QUADRIFINA Band 8 1-349 31. Oktober 2010
© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

The Philippine Notodontidae (Lepidoptera)

A. Schintlmeister[1] & J. H. Lourens[2]

Author's Adresses:
[1] Dr. Alexander Schintlmeister, Calberlastr. 3, D-01326 Dresden, Germany; e-mail: schintlm@aol.com
[2] Dr. Johannes H. Lourens, Ridgewood Park, Brgy Gulang-Gulang, 4301 Lucena City, The Philippines; e-mail: janhlourens@yahoo.com

Abstract

This issue deals with 139 Notodontidae for the Philippine fauna, 40 species of them are recorded for the first time. All species and subspecies, including their primary types, are illustrated in colour and presented with their genitalia. Each species is accompanied by distributional maps for the Philippines and the text provides information on bionomics and variability.

The work evaluates a material of about 20.000 notodontids of various collections.

22 species and 23 subspecies are described as new to science.

The present paper includes 4 designations of Lectotypes, reports 19 cases of new synonymy, 1 case of new homonymy including the proposing of a replacement name, 9 changes in the status, and 11 new combinations.

Zusammenfassung

Diese Publikation beschäftigt sich mit den 139 Notodontiden - Arten der Philippinen, davon werden 40 zu Ersten Mal gemeldet. Alle Arten und Unterarten, einschließlich ihrer primären Typen werden in Farbe abgebildet; auch die Genitalarmaturen werden illustriert. Zu jeder Art wird eine Punkt-Verbreitungskarte beigefügt und der Text enthält Informationen zur Bionomie und Variabilität der Taxa.

Für diese Arbeit wurden etwa 20.000 Notodontiden aus verschiedenen Sammlungen ausgewertet.

Für die Wissenschaft als neu beschrieben werden 22 Arten und weitere 23 Unterarten.

Es werden weiterhin 4 Lectotypen festgelegt, 19 Fälle neu erkannter Synonymie und ein Fall neuer Homonymie einschließlich eines Ersatznamens mitgeteilt. In der Arbeit werden weiterhin 9 Statusänderungen und 11 neue Kombinationen vorgenommen.

Key words: Asia, check list, biogeography, fauna, lectotype designation, homonym, Lepidoptera, new combination, new species, new subspecies, Notodontidae, Philippines, synonymies, taxonomy.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Preface

The foundation for this book on Philippine Prominent Moths (Notodontidae) was laid in December 2005 when both authors undertook a joint collecting safari in Mindanao. There hadn't been a comprehensive scientific update since SCHINTLMEISTER's 1993 Philippine issue (103 species) and the number of "new for science" species had risen dramatically. The prospect of the cooperation between a taxonomist, specialized in this group world-wide and a highly motivated, ecological trained biologist, synergized the inputs on both fronts. Statistically appropriate samples were taken in a variety of biotopes, especially in lowland dipterocarp forests, where access had hitherto been difficult due to safety concerns.

While the first author visited most museums tracing type-material of Philippine Notodontidae, and mounted hundreds of genitalia slides, which enabled him to verify the genuine or synonymic status of Philippine Prominent Moths, prior to new descriptions, the second author, LOURENS, resident in the Philippines for many years, continued to explore many hitherto unknown places on foot and by car and assembled a close to complete collection of Philippine species. Not until 5 years later, after SCHINTLMEISTER had completed his Monograph on the Thailand Notodontidae (SCHINTLMEISTER & PINRATANA 2008), followed by the comprehensive work about the Palaearctic Notodontidae (SCHINTLMEISTER 2009), the first sections of Philippine Notodontidae came to paper.

Efforts were made, to make this issue as user friendly as possible, especially by assembling photographic images together with microscopic features and highlighting diagnostic differences.

It is hoped that further volumes like this Notodontidae work will appear about other moth families. The number of Philippine species of macro-moths is conservatively estimated to contain 3500 species. Let there be more initiative by the Philippine government and scientists with manpower from well guided Philippine students to document this treasure of natural history before it is too late. There isn't much forest left. Strict measures have to be taken that further destruction of natural resources is completely stopped. Special studies should also include Philippine National Parks. At the moment, the unacceptable situation prevails that guardians of those national treasures don't even have the books for studying the insects which they are protecting.

DR. ALEXANDER SCHINTLMEISTER & DR. JOHANNES H. LOURENS

Dresden and Lucena in August 2010

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Introduction

The family Notodontidae or Prominent Moths has an almost worldwide distribution (being absent from the Arctic regions and New Zealand) and comprises some 3,000 described species. The family is part of the superfamily Noctuoidea, which is the largest superfamily in the Lepidoptera, including more than 65,000 described species. The Noctuoidea are characterized by the presence of a metathoracic tympanal organ of the adults and the presence of two MD setae on the larval metathorax.

Characters for defining the Notodontidae themselves are less satisfactory. MILLER (1991: 172) listed several synapomorphies to support the monophyletic nature of the Notodontidae: "Adults: Sclerotized apices of tibial spurs with margins serrate; metascutal bulla present, teardrop-shaped; vein R_2 stalked with R_{3-5}, no accessory cell present; pleuron of female segment 8 partially membranous; a ventral, invaginated, glandular region

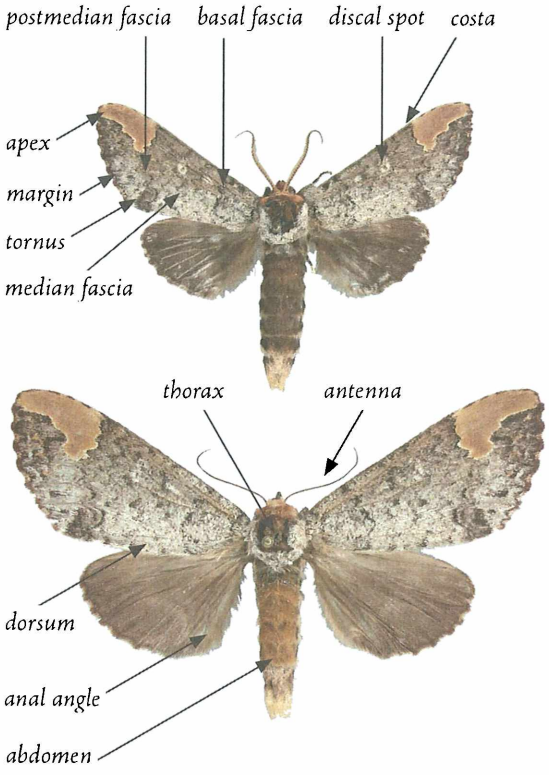


Fig. 1: Wing pattern of *Phalera acutoides*.

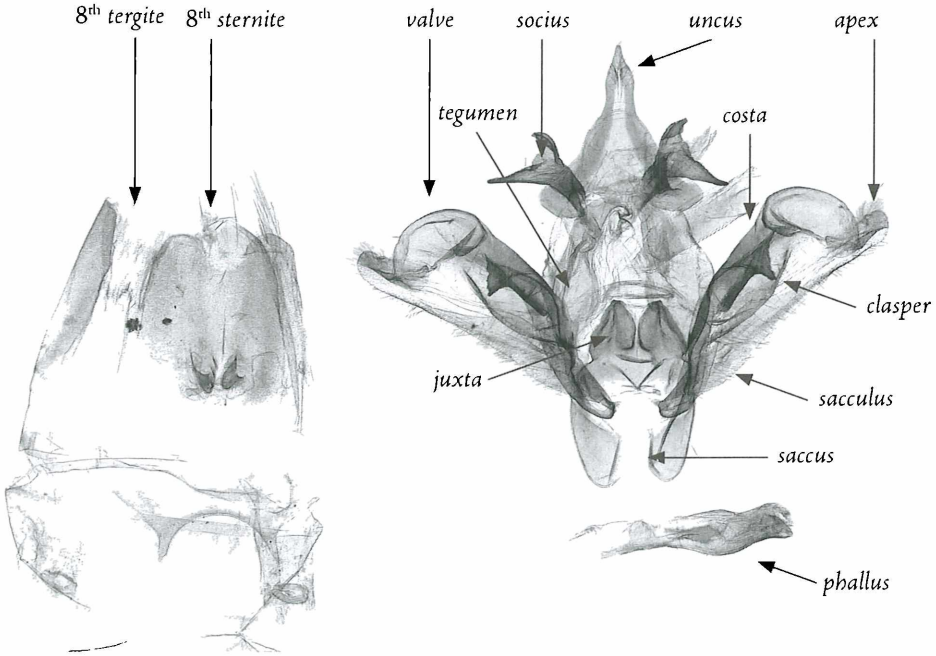


Fig. 2: Male genitalia with glossary of *Phalera acutoides*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

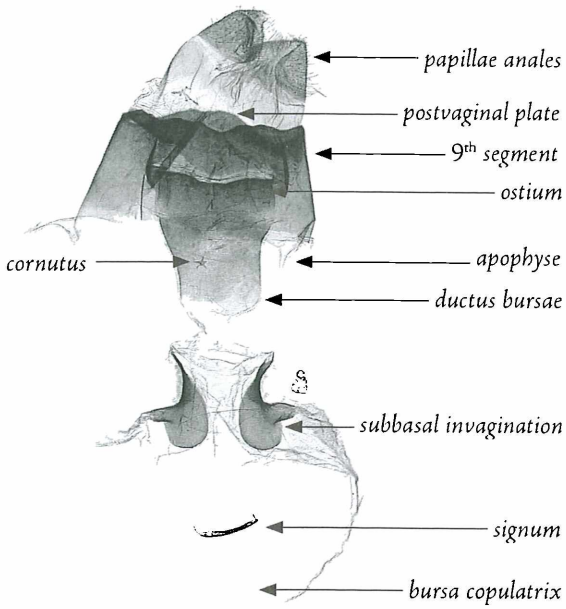


Fig. 3: Female genitalia of *Phalera combusta*.

The following abbreviations are used:

BMNH – The Natural History Museum, London
NHM – Naturhistorisches Museum Wien
USNM – Smithonian, National Museum of Natural History, Washington D.C.
ZMHU – Museum für Naturkunde – Leibnitz-Institut für Evolutions- und Biodiversitätsforschung an der Humboldt-Universität zu Berlin

HT – Holotype
PT – Paratype
ST – Syntype
LT – Lectotype
PLT – Paralectotype

♂ – male
♀ – female

E – East; S – South
W – West; N – North

GU – Genitalia dissection (followed eventually by the slide number).

present in membrane between papillae anales and ostium; males with a terminal tuft of long hairlike scales; scale apices simple or serrate. Larvae: mandibular cutting edge smooth; body evenly covered with secondary setae, larger setae or sometimes verrucae present at primary setal locations; MD setae bisetose on A1; seta X located in E area near anterolateral corner of anal shield, or a verruca in that position; crochets uniordinal."

The adults are usually of moderate size, e.g. forewing length between 15 mm - 35 mm, but under the Philipine prominent moths there are also a few small (about 12 mm) species as well as larger insects up to 60 mm forewing length. The narrow forewings show usually a biologically cryptic, but aesthetically pleasing wing pattern, sometimes with silver metallic spots. The male antennae are usually bipectinate, those of the female are pectinate or filiform. The forewings display, in many species, a median tooth-like tuft of scales projecting from the dorsum. The abdomen is ending with a tuft of scales or hairs in many species. The male genitalia are characterized by the presence of a pair of well-developed socii and pleated sacculus, enclosing long hair-like androconia. The 8th abdominal segment often has numerous modifications, because males of many species use it to grasp the female during copulation. These modifications, particularly of the 8th sternite, are in many cases of taxonomic value for identification of the species.

Notodontid larvae can be recognized by the presence of two MD setae on A1; other Noctuoidea have only one MD seta.

MILLER (1991) gives a subfamilial classification and recognizes nine subfamilies within the Notodontidae. With some modifications and additions by SCHINTLMEISTER (2008) we follow this concept. The genus concept and systematics follow SCHINTLMEISTER (2008).

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Acknowledgements

For this work we used material belonging to the following collections and we wish to thank colleagues for the loan or donations of material, for valuable comments and for giving access to collections they curate:

Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt/Main (Dr. WOLFGANG NÄSSIG), Institut royal des Sciences naturelles, Bruxelles, Museum für Naturkunde an der Humboldt-Universität zu Berlin (Dr. WOLFRAM MEY, VIOLA RICHTER), Museum Witt, München (THOMAS WITT & Dr. WOLFGANG SPEIDEL), Natural History Museum, London (MARTIN HONEY & GEOFFREY MARTIN), Nationaal Natuurhistorisch Museum, Leiden, (Dr. ERIK VAN NIEUKERKEN), Smithsonian, National Museum of Natural History, Washington D.C. (DON HARVEY, with special thanks for providing images of types described by SCHAUS including photographs of their genitalia, and a portrait photograph of SCHAUS), Oxford University Museum of Natural History, Hope Entomological collections (JAMES E. HOGAN), Senckenberg Museum für Tierkunde, Dresden (Dr. MATTHIAS NUSS), Staatliches Museum für Naturkunde, Karlsruhe (Dr. ROBERT TRUSCH), Universitetes Zoologiske Museum, København (Dr. OLE KARSHOLT), Zoologisches Museum und Forschungsinstitut "Alexander König", Bonn (Dr. DIETER STÜNING), Zoologische Staatssammlung München (Dr. AXEL HAUSMANN, with special thanks for permitting to illustrate type material of several Sumatran Notodontidae here).

We are also grateful to the following, who supported our studies with valuable material, information on literature and notodontids (material and images), or helped in other ways: EDITHA SCHUBERT Senckenberg DEI, Müncheberg (for portrait photographs), KLAUS-RÜDIGER BECK, Demitz Thumitz, Dr. RON BRECHLIN, Pasewalk, Dr. KAREL CERNY, Innsbruck, Dr. WOLFGANG ECKWEILER, Frankfurt, MARKWARD FISCHER, Dresden (for expert advise for layouting and technical assistance), SERGEIJ GUNDOROV, Saratov, YASUNORI KISHIDA, Tokyo, Dr. HIDEKI KOBAYASHI, Tokyo, GEOFF MARTIN (also for scanning genitalia slides in BMNH, London and further technical assistance), JAN PETER RUDLOFF, Roßlau (for technical assistance), Dr. RIKIO SATO, Niigata, VICTOR SINJAEV, Moscow, Dr. ALBERTO ZILLI, Roma, ANDREAS ZWICK, Canberra.



Fig. 4: Collection for Philippine Notodontidae at NHM, Wien.

Special thanks go to JOHN DENNE, Lucena, for linguistic corrections.

Last but not least we wish to thank the Naturhistorisches Museum Wien (Dr. SABINE GAAL-HASZLER & Dr. MARTIN LÖDL) for the possibility to publish this long paper. MARTIN LÖDL encouraged the first author to undertake this work and offered space in the museum to accomodate the Philippine Notodontidae from the collections of LOURENS and SCHINTLMEISTER in the NHM, Wien in a own section. So this unique collection with many types is safely preserved for coming generations.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Material and methods

Until 1988 the material of notodontids from the Philipines in collections were limited. Most material the first author found in the collections of BMNH, London, Senckenberg, Frankfurt/Main and in ZMHU, Berlin. The USNM, Washington houses also a small collection from Mindanao and Luzon, but alltogether these collections are keeping not more than 500 specimens.

In January/February 1988 A. SCHINTLMEISTER and K. CERNY realized a first expedition to the Philippines. They visited Palawan, Luzon, Mindoro and – as the results were mind-boggling succesfully, they paid immediately a second trip in September/October 1988 visiting again Palawan, Luzon, Cebu and Mindanao. In the following years K. CERNY undertook several further collecting trips including Panay, where he also collected some Notodontidae, which he gave to the first author. 1993 and 1995 SCHINTLMEISTER and V. SINJAEV collected again in the Phillipines with special focus on Mindanao. V. SINJAEV and A. GORBATSHEV visited with great sucess in February 2000 Palawan (Mt. Salakot) and let their Notodontidae to the first author. W. MEY, curator for Lepidoptera at ZMHU, Berlin organised several expeditions to the Philippines (together with V. RICHTER, W. SPEIDEL and K. EBERT) in 1997, 1999, 2000 to NW Luzon, Samar, Leyte and SE Mindanao. We were able to examine and include this material in our work, which is storaged in ZMHU, Berlin. From the Nationaal Natuurhistorische Museum, Leiden, a smaller series of notodontids was loaned to the first author, which was collected by R. A. MÜLLER in 1986 and 1996 in Mindanao and Sibuyan.

The scientific results in discovering new species in all families of Heterocera,



Fig. 9: Tower as preferred by J. LOURENS for collecting. Inside some blacklight tubes are placed.



Fig. 10: Light trapping system of SCHINTLMEISTER for dry nights. The whole equipment (without generator) is less than 200 gramm, which might be important when travelling only with a rucksack.



Fig. 11: In mountainous areas – here together with K. CERNY at Mt. Polis, 1.800 m, in 1988 – rain protection is necessary. Such misty weather guaranties a mass flight of moths to the lamp.

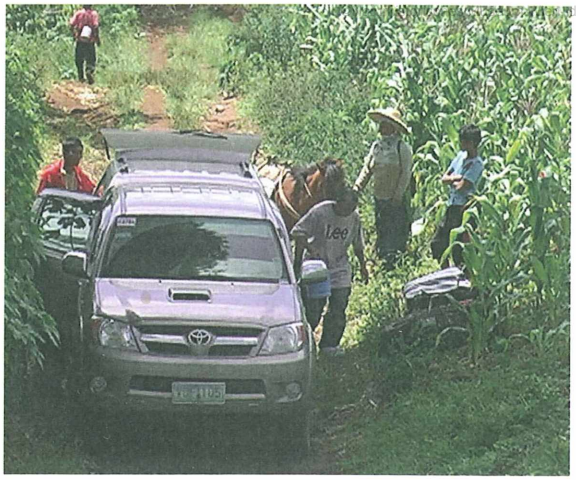


Fig. 12: The 4WD vehicle cannot continue and all equipment must be transported by either buffalo (carabao), horse or willing people to hand carry for further 6 – 10 km to reach a good habitat for sampling moths during night.



Fig. 13: Loading supplies and equipment for climbing Mt. Bongabon in Luzon....



Fig. 14: ... and climbing step by step.

including such families as Saturnidae and Sphingidae attracted further moth-collectors as R. BRECHLIN. They engaged also several local people for collecting moths. The Philippines have traditionally a good stock of local collectors, which are active mostly in commercial attractive groups as Rhopalocera or larger beetles (Lucanidae, Cerambycidae etc.). Some of them expanded to a new "business-field" of smaller moths. So between 1995 2000 a very large number of moths, including notodontids came to Europe. The first notodontids from interesting localities such as Mt. Halcon/ Mindoro, Mt. Balocawe/Leyte, Mt. Canlaon/ Negros or Mt. Busa/Mindanao, were bought by the first author but the number of shipped specimens increased exponentially and as they originated always from the same localities SCHINTLMEISTER stopped buying further material from traders from the Philippines. From this time very large series of Philippine dealer-material was purchased by Museum Witt, München.

In 2003, after his retirement, J. LOURENS started to explore the Philippine moth fauna. The goal was not only to collect much, but to collect intelligent on various different kinds of habitats, including virgin forests (in our days a rarity) at the right time. As a resident over many years in the Philipines he was also able to explore some more risky and less known places. Under sometimes difficult circumstances, including big expenses for travelling (the ferries between the Philippine islands are costly and also the fuel consumed by the powerful landcruiser reach European dimensions in price) he continuously collected on many islands. The advantage of a resident is, that he can select the best times for collecting, e.g. the nights around new moon. A further advantage is, that LOURENS spread most specimens immediately after returned from a collecting trip, which guaranties a good quality. On the other hand

download unter www.biologiezentrum.at

the collections need space and the number of fully airconditioned rooms in his house is restricted. This is the reason, why the series of notodontids in col. LOURENS are not too large, extending not over 40 specimens per species.

Alltogether we examined the following material from the Philippines for this work:

Museum Witt :	about 10.000 specimens
coll. SCHINTLMEISTER	6.000 specimens
coll. LOURENS	3.000 specimens
all other collections	1.500 specimens

The biggest part of Philippine Notodontidae from coll. SCHINTLMEISTER and coll. LOURENS including about 500 mounted slides of genitalia we let to the Natural History Museum in Wien. So the NHM, Wien hosts the primary types (Holotypes) of 93 taxa (69%) described from the Philippines with more than 1.000 Paratypes. 19 primary types (14%) described by SCHAUS are in USNM, Washington and 9 (7%) described by WEST in BMNH, London. The remaining 13 described taxa (10%) are distributed in various other museums.

The Prominent Moths are seldom found during the day, but after dark they come to light. *Dudusa* and *Tarsolepis* come early in the evening, but the majority of notodontids is seen after midnight to the early morning. Therefore it is necessary to work from 6 p.m. to 6 a.m. We used mercury vapour lamps (160W, 250W) as well as superarctinic fluorescent lamps (40 W). SCHINTLMEISTER preferred a 3 m x 4 m wall from white gauze with mercury vapour lamps, while LOURENS used a MUELLER's tower with mercury vapour lamp on the top and several fluorescent tubes inside. Electric power was produced with emergency power generator.

Many of our samples were taken in public lands or forest remnants. To reach these, it almost always required a 6-10 km tracking from the point where a 4WD vehicle failed



Fig. 15: At the top of Mt. Salakot/Palawan. A pavilion as illustrated gives a high comfort during night (including rain protection) and also for packing the moths in the morning using a table.



Fig. 16: Cleaning the collecting site for the night is important, because many moths will rest a few meters away from the lamp and will be better visible on cleaned ground.



Fig. 17: SCHINTLMEISTER climbing Mt. Amuyao/Luzon at 2.600 m in 1988. The temperatures fell during the night below 10°C.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



Fig. 18: C. WOSNITZA (wife of SCHINTLMEISTER), SCHINTLMEISTER, V. SINJAEV and a Corean journalist (from right to left) at Mt. Polis in 1995 in an abandoned hut using it as „head-quarter" The yellow moth on SCHINTLMEISTER's T-shirt is *Leopa nigropupillata* NÄSSIG & TREADAWAY, 1988 a saturnid which was discovered by SCHINTLMEISTER at this place in 1988.



Fig. 19: Climbing Bongabon /Luzon in 2009.



Fig. 20: In 2005 LOURENS and SCHINTLMEISTER celebrating the rediscovery of *Tarsolepis kochi* in Liangga/Mindanao with a bottle of red wine, which the second author "found" in his big landcruiser.

to get through. From such points onward all materials were transported by either buffalo (carabao), horse or willing people to hand carry the canvas bags and a generator from the last Barangay where local authorities were always briefed and consulted.

It was the intention of the first author to check all primary types and to compare them with the material collected in the Philippines. Fortunately the publisher of Quadrifina allowed us to use the printing space rather freehanded and therefore we are using this opportunity to illustrate the holotypes – most of them were never illustrated before – (including their genitalia if dissected and scanned) here. This will enable future students to check quickly type material without travelling to various museums.

The colour plates are derived from single photographs, which were photographed according to the method of ECKWEILER (2001) with a circular full-spectrum fluorescent tube. The origin of the illustrated specimen is given only approximately as in the legends of the male genitalia. All illustrated adults are of natural size; some of them were dissected for their male genitalia after photographing them to confirm proper identification.

Most genitalia figures illustrated here were scanned according to the method described by SCHINTLMEISTER (2002). The scale of the figures may vary between the species of different genera. The legends refer only the region, e.g. Samar, and not the exact locality. The reference number of the genitalia slide allows, in critical cases, the location of the specimen, should this become necessary. Genitalia slides in the Museum Witt are marked with „W" before the number. Other museums citations take the form BM # [BMNH, London] or USNM # respectively. All other genitalia slides („GU" or „MV" numbers) are storaged in NHM, Wien.

The Philippines: Biotopes and their threat

The Philippines comprises eleven major islands, with a land area of 282.000 km², almost the size of the British Isles. The islands are divided (politically) into three groups: Luzon, Visayas and Mindanao. The largest of these islands are Luzon and Mindanao (see table 13). Mindanao island includes the Sulu Archipelago, composed primarily of Basilan, Sulu, and Tawi-Tawi. The smaller islands of the total of 7107, have a joint land area of 18.000 km². There are 1965 small, 466 smaller, about < 2-3 km² islands and 4642 rocky islets and reefs. Most of the small inhabitable islands have a coconut monoculture. There is no doubt that the larger of them like Tawi-Tawi, Humonhon or Batanes (could) provide very valuable information on moth speciation and migration. The main islands are in more detail described by DICKERSON (1925). The >30 sampling areas, indicated in Fig. 21 cover most of the significant Notodontidae biotopes, some others, like mangroves, giant bamboo, swamp areas, which are sporadically sampled, are only noted in the descriptive text.



Fig. 21: The Philippines. The main collecting sites for Notodontidae are marked.

©Naturhistorisches Museum Wien, download



Fig. 22: *Rhododendron* and *Vaccinium* at Mt. Amuyao/Luzon at 2.600 m.

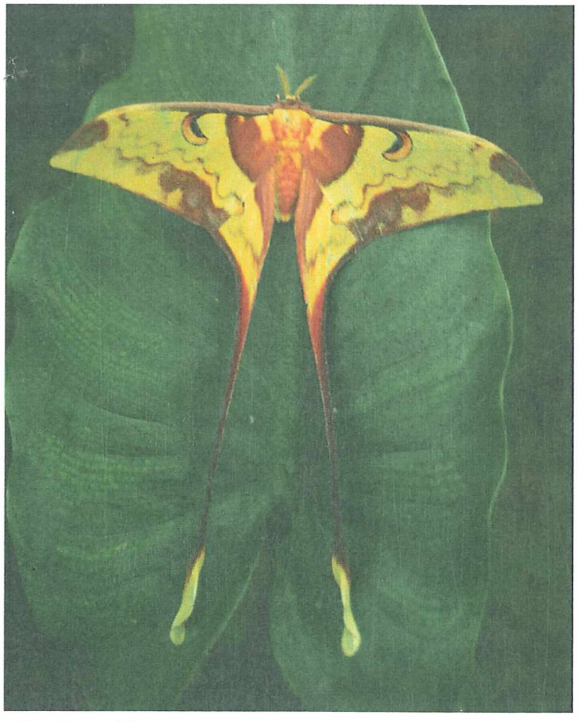


Fig. 23: This upper montane forest of Mt. Amuyao hosts also the endemic *Actias philippinica* NÄSSIG & TREADAWAY, 1997, a species SCHINTLMEISTER discovered nearby at Chatol, but which prefers usually lower altitudes from 800 m – 1300 m.

Tropical forest zones

(E and S Mindanao) are described by WEIDELT & BANAAG (1982). They are based upon an earlier classification by WHITEFORD (1911). Their classification is forestry oriented, and more practical. For a brief characterization we quote them in descending order:

3.000 m –2.500 m: Ericaceae/Rhododendron shrubs
2.500 m – 1.500 m mossy forest,
1.500 m – 1.200 m upper montane forest,
1.200 m – 800 m lower montane dipterocarp forest,
800 m – 400 m upper hill dipterocarp forest,
< 400 m lower hill and lowland dipterocarp forest.

The latter forests are given special attention: they have almost completely disappeared.

Upper Montane zones

Occasional visits to high grounds were made by us to Mt. Pulog (2.922 m), Mt. Amuyao (2.701 m), Mt. Data (2.310 m) in Central Luzon; Mt. Halcon (2.580 m) in Mindoro; Mt. Canlaon (2.450 m) in Negros; Mt. Apo (2.954 m) and Mt. Kitanglad (2.899 m) in Mindanao. The general impression is that the subalpine zones are dominated by short grasses, sedges on swampy places scattered with Ericaceae-*Vaccinium* and occasionally, one layered thin forest stands of *Eugenia, Buxus, Podopcarpus* below 10 m of height, on more sheltered sections, but lack the rich flowering higher plants as in the European Alps. Their "poor" appearance is somewhat similar to the high zones of the Equatorial African Mt. Kilimanjaro (5.893 m) or Mt. Kenya (5.199 m), although in those, altitude adapted species such as *Senecio* species are present from 2.000 m upwards. This is in line with the opinion that the Philippine mountains are geologically relatively young, and significant high altitude speciation has not taken place.

On Mt. Pulog, in the Cordilleras C. Luzon, forests dwindle above 1.800 m. At 2.000 m

there are vast stretches of low growing grasses and sedges, with occasional low, one-layered broadleaf forest and abundant pine. It is home to dwarf bamboo (*Yushania niitakayamensis*). The timber-line is 300 m – 800 m lower than in Mindanao, depending on their shelter and SE exposition.

Mossy Forest zones

in Central Luzon can sometimes be reached by car. The areas were intensively sampled during 1988 – 1995, e.g.

Banaue City, 1.200 m and in particular Mt. Polis Pass at 1.900 m altitude. Trees beyond that point are shortening and show erratic growth, with intertwined branches. The zone is rich in specialized and interesting moth species, including Sphingidae and Saturniidae (HOGENES & TREADAWAY 1998, NÄSSIG & TREADAWAY 1998) as accompanying species for characterization of this biotope. Today this location is ecologically destroyed. Deeper inland, at Barlig Village, near Lake Chatol (1.960 m above sea level) a larger forest remnant is still intact. It exhibits dense stands of *Podocarpus imbricatus*, with fully moss covered stems and branches, loaded with epiphytes and orchids. The forest structure shows two canopy layers. This biotope is one of our richest collecting sites, inclusive Notodontidae. During September to March these forests are fully covered with clouds, night temperatures can reach 6 –10°, but it is amazing that this doesn't seem to affect flight, especially of Geometridae and Nolidae. A large number of montane species of *Tristeirometa, Eupithecia* (Geometridae: Larentiinae), *Nola* (Nolidae) are awaiting identifications and descriptions.

Montane Dipterocarp Forest

WEIDELT & BANAAG (1982) suggested the term montane dipterocarp forest for all the dipterocarp forests above 800 m. They can be subdivided botanically in upper and lower montane, but the proposed grouping corresponds to the limits of "montane



Fig. 24: Mossy forest at Mt. Amuyao at 2.500 m.



Fig. 25: The area of Mt. Polis is a „hot-spot" of evolution and such sunny days are rare. This and the following image were taken in 1988.

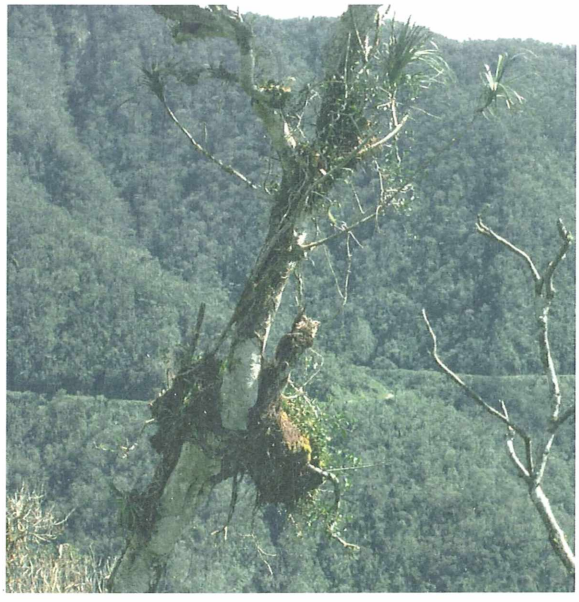


Fig. 26: View from the collecting site at Mt. Polis.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

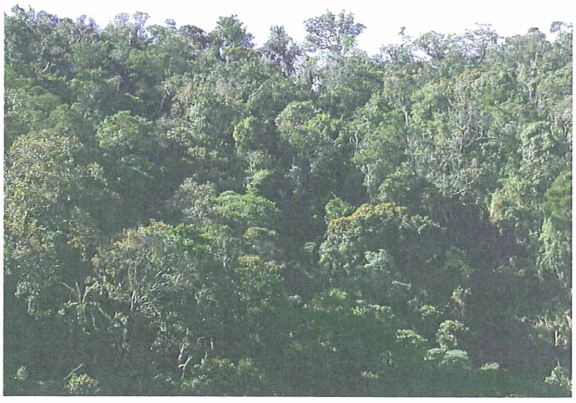


Fig. 27: The Central Highlands just a few kilometers before Kalinga border in 2007. Perhaps now, 2010, too late.

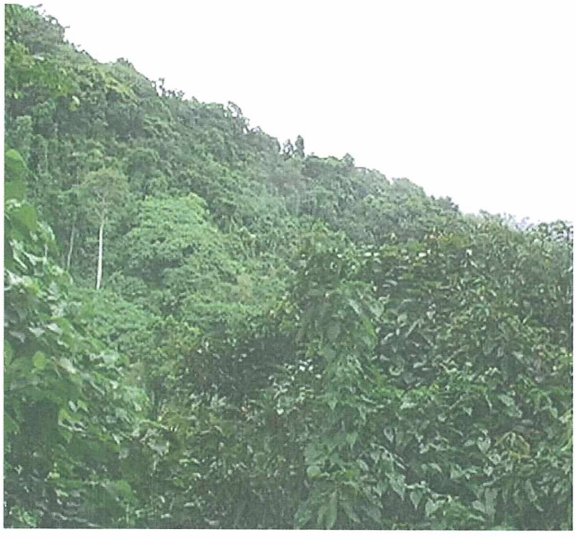


Fig. 28: Hilly dipterocarp forest in Dapalan, Sierra Madre/ E Luzon at 600 m.



Fig. 29: Such a virgin lowland forest as our collecting site in Lianga/Mindanao (one of our best collecting sites) hosts many specialized notodontids.

rainforest" by BURGESS (1969) and earlier classifications for Malaysia. These forests have three canopy layers. They occur on hills with better run-off drainage, usually with frequent fogs during nighttime. In these forests the large tree ferns (Cyatheaceae) are dominant. The load of mosses and lichens is low in the submontane zone, gradually thickening when they approach the mossy forests.

On the West side of the Central Luzon Cordilleras, on the Kalinga Province border with (the almost fully deforested) Abra province, lies a significant high altitude forest in the lee of the central highlands. This, and other forests in Kalinga and Northern Illocos do have the dominant tree species *Agathis, Podocarpus, Phyllocladis* but generally lack Fagaceae: *Lithocarpus* and *Castanopsis*, commonly found in E Luzon, Sierra Madre and in Leyte forests on this altitude.

Upper Hill forest (400 m – 800 m) is in E Mindanao dominated by *Shorea polysperma* and *S. almon*, with a gradual increase in non-Dipterocarps, like *Lithocarpus* (Fagaceae), *Litsea* (Lauraceae) and *Elaeocarpus* (Elaeocarpaceae) in the higher areas.

Lowland and lower hill forest (below 400 m). Some characteristic species of this zone are *Teismanniodendron* and *Vitex*, (both Verbenaceae) which can be recognized by their palmate-pentafoliate (trifoliate) and a 15 cm long rachis (diagnostically winged in *Teismanniodendron*), and carrying blue flowers. *Vitex* (commonly called Molave) is more often found on limestone, together with *Dipterocarpus grandifloris* a widely distributed lowland species and indicator for dry biotopes. The above two types of forest have been most intensively logged. One of our best collecting sites in Mindanao is a well maintained Lower Hill forest maintained in several blocks by Samilia, Diatagon, Lianga in Surigao del Sur. Almost all our other lowland collecting sites were

download unter www.biologiezentrum.at

in second growth vegetation, commonly referred to as secondary forest. Initially they are dominated by an impenetrable blanket of *Merremia vines* (Fig. 30) and on drier places climbing bamboos *Schistostachum* species. If such places are left alone, a number of pioneer trees manage to grow through and re-establish a non-Dipterocarp forest based on pioneer species like *Endospermum peltatum, Cananga* and *Alphitonia*. After a period of 20-30 years Dipterocarps may take over, provided that seeds from nearby trees have come in. In many instances however, the young trees are cut, providing the preferred pole construction material for local "Nipa" house production.



Fig. 30: Road side view W of Gen. Nakar/Luzon.

Secondary Lower Hill forests, especially on dry areas, usually regenerate via a succession range of giant bamboo. Examples hereof can be seen in vast areas of central Abra province, Zambales, Marinduque Island. They form preferred night roosting sites for larger birds such as hornbills, which disperse seeds with their droppings. Thick bamboo stands usually have several dicotyl tree seedlings in their root bases. Their canopy shades off the bamboos stands, which eventually succumb. Unfortunately, bamboos are intensively harvested for local housing and furniture, including such valuable pioneer trees.

The study of moths in general, requires sampling of specimens preferably in their natural environment, especially virgin forests. Good habitats at medium altitudes (800 m – 1.200 m) can host about 60 – 80% of the notodontid fauna of an island. Mt. Canlaon in Negros is such an example. Above 1.400 m one will find more specialized species, e.g. many *Syntypistis*. But the lowland forests host also some special adapted species, which will find hardly above 600 m, e.g. *Tarsolepis kochi* or *Lasioceros euteles.*

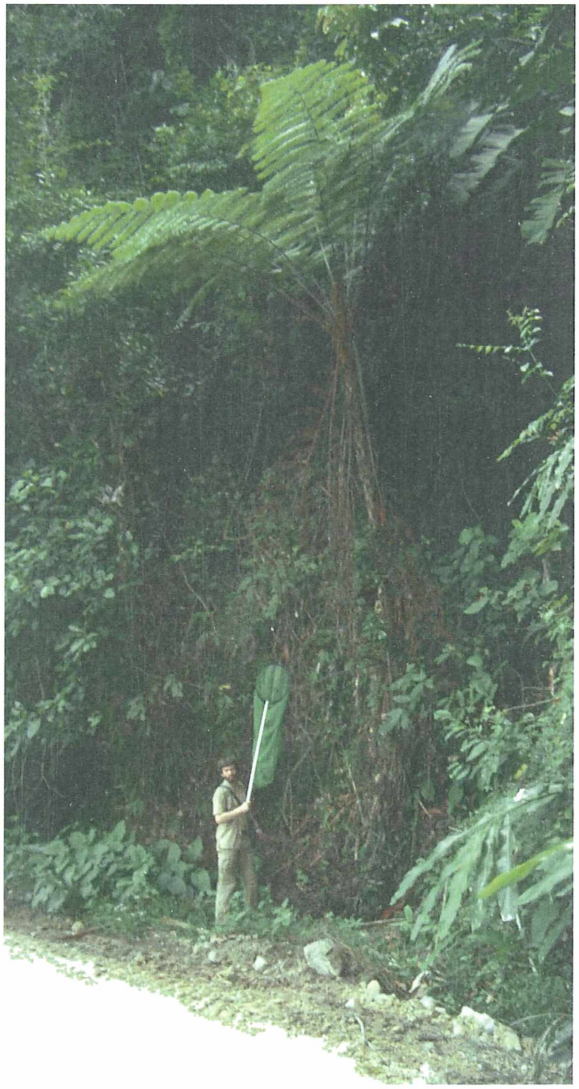


Fig. 31: Tree fern (Cyatheales) in S. Vicente/Palawan as we meet often in secondary hill forests.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



Fig. 32: Foot of Mt. Gantung/Palawan, 200 m in 1988. Such fresh forest-clearings are often very good collecting sites.



Fig. 33: San Vicente, 20 km NEE Roxas is surrounded by smaller fields and other kinds of urbanized areas.



Fig. 34: Mt. Salakot (collecting site at 800 m) nature reserve hosts about 80% of the hitherto reported Notodontidae from Palawan.

In our opinion at least only 30 collecting sites in various islands are necessary to get a comprehensive overview of the Philipine notodontid fauna. So only a few forest reserves could preserve the entire notodontids of the Philippines.
Our most important collecting sites are the following:

Palawan

S. Vicente, 20 km NEE **Roxas**, 10°21'N, 119°10'E, 200 m. A secondary forest in hilly area. Type locality for some notodontids described by SCHINTLMEISTER 1993.
Mt. Salakot Reserve, 9°51'N, 118°38'E, and **Napsan** (7 km E of Mt. Salakot, 09°51'N, 118°37'E) are parts of the Victoria Park, in Central Palawan. The West side of the Island has larger stretches of virgin forests, which are well protected. Authorities insist on strict procedures but are cooperative in respect to those scientists that are seriously concerned to document the biodiversity of this unique Island. Permissions were given on several occasions to climb Mt. Salakot and collect moths. The access to this mountain leads from Salakot Falls a few hours walking through Hilly Dipterocarp forest and a 800 m hike to dry heath forest, almost montane in appearance at 950 m altitude. The best season for sampling moths in Palawan is from December to April.

Mt. Matalingahan is probably the best locality in Palawan as it harbours many species of Sundanian origin, which are found seemingly exclusively in this area such as *Euhampsonia roepkei* and *Fusadonta albipuncta*. There are several collecting sites around Mt. Matalingahan, e.g., Kibyawon, 8°47' N, 117°42' E, 950m or foot of Mt. Matalingahan, 7 km E of Sicud, 08'51.011"N 117'32.154"E 40 m. A further noteworthy place in SW Palawan, situated in a primary forest edge is Brgy. **Culasian Pinagar** 08°48.460'N, 117°28.530'E at 37 m.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Quezon Forest National Park, 14°01'N, 122°11'E, 250 m. In 1988 an outstandig good collecting site in primary forest in a urbanized landscape of S Luzon. At that time settlement of squatters started and in 1993 a village was established at one of our collecting localities. Actually the biggest part of the former forest is destroyed and the area is no longer "National Park" It became a "classical" type locality as many Notodontidae were described from this place by SCHINTLMEISTER (1993).



Fig. 35: View on a collecting site in Quezon Forest N.P. The light trap was situated in the bend (1988).

Aurora 13 km W of Diatagon, 16°32'N, 122°14'E, 585 m is situated in the Sierra Madre, the eastern ridge of N Luzon. The second author discovered in this area several very good collecting sites along freshly opend forest roads. Unfortunately very large areas are now under logging concession by big companies and we worry the complete destroying of the forest.



Fig. 36: Collecting site in Aurora near Dibulo (Luzon) at 650 m. This place hosts also many lowland species like the rare *Notodontella ferrifusa.*

Nueva Ecija, **Bongabon,** Brgy. Laby, 15°38'N, 121°15'E, is situated in Sierra Madre (E Luzon) in the Mingan Mts. The place was visited five times between 2005 - 2009 and moths were sampled at the foot of a dipterocarp montane forest in the shelter of a higher peak between 950 m - 1.050 m.

Mt. Polis pass between Banaue and Bontoc, 17°02 N, 121°03'E, 1.700 m 1.900 m is one of the most interesting places in Luzon and type locality of a lot of Lepidoptera from all families. We collected at several sites around a communication station on the pass. The whole area – in 1988 nearly untouched – is highly endangered by erosion, caused by settlement of man, which goes every year higher. The forest is at present over 2.000 m altitude still in good condition, but the Figs. 25 and 26 are illustrating a "historical" view. The illustrated lower habitats are destroyed today.



Fig. 37: Dipterocarp upper hill forest at Bongabon.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



Fig. 38: Road from Malibcong to Kalinga, an extremely diverse moths biotope.



Fig. 39: The rice terraces of Banaue are a famous touristic spot and easily reachable by bus or car.



Fig. 40: Many slopes in Benguet (photograph taken in 1988) are endangered by erosion, causing in deforestation.

Kalinga E of Malibcong, 17°30' 12° 59' E collecting sites between 1.660 m - 1.900 m are extremely rich collecting grounds for Noctuidae.
The fauna of this place resembles those of Mt. Polis, but we observed more species of moderate altitudes at this site. The area is rich of virgin forest, but logging and settlement destroy at present many good habitates.

Chatol, 15 km SE Bontoc, 17°02'N, 121°03'E, 1.850 m is a small village nearby the lake Chatol, which is known as a "very cold place" and home of montanous species. All villagers are owning the (still primary) forest around and protect it from illegal logging and settlement. The habitat is intact until today. We collected in 1988 and 1995 directly from a house with great success, as the forest begins just behind the village. The fauna is montanous and lowland-species and also many species of moderate altitudes are absent.

Banaue, 20 km N Lagawe, Prov. Ifugao, 16°54'N, 121°05' E, 1.200 m is a city where we found smaller pieces of shrubs and secondary forests between the rice fields. We sampled moths directly in the city but 1995 also at the smaller village Kinakin only a few kilometers away.

"Subprov. **Benguet**" is situated in NW Luzon (approx. 15°58'N, 120°40'E), not far from Baguio. It was in 1913/1914 the operating area of WILEMAN, who collected at several places, named "Klondyke" or "Palali" between 600 m - 1.000 m altitude, which are at present unknown (the area was in former times used for mining), but a classical type locality for Notodontidae described by WEST (1932). When the first author visited the areas in 1988 no forest was left, except some artificial pinus cultures.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Mindoro

Mt. Halcon Mindoro oriental, 13°15.749'N 120°59.703'E, is a forest covered mountain system, which we did not visit. But there is a lot of trader material from Mt. Halcon, which was taken around the year at 1.100 m. The first author travelled in Mindoro together with K. CERNY 1988 from Amnay (13°00'N, 120°55'E) to San José (12°22'N, 121°07°) but failed to find on the way good forest, but even collecting in such "microhabitats" was not successless.



Fig. 41: Many places (Amnay, 1988) in Mindoro are at present deforested.

Samar

Our main collecting site is situated about 4 km – 8 km SE of **Bagacay**, 11°48,025'N, 125°14.610'E along the road at altitudes between 140 m – 250 m above sea level in lower hilly dipterocarp forests.



Fig. 42: Mixed forest at the top of Mt. Balocawe, 600 m.

Leyte

A well known finding site is Hilusig, **Mt. Balocawe**, W of Mahaplag, 10°43'N, 124°55'E, at 600 m. On the top of the hill there is a TV Station, used frequently by commercial collectors. The Mt. Balocawe is covered by mixed dipterocarp forest and secondary forest. The second author was lucky to find here some fabulous notodontids such as *Paracyphanta lourensi.*

In SE Leyte we collected from 2005-2009 several times along a newly opened road, crossing pieces of good virgin lowland forest, to **Libertad** near Tibo (50 m, 10°40'N, 125°06'E) or Katipunan (300 m, 10°43'N, 125°04'E).



Fig. 43: This freshly forest clearing for constructing a road produces good results in sampling notodontids, such as the rare *Cerasana basipuncta.* However, the virgin jungle seen in the background is at present probably not longer existing, as the picture was taken in 2005.

Negros

The **Mt. Kanlaon** is an active vulcano and the highest mountain of Negros (2.435 m). Many commercial dealers collect insects on the western slopes from Mambucal, (about 10°25'N, 123°09'E) up to 1.200 m. We



Fig. 45: Collecting place at Mt. Binansilang in the range of Mt. Kalatungan, 1.200 m in 1988.



Fig. 46: Talakag, Dalongdong, 800 m, locus typicus of many moths collected at this forest edge in 1988.



Fig. 44: Secondary forest at Brgy. Mat-I. (Claveria) in N Mindanao.

also examined rich traders material from **Mt. Mandalagan** (10°39'N, 123°15'E) at 800 m, near Don Salvador Benedicto.

Mindanao

Mindanao has two higher peaks: **Mt. Kitanglad**, 2.899 m, Bukidnon (8°07' N, 124°55'), an inactive volcano, is above 1.500 m covered with almost undisturbed forest nearly until the top. V. SINJAEV collected here on the southern slope (from Intavas to the top) during 1993 during two months a lot of moths at altitudes between 750 m – 2.750 m (the absolute top is too windy for sampling). The highest peak of the Philippines is the **Mt. Apo**, a partially active stratovolcano, of 2.954 m. We collected several times at the W side at 1.200 m (6°57'N, 125°16'E) in secondary forest, on the SE route via **Kapatagan**, 1.200 m 1.570 m in less disturbed montane forest and the E slopes of Mt. Apo at **Baracatan**, (7°00.513'N, 125°22.498'E), 1.050 m in primary forest.

A major collecting site in Mindanao is **Mt Kalatungan** W of Maramag, Bukidnon. This place lies south of the Mt. Kitanglad. In the absence of access roads to the forests, all collecting-, camping-, cooking-materials, foods and drinking water have to be brought in by horse. A 5-6 hours hike through kugon-grass (*Imperata cylindrica*) is needed to reach undisturbed hilly dipterocarp forests. At **Mt. Balonsilang** (07°55.049'N, 124°54.049'E), **Mt. Binansilang** (7°55'N, 124°40'E) and **Talakag** (7°53'N, 124°40'E) we found a surprisingly rich and diverse moth fauna. Some species, such as *Lemairia schintlmeisteri* NÄSSIG & LAMPE, 1989 (Saturniidae) and also *Phalera knoblichi* are seemingly restricted to this region at medium altitudes.

In Misamis Occidental 22 km N of **Claveria**, accessing Mt. Mapua, from Barangay Mat-I,

download unter www.biologiezentrum.at

(8°39.988'N, 124°59.686'E) a carabao carried the generator to 1.050 m. Initially via a comfortable trail, partly over boulders. The site represents a sample of secondary dipterocarp forest.

One of our best collection sites in Mindanao are some lower hill forests well maintained in several blocks in Surigao del Sur, **Lianga**, 8 km W of Diatagon, (8°42'N, 126°05'E) 100 m – 300 m. There, in an virgine forest, we rediscovered *Tarsolepis kochi* and found many other hitherto unknown species. *T. kochi* was later caught at a similar excellent habitat at 10 km SE **Trento Sta Maria**, 185 m (08°01.615'N, 126°12.322'E).

A further noteworthy place in S Mindanao is situated in Prov. Sumangani/Cotabato del sur: **Mt. Busa** near Kainba, about 2.000 m (6°08' S, 124°39'E), which is known as a bird-paradise. We received from Dr. R. BRECHLIN some very interesting and new Notodontidae such as *Oraura schausi*, which were found exclusively at Mt. Busa. The material was collected at 700 m by local collectors.



Fig. 47: Mt. Bagonsilang in Bukidnon at 1.200 m.



Fig. 48: Collecting site in Lianga/Mindanao (one of our best places) hosts many specialized notodontids.



Fig. 49: Igorot village near Bontoc, Central Luzon in harmony with nature.

Threats and conservation

Palawan provides an example where the awareness of its Natural History Treasures is being positively exploited for Ecotourism. It is one of the places where you (again) can observe the birdwing butterfly *Trogonoptera trojana* during a picnic along the Salakot falls. It is in such a contrast to the shocking devastation (Fig. 40) one sees on a journey in the Central Highlands of Luzon, from Banaue to Mt. Polis, where over long distances the slopes up to 60° steep are depleted of all trees for (fire) wood, including roots, and tons of rock and debris are brought down by means of explosives to fill truckload after truckload with building material. No wonder that the local Igorot tribes, have a close

©Naturhistorisches Museum Wien, download



Fig. 50: A farm in Gen. Nakar, E. of Infanta in E Luzon. Philippine residents can obtain a piece of land of several hectares of natural forest for subsistence farming.



Fig. 51: Forest clearing at Mt. Balocawe, Hilusig in Leyte inside the EEG funded forest protection area.

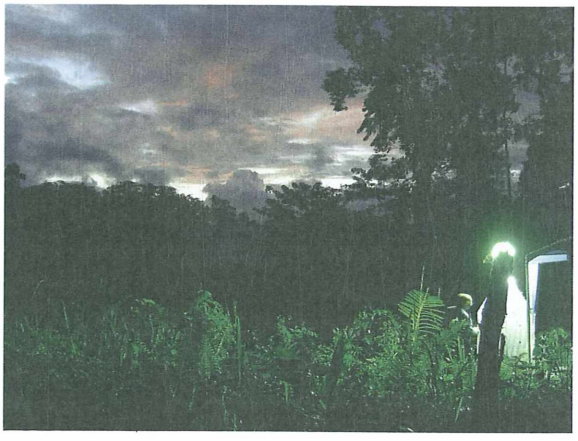


Fig. 52: Such a virgin lowland forest in Lianga/ Mindanao preserves many insects.

understanding for the value of these forests, for irrigation of their rice terraces, living in harmony with these forests for centuries, try to protect them. Mt. Polis, has been a battleground, but is now vegetable farm, so far as the eye reaches.

There are so many other troubled spots where forests are the victim of exploitation. The implementation of the National Integrated Protected Species Act (NIPAS 1992), which was enacted to protect the rich biological diversity of the Philippines, apparently failed to be implemented. Most of such incidents are reported on official websites, sometimes even documented with figures of the numbers of people actively involved in illegal logging. The main criterion for not acting on these offences is a kind pity, "kawawa", that they otherwise have no other source of income. Up to now, local Philippine residents can obtain a piece of several hectares of natural forest for subsistence farming. Such "farms", once populated by a large family, will soon have no other option than starting to make charcoal, starting with just a little, for personal use only... It provides a legal alternative for slash- and burn "kaining" but is similarly destructive on a large scale. This is merely an alarm, that with an ambivalent attitude like that, the last remnants of lowland and hill forest are simply doomed.

There are also examples of excellent ongoing and very promising Forest Protection Projects in the Philippines. A few will be mentioned. C. Samar, is home to the Samar Island National Park (SINP) with a 333.000 ha forest and a 125.000 ha buffer zone. It is recommended to see their web page (http://www.samarislandnaturalpark.org). This UNDP funded project really gives hope that not all forest will be lost for future generations.

Panay: the Philippine Endemic Species Conservation Project (PESCP, http://www.pescp.org/) protects ca. 40.000 ha and

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

represents an example of integration of Filippino and Overseas scientist, with Aklan University, Police, Military and Ministries like the Department of Environment and Natural Resources (DENR), issuing numerous high caliber scientific publications (http://www.denr.gov.ph/) on a wide faunal spectrum.

Need for a National Lepidoptera Collection

The Notodontidae family is one out of many (n > 100) moth families known to occur in SE Asia. It is tragic that with the depletion of these habitas, hundreds of species will probably disappear even before we know them.

Many moths have potential to invade man-made environments, including palms, and have been responsible for outbreaks of allergy, requiring control. For this reason alone, other families, such as Lymantriidae, with proven serious pest status in pine-trees, and Agrotinae (Noctuidae), with notorious vegetable and field crop pests such as *Spodoptera*, should be studied and fully catalogued. Many species of these, some not identifiable, have been found. It is one of the duties of a proud country like the Philippines, to organize and execute such studies. The responsibility for this Natural History Heritage can not just be delegated to Universities like San Carlos in Cebu, where the famous Dr. JULIAN JUMULON-collection is in a deplorable state (pers. comm. C. TREADAWAY) and the University of the Philippines, Los Baños. The Lepidoptera collection there even lacks air conditioning in the specimens collection room. The National Museum (Natural History) in Manila is not equipped yet for this task. The authors have 500 specimens, including labelled paratypes, designated as reference specimens for a future National Collection.

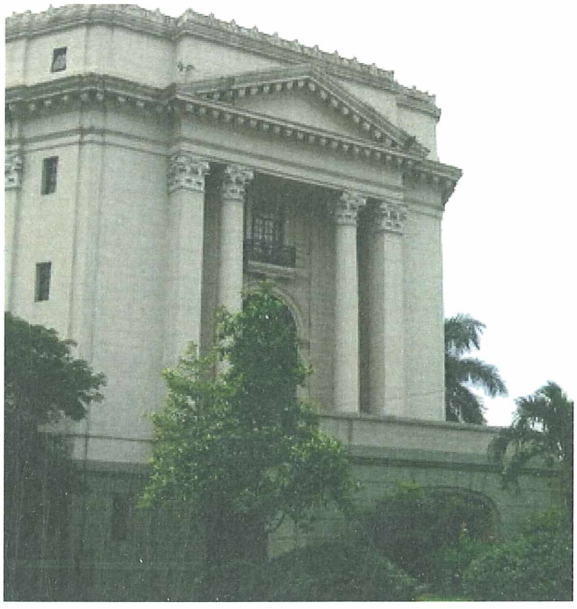


Fig. 53: The National Museum of the Philippines is the official repository established in 1901 as a Natural History and Ethnography Museum of the Philippines. Actually there is no collection of Lepidoptera established at the museum.

Biogeography and Faunal Elements of Notodontidae

The fauna of Philippine Notodontidae is a composite of various faunal elements. The name of faunal elements (in the sense of DE LATTIN 1967) refers to the centre of origin of a species from where it expanded respectively occurs as an endemic. Basically for an analysis is the knowledge of the entire area of distribution (chorology) and the taxonomy of the species. We believe, that in this work we could solve problems in taxonomy, but exact distribution of some oriental Notodontidae is hitherto poorly known. Thus the character of this analysis is rather preliminary. However it is the first biogeographic analysis of an entire moth-family in the oriental tropics. The biogeographic patterns are reflecting also geological historical developments. It is out of the scope of this work to refer this aspects detailed but the interested reader should consult works by HALL (1998), HALL & HOLLOWAY (1998), HOLLOWAY (1987) and TREADAWAY (1998).



Fig. 54: Southeast Asia with the Philippines.

Download unter www.biologiezentrum.at

The **Sundanian faunal elements** have their origin in Sundaland, e.g. Sumatra, the Malayan Peninsula (Malaya) and Borneo. Some authors subsume also Java and Bali to Sundaland. In each of these geographically isolated areas mechanisms of evolution, e.g. genetical drift of isolated populations, lead to the origin of new species. During ice-ages, when sea-level was lower, these islands were several times connected and an exchange of expansive species took place through these bridges. So – at present – Sundaland hosts a very rich fauna, of similar composition, but all of these subcenters have their own endemic species, which occur only in Borneo, Sumatra or Malaya. Sundanian notodontids are represented in the Philippines mostly in Palawan (see table 1), sometimes in distinct subspecies. This group is containing 28 species, which used obviously the bridge from Borneo through Balabac Isl. to enter Palawan. But there is a second distribution pattern of Sundanian faunal elements in the Philippines. These species share Borneo and Mindanao (sometimes including Leyte and Samar) in their distribution pattern but not Palawan.

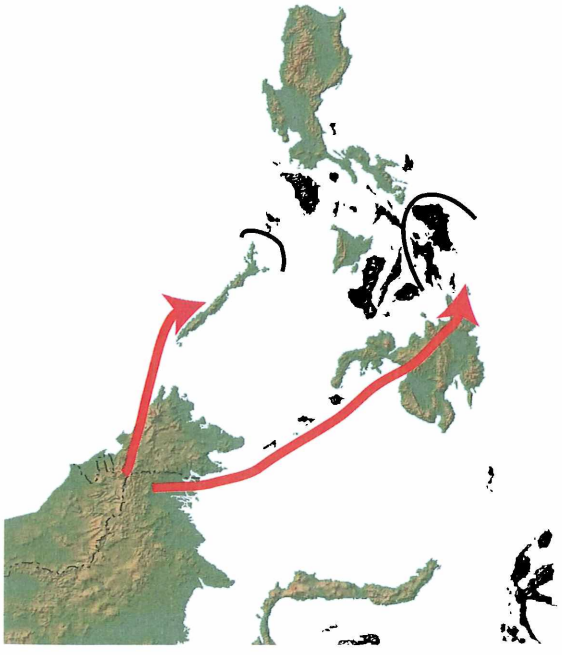


Fig. 55: Invasion of Sundanian faunal elements.

2. *D. vethi borneensis*
8. *E. roepkei*
15. *P. hampsoni hampsoni*°
19. *P. albovittata*[1]
21. *B. horsfieldi*
29. *S. sordida*
33. *S. widagdoi*
40. *P. spinosa*
41. *K. malaysiana**
51. *S. major*
56. *S. virescens*[1]
64. *S. charistera fraseriana*°
68. *P. lichenina**
70. *N. viridescens**
73. *C. anceps**
76. *S. viridifusca sumatrana*°
81. *M. subterminalis*
85. *A. sumatrana*
86. *A. viridigrisea*[2]
88. *F. bipunctus*
90. *F. albipuncta*
93. *C. singapura*
99. *P. plagosus*
101. *D. diluta**[3]
108. *S. nigribasis insulicola*
111. *S. divaricata*
116. *P. grotei*[1]
123. *A. argentifera*
124. *A. duplius*
129. *C. bramah**
131. *M. melinau*

* represented as an endemic subspecies in Palawan
° other subspecies in other parts of the Philippines
[1] probably a Himalayan faunal element.
[2] a widespread species, probably polytypic
[3] polytypic but the Palawan ssp. is most closely to Bornean ssp.

Table 1: Sundanian faunal elements sharing Borneo and Palawan, but no further Philippine Islands, in its distributional pattern.

This second group, constisting of 8 species (= 22%), has used seemingly the bridge over the Tawi-Tawi Islands to Mindanao. Two species, 34. *Saliocleta commutatis* and 112. *Phalera phillipae* are present in the Philippines only in Palawan and Mindanao and both occuring also in Borneo.

15 species of further Sundanian or Himalayan species are widespread in the Philippines (table 2), particularly occuring also in Luzon.

The **Himalayan faunal elements** of expansive type have their origin in the Himalayas. They are usually distributed up to E China, populating Indochina and reach often Sumatra. Only a few species display a wider distribution and reach Borneo and the Philippines. It is rather tentative to recognize them under Philippine notodontids as Himalayan by their distribution pattern in continental Asia. In general after arriving in Borneo, they would use the same ways for penetration of the Philippines as Sundanian faunal elements.

The remaining 57 species (= 41%) in the Philippines are endemics, except 78. *R. cernyi*, which is distributed also in Indochina (but not found in Borneo or Malaya). The high number of endemics indicates, that the Philippines themselve having centers of origin.

3. *T. remicauda*
9. *O. xylinata*
14. *P. punctifascia*[1]
15. *P. hampsoni*
17. *G. curvaria*[1]
22. *H. pallida*[2]
26. *A. suriga*[2]
34. *S. commutatis*
37. *N. longipennis*
39. *P. hunyada*[2]
46. *L. diehli*[2]
47. *T. cathana*
60. *O. smaragdiplena*[1]
53. *S. alternus brunneus*
63. *S. palladina*[2]
65. *S. pallidifascia*[3]
66. *S. comatus*[1,4]
77. *S virens virens*[2]
80. *N. viridinota*[2]
87. *F. orbifer orbifer*[1, 2]
89. *N. fasciata fasciata*[1]
98. *E. vinacaeus*
112. *P. phillipae*
113. *P. acutoides*[2]
115. *P. combusta*[1,2]
117. *P. sundana*
126. *S. sikkima*[1]
130. *C. dorsalis*

[1] probably Himalayan faunal element or polytypic
[2] not in Palawan
[3] very wide spread up to New Guinea, polytypic
[4] with a distinct ssp. in Mindanao

Table 2: Sundanian faunal elements used probably the Tawi-Tawi bridge for expansion.

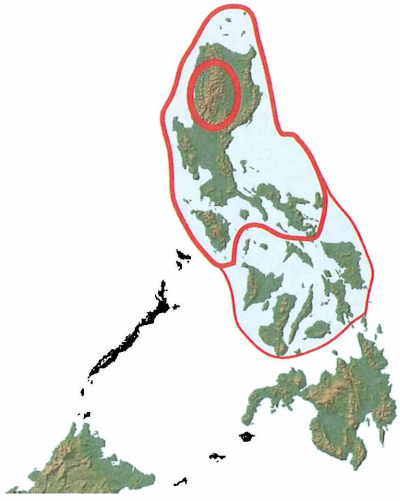


Fig. 56: Luzon faunal elements.

6. *G. rosea*
44. *N. liturata*
66. *S. comatus*
79. *N. ferrifusa*
80. *N viridinota*
89. *N. fasciata*
116. *P. grotei*

Table 3: Species belonging probably to Himalayan faunal elements of an expansive type.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

27. *S. pantaena*[l]
32. *C. semperi* °
54. *S. nephodes* °
58. *S. aswang* °
62. *S. pamela pamela* °
82. *O. diversa diversa*
96. *C. johannes*
104. *H. similis luzonensis*
132 *M. elachista*
133. *M. palmina*

° adapted to higher altitudes
[l] also in Marinduque

Table 4: Endemic Notodontidae in Luzon.

1. *D. minor minor*
12. *P. benderoides*[l]
35. *S. barasamphia*[l]
52. *S. hannemanni hannemanni*
57. *S. orientalis septentrionalis*
61. *S. basivirens basivirens*

[l] also in Marinduque

Table 5: Endemic Notodontidae sharing Luzon and Mindoro.

3. *Dudusa minor expectata*
5. *T. kochi*
11. *O. squalida*
23. *A. sibena sibena*
24. *A. irinae irinae*
38. *O. schausi*
42. *K. rosea gentilis*
62. *S. pamela caeca*
66. *S. comatus mananangai*
82. *O. diversa lidum*
94. *C. gualberta*
106. *A. synthesina*
114. *P. knoblichi*
121. *P. mangholda*
137. *M. uncinatus*

Table 6: Endemic Notodontidae in Mindanao.

We recognized the following centers:

1. Luzon faunal elements

Nine notodontids are restricted to Luzon (table 4), one species (27. *S. pantaena*) to Luzon and Marinduque and further six taxa occuring in Luzon and Mindoro (sometimes also in Marinduque) (table 5). Thus 28% of the Philippine endemics are present only in Luzon or Luzon/Mindoro/Marinduque. This figure indicates, that Luzon is a well defined center (Luzon faunal elements). Under this faunal elements there are two groups: species that are more adapted to higher altitudes (> 1.300 m), less ecological restricted species of medium and lower altitudes and lowland-specialists (< 600 m). The first group, containing four species is restricted to the C. Luzon montainous regions and not expansive, whereas the second group includes expansive species, which are distributed also in Mindoro and Marinduque. Two species, 27. *S. pantaena* and 133. *M. elachista* are seemingly lowland-specialists, which are not occuring in the Mountains of C. Luzon.

2. Mindanao faunal elements

Mindanao hosts 15 endemic notodontids (table 6). But they are not distributed homogenously over the islands. It seems, that Mt. Busa in the south, Dalongdong in the central and Surigao del norte in NE Mindanao

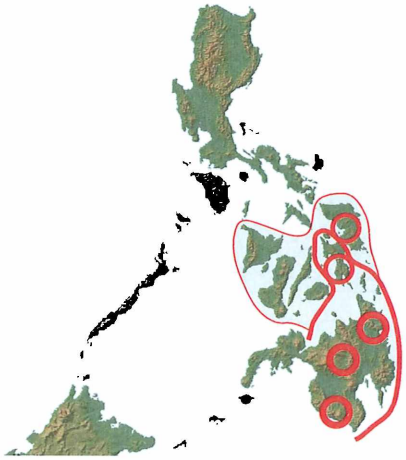


Fig. 57: Mindanao faunal elements.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

13. *P. intermediata*[1,2]
46. *P. diehli*[1,2]
52. *S. hannemanni similis*[1,2]
57. *S. orientalis orientalis*[1]
91. *M. philippinica*[1]
104. *H. similis mindanaensis*[1]
107. *A. maternalis pseudomaternalis*[1]
109. *S. sororcula*[1]
119. *P. surigaona*[1,2]
134. *M. argentea*[1,2]

[1] in Leyte
[2] in Samar

Table 7: Endemic Notodontidae in Mindanao, sharing with Leyte and Samar.

57. *S. orientalis quadriga*[2]
82. *O. diversa matrucula*[1]
83. *O. samar*[2]
97. *C. hannah*[1,2]
104. *H. similis samarensis*[2]
139. *P. lourensi*[1]

[1] in Leyte
[2] in Samar

Table 8: Endemic Notodontidae in Leyte and Samar.

1. *D. minor rufa*[1,2]
52. *S. hannemanni najade*[1]
52. *S. hannemanni triade*[2]
57. *S. orienta distinguenda*[1,2]
61. *S. basivirens viridibasis*[1,2]
82. *O. diversa hinumbian*[1]
95. *C. jonathan*[1,2]
104. *H. similis schintlmeisteri*[1,2]
136. *M. uniformis*[2]

[1] in Negros
[2] in Panay

Table 9: Endemic Notodontidae in Negros and Panay.

could represent secondary centers. All of them host endemics with seemingly very restricted distribution, e.g. 38. *O. schausi*, which was only found (not rare) on Mt. Busa, or 114. *P. knoblichi* from C. Mindanao. Five taxa are endemic in Mindanao and Leyte and further five taxa occur only in Mindanao, Leyte and Samar (table 7). They belong to the Mindanaen faunal elements. In Leyte two endemic notodontids occur and in Samar three taxa. One endemic species shares Leyte and Samar only (table 8). Thus the Mindanaen center could consist of at least five subcenters (three in Mindanao plus Leyte and Samar), sharing together 31 species (54%).

These figures are confinded by the following facts: Eastern Mindanao (Zamboanga) and Tawi Tawi Isl. are practically unexplored. 139. *P. lourensi* is a very rare species, known only from the holotype. This species could also occur in Mindanao, as its closest relative, *Paracyphanta postlutea* SUGI, 1994 flies in Sulawesi (SCHINTLMEISTER 2008).

The Mindanaen faunal elements are contrary to Luzon faunal elements mostly not mountanous and Mt. Apo or Mt. Kitanglad are seemingly not evolutionary "hot spots"

Panay and Negros share together 8 endemic notodontids (table 9), but rather on subspecific

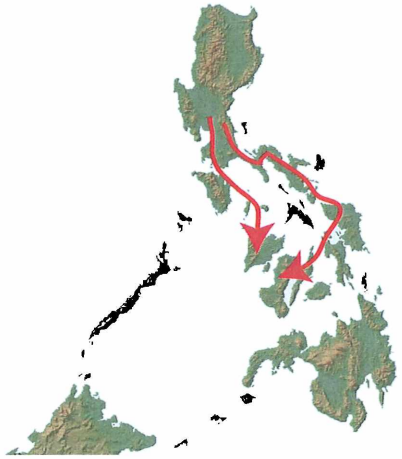


Fig. 58: Luzon and Mindanaen faunal elements expansing into Panay and Negros.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

4. *T. splendida*[2,3,4,5]
7. *G. sugii*[1,2,3,4,5]
10. *O. osica*[1,2,3,4,5]
16. *G. divisa orienta*[2,3]
17. *G. curvaria luzonica*[2,3]
20. *P. philippina*[2, 4, 5]
30. *S. odrana odrana*[2, 3, 4, 5]
31. *S. ubalvia*[2, 3]
42. *K. rosea rosea*[2, 3, 4]
43. *K. robusta*[2, 3, 4]
45. *L dympna*[2, 3, 4, 5]
48. *T. didyma*[2, 4, 5]
49. *S. briachisia*[2, 3, 4, 5]
55. *S. albibasis*[2, 4, 5]
64. *S. charistera charistera*[2, 3, 4, 5]
69. *P. viridescens*[2, 3, 4, 5]
71. *N. bipartita philippina*[2, 3, 4, 5]
74. *C. basipuncta*[3, 4, 5]
75. *C. ulrikae*[2, 3, 4, 5]
76. *S. viridifusca luzonica*[2, 3, 5]
91. *M. philippinica philippinica*[2, 3]
100. *P. ocularis*[1, 2, 3, 4, 5]
103. *L. lunae*[2, 3, 4, 5]
107. *A. maternalis maternalis*[2, 3, 4]
110. *S. familiaris*[1, 2, 3]
118. *P. longa*[2, 3, 4, 5]
120. *P. erconvalda*[2, 3, 4]
122. *C. acharista*[2, 3, 5]
125. *S. raquelae*[2, 3, 4, 5]

[1] sharing Palawan
[2] sharing Luzon
[3] sharing Panay or Negros
[4] sharing Samar or Leyte
[5] sharing Mindanao

Table 10: Endemic but widespread Notodontidae in the Philippines.

level. On the other hand Panay and Negros share with Luzon 22 of 29 widespread Philippine endemic species (76%) but only four species (14%) are exclusively found in Luzon and Panay/Negros. Panay/Negros shares with Mindanao 16 species (55%), none of them exclusively. Only one species, 74. *C. basipuncta,* occurs exclusively in Negros, Leyte and Mindanao but this species represents in Negros probably a distinct taxon.

Theses results suggest, that Panay and Negros represent not a center of origin in the Philippines but where most likely invaded by Luzon faunal elements and – less intensive – by Mindanaen elements. However, investigations of the second author in Arctiidae (*Cyana*) (LOURENS in press) show other results.

Most facts indicate, that the Luzon faunal elements are within the Philippines more expansive than Mindanaen faunal elements (see table 10). But a few cases display seemingly an opposite way, e.g. 55. *S. albibasis*, which was found only one time in Luzon, but more often in Mindanao and Leyte or 30. *S. odrana,* which is (because of a closely related subspecies in Sulawesi) more likely a Mindanaen than a Luzon faunal element.

3. Palawan faunal elements

The notodontid fauna of Palawan is very different from those of the other parts of the Philippines. Most species are Sundanian/ Himalayan (see table 1) or endemics (table 11). Only five endemic species widespread in the Philippines occur also in Palawan, 7. *G. sugii* (we were not able to confirm this record of KOBAYASHI & KISHIDA 2008 from Mt. Matalingahan and found there only 6. *G. rosea*), 10. *O. osica*, 100. *P. ocularis,* 104. *H. similis* (a polytypic species within the Philippines) and 110. *S. familiaris*. The high number of 19 endemic notodontids in Palawan, indicates, that it is a center of origin and not only a Sundanian subcenter as Borneo or Malaya. The number of endemic taxa restricted to Borneo is only 14 but the general number of notodontid

Biologiezentrum Linz/Austria; download unter www.biologiezentrum.at

species in Palawan is 67 versus 133 in Borneo (HOLLOWAY 1983 and own datas). The Malayan subcenter bears only a few endemics.

Relations to other regions

There is no hint, that Taiwan (a subcenter of Pacific faunal elements) has in the past a connection to the Philippines. The geographical distance between Taiwan and Luzon is less than 400 km, but no Pacific faunal elements were found in the Philippines. Taiwan and the Philippines share only a few (<2%), widespread species, very probably of Himalayan origin.

The Sulawesian notodontid fauna resembles somewhat to Mindanaen fauna and shares 14 species, usually in different subspecies. But most of the visually similar notodontids in Mindanao (31 of 69 Mindanaen notodontids) and Sulawesi are specifically different (table 11). According to palaeogeological cognition there was also a bridge between Mindanao and Sulawesi in the past but for the present notodontid fauna the influence is rather low and not comparable to the bridges from Borneo to the Philippines.

The total number of Philippine Notodontidae is actual 139 of which 72 (52%) are endemic species.

The below listed islands share the following



Fig. 59: Palawanian faunal elements.

3. *T. remicauda fuscata*°
25. *A. fajardoi*
28. *A. fortunatorum*
36. *S. flaveolus*
41. *K. malaysiana palawana*
60. *S. tala*
68. *P. lichenina penatus*
70. *N. viridescens pallidabasis*
72. *N. palawana*
73. *C. anceps lutea*
84. *O. similis*
92. *M. palawana*
101. *D. diluta russus*
104. *H. similus similis*°
105. *A. ferinus*
127. *G. augesco*
129. *C. bramah roepkei*
135. *M. flammea*
138. *M. palawana*

° other subspecies in other parts of the Philippines

Table 11: Endemic Notodontidae in Palawan.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

1. *D. minor*
10. *O. osica*
15. *G. hampsoni* #
17. *G. curvaria* #
18. *L. euteles*
20. *P. philippina*
23. *A. sibena* #
30. *S. odrana* #
42. *K. rosea*
47. *T. cathana*
53. *S. alternus* #
59. *S. dila*
62. *S. pamela*
65. *S. pallidifascia* #
66. *S. comatus* #
67. *S. nigribasalis* #
69. *P. viridescens*
71. *N. bipartita* #
76. *S. viridifusca* #
77. *S. virens*
89. *N. fasciata* #
94. *C. gualberta*
98. *E. vinacaeus* #
100. *P. ocularis*
103. *L. lunae*
110. *S. familiaris*
117. *P. sundana*
120. *P. erconvalda*
123. *A. argentifera* #
126. *A. sikkima* #
139. *P. lourensi*

Table 12: Philippine Notodontidae which share the same (#) or closely related species in Sulawesi.

Luzon	108.172 km²
Mindanao	95.581 km²
Negros	13.328 km²
Samar	13.080 km²
Panay	12.297 km²
Palawan	11.785 km²
Mindoro	10.244 km²
Leyte	7.368 km²
Cebu	4.468 km²
Masbate	3.296 km²
Bohol	3.864 km²
Borneo	751.936 km²
Sulawesi	174.599 km²
Taiwan	35.801 km²

Table 13: Size of the major Philippine Islands. For Comparision some of the surrounding Islands are included to this list.

number of species:

Palawan:	67 species (19 endemic taxa, 28%)
Luzon:	65 species (10 endemics, 15%)
Mindoro:	37 species (2 endemics, 5%)
Samar:	35 species (3 endemics, 9%)
Leyte:	44 species (3 endemics, 7%)
Negros:	45 species (2 endemics, 4%)
Panay:	29 species (2 endemics, 7%)
Mindanao:	69 species (15 endemics, 22%).

(other Philippine island are not good enough known in their notodontid faunas)

As seen, Palawan, Luzon and Mindanao are hosting the biggest number of notodontid species and owning also the highest numbers of endemic taxa, which occur exclusively in these islands.

There is no direct correlation between size of an island and number of found notodontid species/endemics (table 13). Taiwan, three times smaller than Luzon, hosts for instance 143 species of notodontids, among them 42 endemic species.

Distributional Check list of the Philippine Notodontidae

Endemic species/subspecies restricted to the Philippines are marked with an asterisk (*).

Dudusinae MATSUMURA, 1929

Dudusa WALKER, 1865

1. **minor minor* SCHINTLMEISTER, 1993	Luzon, Mindoro
minor rufa* **ssp. nov.	Panay, Negros
minor expectata* **ssp. nov.	Mindanao
2. *vethi borneensis* ROEPKE, 1943	Palawan

Tarsolepis BUTLER, 1872

3. *remicauda remicauda* BUTLER, 1872	Luzon, Marinduque, Panay, Mindanao
remicauda fuscata* **ssp. nov.	Palawan
4. **splendida* SCHINTLMEISTER, 1993	Luzon, Mindoro, Panay, Negros, Cebu, Leyte, Mindanao
5. **kochi* SEMPER, 1896	Mindanao

Gangarides MOORE, 1866

6. *rosea* (WALKER, 1865)	Palawan
7. **sugii* SCHINTLMEISTER, 1993	Palawan, Luzon, Negros, Cebu, Leyte, Mindanao

= *Gangarides sugii pulcher* KOBAYASHI & KISHIDA, 2008 **syn. nov.**
= *Gangarides sugii palawanensis* KOBAYASHI & KISHIDA, 2008 **syn. nov.**
= *Gangarides sugii negrosanus* KOBAYASHI & KISHIDA, 2008 **syn. nov.**

Euhampsonia DYAR, 1897

8. *roepkei* HOLLOWAY, 1983	Palawan

Scranciinae MILLER, 1991

Ortholomia FELDER, 1861

9. *xylinata* (WALKER, 1865)	Palawan, Leyte, Mindanao

= *Osica turneri albiplaga* GAEDE, 1930 **syn. nov.**
= *Besida vinvalva* SCHAUS, 1928 **syn. nov.**

10. **osica* **spec. nov.**	Palawan, Luzon, Mindoro, Marinduque, Panay, Negros, Cebu, Samar, Leyte, Mindanao
11. **squalida* **spec. nov.**	Mindanao

Porsica WALKER, 1866

12. **benderoides* SCHINTLMEISTER, 1993	Luzon, Mindoro, Marinduque
13. **intermediata* SCHINTLMEISTER, 1993	Samar, Leyte, Mindanao
14. *punctifascia* (HAMPSON, 1893)	Palawan, Luzon, Samar, Leyte, Mindanao

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Gargetta WALKER, 1865

15. *hampsoni hampsoni* SCHINTLMEISTER, 1981 — Palawan
    hampsoni occulta* **ssp. nov. — Mindoro, Negros, Mindanao
16. **divisa orienta* **ssp. nov.** — Luzon, Mindoro, Marinduque, Panay
17. **curvaria luzonica* SEMPER, 1896 **stat. et comb. rev.** — Luzon, Marinduque, Negros
    = *Gargetta dyspines* WEST, 1932

Lasioceros BETHUNE-BAKER, 1904

18. **euteles* (WEST, 1932) **comb. nov.** — Palawan, Luzon, Mindoro, Panay, Negros, Mindanao

Phycidopsis HAMPSON, 1893

19. *albovittata* HAMPSON, 1893 — Palawan
20. **philippina* SCHINTLMEISTER, 1993 — Luzon, Mindoro, Cebu, Samar, Mindanao

Ceirinae MATSUMURA, 1929

Brykia GAEDE, 1930

21. *horsfieldi* (MOORE, 1860) — Palawan

Hyperaeschra BUTLER, 1880

22. *pallida* BUTLER, 1880 — Luzon, Leyte, Mindanao

Ambadra MOORE, 1883

23. **sibena sibena* SCHINTLMEISTER, 1993 — Mindanao
24. **irinae irinae* **spec. nov.** — Mindanao
    irinae complicata* **ssp. nov. — Negros, Samar, Leyte
25. **fajardoi* SCHINTLMEISTER, 1993 — Palawan
26. *suriga* SCHAUS, 1928 — Samar, Leyte, Mindanao
27. **pantaena* SCHAUS, 1928 — Luzon, Babuyan, Marinduque
28. **fortunatorum* SCHINTLMEISTER, 1993 — Palawan

Saliocleta WALKER, 1862

29. *sordida* (ROEPKE, 1943) — Palawan
30. **odrana odrana* (SCHAUS, 1928) — Luzon, Marinduque, Negros, Leyte,
    = *Ceira sabulosa luzonica* SCHINTLMEISTER, 1993 **syn. nov.** — Mindanao
31. **ubalvia* (SCHAUS, 1928) — Luzon, Mindoro, Panay, Negros
32. **semperi* (SCHINTLMEISTER, 1993) — Luzon
33. *widagdoi* SCHINTLMEISTER, 1994 — Palawan
34. *commutatis* **spec. nov.** — Palawan, Mindanao, Tawi-Tawi
35. **barasamphia* (SCHAUS, 1928) — Luzon, Mindoro, Marinduque
    = *Pydna ercona* SCHAUS, 1928
36. **flaveolus* **spec. nov.** — Palawan

Oaura KIRIAKOFF, 1962

37. *longipennis* (MOORE, 1881) — Palawan, Luzon, Babuyan, Calayan,
    = *Norraca uncinata* SEMPER, 1902 **syn. nov.** — Mindoro, Marinduque, Panay,
    = *Norraca ordgara* SCHAUS, 1928 **syn. nov.** — Negros, Mindanao
38. **schausi* **spec. nov.** — Mindanao

Periergos KIRIAKOFF, 1959

39. *hunyada* (SWINHOE, 1903) — Luzon, Panay, Negros
    = *Pydna marconia* SCHAUS, 1928
    = *Pydna callista* WEST, 1932
40. *spinosa* (HOLLOWAY, 1983) — Palawan

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Cerurinae Butler, 1881

Kamalia Kocak & Kemal, 2006

41. * *malaysiana palawana* (Schintlmeister, 2002) **comb. nov.** Palawan
42. **rosea rosea* (Schintlmeister, 1993) **comb. nov.** Luzon, Sibuyan, Panay, Samar
    rosea gentilis* (Schintlmeister, 2002) **comb. nov. Mindanao
43. **robusta* (Schintlmeister, 1993) **comb. nov.** Luzon, Babuyan, Calayan, Mindoro, Panay, Negros, Samar, Leyte

Neocerura Matsumura, 1929

44. *liturata* (Walker, 1855) Palawan, Luzon, Panay, Samar
    = *Furcula hapala* West, 1932 **syn. nov.**

Dicranurinae Moore, 1882

Liparopsis Hampson, 1893

45. **dympna* Schaus, 1928 Luzon, Marinduque, Negros, Samar, Leyte, Mindanao

Pantanopsis Kiriakoff, 1974

46. *diehli* Kiriakoff, 1974 Samar, Leyte, Mindanao

Teleclita Turner, 1903

47. *cathana* (Schaus, 1928) Palawan, Luzon, Mindanao
48. **didyma* **spec. nov.** Luzon, Samar, Leyte, Mindanao

Stauroplitis Gaede, 1930

49. **briachisia* (Schaus, 1928) Luzon, Mindoro, Negros, Cebu, Samar, Mindanao

Oxoia Kiriakoff, 1967

50. *smaragdiplena* (Walker, 1862) Palawan, Luzon, Mindoro, Panay, Negros, Samar, Leyte, Mindanao

Stauropus Germar, 1812

Subgenus *Stauropus* Germar, 1812

51. *major* Van Eecke, 1929 Palawan
52. **hannemanni hannemanni* Schintlmeister, 1991 Luzon, Mindoro
    **hannemanni similis* Schintlmeister, 1991 Samar, Leyte, Mindanao
    hannemanni najade* **ssp. nov. Negros
    hannemanni triade* **ssp. nov. Panay

Subgenus *Chlorostauropus* Kiriakoff, 1968

53. *alternus brunnea* (Schintlmeister, 1981) Palawan, Luzon, Mindoro, Marinduque, Panay, Negros, Cebu, Samar, Leyte, Mindanao
54. **nephodes* West, 1932 Luzon
55. **albibasis* Schintlmeister, 2003 Luzon, Samar, Leyte, Mindanao

Subgenus *Benbowia* Kiriakoff, 1967

56. *virescens* Moore, 1879 Palawan
57. **orientalis orientalis* Schintlmeister, 1993 Leyte, Mindanao
    **orientalis septentrionalis* Schintlmeister, 1993 Luzon, Mindoro
    orientalis distinguenda* **ssp. nov. Panay, Negros
    orientalis quadriga* **ssp. nov. Samar

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Syntypistis TURNER, 1907

58. **aswang* **spec. nov.**	Luzon
59. **dila* **spec. nov.**	Negros
60. **tala* **spec. nov.**	Palawan
61. **basivirens basivirens* (SCHINTLMEISTER, 1993)	Luzon, Mindoro
basivirens viridibasis* **ssp. nov.	Panay, Negros
62. **pamela pamela* (SCHINTLMEISTER, 1993)	Luzon
pamela caeca* **ssp. nov.	Mindanao
63. *palladina* (SCHAUS, 1928)	Mindoro, Samar, Leyte, Mindanao
64. *charistera charistera* (WEST, 1932)	Luzon, Babuyan, Mindoro, Panay, Negros, Samar, Leyte, Mindanao
charistera fraseriana (KIRIAKOFF, 1967)	Palawan
65. *pallidifascia pallidifascia* (HAMPSON, 1893)	Palawan, Luzon, Negros, Samar, Leyte, Mindanao
pallidifascia juttamariae* **ssp. nov.	Mindoro
66. *comatus comatus* (LEECH, 1889)	Palawan, Luzon, Panay, Negros
= *Quadricalcarifera fasciata tanakai* NAKAMURA, 1976 **syn. nov.**	
comatus mananangai* **ssp. nov.	Mindanao
67. *nigribasalis tropica* (KIRIAKOFF, 1974)	Luzon, Mindanao

Parasinga KIRIAKOFF, 1967

68. **lichenina penatus* **ssp. nov.**	Palawan
69. **viridescens* SCHINTLMEISTER, 1993	Luzon, Mindoro, Negros, Samar, Leyte, Mindanao

Netria WALKER, 1855

70. **viridescens pallidabasis* SCHINTLMEISTER, 2006	Palawan
71. **bipartita philippina* SCHINTLMEISTER, 2006	Luzon, Calayan, Babuyan, Panay, Negros, Samar, Leyte, Mindanao
72. **palawana* SCHINTLMEISTER, 2006	Palawan

Cerasana WALKER, 1862

73. **anceps lutea* (PAGENSTECHER, 1890) **stat. nov.**	Palawan, Balabac
= *Cerasana anceps butzi* SCHINTLMEISTER 2005 **syn. nov.**	
74. **basipuncta* (SEMPER, 1898)	Negros, Bohol, Leyte, Mindanao
75. **ulrikae* SCHINTLMEISTER, 2005	Luzon, Mindoro, Panay, Negros, Bohol, Leyte, Mindanao

Somera WALKER, 1855

76. **viridifusca luzonensis* SCHINTLMEISTER, 1993	Luzon, Mindoro, Negros, Mindanao
viridifusca sumatrana SCHINTLMEISTER, 1993	Palawan
77. *virens virens* DIERL, 1976	Mindanao

Rodneya KIRIAKOFF, 1974

78. *cernyi* SCHINTLMEISTER, 1993	Palawan, Luzon, Mindoro, Marinduque, Negros, Mindanao

Notodontella ROEPKE, 1943

79. *ferrifusa* (DUDGEON, 1898)	Luzon
80. *viridinota* (HAMPSON, 1896)	Luzon, Leyte, Mindanao
= *Fentonia maguila* SCHAUS, 1928 **syn. nov.**	

Medanella KIRIAKOFF, 1974

81. *subterminalis* KIRIAKOFF, 1974	Palawan

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Omichlis HAMPSON, 1895	
82. **diversa diversa* SCHINTLMEISTER, 1993	Luzon
diversa matrucula* **ssp. nov.	Leyte
diversa hinumbian* **ssp. nov.	Negros
diversa lidum* **ssp. nov.	Mindanao
83. **samar* **spec. nov.**	Samar
84. **similis* SCHINTLMEISTER, 1993	Palawan
Antiphalera GAEDE, 1930	
85. *sumatrana* (KIRIAKOFF, 1974)	Palawan
Archigargetta KIRIAKOFF, 1967	
86. *viridigrisea* (HAMPSON, 1898)	Palawan
Formofentonia MATSUMURA, 1925	
87. *orbifer orbifer* (HAMPSON, 1893)	Mindanao
Fentonia BUTLER, 1881	
88. *bipunctus* (ROTHSCHILD, 1917)	Palawan, Balabac
Neopheosia MATSUMURA, 1920	
89. *fasciata fasciata* (MOORE, 1888)	Palawan, Luzon, Leyte
**fasciata obscura* SCHINTLMEISTER, 1993	Panay, Mindanao
Fusadonta MATSUMURA, 1920	
90. *albipuncta* (GAEDE, 1930) **comb. nov.**	Palawan

Notodontinae STEPHENS, 1828

Mesophalera MATSUMURA, 1920	
91. **philippinica philippinica* SCHINTLMEISTER, 1993	Luzon, Mindoro, Negros
**philippinica mindanaensis* SCHINTLMEISTER, 1993	Leyte, Mindanao
92. **palawana* **spec. nov.**	Palawan
Calyptronotum ROEPKE, 1944	
93. *singapura* (GAEDE, 1930)	Palawan
94. **gualberta* (SCHAUS, 1928)	Mindanao
95. **jonathan* **spec. nov.**	Negros, Panay
96. **johannes* **spec. nov.**	Luzon
97. **hannah* **spec. nov.**	Samar, Leyte
Epistauropus GAEDE, 1930	
98. *vinacaeus* (MOORE, 1879)	Palawan, Luzon, Mindoro, Negros, Leyte, Mindanao
Pseudostauropus GAEDE, 1930	
99. *plagosus* GAEDE, 1930	Palawan
100. *ocularis* (SEMPER, 1898) **comb. nov.**	Palawan, Luzon, Mindoro, Negros, Samar, Leyte, Bohol, Mindanao

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Disparia NAGANO, 1916

Subgenus *Disparia* NAGANO, 1916

101. ***diluta russus ssp. nov.** — Palawan

Chadisra WALKER,1862

102. *calapana* (SEMPER, 1898) — Palawan, Luzon, Mindoro, Panay, Negros, Cebu, Samar, Leyte, Mindanao, Tawi-Tawi
= *Chadisra luzonensis* KIRIAKOFF, 1970 **syn. nov.**

Loda KIRIAKOFF, 1970

103. ***lunae* SCHINTLMEISTER, 1993 — Luzon, Negros, Samar, Leyte, Mindanao

Ptilodontinae PACKARD, 1864

Higena MATSUMURA, 1925

104. ***similis similis* SCHINTLMEISTER, 1993 — Palawan
***similis luzonensis* SCHINTLMEISTER, 1993 — Luzon
***similis mindorensis* SCHINTLMEISTER, 1993 — Mindoro
***similis samarensis ssp. nov.** — Samar
***similis cebuensis* SCHINTLMEISTER, 1993 — Cebu
***similis schintlmeisteri* KOBAYASHI & KISHIDA, 2008 — Panay, Negros
***similis mindanaensis* SCHINTLMEISTER, 1993 — Leyte, Mindanao

Allodonta STAUDINGER, 1887

Subgenus *Hexafrenum* MATSUMURA, 1925

105. ***ferinus* SCHINTLMEISTER, 1994 — Palawan
106. ***synthesina* SCHINTLMEISTER, 1993 — Mindanao
107. ***maternalis maternalis* SCHINTLMEISTER, 1993 — Luzon, Mindoro, Samar, Negros
***maternalis pseudomaternalis* SCHINTLMEISTER, 1993 — Leyte, Mindanao

Semidonta STAUDINGER, 1892

108. *nigribasis insulicola* (KIRIAKOFF, 1967) — Palawan
109. ***sororcula spec. nov.** — Leyte, Mindanao
110. ***familiaris* (SCHINTLMEISTER, 1993) — Palawan, Luzon, Babuyan, Calayan, Mindoro, Negros

Phalerinae BUTLER, 1886

Snellentia KIRIAKOFF, 1968

111. *divaricata* (GAEDE, 1930) — Palawan

Phalera HÜBNER, 1819

Subgenus *Phalera* HÜBNER, 1819

112. *phillipae* HOLLOWAY & BENDER, 1995 — Palawan, Mindanao
= *Phalera lacrima* KOBAYASHI & KISHIDA, 2007 **syn. nov.**
113. *acutoides* HOLLOWAY, 1983 — Mindanao
114. ***knoblichi spec. nov.** — Mindanao
115. *combusta* (WALKER, 1855) — Luzon, Marinduque, Negros
116. *grotei* MOORE, 1860 — Palawan

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

117. *sundana* HOLLOWAY, 1982	Palawan, Luzon, Negros, Cebu, Samar, Leyte, Mindanao
118. **longa* KOBAYASHI & KISHIDA, 2007	Luzon, Mindoro, Marinduque, Panay, Negros, Cebu, Leyte, Mindanao
119. **surigaona* SCHAUS, 1928	Samar, Leyte, Mindanao
Subgenus *Erconholda* KIRIAKOFF, 1968 **stat. nov.**	
120. **erconvalda* (SCHAUS, 1928)	Luzon, Mindoro, Negros, Samar
= *Phalera melantata* WEST, 1932 **syn. nov.**	
121. **mangholda* (SCHAUS, 1928)	Mindanao

Pygaerinae DUPONCHEL, 1845

Caschara WALKER, 1862	
= *Coscodaca* KIRIAKOFF, 1968 **syn. nov.**	
122. **acharista* (WEST, 1932) **comb. nov.**	Luzon, Panay, Mindanao
Spatalia HÜBNER, 1819	
Subgenus *Allata* WALKER, 1862 **stat. nov.**	
123. *argentifera* WALKER, 1862	Palawan
124. *duplius* SCHINTLMEISTER, 2007	Palawan
125. **racquelae* SCHINTLMEISTER, 1993	Luzon, Mindoro, Panay, Negros, Samar, Leyte, Mindanao
Subgenus *Celeia* WALKER, 1865 **stat. nov.**	
126. *sikkima* MOORE, 1879	Palawan, Luzon, Mindoro, Panay, Samar, Leyte, Mindanao
Gonoclostera BUTLER, 1877	
127. **augesco* **spec. nov.**	Palawan
Clostera SAMOUELLE, 1819	
128. *angularis* (SNELLEN, 1895)	Palawan, Luzon
= *Pygaera hildora* SCHAUS, 1928 **syn. nov.**	
129. **bramah roepkei* **ssp. nov.**	Palawan
130. *dorsalis* (WALKER, 1862)	Palawan, Luzon, Marinduque, Mindoro, Negros, Samar, Leyte, Mindanao
Micromelalopha NAGANO, 1916	
131. *melinau* HOLLOWAY, 1983	Palawan
132. **elachista* (WEST, 1932)	Luzon
133. **pamina* SCHINTLMEISTER, 1993	Luzon
134. **argentea* SCHINTLMEISTER, 1993	Luzon, Samar, Mindanao
135. **flammea* **spec. nov.**	Palawan
136. **uniformis* **spec. nov.**	Samar
137. **uncinatus* **spec. nov.**	Mindanao
138. **palawana* SCHINTLMEISTER, 1993 **stat. nov.**	Palawan

Platychasmatinae NAKAMURA, 1956

Paracyphanta SUGI, 1994	
139. **lourensi* SCHINTLMEISTER, 2009	Leyte

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Dudusa BUTLER, 1872: 125

Type-species: *Tarsolepis remicauda* BUTLER, 1872

1. *Dudusa minor minor* SCHINTLMEISTER, 1993: 110, pl. 1: 5, pl. 2: 3, 4

HT: ♂, Philippinen, Luzon, Quezon Prov., Tanawan, 14 km S Real, 14°34'n. Breite, 121°33' ö. Länge, 600 m – NHM, Wien, examined.

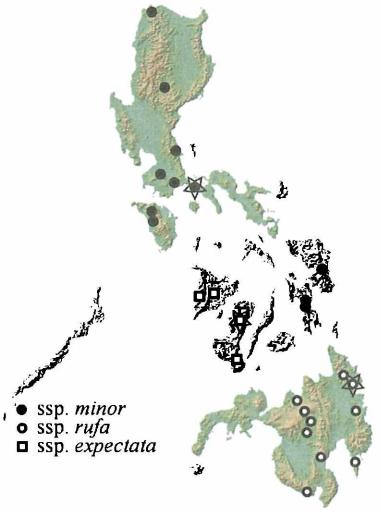


Fig. 60: Distribution of *Dudusa minor*

SCHINTLMEISTER (1993: 110) expected that the Mindanao populations of *Dudusa minor* could belong to a distinct subspecies, but the material at that time was insufficient. Now, a pretty good series from various locations is available and the Mindanao populations are described below. We also use the opportunity to introduce a further subspecies from Negros and Panay.

***Dudusa minor rufa* ssp. nov.**

HT: ♂, Philippinen, Negros, Mt. Canlaon, W. Route via Mambucal, 600 m, 10°22'N 123°12'E, x.1998 leg. local collectors – NHM, Wien, examined.

Paratypes (21 ♂♂, 2 ♀♀):
Negros: 3 ♂♂, 2 ♀♀, Mt. Canlaon, W. Route via Mambucal, 600 m, 10°22'/123°12', x.1998; 6 ♂♂, ibid. iv.1998; 1 ♂, ibid., xii.1996 (GU 59-25); 1 ♂, ibid., iii.1997 (GU 42-04); 1 ♂, ibid., vi. 1997; 1 ♂, ibid., x. 1995; 1 ♂, ibid., i.1998 (GU W14992); 2 ♂♂, ibid., 1010 m, 17.-18.vii.1996; 1 ♂, NE of Don Salvador, Benedicto Barangay Bayong Silang, Mt. Mandalagan, 770 m, 10°36.017'N, 123°16127'E, 19.-20.vi.2009; 4 ♂♂, ibid., 800 m, v.-vi.1998.

Diagnosis. Forewing length ♂♂ 36 mm 38 mm, ♀♀ 46 mm and 48 mm. This subspecies is named after the reddish-brown ground colour of the

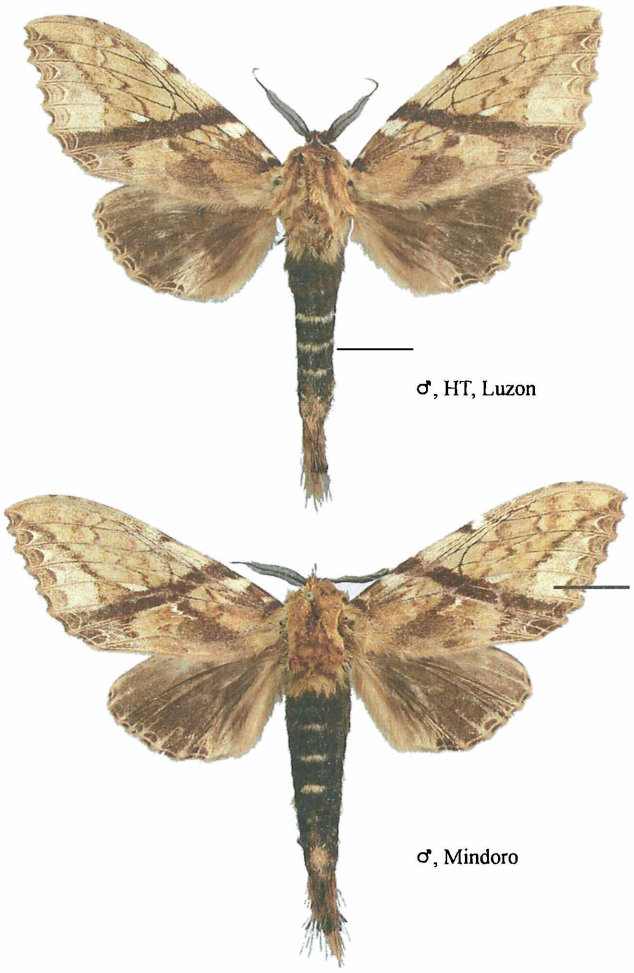


Fig. 61: Males of *Dudusa minor minor*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

wings. Other subspecies are rather pale yellowish-brown coloured. The male genitalia differ from ssp. *minor* from Luzon and Mindoro in the shape of the broader valves. The apical part of the valves is not shouldered as in ssp. *minor*. Two males (one of them somewhat worn) from Panay (W14993) resemble *rufa* but are not included into the type-series.

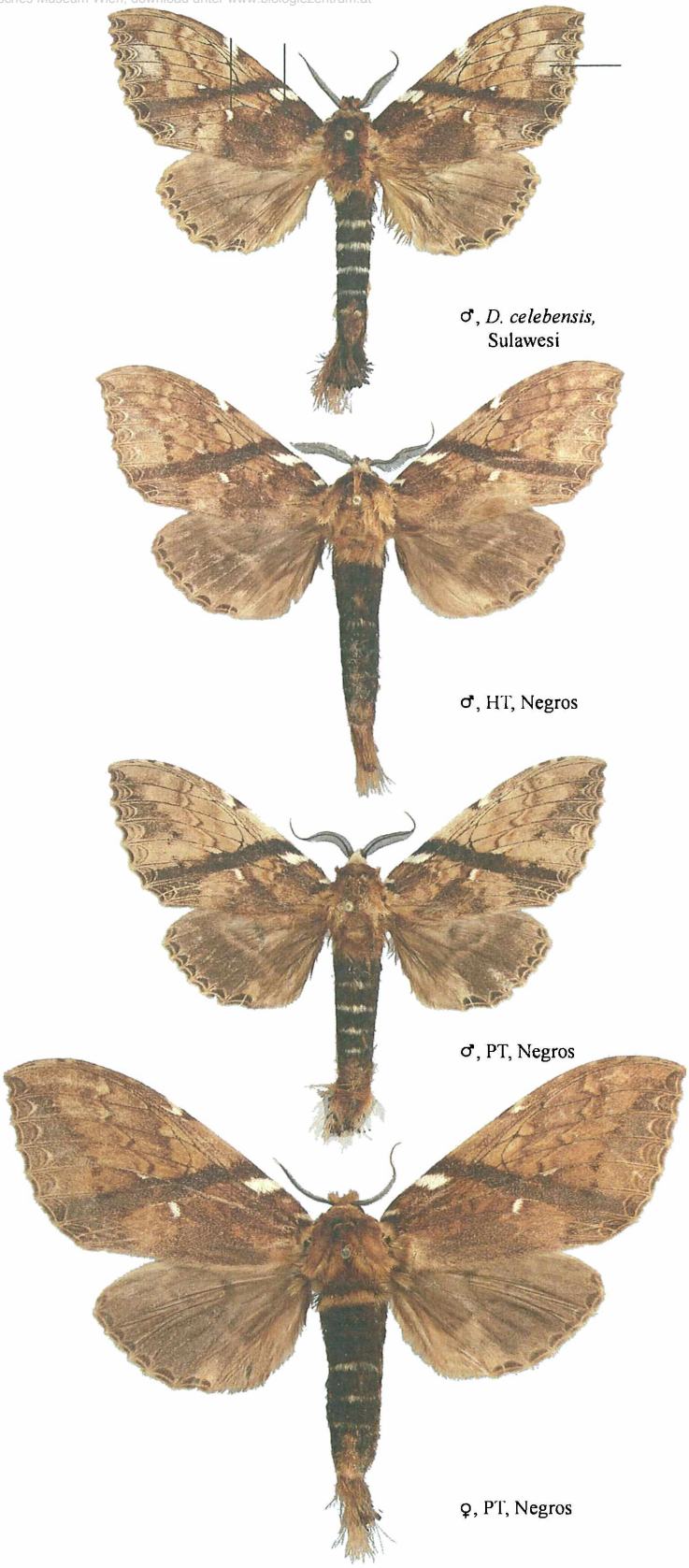


Fig. 62: Adults of *Dudusa celebensis* and *D. minor rufa*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

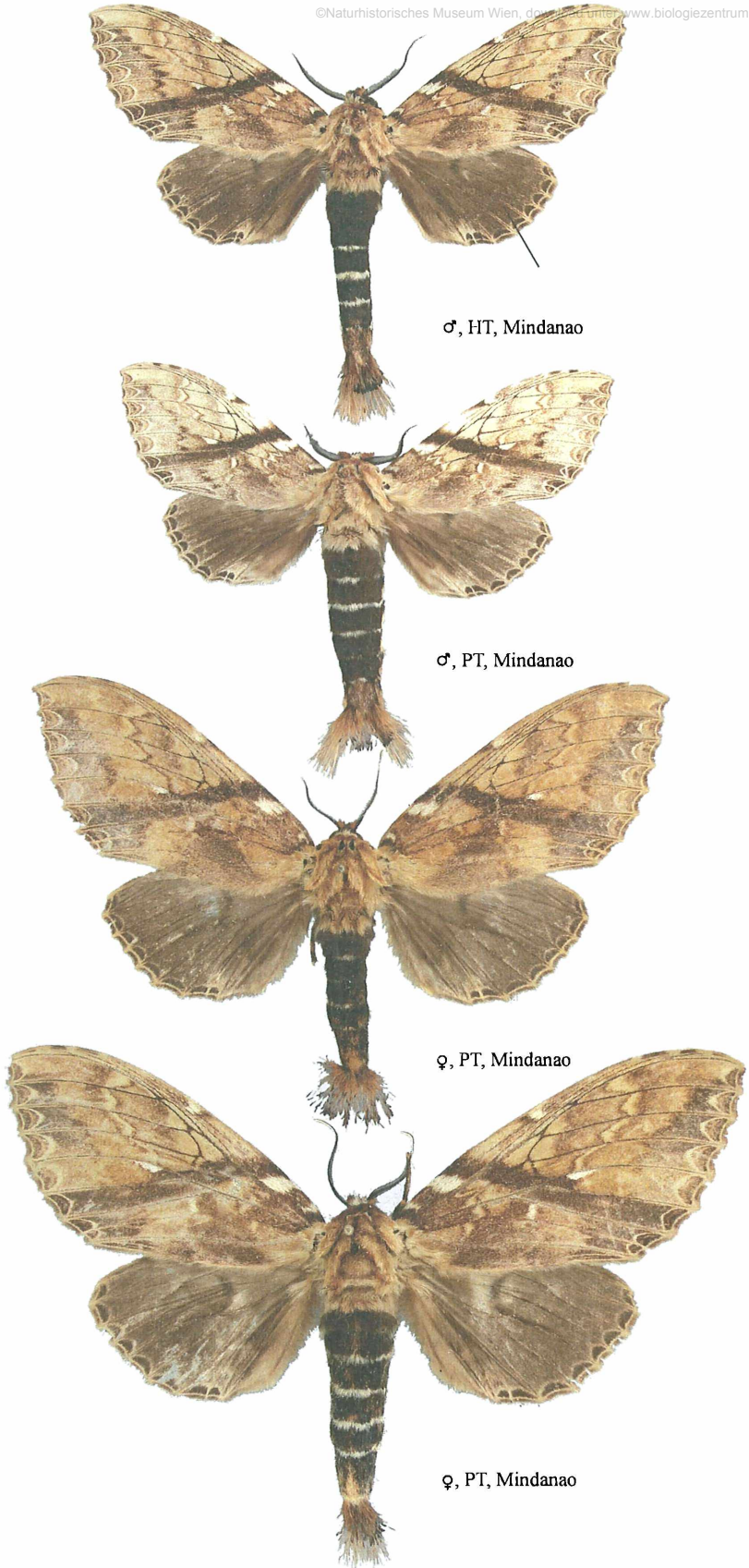
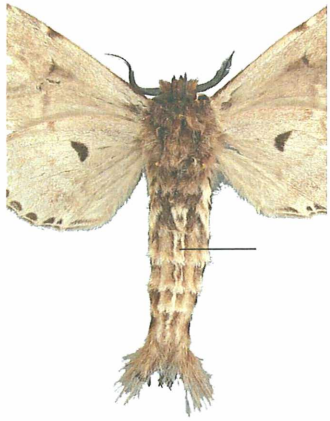
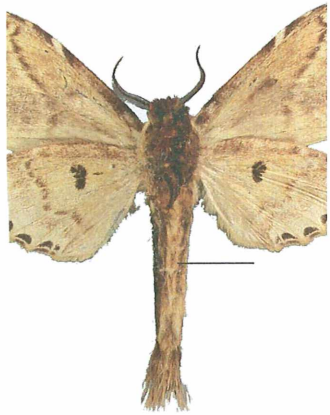


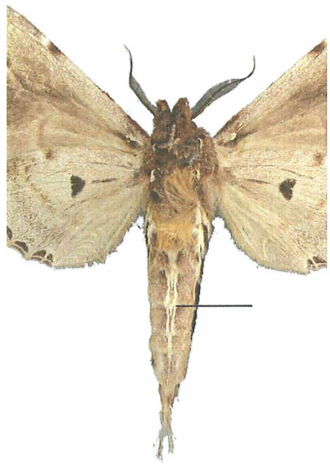
Fig. 63: Adults of *Dudusa minor expectata.*



♂, *D. minor expectata,* PT, Mindanao



♂, *D. celebensis,* Sulawesi



♂, *D. vethi borneensis,* Palawan

Fig. 64: Adults of *Dudusa,* undersides.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

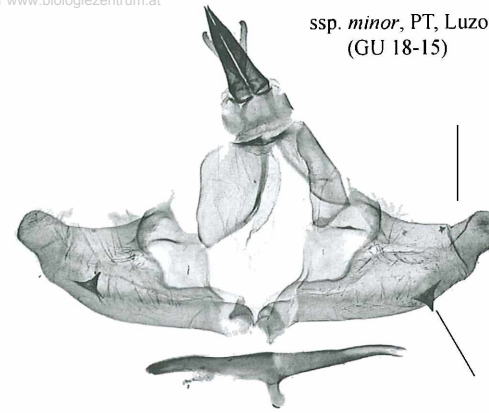
***Dudusa minor expectata* ssp. nov.**

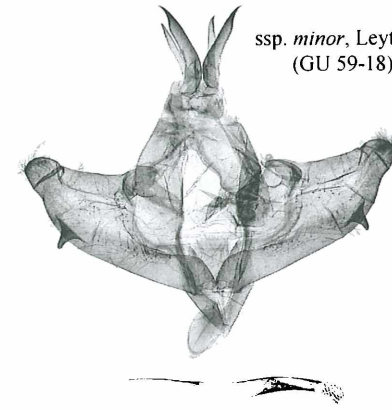
HT: ♂, Philippinen, Mindanao, Prov. Surigao del Sur, 12 km N Lianga, Hanayan, 350 m, 8°42'N, 126°05' E, 29.xi.-1.xii.2005 leg. LOURENS & SCHINTLMEISTER – NHM, Wien, examined.

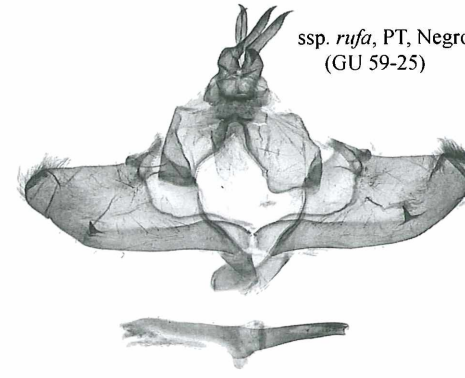
Paratypes (57 ♂♂, 2 ♀♀):

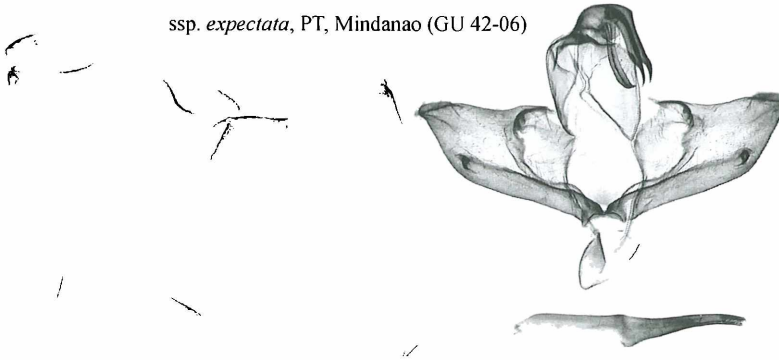
Mindanao: 7 ♂♂, 2 ♀♀, Surigao del Sur, 12 km N Lianga, Hanayan, 350 m, 8°42' N, 126°05' E, 29.xi.-1.xii.2005; 1 ♂, ibid. 430 m, 23.v.2007; 9 ♂♂, Cotabato del Sur, Mt. Busa, 700 m, 6°08' N, 124°39'E, viii.1997 (W14991); 2 ♂♂, Mt. Apo, W-Flanke, 1.200 m, 6°57'N, 125°17'E, 28.-30.vii.1993; 5 ♂♂, Mt. Apo, SE-Route via Kapatagan, 1.570 m, 10.-12. vii.1996; 2 ♂♂, Mt. Apo, E slope, Baracatan, 1.050 m, 4.-5.iii.2008; 1 ♂, Calaysan, ix.2000; 1 ♂, Bukidnon, Mt. Dalongdong, 40 km NW Maramag, 800 m, 1.-3.x.1988, 7°53' n. Breite, 124°40' E. Länge (GU 18-08); 1 ♂, ibid., 1.200 m, 15.-16.i.1999; 2 ♂♂, ibid., 800 m, 30.-31.12.1991 (GU 22-40); 4 ♂♂, iv. 2000; 4 ♂♂, Bukidnon, Mt. Kitanglad, S-Seite, S. Vicente, 750 m, 8°07'N, 124°55'E, 8.-15. ix.1993; (GU42-06); 1 ♂, ibid. 1.400 m, vii.1998; 1 ♂, ibid. iv.1997; 1 ♂, ibid. 600 m, 23.-24.ii.2009; 6 ♂♂, Misamis Prov., Malasag Mt., 300 m, 10.-20.ii.1996; 6 ♂♂, ibid. 8.-15.ii.1996; 1 ♂, foot of Mt. Hamiguitan, Osmena, 95 m, 6°40.588'N, 126°07.690'E, 3.v.2008; 2 ♂♂, Agusan del sur, 34 km E Ampayon, Kulambugan, 470 m, 8°58'N, 125°45'E, 30.vi.2005; 1 ♂, Agusan Sur, 10 km SE of Trento Sta Maria, 185 m, 8°01.615'N, 126°12.32'E, 27.-28.iv.2008; 1 ♂, Mis Oriental, 22 km NE f Claveria, Brgy Mat I., 1.050 m, 08°39.988'N, 124°59.686'E, 20.-21.iii.2009.

Diagnosis. Forewing length ♂♂ 35 mm - 42 mm, at average 38 mm; ♀♀ 47 mm and 54 mm. The type-series is homogenous in size and colouration. Most specimens have a yellowish-brown ground colour to ssp. *minor*, but a few specimens (n = 7 of 45 examined specimens) display a reddish-brown colour similar to ssp. *rufa*. The male genitalia are









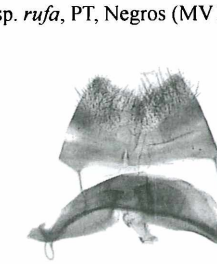
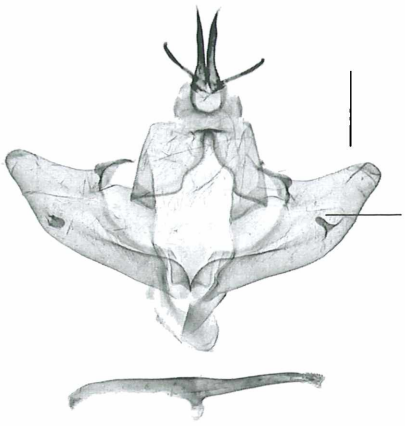


Fig. 65: Genitalia of *Dudusa minor*.

ssp. *expectata*, PT, Mindanao (GU 22-40)



ssp. *expectata*, PT, Mindanao (GU 18-08)



Fig. 66: Male genitalia of *Dudusa minor*.



Fig. 67: *Dudusa minor expectata* (Mindanao).

characterized by the apical somewhat pointed shape of the valves (without a shouldered apex). The valves are shorter than in ssp. *rufa* or ssp. *minor* and the saccular process is not triangular as seen in the other subspecies. However, the mentioned features in the male genitalia are also subject of some individual variation.

Diagnosis. A characteristic feature of *Dudusa minor* is the yellowish-white and black striped abdomen. The underside of the abdomen displays a broad whitish dorsal line, with a central brown core. There is a resemblance to *D. celebensis* ROEPKE, 1944, but the latter species is smaller, having a contrasting fuscous brown basal area of the forewings and the whole abdomen is whitish-brown on the underside. The male genitalia are characterized by the saccular structures of the broad valves which bear a triangular process (in *celebensis* reduced) a straight phallus (in *celebensis* curved) and a bilobed 8th sternite. The female genitalia have a small bursa copulatrix.

Variation. The individual variation of ground colour of the wings, markings and size is on lower level, except the ssp. *expectata*. The shape of the valves in the male genitalia do vary individually as well as the size of the triangular saccular process. The ssp. *minor* displays a paler submarginal area on the forewings, which is not seen in other subspecies of *minor*. For characteristics of ssp. *rufa* and ssp. *expectata* see the descriptions above.

Bionomics. The common adults were observed throughout the year at altitudes of 300 m – 1.200 m. Open localities in primary forests are preferred but the moth was also collected in secondary forests and urban areas.

Distribution. Endemic in the Philippine Islands. *Dudusa minor minor* is distributed in Luzon, Mindoro and Leyte; the ssp. *rufa* occurs in Negros and Panay, whereas ssp. *expectata* was found in Mindanao.

www.biologiezentrum.at

2. *Dudusa vethi borneensis* ROEPKE, 1943: 79; fig. 3 (*Dudusa nobilis borneensis*).
HT: ♂, [Indonesia, Kalimantan], S. E. Borneo, Samarinda – Wageningen University, Laboratory of Entomology, Wageningen-NL, not examined.

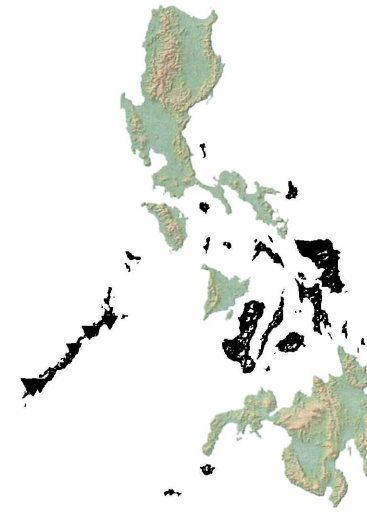


Fig. 68: Distribution of *D. vèthi borneensis*.

ROEPKE (1943) pointed out, that there are dramatic differences in the male genitalia within the complex he attributed specifically to *nobilis* WALKER, 1865. In fact *nobilis* is restricted to continental Asia and Taiwan and is replaced in Sundaland by *Dudusa vethi* (SNELLEN, 1892): 40, pl. 4: 1, 2; (HT: ♂, Sumatra, Sarolangun, Nationaal Natuurhistorische Museum, Leiden, examined). ROEPKE's *Dudusa nobilis celebensis* represents a distinct species, related to *Dudusa minor*. The populations from Palawan belong to the ssp. *borneensis*.

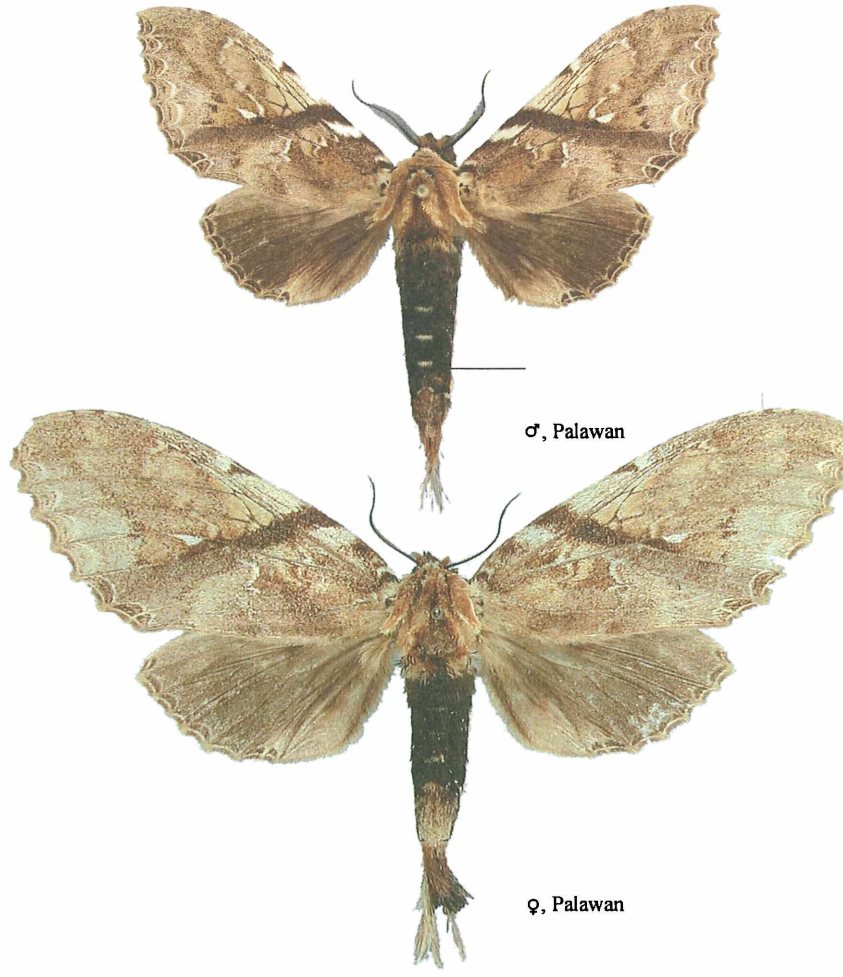
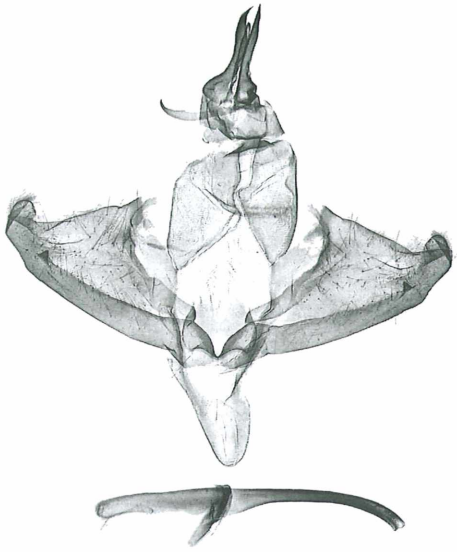


Fig. 69: Adults of *Dudusa vethi borneensis*.

©Naturhistorisches Museum

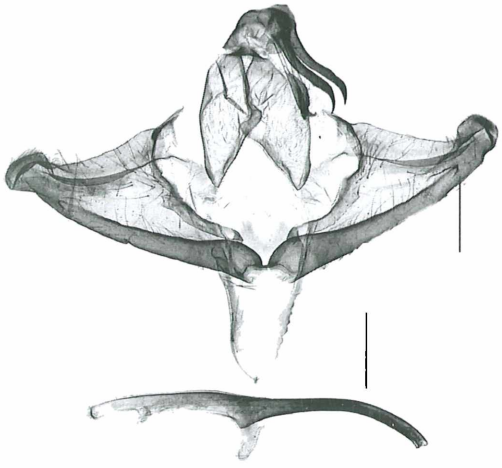
Palawan (GU 18-01)



Palawan (GU 18-14)



Kalimantan (GU 42-07)

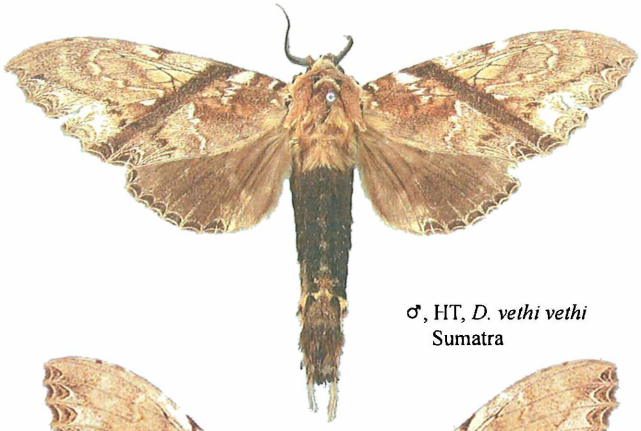


Diagnosis. The abdominal markings – a row of yellowish-brown spots between the segments – is the best feature to distinguish *D. vethi*. The male genitalia resemble *minor*, but the shape of the valves is rather triangular, the saccular process reduced and the phallus is longer and slightly curved. The 8th abdominal segments are as in *minor*. The female genitalia are not dissected yet.

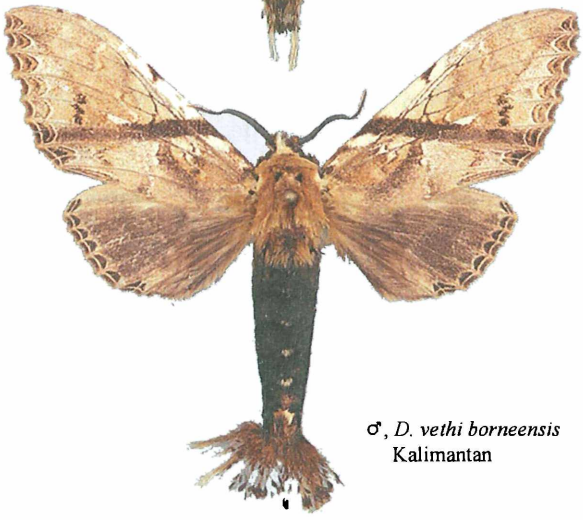
Variation. The individual variation is limited. The ssp. *borneensis* is distinguished by the shape of the valves and the smaller saccular process.

Bionomics. The adults occur only rarely from sea-level up to 1.050 m. They were found in i.-iii., v.-vi., viii., x. and xii. The species also occurs in urbanized areas as well as in a variety of forests.

Distribution. *Dudusa vethi borneensis* is restricted to Palawan and Borneo; the ssp. *vethi* occurs in Sundaland and S. Thailand. The ssp. *javana* ROEPKE, 1943 is distributed in Java and Bali.



♂, HT, *D. vethi vethi*
Sumatra



♂, *D. vethi borneensis*
Kalimantan

Fig. 70: Male genitalia of *D. vethi borneensis*.

Fig. 71: Adults of *Dudusa vethi*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Tarsolepis BUTLER, 1872: 125

Type-species: *Tarsolepis remicauda* BUTLER, 1872

3. *Tarsolepis remicauda remicauda* BUTLER, 1872: 125, pl. 8

HT: ♂, Java, Batavia – BMNH, London, examined.

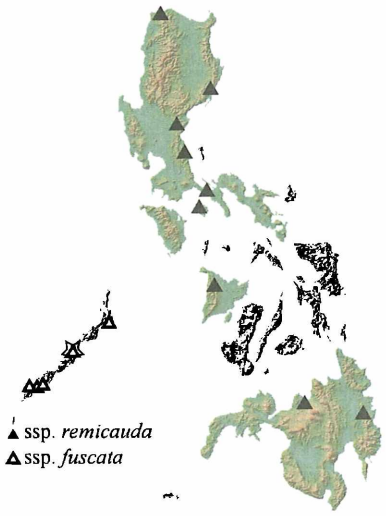


Fig. 72: Distribution of *T. remicauda*

Tarsolepis remicauda is a widely distributed species in Sundaland. It is from a biogeographic point of view somewhat unusual, that only the populations from Palawan represent a distinct subspecies. But the differences are evident (as illustrated) and the quantity of material from various years is sufficient. On the other hand the specimens from Luzon and Mindanao are virtually identical with those from Java or Sumatra.

***Tarsolepis remicauda fuscata* ssp. nov.**

HT: ♂, Philippinen, Palawan, Mt. Salakot Res., 800 m, 9°51‘ N, 18°38‘E, 10.-27.ii.2000, leg. GORBATSHEV & SINJAEV – NHM, Wien.

Paratypes (14 ♂♂, 8 ♀♀):
Palawan: 3 ♂♂, 2 ♀♀, Mt. Salakot Res., 800m, 9°51‘N, 118°38‘E, 10.-27.ii.2000 (MV17.523); 1 ♂♀, ibid. 2.100 ft., ii.1995 (GU 73-39); 1 ♀, „Palawan Is.“, viii.-x.1975 (GU 41-79); 1 ♂, Mt. Matalingajan, 600 m 800 m, 2.-12.viii.2000; 1 ♂, ibid., 800 m, xii.1997; 1 ♂, 3 ♀♀, Mt. Lolwagan, Brook‘s point, 600 m - 900 m, 15.-26.xi.1998; 1 ♂♀, Pinagar 37 m 08°48.460‘N 117°28.530‘E 8.-10. xii. 2007; 1 ♂, Sicud, Piag 40 m, 08°51.011‘N 117°32.154‘E, 7.xii.2007; 5 ♂♂, Bagong-Bagong, ft Mt. Ilian 300 m, 10°26‘N, 119°33‘E, 8.iii.2006.

Diagnosis. Forewing length ♂♂ 35 mm - 38 mm, ♀♀ 39 mm - 42 mm, one ♀ 37 mm. The new subspecies exhibits specimens, with the largest size of adults of known populations. *T. remicauda remicauda,* displays an average forewing length in

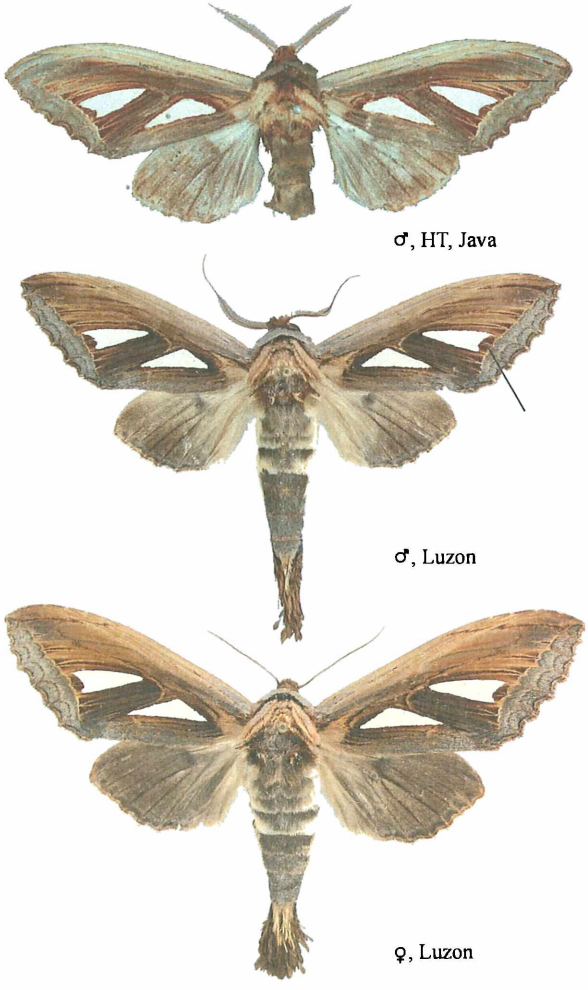


Fig. 73: Adults of *Tarsolepis remicauda remicauda.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

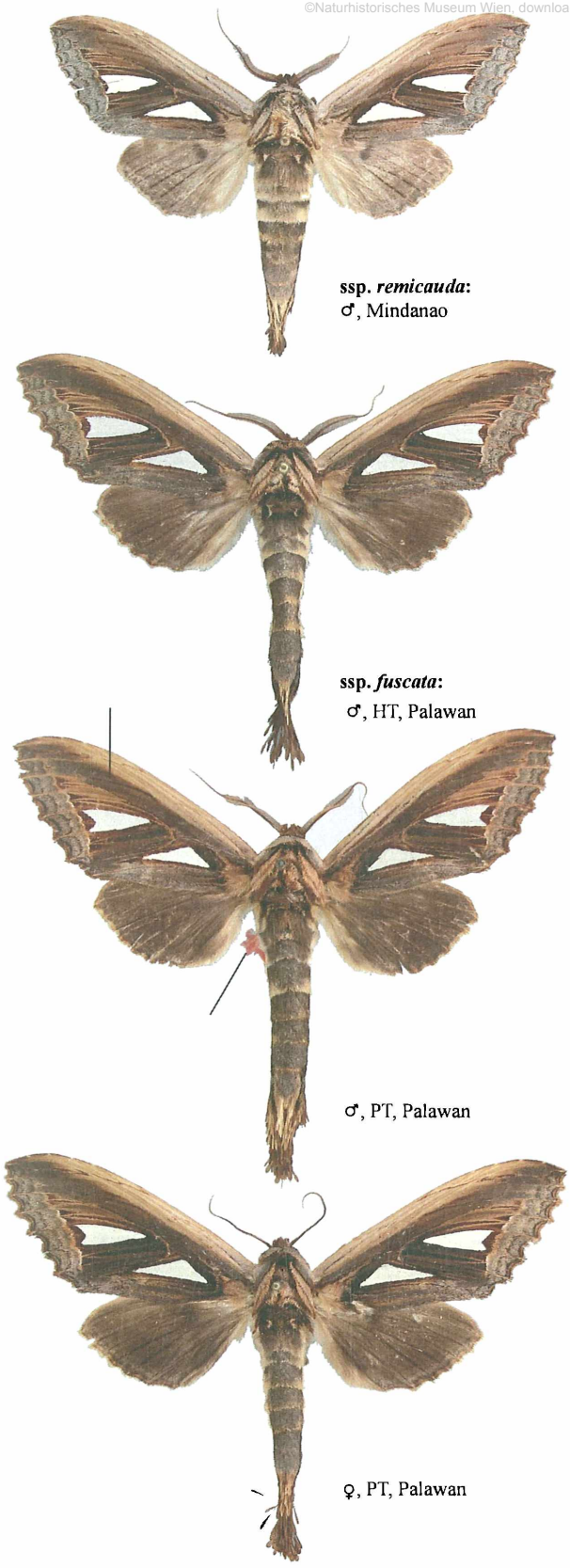


Fig. 74: Adults of *Tarsolepis remicauda.*

the ♂♂ of 35 mm. The fuscous ssp. *captura* SCHINTLMEISTER, 1995: 51; pl. 2: 1, 2 (HT: N Vietnam, Tam Dao, 60 km NW Hanoi, 21°34'N, 105°20'E – coll. A. SCHINTLMEISTER, Dresden, examined) is somewhat smaller than ssp. *remicauda.* The ssp. *fuscata* is characterized by a generally fuscous brown appearance of the wings and a contrasting costa of the forewings. The male genitalia do not differ significantly from the other populations because of individual variation with only minor differences in the shape of the postvaginal plate (as illustrated). The latter feature might also be attributed to individual variation.

Diagnosis. The large adults display two prominent pearly triangles on the forewings, which in most cases do not touch the greyish submarginal area. The species is about 20% larger than the similar *T. splendida* and the ♂♂ have on the underside of the thorax a prominent red brush, which is in *splendida* brownish with graduating to pink. In *T. kochi* the brush is orange-brownish coloured.

The male genitalia are characterized by the saccular structures of the valves and a small triangular bump of the phallus. Both parts of the 8th abdominal segment are distinctively shaped and sclerotized as illustrated. The female genitalia display a very long ductus bursae and a long and slender bursa copulatrix as usual for the females of the genus.

Variation. The shape, size and position of the silver triangles on the forewings are variable. Also the male genitalia vary individually in shape of the valves (apex and saccular processes).

© Museum für Naturkunde Berlin; download unter www.biologiezentrum.at

Bionomics. The flight incidence of adults is erratic, in that they could be totally absent during consecutive nights. This happened in Luzon with a series of n=12 on light during in two nights. The whole material from Luzon (n = 23) was collected during five nights in ii., iv., vi. and vii. The species prefers lowland habitats up to 600 m. In Palawan the species seems to be wider distributed and more common than in Luzon or Mindanao.

Distribution. *Tarsolepis remicauda remicauda* is distributed in Sundaland, Java, Bali, and the lesser Sunda Islands. In the Philippines it was found in Luzon, Marinduque, Panay and Mindanao. The ssp. *fuscata* is restricted to Palawan. The ssp. *captura* flies in Indochina and in China (Yunnan).

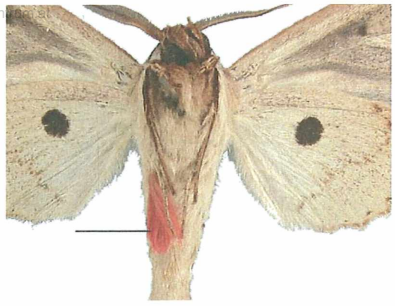
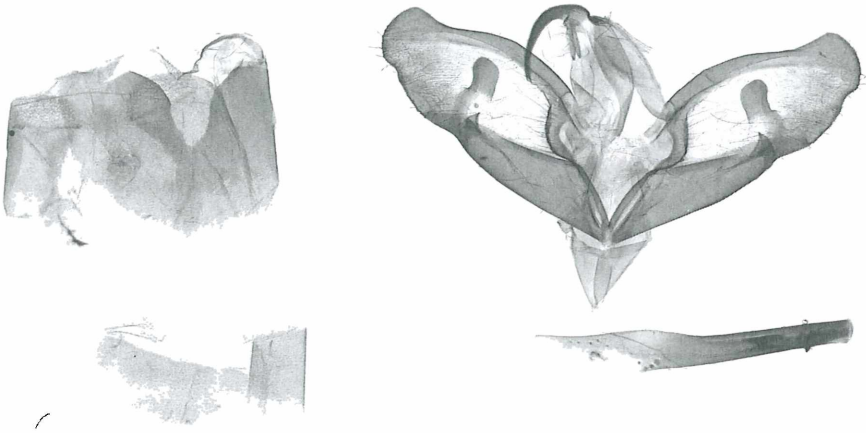


Fig. 75: Holotype of *Tarsolepis remicauda fuscata*, underside.

ssp. *remicauda* Luzon (MV17.521)



ssp. *fuscata* PT, Palawan (MV17.471)

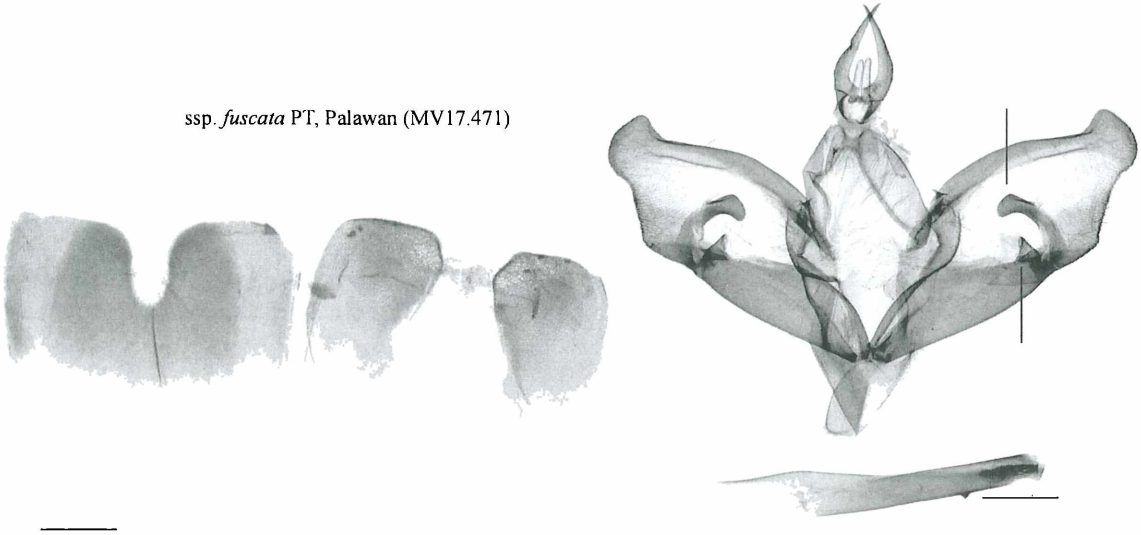
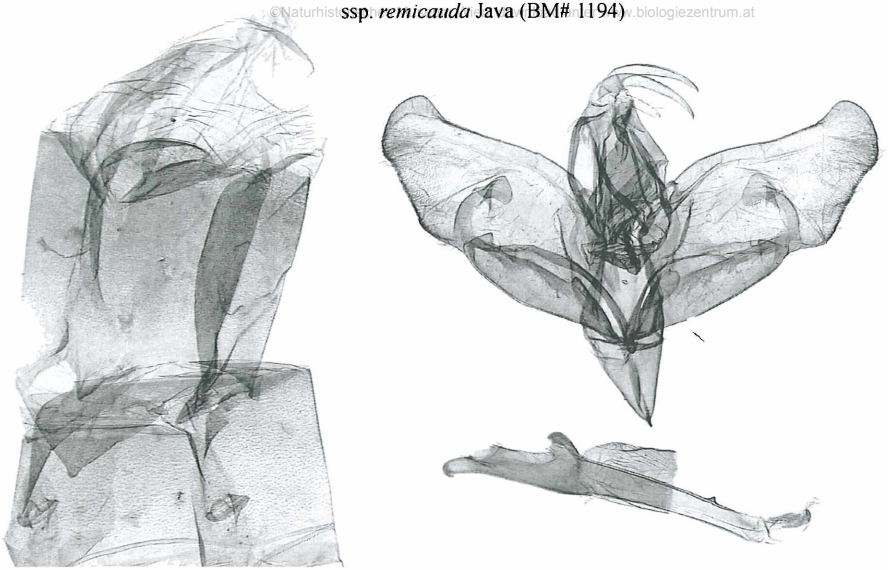


Fig. 76: Genitalia of *Tarsolepis remicauda.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

ssp. *remicauda* Java (BM# 1194)





ssp. *remicauda*, Java
(GU 41-78)



ssp. *fuscata*, PT, Palawan
(GU 41-79)

Fig. 76a: Genitalia of *Tarsolepis remicauda.*

www.biologiezentrum.at

4. *Tarsolepis splendida* SCHINTLMEISTER, 1993: 110, pl. 1: 1, 2; pl. 3: 3.

HT: ♂, Philippinen, N-Luzon, Mts.-Province, Talubin, 7 km SE Bontoc, 17°02' n. Breite, 121°03' ö. Länge, 1.200 m – NHM, Wien, examined.

There cannot be any doubt, that *T. splendida* is specifically different from *remicauda*. However, when writing the diagnosis for these two species, it was hard to find distinct features for separating the species. This is a good example of sympatric sister-species, that show only minor morphological differences.

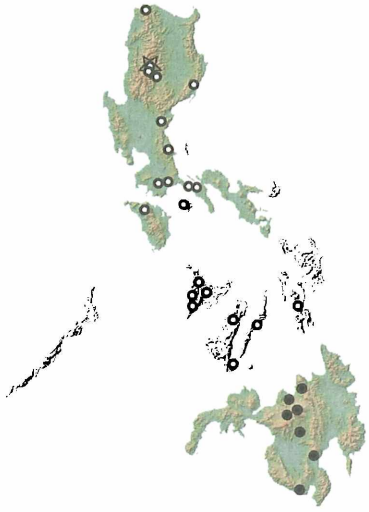


Fig. 77: Distribution of *T. splendida*.

Diagnosis. This is a smaller species in the genus *Tarsolepis*, about 20% smaller than *T. remicauda*. The males are best distinguished from *remicauda* by the brownish brush on the underside of the thorax (in *remicauda* red). The pale greyish coloured costa of the forewings (in *remicauda* yellowish-brown) and the more elongated forewing shape distinguish *splendida* from *remicauda*. The general appearance of *splendida* is paler than *remicauda*.

The male genitalia are similar to *remicauda* but smaller in size and due to the individual variation difficult to separate. Also the bilobed 8th abdominal segment of *splendida* is indistinguishable from that of *remicauda*. The female genitalia are similar to *remicauda* but display a significant (n = 4 GU) different shape of the postvaginal plate.

Variation. Individual variation occurs in the shape and position of the pearly triangular areas and the forewing pattern. Two males show the thoracal brush pinkish instead of brown. The male genitalia are variable in the shape of the valves, particularly the apex and the processes of the saccular region.

The populations from Mindanao (n = 31) are slightly more fuscous brown in general appearance and a bit larger (forewing length about 1 mm larger) compared to a larger series from Luzon. As the differences are small and intermediate specimens occur in Panay, Negros, Cebu and Leyte the Mindanao populations were not described as a subspecies.

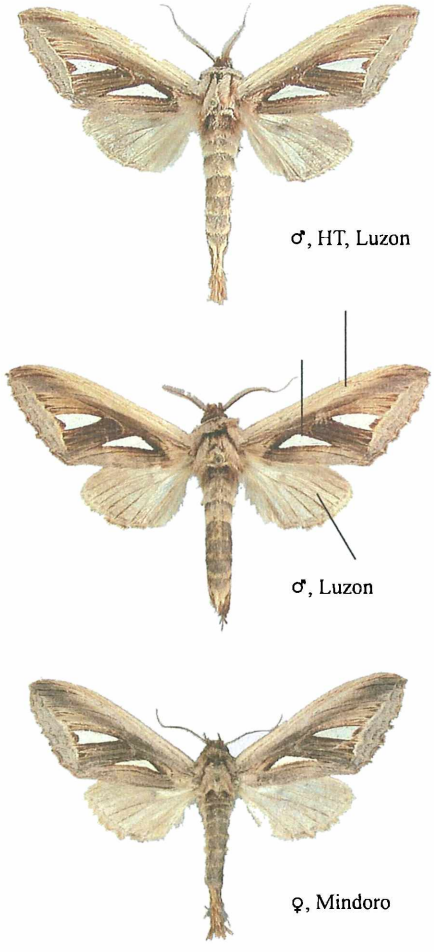


Fig. 78: Adults of *Tarsolepis splendida*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

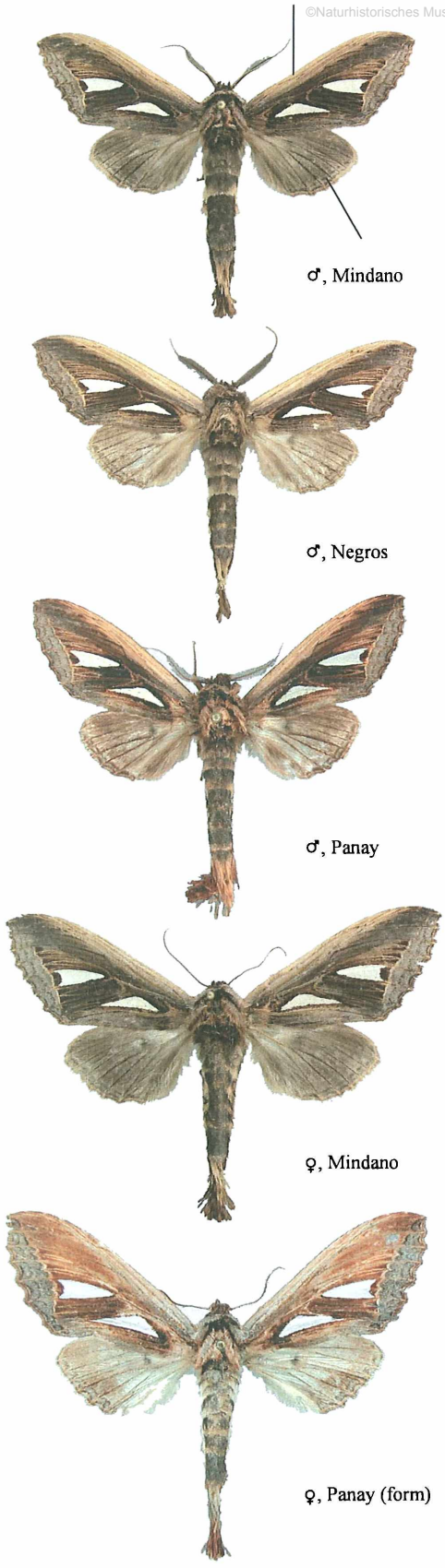


Fig. 79: Adults of *Tarsolepis splendida*.

Bionomics. The adults appear common in all months of the year at altitudes between 300 m and 2.200 m. They were observed in primary and secondary forests as well as in urban habitats. The holotype was taken inside a village.

SEMPER (1892: 409, pl. 52: 4, 5) reported the species (as *T. sommeri* HÜBNER, 1821) as a commoner from Luzon and Cebu and illustrated the caterpillar on plate J: 10, giving "Cajoi-sunub" as its hostplant. He also noticed, that specimens from Cebu are more fuscous than adults from Luzon.

Distribution. Endemic in the Philippines: Luzon, Mindoro, Cebu, Negros, Panay, Leyte and Mindanao.

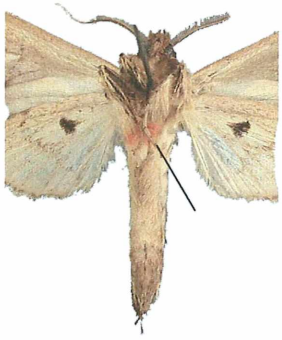


Fig. 80: *Tarsolepis splendida*, underside. The thoracal brush of the ilustrated specimen is unusually slightly pinkish coloured. Most specimens display the brush in the colour of the body.

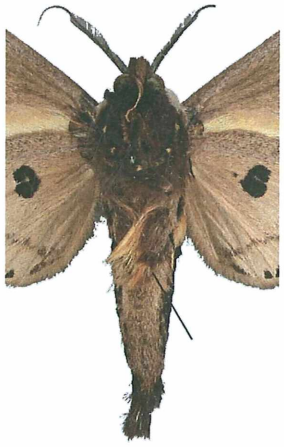


Fig. 81: *Tarsolepis kochi*, underside.

©Naturhistorisches M www.biologiezentrum.at

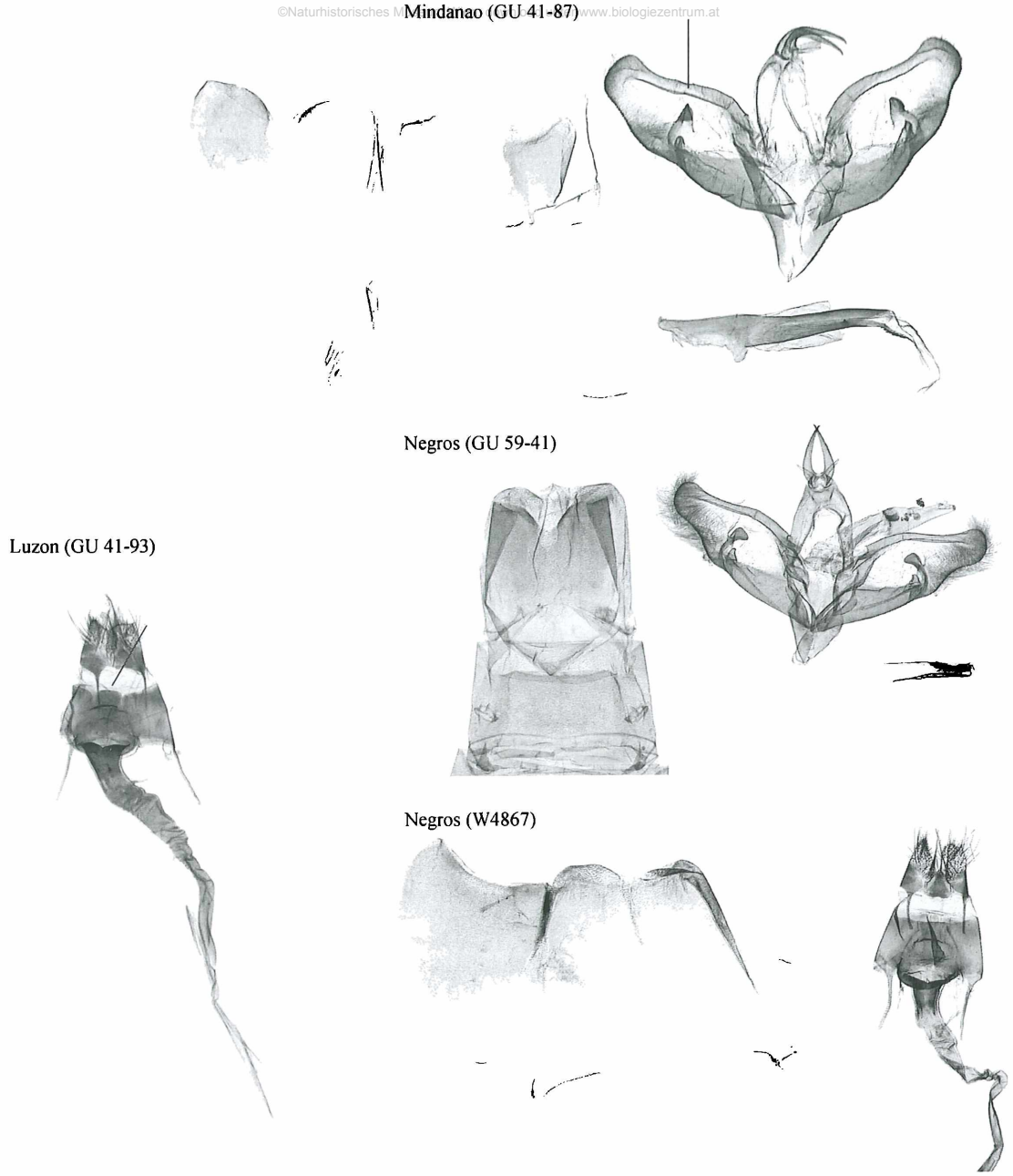


Fig. 82: Genitalia of *Tarsolepis splendida.*

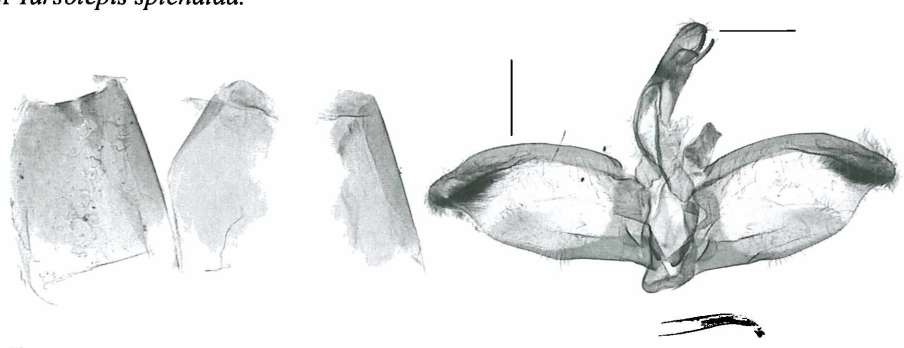


Fig. 83: Male genitalia of *Tarsolepis kochi* (MV 17520).

©Ges. zur Förderung d. Erforschung von Insektenwanderungen e.V. München, download unter www.biologiezentrum.at

5. *Tarsolepis kochi* SEMPER, 1892: 409, pl. 52: 3.
HT: ♂, Philippinen, Ost-Mindanao – Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt/Main, Frankfurt/Main, examined.

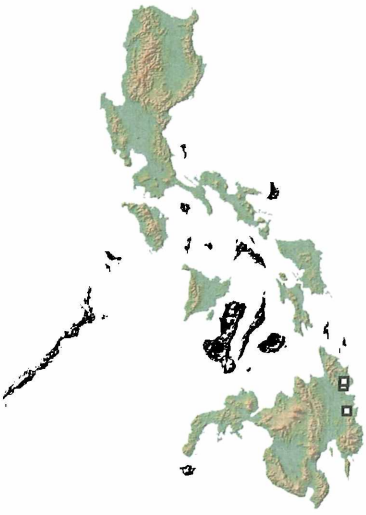


Fig. 84: Distribution of *Tarsolepis kochi.*

For some considerable time to me (AS) this species appeared to be almost „mythical" because it was impossible to get a specimen of this unmistakeable moth. So it was really a surprise, when I saw my first specimen in 2005 in Liangar/Mindanao. The flight is very special – buzzy – and the moths go on the ground about 10 meters n front of the lamp, where they must be picked up from the ground vegetation. Therefore it is hard to catch a perfect specimen. Later, JL was able to discover *T. kochi* in further two localities.

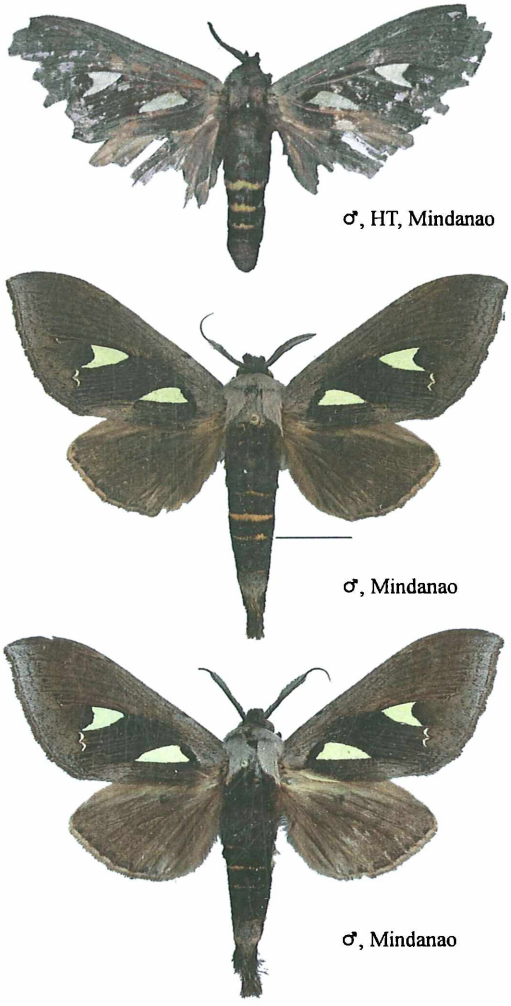


Fig. 85: Adults of *Tarsolepis kochi.*

Diagnosis. This beautiful moth is readily recognizable by the shape of the silvery triangular areas, which have a somewhat greenish tinge. The thoracal brush on the underside is orange-brown, the abdomen contrasting "tigered" yellow.

The male genitalia are best characterized by the unbifurcated uncus and the strong developed costa of the valves. The female is still unknown.

Variation. Almost no individual variation could be noticed (n > 20).

Bionomics. The adults occur sporadically but are not uncommon up to 350 m about sea-level. The moth was found in iv., v., xi. and xii. It seems, that the species is confined on open places inside of primary lowland forests.

Distribution. Endemic in the Philippines: Mindanao.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Gangarides MOORE, 1866: 821

Type-species: *Gangarides dharma* MOORE, 1866

6. *Gangarides rosea* (WALKER, 1865): 513

(*Apona rosea*)

HT: ♂, [NE India], Hindostan – BMNH, London, not examined.

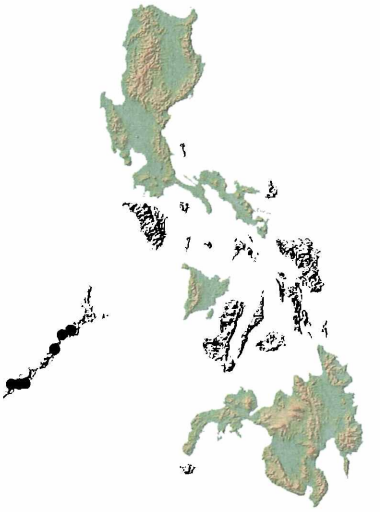


Fig. 86: Distribution of *Gangarides rosea*.

Despite intensive search by AS, the HT of WALKER could not be traced in BMNH where it should be. As the genus *Gangarides* includes several similar species the identity of *rosea* remains therefore somewhat uncertain.

Diagnosis. This large species is characterized within the genus by the white, black filled discalspot, the postmedian line ending in a white spot at the dorsum and the serrated margin of the forewings. *Gangarides rosea* is very similar to *G. sugii* and *splendidus* SCHINTLMEISTER, 1994 but the latter species (which is widely distributed in Sundaland and Indonesia including the Moluccas) have a rather straight margin of the forewings.

The male genitalia of species of *Gangarides* are diverse and more helpful for proper identification. *G. rosea* displays a pair of prominent valve processes at the sacculus and at the costa. The juxta displays a longer and bifurcate process. The 8[III] abdominal segments is specifically bilobed and sclerotized.

Variation. The range of individual variation is wide. The ground colour of the forewings vary from pale brown up to deep reddish-brown; those of the hindwings are from vermillion up to pale reddish brown. The markings in the submarginal area of the forewings

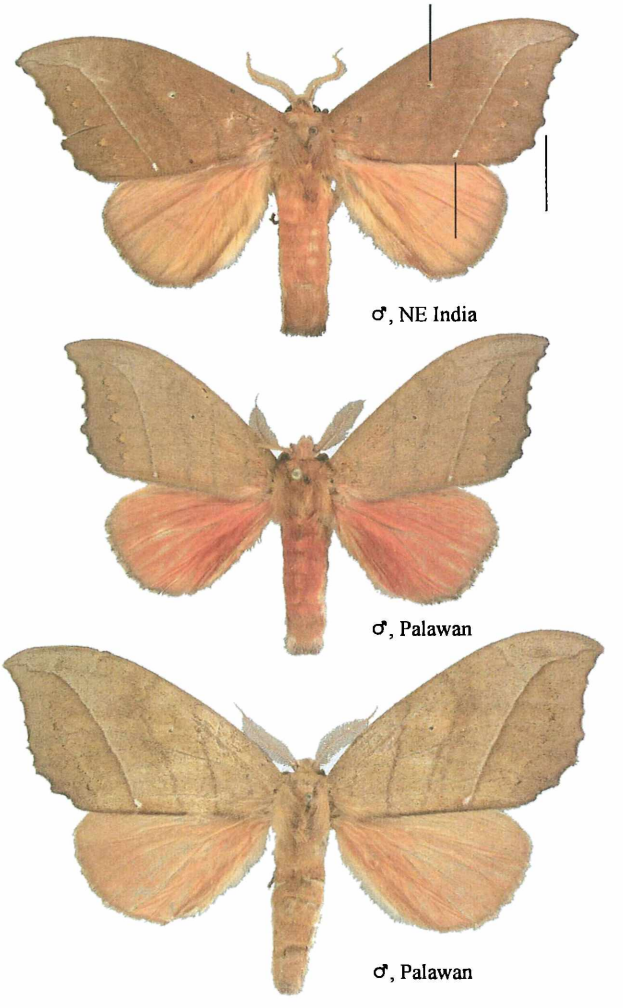


Fig. 87: Males of *Gangarides rosea*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

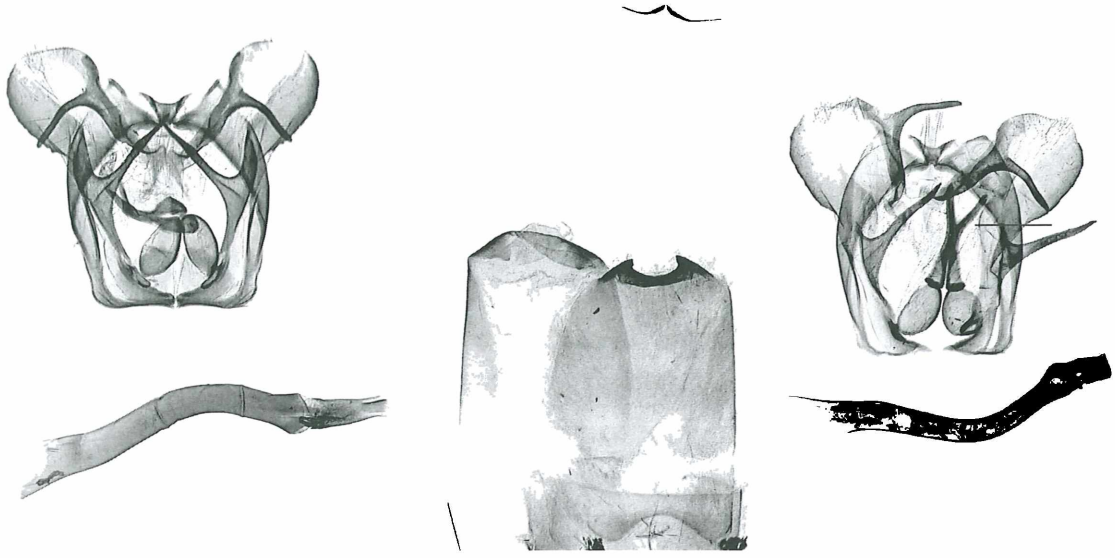


Fig. 88: Male genitalia of *Gangarides rosea*.

and the development of the fasciae are subjects to individual variation. No geographically variation could be noticed.

Bionomics. The adults occur in Palawan sporadically but often commonly (n > 40) and were observed from x. ii. between 300 m and 1.000 m. The moth was collected in cultivated areas as well as in secondary and primary forests.

Distribution. *Gangarides rosea* is distributed in the Himalayas, Indochina, SW China (Yunnan), the Andaman Islands, Sumatra, Borneo and the Philippines: Palawan.

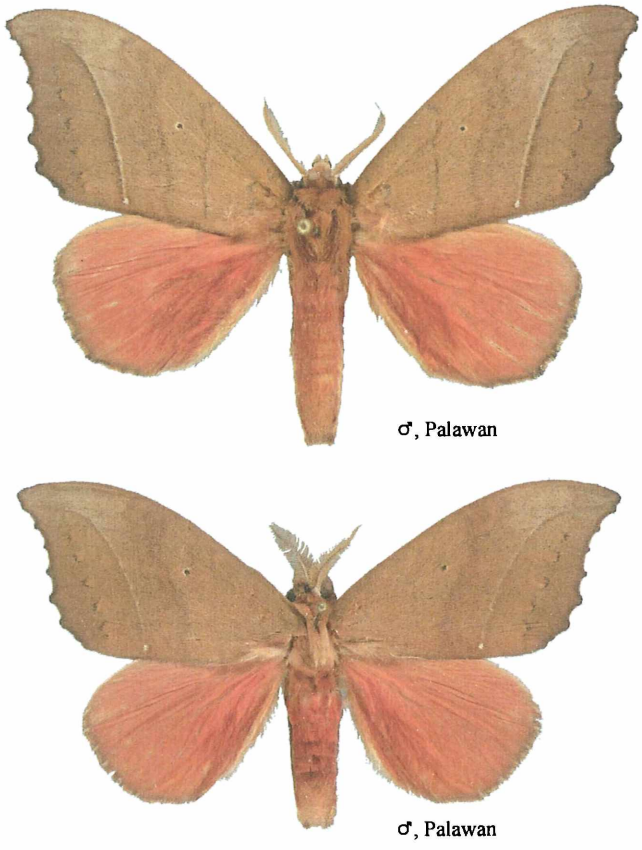


Fig. 89: Adults of *Gangarides rosea*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

7. *Gangarides sugii* SCHINTLMEISTER, 1993: 112

pl. 4: 1; pl. 6: 4

HT: ♂, Philippinen, Mindanao, 40 km NW Maramag, Dalongdong, 800 m, Talakag, 7°53'n. Breite, 124°40'ö. Länge – NHM, Wien, examined.

= *Gangarides sugii pulcher* KOBAYASHI & KISHIDA, 2008: 187, figs. 2, 17, 17a, 17b; **syn. nov.**; HT: ♂, Philippines, Leyte, Mt. Balocaue, 900 m – NSMT, Tokyo, not examined.

= *Gangarides sugii palawanensis* KOBAYASHI & KISHIDA, 2008: 189, figs. 3, 18, 18a, 18b; **syn. nov.**; HT: ♂, Philippines, Palawan, Mt. Mantalingajan, 1.300 m – NSMT, Tokyo, not examined.

= *Gangarides sugii negrosanus* KOBAYASHI & KISHIDA, 2008: 190, figs. 4, 19, 19a, 19b; **syn. nov.**; HT: ♂, Philippines, Negros, Mt. Canlaon, 850 m – NSMT, Tokyo, not examined.

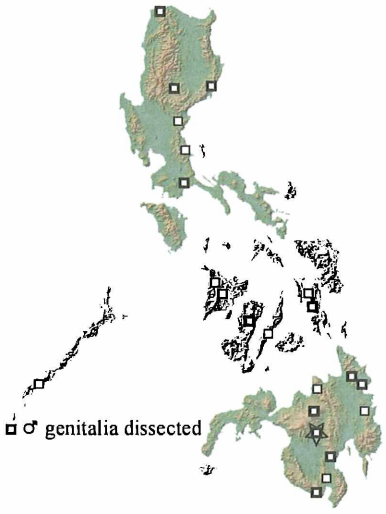


Fig. 90: Distribution of *Gangarides sugii.*

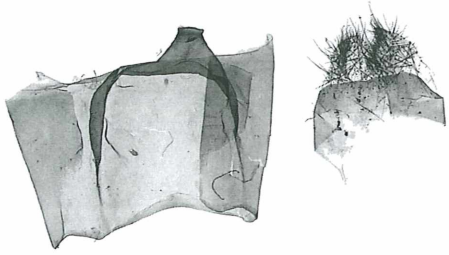


Fig. 91: Female genitalia of *G. sugii.*

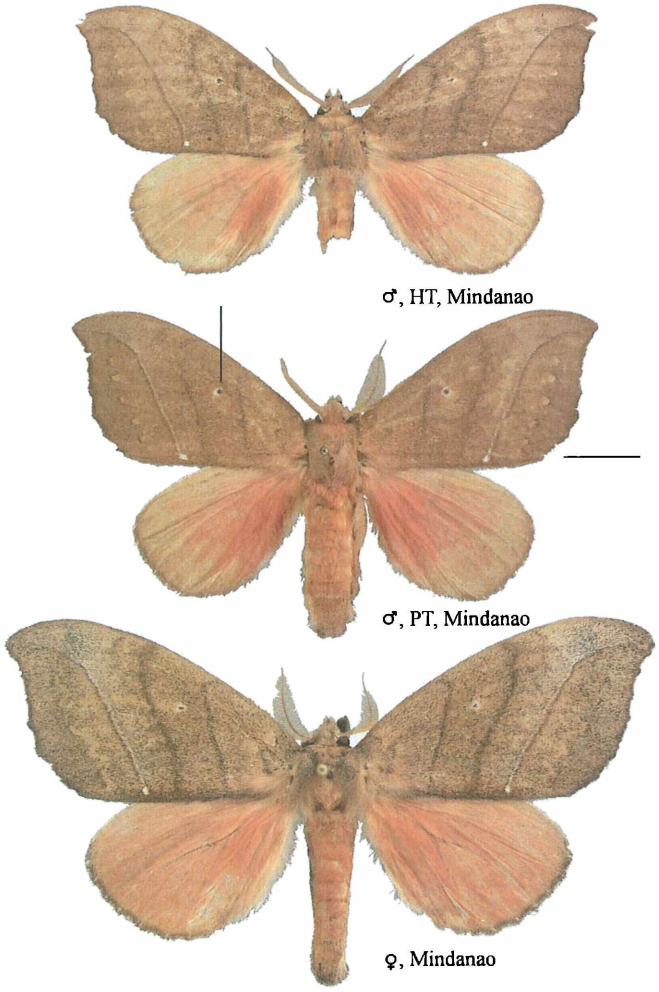


Fig. 92: Adults of *Gangarides sugii.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

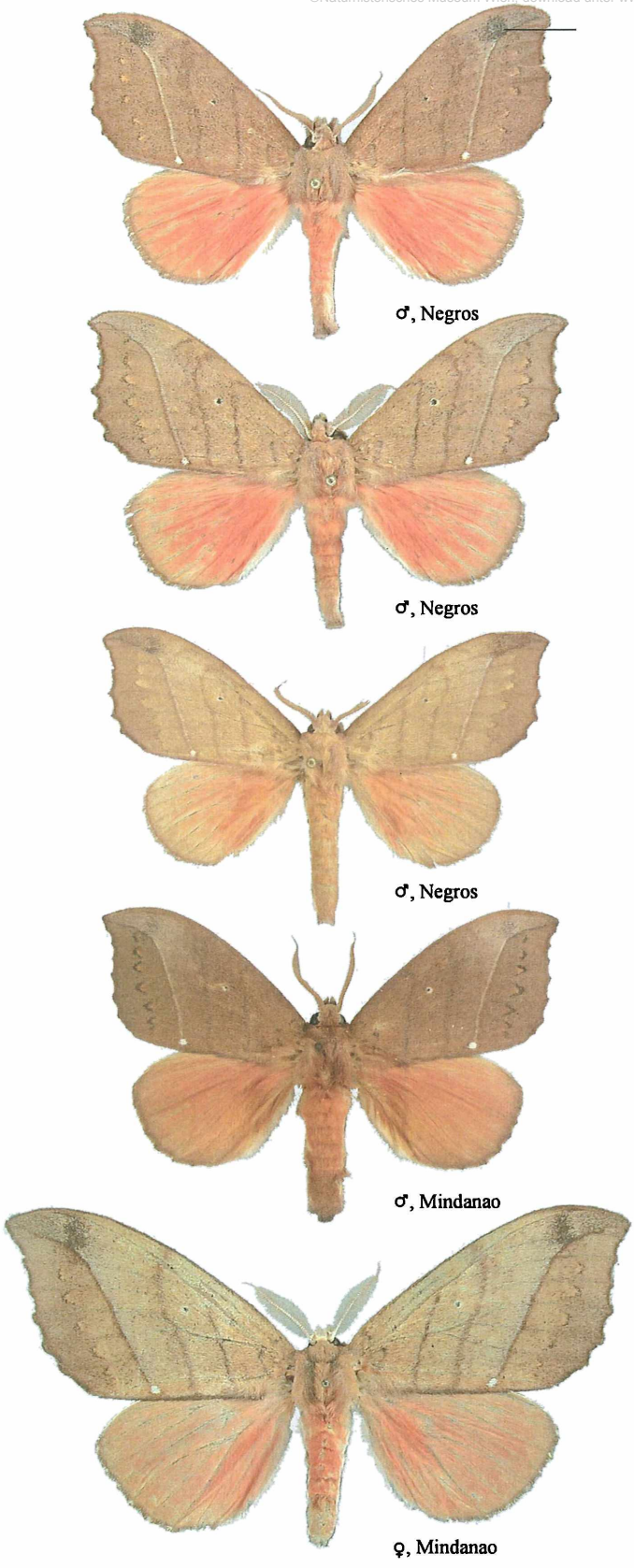


Fig. 93: Adults of *Gangarides sugii*.

SCHINTLMEISTER (1993: 111) pointed out, that there are several species in the genus *Gangarides* and added later descriptions of 6 species (actually 10 species are known). KOBAYASHI & KISHIDA 2008 reviewed the genus, adding a further new species from Sulawesi and Seram. They described of *G. sugii* several subspecies from the Philipines and found, that „the facies are different by every island" (p. 185). They also mentioned differences of the 8th sternites between Mindanao populations and the other islands. Unfortunately their material was very limited. They examined
Palawan: 1 ♂
Negros: 2 ♂♂
Cebu: 1 ♀
Leyte: 2 ♂♂
and described from this material 3 new subspecies. From Mindanao they examined: 4 ♂♂ 1 ♀.
We have much more material to our disposal:
Mindanao: > 80 ♂♂ and 5 ♀♀
Samar: 1 ♂
Negros: 25 ♂♂, 1 ♀
Panay: 2 ♂♂, 1 ♀
Leyte: 17 ♂♂, 6 ♀♀
Luzon: 13 ♂♂, 2 ♀♀

We found that the species is variable in facies and particularly in shape of the margin of the forewings. But it was not possible to find any correlation with geographical localities (i.e. various islands)

and external appearance as KOBAYASHI & KISHIDA stated. Also the male genitalia (totally n = 13 GU) vary individually and not geographically. The shape of the central protuberance of the 8th sternite is not constant in its shape and not helpful for separation of the Philippine populations. Two males from Mindanao lacked this protuberance totally. Thus, the different subspecies described by KOBAYASHI & KISHIDA are reflecting rather infrasubspecific (individual) forms than geographical subspecies. It is well known, that within the genus *Gangarides* the individual variation is very wide in many species, e.g. *G. dharma* MOORE, 1866, *flavescens* SCHINTLMEISTER, 1997 or *rufinus* SCHINTLMEISTER, 1997. *G. sugii* shows a similar appearance. We synonymize therfore:

Gangarides sugii pulcher KOBAYASHI & KISHIDA, 2008, syn. nov. with *Gangarides sugii; Gangarides sugii palawanensis* KOBAYASHI & KISHIDA, 2008, syn. nov. with *Gangarides sugii; Gangarides sugii negrosanus* KOBAYASHI & KISHIDA, 2008, syn. nov. with *Gangarides sugii. Gangarides sugii* is treated here as a monotypic species, which is restricted to the Philippines.

Gangarides sugii is the sister-species of *rosea* and both species occur sensu KOBAYASHI & KISHIDA sympatrically in Palawan (we were not able to find and to examine a specimen of *sugii* from Palawan). All known *Gangarides* species rest head-under and fold their wings tectiform.

Diagnosis. The species is similar to *Gangarides rosea* and because of individual variation often hard to separate by external features. A good character is the rounded tornus of the forewing. A few specimens display a larger blackish area near the apex of the forewings, not seen in other congeners. The male genitalia are distinguished from those of the other congeners by the presence of a saccular spine on the valves. The costal valve process (which is characteristical for *rosea*) is absent. The 8th abdominal segments are not bilobed an the 8th sternite displays often a protuberance.

Variation. The individual variation is comparable as in *G. rosea* (see above). The male genitalia and the shape of the protuberance of the 8th sternite vary individually. There is virtually no correlation of the variation of these characters with the geographical origin of the specimens.

Bionomics. The adults occur commonly from sea-level up to 1.050 m. The moth was collected between iv. and xii. (one male also in ii.), mostly at medium elevations up to 850 m (on Mt. Apo also at 1.570 m above sea-level). The species flies in primary and secondary forests.

Distribution. Endemic in the Philippines: Palawan, Luzon, Negros, Cebu, Leyte and Mindanao.

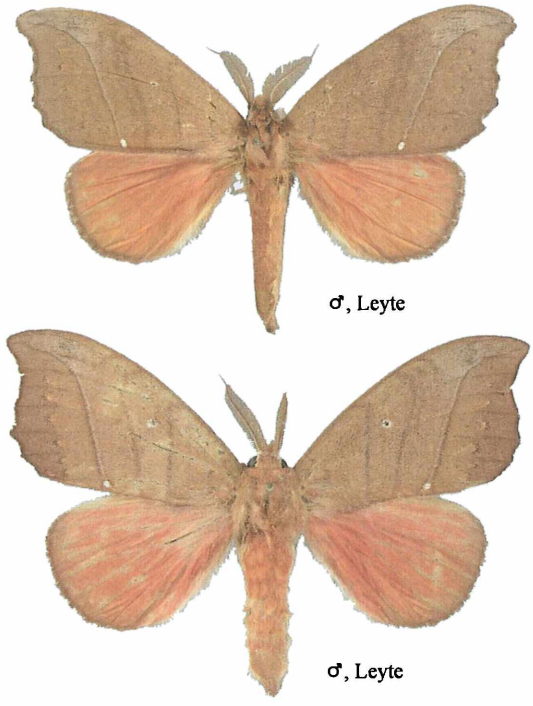


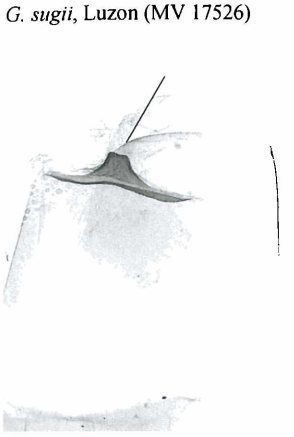
Fig. 94: Males of *Gangarides sugii.*

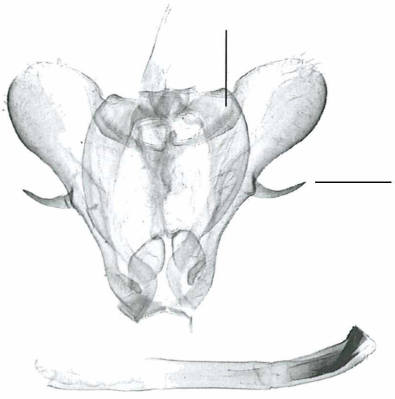
©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

G. rosea, Palawan (GU 73-33)

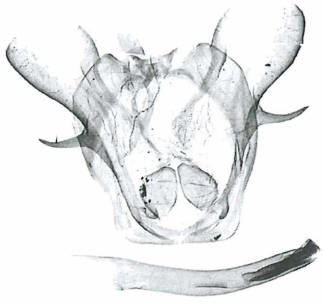


G. sugii, Luzon (MV 17526)





G. sugii HT, Mindanao (GU 18-26)

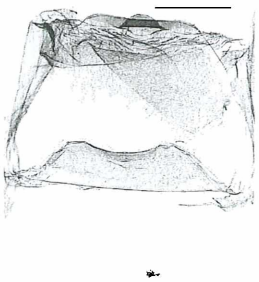


G. sugii, Negros (GU 42-39)

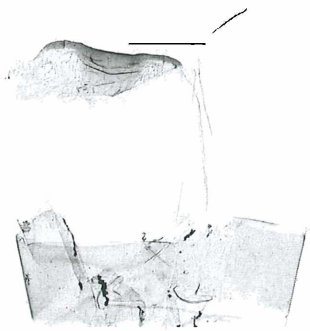




G. sugii, Negros (W 4895), 8th sternite



G. sugii, PT, Mindanao, (GU 18-18)



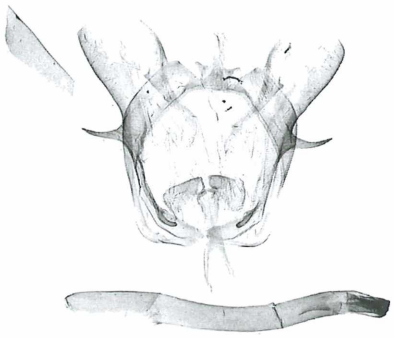


Fig. 95: Male genitalia of *Gangarides rosea* and *sugii*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Euhampsonia DYAR, 1897: 16

Type-species: *Trabala niveiceps* WALKER, 1865

8. *Euhampsonia roepkei* HOLLOWAY, 1983: 32; pl. 2: 9; fig. 31

HT: ♂, Borneo, Sarawak, Gunong Mulu Nat. Park Site 5, Camp 4, Mulu, 1.780 m – BMNH, London, examined.

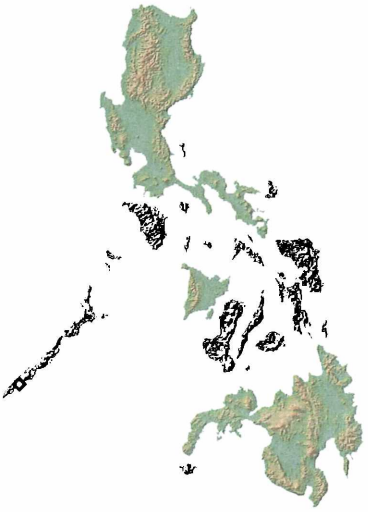


Fig. 96: Distribution of *E. roepkei*.

Euhampsonia roepkei is closely related to *E. serratifera* SUGI, 1994: 115, figs. 1-4, 8 (HT: ♂, Thailand, Chiang Mai Province, Doi Pakia - University of Osaka Prefecture, Sakai, not examined) and not distinguishable by external criteria.

Diagnosis. The large adults display a serrated outer margin and a larger indistinct orange discal spot on the forewings. The female is much larger than the male and has paler orange-brown hindwings. The male genitalia have a bifurcate uncus with a pair of long socii, a long valve process (clasper) and a long and curved phallus. The 8th sternite is of diagnostical shape and sclerotization.

Variation. *E. roepkei* is variable in size and shape of the serrated margin of the forewings. The

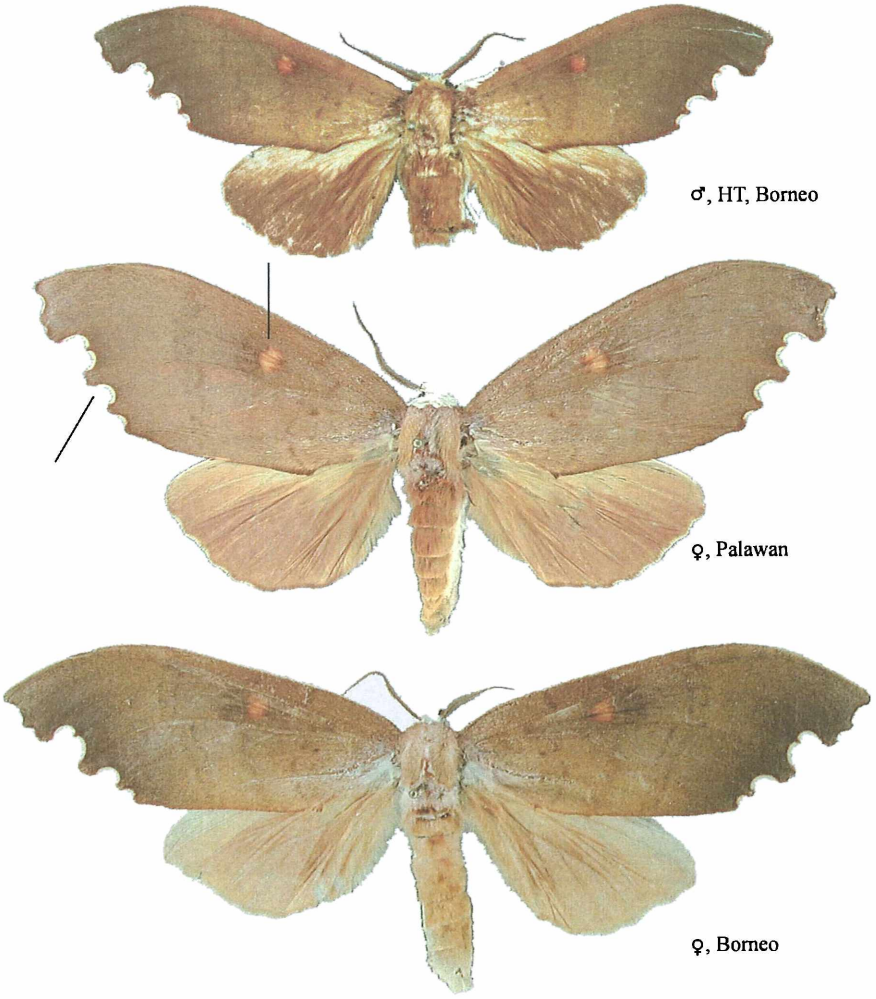


Fig. 97: Adults of *Euhampsonia roepkei*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

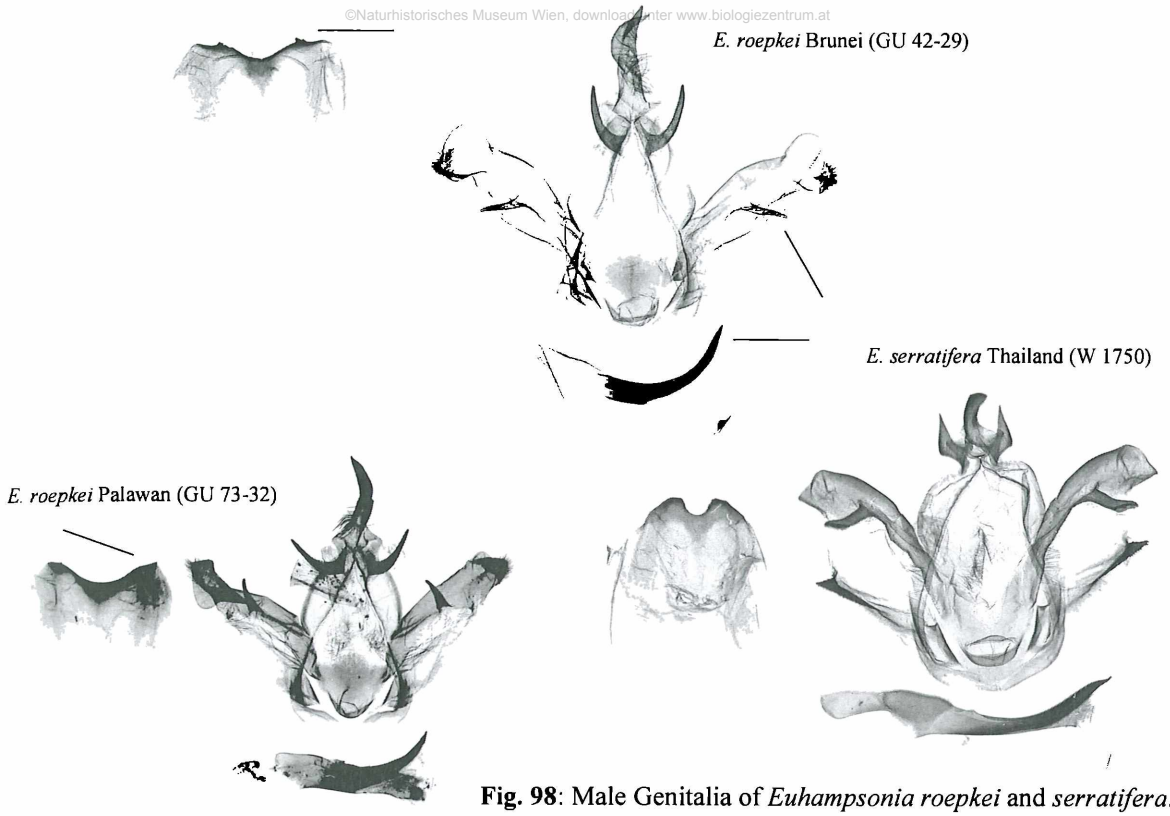


Fig. 98: Male Genitalia of *Euhampsonia roepkei* and *serratifera*.

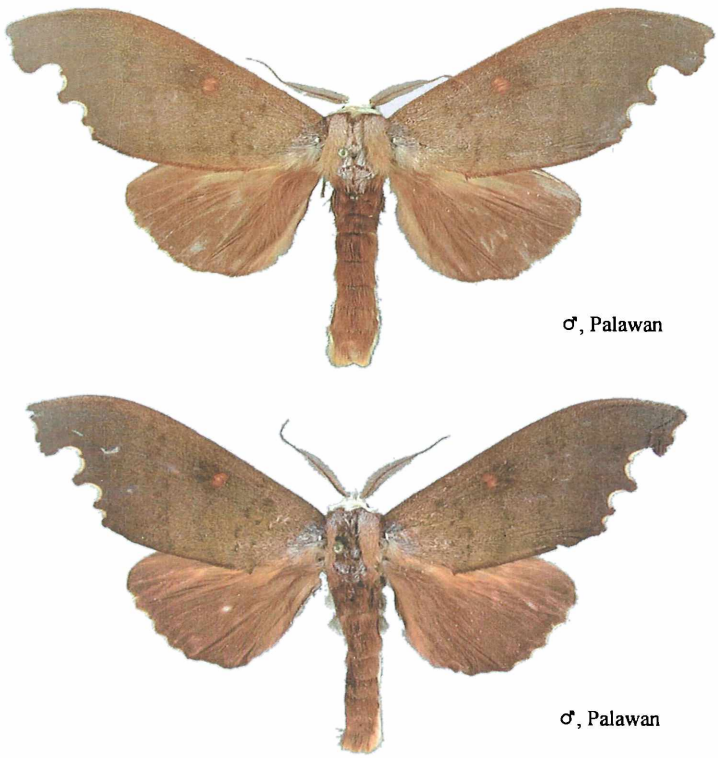


Fig. 99: Adults of *Euhampsonia roepkei*.

male genitalia vary slightly in the shape of the 8th sternite, the shape of the valves and the uncus. The species tends to vary geographically; dissected males from Java, Sumatra and Borneo differ slightly in shape of the 8th sternite, the uncus and the valves. The dissected Palawan specimen lacked the smaller projections on the 8th sternite.

Bionomics. The adults seem to occur occasionally abundant in Palawan. They were observed in iii., v., viii. in primary mountain forests between 600 m - 950 m above sea-level.

Distribution. *Euhampsonia roepkei* is distributed in Sundaland, Java, and the Philippines: Palawan. In Palawan it is known only from Mt. Matalingahan.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Ortholomia Felder, 1861: 39

Type-species: *Ortholomia moluccana* Felder, 1861

= *Besida* Walker, 1865: 456 (*Besida xylinata* Walker, 1865)
= *Osica* Walker, 1865: 766 (*Osica glauca* Walker, 1865)
= *Parathemerastis* Bethune-Baker, 1916: 383 (*Parathemerastis turneri melanistis* Bethune-Baker, 1916)

The members of *Ortholomia* look at first glace, almost like some noctuid moths, but can be differentiated by the white tornal spot of the forewings. The oriental species of *Ortholomia* are difficult to separate by external criteria. The genitalia of most illustrated adults were photographed prior to dissection.

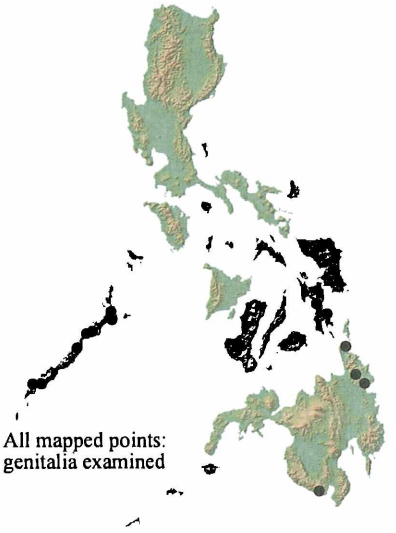


Fig. 100: Distribution of *O. xylinata*.

9. *Ortholomia xylinata* (Walker, 1865): 456 (*Besida xylinata*)

HT: ♀, Java – BMNH, London, examined.

= *Osica turneri albiplaga* Gaede, 1930: 617; pl. 81: g; **syn. nov.**
LT: ♂, Java, Magelang – ZMHU, Berlin, examined.
= *Besida vinvalva* Schaus, 1928: 83 **syn. nov.**
HT: ♂, Philippine Islands, Mindanao, Surigao – (Nr. 33437) USNM, Washington, photograph examined.

Since the type specimen of *xylinata* is a female without abdomen, its true identity is somewhat uncertain. Since AS was not able to find specimens other than *xylinata* in Java and Bali, the given status of this species is highly likely.
The LT of *albiplaga* was designated by S. Sugi in 1994, who also confirmed the synonymy with *xylinata* (genitalia slide SS 7365). But we were not able to trace a paper by Sugi, wher he published this. So we designate the Lectotype here, bearing the following labels: „Java, Magelang, 86"; in Gaede's hand: „*Ortholomia albiplaga* det. M. Gaede"; in Sugi's hand: „*Osica albiplaga* Gaede. Lectotype ♂ Designated by S. Sugi. 1994", „Genitalia Slide No. SS 7365 ♂„ „*Besida xylinata* Wkr. Det S. Sugi 1994 ♂„.

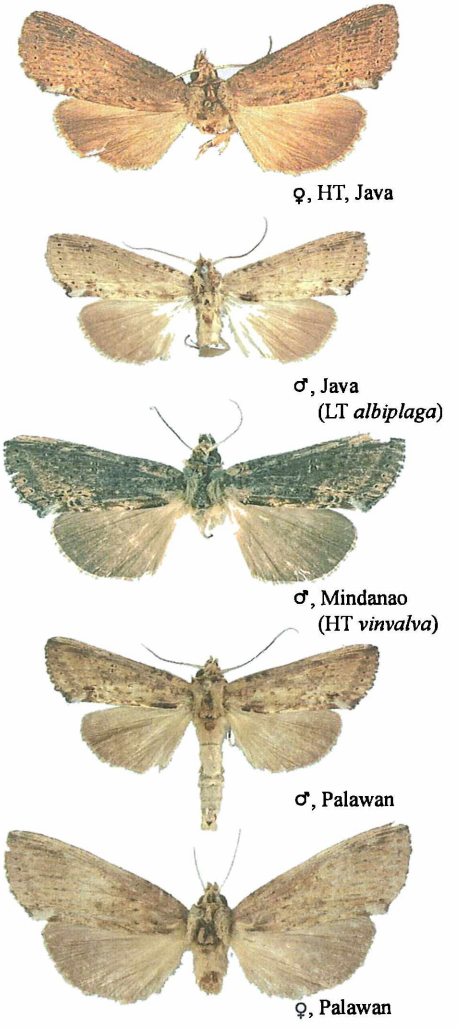


Fig. 101: Adults of *Ortholomia xylinata*.

Diagnosis. The inconspicous species displays a brownish or blackish ground colour of the

©Naturhistorisches Museum

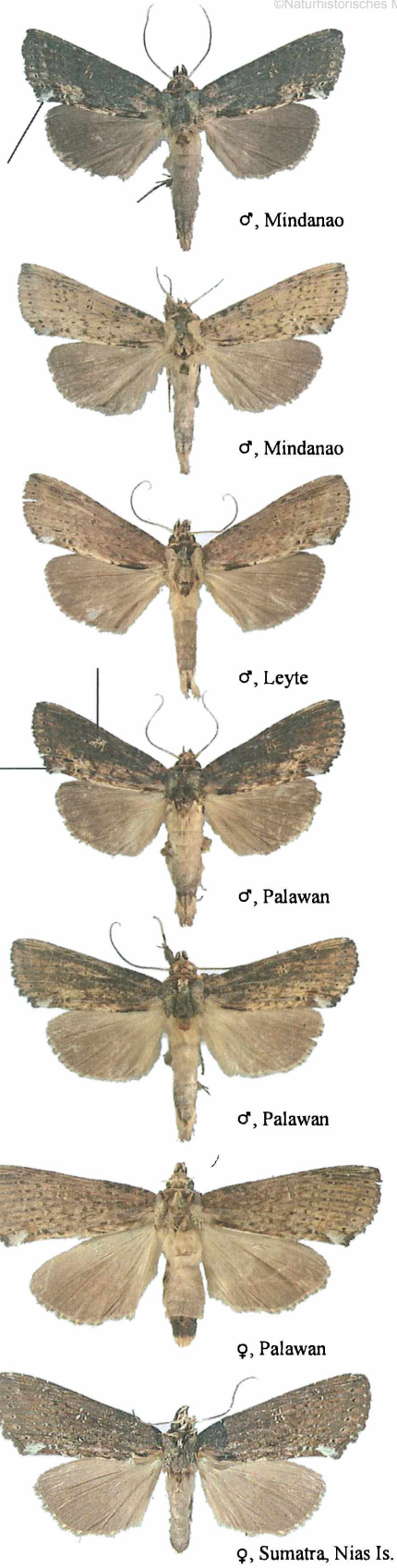


Fig. 103: Adults of *Ortholomia xylinata.*

Mindanao (US# 878, HT of *vinvalva*) Palawan (MV 17539)



Fig. 102: Male genitalia of *Ortholomia xylinata.*

forewings with a white spot in the tornus. The female is larger, with broader shaped forewings and lacks in most cases any fuscous pattern.

The male genitalia are distinctive by the shape of the strongly sclerotized sacculus of the valves. The knob shaped uncus is accompanied by a pair of relatively small socii. The tip of the phallus is distinctively knob-shaped. The 8th abdominal segment is specifically sclerotized. The female genitalia have a very large circular signum and a bilobed ostium. The ductus bursae is shorter than in *osica*.

Variation. The ground colour of the forewings varies from uniform pale brown without any markings to blackish markings to deep black with a contrasting pale brownish pattern. The discal area on the forewings is in blackish specimens sometimes pale brown marked. Of n = 40 (18 genitalized) specimens from Palawan 21 belong to the blackish form. The male genitalia vary in the shape of the sacculus. Males from Mindanao and Leyte are more diverse in the shape of the sclerotized sacculus and its processes than specimens from Sundaland, Java, Bali and Palawan.

Bionomics. The adults occur locally but are not rare in urban areas as well as in secondary and primary forests. They were observed in i., ii., vi., viii., ix. and xi. up to 500 m, in Leyte a single male was taken at 1.140 m. *O. xylinata* is clearly dominant over *osica* in Palawan (40:1) but more rare in Mindanao (6:4) and in comparison to *squalida* (6:11).

Distribution. Distributed in SW China, Indochina, Sundaland, Java, Bali, Sumbawa and in the Philippines: Palawan, Leyte, Mindanao.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

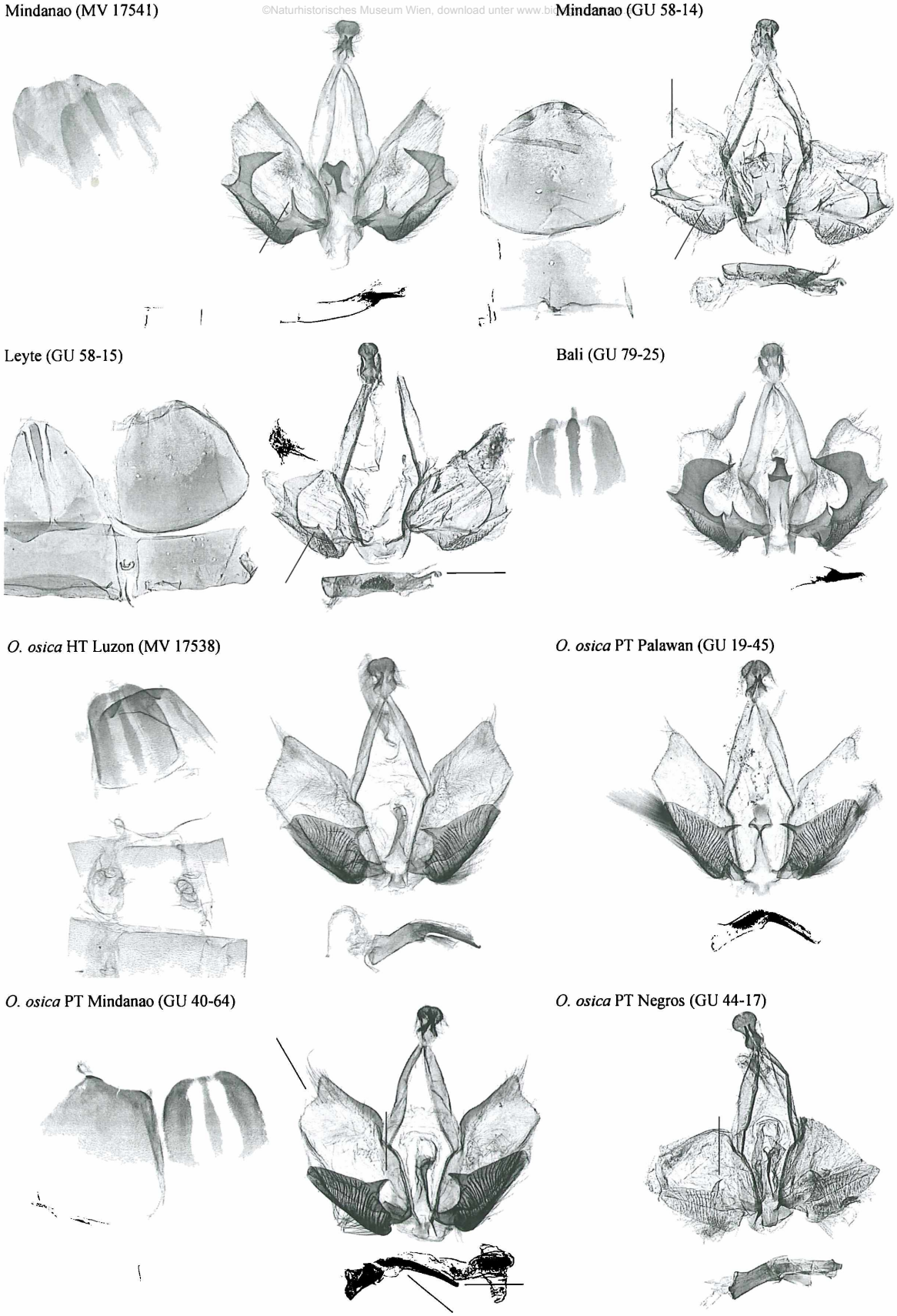
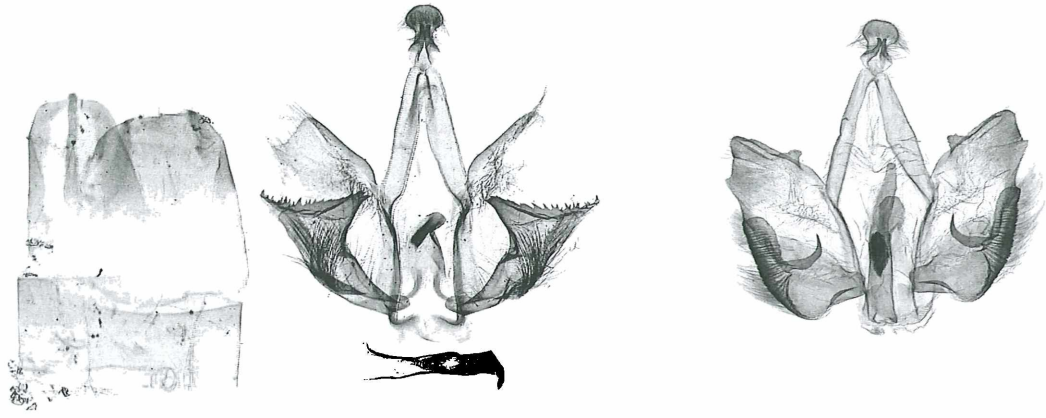
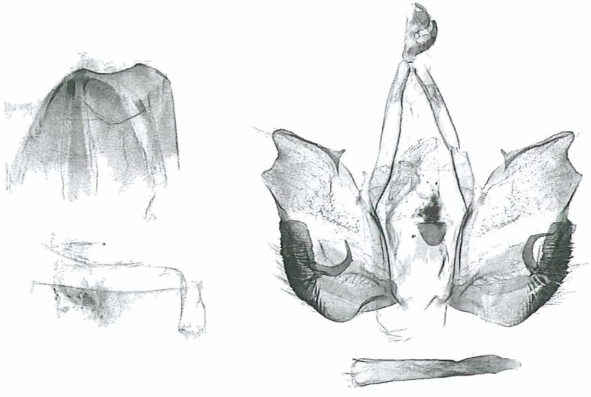


Fig. 104: Male genitalia of *Ortholomia xylinata* and *osica.*

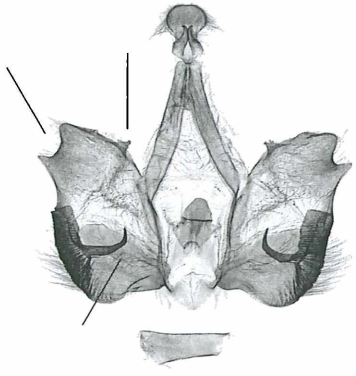
O. besida HT Sumatra (GU 21-54) ©Naturhistorisches Museum Wien, download unter www.biolo *O. squalida* HT Mindanao (MV 18019)



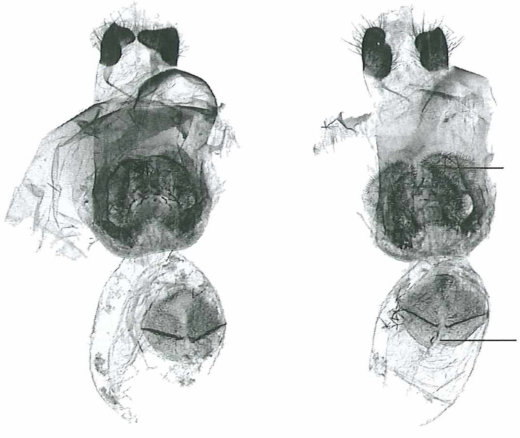
O. squalida PT Mindanao (MV 17567)



O. squalida PT Mindanao (MV 17540)



O. xylinata Palawan (MV 17536 and MV 17519)



O. osica PT's Luzon (MV 17518 and MV 17859)

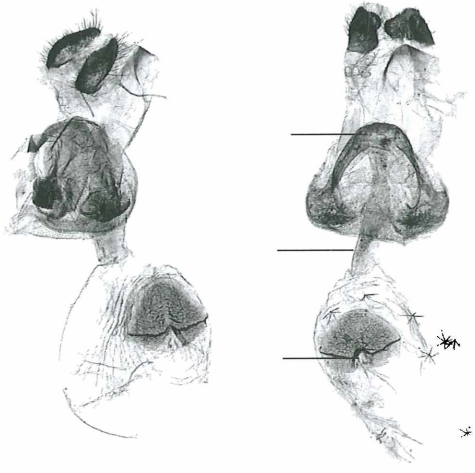


Fig. 105: Genitalia of *Ortholomia besida*, *squalida*, *xylinata* and *osica*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

10. *Ortholomia osica* spec. nov.

HT: ♂, The Philippines, E Luzon, Aurora S. Madre, Dapalan riv. S of Dilalongan, 50 m, 16°02.707‘ N, 121°42.673‘E, 4.ix.2007, leg. JH Lourens (MV 17538) – NHM, Wien.

Paratypes (59 ♂♂, 18 ♀♀):

Luzon: 5 ♂♂, 2 ♀♀, Quezon Forest Nat. Park, 250 m, 14°01‘ N Breite, 122°11‘ E Länge, 8.-10.x.1988 (GU 19-43, 19-44, 21-56, 21-65, 21-66); 1 ♀, Tanawan, 14 km S Real, 500 m, 14°34‘N , 121°.33‘E, 23.i.1988 (MV 17518); 1 ♀, Nueva Vizcaya, Dalton Paß, Santa Fe, 900 m, 16°07‘N, 120°58‘E, 18.ii.1988; 1 ♀, 14 km SE Lagawe, Bolog, 500 m, 16°41‘N, 121°10‘E, 7.ii.1988; 6 ♂♂, 1 ♀, Aurora S. Madre, Depalan riv. S of Dilalongan, 50 m, 16°02.707‘ N, 121°42.673‘E, 4.ix.2007; 1 ♂, ibid., 11.-12.ii.2008; ♂, Aurora, 15 km W of Dibulo, 16°33.176‘N, 122°13.386‘E, 650 m, 26.-27.ix.2008; 2 ♂♂, ibid. 15.vi.2007; 1 ♂, 1 ♀, ibid. 5.-6.ix.2007; 1 ♂, CAR border Abra/Kalinga E of Malibcong Basiwag, 1.600 m, 17°33‘N, 120°59‘E, 16.-17.vi.i.2007 (MV17967); 2 ♀♀, Sierra Madre, Isabela Dinapique, 2 km E of Ango, 580 m, 16°35.927‘E, 122°16.589‘E, 21.-23.ii.2007 (MV 17859); 1 ♂, ibid. 17 km NW Dipanique, 550 m, 16°32‘N, 122°14‘E, 3.ix.2006; 3 ♂♂, 1 ♀, 5 km S of Adams, 350 m, 18°31.338‘N, 120°55.690‘E, 6.-7.iv.2008; 2 ♂♂, ibid, 340 m, 21.iv.2007; 1 ♂, ibid., 140 m, 15.ii.2008; 1 ♂, 10 km E of Ironin, Mt. Bulasan lake, 280 m, 12°44.872‘N, 124°05.925‘E, 12.iii.2009; 1 ♀, ibid. 280 m, xii.2005; 1 ♀, Nueva Ecija Boundary Bongabong Btgy Laby, 580 m, 15°39‘N, 121°16‘E, 10.iii.2005; 1 ♂, Nueva Ecija Sierra Madre, Mingan Mts., Brgy. Laby, 650 m, 15°40.432‘N, 121°17.906‘E, 3.ix.2007; 1 ♂, Sierra Madre Mts., 5 km N of Infanta, 10 km W of Gen.Nakar, 7.v.2004;

Marinduque: 2 ♂♂, 1 ♀, E of Boac, Mt. Hinapulan, 480 m, 13°25.378‘N, 121°55.910‘E, 25.v.2009 (MV17849); 2 ♂♂, Sibujao, Mt. Masimot, 560 m, 13°20.830‘N, 122°00.219‘E, 21.-23.v.2009;

Mindoro: 1 ♀, 10 km E San Jose, Paciolo, 100 m, 12°22‘N, 121°08‘E, 28.i. - 4.ii.1988; 1 ♂, Mt. Halcon, 1.000 m, iv.2001;

Palawan: 1 ♂, S. Vicente, 20 km NEE Roxas, 18°21‘N, 119°10‘E, 400 m, 12.-17.i.1988 (19-45).

Cebu: 2 ♂♂, 5 km N Cebu city, 400 m, 10°20‘N, 123°54‘E, 8.-10.x.1988 (GU19-42);

Samar: 3 ♂♂, 1 ♀, 8 km SE of Bagacay 250 m, 11°48.025‘N, 125°14.610‘E, 13.iii.2009 (MV17857); 3 ♂♂, ibid., 26.iii.2009; (MV17855); 5 ♂♂, 1 ♀, ibid., 200 m, 21.-22.x.2006; 2 ♂♂, 4 km SE of Bagacay, 140 m, 25.vii.2006 (MV17856);

Panay: 1 ♂, Aklan, 13 km S of Libacao, 100 m, 11°24.691‘N, 122°18.542‘E, 27.vi.2009; 2 ♂♂, ibid., 2.ix.2009 (MV17848); 1 ♂, Antique, E of Imparayan, Brgy. Romea, 150 m, 10°47.052‘N, 122°05.995‘E;

Negros: 1 ♂♀, Mt. Canlaon, W Route via Mambucal, 600 m, 10°22‘N, 123°12‘E, ii.1997 (44-97); 1 ♀, ibid., 1.010 m, 17.-18.vii.1996;

Leyte: 1 ♂, 12 km N of Ormoc, Lake Danao, 650 m, 11°04‘N, 124°42‘E, 29.-30.vi.2006 (MV17851);

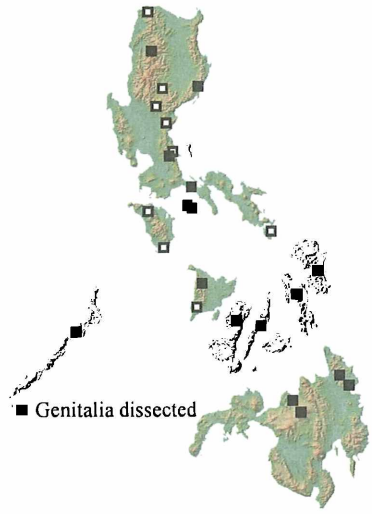


Fig. 106: Distribution of *O. osica*

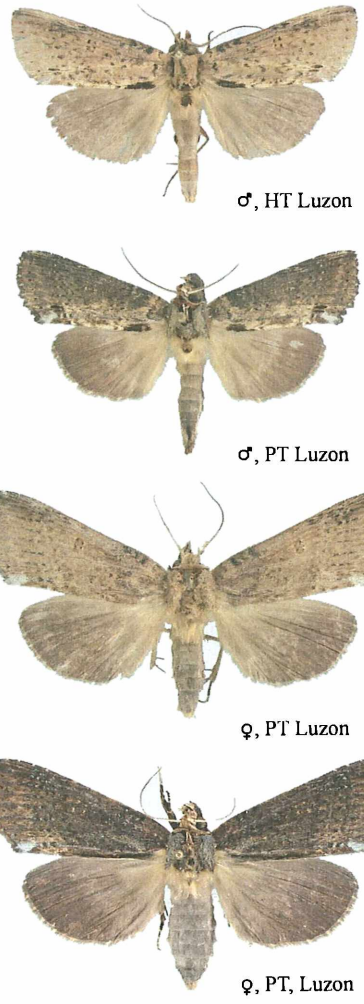


Fig. 107: Adults of *Ortholomia osica.*

©Naturhistorisches Mus

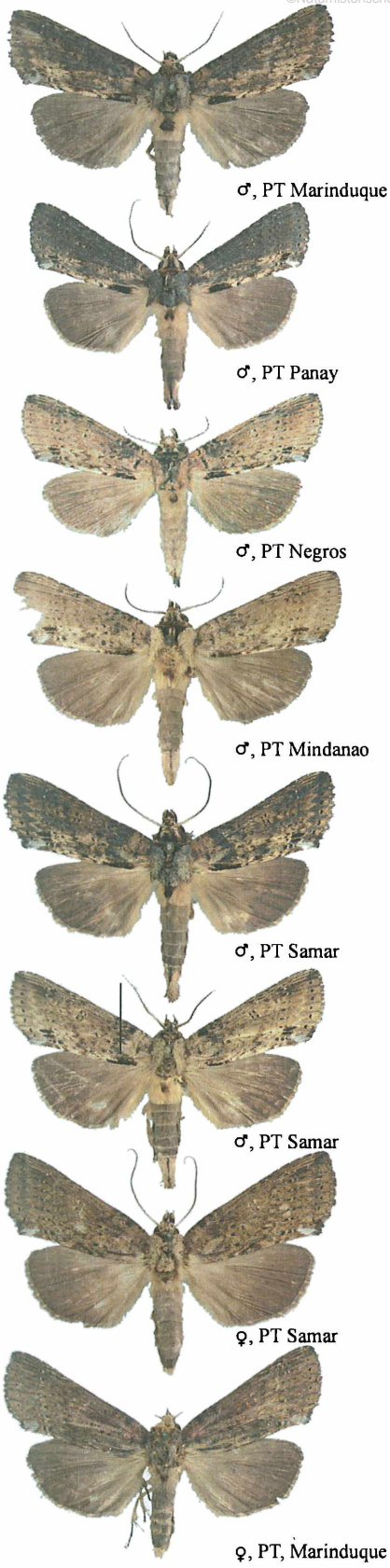


Fig. 108: Adults of *Ortholomia osica.*

Mindanao: 1 ♂, Agusao del Sur, S of Mt. Hilong-H., 34 km of Ampayon, 470 m, 08°58'N, 125°49'E, 30.vi.2005 (MV 17565); 1 ♂, Bukidnon, Mt. Kitanglad, S-Seite, Intavas, 1.200 m, 8°07'N, 124°55'E, 2.vii.1993 (GU 40-64); 2 ♂♂, Surigao del Sur, 12 km N Lianga, Hanayari, 350 m, 08°42'N, 126°05'E, 29.xi.-1.xii.2005; 1 ♀, Misamis, Mt. Malasag, 300 m, 8.-15. ii.1996 (MV17537);

Diagnosis. Forewing length ♂♂ 21 mm - 23 mm, ♀♀ 24 mm - 26 mm. Very similar, and by external criteria, indistinguishable from *O. xylinata. O. osica* appears in a blackish (about 40%) and a brown morph; a few individuals are intermediate. These colour variant ratios were almost similar as in the Philippine *xylinata*. Specimens with a contrasting black dorsal spot on the forewings occure much more often than in *xylinata.* The females occur also in brownish and blackish morphs. The pattern on the forewings (except a postmedian fascia marked as black dots and the white tornal spot) is in most cases reduced.

The male genitalia have a knob shaped uncus, a pair of relatively small socii. The valves are rather rectangularly shaped with a distinctive and strongly sclerotized sacculus, which displays a pointed process. The phallus is boomerang-shaped, not straight, and the tip bears a small hook. The 8th abdominal segments resemble those of *xylinata*. The female genitalia have a very large circular slightly bilobed signum and a unbilobed ostium. The ductus bursae is longer than in *osica*.

Variation. The individual variation is comparable as in *xylinata.* The male genitalia are variable in shape of the sclerotized sacculus of the valves. A single male from Negros displays somewhat aberrant shape of the valves with reduced sacculus-spines.

Bionomics. This is the most common and widespread *Ortholomia* in the Philippines, which occurs in many different habitats up to 1.600 m but most adults were collected below 500 m. Sometimes *osica* was collected together with *xylinata* and *squalida*.

Distribution. *Ortholimia osica* also occurs in Sulawesi, but is probably representing a distinct subspecies there. In the Philippines it was found in: Palawan, Luzon, Mindoro, Marinduque, Samar, Cebu, Panay, Negros, Leyte and Mindanao.

download unter www.biologiezentrum.at

11. *Ortholomia squalida* spec. nov.

HT: ♂, The Philippines, Mindanao, Prov. Surigao del Sur, 12 km N Lianga, Hanayan, primary forest, 350 m, 08°42'N, 126°05'E, 29.xi.-1.xii.2005 leg. A. SCHINTLMEISTER & JH LOURENS (MV 18019) – NHM, Wien.

Paratypes (11 ♂♂, 1 ♀):
1 ♂, Surigao del Sur, 12 km N Lianga, Hanayari, 350 m, 08°42'N, 126°05'E, 29.xi.-1.xii.2005 (MV 17866); 2 ♂♂, Lianga, 8 km W of Diatagon, 200 m, 08°42'N, 126°05'E, 3.-7. vii.2005 (MV 17540, MV 17864); 1 ♂, San Augustin, Brgy Gata, 140 m, 08°43.308'N, 126°05.691'E, 17.-18.iii.2009; 3 ♂♂, Mis. Oriental, 22 km NE of Claveria Brgy. Mat-I1.050 m, 08°39.988'E, 124°59.686'E, 20.-21.iii.2009 (MV 17852); 1 ♂, Cotabato del sur, Mt. Busa, 700 m, 6°08' N, 124° 39' E, viii.1997 (MV17567); 2 ♂♂, ibid, xii.1998; 1 ♂, E slope of Mt. Apo, Baracatan, 1.050 m, 7°00.513'N, 125°22.498'E, 4.-5.v.2998 (MV17865); 1 ♀, Davao Oriental, Aliwagwag, 90 m, 07°43.667'N, 126°17.304'E, 30.iv.-1.v.2008.

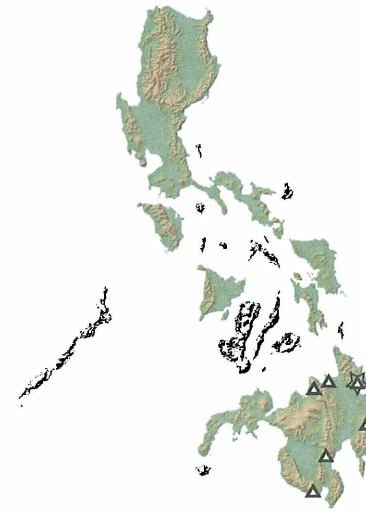


Fig. 109: Distribution of *O. squalida*

A few specimens of *Ortholomia* from Mindanao produced by dissection of their male genitalia a further, hithertho undescribed species (under many examined *O. xylinata* and *osica*), which represents the sympatric sister-species of *osica*. The new species is distinguishable from *xylinata* and *osica* by external criteria.

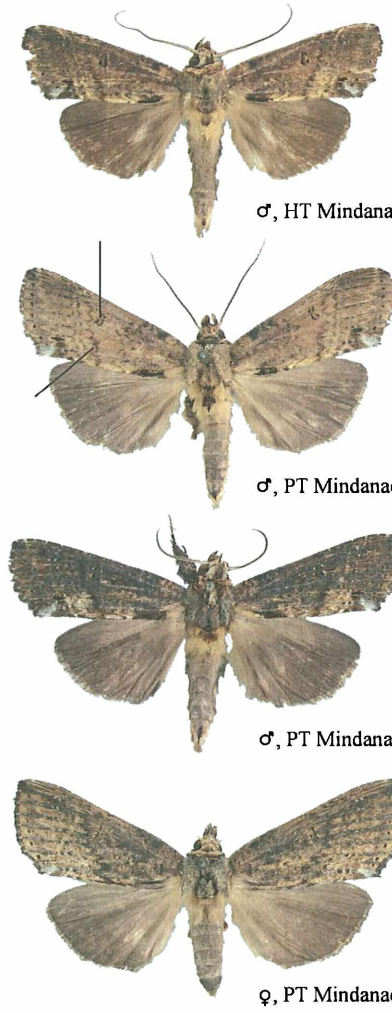


Fig. 110: Adults of *Ortholomia squalida*.

Diagnosis. Forewing length ♂♂ 23.5 mm - 26 mm, ♀ 27 mm. The new species resembles *O. xylinata* and *osica* but the adults display at average 2 mm larger forewings. The ground colour of the forewings varies from black, deep violet brown to pale brown, but most specimens have these mixed with some violet scales, which are never seen in the other similar congeners. *Ortholomia squalida* is distinguished by a well marked black surrounded discal spot on the forewings. Between the postmedian fascia of the forewings, marked as a row of black dots and the discalspot, there is an additional blackish shadow, which is more conspicous toward the dorsum of the forewings. The whitish tornal spot, present on the forewings is as usual for the genus. The female

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

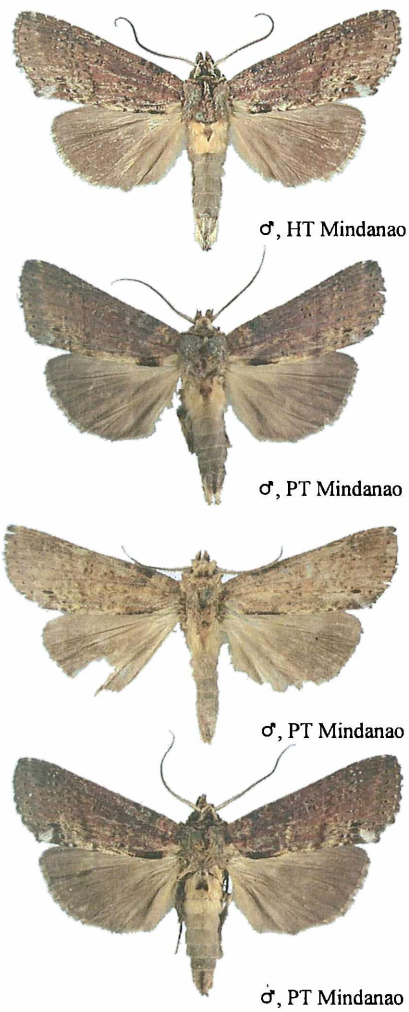


Fig. 111: Adults of *Ortholomia squalida.*

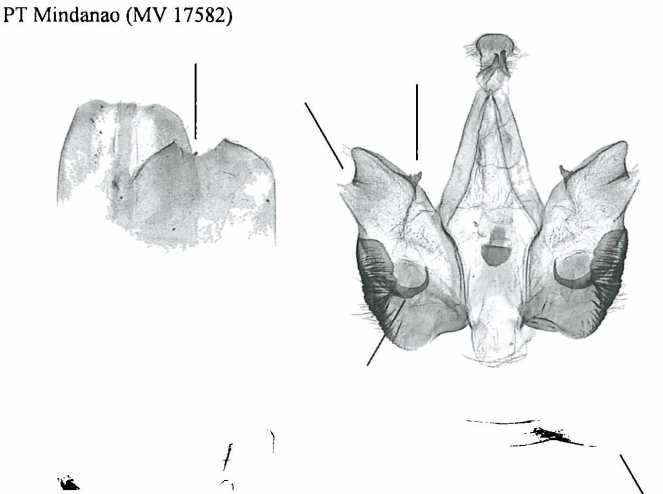


Fig. 112: Male genitalia of *Ortholomia squalida.*

resembles the male; the markings are inconspicuously developed but the postmedian shadow is easily visible. The male genitalia resemble *osica* but the shape of the valve is different. The outer marigin is deeply bilobed, the costa bears a projection of variable size. The sacculus is strongly sclerotized as in *osica* but the spine is much longer and curved. The phallus is straight and not pointed at the tip. The 8th tergite is bilobed (somewhat variable in its shape), the 8th sternite as usual in the genus. There is much individual variation in the notch of the valve margin as showed in further genitalia illustrations above.

Distribution. Endemic in the Philippines: Mindanao.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Porsica WALKER, 1866: 1823

Type-species: *Porsica ingens* WALKER, 1866

Porsica is characterized by narrow shaped forewings and short pectinated but very long antennae. The genus is oriental distributed with some 15 species.

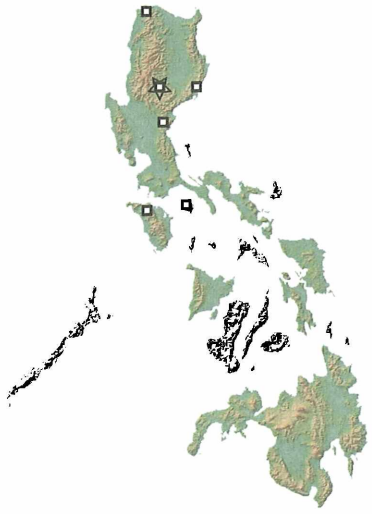


Fig. 113: Distribution of *P. benderoides*.

12. *Porsica benderoides* SCHINTLMEISTER, 1993:

116, pl. 6: 3, pl. 10: 1
HT: ♂, Philippinen, N Luzon, Ifugao, 14 km SE Lagawe, Bolog, 16°41'n. Breite, 121°10' ö. Länge – NHM, Wien examined.

Porsica benderoides is the allopatric sister species of *P. benderi* SCHINTLMEISTER, 1981: 291; pl. 7a, 7b (HT: ♂, Indonesia, Sumatra, Aceh, 20 km NW Langsa, 97°45'E, 4°32'N – coll. A. SCHINTLMEISTER, Dresden, examined) which is distributed in Indochina and Sundaland just like *benderoides*.

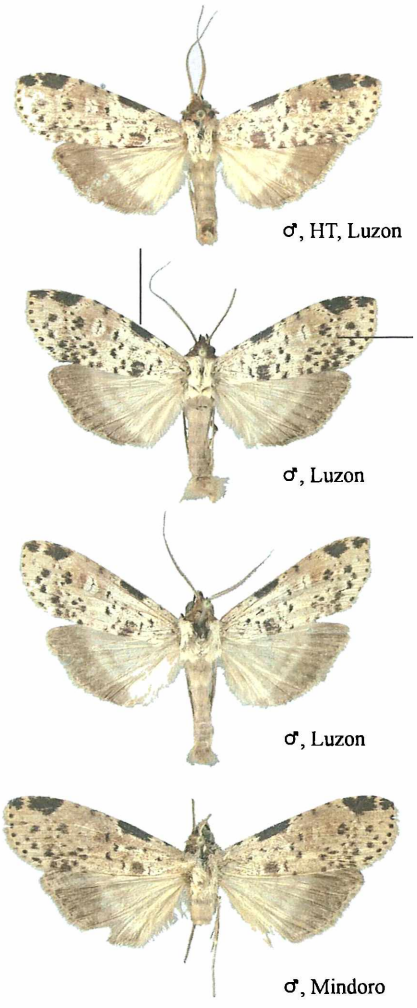


Fig. 114: Males of *Porsica benderoides*.

Diagnosis. The prominent marked species with whitish coloured forewings is very similar to its sister-species *P. intermediata* and *benderi*. The forewings of *benderoides* are somewhat broader, the black costalspot in the median area is smaller and the postmedian fascia – marked as two rows of blackish dots – less conspicuous developed than in *intermediata*. The general appearance of *benderoides* is slightly paler and less contrasting. The female is still unknown.

The male genitalia are readily separable by the shape of the juxta, which displays in *benderoides* a pair of knobs and a slender and pointed uncus. The arms of the bifurcate clasper of the valves are pointed, not rounded. The phallus is thicker than in *intermediata*. The 8th abdominal segments are less modified.

Variation. Hitherto only a few specimens (n = 8) are known. Single males from Mindoro and Marinduque are slightly darker than the series from Luzon. The genitalia show almost no individual variation.

©Naturhistorisches Museum Wien, download

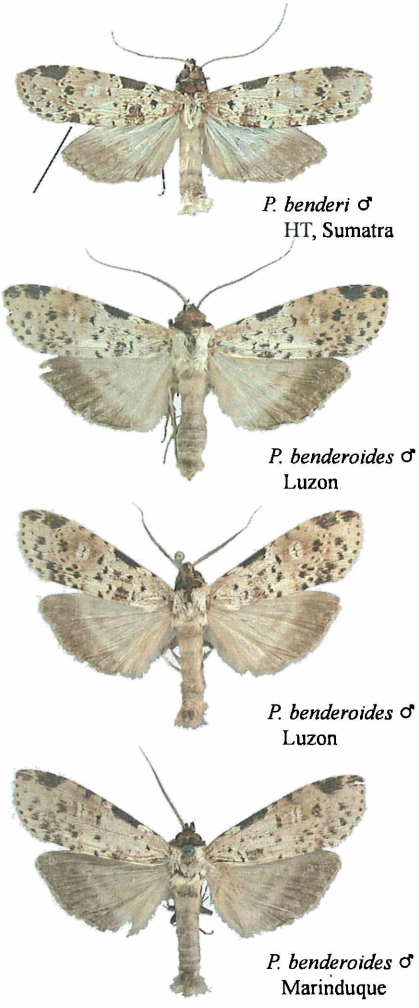


Fig. 115: Males of *Porsica.*

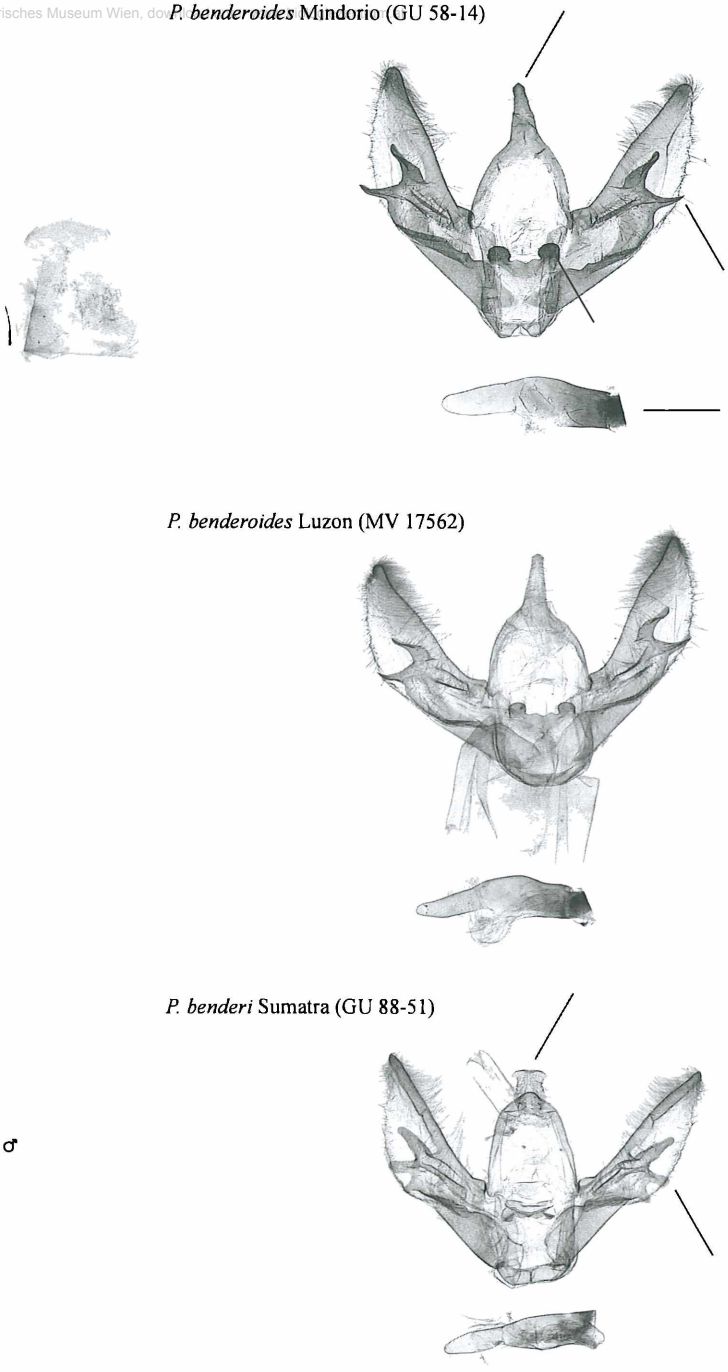


Fig. 116: Male genitalia of *Porsica benderoides* and *benderi.*

Bionomics. The adults were rarely observed in ii., iv., v., vi. and ix. up to 560 m above sea-level and exclusively in primary forests. The male from Mindoro was taken at 1.000 m.

Distribution. *Porsica benderoides* is endemic in the Philippines: Luzon, Marinduque and Mindoro.

Downloaded unter www.biologiezentrum.at

13. *Porsica intermediata* SCHINTLMEISTER, 1993: 117; pl. 6: 6; pl. 10: 2.

HT: ♂, Philippinen, Mindanao, Bukidnon 40 km NW Maramag, Dalongdong, 800 m, Talakag, 7°53' n. Breite, 124° 40' ö. Länge – NHM, Wien, examined.

The Philippine taxa, *P. benderoides* and *intermediata* are very similar. We treat them as different species only in respect to their other allopatric allies from Sundaland (*P. benderi*) and Sulawesi (*P. siadonta* KIRIAKOFF, 1970), which show also only minor but convincing differences. The identifications of *benderoides* and *intermediata* from all Philippine islands have all been confirmed by dissection of male genitalia.

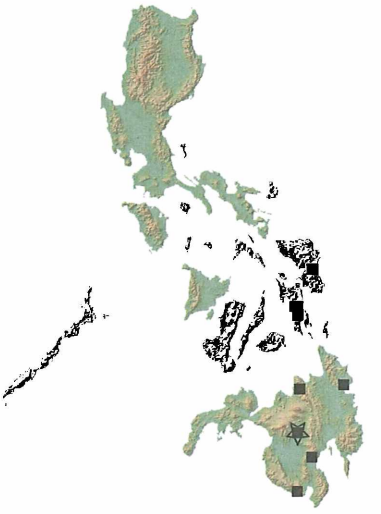


Fig. 117: Distribution of *P. intermediata.*

Diagnosis. The sister-species of *benderoides* is hard to distinguish by external features. The forewings of *intermediata* are somewhat narrower, the black costalspot in the median area is longer, and the postmedian fascia, which is marked as two rows of blackish dots is more conspicuous. The general appearance of *intermediata* is slightly more fuscous than *benderoides*.

The male genitalia are distinguished by the shape of the distinctive juxta. The shape of the broad and not pointed uncus and the shape of the rounded clasper arms of the valves distinguish *intermediata*. The phallus is much more slender then in *benderoides*. The 8th abdominal segments are less modified as is usual in *Porsica*. The female genitalia are characterized by a sclerotized ostium and a small circular shaped signum in the upper part of the bursa copulatrix.

Variation. The individual variation is comparable to *benderoides*. A few males from Leyte are slightly more fuscous in external appearance.

Bionomics. The adults were observed occasionally but infrequently between iii. - xii. mostly in primary and secondary forests from 100 m to 1.050 m.

Distribution. Endemic in the Philippines: Samar, Leyte and Mindanao.

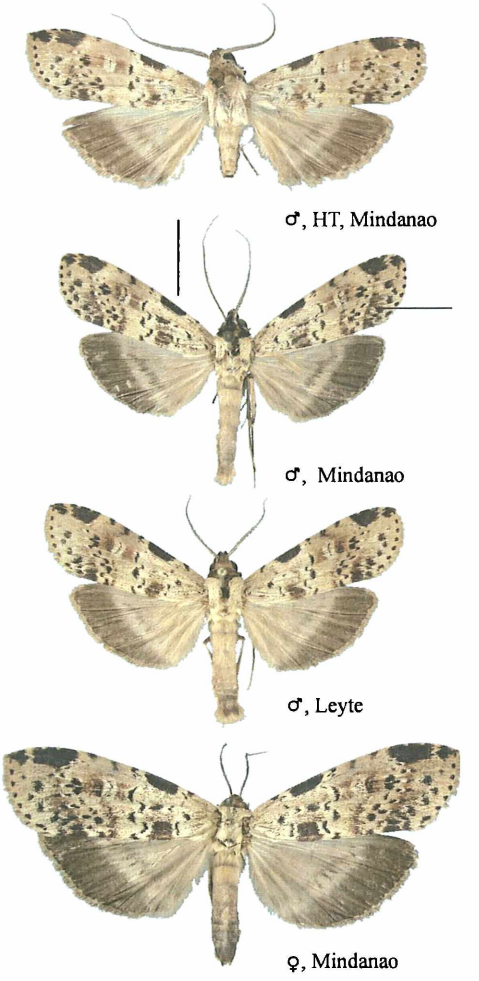


Fig. 118: Adults of *Porsica intermediata.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

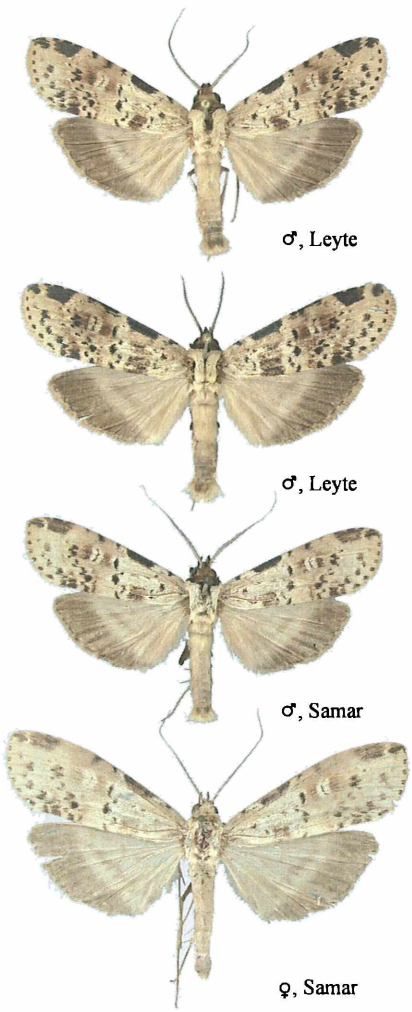


Fig. 119: Females of *Porsica intermediata.*

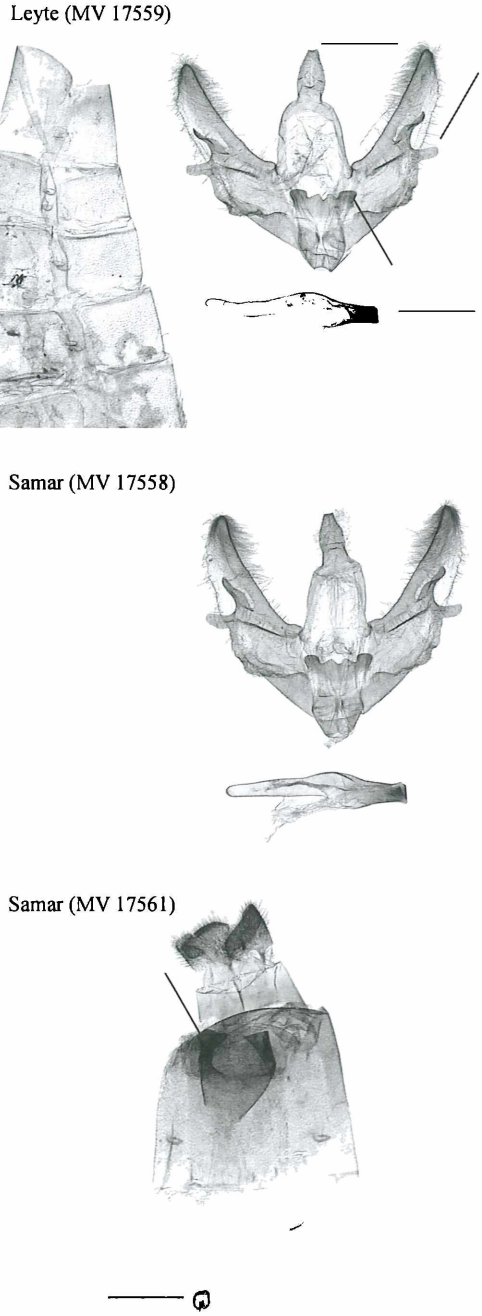


Fig. 120: Genitalia of *Porsica intermediata.*

www.biologiezentrum.at

14. *Porsica punctifascia* (HAMPSON, 1897): 281
(*Gargetta punctifascia*)
HT: ♂, [NE India, Assam], Khasis – BMNH, London, examined.

There is some confusion in this species-group. BENDER & HOLLOWAY, 1985 described *Porsica fallax*, a sister-species from Sumatra, but the male genitalia of the holotype male of *Gargetta punctifascia* in BMNH is not yet dissected. Both species are hard to distinguish using external criteria only and occur sympatrically in NE India and Sumatra. *Porsica fallax* is widely distributed in Indochina, China and Sundaland and is in most cases more common than *punctifascia*. *P. fallax* however, was yet not found in the Philippines. On the other hand a single male of *punctifascia* from Palawan significantly differs in its male genitalia (shape of the clasper of the valves) from other dissected males from Mindanao, Leyte and Samar. The latter populations resemble Sumatran male genitalia but a dissected male from NE India, Assam, departs from these by having a small uncus and a different shape of the clasper. We suspect, that there is a species-complex in *punctifascia* (probably with several subspecies) but the true identity of *punctifascia* remains unclear until the male genitalia of the holotype have been established. Provisionally both taxa from the Philippines, which might represent two different species, are attributed to *punctifascia*.

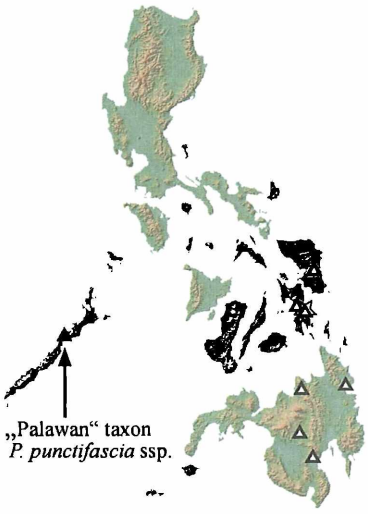


Fig. 121: Distribution of *P. punctifascia*.

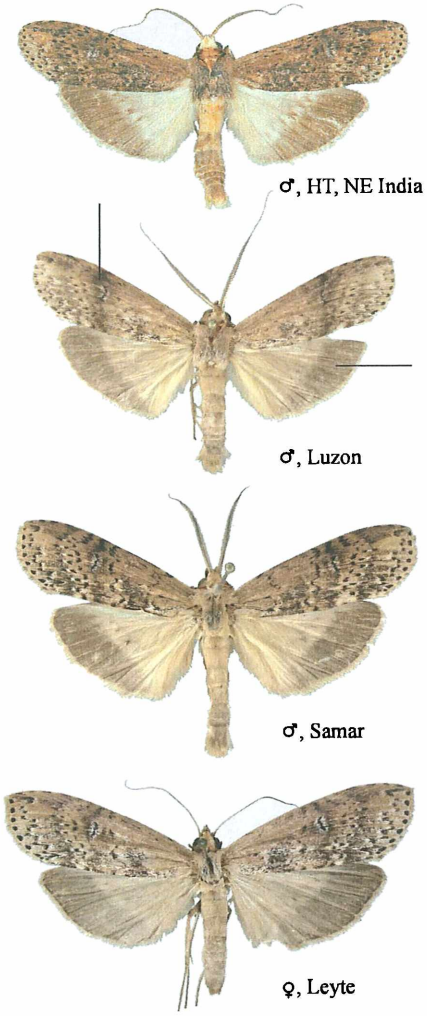


Fig. 122: Adults of *Porsica punctifascia*.

Diagnosis. Within the Philippines the species is easily recognized by the elongated shape of the wings and the long antennae. The male genitalia are characterized best by the shape of the uncus and the curved phallus. The 8th abdominal segments are less modified but of a distinctive shape. The female genitalia display a cordate signum.

Variation. Sometimes the postmedian fascia is accompanied by a blackish shadow. The male genitalia display almost no variation, except for the shape of the juxta (n=5), which seems to be subjected

to some geographical variation.

A single small male from Palawan displays the blackish shadow transverse through the median area and differs from other Philippine material by the shape of the clasper.

Bionomics. The adults are not rare and occur in the Philippines in iii., v., vi., and ix. xii. up to 1.050 m in primary and secondary forests. The male from Palawan was taken in xii. at 110 m.

Distribution. *Porsica punctifascia* is known from NE India, Indochina, Sundaland, Java and the Philippines: Palawan, Luzon, Samar, Leyte and Mindanao.

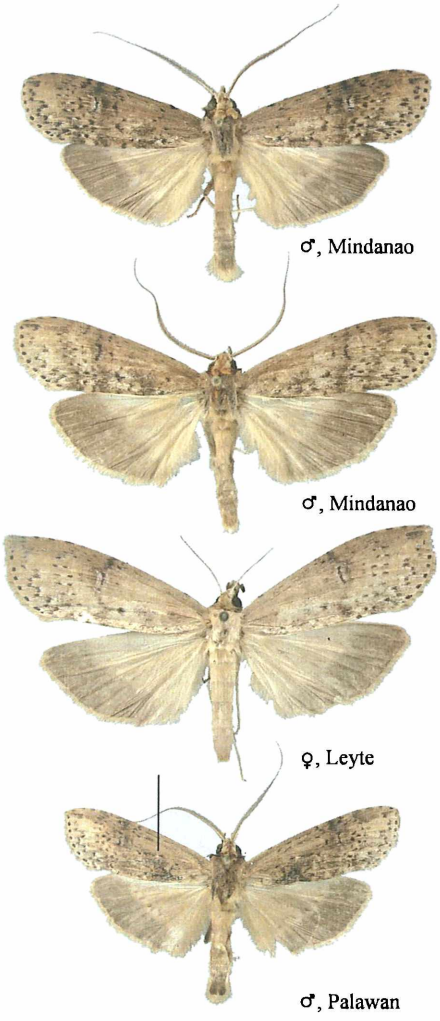


Fig. 123: Adults of *Porsica punctifascia.*

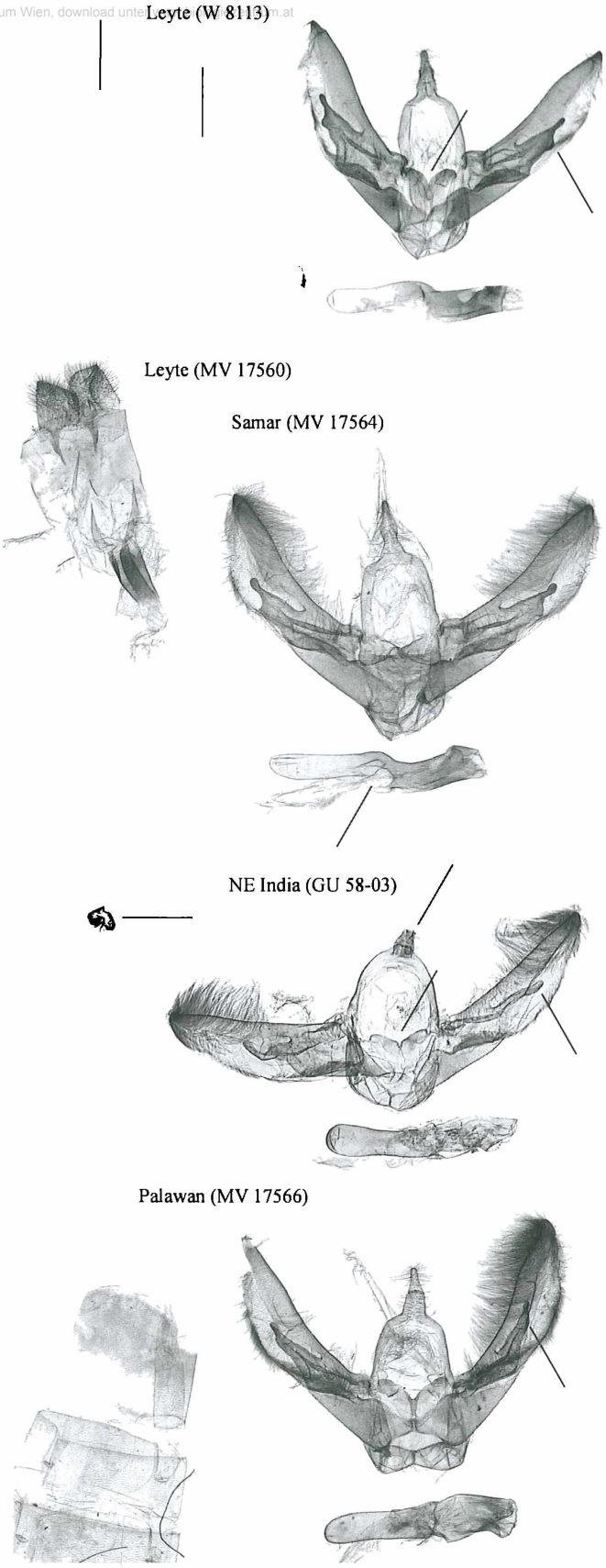


Fig. 124: Genitalia of *Porsica punctifascia.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Gargetta WALKER, 1865: 455

Type-species: *Gargetta costigera* WALKER, 1865

15. *Gargetta hampsoni hampsoni* SCHINTLMEISTER, 1981, : 286, figs. 5a, 5b, 5c

HT: ♂, Sumatra, Aceh, Banda Aceh – coll. A. SCHINTLMEISTER, Dresden, examined.

This is the first record of *P. hampsoni* for the Philippines. Most of the known specimens were collected by JL. The Palawan specimens virtually do not differ from Sundanian populations, except for a slightly smaller wingspan. But Luzon, Visayas and Mindanao host a distinct subspecies, described below. A further subspecies occurs in Sulawesi.

The genus *Gargetta* is characterized by the long (in *Porsica* short) bipectinate male antennae.

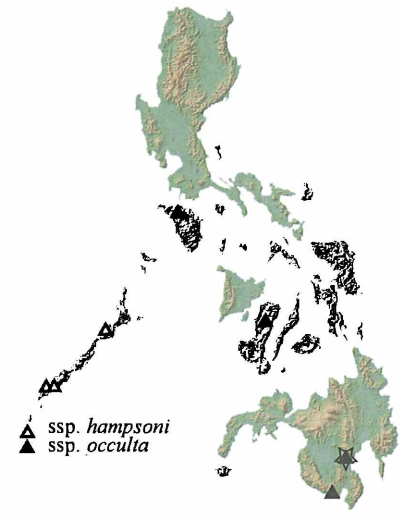


Fig. 125: Distribution of *Gargetta hampsoni*.

***Gargetta hampsoni occulta* ssp. nov.**

HT: ♂, Philippinen, Mindanao, E slope Mt. Apo, Baracatan, 7°00.513'N, 125°22.498'E, 1.050 m, 4.-5. v. 2008 leg. JH Lourens – in coll. NHM, Wien.

Paratypes (7 ♂♂):

Mindanao: 3 ♂♂, E slope Mt. Apo, Baracatan, 7°00.513'N, 125°22.498'E, 1.050 m, 4.-5. v. 2008; (MV 17543); 1 ♂, Cotabato, Prov. Sumangani, Mount Busa near Kainba, 700 m, viii.1997, (GU 77-81);

Negros: 1 ♂, Mt. Canlaon, W. Route via Mambucal, 600 m, iv. 1998; 1 ♂, ibid., 3. - 18.viii.1996, 1.010 m (W 8115);

Mindoro: 1 ♂, Mt. Halcon, iv. 2001, 1.000 m (MV 17544).

Diagnosis. Forewing length ♂♂ 24 mm - 25 mm. Externally not distinguishable from the Sumatra or Borneo series. A single male from Mindoro is rather fuscous brown coloured but such dark specimens are also known from Sumatra and Palawan. The male genitalia display shorter and broader valves in comparison to ssp. *hampsoni* and a less broader bilobed uncus. The 8th abdominal segments differ by their narrower shape. The 8th sternite is cordate notched not triangular as in *hampsoni*.

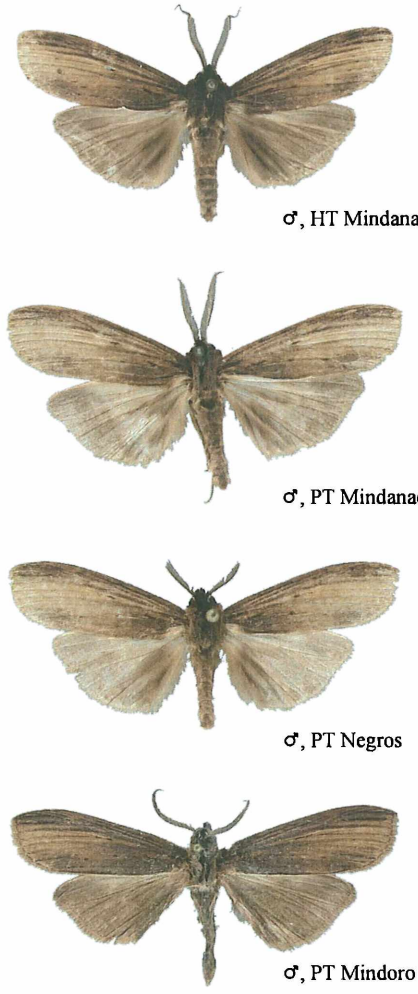
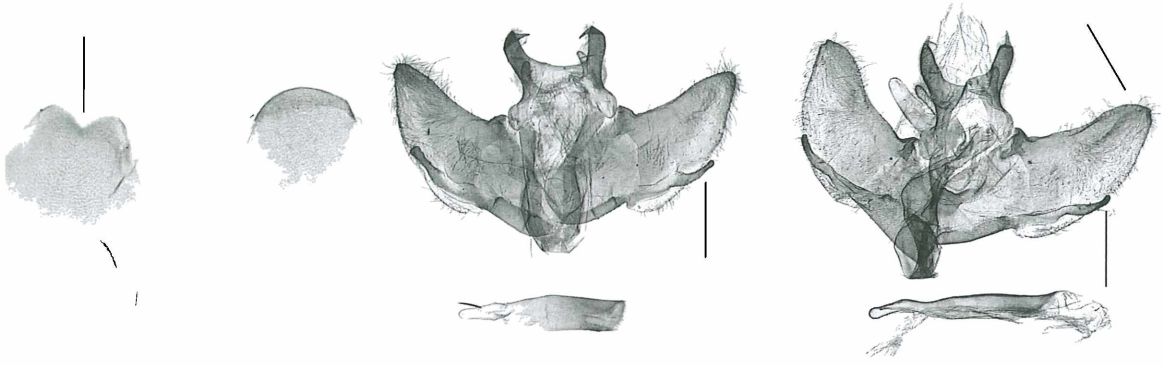


Fig. 126: Males of *G. hampsoni occulta*.

©Naturhistorisches Museum Wien, Lepidoptera Zentrum

ssp. *occulta* PT, Mindanao (GU 77-81)

ssp. *occulta* PT, Mindanao (MV 17543)



ssp. *hampsoni* PT, Sumatra (GU 02-12)

ssp. *hampsoni* Palawan (MV 17542)

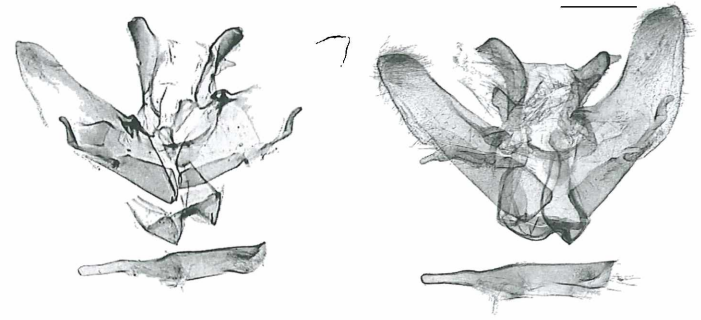


Fig. 128: Male genitalia of *Gargetta hampsoni.*

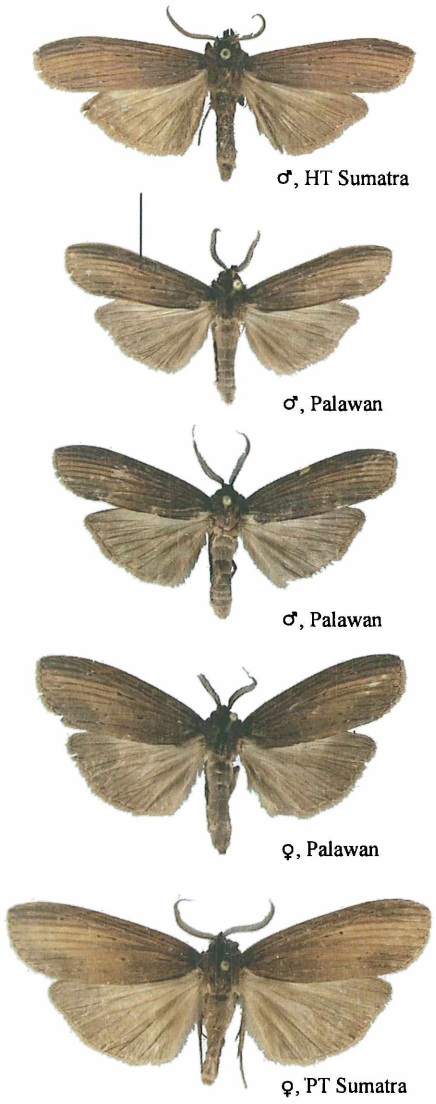


Fig. 127: Adults of *G. hampsoni hampsoni.*

Diagnosis. The species displays elongated forewings and an inconspicous blackish discal strike at the median vein. The tornus of the forewings is rounded.

The male genitalia have a broad and widely bilobed uncus. The valves show a slender saccular process. The 8th sternite is bilobed.

Variation. The individual variation extends to differences of the ground colour ranging from pale brown up to fuscous brown as well as slight variation in male genitalia in the shapes of the uncus-arms and the lengths of the saccular valve process.

Bionomics. The adults are found only infrequently. One time in Palawan during one night 10 ♂♂ and 1 ♀ were collected in xii. at 40 m above sea-level. The moth is usually found in single specimens in iv., v., viii. up to 1.050 m in primary forests only.

Distribution. *Gargetta hampsoni hampsoni* is known from Sumatra, Malaya, Borneo, and Palawan. The ssp. *occulta* occurs in the Philippines: Mindoro, Negros and Mindanao. An undescribed ssp. of *hampsoni* flies in Sulawesi.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

16. *Gargetta divisa orienta* ssp. nov.

HT: ♂, Philippinen, Marinduque, Danao, 5 km N of Malibago, 150 m, 20. v. 2004 leg. JH Lourens (MV 17.532) – NHM, Wien.

Paratypes (7 ♂♂, 3 ♀♀):
Marinduque: 2 ♂♂, Marinduque, Danao, 5 km N of Malibago, 150 m, 20. v. 2004;
Luzon: 1 ♂, 2 ♀♀, Mts. Prov., Chatol, 15 km SE Bontoc, 17°02' N. Breite, 121°03' E Länge 1.600 m, 24.ix.-14.x.1988 (GU 08-57, 07-29, MV 17545);
Mindoro: 1 ♂, 1 ♀, Mt. Malasembo, Puerto Gallero, Halcon Mts., viii.1998 (W 14986, W 14987);
Panay: 3 ♂♂, Antique, E of Imparayan, Brgy. Romea, 150 m, ft. of Mt. Puras, 10°47.052'N, 122°05.995'E, 28.viii.2008.

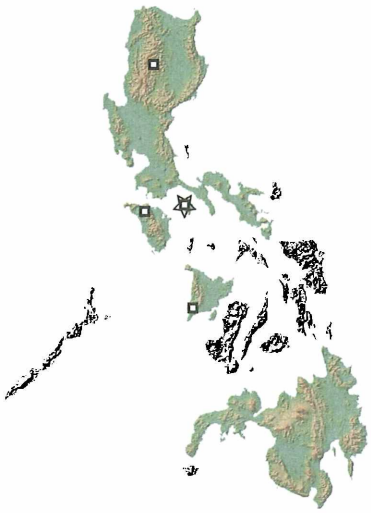


Fig. 129: Distribution of *G. divisa orienta*.

Gargetta divisa GAEDE, 1933: 615, pl. 81: d (HT: ♂, „Burma, Malakka" [but in fact: Java, Malang] – ZMHU, Berlin, examined) is a widespread species, that tends to establish geographical subspecies. The small series from the Philippines – this is the most eastern point of the distribution of the species – differ from Javanian or Sundanian populations. Also specimens from India represent a distinct, hitherto undescribed subspecies.

Diagnosis. Forewing length ♂♂ 17 mm, ♂ from Luzon 19 mm; ♀♀ 17 mm - 22 mm. Very similar to ssp. *divisa* from Java, but the ground colour is slightly paler. The markings – in particular the circular discal spot – are inconspicuously developed. The dorsum usually, shows many white scales which, together with a fuscous brown costal spot near the apex, are helpful when identifying the species. However in ssp. *orienta* their number is reduced in most specimens.
The male genitalia are as usual in the genus *Gargetta* (broad and widely bilobed uncus, small saccular process of the valves, less modified but bilobed 8th sternite). They differ from ssp. *divisa* (Javanese specimens, n = 4 genitalia dissected) by the shape of the rather straight uncus-arms and the wider bilobed uncus. The female genitalia display a long ductus bursae and no signum in the bursa copulatrix. Differences between ssp. *divisa* and ssp. *orienta* are seen in the shape of the ostium.
Variation. The HT displays some blackish spots on

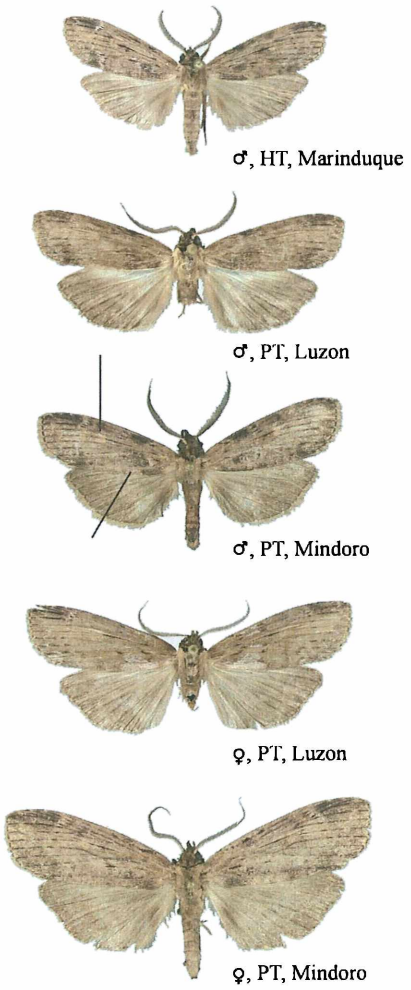
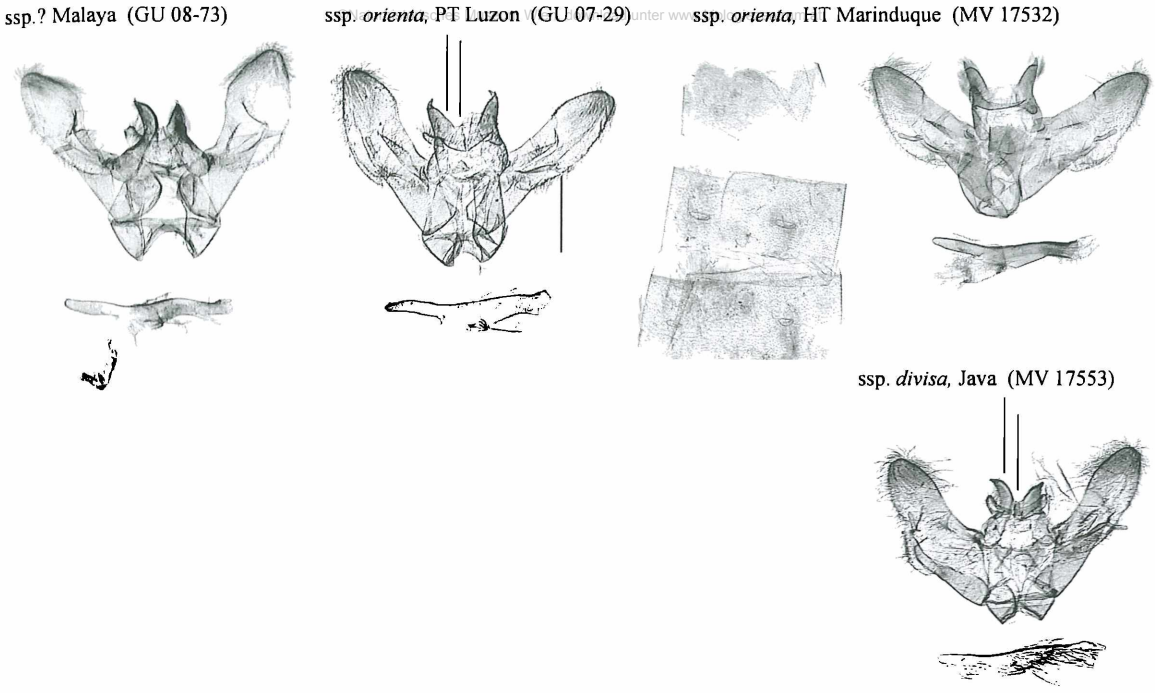


Fig. 130: Adults of *Gargetta divisa orienta*.



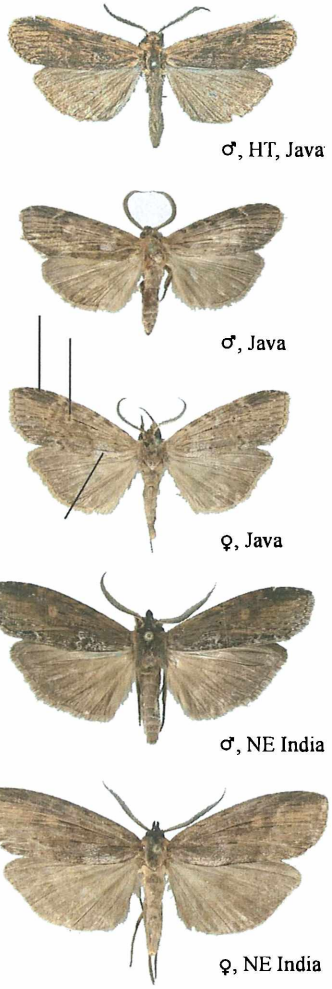


Fig. 131: Adults of *Gargetta divisa.*

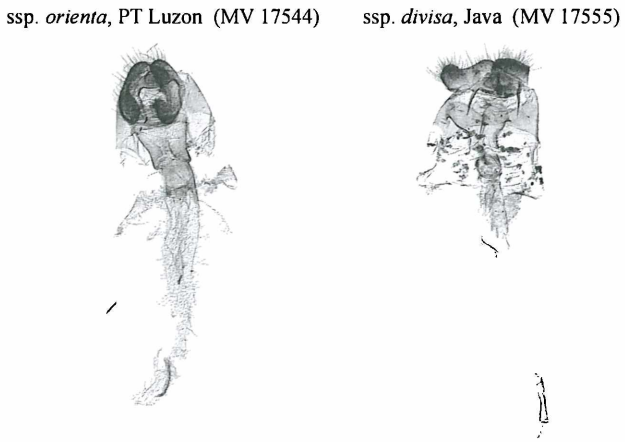


Fig. 132: Genitalia of *Gargetta divisa.*

the forewings. A single male from Luzon (taken at 1.600 m) is larger than the other Paratypes (collected below 200 m).

Distribution. *Gargetta divisa* is distributed from N India, the Andaman Isls., S China, Indochina, Peninsula Malaya, Sumatra and Java. The ssp. *orienta* occurs in the Philippines: Luzon, Marinduque, Mindoro, Panay.

download unter www.biologiezentrum.at

17. *Gargetta curvaria luzonica* (SEMPER, 1896): 411; pl. 52: 7, pl. J: 13, 14 **stat. nov.**

ST: ♂♂, Philippinen, Luzon – not examined.
(*Gargetta luzonica*)

= *Gargetta dyspines* WEST, 1932: 213; HT: ♀, Philippines, Luzon, subprov. Benguet, Klondyke, 800 ft. – BMNH, examined.

This inconspicous species tends to establish geographical subspecies, which are different in the shape of the valves (clasper). *Gargetta curvaria curvaria* HAMPSON, 1893 (HT: ♂, Darjiling – BMNH, examined) occurs in mainland Asia, whereas ssp. *palua* KIRIAKOFF, 1970 (HT: ♂, W. Celebes, G. Tompoe, Paloe, 2700' – BMNH, examined) flies in Sulawesi. From Sumatra *Stictogargetta umbrina* KIRIAKOFF, 1974: 380; pl. 1: 4; fig. 4 (HT: ♂, NO Sumatra, Dolok Merangir, 180 m – not examined) was described, which is distributed as a further ssp. of *curvaria* in Sumatra and Borneo (comb. et stat. nov.). The Philippines subspecies was described twice, first as *Gargetta luzonica* (the series of 12 syntypes was not localized, but the original illustration of SEMPER allows its identification) and secondly as *Gargetta dyspines*. HOLLOWAY (1983: 26) discussed several taxa of the group, (overlooking SEMPER's *luzonica*) and stated, that „the male genitalia are intermediate in structure between typical *Gargetta* and *Porsica*". At least he placed *curvaria* in *Porsica*. We cannot follow this opinion, as the male genitalia fit very well the genus concept of *Gargetta* and also the longer pectinate antennae of the males are indicating, that the species belongs to *Gargetta* and not to *Porsica*.

Diagnosis. *Gargetta curvaria* is characterized by the elongated shape of the forewings and a prominent marked black discal spot distally marked with an elongated light patch. The males display a diagnostic blackish dorsal spot on the dorsum and have 2/3 of the length bipectinated antennae.
The male genitalia are best recognized by the uncus.

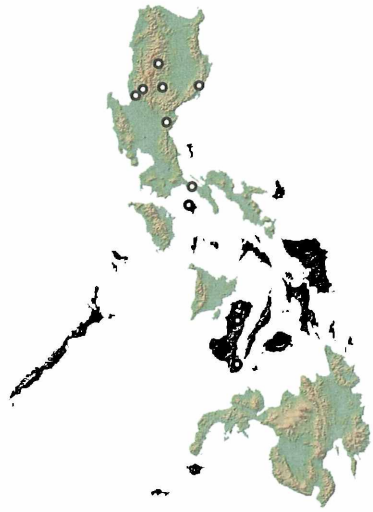


Fig. 133: Distribution of *Gargetta curvaria*.

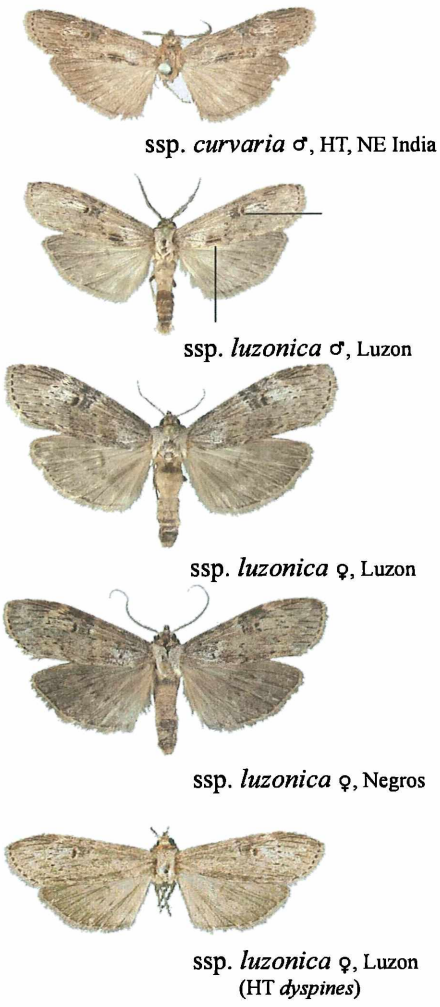
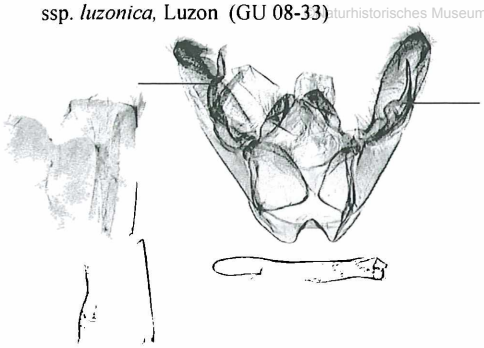


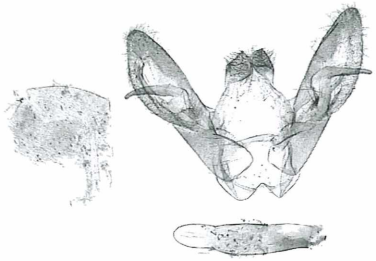
Fig. 134: Adults of *Gargetta curvaria*.

naturhistorisches Museum Wien, download unter www.

ssp. *luzonica*, Luzon (GU 08-33)



ssp. *curvaria*, NE India (GU 88-46)



ssp. *luzonica*, Luzon (MV17549)



ssp. *luzonica*, Luzon (BM #52, HT of *Gargetta dyspines*)

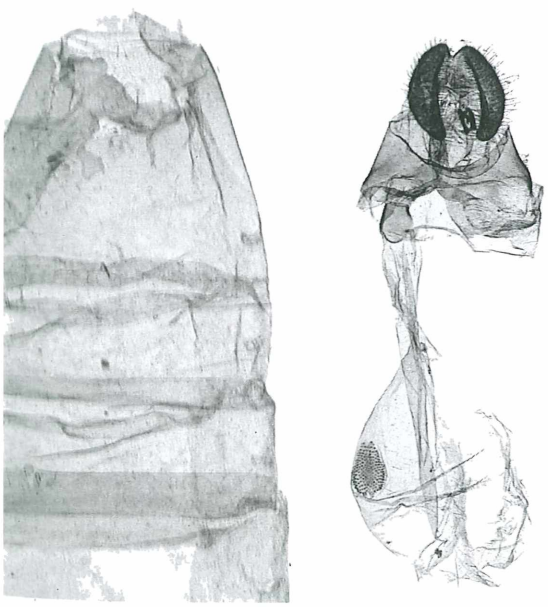


Fig. 135: Genitalia of *Gargetta curvaria*.

The asymmetric valve processes are of taxonomic value for separation on subspecific level. The 8th sternite is slightly bilobed. The female genitalia have an ellipsoid signum.

Variation. The individual variation is relatively low. Sexualdimorphism occurs as described above. The range of individual variation in the male genitalia is also low.

The shape of the asymmetric valve proceses varies geographically and has taxonomic value for separation on subspecific level.

Bionomics. The adults occur infrequently in the Philippines (n = 14). The species seems to be generally rare in its distribution area (except Sumatra and Luzon). *Gargetta curvaria* was taken in the Philippines in ii., viii.-x. from 500 m - 1.600 m in forests and urban areas. SEMPER (1896): 412 reported the caterpillar from Lubalob/*Bridalia* and Nakamura (1970: 139) noticed a rearing of caterpillars from Luzon on *Bridelia glauca* BLUME (Euphorbiaceae).

Distribution. The species is known only in a few localities: the ssp. *curvaria* occurs in NE India, Vietnam, SE China; ssp. *umbrina* flies in Sundaland and ssp. *palua* in Sulawesi. The ssp. *luzonica* is endemic in the Philippines: Luzon, Marinduque and Negros.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Lasioceros Bethune-Baker, 1904: 380

Type-species: *Lasioceros aroa* Bethune-Baker, 1904

= *Litoscelis* Turner, 1944: 8 (Type-species: *Euprora tanyphylla* Turner, 1930 [= *Lasioceros aroa* Bethune-Baker, 1904]

Lasioceros was established in the Notodontidae based upon a species from New Guinea. Kiriakoff (1968: 2) transferred it to the Hypsidae. The genus was transferred back by Watson, Fletcher & Ney (1980: 101). *Lasioceros aroa* (and some allies) are characterized by the outstanding modifications of the male antennae. However the male genitalia of *L. aroa* are somewhat unusual for a notodontid moth and resemble rather to some Noctuidae. Surprisingly the genus is also represented by a species in the Philippines, which has its long antennae rather filiform, but matches the unique wingshape with its characteristic markings and the similar male genitalia structures of *aroa*. *Gargetta euteles* is therefore combined here with *Lasioceros* (comb. nov.). The genus itself is widely distributed, likely as several species in NE Australia, New Guinea, New Britain, New Caledonia, Tanimbar, Timor, Alor, Pantar, Halmahera, Sulawesi and the Philippines.

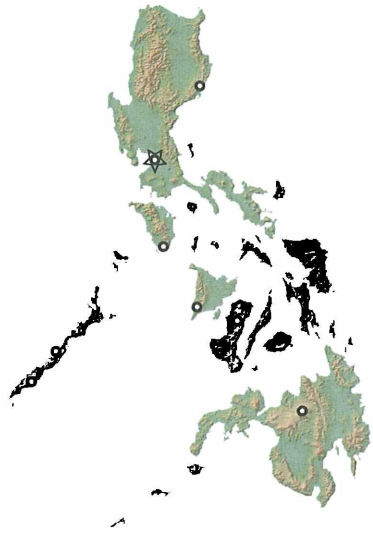


Fig. 136: Distribution of *Lasioceros euteles*.

18. *Lasioceros euteles* (West, 1932): 213

comb. nov. (*Gargetta euteles*)

HT: ♂, Philippine Is., Luzon I., prov. Rizal, Manila (plains) – BMNH, London, examined.

Diagnosis. The species is distinguished by the shape of the forewings, their whitish markings near the apex and the black discal spot. There is also a white dorsal spot on the forewings, which seems to be characteristic for the genus. The antennae of both sexes are very long and filiform.

The male genitalia are of an unusual structure having a long, slender and curved uncus and the modified structures of the valves. There are some

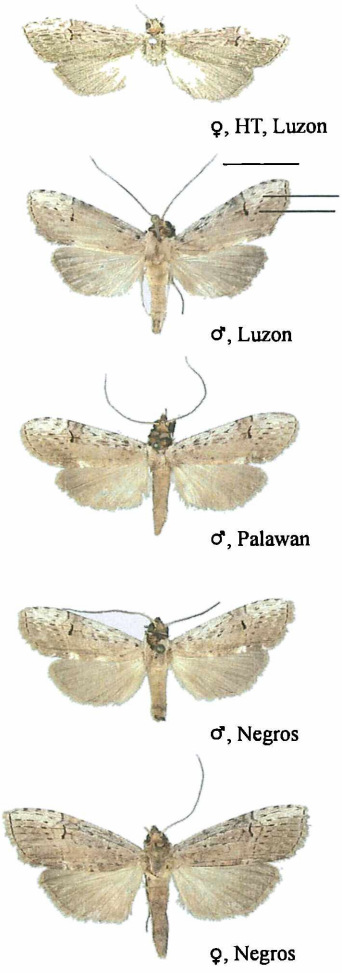
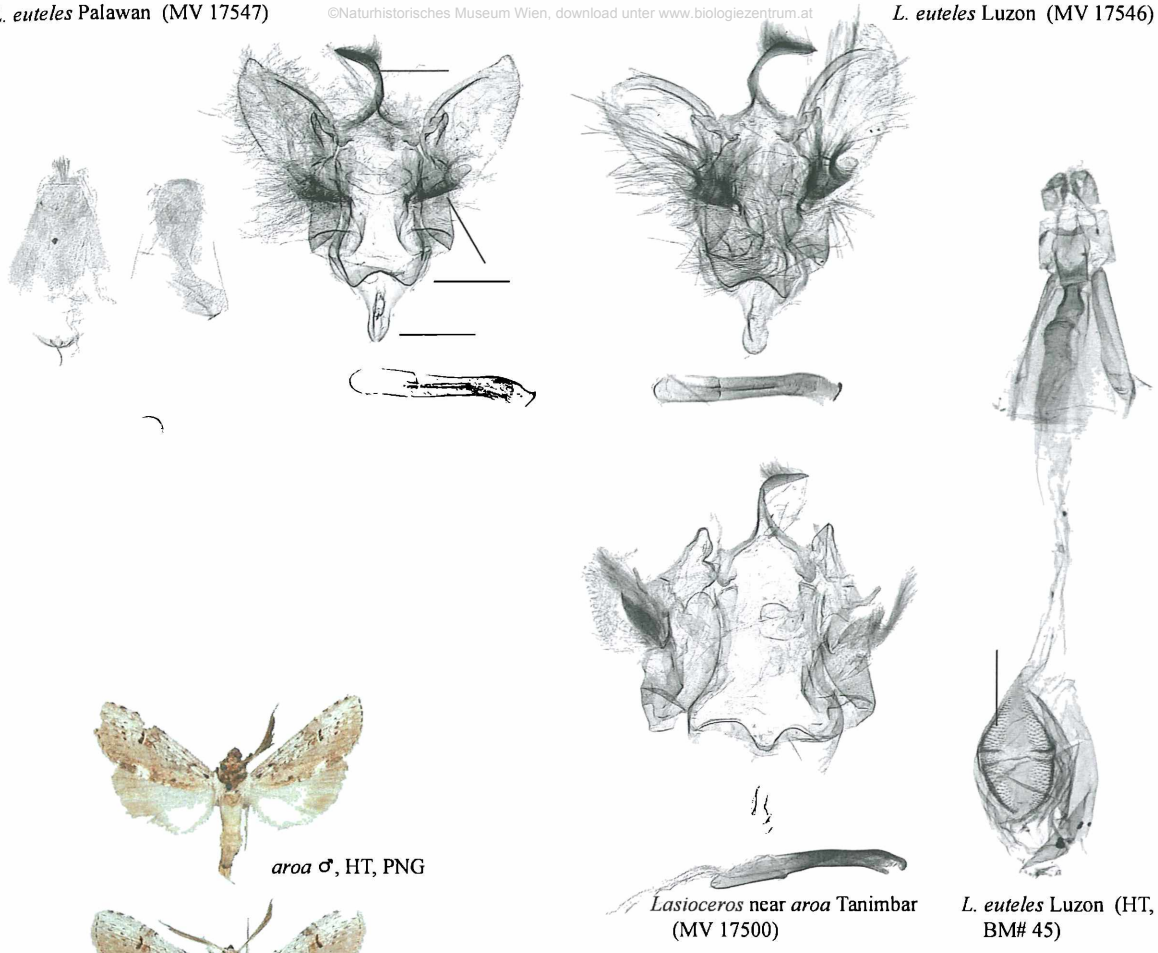


Fig. 137: Adults of *Lasioceros euteles*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



Lasioceros near *aroa* Tanimbar (MV 17500)

L. euteles Luzon (HT, BM# 45)

Fig. 139: Genitalia of *Lasioceros euteles* and *aroa.*

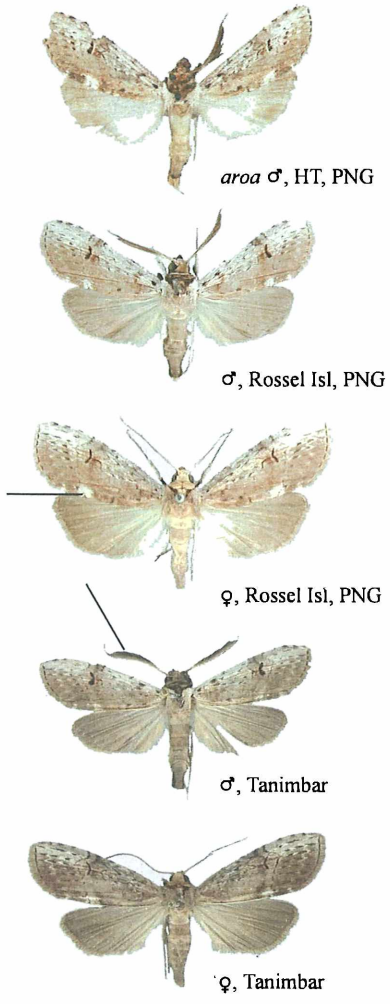


Fig. 138: Adults of *L. aroa* (and allies).

brushes of setae. The 8th sternite is slightly bilobed and less sclerotized than is usual for the whole subfamily. The female genitalia display a long ductus bursae and a very large and prominently sclerotized signum.

Variation. There is not enough material at our disposal to evaluate the individual or geographical variation. It seems, that variation within the species is limited.

Bionomics. *Lasioceros euteles* is a rare species (n < 10 known specimens). They were taken in i., ii., iii., vi., vii., viii., ix. , xi. below 900 m. Most adults were observed between 150 m - 600 m in primary forests. A few specimens are from urban areas.

Distribution. The species is endemic in the Philippines and was found in Palawan, Luzon, Mindoro, Panay, Negros and Mindanao. The most mapping points are based on single specimens only. An undescribed sister species occurs in Sulawesi.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Phycidopsis HAMPSON, 1893: 16, 91

Type-species: *Phycidopsis albovittata* HAMPSON, 1893

= *Sentana* GAEDE, 1930: 620 (Type-species: *Sentana violascens* GAEDE, 1930 [= *Phycidopsis albovittata* HAMPSON, 1893]

Phycidopsis was known for a longer time as a monotypic genus and received little interest. SCHINTLMEISTER (1993) established several new taxa in the genus and it actually seems, that the genus might contain four or five species. Also the single pair from Palawan might represent a distinct species, which can be described if a second male will confirm the striking differences of the first dissected male genitalia (the reader should notice, that the introduction of new taxa based on a single specimen only is always risky because of accidental occurence of individual variation). Unfortunately all *Phycidopsis*-species are rather rare in collections.

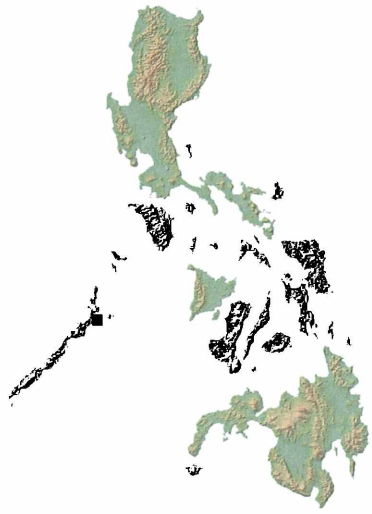


Fig. 140: Distribution of *Ph. albovittata*.

19. *Phycidopsis albovittata* HAMPSON, 1893:

91; pl. 161: 13

HT: ♂, [NE India], Khasis – BMNH, London, examined.

Diagnosis. The *Phycidopsis*-species are well characterized by the elongated shape of the forewings where the upper port is contrasting whitish coloured. The long male antennae are long bipectinate over 50% of their length, the remaining part is filiform.

Phycidopsis albovittata **is a**lmost indistinguishable from *P. philippina* by external features.

The male genitalia are readily recognized by the bilobed and small uncus and the circular, knob-shaped saccular process of the asymmetrical valves (harpe). The 8th sternite of the Palawan ♂ is rounded and not bilobed as in ssp. *sundana* SCHINTLMEISTER, 1993: 118 (HT: ♂, Indonesien, Nord-Sumatra, Prapat, Holzweg 3, 1.350 m – in coll. A. SCHINTLMEISTER, Dresden, examined) and less sclerotized. The female genitalia are not yet dissected.

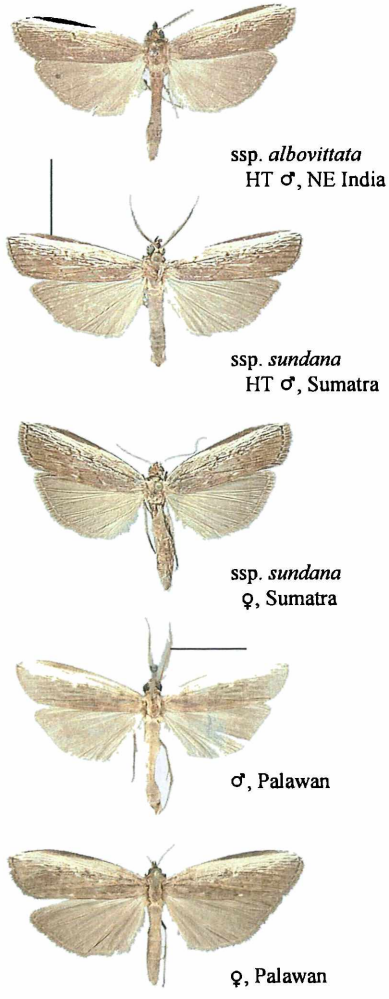
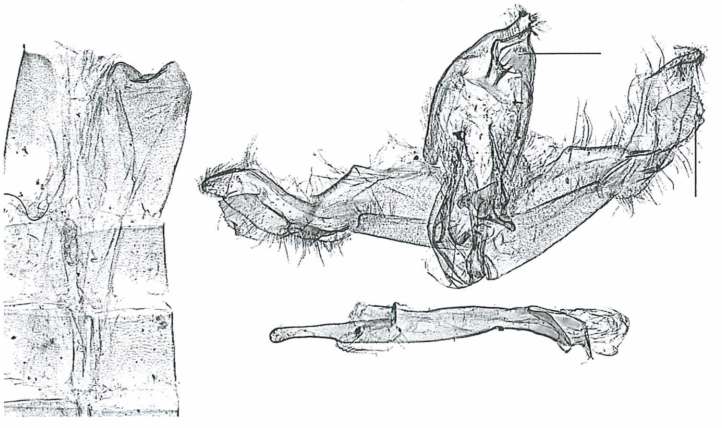


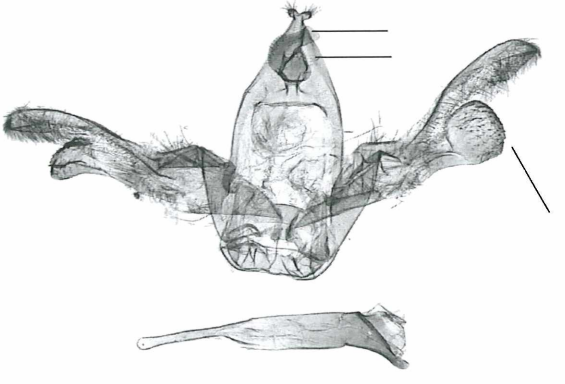
Fig. 140a: Adults of *Phycidopsis albovittata*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Ph. albovittata sundana Sumatra (GU 07-50)



Ph. a. albovittata, China, Yunnan (GU 88-50)



Ph. ? albovittata, Palawan (MV 17552)

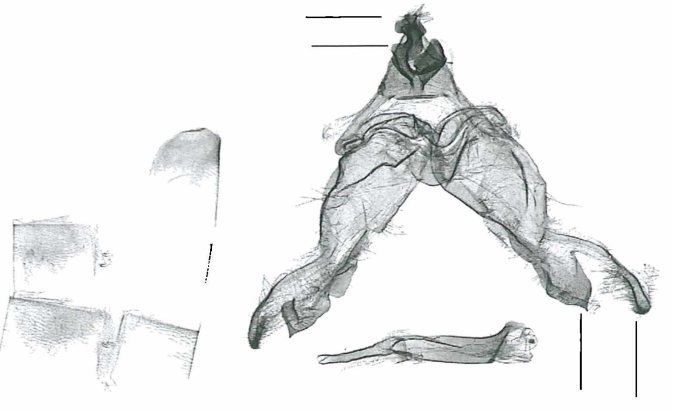


Fig. 140b: Genitalia of *Phycidopsis albovittata.*

Variation. The single, worn male from Palawan differs in the shapes of the gnathos-like structure of the uncus, the harpe and the apex of the valves from continental ssp. *albovittata* and also from ssp. *sundana.* It seems, that specific variation of *albovittata* in mainland Asia is quite lower.

Bionomics. Only one pair (n = 2) is known from Palawan, taken on 8. March 2006 at 300 m in a secondary forest.

Distribution. *Phycidopsis a. albovittata* is scattered known from Sri Lanka, S India, NE India, Indochina, SE China, Taiwan and S Japan. The ssp. *sundana* is distributed in Sundaland and Java. A pair is known from the Philippines: Palawan, where the taxonomic status remains doubtful.

www.biologiezentrum.at

20. *Phycidopsis philippinica* SCHINTLMEISTER, 1993: 118; pl. 6: 2, pl. 11: 3

HT: ♂, Philippinen, Z-Luzon, Quezon Prov., Quezon Forest Nat. Park, 250 m, 14°01‘ n. Breite, 122°11‘ ö. Länge – NHM, Wien, examined.

There are only a few (mostly worn) males of *Ph. philippinica* (n = 7) and the sex ratio is about 1:1. This is noteworthy, as other species within the genus are represented only by a very few females (less than 9%, n = 56).

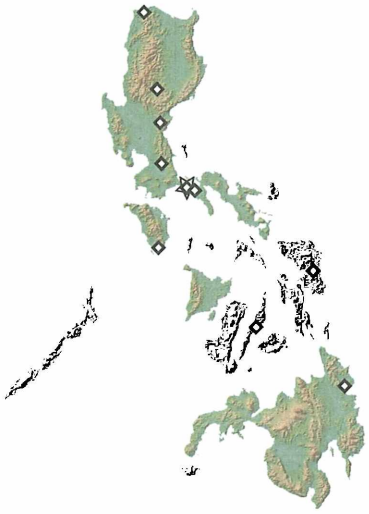


Fig. 140c: Distribution of *P. philippinica.*

Diagnosis. Indistinguishable from *P. albovittata* by external criteria, but it seems, that the fuscous brown area on the costa of the forewings is slightly longer. The few females display more elongated wings compared to *albovittata*.

The male genitalia resemble those of *albovittata* but differ by the knob-shaped and unbilobed uncus. Also the gnathos and the ellipsoid shaped saccular process of the valves (harpe) are helpful for recognizing *philippinica*. The less sclerotized 8th sternite is rounded, not bilobed. The female genitalia have a long bursa copulatrix with a long and slender signum.

Variation. The individual variation of pattern and colouration of the wings is slight. From Luzon there is a very small female (illustrated). A male from Luzon displays an aberrat shape of the phallus as illustrated (GU 15-14). The geographical variation cannot be evaluated here, as from outside Luzon only single specimens are known.

Bionomics. The species occurs infrequently in ii., iii., viii. and x. at lower altitudes below 500 m. The known specimens (n > 15) were collected mostly in secondary forests and urban areas, but occur also in primary forests.

Distribution. The species is endemic in the Philippines: Luzon, Mindoro, Samar, Cebu, Mindanao.

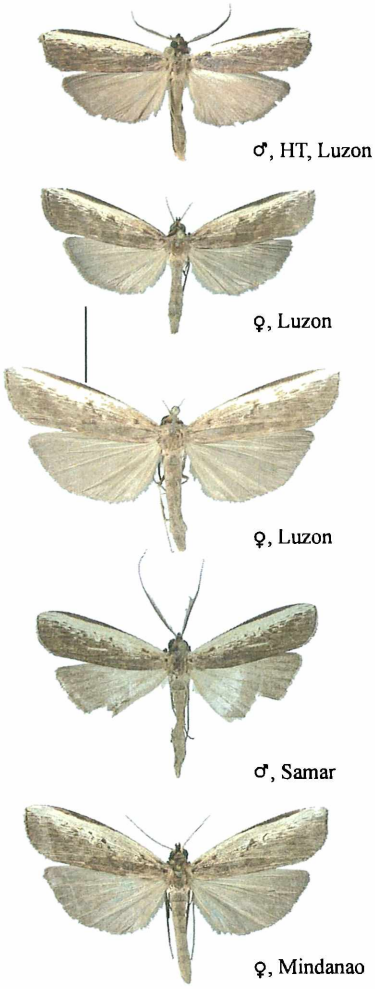


Fig. 141: Adults of *P. philippinica.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Ph. philippinica, Luzon (GU 15-14)

Ph. philippinica, Luzon (MV 17554)

Ph. philippinica, Mindoro (GU 15-17)

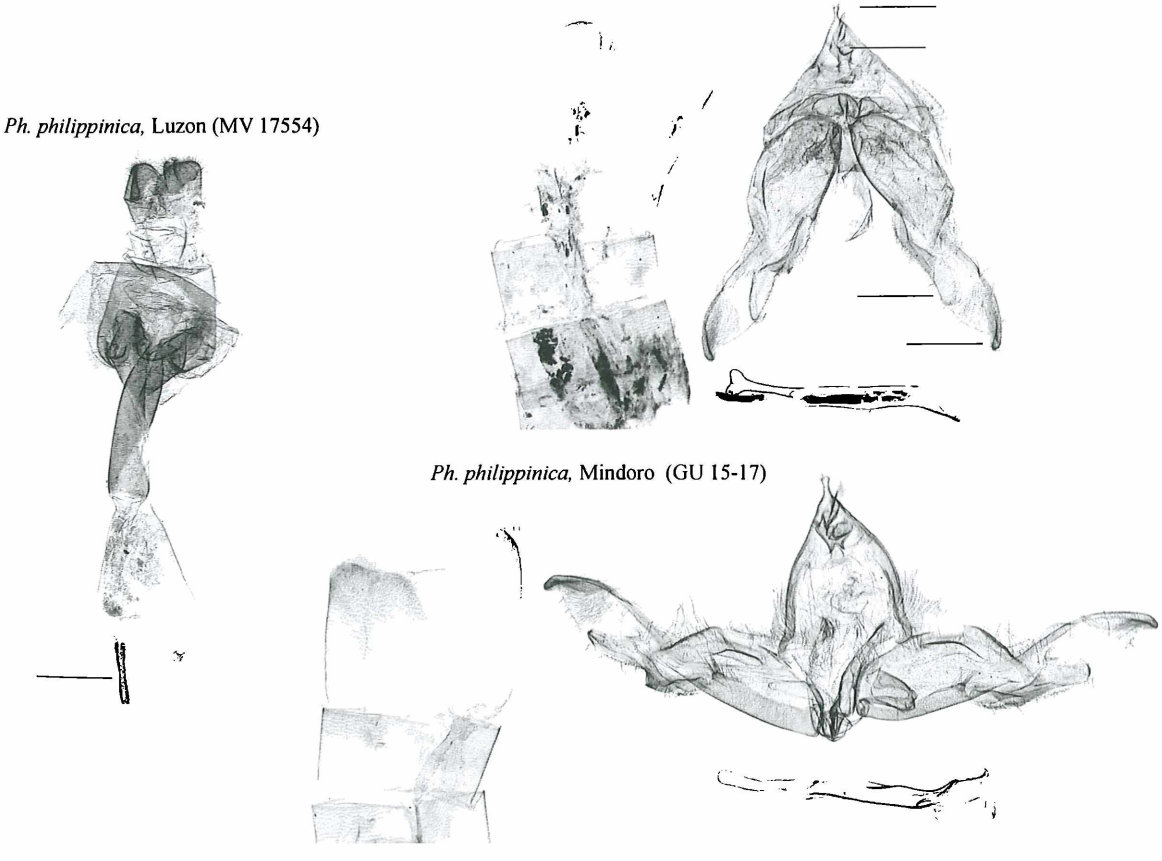


Fig. 142: Genitalia of *Phycidopsis philippinica.*

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Brykia GAEDE, 1930: 644

Type-species: *Allata albonotata* WALKER, 1862
[= *Eumeta horsfieldi* MOORE, 1860]

21. *Brykia horsfieldi* (MOORE, 1860): 430

HT: ♂, Java– BMNH, London, examined.

= *Allata albonotata* WALKER, 1862: 140; ST's: ♂♀, Borneo, Sarawak (#729 1/2 and 2/2) – Oxford University Museum of Natural History, examined.

= *Brykia ferruginea* NAKAMURA, 1976: 41, figs. 5, 27-31; HT: ♂, Sarawak, Kuala Bok near Miri – Tokyo University of Agriculture & Technology, not examined.

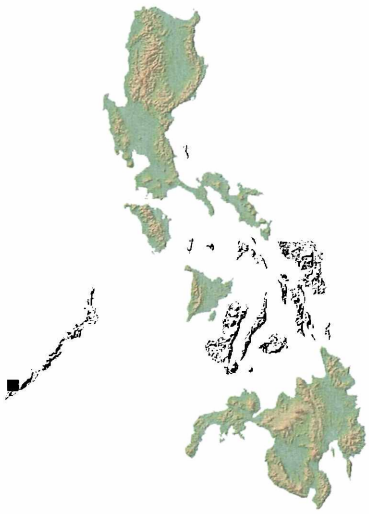


Fig. 143: Distribution of *Brykia horsfieldi.*

This is the first record for the Philippines. The species was discovered by JL in Palawan in 2007.

Diagnosis. The species has a diagnostic white marginal spot in the centre of the forewing. The female displays blackish coloured veins.

The male genitalia are characterized by the shape of the valves and the phallus, which bears several hooks. The 8th abdominal segments are bilobed and prominent sclerotized. The female has a large circular bursa copulatrix with a signum. The 8th sternite is slightly bilobed. The 8th tergite shows a pair of chitinized projections.

Variation. *Brykia horsfieldi* is a variable insect, which varies in the ground colour of the forewings from pale reddish brown to blackish. The median area of the forewings of the males is sometimes whitish filled.

The genitalia of a Palawan specimen show several minor differences to Sundaland males (shape of the valves, sclerotizations of the juxta, shape of the phallus and shape of the projections of the 8th abdominal segments), but there is not enough material from Palawan to draw taxonomically consequences here.

Bionomics. The few known Palawan males (n = 3) were collected in primary forests in iii. and xii. below 50 m.

Distribution. *Brykia horsfieldi* is distributed in Java, Sundaland S Thailand, S Myanmar and in the Philippines: Palawan.

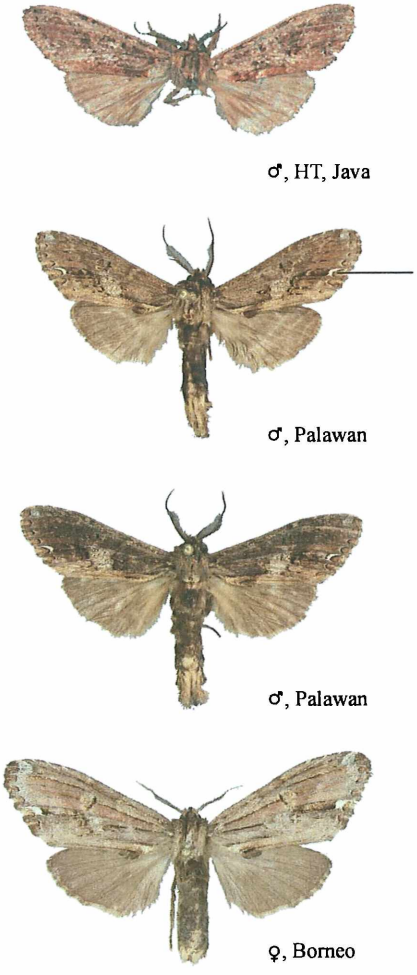


Fig. 144: Adults of *Brykia horsfieldi.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

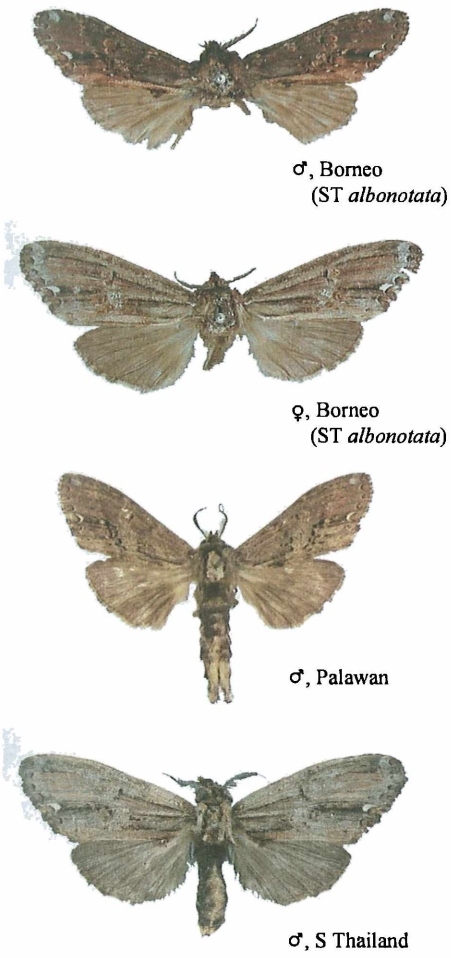


Fig. 145: Adults of *Brykia horsfieldi.*

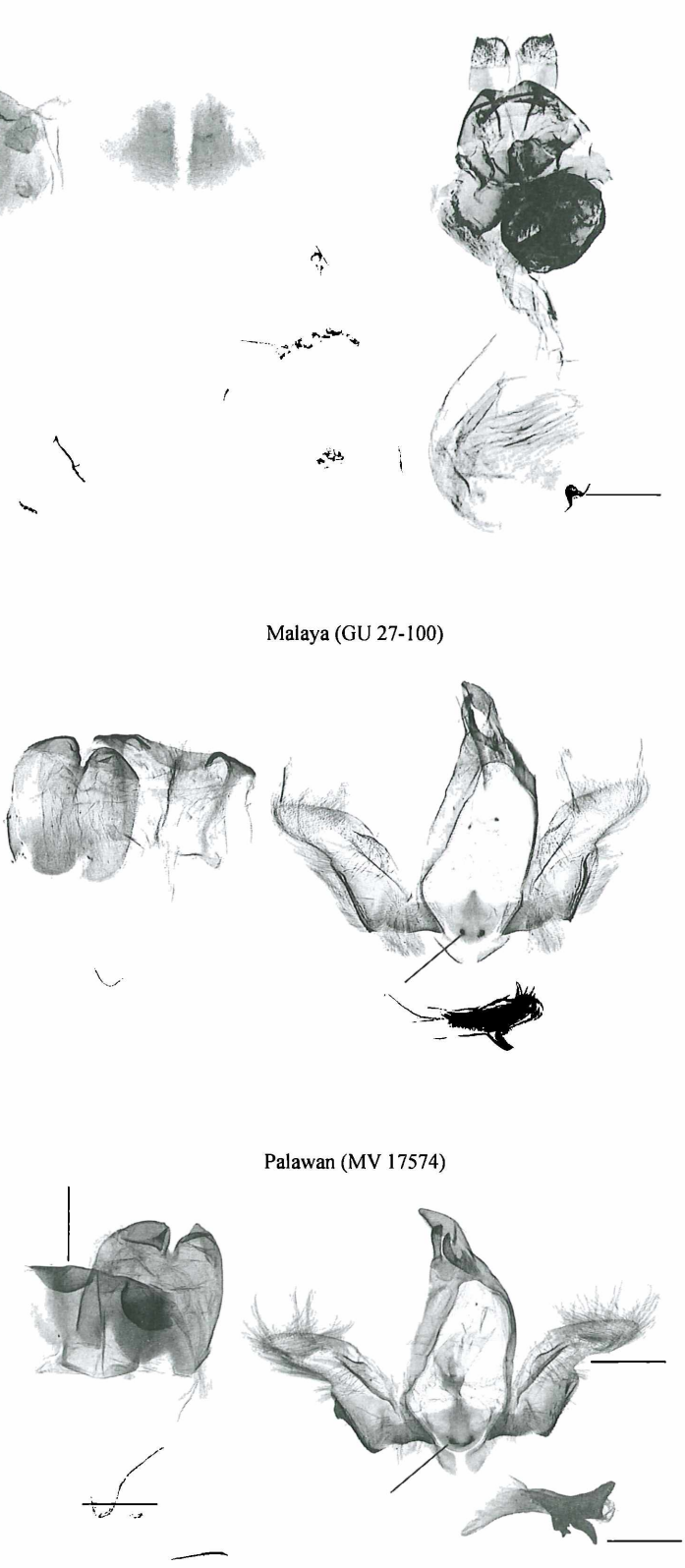


Fig. 146: Genitalia of *Brykia horsfieldi.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Hyperaeschra Butler, 1880: 65

Type-species: *Hyperaeschra pallida* Butler, 1880

22. *Hyperaeschra pallida* Butler, 1880:

65, pl. 6: 3, pl. 10: 1
HT: ♂, [NE India], Darjeeling – BMNH, London, examined.

= *Phalera ochropis* Hampson, 1910: 90; pl. F: 8;
HT: ♂, Ceylon, Hatutale – BMNH, London, examined.

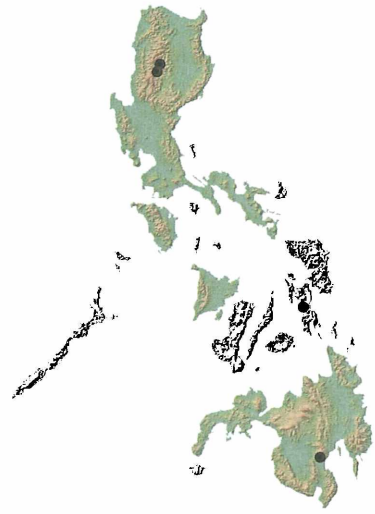
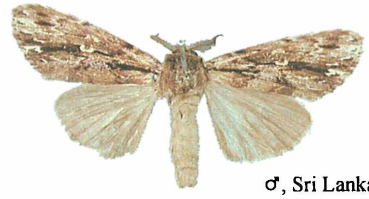


Fig. 147: Distribution of *H. pallida*.

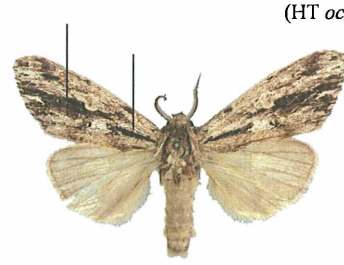
The distribution pattern of *Hyperaeschra pallida* with many gaps is somewhat atypical. The species occurs in Sumatra very locally and seems to be absent in Malaya, Borneo and Palawan.



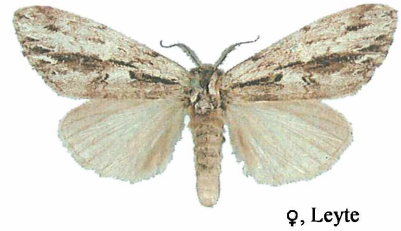
♂, HT, NE India



♂, Sri Lanka
(HT *ochropis*)



♂, Mindanao

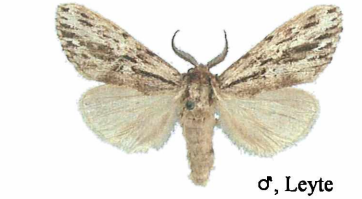


♀, Leyte

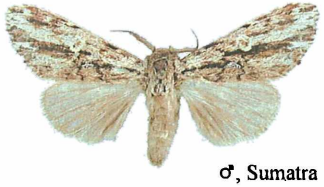
Fig. 148: Adults of *Hyperaeschra pallida*.

Diagnosis. *Hyperaeschra pallida* is characterized by a fuscous brown basal-streak, an inconspicous yellowish brown discal spot and a pale brown ground colour of the forewings.
The male genitalia have a pair of large socci with two processes, and a curved and slender phallus. The 8th sternite displays a pair of strong sclerotized processes with a characteristic shape. The females have a large ostium, a long ductus bursae and a small signum on the bursa copulatrix.
Variation. There are only few specimens from the Philippines at our disposal (n < 10). We found differences in the size of the adults and variation in the darkness of the brown forewing pattern. The male genitalia differ slightly in the shape of the socii.
Bionomics. The adults were observed in very scattered locations in i., v., vi., vii. and in ix. between 1.000 m up to 2.000 m mostly in primary forests. One female from Leyte was taken at 700 m.
Distribution. *Hyperaeschra pallida* shows a disjunct distribution: Himalayas, Sri Lanka, Indochina and S China, Sumatra and the Philippines: Luzon, Leyte, Mindanao.

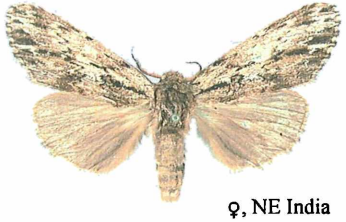
©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



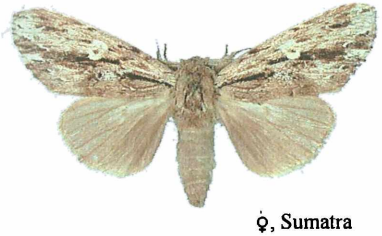
♂, Leyte



♂, Sumatra



♀, NE India

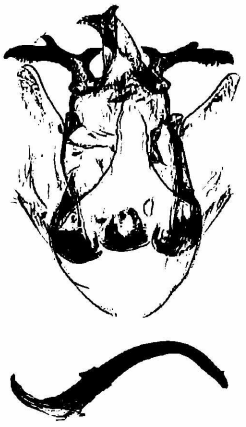


♀, Sumatra

Fig. 149: Adults of *Hyperaeschra pallida.*

Nepal (W 1814)





Luzon (W 1808)





Leyte (W 8116)

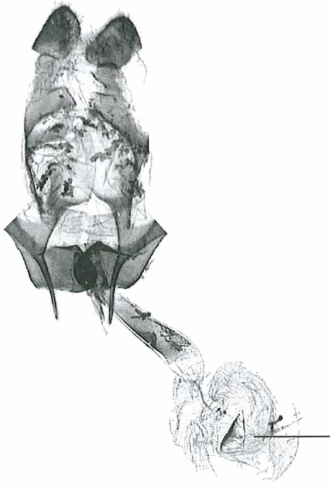


Fig. 150: Genitalia of *Hyperaeschra pallida.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Ambadra MOORE, 1883: 16

Type-species: *Eumeta rafflesi* MOORE, 1860

= *Suriga* KIRIAKOFF, 1962: 153, 203 (*Turnaca suriga* SCHAUS, 1928)
= *Atornoptera* KIRIAKOFF, 1974: 373 (*Atornoptera discocellularis* KIRIAKOFF, 1974)

The genus *Ambadra* is a larger species group of the oriental tropics. The genus was reviewed by HOLLOWAY (1982: 205) but since that time many more species have become known (actually: n > 36), many of them are hitherto undescribed. The Philippines hosts six species, occuring almost allopatric.

The genus is characterized by slender forewings with a characteristic shape and pointed apex. The forewings have a longitudinal brown or black streak. The male genitalia are characterized by a very broad base of the uncus (with a pair of straight socii), which shows in most cases elongated tips. But in some species there are curiously modifications. The bilobed 8th sternite bears a pair of projections. The females are usually very rare in collections and in many species still unknown.

The resting adults resemble dried, yellow bamboo-leafs, which is presumably the foodplant of the caterpillars.

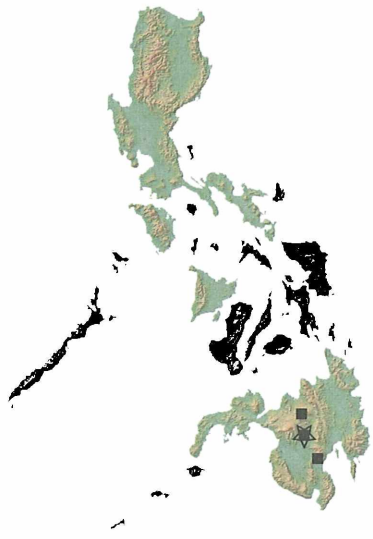


Fig. 151: Distribution of *Ambadra sibena*.

23. *Ambadra sibena sibena* SCHINTLMEISTER, 1993: 120, pl. 32 (*Turnaca* (*Ambadra*) *sibena*)

HT: ♂, Philippinen, Mindanao, Prov. Bukidnon, 40 km NW Maramag, Dalongdong, Talakag, 800 m – NHM, Wien, examined.

This species belongs to the difficult complex of the *Ambadra rafflesi* group, which is also represented by a bulk of species in Sulawesi.

ROEPKE (1943: 102, figs. 14a, 14b) described from Sulawesi *Turnaca celebensis* (HT: ♂, Centr. Celebes, Todjambu – Wageningen University, Laboratory of Entomology, photograph examined) and

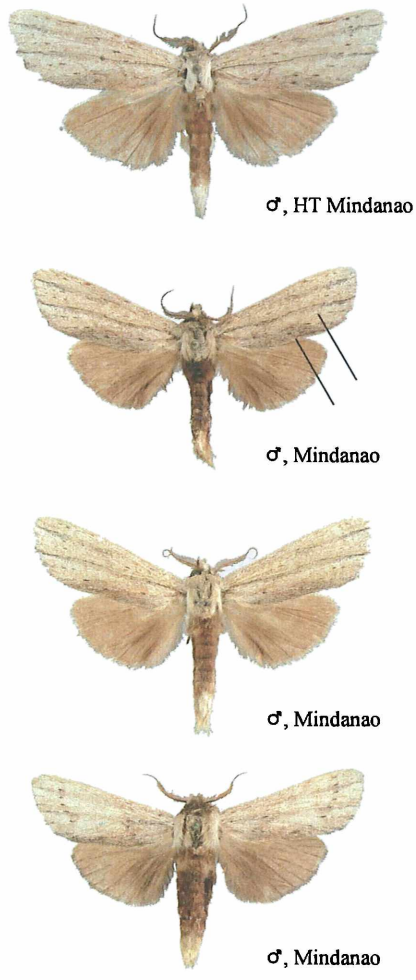


Fig. 152: Males of *Ambadra sibena sibena*.

©Naturhistorisches Museum Wien

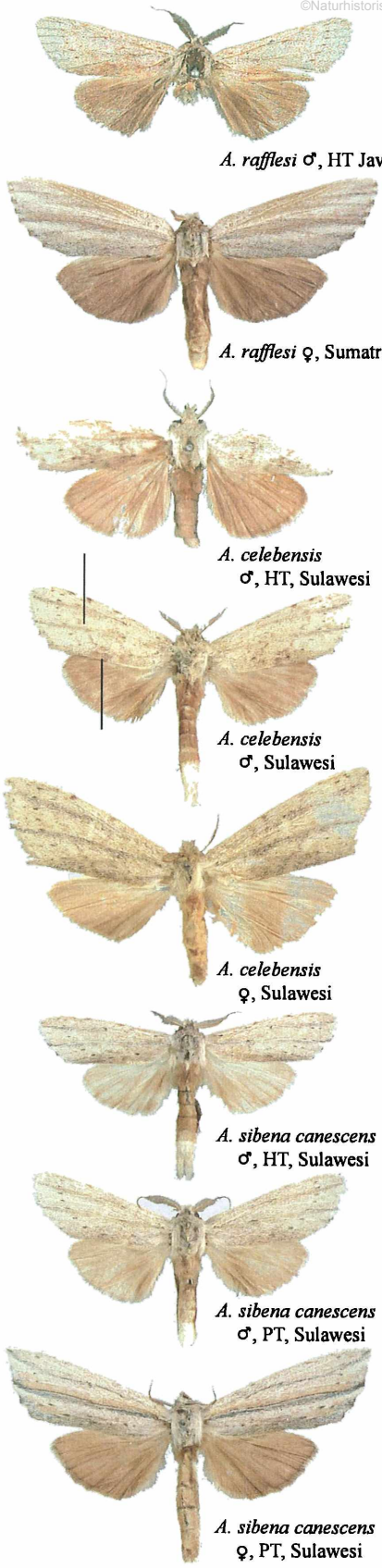


Fig. 153: Adults of *Ambadra*.

illustrated the genitalia of the holotype accurately. KIRIAKOFF (1963: 208) synonymized it with *Turnaca suriga*. HOLLOWAY (1983: 206) follows KIRIAKOFF, but argues, that *suriga* might be a complex of species. In fact *suriga* is an easily recognizable species which does not occur in Sulawesi. In Sulawesi about 5 or more species of the *rafflesi* complex occur (with similar male genitalia, but a range of differences in external appearance), including a species, which resembles *sibena*. The identity of the „true" *celebensis* is therefore important. ROEPKE differentiated *celebensis* in his original description that the forewings are larger than *rafflesi*, the yellowish ground colour has darker crosslines on the forewings and the greyish-brown suffused dorsum. Seemingly ROEPKE described *celebensis* as the largest species of the species-bulk, which occurs in Sulawesi. A transparency of the illustrated holotype, kindly provided to me by DAVID CARTER (BMNH, London) in 2000 represents probably an image with incorrect colours.

A second species from Sulawesi of rather greyish-brown ground colour resembles by external appearance much to a sister-species of *sibena* (*Ambadra irinae*), but with male genitalia closely matching well to *sibena*. It is described below as a subspecies of *sibena*:

Ambadra sibena canescens ssp. nov.

Holotype: ♂, Indonesia, Sulawesi, Mt. Sampuraga, 1°20'S, 120°04'N, 1.400 m, 1.-5. ii.1995, leg. SINJAEV & TARASOV – in coll. A. SCHINTLMEISTER, Dresden.

Paratypes (48 ♂♂, 2 ♀♀):

Sulawesi: 11 ♂♂, Mt. Sampuraga, 1°20'S, 120°04'N, 1.400 m, 1.-5.ii.1995 (GU 41-41, 54-60, 54-73); 16 ♂♂, 2 ♀♀, ibid. 11.-12.ii.1995 (GU 41-35, 54-62); 3 ♂♂ Namo, Straße Palopo-Gimpu, 650 m, 21-22.ix.1995; 3 ♂♂, Puncak, Palopo, 2°55' S, 120°05'E, 1.000 m, 25.-31.i.1995 (GU 54-63); 3 ♂♂, ibid., 13.-14.ii.1995; 3 ♂♂, ibid., xii.1998 (GU 88-82); 1 ♂, Tambuisi, x.1997.

Diagnosis. Forewing length ♂♂ 20 mm 21 mm, ♀♀, 26 mm, smaller than *A. celebensis*, which has a forewing length of ♂♂ 22 mm -

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

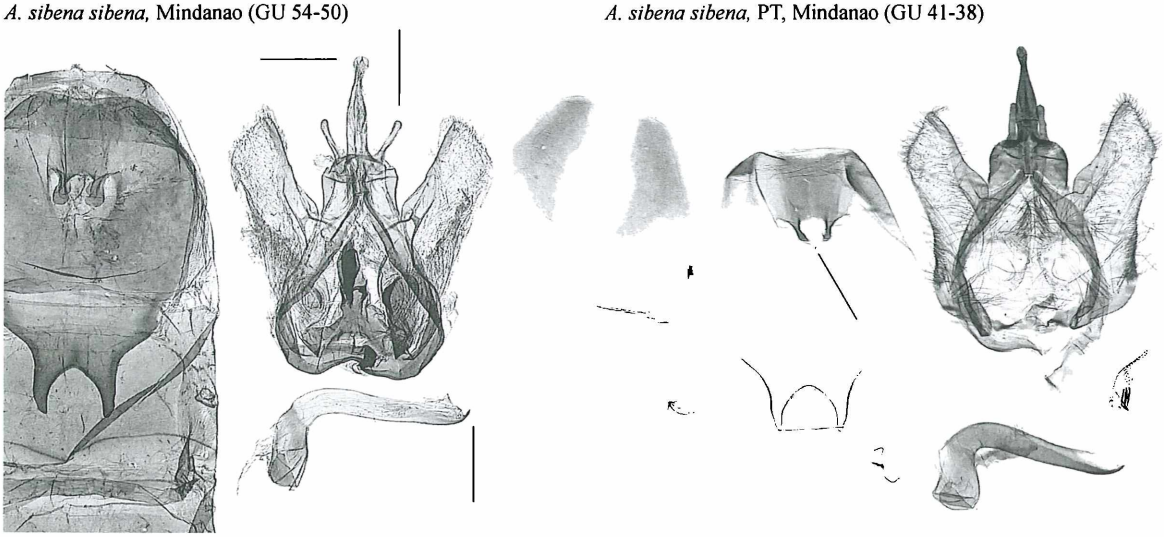
A. rafflesi, HT, Java (BM 809)

A. celebensis, Sulawesi (GU 41-42)



A. sibena sibena, Mindanao (GU 54-50)

A. sibena sibena, PT, Mindanao (GU 41-38)



A. sibena canescens, PT, Sulawesi (GU 54-73)

A. sibena canescens, PT, Sulawesi (GU 54-73)

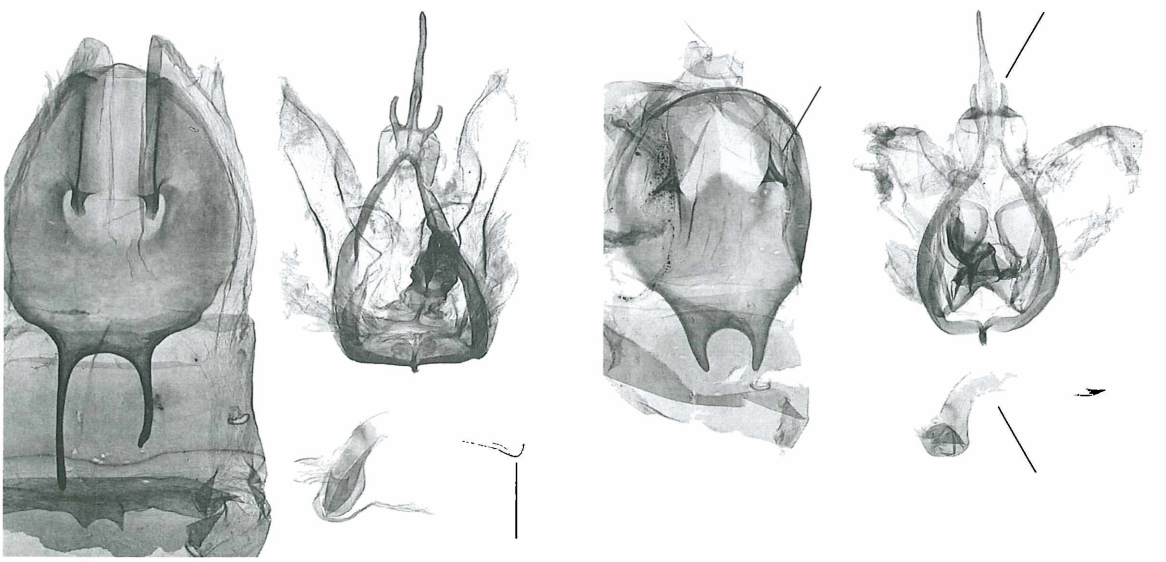


Fig. 154: Male genitalia of *Ambadra.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

24 mm, ♀ 28 mm. The ground colour is greyish-brown, in *celebensis* and ssp. *sibena* is yellowish brown. The longitudinal streaks of the forewing of ssp. *canescens* and in *celebensis* are weakly developed, whereas in ssp. *sibena* they are well developed. The hindwings of ssp. *canescens* are paler brown than in ssp. *sibena*.

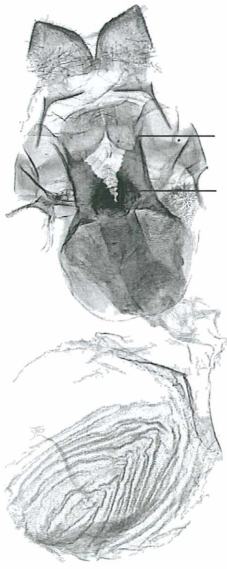
The male genitalia of *canescens* are as in ssp. *sibena*. There are some minor differences such as the shape of the small process at the phallus-tip and the shape of the 8th sternite, but these features are probably subject of individual variation as the illustrated genitalia of GU 54-73 show. The socii of *canescens* are significantly shorter than in ssp. *sibena*. In comparison to *celebensis* the phallus of *canescens* is longer and rectangular. The 8th sternite displays longer projections. The female genitalia have no signum. The bursa copulatrix shows a characteristic structure. The 8th sternite is slightly bilobed.

A. rafflesi, Sumatra (GU 88-54)



Diagnosis. The species is the largest *Ambadra* in the Philippines. The ground colour of the forewings is brownish-yellow and darker than in the other Philippine relatives. The central longitudinal streak from the base to the margin of the forewings is well developed, a second streak near the costa only faintly visible. The female of ssp. *sibena* is still unknown, but we expect, that it should resemble the sexualdimorphic female of ssp. *canescens* from Sulawesi.

A. sibena canescens, PT, Sulawesi (GU 41-35)



The male genitalia are recognizable by the shape of the pointed uncus and the long, thick and rectangular shaped phallus. The 8th sternite is bilobed distally with a pair of diagnostic shaped projections.

Variation. Adults of *A. sibena sibena* vary slightly in the darkness of the ground colour and forewing length. The postmedian fascia, marked as a double row of black dots is sometimes absent or inconspicuous. Some male genitalia show variation in the shapes of the 8th sternite and the phallus.

Bionomics. The adults are usually infrequently observed, but on 10.-12.vii.1996 on Mt. Apo at 1.570 m they appear common (n > 10). It seems, that the species prefers forested mountainous habitats above 600 m. Adults were collected in i., ii., vii., ix. and xii. up to 1.700 m.

Distribution. *Ambadra sibena sibena* occurs in Mindanao, the ssp. *canescens* flies in Sulawesi. The ssp. *sibena* was to be found almost allopatric with *irinae*.

Fig. 155: Female genitalia of *A. rafflesi* and *sibena canescens*.

download unter www.biologiezentrum.at

24. *Ambadra irinae irinae* spec. nov.

HT: ♂, Philippinen, Mindanao, Prov. Surigao del Sur, Hanayan, 12 km N Lianga 350 m, primary forest, 08°42'N, 126°05'E 29.xi. - 1.xii.2005 leg. JH LOURENS & A. SCHINTLMEISTER – NHM, Wien.

Paratypes (18 ♂♂):

Mindanao: 2 ♂♂, Hanayan, 12 km N Lianga 350 m, 08°42'N, 126°05'E 29.xi.-1.xii.2005 (MV 17584); 2 ♂♂, ibid., 200 m, 3.-7.vii.2005; 3 ♂♂, Lianga, 13 km W of Diatagon, 430 m, 8°44.475'N, 126°05.632'E, 22.-23.v.2007; 1 ♂, ibid., 350 m, 13.iii.2009; 1 ♂, Bukidnon, Mt. Kitanglad, S-Seite, Intavas, 1.700 m, 8°07'N, 124°55'E, 15.viii.-15.ix.1993; 5 ♂♂, Prov. Sumangani, Cotabato, Mount Busa, near Kainba, 700 m, 6°08'N, 124°39'E, viii.1997 (MV17585); 5.x.2005 (MV 17581, 17582); 3 ♂♂, Davao oriental, Aliwagwag, 90 m, 7°43.667' N, 126°17.304'E, 30.iv.-1.v.2008; 1 ♂, Misami Prov., Malasae Mt. 300 m, 10.-20.ii.1996 (GU 44-95).

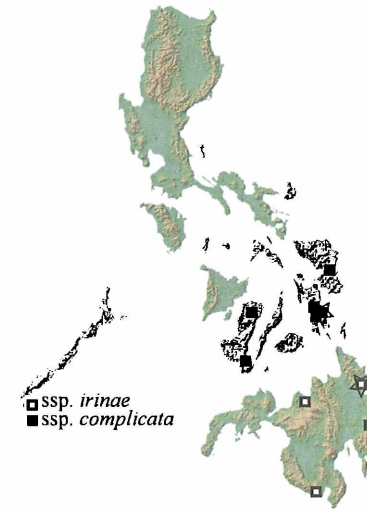


Fig. 156: Distribution of *Ambadra irinae*.

Etymology. We desicate this species to Irina Kovalnko, Vaukavysk, Belorus.

This inconspicuous greyish-brown species occurs in Mindanao together with *A. sibena*. It seems, that *irinae* prefers lowland forests wheras *sibena* occupies mountainous regions.
The species, *sibena* and *irinae* are close relatives but doubtless represent different species.

Diagnosis. Forewing length ♂♂ 19,5 mm - 22 mm, smaller than *sibena* (forewing length ♂♂ 22 mm - 23 mm). *Ambadra irinae* differs by its size and greyish-brown ground colour of the narrower forewings from *sibena*. The longitudinal streak of the forewing is weakly developed, and also the postmedian fascia, marked as a row of blackish dots, is often indistinct (the illustrated holotype represents a well marked individual). The general appearance of *irinae* is paler and not yellowish compared to *sibena*. The female is still unknown.

The male genitalia of *irinae* have an unique falciform shaped uncus-tip, which makes the species readily recognizable. The valves are slightly shorter than in *sibena* and the apex somewhat bilobed. The phallus is rather slender and straight. It shows a small uncurved spine at the tip and bears many cornuti. The

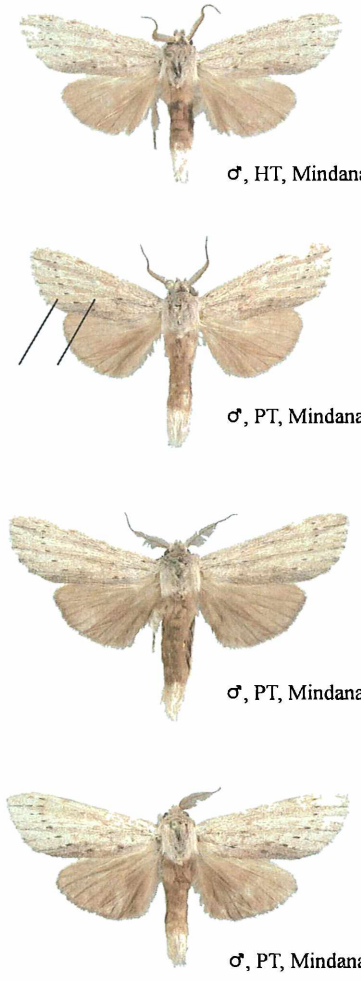
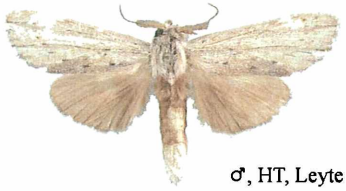
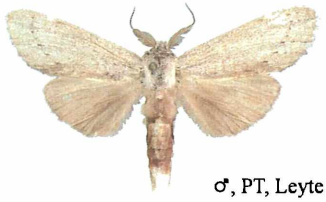


Fig. 157: Males of *Ambadra irinae irinae*.

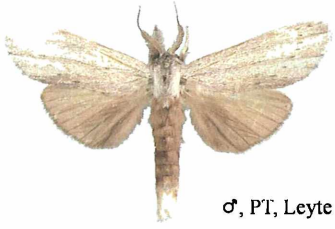
©Naturhistorisches Mus



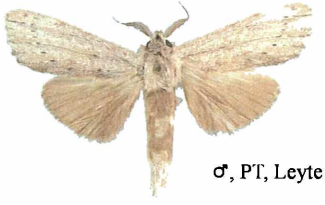
♂, HT, Leyte



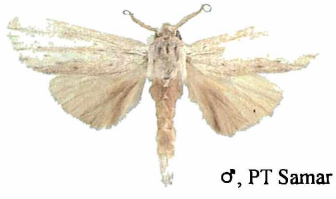
♂, PT, Leyte



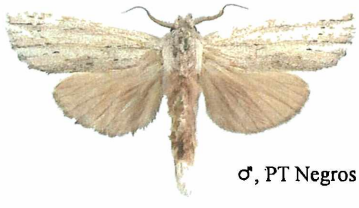
♂, PT, Leyte



♂, PT, Leyte



♂, PT Samar



♂, PT Negros

Fig. 158: Males of *A. irinae complicata.*

8th abdominal segments are distally bilobed. The 8th sternite displays more slender and longer projections than in *sibena.*

Populations from Leyte differ significantly from *irinae* specimens from Mindanao in the shape of the uncus. They probably could represent distinct species but due to limited experience with interpretation of these rather quantitative than qualitative features, this was witheld. For biogeographically reasons (Allopatrically distribution pattern) *complicata* is described below as a subspecies of *irinae.* Three males from Samar and Negros differ in their genitalia from Leyte populations and may represent probably a further subspecies of *irinae.*

***Ambadra irinae complicata* ssp. nov.**

HT: ♂, Philippinen, S Leyte, Bar. Imelda Katipunan, S of Libertad, 300 m, 10°43'N, 125°04'E 28.xi.2005 leg. JH LOURENS & A. SCHINTLMEISTER – NHM, Wien.

Paratypes (40 ♂♂):

Leyte: 5 ♂♂, Bar. Imelda Katipunan, S of Libertad, 300 m, 10°43'N, 125°04'E 28.xi.2005; 6 ♂♂, Libertad near Tibo, 30 m, 10°40'N, 125°6'E, 5.x.2005 (MV 17581, 17582); 4 ♂♂, Hinapu Dacu, 600 m, 20 km N of Maasin, 10°16'S, 124°55'E, 6.-7.x.2005; 5 ♂♂, Mt. Balocawe, TV Stat. W Mahaplag, 10°43'N, 124°55'E, 3.xii.2005; 2 ♂♂, ibid., 29.-30.iii.2005; 2♂♂, ibid. 27.-28.vi.2006; 2 ♂♂, ibid., 15.-19.v.2007;1 ♂, Mt. Balocaue, 600 m, 28.-29.xii.2000 (W 8624); 1 ♂, Mt. Bolog, 1.140 m, 10 km E Mahaplag, vi.1997 (GU 58-16); 2 ♂♂, Lake Danao, 650 m, 14.-17.iv.1997; 1 ♂, Tubod hills S of Abuyog, 280 m, 10°42'N, 125°05'E, 23.x.2006.

Samar: 3 ♂♂, C. Samar, 8 km SE of Bagacay, 250 m, 11°48,025'N, 125°14.610'E, 13.iii.2009 (MV 17583, 175846); 2 ♂♂, ibid, 21.-22.x.2006; 1 ♂, ibid., 140 m, 25.vi.2006; 1 ♂, Loquilocon, Ulut river, 80 m, 27.iv.1997 (MV17580);

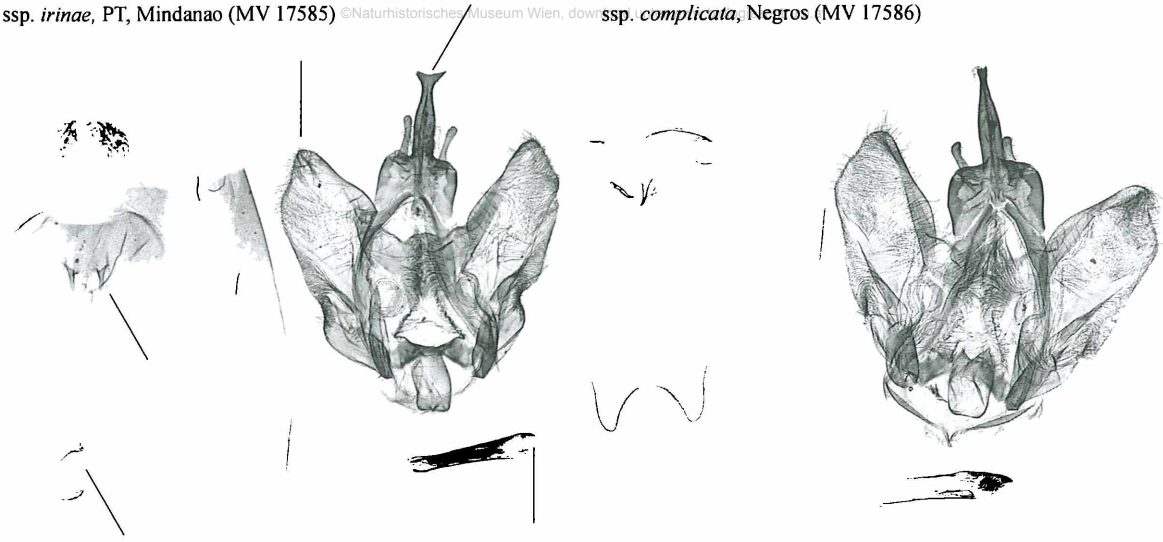
Negros: 2 ♂♂, Negros occ., 14 km W of San Jose, Dumaguete Twin Lakes, ft. Mt. Guinasayawan, 900 m, 9°21.660'N, 123°10'E, 23.-24.vi.2009 (MV17586); 1 ♂, Negros or., NE of Don Salv. Benedicto Barangay Bagong Silang ft. Mt. Mandalagan, 10°36.017'N, 123°16.127'E, 19.-20.vi.2009.

Diagnosis. Forewing length ♂♂ 19 mm - 20 mm, slightly smaller than ssp. *irinae.* The new subspecies is indistinguishable from ssp. *irinae* by external

ssp. *irinae*, PT, Mindanao (MV 17585)

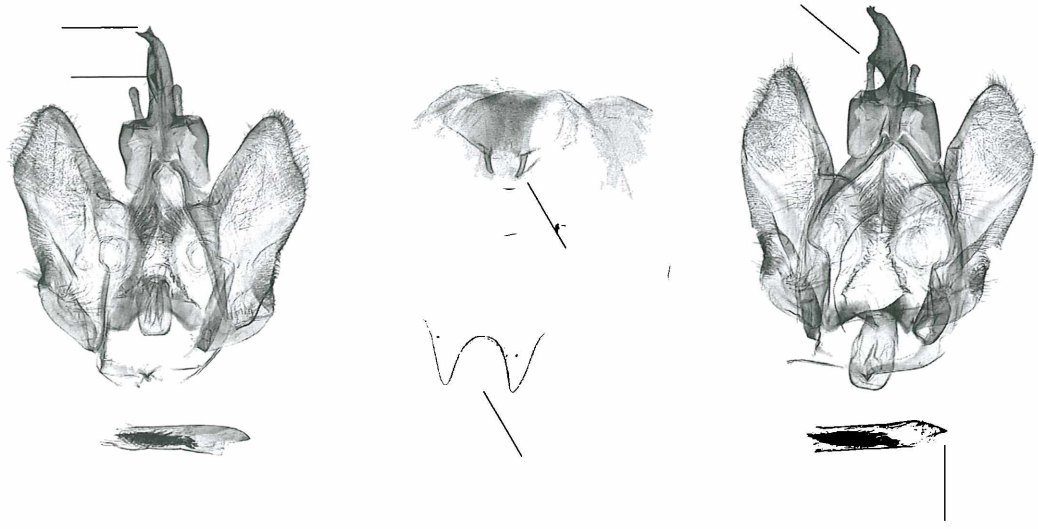
©Naturhistorisches Museum Wien, down

ssp. *complicata*, Negros (MV 17586)



ssp. *complicata*, PT, Leyte (MV 17581)

ssp. *complicata*, PT, Leyte (MV 17582)



ssp. *complicata*, PT Samar (MV 17583)

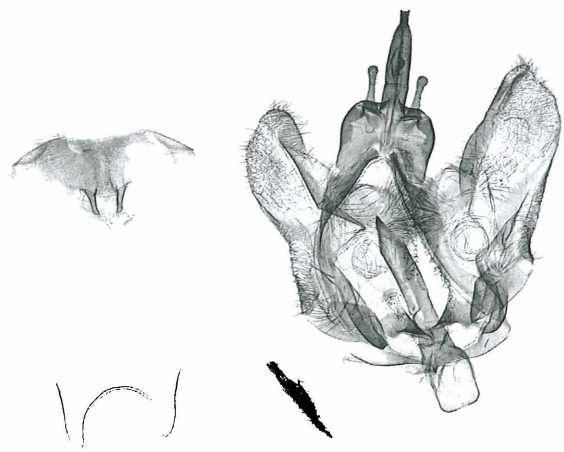


Fig. 159: Male genitalia of *Ambadra irinae*.

appearance. In males, clear differences prevail in the differently shaped thicker and shorter uncus, which is bilobed and bears in the middle of the upper part a gnathos-like projection. The 8th sternite displays more slender and longer projections.

Variation. Males from Negros and Samar differ from Leyte populations in having a slightly more slender uncus with a relatively small projection.

Distribution. *Ambadra irinae* is endemic in the Philipines. The ssp. *irinae* is restricted to Mindanao; the ssp. *complicata* occurs in Leyte, Samar and Negros.

www.biologiezentrum.at

25. *Ambadra fajardoi* SCHINTLMEISTER, 1993:

119; pl. 12: 1, 13: 2 (*Turnaca* (*Ambadra*) *fajardoi*) HT: ♂, Philippinen, N-Palawan, S. Vicente, 20 km NEE Roxas, 10° 21' n. Breite, 119°10' ö. Länge 400 m – NHM, Wien, examined.

Ambadra fajardoi is a close relative of *A. irinae*; because of the dramatic differences of the male genitalia (uncus, concave valves, phallus and 8th sternite) we treat it as a distinct species.

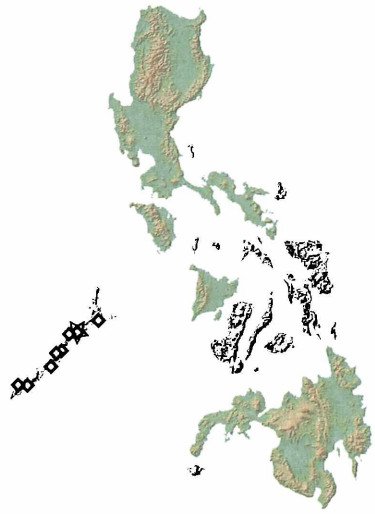


Fig. 161: Distribution of *Ambadra fajardoi.*

Diagnosis. *Ambadra fajardoi closely* resembles *A. irinae*, but the ground colour of the forewings is tinged with yellow. The longitudinal streak is weakly developed. The female is unknown.

The male genitalia are unmistakable by the unique shaped uncus-tip. The valves differ from *irinae* by the slightly concave shape; the socci are longer, the phallus is more slender and rectangular shaped with a long spine at the tip. The 8th sternite resembles *irinae*, but the sclerotized projections are of a different shape.

Variation. The individual variation is low. Most specimens have many cornuti in the phallus, which are lacking in the illustrated genitalia.

Bionomics. The adults were found frequently during the whole year (except in iv., v., ix. and xi.) in primary and secondary forests at medium altitudes between 50 m - 950 m.

Distribution. Endemic in the Philippines: Palawan.

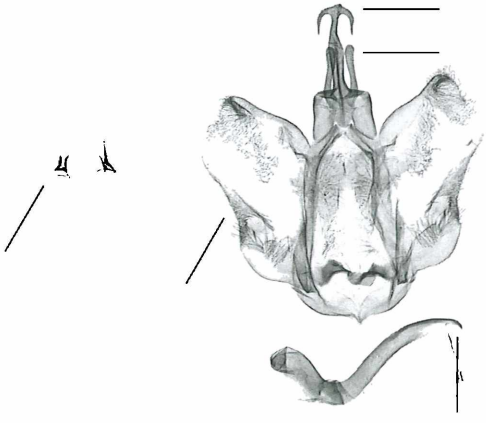


Fig. 160: Male genitalia of *Ambadra fajardoi* (GU 41-39).

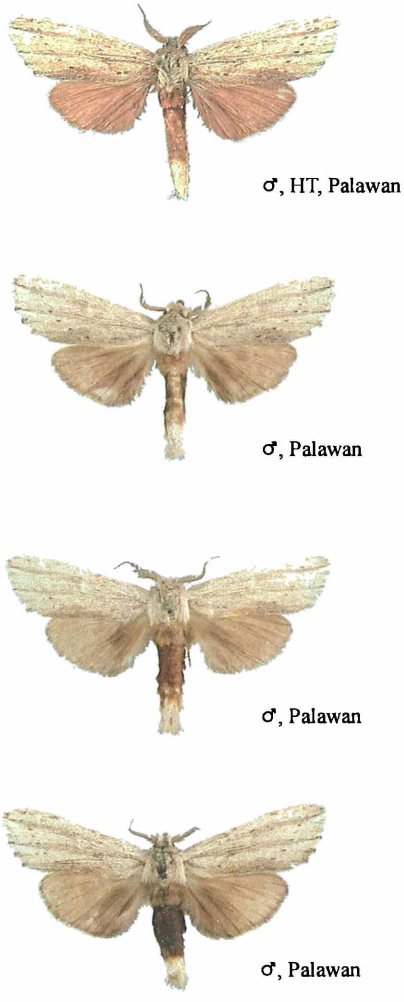


Fig. 162: Males of *Ambadra fajardoi.*

Download unter www.biologiezentrum.at

26. *Ambadra suriga* (SCHAUS, 1928): 88

(*Turnaca suriga*)
HT: ♂, Philippine Islands, Mindanao, Surigao – USNM, Washington, not examined.

Diagnosis. *Ambadra suriga* is best characterized by the reddish-brown spot of the forewings. The prominent developed longitudinal streak is dorsally flanked by a yellowish-green line. The female is unknown.

The male genitalia have concave shaped valves and a pointed tip of the uncus. The phallus is strong, pointed at the tip and curved. It bears cornuti. The 8th sternite is distally slightly bilobed; the pair of projections is small.

Variation. Adults are variable in size and tone of the yellowish ground colour, which is sometimes tinged with violet. In a few specimens, the markings of the forewings are weakly developed. The dissected genitalia of males from Mindanao were uniform and virtually without variation.

Bionomics. The adults were uncommonly (n = 18) found from iii., v. - xii. locally restricted and mostly in primary forests. The moths occur at medium altitudes from 250 m up to 1.250 m, most common above 1.000 m.

Distribution. The species occur in Sundaland, S Thailand and in the Philipines: Mindanao, Leyte and Samar.

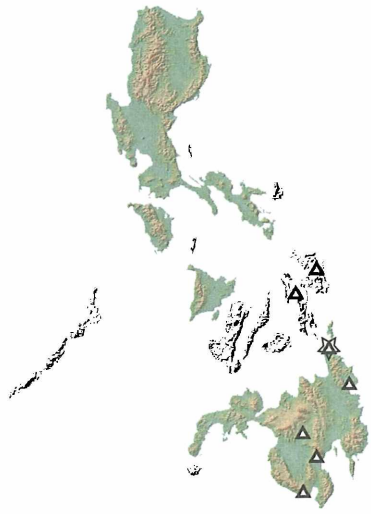


Fig. 163a: Distribution of *Ambadra suriga.*

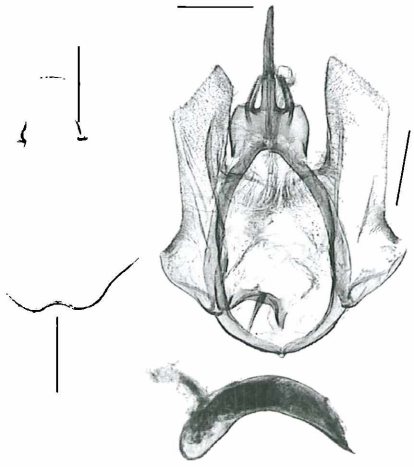


Fig. 163: Male genitalia of *A. suriga* (HT, Mindanao US #895)

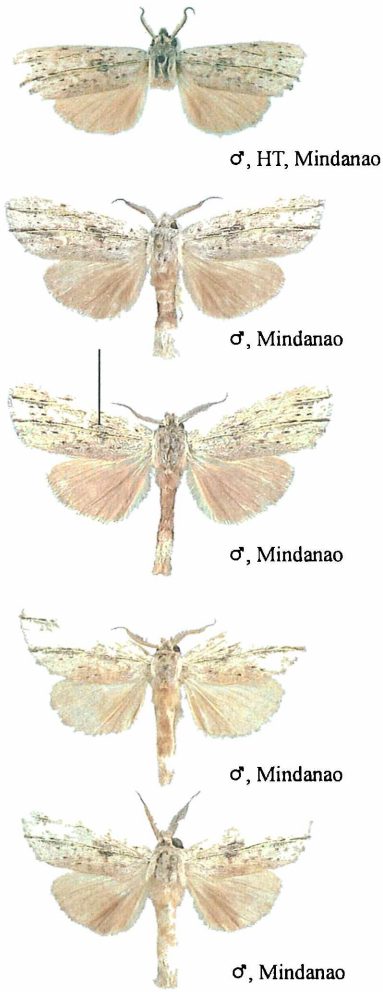


Fig. 164: Males of *Ambadra suriga.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

27. *Ambadra pantaena* (SCHAUS, 1928): 88

(*Turnaca pantaena*)

HT: ♂, Philippinen, Philippine Islands, Luzon [Mt. Makiling] – USNM, Washington, not examined.

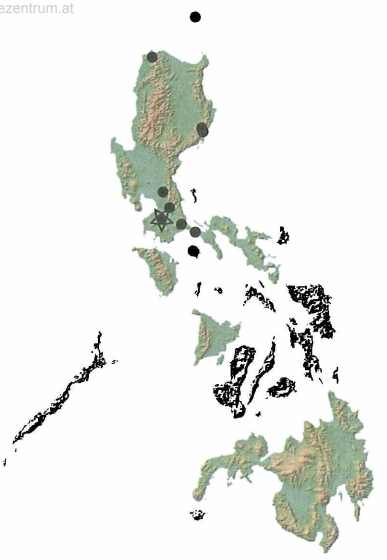


Fig. 165: Distribution of *Ambadra pantaena*.

Ambadra pantaena and *fortunatorum* are members of a group of smaller, yellowish coloured species which are hard to separate by external criteria. Fortunately they have well modified male genitalia. There are more than 15 species from the Andaman Isl., Indochina, Sundaland, Java and Sulawesi of that appearance, with highest diversity in Sundaland.

Diagnosis. A smaller species, that is virtually indistinguishable by external criteria from the Palawanian *A. fortunatorum*. Characteristic are the narrow forewings with a weakly developed longitudinal streak and the postmedian fasciae, marked as a row of black dots. The females have a pointed apex of the forewings and clearer markings than most females of *Ambadra*.

The male genitalia (illustrated under the following species) are characterized by the short and broad uncus with a pair of relatively small socii. The curved phallus shows a bifurcate, strong sclerotized tip. The bilobed 8th sternite displays a pair of very small projections.

Variation. The markings on the forewings are subject to individual variation. Rarely one finds specimens, such as the holotype, with a prominent pattern. Other individuals are sometimes almost uniform. Three of five males from Babuyan are slightly smaller and have paler hindwings than specimens fom Luzon. However the male genitalia (n = 4) are very constant and show almost no variation.

Bionomics. The adults were taken uncommonly (n = 20) in i., iv. -vii. and ix. in primary and secondary lowland forests up to 550 m.

Distribution. Endemic in the Philippines: Luzon including the Babuyan islands and Marinduque.

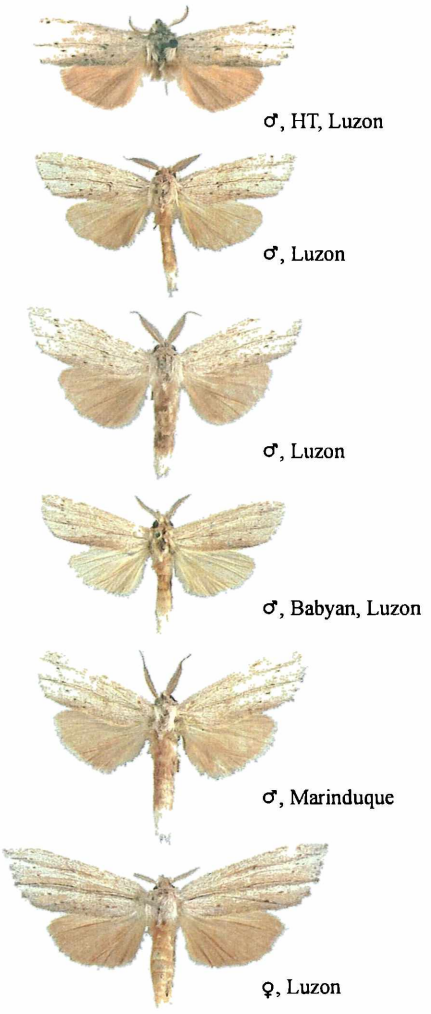


Fig. 166: Adults of *Ambadra pantaena*.

www.biologiezentrum.at

28. *Ambadra fortunatorum* (SCHINTLMEISTER, 1993): 120, pl. 12: 5, pl. 13: 1 (*Turnaca* (*Turnaca*) *fortunatorum*), **comb. nov.**

HT: ♂, Philippinen, N-Palawan, S Vicente, 20 km NEE Roxas, 10° 21' n. Breite, 119° 10' ö. Länge, 400 m – NHM, Wien, examined.

Turnaca acuta WALKER, 1865, the type species of *Turnaca* resembles *Ambadra rafflesi*, rather than a member of the *pantaena*-group. But the male genitalia of *acuta* show an accentuate dorsum of the valves and a bifid uncus. Thus *fajardoi* must be combined with *Ambadra*. But perhaps the whole group may require a distinct genus or subgenus status.



Fig. 167: Distribution of *A. fortunatorum*.

Diagnosis. The small species is very similar to *A. pantaena* and sometimes indistinguishable by external appearance. Characteristics are the narrow forewings with a weakly developed longitudinal streak and the postmedian fasciae, marked as a row of black dots. Most males (but not all) show a blackish spot in the median area below the longitudinal streak, which is usually weaker developed in *pantaena.* The female is still unknown.

The male genitalia are characterized by the triangular shaped uncus with a short tip and the robust, hammer-shaped socii. The valves are reduced in size. The 8th sternite is of unique, unmistakable shape and sclerotization as illustrated.

Variation. The markings on the forewings are subject to individual variation. There are a few individuals, which have the black spot in the median area of the forewings and the markings weakly developed or absent. A single male has a forewing length of 15 mm (the average forewing length is 17 mm - 19 mm). The male genitalia are constant, but the phallus shows a variable number of cornuti.

Bionomics. The adults were taken frequently in i., ii., iii., viii., x. and in xii. in primary and secondary forests up to 900 m.

Distribution. Endemic in the Philippines: Palawan.

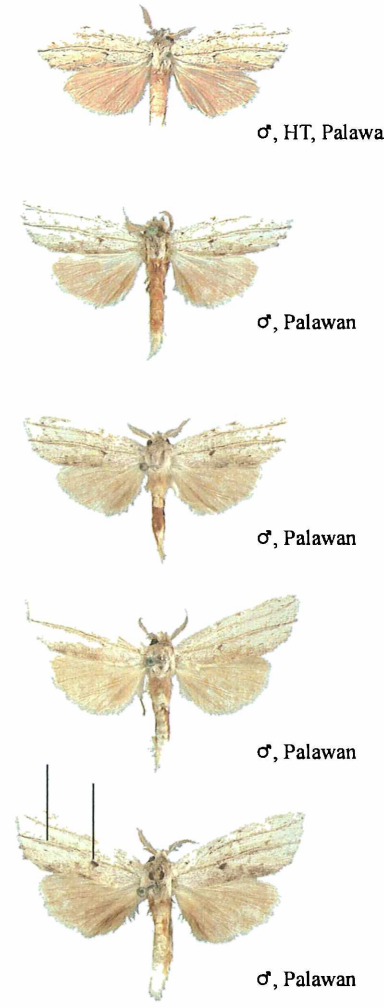
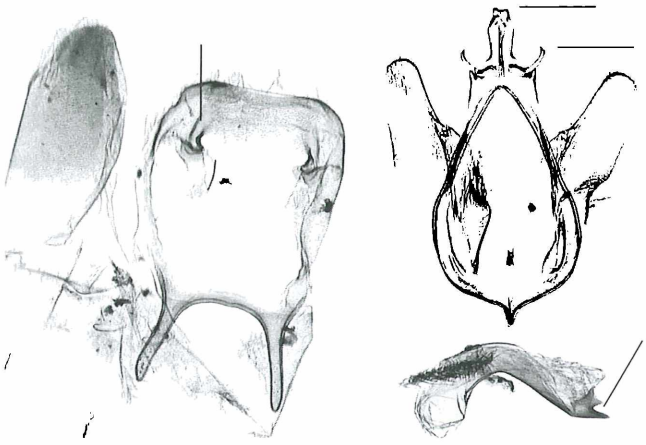


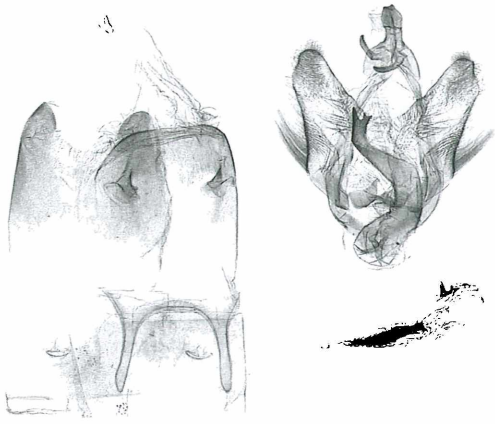
Fig. 168: Males of *Ambadra fortunatorum*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

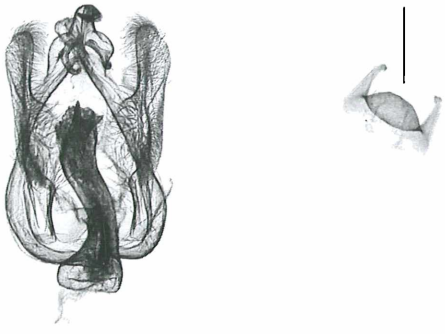
Ambadra pantaena, Luzon (GU 17-94)



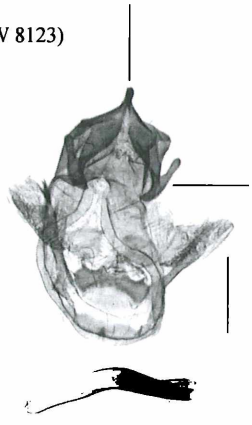
Ambadra pantaena, Marinduque (MV 17578)



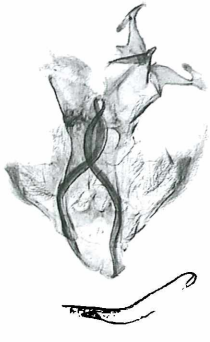
Ambadra pantaena, HT, Luzon (USNM# 893)



A. fortunatorum, Palawan (W 8123)



A. fortunatorum, PT, Palawan (GU 17-95)



A. fortunatorum, PT, Palawan (GU 17-92)

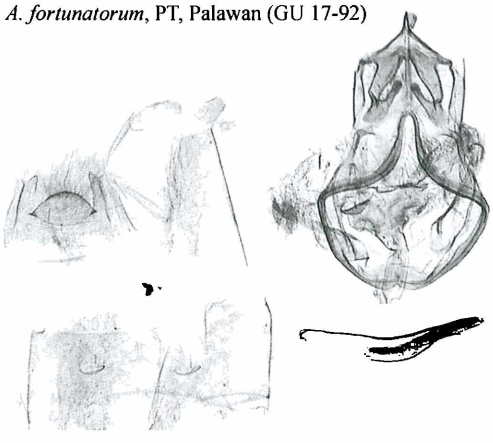


Fig. 169: Male genitalia of *Ambadra pantaena* and *fortunatorum*.

© Biologiezentrum Linz/Austria; Austria, Wien, download unter www.biologiezentrum.at

Saliocleta WALKER, 1862: 124

Type-species: *Saliocleta nonagrioides* WALKER, 1862

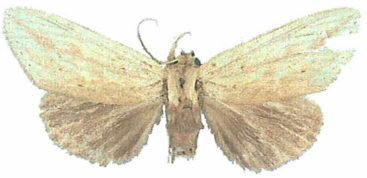
= *Ceira* WALKER, 1865: 462 (*Ceira metaphaea* WALKER, 1865)

The genus *Saliocleta* was interpreted by SCHINTLMEISTER & PINRATANA (2007: 79) and SCHINTLMEISTER (2008: 82) because of similarities in morphology and male genitalia in a wider sense. Characteristic genus-features are: short pectinate male antennae, intensive yellow or orange ground colour of the forewings with an often angled tornus and reddish brown hindwings. The male genitalia show a robust, short and rounded uncus with a pair of modified socii and a characteristic sclerotized distally rounded 8th sternite with a pair of smaller projections similar as in *Ambadra*.

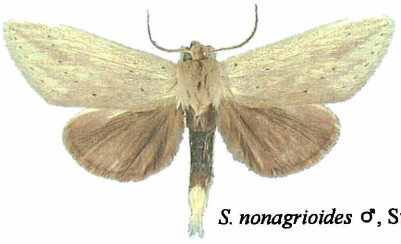
Several subgenera might be used to combine the many species-groups. The categorizing in subgenera or genera is somewhat difficult, because of the many species that show overlap between the various groups.

The genus contains some 40 species, most of them are hitherto undescribed.

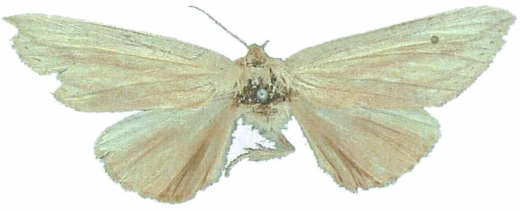
For better understanding the *Saliocleta* genus, detailed knowledge of the identity of its type species *nonagrioides* is of key value. SCHINTLMEISTER & PINRATANA (2007: 79) pointed out, that the HT of *Saliocleta nonagrioides*, (HT: ♀, Borneo, Sarawak - Oxford University Museum of Natural History, examined) is not the same species, that was mentioned and illustrated by HOLLOWAY (1983: 44, pl. 4: 7, fig. 44) under this name. The HT ♀ of *nongarioides* matches in wingshape and markings the ♀♀ of *Pydna odrana* SCHAUS, 1928 and *Turnaca sordida* ROEPKE, 1943. There are further species in the group, but they are smaller, have broader forewings with a more pointed, not rounded tornus.



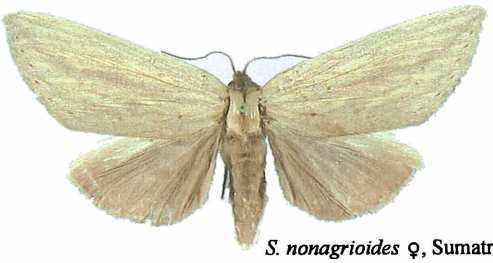
S. nonagrioides ♂, Sumatra (HT of *Bireta sabulosa*)



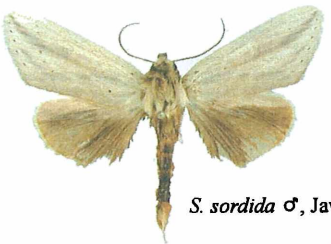
S. nonagrioides ♂, Sumatra



S. nonagrioides ♀, HT, Borneo



S. nonagrioides ♀, Sumatra



S. sordida ♂, Java

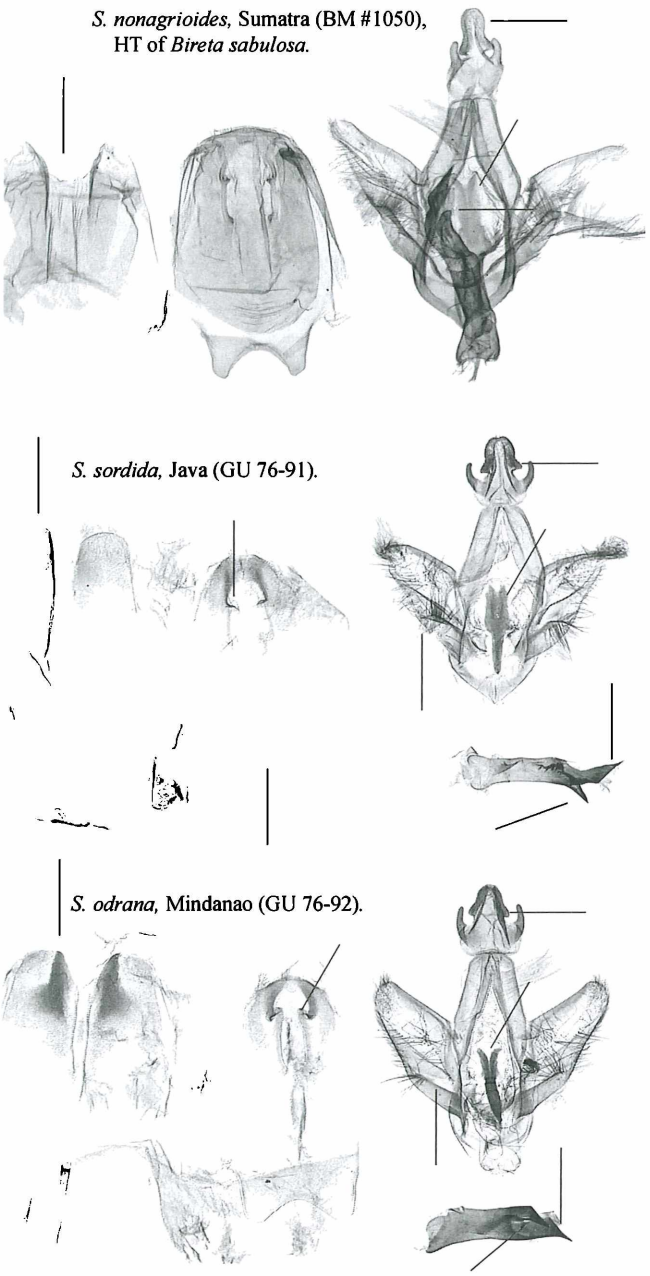


S. sordida ♀, Sumatra

Fig. 170: Adults of *Saliocleta*.

The HT of *nonagrioides* is large, about 30 mm forewing length and belongs to the largest known females in the group. The known ♀♀ of *odrana* and *sordida*, represented in the Philipines are much smaller. They have a forewing length of 26 mm - 28 mm (n = 4).

Bireta (*Norraca*) *sabulosa* KIRIAKOFF, 1962: 199 (HT: ♂, Sumatra occid., Lebong Tandai - BMNH, London, examined) is in the collection of AS well represented from all parts of Sumatra (n > 30, amongst them are 4 ♀♀). A few ♂♂ are from Borneo, Sabah (n = 4). The forewing length of *sabulosa* ♀♀ is 30 mm - 33 mm; most ♀♀ are darker than *sordida* and match the holotype of *nonagrioides*. *Bireta* (*Norraca*) *sabulosa* becomes therefore a junior synonym of *Saliocleta nonagrioides*, syn. nov.



The differences of *nonagrioides* (which does not occur in the Philippines) and *sordida* in the ♂♂ are as follows:

- about 1mm -2 mm larger forewing length,
- forewings more suffused with brownish scales fuscous brown spots in the forewings do not occur in *nonagrioides*,
- hindwings fuscous chocolate-brown, in *sordida* paler and rather reddish brown,
- male genitalia have a longer uncus which is less bulged as in *sordida*,
- soccii slightly thicker,
- valves more narrow,
- 8th tergit is broader and deeper bilobed distally,
- 8th sternite shows two pairs of small projections, whereas *odrana* has only one pair of longer projections.

The shapes of juxta, the bifurcate phallus tip and also the sclerotizations of the 8th sternite show further, subtle but distinct differences.

Fig. 171: Male genitalia of *Saliocleta nonagrioides, sordida* and *odrana*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

29. *Saliocleta sordida* (ROEPKE, 1943): 103, figs. 15a, 15b (*Turnaca sordida*)
HT: ♂, Java, Tjobodas – Wageningen University, Laboratory of Entomology, transparency examined.

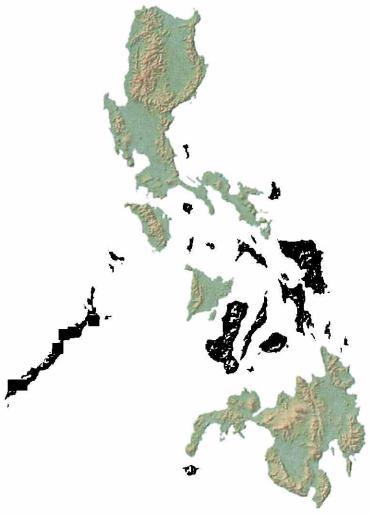
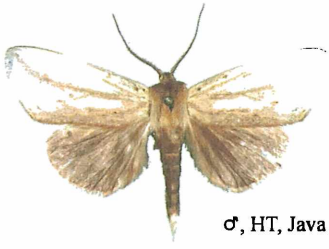
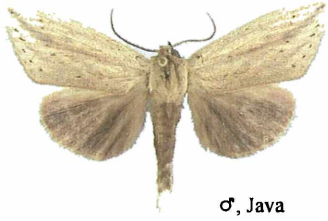


Fig. 172: Distribution of *Saliocleta sordida*.

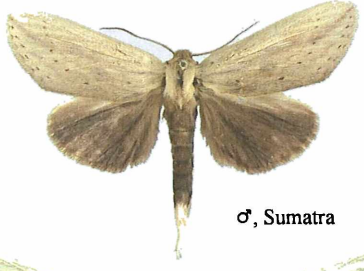
The good illustration of the male genitalia in the original description of ROEPKE (1943) allows the species to be identified. ROEPKE's illustration in the original description is not the holotype but a paratype of this variable species with a fuscous median spot on the forewings.
In Palawan the only species of the *nonagrioides*-group is apparently *S. sordida*. The pretty good series (n > 35, 6 GU) enabled us to study the individual variation and also to identify the matching female.
The series from Palawan and Borneo have paler and more reddish coloured hindwings with contrasting fuscous brown pattern and represent probably a different subspecies. Populations from Sumatra, Java and Bali have more uniform and fuscous brown hindwings.



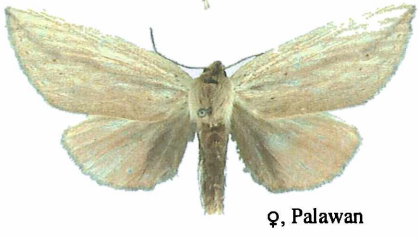
♂, HT, Java



♂, Java



♂, Sumatra



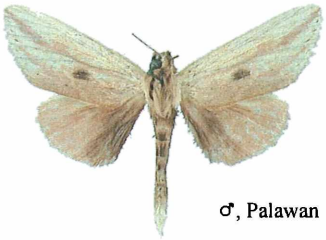
♀, Palawan

Fig. 173: Adults of *Saliocleta sordida*.

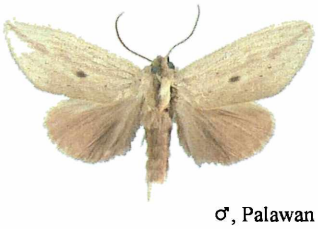
Diagnosis. Very similar to *S. odrana*. Due to the wide range of individual variation it is difficult to separate both species with the help of external features only. However in Palawan *sordida* is 2 - 3 mm smaller in forewing length compared to *odrana* from Mindanao and Leyte. The sexualdimorphic female resembles the male but hitherto no forms with blackish spot on the forewings are known. Females of *odrana* have a diffuse brownish patch in the discal area of the forewings, which is absent in *sordida*.

The male genitalia of *sordida* are separable from those of *odrana* by the shape of the 8th tergite and the more slender phallus. Also the sacculus of the valves, the sclerotization of the juxta and the 8th sternite (projections, notch) are different in both species.
The female genitalia closely resemble *odrana*, but there are minor differences in the shape of the ostium. *S. sordida* has a smaller, circular shaped signum.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



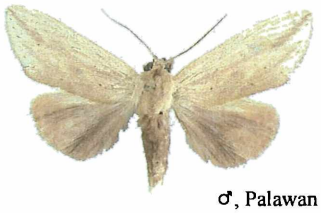
♂, Palawan



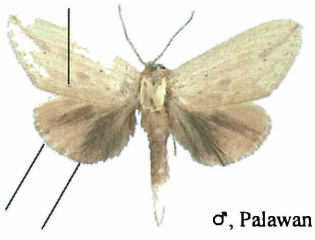
♂, Palawan



♂, Palawan



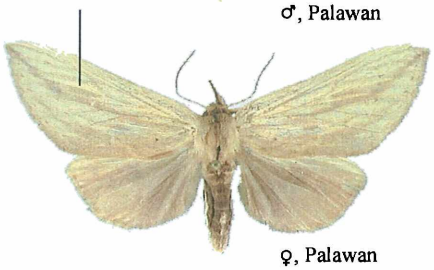
♂, Palawan



♂, Palawan



♂, Palawan



♀, Palawan

Fig. 174: Adults of *Saliocleta sordida.*

Variation. The range of individual variation in Palawan is wide. A few individual forms are illustrated here. The forms with a contrasting blackish spot on the forewings occur in about 20% of the males. Males from Palawan have paler and more reddish coloured hindwings than specimens from Sundaland.

The few males (n = 6; 4 GU) from Luzon and Negros are smaller and paler than the series from Palawan. The hindwings have a more reddish tinge.

The male genitalia of Palawan specimens show individual variation in the sclerotizations of the juxta and – to a lesser extend – in shapes of the uncus and the phallus tip.

Bionomics. The adults are generally rare in collections. Only from Palawan a larger series is available. They were collected i., ii., iii., x., xii. from 30 m - 950 m; most specimens were taken in primary and secondary forest at lower altitudes below 500 m.

Distribution. Distributed in Bali, Java, Sundaland and the Philipines: Palawan.

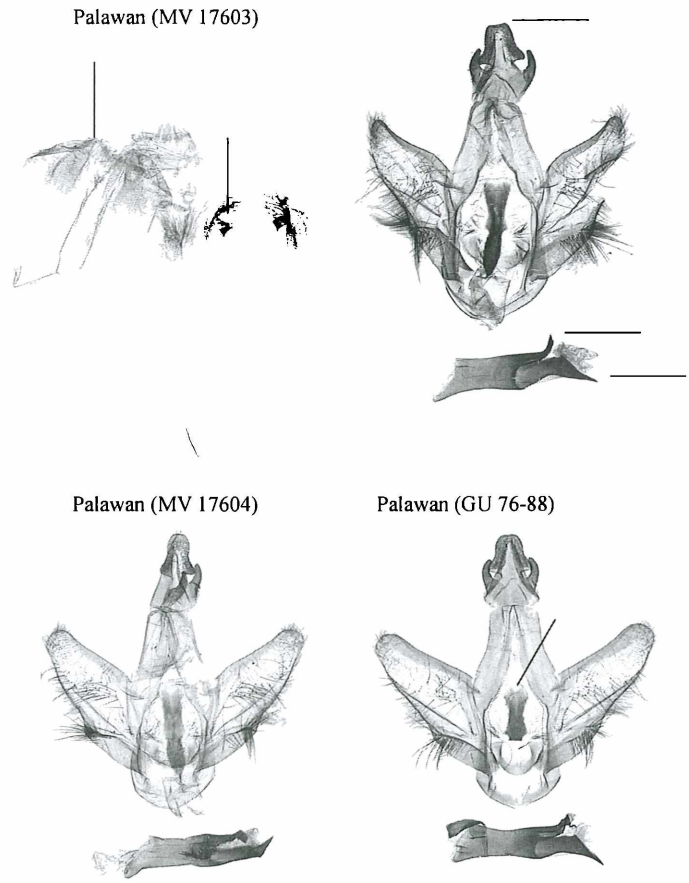


Fig. 175: Male genitalia of *Saliocleta sordida.*

Download unter www.biologiezentrum.at

30. *Saliocleta odrana* (SCHAUS, 1928): 86

HT: ♂, Philippine Islands, Mindanao, Surigao – USNM, Washington, photograph examined. (*Pydna odrana*)

= *Ceira sabulosa luzonica* SCHINTLMEISTER, 1993: 121, pl. 12: 7, pl. 13: 3, **syn. nov.**
HT: ♂, Philippinen, N-Luzon, Ifugao, Banaue vic., 20 km N Lagawe, 16°54' n. Breite, 121° 06' ö. Länge, 1.200 m – NHM, Wien, examined.

Saliocleta odrana is the sister species of *sordida* but the differences are very subtle. It seems, that *sodida* is rather a lowland-species, while *odrana* prefers medium altitudes around 1.000 m above sea-level.

Norraca celebica KIRIAKOFF, 1970: 109, fig. 8 (HT: ♂, W. Celebes, Mt. Tompoe, Paloe, 2.700 ft – BMNH, London, examined) is recognized here as a subspecies of *odrana* (stat. et comb. nov.). Based on a good series (n > 40) from Sulawesi at our disposal, they differ from ssp. *odrana* having paler hindwings and generally more reddish appearance. The male genitalia of *celebica* have a shorter uncus than *odrana* and a slightly different shape of the 8th abdominal segments.

The description of *Ceira sabulosa luzonica* has been based on a misidentification of *Turnaca odrana*. It is a junior synonym of *odrana* (syn. nov.).

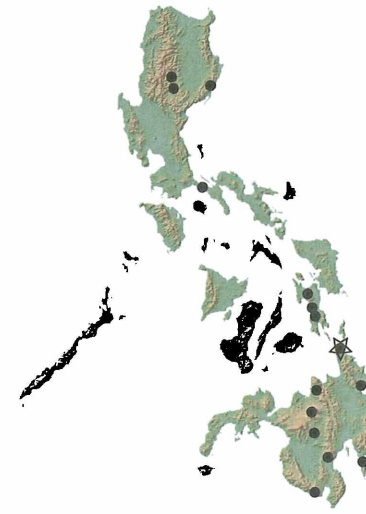


Fig. 176: Distribution of *Saliocleta odrana*.

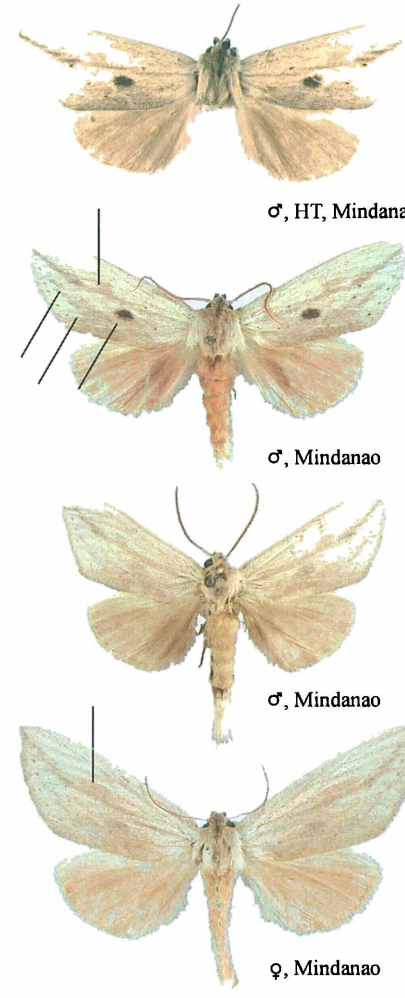


Fig. 177: Adults of *Saliocleta odrana*.

Diagnosis. Very similar to *S. sordida*, but 2 - 3 mm larger in forewing length. In Luzon and Negros also smaller individuals occur. Most specimens of *odrana* have a brownish medianspot on the transverse brownish line of the forewings. The hindwings are paler than in *sordida* from Palawan and the pattern of darker brownish areas are different in shape. The females can properly be separated from *sordida*-females by the weaker developed brownish transverse band.

The male genitalia are characterized by the well developed sacculus of the valve and a thicker phallus and the shape of the 8th tergite. Also the sclerotizations

©Naturhistorisches Museum

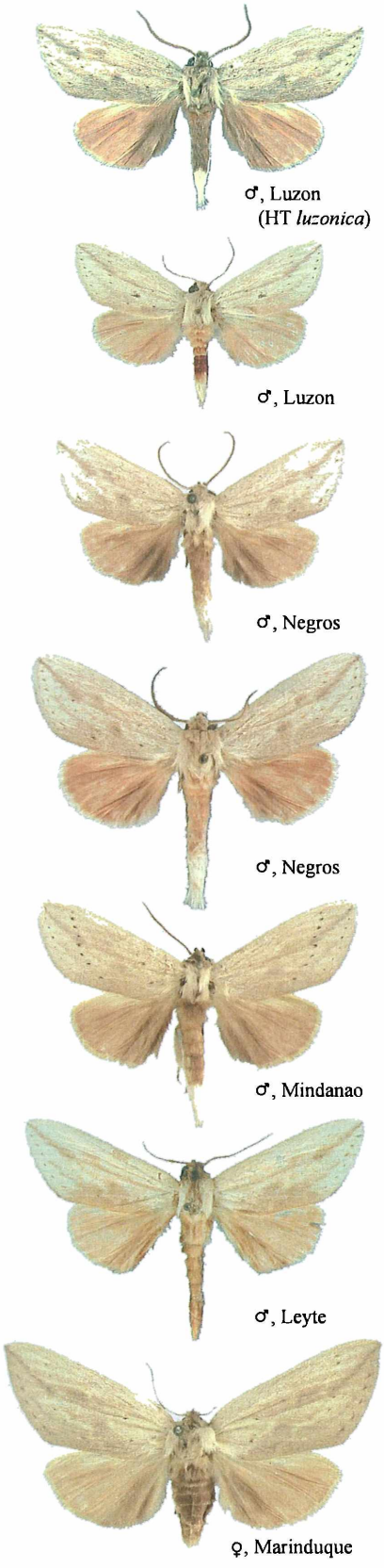


Fig. 178: Adults of *Saliocleta odrana*.

of the juxta and the 8th sternite are different in both species. Female genitalia are different in both species. They are similar to those of *sordida*, but differ in the shape of the ostium. The signum of *odrana* is larger and ellipsoid rather than circular.

Variation. The degree of individual variation is smaller in Leyte and Mindanao. Populations in Luzon and Negros vary in size, the forewing shape and predominant colour of the wings. Specimens collected at higher altitudes displayed a larger wingspan and, occasionally (about 10% of those examined) showed individual characteristics including a contrasting blackish median spot of varying sizes. Most other males show a pale brown, indistinct spot in this position. Other individuals have the postmedian fascia marked as a prominent row of black dots (in most fascia this is faint). Apart from two specimens, a series from Luzon (n = 11) has a fuscous brown tinge on the forewings and is less reddish compared to those from Mindanao and Leyte.

The male genitalia of *odrana* are less variable. Specimens from Luzon and Negros tend to have a more robust phallus (n = 8 GU); only one male from Negros shows a phallus comparable with specimens from Mindanao. A single male from Negros (GU 58-10) shows remarkably slender and long socii.

Bionomics. The adults appear frequently throughout the year (not found in xi.) from 120 m - 2.200 m. Most adults were observed at medium altitudes between 800 m - 1.200 m in primary and secondary forests.

Distribution. *Saliocleta odrana odrana* is endemic in the Philipines: Luzon, Marinduque, Negros, Leyte and Mindanao. The ssp. *celebica* is distributed in Sulawesi including Peleng Isl.

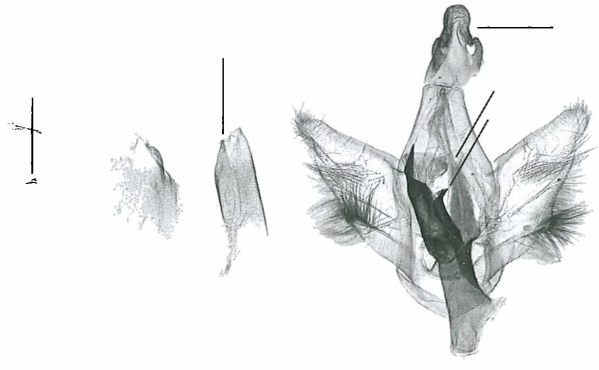


Fig. 179: Genitalia of *S. odrana celebica* (Sulawesi (GU 88-62).

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

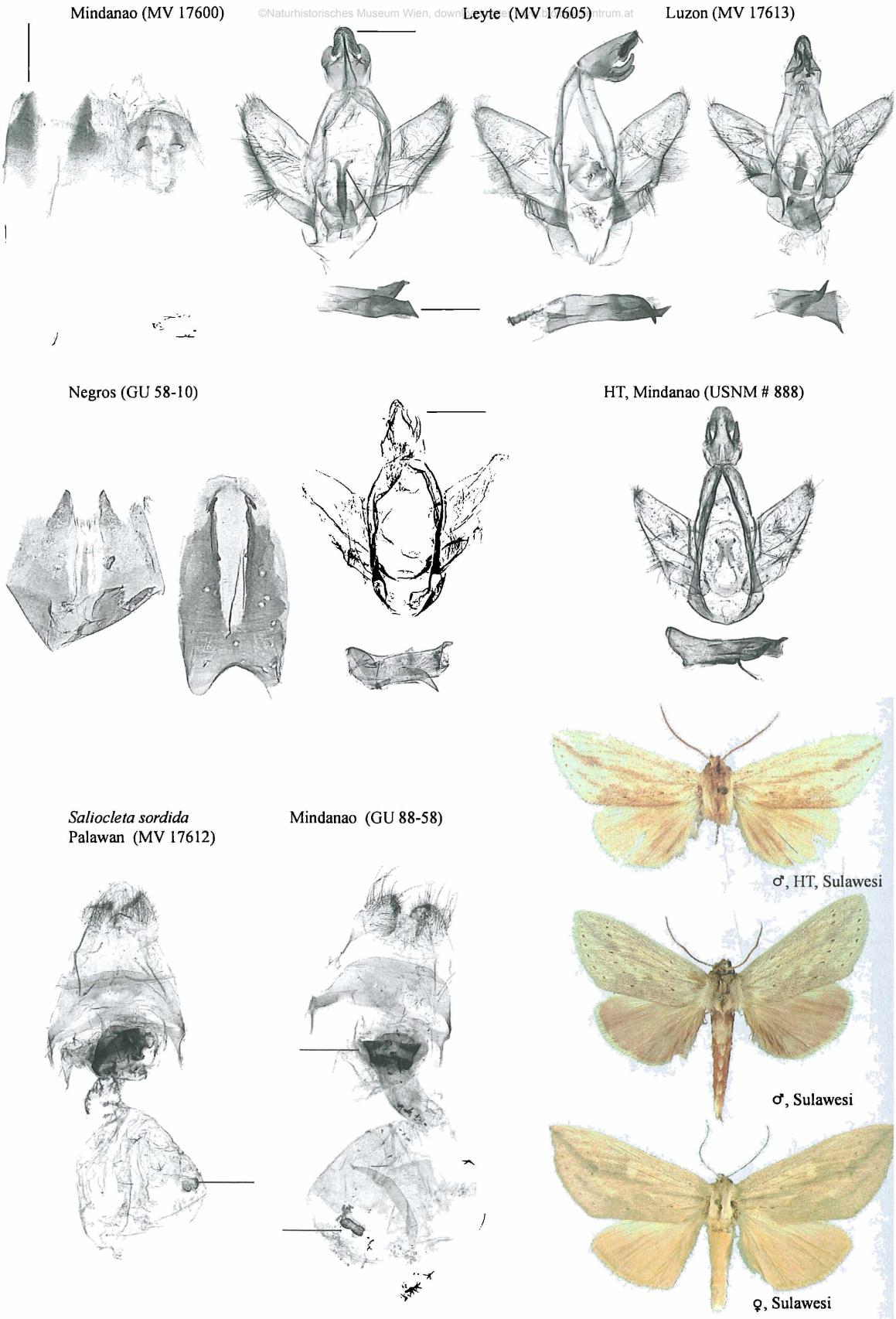


Fig. 180: Genitalia of *S. odrana* and female genitalia of *S. sordida*. **Fig. 181**: Adults of *S. odrana celebica*.

Biodiversity Heritage Library, http://www.biodiversitylibrary.org/; Museum für Naturkunde unter www.biologiezentrum.at

31. *Saliocleta ubalvia* (Schaus, 1928): 86

(*Pydna ubalvia*)

HT: ♂, Philippine Islands, Luzon [Mt. Makiling], – Nr. 33442, USNM, Washington, photo examined.

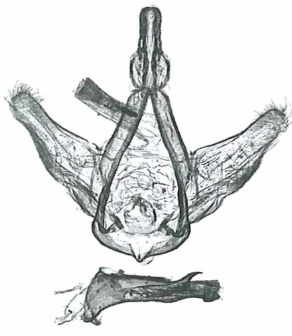
Diagnosis. *Saliocleta ubalvia* is characterized by the prominent brown band from the base to the apex of the forewings. The wingshape is diagnostically rounded at margin and costa but the apex is somewhat pointed. The only known female (n = 1) has a weakly developed fuscous forewing spot and a falcate apex. Both characteristics do not occur in the females of the other congeners.

The male genitalia resemble *S. sordida* but the uncus is slightly bilobed and the phallus shows a broad and serrated process near the tip. The 8th abdominal segment resembles *sordida*.

Variation. Occasionally there are individuals, showing a blackish median spot on the forewings (about 10% of n > 50 specimens). The colour of the forewings varies slightly to reddish brown. A few males from Luzon display slightly bilobed uncus.

Bionomics. The adults are uncommon and occur during the whole year (not found yet in i., v. and xii.) in primary and secondary forests at medium altitudes between 150 m - 800 m, in Mindoro up to 1.000 m.

Distribution. Endemic in the Philippines: Luzon, Mindoro, Panay and Negros.



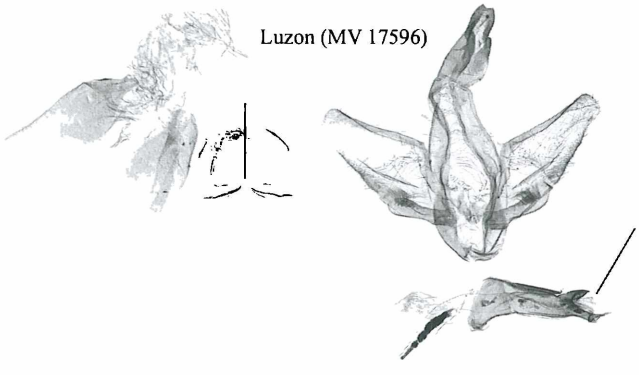


Fig. 182: Male genitalia of *Saliocleta ubalvia*.

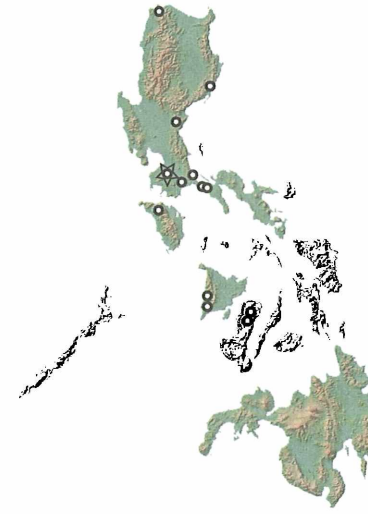


Fig. 183: Distribution of *Saliocleta ubalvia*.

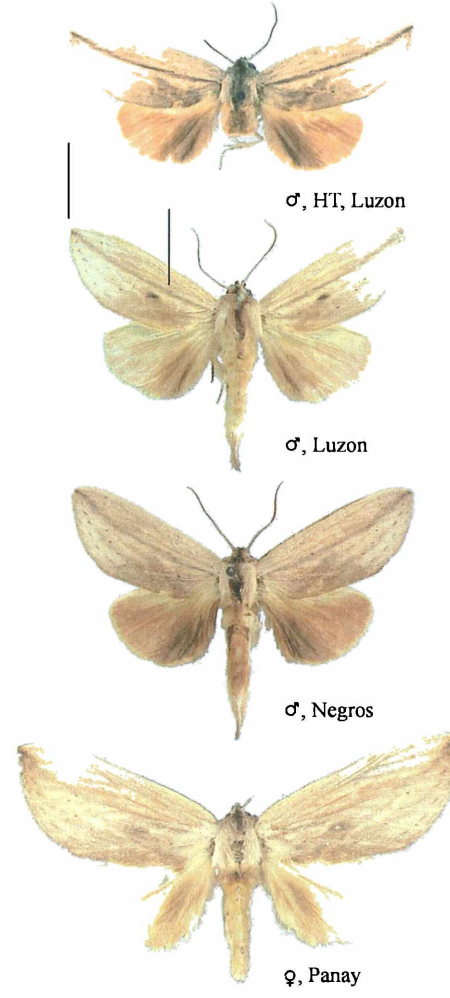


Fig. 184: Adults of *Saliocleta ubalvia*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

32. *Saliocleta semperi* (SCHINTLMEISTER, 1993): 122, **comb. nov.** (*Ceira semperi*)

HT: ♂, Philippinen N-Luzon, Mts. Province, Chatol 1.600 m, 15 km SE Bontoc, 17°02‘ n. Breite, 121° 03‘ ö. Länge – NHM, Wien, examined.

Diagnosis. The elongated forewings with a somewhat pointed apex and the prominent brown band from the base to the apex characterizes the species. The median spot is brown, the wing colour more yellow than reddish as in *ubalvia*. The costa of the forewings shows two brown dots, which are lacking in *ubalvia.* The female has rather uniform yellowish coloured forewings, except for the brown band to the apex and a submarginal fascia, weakly marked as a row of blackish dots.

The male genitalia have a relatively small and rounded uncus and rounded valves. The phallus displays a pair of diagnostic tong-shaped processes at the tip. The 8th abdominal segment resembles *sordida.* The female genitalia have a small signum.

Variation. Sometimes weakly marked and paler specimens occur. The ground colour in other individuals tends to be yellowish-brown with well marked patterns.

Bionomics. The moths commonly occur in forest clearings of mountainous regions between 900 m - 2.000 m during the whole year (not observed yet in ii., iii., x. and xi.).

Distribution. Restricted to Luzon.

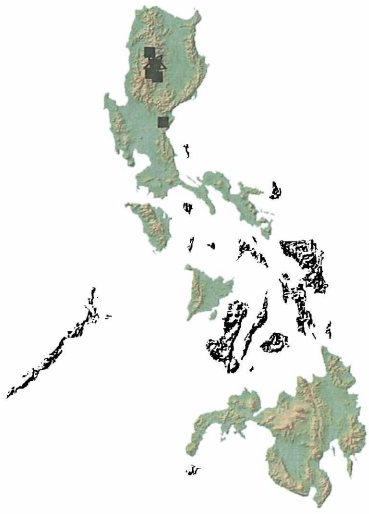


Fig. 186: Distribution of *Saliocleta semperi.*

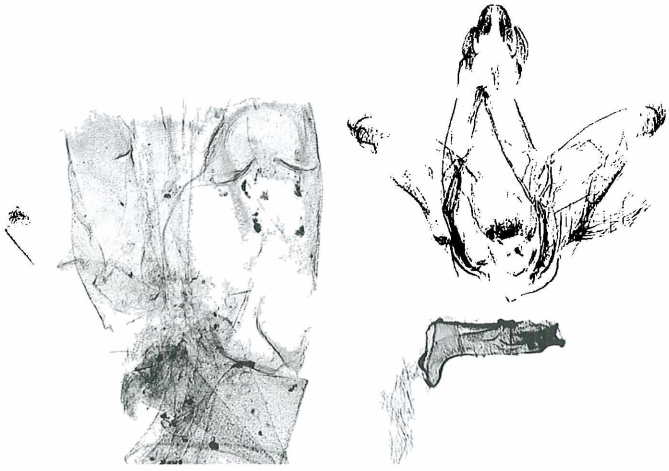


Fig. 185: Male genitalia of *S. semperi* Luzon (GU 17-84).

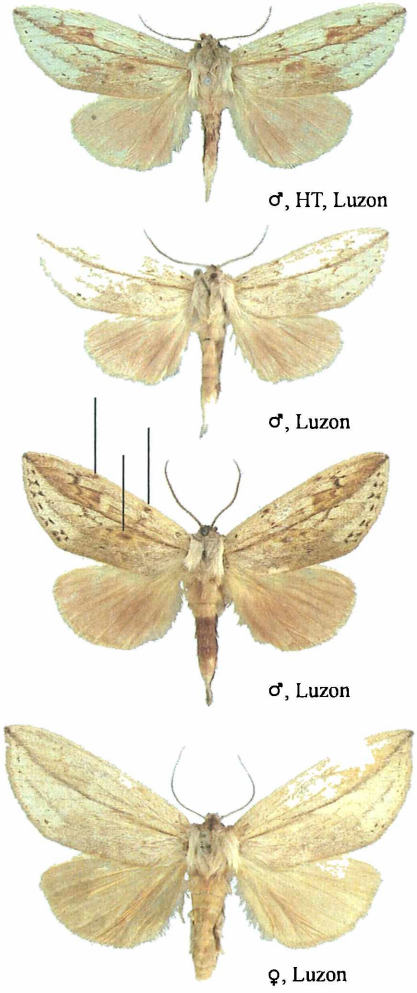


Fig. 187: Adults of *Saliocleta semperi.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

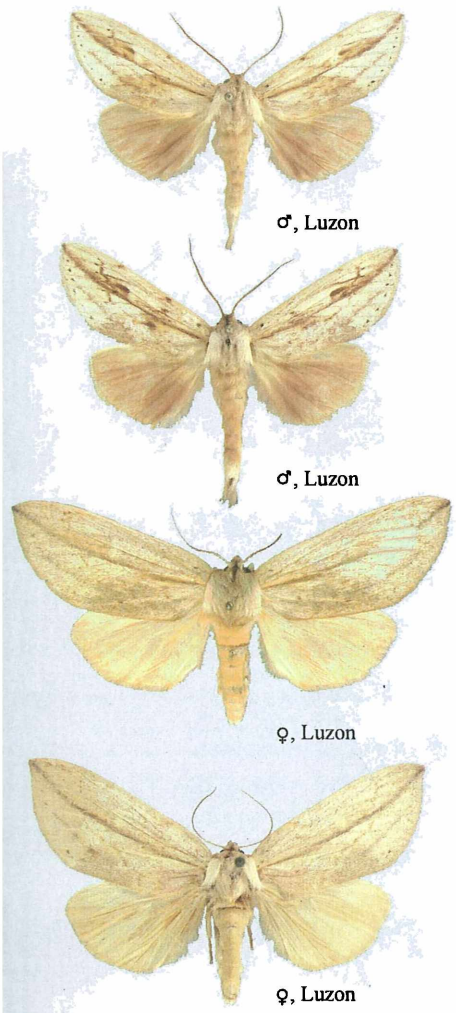


Fig. 188: Adults of *Saliocleta semperi.*

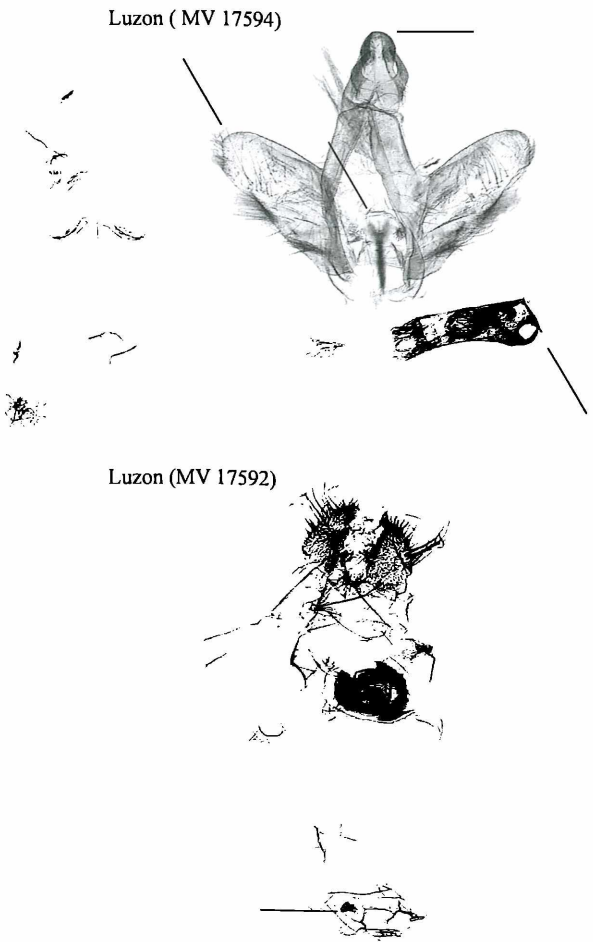


Fig. 189: Genitalia of *Saliocleta semperi.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

33. *Saliocleta widagdoi* SCHINTLMEISTER,

1994: 222; pl. 3: 13, pl. 4: 1
HT: ♂, Indonesia, North Sumatra, Prapat HW 2,
– coll. A. Schintlmeister, Dresden, examined.

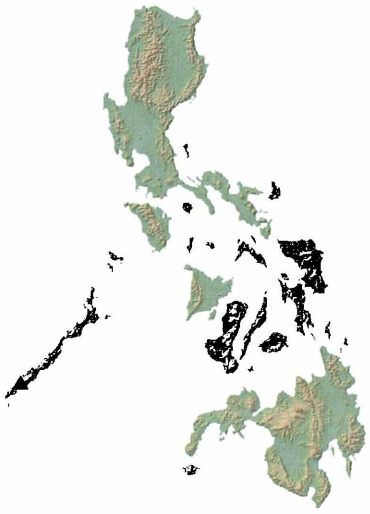


Fig. 190: Distribution of *S. widagdoi.*

Saliocleta widagdoi is an inhomogenous unit. Particularly the shapes of the uncus and socii of different populations are diverse and probably *widagdoi* represents a complex of several species. Also two males from Palawan do not match fully Sumatran type material, they are also different in external appearance (as illustrated). The restricted material to our disposal (n = 2) does not enable us to draw taxonomical consequences.

Diagnosis. *Saliocleta widagdoi* is well characterized by the fuscous chocolate-brown hindwings. The tornus of the forewings is rectangular. The longitudinal band is prominent and contrasting. The postmedian fascia is well marked as a row of black dots, with a larger spot on the longitudinal fascia.

The male genitalia are well distinguished by the rounded uncus, the robust and short triangular shaped socii. The phallus is relatively short. The 8th sternite resembles *S. semperi* and *commutatis.*

Variation. the two males from Palawan are different, as illustrated, but their male genitalia are virtually identical. They have a robust uncus and socii and somewhat broader valves compared to Sumatran specimens. Populations from Indochina and SE China are again different by shapes of uncus, socii, shape of the valves and a broader phallus.

Bionomics. The two known Palawan males were collected at 950 m and 1.150 m in v. and ix. Outside the Philippines the species is not rare and occurs during the whole year up to 1.900 m above sea-level.

Distribution. The species is widely distributed in Java, Sundaland and Indochina up to SE China. From the Philippines (Palawan, Mantalingahan) 2 ♂♂ are known.

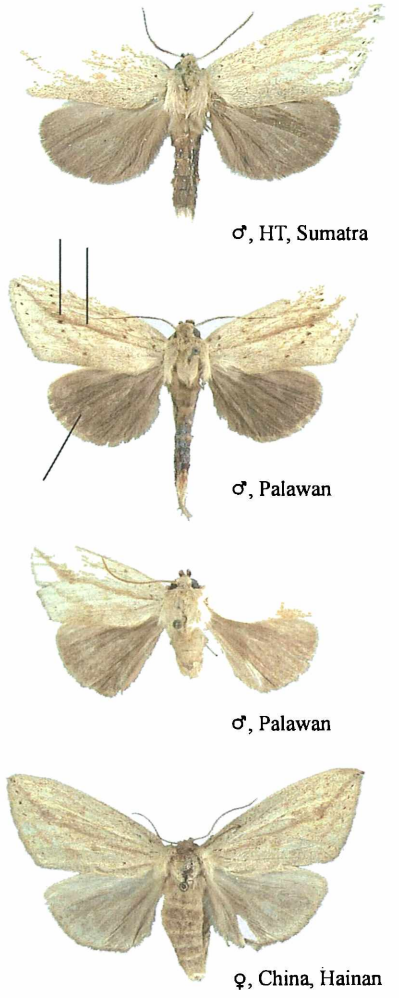
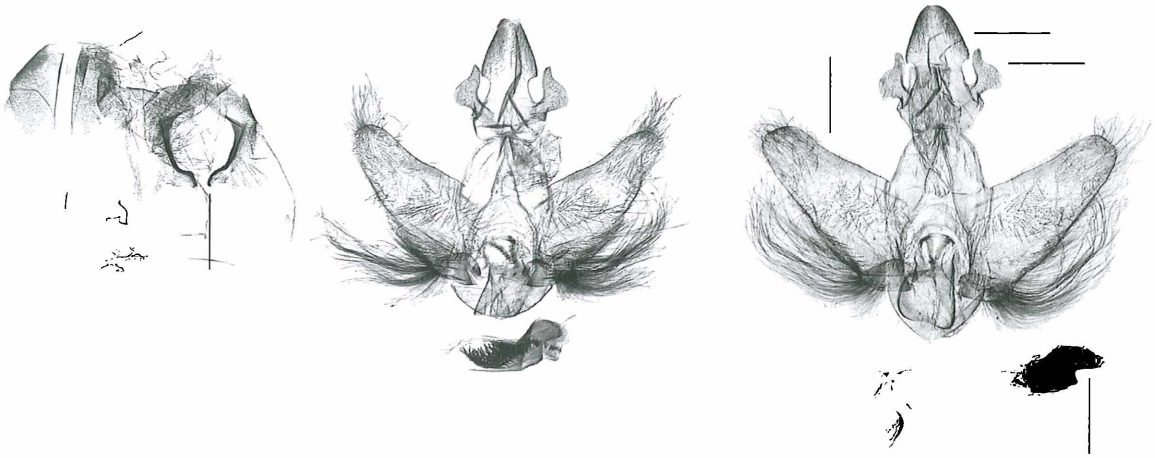


Fig. 191: Adults of *Saliocleta widagdoi.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Palawan (MV 17591)

Palawan (GU 12-34)



PT, Sumatra (GU 12-85)

China-Guangxi (GU 82-30)

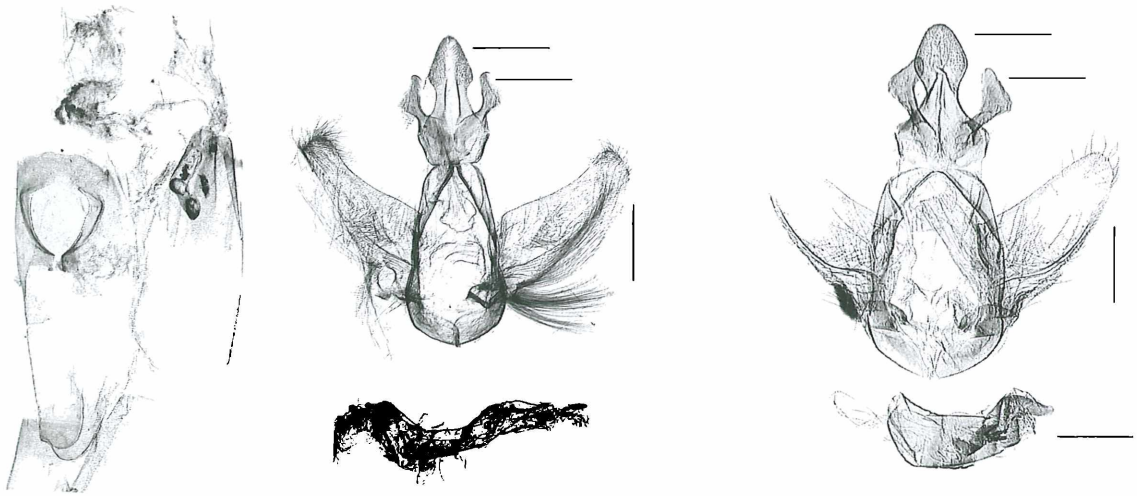


Fig. 192: Genitalia of *Saliocleta widagdoi.*

download unter www.biologiezentrum.at

34. *Saliocleta commutatis* spec. nov.

HT: ♂, Philippinen, Palawan, S. Vicente, 20 km NEE Roxas, 10°21N.L./119°10'E. Br., Mittelgebirgsurwald, 400 m, 12. i. - 17.i.1988, leg. Cerny & Schintlmeister – NHM, Wien.

Paratypes (30 ♂♂, 2 ♀♀):
Palawan: 4 ♂♂, S. Vicente, 20 km NEE Roxas, 10°21' N.L., 119°10'E. Br., 400 m, 12. i. - 17.i.1988 (GU 17-80, 17-87); 3 ♂♂, Mt. Salakot, res., 800 m, 9°51' N, 118°38'E, 10.-27. ii.2000; 1 ♂, Irawan, 50 m, 5.viii.1997; 1 ♂, Bacungaro, 21.x.1995; 2 ♂♂, Matalango, SE Port Barton, 80 m, 10°18'N, 119°11'E, 6.iii.2006 (MV 17587); 4 ♂♂, NE of Napsan, 7 km N of Salakot Falls, 950 m, 9°51'N, 118°37'E, 14.-15.iii.2006; 1 ♂, Brgy. Maranlantan, Lake Danao, 85 m 10°46.093'N, 119°30.658'E, 18.xii.2007; 1 ♀, Brgy. Culasian Pinagar 37 m, 8°48.460'N, 117°28.530'E, 8.-10.xii.2007 (MV17598);
Mindanao: 4 ♂♂, Bukidnon, Mt. Kitanglad, S-Seite, Intavas, 750 m, 8°07'N, 124°55'E, 15.viii.-15.ix.1993; 1 ♂, 40 km NW Maramag, Dalongdong, 800 m, Talakag, 7°53'N, 124°40'E, 1.-3.x.1988 (GU 17-86); 1 ♂, Mis. Oriental, 22 km NE Claveria Brgy Mat-I, 1.050 m, 8°39.988'N, 124°59.686'E, 20.-21. iii.2009; 1 ♂, Agusan sur, 10 km SE Trento Sta. Maria, 185 m, 8°01.615'N, 126°12.322'E, 27.-28.viii.2008; 2 ♂♂, Cotabato del sur, Mt. Busa, 700 m, viii.1997 (MV 17588);
Tawi-Tawi: 1 ♂, Tanawakan, north of Batu Batu, 14.ixi.1961 (GU 12-35);
Borneo: 1 ♂, Kalimantan Selatan, 30 km E Kandangan, 15 km NE Loksado, 800 m, 2°52'S, 115°38'E, xi.1997 (GU 88-57); 1 ♀, 85 miles above Pontianak, iv.1909; 1 ♂, Brunei, Ulu Temburong, 300 m, 10.ii.1080 (BM #994);
Thailand: 1 ♂, Krabi, Khao Prabang, Khram non-hunting area, rd to coffee plantn. 8-xii.1991; 1 ♂, Yala, Ba Haia, 6°09'N, 101°16'E, 800 m, 3.-20.iv.2002; 1 ♂, Changmai, Sansai, 17.ix.1985.

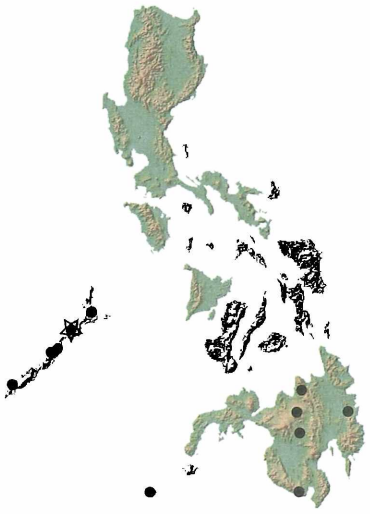


Fig. 193: Distribution of *S. commutatis*.

Schintlmeister & Pinratana (2007: 79) earlier pointed out, that the HT of *S. nonagrioides*, a female is not the same species, that was reported and illustrated in Holloway (1983: 44, pl. 4: 7, fig. 44) under this name from Borneo. The species is described here as new to science.

Diagnosis. Forewing length ♂♂ 20 mm - 21 mm, a single ♂ from Tawi-Tawi 19 mm; ♀♀ 26 mm and 28 mm. The new species is readily recognizable by the angled tornus of the forewing and the reddish brown hindwings. The forewings are a warm yellow with brown markings. There are two indistinct but diagnostic patches in the median and postmedian

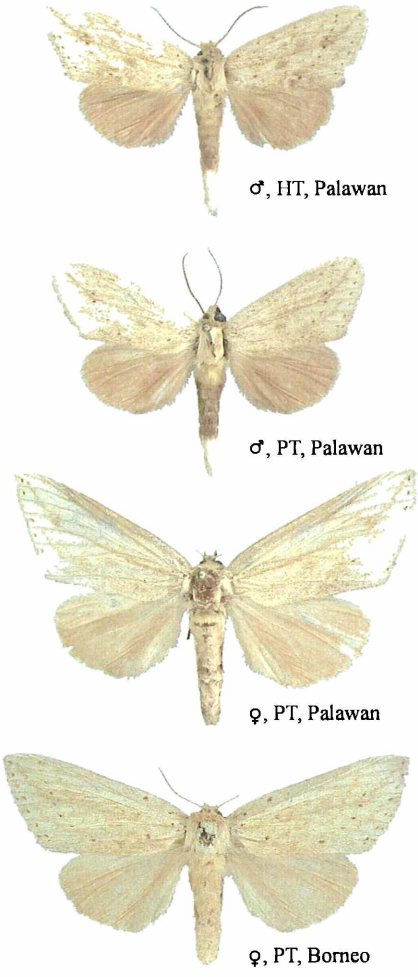
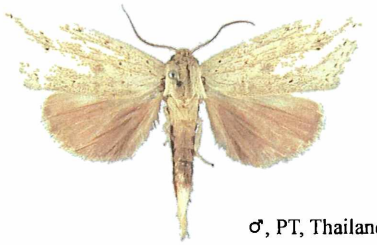
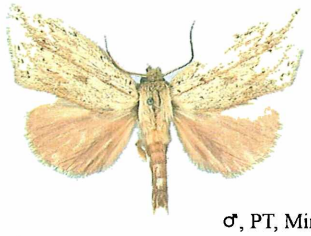


Fig. 194: Adults of *Saliocleta commutatis*.

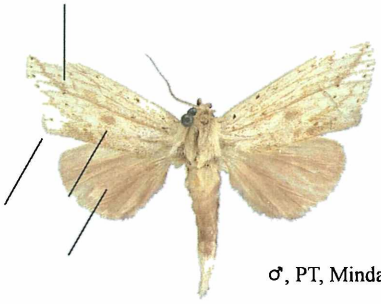
©Naturhistorisches Mus



♂, PT, Thailand



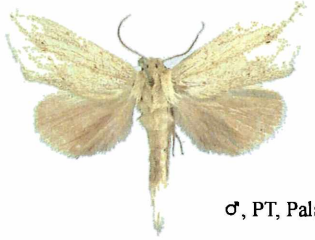
♂, PT, Mindanao



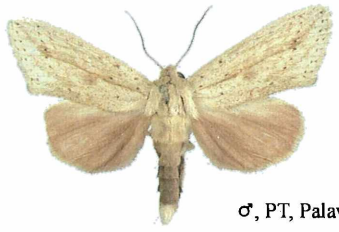
♂, PT, Mindanao



♂, PT, Tawi Tawi



♂, PT, Palawan



♂, PT, Palawan

Fig. 195: Males of *Saliocleta commutatis*.

area near the brown longitudinal fascia running from the base to the apex of the forewings. The female resembles the male but the wingshape is broader. *S. widagdoi* differs from *commutatis* by the fuscous chocolate brown hindwings and the male genitalia.

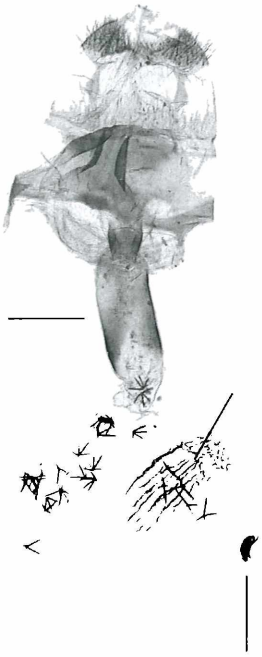
The male genitalia are characterized by a pointed uncus, the pair of robust, boomerang shaped socii and the diagnostically curved phallus. The base of the valves bears a brush of long setae. The shape and the sclerotization of the 8th sternite resembles *S. semperi*. The female genitalia have a robust and strong sclerotized ductus bursae and a signum.

Variation. The markings on the forewings are sometimes reduced and weakly developed. A single male from Tawi Tawi is unusually small and pale. The male genitalia seem to be remarkably constant (n = 9 GU).

Bionomics. The adults are not rare in the Philippines in primary and secondary forests up to 1.050 m.

Distribution. Distributed in Thailand, Borneo and the Philippines: Palawan, Mindanao and Tawi-Tawi Islands.

PT, Palawan (MV 17598)



PT, Palawan (GU 17-87)

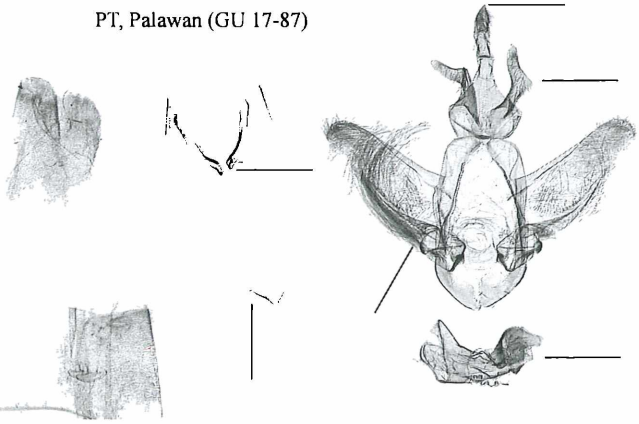


Fig. 196: Genitalia of *Saliocleta commutatis*.

© Naturhistorisches Museum, download unter www.biologiezentrum.at

35. *Saliocleta barasamphia* (Schaus, 1928):

87 (*Pydna barasamphia*)
HT: ♂, Philippine Islands, Luzon [Mt. Makiling] – Nr. 33443, USNM, Washington, not examined.

= *Pydna ercona* Schaus, 1928: 87;
HT: ♂, Philippine Islands, Luzon [Los Baños] – Nr. 33444, USNM, Washington, photo examined.

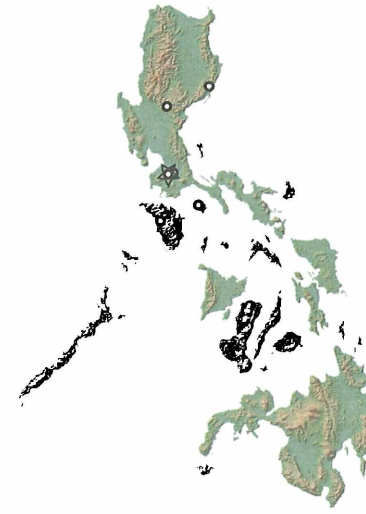


Fig. 197: Distribution of *S. barasamphia.*

Kiriakoff (1962: 195) elucidated the synonymy of *Pydna barasamphia* and *Pydna ercona* and illustrated schematically the male genitalia of both types (figs. 45, 45a). We found unfortunately no male in Luzon (except the types) but two males from Mindoro and Marinduque matched the illustrations of Kiriakoff. The sexualdimorphic females from Luzon are very probably conspecific with *barasamphia*, as no other member of this group is known from Luzon.

Diagnosis. The small moth belongs to a group of similar species that are characterized by a brownish longitudinal band from the base to the apex of the forewings, a marginal fascia, marked as a row of small black dots and an angled tornus of the forewings. *Saliocleta barasamphia* shows indistinct and diffuse brownish markings; most other congeners have a clearer pattern. The female lacks almost any pattern but the discalspot of the forewings is marked as an inconspicous paler spot.
The male genitalia are very distinct by the biforked very large socii and the arrow-shaped, broad uncus. The phallus is curved. The 8th abdominal segments are similar to most other congeners, e.g. *S. semperi.* The female genitalia have small papillae, a robust long and strongly sclerotized ductus bursae. The signum is small.
Variation. The brown pattern on the forewings is usually not very conspicous, but the HT of *ercona* has contrasting markings. The specimens from Mindoro are very pale in ground colour. Unfortunately there is not enough material to study the variability.

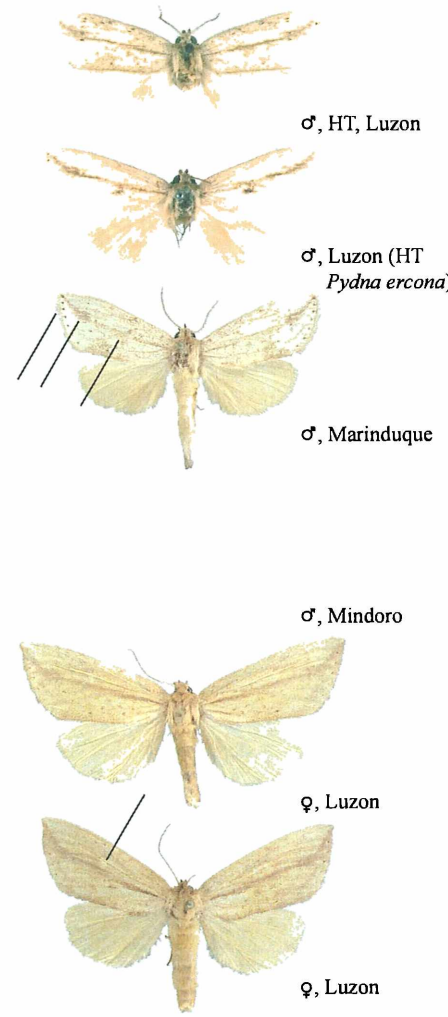
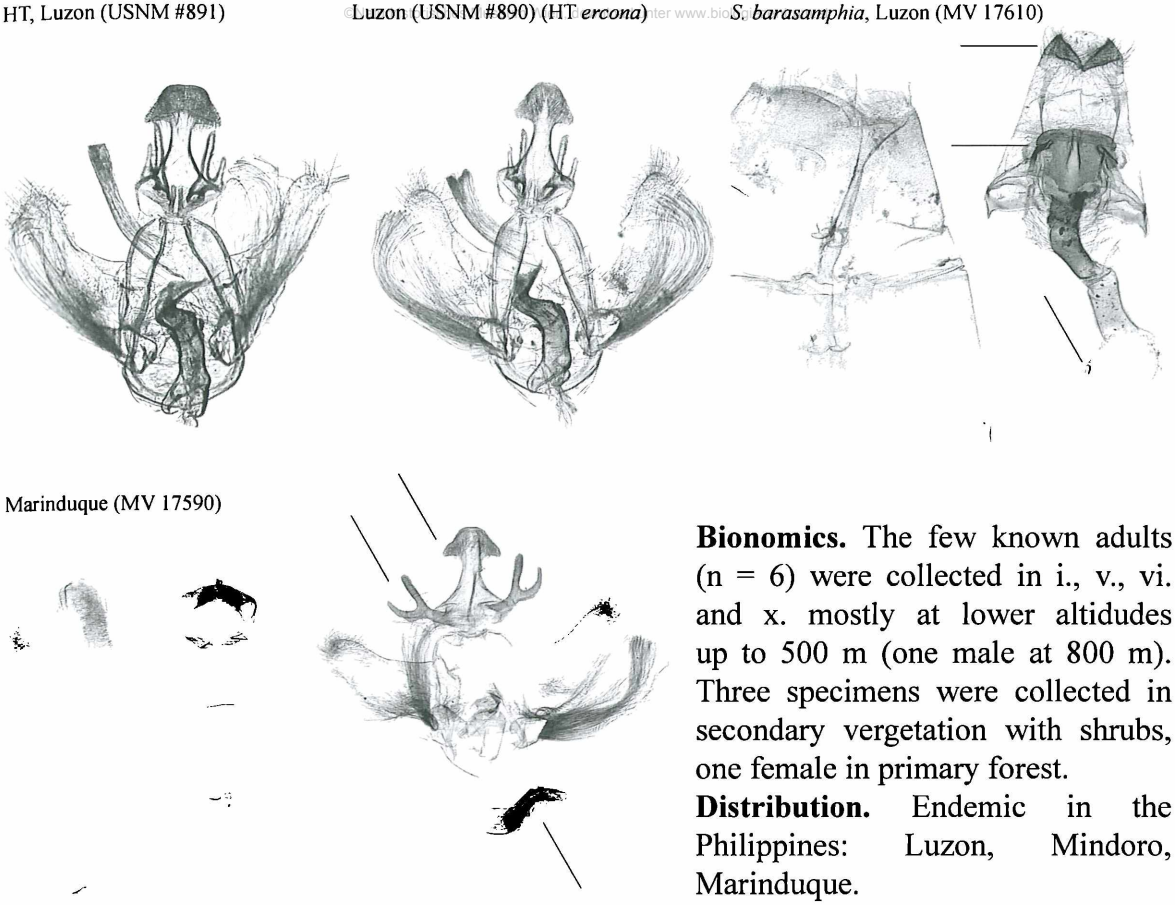


Fig. 198: Adults of *Saliocleta barasamphia.*



Bionomics. The few known adults (n = 6) were collected in i., v., vi. and x. mostly at lower altidudes up to 500 m (one male at 800 m). Three specimens were collected in secondary vergetation with shrubs, one female in primary forest.

Distribution. Endemic in the Philippines: Luzon, Mindoro, Marinduque.

Fig. 199: Genitalia of *Saliocleta barasamphia.*

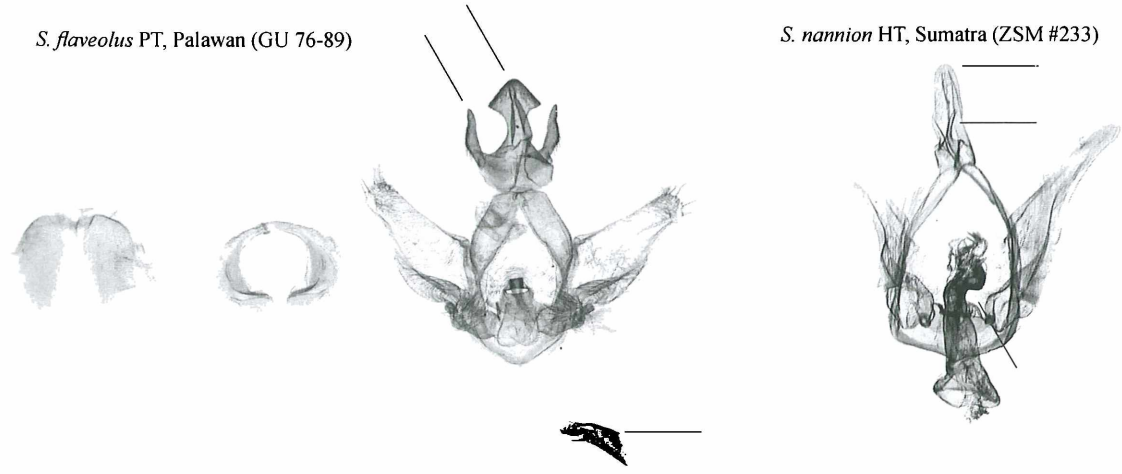


Fig. 200: Male genitalia of *Saliocleta flaveolus* and *nannion.*

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

36. *Saliocleta flaveolus* spec. nov.

HT: ♂, Philippines, C. Palawan, W Victoria range, 10 km E of Napsan, 300 m, 9°50'N, 118°35'E, 16.iii.2006 leg. JH Lourens – NHM, Wien.

Paratypes (12 ♂♂):
Palawan: 2 ♂♂, Mt. Gantung, Fuß, 200 m, 9°01' N.L./ 117°57'E. Br., 19.- 21.i.1988 (GU 17-88, 17-89); 1 ♂, Mt. Salakot, res., 800 m, 9°51' N, 118°38'E, 10.-27.ii.2000; 2 ♂♂, ibid., 350 m, 9.viii.1997; 1 ♂, ibid. 500 m, 19.vii.1984; 1 ♂, Victoria peak, 700 m, 1.viii.1984; 1 ♂, Irawan, 50 m, 20.x.1995; 2 ♂♂, ibid. 5.-10.viii.1997; 1 ♂, San Lucia, 25.x.1995; 1 ♂, Mt. Magcasaw, Brook's point, 600 m - 900 m, 3.-6.xi.1996.

Etymology. The name refers to the yellow colour of the moth.

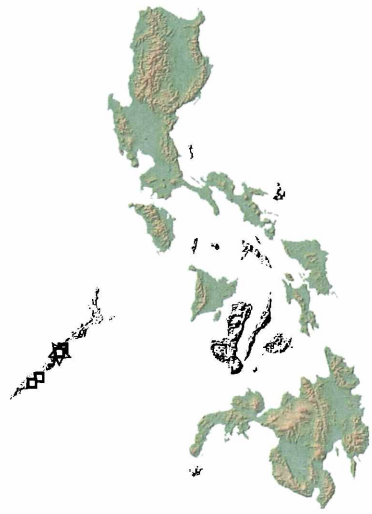


Fig. 201: Distribution of *S. flaveolus*.

Diagnosis. Forewing length ♂♂ 17 mm - 20 mm (average 18 mm). The small species is characterized by a warm yellow ground colour with a prominent well developed brown longitudinal fascia from the base to the apex of the forewings. The postmedian and submarginal fasciae are marked as rows of black dots. Some individuals have also a postbasal row of black dots. The hindwings are yellow tinged with orange. *Saliocleta flaveolus* bears resemblance to *S. nannion* (KIRIAKOFF, 1974) from Sumatra. But the male genitalia of the latter species are different (slender uncus, short socii, curved phallus – as illustrated above). The female is still unknown but could be similar to the female of *barasamphia.*
The male genitalia are characterized by an arrow-like shaped uncus and a pair of relatively long socii. The base of the valves bears a brush of long setae. The rather straight shaped phallus has a diagnostically small spine. The shape and the sclerotization of the 8th sternite resembles *S. semperi* and other congeners.
Variation. The markings on the forewings are sometimes weakly developed. Three specimens of the type-series show an indistinct brownish median spot on the forewings.
Bionomics. The small moths were taken up to 800 m in primary and secondary forests.
Distribution. Endemic in the Philippines: Palawan.

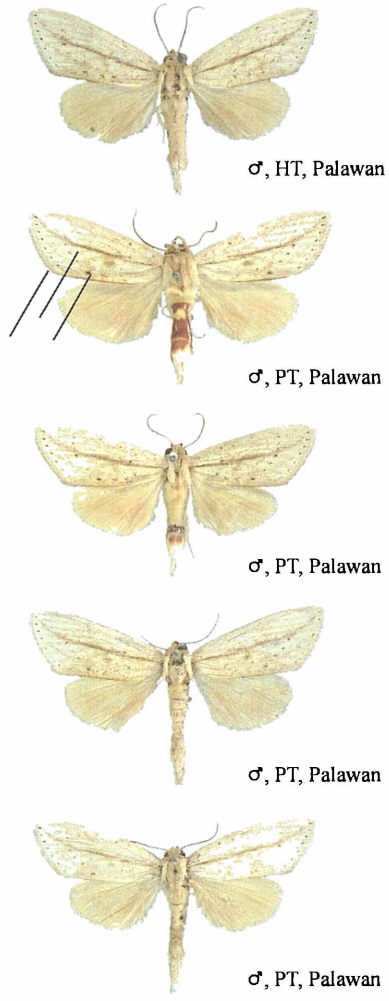


Fig. 202: Males of *Saliocleta flaveolus*.

Download unter www.biologiezentrum.at

Oraura KIRIAKOFF, 1962: 152, 204

Type-species: *Bireta aurora* KIRIAKOFF, 1962

Oraura was established as a subgenus of *Bireta* WALKER, 1856 and was raised to generic level by KIRIAKOFF (1967: 53). SCHINTLMEISTER (1992: 68) included *Oraura* as a synonym in *Ceira* Walker, 1865 and recognized later (SCHINTLMEISTER & PINRATANA 2007) *Ceira* as a synonym of *Saliocleta*. Due to the elongated forewings of the adults with the characteristic pattern in the discal area (a white circular stigma and two white streaks) SCHINTLMEISTER (2008: 88) placed it in *Armiana* (type-species: *Armiana lativitta* WALKER, 1862) as a subgenus of *Saliocleta*. The male genitalia of *S. lativitta* match well the genus concept of *Saliocleta*, but they differ dramatically from *Bireta auroa* (type species of *Oraura*) in the shape of the uncus, the socii and in particular the absence of a basal projection of the valves in *aurora*. So we treat *Oraura* as a distinct genus, which is doubtless closely related to *Saliocleta*.
The genus is distributed in several species in the oriental tropics up to Timor Isl. and the palaearctic part of China.

37. *Oraura longipennis* (MOORE, 1881): 340 (*Norraca*)

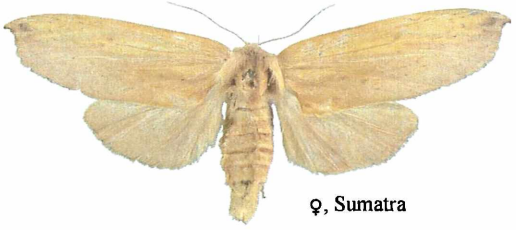
HT: ♂, [Malaysia], Penang – BMNH, London, examined.

= *Norraca uncinata* SEMPER, 1902: 706, pl. 66: 18;
LT: ♀, Philippinen, Luzon – Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt/Main, examined, **syn. nov.**

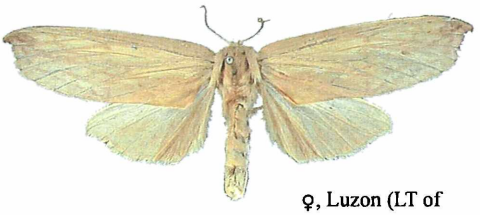
= *Norraca ordgara* SCHAUS, 1928: 89;
HT: ♂, Philippine Islands, Manila – # 33448, USNM, photo examined, **syn. nov.**



♀, HT, Penang



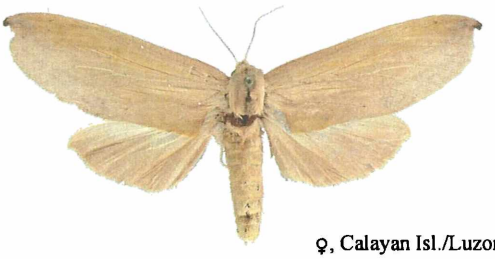
♀, Sumatra



♀, Luzon (LT of *Norraca uncinata*)



♀, Negros



♀, Calayan Isl./Luzon

Fig. 203: Females of *Oaura longipennis*.

The Holotype of *Norraca longipennis* is a small and pale female, probably a reared specimen from Penang Isl., not far from the mainland of W Malaysia. Its genitalia match a dissected female from Negros.

SEMPER (1902) described *Norraca uncinata* in an appendix of his book. He reported two females, of which only one could be located in Senckenberg, Frankfurt. This female we designate hereby as the lectotype to stabilize the taxonomy because a second congener occur in the Philippines. The illustrated LT female bears the following labels: in SEMPER's hand „*Norraca uncinata* SEMPER Type", two labels „922" and „893" and a later (probably by GAEDE) added red label „Type". The LT matches well to Sumatran and Negros specimens and is a junior synonym of *Norraca longipennis* (syn. nov.). A further junior synonym of *longipennis* is *Norraca ordgara* of which the male genitalia (HT) are illustrated by KIRIAKOFF (1962, fig. 63), syn. nov. They closely match the dissected specimens from Sundaland, Thailand, China and the various islands of the Philippines (n = 11 GU).

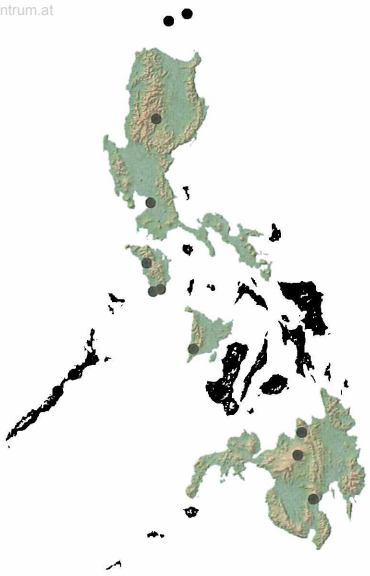


Fig. 204: Distribution of *O. longipennis*.

Diagnosis. The males are well characterized by the elongated unique forewing shape, the orange-brown ground colour of the forewings with creamy markings in the discal area and the long abdomen. They are distinguished from other similar congeners by the prominent fuscous brownish markings in the postmedian area. The sexual dimorphic females have a falcate apex of the forewings with a diagnostic blackish spot. They lack almost any fuscous pattern on the wings.

The male genitalia are characterized by the fan-shaped tip of the uncus, a costal process of the valves and the diagnostically shaped phallus. The 8th abdominal segments resemble those of most other species of *Saliocleta*. The female genitalia have a large postvaginal plate, a very robust and strong sclerotized ductus bursae. There is no signum on the bursa copulatrix.

Variation. *Oraura longipennis* is a variable insect, that fluctuates in the ground colour of the forewings from pale reddish brown to fuscus orange-brown and

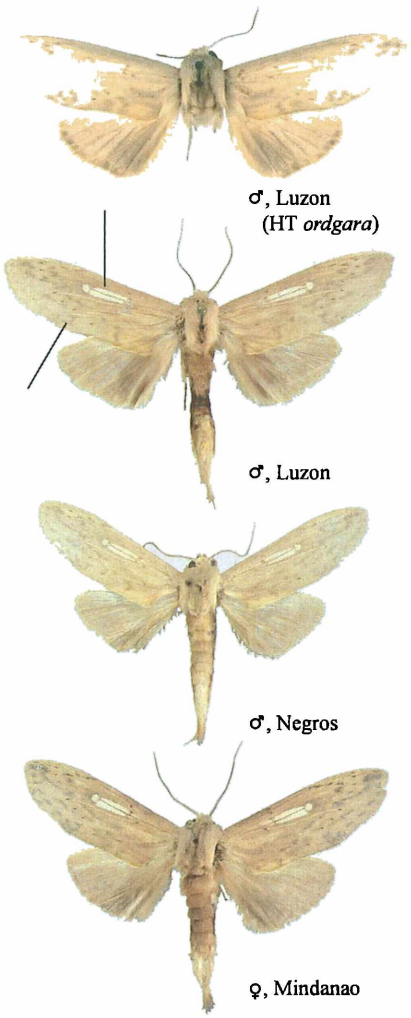


Fig. 205: Males of *Oraura longipennis*.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

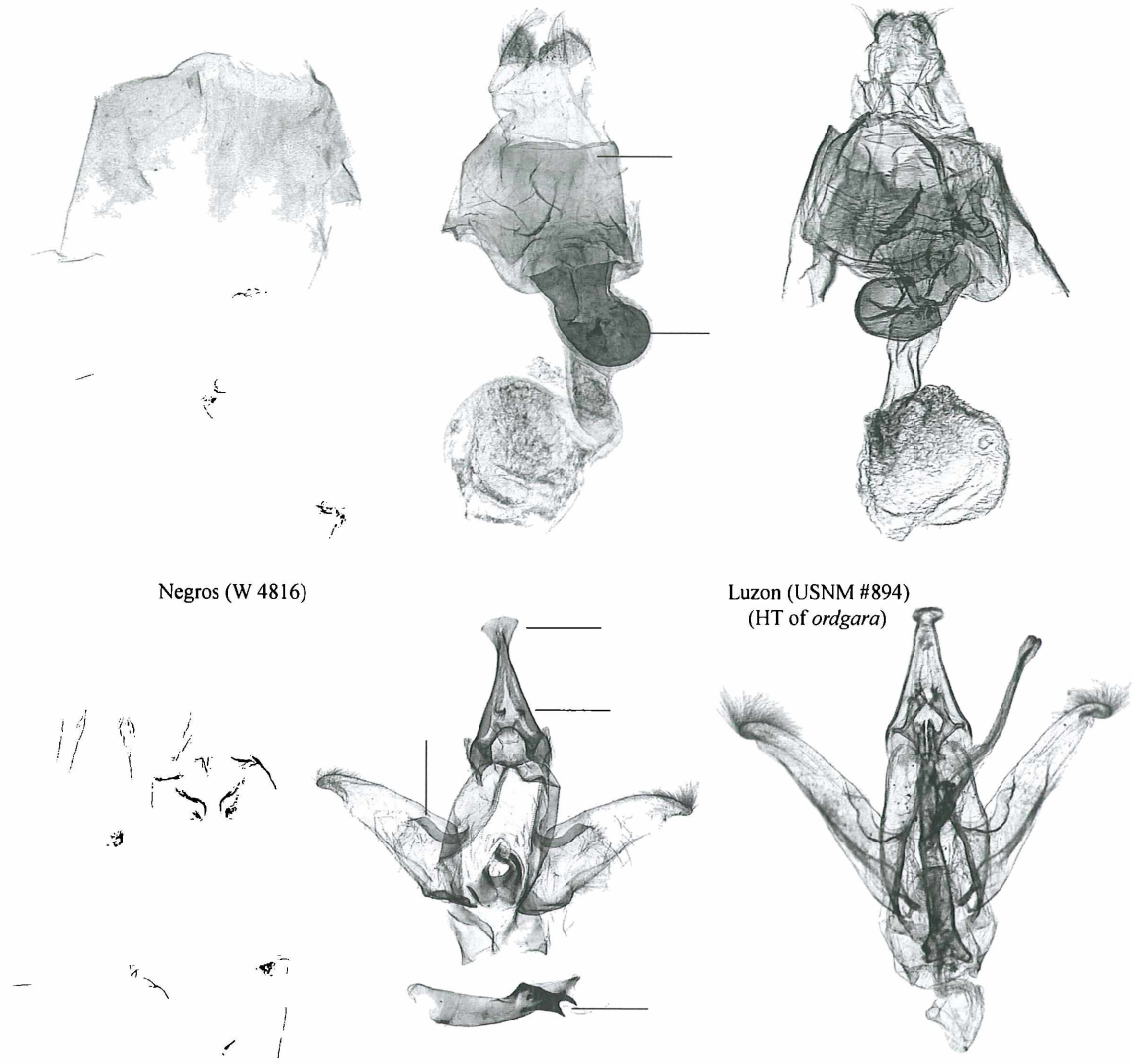


Fig. 206: Genitalia of *Oraura longipennis*.

yellowish-brown. In some males the brownish pattern is reduced. The colouration of the forewings of the females can range from yellow to fuscous orange-brown. The HT of *ordgara* shows a knobshaped uncus.

Bionomics. The adults occur throughout the year at lower and medium altitudes up to 1.200 m. A male from Mindanao was caught at 2.200 m. The imagines are occasionally common in urban areas and secondary forests but also occur in primary forests.

Distribution. Widely distributed in India, Sri Lanka, Andaman Isl., Indochina, S China, Sundaland, Java, Bali, the lesser Sunda Islands and in the Philippines: Palawan, Luzon (including Babuyan and Calayan Islands), Mindoro, Panay, Negros and Mindanao.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

38. *Oraura schausi* spec. nov.

HT: ♂, Philippinen, Cotabato (Prov. Sumangani) Mount Busa, near Kainba 70 m, viii.1997, leg. Bal – NHM, Wien.

Paratypes (9 ♂♂):
Mindanao: 9 ♂♂, Cotabato del sur, Mt. Busa, 700 m, viii.1997 (GU 52-42, MV 17601).

Etymology: Named after William SCHAUS (1858 – 1942 New York) who started his entomological career as an amateur entomologist and became in 1921 (at the age of 63) a honorary curator of insects in the USNM, Washington. SCHAUS described more than 5000 Lepidoptera, mostly from S America and contributed in one paper also to Philippine notodontids.

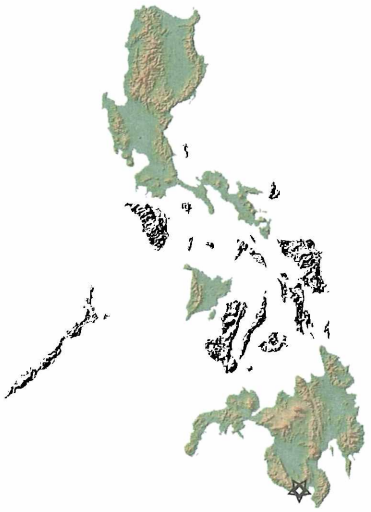


Fig. 207: Distribution of *Oraura schausi.*

Diagnosis. Forewing length ♂♂ 23 mm - 27 mm; most specimens have a forewing length between 25 mm - 26 mm. The new species resembles *O. longipennis*, which also occurs in Mindanao. *O. schausi* however has 2 mm - 4 mm bigger forewing length and the ground colour of the forewings is more intensively pinkish-brown. The brown pattern is weakly developed and some individuals show almost plain forewings. The hindwings are more pinkish tinged compared to *longipennis.* The female is still unknown.

The male genitalia have a very broad prominent triangular shaped uncus with a small rectangular tip. The uncus is much shorter compared to *longipennis* and shows a pair of small projections near the tip. The pair of robust socii resembles *longipennis* but are larger. The basal projection of the valves is small. The phallus is curved and has no bifurcate tip as in *longipennis*. The shape and the sclerotizations of the 8th abdominal segments are similar to *longpennis*.

Variation. There are remarkable differences in the forewing lengths of the specimens of the type series. Also the development of the brown markings is subject of individual variation.

Distribution. Known only from the type locality in Mindanao.

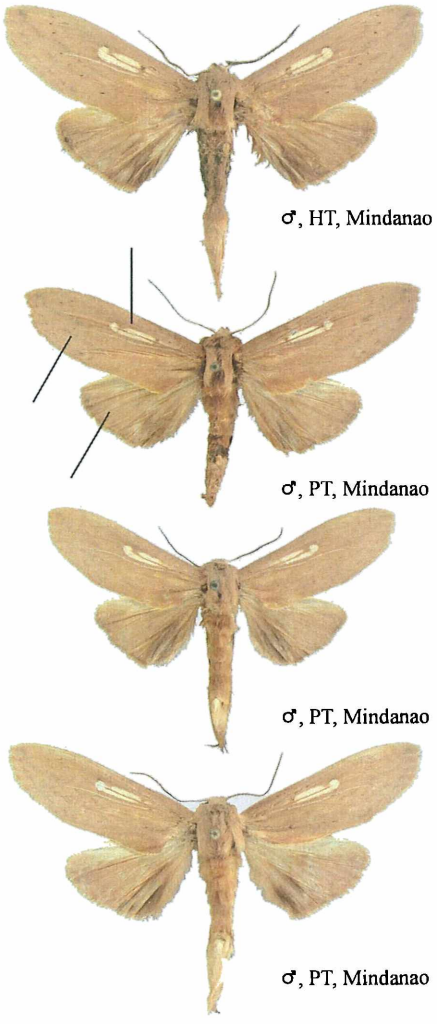


Fig. 208: Males of *Oraura schausi.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

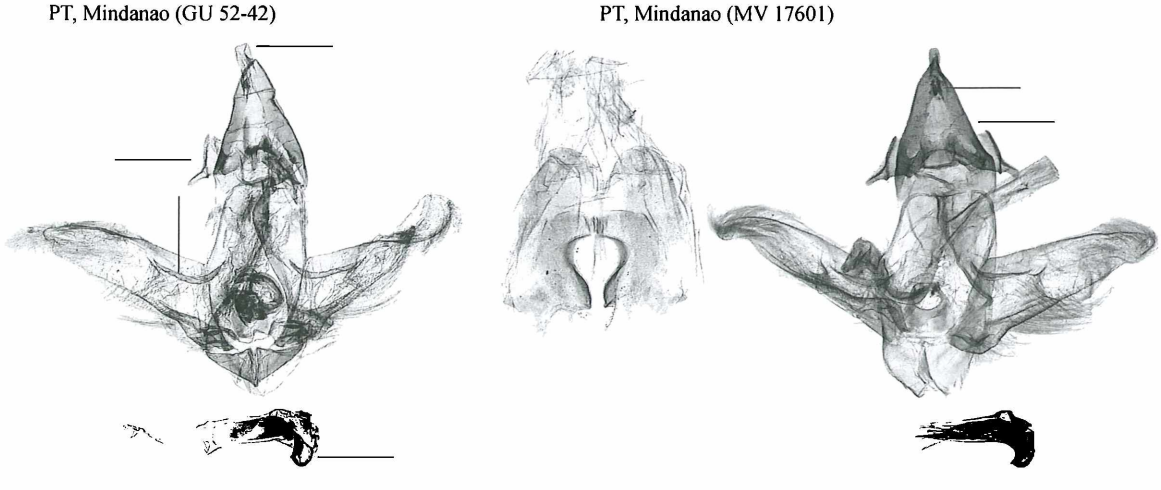


Fig. 209: Genitalia of *Oraura schausi.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Periergos KIRIAKOFF, 1959: 321

Type-species: *Periergos obsoleta* KIRIAKOFF, 1959

= *Pydna* WALKER, 1856: 1763 (*Pydna testacea*) nec. HERRICH-SCHÄFFER, 1855 [Geometridae]
= *Eupydna* FLETCHER, 1980: 72 (replacement name for *Pydna*)
= *Hunyada* KIRIAKOFF, 1962: 151, 161 (*Pydna hunyada* SWINHOE, 1903)
= *Mismia* KIRIAKOFF, 1962: 151, 159 (*Mismia impunctibasis* KIRIAKOFF, 1962)

The Philippine representantives are almost indistinguishable by external features due to wide individual variation. Forewing shape and the prominent developed antennae of the males distinguishes *Periergos* from other genera.

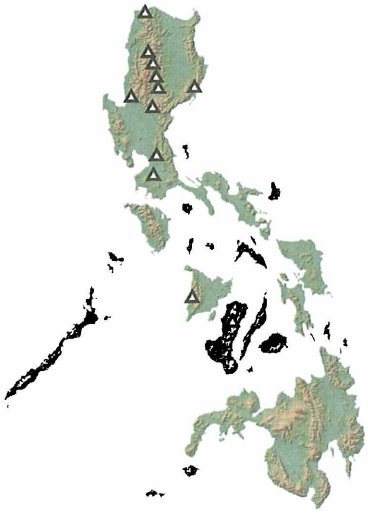


Fig. 210: Distribution of *P. hunyada.*

38. *Periergos hunyada* (SWINHOE, 1903): 504 (*Pydna hunyada*)

HT: ♂, Java merid. – BMNH, London, examined.

= *Pydna marconia* SCHAUS, 1928: 85
ST's: ♂♂, ♀, Philippine Islands, Luzon [Mt. Makiling] – USNM, Washington, photo examined.
= *Pydna callista* WEST, 1932: 214
HT: ♂, Philippine Is., Luzon, subprov. Benguet, Klondyke, 1.300 ft. – BMNH, London, examined.
= *Rosiora* (*Hunyada*) *venosa* KIRIAKOFF, 1962: 162; fig. 11; HT: ♂, Malay States, Bukit Kutu, 3.300 ft. – BMNH, London, examined.

The male genitalia of the primary types of the above listed synonyms were examined to clear the taxonomy.
To stabilize the nomenclature we designate the Lectotype of *Pydna marconia* bearing the following labels: [in Schaus' hand] *Pydna marconia* type ♂ SCHS", „Mt. Makiling, Luzon, BAKER", Not in BM 1925 WSCHAUS", Type No. 33440 U.S.N.M.", „ ♂ genitalia on slide Jan. 1959 E.L.T. 887".

Diagnosis. The males have very long pectinated brown antennae. Most males

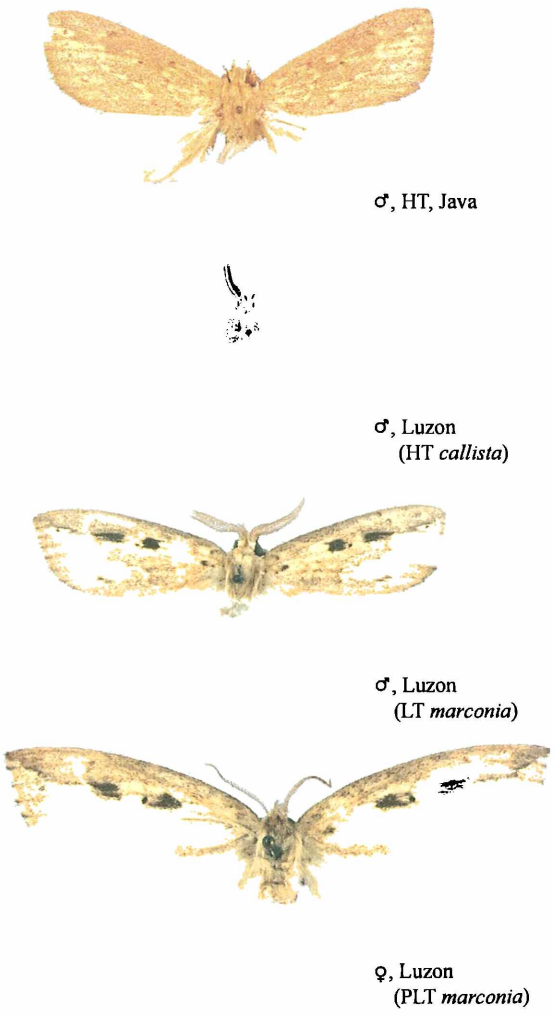
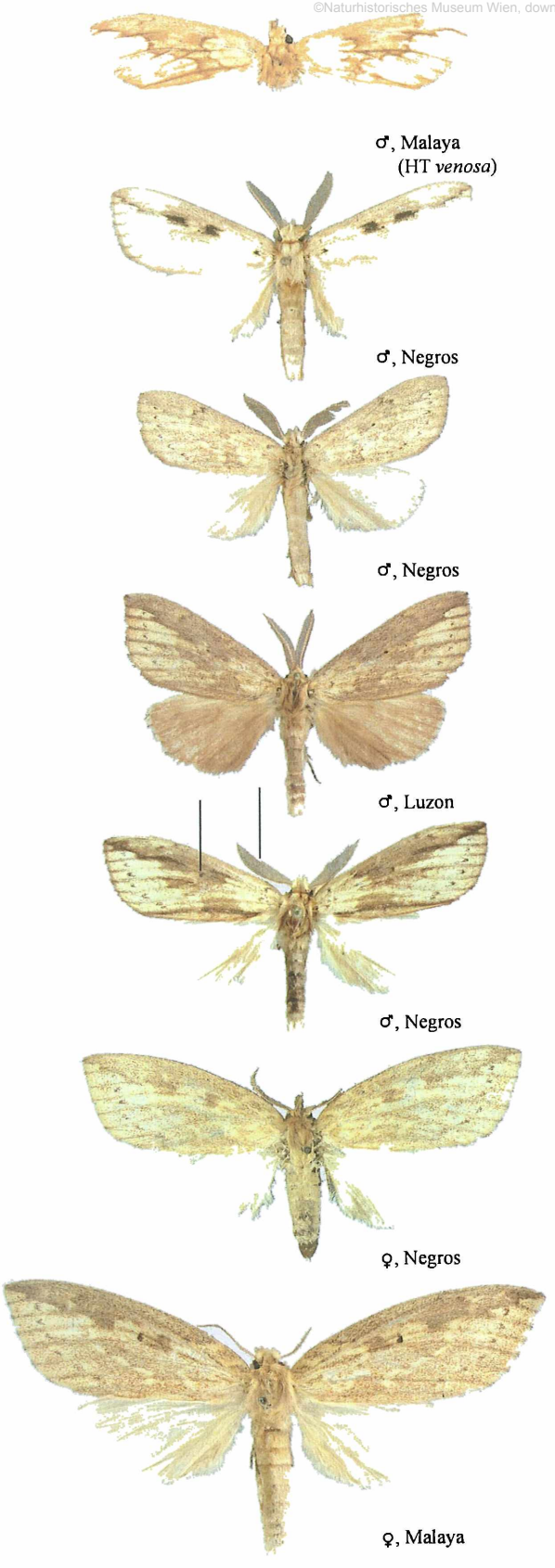


Fig. 210a: Adults of *Periergos hunyada.*

©Naturhistorisches Museum Wien, download



show a fine and sharp black discal spot on the forewings. The female is larger than the male and has short pectinate antennae. The male genitalia are well characterized by long armes of the valves. The uncus is reduced, the long phallus is curved. The female genitalia have a large postvaginal plate, robust and strongly sclerotized papillae with broad apophyses, knob-shaped at the tip.The bursa copulatrix is relatively small without a signum.

Variation. *Periergos hunyada* is very variable. The ground colour of the wings varies from yellowish-white to dark reddish brown. The forewings show fuscous brown to blackish patterns of all possible kinds. Most individuals from Negros tend to have whitish hindwings. The male genitalia vary slightly in the shape of the valves, but a single male from Luzon (W 4822) shows a broader ventral valve arm with deformated tip.

Bionomics. The adults were commonly observed during the whole year except v., viii. and xi. between 100 m - 1.600 m, but most specimens were taken below 1.000 m. The species was collected in primary, secondary forests and urban areas.

Distribution. Distributed in Bali, Java, Sundaland, Indochina and the Philippines: Luzon, Negros and Panay.

P. hunyada Negros (W 8581) *P. spinosa* Palawan (GU 88-64)

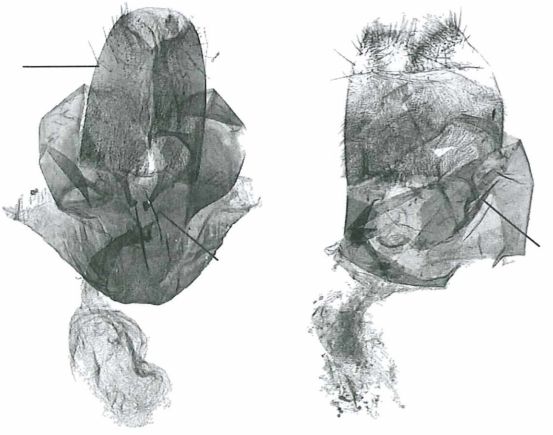


Fig. 210b: Adults of *Periergos hunyada.*

Fig. 210c: Female genitalia of *P. hunyada* and *spinosa.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

40. *Periergos spinosa* HOLLOWAY, 1989: 46,

pl. 4: 5, fig. 32 (*Hunyada spinosa*)
HT: ♂, Borneo, E. Sabah, Kalabakan, 100 m – BMNH, London, examined.

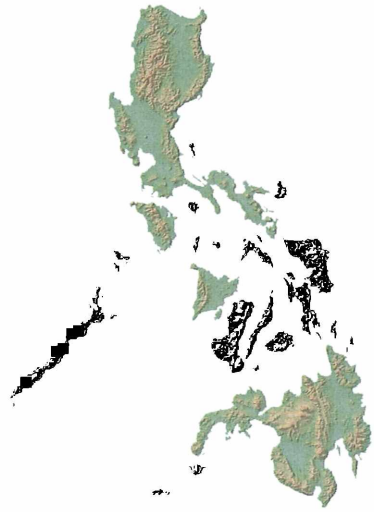


Fig. 210d: Distribution of *Periergos spinosa*.

The sister-species of *P. hunyada* is virtually indistinguishable from this species but the male genitalia allow clear differentiation. *P. spinosa* is hitherto only known from Palawan (n = 6 GU), whereas in the other parts of the Philippines exclusively *hunyada* was found (n = 12 GU). In Borneo and Thailand both species occur sympatrically.

Diagnosis. Indistinguishable from *P. hunyada* according to external criterias. It seems, that the series of *spinosa* from Palawan is slightly paler in general appearance than populations of *hunyada* from Luzon or Sumatra.

The male genitalia are distinguishable from *hunyada* by a subbasal lobe with prominent setae on the dorsal side and curved arm of the valve. The shoulders of the uncus are clearly larger than in *hunyada.* The female genitalia strongly resemble *hunyada* but differ by the smaller vaginal plate and a larger bursa copulatrix (no signum).

Variation. The individual variation of the ground colour and forewing pattern is similar as in *hunyada.* The male genitalia show little variation in the shape of the dorsal valve arm, particularly in the shape and length of the curved spine.

Bionomics. The species seems to be rare except in Palawan, (n > 20). The adults were observed in i., ii., iii., vi., viii., ix. and xii. mostly in primary (occasionally also in secondary) lowland forests up to 400 m; a few specimens were taken at 800 m.

Distribution. Known from Borneo, Thailand and the Philippines: Palawan.

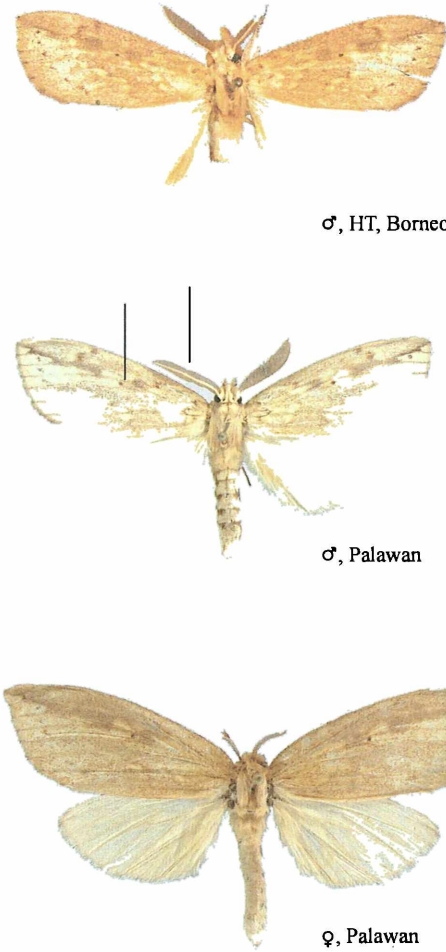


Fig. 211: Adults of *Periergos spinosa.*

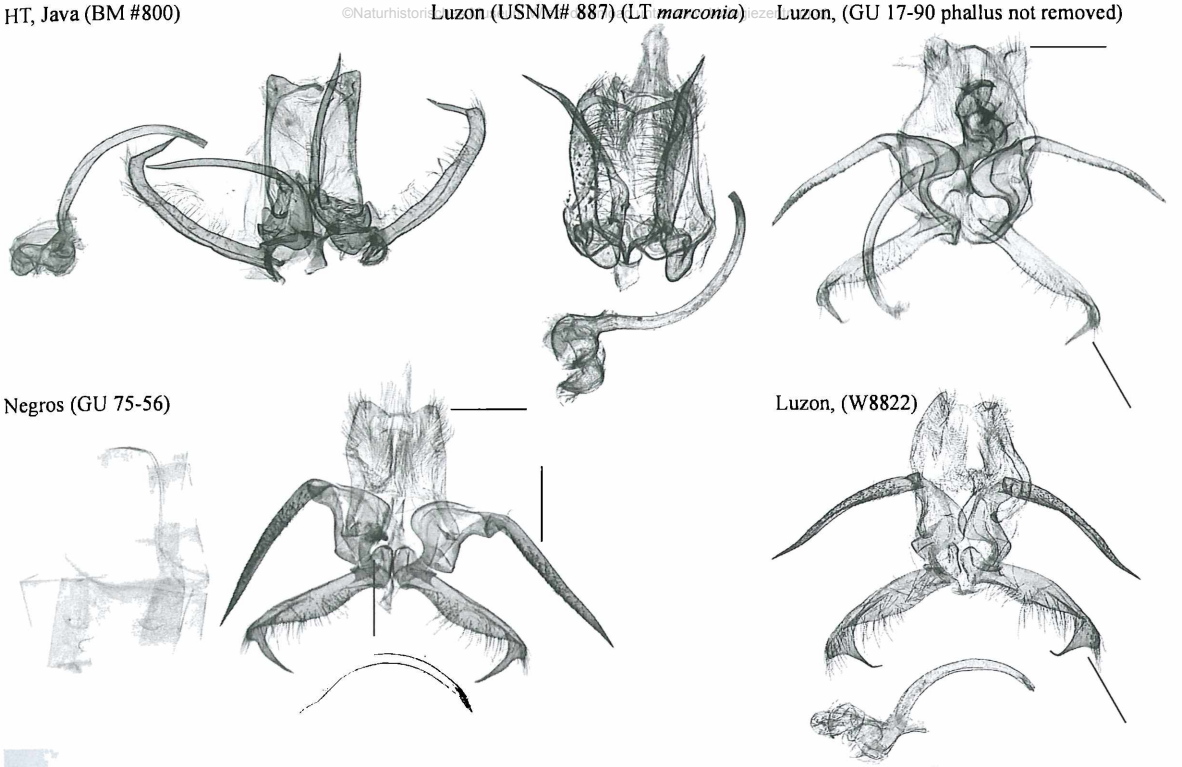


Fig. 213: Male genitalia of *Periergos hunyada.*

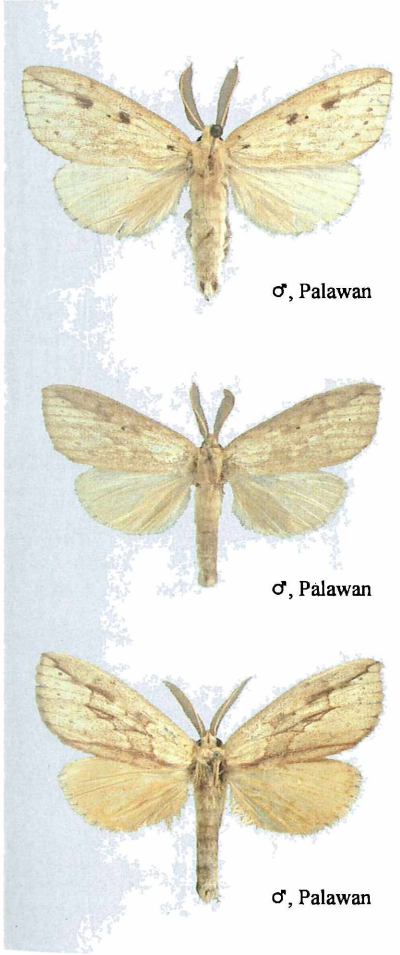


Fig. 212: Males of *Periergos spinosa.*

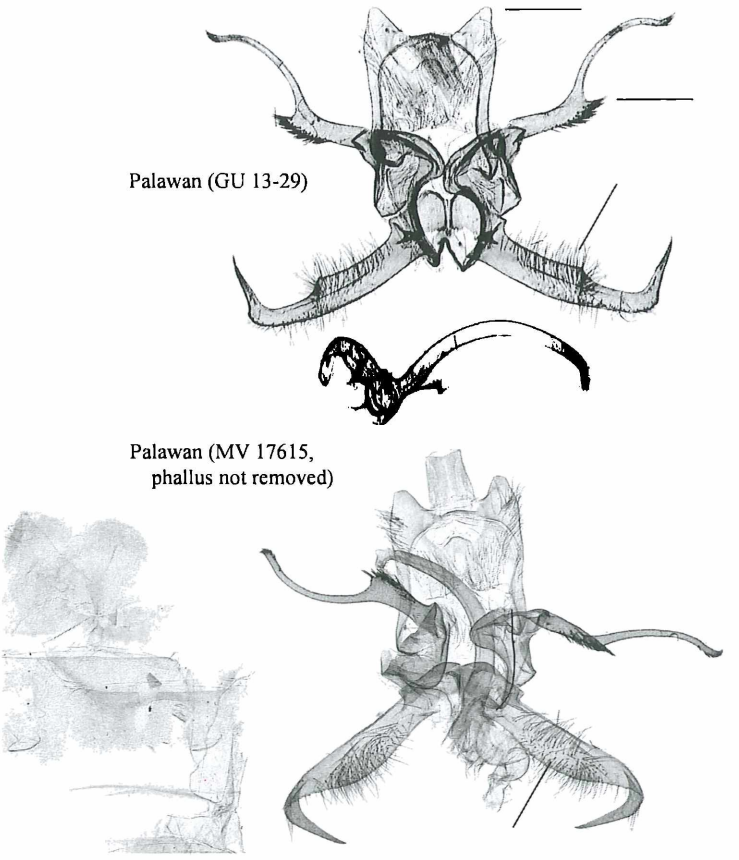


Fig. 214: Male genitalia of *Periergos spinosa.*

Download unter www.biologiezentrum.at

Kamalia Kocak & Kemal, 2006: 3

Type-species: *Cerura tattakana* Matsumura, 1927

= *Paracerura* Schintlmeister, 2002: 106 nec. Dehaveng & Oliviera, 1996: 441 (Collembola, Isotomiodae).

Kocak & Kemal (2006) pointed out, that *Paracerura* is a junior homonym of a genus described in Collembola by Dehaveng & Oliviera (1996). The replacement name is *Kamalia*. Thus the following species must be newly combined with *Kamalia*. The genus was revised by Schintlmeister (2002). *Kamalia* species tend to get greasy over time, and become resinous due to the oxygen in the air; this causes that the forewings of many specimens in collections become somewhat yellowish tinged.

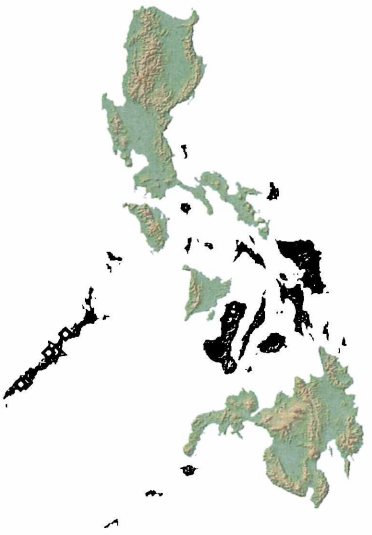


Fig. 215: Distribution of *K. malaysiana*.

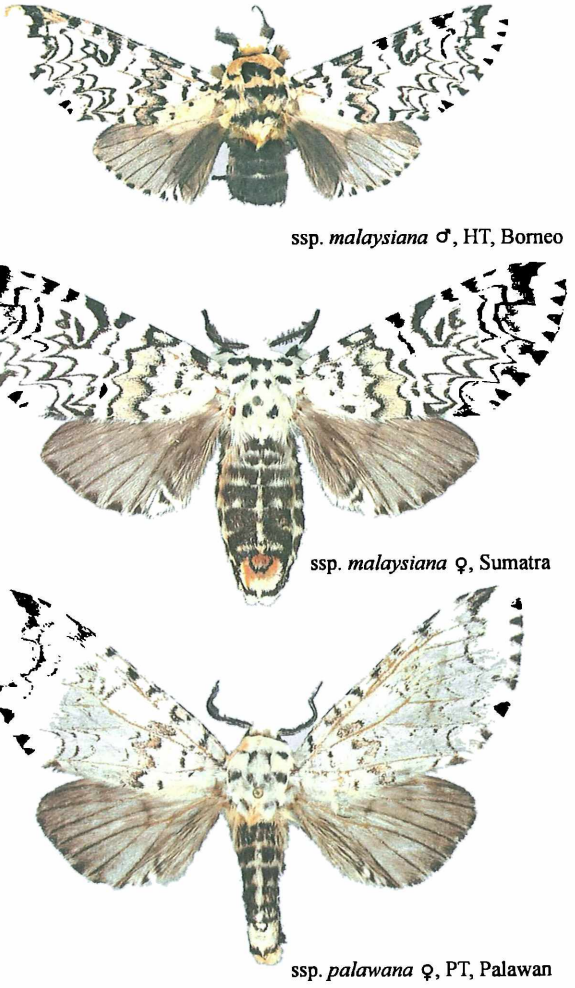
41. *Kamalia malaysiana palawana*

(Schintlmeister, 2002): 116; figs. 12, 15, 51 (*Paracerura malaysiana palawana*) **comb. nov.**

HT: ♂, Philippinen, Palawan, Mt. Salakot, Res. 800 m, 9°51' N, 118°38' E – NHM, Wien, examined.

Kamalia malaysiana (Holloway, 1982) (HT: ♂, Malaysia, W. Pahang, Genting Tea estate – BMNH, London, examined). is a widely distributed species with several geographical subspecies in Java, the lesser Sunda Islands and smaller islands like Nias Isl. (near Sumatra). Also the ssp. *palawana* shows clear differences in general appearance.

Diagnosis. Most *Kamalia* species are very similar in external appearance. *Kamalia malaysiana palawana* is rather small, the blackish markings on the forewings are less contrasting. The postbasal band is brownish filled; *K. rosea* has this more greenish-blue tinged. The hindwings are more



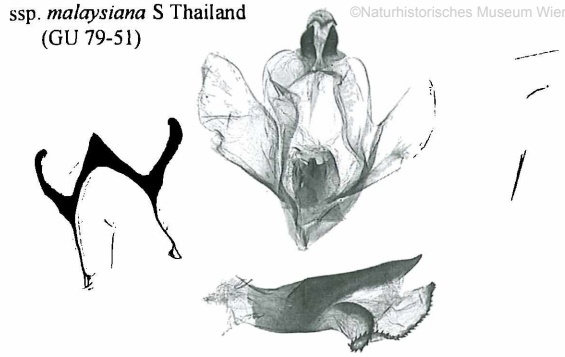
ssp. *malaysiana* ♂, HT, Borneo

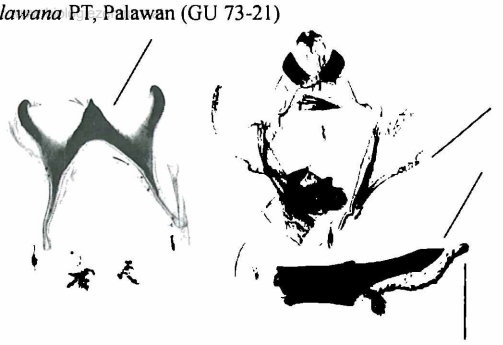
ssp. *malaysiana* ♀, Sumatra

ssp. *palawana* ♀, PT, Palawan

Fig. 216: Adults of *Kamalia malaysiana*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at





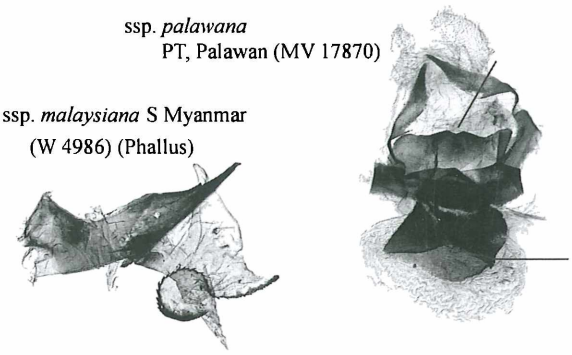


Fig. 218: Genitalia of *Kamalia malaysiana.*

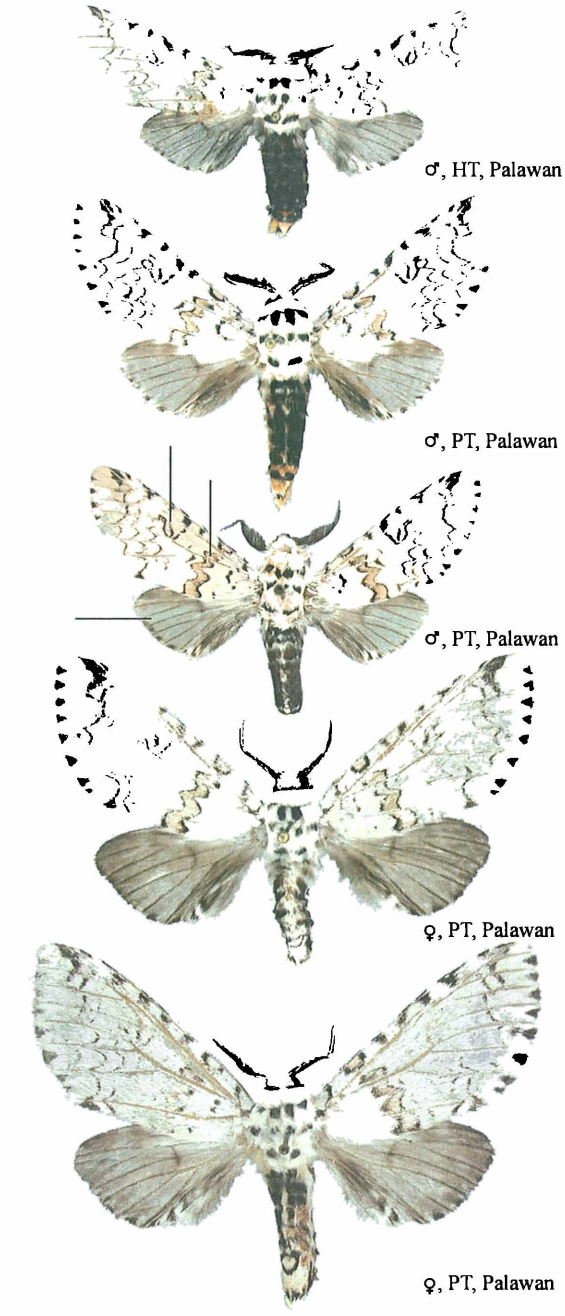


Fig. 217: Adults of *Kamalia malaysiana palawana.*

blackish than in *K. robusta* or *K. rosea rosea.* The females resemble the males but are much larger and the forewings are broader. The male genitalia have a robust and pointed phallus with a serrated, chitinized chain. It seems, that the phallus is slightly more slender in ssp. *palawana* than in ssp. *malaysiana.* The 8th sternite is distinctively W-shaped and sclerotized. The female genitalia are distinguished by the short ductus bursae and the large circular bursa copulatrix. No signum.

Variation. The variation of ssp. *palawana* is slight, except for the wingspan. The male genitalia vary slightly in the shape of the phallus and the sclerotization of the 8th sternite.

Bionomics. The adults were frequently observed (n > 50) in ii., v., ix. - xii. from 50 m - 900 m mostly in primary forests.

Distribution. *Kamalia malaysiana* occurs in various ssp. in S Indochina, Sundaland, Java, Bali and the lesser Sunda-islands. The ssp. *palawana* is endemic in Palawan.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

42. *Kamalia rosea rosea* (SCHINTLMEISTER, 1989): 124, pl. 14: 3, pl. 15: 1 (*Cerura* (*Cerura*) *rosea*), **comb. nov.**
HT: ♂, Philipinen, Z. Luzon, Quezon prov., Quezon Forest Nat. Park, 250 m, 14° 01‘ N 122° 11‘ E – NHM, Wien, examined.

Kamalia rosea gentilis (SCHINTLMEISTER, 2002): 108, pl. 1: 3; pl. 2: 24, s/w pl. 1: 32, 33 (*Paracerura rosea gentilis*), **comb. nov.**
HT: ♂, Philipinen, Mindanao, Bukidnon, Mt. Kitanglad S Seite, Intavas, 2.400 m, 8° 07’N 124° 55’E – NHM, Wien, examined.

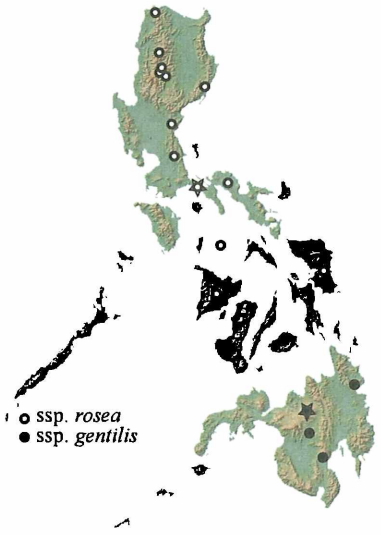


Fig. 220: Distribution of *Kamalia rosea*.

Kamalia rosea has generally whitish hindwings, which are much paler than in *K. robusta*. Both species occur in the Philippines often sympatrically. In Mindanao, the subspecies *rosea gentilis*, with phenotypically surprising blackish hindwings, replaces *robusta*, which seems to be absent there. The next relative of *rosea*, *Kamalia minahassae* (HOLLOWAY, 1982), comb. nov., with blackish hindwings occur in Sulawesi. DNA analysis (BOLD-NOTAS) however supports, that *gentilis* is a subspecies of *rosea* and not a ssp. of *minahassae* or a distinct species.



Fig. 219: Male of *K. rosea gentilis*.

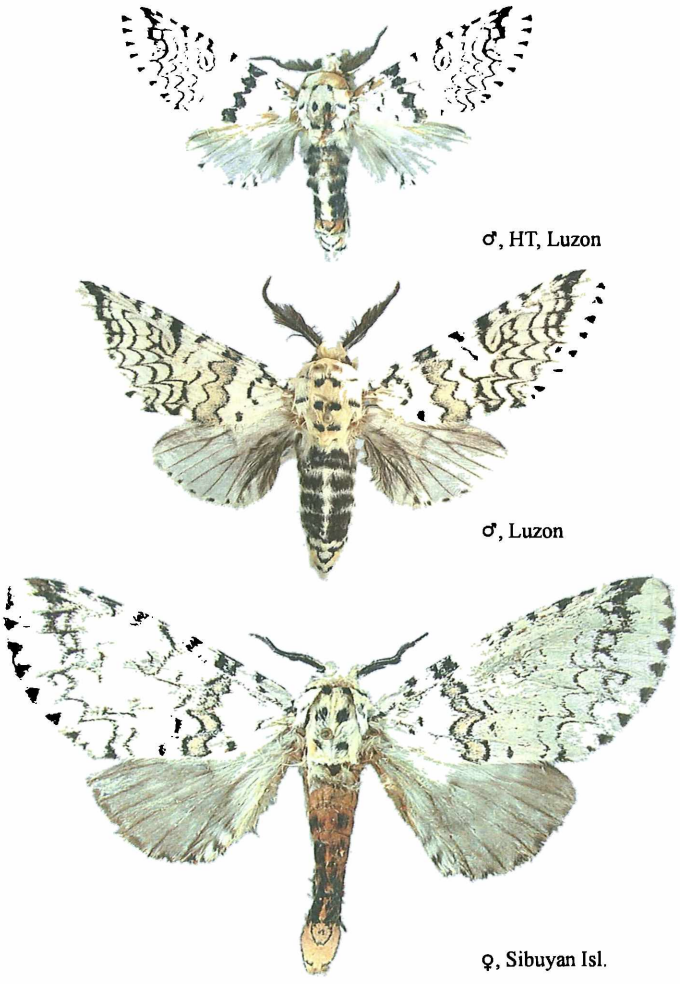


Fig. 221: Adults of *Kamalia rosea rosea*.

©Naturhistorisches Museum Wien, download unterPT, Mindanao (GU 41-67)

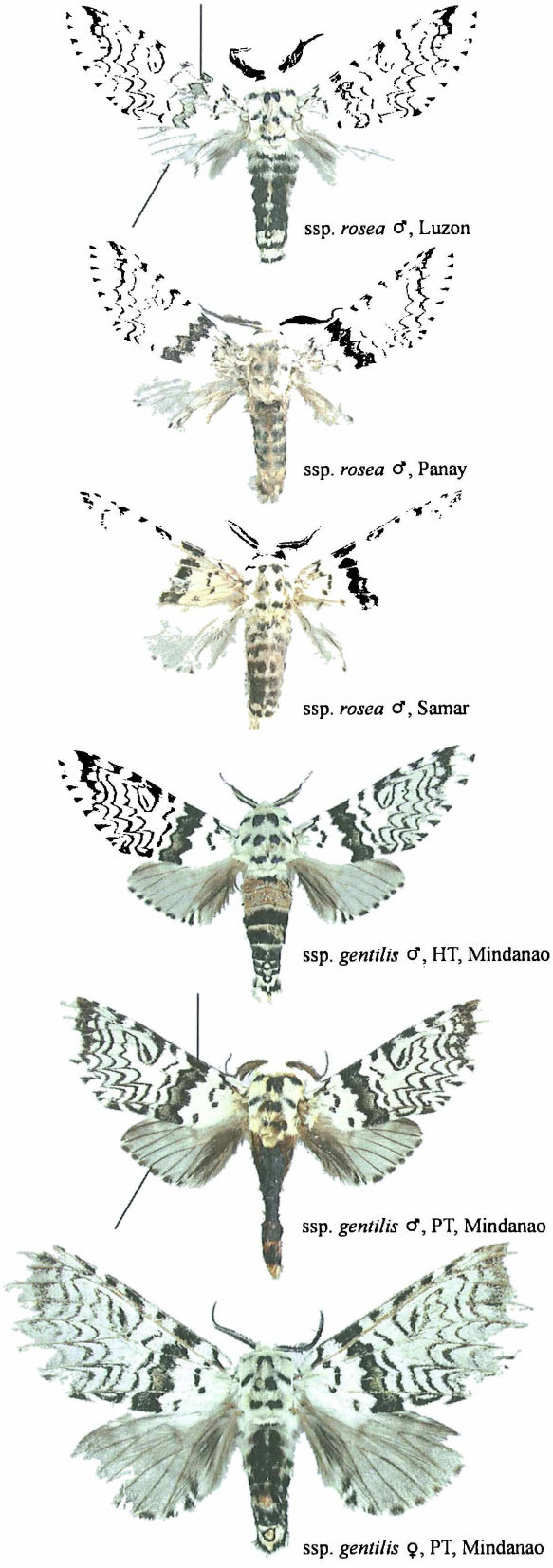


Fig. 222: Adults of *Kamalia rosea.*

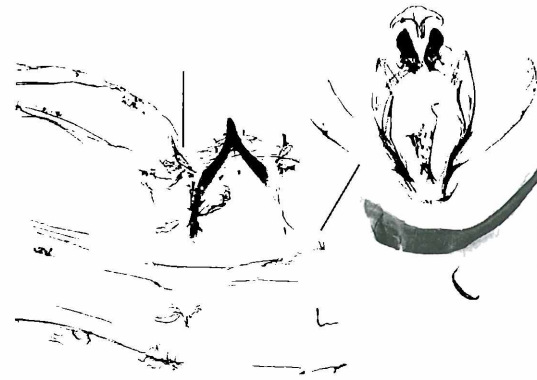


Fig. 223: Male genitalia of *K. rosea gentilis.*

Diagnosis. The forewing pattern is almost indistinguishable from *robusta.* The latter species has a more fuscous appearance. and shows larger black marginalspots on the hindwings. The female is much larger and has blackish hindwings.

The male genitalia are best characterized by the long, curved, pointed and slender phallus. The valves have no notch as *malaysiana*. The 8th sternite is distinctively sclerotized. The female genitalia have a massive ostium and a relatively small bursa copulatrix without signum.

Variation. The white groundcolour of ssp. *rosea,* is in fresh specimens somewhat shiny pinkish tinged. The intensity of the blackish pattern varies individually. The hindwings of ssp. *gentilis* are fuscous and the black pattern of the forewings is more extensive than in ssp. *rosea.*

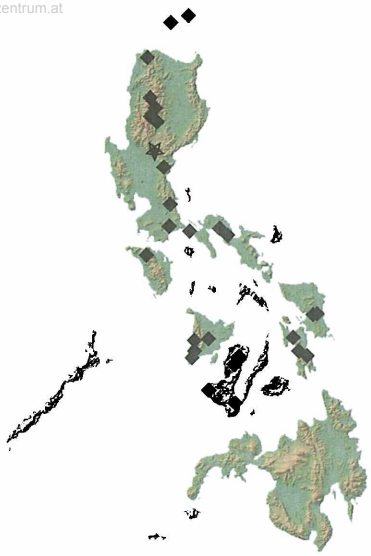
The male genitalia show virtually neither individual nor geographical variation.

Bionomics. The adults of ssp. *rosea* are uncommon in iii. - xi. between 250 m - 2.000 m; most moths were taken in primary forests up to 800 m. In Mindanao (ssp. *gentilis*) most specimens were taken from vii. - xii. above 2.000 m up to 2.600 m.

Distribution. *Kamalia rosea* is endemic in the Philippines. The ssp. *rosea* occurs in Luzon, Samar, Sibuyan and Panay; the ssp. *gentilis* flies in Mindanao.

download unter www.biologiezentrum.at

43. *Kamalia robusta* (SCHINTLMEISTER, 1989): 125, pl. 14: 5, pl. 15: 2 (*Cerura* (*Cerura*) *rosea*), **comb. nov.**
HT: ♂, Philippinen, N-Luzon, Nueva Vizcaya, Dalton-Paß, Santa Fe, 800 m, 15° 07' n. Breite, 120° 36' ö. Länge – NHM, Wien, examined.



Kamalia robusta has unusual male genitalia and belongs to an own group. It is the most common species of this genus in the Philippines, much more common than *K. rosea*. Both species are observed sometimes together, during one night (in ratio 2 1 or higer versus *robusta*).

Fig. 224: Distribution of *Kamalia robusta*.

Diagnosis. *Kamalia robusta* is similar to *K. rosea rosea*, but the hindwings, and the general appearance is more fuscous. The black marginalspots on the hindwings are smaller than in *rosea*. The post basal fascia is mostly brownish filled, not bluish or greenish tinged as in *rosea*. The female resembles the male.
The male genitalia have a massive and relatively short phallus with a robust process. The shape of the valves with strong sclerotized saccular processes are unusual within the genus. The 8th sternite is distinctively W-shaped and sclerotized.
Variation. The white groundcolour of *robusta* is, in fresh specimens, often shiny pinkish tinged (as in *rosea*). The intensity of the blackish pattern varies individually. A series from the islands of Babuyan and Calayan (n = 14) has remarkably pale hindwings (n = 3 GU). The male genitalia are variable in the shape of the

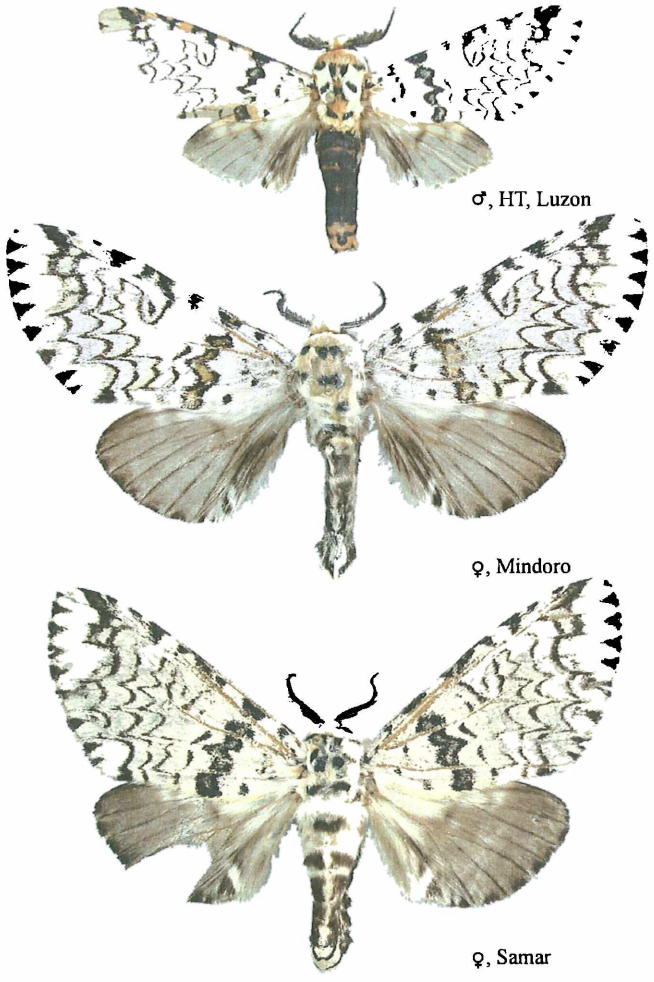


Fig. 225: Adults of *Kamalia robusta*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

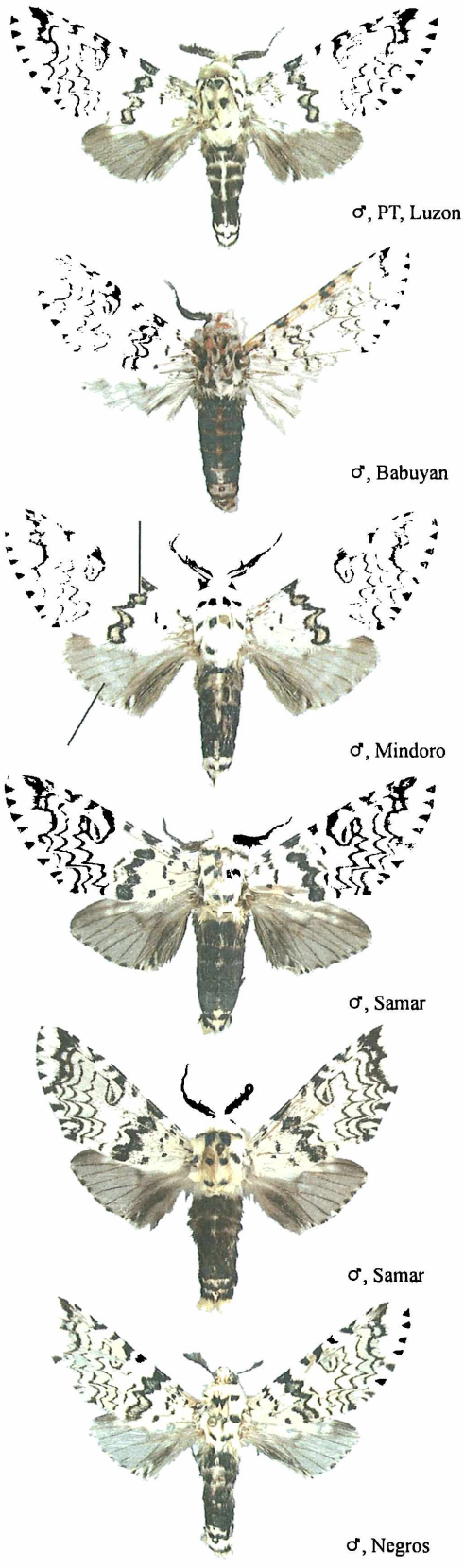


Fig. 226: Males of *Kamalia robusta*.

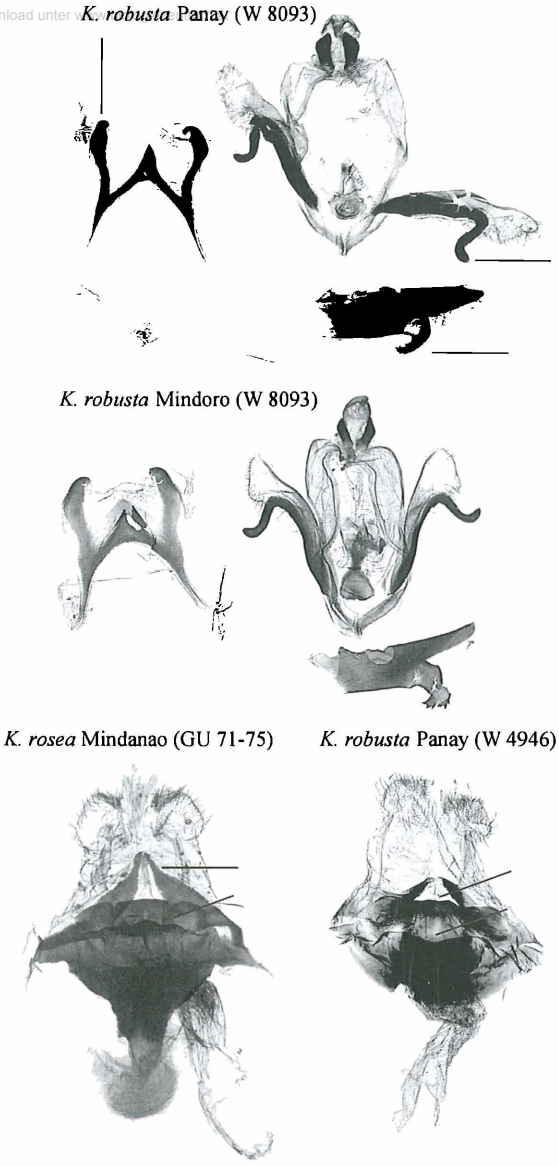


Fig. 227: Genitalia of *Kamalia robusta* and *rosea*.

phallus and sclerotizations of the 8th sternite. The female genitalia differ from *rosea* in shape and sclerotization of the ostium.

Bionomics. The adults fly usually between 50 m - 1.900 m above sea-level and seem to prefer lower altitudes than *rosea*. The species was observed throughout the year (except v.) mostly in secondary and primary forests.

Distribution. The species is endemic in the Philippines: Luzon (including Babuyan and Calagan Islands), Mindoro, Negros, Panay, Samar and Leyte. Not found in Mindanao.

Biodiversity Heritage Library, http://www.biodiversitylibrary.org/; Download unter www.biologiezentrum.at

Neocerura MATSUMURA, 1929: 89

Type-species: *Cerura liturata* WALKER, 1855

Neocerura resembles *Kamalia* in external appearance but the 8th abdominal segments are not sclerotized and not modified as in *Kamalia*. The phallus of all four known species is bifurcate.

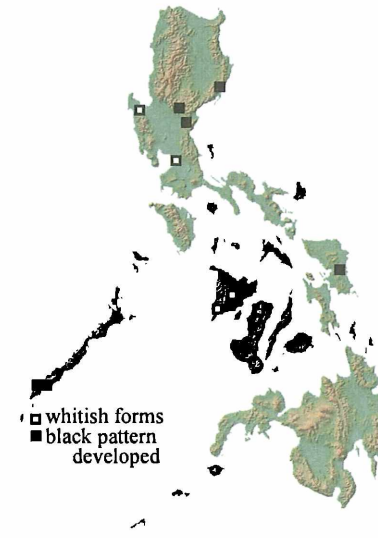


Fig. 228: Distribution of *Neocerura liturata*.

44. *Neocerura liturata* (WALKER, 1855): 988

(*Cerura liturata*)

ST: ♀, [Bangladesh], Sylhet and [S India] Madras – BMNH, London, examined.

= *Dicranura argentea* FELDER, 1874: pl. 96: 6, not examined.
= *Cerura damodara* MOORE, 1866: 812; HT: ♂, NE Bengal, not examined
= *Cerura arikana* MATSUMURA, 1927: 7; HT: ♂, Formosa, Arikan – EIHU, Sapporo, photo examined.
= *Cerura liturata baibarana* MATSUMURA, 1927: 7; HT: ♀, Formosa, Baibara – EIHU, Sapporo, photo examined
= *Furcula hapala* WEST, 1932: 211, **syn. nov.**
HT: ♂, Philippine Is., Luzon I., prov. Rizal, Manila (plains) – BMNH, London, examined.

Our material of *N. liturata* from the Philippines is very diverse. Populations from Java and other places in the Oriental tropics show similar polymorphism as the Philippine populations (n > 150, 32 GU). It was not possible to find any correlation of external appearance, with geographical origin and male genitalia. A DNA analysis (BOLD-NOTAS) of n = 25 sequenced individuals also gives no correlations even within populations (except for 5 individuals from mainland Asia, which are distinguishable by an own, only slightly different cluster. The polymorphism is probably caused by climatical influences. As SCHINTLMEISTER (1998 and 2008) showed, *Furcula aeruginosa* (CHRISTOPH, 1873), a related species from Central Asia, has similar polymorphism in different generations in one year, depending on variable humidity conditions of the caterpillars habitats.

Furcula hapala therefore becomes a junior synonym of *Neoerura liturata* (WALKER, 1855),

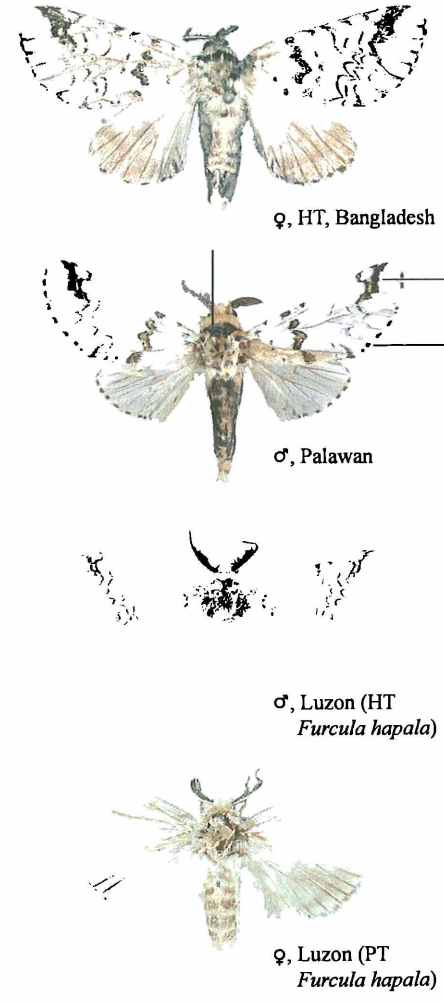


Fig. 229: Adults of *Neocerura liturata*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

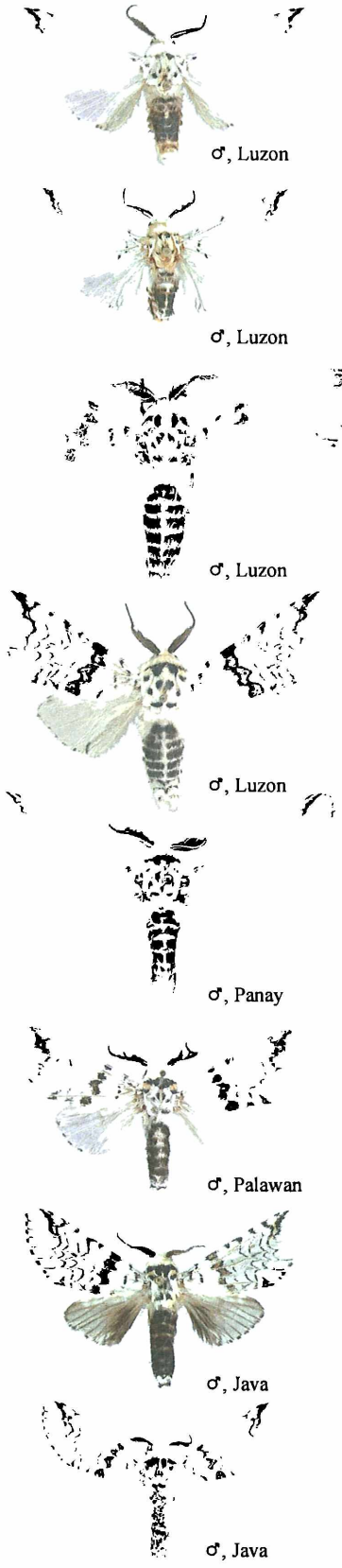


Fig. 230: Adults of *Neocerura liturata.*

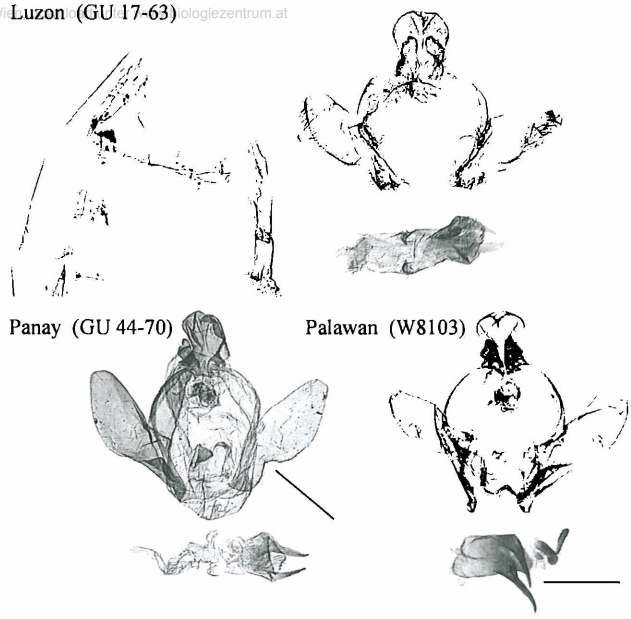


Fig. 231: Genitalia of *Neocerura liturata.*

which is in fact a monotypic species (as far as is known). *Neocerura liturata* was in history five times described as a „new" species.

Diagnosis. *Neocerura liturata* is distinguishable by the black marginal spots on the forewings, which are small circular dots and not tapered as in *Kamalia.* The patagia is often marked as a prominent black band. The female is slightly larger. The male genitalia are characterized by a bifurcate phallus. The 8th abdominal segments are not modified as in *Kamalia.* The female genitalia (SCHINTLMEISTER 2008, fig. 511) have a long and slender ductus bursae and a larger, circular bursa copulatrix without signum.

Variation. This is a very variable species, particularly regarding size. In specimens from Luzon and Panay the black markings are often reduced. Palawan specimens sometimes have blackish hindwings but white hindwings also occur. The male genitalia vary in the shape of the phallus.

Bionomics. *Neocerura liturata* is rare in the Philippines (n = 16). They were collected in ii., iv. and vi. - xii. up to 800 m in primary and secondary forests.

Distribution. The species is distributed from India, S China, Taiwan, Indochina, Sundaland, the oriental tropics up to Sulawesi. In the Philippines it was found in Palawan, Luzon, Samar and Panay.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Liparopsis Hampson, 1893: 154

Type-species: *Liparopsis postalbida* Hampson, 1893

45. *Liparopsis dympna* Schaus, 1928: 84

HT: ♂, Philippine Islands, Mindanao, Surigao – Nr. 33438, USNM, Washington, photo examined.

Diagnosis. This small species replaces *L. sundana* Holloway, 1983 in the Philippines and is not distinguishable by external features. Within the Philippines *dympna* is unmistakable by its wingshape and the two smaller discal spots on the forewings. Females are larger than the males.

The male genitalia are characterized by the bilobed, long and slender uncus and the shape of the valves, with one process only. The phallus is biforked. The 8th abdominal segments are not modified. The differences of the male genitalia in comparision to *sundana* or *postalbida* are dramatically (bifurcate valves, phallus, compare Schintlmeister 2008, fig. 583).

Variation. No geographical variation of the adults and their genitalia (n = 8) was noticed within the Philippines. The ground colour of the forewings varies sightly in the darkness, the male genitalia in shape of the valves and the phallus.

Bionomics. The adults occur commonly throughout the year mostly at lower altitudes up to 800 m.

Distribution. Endemic in the Philippines: Luzon, Marinduque, Samar, Leyte, Negros and Mindanao.

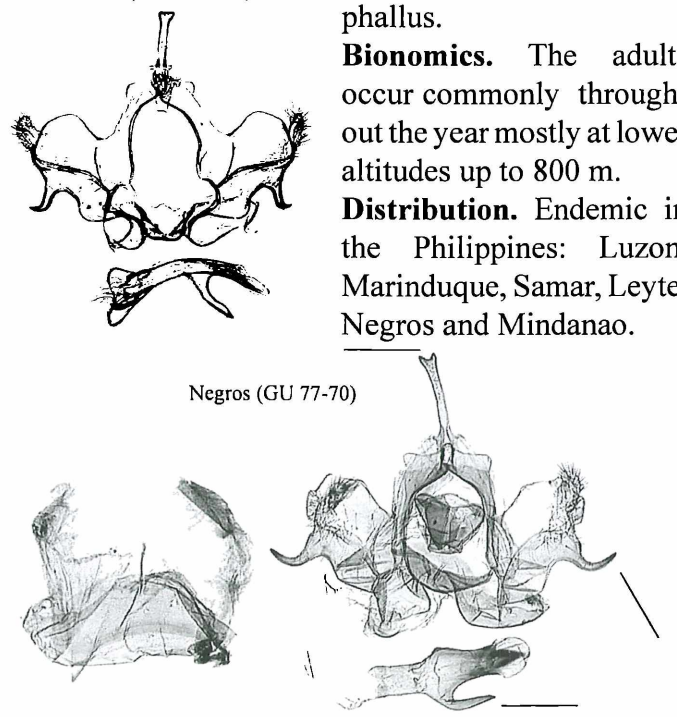


Fig. 232: Male genitalia of *Liparopsis dympna*.

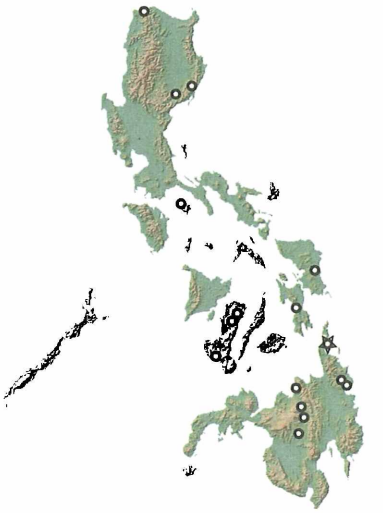


Fig. 233: Distribution of *L. dympna*.

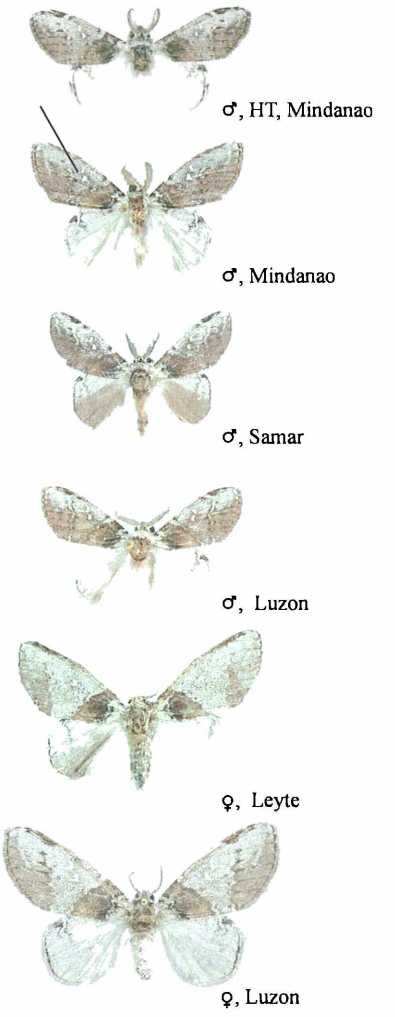


Fig. 234: Adults of *Liparopsis dympna*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Pantanopsis KIRIAKOFF, 1974: 387

Type-species: *Pantanopsis diehli* KIRIAKOFF, 1974

46. *Pantanopsis diehli* KIRIAKOFF, 1974: 388; pl. 2: 3; fig. 10

HT: ♂, N Sumatra, Deli [= Medan], Dolok Merangir– ZSM, München [examined].

It was somewhat surprising, when W. Mey and W. Speidel discovered this rare and delicate species in Leyte and Samar in 2001. The distribution pattern of this Sundanian species is somewhat unusual.

Diagnosis. The small species resembles *Liparopsis,* but the markings on the apex of all wings of this small species are diagnostic. Females are larger with more fuscous brown coloured submarginal area of the hindwings.

The male genitalia are characterized by the distinct shape of the tegumen, the smooth valves and a phallus with several sclerotized shorter triangular spines. The 8th abdominal segments are not modified.

Variation. No geographical variation of the adults and their genitalia was noticed within the given distribution area of the species.

Bionomics. The adults are rare (n = 6) in the Phillippines. The moth was only seen in primary lowland forests up to 350 m altitude in iv. and xi. Its rarity in collections is probably corellated with the disappearing of virgin lowland forests.

Distribution. *Pantanopsis diehli* occurs in Sundaland, S Thailand, Cambodia and in the Philippines: Mindanao, Leyte and Samar.

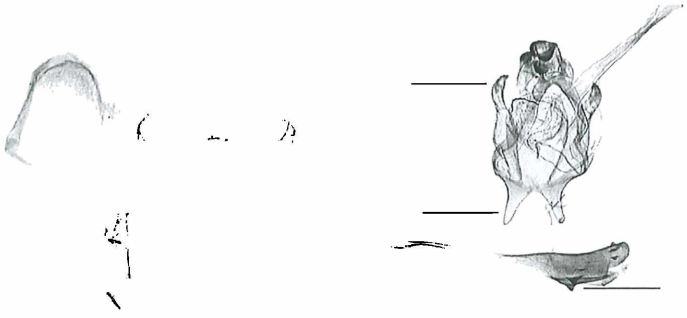


Fig. 235: Male genitalia of *P. diehli* (Sumatra, GU 79-74).

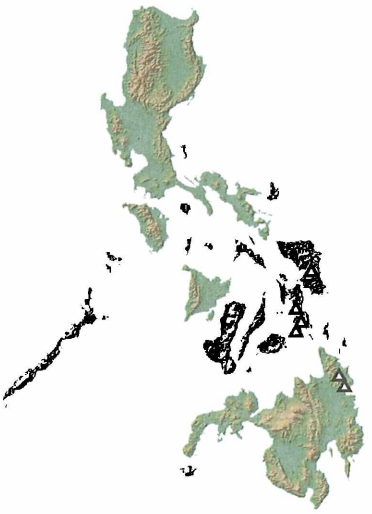


Fig. 236: Distribution of *P. diehli.*

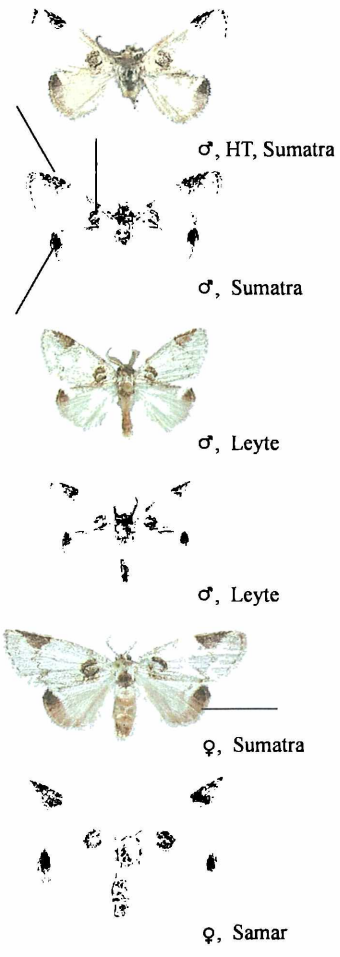


Fig. 237: Adults of *Pantanopsis diehli.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Teleclita Turner, 1903: 45, 53

Type-species: *Teleclita cydista* Turner, 1903 [= *Notodonta dryinopa* Dodd, 1902]

47. *Teleclita cathana* (Schaus, 1928): 81

(*Neopheogia* [sic] *cathana*)

LT: ♂, Philippine Islands, Mindanao [Luzon, Mt. Makiling] – Nr. 33434 USNM, Washington, photo examined.

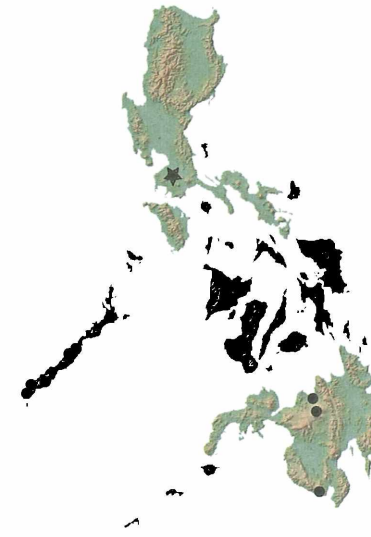


Fig. 238: Distribution of *Teleclita cathana*.

Holloway (1985: 81, pl. 8, fig. 80) described *Teleclita sundana* from Singapore and compared it with *T. cathana*. The latter was described from a pair bearing identical labels "Luzon, Mt. Makiling". In the original descriptions Schaus mentioned contradictory the ♂ from Mindanao and only the ♀ from Luzon. The ♂ has an additional red label with the Type-Number 33434 and is designated here as Lectotype, the ♀ as Paralectotype to stablize the nomenclature. The ♂ genitalia of "*sundana*" illustrated in Holloway (1985 fig. 80) (Locality: "Philippine Is.") closely match the examined genitalia of adults from Mindanao, but the HT ♀ of *sundana* comes from Singapore. In a foot-note on plate 8 Holloway (1985) mentioned, that the illustrated male (fig. 13) from the Philippines is in fact *cathana*.

Although, by the absence of males from the Malayan Peninsula or Singapore the subspecific status of *sundana* could not be fully documented. But the Philippine and Malayan Populations belong very probably to the same species and *Teleclita sundana* becomes a junior synonym of *Neopheosia cathana* (syn. nov.).

On the other hand *Hoplitis strigata* Moore, 1879 (2 syntypes ♂♂ of similar appearance [S India], Canara, in BMNH, London and ZMHU, Berlin, examined) might also be conspecific and would then be the oldest available name. Dissected male genitalia of specimens from S India, NE India and Thailand are almost identical, but they differ from Palawan and

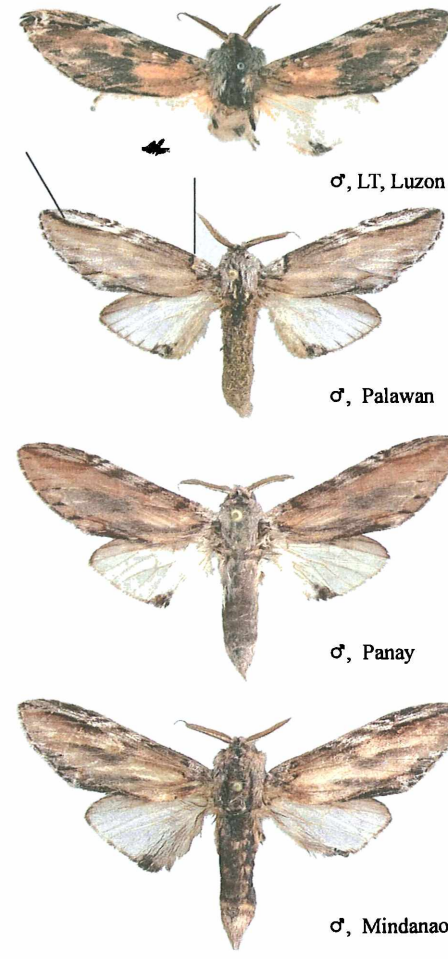


Fig. 239: Males of *Teleclita cathana*.

©Naturhistorisches Museum Wien, download

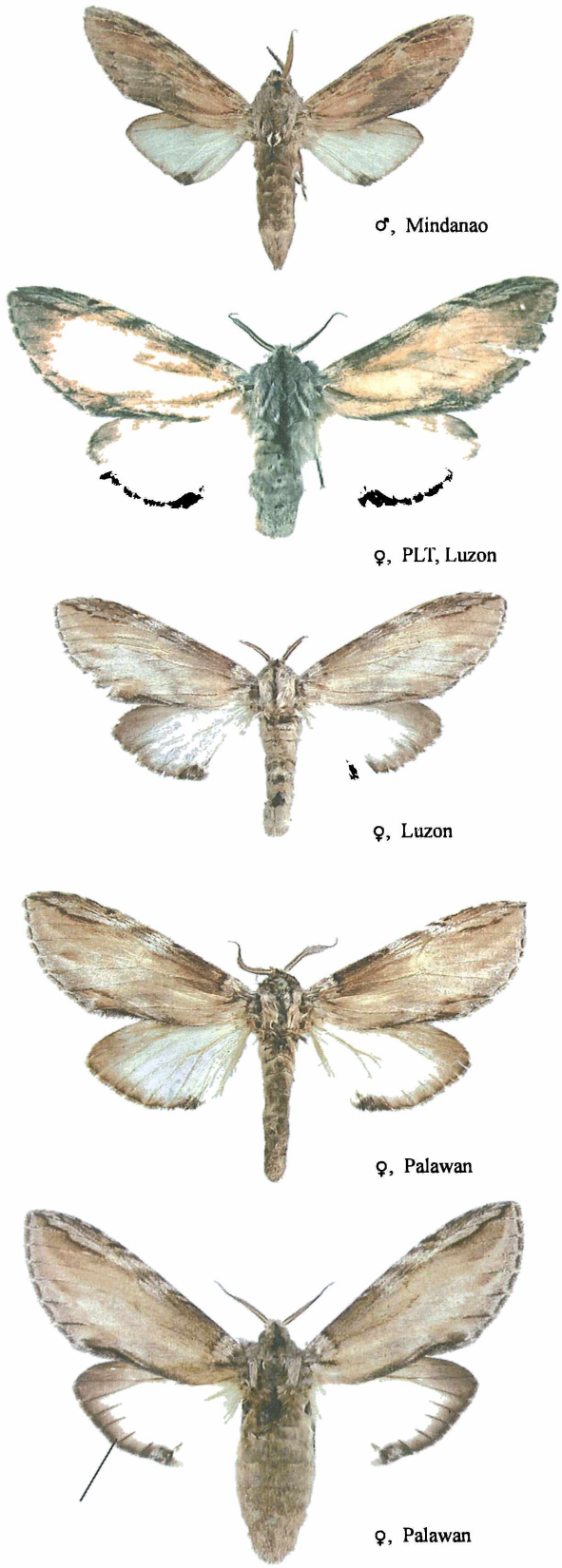


Fig. 240: Adults of *Teleclita cathana*.

Mindanao adults by the shape of the socii.

The *Teleclita strigata* complex however tends to vary geographically in its male genitalia. There are differences in the shape of the uncus, the socii, the tegumen processes and the shape of the valve spines. A further species (or subspecies) occurs in Sumatra, Java and Bali, further distinct taxa are distributed in the lesser Sunda Islands, Sulawesi, Halmahera and Tanimbar. Described species of the *strigata*-complex are known from Australia, (*dryinopa* DODD, 1902) and New Guinea (*cinnamomea* ROTHSCHILD, 1917). *Hoplitis insignifica* ROTHSCHILD, 1917, described from Dammer Isl., S of Halmahera belongs as a further species from Tanimbar to the *Teleclita grisea* HAMPSON, 1862 – group, but the *strigata*-complex is also represented by a distinct species in Halmahera.

Diagnosis. *Teleclita cathana* is a larger species with elegant shaped and pointed forewings, which are more elongated than the following new species. The costa of the forewings is whitish-grey in the median area; the basal area is marked by greyish scales. The female is paler and there is a broad golden band along the costa. The fringe and the submarginal area of the female is blackish coloured. Both sexes display a black anal angle, which is typical for all species in the genus.

The male genitalia are characterized by a triangular central uncus process, a pair of robust socii (without a spine as in *T. didyma*) and a pair of longer spines on the valve. The club-shaped tegumen process is serrated. The phallus is rather small with many cornuti. The 8th abdominal segment is not modified. The female genitalia (Sumatran material) lacks the ductus

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

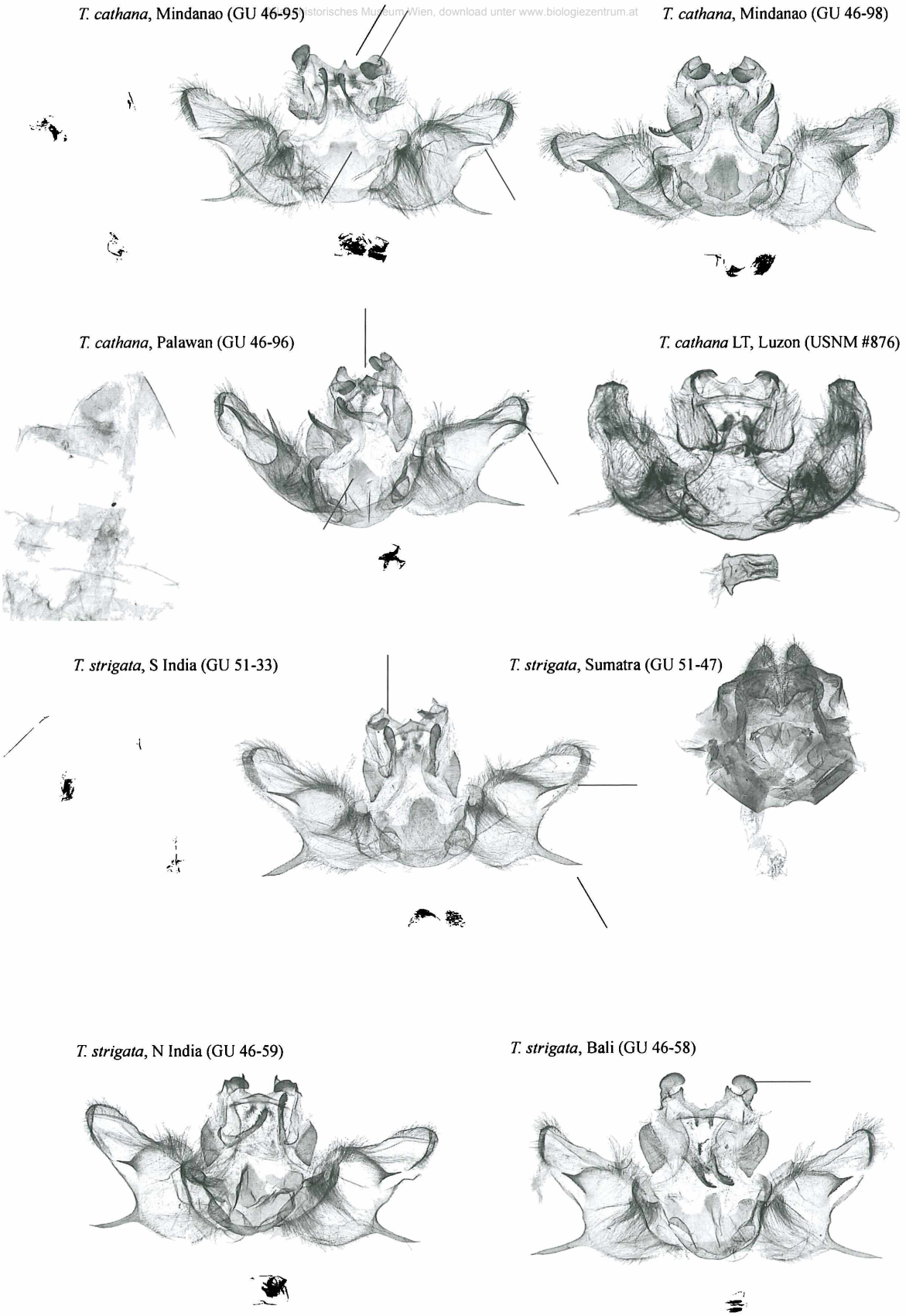


Fig. 241: Genitalia of *Teleclita*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

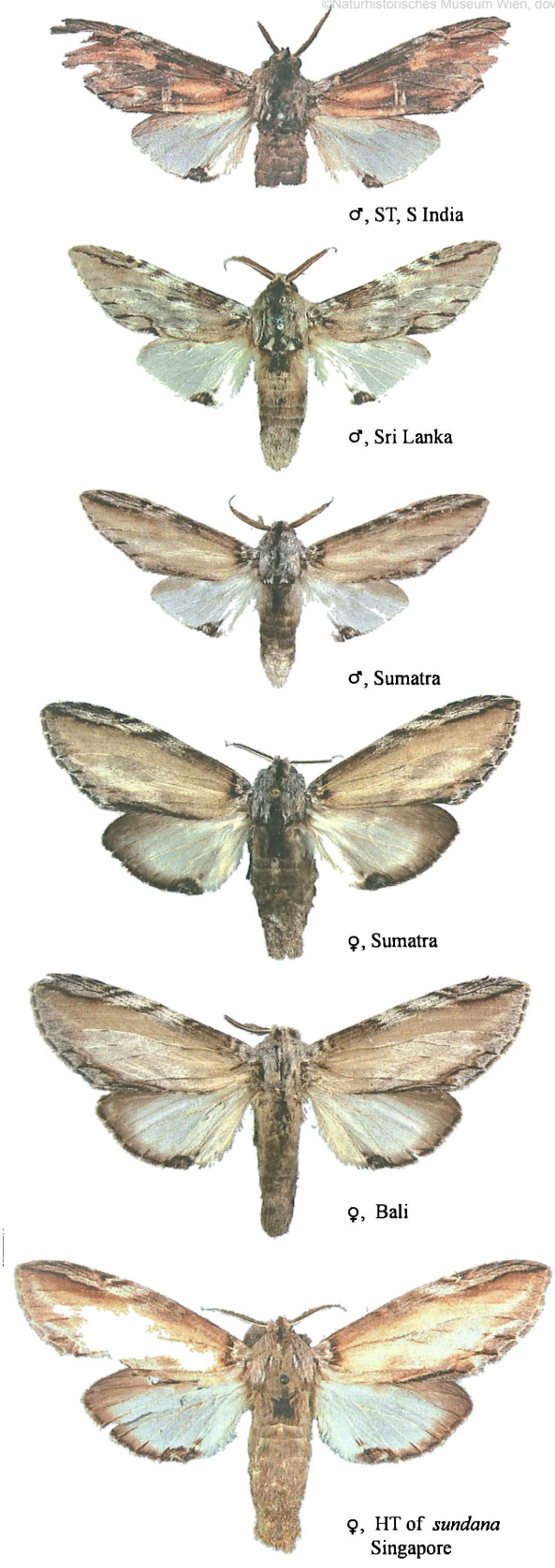


Fig. 242: Adults of *Teleclita strigata*.

seminalis but the ductus bursae and the bursa copulatrix are larger than *didyma*.

Variation. Fuscous blackish individuals with reddish brown postbasal area of the forewings are not rare in the wild (also the HT of *cathana* belongs to this form); but there is no geographical correlation. Some males display a weakly developed yellowish discal spot on the forewings. The male genitalia of Palawan material resemble *strigata* (from S India) rather than those of Mindanao. Particularly the sclerotized juxta is different from Mindanao males. The differences in the shape of the socii, the length of the valve spines and the club-shaped serrated tegumen processes might be subject to individual variation as shown in the two illustrated male genitalia from Mindanao from the same locality. But there is no material available from Luzon (type locality of *cathana*) or the Malayan peninsula (type locality of *sundana*) for comparison. Therefore it is actual not possible to recognize different subspecies from the Philippines.

Bionomics. The species flies commonly throughout the year in Palawan between 250 m and 900 m also in secondary forests. In Mindanao the adults were observed sporadically in ii. and viii., from 300 m – 1.200 m. A single male from Panay was taken in vi.

Distribution. *Teleclita cathana* is distributed (probably in several subspecies) in Malaya, Borneo and the Philippines: Palawan, Luzon, Panay and Mindanao.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

48. *Teleclita didyma* spec. nov.

HT: ♂, Philippines, Mindanao, Bukidnon, 45 km NW Maramag, Mt. Binansilang, 1.200 m, Bergurwald, 7° 55' N Breite, 124° 40' E Länge, 2.x.1988 (GU 51-38) leg. CERNY & SCHINTLMEISTER – NHM, Wien.

Paratypes (19 ♂♂, 6 ♀♀):
Mindanao: 2♂♂, Prov. Bukidnon, Mt. Kitanglad, 1.400 m, vii.1998; 2♂♂, 1♀, Cotabato del sur, Mt. Busa, 700 m, 6° 08' N, 124° 39' E, viii.1997; 1♂, 1♀, Surigao Sur, Diatagon 350 m, 8°43,308' N, 126°05,691'E 16.iii.2009; 1♂, ibid., San Augustin, Brgy. Gata, 140 m, 8°43.308' N, 126°05.691' E, 7.vii.2005; 1♂, Davao Oriental, Boston, Mt. Agtuuganon, Camp 55 1.020 m, 29.v.-7.vi.1996; 1♂, Mis. Oriental, 22 km NE Claveria, Brgy. Mat-I, 140 m, 17.-18.iii.2009;
Leyte: 1♂, 1♀, Mt. Bolog, 10 km E of Mahaplag, 1.140 m, vi.1997 (GU 76-67);
Samar: 2♂♂, 8 km SE Bagacay, 200 m, 8°43.308' N, 126° 05.691' E, 16.iii.2009;
Luzon: 6♂♂, Ilocos Norte, 5 km S of Adams, 350 m, 18° 31,338' N, 120° 55,690' E, 6.–7.iv.2008 (MV 17.459); 1♂, ibid. Managa River, 50 m, 18°31.307' N, 120°54.709' E, 5.iv.2008; 1♀, Nueva Ecija, Brgy Laby, 580 m, 15° 39' N, 121° 16' E, 10. iii.2005 (MV 17.460); 1♂, 2♀♀, Isabela Sierra Madre Dinapique, 2 km E Ango, 580 m, 16°35,927'N, 122°16,589'E 21.-23.ii.2007.

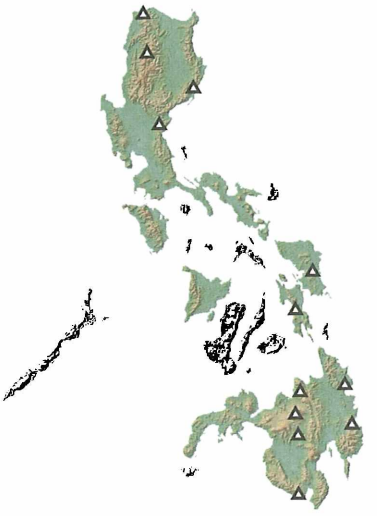


Fig. 243: Distribution of *Teleclita didyma*.

Diagnosis. Forewing length ♂♂ 29 mm – 31 mm, ♀♀ 35 mm – 38 mm. This overlooked species resembles *T. cathana* but is readily distinguished by its larger size, the broader shape of the forewings – particularly in the females – and a more fuscous appearance. The forewings show an inconspicous greyish marked basal area followed by a larger and prominent reddish brown coloured dorsal patch in the blackish median area. The brown discal spot, which is surrounded by a contrasting pale creamy line and the pale postmedian fascia are diagnostic features that distinguish *didyma* from *cathana*. The hindwings of the female have a blackish fringe. Both sexes display a black anal angle, which is typical for all *Teleclita*.

The male genitalia have an uncus without a central projection. The socii are very robust and display a large spine. The spines of the valves are reduced in size, compared to *cathana*. The 8th abdominal segment of the males is less modified. The ductus bursae of the female genitalia

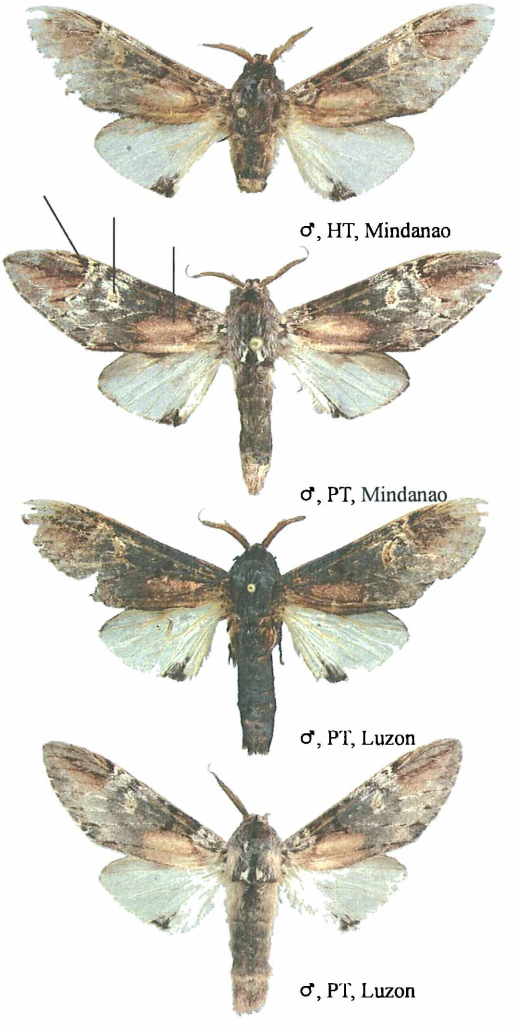
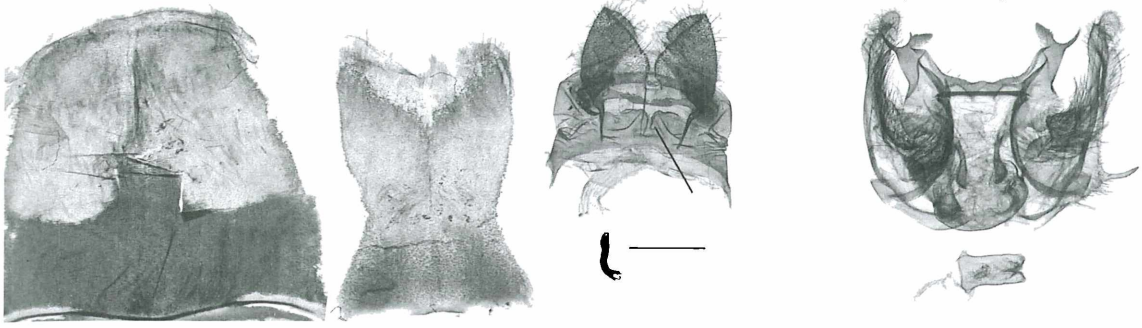


Fig. 244: Adults of *Teleclita didyma*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



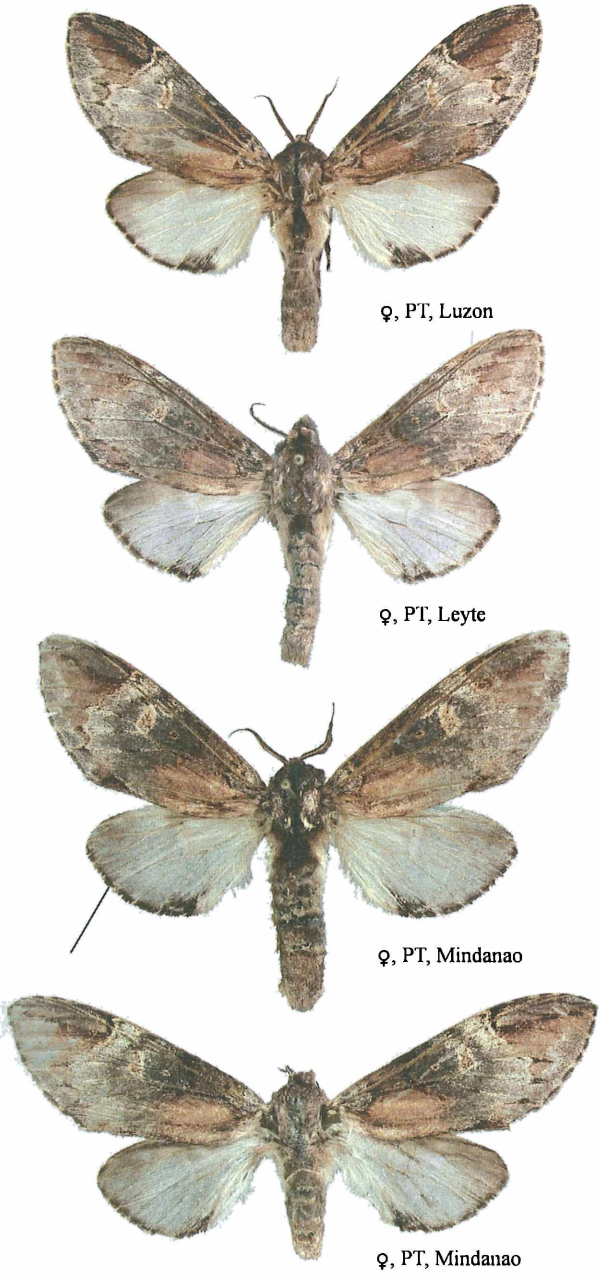


Fig. 245: Adults of *Teleclita didyma.*

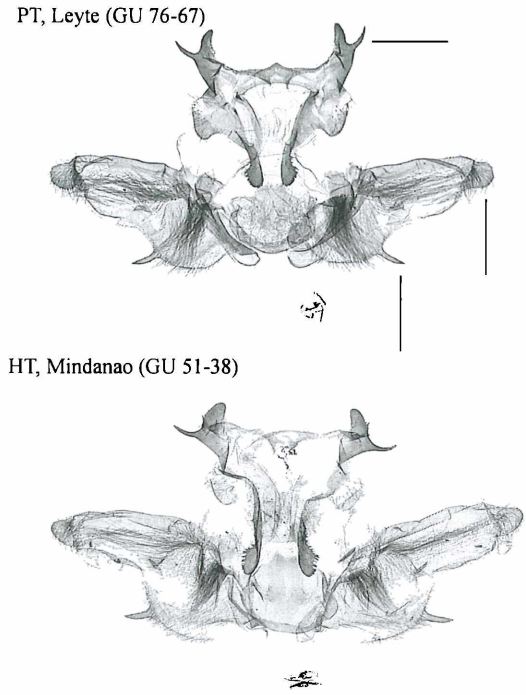


Fig. 246: Genitalia of *Teleclita didyma.*

and the bursa copulatrix are relatively small. The ductus seminalis is remarkably large. The 8th abdominal segments are characteristically sclerotized as illustrated.

Variation. The species vary in size and darkness of the forewings, as illustrated. The male genitalia of the Luzon specimen have the socii less robust developed than the dissected Holotype from Mindanao.

Bionomics. This uncommon species was observed exclusively in primary forests.

Distribution. Endemic in the Philippines: Luzon, Samar, Leyte and Mindanao.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Stauroplitis GAEDE, 1930: 639

Type-species: *Stauroplitis annulata* GAEDE, 1930

= *Briachisia* KIRIAKOFF, 1968: 140 (*Stauropus briachisia* SCHAUS, 1928)
= *Antichadisra* KIRIAKOFF, 1974: 416 (*Antichadisra dentata* KIRIAKOFF, 1974 [=*Stauroplitis annulata* SCHAUS, 1928])

49. *Stauroplitis briachisia* (SCHAUS, 1928):

75 (*Stauropus briachisia*)
ST's: ♂♀, Philippine Islands, Mindanao, Surigao – USNM, Washington, photos examined.

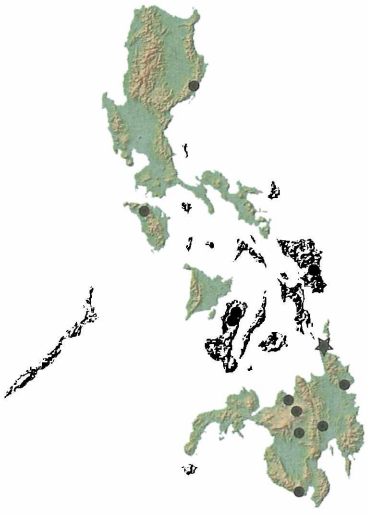


Fig. 247: Distribution of *S. briachisia.*

This is the allopatric sister species of the Sundanian *S. annulata* GAEDE, 1930 and externally almost indistinguishable.

Diagnosis. This large species is characterized by a whitish discal spot on the rather triangular shaped forewings and black markings near the apex, costa and base. The larger female is slightly paler than the male.

The male genitalia have a robust uncus and a pair of massive socii. The sacculus of the valves is developed prominently as a strong sclerotized and serrated structure. The short phallus shaped like a shovel at the tip. The 8th sternite is diagnostically shaped and sclerotized with a central projection. The 8th tergite is bilobed. The female has a relatively small, circular bursa copulatrix without a signum. The apophyses are remarkable long.

Variation. *Stauroplitis briachisia* varies in size and slightly in the darkness of the fuscous brown ground colour. The male genitalia are very variable in the multidentate flange of the valve and the shape of the phallus. No correlation between geographical origin and shape of the multidentate flange was found.

Bionomics. The adults are not rare. They occur in iii. - iv. and vi. - ix. between 100 m - 1.000 m, mostly in primary forests.

Distribution. The species is endemic in the Philippines: Mindanao, Negros, Samar, Mindoro and Luzon.

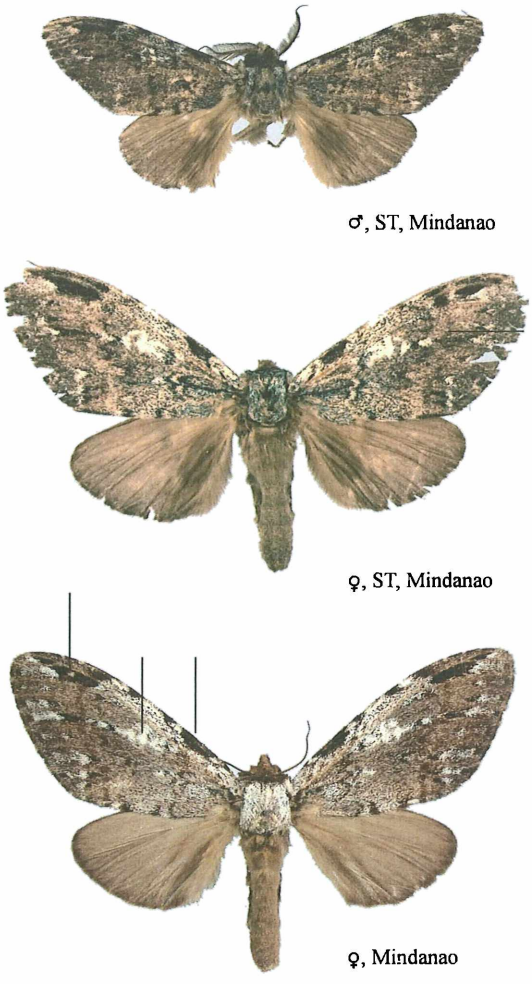
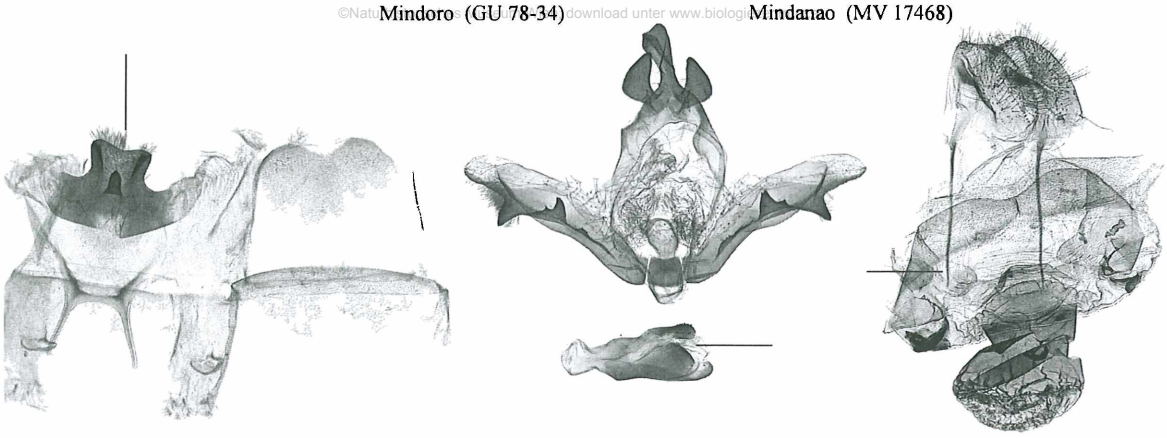
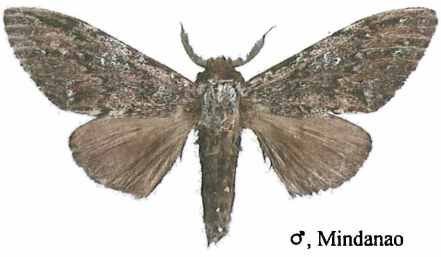
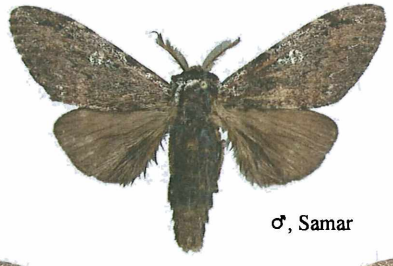


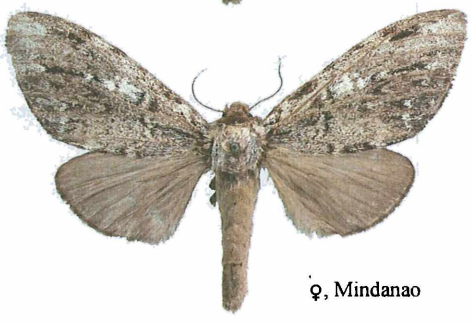
Fig. 248: Adults of *Stauroplitis briachisia.*

©Natu... download unter www.biologi...




♂, Mindanao


♂, Samar


♀, Mindanao

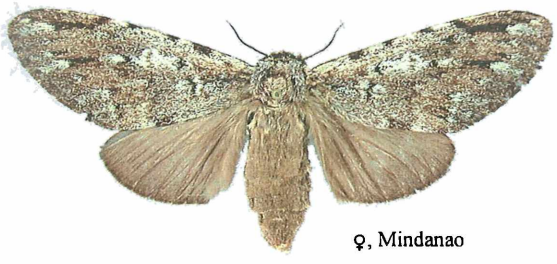
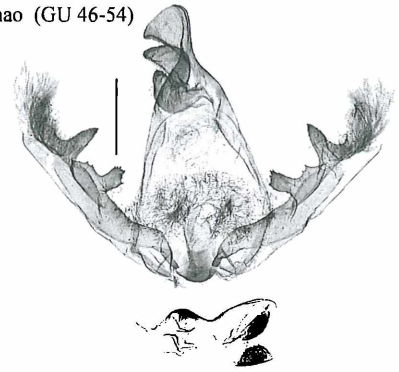

♀, Mindanao

Fig. 249: Adults of *Stauroplitis briachisia.*



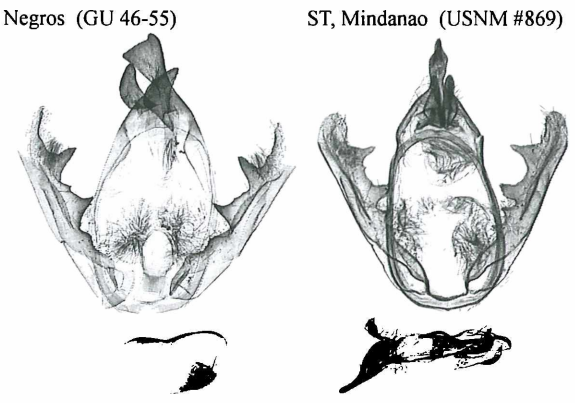


Fig. 250: Genitalia of *Stauroplitis briachisia.*



Fig. 251: Male of *Stauroplitis briachisia* (Mindanao).

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Oxoia KIRIAKOFF, 1967: 53

Type-species: *Exaereta smaragdiplena* WALKER, 1962

= *Panteleclita* KIRIAKOFF, 1974: 418 (*Panteleclita viridipicta* KIRIAKOFF, 1974)

50. *Oxoia smaradiplena* (WALKER, 1862):

134 (*Exaereta smaragdiplena*)
HT: ♂, Borneo, Sarawak – Oxford University Museum of Natural History, examined

= *Somera oxoia* SWINHOE, 1904: 152
HT: ♂, Borneo, Kuching – BMNH, London, examined

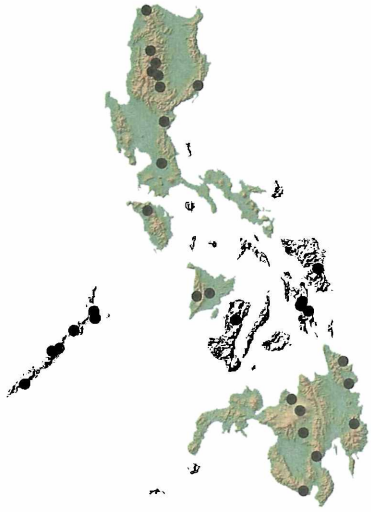


Fig. 252: Distribution of *O. smaragdiplena.*

Diagnosis. The sister species of *Oxoia smaragdiplena*, *O. viridipicta* (KIRIAKOFF, 1974): 419; fig. 30, pl. 5: 4 (HT: ♂, N Sumatra, Deli, Dolok Merangir – Zoologische Staatssammlung München, examined) from Sundaland and Indochina is somewhat smaller and richer green coloured (and could be present in Palawan for biogeographical reasons). In comparison to *viridipicta*, the antennae are shorter bipectinate and only 1/5 of the antennae are unpectinate (in *viridipicta* 1/4). From Sulawesi to New Guinea flies *O. irritativiridis* (BETHUNE-BAKER, 1904): 380; PL. 5: 8 (HT: ♂, British New Guinea, Dinawa – BMNH, London, examined), which is characterized by a larger pale greenish discal spot on the forewings. The females of *smaragdiplena* display broader shaped wings than the males.

The male genitalia of *smaragdiplena* have a pointed apex of the valve and a large rectangular uncus with a pair of smaller socii. The other congeners have valves with long spines. The female genitalia display a prominent large ductus bursae as in other congeners. The ostium is very characteristically sclerotized.

Variation. The species varies individually in the extend of the green areas, as well as darkness of the fuscous brown ground colour. Variation of the male genitalia is restricted on the valve shape. No geographical variation.

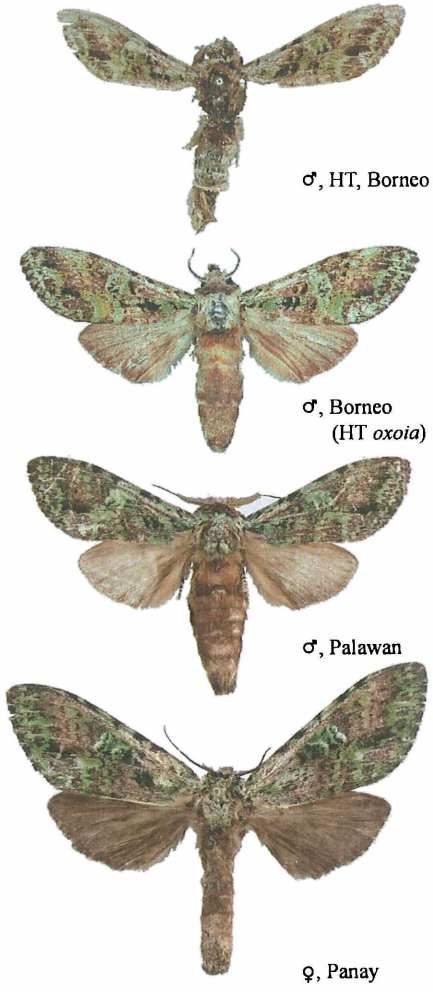
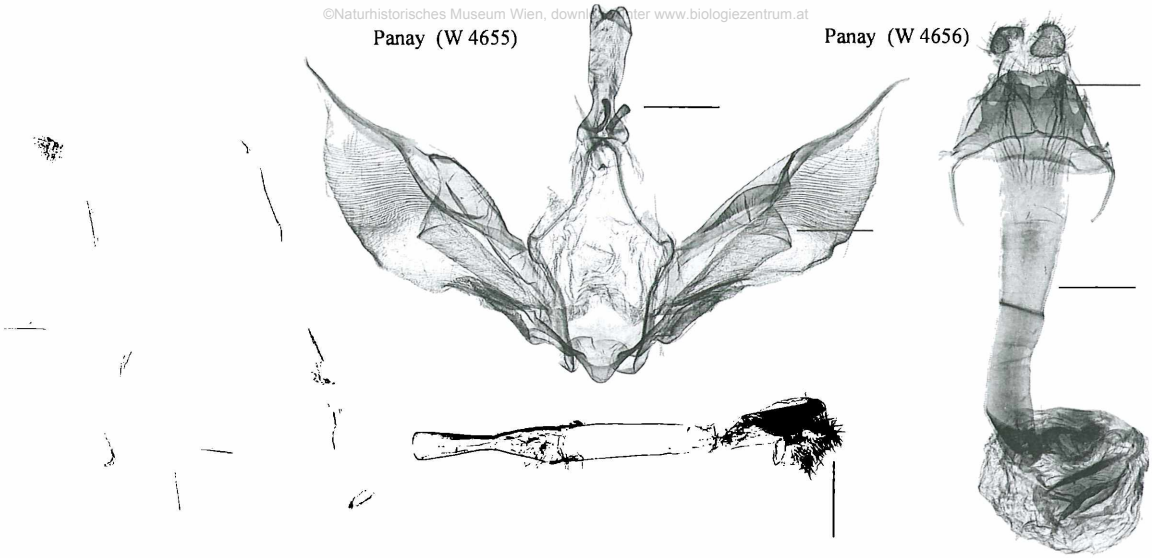


Fig. 253: Adults of *Oxoia smaragdiplena.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



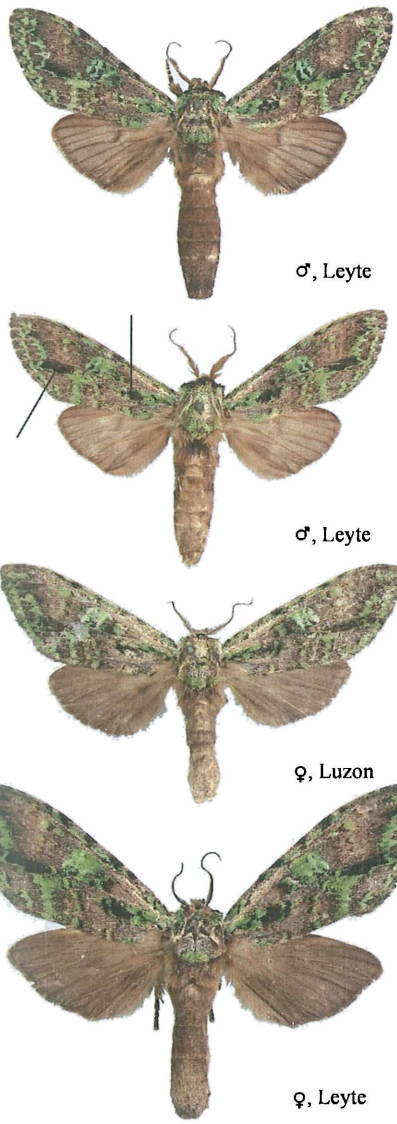


Fig. 254: Adults of *Oxoia smaragdiplena.*

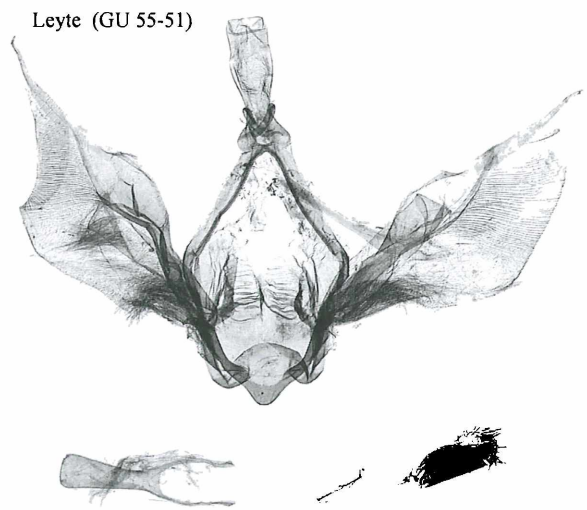


Fig. 255: Genitalia of *Oxoia smaragdiplena.*

Bionomics. The males are quite common throughout the year. In the Philippines they prefer different types of rainforests between 600 m 1,200 m although some adults were observed up to 2,000 m.
Distribution. The species is widely distributed in NE India, Myanmar, Yunnan, Thailand, Laos, Vietnam, Sundaland, Java, Bali and the entire Philippines: Palawan, Luzon, Mindoro, Samar, Panay, Negos, Leyte and Mindanao.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Stauropus Germar, 1812: 45

Type-species: *Phalaena fagi* Linnaeus, 1758

= *Terasion* Hübner, 1819:147 (*Phalaena fagi* Linnaeus, 1758)
= *Palaeostauropus* Okagaki & Nakamura, 1959: 17 (*Stauropus obliterata* Wileman & South, 1917)
= *Miostauropus* Kiriakoff, 1963: 273 (*Stauropus mioides* Hampson, 1904)
= *Neostauropus* Kiriakoff, 1967: 89 (*Stauropus basalis* Moore, 1877)
= *Chlorostauropus* Kiriakoff, 1968: 135 (*Stauropus iridissimus* Bethune-Baker, 1904)
= *Benbowia* Kiriakoff, 1967: 52 (*Stauropus virescens* Moore, 1879)

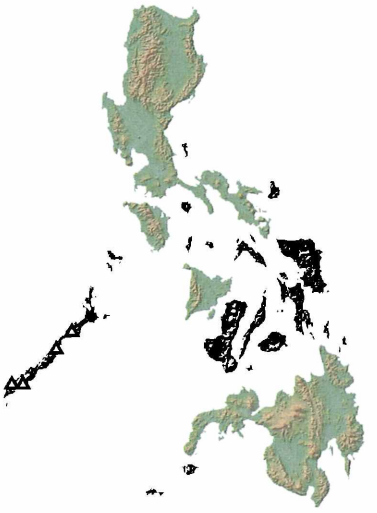


Fig. 256: Distribution of *Stauropus major*.

51. *Stauropus major* Van Eecke, 1929: 166; pl. 14: 6

HT: ♂, Sumatra, Deli [= Medan] – Nationaal Natuurhistorisch Museum, Leiden, examined.

= *Stauropus albimacula* Gaede, 1930: 626, pl. 14: 6
HT: ♂, Sumatra [North Korintji Valley, 5.000 ft.] – BMNH, London, examined.

Stauropus major is a widespread species which occurs almost without any geographical variation (also four males from the Andaman isls. do not differ from Sumatran specimens). *S. major* is replaced by *S. thiaucourti* Schintlmeister, 2003 in Sri Lanka and S India and in the Philippines East of Palawan by *S. hannemanni* Schintlmeister, 1993, a species that shows contrarily extensive geographical variation.

Diagnosis. The medium-sized adults are best recognizable by the chocolate fuscous brown ground colour of all wings. The basal area of the forewings is greenish-blue and the hindwings display a pale brownish (not yellowish) analregion. The latter two features separate it from the

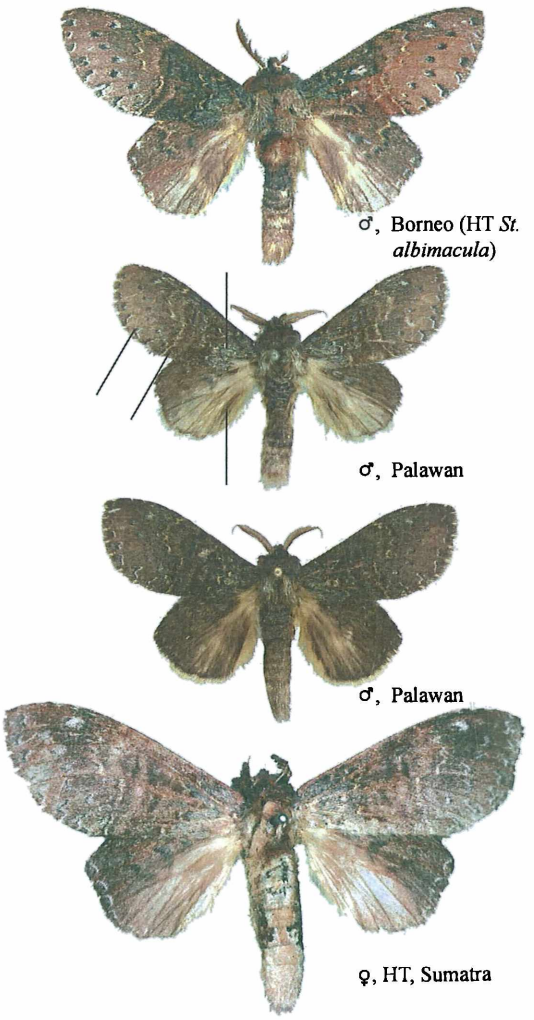


Fig. 257: Adults of *Stauropus major*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

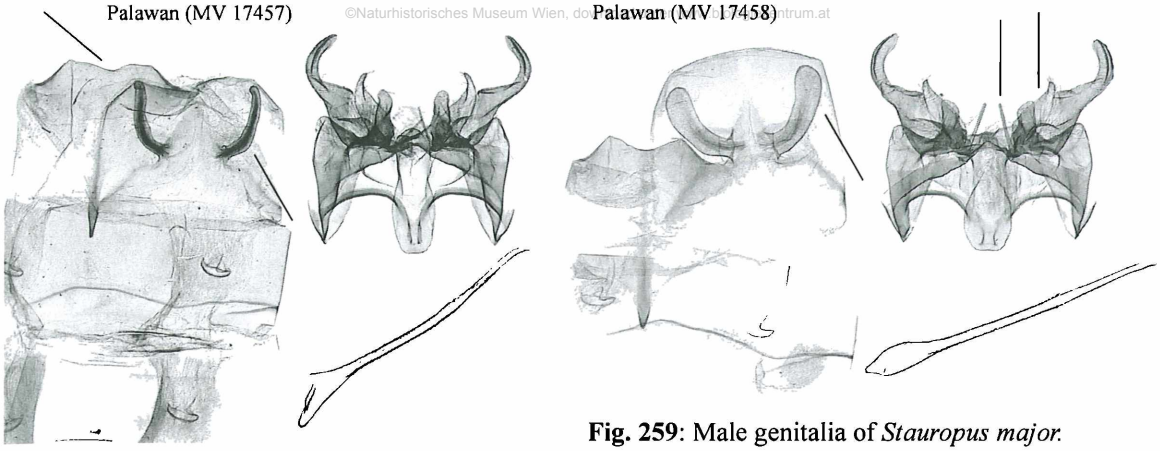


Fig. 259: Male genitalia of *Stauropus major.*

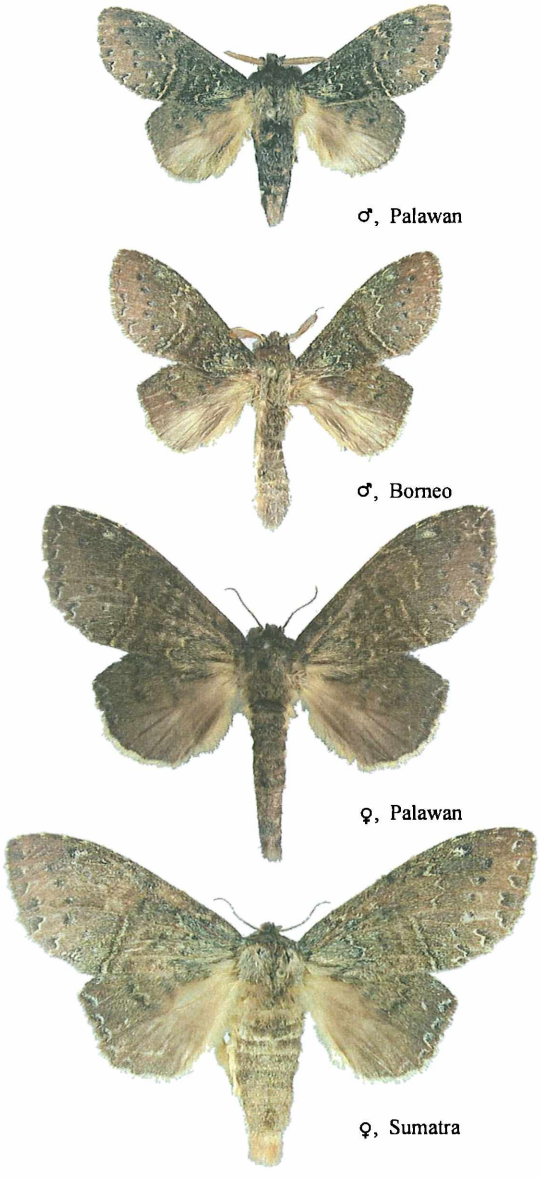


Fig. 258: Adults of *Stauropus major.*

allopatric sister-species, *S. hannemanni*. The underside of the forewings is brown, except the yellowish coloured costa. The female resembles the male but is much larger.

The male genitalia are characterized by long, and curved valves, and a genus-typical long and slender phallus. The longer processes of the valves distinguish *major* from the similar male genitalia of *hannemanni*. The female genitalia have a long ductus bursae and a relatively small bursa copulatrix without signum. They resemble closely *hannemanni* but display somewhat smaller papillae anales and shorter apophyses.

Variation. The individual variation of the darkness of the ground colour and the distinctness of the markings is rather low. The series from Palawan is, on average slightly smaller than Sundanian populations, which are also variable in size. The male genitalia vary individually in shape of the valves and 8th abdominal segments.

Bionomics. The adults are common in Palawan from xii.- ii. Most specimens were taken in primary forests at altitudes between 100 m - 300 m but outside Palawan the moths were observed throughout the year up to 2,000 m above sea-level.

Distribution. The species is widely distributed in NE India, the Andaman Isls., Myanmar, Indochina, SE China (Hainan), Sundaland, Java, Bali, the Lesser Sunda Isls. and Palawan.

www.biologiezentrum.at

52. *Stauropus hannemanni hannemanni*

SCHINTLMEISTER, 1991: 112; pl. 1: 5, 6; pl. 2: 3
HT: ♂, Philippinen, N Luzon, Mts. Provinz, Chatol, 1.600 m, 15 km SE Bontoc, 17°02'N Breite, 121°03'E Länge – NHM, Wien, examined.

Stauropus hannemanni similis SCHINTLMEISTER, 1991: 112; pl. 1: 3, 4; pl. 2: 4
HT: ♂, Philippinen, Mindanao, 45 km NW Maramag, Mt. Binansilang, 1.200 m, 7°53'N Breite, 124°40'E Länge – NHM, Wien, examined.

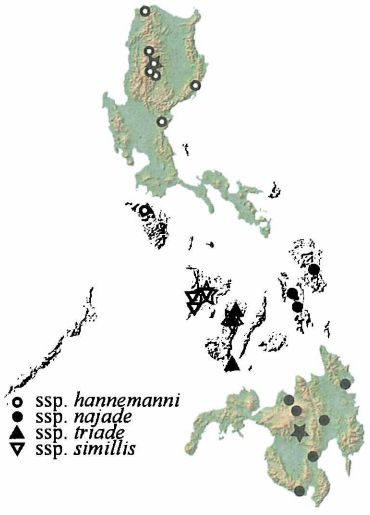
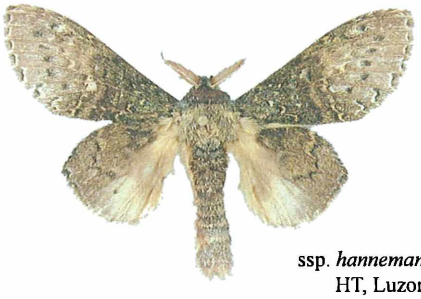
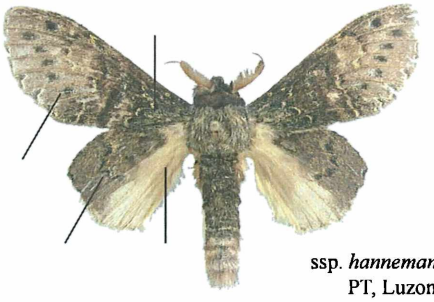


Fig. 260: Distribution of *St. hannemani.*

Stauropus hannemanni is the vicariant of *S. major.* But *hannemanni* shows, contrary to *major,* extensive geographical variation. Therefore it was necessary to introduce two further subspecies. The Philippines host four subspecies of *hannemanni.*


ssp. *hannemanni* ♂
HT, Luzon

Stauropus hannemanni najade **ssp. nov.**
HT: ♂, Philippinen, Negros, Mt. Canlaon, W Route via Mambucal, 600 m, 10°22' N, 123° 12' E, vii. 1997, leg. local collectors – NHM, Wien.


ssp. *hannemanni* ♂
PT, Luzon

Paratypes (21 ♂♂):
Negros: 3 ♂♂, Negros, Mt. Canlaon, W Route via Mambucal, 1.010 m, 10°22' N, 123° 12' E, 17.-18.vii. 1996; 2 ♂♂, ibid. 820 m, 15. vii. 1996; 2 ♂♂, ibid., 600 m, xii.1996; 2 ♂♂, ibid. vii. 1997 (MV17.452); 1m, ibid., 60 m, iv. 1998; 2 ♂♂, ibid., x. 1995; 3 ♂♂, NE of Don Salv. Benedicto, Barangay Bagong Silang, ft. Mt. Mandalagan, 770 m, 10°36.017'N, 123°16.127'E, 19.-20.vi. 2009; 2 ♂♂, ibid., 800 m, v.-vi.1998; 1 ♂, Mt. Talinis 1.200 m, iii. 1998; 2 ♂♂, Mt. Mandalaga xii. 1997 (GU 47-20); 1 ♂, 14 km W of San Jose, Dumaguete, Twin Lakes, Mt. Guinsayawan, 900 m, 09°21.660'N, 123°10.795'E, 23.-24.vi.2009.

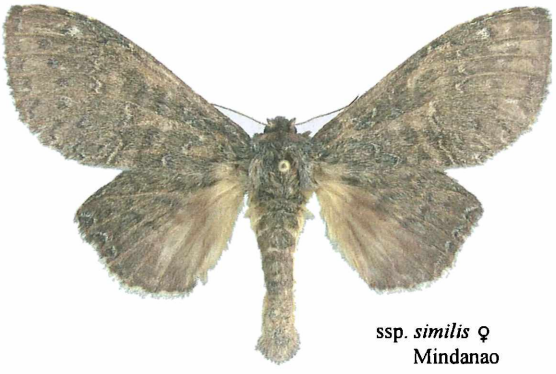

ssp. *similis* ♀
Mindanao

Fig. 261: Adults of *Stauropus hannemanni*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

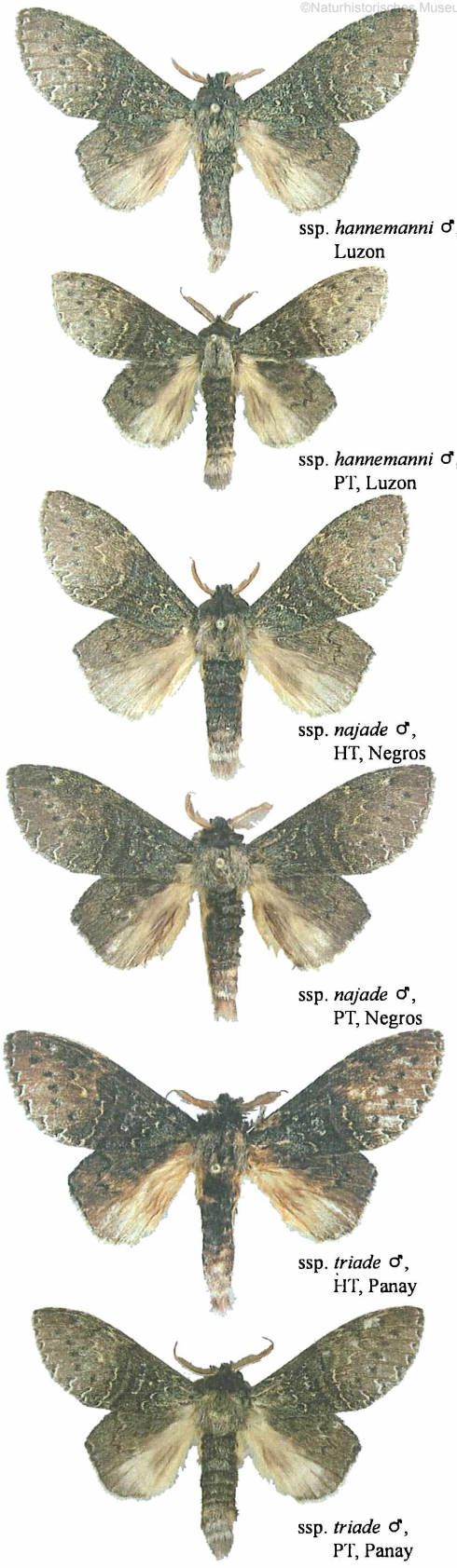


Fig. 262: Males of *Stauropus hannemanni*.

Diagnosis. Forewing length ♂♂, 26 mm – 31 mm; average 29 mm. The new ssp. externally resembles ssp. *hannemanni* rather than ssp. *similis*. The moth cannot be distinguished from ssp. *hannemanni* by external features, but the male genitalia are different. They are characterized by the shape of the upper arm of the valves, which is less curved than ssp. *hannemanni* or ssp. *triade* and shorter. The saccus is shorter and broader and the 8th tergite bears a pair of long and slender processes. They are longer than ssp. *hannemanni* and more slender than ssp. *triade* or ssp. *hannemanni*. The shape of the distinctive bilobed 8th tergite separates ssp. *najade* from the other subspecies of this species.

***Stauropus hannemanni triade* ssp. nov.**

HT: ♂, Philippinen, Panay, Mt. Baloy, vi.1998 leg. local collectors – NHM, Wien.

Paratypes (4 ♂♂):
Panay: 2 ♂♂, Mt. Baloy, vi. 1998 (W15538, W15539); 2 ♂♂, Mt. Malindog, 600 m, iii.-iv.1997 (GU 47-19, MV17.453).

Diagnosis. Forewing length ♂♂, 27 mm – 29 mm; HT forewing length is 31 mm. The ssp. *triade* looks closer to ssp. *hannemanni* than to ssp. *najade* from Negros. The moth cannot reliably be distinguished from ssp. *hannemanni* by means of external features, but the male genitalia are different. The upper arm of the valves is almost rectangularly curved and more robust. The shape of the 8th sternite is as in ssp. *hannemanni* but the processes of the 8th tergite are more slender and significantly longer. They are closest to ssp. *najade* but more slender.
The forewing length varies between 27 mm – 31 mm.

Diagnosis. *Stauropus hannemanni* differs from *major* in the larger wingspan and the yellowish coloured base of the hindwings. The basal area of the forewings is not greenish filled as in *S. major*. The female resembles the male.

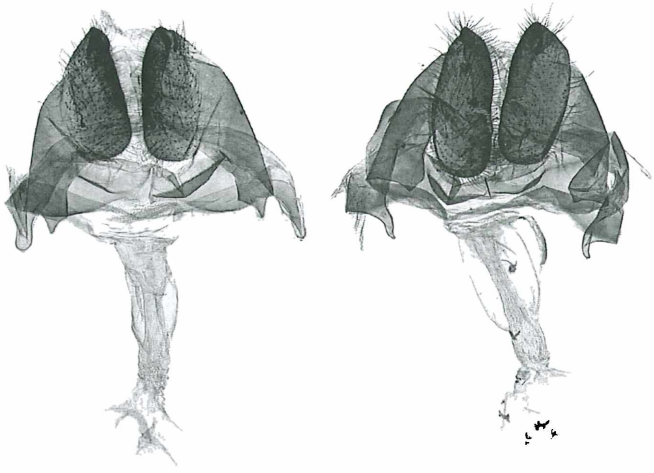


Fig. 263: Female genitalia of *St. major* and *hannemanni.*

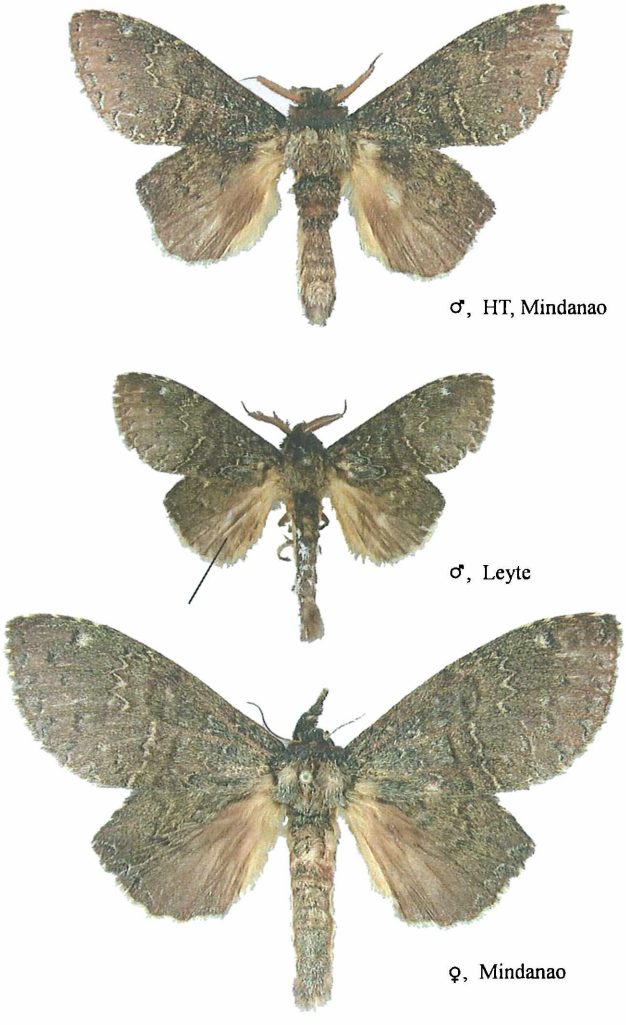


Fig. 264: Adults of *Stauropus hannemanni similis*

The male genitalia are similar to *major*. They differ in the shorter processes and the shape of the valve and most clearly by the shape of the bilobed 8th tergit. The female genitalia are similar to *major* but display somewhat larger papillae anales.

Variation. The ssp. *similis* differs slightly from ssp. *hannemanni* by darker colouration of the hindwings. The underside of the forewings of *similis* is fuscous brown rather than pale yellow-whitish. Specimens from Samar and Leyte are intermediate between populations from Mindanao and *hannemanni* from Luzon, but are closer (underside of wings, male genitalia) to ssp. *similis*.

The male genitalia of ssp. *similis* differ from ssp. *hannemanni* by more slender valve-processes, the short and rectangular shaped saccus and the distinctive shape of the wide bilobed 8th sternite. For characteristics of ssp. *najade* and *triade* see diagnosis above. The adults vary individually slightly in the darkness of the underside of the forewings; very few individuals of ssp. *hannemanni* display slightly brown undersides of the forewings.

The individual variation of the male genitalia relates to shapes of the valve and the socii and also the processes of the 8th sternites.

Bionomics. The adults are uncommon and fly throughout the year. Most specimens were observed between vi. - viii. The imagines prefer mountain rainforests at altitudes between 350 m - 1,600 m, occasionally at 2.000 m.

Distribution. *St. hannemanni* is endemic in the Philippines: Luzon, Mindoro (ssp. *hannemanni*), Negros (ssp. *najade*), Panay (ssp. *triade*), Samar, Leyte and Mindanao (ssp. *similis*).

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

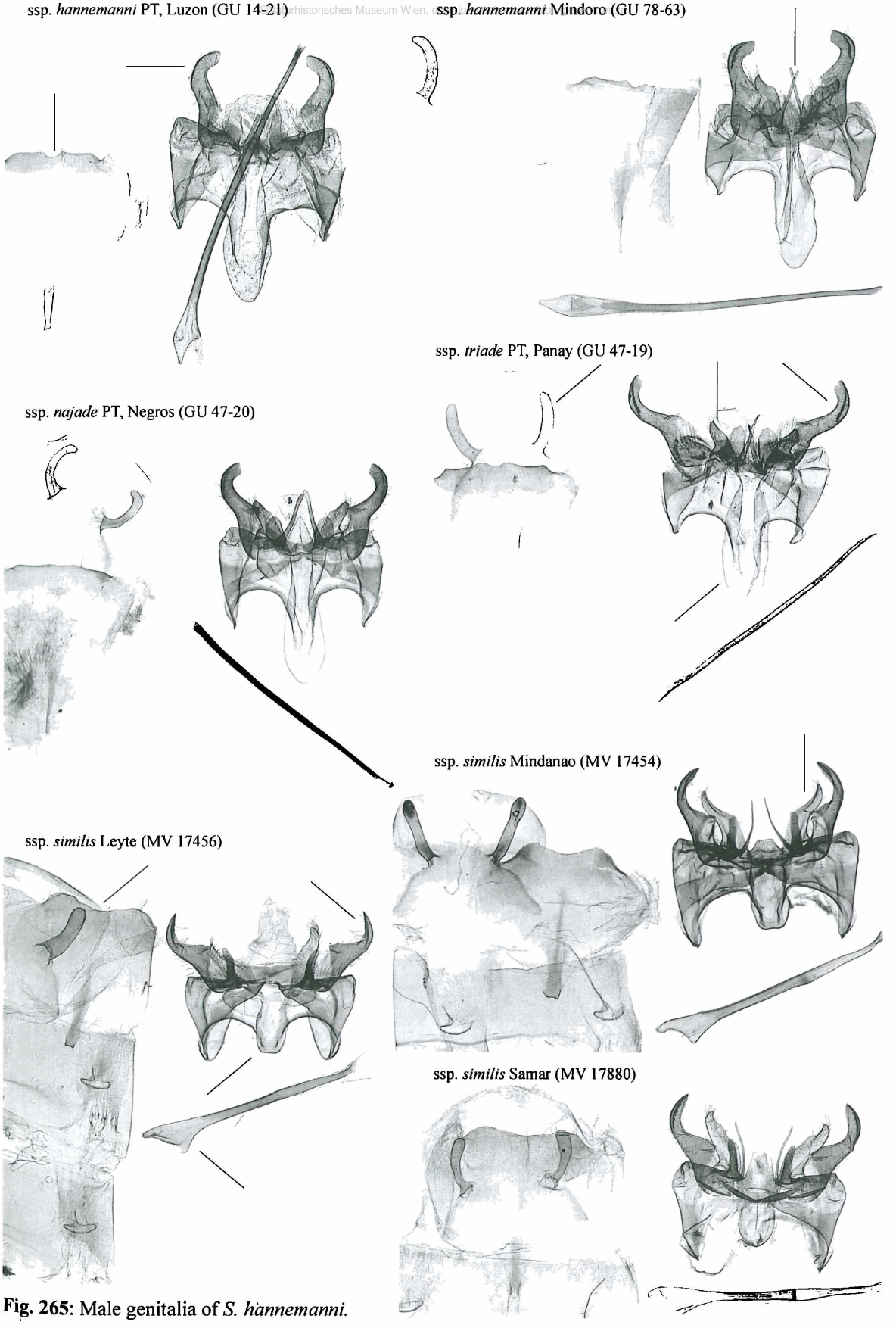


Fig. 265: Male genitalia of *S. hannemanni*.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

53. *Stauropus alternus brunnea* (SCHINTLMEISTER, 1981): 285; figs. 2a, 2b (*Stauropus brunea brunnea*)

HT: ♂, Indonesien, Sumatra, Aceh, 20 km NW Langsa, 97°45'E, 4°32'N – in coll. A. SCHINTLMEISTER, Dresden.

Stauropus alternus WALKER, 1855: 1020 (HT: ♀, Sylhet [=Bangladesh] – BMNH, London, examined) and the following species belong to a species-group that has almost no modifications of the 8th abdominal segments. These species are most diverse in the Papuan region. SCHINTLMEISTER (2008) placed them in the subgenus *Chlorostauropus* KIRIAKOFF, 1968 (type-species: *Stauropus viridissimus* BETHUNE-BAKER, 1904), which contains, at present, nine species.

Diagnosis. *Stauropus alternus* is within the genus characterized by the elongated forewings, but the species is very similar to *S. nephodes*, which also occurs in the Philippines. Both species are best separated by their forewing shapes, which are in *alternus* slightly longer and less rounded. The fuscous brown shadow in the median area does not extend towards the apex on the costa as in *nephodes*. The female usually shows a submarginal fascia, marked as a row of prominent large reddish brown dots.

The male genitalia resemble much to *nephodes*, but differ slightly in the shape of the tegumen processes. The 8th sternite is slightly bilobed and weakly sclerotized. The 8th tergite is not modified. The female genitalia are characterized by large papillae, a diagnostic shaped vaginal plate and a sclerotized ductus bursae. The weakly sclerotized and small bursa copulatrix has no signum.

Variation. The species varies individually in size and darkness of the ground colour of the wings. A single male from Negros is small and pale reddish brown coloured as illustrated. The male genitalia vary individually slightly in the shape of the valves and the length of he phallus.

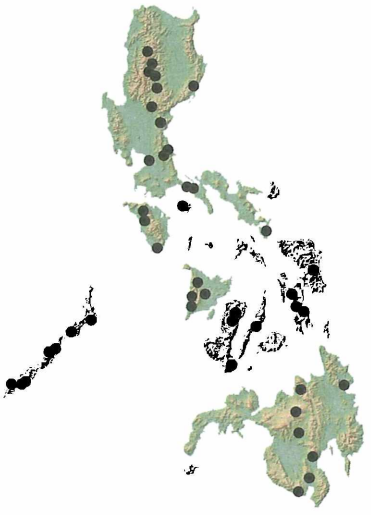


Fig. 266: Distribution of *St. alternus*.

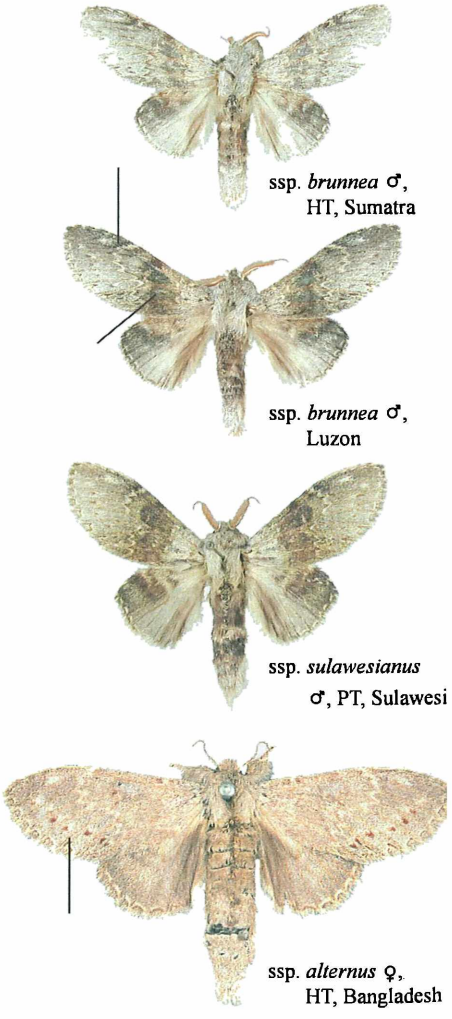


Fig. 267: Adults of *Stauropus alternus*.

©Naturhistorisches Museum

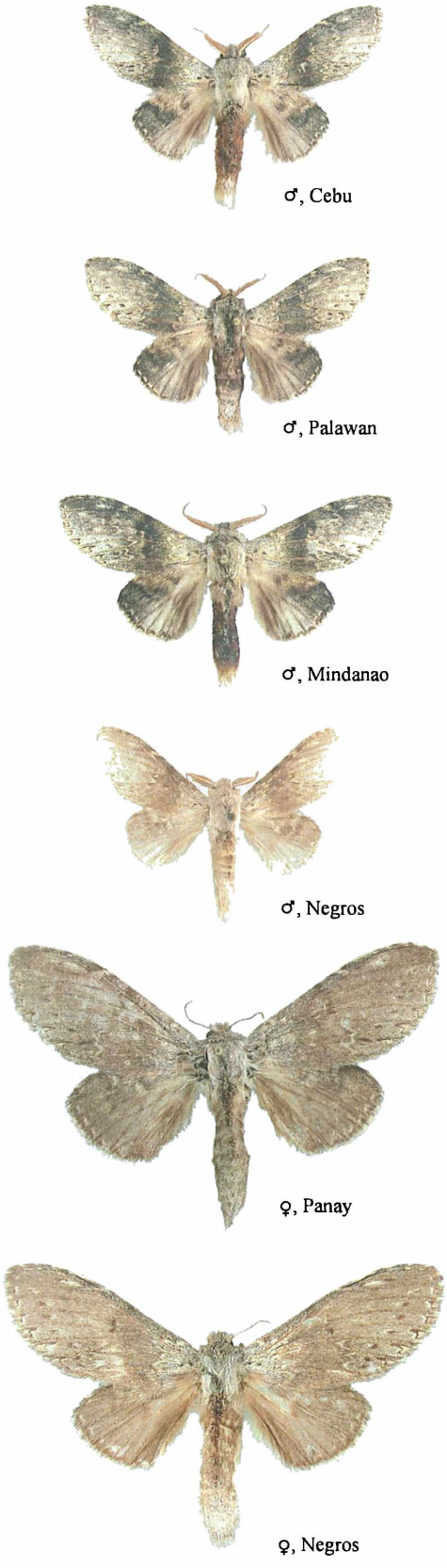


Fig. 268: Adults of *S. alternus brunnea.*

Stauropus alternus tends to establish geographical subspecies, which rather display differences in their male genitalia than in external appearance (SCHINTLMEISTER 2003). The differences between ssp. *brunnea* and ssp. *alternus* from the continent are rather small. No significant differences were found between the thoroughly sampled populations (n > 200, 6 GU) of the several Philippine islands.

Bionomics. The adults are amongst the most common Philippine notodontids and are found throughout the year. The species occurs in a wider range of habitats: from urbanized places (including larger cities), different types of forests and agricultural areas. It was occasionally reported as a pest (outside the Philippines). It seems, that the moth prefers lower altitudes; it was collected up to 1.600 m (ssp. *alternus* up to 2.500 m), but most specimens were observed between 0 m 700 m. The caterpillar is polyphagous and easy to rear (SCHINTLMEISTER 1997).

Distribution. The ssp. *alternus* occurs in the Himalayas (from Pakistan to Bhutan), Andaman Isl., S China, S Japan, Taiwan and Indochina. The ssp. *brunnea* occurs in Sundaland and the Philippines: Palawan, Luzon, Marinduque, Mindoro, Samar, Panay, Negros, Cebu, Samar, Leyte and Mindanao. Further subspecies fly in Java, the lesser Sunda Islands up to Timor, Sulawesi, and the Moluccas.

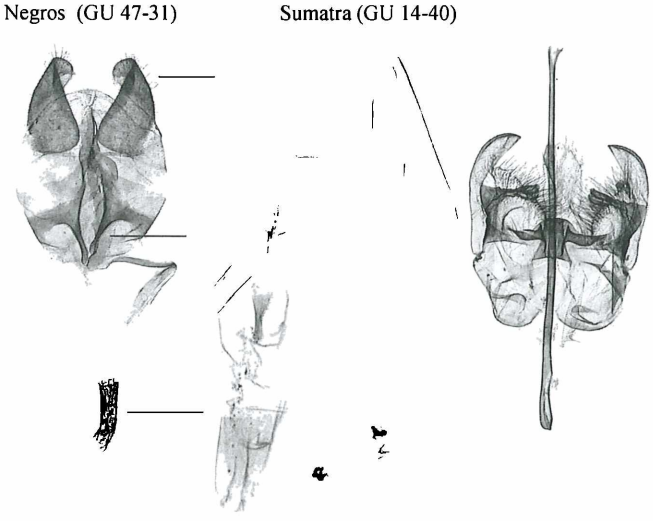


Fig. 269: Genitalia of *Stauropus alternus brunnea.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

54. *Stauropus nephodes* WEST, 1931: 212;
HT: ♂, Luzon, subprov. Benguet, Klodyke – BMNH, London, examined.

Stauropus nephodes is closely related to *alternus* and both species occur sympatrically. But the ecological valence of *nephodes* is much more restricted and the rare adults are rather montane and a classical example of speciation by ecological adaption.

Diagnosis. This is a sibling species of *S. alternus*. *Stauropus nephodes* is separable by the following features: smaller than *alternus* and the shape of the forewings is more rounded. The fuscous brown shadow in the median area is more contrasting and extends toward the apex on the costa. The postmedian areas of the forewings are whitish with a row of brown dots. The hindwings are dorsally contrasting whitish coloured, in *alternus* rather brownish. The female is still unknown.

The male genitalia of *nephodes* are smaller than in *alternus*. They differ slightly in the shape of the shorter valves, a different sclerotized juxta and a dorsally slightly curved phallus. The 8th abdominal segment resembles *alternus* and is also weakly sclerotized.

Variation. There is almost no individual variation in external appearance or the male genitalia. Due to the restricted area of distribution there is also no geographical variation.

Bionomics. The adults are uncommon (n = 18) and seem to be specialized to defined ecological conditions. The adults were taken in ii. and x. at altitudes between 800 m - 1.200 m in primary and secondary forests.

Distribution. Endemic in the mountainous regions of N Luzon.

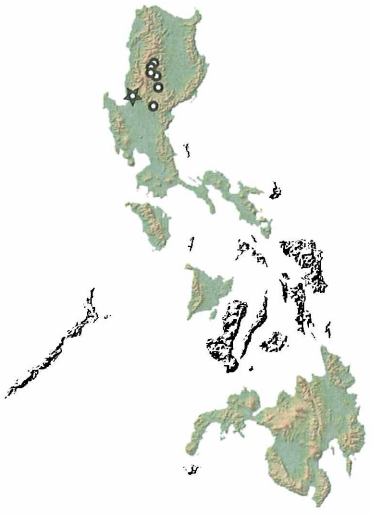


Fig. 270: Distribution of *St. nephodes*.

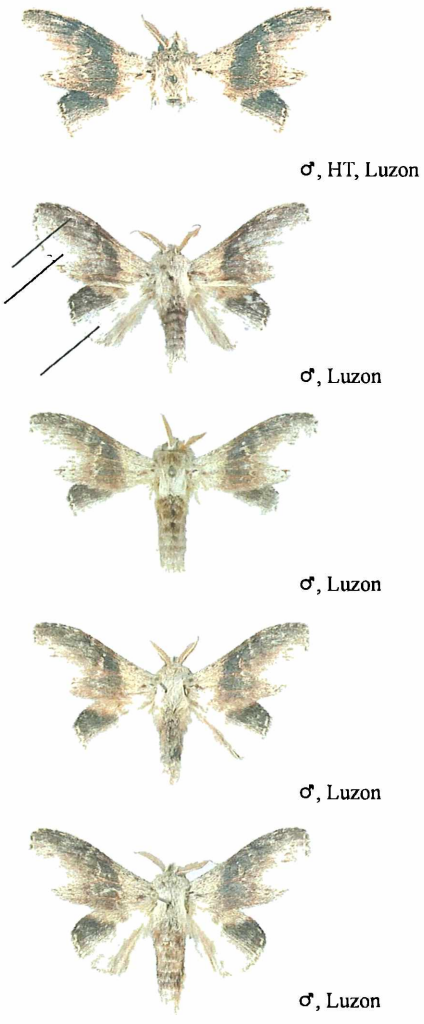


Fig. 271: Males of *Stauropus nephodes*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Cebu (GU 14-53) Mindanao (GU 14-57) Palawan (GU 14-54)

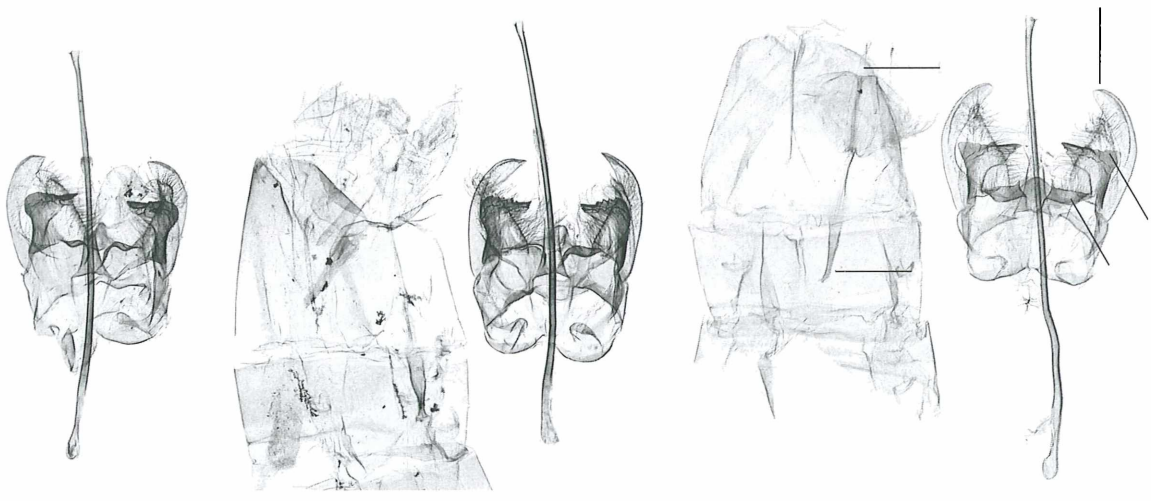


Fig. 272: Genitalia of *Stauropus alternus brunnea.*

HT, Luzon (BM # 116) Luzon (GU 14-51)

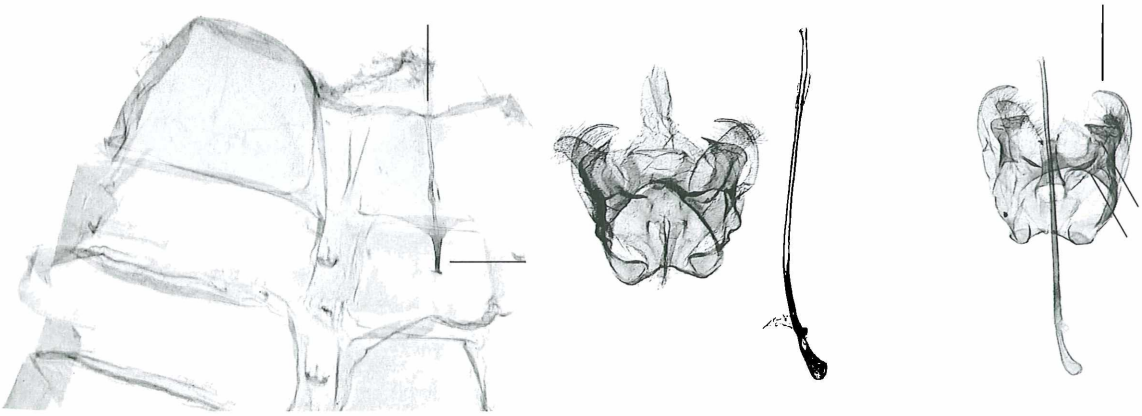


Fig. 273: Male genitalia of *Stauropus nephodes.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

55. *Stauropus albibasis* SCHINTLMEISTER, 2003: 108; figs. 25, 26, 79.

HT: ♂, Philippines, S Mindanao, Cotabato, Prov. Sumangani, Mount Busa near Kainba, 700 m – NHM, Wien, examined.

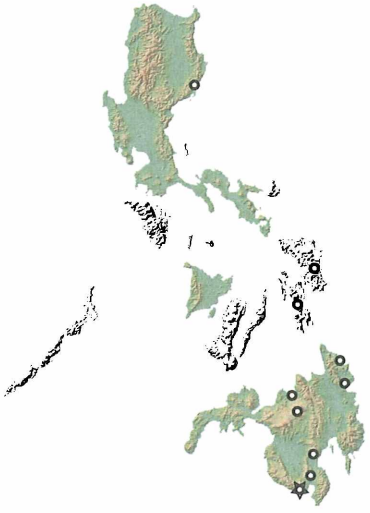


Fig. 274: Distribution of *St. albibasis*.

Stauropus albibasis resembles, by external appearance, the morphs of the subgenus *Stauropus*, but the male genitalia undeniably justify classification in the subgenus *Chlorostauropus*. The species was only recently discovered by JH in Luzon and Samar.

Diagnosis. *Stauropus albibasis* is well characterized by the distinctive contrasting white postbasal area of the forewings. The female also displays a prominent blackish discalspot on the forewings, which is more weakly developed in the males.

The genitalia resemble *St. alternus*, but the large valves are different in shape. The saccus is not bilobed but bulged. The long phallus and the less modified 8th abdominal segments are more similar to *St. nephodes* rather than *alternus*. The female genitalia have a smaller ostium compared to *alternus*.

Variation. The species varies slightly in size and darkness of the ground colour of the wings. The male genitalia are virtually constant in Mindanao; a male from Leyte has a thicker arm of the valves.

Bionomics. The adults are not rare in Mindanao (from Leyte only three males are known, from Luzon and Samar single males were taken). The species occur in iv.-x. and in xii.-i. from 300 m - 1.700 m mostly at lower elevations up to 700 m and exclusively in primary forests.

Distribution. Endemic in the Philipines: Mindanao, Leyte, Samar and Luzon

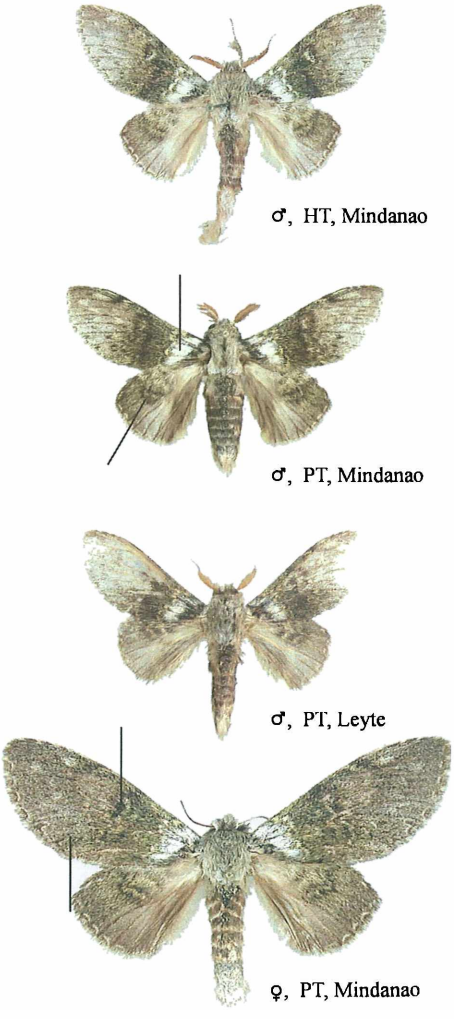


Fig. 275: Adults of *Stauropus albibasis*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

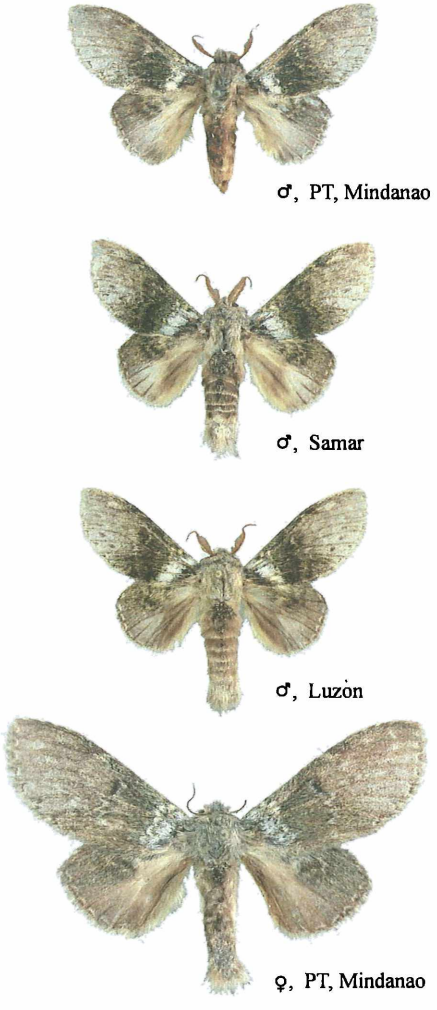


Fig. 276: Adults of *Stauropus albibasis*.

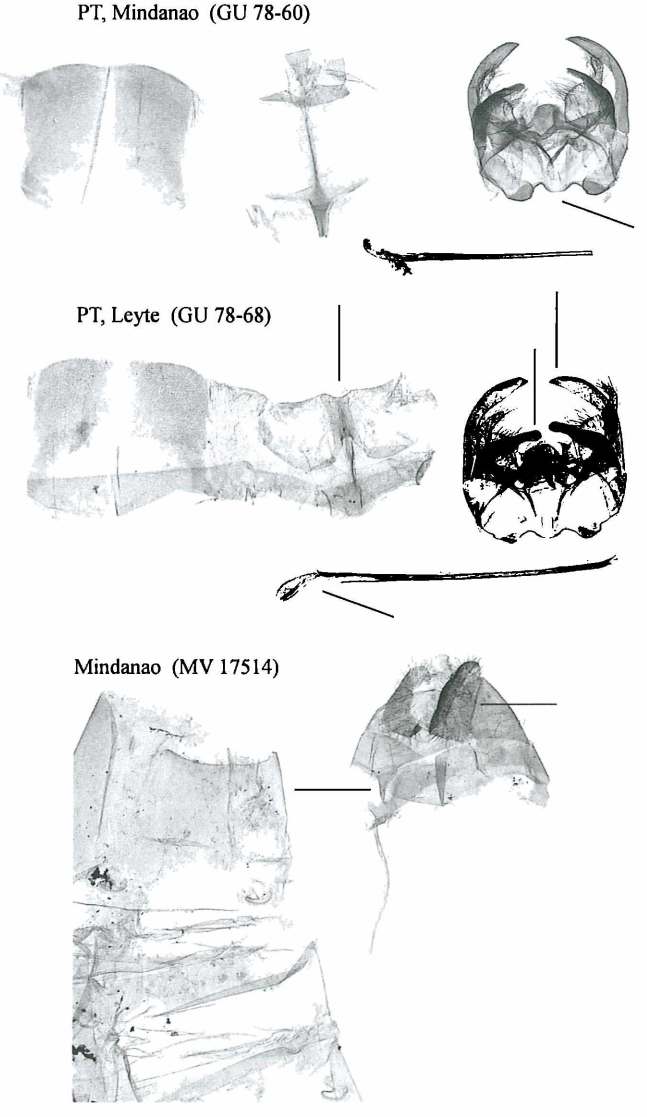


Fig. 277: Genitalia of *Stauropus albibasis*.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

56. *Stauropus virescens* Moore, 1879: 404

HT: ♂, Darjeeling – BMNH, London, examined.

= *Stauropus obscuratus* Van Eecke, 1929: 165; pl. 13: 4; HT: ♂, Sumatra, Fort de Kock – Nationaal Natuurhistorisch Museum, Leiden, examined.

= *Benbowia dudgeoni* Kiriakoff, 1967: 53; fig. 13; HT: ♂, Sumatra, Lebong Tandai – BMNH, London, examined.

Benbowia is applicable as a subgenus name for a group of six characteristically green coloured species, which are often difficult to separate by external criteria.

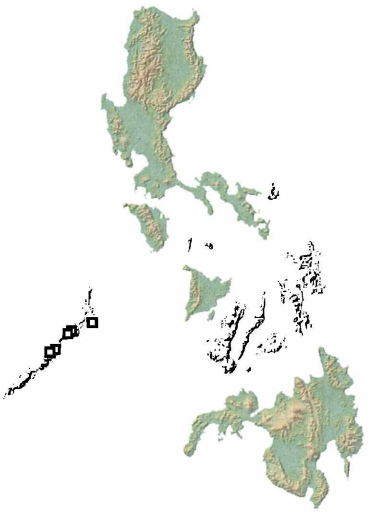


Fig. 278: Distribution of *St. virescens*.

Diagnosis. Clearly distinguishable by the green forewings, which display a weakly developed brown basal fascia (see *orientalis*). The species cannot be reliably separated by external features from some other congeners (*elisabethae* Dierl, 1981, *callista* Schintlmeister, 1997, *camilla* Schintlmeister, 1997) in Sundaland and Indochina.

The male genitalia are characterized by the shape of the very large socii, the ellipsoid and pointed juxta and the robust valves. The 8th tergite segment is diagnostically serrated at the concave dorsum.

The female (not found yet in Palawan) resembles *orientalis* but the apophyses are very massive.

Variation. The small Palawan series show virtually no individual variation. Outside Palawan the ground colour varies from bluish to yellow-green as well as the distinctiveness of the brown markings. Sometimes specimens with blackish median and basal areas of the forewings occur (f. *obscuratus*). The male genitalia of Sundanian and Indian specimens differ somewhat in the shape of the curved phallus and the shapes of the 8th abdominal segments. Outside Palawan the variability in the male genitalia seems to be wider (uncus, valve, phallus).

Bionomics. Only a restricted number (n = 9) of adults is known from Palawan, which was taken in xii.- iii. and vi. between 175 m and 800 m (in the Himalaya up to 2.100 m) in primary and secondary forests.

Distribution. Widely distributed from NW India,

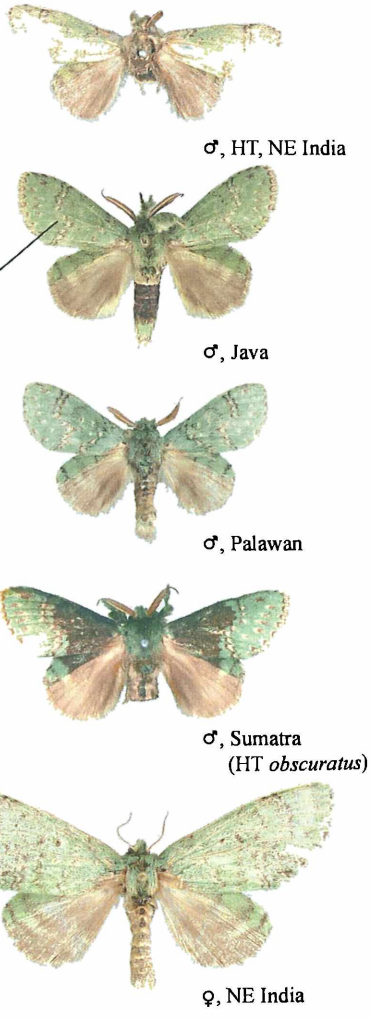


Fig. 279: Adults of *Stauropus virescens*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

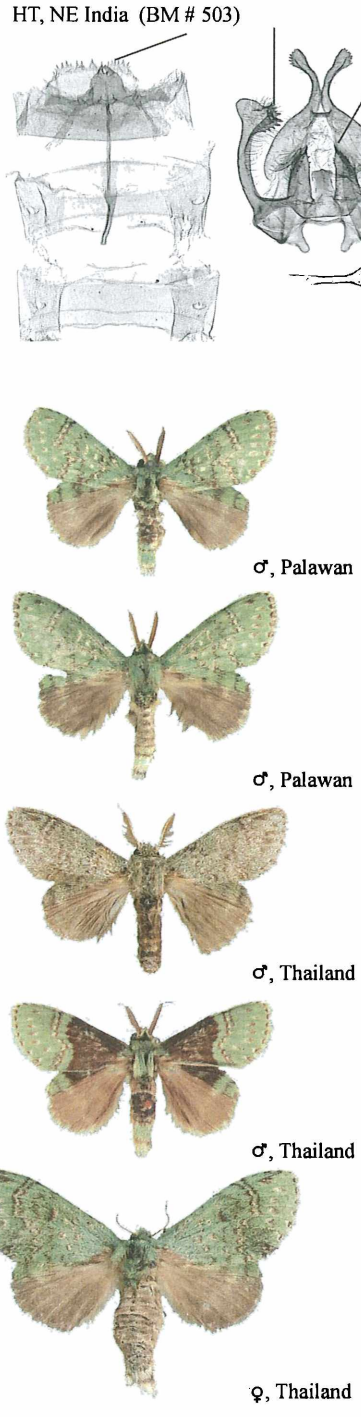


Fig. 280: Adults of *Stauropus virescens.*

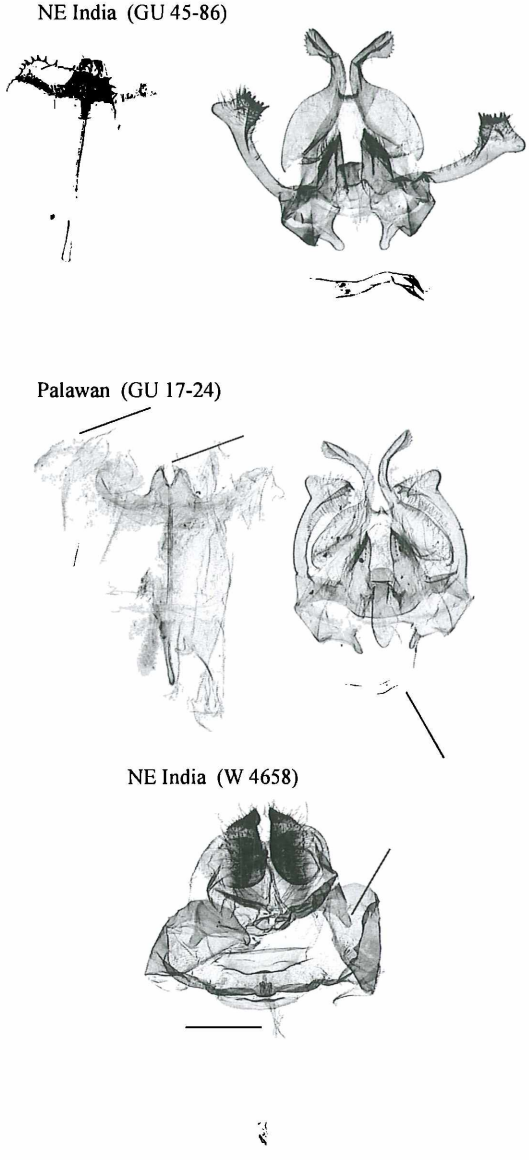


Fig. 281: Genitalia of *Stauropus virescens.*

Nepal, NE India, Andaman Isls., Indochina, SW China (Yunnan), Sundaland, Java, Bali and Palawan.

www.biologiezentrum.at

57. *Stauropus orientalis orientalis* SCHINTLMEISTER, 1993: 127; pl. 1: 4; pl. 16: 1 (*Benbowia orientalis*)

HT: ♂, Philipinen, Mindanao, Bukidnon, 40 km NWMaramag, Dalongdong, Talakag, 800 m, 7°53'n. Breite, 124°40' ö. Länge – NHM, Wien, examined.

Stauropus orientalis septentrionalis SCHINTLMEISTER, 1993: 128; pl. 1: 6; pl. 16: 2 (*Benbowia orientalis septentrionalis*)

HT: ♂, Philipinen, Luzon, Quezon Prov., Quezon Forest Nat. Park, 250 m, 14°01' n. Breite, 122°11' ö. Länge – NHM, Wien, examined.

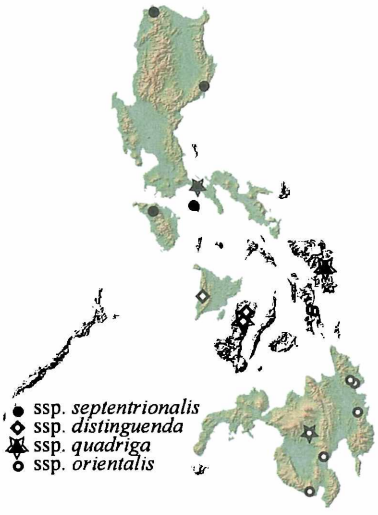


Fig. 282: Distribution of *St. orientalis*.

Benbowia orientalis is a variable species, that is probably why it is probably actively speciating. Two further subspecies from Negros and Samar are introduced below, but further distinct geographically subspecies are likely to inhabit other Philippine Islands (Leyte, Mindoro, Panay). The populations from Leyte (n = 3 GU) are intermediate between ssp. *orientalis* (curved phallus) and ssp. *quadriga* (slender and somewhat pointed socii). This populations are placed provisionally to ssp. *orientalis*.

***Stauropus orientalis distinguenda* ssp. nov.**

HT: ♂, Philippinen, Negros Or., NW of Don Salv. Bededicto, Barangay Bagong Silang ft. Mt. Mandalagan, 770 m, 10°36.017'N, 123°16.127'E prim. hill forest edge, 19.-20.vi.2009, leg. J.H Lourens – NHM, Wien.

Paratypes (25♂♂, 3♀♀):

Negros: 1♂, NW of Don Salv. Benedicto, Barangay Bagong Silang ft. Mt. Mandalagan, 770 m, 10°36.017'N, 123°16.127'E, 19.-20.vi.2009; 4♂♂, 1♀, Mt. Kanlaon, W-Route via Mambucal, 820 m, 15. vii. 1996 (GU 43-55, MV 17.451); 8♂♂, 2♀♀, ibid., 1010 m, 17.-18. vii. 1996 (GU 43-53, 43-54, 43-71), 3 ♂♂, ibid., 600 m, ix. 1997 (GU 45-64), 1♂ ibid., vii. 1997 (GU 45-81); 1♂, ibid. xii.1996; 1♂, ibid. x. 1997 (GU 81-44); 3♂♂, ibid. iv. 1998; 1♂, ibid. ii. 1997; 1♂, Mt. Canlaon, i.-iv.1995, 1♂, Mt. Mandagan, xii. 1997.

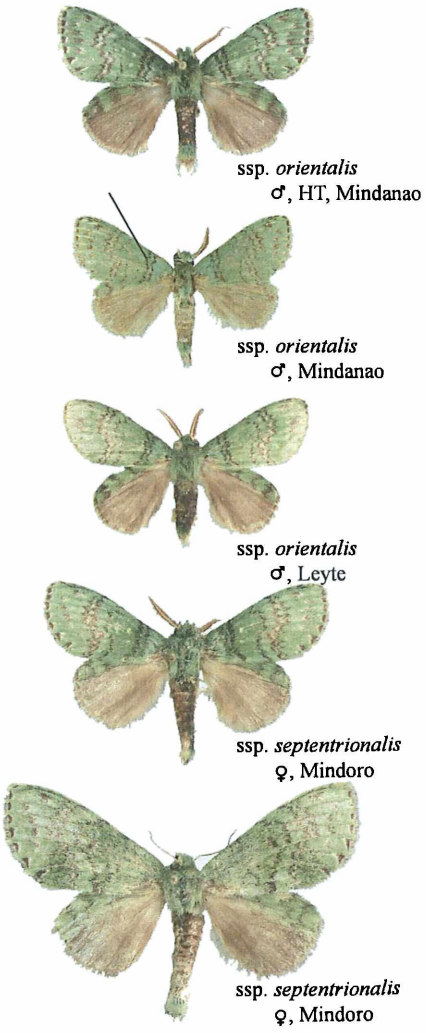


Fig. 283: Adults of *Stauropus orientalis*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

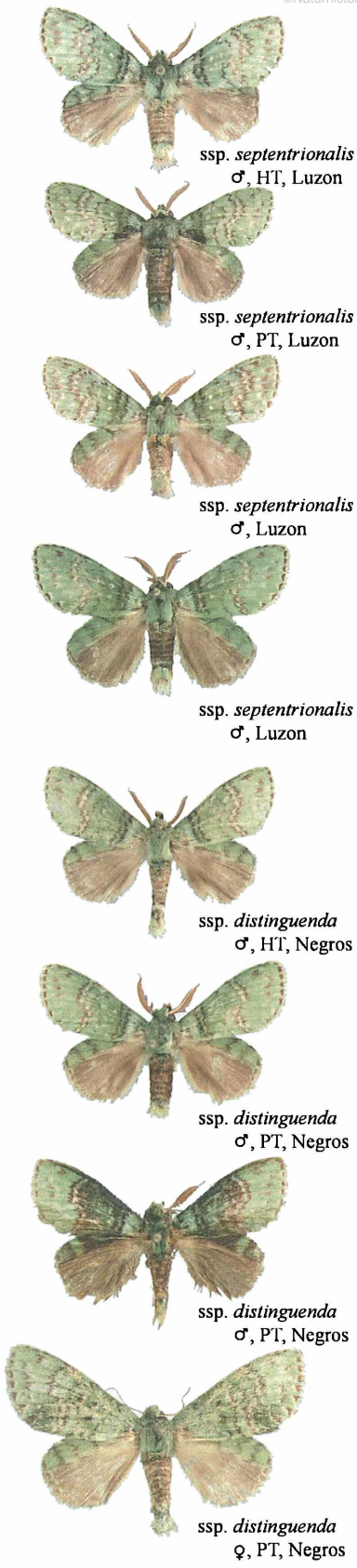


Fig. 284: Adults of *Stauropus orientalis*.

Diagnosis. Forewing length ♂♂ 17 mm – 19 mm, ♀♀ 22 mm. The new subspecies does not differ in external appearance from other known subspecies, but there is a tendency to develop individuals whith enlarged blackish markings areas, comparable to f. *obscuratus* in *Stauropus virescens*. 7 of 28 examined specimens from Negros are enriched whith blackish markings. The material from other regions in the Philippines does not have so many melanic individuals; of ssp. *septentrionalis* and *quadriga only* single males having a smaller blackish median or basal areas (as illustrated). The female is larger than the male.

The male genitalia of ssp. *distinguenda* are characterized by the shape of the large socii, which are knob-shaped at the tip (in ssp. *septentrionalis* large club-shaped) and rather rectangular angled in the upper part than U-shaped as in ssp. *orientalis*. The valves are longer and slightly curved; they are not pointed at the tip and less serrated as in ssp. *septentrionalis*. The phallus of ssp. *distinguenda* is longer than in the other known subspecies and slightly more curved (probably a character that varies individually). A useful character to separate the subspecies of *orientalis* is also the shape of the sclerotized 8th tergite.

***Stauropus orientalis quadriga* ssp. nov.**

HT: ♂, Philippinen, Samar, 8 km SE of Bagacay, prim. forest road, 200 m, 1°47'N, 125°15'E 21.-22. x. 2006, leg. JH Lourens – NHM, Wien.

Paratypes (10♂♂):

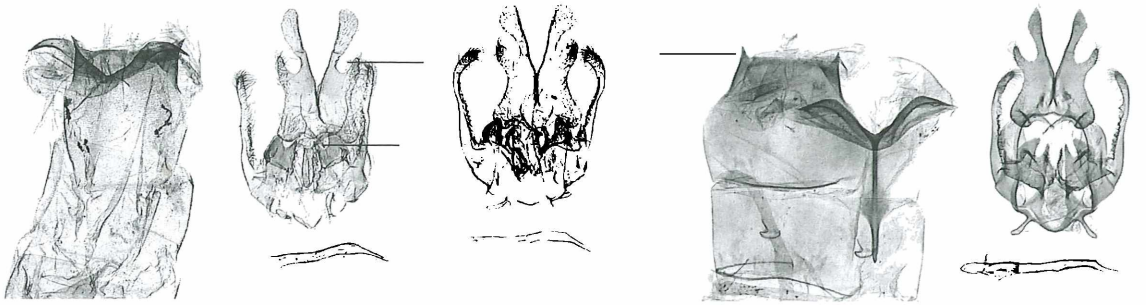
Samar: 5♂♂, 8 km SE of Bagacay, 200 m, 1°47'N, 125°15'E 21.-22. x. 2006, 1♂, ibid. 250 m, 22.vi.2006; 1♂, ibid. 250 m, 11°48.025'N, 125°14.610'E, 13.iii.2009 (MV 17.627); 1♂, ibid. 20.iii.2009; 2♂♂, 4 km E Bagacay, 140 m, 11°48'N, 125°15'E, 2.vi.2006 (MV 17.256, 17.626).

Diagnosis. Forewing length ♂♂ 15 mm – 18 mm. The ssp. *quadriga* does not differ significantly in external appearance from other known subspecies, but there is a tendency to develop a weaker blackish

ssp. *orientalis* PT, Mindanao (GU 17-23)

ssp. *orientalis* PT, Mindanao (GU 17-12)

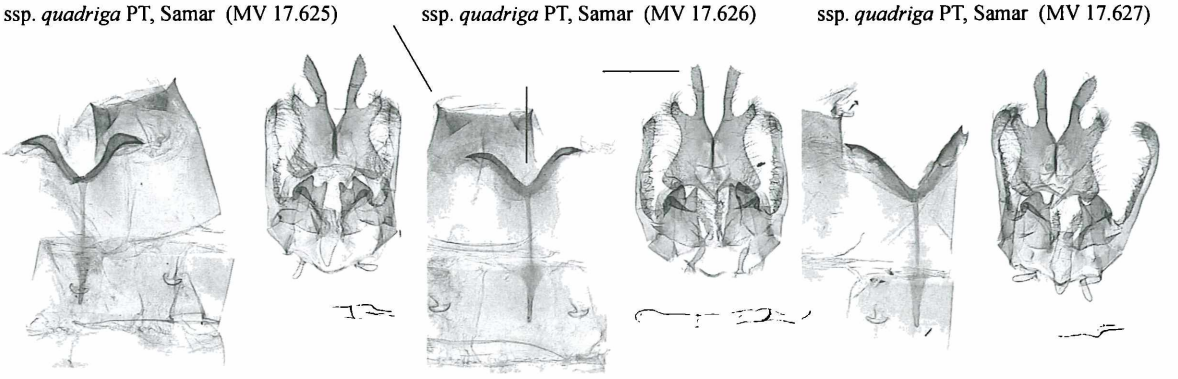
ssp. *orientalis* Leyte (MV 17.449)



ssp. *quadriga* PT, Samar (MV 17.625)

ssp. *quadriga* PT, Samar (MV 17.626)

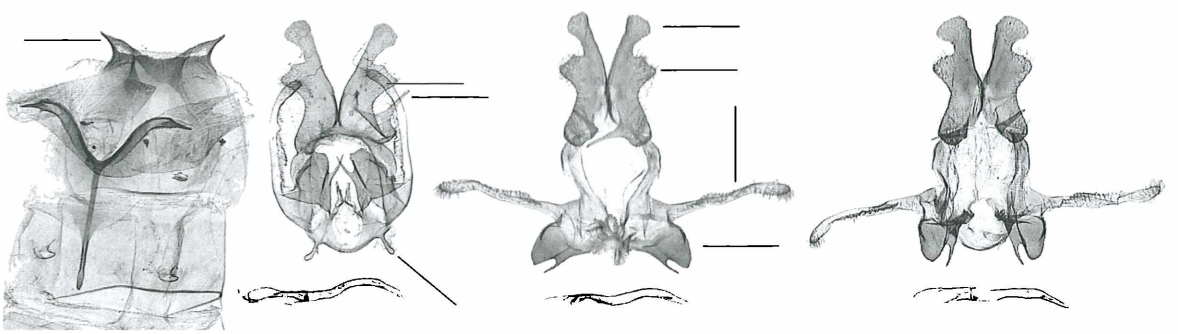
ssp. *quadriga* PT, Samar (MV 17.627)



ssp. *distinguenda* PT, Negros (MV 17.451)

ssp. *distinguenda* PT, Negros (GU 45-52)

ssp. *distinguenda* Panay (W 4666)



ssp. *distinguenda* PT, Negros (GU 45-71)

ssp. *septentrionalis* PT's, Luzon (GU 17-34, 17-26)

ssp. *septentrionalis* Mindoro (MV 17.450)

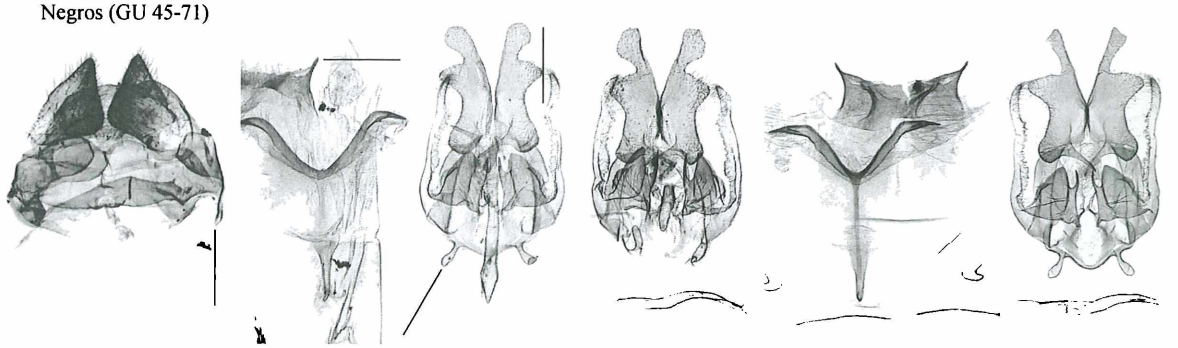


Fig. 285: Genitalia of *Stauropus orientalis*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

basal fascia. One (worn) male belongs to the form with the blackish median area. The female is still unknown.

The male genitalia are separable from all other known subspecies by the slender shape of the large socii, which is pointed at the tip. The phallus is rather straight and not curved as in the other subspecies. The processes of the 8th sternite, are bifurcate, which is unique within the species.

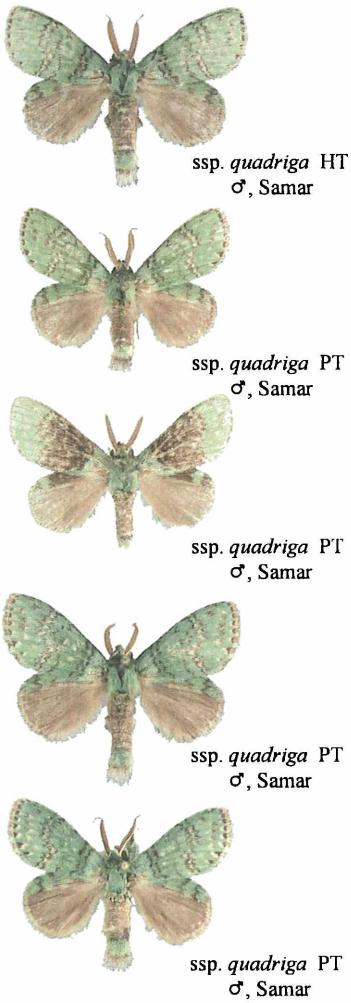


Fig. 285a: Adults of *Stauropus orientalis*.

Diagnosis. *Benbowia orientalis* differs from *virescens* (and other Sundanian species of the subgenus *Benbowia*) by a prominently blackish marked pair of basal fasciae on the forewings.

The male genitalia are readily distinguished by the unique shape of the very large socii, the more slender valves and the distinctive sclerotized 8th abdominal segment. The female genitalia are similar to *virescens* with a relatively small bursa copulatrix and less robust apophyses.

Variation. The species varies slightly in the ground colour of the forewings, which is sometimes somewhat bluish tinged and the distinctness of the brown markings. For melanic forms: see above under ssp. *distinguenda.* The male genitalia display extensive geographical variation in shapes of socii, valves and 8th tergite as illustrated. A few specimens from Panay and Mindoro are slightly different in the shape of the socci and could represent further subspecies.

Bionomics. The species was observed throughout the year (except viii.) between 250 m and 1.100 m in primary and secondary forests.

Distribution. Restricted to the Philippines: ssp. *septentrionalis*: Luzon, Mindoro; ssp. *distinguenda*: Negros, Panay; ssp. *quadriga*: Samar and ssp. *orientalis*: Leyte, Mindanao.

©NHM Wien, download unter www.biologiezentrum.at

Syntypistis Turner, 1907: 679

Type-species: *Syntypistis chloropasta* Turner, 1907

= *Omestia* Bethune-Baker, 1908: 177 (*Omestia bella* Bethune-Baker, 1908)
= *Quadricalcarifera* Strand, 1916: 160 (*Stauropus* (*Quadricalcarifera*) *subgeneris* Strand, 1916)
= *Egonocia* Marumo, 1920: 281, 333 (*Somera cyanea* Leech, 1889)
= *Stauropodopsis* Roepke, 1944: 20 (*Stauropodopsis grisescens* Roepke, 1944)
= *Taiwa* Kiriakoff, 1967: 51 (*Stauropus confusa* Wileman, 1910)
= *Vaneeckia* Kiriakoff, 1968: 49 (*Stauropus ovalis* Van Eecke, 1929 [=*Stauropus pallidifascia* Hampson, 1893])

Syntypistis is a larger (n > 80 species, 10 occure in the Philippines) genus that is widespread in the Oriental and Australian region. The general appearance of some species has resemblance with some *Stauropus* but the genitalia of both sexes are principally different. Once the genus becomes better known the introduction of subgenera seems to be appropriate. The shapes and sclerotizations of the 8th sternite are, in many cases, of significant taxonomic value for separation of the species.

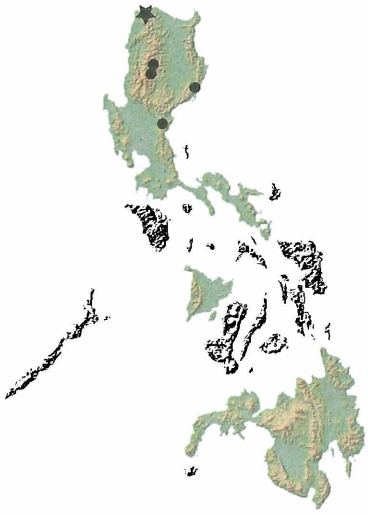


Fig. 286: Distribution of *S. aswang*.

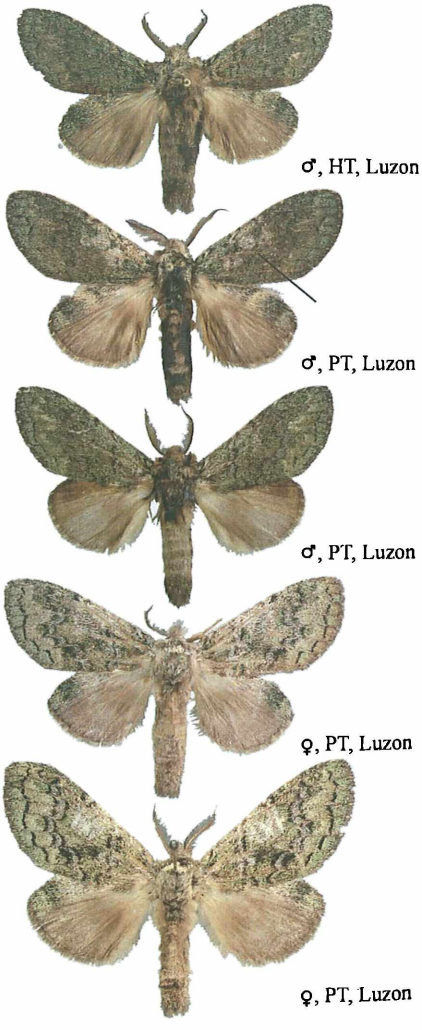


Fig. 287: Adults of *Syntypistis aswang*.

58. *Syntypistis aswang* spec. nov.

HT: ♂, Philippinen, N Luzon, 5 km S of Adams, 18°31.338'N, 120°55.690' E, 350 m, 6.-7. iv. 2008, leg. J. H. Lourens (MV17.475) – NHM, Wien.

Paratypes (25 ♂♂, 3 ♀♀):
Luzon: 1♂♀, 5 km S of Adams, 18°31.338'N, 120°55.690' E, 350 m, 6.-7.iv.2008; 1♂, ibid., 700 m, 20.iv.2007; 1♂, E Luzon, Sierra Madre, Isabela 17 km NW Dinapique, 16°32'N, 122°14'E, 3.ix.2006; 1♂, Prov. Ifugao, Mt. Polis-Paß, 2.000 m, 21.-23.vii.1993; 1♂, 15 km SE Bontoc, Chatol, 17° 02' N, 121° 03' E, 1.950 m, 28.i.2006; 1♂, Nuevo Viszcaya, Dalton Paß, Santa Fe, 15°07'N, 120°36'E, 21.ix.-17.x.1988, 800 m (GU 19-11); 3♂♂, N. Ec., Bongabon Brgy. Laby, Sierra Madre, Mingan Mts., 15°38'N, 121°15'E, 950 m, 26.–27.iv.2006; 3♂♂, Aurora, Sierra Madre, 15 km W of Dibulo, 16°33,154'N, 122°13,334'E, 560 m, 16.vi.2007; 3♂♂, ibid., 585 m, 14.–15. vi.2007; 1♂, Isabela, Sierra Madre, 22 km NW Dinapique, 16°33'N, 122°13'E, 700 m, 4.ix.2006; 4♂♂, CAR border Abra/Kalinga, E of Malibcoing, Basiwag, 17°30'N, 120° 57'E,

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

1.700 m, 19.xi.2006; 3♂♂, 1♀, ibid., 1.550 m – 1.650 m, 17.–18. xi. 2006; 1♂, ibid., 1.600 m, 16.–17 i.2007; 1♂, ibid. 1.700 m, 8.ii.2007.

Diagnosis. Forewing length ♂♂ 20 mm 21 mm, ♂♂ 26 mm 27 mm. The species closely resembles, by external appearance, *Syntypistis viridipicta* (WILEMAN, 1910): 312 (HT: ♂, Formosa, Kanshirai – BMNH, London, examined), a species that is widespread in continental Asia and Sumatra. The forewings of *aswang* are rather uniform blackish-green with weakly marked blackish basal and submarginal fasciae. The costa of the brownish hindwings is also greenish coloured, corresponding to the forewings (as usual in the genus). The vicariant and sister-species *dila* occurs in Negros (see below for differential diagnosis). The paler female resembles the male but the postmedian and submarginal fasciae of the forewings are more prominently marked.

The male genitalia, which are very different from *viridipicta*, have an unusual club-shaped valve, a gnathos of equal length as the uncus and a swollen base of the uncus. The phallus is rather straight. A good feature for the identification of the species is the distinctively shape of the bilobed 8th abdominal segments and their distal sclerotizations.

Variation. A few individuals display greyish stigma in the median area of the forewings.

Bionomics. The adults were taken exclusively in primary forests up to 2.000 m.

Distribution. Endemic in the Philippines: N Luzon.

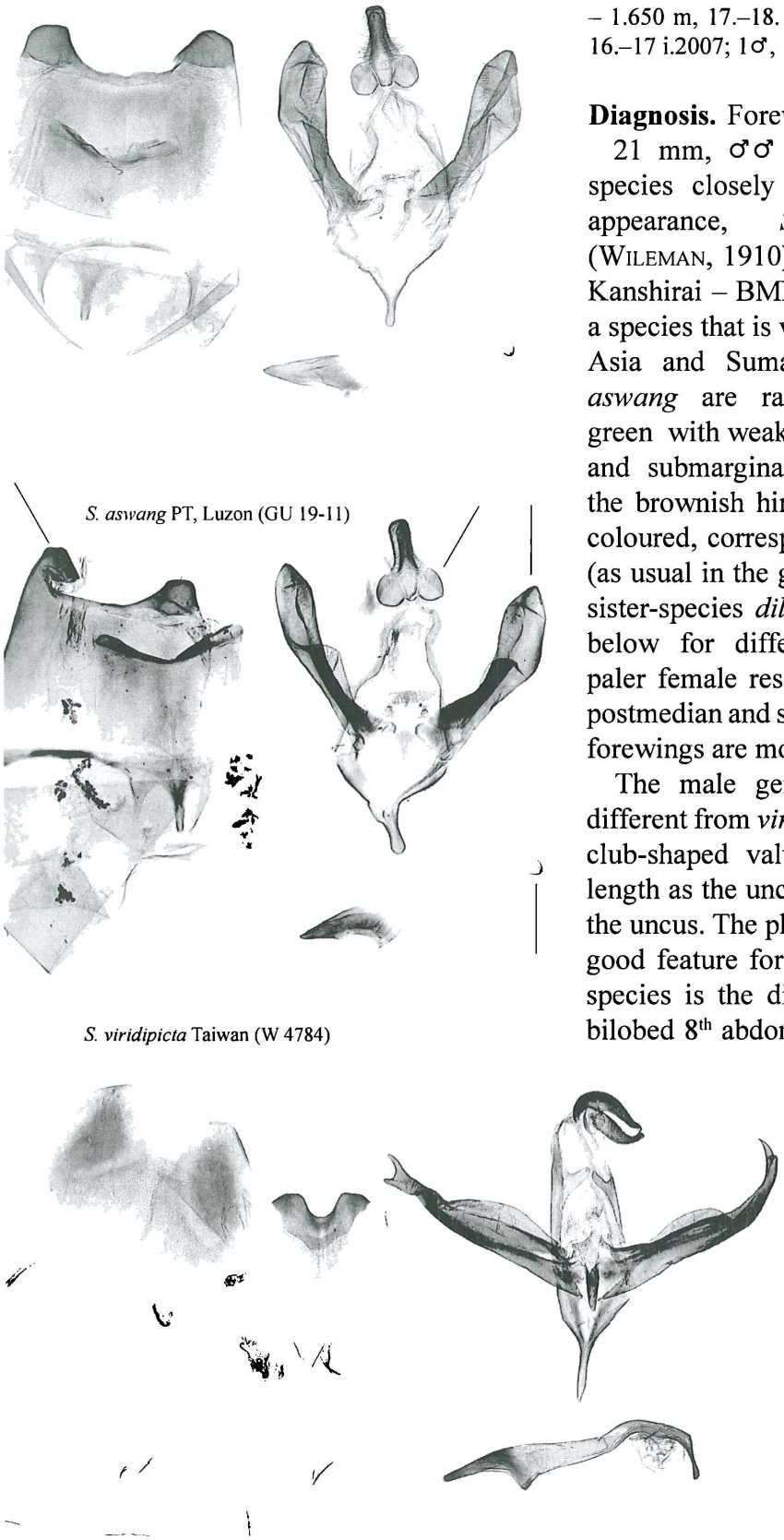


Fig. 288: Male genitalia of *Syntypistis aswang* and *viridipicta*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

59. *Syntypistis dila* spec. nov.

HT: ♂, Philippines, Negros, Mt. Canlaon, W Route via Mambucal, 10°22'N, 123°12'E, 600 m, vii.1997 – NHM, Wien.

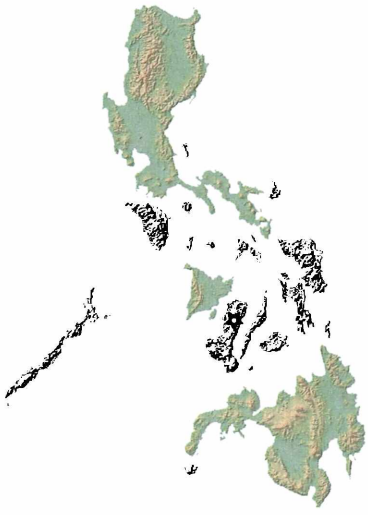


Fig. 289: Distribution of *Syntypistis. dila.*

Syntypistis dila is the vicariant sister-species of *aswang* (further undescribed species of the complex occur in Sulawesi and the Moluccas). It might be possible, that *dila* is a subspecies of *aswang*, but the differences in the male genitalia are compelling to establish species status, because there are some doubtless distinct pairs of species (e.g. *S. viridipicta/cyanea* LEECH, 1889), displaying much smaller differences. So *dila* is described here as a new species.

Paratypes (14 ♂♂, 1 ♀):
Negros: 4♂♂, 1♀, Negros: Mt. Canlaon, W Route via Mambucal, 10°22'/123°12', 600m, vii.1997 (GU 47-57); 3♂♂, ibid. iv. 1998; 6♂♂, Mt. Canlaon, x. 1995 (GU 42-75, 79-37); 1♂, ibid. i.-iv.1995 (W15576).

Diagnosis. Forewing length ♂♂, 21 mm – 22.5 mm; average 29 mm, slightly (1 mm – 1.5 mm) larger than *aswang*, which is the sister-species. The forewing length of the single worn ♀ is 24 mm. *Syntypistis dila* differs from *aswang* by the better developed blackish markings on the forewings, in particular the black postmedian fascia and markings in the basal area. The green colour of the forewings is more mixed with blackish scales compared to *aswang*.
The male genitalia differ from *aswang* by a more swollen shape of the shorter valves, a longer and somewhat pointed saccus and a distally curved phallus with serrated tip. The 8th abdominal segments show dramatic differences with *aswang*. The bilobed 8th sternite displays a central process, absent in *aswang*. The circular bilobed 8th tergite (in *aswang* triangular notched) shows sclerotizations resembling *S. viridipicta*.

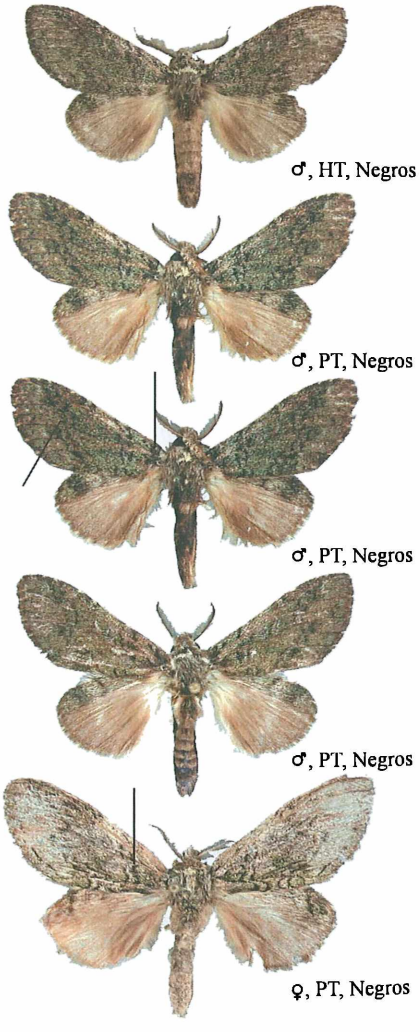


Fig. 290: Adults of *Syntypistis dila.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

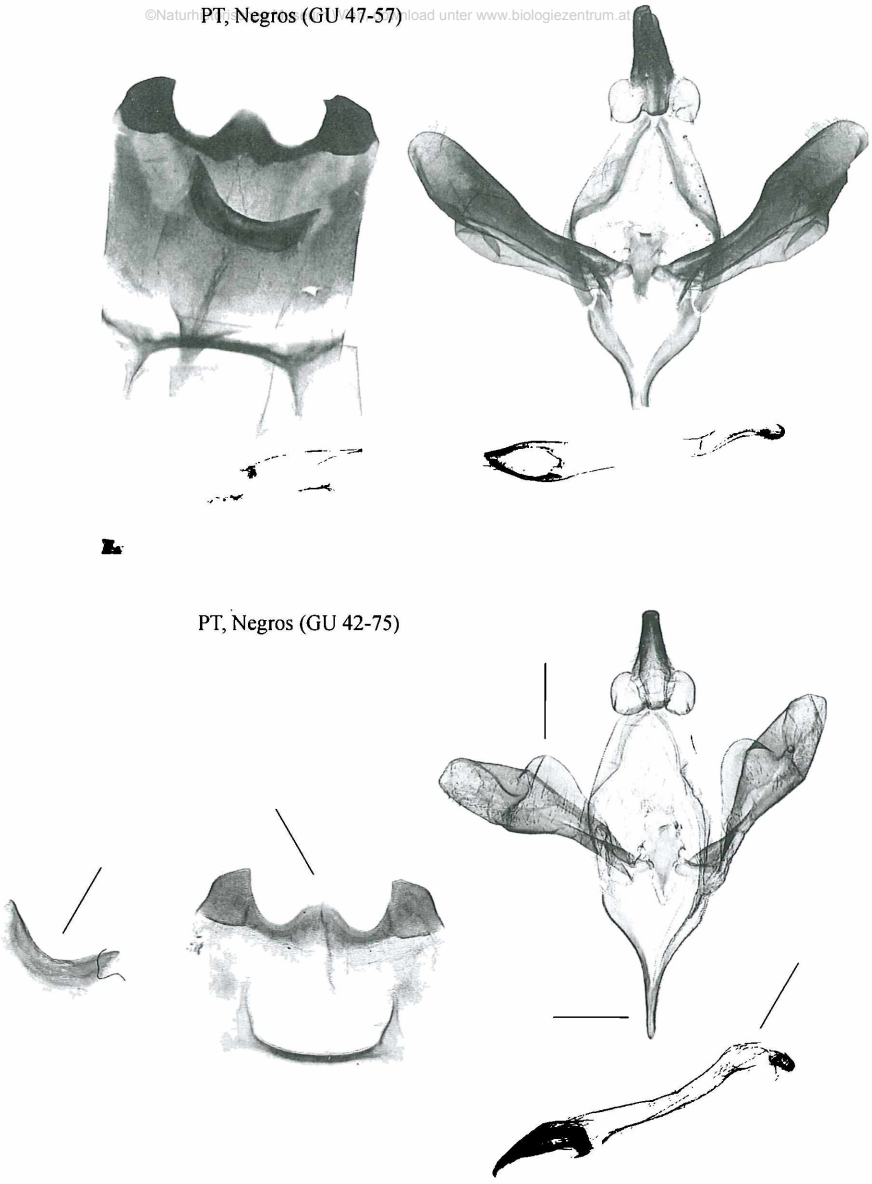


Fig. 291: Male genitalia of *Syntypistis dila.*

Variation. The individual variation is low. A few specimens display whitish-grey markings in the median area near the costa.
Bionomics. The uncommon adults were taken in primary rainforest at 600 m.
Distribution. Endemic in the Philippines and known hitherto only from Mt. Canlaon, Negros.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

60. *Syntypistis tala* spec. nov.

HT: ♂, Philippinen, Palawan, Mt. Salakot, 500 m, 2.viii.1984, leg. B. TURLIN – NHM, Wien.

This new species is doubtless closely related to *Syntypistis umbrosa* MATSUMURA, 1927 (LT: ♀, Formosa [= Taiwan], Baibara, EIHU, Sapporo, photograph examined) a variable and widespread species, which is distributed from Pakistan, the Himalayas, Indochina, Sundaland, SE China and Taiwan. However, *S. tala* seems to be much more constant including the male genitalia (n = 3 GU), which show several structural differences (uncus, saccus, phallus, 8th sternite). *Syntypistis tala* is therefore described as a bona fida species and not as a subspecies of *umbrosa* or *S. basivirens*.

Paratypes (3 ♂♂, 1 ♀):
Palawan: 2♂♂, Mt. Salakot, ii. 1995, 2.100 ft. (GU 42-64, MV 17485), 1♂, Salakot-Pass, 350m, 9.vii.1997 (MV 17484), 1♀, Mt. Matalingahan, 800 m, xii.1997.

Diagnosis. Forewing length ♂♂ 21 mm - 22 mm, ♀ 27 mm. The new species resembles *S. umbrosa*. There is also a resemblance to *S. basivirens* and *pamela* (see below) but the forewings are more narrow, the dorsum is not whitish and the basal fascia is straight. *Syntypistis tala* has a brownish-green filled basalarea of the forewings, accompanied by a inconspicous blackish fascia towards the median area. The costal part of the median area is pale greyish. Green scales on the forewings are more sparse and less shiny than in *palladina*. The sexualdimorphic female is very similar to *umbrosa*. The *palladina* and *basivirens* females are more contrasting and greenish by general appearance. The male genitalia of *tala* are similar to *umbrosa*. They differ by the shorter uncus, the shape of the longer saccus and the rather straight phallus. The broad gnathos is shorter than the uncus (in *umbrosa* of equal length) and the 8th sternite is conspicuously different sclerotized and shaped.

Variation. The few examined adults do not vary

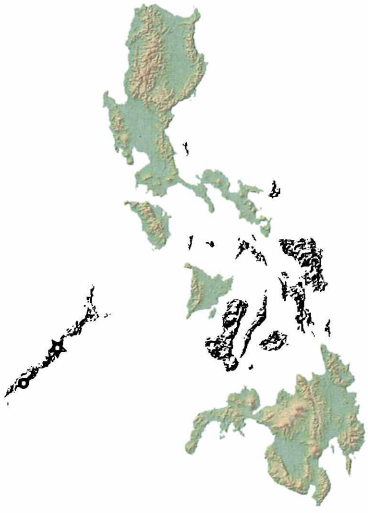


Fig. 292: Distribution of *S. tala*.

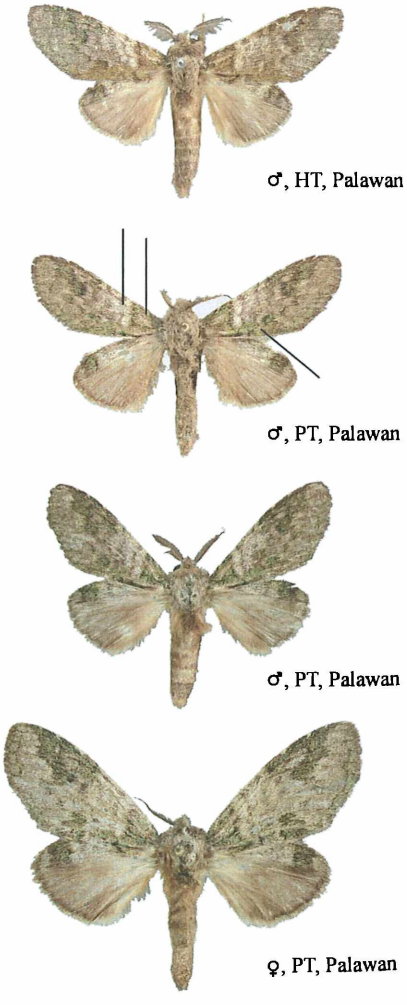


Fig. 293: Adults of *Syntypistis tala*.

turhistorisches Museum Wien, download unter www.biologiezentrum

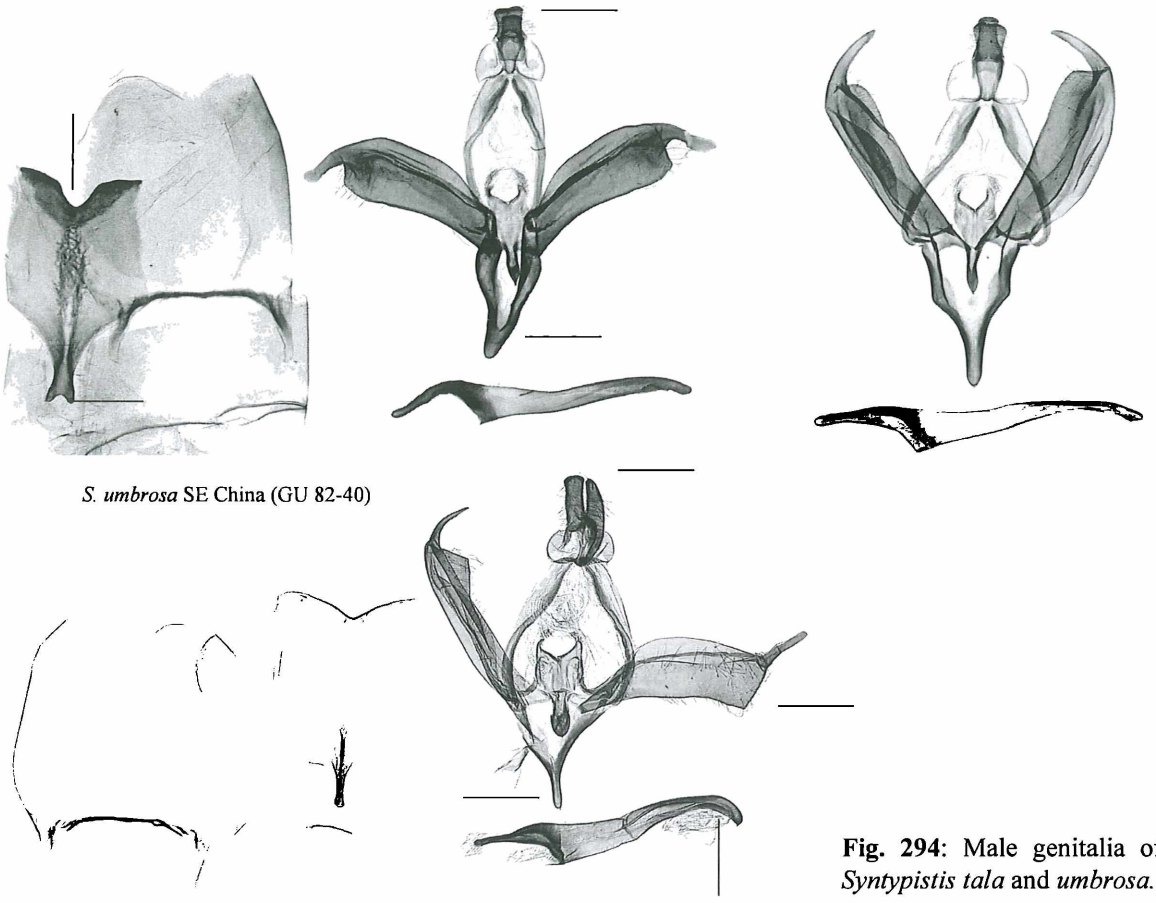


Fig. 294: Male genitalia of *Syntypistis tala* and *umbrosa*.

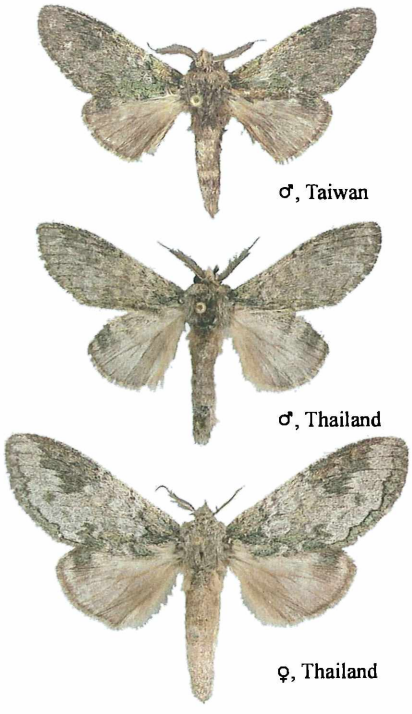


Fig. 295: Adults of *Syntypistis umbrosa*.

much in external appearance, but the male genitalia are very variable in the shape of the valves and their apical process (a similar wide variation is also seen in *umbrosa*).

Bionomics. The adults seem to be rare. The moths were taken in primary forests up to 800 m.

Distribution. Endemic in the Philippines: Palawan.

© Biologiezentrum Linz, download unter www.biologiezentrum.at

61. *Syntypistis basivirens basivirens* (SCHINTLMEISTER, 1993): 130, pl. 17: 3, pl. 18: 6, 7 (*Quadricalcarifera basivirens*).
HT: ♂, Philippinen, N-Luzon, Ifugao, Banaue vic., 1.200 m, 20 km N Lagawe, 16°54' n. Breite, 121°06' ö. Länge – NHM, Wien, examined.

Syntypistis basivirens belongs together with *pamela* to the *umbrosa*-group. The differences in male genitalia between *pamela* and *basivirens* are small. Both species occur often sympatric. Several aberrant female-forms of both species exist, which could only be doubtfully classified.

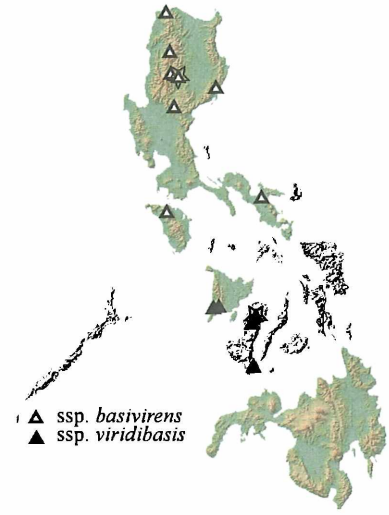


Fig. 296: Distribution of *S. basivirens*.

***Syntypistis basivirens viridibasis* ssp. nov.**
HT: ♂, Philippinen, Negros occ., Mt. Kanlaon, W-Route via Mambucal, 820 m, Prim. Forest, 15.vii.1996 leg. Dr. R. BRECHLIN – NHM, Wien.

Paratypes (22 ♂♂, 2 ♀♀):
Negros: 1♂, Negros occidental, Mt. Kanlaon, W-Route via Mambucal, 820 m, 15.vii.1996; 5♂♂, 1♀, ibid., 1.010 m, 17.-18.vii.1996 (GU 42-89); 4♂♂, ibid., 10°22' N, 123°12' E, 600 m, vii. 1997 (GU 47-75); 2♂♂, ibid. iii. 1997; 5♂♂, ibid. iv. 1998; 1♂, xii.1996 (GU 47-80); 1♂, Mt. Canlaon, x.1995; 1♂, Mt. Mandalagan near Don Salvador Benedicto, xii. 1997; 1♂, ibid., ii.1998 (W 15.626);
Panay: 1♂, Panay occ., Sibalom, Bontol, 50 m, 10.xii.1991; 1♂, Mt. Baloy, vi.1998 (W 15.625); 1♀, Aklan, 13 km S of Libacao, 100 m, 11°24.691'N, 122°18.542'E, vi.2009.

Diagnosis. Forewing length ♂♂ 22 mm, ♀♀ 27 mm, about 1 mm larger than ssp. *basivirens*. The ssp. *viridibasis* differs slightly by a more fuscous ground colour of fore- and hindwings from Luzon-Populations of ssp. *basivirens*. The green pattern of the females is tinged blackish. The male genitalia do not differ significantly from ssp. *pamela* or *caeca* but it seems, that the 8th sternite is slightly different shaped.

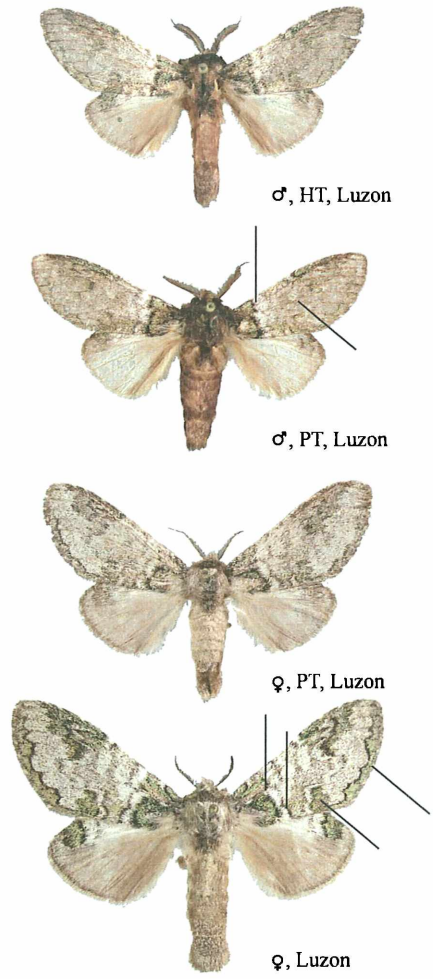


Fig. 297: Adults of *S. basivirens basivirens*.

Diagnosis. *Syntypistis basivirens* is characterized by the greenish filled basal area of the forewings, which contrasts to the greyish-white median area. There is a whitish marked discalspot in both sexes, which is, in most cases, rather inconspicous. The postbasal

©Naturhistorisches Museum Wien

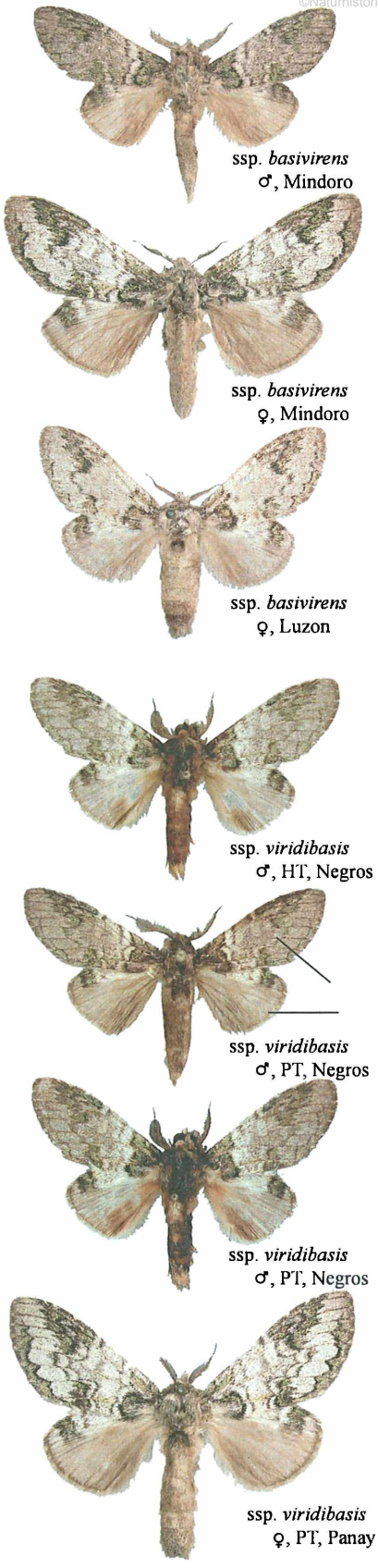


Fig. 298: Adults of *S. basivirens*.

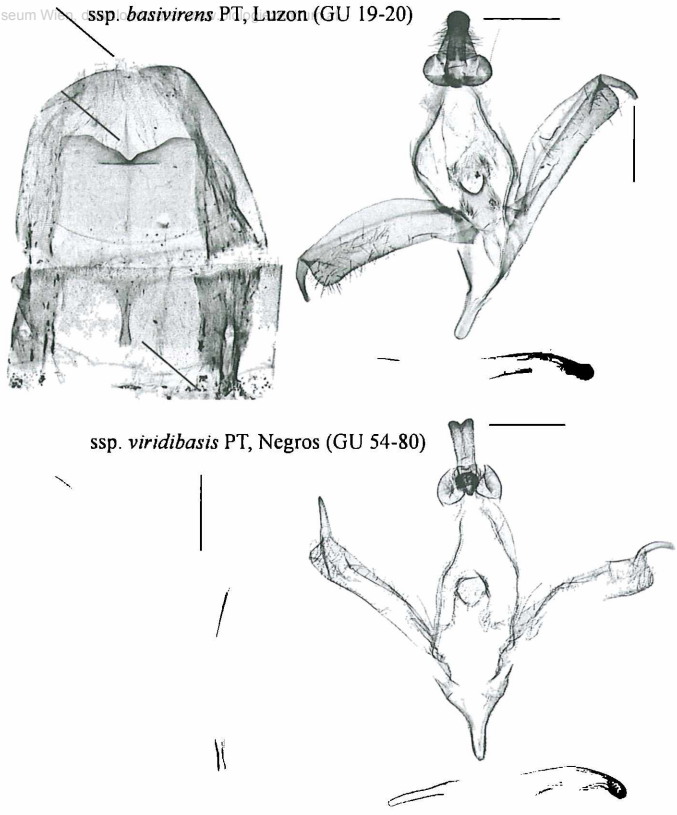


Fig. 299: Male genitalia of *Syntypistis basivirens*.

fascia consists of a white area bordered by two buckled blackish lines. *Syntypistis basivirens* resemble *S. tala*, which differs by a more fuscous general appearance and a weakly developed straight postbasal fascia. The female has a contrasting white ground colour.

The male genitalia closely resembles *tala* by the uncus, phallus and juxta but is readily distinguishable by the nonbilobed 8th tergite and the shape of the weakly sclerotized 8th sternite. The male genitalia are very similar to *pamela*, but it seems that the apical process of the valves is larger.

Variation. The individual variation including the genitalia is on low level, but the females are very variable (as illustrated). A single male from Mindoro closely resembles *tala*, but the female, taken at the same place (both are illustrated) does not differ from the majority of Luzon females.

Bionomics. The uncommon adults were taken throughout the year (except in i.) from 50 m up to 2.000 m, mainly in primary forests.

Distribution. Endemic in the Philippines: Luzon, Mindoro (ssp. *basivirens*); Panay and Negros (ssp. *viridibasis*).

www.biologiezentrum.at

62. *Syntypistis pamela pamela* (SCHINTLMEISTER, 1993): 129, pl. 17: 1, pl. 18: 4, 5 (*Quadricalcarifera pamela*)
HT: ♂, Philippinen, N-Luzon, Ifugao, Mt. Pulis, 16 km SEE Bontoc, 17°02'N, 121°01'E, 1.900 m – NMH, Wien, examined.

KIRIAKOFF (1970: 114, fig. 11) described from Sulawesi *Quadricalcarifera alboviridis* (HT: ♂, W. Celebes, Paloe district, Mt. Tompoe, 2700 ft. – BMNH, examined), a species which closely resembles to *pamela*. ROTHSCHILD (1917: 244), described from Papua New Guinea (HT: ♀, British New Guinea, Biagi, Mambare R., 5000 ft. – BMNH, examined) *Stauropus alboviridis*, which belongs to the *Syntypistis comatus*-group. This species was combined in the catalogue of KIRIAKOFF (1967: 125) with *Quadricalcarifera*. KIRIAKOFF's *alboviridis* is therefore a junior secondary homonym and we propose as the replacing name *Syntypistis kiriakoffi* nom. nov. *Syntypistis kiriakoffi* is illustrated here for the first time in both sexes.
Syntypistis pamela occurs in Mindanao as a distinct subspecies:

***Syntypistis pamela caeca* ssp. nov.**
HT: ♂, Philippinen, Mindanao, Bukidnon, Mt. Kitanglad, S-Seite, Intavas, 8°07'N, 124°55'E, Primärurwald, 2.200 m, 15.viii.-15.ix.1993 leg. V. SINJAEV – NHM, Wien.

Paratypes (15 ♂♂, 5 ♀♀):
Mindanao: 1♂, 5♀♀, Mt. Kitanglad, S-Seite, Intavas, 8°07'N, 124°55'E, 2.200 m, 15.viii.-15.ix.1993 (MV 17.476); 2♂♂, ibid, but 1.700 m (GU 43-24); 1♂, Bukidnon, 40 km NW Maramag, Dalongdong, 7°53'N, 124°40'E, 800m, 1.-3.x.1988 (GU 47-81); 1♂, ibid., Mt. Binansilang, 1.250 m, 29.12.1992 (GU 22-46); 6♂♂, Davao del sur, Mt. Apo, SE-Route via Kapatagan, 1.570 m, 10.-12.vii.1996 (GU 42-90, 54-81); 1♂, Cotabao del sur, Mt. Busa, 6°08'N, 124° 39'E, 700 m, viii. 1997 (GU 54-79); 1♂, Mt. Busa, near Kainba, 700 m, xii. 1998; 2♂♂, Davao del norte, Mt. Caragan, vii. 1998.

Diagnosis. Forewing length ♂♂ 22 mm, ♀♀ 27 mm. The new subspecies differs from ssp. *pamela* by a more fuscous general appearance. The forewings display a blackish-green ground colour with contrasting green

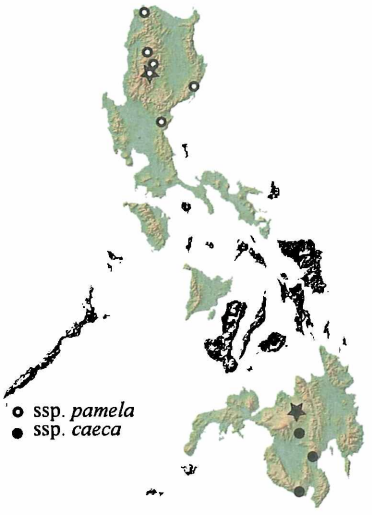


Fig. 300: Distribution of *S. pamela*.

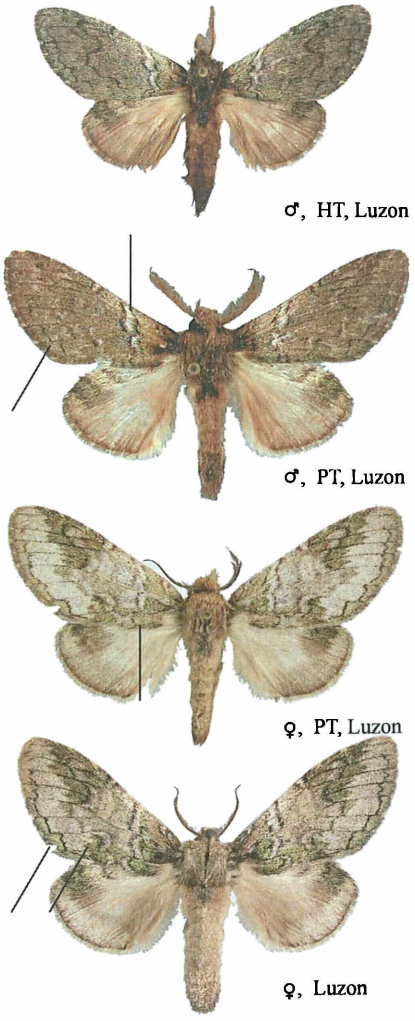


Fig. 301: Adults of *S. pamela pamela*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

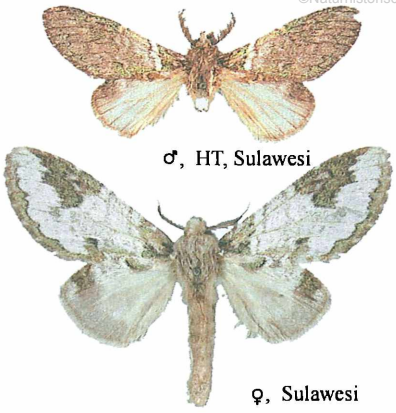


Fig. 302: Adults of *Syntypistis kiriakoffi*.

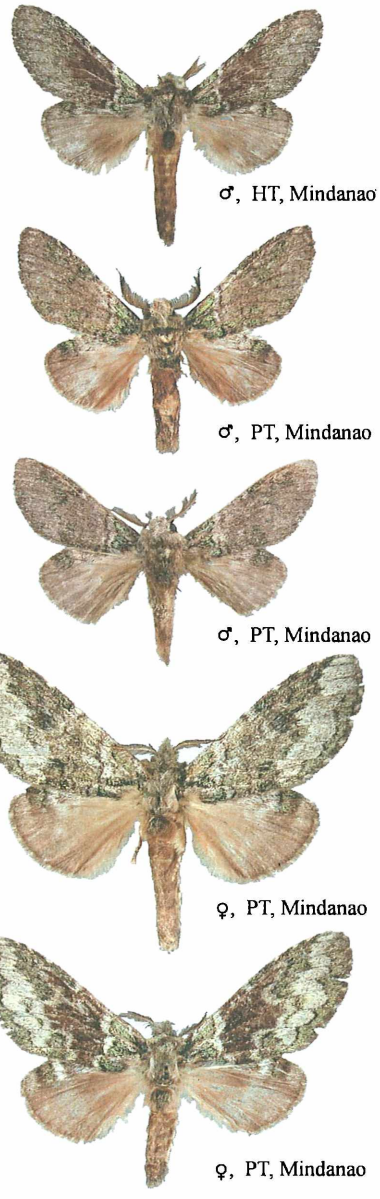


Fig. 303: Adults of *S. pamela caeca*.

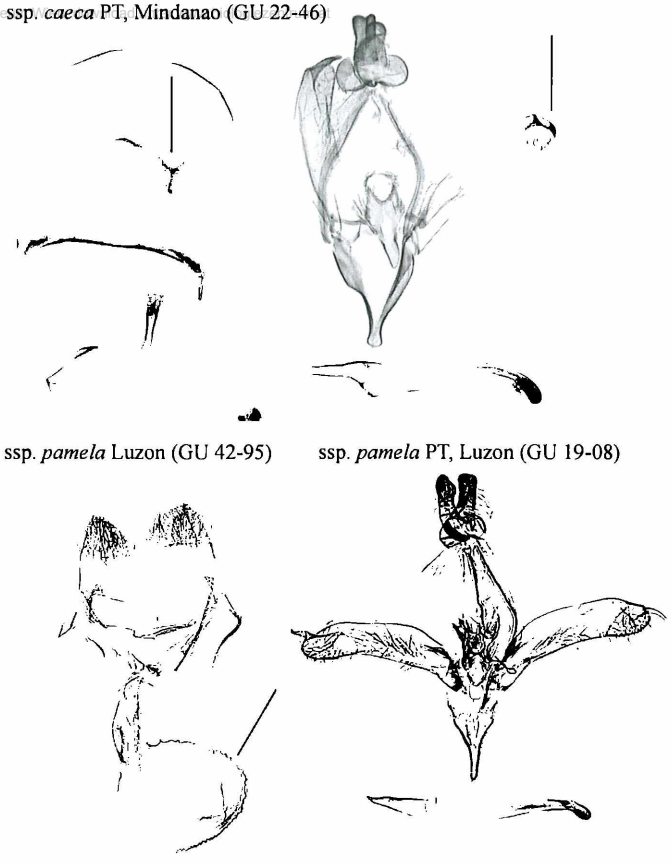


Fig. 304: Genitalia of *Syntypistis pamela*.

filled basal area. The median area is occasionally darkened blackish brown. The whitish basal fascia of the forewings of the males is weakly developed.

The male genitalia do not differ from ssp. *pamela*.

Diagnosis. *Syntypistis pamela* is well characterized by the distinctive white postbasal fascia of the forewings. The submarginal fascia is marked as a sharp black line in both sexes. The females are similar to those of *basivirens* but display a blackish spot on the postmedian fascia near the dorsum and a greenish coloured dorsum (instead of whitish as in *basivirens*). The genitalia resemble *basivirens* but the valves differ slightly in shape, in particular, the smaller apical process. The female genitalia resemble *S. umbrosa*.
Variation. The males are homogenous; females vary somewhat individually in darkness and markings.
Bionomics. The adults occur uncommonly from vi.-xii. up to 2.200 m and mostly in primary mountain forests.
Distribution. Endemic in the Philipines: Luzon (ssp. *pamela*) and Mindanao (ssp. *caeca*).

www.biologiezentrum.at

63. *Syntypistis palladina palladina* (SCHAUS, 1928): 76 (*Stauropus palladina*)

HT: ♂, Philipine Islands, Mindanao, Surigao – Nr. 33425, USNM, Washington, photo examined.

The male genitalia of Philippine *S. palladina* differ from Sundaland populations by the larger uncus, a larger gnathos and the shape of the 8th sternite. For Sundanian populations the name *viridimargo* KIRIAKOFF, 1967: 48, fig. 19 (HT: ♂, South East Borneo, Samarinda – BMNH, London, examined) as a subspecies name might be applicable stat. nov.

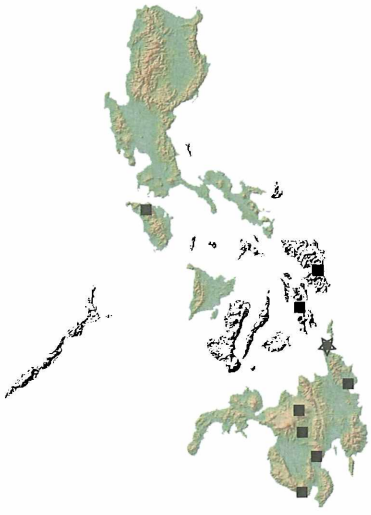


Fig. 305: Distribution of *S. palladina*.

Diagnosis. The variable species resembles *S. pamela* but the forewings of the males are more elongated. Often, there are areas of light bright green scales on the forewings and the median area is rather paler than fuscous brown as in *S. pamela caeca*. The males display inconspicous whitish markings and a black discal streak in the median area of the forewings. The sexualdimorphic female is similar to *pamela* and other females of the species-group. It can be separate in most cases by three whitish circular spots in the median area and the greenish filled submarginal area of the forewings.

The male genitalia resemble those of the other members of the *umbrosa*-group but are distinguishable by the shape of the uncus and the relatively large phallus, which is distally curved, not straight. The valves, with apical process, are not rectangular shaped as in other similar members and the 8th abdominal segment is distinctively bilobed. The female genitalia are characterized by a diagnostic shape of the ostium and a large bursa copulatrix without signum.

Variation. The males are variable and display a range of unicoloured fuscous brown individuals up to contrasting specimens with clear markings. Females occur with brownish or whitish ground colour with a contrasting pattern.

Bionomics. The adults were observed uncommonly from x.-iii. and in viii. at medium altitudes between 600 m – 800 m in primary and secondary forests.

Distribution. Distributed in Sundaland, S Thailand and the Philippines: Mindanao, Samar, Leyte and Mindoro.

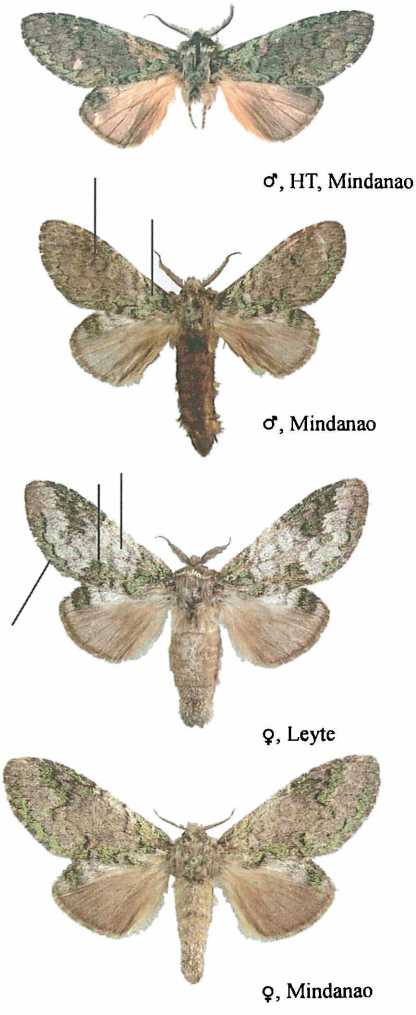


Fig. 306: Adults of *S. palladina palladina*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

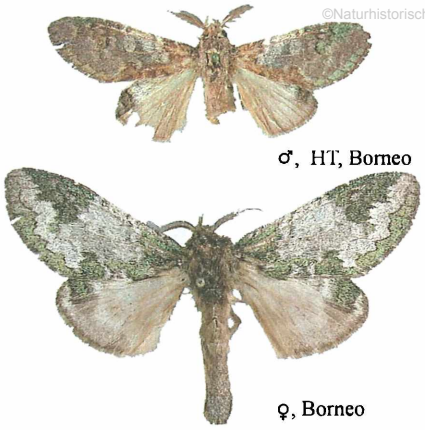
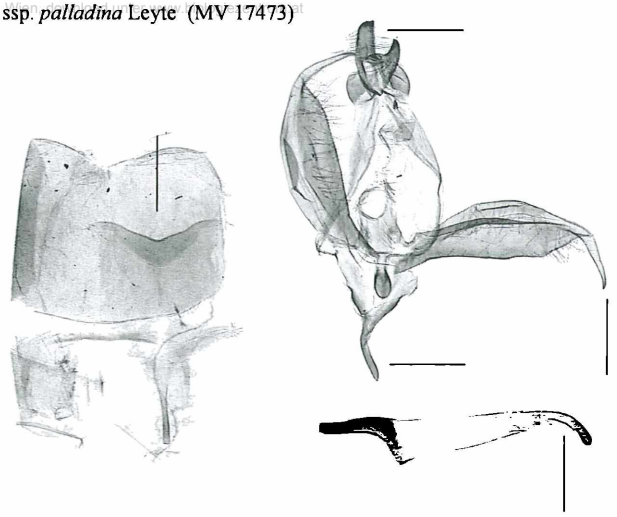


Fig. 307: Adults of *S. palladina viridimargo.*

ssp. *palladina* Leyte (MV 17473)



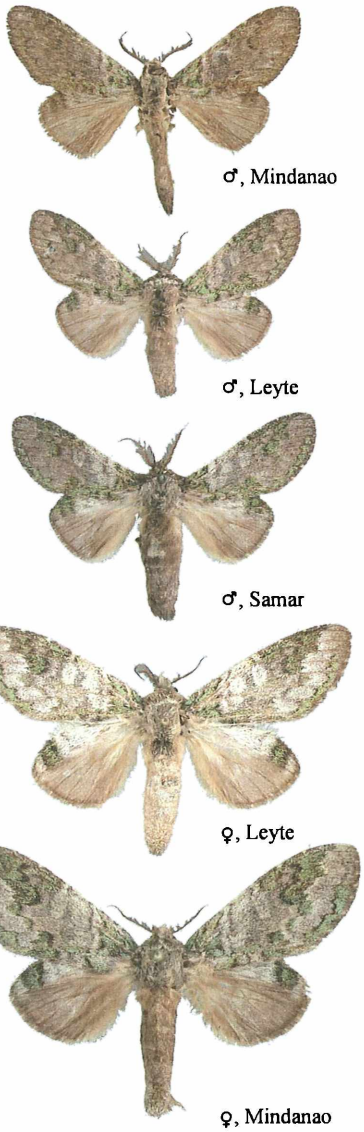
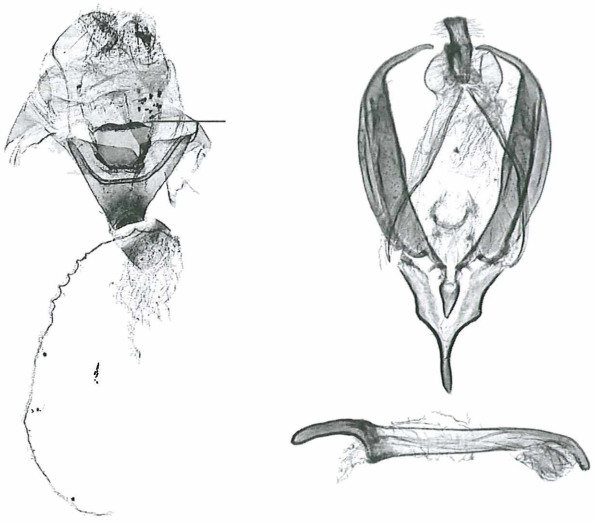


Fig. 308: Adults of *Syntypistis p. palladina.*

ssp. *palladina* Mindanao (♀ GU 47-82 and ♂ HT, USNM # 870)



ssp. *viridimargo* Kalimantan (GU 41-91)

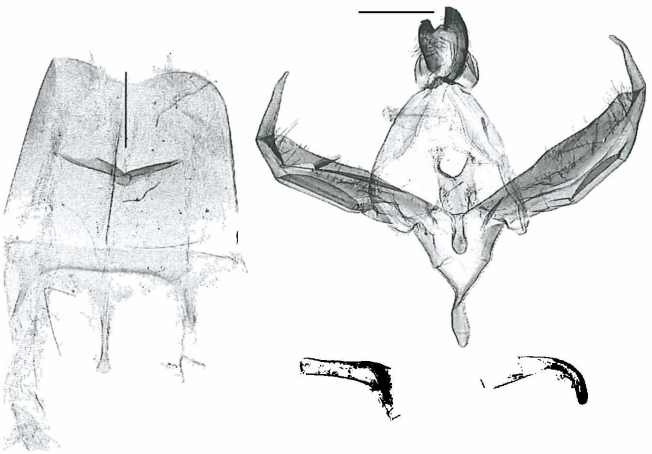


Fig. 309: Genitalia of *Syntypistis palladina.*

www.biologiezentrum.at

64. *Syntypistis charistera charistera* (WEST, 1932: 211 (*Stauropus charistera*)

HT: ♂, Philippine Is. Mindanao I., subprov. Lanao, Kolambugan (plains) – BMNH, London, examined.

Syntypistis charistera fraseriana (KIRIAKOFF, 1967): 43, fig. 7 (*Quadricalcarifera fraseriana*)
HT: ♂, Singapore, Fraser's Hill – BMNH, London, examined.

= *Quadricalcarifera bambusicola* KIRIAKOFF, 1970: 390, fig. 12, pl. 3: 3; HT: ♂, Nordsumatra, Dolok Merangir – Zoologische Staatssammlung München, examined.

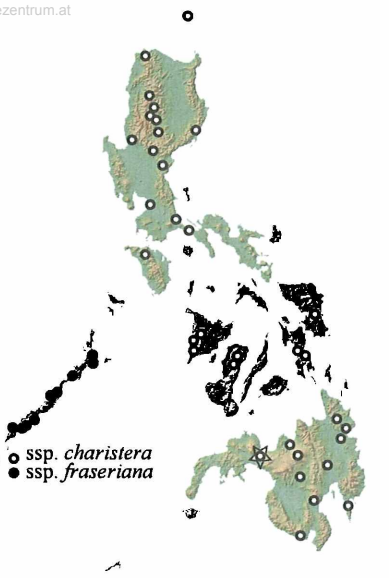


Fig. 310: Distribution of *S. charistera.*

This taxonomically difficult complex includes probably more than one species. At present we are able to recognize only two subspecies within the Philippines, which represent an average of the many individual forms. More detailed study of the complex, including DNA and breeding results may certainly lead to the recognition of further taxa in the complex (and also to further synonyms).

The following new synonymies of *Stauropodopsis grisescens celebensis* ROEPKE, 1944: 22; figs. 22a, c, d, (HT: ♂, N. Celebes, Menado, Tonsea Lama, col. slide examined) are to report (HT's illustrated):
Quadricalcarifera ferrea KIRIAKOFF, 1967: 46; fig. 15 (HT: ♂, N Celebes, Minahasa – RMNH, Leiden examined), syn. nov. The HT comes from the original series collected by VAN DEN BERGH, which was used by ROEPKE to describe his *celebensis.*
Quadricalcarifera rhypara KIRIAKOFF, 1970: 115; fig. 15 (HT: ♂, SW Celebes, Tjamba near Maros, 1.500 ft., – BMNH, London examined), syn. nov.

Diagnosis. *Syntypistis charistera* is a smaller species within the genus and due to the variable wing pattern best recognizable by the size and the wingshape. The females can be distinguished by a uniform brownish-green ground colour of the forewings with a weakly developed blackish basal-line. Most females display a prominent blackish marked postmedian area.

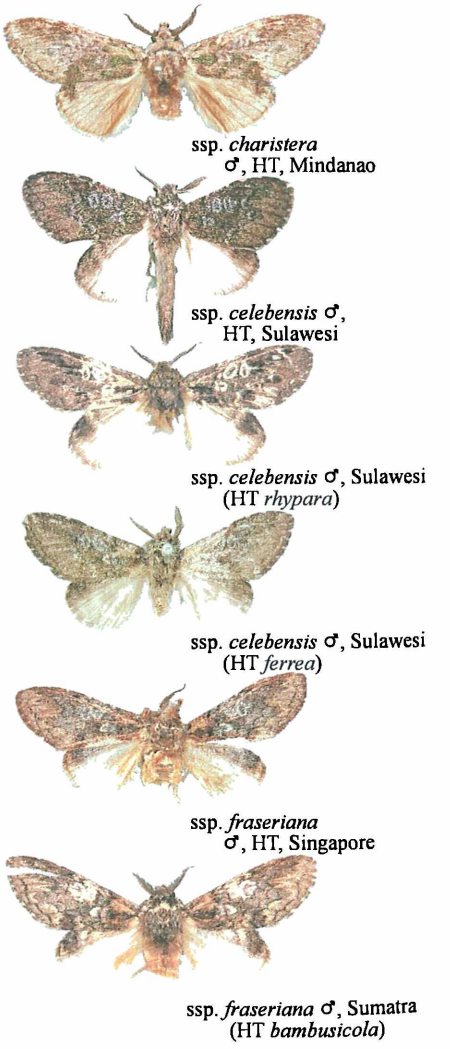


Fig. 311: Adults of *Syntypistis charistera.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

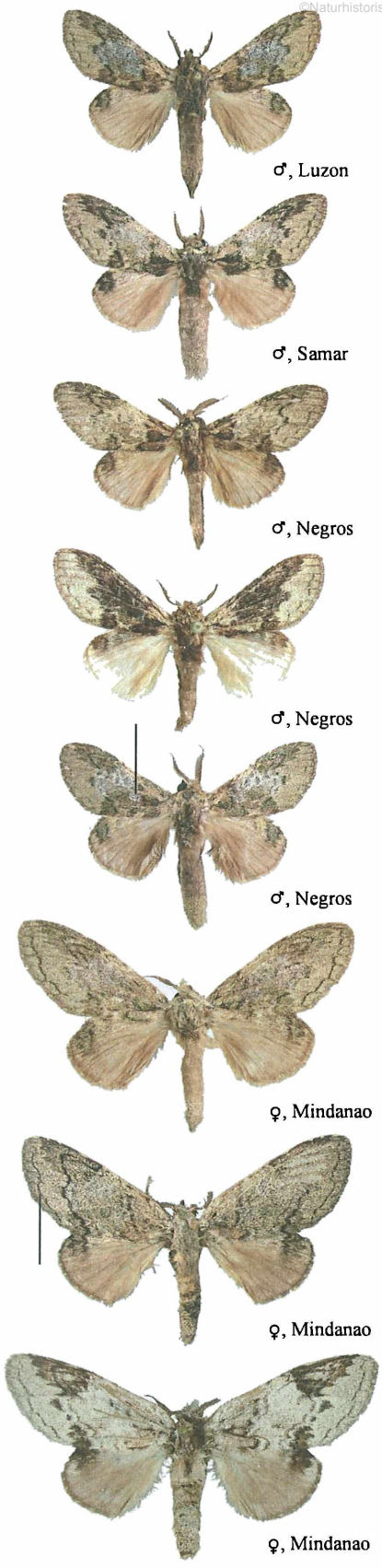


Fig. 312: Adults of *S. charistera charistera*.

The male genitalia confirm a relationship with the belonging to the *umbrosa*-group but can further be characterized by the pointed valves without a process and a straight phallus with a small but distinct distal spine. The 8th sternite, is distinctively bilobed. The notch of the 8th sternite is denticulate. The female genitalia have long apohyses and a characteristic sclerotized band along the bursa copulatrix.

Variation. The males are very variable. There are uniform almost blackish coloured specimens with paler postmedian area on the forewings as well as greyish-white individuals with contrasting blackish filled basal area and a conspicous tornalspot. A selection of the individual forms is illustrated here. The females are less diverse but a few specimens show analogous forms as seen in the males.

The male genitalia vary individually in the number and length of the denticulations of the notch of the 8th sternite. Apart from wide individual variation, the species shows also extensive geographical variability. The ssp. *fraseriana* differs from other Philippine populations by the presence of a blackish basalspot and three contrasting sharp white markings on the forewings (in ssp. *charistera* rather inconspicous). However a minority (about 10%) of the individuals in a substantial sample (n > 60) from Palawan shows uniform coloured individuals without white markings and 35% have rather inconspicuous white markings on the forewings. A few individuals have prominent blackish marked postmedianfascia on the forewings, which are more commonly seen in ssp. *charistera* or ssp. *celebensis* ROEPKE, 1944 from Sulawesi but not in populations from Sundaland.

Material from Negros (n > 100) and Mindanao (n > 50) has a tendency to develop greyish-white forms with contrasting black basal and tornal spots and contrasting apical markings. About 15% of the examined specimens belong to such forms and further 10% from Negros and Mindanao are melanistic.

The male genitalia are also variable (shape of the valves with apical process, shape of the 8th sternite). However this variability can not be attributed to certain Philippine geographical territories. The phallus bears only a single spine, whereas in Sundaland (n = 4 GU) the distally tip of the phallus

www.biologiezentrum.at

display a serrated process with 3 ore more spines.

Bionomics. The adults belong to the most common Philippine notodontids. They occur in all months of the year from 0 m up to 2.200 m above sea-level in primary forests as well as in urban areas. The percentage of the females attracted by light is very low (less than 5%).

Distribution. *Syntypistis charistera charistera* occurs over the entire Philippine islands: Palawan, Luzon, Mindoro, Panay, Negros, Samar, Leyte, Mindanao. In Palawan flies ssp. *fraseriana* which occurs also in Sundaland, Java and Bali. The species is widely distributed in several subspecies from Indochina (ssp. *minima* SCHINTLMEISTER, 1997), Sulawesi (ssp. *celebensis*) throughout the Indonesian Islands up to New Guinea (*kebeae*-BETHUNE-BAKER, 1904 group).

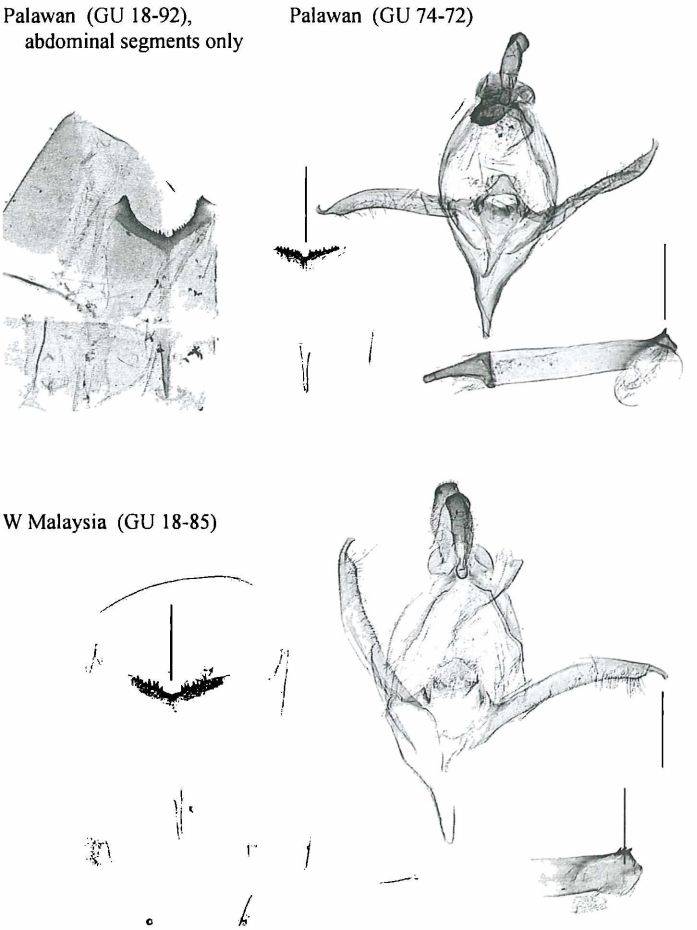


Fig. 313: Male genitalia of *Syntypistis charistera fraseriana.*

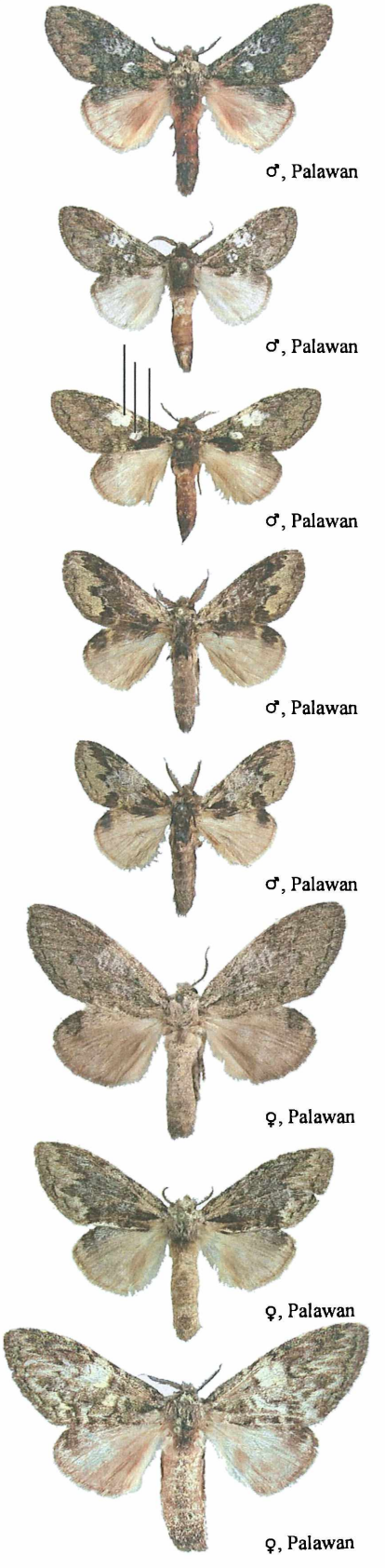


Fig. 314: Adults of *S. charistera fraseriana.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

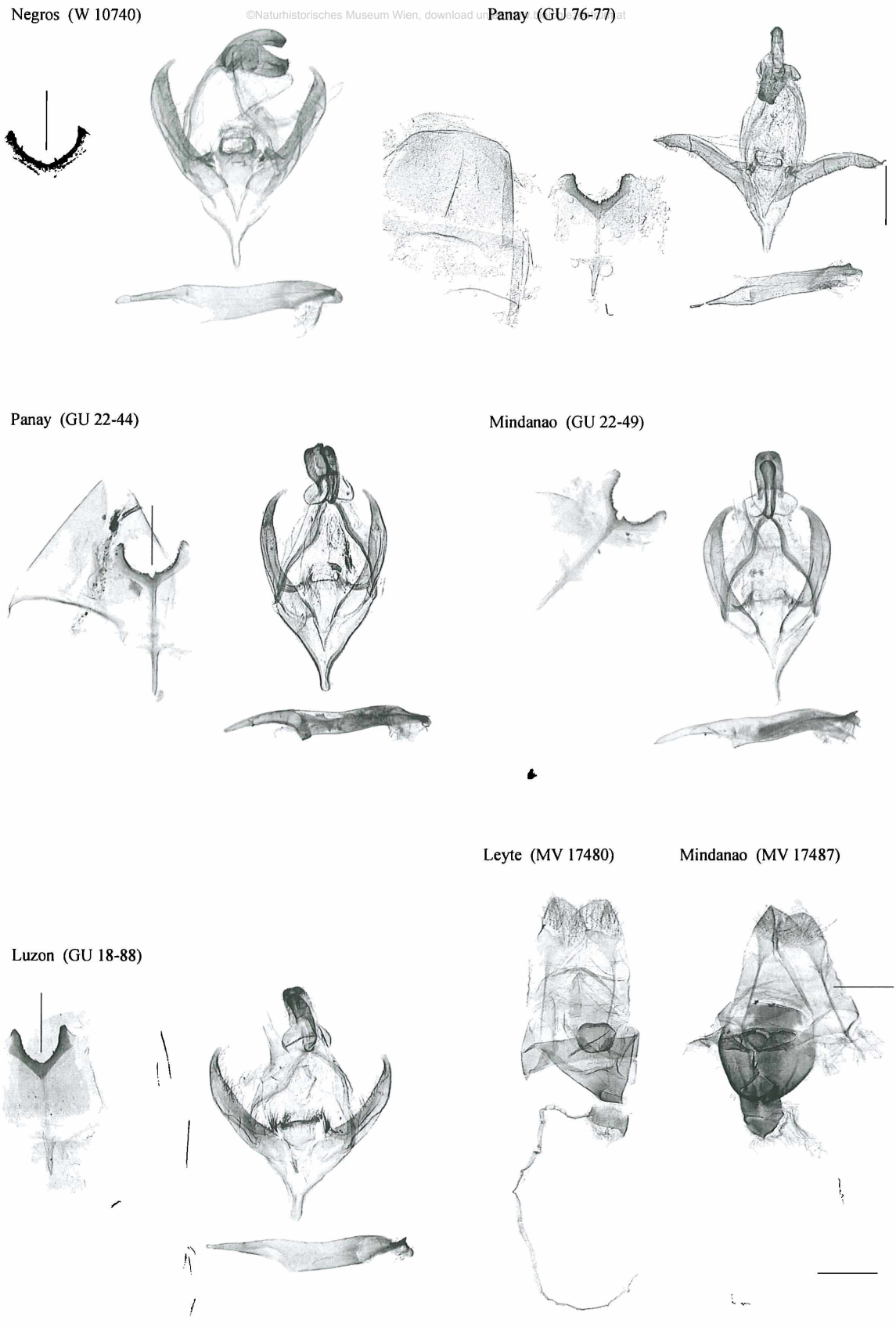


Fig. 315: Genitalia of *Syntypistis charistera charistera.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

65. *Syntypistis pallidifascia pallidifascia*

(HAMPSON, 1893): 151, (*Stauropus pallidifascia*) HT: ♂, [NW India], Sikhim – BMNH, London examined.

= *Quadricalcarifera centrobrunnea* MATSUMURA, 1927: 11 pl. 1: 4; HT: ♂, Formosa, Baibara – EIHU, Sapporo, photograph examined.

= *Quadricalcarifera concentrica* MATSUMURA, 1927: 11 pl. 1: 11; HT: ♂, Formosa, Baibara – EIHU, Sapporo, photograph examined.

= *Stauropus ovalis* VAN EECKE, 1929: 166; pl. 14: 7; HT: ♀, Sumatra, Fort de Kock – Nationaal Natuurhistorisch Museum, Leiden.

Syntypistis pallidifascia juttamariae ssp. nov.

HT: ♂, Philippinen, Mindoro, Mt. Halcon, 1.000 m, v. 2001 – NHM, Wien.

Paratypes (58 ♂♂, 3 ♀♀):
Mindoro: 36 ♂♂, 3 ♀♀, Mindoro, Mt. Halcon, 1.000 m, iv. 2001 (MV 17.469, 17.476, 17.477); 20 ♂♂, ibid., ix. 2001; 2 ♂♂, Halcon Mts., Mt. Malasambo, Puerto Gallera viii. 1998, (W15717, W15718).

Etymology: Dedicated to Jutta Maria Pick, Firenze.

Diagnosis. Forewing length ♂♂ 20 mm - 22 mm, ♀♀ 23,5 mm – 24 mm. The males are on the average 2 mm larger compared to the forewinglength of the other known populations. The forewings are fuscous blackish brown and the green scales in particular are shiny and contrasting. Also the brown median area is more fuscous brown. The female does not differ significantly from fuscous females of ssp. *pallidifascia*. The male genitalia are distinguished by the large and bilobed harpe of the valves (4 GU); in ssp. *pallidifascia* the harpe is smaler and knob-shaped. The shape of the phallus is in other individuals of ssp. *juttamariae* curved as in ssp. *pallidifascia*.

Diagnosis. The species is characterized by the prominent pale brownish median area of the forewings, surrounded by blackish fasciae. The sexual dimorphic female differs in a more fuscous median area.

The male genitalia are unique by their asymmetric valves, the distinctive large uncus, a curved phallus and the distinctive shaped 8th sternite. The female displays a sclerotized band at the bursa copulatrix as usual in other congeners.

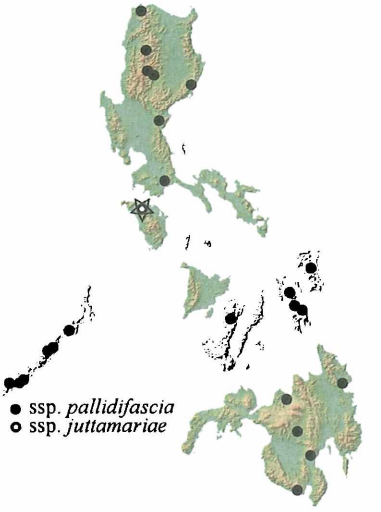


Fig. 316: Distribution of *S. pallidifascia*.

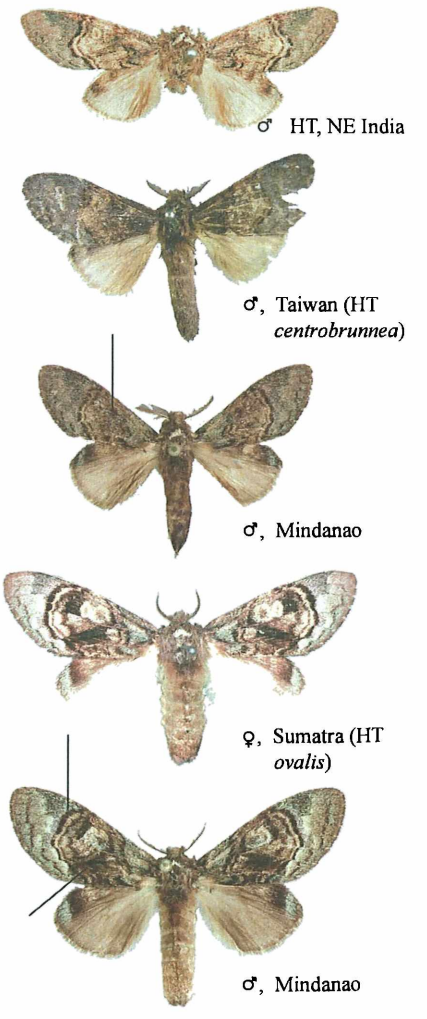


Fig. 317: Adults of *S. p. pallidifascia*.

©Naturhistorisches Mus

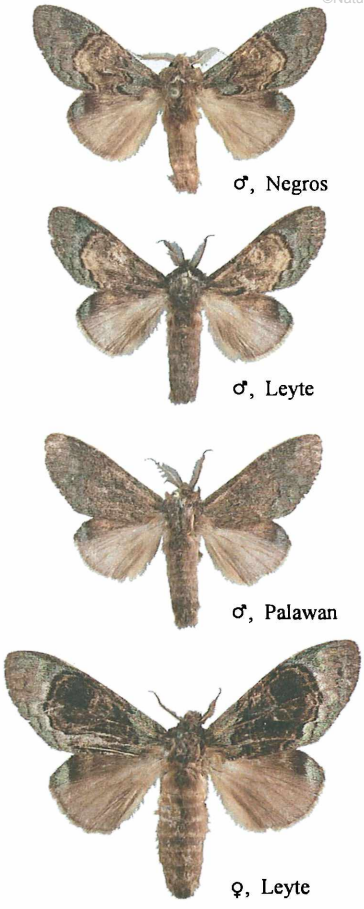


Fig. 318: Adults of *S. p. pallidifascia.*

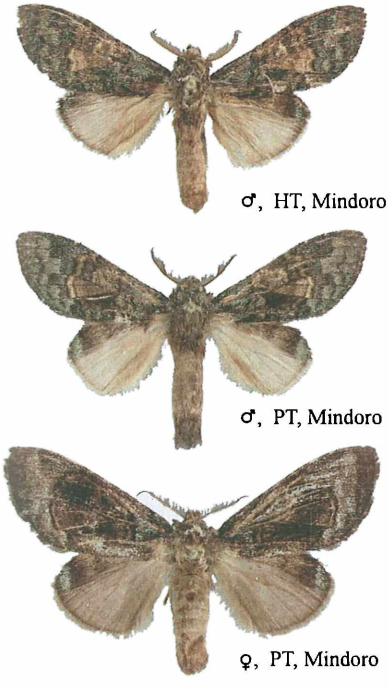
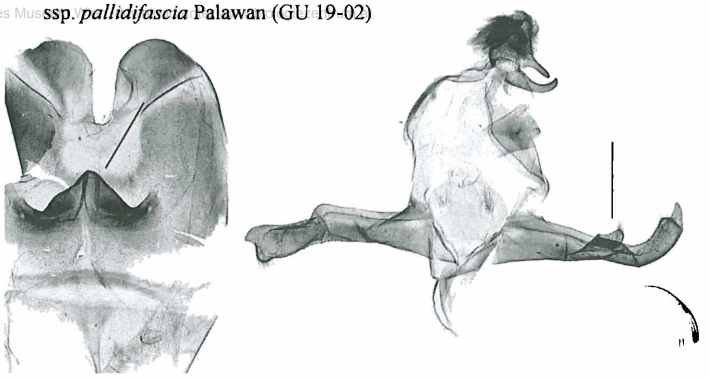


Fig. 319: Adults of *S. p. juttamariae.*

ssp. *pallidifascia* Palawan (GU 19-02)



ssp. *juttamariae* PT, Mindoro (MV 17476 & 17477)

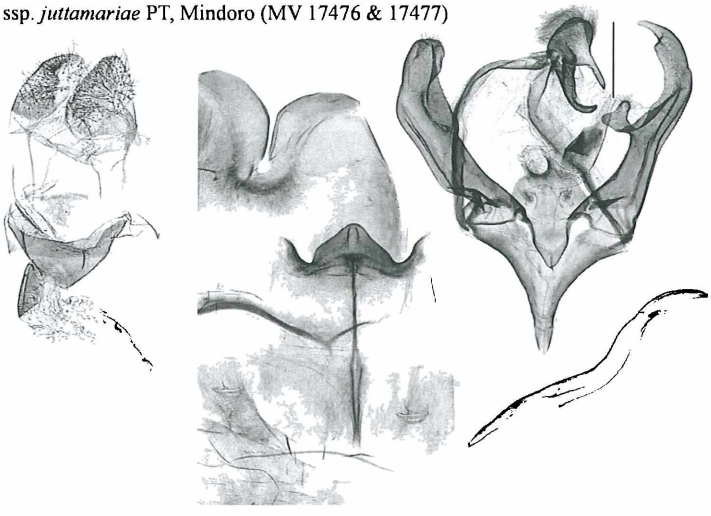


Fig. 320: Genitalia of *Syntypistis pallidifascia.*

Variation. The males are very variable ranging from almost uniform brownish-green coloured forewings and specimens with contrasting marked pale brown median area. Sometimes very small (below 16 mm forewing length) individuals occur. The females are less variable but also show different degrees of paleness. Most of them have a blackish fuscous median area. The male genitalia vary individually in the shape and the size of the uncus and also, somewhat, in the shape of the valves. No geographical variation was found within the Philippines, except the population from Mindoro.

Bionomics. The common adults were observed in all months of the year between 350 m and 1.600 m; in the Himalayas they occur up to 2.200 m. The species was taken in many different habitats, including urban areas.

Distribution. Distributed from the Himalaya, whole of India, Sri Lanka, Indochina, Taiwan, China, Sundaland, the Indonesian Islands, Sulawesi up to New Guinea and the Philippines: Palawan, Luzon, Samar, Negros, Leyte, Mindanao. The ssp. *juttamariae* is restricted to Mindoro.

download unter www.biologiezentrum.at

66. *Syntypistis comatus comatus* (LEECH, 1898): 306 (*Stauropus comatus*)

HT: ♀, Western China, [Sichuan], Omei-Shan – BMNH, London, examined.

= *Quadricalcarifera viridimaculata* MATSUMURA, 1922: 521; HT: ♀, Formosa, Horisha [= Puli] – EIHU, Sapporo, photograph examined.

= *Quadricalcarifera bioculata* KIRIAKOFF, 1967: 42, fig. 6; HT: ♂, S.W. Sumatra, Barisan Range, 2.500 ft. – BMNH, London, examined.

= ? *Quadricalcarifera hasegawai* NAKAMURA, 1976: 38; HT: ♀, West Malaysia, Fraser's Hill – Nat. Inst. Agr. Sci, Tokyo, not examined.

= *Quadricalcarifera fasciata tanakai* NAKAMURA, 1976: 139, figs. 1, 9-15 **syn. nov.**
HT: ♂, Luzon Is., Baguio – National Science Museum, Tokyo, photograph examined.

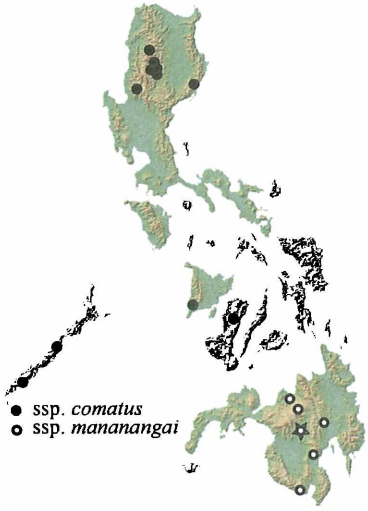


Fig. 321: Distribution of *S. comatus*.

The holotype of *Quadricalcarifera fasciata tanakai* belongs in fact to *Syntypistis comatus; Syntypistis fasciata* is a different species, restricted to the Himalaya, Myanmar and China. However, the series from N Luzon, including the worn holotype of *tanakai*, is indistinguishable from Chinese populations. The taxon *tanakai* becomes therefore a junior synonym of *comatus* (syn. nov.).

***Syntypistis comatus mananangai* ssp. nov.**
HT: ♂, Philippines, Mindanao, Bukidnon, Dalongdong, 40 km NW Maramag, Talakag, Waldrand, 800 m, 7°53'N Breite, 124°40'E Länge, 1.-3.x.1988 leg. K. CERNY & A. SCHINTLMEISTER – NHM, Wien.

Paratypes (74 ♂♂, 13 ♀♀):
Mindanao: 7♂♂, 2♀♀, Bukidnon, Dalongdong, 40 km NW Maramag, Talakag, 800 m, 7°53'N Breite, 124°40'E Länge, 1.-3.x.1988 (GU 19-21, 19-22, 47-98); 1♂, Bukidnon, Dalongdong, 40 km NW Maramag Mt. Binansilang, 7°53'N, 124°40'E, 1.200 m, 2.x.1986; 2♂♂, ibid., 1.250 m, 29. xii. 1992; 2♂♂, ibid. Mt. Kalatungan, 1.450 m, 30. xii.

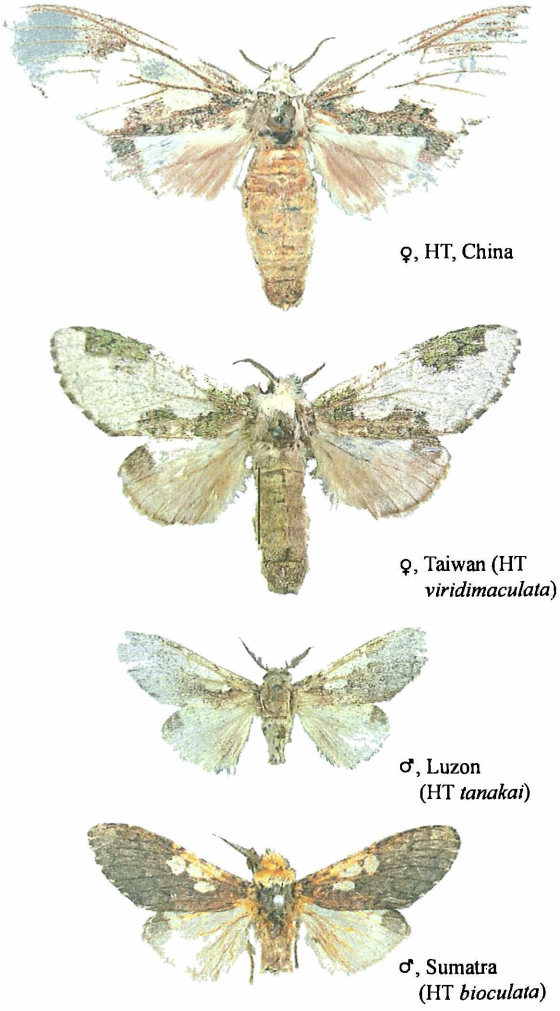


Fig. 322: Adults of *Syntypistis comatus comatus*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

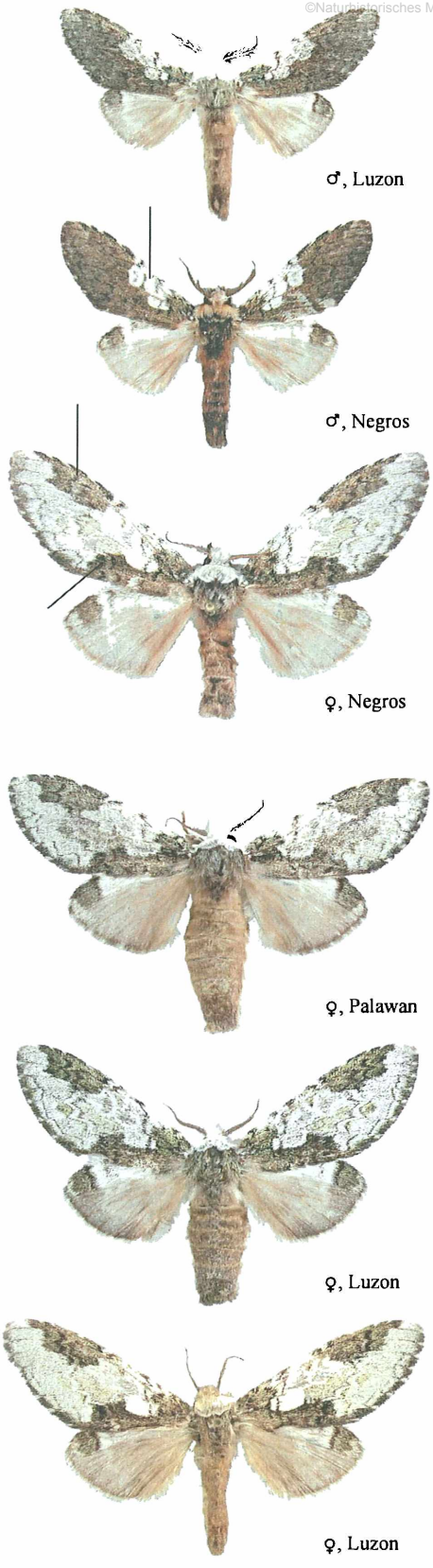


Fig. 323: Adults of *S. comatus comatus*.

1992; 3♂♂, 1♀, Dalongdong, iv.2000; 4♂♂, 1♀, 14 km NE Maramag, Brgy Bagong Silang, 1.480 m, 7° 55'N, 124° 54 'E, 27.–28.ii.2009; 3♂♂, Cotabato del sur, Mt. Busa, 6°08'N, 124°39'E, 700 m, viii. 1997 (GU 54-89); 1♂♀, ibid. xii.1997; 2♂♂, Bukidnon, Mt. Kitanglad, S-Seite, Intavas, 8°07'N, 124°55'E, 1.200 m, vii.1993; 8♂♂, 1♀, ibid. 1.700 m, 15.viii.-15.ix.1993 (GU 43-01); 3♂♂, ibid. 2.200 m, 15.viii.-15.ix.1993; 1♂♀, ibid., 2.400 m, 4.viii.1993 (GU 54-94); 1♂, Mt. Kitanglad, S Vicente, 750 m, 15.viii.-15.ix.1993; 7♂♂, Davao del sur, Mt. Apo, SE Route via Kapatagan, 1.570 m, 10.-12. vii.1996; 3♂♂, ibid., 2.230 m, 8.vii.1996; 1♂, ibid. 2.600 m, 9.vii.1996; 6♂♂, 1♀, E slope Mt. Apo, Baracatan, 7°00'N, 125°22'E, 1.050 m, 4.-5.v.2008; 12♂♂, 1♀, Davao del Norte, Mt. Caragan, vii.1998; 2♂♂, 3♀♀, Mt. Apo, W-Flanke, 6°57'N, 125°17'E, 1.200 m, 28.-30.vii.1993; 1♂, Calaysan, ix.2000; 2♂♂, 1♀, 22 km NE Claveria, Brgy. Mat-I, 1.050 m, 8°40'N, 125°00'E, 2.iii.2009.

Diagnosis. Forewing length ♂♂ 21 mm - 26 mm (average: 24 mm), ♀♀ 28 mm – 31 mm. The males of the ssp. *mananangai* differ from ssp. *comatus* by narrower forewings and reduced whitish markings, where the white spot in the median area, nearest toward the margin is contrasting filled with fuscous scales. There is a prominent white apicalspot. The hindwings are more fuscous and pinkish-brown coloured in both sexes than in ssp. *comatus*. The females show more prominent blackish pattern in the white fields on their forewings compared to other Philippine populations. The genitalia of both sexes do not differ significantly from ssp. *comatus*.

Diagnosis. *Syntypistis comatus* is characterized in the males by deep green forewings (fading to brownish) with diagnostic and contrasting white markings in the median area. The hindwings are brownish in both sexes. The sexualdimorphic females show almost white forewings with green spaces along the dorsum and near the apex.

The male genitalia have a characteristic shaped valve with a jaw-shaped apical process and a distally curved phallus. Both 8th abdominal segments are characteristically bilobed. The female genitalia have an unbilobed ostium (in the *umbrosa*-group bilobed) and a characteristic sclerotized zig-zag band on the bursa copulatrix.

The large bursa copulatrix is without a signum.

www.biologiezentrum.at

Variation. The males vary slightly in the darkness of the ground colour of the forewings and the development of the white patches in the median area. A few individuals show this white patches as isolated spots. The females show hardly any individual variation.

The male genitalia are variabel in the shape of the valves, in particular in the apical region. Also the shape of the saccus is subject to individual variation; sometimes rounded, but in most cases pointed.

Bionomics. The adults are common and were observed throughout the year. They prefer higher altitudes between 1.200 m - 2.600 m but were also collected at medium altitudes below 600 m. The adults are most common in primary forests, but were taken also in secondary forests. The hostplant of the caterpillar are various Fagaceae such as *Quercus*.

Distribution. *Syntypistis comatus* is distributed in the Himalaya, Indochina, China, Taiwan, Sundaland, Java, Sulawesi, New Guinea and the Philippines: Palawan, Luzon, Panay, Negros. The ssp *mananangai* is restricted to Mindanao.

ssp. *comatus* Luzon (GU 43-02) ssp. *mananangai* PT, Mindanao (GU43-01)



Fig. 324: Female genitalia of *Syntypistis comatus*.

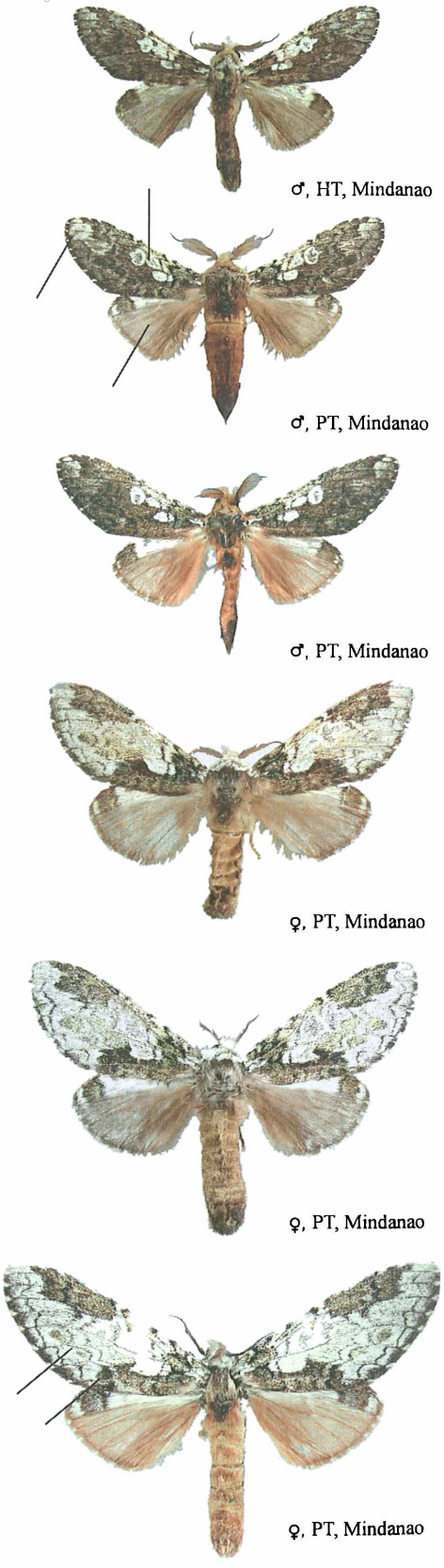
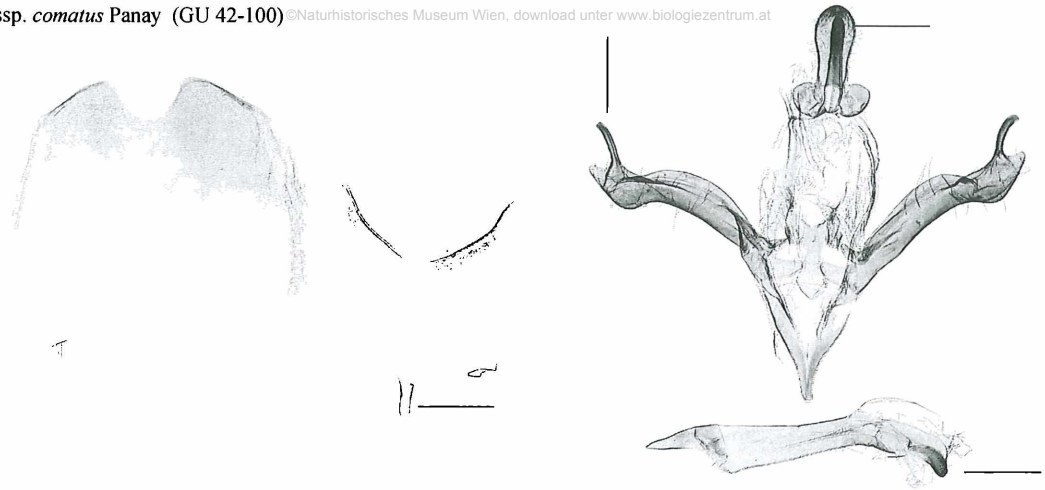


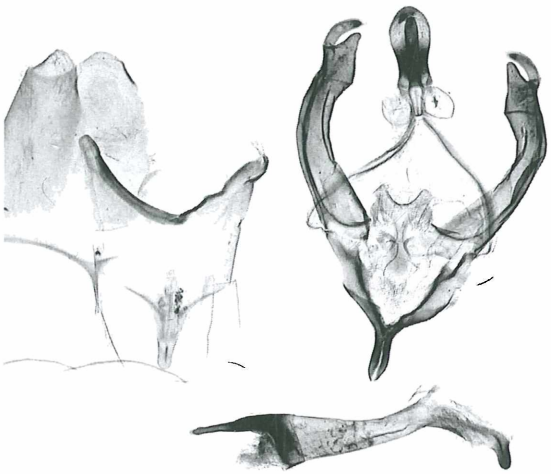
Fig. 325: Adults of *S. comatus mananangai*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

ssp. *comatus* Panay (GU 42-100)



ssp. *comatus* Luzon (GU 19-23)



ssp. *comatus* Negros (GU 42-99)



ssp. *mananangai* PT, Mindanao (GU 19-21)



ssp. *mananangai* PT, Mindanao (GU 19-22)

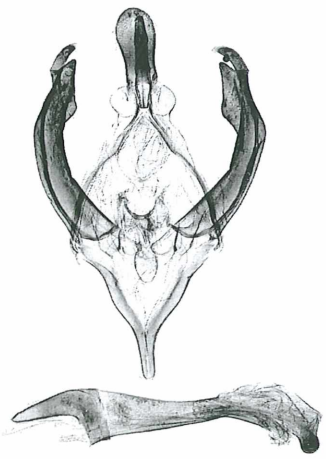


Fig. 326: Male genitalia of *Syntypistis comatus*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

67. *Syntypistis nigribasalis tropica*

(KIRIAKOFF, 1974): 388, pl. 2: 4
(*Quadricalcarifera nigribasalis tropica*)
HT: ♂, NO Sumatra, Deli, Dolok Merangir – Zoologische Staatssammlung, München, examined.

Syntypistis nigribasalis (WILEMAN, 1910): 289 (HT ♂, Formosa, Rantaizan – BMNH, examined) has a disjunct distribution in the Philipines, but the populations from Luzon and Mindanao are not distinguishable. From Borneo a very similar sister-species, *Quadricalcarifera alleni* HOLLOWAY, 1983: 51, pl. 4: 21; fig. 50 (HT: ♂, Brunei, Bukit Retak, 1.618 m – BMNH, London, examined), was described. A further hitherto undescribed species of the complex was found by AS in Vietnam. Upon the likely discovery of specimens from Palawan the identities should be verified with utmost care.



Fig. 327: Distribution of *S. nigribasalis*

Diagnosis. *Syntypistis nigribasalis* can be readily separated by its whitish ground colour with contrasting black pattern.

The female resembles the male but the general appearance is less contrasting and more fuscous. The male genitalia have short valves, a robust and long uncus and a prominent long and distally curved phallus. The 8th sternite displays a distinctive central projection.

Variation. There is almost no variation within the Philippines. In Sundaland sometimes paler individuals occur. The ssp. *tropica* differs slightly in the male genitalia (shapes of valve, phallus and 8th abdominal segment) from ssp. *nigribasalis*.

Bionomics. The adults were observed uncommonly (n = 16) in i., vi, viii., ix. between 700 m - 1.950 m in primary mountainous forests.

Distribution. The nominotypical subspecies *nigribasalis* is restricted to Taiwan. The ssp. *tropica* occurs in mainland China, Indochina, Sundaland, Java, Bali, Sulawesi and the Philippines: Luzon and Mindanao.

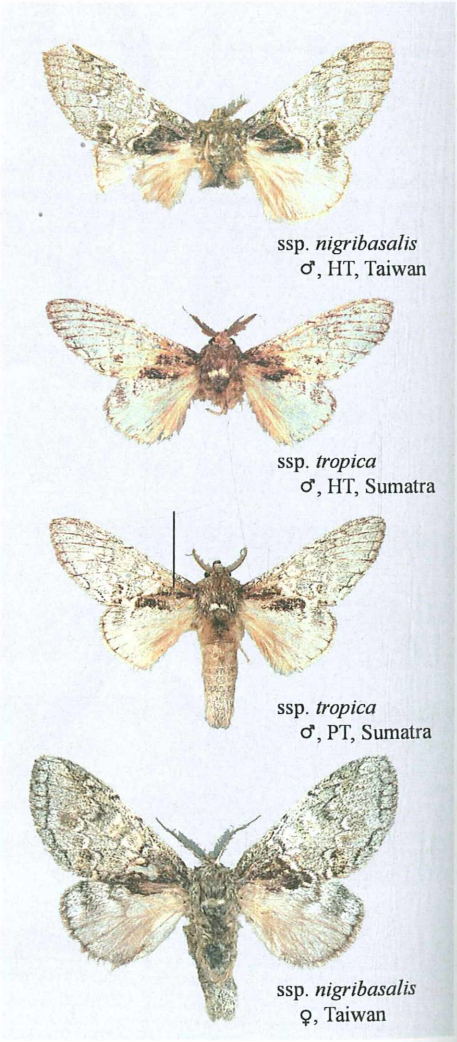


Fig. 328: Adults of *S. nigribasalis*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

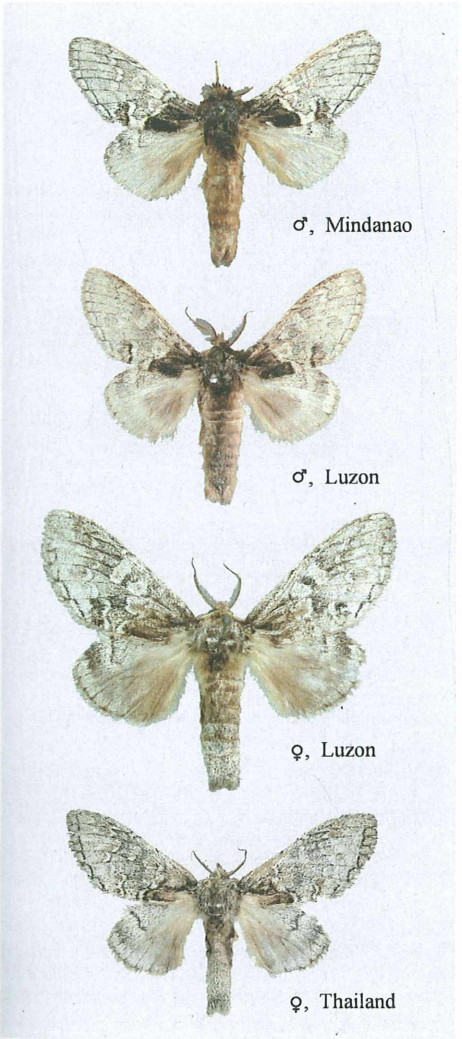


Fig. 329: Adults of *S. nigribasalis tropica.*

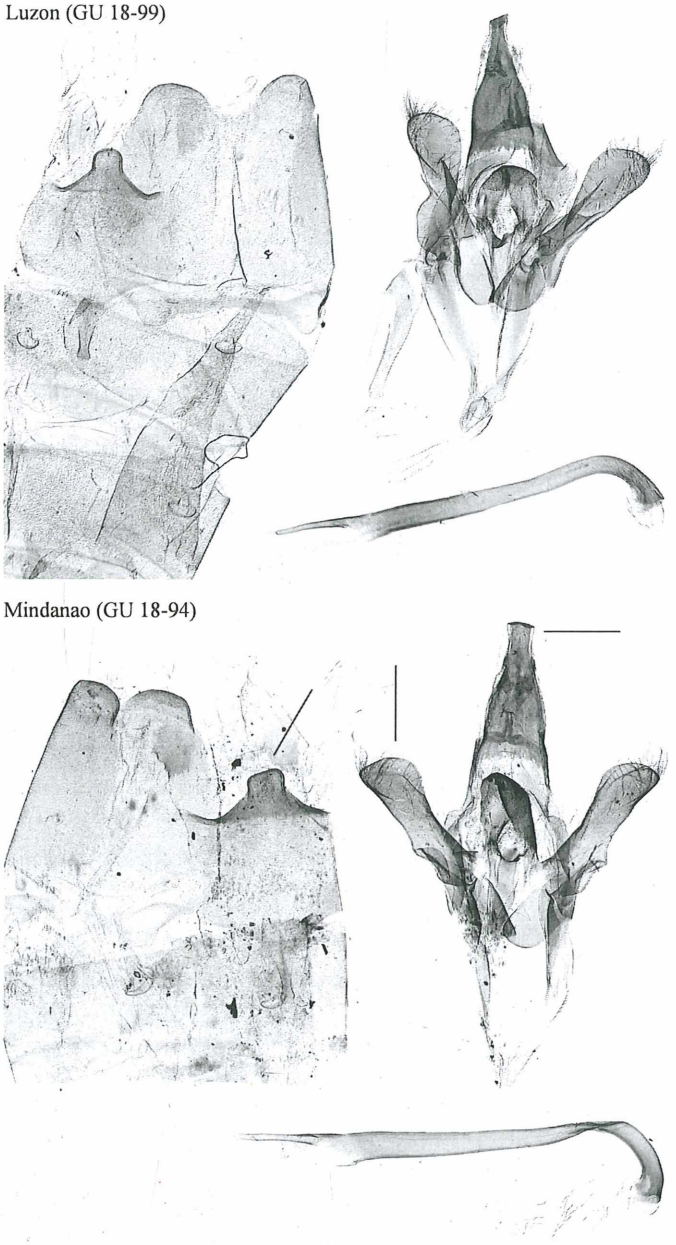


Fig. 330: Male genitalia of *Syntypistis nigribasalis tropica.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Parasinga KIRIAKOFF, 1967: 51

Type-species: *Somera lichenina* BUTLER, 1880

68. *Parasinga lichenina penatus* ssp. nov.

HT: ♂, Philippinen, Palawan, S. Vicente, 20 km NEE Roxas, 10°21' N, 119°10' E, 400 m, 12.- 17.i.1988 leg. K. CERNY & A. SCHINTLMEISTER – NHM, Wien.

Paratypes (22 ♂♂, 1 ♀):
Palawan: 1♂, S. Vicente, 20 km NEE Roxas, 10°21'N, 119°10'E, 400 m, 12.-17.i.1988 (GU 17-37); 13♂♂, Mt. Salakot Res., 800m, 9°51'N, 118°38'E, 10.-27.ii.2000 (MV17.471, 72-89); 1♂, ibid. 350 m, 9.viii.1997; 1♂, ibid. 8.x.1993; 2 ♂♂, Mt. Matalingahan, 800 m, xii.1997; 1♀, ibid., abandoned village (Kibyawon), 8°46'59.0"N, 117°42'06.7"E, 23.v.2001; 1♂, Mt. Magcasaw, Mainit, Brook's point, 600 m - 900 m, 3.-6. xi.1996; 1♂, 3km N Nagtabon, 09°57.015'N, 118°39.275'E, 220 m, 12.xii.2007; 1♂, Brgy Piag, 7 km E Sicud, foot of Mt. Mantalingajan, 40 m, 08°51.011'N, 117°32.154'E, 7.xii.2007.

Diagnosis. Forewing length ♂♂ 19 mm - 23 mm, ♀ 29 mm. The new subspecies resembles ssp. *lichenina*, (BUTLER, 1880): 67 (HT: ♂, Borneo – BMNH, London, examined), but the the forewings are(within the individual variation range of our series) slightly less bluish. Most specimens have a weakly developed tornalspot of the forewings. *Parasinga lichenina* differs from *viridescens* by a paler ground colour and the presence of a blackish tornalspot. The female of ssp. *penatus* resembles the male but the forewing pattern is more prominently developed and has a more greenish ground colour.

The male genitalia can be distinguished from ssp. *lichenina* by the shape of the narrower apex of the valves. The saccus of *penatus* is more robust and also the 8th sternite is deeper bilobed in comparison to ssp. *lichenina*. *Parasinga viridescens* is distinguished from *lichenina* by the presence of a digitus process on the valves. The female genitalia have a relatively small bursa copulatrix.

Variation. The Palawan populations vary individually in the degree of density of the forewings pattern. A single male (illustrated here) closely resembles, in colour and contrasting blackish pattern, some



Fig. 331: Distribution of *P. lichenina*.

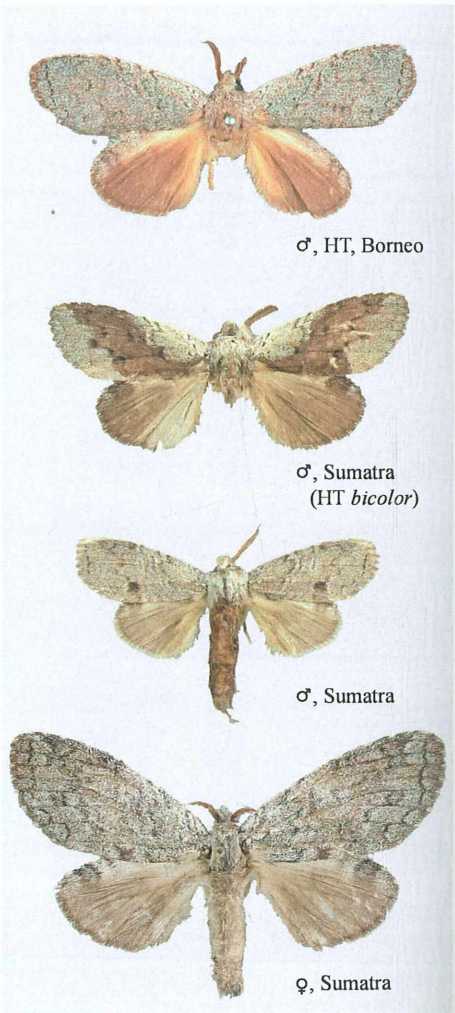


Fig. 332: Adults of *P. lichenina lichenina*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

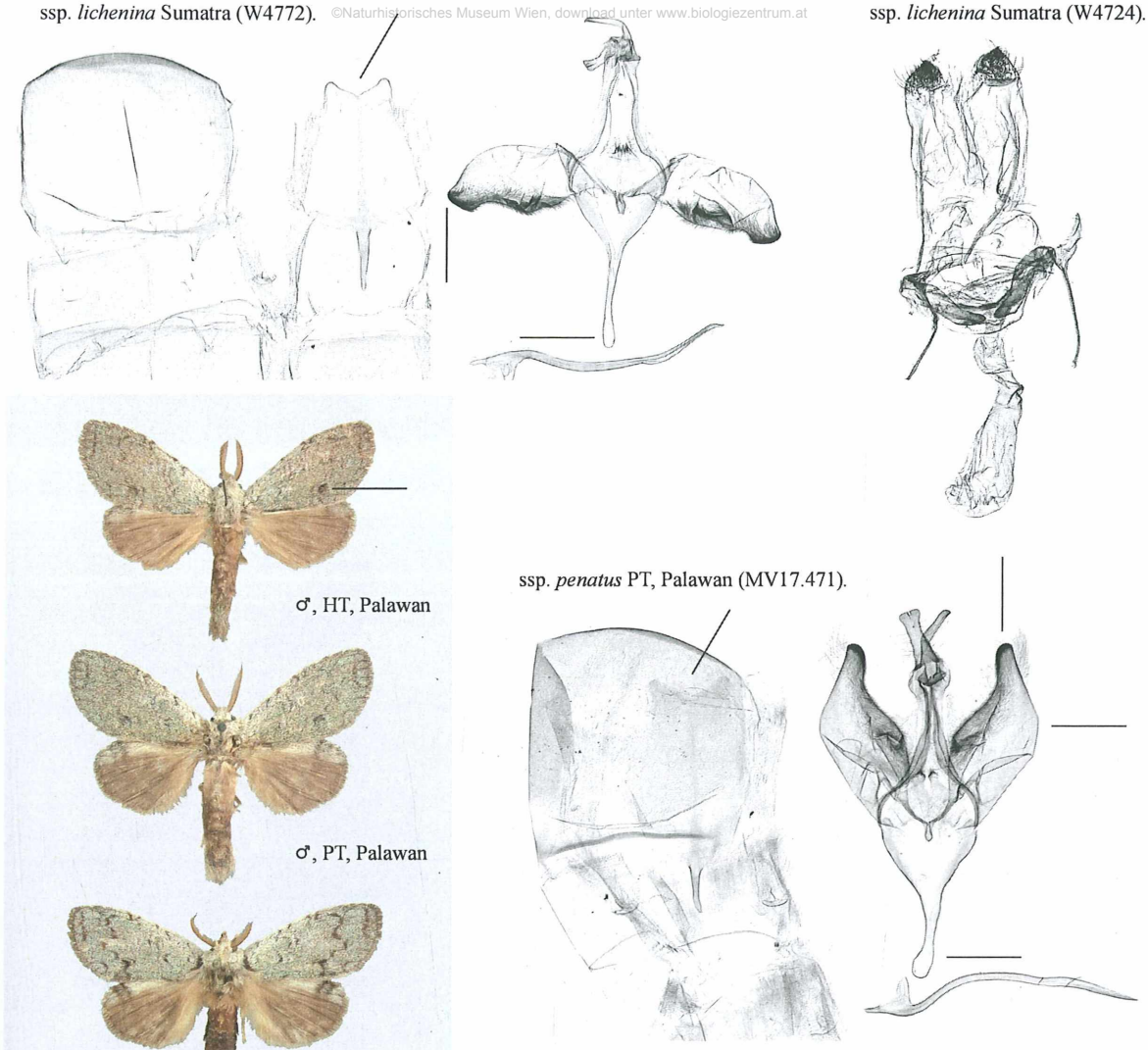


Fig. 334: Genitalia of *Parasinga lichenina.*

Fig. 333: Adults of *P. lichenina penatus.*

Sumatran specimens. No melanic forms (f. *bicolor* KIRIAKOFF, 1977), as frequently occuring in ssp. *lichenina*, are hitherto known from Palawan. *Parasinga lichenina lichenina* is much more variable (size, pattern, darkness, melanic forms).

There is virtually no individual variability in male genitalia of *lichenina* as well as in ssp. *penatus*.

Bionomics. The adults are infrequently found in Palawan throughout the year (not yet in iii., iv., vi., ix) up to 800 m, mostly in primary forests. In Thailand the species was recorded up to 2.050 m above sea-level.

Distribution. *Parasinga lichenina lichenina* is distributed in Sundaland, Java, Bali, Cambodia and Thailand. Ssp. *penatus* is endemic in Palawan.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

69. *Parasinga viridescens* SCHINTLMEISTER, 1993: 131, pl. 18: 1-3, pl. 19: 2.

HT: ♂, Philippinen, Luzon, Nueva Vizcaya, Dalton-Paß, Santa Fe, 800 m, 15°07' n. Breite, 120°36' ö. Länge – NHM, Wien, examined.

Parasinga is closely related to *Syntypistis* but the male genitalia (long saccus and the shape of the valves) are different. The genus is Sundanian and contains five species.

Parasinga viridescens is polymorphic and variable by external appearance in a similar way as *P. lichenina lichenina*. Contrary to this fact the individual variation of *P. lichenina penatus* seems to be very limited.



Fig. 335: Distribution of *P. viridescens*.

Diagnosis. The species resembles *P. lichenina* by its green forewings, but the general appearance is much darker. The black tornal spot on the forewings, which is characteristic for *lichenina* is absent in *viridescens*. There are white stigmata on the forewings, which never occur in *lichenina*.

The male genitalia are readily distinguished by a digitus process on the valves. The saccus is much longer than in *lichenina*. The 8th abdominal segment is less modified; the 8th sternite is not bilobed.

Variation. The individual variation is comparable to the individual variability of *P. lichenina lichenina*. Some specimens – less then 10% of the examined material (n > 70) – are displaying melanic forms. A single female shows a fuscous shadow in the median area of the forewings. The white stigmata on the forewings are absent in a few specimens.

The male genitalia vary individually in size of the digitus process on the valves, as illustrated and, less dramatically, in the shape of the uncus. No geographically correlated variation was noticed.

Bionomics. The adults occur frequently during all months of the year. The moths prefer medium altitudes between 250 m – 1.600 m and primary forests.

Distribution. The species is distributed in the Philippines: Luzon, Mindoro, Samar, Leyte, Negros, Mindanao. In Sulawesi a further, hitherto undescribed subspecies of *viridescens* occurs.

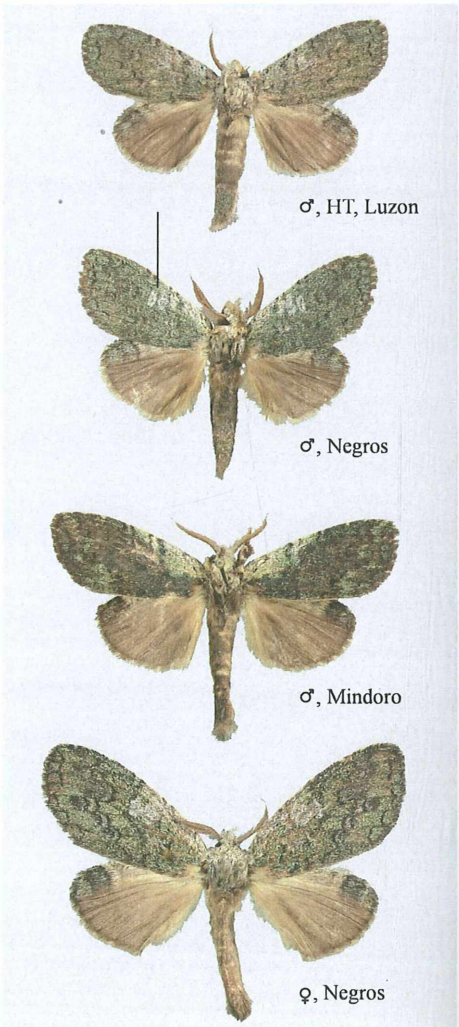


Fig. 336: Adults of *Parasinga viridescens*.

historisches Museum Wien, download unter www.biologiezentrum.at

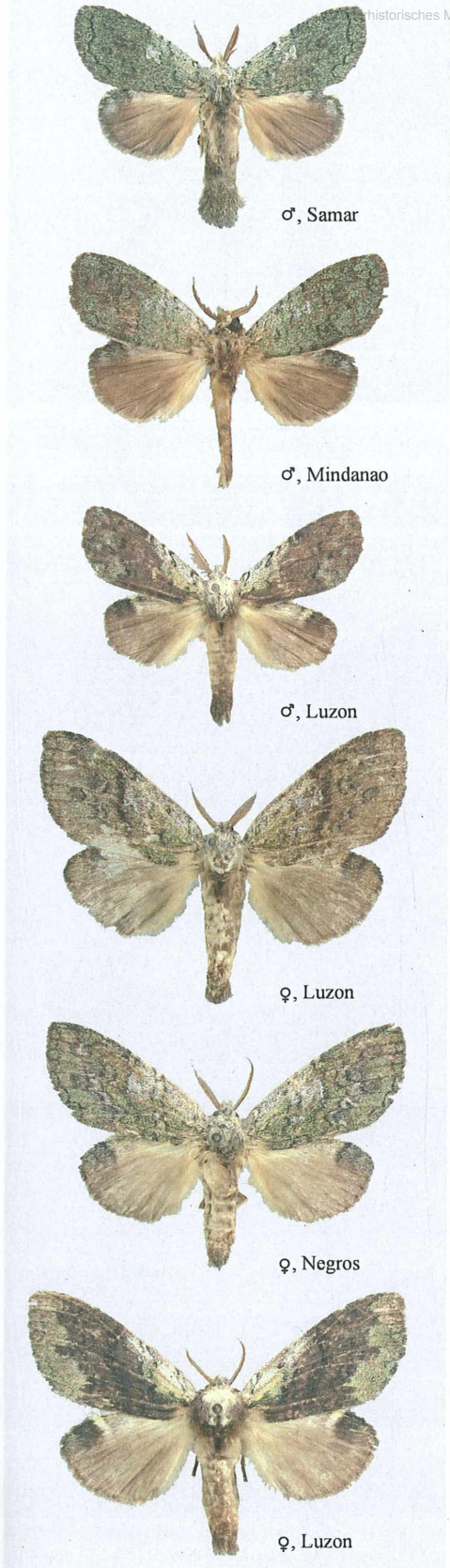


Fig. 337: Adults of *Parasinga viridescens*.

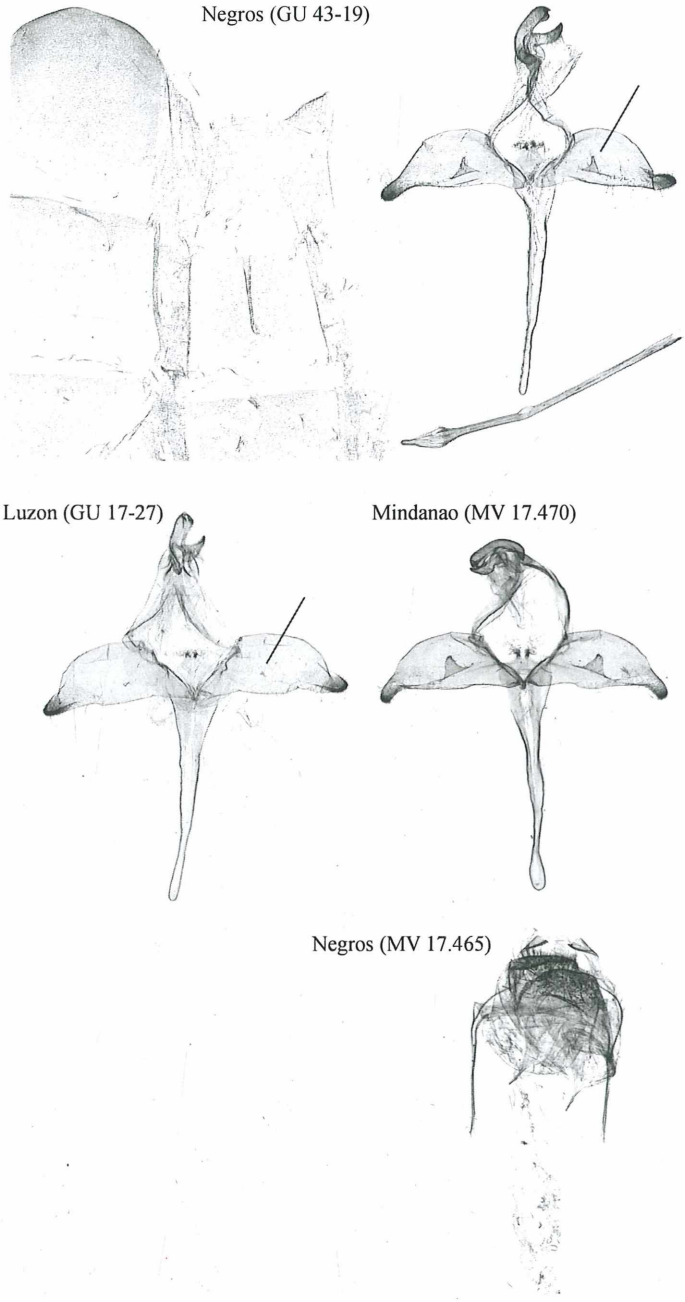


Fig. 338: Genitalia of *Parasinga viridescens*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Netria WALKER, 1855: 1504

Type-species: *Netria viridescens* WALKER, 1855

The genus was known formerly as monotypic. Due to the revision by SCHINTLMEISTER undertaken in 2006, 13 species and further seven subspecies were recognized. In the Philippines three species occur, which are similar by their external appearance. Males can easily be distinguished after cleaning the underside of the last abdominal segments with a brush and the examination of the characteristic shaped 8th sternites. The females display sexualdimorphism, where the median space of the forewings is darker than the whitish basal and postmedian areas.



Fig. 339: Distribution of *Netria viridescens*.

70. *Netria viridescens pallidabasis*

SCHINTLMEISTER, 2006: 70, pl. 1: 11-13; pl. 6: 13

HT: ♂, Z-Palawan, Mt. Salakot Res., 800 m, 9°51'N, 118°38'E – Museum Witt, München, examined.

Diagnosis. The males of *Netria viridescens pallidabasis* are distinguished from the other Philippine *Netria* by the white scales at the basal fascia on the forewings. The general appearance of *Netria viridescens* WALKER, 1855: 1504 (HT ♀, Java – BMNH, London, examined) is more brownish-grey and less greenish than in the following two species. The females display a broad brownish postmedian fascia of the hindwings and also a prominent whitish basal area on the forewings. The discalspot is weakly marked pale-brownish in most specimens of both sexes, the blackish tornalspot is conspicous and a diagnostic feature for the species.

The male genitalia are readily recognizeable by shapes of the 8th abdominal segments. The 8th tergit is rounded and the 8th sternite bears a prominent larger central spine.

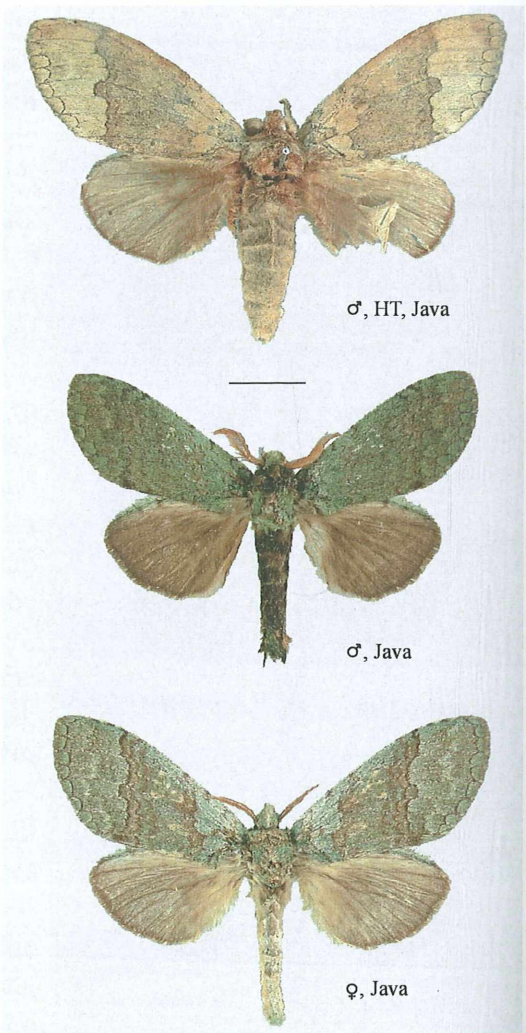


Fig. 340: Adults of *Netria viridescens viridescens*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

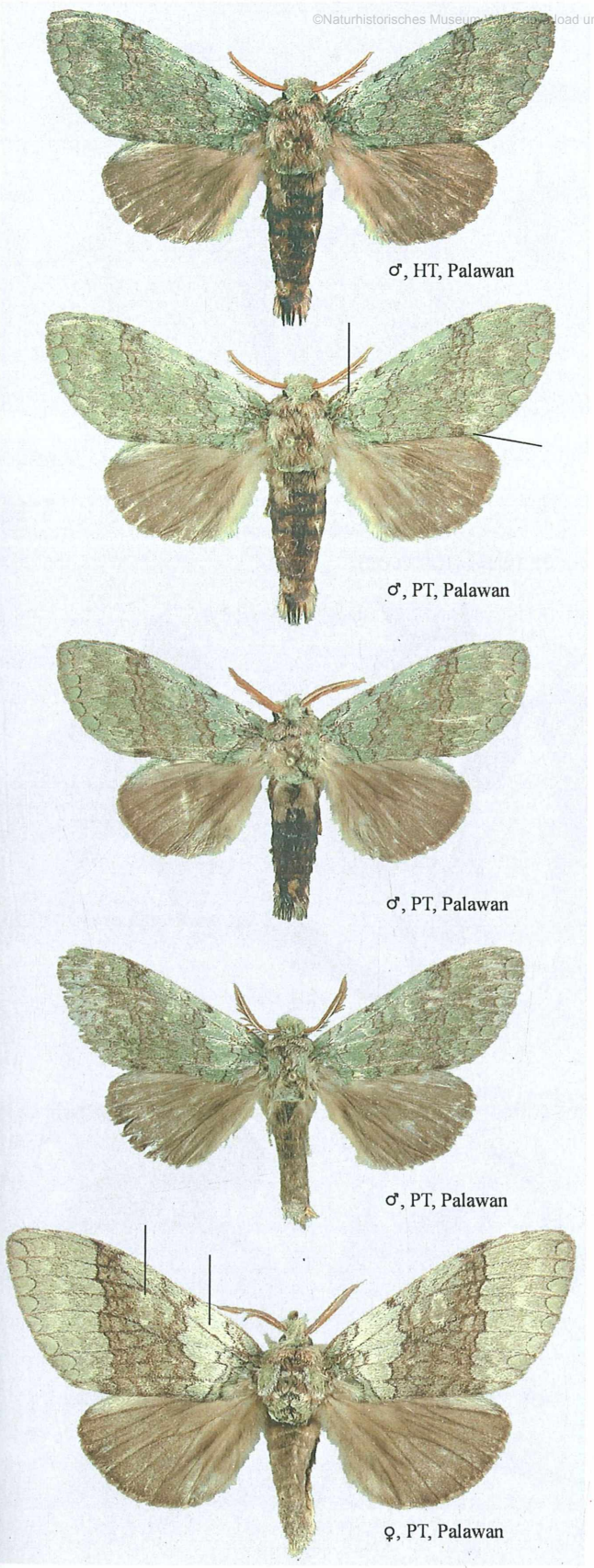


Fig. 341: Adults of *Netria viridescens pallidabasis*.

Variation. The adults in Palawan display a lower range of individual variation. But the ssp. *pallidabasis* is well modified in comparison to the other subspecies: it is larger in size and has whitish scales in the basalarea of the forewings. The ssp. *pallidabasis* differs from ssp. *viridescens* by the shape of the spines of the 8th sternite and the shape of the larger valve.

Bionomics. The adults were commonly observed in Palawan during all months except i. and iv.-vii. at medium altitudes between 50 m – 1.150 m mainly in primary forests but sometimes also in secondary forests.

Distribution. The ssp. *viridescens* occurs in Sundaland, Java and Bali. Further ssp. are known from the Himalaya, Indochina and the biggest part of China including Taiwan. The ssp. *pallidabasis* is restricted to the Philippines: Palawan.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

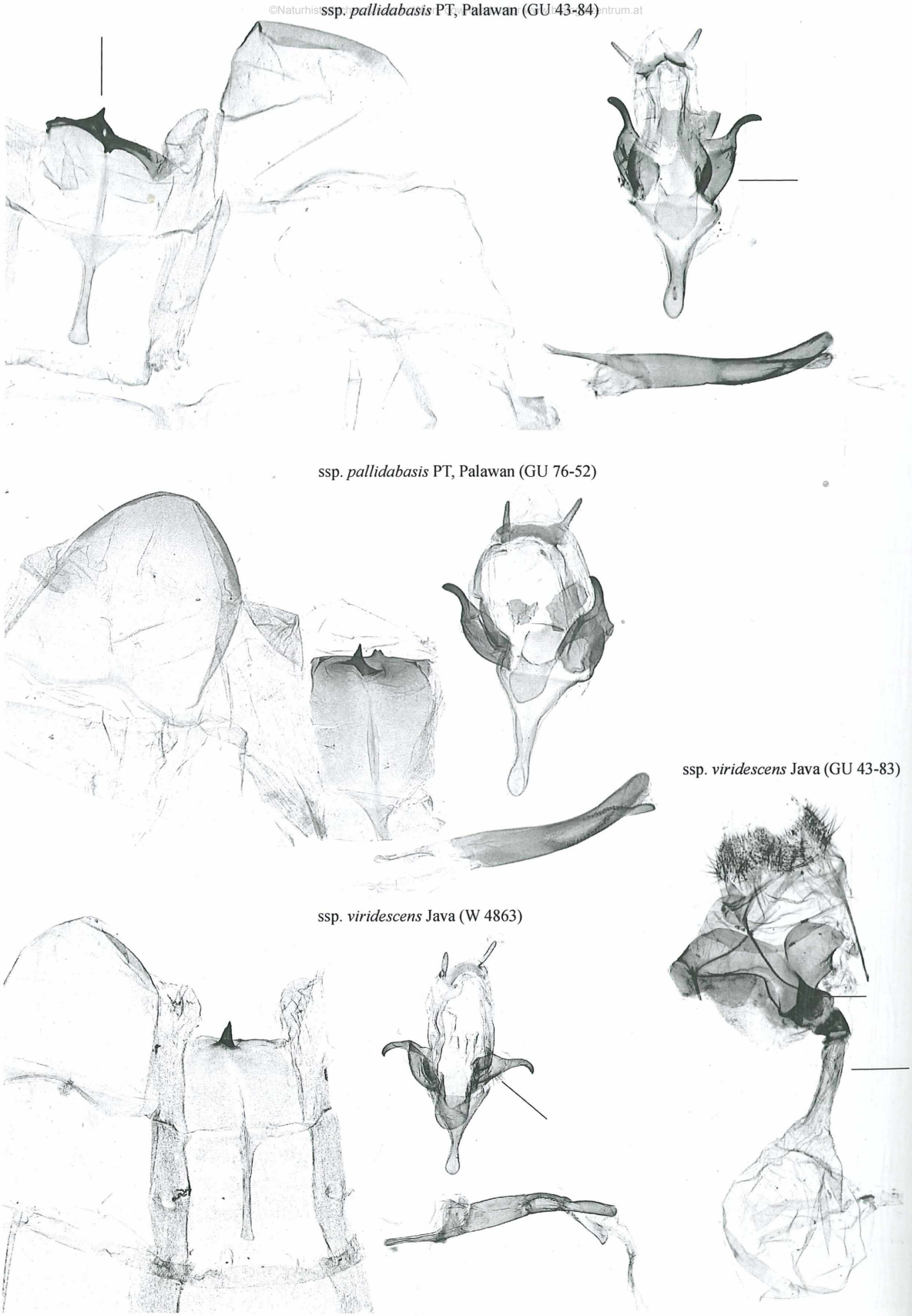


Fig. 342: Genitalia of *Netria viridescens*.

unter www.biologiezentrum.at

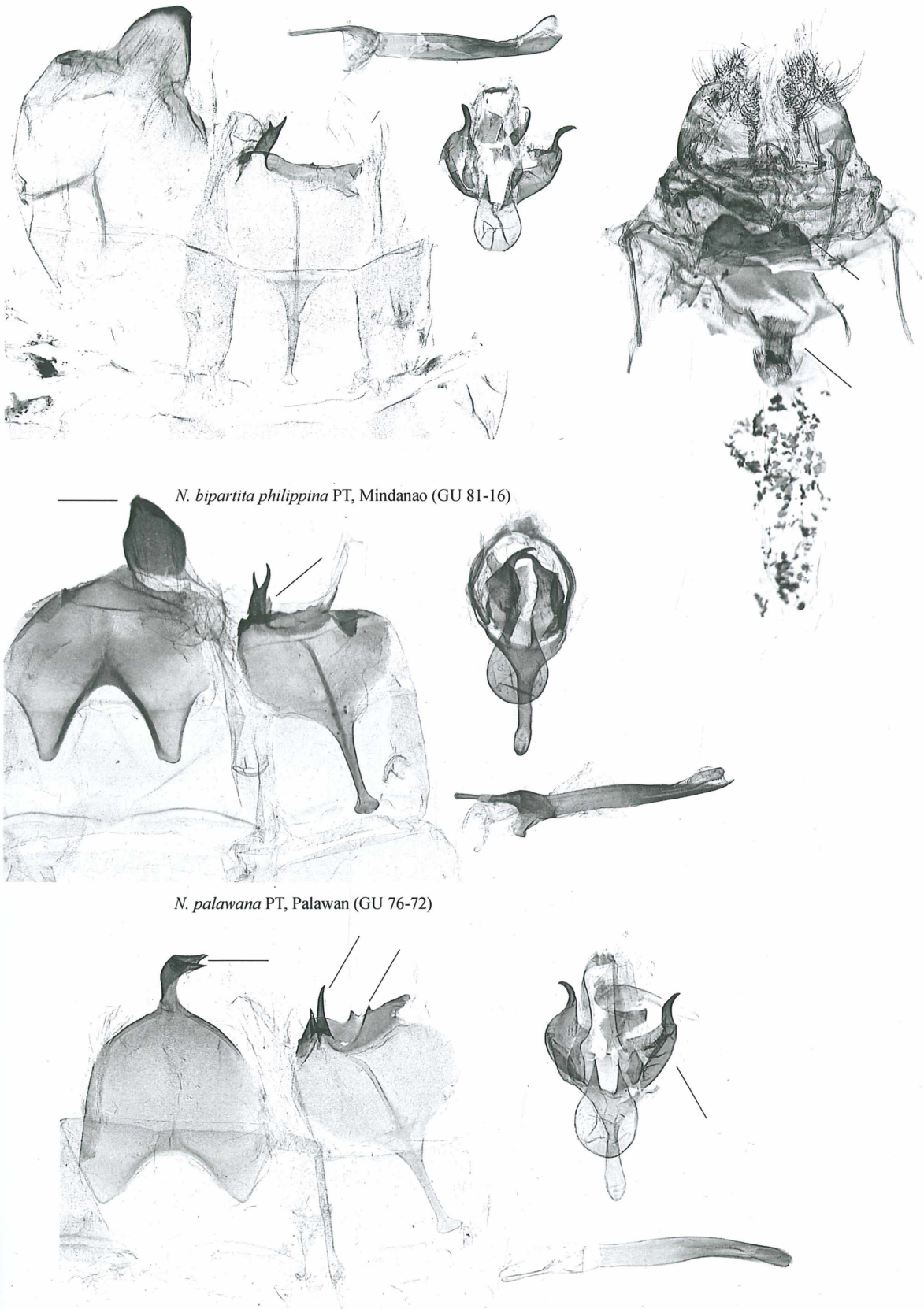


Fig. 343: Genitalia of *Netria bipartita philippina* and *palawana*.

www.biologiezentrum.at

71. ***Netria bipartita philippina*** SCHINTLMEISTER, 2006: 73, pl. 3: 6, 7, 9, pl. 8: 1, 2; pl 10: 4.
HT: ♂, Negros, Mt. Canlaon, W-Route via Mambucal, 800 m, 10°22' N, 123°12'E – Museum Witt, München, examined.

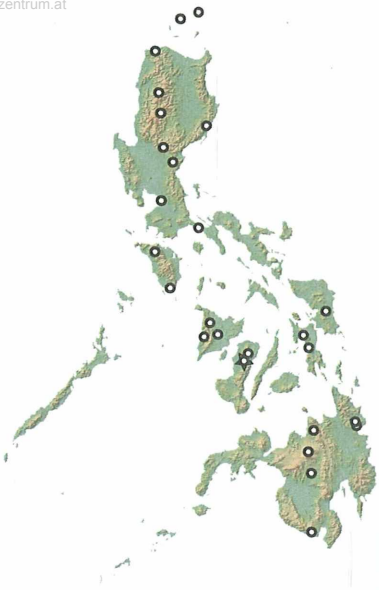


Fig. 344: Distribution of *Netria bipartita.*

Netria bipartita SCHINTLMEISTER, 2006: 72; pl. 3: 1, 2, 5; pl. 7: 5, 6; pl. 10: 3 (HT: ♂, Indonesia, Sulawesi, Mt. Tambuisi – Museum WITT, München, examined) is rather Mollucan-Sulawesian distributed and closely related to *palawana*. The differences in male and female genitalia are dramatically. So we have no doubt, that both allopatric taxa belong to different species.

Diagnosis. Similar to *N. viridescens* and *palawana.* The general appearance of *bipartita* is more greenish than in *viridescens pallidabasis* and the fuscous tornal spot of the forewings is rather inconspicous. The yellowish-brown discoidal spots are weakly developed or absent. The sexualdimorphic females are characterized by the brownish coloured median area of the forewings. The shape of the convex postmedian fascia of the forewings of both sexes is also helpful for identification.

In most Philippine islands (except Palawan) only *bipartita philippina* occurs.

The male genitalia are unmistakable by the shape of the 8th tergite with a prominent large projection. The 8th sternite bears a bifurcate, asymmetrical placed spine and - often reduced – a further pair of central-spines. The female genitalia differ from *palawana* by the less deeply bilobed ostium and a robust and relative short ductus bursae.

Variation. The adults display only a low degree of individual variation (size, intensity of the green ground colour, distinctness

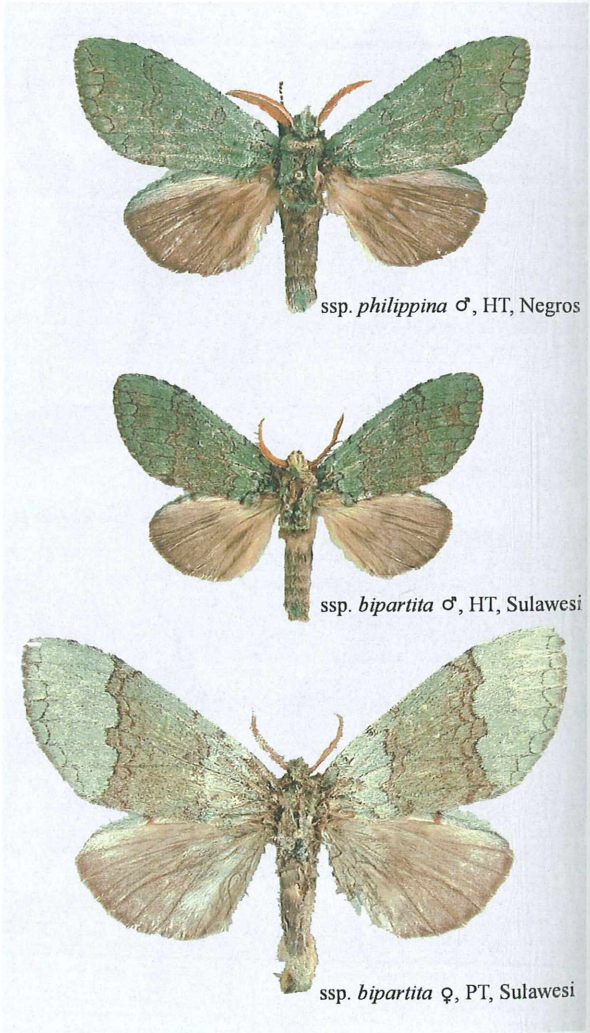


Fig. 345: Adults of *Netria bipartita.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

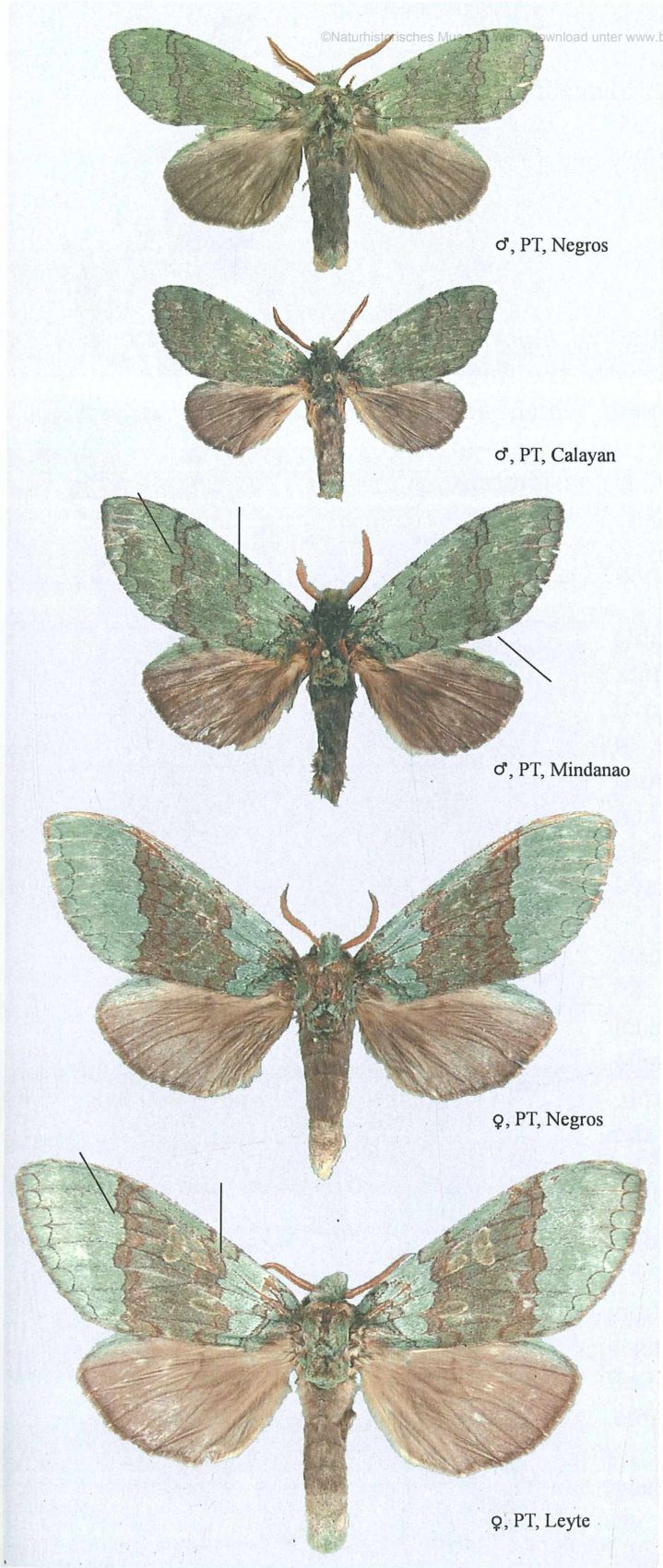


Fig. 346: Adults of *Netria bipartita philippina.*

of the brownish markings). But there is noticeable geographical variation (size, male genitalia, 8th abdominal segments) which led to the descriptions of several subspecies from outside the Philippines. The ssp. *philippina* is the largest known subspecies of *bipartita.*

Bionomics. The adults are common in the Philippines (n > 250) and were observed during all month of the year between 50 m and 2.200 m above sea level. The moths occur mainly in primary forests but were observed also in secondary forests. Montainous habitats are preferred.

Distribution. *Netria bipartita bipartita* occurs in Sulawesi, further subspecies were described from Halmahera (ssp. *tarasovi* SCHINTLMEISTER, 2006) and Ambon/Seram (ssp. *andreasmuelleri* SCHINTLMEISTER, 2006). A single male is known from Buru.

The ssp. *philippina* is endemic in the Philippines: Luzon (including Babuyan and Calayan Isls.), Mindoro, Leyte, Samar, Negros, Panay, Leyte, Mindanao.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

72. *Netria palawana* Schintlmeister, 2006:

77, pl. 3: 8, 10, pl. 8: 3, 4; pl 10: 5

HT: ♂, Philipinen, Palawan, Mt. Mantalingahan, abandoned village (Kibayawon), 950 m, 8° 47'N, 117°42'E – Museum Witt, München, examined.

Netria palawana is related to the *N. bipartita* group. There are no close relations to the three *Netria*-species occuring in Borneo, which are rather Sundanian/Siamic. The latter group is represented in Palawan by *N. viridescens pallidabasis*.



Fig. 347: Distribution of *Netria palawana*.

Diagnosis. Almost indistinguishable by external features from *N. bipartita*. But it seems, that the fuscous tornal spot on the forewings is absent in most individuals and the brownish markings are generally weaker. The sexualdimorphic females are characterized by the brownish coloured median area of the forewings.

The 8th tergit has a prominent bifurcate large and slender process. The 8th sternite bears a pair of asymmetrical longer spines instead of a single bifurcate process as seen in *bipartita*. Also the shapes of the juxta and the phallus differ from *bipartita*. The female genitalia differ from *bipartita* by the deeply bilobed ostium and a long and slender ductus bursae.

Variation. The individual variation is slight, but the series at our disposal vary in forewing length. The shape of the 8th abdominal segments is variable in the length of the processes.

Bionomics. The adults were not rarely found (n > 40) in ii., iii., v., vii., x., xi. and xii. between 50 m and 950 m, most common in xi.-xii. up to 500 m. Primary

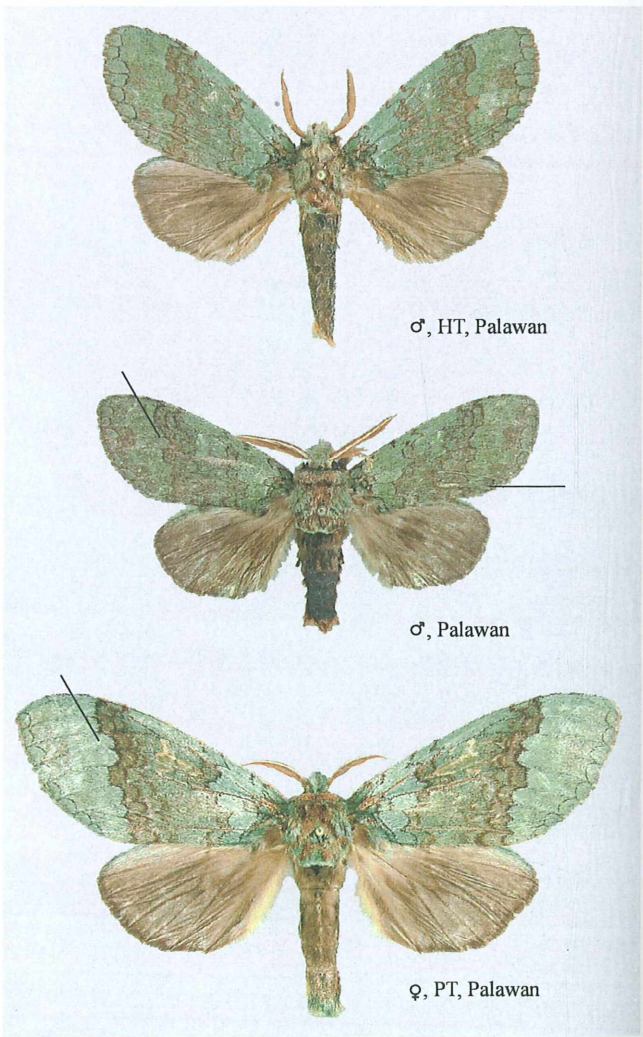
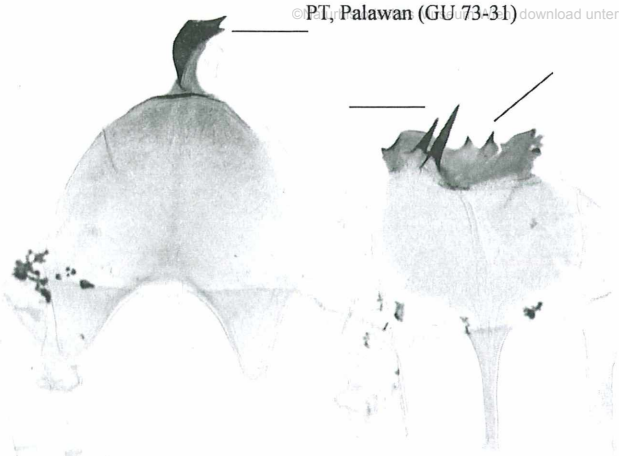


Fig. 348: Adults of *Netria palawana*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

PT, Palawan (GU 73-31)





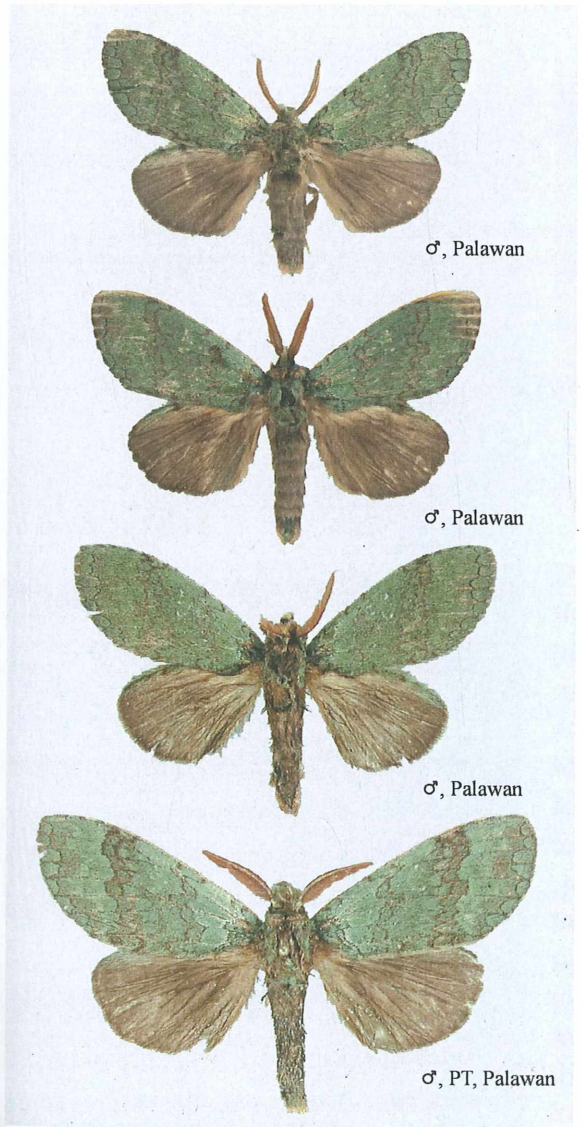


Fig. 349: Adults of *Netria palawana.*

PT, Palawan (GU 44-16)

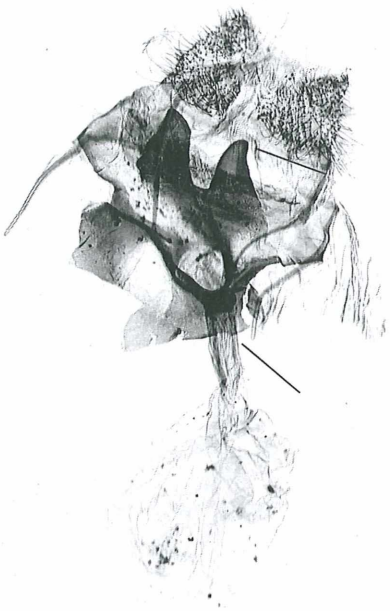


Fig. 350: Genitalia of *Netria palawana.*

forests in hilly habitats are preferred, but the species was also observed in secondary forests.

Distribution. Endemic in the Philippines: Palawan.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Cerasana WALKER, 1862: 123

Type-species: *Cerasana anceps* WALKER, 1862

The genus contains some species of unusual external appearance. The moths resemble, with their yellow abdomen with black dots, rather tiger moths (Arctiidae) or Lymantriidae than Notodontidae. Initially *Cerasana* was established in Arctiidae, later placed in Lymantriidae and transferred to the Notodontidae by GAEDE (1930). The male genitalia are characterized by a reduced and asymmetrical pair of valves, the robust tegumen and in particular by their asymmetrical 8th sternites. They tend to develop greater differences between the species but also within a species.

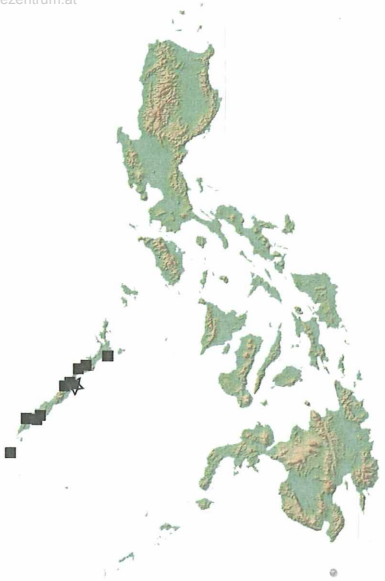


Fig. 351: Distribution of *Cerasana anceps*.

73. *Cerasana anceps lutea* (PAGENSTECHER, 1890):14 (*Natada* [sic] *lutea*) **stat. nov.**

HT: ♂, Palawan [Puerta Princessa] – ZMHU, Berlin examined.

= *Cerasana anceps butzi* SCHINTLMEISTER, 2004: 196, figs. 7-9, 25 **syn. nov.**
HT: ♂, Philippinen, Z.-Palawan, Mt. Salakot, Res., 800 m, 9°51'N, 118°38'E – NHM, Wien, examined.

PAGENSTECHER (1890) described *lutea* from material collected in Palawan/Puerta Princessa by PLATEN for Otto STAUDINGER (STAUDINGER 1888). Fortunately the first author was recently able to locate the missing type of *lutea* in ZMHU, Berlin, which is a ♂ and not a ♀ as stated by PAGENSTECHER. It is conspecific with *C. anceps* WALKER, 1862 (HT: ♂, [Borneo], Sarawak – Oxford University Museum, Hope Department, examined) and represents a distinct subspecies (stat. nov.), which was described as ssp. *butzi*, a junior synonym (syn. nov.). The smaller congener, formerly misidentified as *lutea* (sensu HOLLOWAY 1983), is described below as new to science.

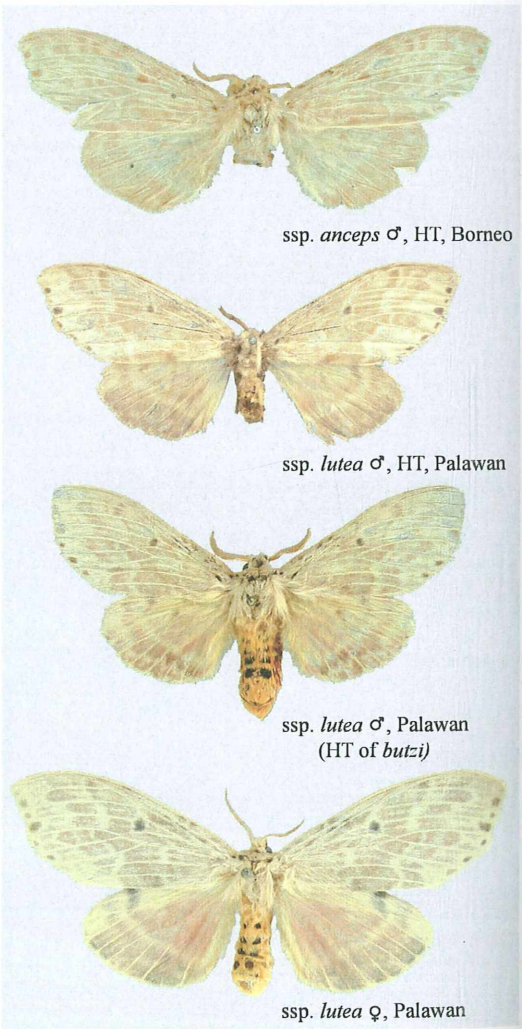
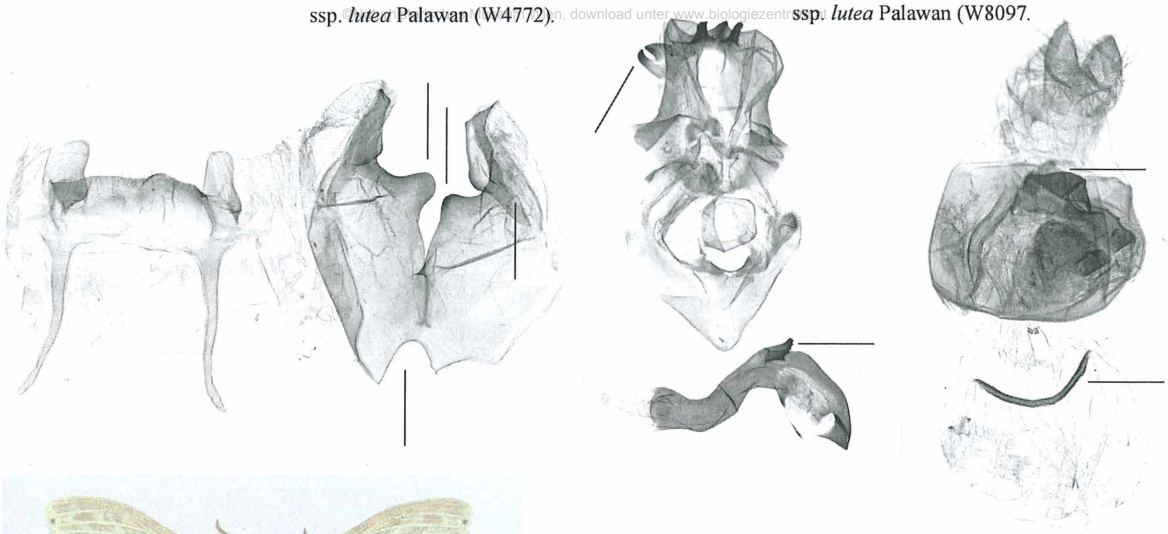


Fig. 352: Adults of *Cerasana anceps*.

download unter www.biologiezentrum

ssp. *lutea* Palawan (W4772).

ssp. *lutea* Palawan (W8097.



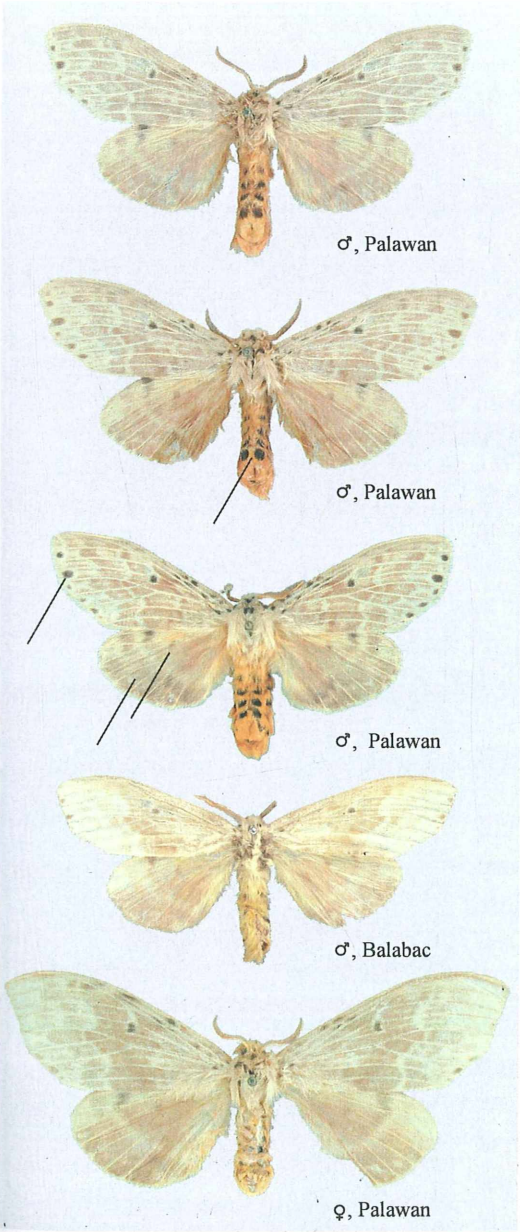


Fig. 353: Adults of *Cerasana anceps lutea.*

ssp. *anceps* Kalimantan (81-04).

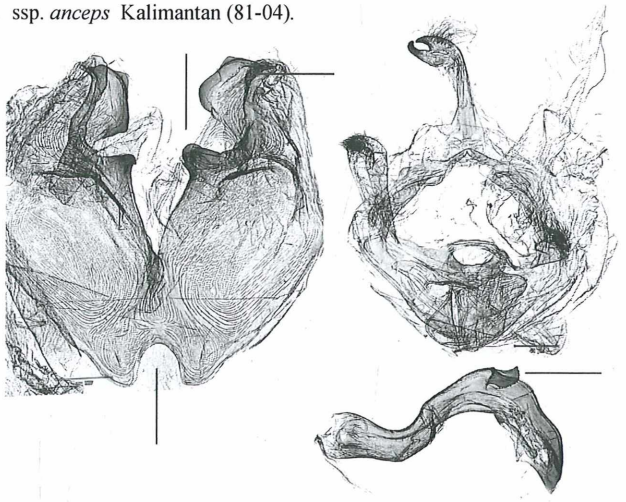


Fig. 354: Genitalia of *Cerasana anceps.*

Diagnosis. *Cerasana anceps* is distinguished from the other congeners by its broad brownish postmedian fascia of the hindwings. The forewings display a brownish discal spot. A double row of prominent black dots on the abdomen and the paler medianfascia on the hindwings are good characters for identification. Both sexes are very similar.

The male genitalia are readily recognizable by the characteristic shape of the curved phallus and the bilobed 8th abdominal segments. The female genitalia display a larger signum.

Variation. The adults are variable in the distinctness of the brownish pattern of the wings. Sometimes individuals occur with a reduced pattern and a more fuscous brownish median area.

www.biologiezentrum.at

The ssp. *lutea*, is paler (particularly in the brownish postmedian area of the hindwings) than ssp. *anceps*. The male genitalia of ssp. *lutea* differ by different shape and sclerotizations of the 8th abdominal segments and the shape of the serrated plate of the phallus.

Bionomics. The adults were observed in Palawan commonly from x.-iii. at lower and medium altitudes up to 900 m in primary and secondary forests.

Distribution. *C. anceps anceps* occurs in Sundaland, the ssp. *ursulae* SCHINTLMEISTER, 2004 was described from S. Thailand. The ssp. *lutea* is restricted to the Philippines: Palawan and Balabac Isl.

***Cerasana pagenstecheri* spec. nov.**

HT: ♂, Indonesia, Sumatra, 35 km N Bengkulu 500 m, 3°38'S, 102°29'E, Primärurwald-Pass, 3.xi.1981 leg. A. SCHINTLMEISTER & WIDAGDO – coll. A. SCHINTLMEISTER, Dresden.

Paratypes: (12 ♂♂, 5 ♀♀):

Sumatra: 1♂, Indonesia, Sumatra, 35 km N Bengkulu 500 m, 3°38'S, 102°29'E, Primärurwald-Pass, 3.xi.1981 (GU 17-14); 1♂, 7 km W Muaratebo, 1°27'S, 102°16'E, 100 m, 21.x.1981 (GU15-59); 1♂, Jambi, 28 km SW Sarolangun, 2°30'S, 102°36'E, 200 m, 5.xi.1981 (GU 17-15); 4♂♂, 2♀♀, Lebong Tandai, 24.iv.1923, 13.xi.1921, 13.xii.1921 (BM53/2004);

Belitung Isl.: 1♂, Mt. Tajam, 510 m, 2°48'S, 108°05'E, 18.-23. ii.2007;

Malay Peninsula: 1♂, 1♀ Singapore; 1♂, Pahang, Kuala Lipis, 1911;

Borneo: 1♂, Sandakan (BM #1185); 1♀, West Java 1917;

Java: 1♀, Tjilandat, Djamp. Tengg. iv.1936; 1♂, zonder vindplaat

Etymology. Named after Arnold Pagenstecher (5.xii. 1837 - 11.vi.1913), otologist and from 1900 honorary director of the Naturhistorisches Museum Wiesbaden.

Diagnosis. Forewing length ♂♂, 21 mm - 23 mm, ♀♀, 25 mm - 27 mm. The new species resembles much *basipuncta* but is slightly larger in size. Both species are characterized by rather uniform yellow colouration, with weakly developed brownish markings (except a blackish basal spot of the forewings). A few uniform specimens lacked any brownish pattern. The hindwings are often tinged

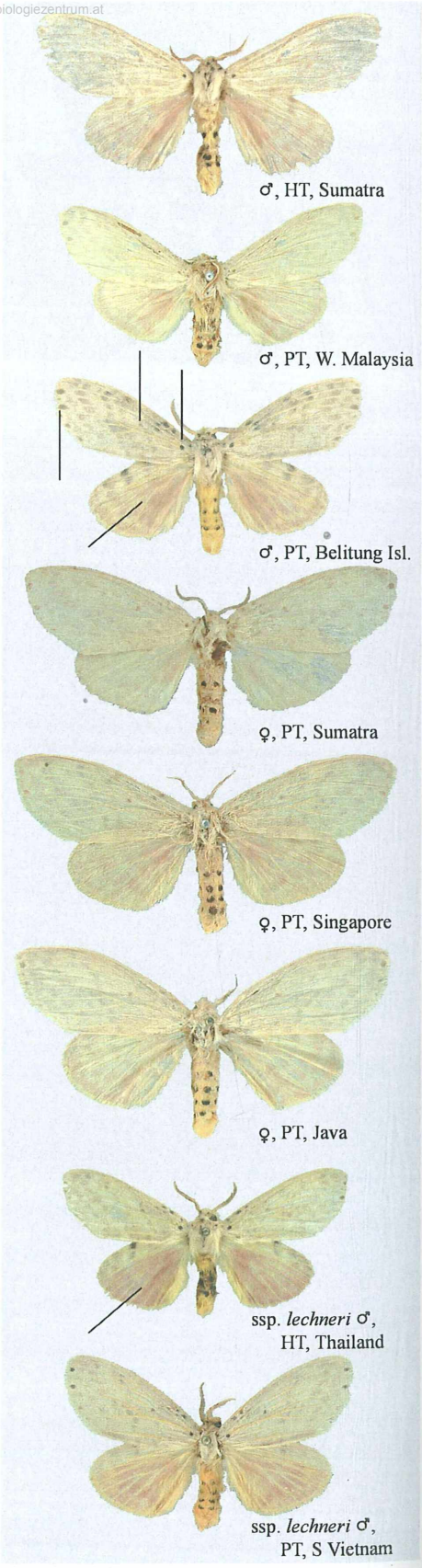
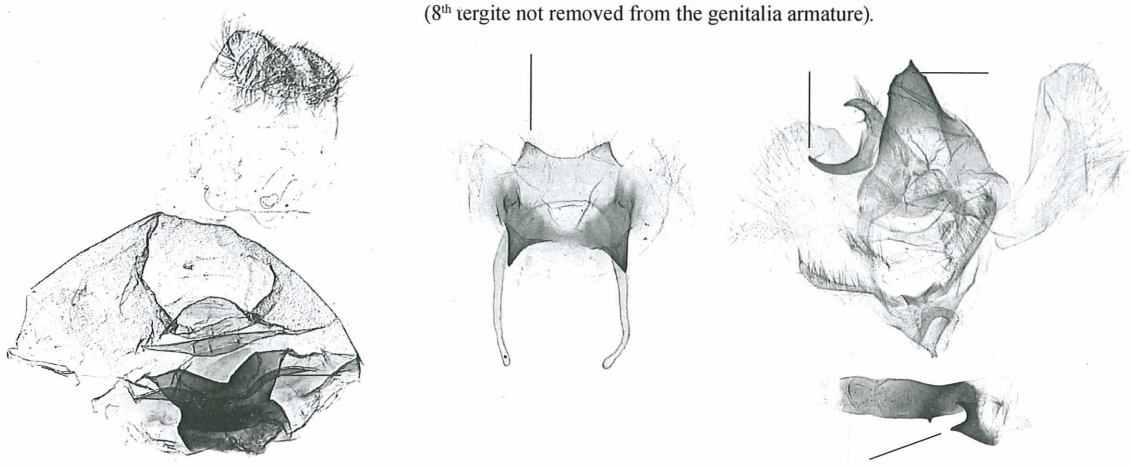


Fig. 355: Adults of *C. pagenstecheri*.

ssp. *pagenstecheri* PT, Sumatra (BM #53/2003)

ssp. *pagenstecheri* PT, W Malaysia (BM #37/2003)
(8th tergite not removed from the genitalia armature).



ssp. *lechneri* Thailand (GU 79-49).

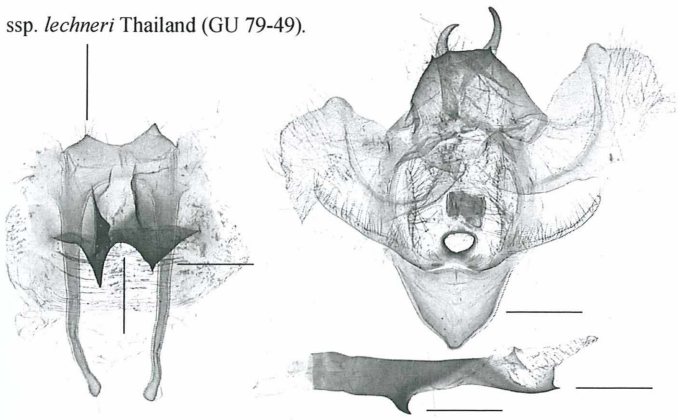


Fig. 356: Genitalia of *Cerasana pagenstecheri.*

with reddish-brown. The female is slightly larger than the male. The male genitalia are very distinctive by their large uncus, the curved phallus with two spines and the rather small, pointed saccus. The bilobed 8th sternite is unmistakable within the genus because of its unique shape and the long processes. The female genitalia display a robust, notched ostium with a massive ductus bursae.

***Cerasana pagenstecheri lechneri* ssp. nov.**

HT: ♂, S Thailand, Chumphon Prov., 5 km S Phato, 155 m, 9°46'N, 98°47'E, 6.vii.2008, leg. LANGER, LÖFFLER & NAUMANN – coll. A. SCHINTLMEISTER, Dresden.

Paratypes: (7 ♂♂):

Thailand: 1♂, Yala, Pu Hala, 6°09'N, 101°16'E, 800 m, 3.-20.iv.2002 (GU 79-49); 2♂♂, Changwat Chumphon, Amphoe Pa Toh, 10 km west Ban Lang Tang, 160 m, 09°46'N, 98°46 'E, 11./12. vii. 2007; 1♂, Changwat Suratthani, Amphoe Koh Samui, Lamai Vicinity, Khao Lamai, 173 m, N 09°30,126'N, 100°01,395'E, 16./17. vii. 2007; 2♂♂, Changwat Nakhorn Sri Thammarat, Noppitham Vicinity, Khao Luang N.P., 66 m, 08°43,976'N, 99°41,309'E, 19./20. vii. 2009;

Vietnam: 1♂, Prov. Lam Dong, Gia Bac, 467 m, 11°17'N, 108°06'E, 14.vii.2002.

Etymology. Dedicated to Kurt Lechner, Weerberg/Austria, who collected a series in S Thailand, which enabled us to describe this fine subspecies.

Diagnosis. Forewing length ♂♂, 21 mm - 22 mm. The hindwings are fuscous magenta-brown coloured (the single specimen from Vietnam is more yellow tinged). The male genitalia differ from ssp. *pagenstecheri* by the smaller uncus, the longer saccus and also by the shape of the 8th sternite. The dramatically different shape of the phallus with a central spine indicates, that *lechneri* probably represents a distinct species.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

74. *Cerasana basipuncta* Semper, 1898:

415, pl. 53: 1 (*Pydna basipuncta*)
LT: ♂, Philippinen, Bohol – Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt/Main, examined



Fig. 357: Distribution of *C. basipuncta.*

Semper (1898) described this species from three specimens but mixed *basipuncta* in the type series together with a further species, later described as *Cerasana ulrikae*. Schintlmeister (2004) fixed therefore a Lectotype, so that the identity becomes clear. *Cerasana basipuncta* is a rare species in the Phillipines; only 13 males of this noticeable species are hithertho known. The diverse male genitalia suggests, that there are probably several subspecies in the Philippines.

Diagnosis. *Cerasana basipuncta* closely resembles *C. pagenstecheri* but is smaller in size. Both species display a rather uniform yellow colouration, often almost without markings, except a blackish basal spot of the forewings. A brownish apical patch seems to be characteristic for *basipuncta.* The female is larger and has short pectinate antennae (females of the other congeners have longer pectinations like their corresponding males).

The male genitalia are readily recognizable by the characteristically triangular shaped 8th tergite and the bilobed 8th abdominal segments. Also the shape of the uncus is a diagnostic feature to separate both species.

Variation. The present material is insufficient to analyse the variation, but the series is inhomogenous in size, colouration and the brownish pattern. Two males from Leyte display well developed brownish markings; the third male is paler, rather uniform and similar to the illustrated female. The dissected male genitalia (n = 3) differ in the shapes of the abdominal segments, the saccus, the uncus and the phallus, as illustrated.

Bionomics. The known adults (n = 13) where taken in v. - vii. and x. - xi. between 50 m and 690 m in primary forests.

Distribution. Endemic in the Philippines: Negros, Bohol, Leyte and Mindanao.

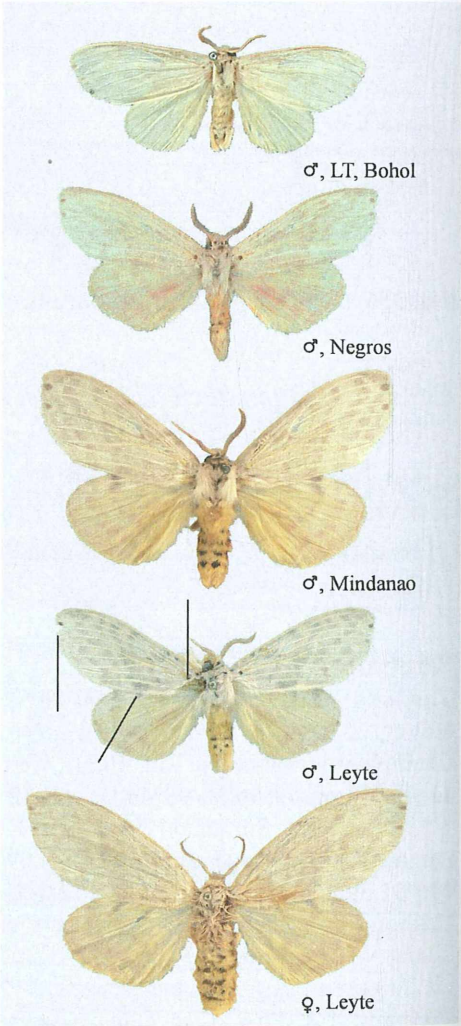
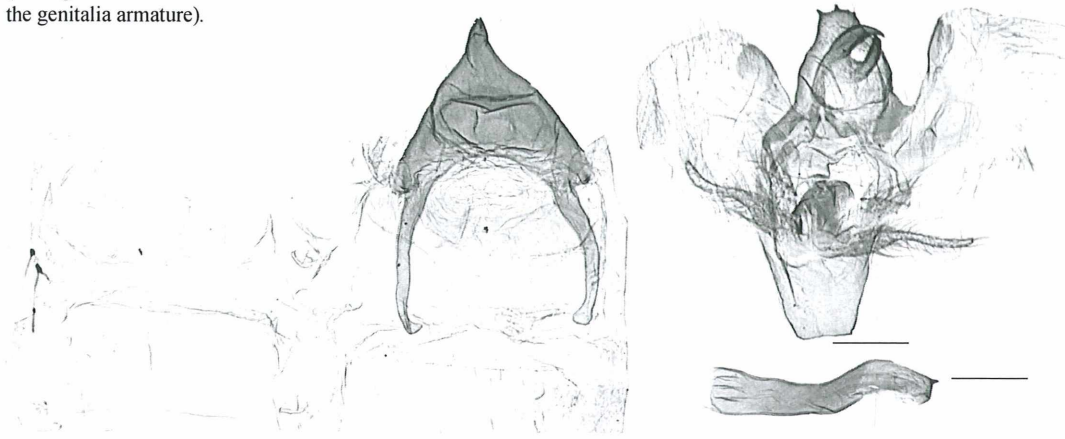


Fig. 358: Adults of *Cerasana basipuncta.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

LT, Bohol (Senckenberg, no number)
(8th tergite not removed from
the genitalia armature).



Negros (W 4808).



Mindanao (BM #36/2003)
(8th tergite not removed from
the genitalia armature).

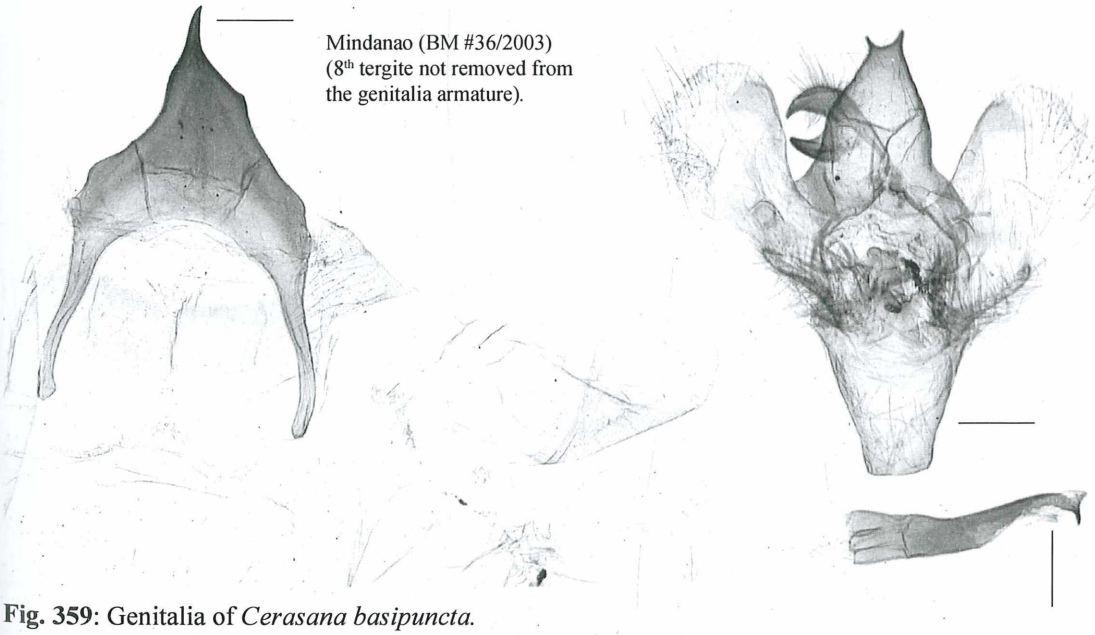


Fig. 359: Genitalia of *Cerasana basipuncta.*

www.biologiezentrum.at

75. *Cerasana ulrikae* Schintlmeister, 2004:

203, Figs. 21-23, 37.

HT: ♂, Philippinen, Mindoro Occid., 35 km NNE San José, Pusok, 200 m, 12°38'N, 120°55'E – NHM, Wien examined.

This rather unmistakable and distinct species was misinterpreted for a longer time as *C. basipuncta*. Hence Schintlmeister (2004: 198) fixed a Lectotype for *basipuncta*, the introducion of *ulrikae* as a new species becomes necessary.



Fig. 360: Distribution of *C. ulrikae*.

Diagnosis. The unmistakable, large species is readily recognizable by the conspicous reddish-brown discal spots of the forewings. The hindwings are often reddish-brown.

The male genitalia are characterized by the different length of both valves, a small uncus, the large phallus and the asymmetric 8th abdominal segments of unique shape. The female genitalia have a sclerotized band comparable to *C. anceps*.

Variation. The adults vary in the intensity of the wing colours and also in the developments of the brownish forewing patterns in the median area. The discal patches of the hindwings are sometimes weakly marked. Specimens from Mindoro also tend to produce orange coloured hindwings, whereas some specimens from Luzon have rather brownish forewings. Some males from from Mindanao display yellow hindwings (among specimens with reddish hindwings). The male genitalia of these populations do not show significant differences, but they show considerable variation by the shapes of the 8th abdominal segments, uncus and phallus.

Bionomics. The species was observed throughout the year (except in iv. and v.) from 200 m – 1.000 m mostly in secondary vegetation and cultivated areas.

Distribution. Endemic in the Philippines: Luzon, Mindoro, Leyte, Negros, Panay, Bohol and Mindanao.

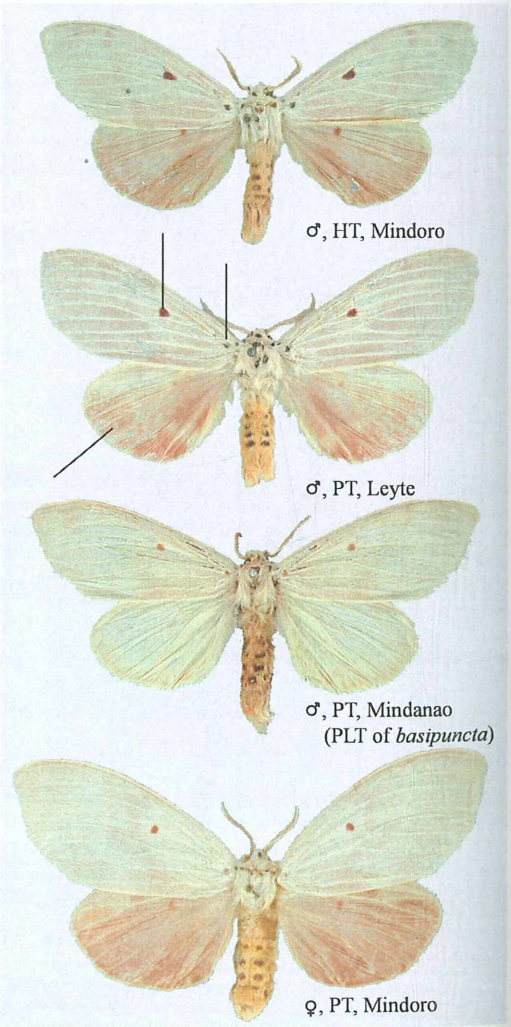
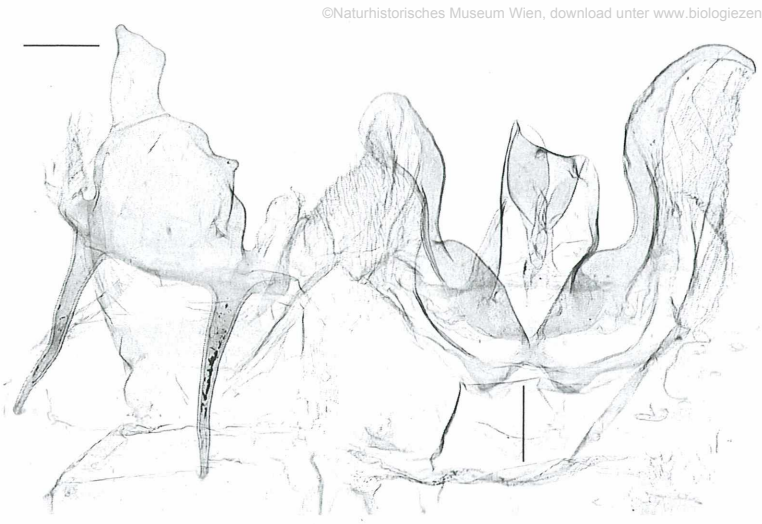


Fig. 361: Adults of *Cerasana ulrikae*.

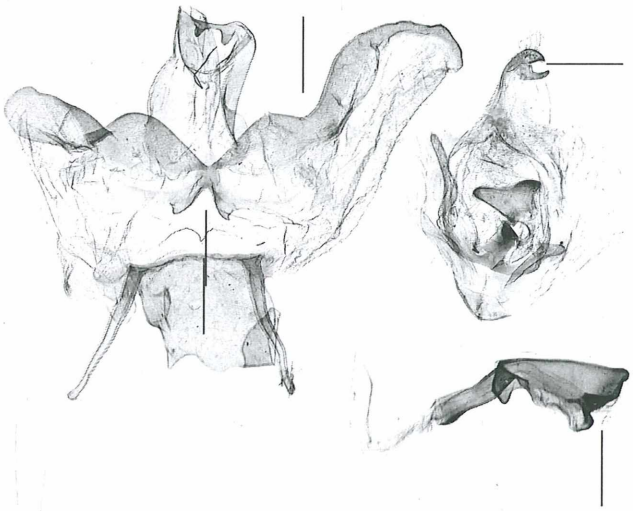
©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



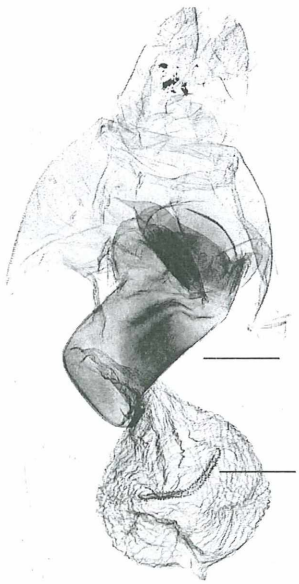
PT, Negros (W 1766)



PT, Mindoro (GU 14-47)



PT, Negros (W 4847)



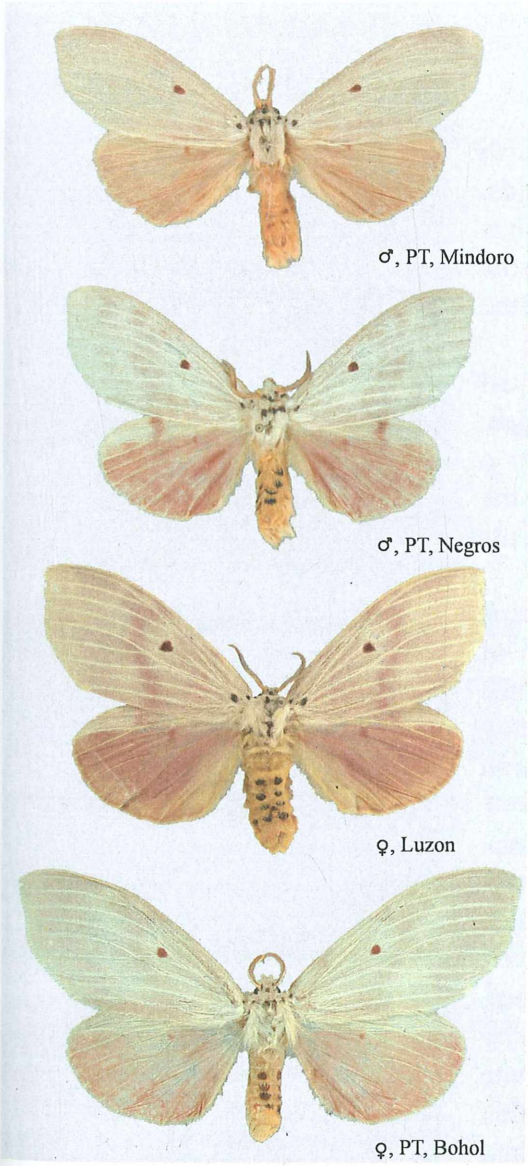


Fig. 362: Adults of *Cerasana ulrikae*.

Fig. 363: Genitalia of *Cerasana ulrikae*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Somera WALKER, 1855: 778, 882

Type-species: *Somera viridifusca* WALKER, 1865

76. *Somera viridifusca sumatrana* SCHINTLMEISTER, 1993: 113, pl. 6: 5.

HT: ♂, Indonesia, Nordsumatra, Pakkat, 99°33'E, 2°10'N, 400 m-600 m – BMNH, London, examined.

Somera viridifusca luzonensis SCHINTLMEISTER, 1993: 113, pl. 6: 7, 7: 1.

HT: ♂, Philippinen, Luzon, Subprov. Benguet, Haights Place, Panai, 7000' – BMNH, London, examined.

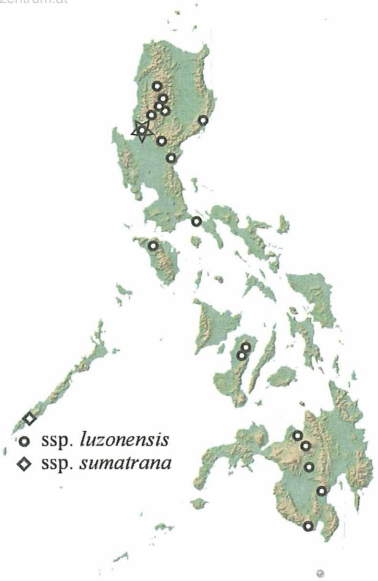


Fig. 364: Distribution of *S. viridifusca.*

Diagnosis. The green coloured forewings distinguish *Somera* species from other Philippine notodontids. The brown patch in the median area of the forewings is much larger than in *S. virens* and there is a row of larger brown spots in the submarginal area of the forewings.

The male genitalia are characterized by the equal lengths of the tegumen processes and a longer uncus. (compared to *virens*). The female genitalia bear a prominent signum. They differ from *virens* by the shape of the ventral plate. The 8th abdominal segments are less modified.

Variation. The individual variation of ssp. *luzonensis* is low. The adults vary slightly in the extension of the brown area on the forewings, the darkness of the green ground colour and the forewing length. Only few male specimens of ssp. *sumatrana* from Palawan were at our disposal. (n = 3).

The Philippine populations (except the ssp. *sumatrana,* which occurs in Palawan) belong to ssp. *luzonensis*, which resembles by external appearance rather ssp. *viridifusca* WALKER, 1855 (HT: ♂, [Bangladesh], Sylhet – BMNH, London, examined). It may be distinguished from the latter mainly by the shape of the shorter tegumen processes and the concave shaped and broader valves. The Sundanian ssp. *sumatrana* is smaller in forewing length and has a paler external appearance. The ground colour

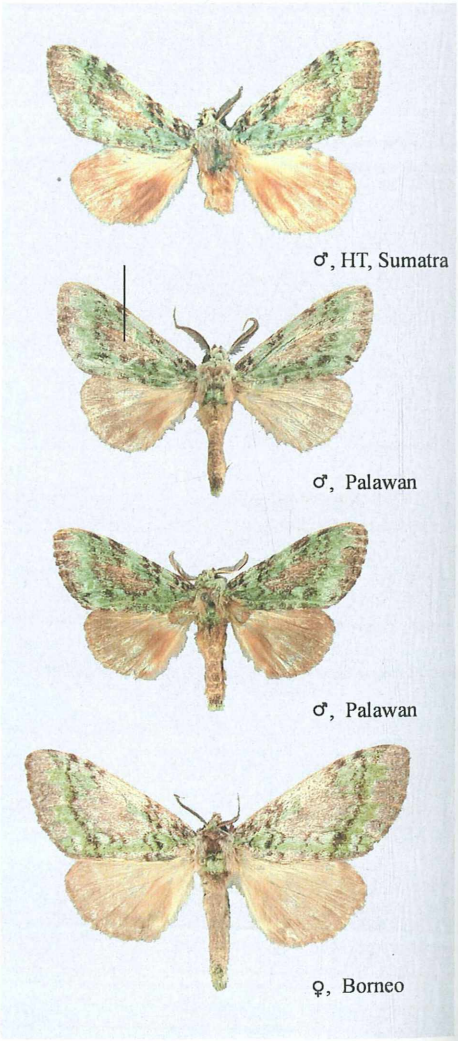


Fig. 365: Adults of *S. v. sumatrana.*

©Naturhistorisches Mus

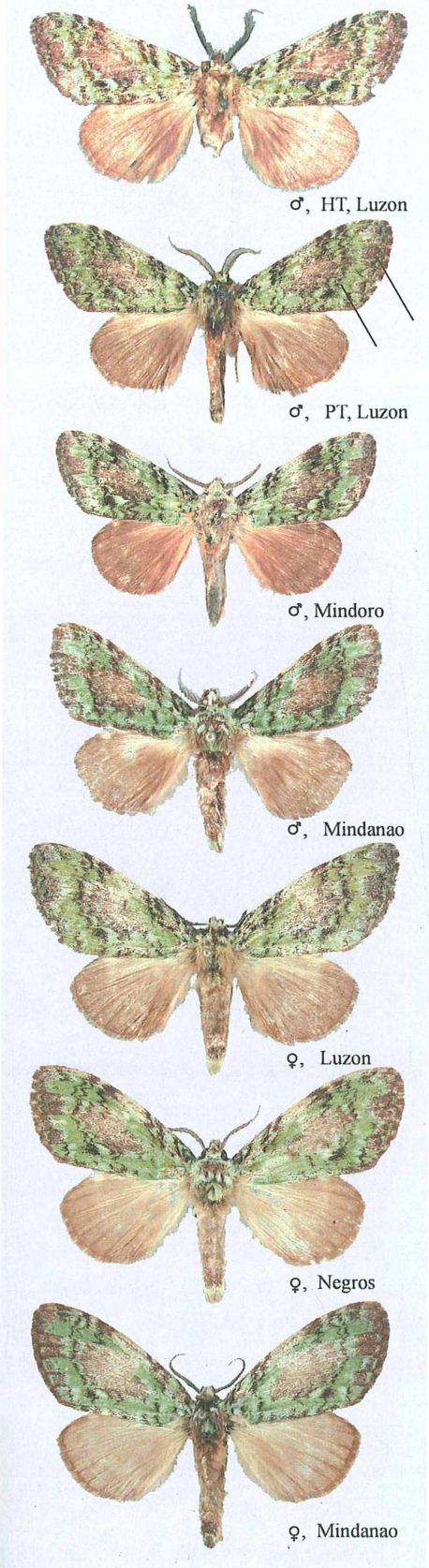
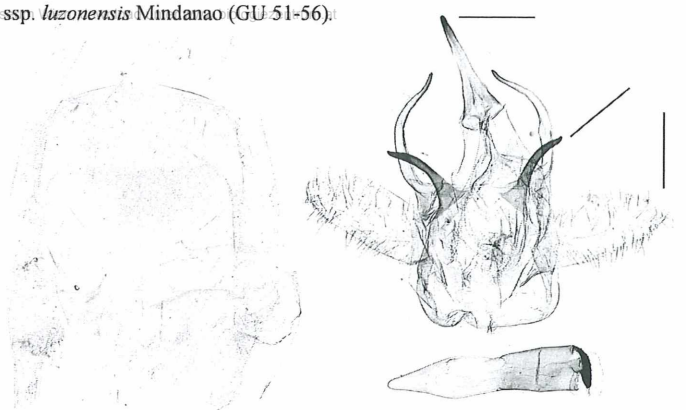


Fig. 366: Adults of *S. viridifusca luzonensis*.

ssp. *luzonensis* Mindanao (GU 51-56).



ssp. *sumatrana* Borneo (W 4851).

ssp. *luzonensis* Luzon (GU 43-43).

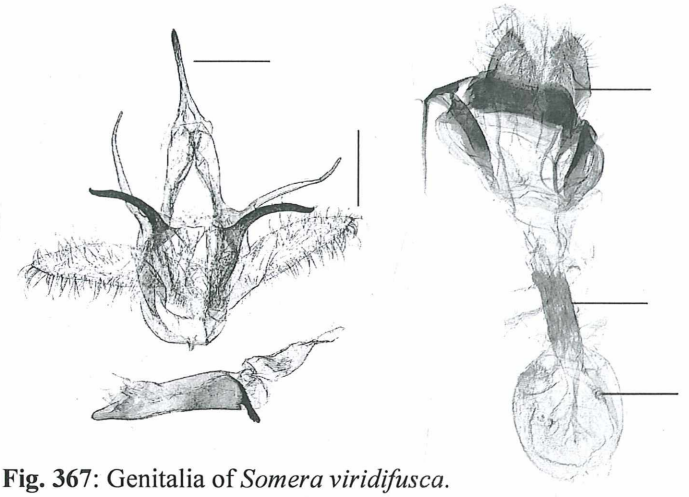


Fig. 367: Genitalia of *Somera viridifusca*.

of the forewings is somewhat more bluish. The male genitalia of *sumatrana* are virtually the same as ssp. *viridifusca*.

Bionomics. The adults of ssp. *luzonensis* are commonly found during all months of the year from 50 m up to 2.600 m mostly in mountainous regions above 1.000 m in primary and secondary forests.

Distribution. *Somera viridifusca viridifusca* is widely distributed in the Himalayas, Myanmar, Indochina, S China, Taiwan. The ssp. *sumatrana* occurs in S Thailand, Sundaland, Java, Bali and in the Philippines: Palawan. The entire Philippines, except Palawan, are inhabited by ssp. *luzonensis*: Luzon, Mindoro, Negros and Mindanao. The species distribution range includes also Sulawesi: ssp. *celebica* SCHINTLMEISTER, 1993.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

77. *Somera virens virens* DIERL, 1976:

84; fig. 2.

HT: ♂, Sumatra, [Pematang] Siantar, Holzweg 2, 1.050 m – Zoologische Staatssammlung München, examined.

= *Somera haxairei* ORHANT, 1995: 71, fig. d
HT: ♀, Malaysia, Cameron Highlands,Tanah Rata – coll. G. ORHANT, Wailly Beaucamp/France, not examined.



Fig. 368: Distribution of *Somera virens.*

The genus contains three species of green external appearance. Two of them, *S. viridifusca* and *virens* are sibling species, which are sometimes hard to separate. The isolated occurence in the Philippines, Mindanao is biogeographically somewhat unusual.

Diagnosis. The characteristic green forewings distinguish the species of *Somera*. The brown patch in the median area of the forewings is usually smaller and less conspicous than in *S. viridifusca.* The green submarginal band of the forewings is continuous; in *viridifusca* it is interrupted by a brown spot. The green colour of the forewings is often mixed with bluish scales. The black tornalspot of the forewings is larger and more prominent developed than in *viridifusca.* The female resembles the male.

The male genitalia display a pair of tegumen processes of almost equal length and a shorter uncus than *viridifusca.* The female genitalia bear a prominent signum and the ductus bursae is longer and thinner than in *viridifusca*. They differ from *viridifusca* by the shape of the bilobed ventral plate. The 8th abdominal segments are less modified as in the other congeners.

Variation. The individual variation of the known Philippine specimens is on low level. But the species is variabel outside the Philippines (size of the brown patch on the forewings, number of bluish scales, size and general darkness of the adults). However the Philippine populations do

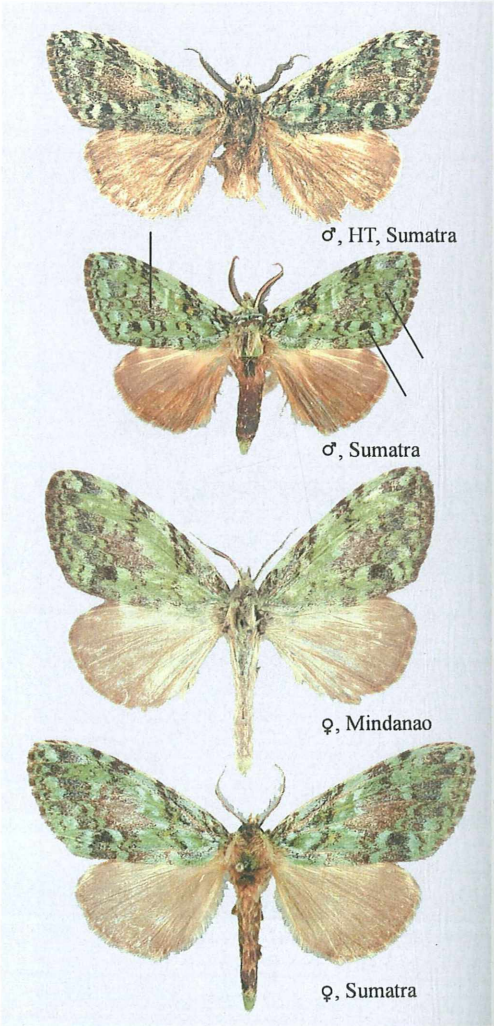
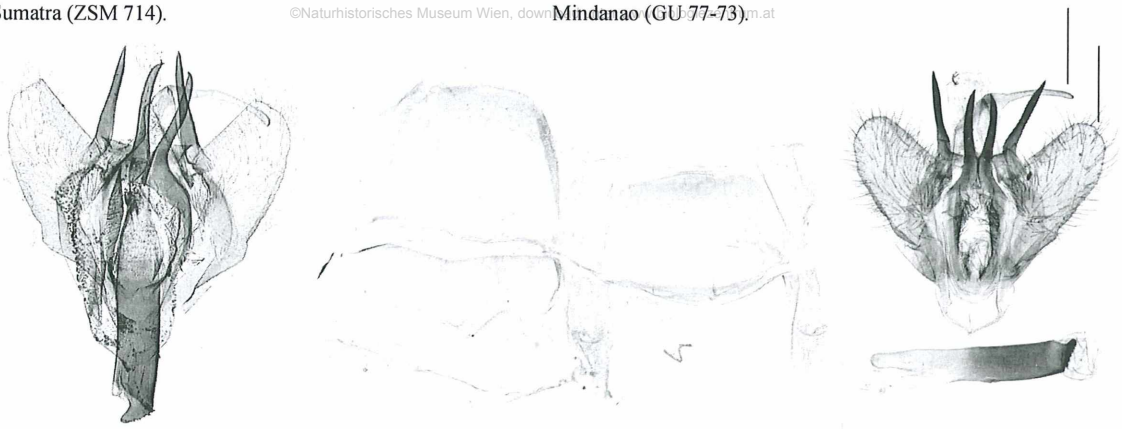


Fig. 369: Adults of *Somera virens virens.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

HT, Sumatra (ZSM 714).

Mindanao (GU 77-73).



W. Malaysia (GU 43-49).

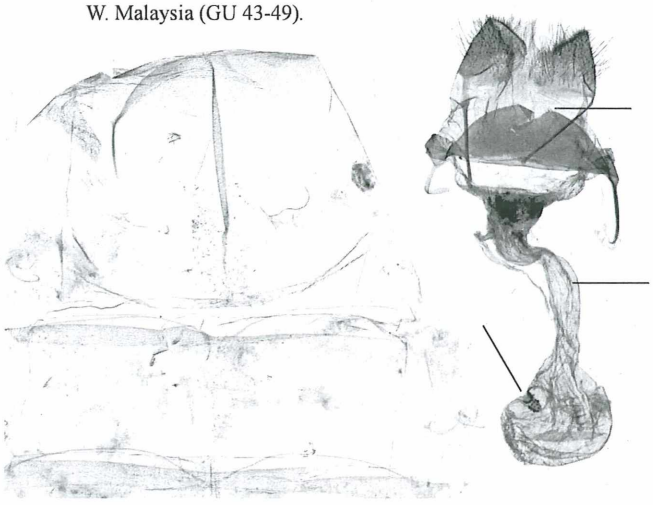


Fig. 371: Genitalia of *Somera virens virens.*

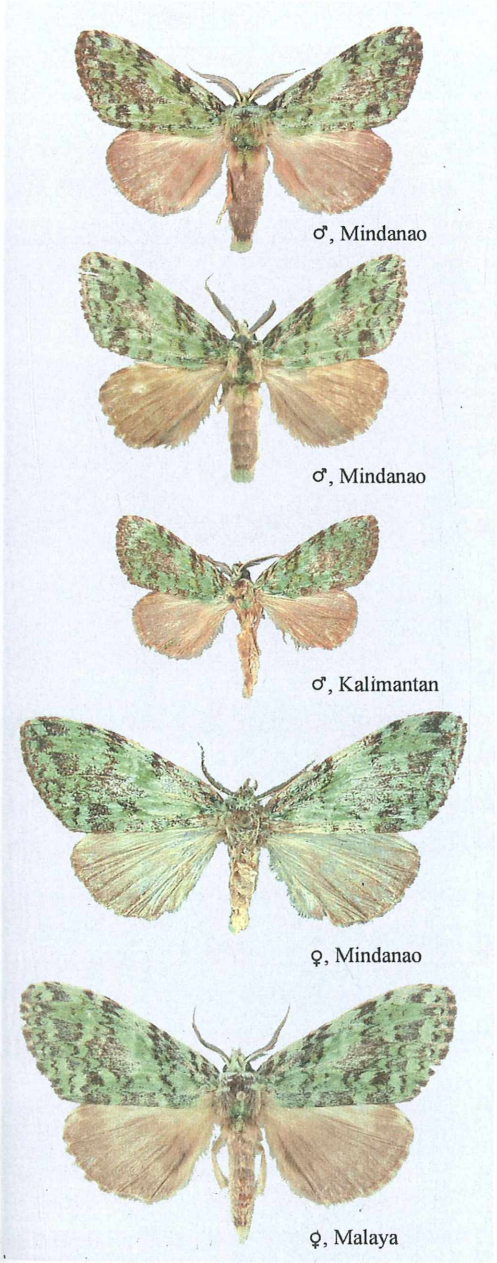


Fig. 370: Adults of *Somera virens virens.*

not differ from series of the the nominotypical ssp. *virens* from Sumatra. The continental subspecies *watsoni* SCHINTLMEISTER, 1997 however, is much darker (forewings are blackish-green, often mixed with many contrasting bluish scales) in general appearance.

Bionomics. The adults are rare in Mindanao (n < 15) and were observed from iv. - viii. at medium altitudes between 500 m – 1.200 m in primary forests.

Distribution. *Somera virens virens* is distributed in Borneo, Sumatra and the Malayan Peninsula. It was also found in the Philippines on Mindanao. The ssp. *watsoni* flies in Indochina, Hainan, SW China, Myanmar and the Himalaya.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Rodneya KIRIAKOFF, 1967: 63

Type-species: *Rodneya caudata* KIRIAKOFF, 1967

78. *Rodneya cernyi* SCHINTLMEISTER, 1993: 133, pl. 21, pl. 31: 3, 5.

HT: ♂, Philippinen, Süd-Palawan, Mt. Gantung, Fuß, 9°01' n. Breite, 117° 57' ö. Länge, 200 m – NHM, Wien, examined.

A prominent species, which can hardly be overlooked. Therefore it was somewhat astonishing, that after the description in 1993 the species was discovered recently (SCHINTLMEISTER 2007) in Thailand and Laos (not recorded for Sundaland!).



Fig. 372: Distribution of *Rodneya cernyi.*

Diagnosis. *Rodneya cernyi* is best recognized by the diagnostic sinuous shaped forewing. The males display a somewhat fuscous, paler filled discal stigma on the forewings. The female has a slightly falcate apex of the forewings.

The robust male genitalia have a pair of very massive soccii and a large, curved uncus, which bears a knob-shaped projection on top. The 8th sternite displays a pair of sclerotized projections of characteristic shape. The female has a large ostium but short ductus bursae and smaller bursa copulatrix.

Variation. The species is variable. The colouration of males ranges from unicolour reddish brown to orange and brownish forms with contrasting forewing patterns. The females are less variable and of reddish-brown ground colour only. The male genitalia are virtually not variable (n = 5 GU). No geographical variation was found.

Bionomics. The adults were frequently observed in Palawan but elsewhere scattered in i.-v., vii. x.-xii. mostly at lowlands up to 400 m. In Palawan once at 900 m and in Negros even at 1.200 m.

Distribution. *Rodneya cernyi* shows a disjunct distribution: Thailand, Laos and the Philippines: Palawan Luzon, Mindoro, Marinduque, Negros and Mindanao.

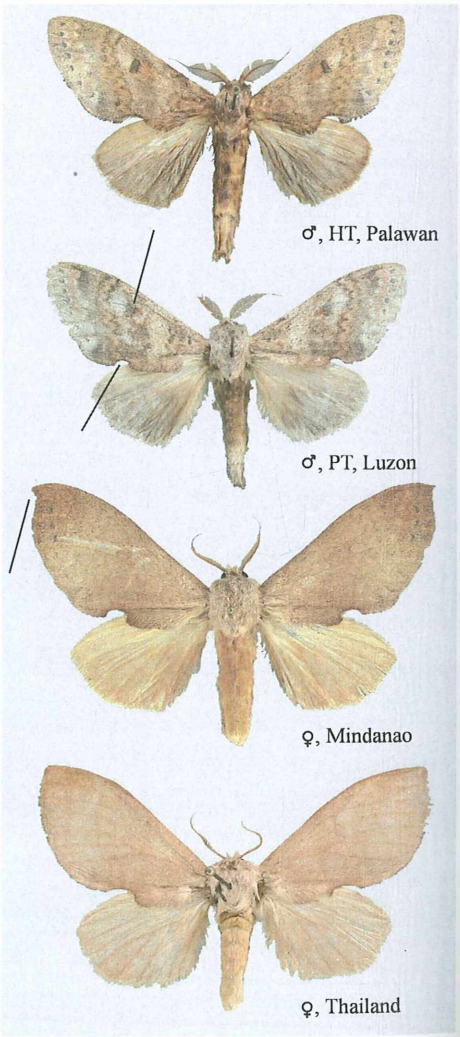


Fig. 373: Adults of *Rodneya cernyi.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

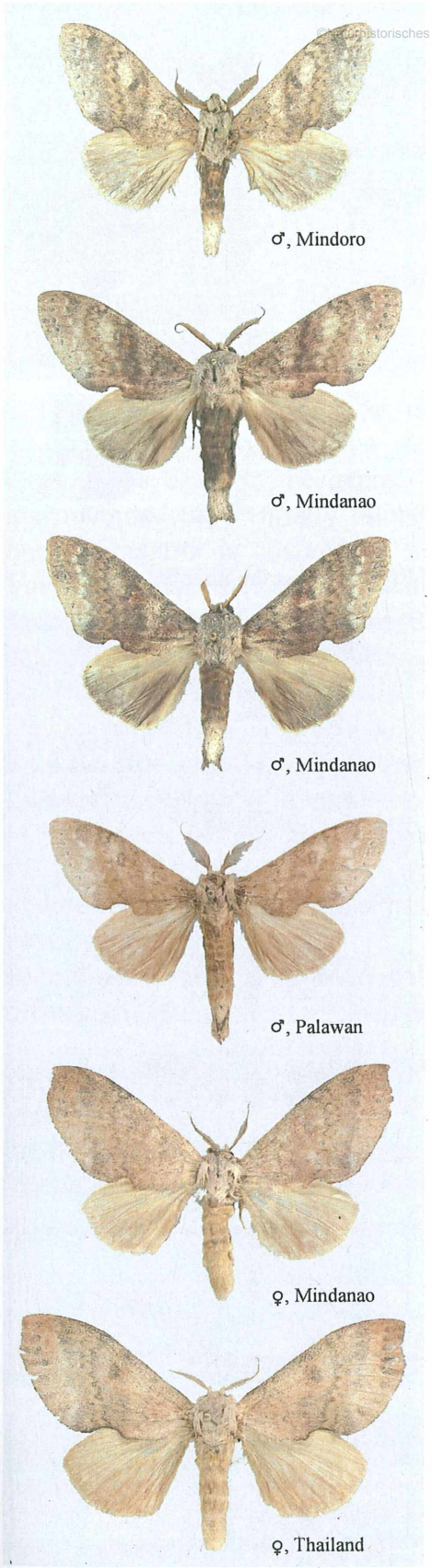


Fig. 373a: Adults of *Rodneya cernyi.*



Fig. 374: Genitalia of *Rodneya cernyi.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Notodontella Roepke, 1943: 78

Type-species: *Notodontella nieuwenhuisi* Roepke, 1943 [= *Fentonia ferrifusa* Dudgeon, 1898].

= *Podocryptula* Bryk, 1949: 44 (*Podocryptula nana* Bryk, 1949 [= *Fentonia ferrifusa* Dudgeon, 1898).
= *Chloroceramis* Kiriakoff, 1968: 237 (*Fentonia viridinota* Hampson, 1896).
= *Maguila* Kiriakoff, 1968: 204 (*Fentonia viridinota* Hampson, 1896).

79. *Notodontella ferrifusa* (Dudgeon, 1898): 634 (*Fentonia ferrifusa*).

HT: ♂, Sikkim – BMNH, London, PT examined.

= *Notodontella nieuwenhuisi* Roepke, 1943: 79, fig. 7
HT: ♀, E Java, Mt. Ardjuno – Nationaal Natuurhistorische Museum, Leiden, colour photo examined.
= *Podocryptula nana* Bryk, 1949: 44; pl. 1: 7
HT: ♂, Burma, Tenasserim, Sukli, 75 km E of Moulmein – Naturhistoriska Riksmuseet, Stockholm, colour photo examined.



Fig. 375: Distribution of *N. ferrifusa*.

Schintlmeister (2007: 147) reviewed the taxa, which he unified under *Notodontella*. He showed the synonymies cited above. It was not possible to verify the holotype. A specimen in BMNH, London taken in May 1897 by Dudgeon is labelled as a „Cotype". A second male, probably the Holotype (virtually identical to the illustrated Paratype) comes from the same type-locality but was collected by Dudgeon in June 1896.
Notodontella ferrifusa is a small and rare species and is probably often overlooked. The recent findings in Luzon, which were quite surprising, extend the known distribution area far more towards the East. The dissected specimen from Luzon (MV 17881) differs from the few dissected (n = 7) specimens outside the Philippines and could represent a distinct taxon, if the differences can be confirmed with further material.

Diagnosis. This small species displays a diagnostic white basal area on the forewings with a contrasting blackish patch on the dorsum, which is sometimes inconspicuous. The postmedian fascia is often marked as a row of small blackish patches.

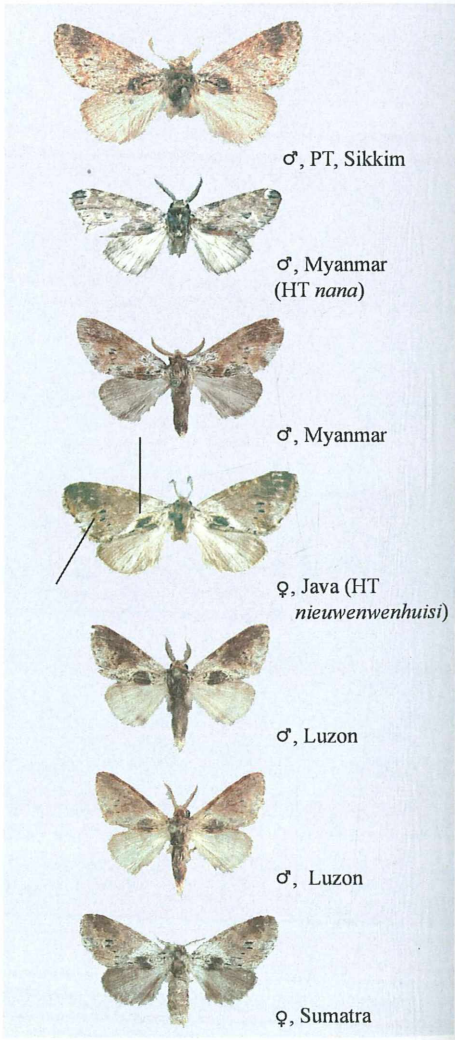
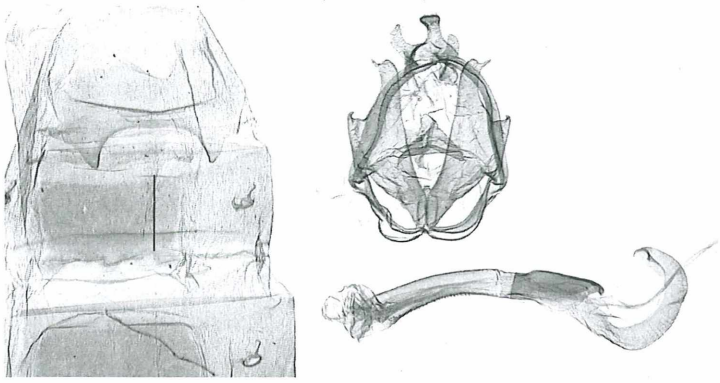
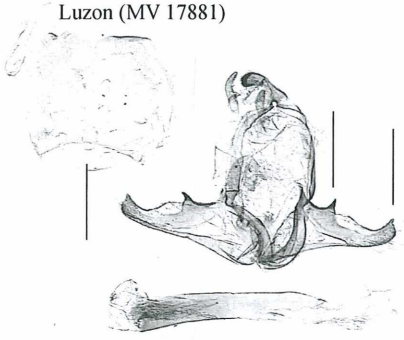


Fig. 376: Adults of *Notodontella ferrifusa*.

PT, Sikkim (BM # 1082) ches Museum Wien, download unter www.biologiezentr Cambodia (GU 72-76)



Luzon (MV 17881)



The male genitalia show a costal process and an apical on the valves. The phallus is relatively large as is usual in the genus. The 8th sternite is less modified but ventrally bilobed. The surface of bursa copulatrix is covered by a special structure.

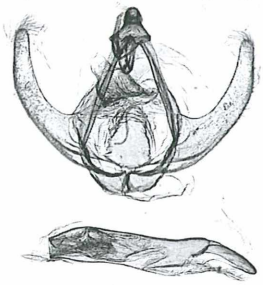
Variation. The individual variation is wide. The forewing pattern, in particular the fuscous dorsal patch, is sometimes poorly developed. Sometimes brownish coloured individuals occur. The male genitalia of various geographical regions are virtually the same (n = 7 GU) but the dissected specimen from Luzon differs slightly in the shape of the costal spine of the valves, the straight phallus and the shape of the 8th sternite as illustrated. It would be premature to describe a subspecies on the basis of such limited, possibly aberrant, material.

Bionomics. The adults were collected only three times in the Philippines (n = 3) in ix. at 650 m - 950 m (in Sikkim one time observed at 2.000 m) in primary forests. The species occurs only rarely outside the Philippines.

Distribution. Known from N and S India including the Andaman Isl., Myanmar, Indochina, Sundaland, Java and the Philippines: Luzon.

Fig. 379: Male genitalia of *N. ferrifusa.*

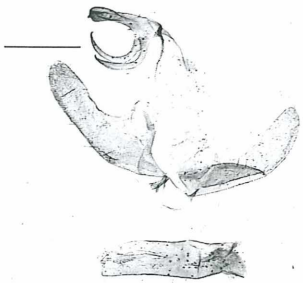
Mindanao (USNM #847, ST *maguila*)



Luzon (MV 17883)



Mindanao (MV 17502)



Luzon (MV 17882)

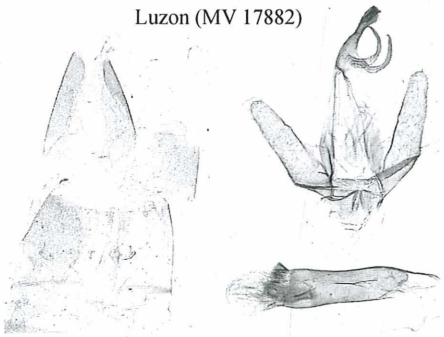


Fig. 378: Male genitalia of *Notodontella viridinota.*

www.biologiezentrum.at

80. *Notodontella viridinota* (HAMPSON, 1896):

459 (*Fentonia viridinota*).

HT: ♂, Bhutan – BMNH, London, examined.

= *Fentonia maguila* SCHAUS, 1928: 80

ST's: ♂♂, ♀ Philipine Islands, Mindanao, Surigao – USNM, Washington, photo examined, **syn. nov.**

We dissected several specimens of *N. viridinota* (n = 3 GU) from Mindanao and found no differences between populations from the Himalayas. The observed differences in dissected male genitalia of a ST of *maguila* might be caused by preparation of the genitalia in hinged position of the broad uncus. *Fentonia maguila* sinks therefore as a junior synonym of *viridinota* (syn. nov.).

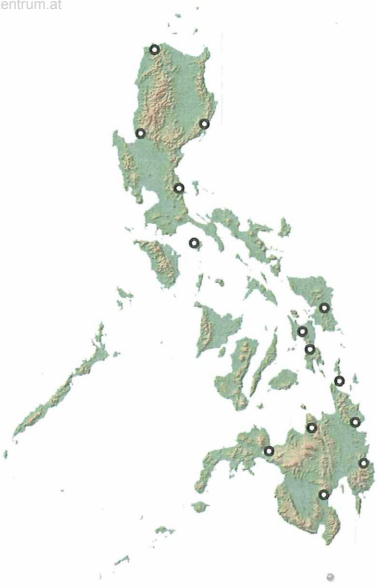


Fig. 380: Distribution of *N. viridinota.*

Diagnosis. *Notodontella viridinota* is best recognizable by the splendid greenish patches with two white streaks near the costa of the forewings and the green hairs of the thorax. The small male genitalia are less modified and show a pair of long, sharp pointed sickle shaped socii. The 8th abdominal segments are less modified and resemble in their shape *N. ferrifusa.*

Variation. The individual variation includes individuals with blackish fuscous forewings, almost without markings (except the whitish costal markings). The forewing pattern is in some individuals sharp, in others diffuse. There are also a few pale specimens (both sexes) like the illustrated female from Luzon. The male genitalia of various geographical regions are virtually identical.

Bionomics. The adults were infrequently in the Philippines observed in iv., v., ix, xi. and xii. mostly at lower altitudes up to 500 m (a single male at 1.200 m comes from Mt. Apo, Mindanao). The moths are bound to primary forests.

Distribution. Distributed in the Himalayas, Myanmar, Indochina, Sundaland, Java, Bali and the Philippines: Luzon, Leyte and Mindanao.

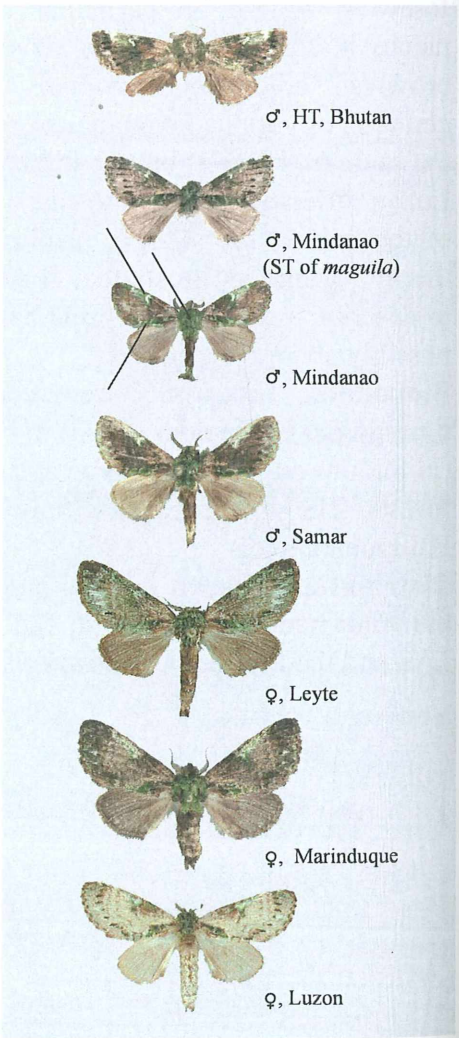


Fig. 381: Adults of *N. viridinota.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Medanella KIRIAKOFF, 1974: 401

Type-species: *Medanella subterminalis* KIRIAKOFF, 1974

81. *Medanella subterminalis* KIRIAKOFF, 1974:

401; pl. 4: 2; fig. 20

HT: ♂, N Sumatra, Deli [= Medan], Dolok Merangir – Zoologische Staatssammlung, München [examined].



Fig. 383: Distribution of *M. subterminalis*.

The small and inconspicous species is probably often overlooked or misidentified as a noctuid moth.

Diagnosis. The small and almost blackish-brown species shows black marked postmedian fascia and a black discal spot on the forewings. The rare female resembles the male but has a larger forewing length.

The male genitalia are best recognized by the saccular structure of the valves. The phallus bears some large cornuti. The 8th abdominal segments are less modified, but the 8th tergite is relatively slender.

Variation. No geographical variation of the adults and their genitalia was noticed within the entire distribution area of the species. Individual variation was seen in to respect to the darkness of the brown wings.

Bionomics. The adults were infrequently observed in Palawan from x. – iii. up to 800 m (mostly below 300 m) in secondary forests and also primary jungle.

Distribution. Distributed in Sundaland Indochina, Myanmar, NE India and the Philippines: Palawan.

Palawan (MV 17503) HT Sumatra (ZSM 703)

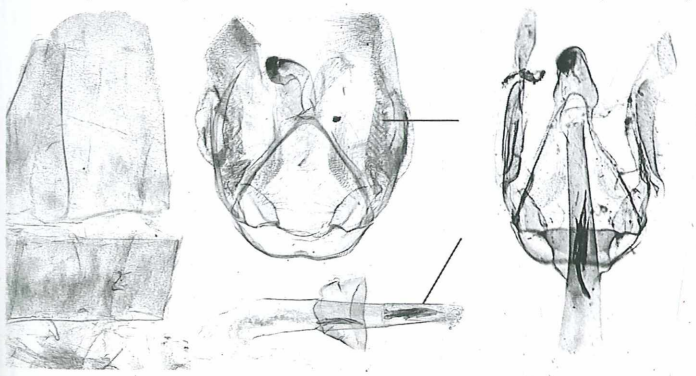


Fig. 382: Male genitalia of *Medanella subterminalis*.

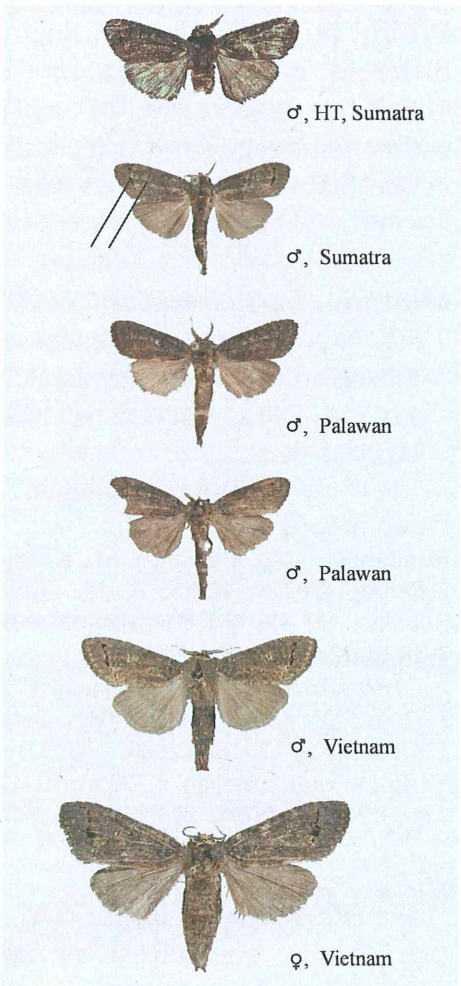


Fig. 384: Adults of *M. subterminalis*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Omichlis HAMPSON, 1895: 279

Type-species: *Omichlis rufoticta* HAMPSON, 1895

82. *Omichlis diversa diversa* SCHINTLMEISTER, 1993: 114, pl. 8: 1, pl. 14: 2.

HT: ♂, Philippinen, N-Luzon, Mts. Province, Chatol, 15 km SE Bontoc, 17°02' n. Breite, 21°03' ö. Länge, 1.600 m – NHM, Wien, examined.

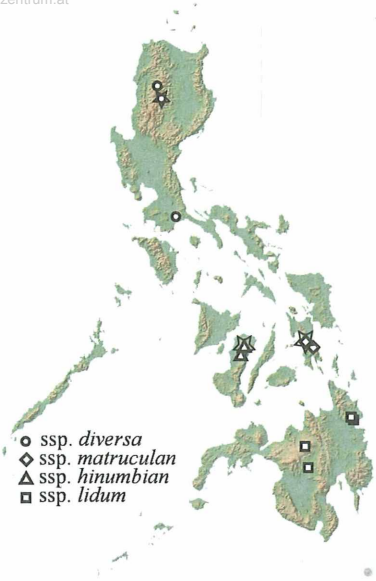


Fig. 385: Distribution of *O. diversa.*

Omichlis is a large genus with more than 35 described species, which are very similar in the Oriental region in external appearance but have well modified valves in the male genitalia. Within the Philippines *O. diversa* shows various different male genitalia on different islands, which we believe are of subspecific character rather than rendering these value.

The following subspecies are introduced:

Omichlis diversa lidum ssp. nov.

HT: ♂, Philippinen, Mindanao, Bukidnon, Mt. Kitanglad, S-Seite, Intavas, 1.700 m, 8° 07' N, 124° 55' E, 15. viii. – 15. ix. 1993, leg. V. SINJAEV– NHM, Wien.

Paratypes: (8 ♂♂, 2 ♀♀):

Mindanao: 1 ♂♀, Bukidnon, Mt. Kitanglad, S-Seite, Intavas, 2.200 m, 8°07'N, 124°55'E, 15. viii.–15. ix.1993; 2 ♂♂, Bukidnon, 45 km NW Maramag, Mt. Binansilang, 1.200 m, 7°55'N, 124°40'E, 2.x.1988 (GU 16-49); 2 ♂♂, Surigao del Sur, Liangga, 8 km W of Diatagon, 8°42'N, 126°05' E, 200 m, 3.–7.vii.2005; 1 ♂, San Agusti Brgy. Gata, 140 m, 8°43.308'N, 126°05.691'E, 17.-18.iii.2009; 1 ♂, Davao del Sur, Mt. Apo, SE-Route via Kapatagan, 1.570 m, 10.-12.vii. 1996; 1 ♀, Mt. Apo, 1.200 m 6°57'N, 125°16'E, 26.-30.vii.1993 (W 8637); 1 ♂, Provinz Davao del Norte, Mt. Caragan, vii.1998.

Diagnosis. Forewing length ♂♂, 19 mm - 20 mm; ♀♀, 22 mm. The subspecies *lidum* is in external appearance very close to ssp *diversa,* but the blackish basal patch of the forewings is more weakly developed.The male genitalia are characterized by

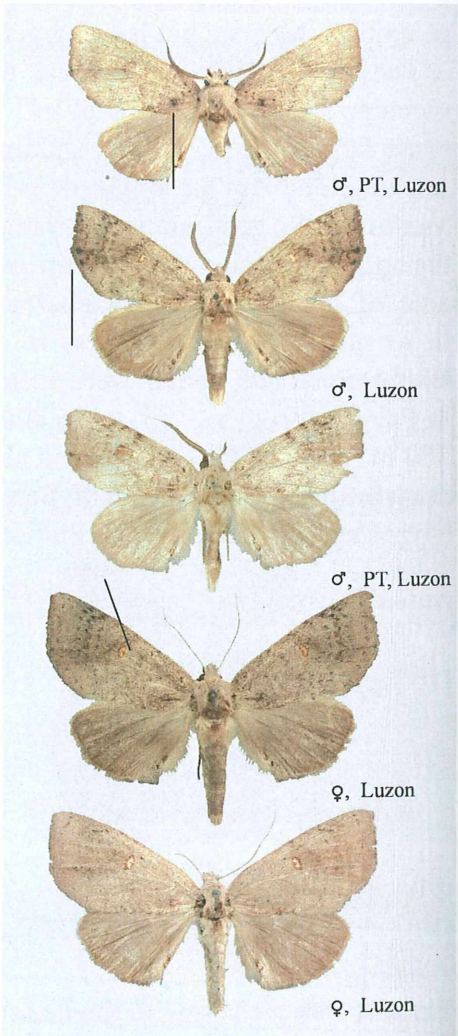


Fig. 386: Adults of *O. d. diversa.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

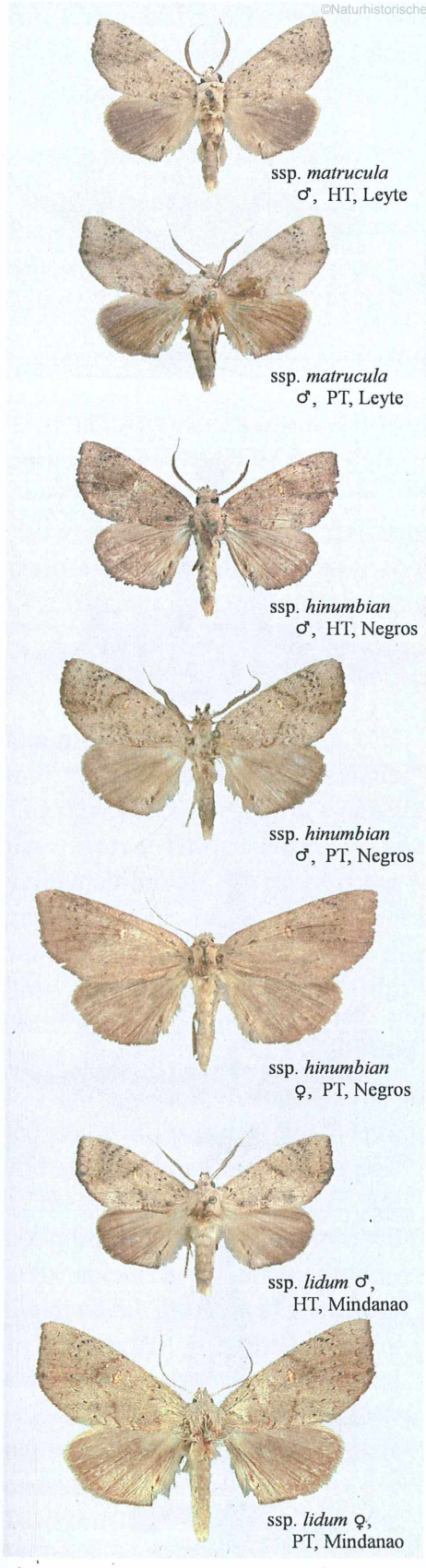


Fig. 387: Adults of *Omichlis diversa.*

the shape of the valves and their various projections. In particular the clasper is larger that in ssp. *diversa* and the sacculus is not triangular as in ssp. *diversa* but columnar. The juxta is more slender sclerotized in its upper part than in ssp. *diversa.*

***Omichlis diversa hinumbian* ssp. nov.**

HT: ♂, Philippinen, Negros, Prov. Negros Occidental, Mt. Mandalagan, 800 m, near Don Salvador Benedicto, May/June 1998 leg. BAL – NHM, Wien.

Paratypes: (9 ♂♂, 2 ♀♀):
Negros: 1 ♂♀, Mt. Mandalagan, 800 m, near Don Salvador Benedicto v.-vi.1998; ; 2 ♂♂, 1 ♀, Mt. Mandalagan, xii.1997; 1 ♂, Mt. Kanlaon, W-Route via Mabucal, 1.020 m, 17.-18. vii.1996 (GU 51-46); 1 ♂, ibid. iv.1998 (W 1771); 1 ♂, ibid vi.1998 (W 15593); 1 ♂, ibid iii.1997 (W 15591); 1 ♂, ibid. x.1995.

Diagnosis. Forewing length ♂♂, 19 mm - 21 mm (at average 20 mm); ♀, 23 mm. The subspecies *hinumbian* is darker than the other known subspecies of *diversa.* The forewing pattern is not distinguishable from ssp. *diversa*. The male genitalia resemble those of ssp. *matruculan.* The three projections of the valves are larger and triangular shaped. They are the largest in all known subspecies of *diversa* and can be separated from ssp. *matruculan* by the shape of the juxta, which displays a reduced distal projection and is rather circular in shape. The phallus is forked.

***Omichlis diversa matruculan* ssp. nov.**

HT: ♂, Philippinen, Leyte, Hilusig, W of Mahaplag, Mt. Balocawe 600 m, 10°43'N, 124°55'E, 29.-30. iii.2005, leg. J. H. LOURENS – NHM, Wien.

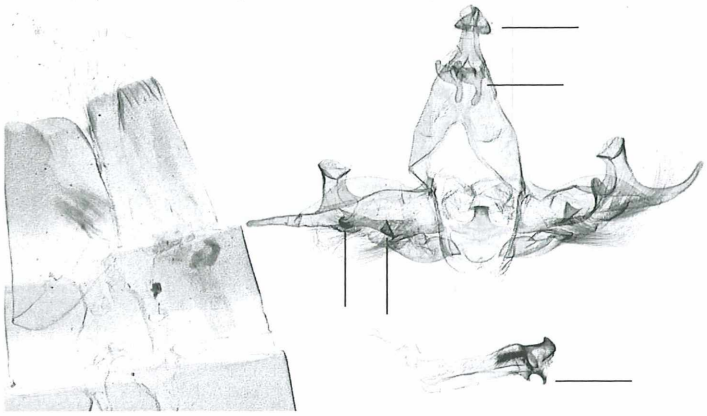
Paratypes: (10 ♂♂):
Leyte: 2 ♂♂, Hilusig, W of Mahaplag, Mt. Balocawe 600 m, 10°43'N, 124°55'E, 29.-30.iii.2005 (MV 17489); 4 ♂♂, ibid. 15.-19.v.2007; 1 ♂, ibid., 700 m, vii. 1999 (W 8647); 1 ♂, Brgy. Imelda, Calacan river, 420 m, 10°41'N, 125°03'E, 26.vi.2006; 2 ♂♂, ibid., 24.x.2006.

Diagnosis. Forewing length ♂♂, 19 mm. Not distinguishable in external appearance from ssp.

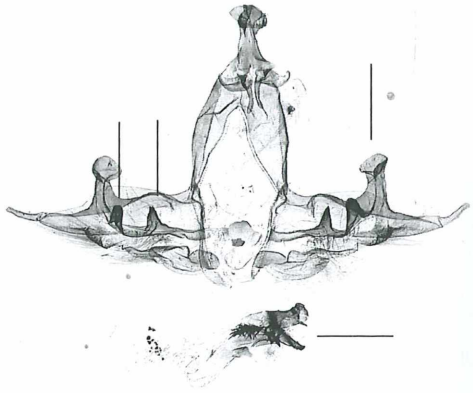
Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

lidum. But the male genitalia are similar to ssp. *hinumbian.* The three projections of the valves are large and triangular shaped and the phallus is forked as in ssp. *hinumbian*. Separable from ssp. *hinumbian* by the shape of the broader basal valve projection and the shape of the juxta, which have a larger distal projection as seen in ssp. *diversa* and *lidum.*

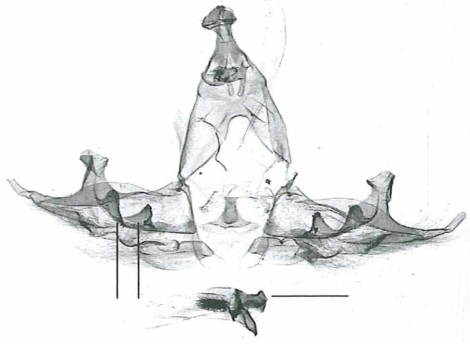
ssp. *diversa* HT, Luzon (GU 17-31).



ssp. *hinumbian* PT, Negros (GU 51-46).



ssp. *matruculan* PT, Leyte (MV 17489).



ssp. *lidum* PT, Mindanao (GU 16-49.

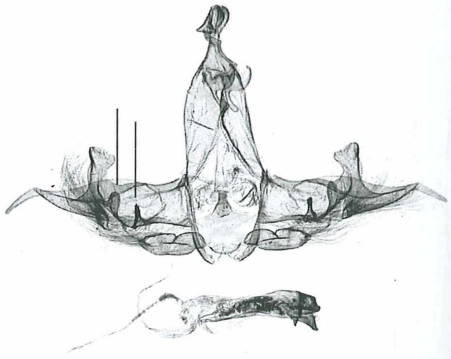


Fig. 388: Genitalia of *Omichlis diversa.*

Diagnosis. *Omichlis diversa* is characterized by a dark brownish inconspicous postmedian fascia on the forewings, a yellowish-brown discal spot (more conspicously marked in the females). Several transverse fasciae are marked as blackish dots. The forewing shape and the long bipectinate antennae of the male with naked tip are characteristic for the whole genus. *O. similis* differs by a smaller wingspan and a paler ground colour of the forewings. The forewings are paler than the hindwings. The female of *diversa* is generally more fuscous than the male and slightly larger with filiform antennae.

Both species can clearly be separated by means of their male genitalia, where *diversa* displays three valve-processes (and *similis* only one). The 8th abdominal segments are less modified. The genitalia of the only available female were not dissected.

Variation. Rarely almost uniform specimens occur. Populations from Negros (ssp. *hinumbian*) are slightly darker. The individual variation of each of the different subspecies is low. The male genitalia are different in the various islands, which leads to the descriptions of the above mentioned subspecies. The ssp. *diversa* from Luzon has reduced valve projections.

Bionomics. The species was observed infrequently from iii.- xii. between 350 m – 2.200 m in primary forests, mostly above 800 m.

Distribution. Endemic in the Philippines: Luzon (ssp. *diversa*), Leyte (ssp. *matruculan*), Negros (ssp. *hinumbian*) and Mindanao (ssp. *lidum*).

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

83. *Omichlis samar* spec. nov.

HT: ♂, Philippinen, C. Samar, 8 km SE of Bagacay, prim forest road, 200 m, 11°47'N, 125°15'E, 21.-22.x.2006, J.H. LOURENS leg. (MV 17924) – NHM, Wien.

Paratype: (1 ♂):
Samar: 1 ♂, 8 km SE of Bagacay, prim forest road, 250 m, 11°48.025'N, 125°14.610'E, 13.iii.2009.

Two males from Samar resemble by external appearance *Omichlis similis* rather than *O. diversa*. Dissection of the male genitalia showed, that there are structural differences from *diversa*, so that we have to describe *samar* as a distinct species and not as a subspecies.



Fig. 389: Distribution of *Omichlis samar*.

Diagnosis. Forewing length ♂♂, 17 mm and 18 mm; clearly (1 mm -3 mm) smaller than *O. diversa*. The new species resembles rather males of *similis* than *diversa*. The ground colour of all wings is pale yellowish-brown. *O. diversa* has a more fuscous ground colour; *similis* has darker hindwings than *samar*. The Holotype of *samar* displays a fuscous brownish longitudinal band from the base to the outer margin, a form, which is hitherto unknown for *diversa*.

The male genitalia are characterized by a pointed shape of the uncus (in *diversa* and *similis* rhomboid) and a pair of massive socii. The valves are not pointed but broad and bilobed at the apex. They lack any projections, which are typical for *diversa* or *similis*. The phallus bears a long and strongly sclerotized hook at the tip. The 8th abdominal segment is not modified, as is usual for the genus.

Distribution. Endemic in the Philippines: Samar.

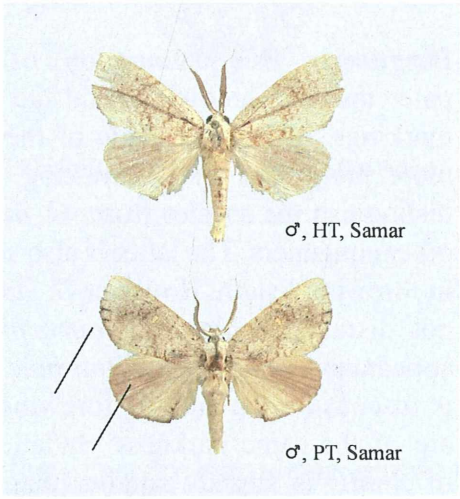


Fig. 390: Adults of *Omichlis samar*.

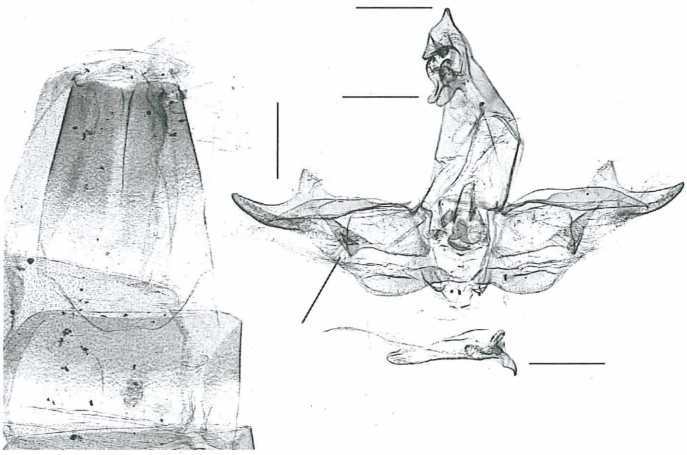


Fig. 391: Genitalia of *Omichlis samar*, HT, Samar (MV 17924).

www.biologiezentrum.at

84. *Omichlis similis* SCHINTLMEISTER, 1993: 115, pl. 8: 2, pl. 14: 4, 6
HT: ♂, Philippinen, N-Palawan, S. Vicente, 20 km NEE Roxas, 10° 21' n. Breite, 119° 10' ö. Länge, 400 m – NHM, Wien, examined.

This seems to be the sibling species of the Sundanian *O. dimorpha* KIRIAKOFF, 1974: 399; PL. 4: 1,FIG. 19 (HT ♂, Nord-Sumatra, 30 km SW Siantar, Holzweg 2, 1.050 m – ZSM, München, not examined) due to similar polymorphism of the adults but in fact the male genitalia (which have less similarities to *dimorpha*) show, that *O. diversa* must be the sister-species of *similis*.



Fig. 392: Distribution of *O. similis*.

Diagnosis. The colouration of forewings is paler than the hindwings and the fuscous brown markings of the anal angle of the hindwings are more prominent and contrasting. These features distinguish the species from *O. diversa* and most other congeners. The latter is also somewhat larger in forewing length. However *O. similis* is virtually not distinguishable from *dimorpha* by external appearance. The sexualdimorphic female (n = 1) is fuscous brown and the forewing and hindwing are of the same darkness gradation. The female of *similis* is slightly smaller than the female of *diversa*.
The male genitalia resemble *diversa* and differ dramatically from *dimorpha*. The valves of *similis* bear two larger processes (*dimorpha* displays only one and a very different shape of the pointed valves); *diversa* has three projections. The shape of the uncus and the phallus are diagnostic features which characterize *similis*. The 8th abdominal segments are less modified as usual in *Omichlis*. The female genitalia were not dissected.
Variation. The individual variation of *similis* shows amazing resemblance with the Sundanian *dimorpha*. The wing colours and fascies are extremely variable and can be composed of all combinations from almost uniform pale brown

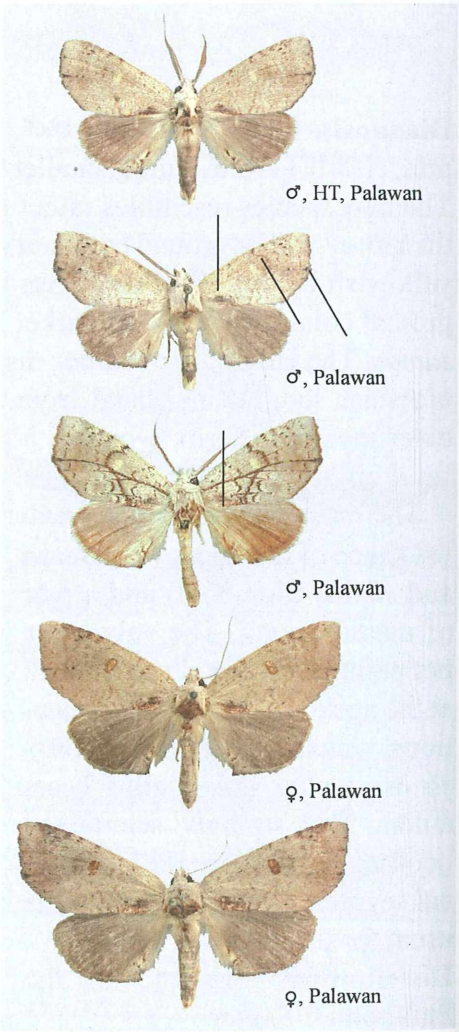
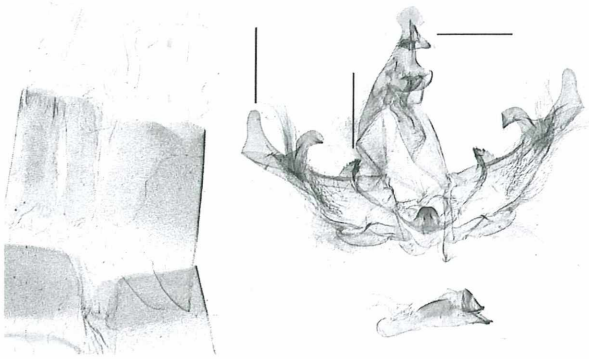


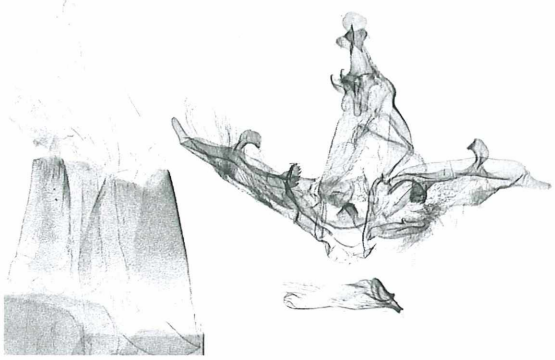
Fig. 393: Adults of *Omichlis similis*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

O. similis PT, Palawan (GU 17-29).



O. similis PT, Palawan (GU 16-41).



O. dimorpha HT, Sumatra (ZSM # 384).

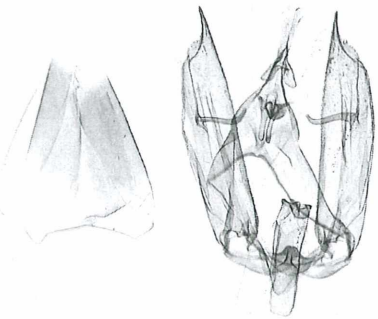


Fig. 395: Male genitalia of *Omichlis diversa* and *dimorpha.*

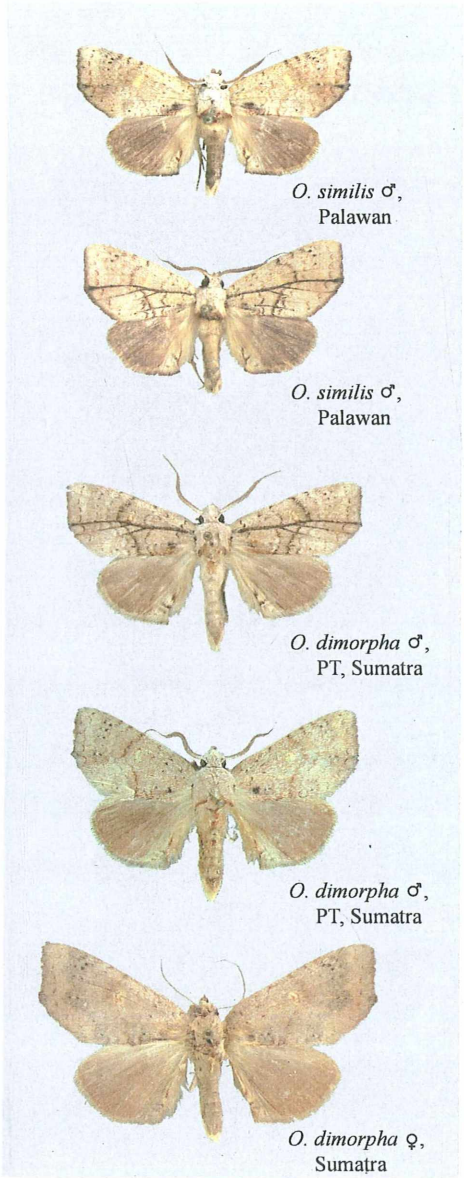


Fig. 394: Adults of *Omichlis similis* and *dimorpha.*

coloured forewings to individuals showing many fuscous brown transverse fasciae. There also occurs a form, where the longitudinal veins are marked contrasting brown. Because of the limited number of examined material (n < 15, mostly specimens in poor condition).

The male genitalia (n = 2) show little individuality in the shape of the apical part of the valves.

Bionomics. The species was uncommonly observed in i., ii., iii., v., vi., from 300 m – 850 m , two males were taken at 1.050 m. In primary forests only.

Distribution. Endemic in the Philippines: Palawan.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Antiphalera GAEDE, 1930: 614

Type-species: *Phalera bilineata* HAMPSON, 1896

= *Grangulina* KIRIAKOFF, 1974: 377 (*Grangulina sumatrana* KIRIAKOFF, 1974)

Antiphalera sumatrana is the allopatric sister-species of the Himalayan *bilineata*, which led to the synonymy of *Grangulina* with *Antiphalera* (HOLLOWAY, 1983).



Fig. 396: Distribution of *A. sumatrana*.

85. *Antiphalera sumatrana* (KIRIAKOFF, 1974): 378; pl. 1: 3; fig. 3 (*Grangulina sumatrana*).

HT: ♂, N Sumatra, Deli, Dolok Merangir – Zoologische Staatsammlung, München, examined.

Diagnosis. *Antiphalera sumatrana* has a reddish-brown ground colour. The blackish tornal spot of the forewings is a diagnostic feature but also the paler discalspot is helpful for identification. The female resembles the male but is more tinged with white scales. The male genitalia show a number of distinct features: Uncus crenated, a pair of curved and long tegumen processes, robust tegumen, a massive phallus with a serrated plate at the tip. The 8th sternite displays a prominent central triangular projection.

Variation. The individual variation includes different percentages of reddish scales on the forewings and the size of the adults. The females vary in the extension of white scales and darkness of the rather greyish ground colour. The holotype from Sumatra somewhat differs in its male genitalia from a dissected Palawan specimen in the shape of the uncus, the more slender tegumen processes and also in the shape of th 8th sternite with longer projection. Some further dissected males from Sumatra, Kalimantan and Thailand (n = 5 GU) match our Palawan material.

Bionomics. Our five male specimens (n = 5) originate from 2 localities on Palawan. They were taken in iii., v. and vii. in primary forests between 600 m - 950 m. The moth was reported by HOLLOWAY (1983) from Borneo at 2.000 m.

Distribution. The species is distributed in Sundaland, S Thailand and the Philippines: Palawan.

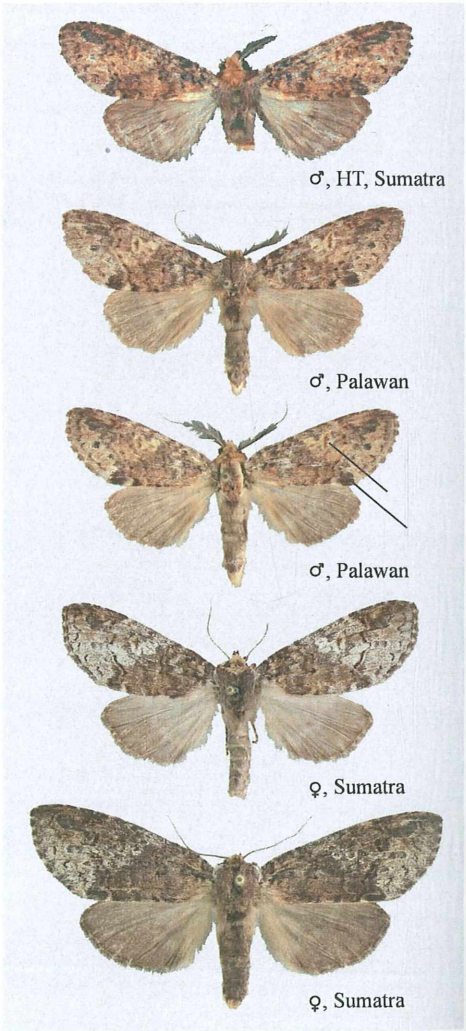


Fig. 397: Adults of *Antiphalera sumatrana*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

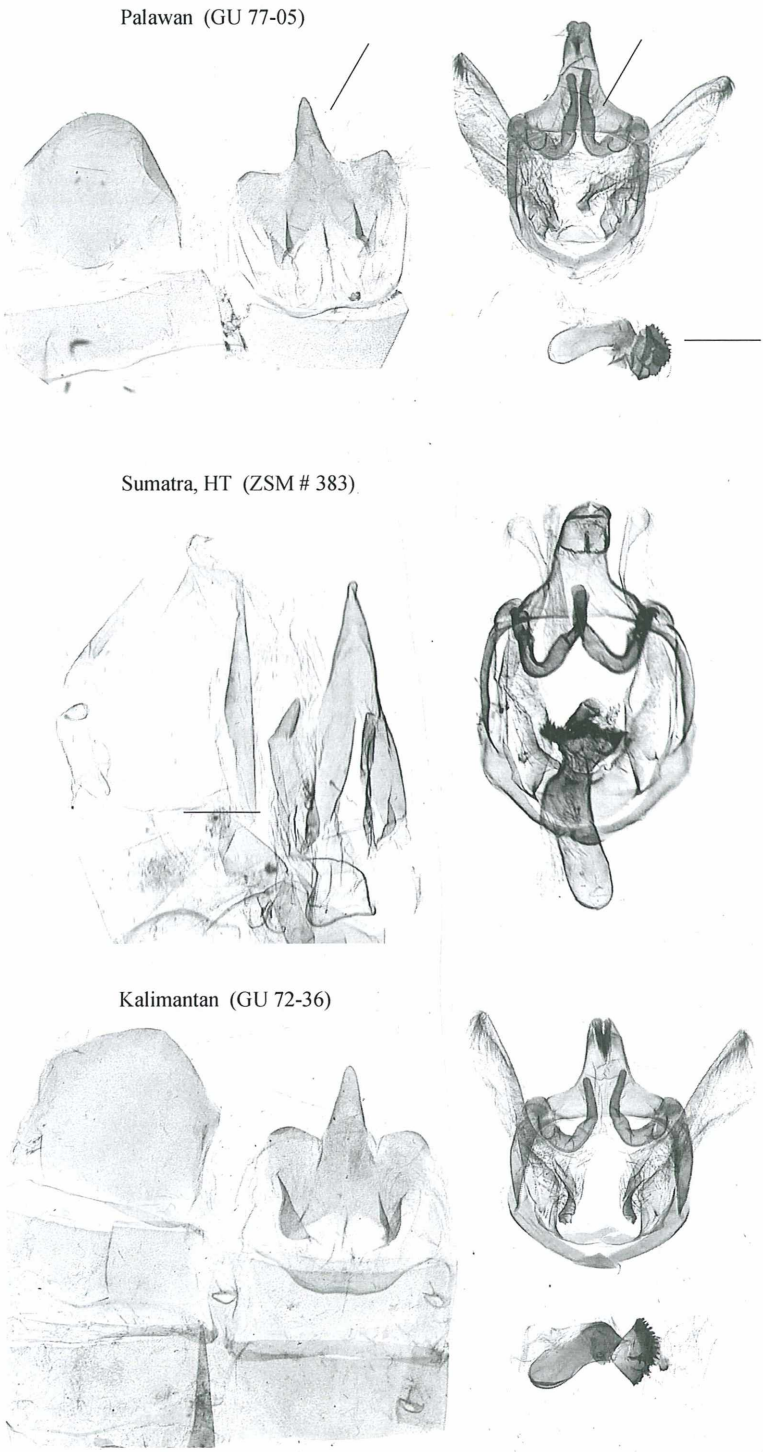


Fig. 398: Genitalia of *Antiphalera sumatrana.*

© Museum für Naturkunde Berlin, download unter www.biologiezentrum.at

Archigargetta KIRIAKOFF, 1967: 38

Type-species: *Archigargetta cyclopea* KIRIAKOFF, 1967 [= *Cascera amydra* TURNER, 1903]

= *Roepkeella* KIRIAKOFF, 1968 (*Pseudogargetta fuscicollis* GAEDE, 1930)

HOLLOWAY (1983: 29) reviewed many taxa which he subsumes at least in one genus *Archigargetta* with two allopatric species only.

86. *Archigargetta viridigrisea* (HAMPSON, 1898): 626 (*Gargetta viridigrisea*)

HT: ♀, Sikkim – BMNH, London, examined.

= *Stauropus clothus* SWINHOE, 1899: 110;
HT: ♂, [S India], Karwar – BMNH, London, examined.
= *Pseudogargetta fuscicollis* GAEDE, 1930: 618, pl. 81: f;
ST's: ♂♂, Malaysia, Borneo, Java – Museum Wiesbaden, Naturhistorische Sammlungen, not examined (not found).
= *Roepkeella tornalis* KIRIAKOFF, 1974: 380; pl. 1: 5; fig. 6
HT: ♂, NO Sumatra, Deli, Dolok Merangir – Zoologische Staatssammlung, München, examined.



Fig. 399: Distribution of *A. viridigrisea.*

The species is rare in collections but widely distributed in SE Asia. The wider range of individual variation and the rareness led to several descriptions of the same species. HOLLOWAY (1983: 29) designated a female labelled as „Cotype" by Dudgeon as the Lectotype of *viridigrisea*. We were not able to dissect a male from the Himalayas but many GU (n = 11) from various places (S India, Andaman Isl., Thailand, Sumatra, Kalimantan, Flores, Sulawesi and from Palawan) indicate, that in fact only one species occurs in these regions.

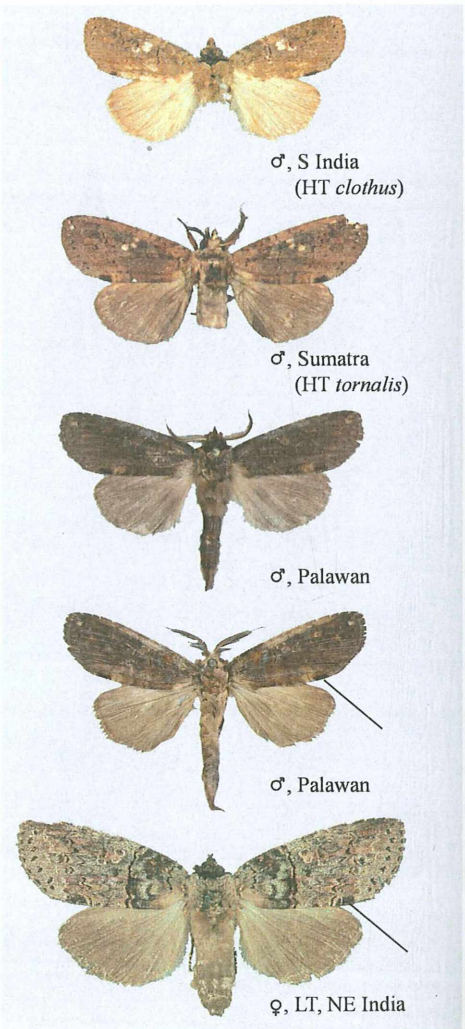


Fig. 400: Adults of *A. viridigrisea.*

Diagnosis. The black tornal patch on the forewings is a diagnostic character for identification of *Archigargetta viridigrisea.* Also the contrasting white spots on the forewings (if developed) or the narrow forewingshape are useful characters to recognize the males. The sexualdimorphic female also displays the

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Andaman isl. (GU 77-68) Palawan (GU 17-50)

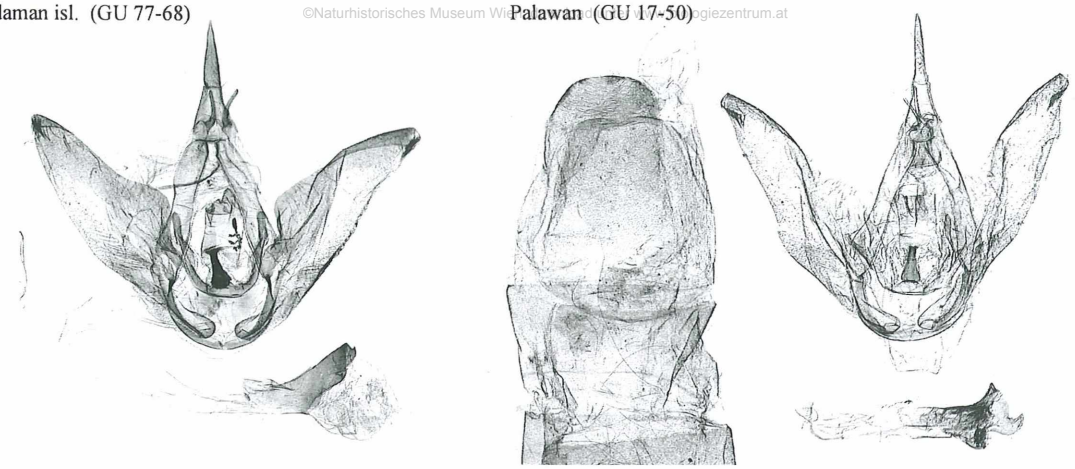


Fig. 401: Male genitalia of *Archigargetta viridigrisea.*

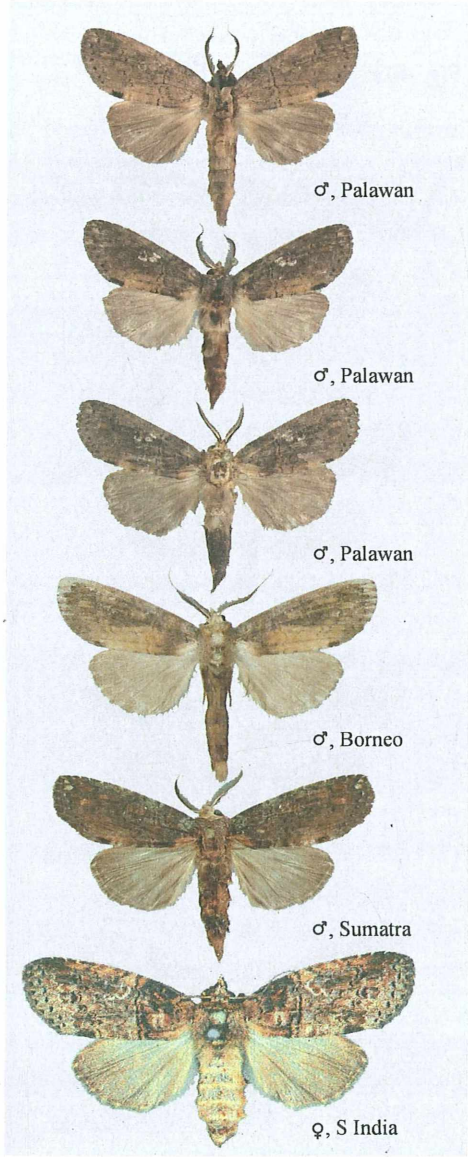


Fig. 402: Adults of *A. viridigrisea.*

diagnostic black tornalspot and a large, fuscous basal area with a rich pattern on the forewings.

The male genitalia are characterized by the long and triangular shaped uncus with a pair of very small socii. The well sclerotized juxta is of characteristic shape. The 8th abdominal segments are not modified but the 8th sternite is slightly bilobed. The female genitalia are not yet dissected.

Variation. The males are variable. There are individuals with uniform blackish coloured forewings as well as yellowish-brown forms. The white stigmata on the forewings are often inconspicously developed or absent. The number of the greenish scales on the forewings varies individually. The few known females ($n < 5$) from various places (still unknown from Palawan) display virtually no variation, except moderate variation of the darkness of the ground colour. The male genitalia varys moderately by the shape of the valves and also in the shape of the phallus.

Bionomics. The adults arer everywhere uncommon. In Palawan the moth was collected in ii., iii, v. nd xii. in primary forests between 30 m and 950 m above sea level. Elsewhere the species occurs throughout the year, mostly at lower altitudes up to 700 m. The caterpillar was reared in S India on Wild guava, *Careya arborea* (Lecythidaceae) (HOLLOWAY 1983: 31).

Distribution. *Archigargetta viridigrisea* is found in entrire India, Sri Lanka, the Andaman Islands, Indochina, Sudaland Java, Bali, the Lesser Sunda Islands, Sulawesi and the Philippines: Palawan.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Formofentonia MATSUMURA, 1925: 396

Type-species: *Formofentonia rotundata* MATSUMURA, 1925 [= *Stauropus orbifer* HAMPSON, 1893]

87. *Formofentonia orbifer orbifer* (HAMPSON, 1893): 152 (*Stauropus orbifer*)

HT: ♀, Sikkim – BMNH, London, examined.

Formofentonia orbifer is a widespread and common species in the Asian tropics but in the Philippines only a few specimens were found so far (n < 10), exclusively in Mindanao. This small series does not differ by general appearance from Sundanian or Himalayan populations. Although the valves of the male genitalia are slightly different. Because of the minor differences we hesitate to designate a new subspecies on the basis of such a small series.



Fig. 403: Distribution of *F. orbifer*.

Diagnosis. An unmistakable and beautiful species, which is characterized best by the pale brown circle in the apex of the forewings.

The male genitalia have a strong sclerotized sacculus. The unique shaped divided uncus with a pair of long and slender socii and the shape of the apical part of the valve are further characteristic features. The 8th abdominal segments are not modified. The female genitalia display a long ductus bursae and a conspicous large signum.

Variation. The variation seems to be low in the Philippines, but wider in other parts of its Asian distribution area. Subspecies from Taiwan (ssp. *rotundata* MATSUMURA, 1925), and Java (ssp. *madena* SCHAUS, 1928) are different in external appearance and a hitherto undescribed ssp. from Sulawesi shows differences in the shape of the tegumen and the valves. The rather isolated population in Mindanao differs slightly in the shape of the valves from a dissected male from Sikkim.

Bionomics. The adults are common throughout the

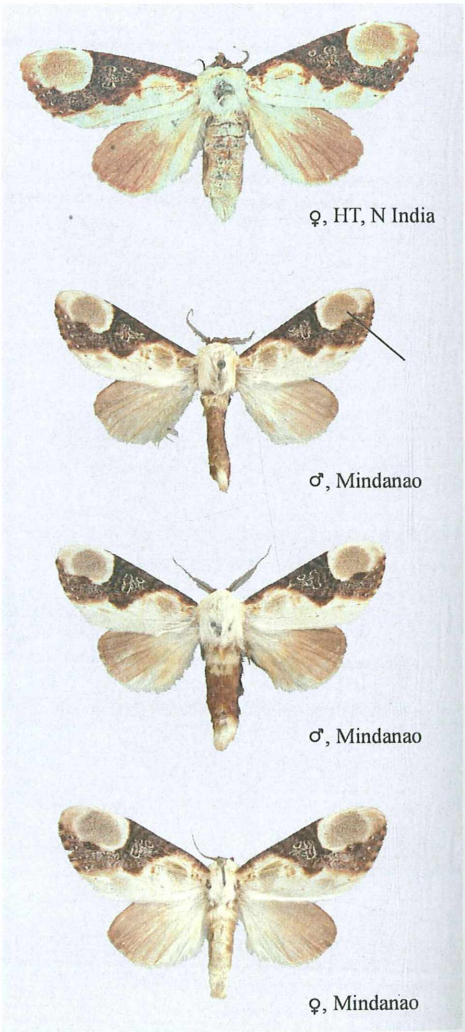


Fig. 404: Adults of *Formofentonia orbifer*.

storisches Museum Wien, download unter www.biodiversitylibrary.org

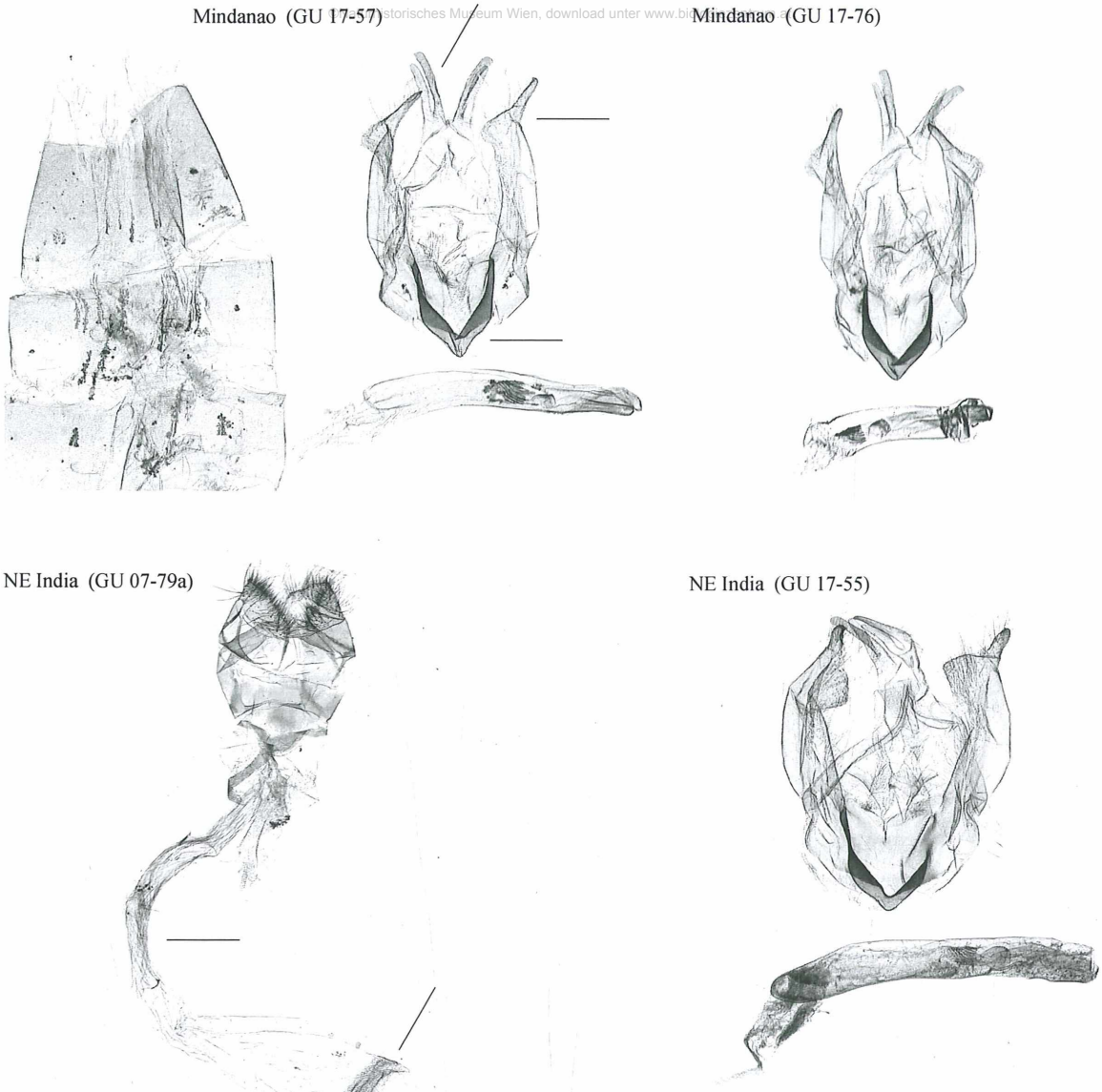


Fig. 405: Genitalia of *Formofentonia orbifer orbifer.*

year outside the Philippines, but in Mindanao they were observed infrequently from 800 m up to 2.600 m in vii.-x.

Distribution. *F. orbifer orbifer* is distributed in the Himalayas, the Andaman Islands, S. China, Indochina, Sundaland and the Philippines: Mindanao. In Taiwan flies the ssp. *rotundata*, in Java, ssp. *madena*. A further hitherto undescribed subspecies occurs in Sulawesi.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Fentonia Butler, 1881: 20

Type-species: *Fentonia laevis* Butler, 1881
[= *Harpyia ocypete* Bremer, 1861]

Fentonia is a larger complex of taxonomically difficult species (n > 15), most diverse in Sundaland. Surprisingly only one species was found on Palawan only; Borneo harbours five species.



Fig. 406: Distribution of *Fentonia bipunctus*.

88. *Fentonia bipunctus* Rothschild, 1917:

246; pl. 5: 2 (*Stauropus bipunctus*).
HT: ♀, Penang – BMNH, London, examined.

Diagnosis. The two black patches in the median area of the greyish forewings characterize the species. The female resembles the male but the hindwings are usually darker.

The male genitalia are as usual in *Fentonia* with a characteristic hairy uncus. The 8th sternite is distally convex shaped with a sclerotized margin. The female genitalia display a bilobed ostium and a conspicous sclerotized signum at the large bursa copulatrix.

Variation. The tone of the greyish ground colour is subject to individual variation. Occasionally specimens occur with inconspicously developed blackish median patches. The pointed tip of the phallus is slightly modified in some dissected males from Sumatra, Kalimantan and S. Myanmar (n = 3).

Bionomics. The adults are observed infrequently in primary forests at lower altitudes up to 800 m (in Thailand up to 1.500 m). In Palawan they were, on one occasion, abundantly collected (n > 20) but usually it is a rare moth, which appears from ii.-viii.

Distribution. The species has a scattered distribution and is known from Sundaland, Indochina and from the Philippines: Palawan (including Balabac Island).

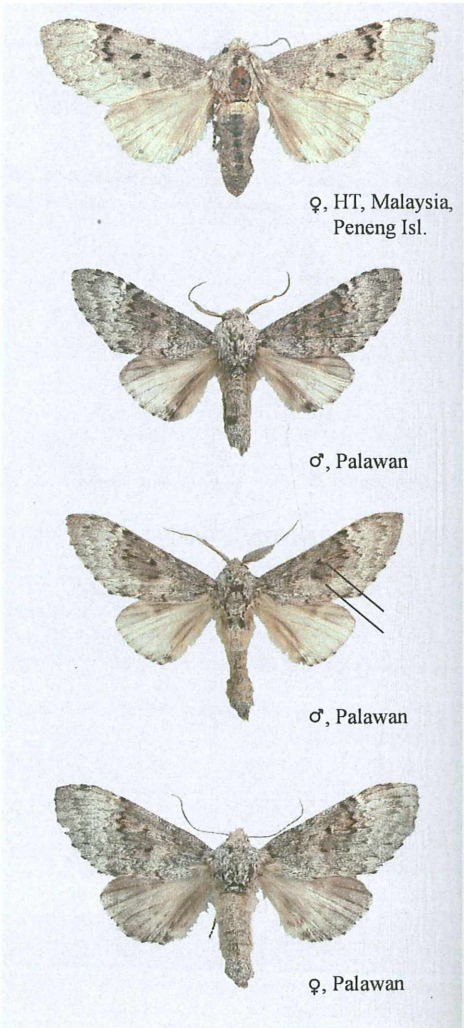


Fig. 407: Adults of *Fentonia bipunctus*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

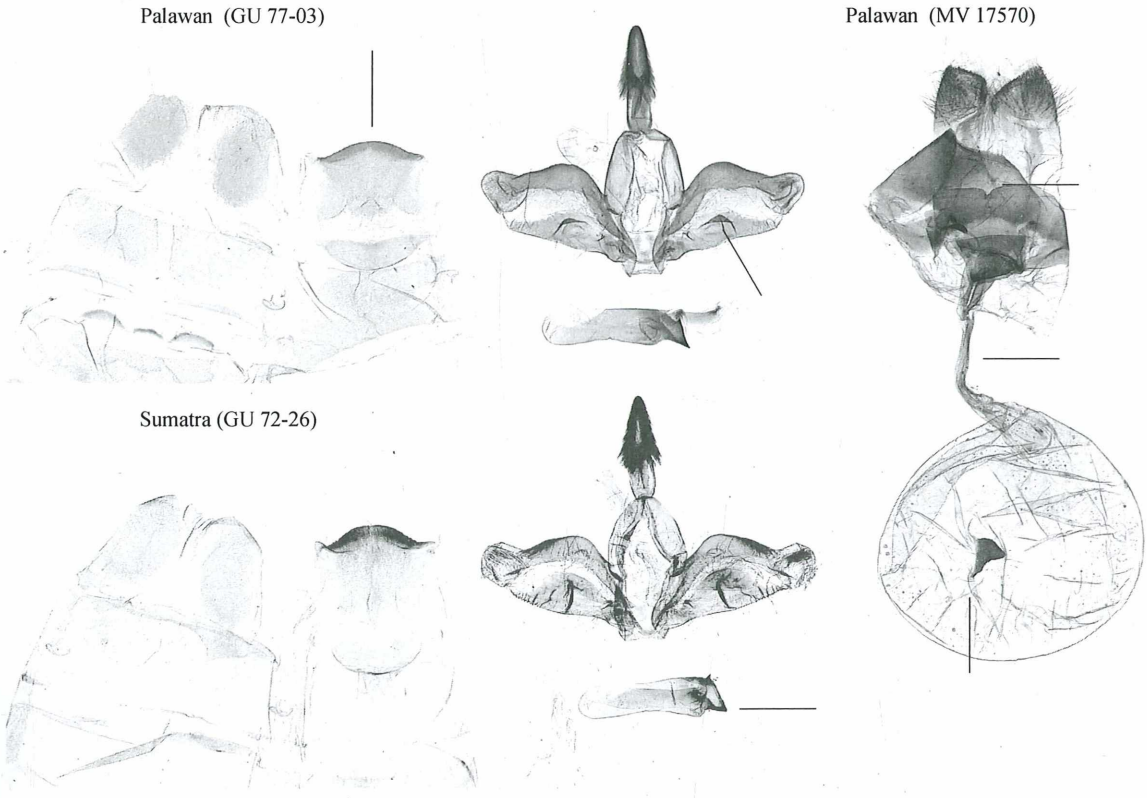


Fig. 408: Genitalia of *Fentonia bipunctus.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Neopheosia MATSUMURA, 1920: 147

Type-species: *Pheosia fasciata* MOORE, 1888

= *Parafentonia* KIRIAKOFF, 1963: 277 (*Parafentonia inconspicua* KIRIAKOFF, 1963 [= *Drymonia mandschurica* OBERTHÜR, 1911]) nec. ROEPKE, 1944: 19 (Notodontidae).
= *Hemifentonia* KIRIAKOFF, 1967: 152 (replacement name for *Parafentonia*).

89. *Neopheosia fasciata fasciata* (MOORE, 1888): 401 (*Pheosia fasciata*).

ST's: ♂♀, [NW India, Dharmsala], Kangra – BMNH, London, examined.

= *Neopheosia fasciata japonica* OKANO, 1955: 54, pl. 2: 19, 20
HT: ♂, Japan, Iwate pref., Morioka, not examined.
= *Neopheosia fasciata formosana* OKANO, 1959: 39, pl. 3: 5
HT: ♂, Central Formosa, Puli-Wushe, not examined.

Neopheosia fasciata obscura SCHINTLMEISTER, 1993: 132; pl. 14: 8, pl. 20: 2.
HT: ♂, Philippinen, Mindanao, Bukidnon, 40 km NW Maramag, Dalongdong, Talakag, 800 m – NHM, Wien, examined.

Diagnosis. The species is readily recognized by its pale orange-brown ground colour. The black discalstreak on the forewings and the blackish dorsum on the forewings are diagnostic features for ssp. *fasciata*. Ssp. *obscura* shows more or less fuscous ground colour of all wings but the discalspot of the forewings is conspicous. The male genitalia show a third, gnathos-like structure of the uncus, apart of a pair of large socii. The 8th sternite is simple and distally sclerotized. The female genitalia have a long and robust ductus bursae and a band-shaped signum.
Variation. The range of individual variation includes forewing length and paleness of the ground colour. Occasionally in the Himalayas fuscous adults appear and from Sulawesi a fuscous single female (under n > 25 other specimens) was collected. The male genitalia vary individually in the shape of the furcate uncus as well as in the shape of the 8th sternite. The Panay specimens at our disposal (n = 3) are slightly paler than a series from Mindanao but significantly darker than the series from Luzon or Palawan and belong to ssp. *obscura*.

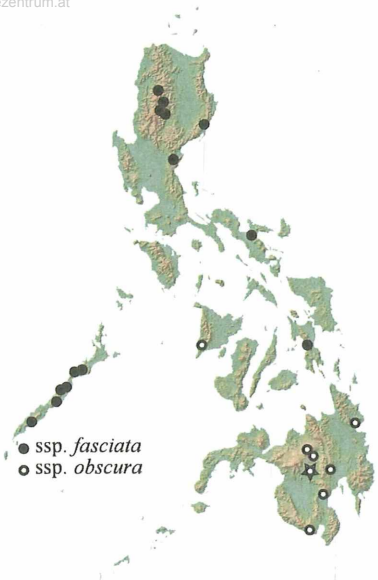


Fig. 409: Distribution of *Neopheosia fasciata*.

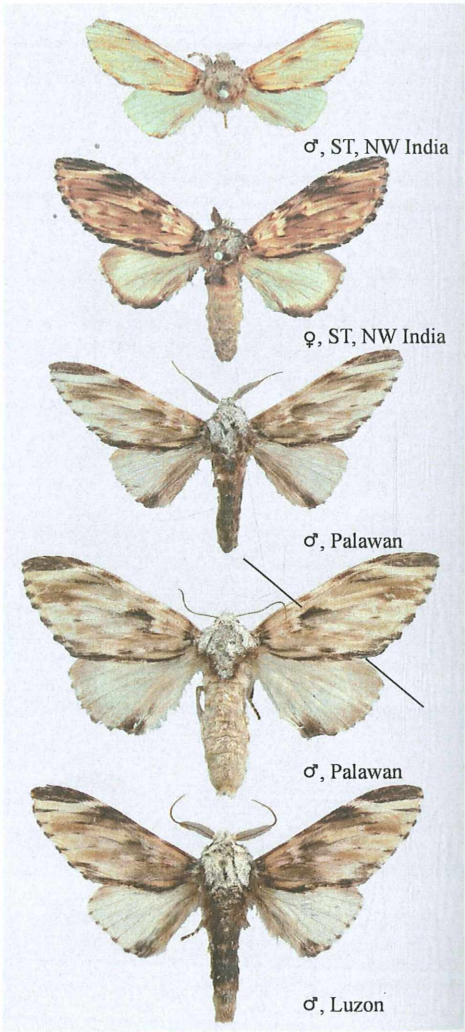


Fig. 410: Adults of *N. fasciata fasciata*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

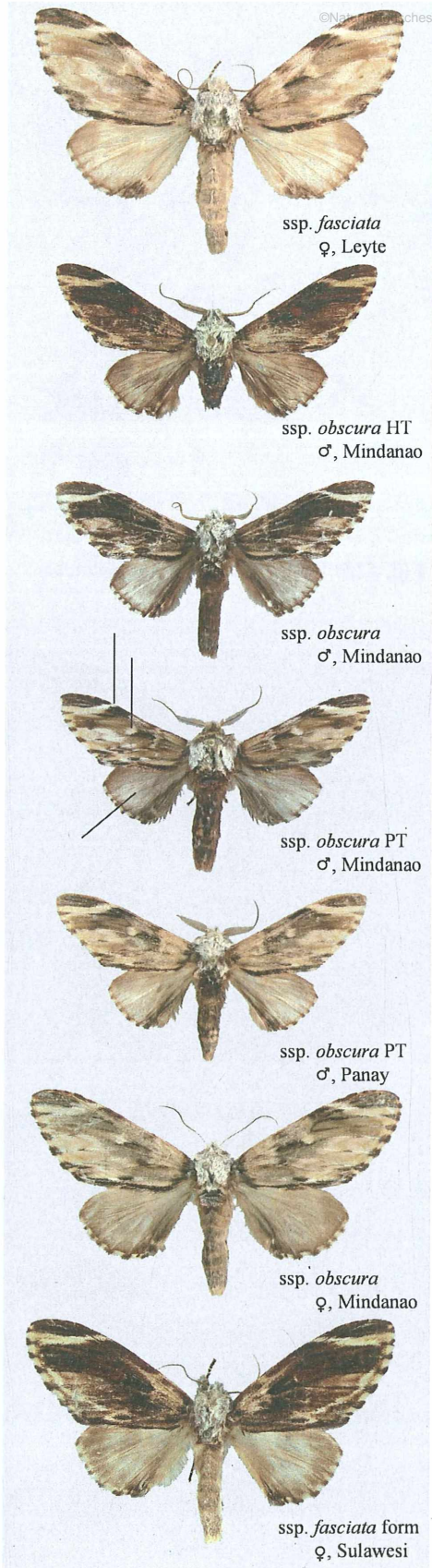


Fig. 411: Adults of *Neopheosia fasciata.*

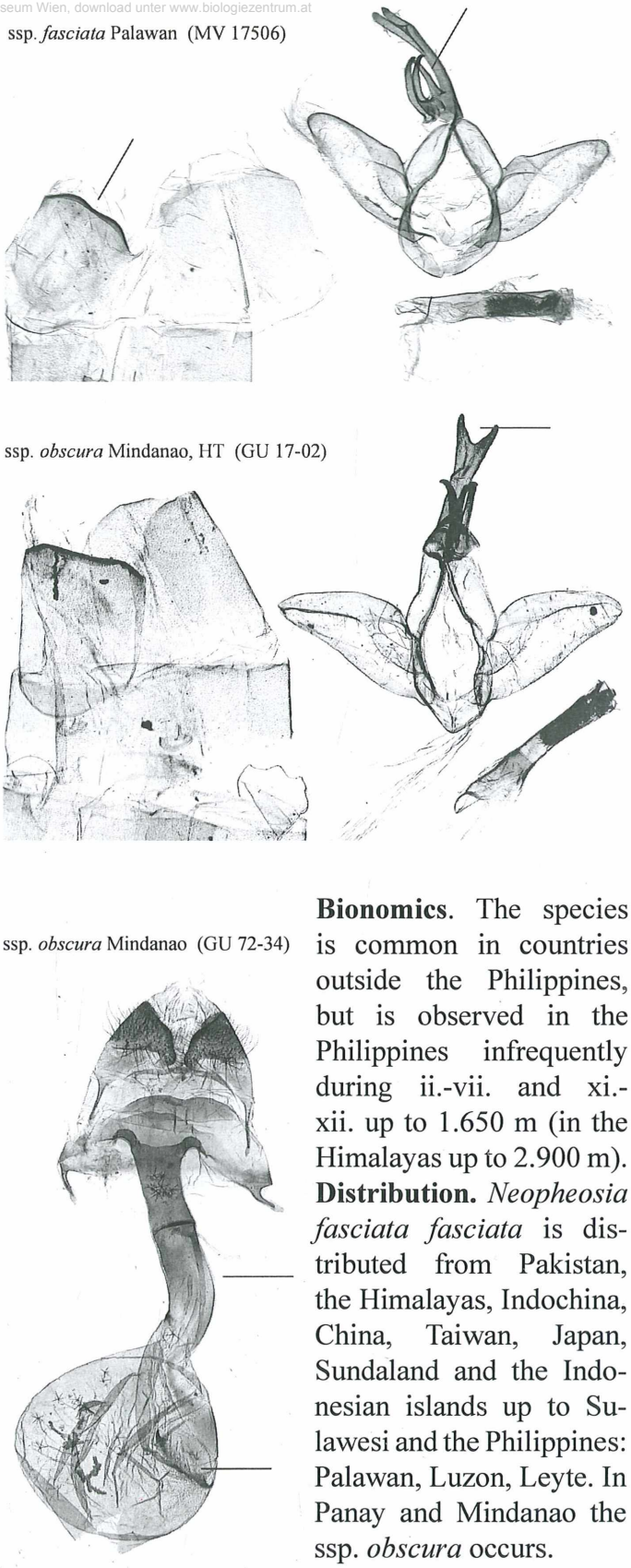


Fig. 412: Genitalia of *Neopheosia fasciata.*

Bionomics. The species is common in countries outside the Philippines, but is observed in the Philippines infrequently during ii.-vii. and xi.-xii. up to 1.650 m (in the Himalayas up to 2.900 m).

Distribution. *Neopheosia fasciata fasciata* is distributed from Pakistan, the Himalayas, Indochina, China, Taiwan, Japan, Sundaland and the Indonesian islands up to Sulawesi and the Philippines: Palawan, Luzon, Leyte. In Panay and Mindanao the ssp. *obscura* occurs.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Fusadonta Matsumura, 1920: 146

Type-species: *Notodonta basilinea* Wileman, 1911

= *Pheosilla* Kiriakoff, 1963: 274 (*Pheosilla umbra* Kiriakoff, 1963.

Notodonta basilinea was placed in the palaearctic genus *Peridea* Stephens, 1828 based on external similarities. As the male genitalia show, it certainly belongs to the genus *Fusadonta* (e.g. the dense setae of the 8th sternite), comb. nov. At present *Fusadonta* includes further three species distributed in E China, Korea and Japan, which are all uncommon.



Fig. 413: Distribution of *F. albipuncta.*

90. *Fusadonta albipuncta* (Gaede, 1930): 641; pl. 80: d (*Notodonta albipuncta*), **comb. nov.**

HT: ♂, Sumatra, Barisan Gebirge, 800 m – BMNH, London, examined.

Diagnosis. This large species is a rather uniform fuscous brown with a pale discal spot. The hindwings have a pale median band. The males have bipectinate antennae with filiform tip; those of the females are filiform.

The male genitalia show a robust and bifurcate uncus with a pair of larger gnathoi. The apex of the valves is bilobed. The phallus is large and bears many cornuti. The 8th sternite is deeply bilobed and displays characteristically dense setae. The female genitalia have a diagnostic shaped ventral plate and a conspicous sclerotized signum on the bursa copulatrix.

Variation. In some adults the markings are only weakly developed. Other individuals are tinged with orange-brown scales.

The only male from Palawan shows minor differences in the shape of the phallus in

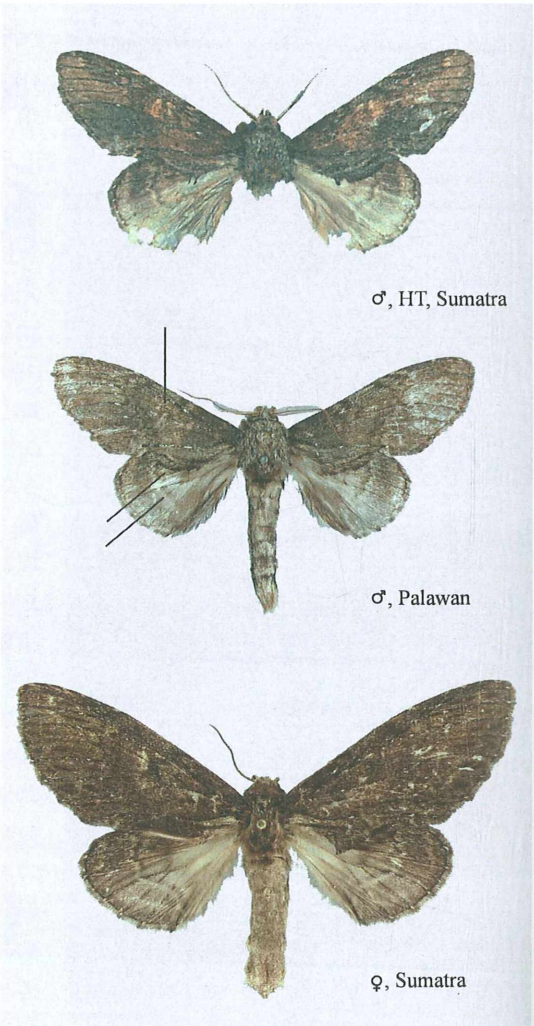
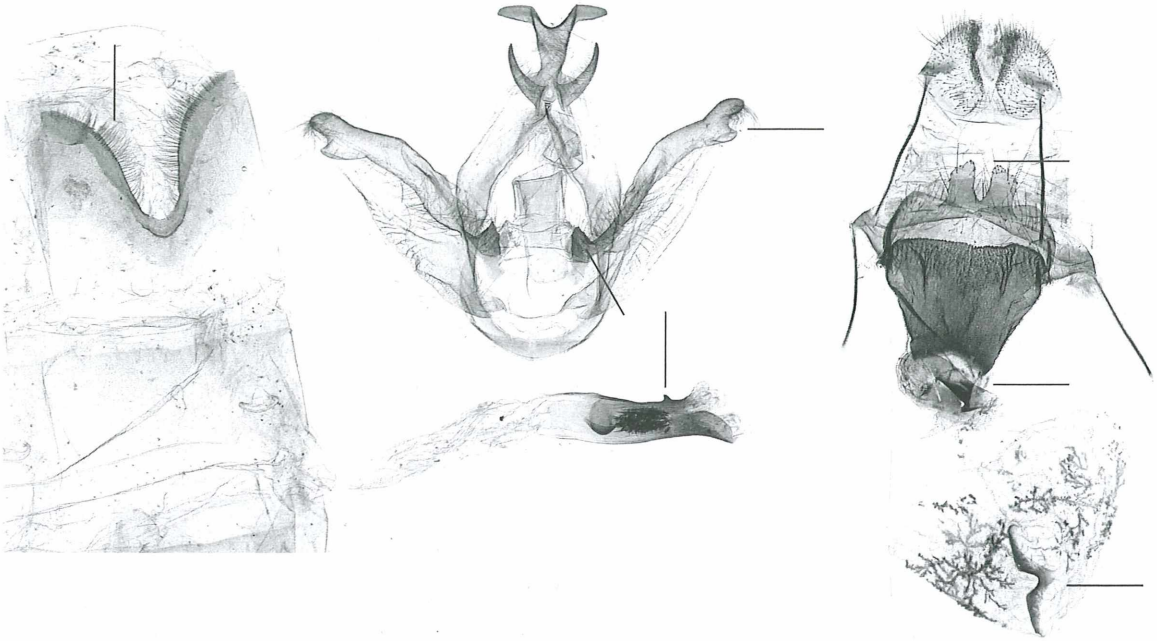


Fig. 414: Adults of *Fusadonta albipuncta.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Palawan (MV 17.894)

Sumatra (GU 45-25)



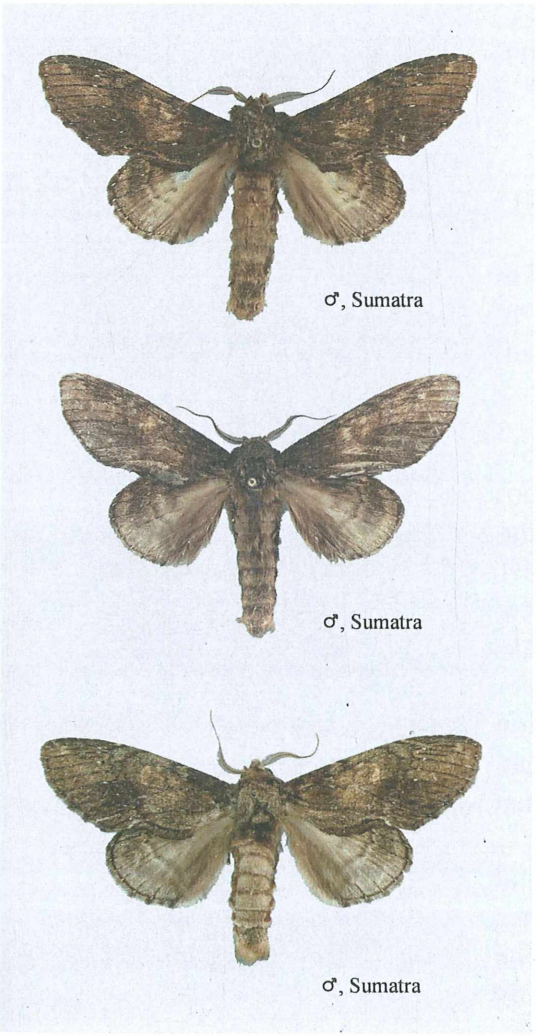


Fig. 415: Males of *Fusadonta albipuncta.*

Sumatra (GU 45-26)

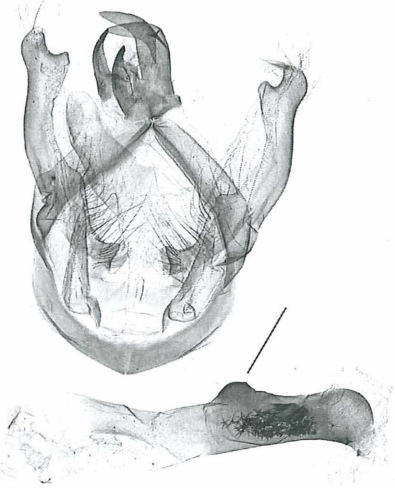


Fig. 416: Genitalia of *Fusadonta albipuncta.*

comparison with Sumatran males.

Bionomics. Only one male (n = 1) is known from Palawan, taken on 18.-19.v. 2001 at 950 m above sea level. In Borneo and Sumatra the species is also rare (n < 20 known specimens) and was found from iv. - xii. between 1.000 m and 1.700 m in primary forests only.

Distribution. *Fusadonta albipuncta* is found in Sumatra, Borneo and the Philippines: Palawan, Mt. Matalingahan.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Mesophalera MATSUMURA, 1920: 150

Type-species: *Phalera sigmata* BUTLER, 1877

Mesophalera is highly diverse in SE China and Indochina (n = 10 of 14 described species). The Philippines are inhabited by two species; the genus seems to be absent in Borneo. From Sumatra and Java one species is known. The hostplants of the caterpillars (as far as known) are in the Family Theaceae (e.g. tea).

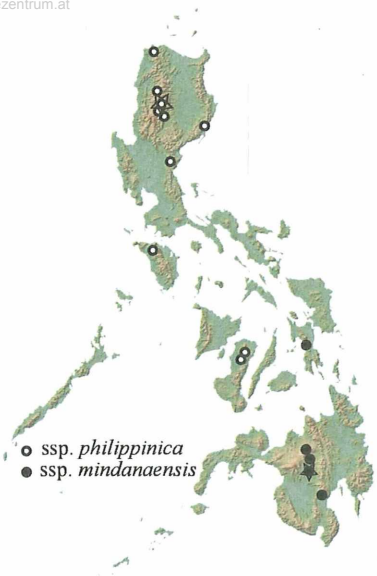


Fig. 417: Distribution of *M. philippinica*.

91. *Mesophalera philippinica philippinica*

SCHINTLMEISTER, 1993: 135, pl. 22: 3, pl. 23: 1.
HT: ♂, Philippinen, N-Luzon, Mts. Province, Chatol, 15 km SE Bontoc, 17°02' n. Breite, 21°03' ö. Länge, 1.600 m – NHM, Wien, examined.

Mesophalera philippinica mindanaensis SCHINTLMEISTER, 1993: 135, pl. 22: 4, 23: 3, 5.
HT: ♂, Philippinen, Mindanao, Bukidnon, 45 km NW Maramag, Mt. Binansilang, 1.200 m, 7°55' n. Breite, 124°40' ö. Länge – NHM, Wien, examined.

Diagnosis. *Mesophalera philippinica* belongs to a group of externally similar species which includes *M. palawana* or *walshiae* (ROEPKE, 1944): 20; fig. 21 (HT: ♀, W. Java, Perbawattee, 1.000 m – PT in Nationaal Natuurhistorische Museum, Leiden, examined), which can be identified by the reddish-brown hindwings. The greyish forewings with paler median area are subject to considerable variation patterns. *M. philippinica* is clearly smaller than *palawana* and has slightly narrower forewings than *walshiae*.

The male genitalia are characterized by the costal valve processes, which show two smaller spines at the tip. The phallus bears many cornuti. The 8th abdominal segments are less modified. The 8th sternite displays two smaller projections.

Variation. The species is variable including the

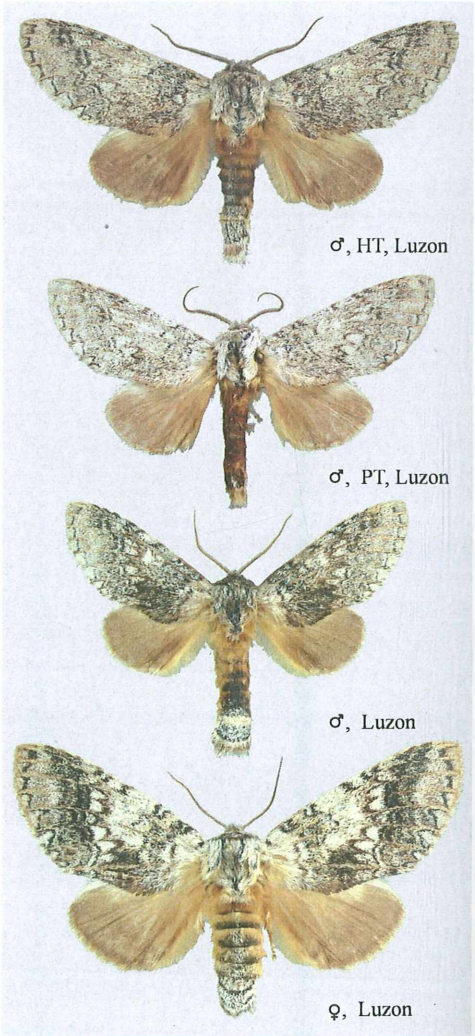


Fig. 418: Adults of *M. p. philippinica*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

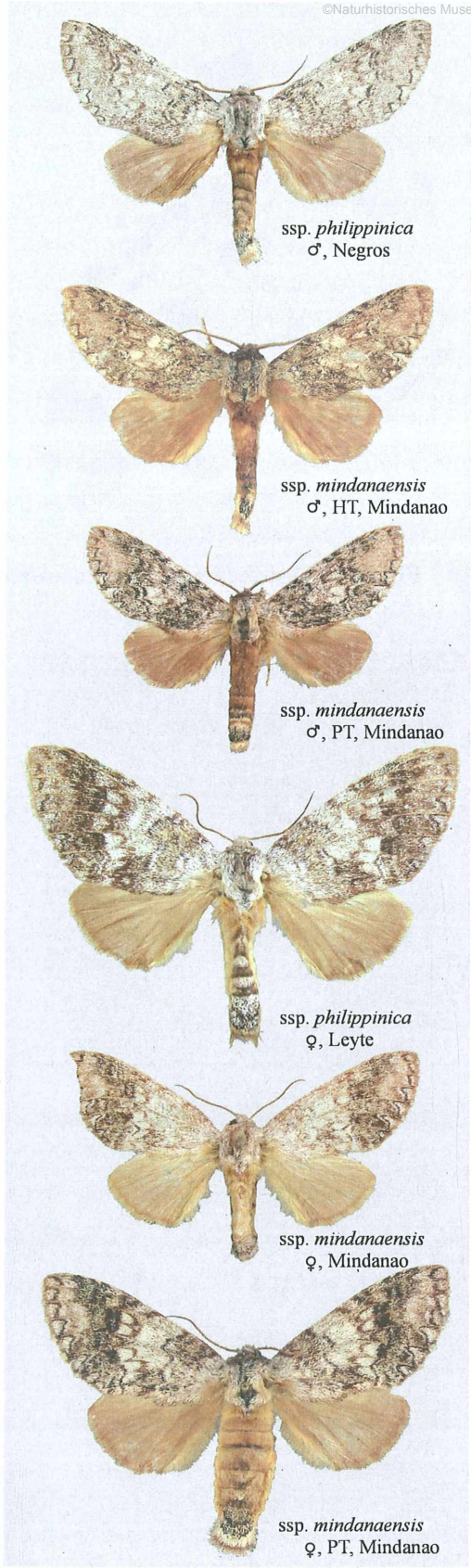


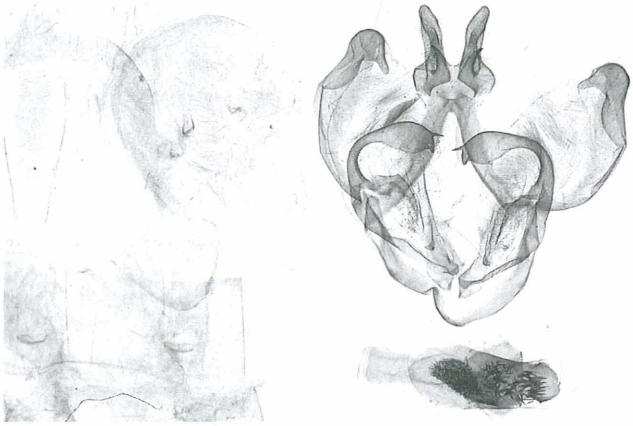
Fig. 419: Adults of *M. philippinica*.

size and the darkness of the forewings. Often specimens with many blackish scales occur, but in ssp. *philippinica* most specimens have pale greyish forewings. All wings of the ssp. *mindanaensis* have a more reddish tinge. The individual variations of male genitalia includes differences in the shape of the apical part of the valve and the phallus. No significant differences in male genitalia between the two subspecies were found.

Bionomics. The adults occur commonly and were observed during all months of the year, except iii. and xii. mostly in mountainous and forested regions above 1.000 m up to 2.700 m. A few specimens were collected at 560 m and 800 m.

Distribution. Endemic in the Philippines. The ssp. *philippinica* occurs in Luzon, Mindoro and Negros. The ssp. *mindanaensis* is known from Leyte and Mindanao.

M. philippinica philippinica Negros (GU 45-22).



M. philippinica mindanaensis PT, Mindanao (GU 17-45).

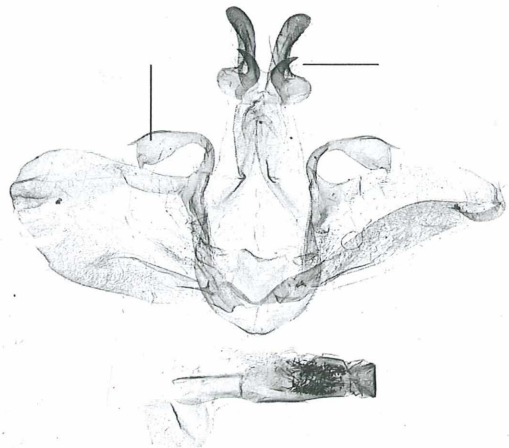


Fig. 420: Male genitalia of *M. philippinica*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

92. *Mesophalera palawana* spec. nov.

HT: ♂, Philippinen, Z. Palawan, Mt. Salakot Res., 800 m, 9°51'N, 118°38'E, 10. – 27.ii.2000 leg. GORBATSHEV & SINJAEV – NHM, Wien.

Paratypes (34 ♂♂, 4 ♀♀):
Palawan: 3 ♂♂, 3 ♀♀, Mt. Salakot Res., 800 m, 9°51'N, 118°38'E, 10.–27.ii.2000 (GU 73-28); 6♂♂, 1♀, ibid., N 942'10", E 118°31'18", 7.iii.1998; 20♂♂, S. Palawan, Mt. Mantalingajan, 600 m – 800 m, 2.-12.viii.2000 (GU 76-51); 4♂♂, ibid., Kibyawon, 8°46'59.0"N, 117°42'06.7"E, 950 m, 16.-19.v.2001; 1♂, Mt. Loiwag, Brooke's point, 600 m – 900 m, 15.-26.ix.1998.



Fig. 421: Distribution of *M. palawana*.

Etymology. Named after the Palawan Isl.

Diagnosis. Forewing length ♂♂, 29 mm - 32 mm ; ♀♀, 35 mm - 39 mm. The large and pale species resembles *M. walshiae* (ROEPKE, 1944), but is much larger. The median area of the greyish-white forewings is bordered by a contrasting violet-brown postmedian fascia. The blackish „>" shaped discalspot is a diagnostical feature. The postmedian area is tinged violet-brown and the submarginal fascia of the forewings is marked as a violet-brown zig-zag line. The marginal area is contrasting whitish. The hindwings are brownish tinged with yellow.

The large male genitalia have a divided uncus and a serrated pair of socii. The costal process of the valves is slender and resembles somewhat *walshiae*. The phallus bears many cornuti, which are also found in the bursa copulatrix of the female. The 8th sternite displays two conspicuous projections. The female genitalia have a short and robust ductus bursae (as usual in *Mesophalera*) and a very large signum, uniquely sclerotized with a fine structure.
Apart from size, the variability is quite low.

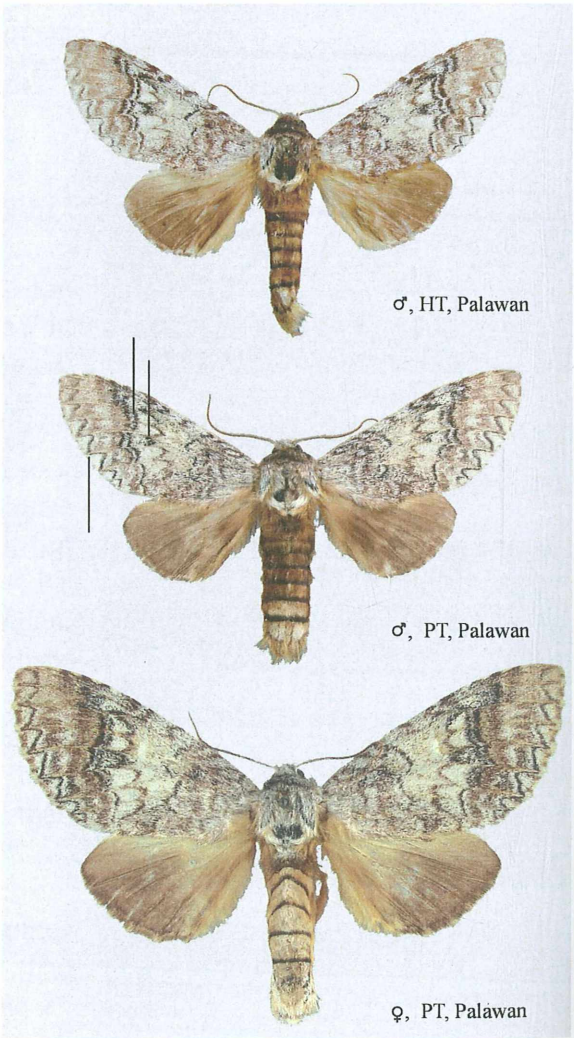
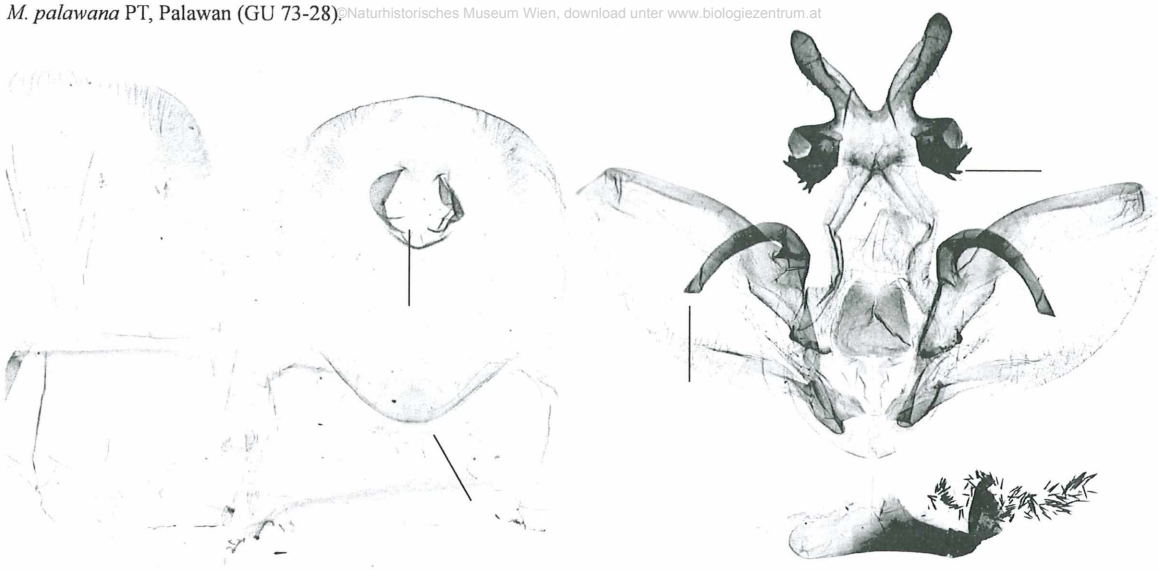


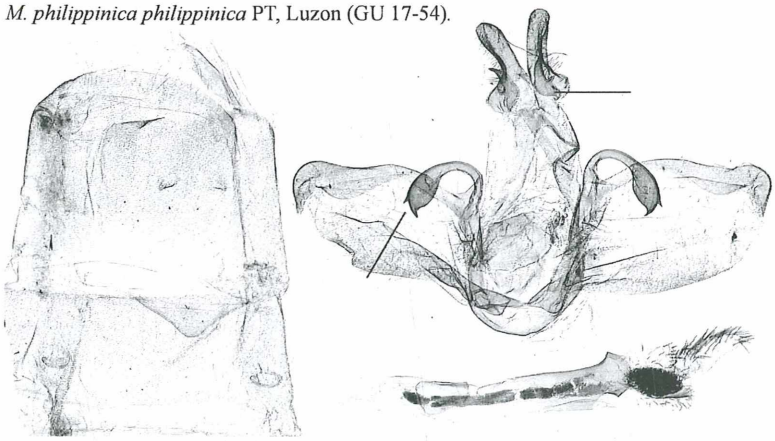
Fig. 422: Adults of *Mesophalera palawana*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

M. palawana PT, Palawan (GU 73-28).



M. philippinica philippinica PT, Luzon (GU 17-54).



M. palawana PT, Palawan (MV 17514).

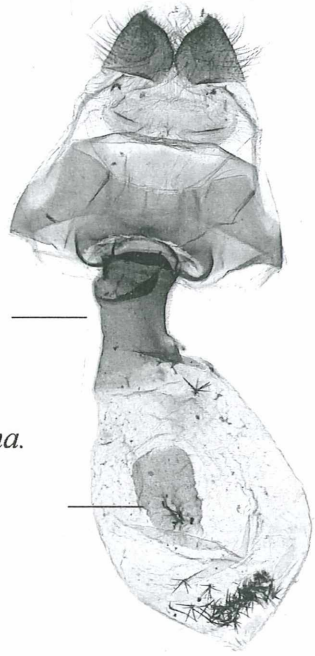
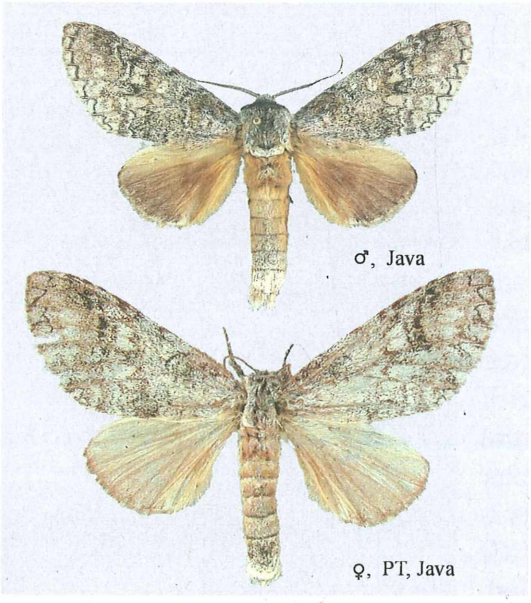
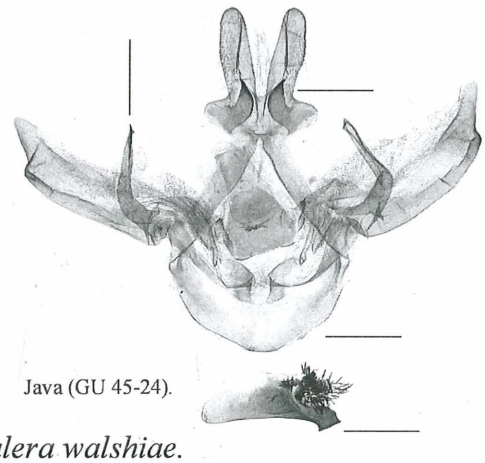


Fig. 423: Genitalia of *Mesophalera philippinica* and *palawana.*





Java (GU 45-24).

Fig. 424: Adults and male genitalia of *Mesophalera walshiae.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Calyptronotum Roepke, 1944: 5

Type-species: *Calyptronotum confusum* Roepke, 1944 [= *Pseudofentonia singapura* Gaede, 1930)

Calyptronotum is closely related to *Pseudofentonia* Strand, 1912 and also *Mesophalera*. These genera show similar male genitalia, in particular the costal processes of the valves. We follow Kobayashi & Kishida (2008), who reviewed *Calyptronotum* as a distinct genus (Schintlmeister 2008 treated it as a subgenus of *Pseudofentonia* Strand, 1912). The known taxa are very similar and we found no features to separate them only by external appearance. The adults are distinguished by silvery grey forewings with a concave basal fascia and a small but sharp black discalspot. The hindwings are fuscous chocolate-brown. The females display two blackish patches in the postmedian fascia of the forewings. The genitalia show dramatic differences in both sexes, on the basis of which three new species could be identified and validly described without any doubt. None of these identified species were found sympatrically. We totally dissected n = 58 genitalia from various localities including Sulawesi and Ambon.



Fig. 425: Distribution of *C. singapura*.

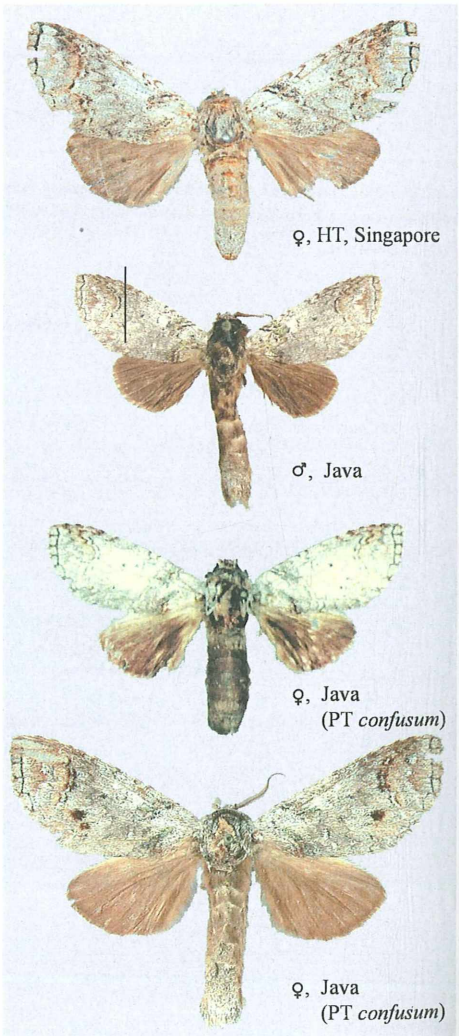


Fig. 426: Adults of *C. singapura*.

93. *Calyptronotum singapura* (Gaede, 1930): 624; pl. 82: h (*Pseudofentonia singapura*)

HT: ♀, Singapore – BMNH, London, examined.

= *Calyptronotum confusum* Roepke, 1944: 5, figs. 19a, 19b
HT: ♂, [Indonesia, Java], G. Gedeh – Wageningen University, Laboratory of Entomology, photo examined.

Diagnosis. The adults match the common description of the genus as given above. The male genitalia are characterized by a second costal valve process of medium size. The uncus is round with a small central process (sometimes absent). The gnathos (or better the merged socii) are slightly bilobed. The phallus is of a diagnostic shape, slightly tapered distally but not pointed. The 8th sternite has a small central projection. The female genitalia have a strong sclerotized and

©Naturhistorisches Museum Wien, downloaded unter www.biologiezentrum.at

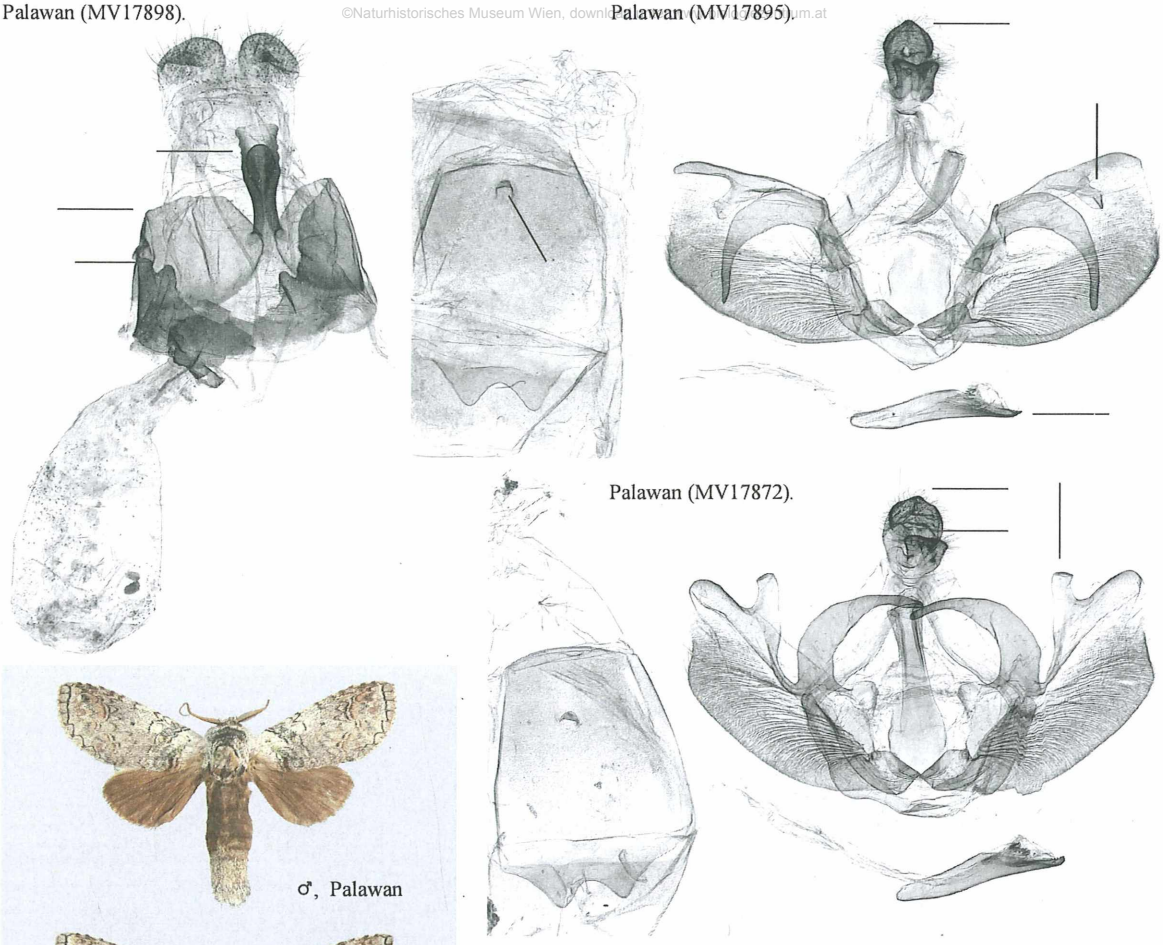


Fig. 428: Genitalia of *C. singapura*.

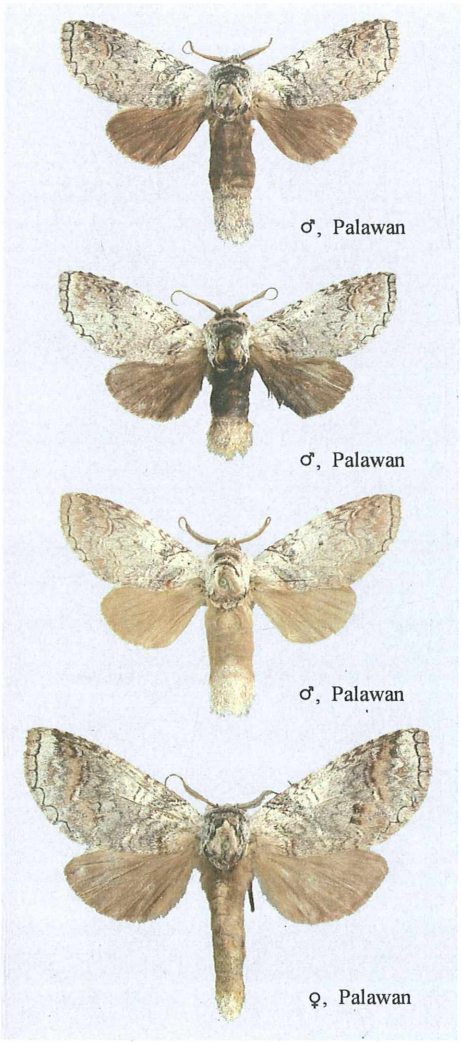


Fig. 427: Adults of *C. singapura*.

large 8th segment with a diagnostically shaped and strong sclerotized cylindrical process. The ostium is triangular and strongly sclerotized. The bursa copulatrix has no signum.

Variation. The Palawan specimens are fairly uniform with only minor individual variation of the number of greenish scales interspersed in the basal area. A single male is pale yellowish-brown (as illustrated). The male genitalia vary individually in the shape of the uncus, the notch of the merged socii and also in shape of the valves (in particular the apical process), as illustrated.

Bionomics. The adults are frequently found from xii.-iii. and in vi. (outside Palawan throughout the year) mostly at lower altitudes up to 850 m, in Thailand up to 1.730 m.

Distribution. The species is distributed from NE India, Indochina, S China, Sundaland, Java, Bali, the lesser Sunda Islands and the Philippines: Palawan.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

94. *Calyptronotum gualberta* (SCHAUS, 1928): 77 (*Fentonia gualberta*)
ST's: ♂♂, ♀, Philipine Islands, Mindanao, Suriga – USNM, Washington, photo ST examined.

KOBAYASHI & KISHIDA (2008) confused this species with the following newly described *jonathan*, which does not occur in Mindanao. *C. gualberta* is closely related to *singapura*; the differences are rather minor in the males, but the female genitalia differ dramatically. *C. adustum* KOBAYASHI & KISHIDA, 2008 from Sulawesi has also similar male genitalia (n = 3 GU) but the female genitalia, which resemble *singapura*, show a clear signum, which is exceptionally rare in this genus.



Fig. 429: Distribution of *C. gualberta*.

Diagnosis. The external appearance is almost similar as *singapura*, but, based upon a series of n = 11, always slightly darker.

The male genitalia resemble *C. singapura* by the second costal valve process, which is knob-shaped at the tip. "The male genitalia have the major process of the valve more finely tapered, the more distal, minor one is larger, the uncus has two small ventral processes and the gnathus has a deeper angular cleft apically" (HOLLOWAY 1983: 66). The phallus is longer and apically extended. The female genitalia have a much slender 8th segment. The process is broader and convex shaped, triangular cleft distally. There is no signum.

Variation. Individual variation is seen in the forewings (ranging from brownish-grey to silver) and the brown forewing pattern. There are also individuals with a pale greenish tinged basal area. The genitalia seem virtually without variation (n = 5 GU).

Bionomics. The adults are uncommonly found and were observed from iv. - xii. at medium altitudes up to 800 m, one male at 1.570, m in primary and secondary forests.

Distribution. Endemic in Mindanao.

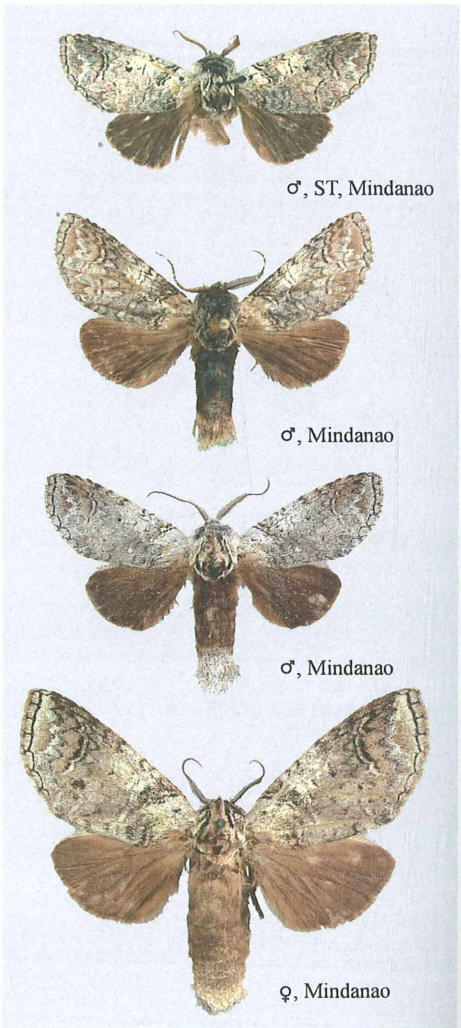


Fig. 430: Adults of *C. gualberta*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

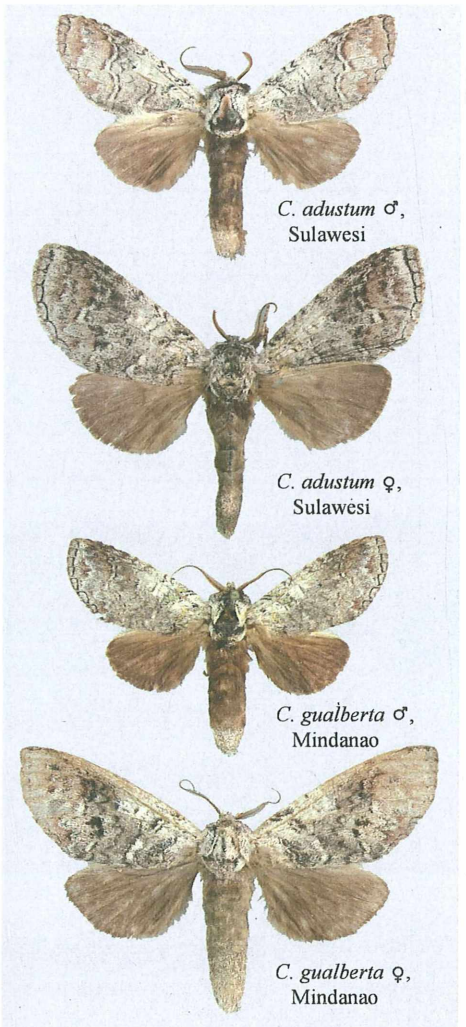


Fig. 431: Adults of *C. gualberta* and *adustum*.

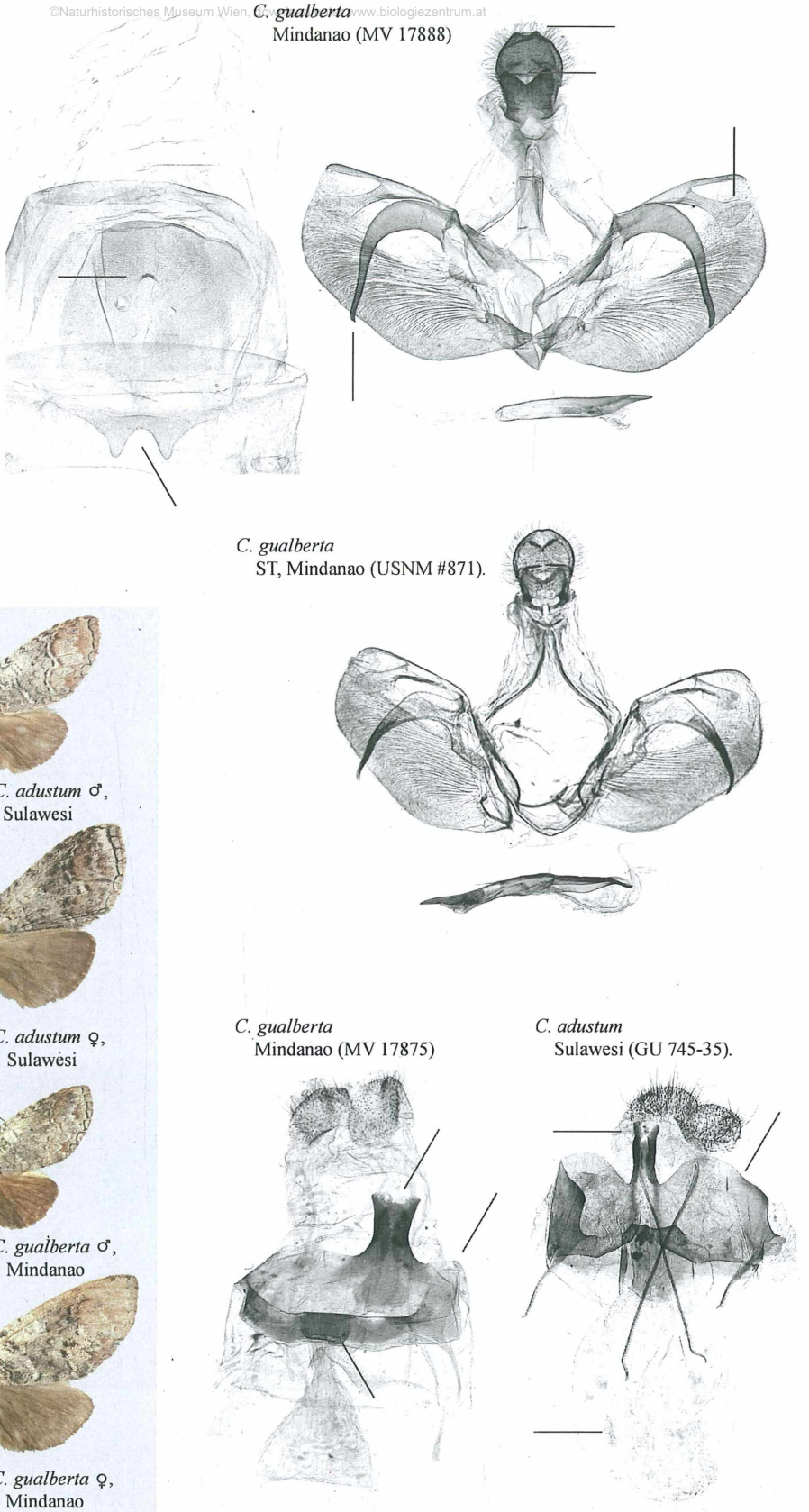


Fig. 432: Genitalia of *C. gualberta* and *adustum*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

95. *Calyptronotum jonathan* spec. nov.

HT: ♂, Philipines, Negros, Prov. Negros Occidental, Mt. Mandalagan near Dol Salvador Benedicto 800 m, May/June 1998 leg. Bal; MV17901 – NHM, Wien.

Paratypes: (19 ♂♂, 3 ♀♀):
Negros: 4 ♂♂, Mt. Mandalagan, near Don Salvador Benedicto, 800 m, v.-vi.1998; 8 ♂♂, 2 ♀♀, Mt. Mandalagan, xii.1997 (GU 76-48, MV 17.897); 1 ♀, NE Don Salv. Benedicto, Barangay Bagng Silang, ft. Mt. Mandalagan 770 m, 10°36.017'N, 123°16.127'E, 19.-20.vi.2009; 3 ♂♂, Mt. Kanlaon, W-Route via Mabucal, 1.010 m, 17.-18.vii.1996 (GU 45-40, M17.902); 1 ♂, ibid. 820 m, 15.vii.1996; 2 ♂♂, vi. 1997; 5 ♂♂, ibid, 600 m, iv.1998 (MV17.903);
Panay: 3 ♂♂, Prov. Aklan, Mt. Malindog, 600 m, iii.-iv.1997 (MV19.00, MV17.906); 1 ♂, E of Baloy, Brgy. Supanga, 32 km W Calinog, 570 m, 11°09.460'N, 122°21.279'E, 30.-31. viii.2008 (MV17.886).

Etymology: The arbitrary combination of letters is influenced by Jonathan Markus Kirch, born on 22.iii.2010, to whom the species is dedicated.

Diagnosis. Forewing length ♂♂, 20 mm - 23 mm; ♀, 26 mm - 27 mm. The males are not distinguishable from *C. gualberta* by external appearance, but the type series seems to be slightly paler than *gualberta* from Mindanao. The females show well developed black patches on the postmedian fascia of the forewings.

The male genitalia are characterized by the lacking distal valve process. They resemble those of *C. johannes* from Luzon.The main valve process is strongly curved, nearly angled. The uncus is large and of rhomboid shape with two very small central processes. The merged socii are deeply bilobed. The valves are convex shaped at their base. The phallus is swollen in the middle part and shows a pointed tip. Occasionally the tip bears two ore three smaller thorns. The 8th sternite is ventrally bilobed but the tips are pointed, not rounded as in *johannes*. The relatively small female genitalia have a slender 8th segment with a short and broad process, which differs from *johannes* by the notch. The apophyses anteriores are long as usual in the genus.



Fig. 433: Distribution of *C. jonathan*.

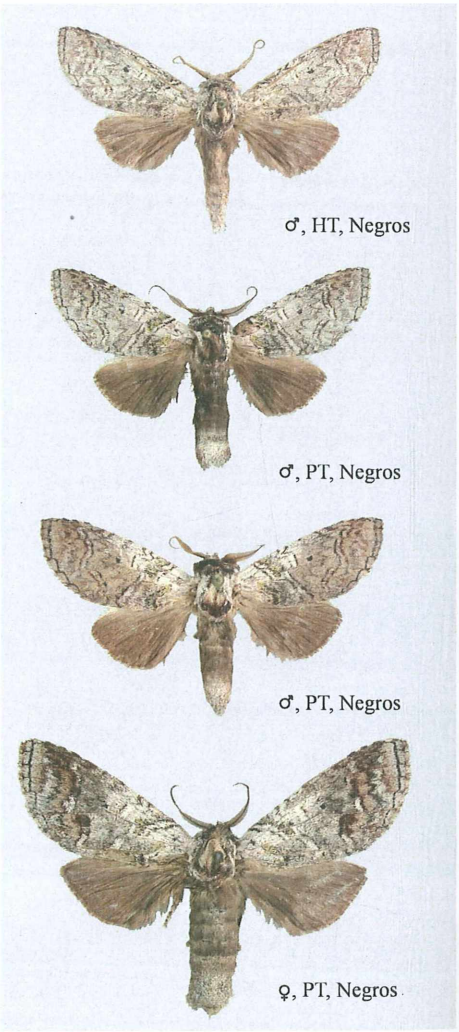


Fig. 434: Adults of *C. jonathan*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

PT, Negros (MV 17887).

PT, Negros (GU 76-48).

PT, Negros (MV 17901).

PT, Panay (MV 17906).

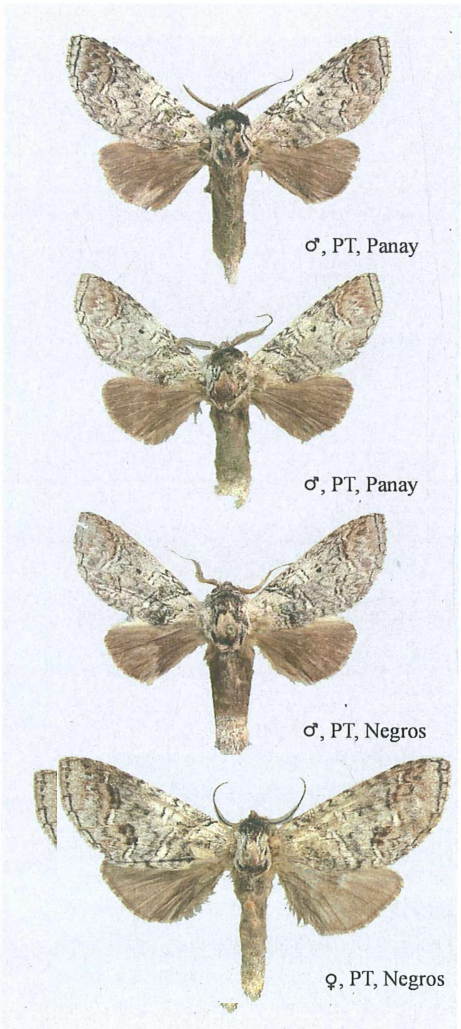


Fig. 435: Adults of *C. jonathan.*

Fig. 436: Genitalia of *Calyptronutum jonathan.*

The male genitalia vary slightly in the shape and size of the uncus, the shape of the valves including the main valve process. Also the shape of the 8th sternite is subject of individual variation. The Panay specimens (n = 3 GU) show a less concave shaped valve-costa and might represent a distinct subspecies.

Distribution. Endemic in the Philippines: Panay and Negros.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

96. *Calyptronotum johannes* spec. nov.

HT: ♂, Philipines, N Luzon, Mts. Prov., Chatol, 15 km SE Bontoc, 1.900 m, 17°02'N Breite, 123°03'E Länge, Nebelurwald, 24.ix., 14.x.1988 leg. Cerny & Schintlmeister – NHM, Wien.



Fig. 437: Distribution of *C. johannes*.

It is somewhat surprising, that the next relative, *C. jonathan*, does not occur in Samar and Leyte, but does fly in Negros and Panay. For established biogeographic reasons the species should also occur in Mindoro but we failed to get any member of the genus from there. It seems, that *johannes* is a species that prefers mountainous regions above 1.000 m; only a few individuals were collected at lower altitudes. The other congeners are lowland-species.

Paratypes: (16 ♂♂, 13 ♀♀):
Luzon: 1♂, Mts. Prov., Mt. Amuyao, 22 km SE Bontoc, 1.900 m 17°00' N, 121°09'E, 25.ix.1988 (GU 17-77); 1♂, Ifugao, Banaue vic., 1.200 m, 16°54'N, 121°06'E, 22.ix.-16.x.1988; 2♂♂, Ifugao, Mt. Polis-Paß, 20 km N Banaue, 2.000 m, 2.-14. ix.1998; 2♂♂, Kalinga E of Malibcong Basiwag, CAR border Abra, 1.690 m, 17°30.200'N, 120°58.881'E, 17.-18.iv.2007 (MV17.905); 3♂♂, ibid., 1550 m - 1.650 m, 17.-18.xi.2006; 3♂♂, 1♀, Sierra Madre, Aurora 15 km W of Dibulo, 560 m, 16°33.154'N, 122°13.334'E, 16.vi.2007; 2♀♀, ibid., 585 m, 14.-15.vi.2007 (MV17.876); 1♂, Sierra Madre, Mingan Mts., Aurora, 8 km W of Baler, 471 m, 16°41.463'N, 121°23.86'E, 18.vi.2007; 1♂, Sierra Madre 5 km W of Gen. Nakar, 180 m, 14°46.703'N, 121°36.799'E, 12.ii.2007; 1♀, ibid., 120 m, 5.vi.2004; 1♂, 6♀♀, Sierra Madre, Mingan Mts., Bongaban Bgy. Laby, 950 m, 15°38'N, 121°15'E, 26.-27.iv.2006; 1♀, ibid., 950 m, 7.-9.ix.2005 (MV17.896); 1♂, 1♀, ibid. 700 m, 4.ix.2006; Sierra Madre, Isabela, 17 km NW Dinapique, 550 m, 16°32N, 122°14'E, 3.ix.2006 (MV 17.892); 1♀, Apayao, pagudpud Adams, Brgy. Pantiang Managa riv., 340 m, 18°31.278'E, 120°54.642'E, 21.iv.2007;

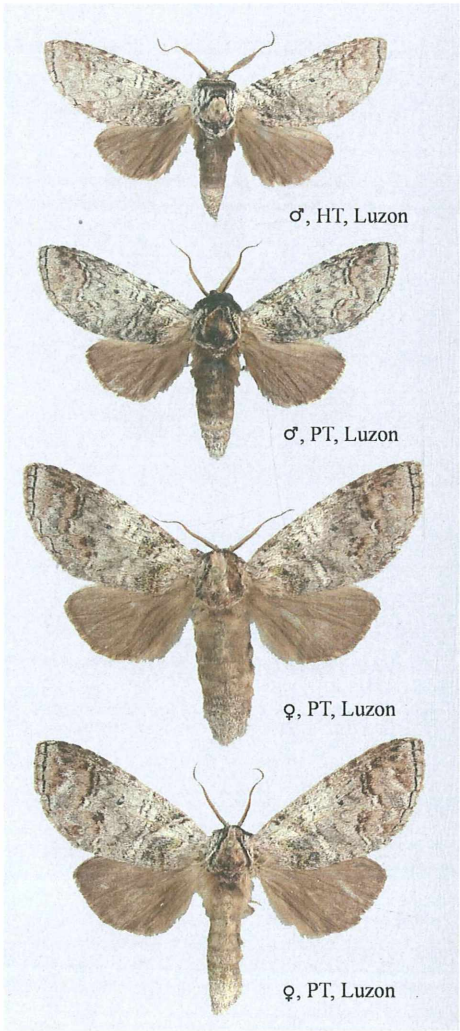


Fig. 438: Adults of *C. johannes*.

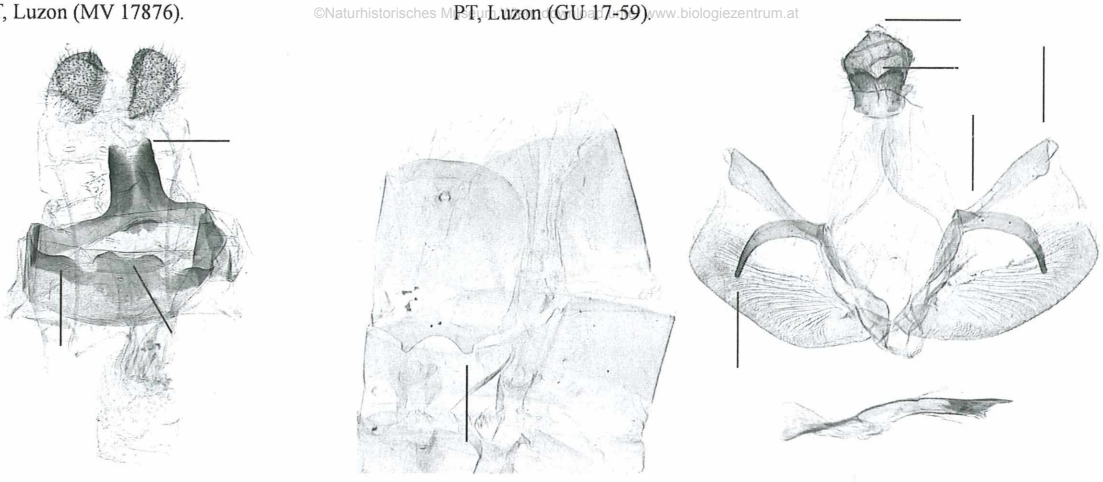
Etymology: The arbitrary combination of letters is influenced by Johannes Kirch, Berlin, father of Jonathan, to whom the species is dedicated. Dedicated to Johannes Kirch, Berlin, father of Jonathan.

Diagnosis. Forewing length ♂♂, 21,5 mm - 24 mm; ♀, 28 mm - 30,5 mm. *Calyptronotum johannes* is on average about 1 mm larger compared to *gualberta*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

PT, Luzon (MV 17876).

PT, Luzon (GU 17-59).



PT, Luzon (MV 17705).

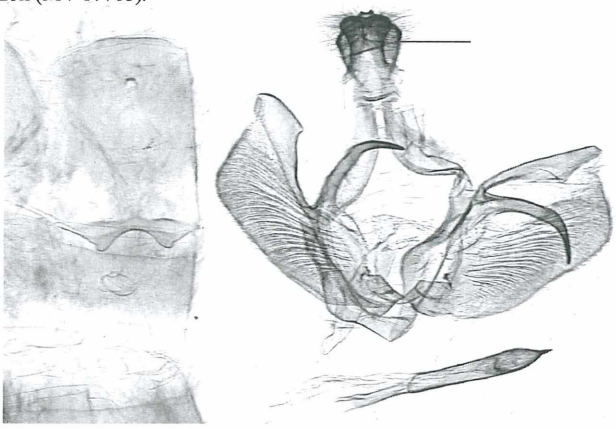


Fig. 440: Genitalia of *C. johannes*.

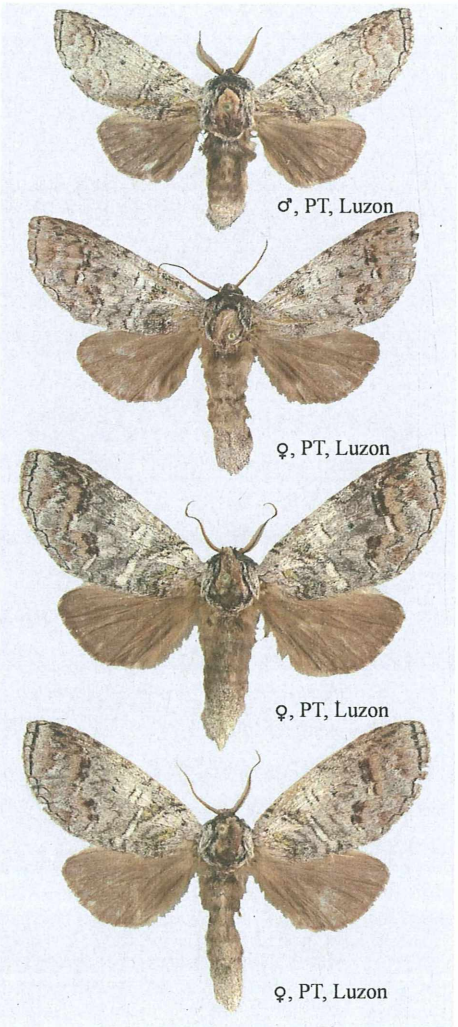


Fig. 439: Adults of *C. johannes*.

or *jonathan*, but indistinguishable by pattern or colouration.

The male genitalia resemble *C. jonathan*, but the valve costa is straight. The distal valve process is lacking. The main valve process is less strongly curved and shorter than in *jonathan*. The uncus is large and of rhomboid shape, occasionally with two small central processes. The merged socii are bilobed but the valley is less deep than *jonathan*. The length of the socii and also the size of the uncus vary individually as illustrated. The phallus is not swollen in the middle part as in *jonathan*. Occasionally the tip bears two ore three smaller thorns. The 8th sternite is bilobed ventrally, but the tips are softly rounded not pointed as in *jonathan*.

The female genitalia resemble *jonathan* with a slender 8th segment but the process is less notched. The ostium is bilobed. The signum is absent.

Distribution. Endemic in the Philipines: Luzon.

97. *Calyptronotum hannah* spec. nov.

©Naturhistorisches Museum Wien; download unter www.biologiezentrum.at

HT: ♂, Philippines, SE Leyte, Libertad near Tibo, primary forest, 50 m, 10°40'N, 125°6'E, 5.x.2005, leg. JH Lourens – NHM, Wien.

Calyptronotum hannah is in many ways a more remote and advanced species and more modified than the other congeners. The males can be recognized by their smaller size and shiny silver forewings. The male genitalia are unmistakable by the unique valve processes.



Fig. 441: Distribution of *C. hannah.*

Paratypes (9 ♂♂, 11 ♀♀):
Leyte: 1♂, W of Mahaplag, Mt. Balocaue, 600 m, 10°43'N, 124°55'E, 27.-28-vi.2006; 3♂♂, 1♀, ibid. 29.-30.iii.2005 (MV17.889); 2♂♂, 2♀♀, ibid. 19.-20.v.2005 (MV17.904, W15.737); 5♀♀, ibid. 15.-19.v.2007 (MV17.890, MV17.893); 1♀, Mt. Bolog, 10 km E of Mahaplag, 1.140 m, vi.1997;
Samar: 2♂♂, 8 km SE of Bagacay, 250 m, 11°48.025'N, 125°14.610'E, 26.iii.2009 (MV17.885); 1♀, ibid., 13.iii.2009; 1♂, 1♀, ibid. 140 m, 25.vi.2006 (MV17.887).

Etymology: The arbitrary combination of letters is influenced by Hannah Markus, Berlin, lucky mother of Jonathan, to whom the interesting species is dedicated.

Diagnosis. Forewing length ♂♂, 19 mm - 22 mm; ♀, 27 mm - 29 mm, a smaller species within the genus. *Calyptronotum hannah* is paler and the silver ground colour more shiny than the other congeners. The fuscous pattern of the forewings is, in most specimens of the type series, reduced. Only three of the ten females show well developed black patches on the postmedian fascia of the forewings; two females (individual form) display enriched blackish pattern in the basal area of the forewings. The chocolate brown hindwings are sligtly paler than the other congeners. The male genitalia are very distinct by the rounded shape of the valves and the large second valve process, which is somewhat pointed and much stronger developed than in *C. singapura.* The main process is angled, which is a diagnostic feature. The circular uncus is small, slightly bilobed distally and

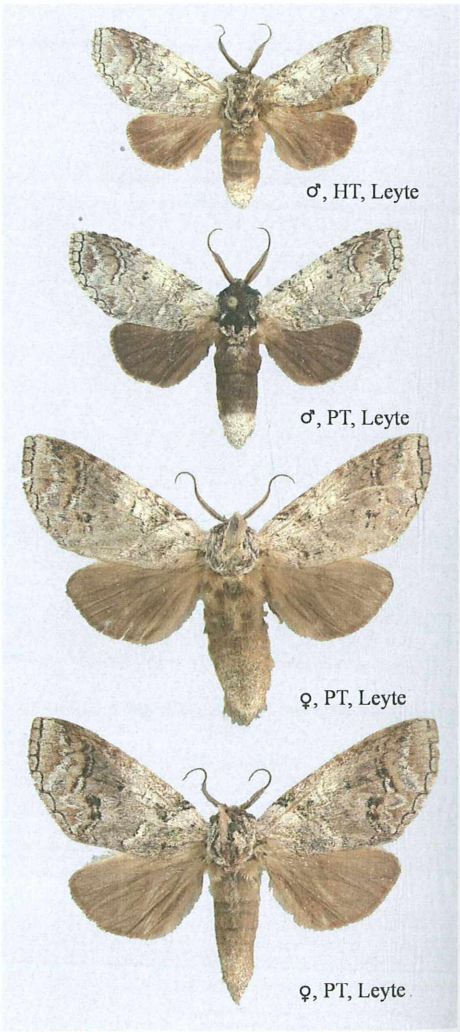
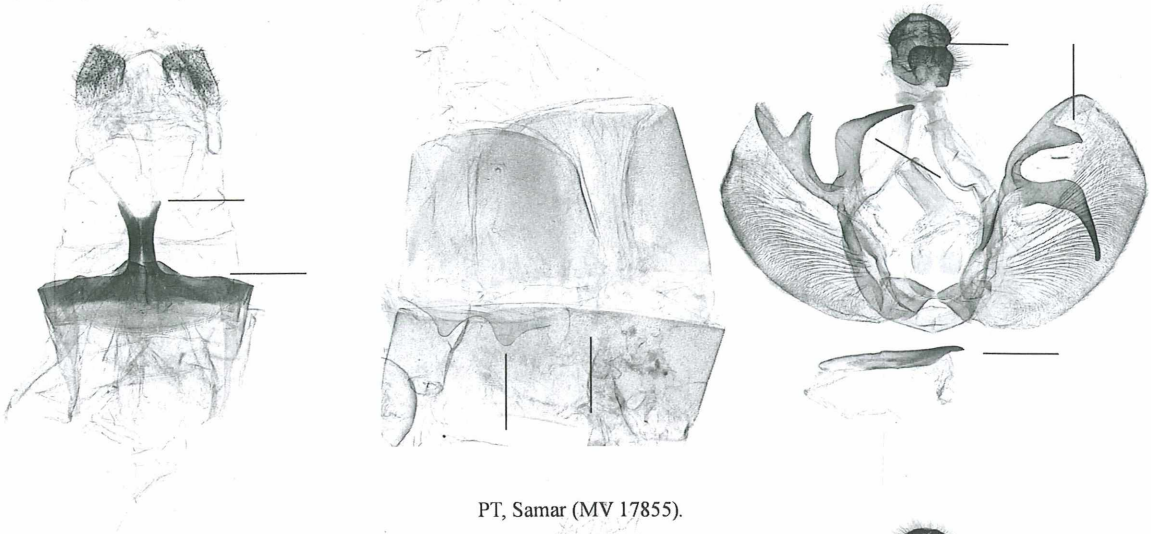


Fig. 442: Adults of *C. hannah.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

PT, Leyte (MV 17890).

PT, Leyte (MV 17904).



PT, Samar (MV 17855).

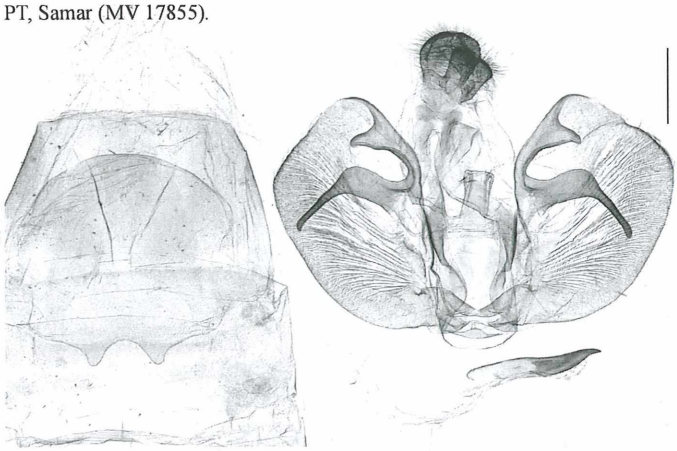


Fig. 444: Genitalia of *Calyptronotum hannah*.

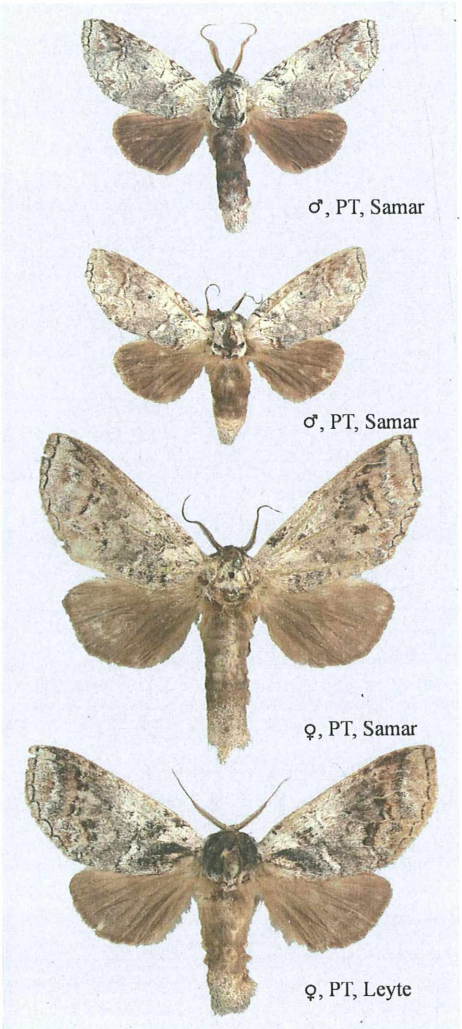


Fig. 443: Adults of *C. hannah*.

the merged socii are large and nearly unbilobed. The phallus is as in *singapura*. The 8th sternite has no projection, which is characteristic for most other congeners. The female genitalia resemble *gualberta* rather than *singapura* and the 8th sternite is straight, not sinuous. The process is slender and deeply notched. The apophyses are shorter and not strong sclerotized as in the other congeners. There is no signum. A dissected male from Samar shows very rounded shape of the valves and the 8th sternite, but the other features match well to specimens from Leyte.

Distribution. Endemic in the Philippines: Leyte and Samar.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Epistauropus Gaede, 1930: 625

Type-species: *Stauropus apiculatus* Rothschild, 1917 [= *Stauropus vinacaeus* Moore, 1879]

98. *Epistauropus vinacaeus* (Moore, 1879): 404; pl. 33: 1 (*Stauropus vinacaeus*).

HT: ♀, Darjiling – BMNH, London, examined.

= *Stauropus apiculatus* Rothschild, 1917: 245, pl. 3: 17
ST's: ♂♀, [W. Malaysia] , Peleng Isl. – BMNH, London, examined.

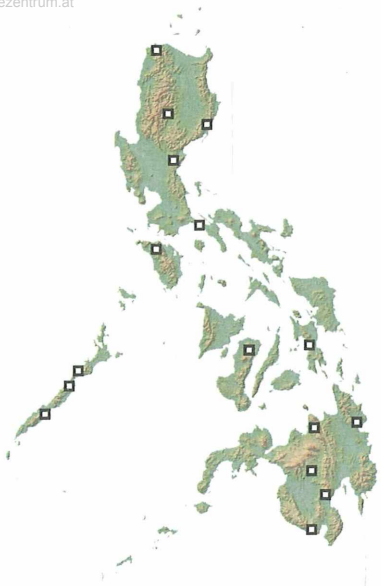


Fig. 445: Distribution of *E. vinacaeus*.

Diagnosis. *Epistauropus vinacaeus* has a darker forewing costa and a conspicous pale discal spot on the forewings of the sexualdimorphic females. The submarginal area of the forewings displays in both sexes characteristic whitish markings. Most males have a diffuse blackish patch near the tornus of the forewings.

The male genitalia display a massive tegumen with a broad saccus. The valves show a reduced apical process and two larger costal processes. The phallus bears many cornuti and spines.The slightly asymmetric 8th sternite is of unique shape and on both sides bilobed.

The female genitalia have a short and massive ductus bursae. The posterior apophysis are relatively long. The bursa copulatrix displays several chitinized structures as illustrated. The only dissected female was filled with many star-shaped cornuti (most of them were removed during mounting).

Variation. The species is variable in size, paleness of ground colour and the whitish pattern in the submarginal area of the forewings. The colouration of males ranges from pale greyish orange to deep magenta-brown. The male genitalia are very variable in the shape of the uncus. There are specimens with a deeply bilobed uncus but also unlobed individuals occur. The shapes of the valve processes are more slightly variable. However no correlation to geographical variation cold be found (n = 12 GU).

Bionomics. The adults fly throughout the year mostly in primary forests at lower altitudes up to 800 m, but

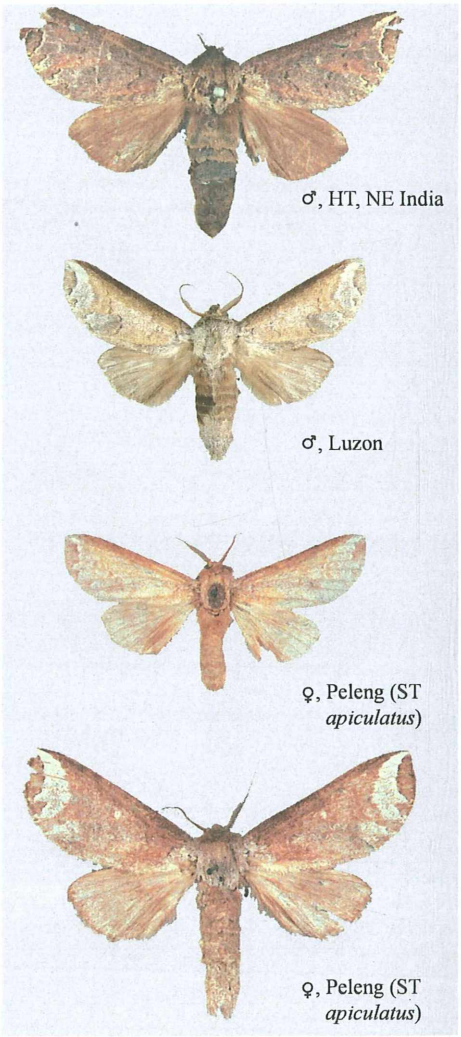


Fig. 446: Adults of *Epistauropus vinacaeus*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

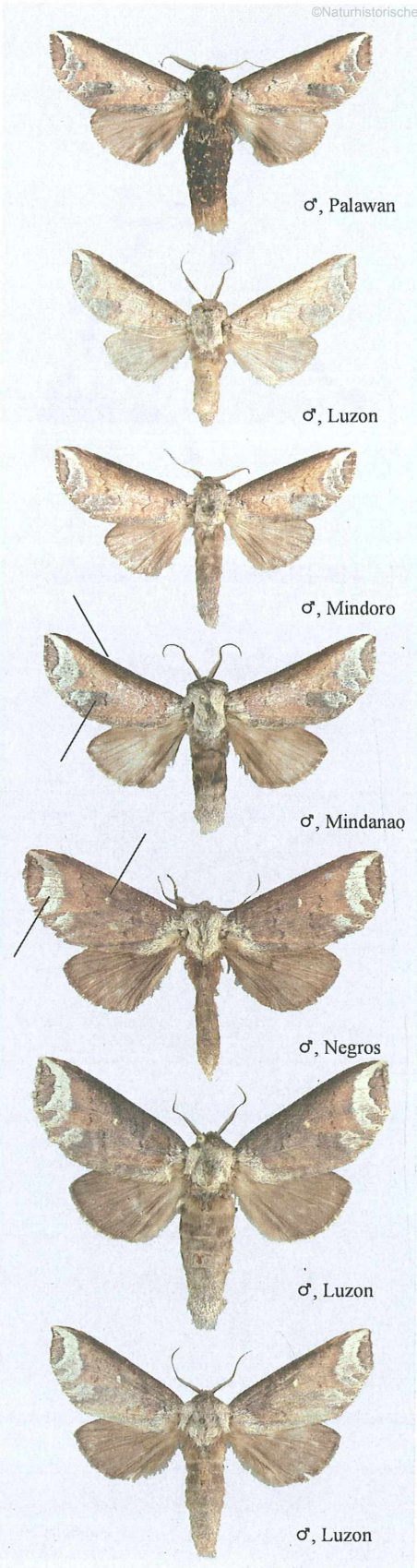


Fig. 447: Adults of *Epistauropus vinacaeus*.

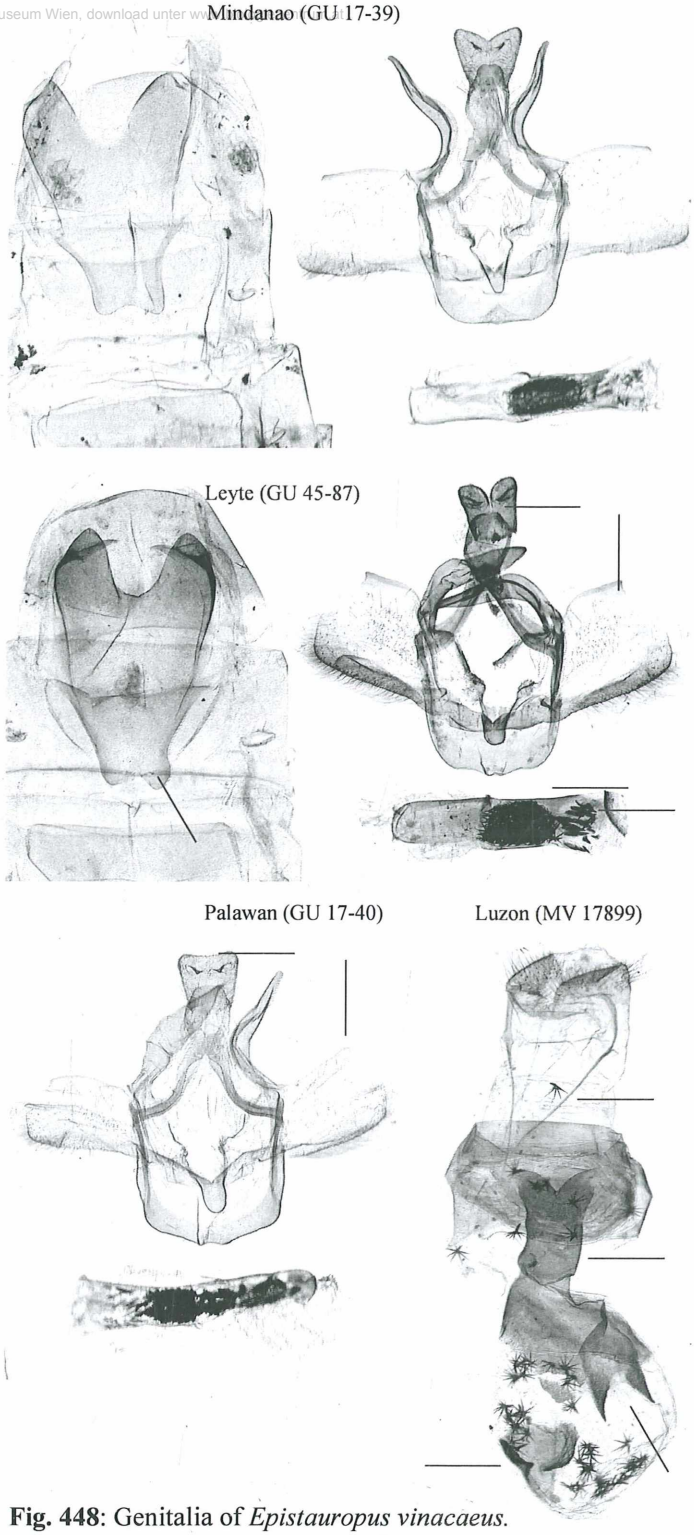


Fig. 448: Genitalia of *Epistauropus vinacaeus*.

occasionally up to 1.520 m.

Distribution. Distributed in the Himalaya, the Andaman Isl., Cambodia, Sundaland, Java, Sulawesi and the Philippines: Palawan, Luzon, Mindoro, Negros, Leyte and Mindanao.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Pseudostauropus Gaede, 1930: 631

Type-species: *Pseudostauropus plagosus* Gaede, 1930

Schintlmeister (2007) treated *Pseudostauropus* and *Calyptronotum* as subgenera of *Pseudofentonia*. Kobayashi & Kishida (2008) reviewed *Calyptronotum* as a distinct genus and we follow here their opinion. Thus *Pseudofentonia* must be treated also as a distinct genus, which is doubtless closely related with *Pseudofentonia* and *Mesophalera*.

99. *Pseudostauropus plagosus plagosus*

Gaede, 1930: 631; pl. 84: a.
HT: ♂, Sumatra, Penang, Barisan Gebirge – BMNH, London, examined.



Fig. 449: Distribution of *P. plagosus*.

Diagnosis. The species resembles *Calyptronotum* but is smaller and not fasciated on the forewings. A characteristic feature is the fuscous costal area near the apex of the forewings. The female is still unknown.

The male genitalia are unique by the strong sclerotized tegumen processes and the transparent valves with concave margin. The abdominal segments are less modified but slightly bilobed.

Variation. The variability ranges from pale, almost whitish coloured forewings with a reduced number of fuscous scales to greyish-brown fuscous individuals. The male genitalia show some individual variation in the shape of the uncus and the tegumen processes. Contrary to ssp. *haxairei* Schintlmeister, 2007: 174, pl. 28; fig. 134 (HT: ♂, Thailand, Kanchanaburi, Ban Thu Teay, Dong Leg, 14°42'374"N, 98°54'402"E, 710 m – in coll. A. Schintlmeister, Dresden, examined) from Indochina and N of the Malayan Peninsula no geographical correlation could be found. The ssp. *haxairei* differs by a conspicuously different shape of the tegumen processes (including structural differences) and a shorter phallus.

Bionomics. The adults were infrequently found in Palawan (n = 12) from xii.-ii. up to 800 m, but most adults were taken below 300 m in primary forests.

Distribution. *Pseudostauropus plagosus plagosus* is distributed in Sumatra, Borneo and Palawan; the ssp. *haxairei* occurs in Indochina.

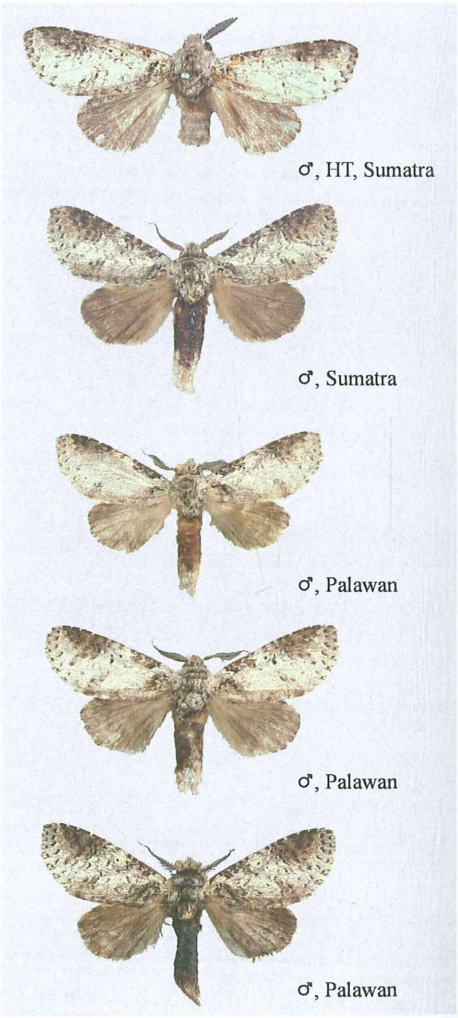
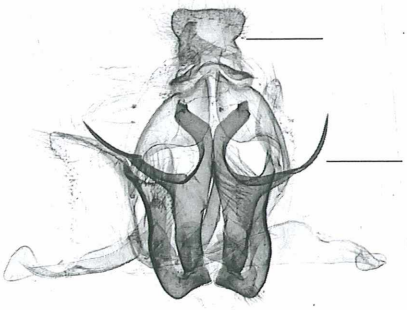


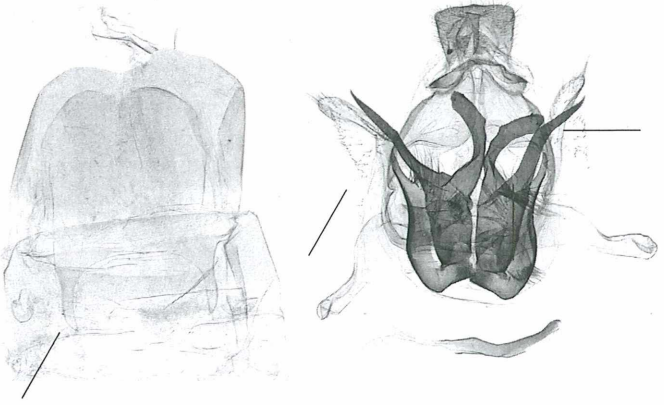
Fig. 450: Adults of *P. plagosus*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Borneo (GU 88-42), phallus not removed.



Palawan (MV 17628).



HT, Sumatra (BM #1059), phallus not removed.

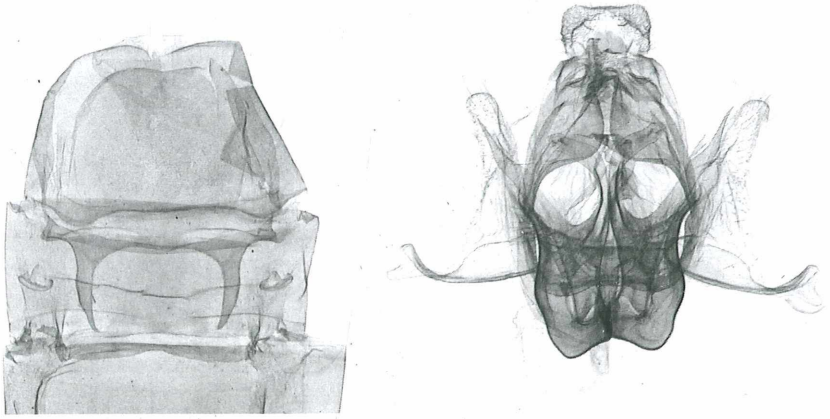


Fig. 451: Male genitalia of *Pseudostauropus plagosus*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

100. ***Pseudostauropus ocularis*** (SEMPER, 1898): 413; pl. 52: 8, 9 (*Stauropus ocularis*) **comb. nov.**

ST's: ♂♀, Philippinen, Luzon and Bohol – Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt/Main, examined.

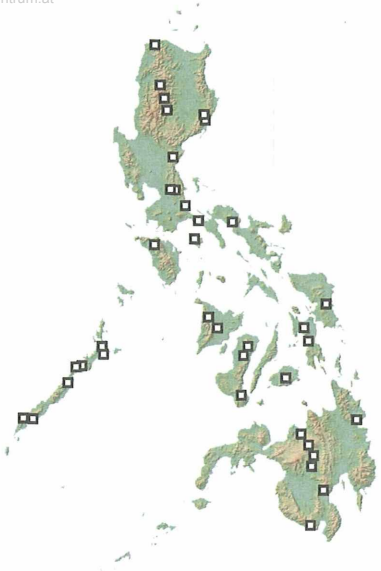


Fig. 452: Distribution of *P. ocularis*.

SEMPER (1898) originally described the species after a pair in *Stauropus* and GAEDE (1930) transferred it to *Pseudofentonia*. The external appearance matches closely to *Pseudostauropus plagosus* but the male genitalia are different. The male genitalia were mounted in different positions to show the complex three dimensional structure. Based hereon, we opted to maintain *ocularis* in *Pseudostauropus* for the following reasons: The uncus is of same type but has an additional pair of socii. The somewhat special sacculus structure of the valves matches those of *plagosus*. The tegumen is highly modified and well sclerotized, with several projections and processes. The rather simple phallus as well as proximal side of the 8th sternite are not noticeably different from *plagosus*. However the differences between these two species may eventually lead to the designation of a distinct genus.

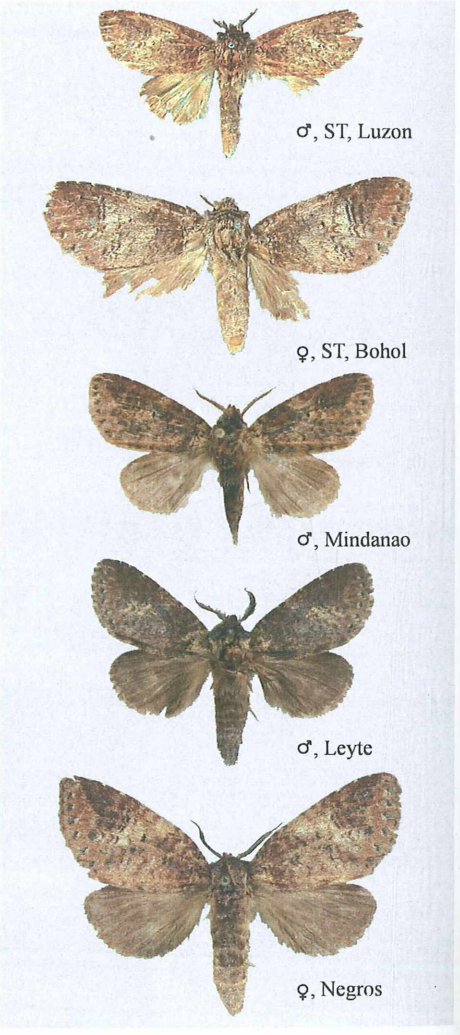


Fig. 453: Adults of *P. ocularis*

Diagnosis. *Pseudostauropus ocularis* has a reddish-brown external appearance with a small but sharp marked black discal spot on the forewings. The submarginal fascia of the forewings is well marked as a row of black patches.

The male genitalia are identified by the unique teguminal structures and the circular uncus with a pair of smaller socii. The proximal shape of the bilobed 8th sternite is unique. The female genitalia have long apophyses and a large rhomboid ostium.

Variation. The wings vary from deep chocolate-brown to pale red-brown. There are very dark, almost uniform fuscous brown specimens and – more rarely – pale yellowish-brown individuals. The male genitalia are variable in the shape of the teguminal structures and also the shape of the uncus,

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

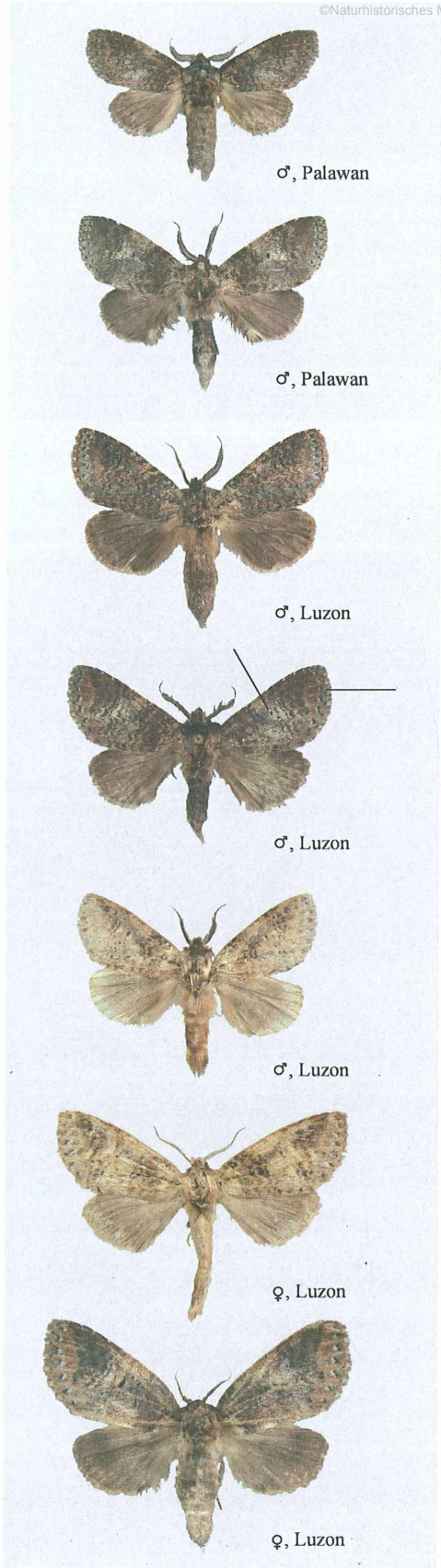


Fig. 454: Adults of *P. ocularis*.

Samar (MV 17847).

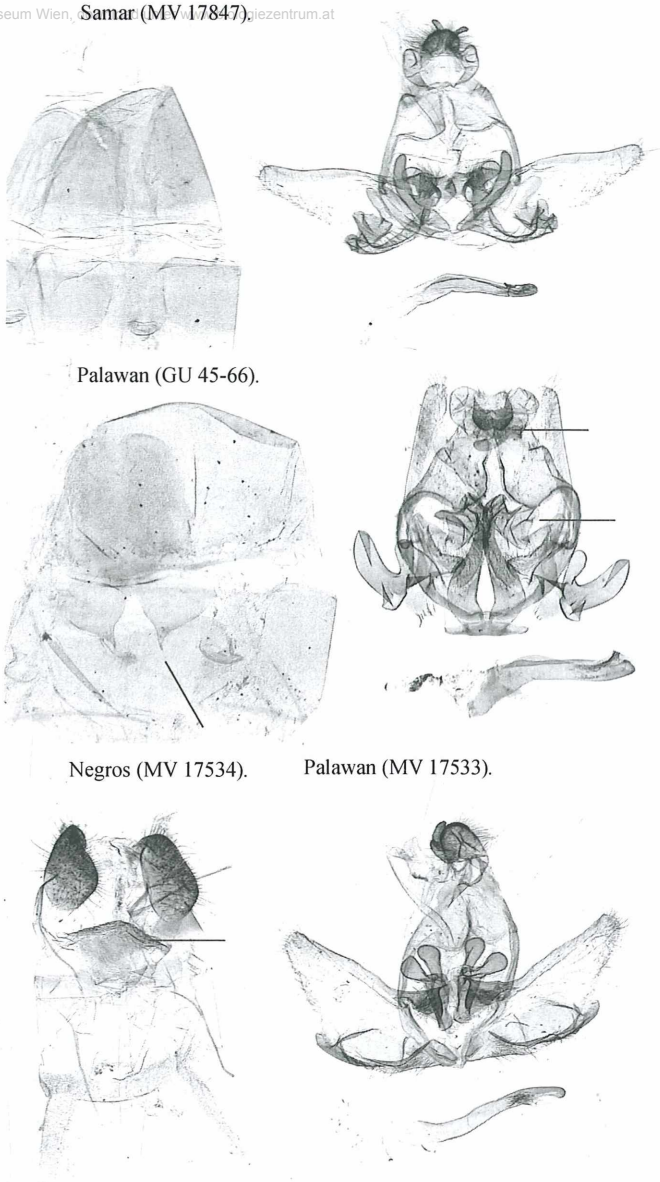


Fig. 455: Genitalia of *P. ocularis*.

the valves, as illustrated and, to a lesser extent, in the shapes of the uncus and the phallus. No geographical variation was found.

Bionomics. The adults commonly fly during all months of the year up to 1.600 m in various types of forests as well as cultivated areas. The females are rarely attracted to light, less than 2% of the observed males.

Distribution. The species is endemic in the Philippines: Palawan, Luzon, Mindoro, Samar, Leyte, Negros, Bohol and Mindanao. In Sulawesi a further, hitherto undescribed, sister species occurs.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Disparia Nagano, 1916: 3

Type-species: *Fentonia sordida* Wileman, 1911
[= *Stauropus diluta* Hampson, 1910]

101. *Disparia diluta russus* ssp. nov.

HT: ♂, Philippines, C. Palawan, NE of Napsan, 7 km N of Salakot Falls, 950 m, 09°51'N, 118°37'E, 14.-15.iii.2006 leg. JH Lourens – NHM, Wien.

The species tends to establish geographical subspecies and was reviewed by Schintlmeister (2007: 175). At that time only two males were known from Palawan, not enough to describe a subspecies, but at present we have five males at our disposal and introduce a further subspecies:



Fig. 456: Distribution of *Disparia sundana*.

Paratypes (4 ♂♂):
Palawan: 1 ♂, Mt. Mantalingahan, house of Ening Ening, 8°47'16.1"N, 117°42'03.3"E, 1.100 m, 21.-22.v.2001; 2 ♂♂, Mt. Mantalingahan, 600 m – 800 m, 2.-12.viii.2000 (GU 78-40, MV 17894); 1 ♂, Mt. Mantalingahan, 800 m, xii.1997.

Diagnosis. Forewing length ♂♂, 23 mm -26 mm. The subspecies strongly resembles ssp. *borneensis* Schintlmeister, 2007: 177, pl. 28; fig. 137 (HT: ♂, Indonesia, Kalimantan Selatan, 30 km E Kandagan, 15 km NE of Loksado, 1.100 m, 2°52'S, 115°38'E in coll. A. Schintlmeister, Dresden, examined) but differs by the more weakly developed fuscous tornal patch and the paler rather yellow-whitish than reddish-grey ground colour of the forewings. The fuscous, contrasting basal area of the forewings is larger and extends more towards the tornus. The hindwings are less reddish tinged than ssp. *borneensis*. The ssp. *sumatrensis* is distinguished by more reddish wings and absent fuscous tornal patch on the forewings; the ssp. *sundana* has the submarginal area of the forewings darker than the whitish median area.

The male genitalia differ from ssp. *borneensis* by a deeper bilobed uncus, robuster socii, a more slender apex of the valve and a more slender and longer phallus. Contrary to the external appearance, the

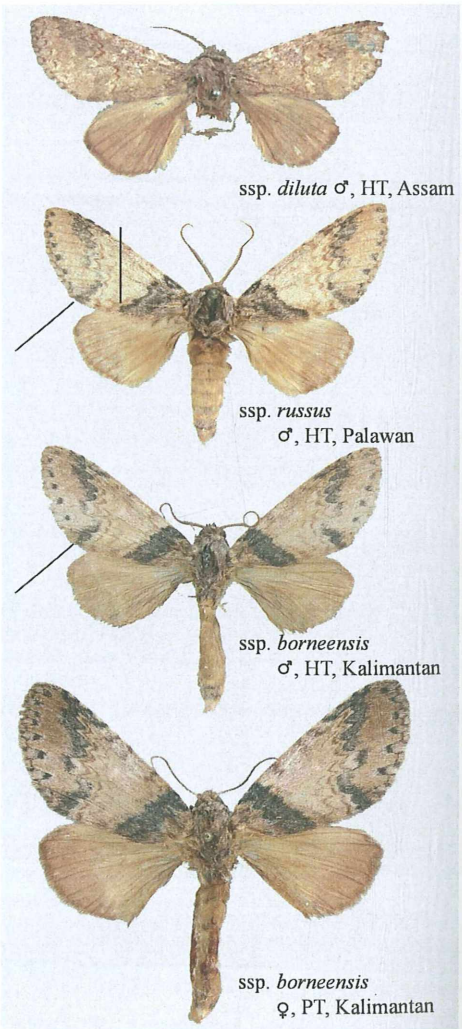


Fig. 457: Adults of *Disparia diluta*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

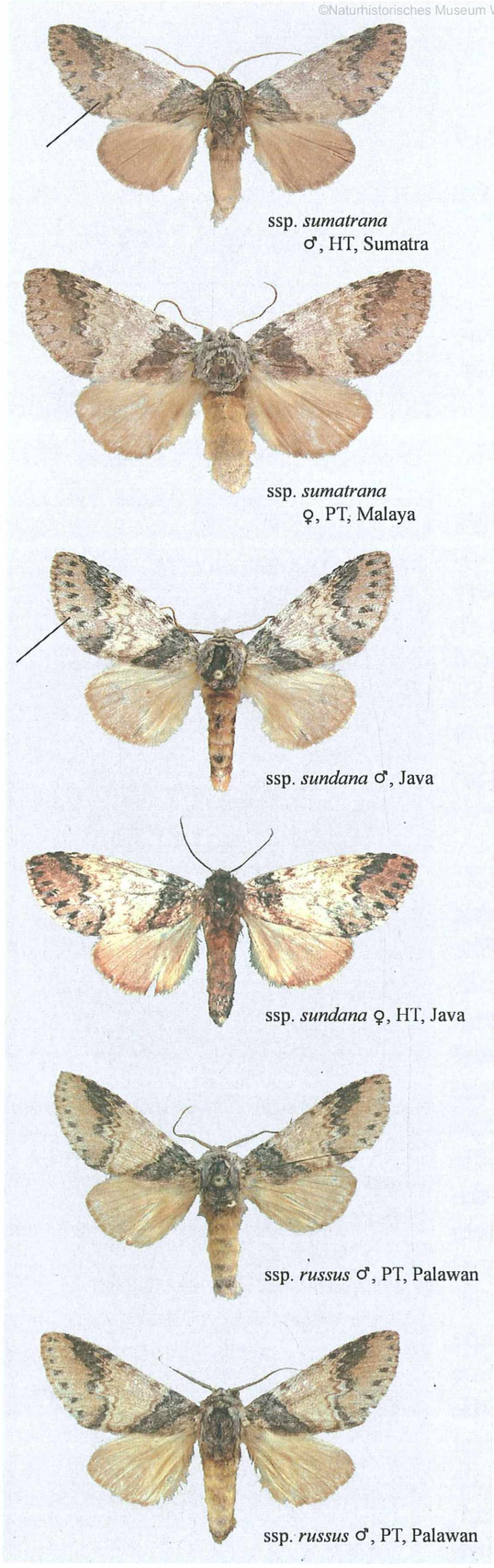


Fig. 458: Adults of *Disparia diluta.*

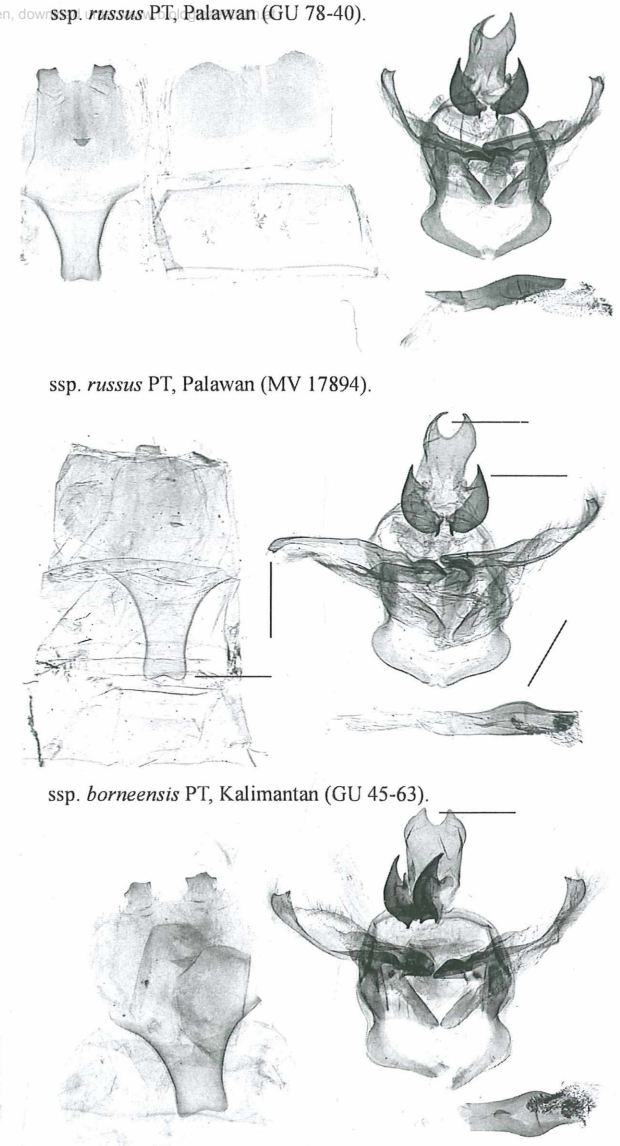


Fig. 459: Genitalia of *Disparia diluta.*

male genitalia are more similar to ssp. *sundana* than *borneensis.* The female of ssp. *russus* is still unknown.

Distribution. *Disparia diluta russus* is endemic in the Philippines: Palawan. The ssp. *borneensis* is restricted to Borneo, the ssp. *sumatrana* SCHINTLMEISTER, 2007 is found in Sumatra, Malaya and S Indochina; the ssp. *sundana* (ROEPKE, 1944) flies in Java. The nominotypical ssp. *diluta* (HAMPSON, 1910): 92 (HT: ♂, Assam – BMNH, London, examined) and further subspecies occur from the Himalayas, Indochina, China, Taiwan to Japan.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Chadisra WALKER, 1862: 81

Type-species: *Chadisra bipars* WALKER, 1862

102. *Chadisra calapana* (SEMPER, 1898): 414

(*Pheosia calapana*)
HT: ♀, Philippinen, Nord-Mindoro, Calapan – ZMHU, Berlin, examined.

= *Chadisra luzonensis* KIRIAKOFF, 1970: 121; fig. 16
HT: ♂, Philippine Is., Manila, Santa Ana – BMNH, London, examined, **syn. nov.**

KIRIAKOFF (1968: 215) placed *Pheosia calapana* as a synonym of *Dediama basivacua* WALKER, 1862 due to misidentification of *calapana* (HOLLOWAY 1983: 78, 79). It seems, that the entire Philippines are populated by only one species of the complex (n > 300 adults examined, n = 19 genitalia dissected from the Philippines). *Chadisra luzonensis* is therefore a junior synonym of *Pheosia calapana* and *is* representing male and female of the same species (syn. nov.).

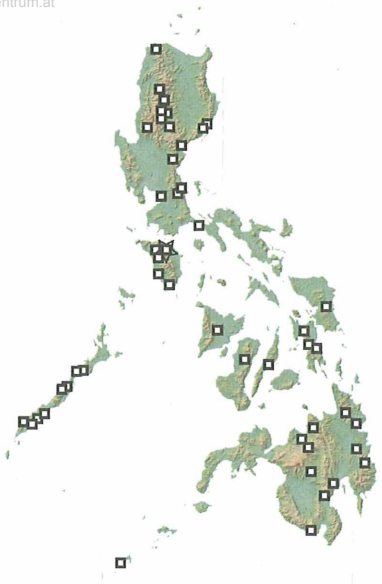


Fig. 460: Distribution of *C. calapana*.

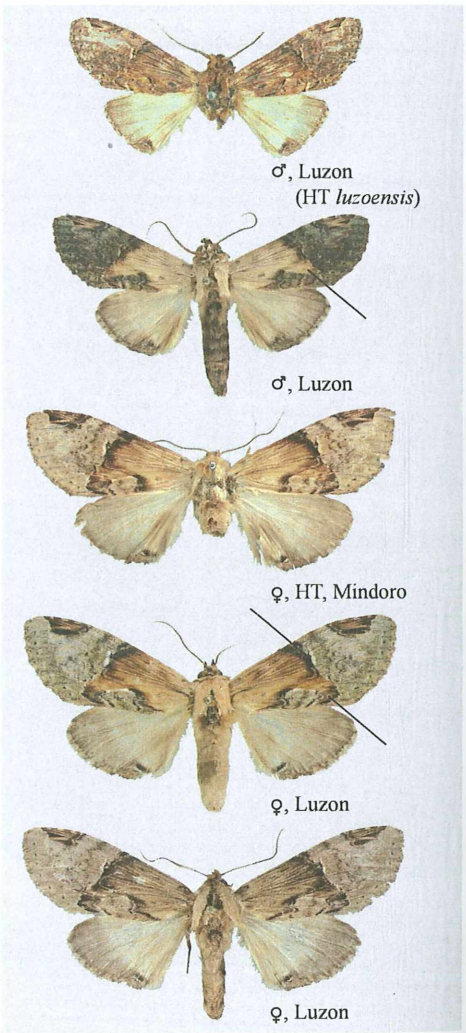


Fig. 461: Adults of *Chadisra calapana*.

Diagnosis. *Chadisra calapana* is a sexualdimorphic species that occurs in both sexes in two morphs. The species is indistinguishable from the S Indian *C. basalis* (MOORE, 1883) and the Sulawesian *vittata* (KIRIAKOFF, 1970) by external appearance but the male genitalia are very different. Separation from the other species of the complex is possible by the shape of the pale brown area (pale male morph) of the forewings and the dorsal and median markings of the females. Most females of the genus, and *calapana* in particular, have a small transversal white discal streak.

The male genitalia are characterized by the shape of the circular uncus, with a pair of very massive socii, a pair of prominent saccus processes of the tegumen and by the unique shape of the robust phallus. The 8th tergite is deeply bilobed. The female genitalia have a strong sclerotized bilobed ostium with a central projection.The ductus bursae is short, and the weakly sclerotized bursa copulatrix is small.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

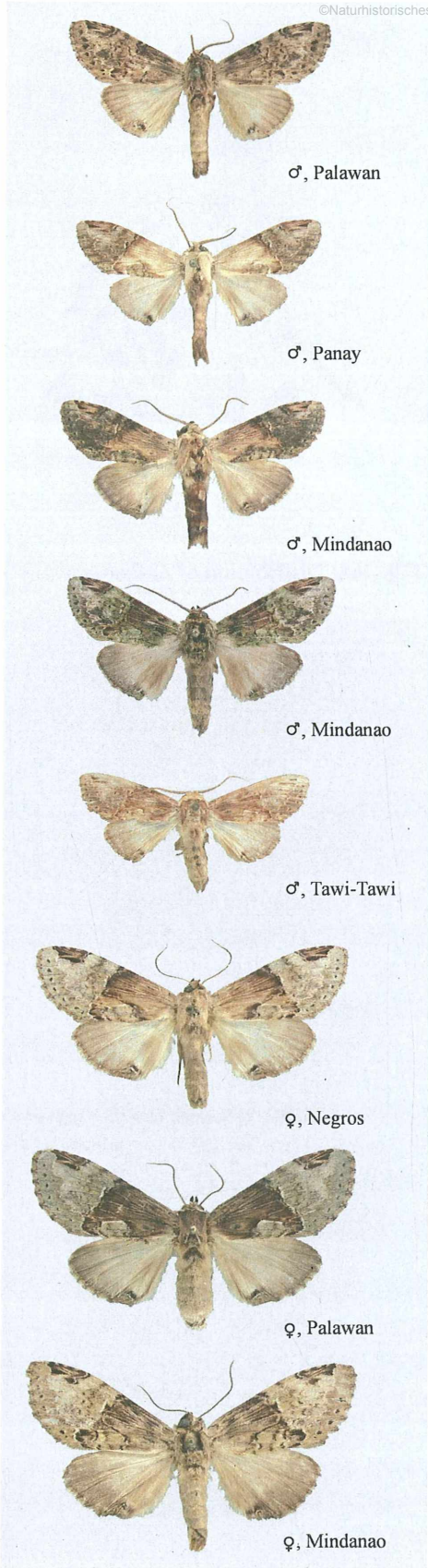


Fig. 462: Adults of *Chadisra calapana.*

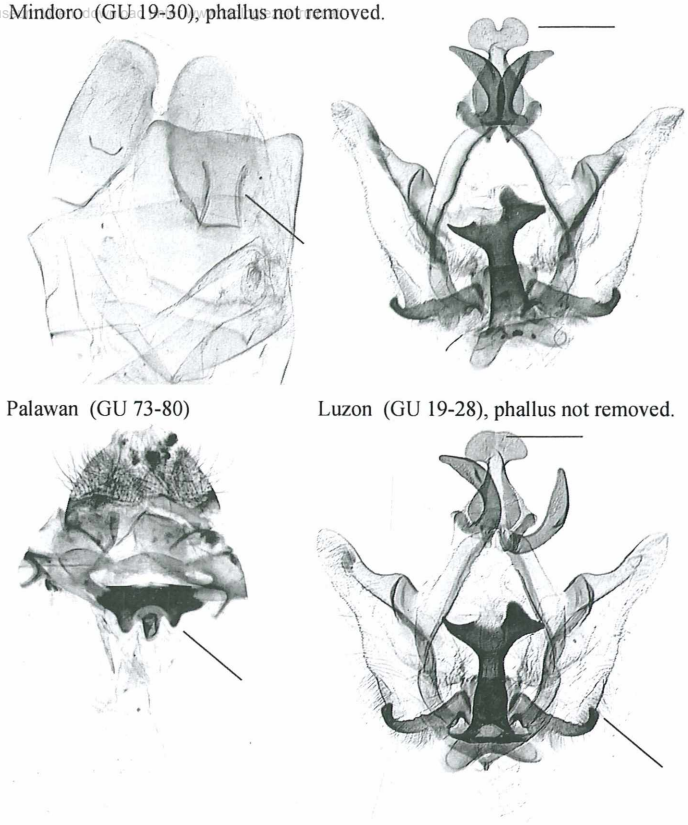


Fig. 463: Genitalia of *Chadisra calapana.*

Variation. The males vary in the size and the contrasts of the pale median area of the forewings. Individuals of both morphs display occasionally greenish tinged forewings. Females occur also in forms with brownish or pale yellowish-orange forewings. Some adults show greenish tinged forewings. The male genitalia vary moderately, especially by the shape of the uncus, which is in some individuals not bilobed.

Bionomics. This is one of the most common notodontids of the Philippines and the adults occur everywhere (cities, urban landscapes, various kinds of badland and forests) throughout the year. The adults were observed in Mindanao between 0 m - 2.200 m above sea-level, but most specimens were taken below 1.000 m.

Distribution. *Chadisra calapana* is distributed (all confirmed by male genitalia dissections) in Bali, Java, Sumatra, Borneo and the Philippines: Palawan, Luzon, Mindoro, Samar, Panay, Negros, Cebu, Leyte, Mindanao and Tawi-Tawi (Tarawakan).

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Loda KIRIAKOFF, 1970: 116

Type-species: *Loda celebensis* KIRIAKOFF, 1970

Loda belongs to the *Chadisra*-complex. Also the polymorphism and sexualdimorphism resemble many *Chadisra* species and probably *Loda* will be placed as a subgenus of *Chadisra*, once the group will be revised. Only two species are hitherto known.



Fig. 464: Distribution of *Loda lunae*.

103. *Loda lunae* SCHINTLMEISTER, 1993: 140; pl. 23: 4, pl. 25: 3.

HT: ♂, Philippinen, Luzon, Nueva Vizcaja, Dalton-Paß, Santa Fe, 800 m, 15°07'n. Breite, 120°56' ö. Länge – NHM, Wien, examined.

Diagnosis. This species is sexualdimorph. The males occur in two main-forms: The fuscous brown to blackish ground colour of the forewings have a contrasting creamy dorsal- and submarginal space. The border between both areas is a clear, contrast by a pale line. The other form is uniformly coloured and has paler brownish forewings with two black streaks in the postmedian area and a paler basal area. Both forms display a conspicous creamy apical patch. The females occur in a darker morph with a contrasting creamy band along the costa of the forewings. The second morph has a pale yellowish-brown basal- and median area of the forewings with more fuscous contrasting dorsal and submarginal spaces.

The male genitalia of both morphs are not distinguishable. They are characterized by a rectangular shaped uncus and a pair of smaller socii. The saccus shows a pair of processes. In the upper part of the tegumen a bilobed plate with an unique shape is situated (*L. celebensis* KIRIAKOFF, 1970 shows instead of the plate a pair of large tegumen processes). The phallus is small and has a massive spine. The 8th sternite is deeply bilobed. The female genitalia have robust distal two abdominal segments and a bilobed ostium. The ductus bursae and the bursa copulatrix are reduced in size.

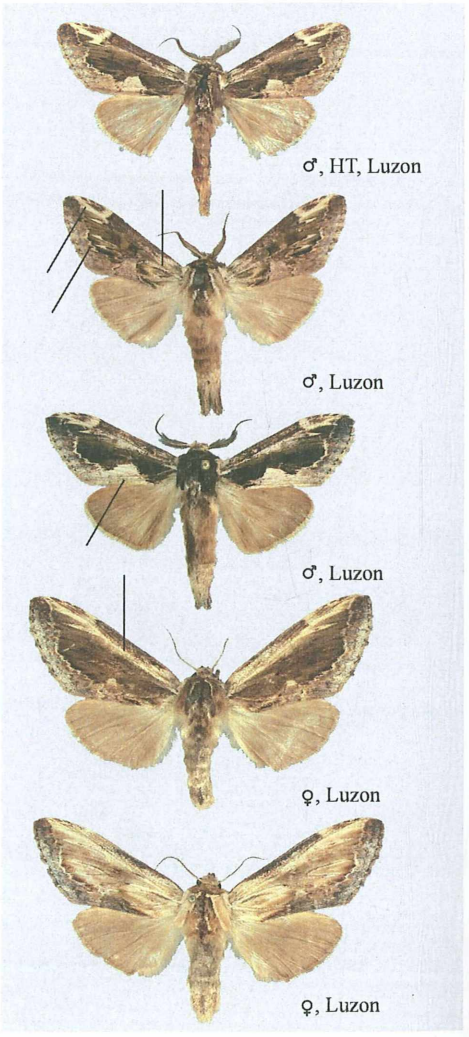


Fig. 465: Adults of *Loda lunae*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

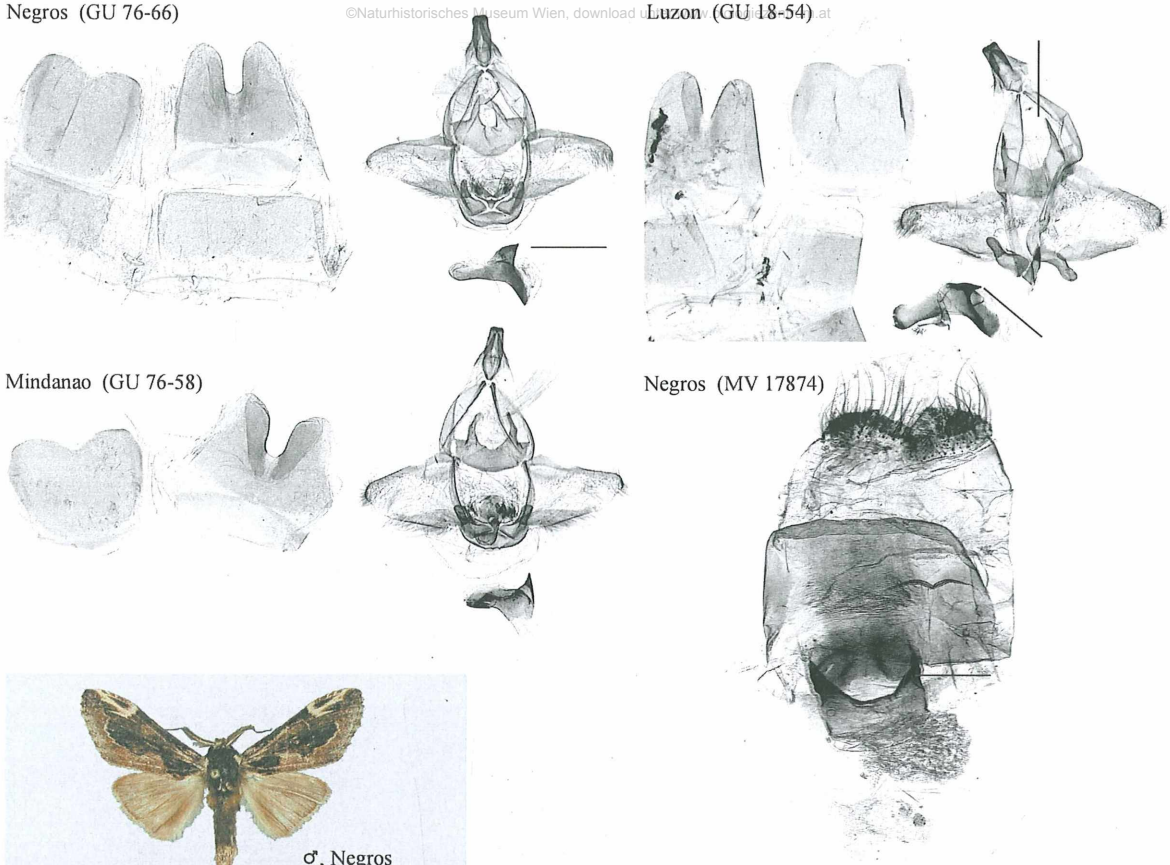


Fig. 467: Genitalia of *Loda lunae.*

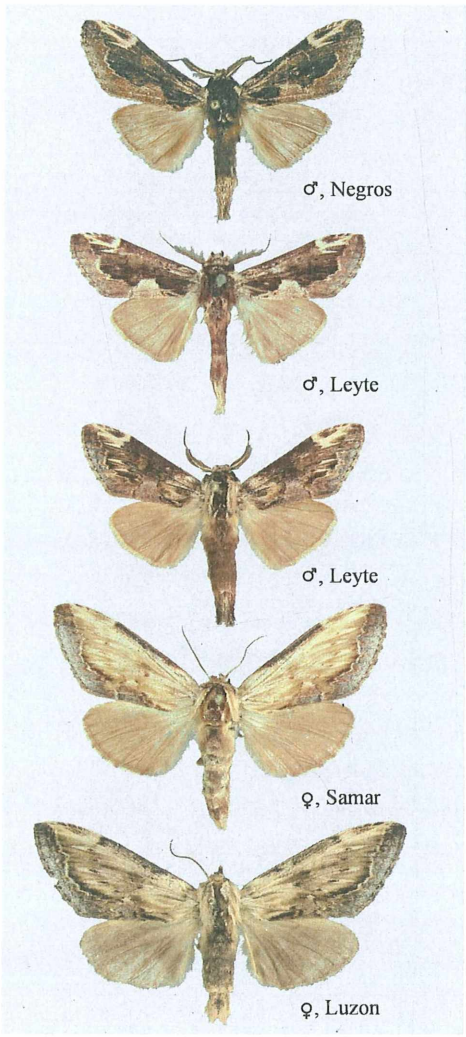


Fig. 466: Adults of *Loda lunae.*

Variation. The species is – apart from the polymorphism – variable. Extensive individual variation was found in the foerwing colour, ranging from blackish to reddish-brown and variation of paleness. A male from Negros (illustrated here) of the fuscous morph has no creamy dorsal patch. The females are more variable (as illustrated) than the males. All morphs and individual forms were simultaneously collected in Luzon, Leyte and Negros during one night. The male genitalia vary in the shape of the teguminal plate, the phallus and in the shape and sclerotizations of the 8th abdominal segments. Only two females were dissected. It was not possible to find any geographically correlation.

Bionomics. The adults occur locally in different types of rainforests but can sometimes be common. The moth was found throughout the year between 100 m - 1.900 m, most common below 1.000 m.

Distribution. *Loda lunae* is endemic in the Philippines: Luzon, Negros, Samar, Leyte and Mindanao.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Higena MATSUMURA, 1925: 394

Type-species: *Higena plumigera* MATSUMURA, 1925
[= *Hyperaeschra trichosticha* HAMPSON, 1897]

= *Kikuchiana* MATSUMURA, 1927: 10 (*Kikuchiana infuscata* MATSUMURA, 1925 [= *Hyperaeschra trichosticha* HAMPSON, 1897])
= *Anthyperaeschra* GAEDE, 1930: 642 (*Hyperaeschra trichosticha* HAMPSON, 1897)
= *Sagamora* KIRIAKOFF, 1967: 61 (*Sagamora umbrina* KIRIAKOFF, 1967)

Higena is a taxonomic difficult unit with a number of seven or more almost inconspicous species. The Philippines are populated by one species only, which is very diverse in its male genitalia (the females are rare in collections and only two were dissected). This led to the description of six subspecies; one subspecies from Samar is added to this list.

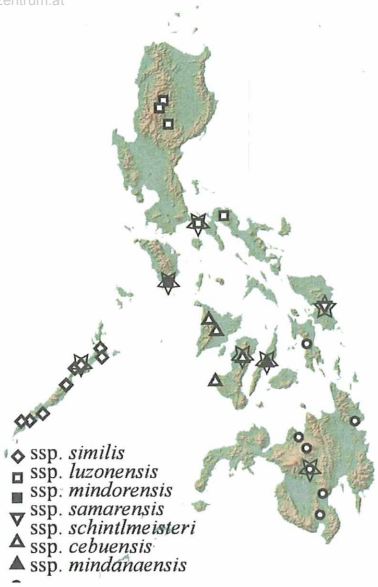


Fig. 468: Distribution of *Higena similis*.

104. *Higena similis similis* (SCHINTLMEISTER, 1993: 137, pl. 23: 7, pl. 24: 4
HT: ♂, Philippinen, Nord-Palawan, S. Vicente, 20 km NEE Roxas, 10° 21' n. Breite, 119° 10' ö. Länge, 400 m – NHM, Wien.

Higena similis luzonensis SCHINTLMEISTER, 1993: 137, pl. 23: 8, 9, pl. 24: 5
HT: ♂, Philippinen, Luzon, Quezon Prov., Quezon Forest Nat. Park, 14° 01' n. Breite, 122° 11' ö. Länge, 250 m – NHM, Wien.

Higena similis mindorensis SCHINTLMEISTER, 1993: 138, pl. 24: 6
HT: ♂, Philippinen, Mindoro occid., 35 km NNE San José, Pusok, 12° 36' n. Breite, 120° 55' ö. Länge, 200 m – NHM, Wien.

Higena similis cebuensis SCHINTLMEISTER, 1993: 138, pl. 23: 6, pl. 24: 7
HT: ♂, Philippinen, Cebu, 5 km N Cebu City, 10° 20' n. Breite, 123° 54' ö. Länge, 400 m – NHM, Wien.

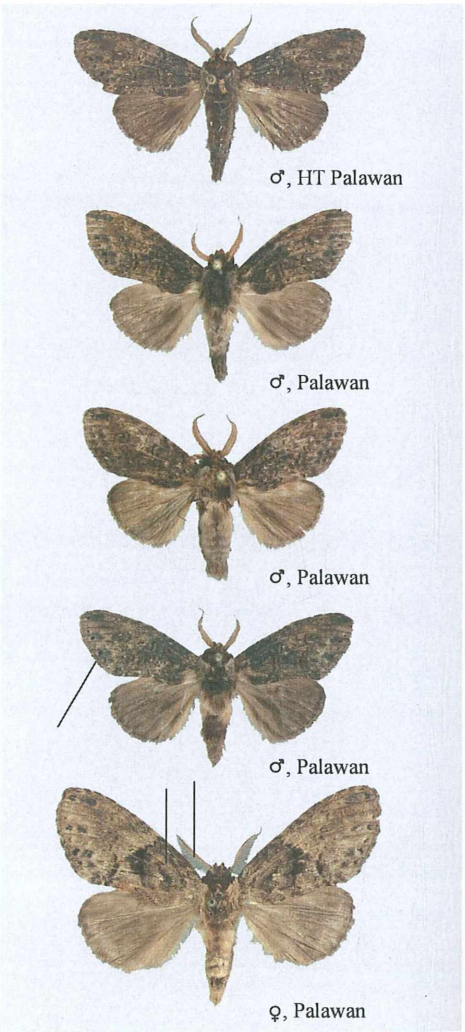


Fig. 469: Adults of *Higena similis similis*.

©Naturhistorisches Mus

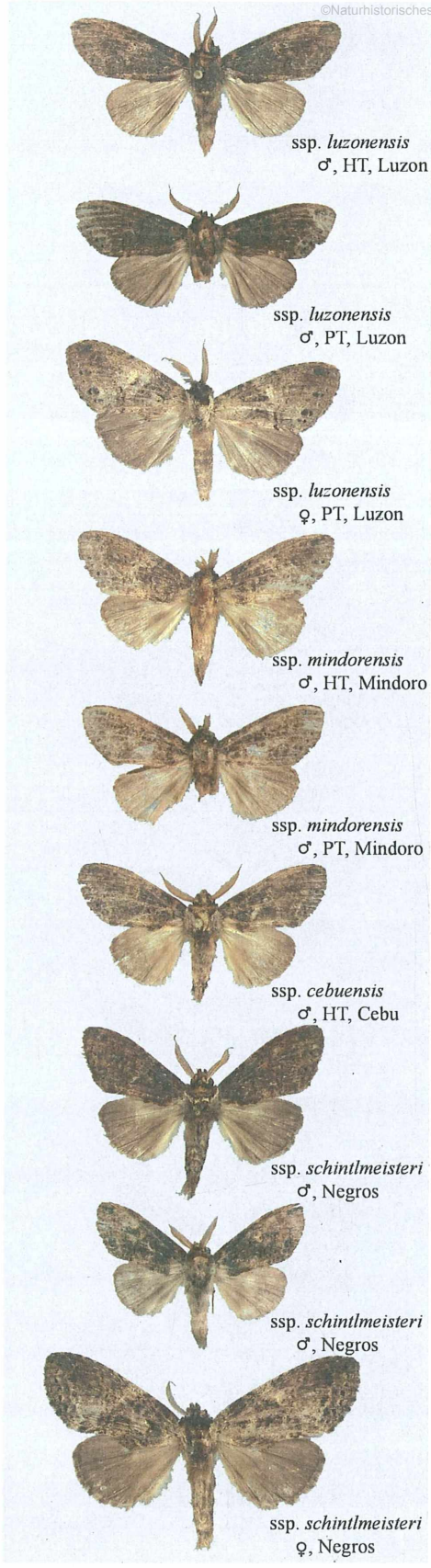


Fig. 470: Adults of *Higena similis*.

Higena similis schintlmeisteri KOBAYASHI & KISHIDA, 2008: 176, figs. 4, 13
HT: ♂, Philippines, Negros, Mt. Canlaon – National Museum of Nature and Science, Tokyo, not examined.

Higena similis mindanaensis SCHINTLMEISTER, 1993: 138, pl. 23: 10, pl. 24: 8
HT: ♂, Philippinen, Mindanao, Bukidnon, 40 km NW Maramag, Dalongdong, Talakag, 800 m – NHM, Wien.

***Higena similis samarensis* ssp. nov.**
HT: ♂, Philippinen, C. Samar 8 km SE of Bagacay, prim. forest road, 250 m, 11°48.025'N, 125°14.610'E, 13.iii.2009 leg. H. J. LOURENS & K. CERNY.

Paratypes (10 ♂♂, 1 ♀):
Samar: 8 ♂♂, 1 ♀, 8 km SE of Bagacay, 250 m, 11°48.025'N, 125°14.610'E, 13.iii.2009 (MV 17.910); 1♂, ibid., 20.iii.2009; 1♂, Concord, Cadac-an, 150 m, 22.-24.iv.1997 (GU 79-92);

Diagnosis. Forewing length ♂♂, 16 mm - 17 mm. The new subspecies is not distinguishable by external appearance from the other subspecies of *similis*, but the small series includes some specimens (6 out of n = 9) with blackish shadowed forewings.

The male genitalia resemble rather *ssp. mindanaensis* than *luzonensis*. The ampulla of the valves is much reduced in one specimen and hardly visible but in the second dissected male an ampulla lacking. The strong sclerotized sacculus-projection is semicircular and smaller than in all other subspecies except *mindanaensis*. The valves are narrower than ssp. *mindanaensis*. Both 8th abdominal segments are deeper bilobed than ssp. *mindanaensis*; the shape of 8th sternite is diagnostic for ssp. *samarensis*.

Diagnosis. *Higena similis* is a inconspicous fuscous brown coloured smaller species. The males have a fine blackish pattern, occasionally with a row of black marginalspots on the forewings. The sexualdimorphic females have also strong bipectinated antennae (as

the male) and a blackish basal- and median area. The postmedian area of the forewings is paler brown. The male genitalia are characterized by a serrated, stronger sclerotized sacculus structure of the valves and a curved phallus. The bilobed 8th abdominal segment is of taxonomic value. The female has larger papillae in comparison to the small bursa copulatrix. The ductus bursae is reduced in length.

Variation. The species varies individually in both sexes in the colourations of the forewings, ranging from warm reddish brown to deep bluish-black. The male genitalia of the different subspecies vary slightly in the shape of the valves and the develpement of the ampulla. A single male from Negros (GU 76-57) displays very large socii.

The male genitalia show geographical variation in the following features:

- size and shape of the sclerotized sacculus structures of the valves,
- shape of the valves,
-presences and shape of the ampulla of the valves,
- shape of the 8th sternite.

Two dissected males from Leyte and Panay are provisionally placed together with ssp. *mindanaensis* and ssp. *schintlmeisteri* although they are slightly different in shape of the valves and the sacculus structure from populations of Mindanao and Negros respectively. Also the females probably tend to differ geographically in the shape of the sclerotizations and length of the posterior apophyses, but only two females from Mindanao and Negros were dissected.

Bionomics. The adults are infrequent but fly throughout the year. Only from Palawan (ssp. *similis*) there is a larger series (n = 48) of males available. The species prefers primary and secondary forests at lower altitudes up to 500 m, but a few males were collected at 1.050 m and 1.100 m.

Distribution. *Higena similis* is endemic in the Philippines. The ssp. *similis* is restricted to Palawan. Further subspecies occur in Luzon (ssp. *luzonensis*), Mindoro (ssp. *mindorensis*), Samar (ssp. *samarensis*), Cebu (ssp. *cebuensis*), Negros and Panay (ssp. *schintlmeisteri*) and in Mindanao and Leyte (ssp. *mindanaensis*).

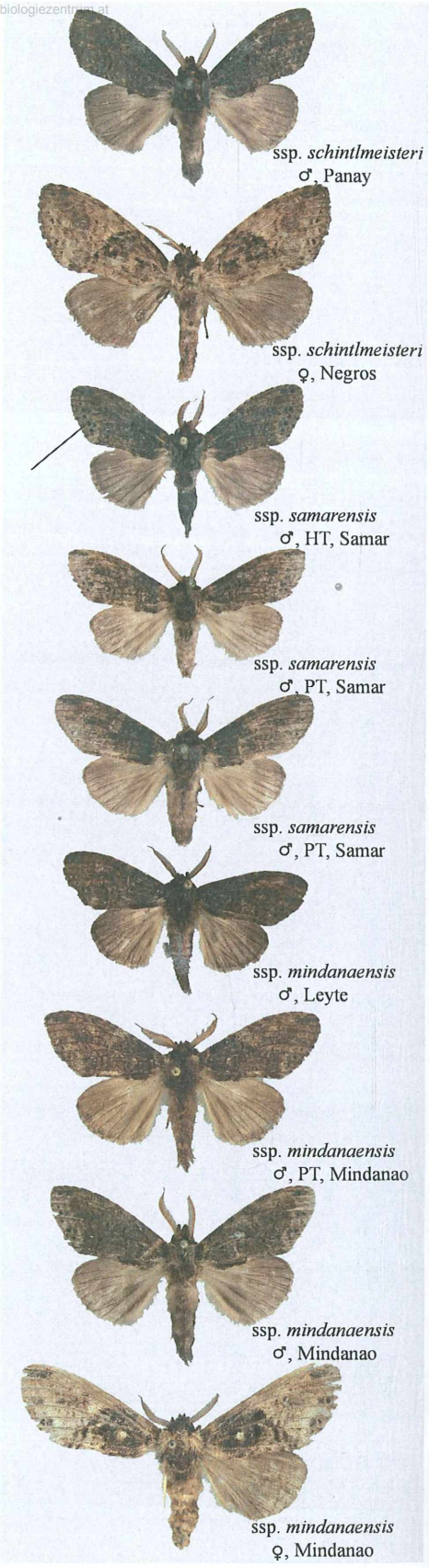
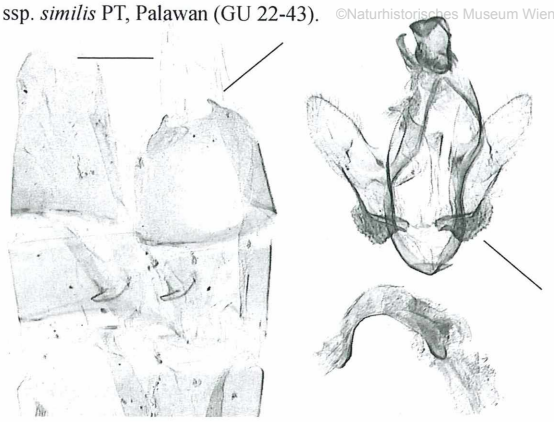


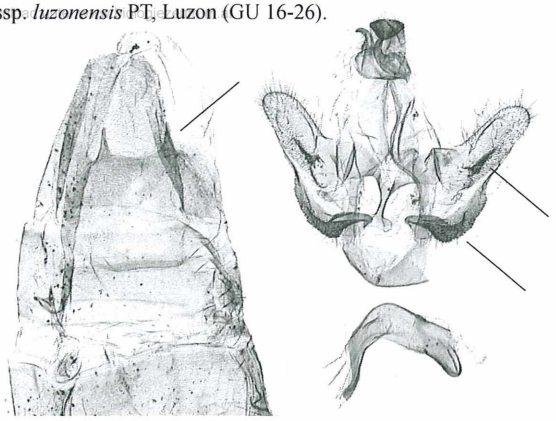
Fig. 471: Adults of *Higena similis*.

ssp. *similis* PT, Palawan (GU 22-43).

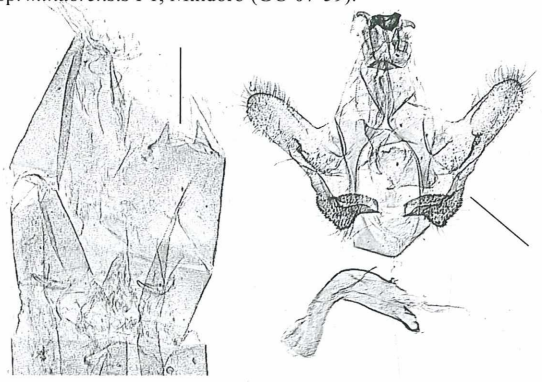
©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

ssp. *luzonensis* PT, Luzon (GU 16-26).

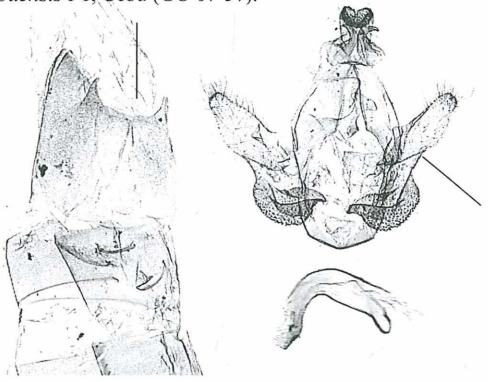




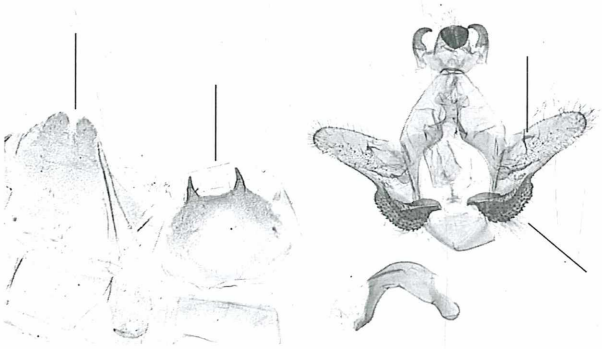
ssp. *mindorensis* PT, Mindoro (GU 07-59).



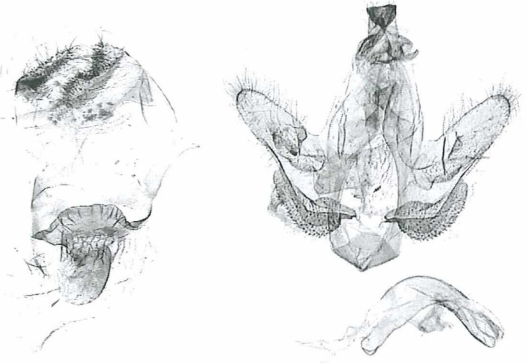
ssp. *cebuensis* PT, Cebu (GU 07-57).



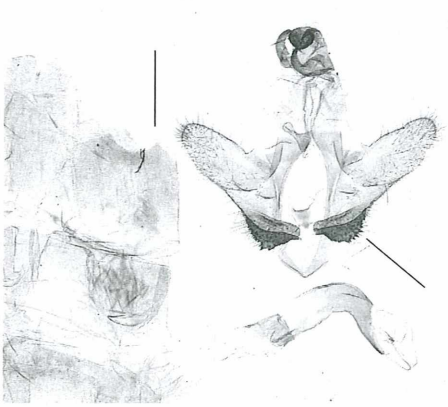
ssp. *schintlmeisteri* Negros (GU 76-57).



ssp. *schintlmeisteri* Negros (♀ GU 77-07 & ♂ 57-53).



ssp. *samarensis* PT, Samar (MV 17910).



ssp. *mindanaensis* Mindanao (♀ MV 17911 & ♂ PT, GU 16-27).

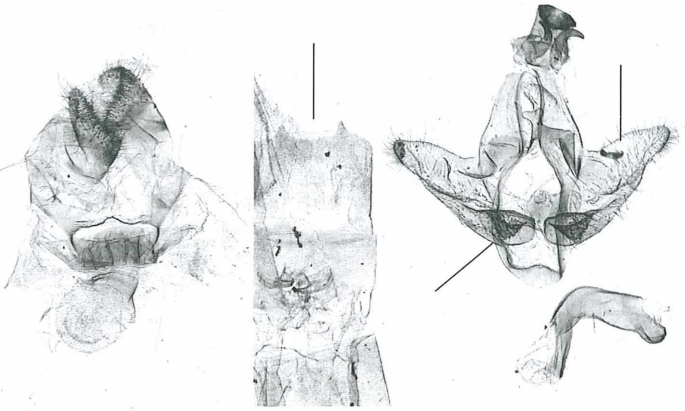


Fig. 472: Male genitalia of *Higena similis*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Allodonta STAUDINGER, 1887: 223

Type-species: *Notodonta tristis* STAUDINGER, 1887
[= *Notodonta plebeja* OBERTHÜR, 1880)

Allodonta is a larger genus most diverse on the Continent. The Sundanian and Philippine species all belong to the subgenus *Hexafrenum* MATSUMURA, 1925 (Type-species: *Hexafrenum maculifer* MATSUMURA, 1925) (see SCHINTLMEISTER & PINRATANA 2007: 214).

105. *Allodonta ferinus* SCHINTLMEISTER, 1994:

229, pl. 4: 15, pl. 5: 2 (*Hexafrenum ferinus*).
HT: ♂, Palawan, Mantalingajan, Tagembung, 1150 m (GU 21-75) – NHM, Wien, examined.



Fig. 473: Distribution of *Allodonta ferinus*.

Diagnosis. *Allodonta ferinus* resembles *A. austrocollaris* HOLLOWAY, 1983: 72; pl. 7: 7, fig. 77 (HT: ♂, Borneo, Sarawak, Gunung Mulu Nat. Park, 150 m – BMNH, London examined) and *A. synthesina*. It is distinguished by a larger wingspan and a deeper blackish-brown ground colour (in fresh specimens). The creamy area along the dorsum of the forewings is discriminative.

The asymmetric male genitalia have more similarity to *synthesina*. They are distinctive by the apical shape of the valves, which have an additional and pointed projection in *ferinus,* which is absent in *austrocollaris*. The apical projections of *synthesina* are broader and rounded. The bifurcate phallus is of a diagnostical shape and different from the other congeners. The 8th sternite has a narrow notch, which is wider bilobed in *synthesina* and triangular shaped in *austrocollaris*. The female genitalia are large and robust, particularly the ductus bursae. The vaginal plate is concave and the papillae anales are triangular in shape and pointed (in *synthesina* rounded). The bursa copulatrix has no signum.

Variation. The individual variation is narrow.

Bionomics. The adults are infrequently found in ii., vi., viii. and xii. from 150 m -1.150 m, mostly below 800 m and in primary forests only.

Distribution. The species is endemic in the Philippines: Palawan.

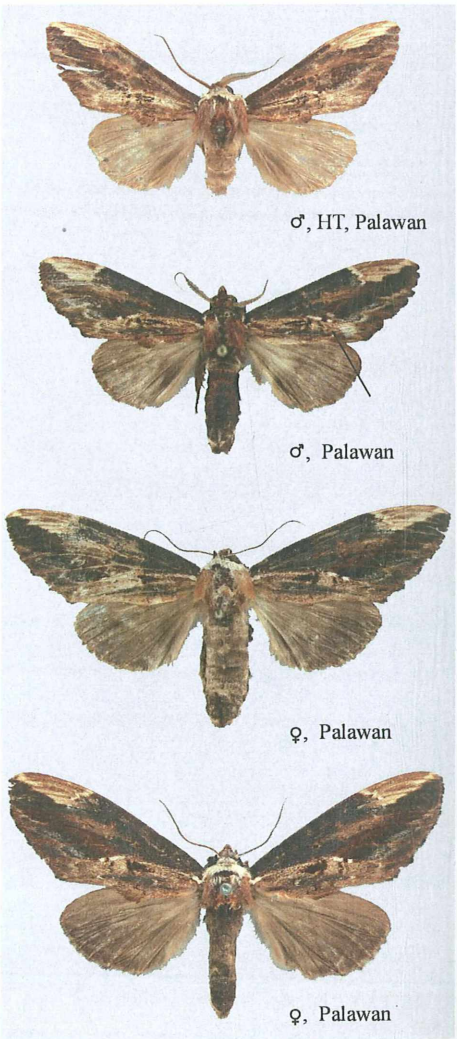
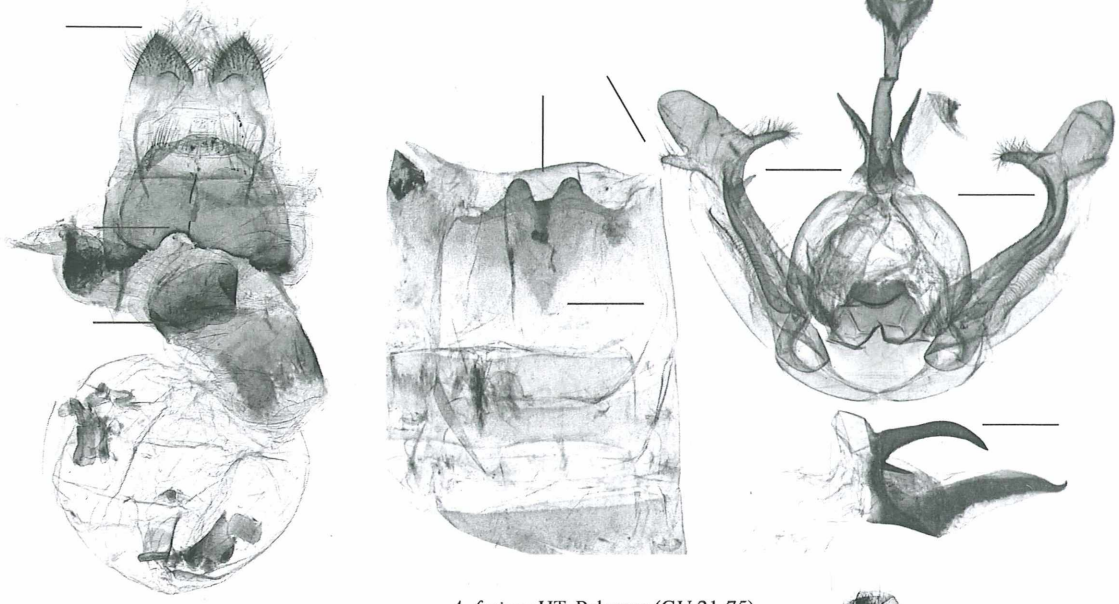


Fig. 474: Adults of *Allodonta ferinus*.

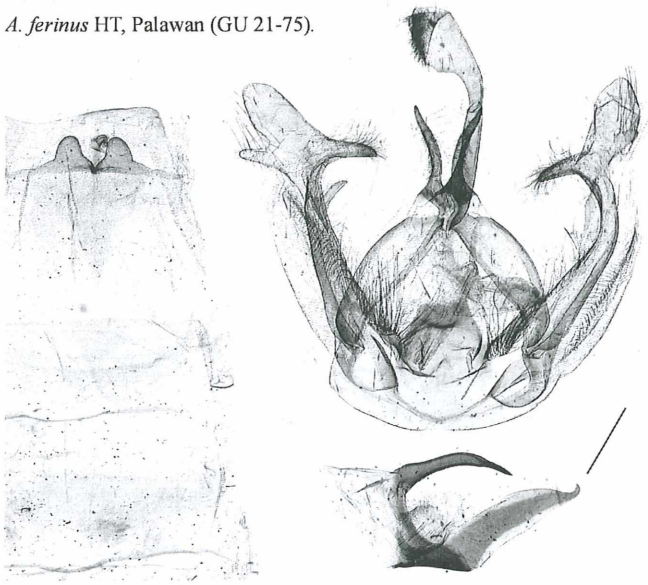
A. ferinus Palawan (MV17919).

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

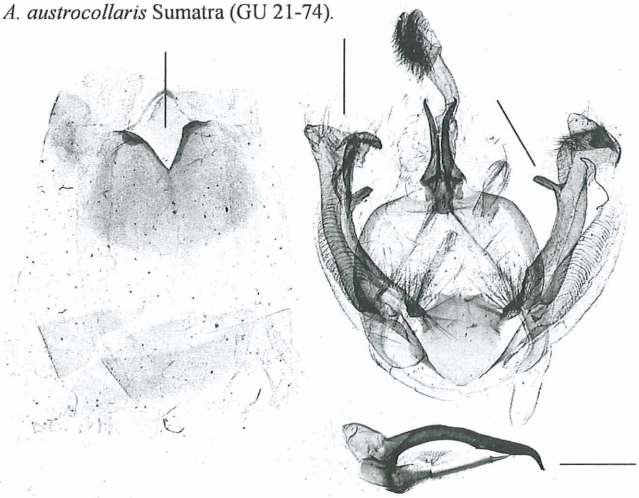
A. ferinus, Palawan (GU 80-26).



A. ferinus HT, Palawan (GU 21-75).



A. austrocollaris Sumatra (GU 21-74).



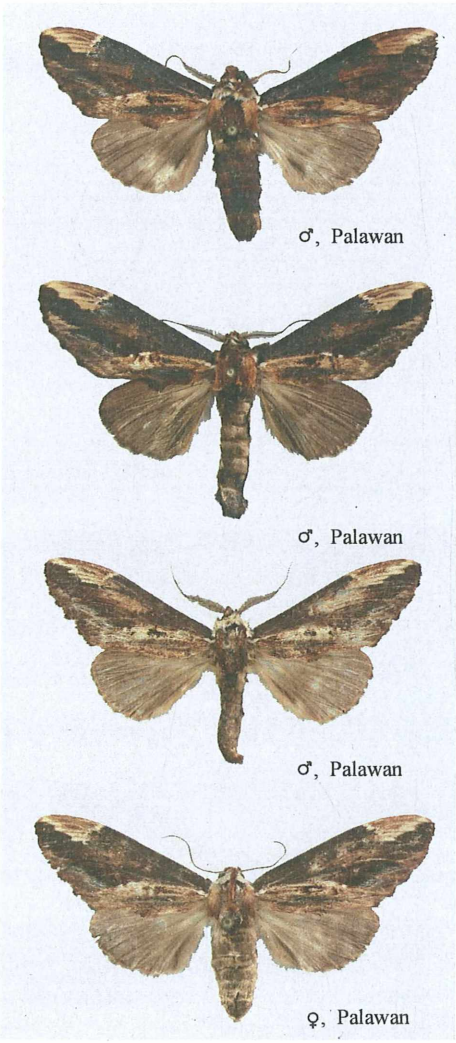


Fig. 475: Adults of *Allodonta ferinus*.

Fig. 476: Genitalia of *A. ferinus* and *austrocollaris*.

www.biologiezentrum.at

106. *Allodonta synthesina* SCHINTLMEISTER, 1993: 138, pl. 25: 5, pl. 26: 1, 2 (*Hexafrenum synthesina*)

HT: ♂, Philippinen, Mindanao, Bukidnon, 40 km NW Maramag, Dalongdong, Talakag, 7°53‘ n.Breite, 124°40‘ ö.Länge, 800 m – NHM, Wien, examined.



Fig. 477: Distribution of *A. synthesina.*

Diagnosis. The sister species of *A. ferinus, A. synthesina,* is smaller and and has a paler brown couloured appearance on all wings. The patagiae is more conspicuously pale creamy than in *ferinus*.

The male genitalia differ from *ferinus* by the reclining costal valve process on the left arm of the valves. The upper, pointed part of the bifurcate phallus is longer than in *ferinus* but shorter than in *austrocollaris.* The bilobed 8th sternite is similar to those of *ferinus* but has a wider valley. The female genitalia resemble *ferinus*, but are smaller in size. The papillae are rounded, not pointed as in *ferinus* and the ductus bursae is robust but narrower. The vaginal plate is not concave shaped but rather straight. The bursa copulatrix has no signum.

Variation. The individual variation is low. The ground colour varies from violet-brown to fuscous reddish brown. The male genitalia slightly vary in the shapes of the phallus and the 8th sternites, but only two male genitalia (n = 2) where dissected.

Bionomics. The adults are usually uncommonly (except of the type series of n = 28 specimens, which was collected during 3 nights). The moth was found in iii., v., x.-xii. from 350 m - 1.200 m in primary and secondary forests.

Distribution. Endemic in the Philippines: Mindanao.

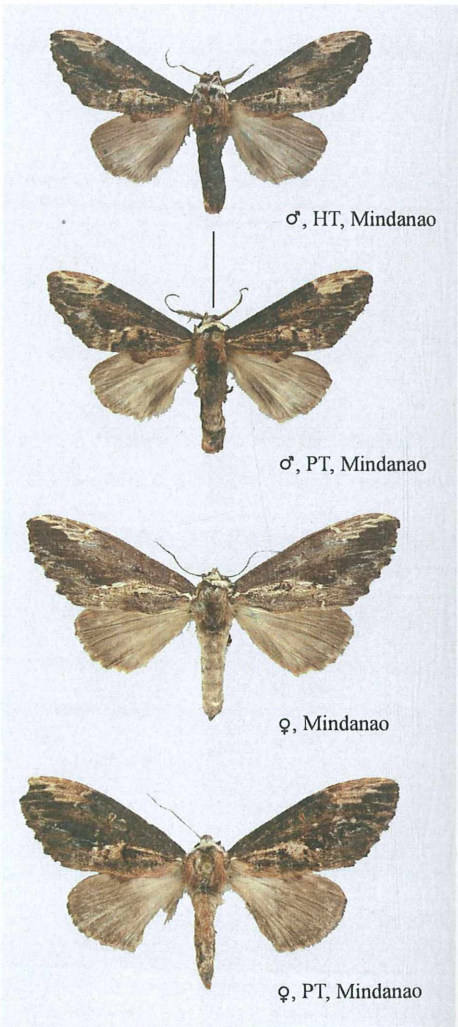


Fig. 478: Adults of *Allodonta synthesina.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

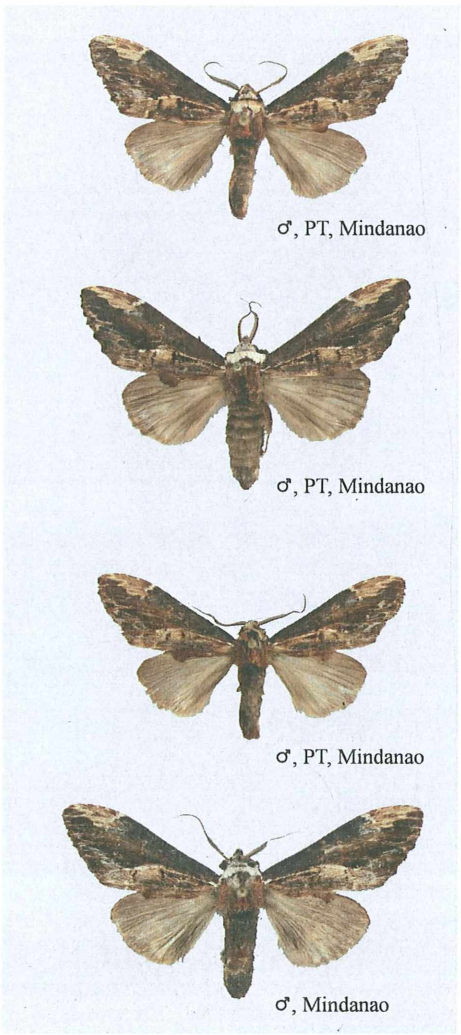


Fig. 479: Males of *Allodonta synthesina.*

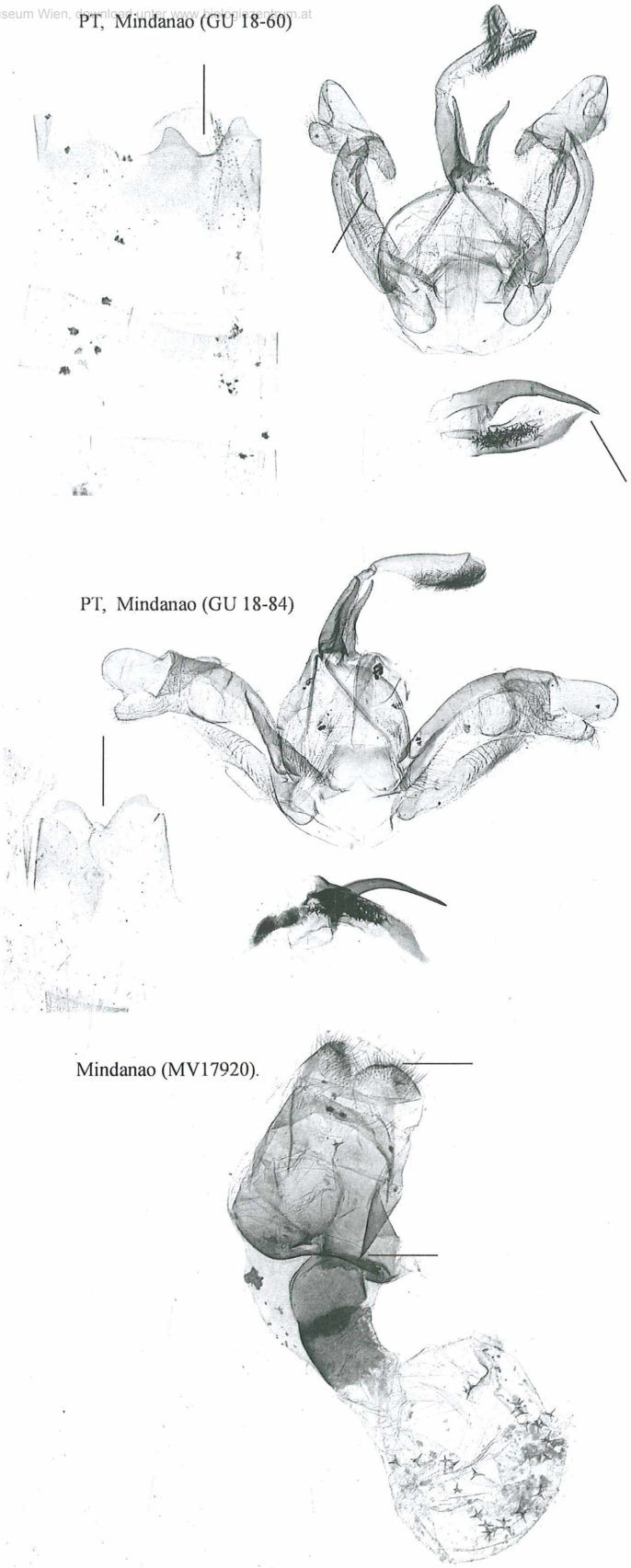


Fig. 480: Genitalia of *Allodonta synthesina.*

Download unter www.biologiezentrum.at

107. *Allodonta maternalis maternalis*

SCHINTLMEISTER,1993: 139, pl. 25: 1, pl. 26: 3, 4 (*Hexafrenum maternalis*).
HT: ♂, Philippinen, N-Luzon, Mt. Pulis, 16 km SSE Bontoc, 17° 02' n. Breite, 121° 01' ö. Länge, 1.900 m – NHM, Wien, examined.

Allodonta maternalis pseudomaternalis

SCHINTLMEISTER,1993: 139, pl. 25: 2, pl. 26: 5 (*Hexafrenum maternalis pseudomaternalis*).
HT: ♂, Philippinen, Mindanao, Bukidnon, 40 km NW Maramag, Dalongdong, Talakag, 7°53' n.Breite, 124°40' ö.Länge, 800 m – NHM, Wien, examined.

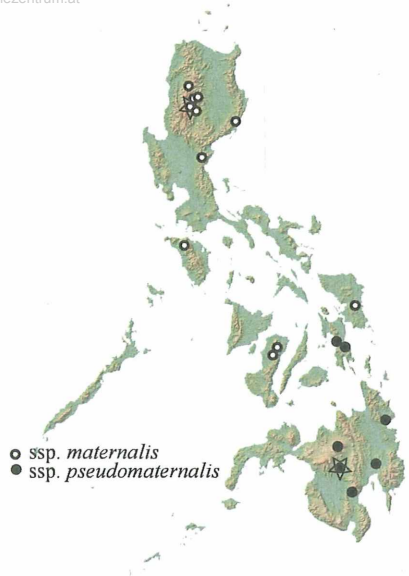


Fig. 481: Distribution of *A. maternalis*.

Because of individual variation (including their male genitalia) both subspecies of *A. maternalis* cannot always be separated from each other.

Diagnosis. The species is distinguished by the violet brown ground colour with a fuscous blackish broad basal streak, apical patch and a finer discal streak. The creamy transversal costal streak near the apex and a larger patch in the tornus of the forewings are diagnostic features. The species is smaller than most other congeners. The relatively small male genitalia have a pair of long socii (about the size of the uncus), a bilobed and sclerotized juxta and a characteristically shaped clasper. The 8th sternite is bilobed. The female genitalia show less structures and have no signum. The ductus bursae is remarkably reduced in size.
Variation. The species varies considerably in the darkness of the ground colouration and in size. The ssp. *maternalis* is generally paler and more violet tinged compared to ssp. *pseudomaternalis*. Two males from Mindanao and Negros show blackish fuscous forewings. The male genitalia of both subspecies are distinguished by the shape of the valves the shape of the phallus, which is longer in ssp. *maternalis,* and the shape of the bilobed 8th sternite. A single male from Mindoro resembles males from Luzon, but the clasper shows a different shape.
Bionomics. The adults are not rare in Mindanao and

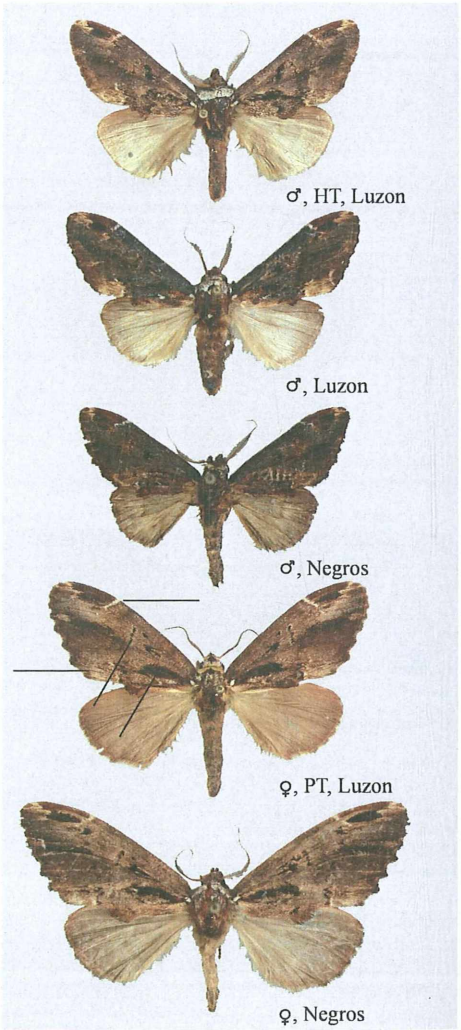
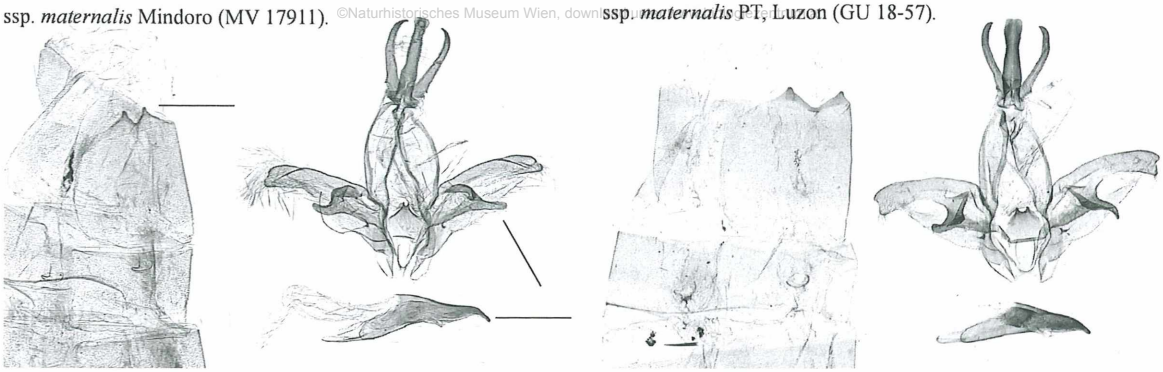


Fig. 482: Adults of *A. m. maternalis*.

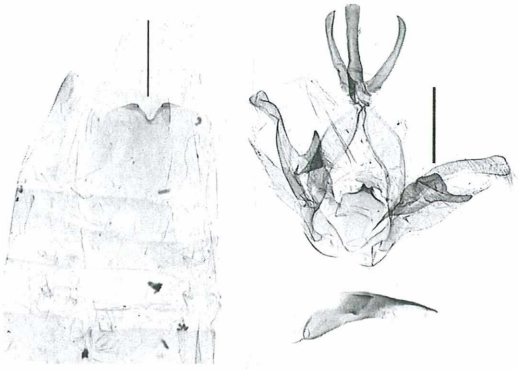
©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

ssp. *maternalis* Mindoro (MV 17911).

ssp. *maternalis* PT, Luzon (GU 18-57).



ssp. *pseudomaternalis* PT, Mindanao (GU 18-83).



ssp. *maternalis* PT, Luzon (MV 17921).

ssp. *pseudomaternalis* PT, Mindanao (MV 17915).

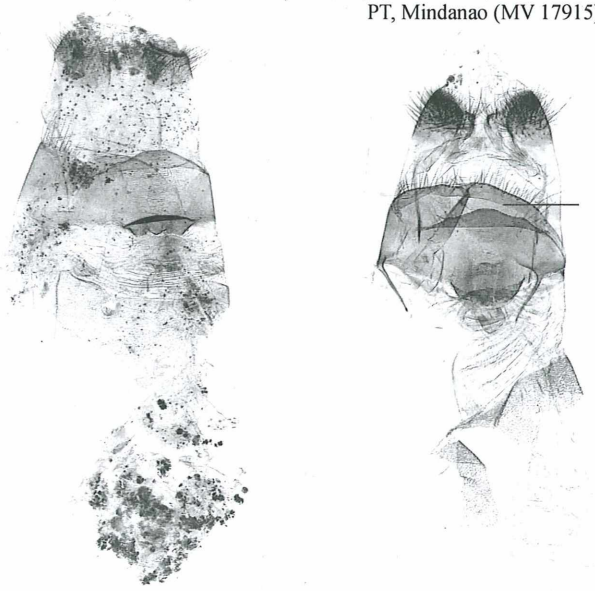


Fig. 484: Genitalia of *Allodonta maternalis*.

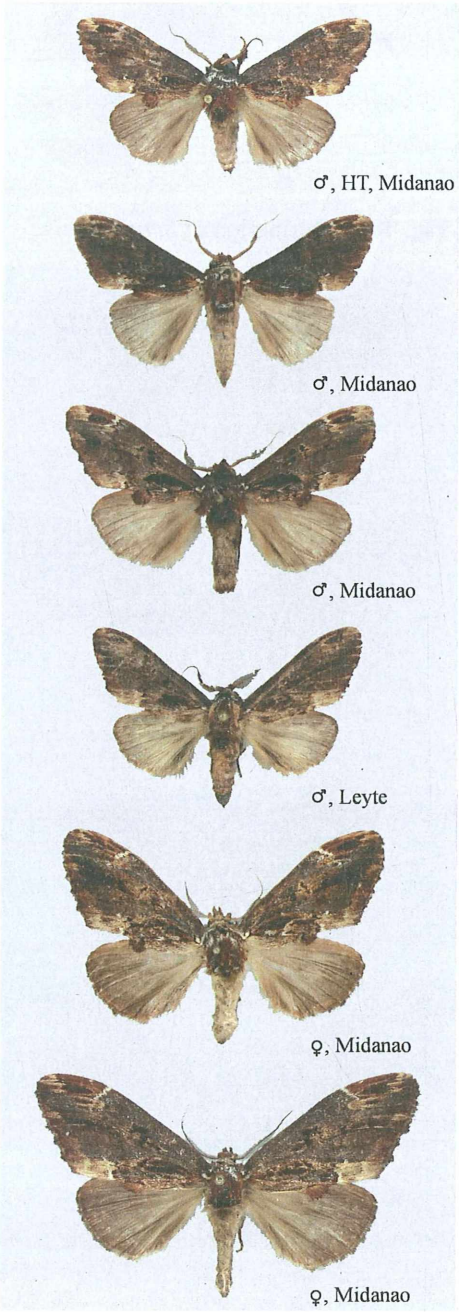


Fig. 483: Adults of *A. m. pseudomaternalis*.

Luzon (from Leyte and Mindoro only single males were collected). The moth was found during all months mostly in primary forests between 350 m - 1.600 m, in Luzon also at 2.700 m.

Distribution. Endemic in the Philippines: ssp. *maternalis* occur in Luzon, Mindoro, Samar and Negros; ssp. *pseudomaternalis* was found in Mindanao and Leyte.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Semidonta STAUDINGER, 1892: 358

Type-species: *Drymonia biloba* OBERTHÜR, 1880

=*Hyperaeschrella* STRAND, 1916 (*Hyperaeschra* (*Hyperaeschrella*) *kosemponica* STRAND, 1916)
= *Polyaeschra* KIRIAKOFF, 1967 (*Hyperaeschra dentata* HAMPSON, 1893)
= *Kumataia* KIRIAKOFF, 1967 (*Kumataia producta* KIRIAKOFF, 1967)
= *Sinodonta* KIRIAKOFF, 1967 (*Semidonta bidens* OBERTHÜR, 1880)

Semidonta is a difficult genus (n = 23 described taxa of which 10 are presently valid) with several sibling species-pairs with small taxonomical differences in facies and genitalia with characteristically bifurcate valves. Fortunately these pairs have often an overlapping distribution pattern, e.g. they are often not allopatric.



Fig. 485: Distribution of *S. nigribasis*.

108. *Semidonta nigribasis insulicola* (KIRIAKOFF, 1967): 60 (*Polyaeschra dentata insulicola*).

HT: ♂, Java, Batavia – Nationaal Natuurhistorische Museum, Leiden, not examined.

Hyperaeschra nigribasis HAMPSON, 1893: 165 (HT ♂, Sikhim – BMNH, examined) clearly differs from Sundanian populations, in general external appearance of the contrasting basal area, but the male genitalia are virtually identical. The ssp. *insulicola* might be applied for Sundanian and Palawan populations but specimens from this regions are larger and usually also darker than a small series from Java and Bali at our disposal.

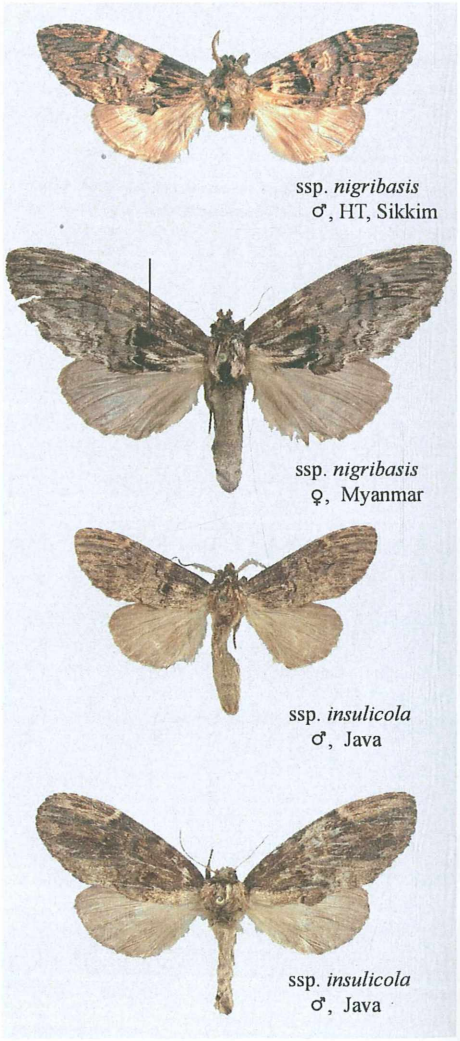


Fig. 486: Adults of *S. nigribasis*.

Diagnosis. *Semidonta nigribasis insulicola* is characterized by a rather uniform brownish appearance. The basal area of the forewings is slightly darker and bears a black spot in the middle of the basal fascia. Near the inconspicuous apical patch (the females show this patch more contrasting) there

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

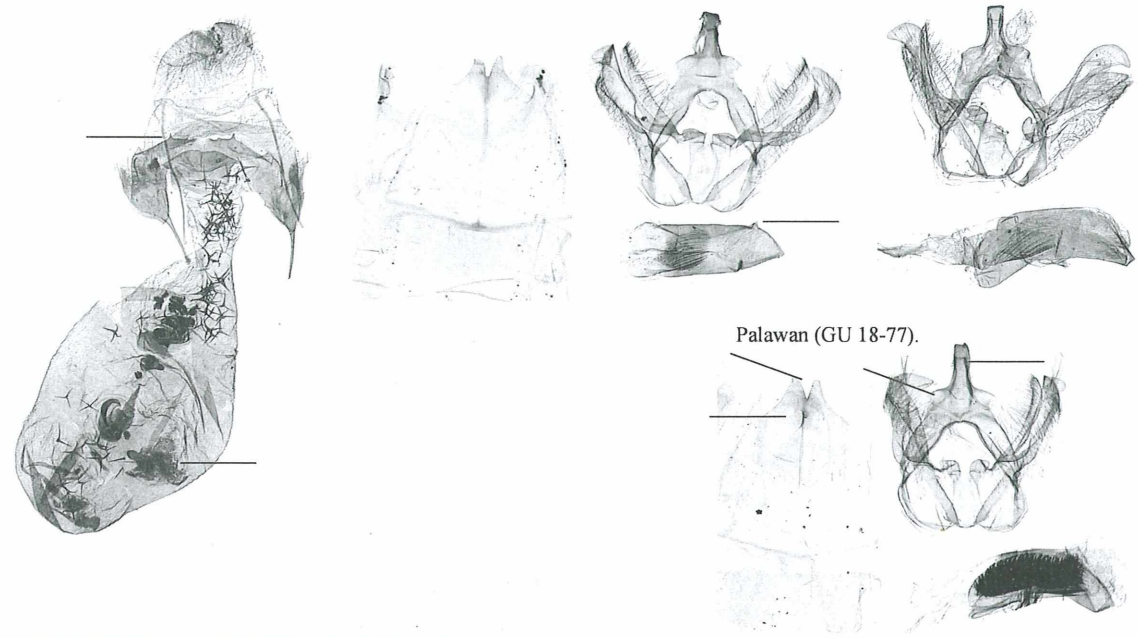


Fig. 488: Genitalia of *Semidonta nigribasis insulicola.*

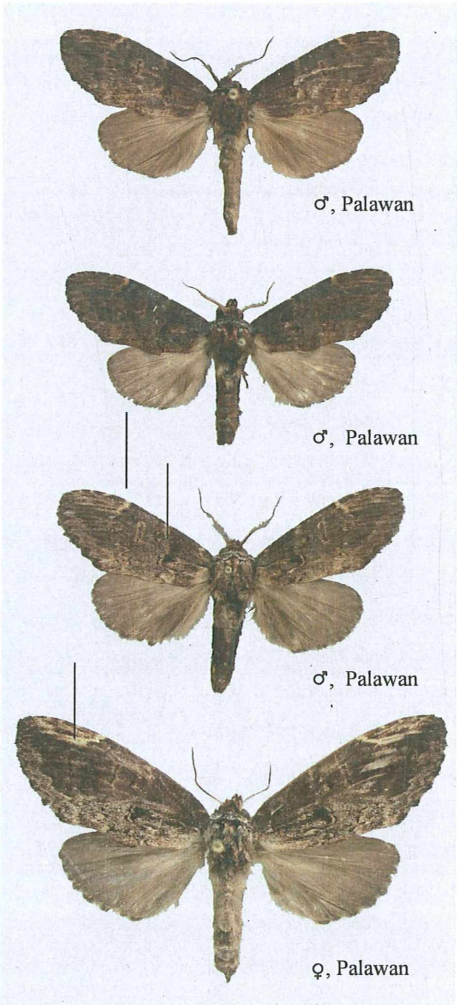


Fig. 487: Adults of *Semidonta nigribasis insulicola.*

is a creamy transverse costal streak.

The male genitalia are specifically characterized by the rectangular uncus with reduced socii and in particular by the shape of the bilobed 8th sternite. The robust phallus sometimes bears a lot of cornuti, which are in other individuals often lost. The female genitalia show a short ductus bursae, long apophyses and a characteristically shaped ventral plate. A large signum is present on the bursa copulatrix.

Variation. The species varies individually in the darkness of the ground colour. Sometimes almost blackish individuals occur. The male genitalia seem to be remarkably constant in their structures. The species tends to establish geographically subspecies (see above). The ssp. *dentata* HAMPSON, 1893 is paler with whitish-brown hindwings.

Bionomics. The adults were infrequently observed in Palawan in i., ii., x. and xii. between 50 m – 800 m (in Kalimantan up to 1.100 m) in primary and secondary forests. The caterpillar was reared on *Nephelium lappaceum* (Sapindaceae) (HOLLOWAY 1983: 73).

Distribution. *Semidonta nigribasis nigribasis* is distributed from Afghanistan through the Himalaya, Indochina and SW China. The ssp. *dentata* is restricted in Sri Lanka and S India. In Bali, Java, Sundaland and the Philippines: On Palawan the ssp. *insulicola* occurs.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

109. *Semidonta sororcula* spec. nov.

HT: ♂, Philippinen, Mindanao, Prov. Surigao del Sur, Hanayan, 12 km N Lianga, 350 m, 08°42'N, 126°05'E, primary forest, 29.xi.-1.xii.2005 leg. J. H. Lourens & A. Schintlmeister – NHM, Wien.

Paratypes (30 ♂♂, 2 ♀♀):

Mindanao: 1 ♂, Prov. Surigao del Sur, Hanayan, 12 km N Lianga, 350 m, 08°42'N, 126°05'E, primary forest, 29.xi.-1. xii.2005; 3 ♂♂, San Augustin, Brgy. Gata, 140 m, 08°43.308'N, 126°05.691'E, 17.-18.iii.2009; 2 ♂, Cagayan, 6 k N of Diminorog, 40 km S of Talakag, Ft. Mt. Kanlianan 1.240 m, 07°56.131'N, 124°38.375'E, 20.-21.iii.2009; 1 ♂, Lianga, 8 km W of Diatagon, 200 m, 8°42' N, 126°05' E, 3.-7.vii.2005; 3 ♂♂, Bukidnon, 40 km NW Maramag, Dalangdong, Talakag, 800 m, 7°35'N, 124°40'E, 1.-3.x.1988 (GU 18-51, 18-66); 1 ♂, Davao del Norte, Mt. Caragan, vii.1998; 1 ♂, Mt. Matutum, S Cotabato, i.1997; 2 ♂♂, 1 ♀, Cotabato, Prov. Sumangani, Mount Busa near Kainba, 700 m, viii.1997; 1 ♂, ibid., xii.1998;

Leyte: 1 ♂, Hilusig, W of Mahaplag, Mt. Balocawe 600 m, 10°43'N, 124°55'E, 29.-30.iii.2005; 1 ♂, „Insel Leyte", ii.2001; 1 ♂, Cadacan river, Brgy. Imelda, 10°41'N, 125°03'E, 26.vi.2006; 1 ♂, Tubod hills S of Abuyog, 280 m, 10°42'N, 125°05'E, 23.x.2006;

Samar: 2 ♂♂, 4km SE of Bagacay, 140 m, 11°48'N, 125°15'E, 25.vi.2006; 5 ♂♂, 8 km SE of Bagacay, 250 m, 11°48.025'N 125°14.610'E, 13.iii.2009; 2 ♂♂, 1 ♀, ibid. 26.iii.2009; 1 ♂, ibid. 21.-22.x.2006;



Fig. 489a: Distribution of *S. sororcula.*

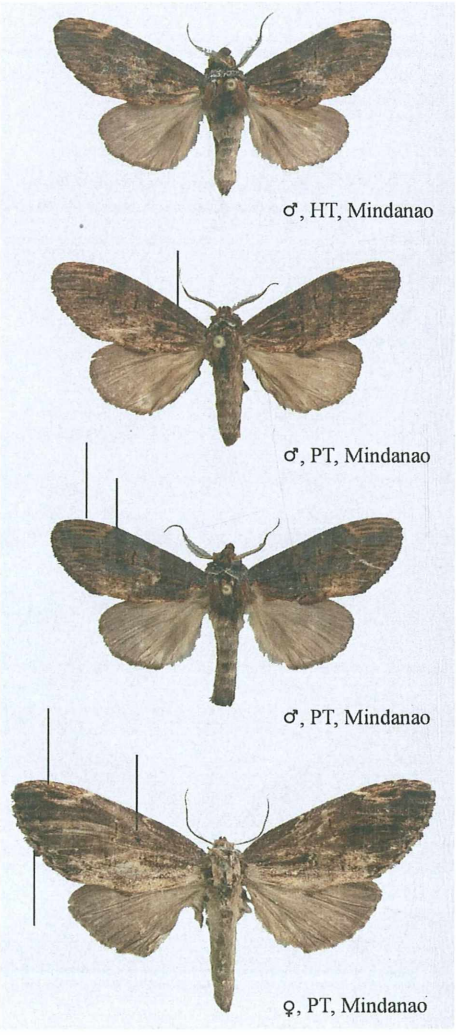


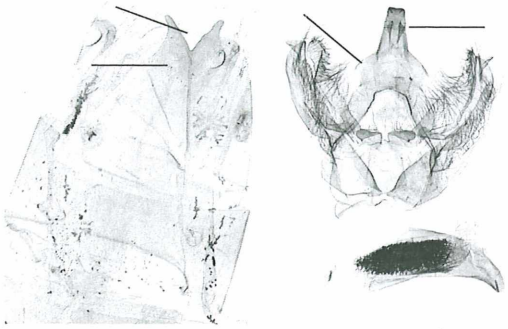
Fig. 489b: Adults of *S. sororcula.*

Diagnosis. Forewing length ♂♂ 21 mm - 22 mm, 1 ♂ 24 mm; ♀♀ 27 mm. Similar to *Semidonta nigribasis insulicola*. The new species differs from the latter by the inconspicuous apical patch of the forewings. The paler transverse costal streak near the apex of the forewings is weakly and diffusely developed. Between the discal streak and the more fuscous basal area of the forewings lies an inconspicuous blackish spot, which is also present in *nigribasis.* Most individuals of the type series have a paler brownish basal streak, absent in *nigribasis*. The female of *sororcula* shows a rather uniform pattern on the forewings (apical and dorsal areas) than *nigribasis insulicola.*

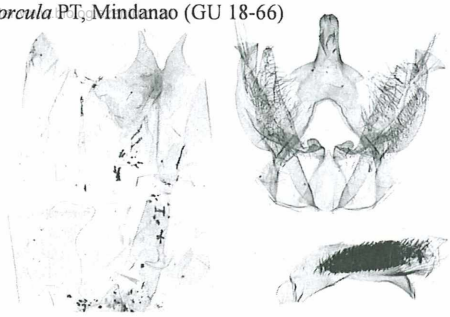
The male genitalia resemble *nigribasis* but differ slightly in the shapes of the rectangular uncus, the larger socii and in particular by the base of the uncus, which is in *nigribasis* more swollen.The 8th sternite is deeper bilobed and the notch rather triangular. The

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

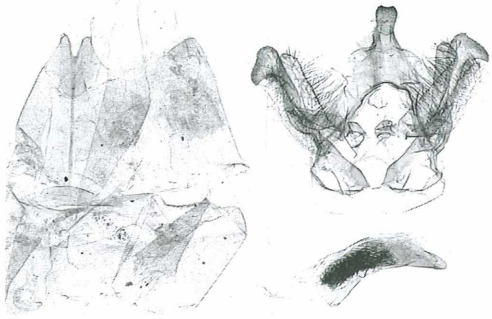
S. sororcula PT, Mindanao (GU 18-51)



S. sororcula PT, Mindanao (GU 18-66)



S. sororcula PT, Leyte(MV 17923)



S. occidentalis Sulawesi (GU 75-77)

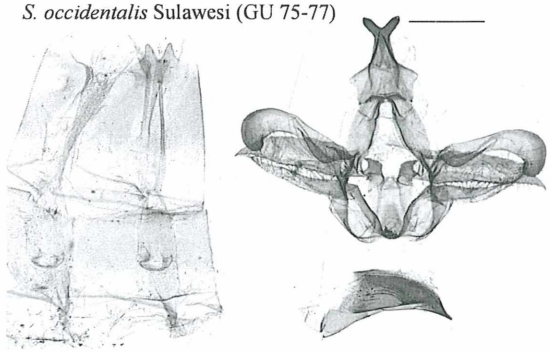


Fig. 489d: Male genitalia of *Semidonta sororcula* and *occidentalis*.

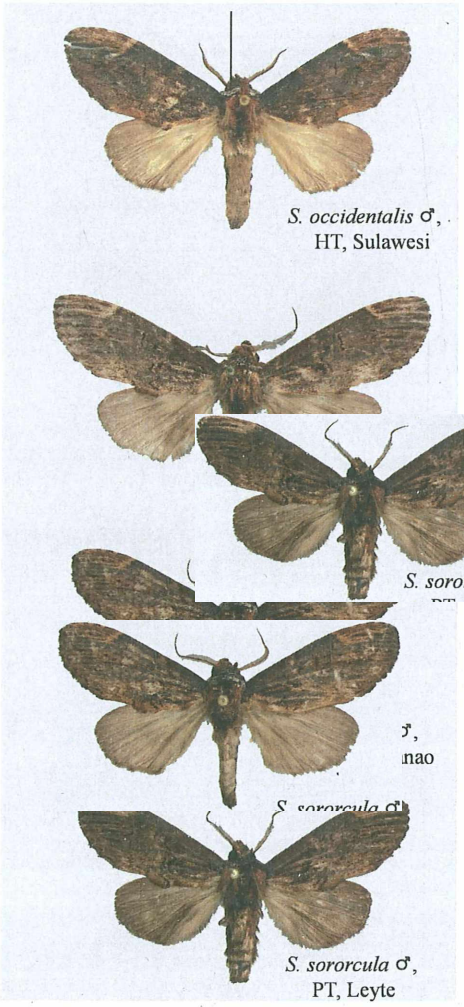


Fig. 489c: Males of *Semidonta occidentalis* and *S. sororcula*.

erotizations of the 8th sternite differ from *nigribasis* illustrated.

e *S. occidentalis* SCHINTLMEISTER, 1993: 142, pl.26: 6, pl. 27: 3 (HT Indonesia, Sulawesi selatan, Puncak, 27 km W Palopo, 2°59' s. Breite, 120°00' ö. Länge, 1.000 m - 1.200 m in coll. A. SCHINTLMESTER, examined) resembles visually much *sororcula* (separable by the pale greyish patagia) but – as the uncus of the illustrated male genitalia shows (GU75-77) – the species is more related to the following *S. familiaris.*

Variation. The darkness of the ground colour of *sororcula,* the shape of the uncus and the shape of the 8th sternite vary slightly.

Distribution. Endemic in the Philippines: Mindanao and Leyte.

www.biologiezentrum.at

110. *Semidonta familiaris* (SCHINTLMEISTER, 1993): 141, pl. 267: 7, 8, pl. 27: 4 (*Hyperaeschrella*) HT: ♂, Philippinen, Luzon, Quezon Prov., Quezon Forest Nat. Park, 250 m, 14°01' n. Breite, 122°11' ö. Länge – NHM, Wien, examined.

Semidonta familiaris strongly resembles *S. nigribasis insulicola*, but the sympatric occurrence of both species on Palawan, provides evidence, that both taxa are distinct species and not subspecies of *nigribasis*. The sister species of *familiaris* is the Sulawesian *S. occidentalis* (see above).



Fig. 489e: Distribution of *S. familiaris*.

Diagnosis. *Semidonta familiaris* is characterized by its violet-brown forewings. The apical patches of the forewings and the basal area are conspicuously contrasting. The blackish postmedian fascia distinguishes *familiaris* from the other congeners. The sexualdimorphic female also shows the blackish postmedian fascia. The apical patch is better and more contrasting developed than in the females of the other congeners.

The male genitalia of *nigribasasis* and *sororcula* can be differentiated by a broad uncus-tip. The base of the uncus is somewhat rectangularly angled; the socii are absent. The bilobed 8th sternite is very similar to *nigribasis*. The female genitalia are smaller than *nigribasis* and the signum is less conspicuous.

Variation. The individual variation of *familiaris* is low. The darkness of the ground colour varies slightly. The male genitalia show some variation in the shape of the uncus.

Bionomics. The moth is not rare. The adults were observed throughout the year (except in iii., v. and xi.) between 50 m – 1.000 m in primary and secondary forests.

Distribution. Endemic in the Philippines: Palawan Luzon (including Babyan and Calayan Isls.), Mindoro and Negros.

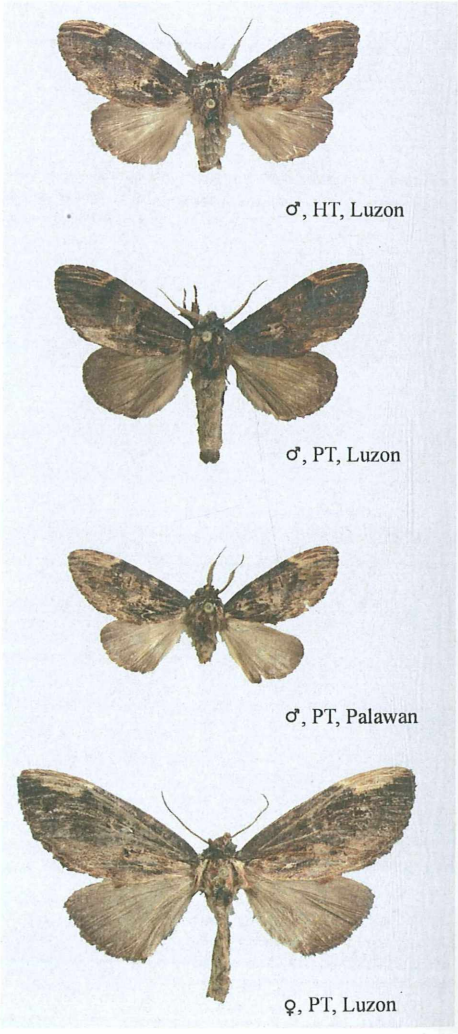


Fig. 490: Adults of *S. familiaris*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

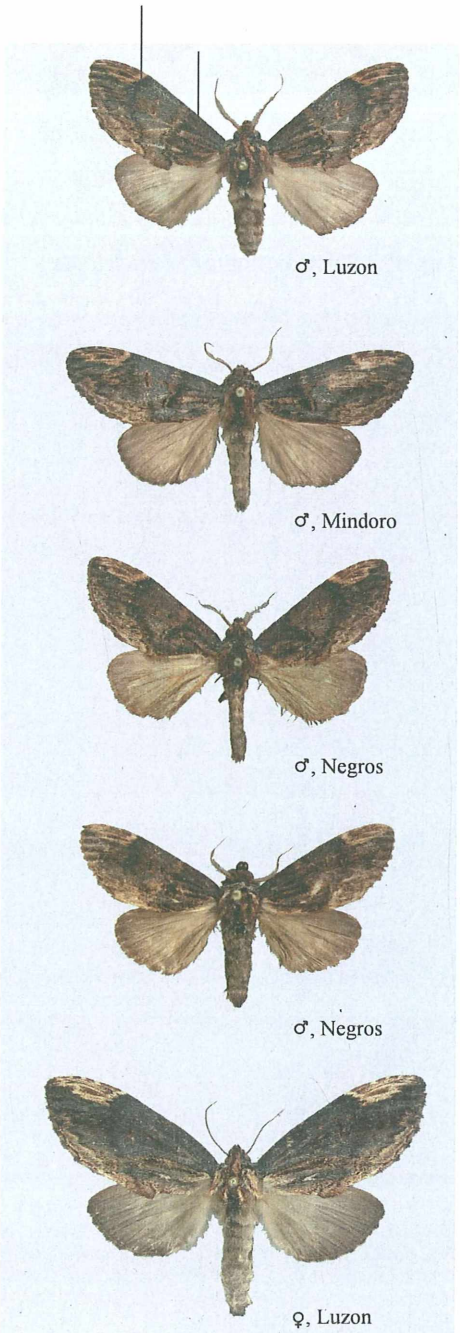
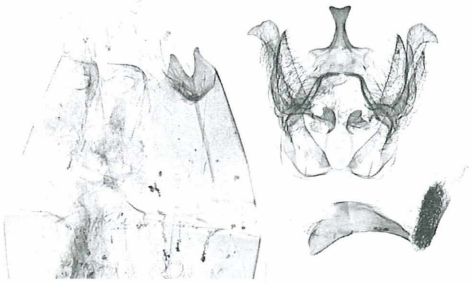
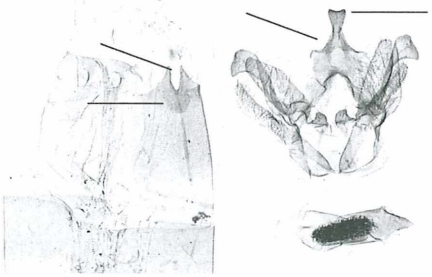


Fig. 491: Males of *Semidonta familiaris*.

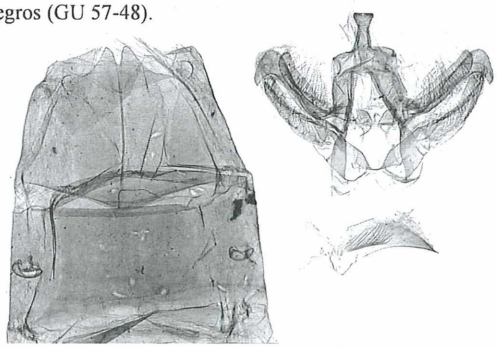
HT, Luzon (GU 18-63).



PT, Palawan (GU 18-49).



Negros (GU 57-48).



Mindanao (MV 17916).

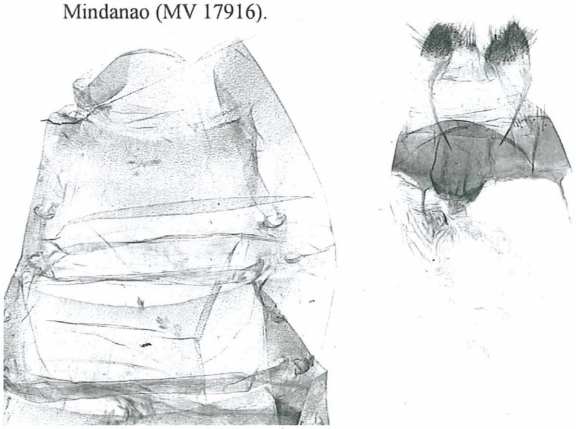


Fig. 492: Genitalia of *Semidonta familiaris*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Snellentia KIRIAKOFF, 1968: 60

Type-species: *Phalera divaricata* GAEDE, 1930

The genus contains two species only. The male genitalia are very different from those of *Phalera*.



Fig. 493: Distribution of *S. divaricata*.

108. *Snellentia divaricata* (GAEDE, 1930):

614, pl. 81: e (*Phalera divaricata*)
LT: ♂, Java [occ., Preanger (Gede)] – ZMHU, Berlin, examined.

GAEDE mentioned in the original description the following type-localities: „Khasia Hills, Java, Sumatra“ , but the first author only traced a male in ZMHU, Berlin, illustrated here, bearing the following labels: „Java occ. Preanger (Gede), 1894-5. Prillwitz“; „Origin.“ [as used by STAUDINGER]; „Bilineata La Hamps. (Sn.) n. sp.“ and „Divaricata Snell.“ To stabilize the nomenclature, this specimens is designated here as Lectotype of *Phalera divaricata*, which was described first by GAEDE and not by SNELLEN.

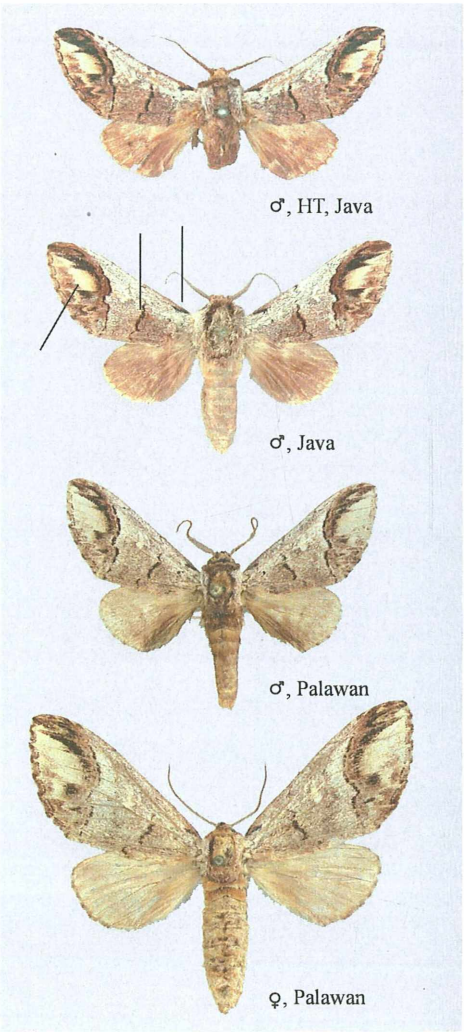


Fig. 494: Adults of *Snellentia divaricata*.

Diagnosis. The species can be distinguished by the conspicuous moon-spot at the margin and two contrasting brown streaks in the median area toward the dorsum and a costal streak near the base of the forewing. The female is larger but has the same pattern as the male.

The male genitalia are characterized by a bifurcate uncus, of which each arm is bifurcated again. The 8th abdominal segments are less modified The 8th sternite is bilobed. The female has robust papillae annales, long apophyses and a massive ventral plate. There is no signum on the bursa copulatrix.

Variation. The variation in this species is very low restricted to size only. Sometimes slightly fuscous individuals occur. The series from Palawan (n = 44) is slighltly paler and less contrasting compared to populations from Sumatra and S Vietnam.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

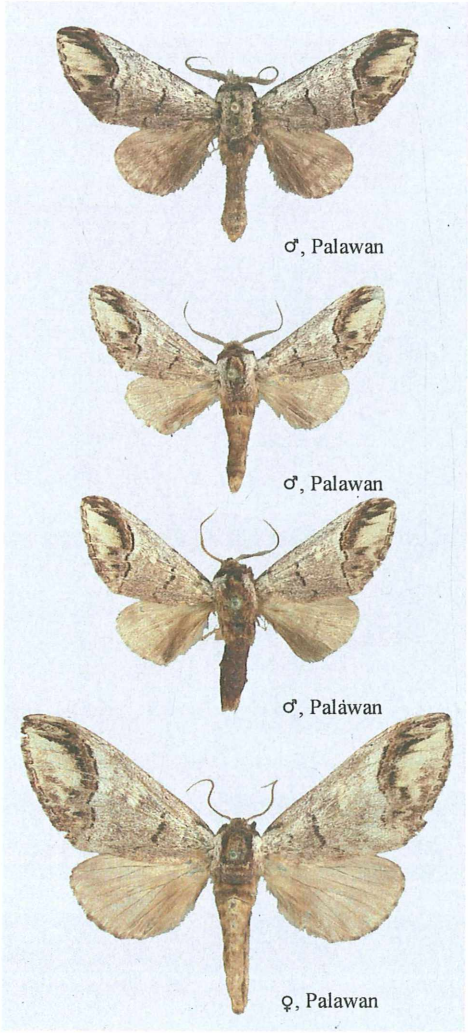


Fig. 495: Adults of *Snellentia divaricata.*

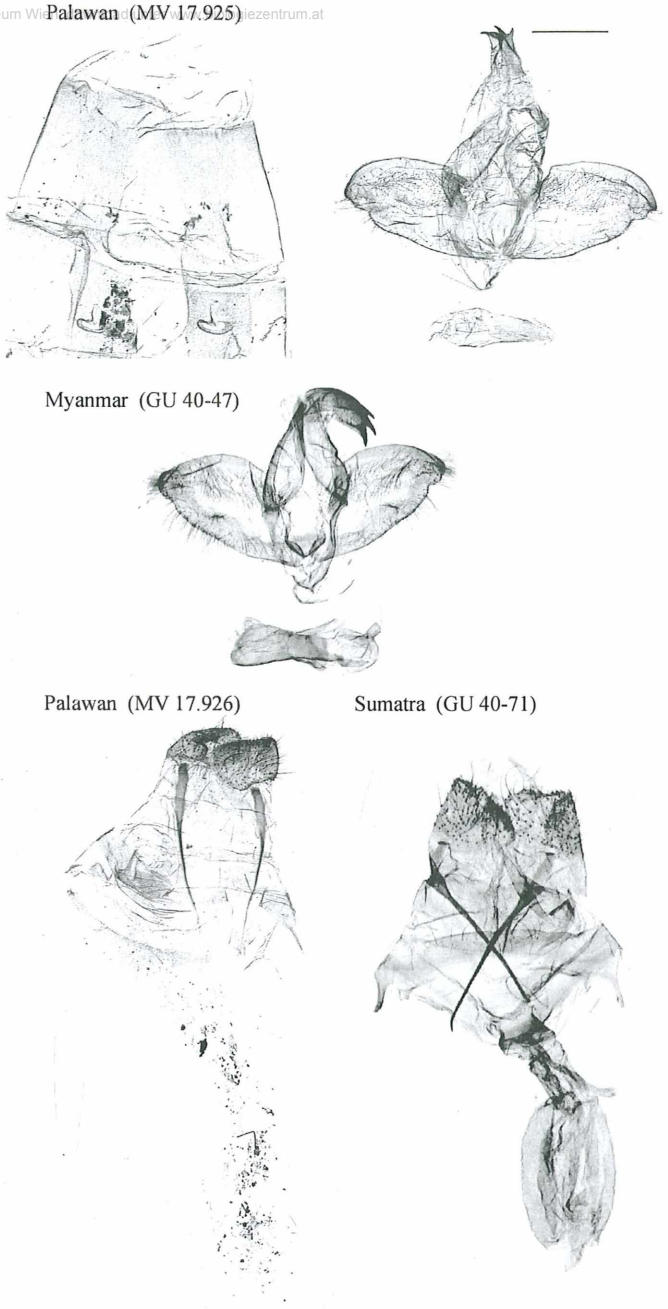


Fig. 496: Genitalia of *Snellentia divaricata.*

Bionomics. *Snellentia divaricata* is usually an uncommon species in Palawan, which was collected only once at Mt. Matalingahan in xii. in a larger series (n = 39). The adults were observed in vii. viii. and xii. between 50 m - 800 m, mostly at lower altitudes up to 350 m in primary forests.

Distribution. The species is distributed from NE India (Assam), Myanmar, SW China, Indochina, Java, Sundaland and in Palawan.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Phalera Hübner, 1819: 147

Type-species: *Phalaena bucephala* Linnaeus, 1758

= *Acrosema* Meigen, 1830: 24 (*Phalaena bucephala* Linnaeus, 1758)
= *Hammatophora* Westwood, 1843: 63 (*Phalaena bucephala* Linnaeus, 1758)
= *Anticyra* Walker, 1855: 980, 1091 (*Anticyra combusta* Walker, 1855) nec Curtis, 1834 (Trichoptera)
= *Dinara* Walker, 1856: 1699 (*Dinara lineolata* Walker, 1856 [= *Anticyra combusta* Walker, 1855)
= *Horishachia* Matsumura, 1929: 39, 40 (*Horishachia infusca* Matsumura, 1929 [= *Phalera obscura* Wileman, 1910])
= *Phaleromimus* Bryk, 1949: 9 (*Phaleromimus albocalceolata* Bryk, 1950)



Fig. 497: Distribution of *Phalera phillipae*.

112. *Phalera phillipae* Holloway & Bender, 1985: 37; pl. 3: 12, fig. GA 1

HT: ♂, N. O. Sumatra, Sindar Raya 330 m – via coll. Bender in BMNH, London [not found], not examined.

= *Phalera lacrima* Kobayashi & Kishida, 2007: 275; fig. 2, 20, 20a-d; HT: ♂, Philippines, Palawan, central, Mt. Salakoi [= Mt. Salakot], 900 ft., – National Science Museum Tokyo, not examined, **syn. nov.**

Kobayashi & Kishida described *Phalera lacrima* after two males from Palawan. They compared them in the diagnosis with *P. phillipae* but the genitalia figure in Holloway & Bender's original description of *phillipae* is illustrated in a very small scale and details are hard to recognize. The differences given by Kobayashi & Kishida (socius, uncus) can be attributed to individual variation; e.g. the illustrated genitalia of a male from Palawan has asymmetrical socii. The white macula posterior of the apical patch on the forewing – described as a impressively discriminating feature – is also present in one specimen (of n = 13) from Sumatra but the small series from Palawan at our disposal shows this spot only in n = 3 out

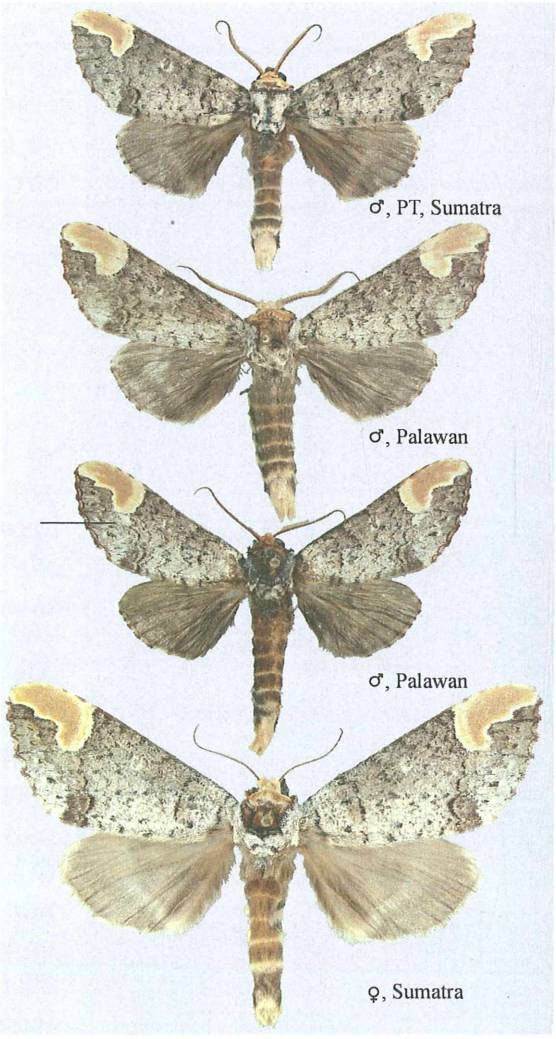
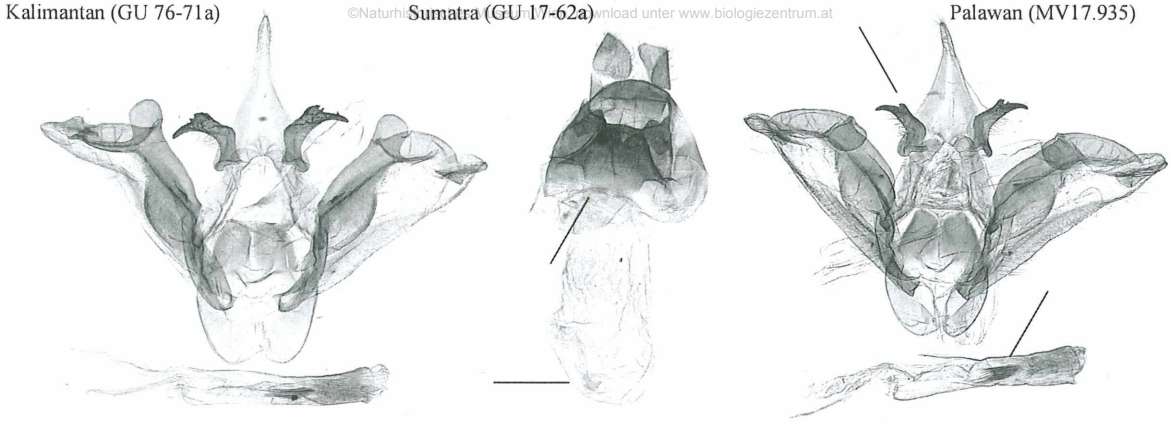


Fig. 498: Adults of *Phalera phillipae*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



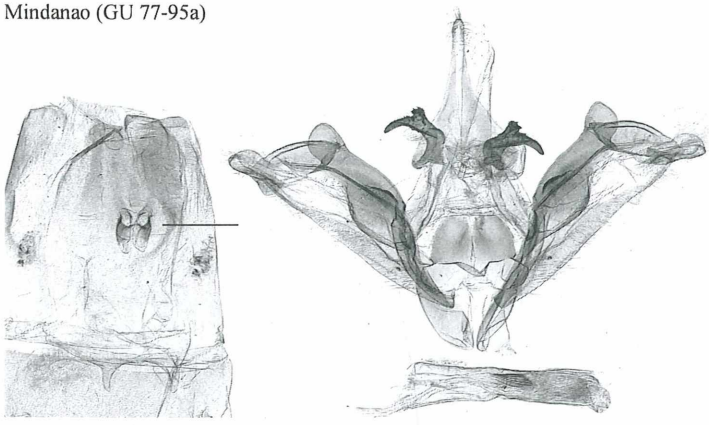


Fig. 500: Genitalia of *Phalera phillipae*.

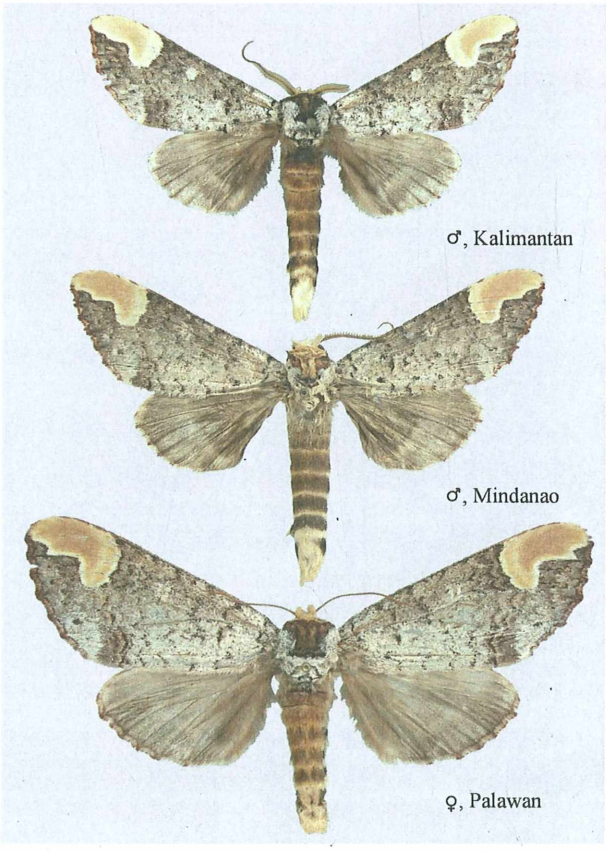


Fig. 499: Adults of *Phalera phillipae*.

of 5 specimens. *Phalera lacrima* must therefore sink as a junior synonym of *Phalera phillipae*, (syn. nov.).

Diagnosis. The large species is distinguished from the other Philippine congeners by the pale cream apical spot on the forewings.

The male genitalia are clearly distinguished by the swollen costa of the valves and the triangular uncus. Also the shape of the socii is a characteristic feature. The 8th sternite is bilobed with characteristic pockets. The female genitalia have a short ductus bursae and a signum.

Variation. A few adults from Borneo have the discalspot of the forwings conspicous white. The male genitalia show some individual variation in the shape of the socii. A single male from Mindanao has a slighty different shape of the socii and is larger than Palawan specimens.

Bionomics. The species is rare in the Philippines (n = 8 known specimens) and Sundaland. The adults were taken in iii., v., viii. and x. up to 950 m (in Sumatra up to 1.700 m) in primary forests only.

Distribution. *Phalera phillipae* is found in Sumatra, Borneo and in the Philippines: Palawan and Mindanao.

© Biologiezentrum Linz, download unter www.biologiezentrum.at

113. *Phalera acutoides* HOLLOWAY, 1983: 35; pl. 3: 3; fig. 28
HT: ♂, Brunei, Ulu Temburing, 300 m, – BMNH, London, examined.



Fig. 501: Distribution of *Phalera acutoides*.

Phalera acutoides belongs to a species complex (about 9 species) of the *Phalera raya* MOORE, 1860 - line. This group is represented in SE Asia by three species, two of which are occuring in Mindanao. *Phalera acuta* was described by GAEDE, 1930: 613, HT: „Java, Sarawak" as a "form. nov." of *raya*. In GAEDE (1934: 197) it was cited as „var." In BMNH, London, there is a ♂ with following labels: „55.24. Mt. Gedeh, 4000 feet, Java, Oct. ,24. G. Overdijkink.", „*raya-acuta* Type [in GAEDES hand] det M. GAEDE" a red label „Type" a blue label Notodontidae genitalia slide No. 767 ♂" and a yellow label Photo done by A. SCHINTLMEISTER #4874". This specimen is designated hereby as Lectotype to stabilize the nomenclature.
The taxonomic situation of the populations from Mindanao, Borneo, Sumatra and Java of the *acuta* and *acutoides*-group is not clear; probably they belong to one species with different subspecies.

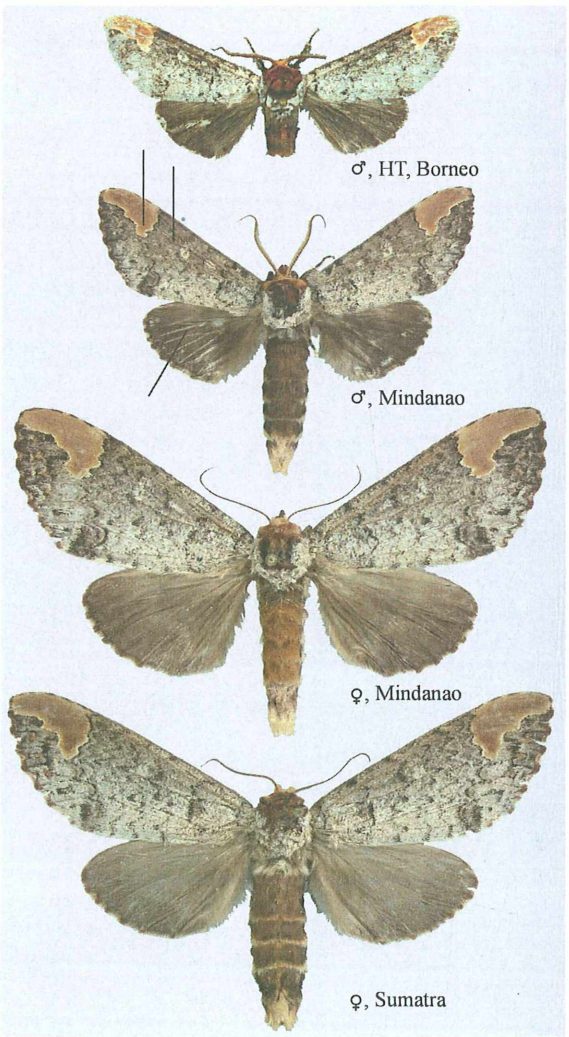


Fig. 502: Adults of *Phalera acutoides*.

Diagnosis. *Phalera acutoides* is the sister species of the Javan *P. acuta*. The species is clearly recognized by the darker grey hindwings. The blackish forewing fasciae are more broken and obscure than in the other similar species of the group. The creamy discal spot on the forewings is more conspicuous than in the following new species.

The male genitalia are closer to those of *acuta* than *knoblichi*. They have a triangular, elongated uncus, which is shorter than in *knoblichi*. The shape of the bifurcate socii (as illustrated) is usefull for discrimination

Download unter www.biologiezentrum.at

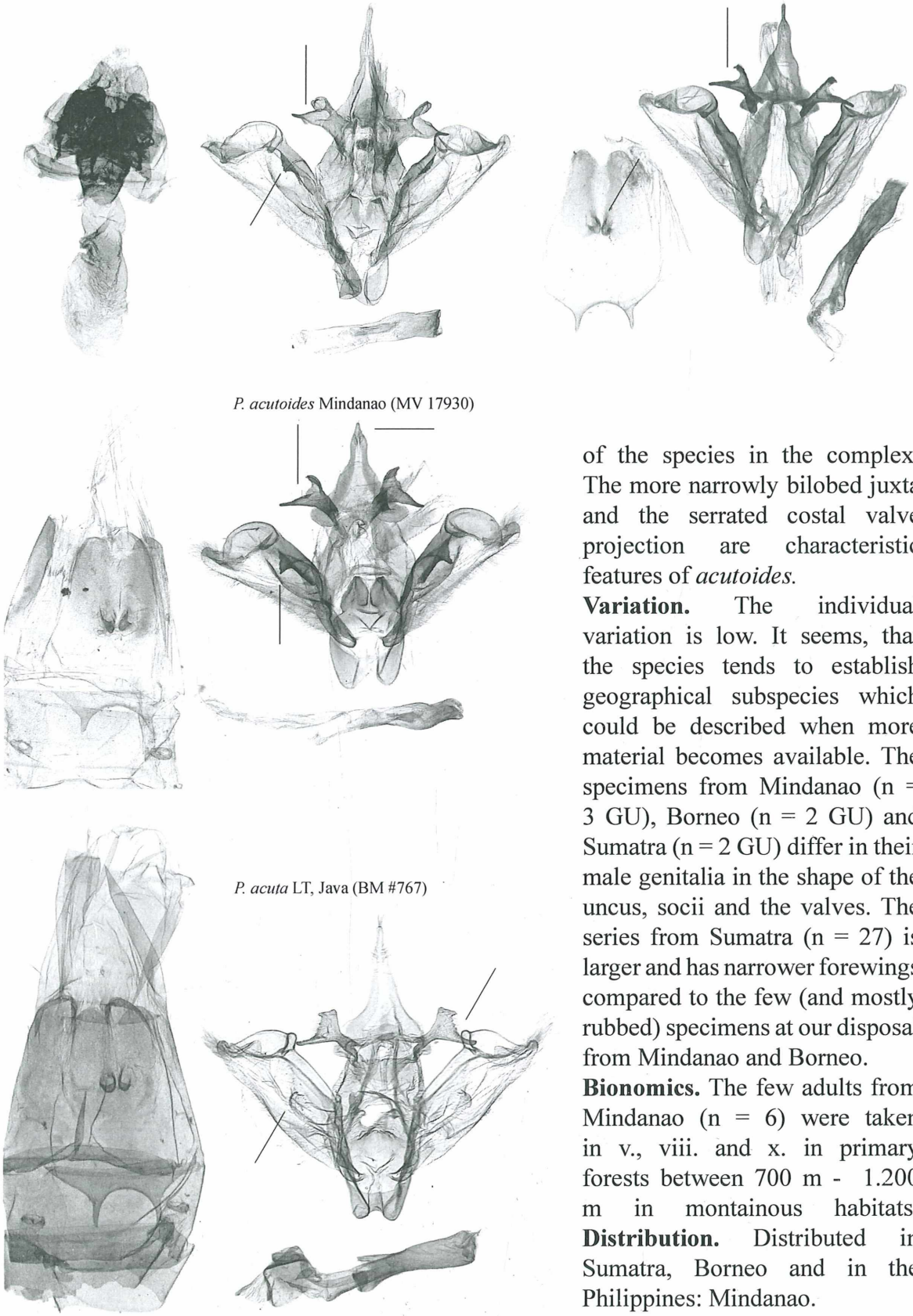


Fig. 503: Genitalia of *Phalera acutoides* and *acuta*.

of the species in the complex. The more narrowly bilobed juxta and the serrated costal valve projection are characteristic features of *acutoides*.

Variation. The individual variation is low. It seems, that the species tends to establish geographical subspecies which could be described when more material becomes available. The specimens from Mindanao (n = 3 GU), Borneo (n = 2 GU) and Sumatra (n = 2 GU) differ in their male genitalia in the shape of the uncus, socii and the valves. The series from Sumatra (n = 27) is larger and has narrower forewings compared to the few (and mostly rubbed) specimens at our disposal from Mindanao and Borneo.

Bionomics. The few adults from Mindanao (n = 6) were taken in v., viii. and x. in primary forests between 700 m - 1.200 m in montainous habitats.

Distribution. Distributed in Sumatra, Borneo and in the Philippines: Mindanao.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

114. *Phalera knoblichi* spec. nov.

HT: ♂, Philippinen, Mindanao, 14 km E of Maramag Brgy. Bagong Silang, 1.480 m, 07°55.049'N, 124°54.049'E, 27.-28.ii.2009 leg. K. KNOBLICH & J.H. LOURENS – NHM, Wien.

Paratypes (12 ♂♂, 2 ♀♀):
Mindanao: 12 ♂♂, 1 ♀, 14 km E of Maramag Brgy. Bagong Silang, 1.480 m, 07°55.049'N, 124°54.049'E, 27.-28.ii.2009 (MV 17934); 1 ♂, 40 km NW km Maramag, Dalongdong, Talakag, 800 m, 7°53'N, 124°40'E, 1.-3.x.1988; 7 ♂♂, Dalongdong iv. 2000 (MV 17929, MV 17933); 3 ♂♂, 1 ♀, Calasan, ix. 2000 (MV 17927); 5 ♂♂, Cagayan, 6 km N of Diminorg, 40 km S of Talakag, Ft. Mt. Kalianlian, 1.240 m, 07°56.131'N, 124°38'.375'E, 20.-21.iii.2009; 3 ♂♂,Bukidnon, Mt. Kitanglad, S-Seite, Intavas, 2.200 m, 8°07' N, 124°55'E, 15.viii.-15.ix.1993.



Fig. 504: Distribution of *Phalera knoblichi.*

Etymology. Dedicated to Klaus Knoblich, Wuppertal.

Diagnosis. Forewing length ♂♂, 28 mm - 30 mm; ♀ 36 mm. 2 mm larger in forewing length than *Phalera acutoides* from Mindanao, and *acuta.* Both species are similar to *knoblichi* by external appearance and markings. *Phalera knoblichi* is readily separable from both species by the paler greyish-brown hindwings and the paler creamy and brown coloured apical patches on the forewings. The forewing shape is broader, less elongated than *acutoides*. The new species is characterized by silvery-grey forewings with several fascia, marked as inconspicuous blackish spots and an indistinct paler discal spot. The female resemble the male, but is larger in size.

The male genitalia of *knoblichi* resembles *acuta* and *acutoides.* They are distinguished by very long and acute triangular uncus, the robust socii, which are bifurcate but not serrated. The shape of the valves (costa) and the juxta are different as illustrated. The bilobed 8th sternite is typical for the *raya*-species group. The female genitalia provide similarity to those of *acuta* (*acutoides* female was not dissected) by some minor structures of the ventral plate; but the ductus bursae is straight in *knoblichi* and

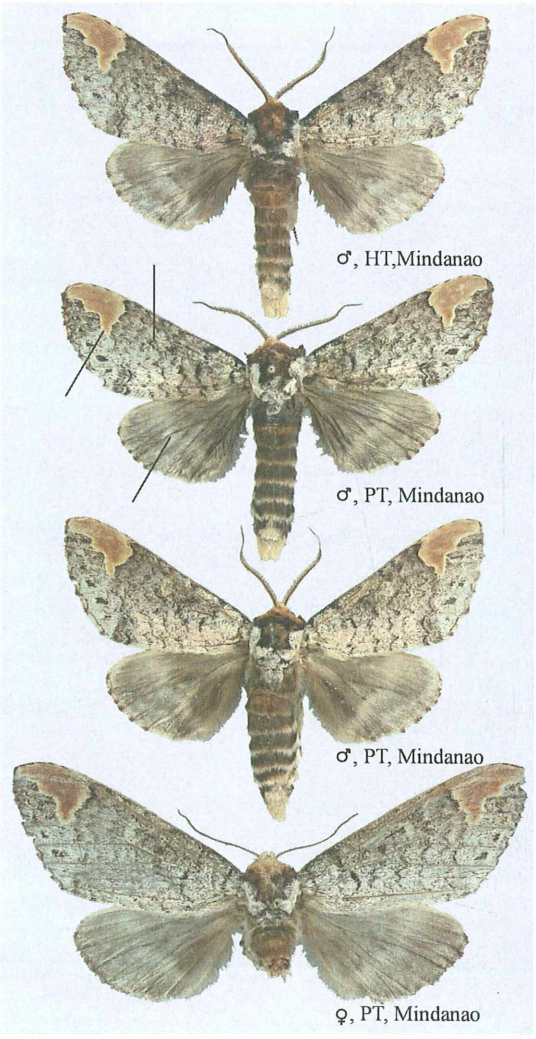
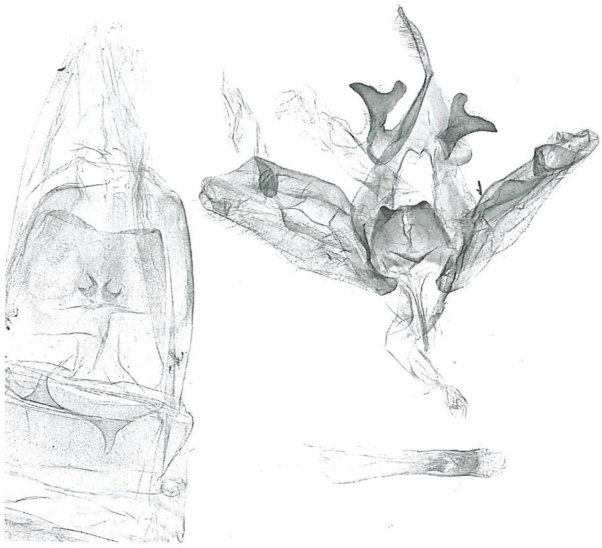


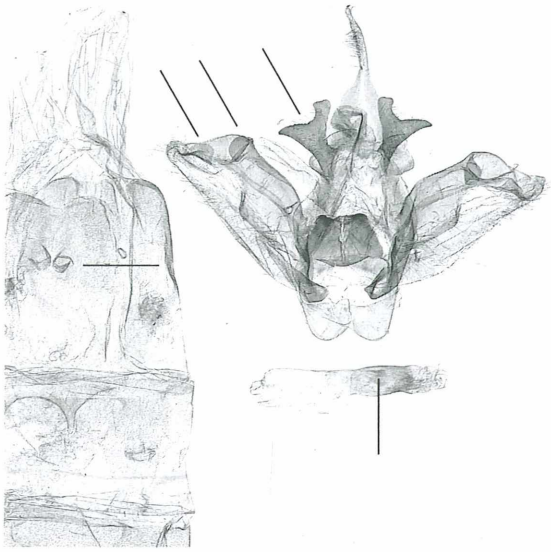
Fig. 505: Adults of *Phalera knoblichi.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

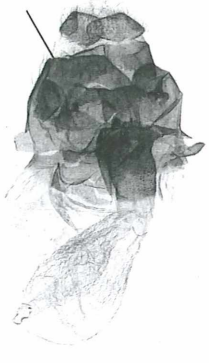
PT, Mindanao (MV 17934)



PT, Mindanao (MV 17929)



PT, Mindanao (MV 17927)



PT, Mindanao (MV 17933)

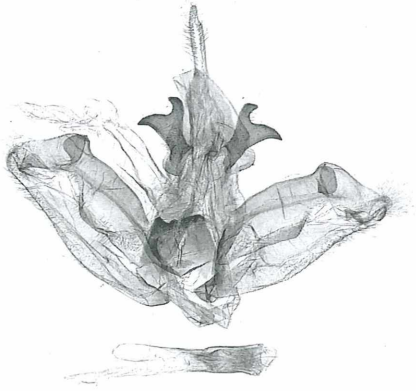


Fig. 507: Male and female Genitalia of *Phalera knoblichi.*

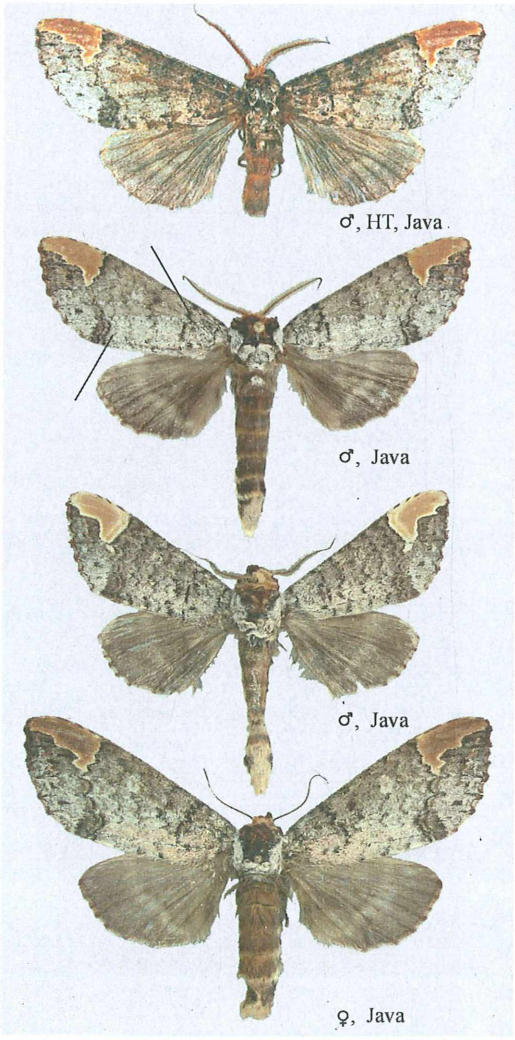


Fig. 506: Adults of *Phalera acuta.*

the somewhat pear shaped bursa copulatrix.

Variation. The individual variation is remarkably low, including the male genitalia (n = 3 GU, illustrated).

Distribution. Endemic in Mindanao and probably restricted to the central part, where *knoblichi* occurs sympatrically with *acutoides*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

115. *Phalera combusta* (WALKER, 1855): 1092

(*Anticyra combusta*).

HT: ♂, Philippines – BMNH, London, examined.

= *Dinara lineolata* WALKER, 1856: 1700
HT: ♂, [NW India], Hindostan – Oxford University Museum of Natural History, examined.

Phalera combusta stands somewhat isolated in the large *Phalera* genus. The female genitalia suggest a relationship with the *Phalera grotei* - group but the external appearance resembles rather the African genus *Antheua* WALKER, 1855 (type species: *Antheua simplex* WALKER, 1855). The male genitalia of *combusta* are more similar to the *Phalera torpida* WALKER, 1865 lineage, which is represented in the Philippines by *Phalera mangholda*.



Fig. 508: Distribution of *Phalera combusta*.

Diagnosis. In the Philippines the species is unmistakably identified by the yellow-brownish ground colour of all wings. The 7th abdominal segment is contrasting black contrary to the orange-brown abdomen.

The male genitalia have a slender and less sclerotized uncus and a pair of very large socii. The broad valves are almost not modified. The female genitalia are distinctive by the large bursa copulatrix, which displays two subbasal sclerotized invaginations.

Variation. There is almost no individual as well as geographical variation in *combusta*.

Bionomics. The species is common on Negros but rare on Marinduque and Luzon. Adults were taken in v., vi., and vii. (outside the Philippines during the whole year) in primary forests and as a follower of cultivated landscapes, also in urban areas. The moths prefer lower altitudes up to 600 m, but were occasionally observed at 1.010 m. The polyphagous caterpillar feeds also on Graminaceae.

Distribution. *Phalera combusta* is widespread but occurs scattered. The species was found in the Himalaya, Myanmar, Indochina China, Taiwan, Sundaland, Java, Bali, Timor, Tanimbar and the Philippines: Luzon, Marinduque and Negros.

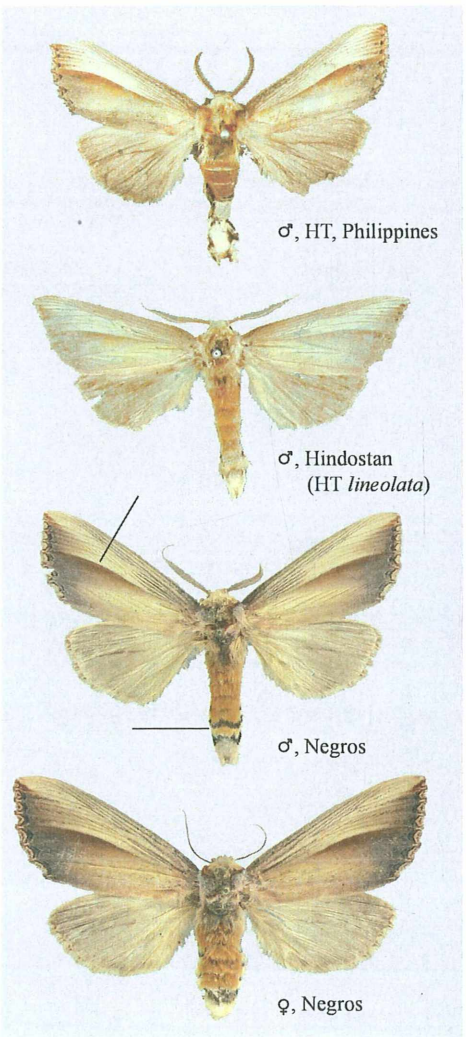


Fig. 509: Adults of *Phalera combusta*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

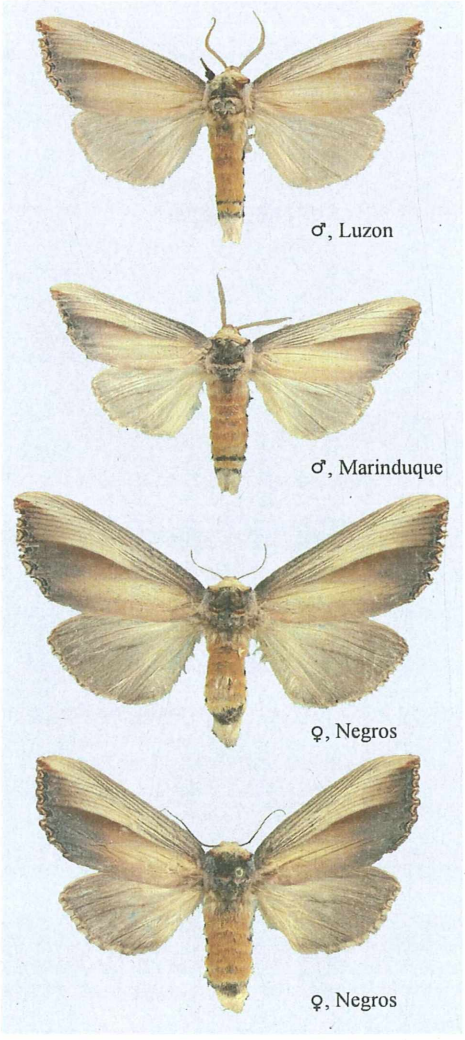


Fig. 510: Adults of *Phalera combusta.*

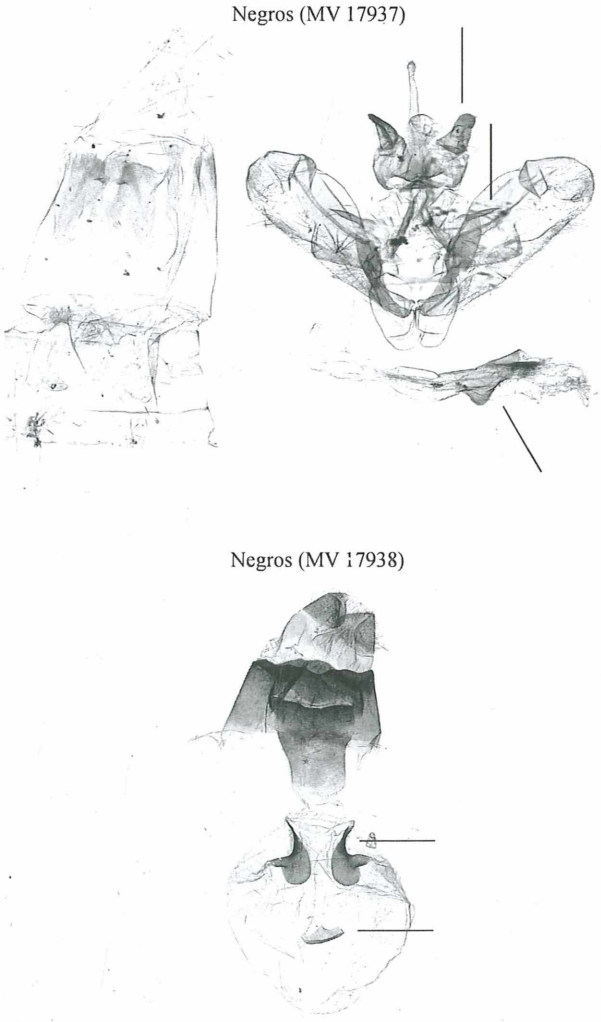


Fig. 511: Male and female genitalia of *Phalera combusta.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

116. *Phalera grotei* Moore, 1860: 434

HT: ♀, Calcutta – BMNH, London, examined.

= *Phalera sangana birmicola* Bryk, 1949: 7; pl. 2: 9
HT: ♂, [Myanmar], Burma, Washaung, 20 km E of Myitkyina – Naturhistoriska Riksmuseet, Stockholm, slide examined.

= *Phalera cihuai* Yang & Lee, 1978: 487, pl. 37: 1, 2, fig. 78 D; HT: ♂, China, Beijing – Agricultural University of Beijing, not examined.

= *Phalera birmicola obfuscata* Nakamura, 1978: 221; fig. 24; HT: ♂, Korea, Soeul, Chung-Yang-Rei – National Science Museum, Tokyo, photograph examined.



Fig. 512: Distribution of *Phalera grotei*.

The *Phalera grotei* lineage is taxonomically a difficult complex of larger species, most diverse in the Oriental tropics. The Philippines host four species of the group.

Diagnosis. The large species with the tigered abdomen is separable from the related species by the somewhat narrower shape of the forewing. The apex of the forewings is in Palawan populations less rounded than in the sympatrically *P. sundana* or *longa*. Due to individidual variation individuals of *grotei* are sometimes not distinguishable from *sundana* by visual features.

The male genitalia have a more slender triangular shaped uncus than *sundana*. The socii and the costal flaps are more robust than in *sundana*. A characteristic feature is the apical spine of the valves, which is not present in other species of the complex (except *sundana*). The female genitalia differ from the other similar species by the rectangular shaped ostium and a rather straight shaped 9th abdominal segment. There is a larger strong sclerotized subapical invagination. The two subbasal invaginations are smaller than in *sundana*.

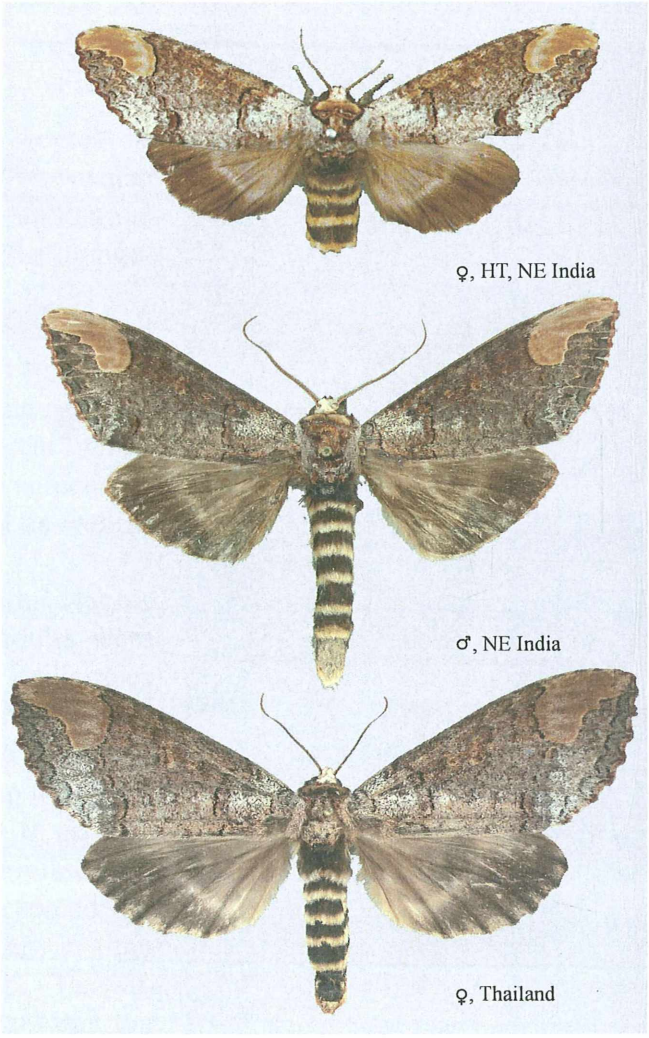


Fig. 513: Adults of *Phalera grotei*.

©Naturhi... Palawan (GU 73-34) ...ownload unter www.biologiezentrum.at HT, NE India (BM# 766)

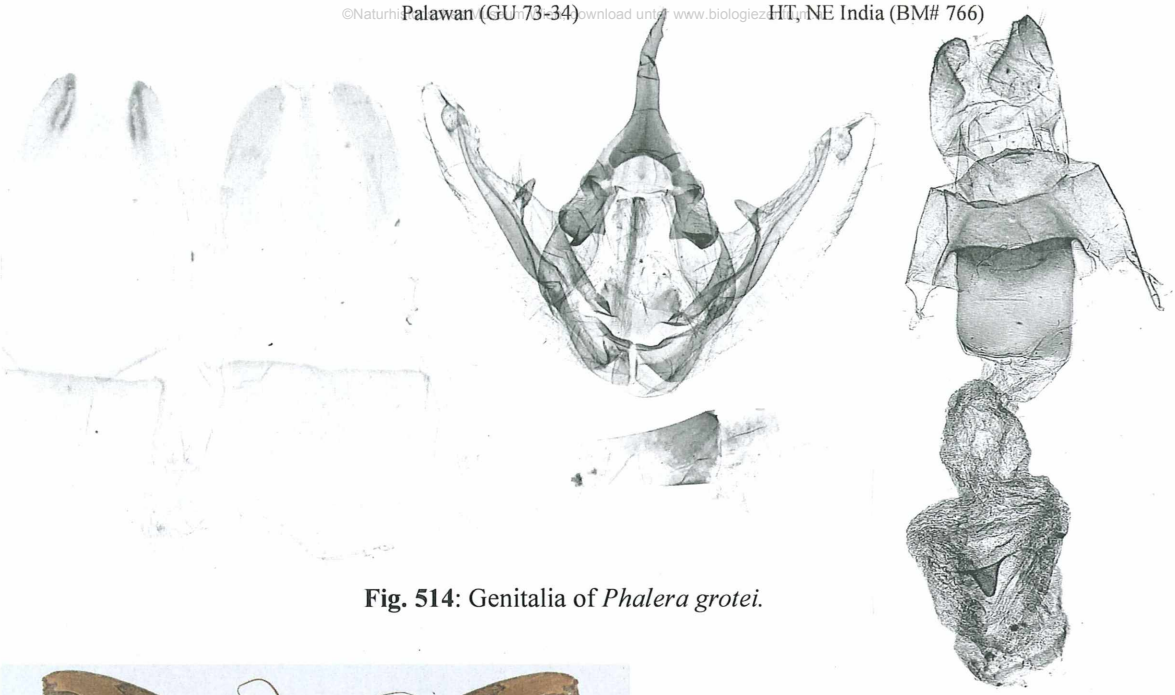


Fig. 514: Genitalia of *Phalera grotei.*

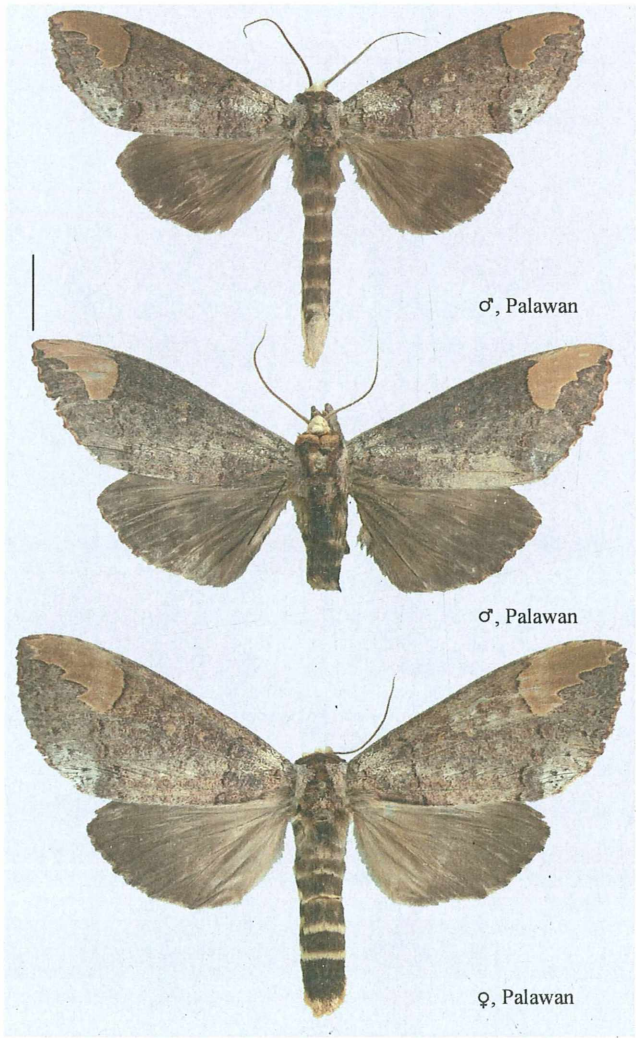


Fig. 515: Adults of *Phalera grotei.*

Variation. The species is variabel in colour intensity and shape of the apical moon-spot. The ground colour varies individually from pale brown to blackish brown. Pale forms are however absent in Palawan, perhaps due to climatic conditions. The percentage of white scales on the forewings is also subject to individual variation. Occasionally there are individuals lacking the white scales. The male genitalia vary individually in the shape of the socii and also in the shape of the valve processes.

Bionomics. The species is common and a well-known follower of cultivated landscapes outside Palawan. The adults from Palawan (n = 43) were observed during i., ix. - xii. mostly in secondary lowland forests up to 600 m. The caterpillar feeds on various Leguminosae.

Distribution. *Phalera grotei* is found in India, Nepal, Bhutan, the Andaman Isls., Myanmar, Korea, China, Indochina, Sundaland and the Philippines: Palawan.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

117. *Phalera sundana* Holloway, 1982: 63, 201; pl. 21: 5

HT: ♂, Malaysia, W. Pahang, Genting Tea Estate, 2.000 ft. – BMNH, London, examined.

Phalera sundana is the most common and widespread species of this complex in the Philippines. This variable insect is in fact visually indistinguishable from *longa*. The genitalia of many specimens from various localities have been dissected (n = 41) prior to correct identification. All illustrated specimens of *sundana* and *longa* were pictured prior to dissection for correct identifications.

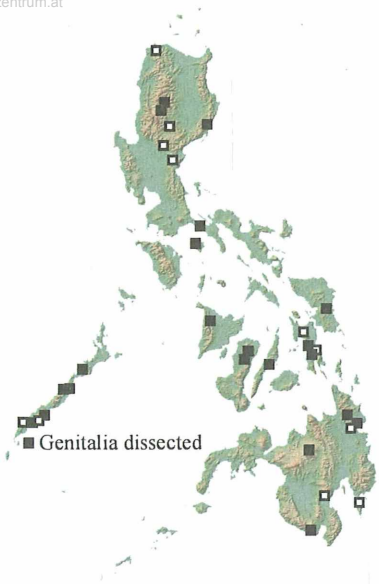


Fig. 516: Distribution of *Phalera sundana*.

Diagnosis. The large species with the tigered abdomen is visually hard to distinguish from *P. grotei*. The forewings are broader and apically more rounder. The features given by Holloway (1982) – i. e. being paler and grey patched tornus with two black dots – may vary. *Phalera sundana* can only reliably be separated from *longa* by their genitalia. In most cases *sundana* is larger and more fuscous.

The male genitalia of *sundana* are considerably larger than *grotei* or *longa* and have a diagnostically broad, not triangular shaped uncus. The socii are deeply bilobed; the apical spine of the valve is pointed. The female genitalia have a clearly bilobed base of the ostium. The 9th tergite displays

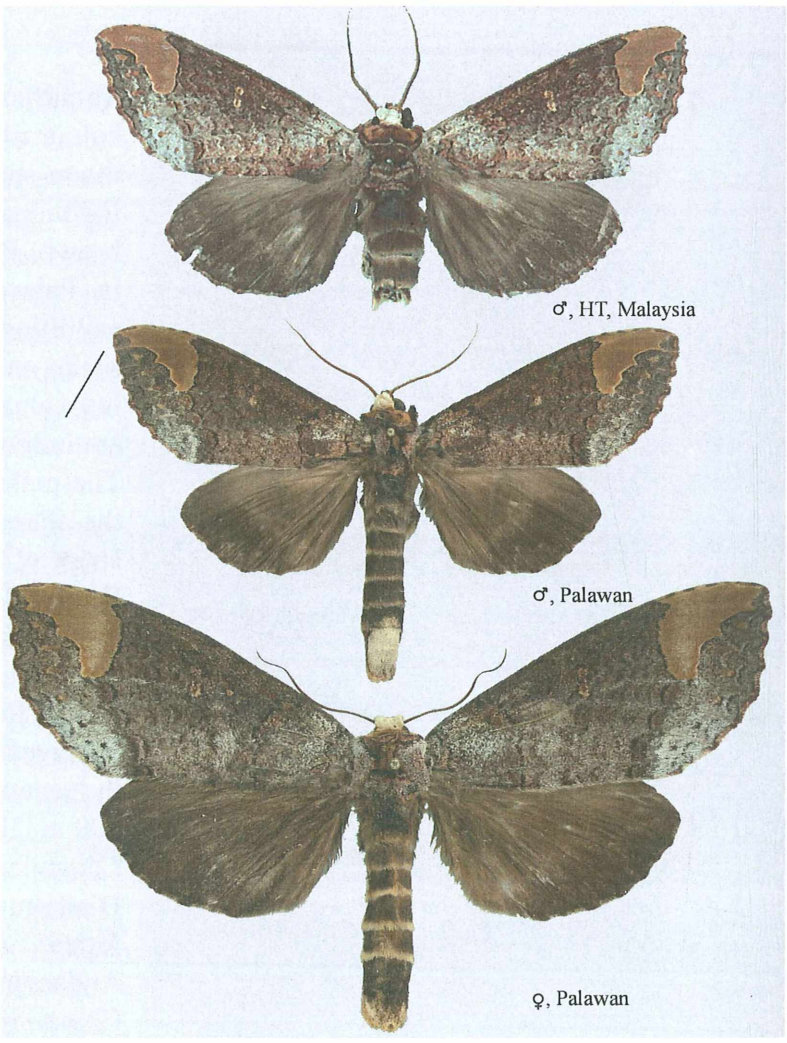


Fig. 517: Adults of *Phalera sundana*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

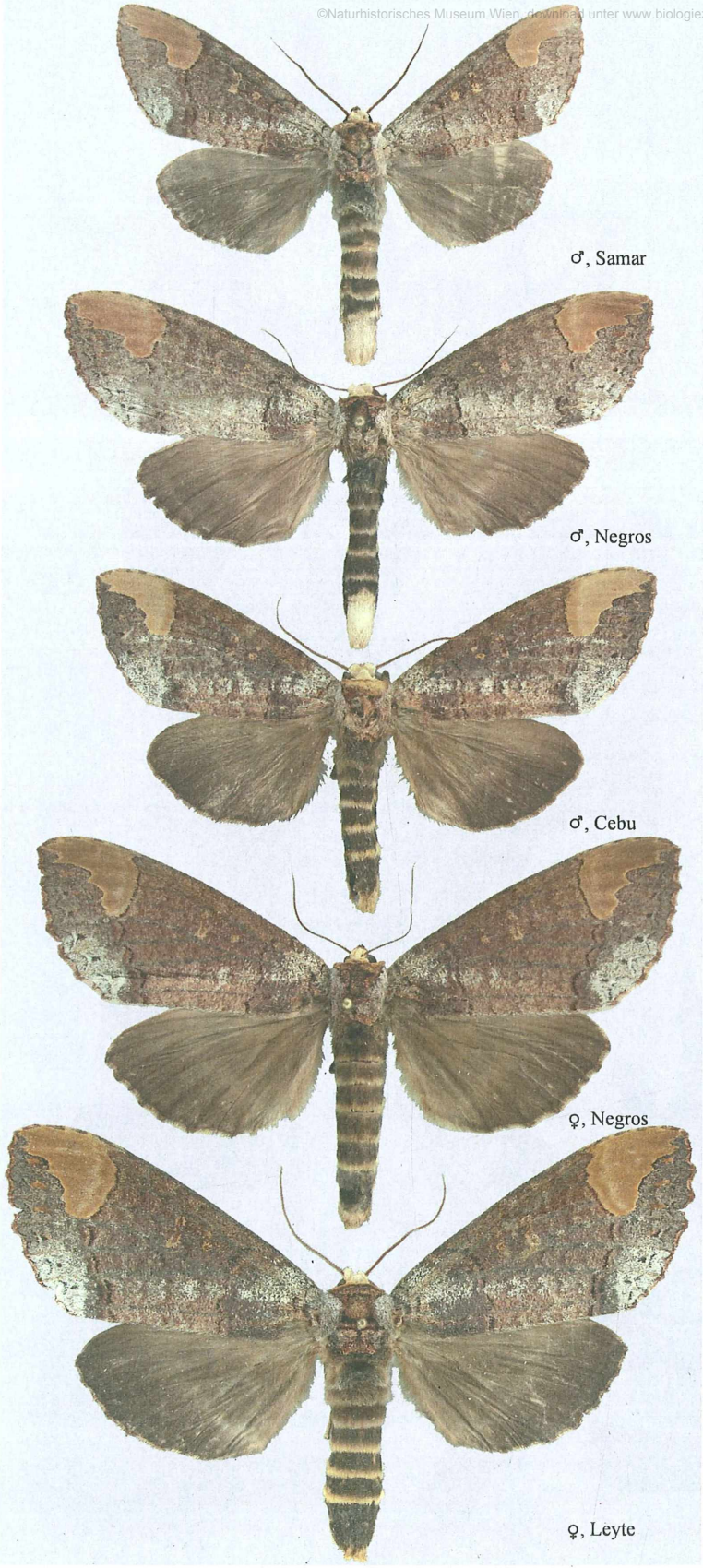


Fig. 518: Adults of *Phalera sundana.*

two acute projections. As in the other species of the group, there is a sclerotized subapical invagination; the two subbasal invaginations are the largest seen in the group.

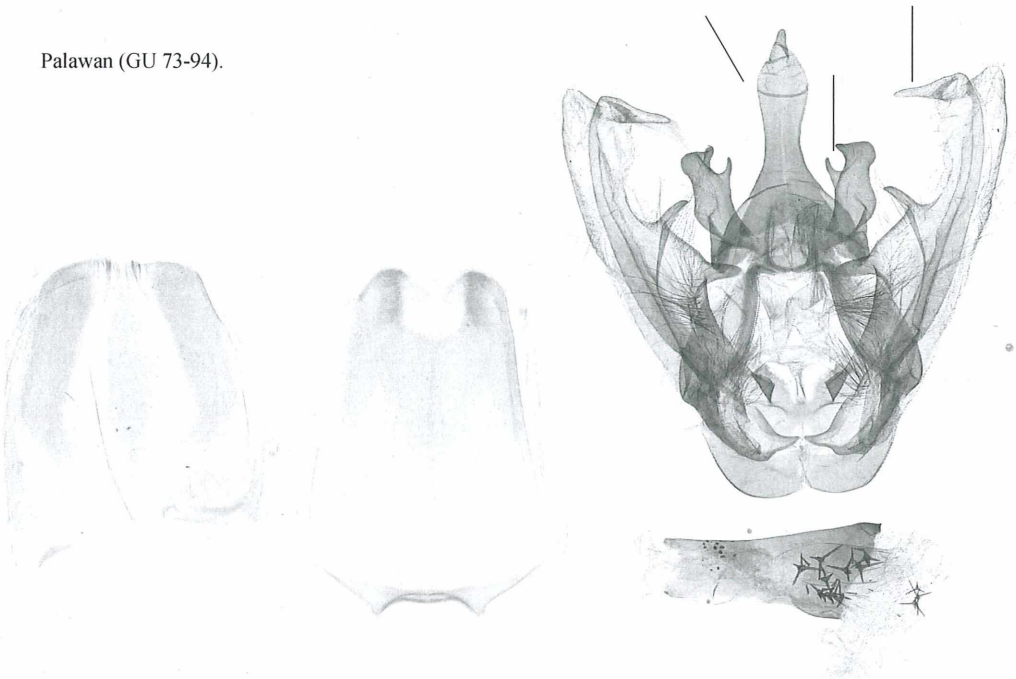
Variation. The species is very variabel in size, forewing shape, the paleness, the shape of the apical moon-spot and the percentage of white scales on the forewings. The ground colour varies slightly from pale brown to fuscous brown. The male genitalia vary individually in the shape of the uncus and the socii. A male from Cebu (GU 18-28) shows a very different shape of the uncus, as illustrated; but a further dissected male from the same locality has normal genitalia as usual for *sundana.*

Bionomics. The species is common and often encountered in cultivated landscapes. The adults occur during the whole year in primary, secondary forests and also urban areas up to 2.200 m above sea level, but most specimens were observed at lower altitudes up to 1.000 m.

Distribution. *Phalera sundana* is distributed in Bali, Java, Sundaland, Indochina, S China and the Philippines: Palawan, Luzon, Samar, Cebu, Negros, Leyte, Mindanao.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Palawan (GU 73-94).



Negros (MV 17529).

Mindanao (MV 17950).

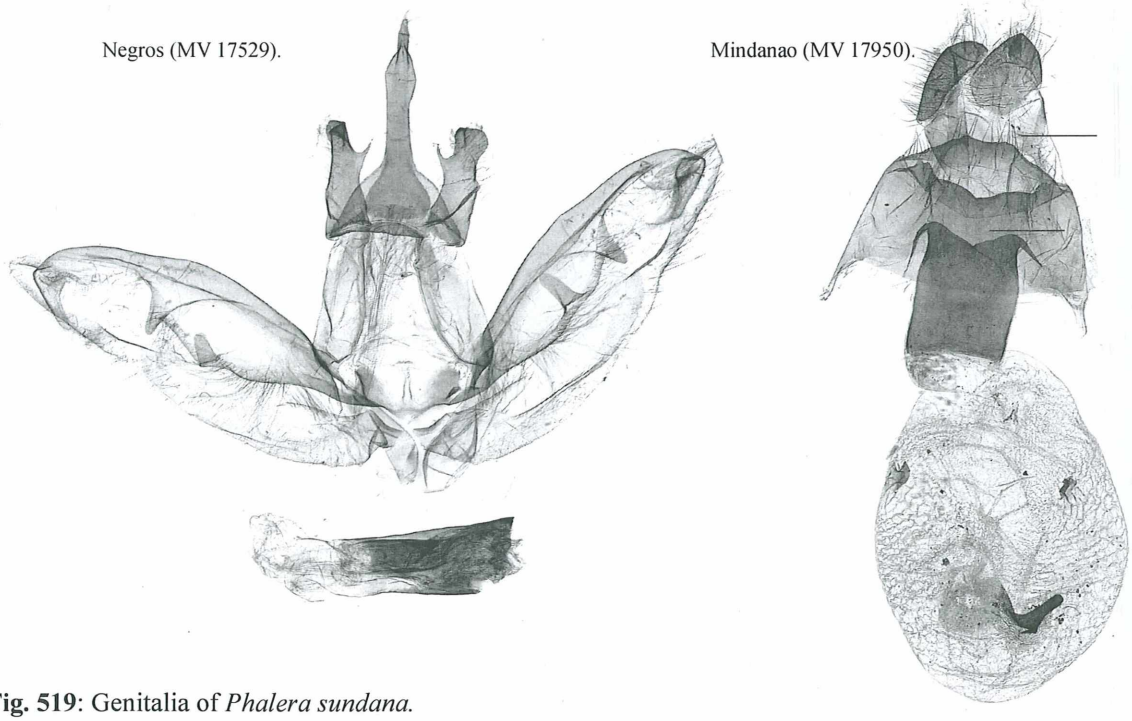
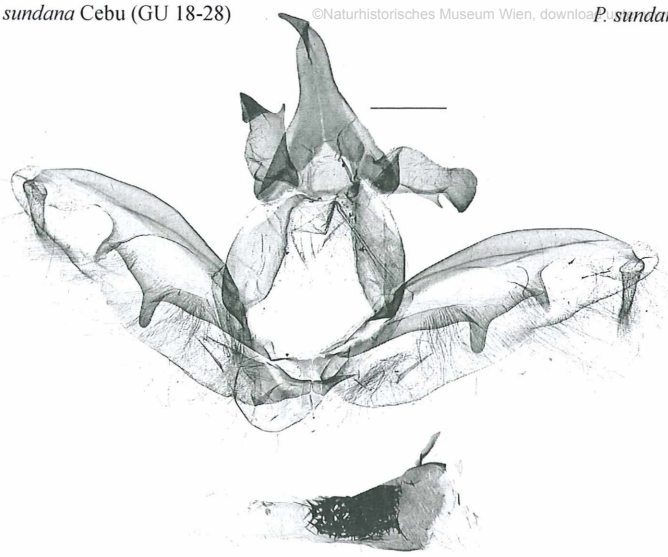


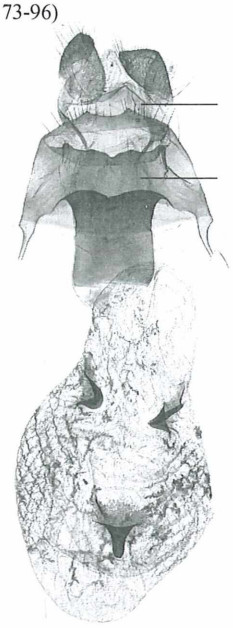
Fig. 519: Genitalia of *Phalera sundana.*

©Naturhistorisches Museum Wien, download

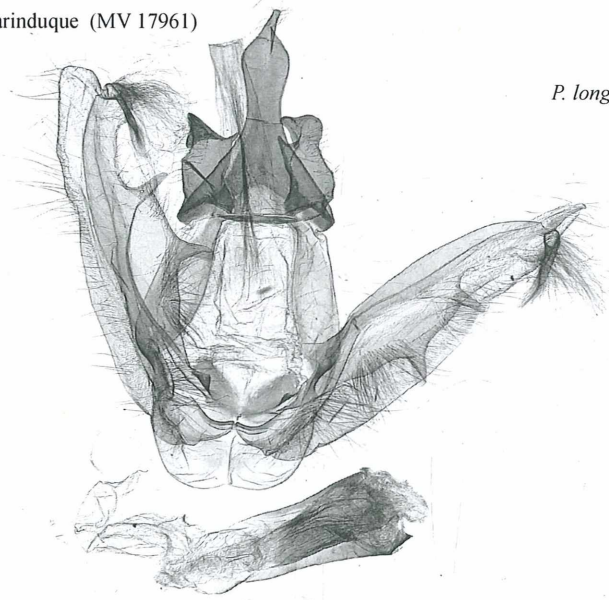
P. sundana Cebu (GU 18-28)



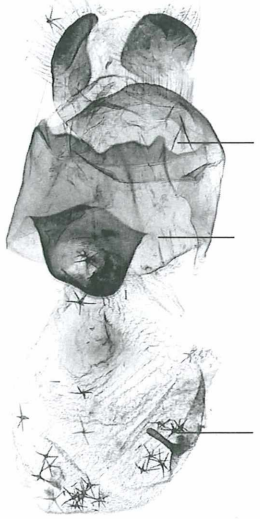
P. sundana Palawan (GU 73-96)



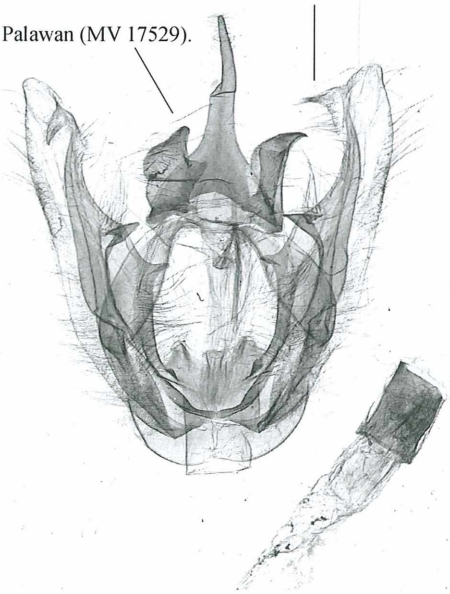
P. sundana Marinduque (MV 17961)



P. longa Luzon (MV 18000)



P. grotei Palawan (MV 17529).



P. longa Luzon (GU 18-43)



Fig. 520: Genitalia of *Phalera sundana, grotei* and *longa.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

118. *Phalera longa* KOBAYASHI & KISHIDA, 2007: 278; figs. 3, 21, 21a, 21b2, 21b1, 21c, 21d, HT: ♂, Philippines, N. Luzon, Banaway [= Banaue] – National Science Museum, Tokyo, not examined.

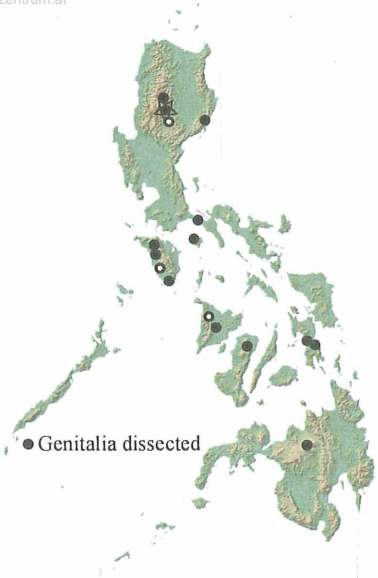


Fig. 521: Distribution of *Phalera longa*.

When describing *Phalera longa*, KOBAYASHI & KISHIDA (2007) overlooked the note in HOLLOWAY (1982: 201), that *Phalera sundana* occurs in Mindanao. They did not compare the new species with *sundana* and examined only two male genitalia (from a series of n = 12 specimens of the complex), which accidentally did not belong to *sundana*. Our studies show *sundana* is more widely distributed and much more common in the Philippines than *longa*. We suppose that, the type series of *longa* very probably contains some *sundana* specimens.

Diagnosis. The species is visually hard to distinguish from *P. sundana*, but *longa* is generally smaller and somewhat paler in external appearance. The shape of the apical moon spot on the forewings is variable and not a reliable feature for identification of *longa* as KOBAYASHI & KISHIDA (2007) suggest.

The male genitalia resemble somewhat *grotei*, but the valve processes are developed as circular projections, not pointed as in *sundana* or *grotei*. The female genitalia have an unbilobed base of the rather rectangular shaped ostium. The 9th tergite displays no projections; the 9th sternite is deeper notched than in *sundana*. As in the other species of the group there is a sclerotized subapical invagination and two subbasal invaginations.

Variation. The species is variabel in

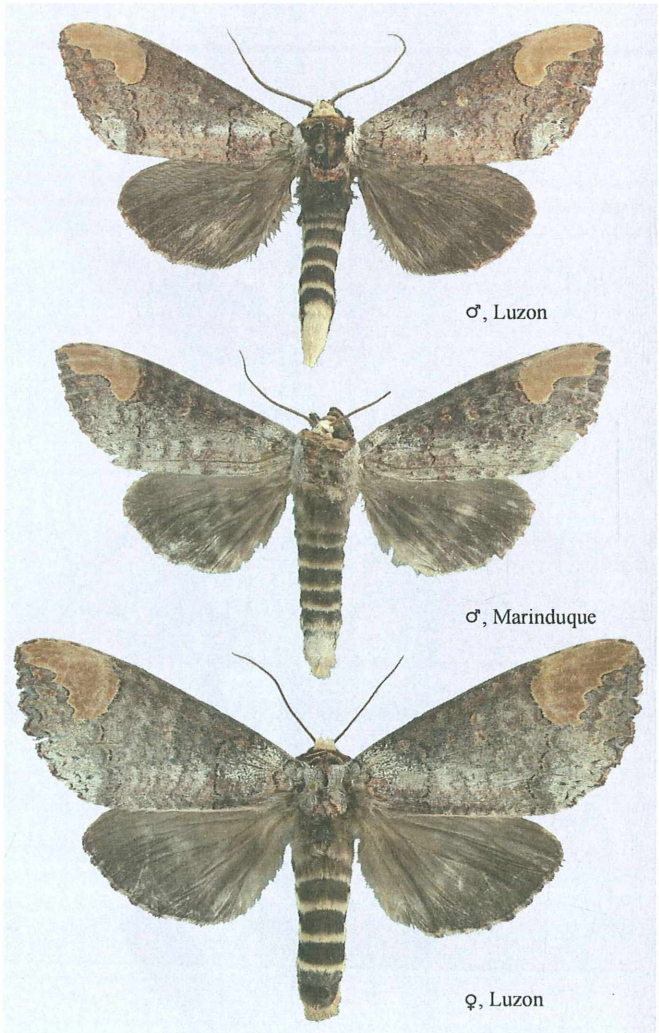


Fig. 522: Adults of *Phalera longa*.

©Naturhistorisches Museum Wien, download unter www.

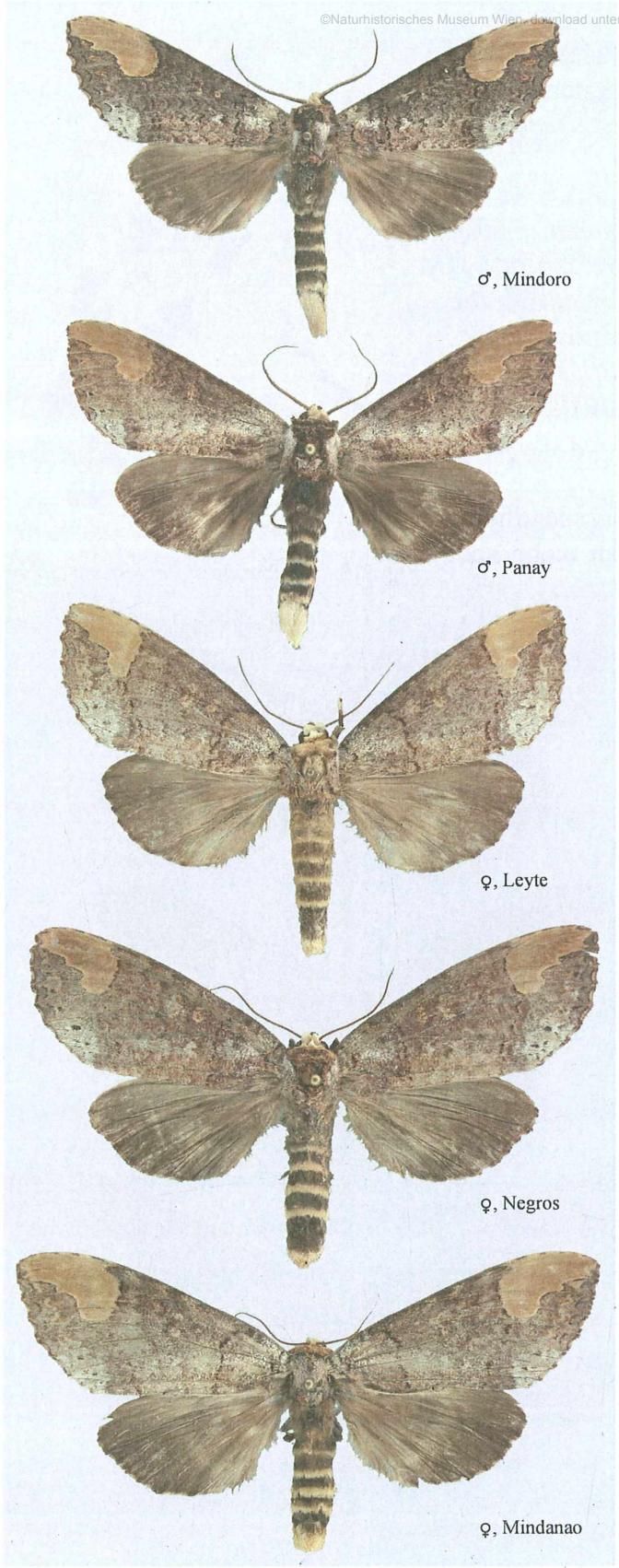


Fig. 523: Adults of *Phalera longa*.

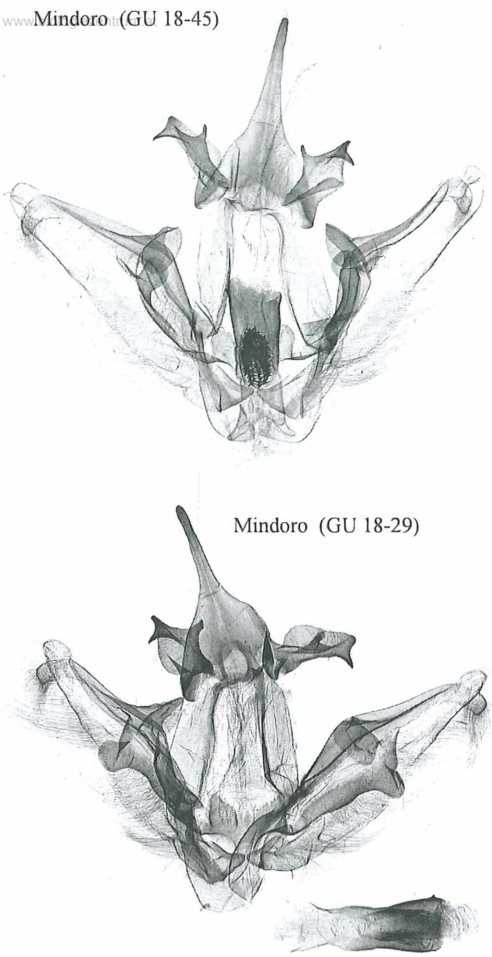


Fig. 524: Male genitalia of *Phalera longa*.

size, and shape of the apical moon-spot and the percentage of white scales on the forewings. The male genitalia vary slightly in the shape of the uncus and the socii.

Bionomics. The species is uncommon and rather restricted to primary and secondary forests. The adults were observed in i., ii., iv., v., vi., viii., x., xii. They occur from 50 m up to 1.900 m.

Distribution. *Phalera longa* is endemic in the Philippines: Luzon, Mindoro, Marinduque, Panay, Negros Leyte and Mindanao. Ocurrence in Cebu (KOBAYASHI & KISHIDA 2007) remains doubtful.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

119. *Phalera surigaona* Schaus, 1928: 83

LT (here designated): ♂, Philippine Islands, Mindanao, Surigao – USNM, Washington, photo and genitalia slide examined.

Schaus described *Phalera surigaona*, after 5 ♂♂ and 1 ♀ (Syntypes). To fix the identity of the species we designate here a male bearing the following labels as LT: „Surigao, Mindanao PI", „Aug", „BP Clark donor", „*Phalera surigaona* type Schs [in Schaus' hand], „Type No. 33436 U.S.N.M.", „♂ genitalia on slide Dez. 1958 E.L.T. 877".



Fig. 525: Distribution of *Phalera surigaona*.

Diagnosis. *Phalera surigaona* is readily identifiable by the less contrasting blackish brown moon spot and the white tornal spot.

The male genitalia resemble *sundana* but lack the apical valve process. The upper costal process is usually not pointed but somewhat circular as in *longa*. The female genitalia have a rather circular, not ellipsoid, shaped bursa copulatrix and a short ostium compared to the other species of the complex.

Variation. The species varies slightly in the darkness of the ground colour and the contrast of the wing pattern. Only the LT displays a pair of pointed valve processes (n = 5 GU). The socii are variable in shape.

Bionomics. The uncommon adults were collected in ii., iii., v. and vii.-xii. in primary forests. They occur from 200 m up to 2.000 m.

Distribution. Endemic in the Philippines: Samar, Leyte and Mindanao.

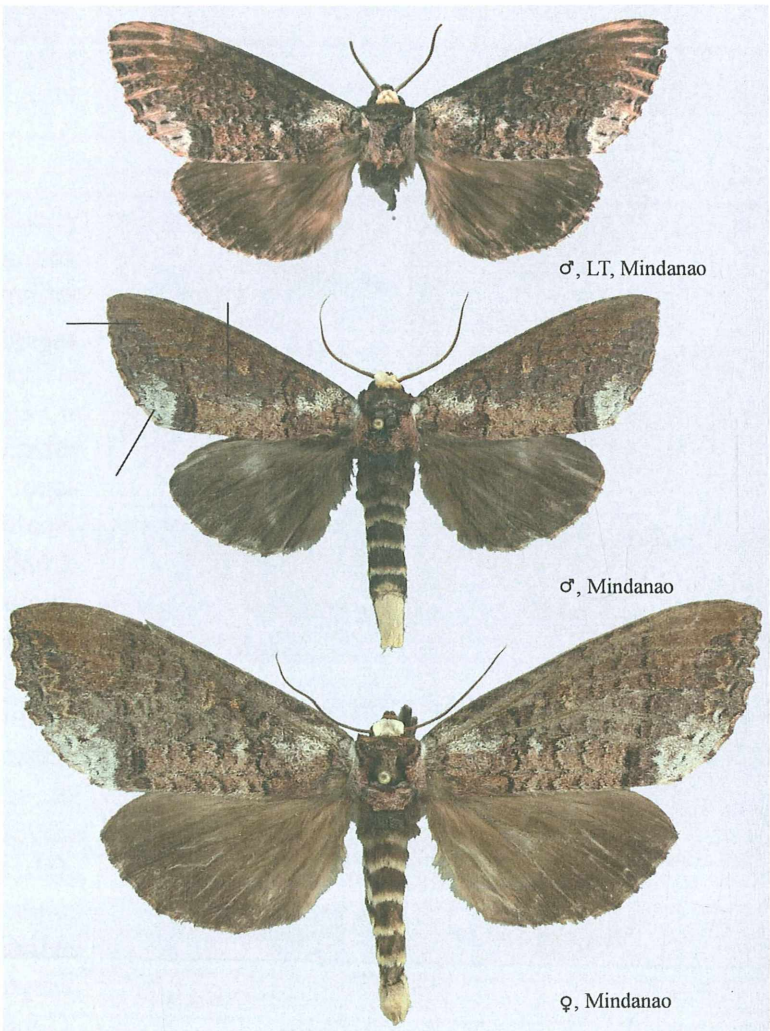


Fig. 526: Adults of *Phalera surigaona*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

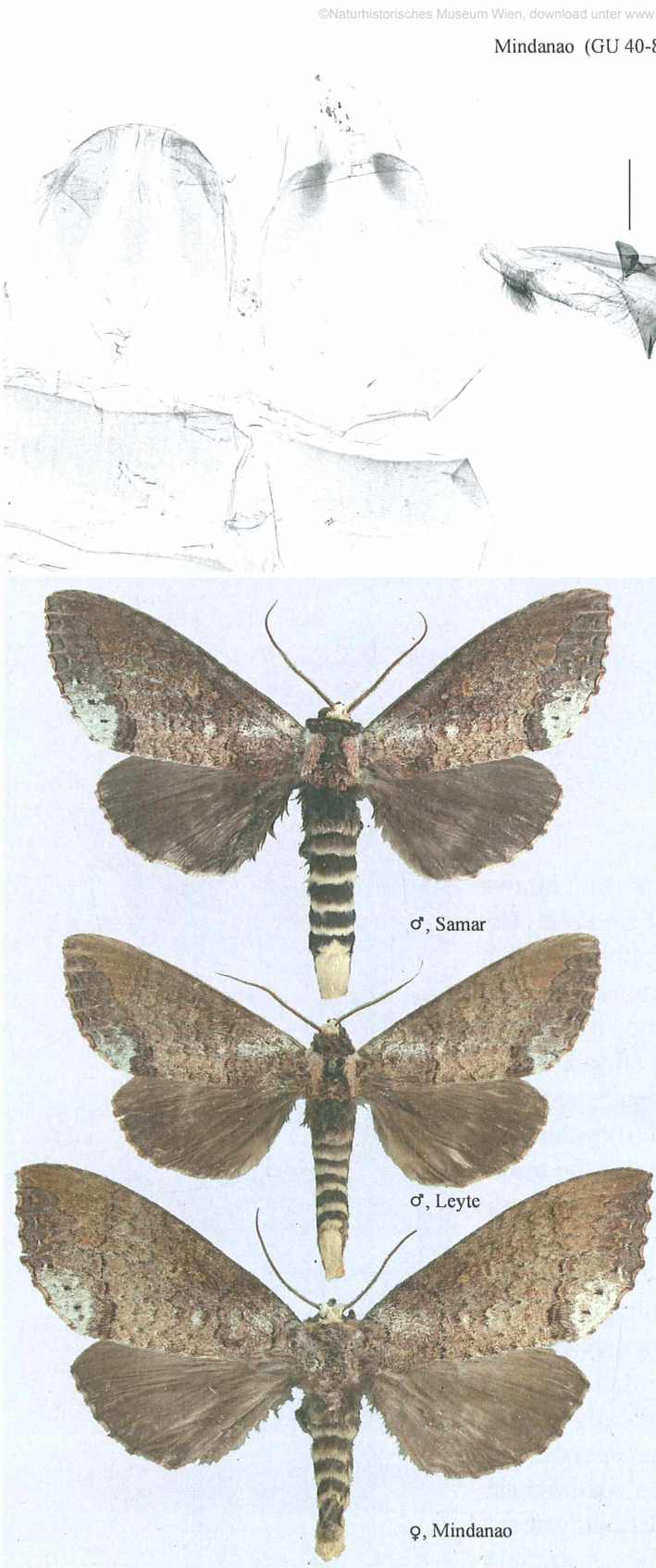


Fig. 527: Adults of *Phalera surigaona.*

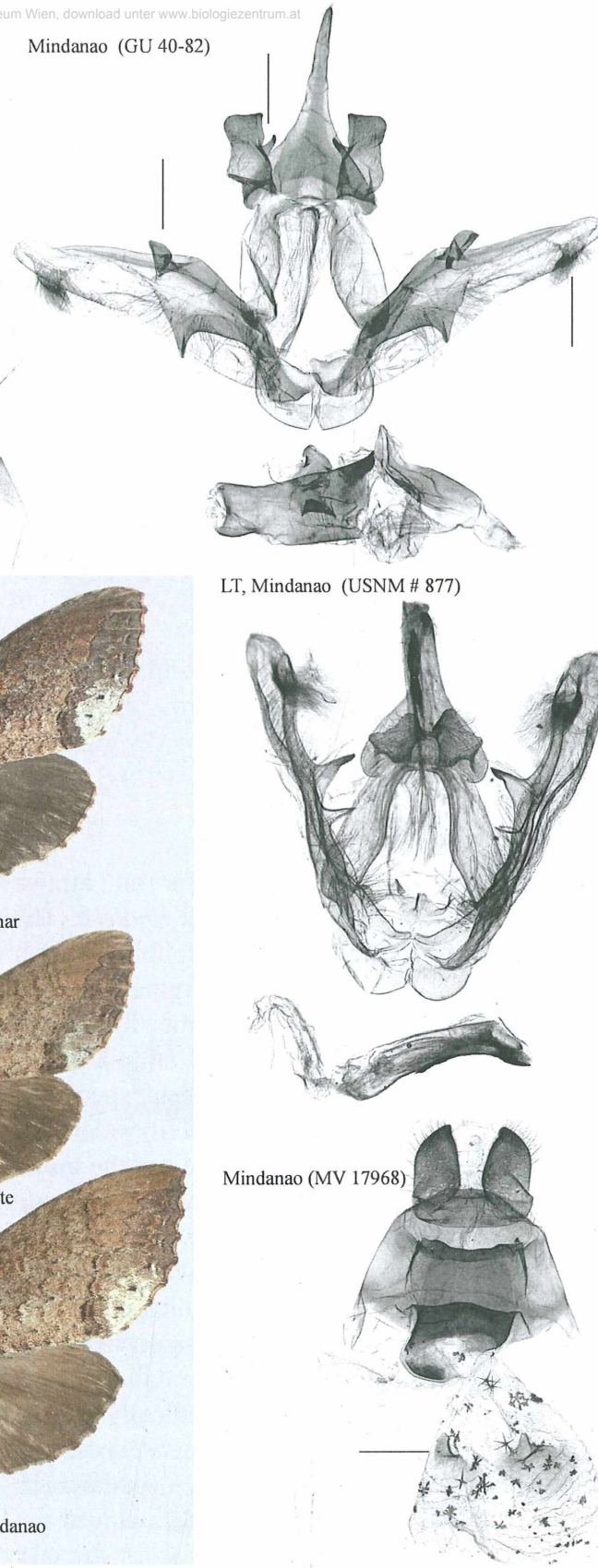


Fig. 528: Genitalia of *Phalera surigaona.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

120. *Phalera erconvalda* (Schaus, 1928): 78

(*Fentonia erconvalda*)

HT: ♂, Philippine Islands, Luzon [Mt. Makiling] – USNM, Washington, photo and genitalia slide examined.

= *Phalera melantata* West, 1932: 212, **syn. nov.**
HT: ♂, Philippine Is., Luzon I., subprov. Benguet, Palali, 2.000 ft. – BMNH, examined.



Fig. 529: Distribution of *P. erconvalda*.

Comparison of the types of *Fentonia erconvalda* and *Phalera melantata* lead to the hereby introduced new synonymy. Holloway (1983: 37) stated the type locality of *erconvalda* incorrect as Mindanao and considered *melantata* as a bona fide species. *Phalera erconvalda* belongs to the *Phalera torpida* Walker, 1865 lineage, which is characterized by greyish to blackish ground colour of all wings and very robust socii in the male genitalia. For this group *Erconholda* Kiriakoff, 1968 as a subgenus name is applicable as a subgenus name.

Diagnosis. *Phalera erconvalda* is an almost blackish-brown and relatively small *Phalera*. The male shows in most individuals a double blackish basal fascia. The sexual dimorphic females have paler ground colour of the forewings, inconspicuous circular grey discal stigma and a grey moon-spot near the apex. The sister species of *erconvalda* – *P. mangholda* – is generally paler grey in external appearance and the male has the moon spot on the forewings more conspicous. The male genitalia with reduced uncus have a pair of robust and large socii. The valves are characterized by the apical process and bear also a smaller postapical projection. The 8th sternite is of diagnostic shape and sclerotization. The female genitalia have a robust 9th sternite and a characteristically shaped ostium. There is no signum on the bursa copulatrix.

Variation. The species varies slightly in the darkness of the forewing ground colour. The forewing shape of the males is remarkably variable (as illustrated). The male genitalia (n = 4 GU) show almost no

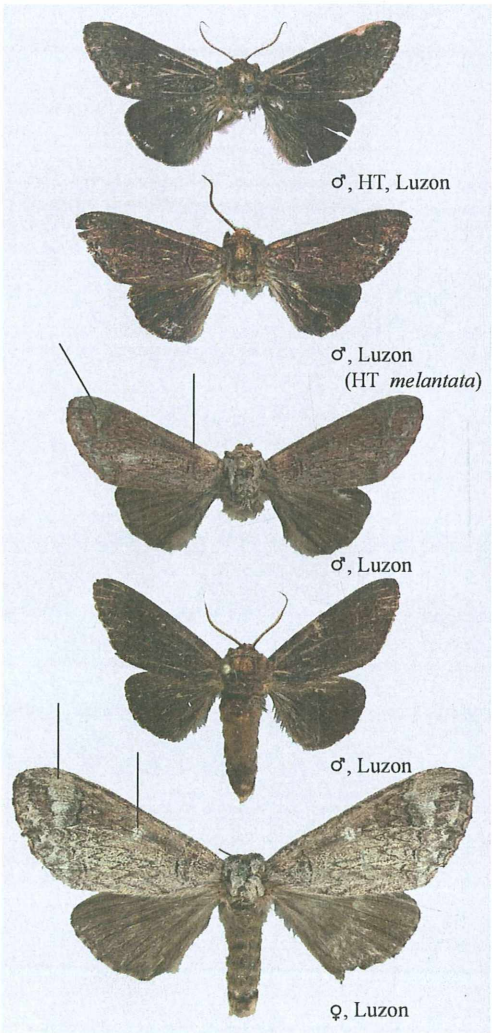
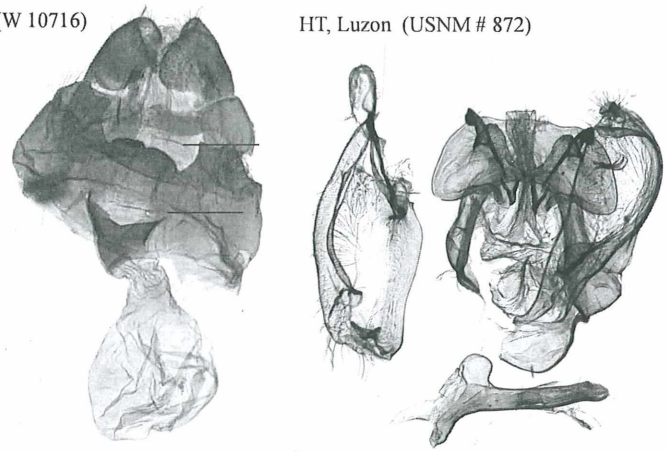
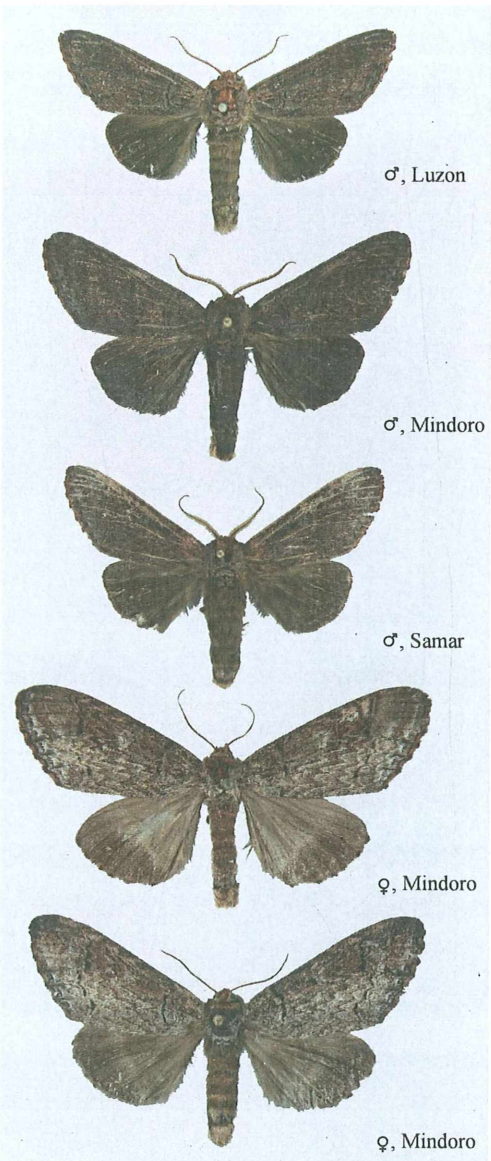


Fig. 530: Adults of *Phalera erconvalda*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at







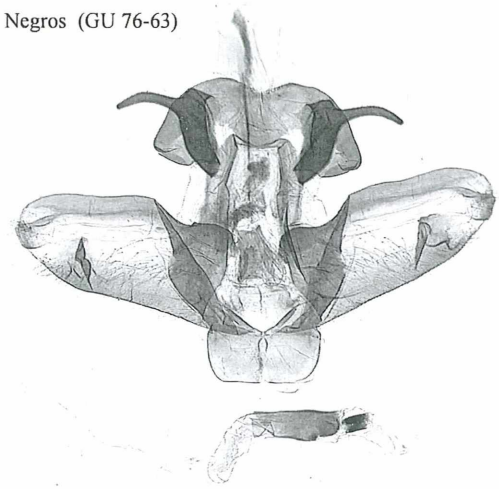


Fig. 531: Adults of *Phalera erconvalda.*

Fig. 532: Genitalia of *Phalera erconvalda.*

variation. No geographical variation could be found.

Bionomics. The rare adults (n = 13) were taken in ii., iv., vi., ix., x. in primary forests only at lower altitudes up to 1.000 m.

Distribution. Endemic in the Philippines: Luzon, Mindoro, Negros and Samar.

Biodiversity Heritage Library, http://www.biodiversitylibrary.org/; www.biologiezentrum.at

121. *Phalera mangholda* (Schaus, 1928): 79

(*Fentonia mangholda*)

LT: ♂, Philippine Islands, Mindanao, Surigao – USNM, Washington, photo and genitalia slide examined.

Schaus (1928) listed a ♂ from Mindanao and a ♀ from Luzon as Syntypes in his original description of *Phalera mangholda*. The ♀ (which we did not examin) should belong to *erconvalda*. For this reason and to stabilize the nomenclature we select and designate the ♂ as Lectotype, which bears the following labels: „Surigao, Mindanao PI", Nov", „BPClark", „Not in BM 1925 W. Schaus", „*Fentonia mangholda* ♂ Type Schs" [in Schaus's hand], „Type No. 33429 U.S.N.M.", „♂ genitalia on slide Dez. 1958 E.L.T. 873".



Fig. 533: Distribution of *P. mangholda*.

Diagnosis. *Phalera mangholda* is the sister species of *P. erconvalda* but the insect is paler in general appearance. The grey apical moon spot is well developed and larger than in the similar Sundanian *P. banksi* Holloway (1983), but inconspicuous, the greyish discalspot is visible in both sexes. The black basal fascia of the forewings is not double as in *erconvalda* but developed as a simple line.

The male genitalia strongly resemble *erconvalda*. They differ in the shorter socius process, with a rounded tip, not pointed as in *erconvalda*. The dorsal projection of the valves is larger than in *erconvalda* and placed more toward the base. The valves display basally a knob-shaped projection. The 8th sternite bears a larger pair of central pockets than *erconvalda*. The female genitalia have a robust 9th sternite and a characteristically v-shaped ostium. There is no signum.

Variation. The species varies slightly in the darkness of the forewing ground colour and the contrast of the apical moon spot. The male genitalia show virtually no individual variation.

Bionomics. The moths occur uncommonly from v.-xii. in primary forests only up to 700 m; single males were taken at 1.200 m and 1.700 m.

Distribution. Endemic in the Philippines: Mindanao.

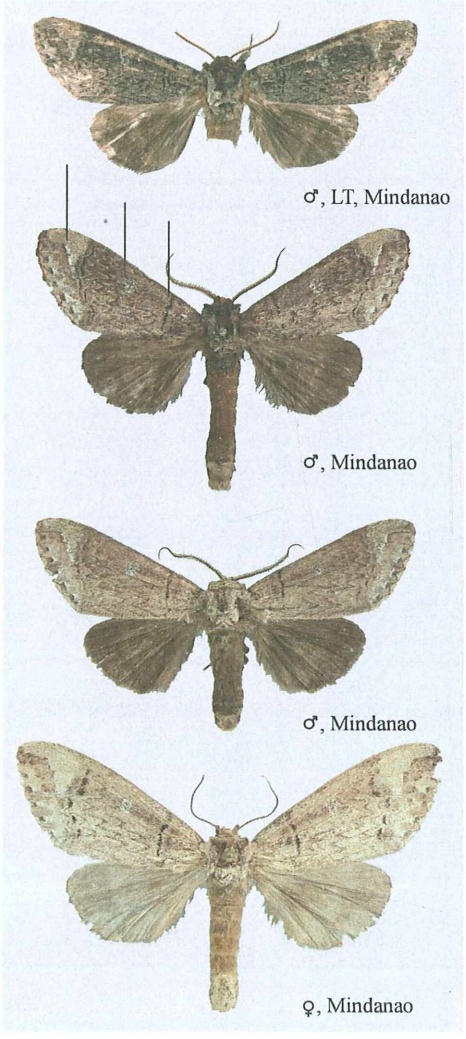
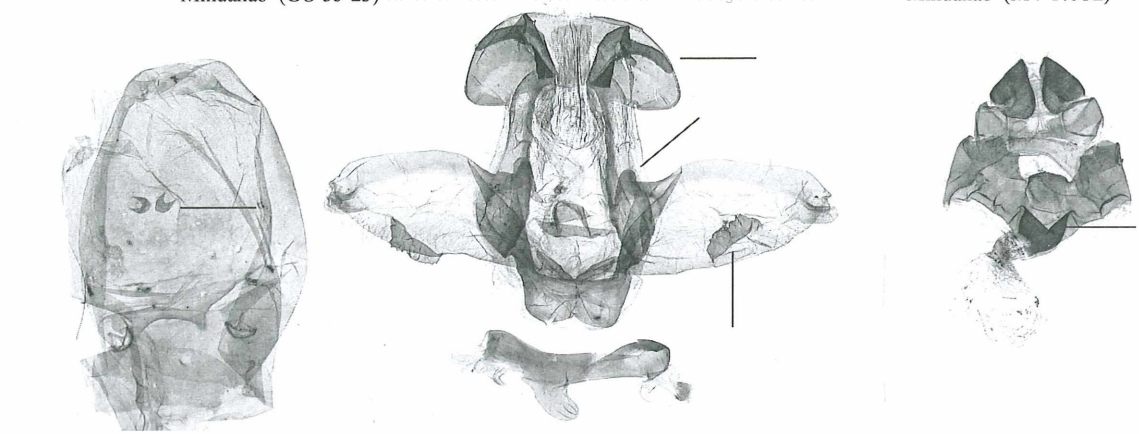


Fig. 534: Adults of *Phalera mangholda*.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



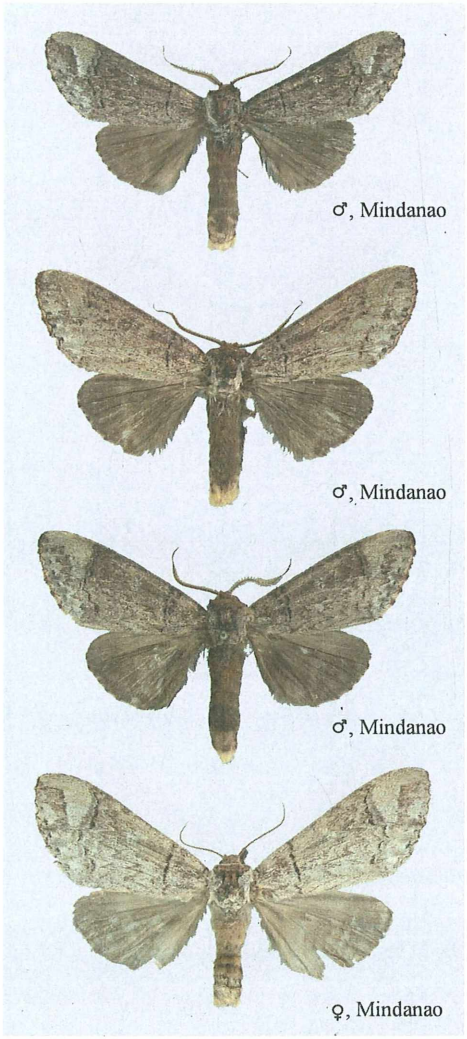


Fig. 535: Adults of *Phalera mangholda.*

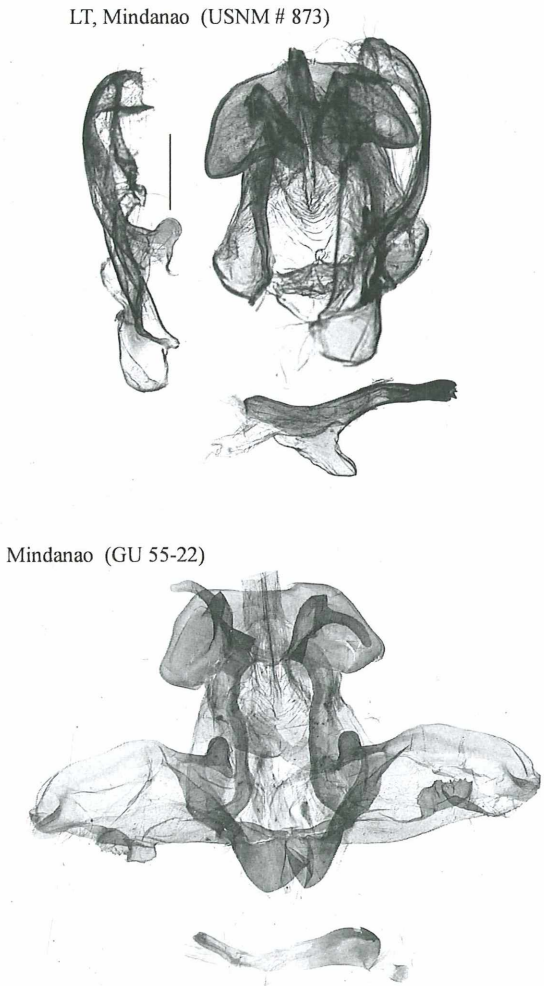


Fig. 536: Genitalia of *Phalera mangholda.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Caschara WALKER, 1862: 133

Type-species: *Caschara punctifera* WALKER, 1862

= *Coscodaca* KIRIAKOFF, 1968: 245 (*Spatalia acharista* WEST, 1932), **syn. nov.**

Caschara punctifera WALKER, 1862 and *Spatalia acharista* WEST, 1932 are two closely related species, which share some distinctive features such as the deep triangular forewings, the dorsum with a central process, an excavation on the dorsum and similar antennae with a naked tip. The male genitalia of both species are having similar shapes of valves and structures of the 8th sternite, but can be separated by the shape of the uncus and the socii. However we have no doubt, that both species are congeneric. Therefore *Coscodara* sinks as a junior subjective synonym of *Caschara* and *acharista* is combined newly with *Caschara*.



Fig. 537: Distribution of *C. acharista*.

122. *Caschara acharista* (WEST, 1932): 210, (*Spatalia acharista*), **comb. nov.**

HT: ♂, Philippine Is., Luzon I., subprov. Benguet, Klondyke, 800 ft. – BMNH, London, examined.

Diagnosis. The species is distinguished from other Philippine notodontids by the unique shape of the forewings. The female is as the female of *punctifera* less sexual dimorphic.

The male genitalia are characterized by the Y-shaped uncus and the bifurcate socii. The 8th sternite displays distally a paired arrow-shaped structure.

Variation. *Caschara acharista* is a variable species (all known specimens are illustrated). The nominotypical form has a golden coloured median area near the dorsum and a golden apical patch on the forewings. The other 4 specimens are rather uniform reddish brown.

Bionomics. The rare adults (n = 6) were taken in iii, ix. and x. at lower altitudes from 50 m – 800 m in primary lower hill forests only.

Distribution. Endemic in the Philipines: Luzon, Panay and Mindanao.

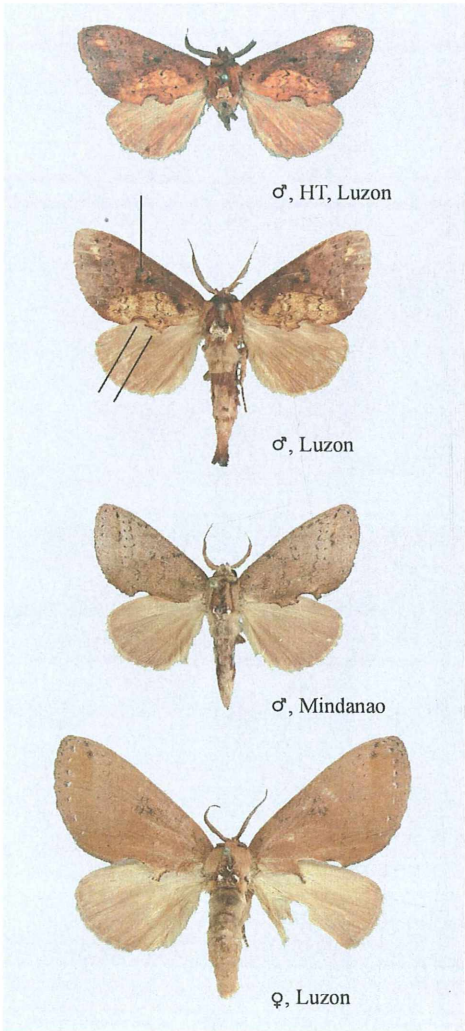


Fig. 538: Adults of *Caschara acharista*.

Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

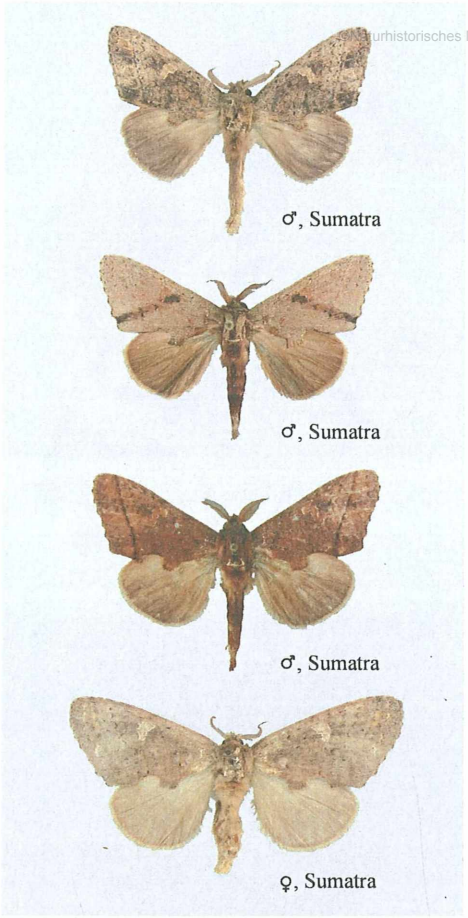


Fig. 539: Adults of *Caschara punctifera.*

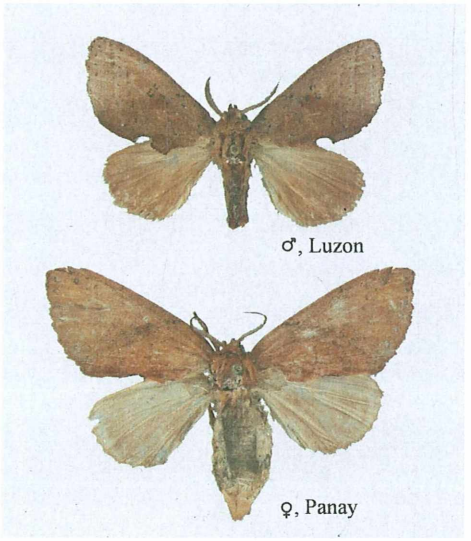


Fig. 540: Adults of *Caschara acharista.*

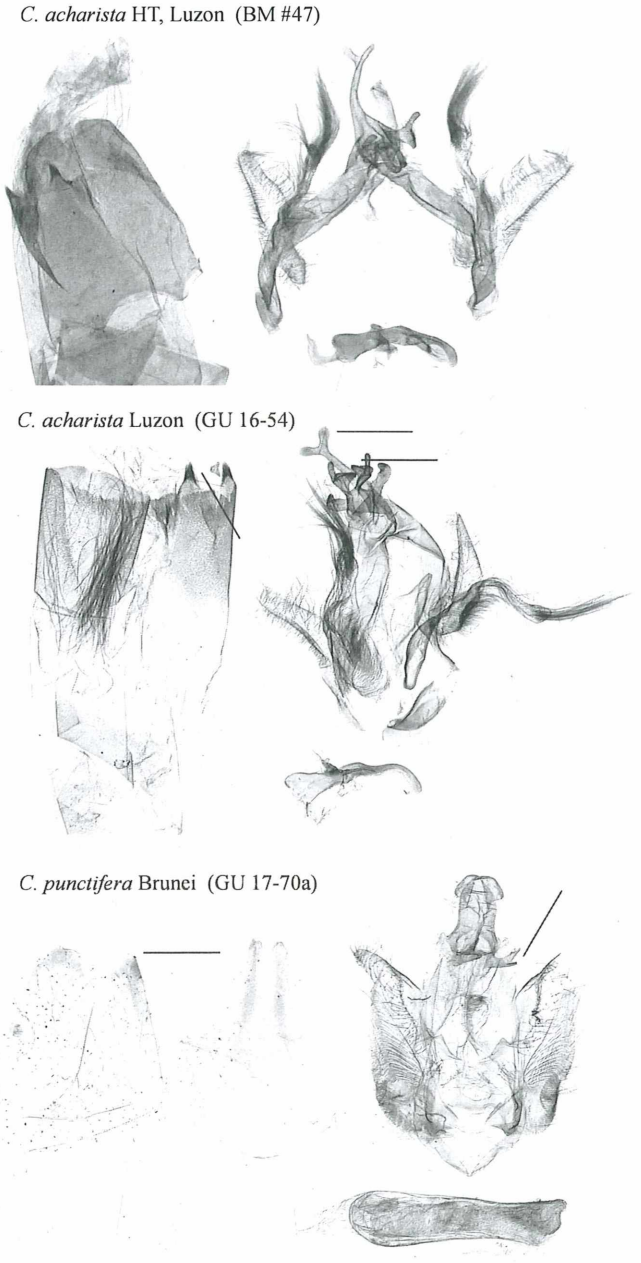


Fig. 541: Male genitalia of *Caschara acharista* and *punctifera.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Spatalia HÜBNER, 1819: 145

Type-species: *Bombyx argentina* DENIS & SCHIFFERMÜLLER, 1775

Structural similarities in male genitalia (pair of valve processes, sclerotizations of the 8th abdominal segments), female genitalia (ventral plate) as well as external similarities of the males (e.g. silver spots on the forewings, forewing shape, anal brush) suggest, that *Allata argentifera* (type-species of *Allata* WALKER, 1862: 140) is congeneric with *Spatalia*. However, the species of the *Allata argentifera* group are strongly sexualdimorphic. So it makes sense to keep *Allata* as a subgenus of *Spatalia*. Further subgenera of *Spatalia* are *Celeia* WALKER, 1865: 463 (type-species: *Celeia plusiata* WALKER, 1865, the S Indian sister-species of *sikkima*) and *Pseudallata* KIRIAKOFF, 1968: 244 (type-species: *Spatalia laticostalis* HAMPSON, 1900). Because of taxonomical difficulties the genitalia of all illustrated males (except *raquelae* and *sikkima*) of the genus are dissected.

123. *Spatalia argentifera* WALKER, 1862: 140.

(*Allata argentifera*)

HT: ♂, [Borneo], Sarawak – Oxford University Museum of Natural History, examined.

Spatalia argentifera and its allies are a group of taxonomic difficult species, still causing much confusion at present. We use this opportunity to make some remarks on two further species, which were hitherto not found in the Philippines: 1. *Spatalia* (*Allata*) *benderi* DIERL, 1976: 212, fig. 4 (HT: ♂, N-Sumatra, Deli, Dolok Merangir, 180 m – ZSM, München, examined). The HT adult and the genitalia of the HT (SP684) are illustrated here. The series of Paratypes include also *argentifera* and *duplius*, as dissection of male genitalia shows. The less variable species is characterized by relatively broad



Fig. 542: Distribution of *S. argentifera*.

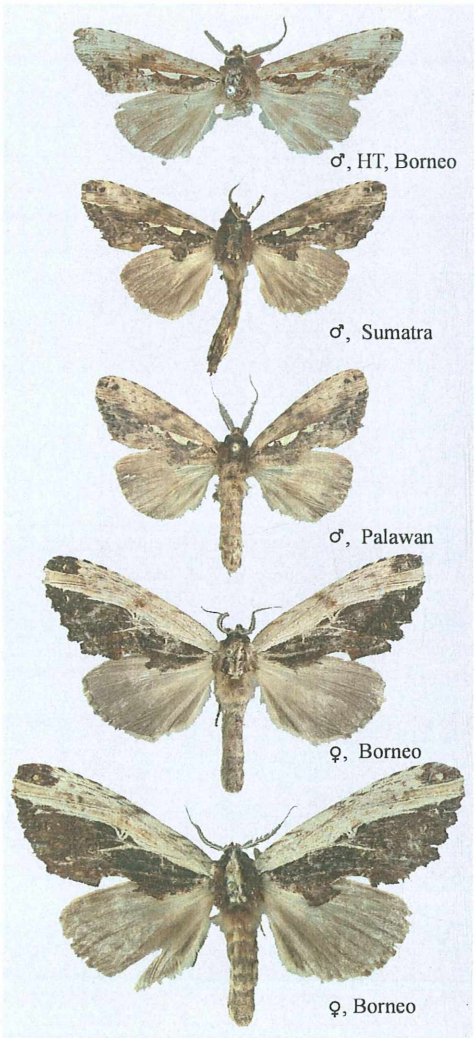


Fig. 543: Adults of *S. argentifera*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

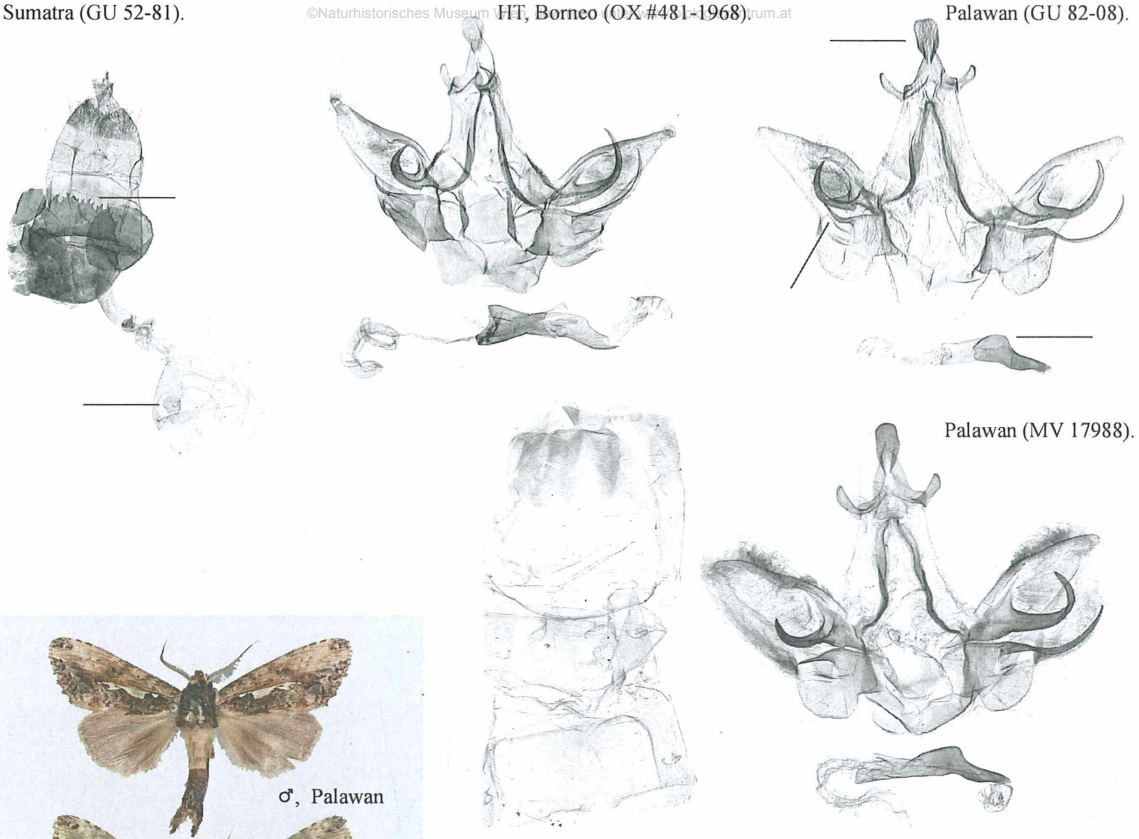


Fig. 545: Genitalia of *Spatalia argentifera.*

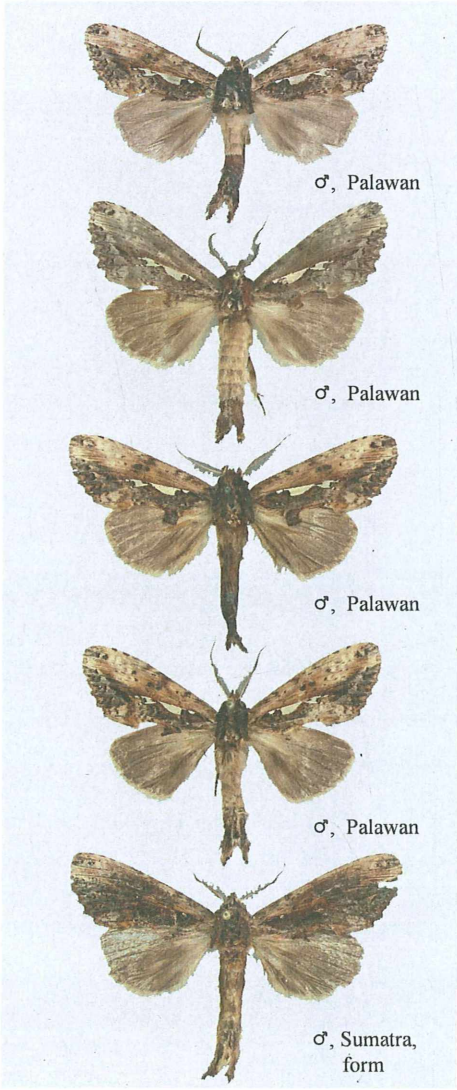


Fig. 544: Males of *S. argentifera.*

and fuscous greyish (never reddish brown and seldom yellowish tinged) coloured forewings. The costal region does not contrast much toward the ground colour and the middle silver spot of the forewings is shorter and broader than in *argentifera*. The male genitalia have rather symmetrical pairs of valve processes; the sacculus process is short. *Spatalia benderi* is a rare species, only known by n = 16 specimens from Sumatra, Malaya and Borneo (the record from Palawan in SCHINTLMEISTER (1993: 144) concerns in fact *duplius*). The female illustrated by HOLLOWAY (1983 pl. 9: 4) is the genuine female of *duplius*. The possible female of *benderi* is illustrated below. Surprisingly, a similar female was caught in Mindanao, Lianga (at present not identifiable).

2. *Pheosia costalis* MOORE, 1879: 69 was described after a ♀, from Darjeeling (ST in BMNH, London, examined; a further ST ♂, in coll. Staudinger, ZMHB, Berlin was not traced). It was synonymized with *argentifera* by KIRIAKOFF (1968: 247). HOLLOWAY (1983: 86) suggested synonymy with

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Celeia sikkima (which also occurs in Darjeeling). However, the female ST of *costalis* is distinguished by a the rather violet-brown forewings with a small silver-streak from both mentioned species. It closely matches a female from Java, which was described as *Spatalia lignea* PAGENSTECHER, 1894: 44, pl. 1: 2; (HT: ♀, [in original description stated as ♂] „Java", Museum Wiesbaden, Naturhistorische Landessammlung, examined). The legend for PAGENSTECHER's plate 1 gives *tridentaria* instead of *lignea*. *Spatalia costalis* is a rather western distributed species (Himalaya, Andaman Isls., Myanmar, China-Yunnan, Caojian (=First record for China), Indochina, Malaya, Sumatra, Java) and *lignea* must sink as a junior synonym (syn. nov.).

From Mindanao there are two females, which we cannot attribute at present to any of the known species.

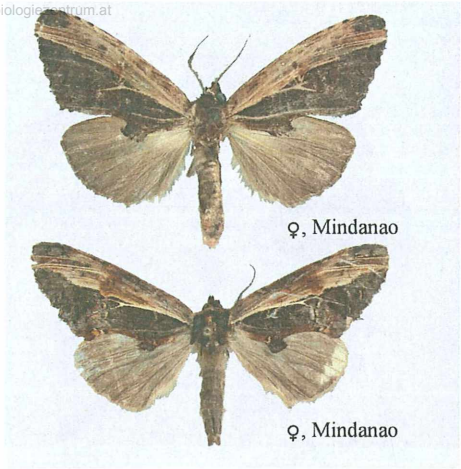


Fig. 546: Unidentified females of *Spatalia*.

Diagnosis. The males of *S. argentifera* are characterized by elongated forewings with silver markings. However, they are hard to separate visually from the other males of the subgenus *Allata,* (indistinguishable from *S. raquelae*). The females are very different from the males, having only a small thin silver band in the median area of the forewings. The forewings are blackish-violet. Both, males and females in our available series of material are larger than the other similar species from the Philippines.

The male genitalia are specifically characterized by the shape of the relatively short uncus and the phallus. The valves bear a pair of curved processes, which are on the right valve larger. The 8th abdominal segments are sclerotized as usual in *Spatalia*. The female genitalia have a roughly serrated 9th abdominal segment (in other species of the subgenus the serration is much finer, however rougher in *raquelae*) and a pair of sclerotized plates in the lamella prevaginalis. The signum is circular and double bilobed.

Variation. The males vary individually in the size, the colouration of the forewings, from yellowish brown, reddish brown, grey to fuscous grey, and the shape of the silver markings. From Sumatra there is a melanistic specimen. In Sulawesi such adults occur more common (about 50% of the examined

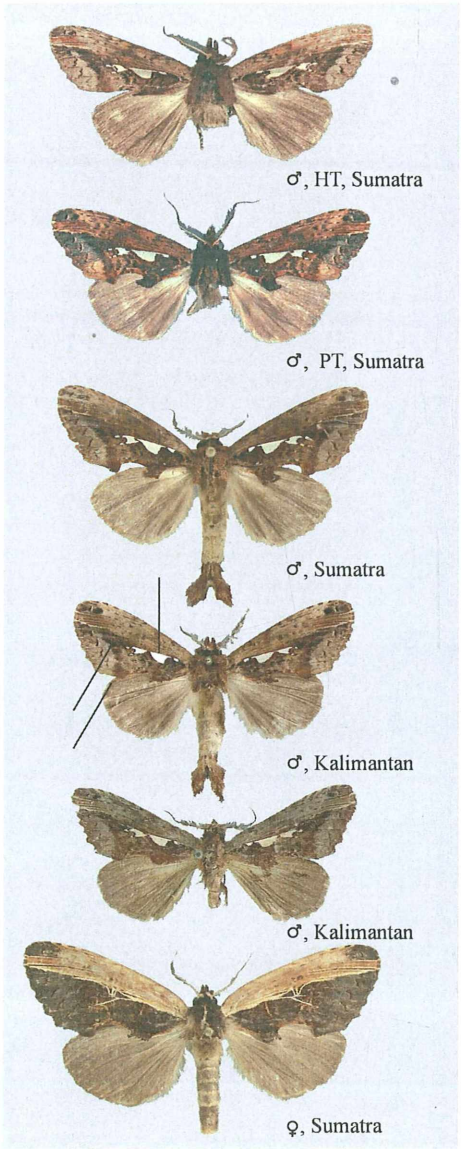


Fig. 547: Adults of *Spatalia benderi*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

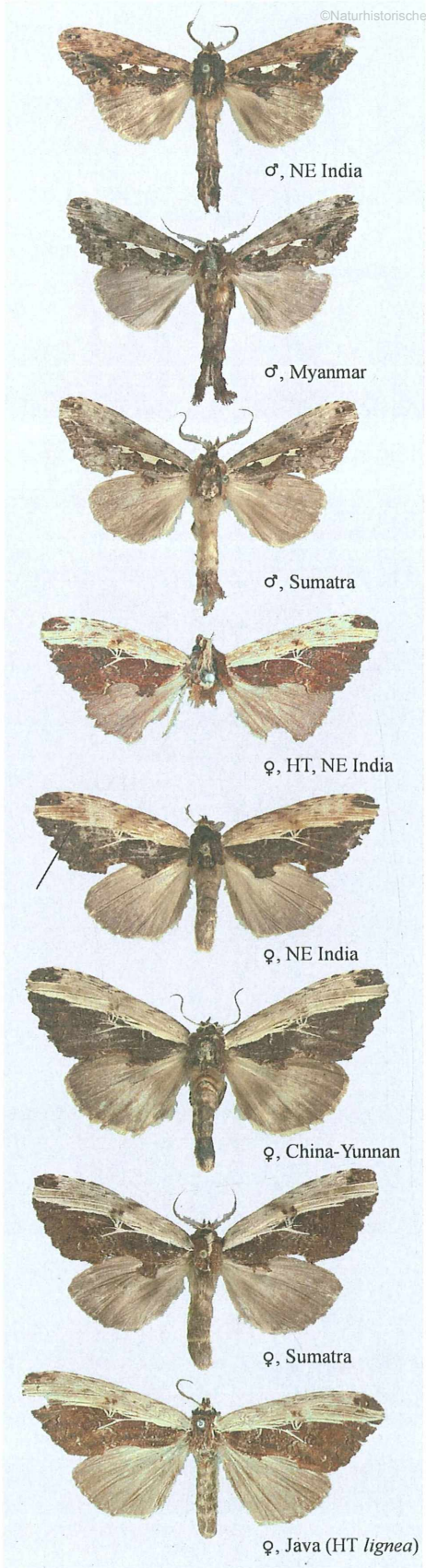


Fig. 548: Adults of *Spatalia costalis*.

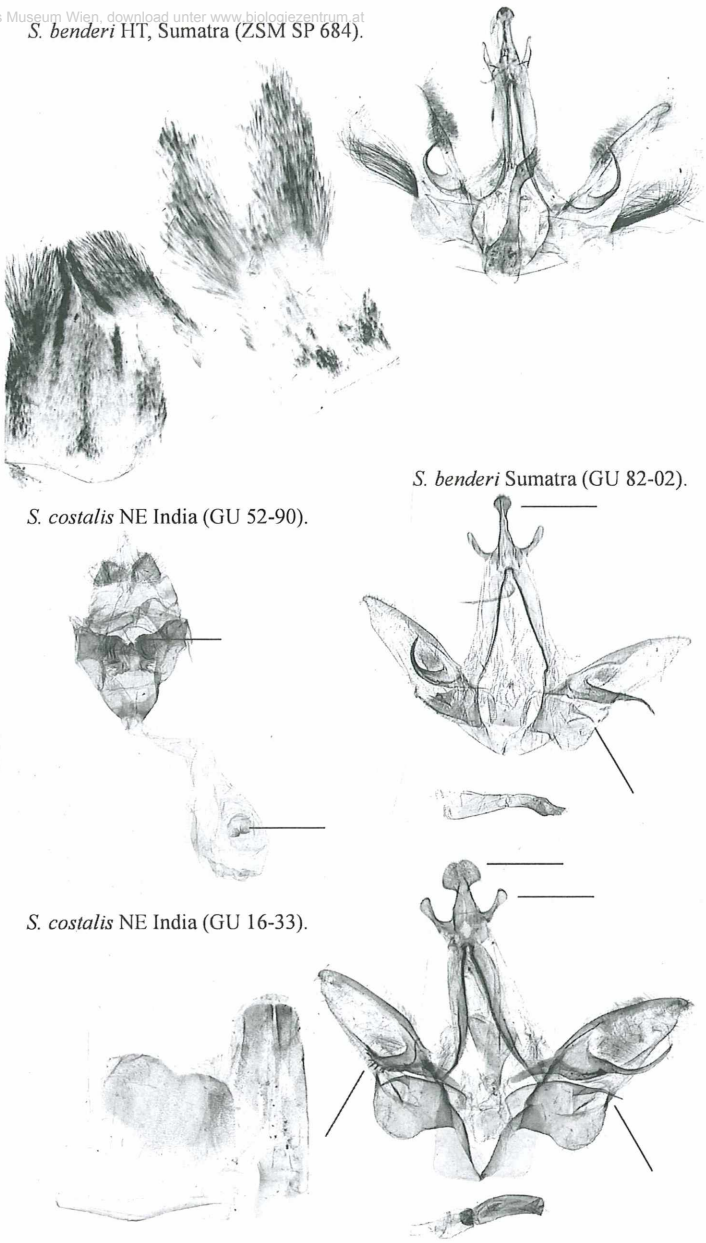


Fig. 549: Genitalia of *Spatalia benderi* and *costalis*.

specimens). The females are variable in size. The male genitalia seem to be remarkably constant in the shape of the uncus, whereas the length and shape of the valve processes is variable.

Bionomics. The males (no female) were in Palawan quite common (n > 80) in i., ii., iii., v., vi., ix. and xii. in primary and secondary forests up to 950 m. In Borneo specimens were observed up to 1.600 m.

Distribution. Distributed in Indochina, Sundaland, Java, Sulawesi and in the Philippines: Palawan.

www.biologiezentrum.at

124. *Spatalia duplius* SCHINTLMEISTER, 2007:

235, pl. 38; fig. 201 (*Allata* (*Allata*) *duplius*)

HT: ♂, N Viertnam, Mai-chau, 40 km SE Moc-chau, 1.400 m, 20°50'N, 104°50'E – coll. A. SCHINTLMEISTER, Dresden, examined.

When SCHINTLMEISTER described *duplius* there was no awareness of the existence of a second species, *S. costalis*. In the original description of *duplius* a number of Paratypes were included from NE India and the Andaman Isls., which de facto belonged to *costalis* and not to *duplius*. It seems, that *duplius* is the eastern distributed sibling species of *costalis*, but both species occur sympatrically in China-Yunnan, Vietnam and Thailand.



Fig. 550: Distribution of *Spatalia duplius*.

Diagnosis. *Spatalia duplius* is in both sexes visually indistinguishable from *S. costalis*. In the series (n > 100) *duplius* is significantly smaller than *argentifera* or *raquelae* and the costal area of the forewings is less mottled. The male antennae of *duplius* have a longer filiform part – about 40% of the whole antennae, than *argentifera* or *raquelae*. The females of *argentifera* and *raquelae* further differ in the reddish tinge and paler wings.

The male genitalia are readily recognizable by the slender shape of the uncus with a pair of long socii. The left valve has a short and sometimes serrated costal process. Those of the right valve are much longer than of the left valve. The phallus is slightly curved and longer than in other related species. The sclerotizations of the 8th abdominal segment closely resemble other *Spatalia*. The female genitalia resemble *argentifera* but the 9th abdominal segment is rougher serrated and the signum heart-shaped.

Variation. The individual variation of the males is similar to *argentifera*. There are pale yellowish brown specimens and also individuals showing fuscous greyish forewing with a contrastless costa. The females vary in ground colour from dark violet to pale violet-brown. Both sexes are variable in size. The Palawan population seems to be slightly smaller and paler than Sundanian specimens.

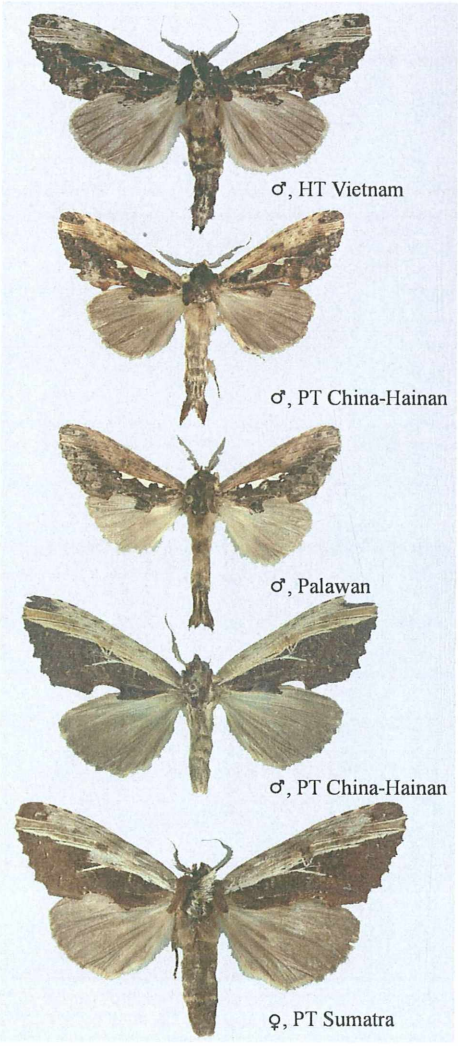
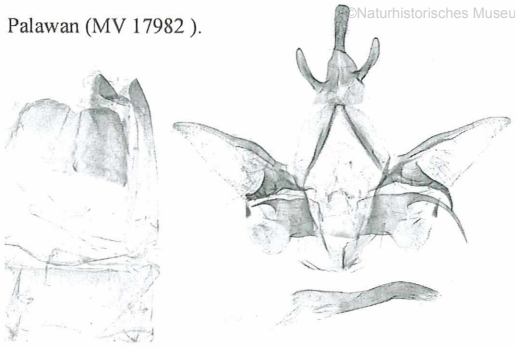


Fig. 551: Adults of *Spatalia duplius*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

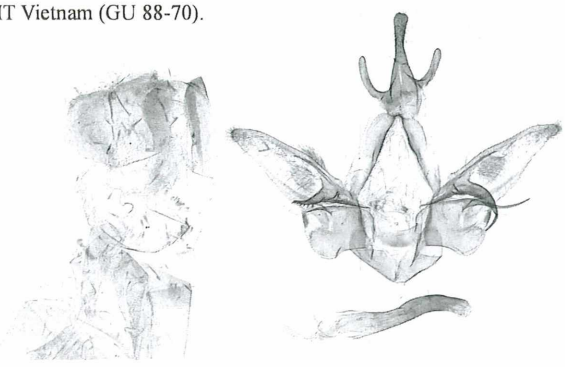
Palawan (MV 17982).



Palawan (GU 76-61).



HT Vietnam (GU 88-70).



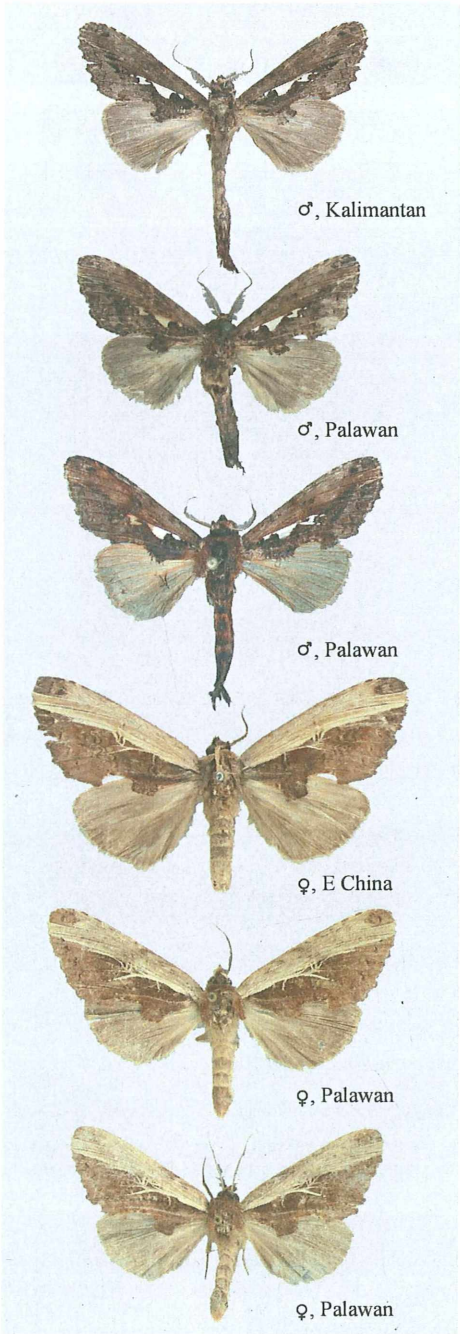


Fig. 552: Adults of *Spatalia duplius*.

Palawan (MV 17986). China-Hainan (GU 87-59).

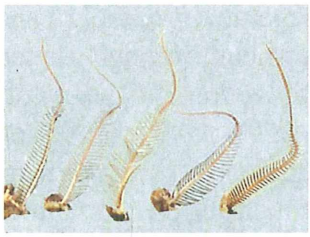


Fig. 553: Antennae of *Spatalia argentifera, S. duplius, S. raquelae, S. benderi, S. sikkima* (from left to right).

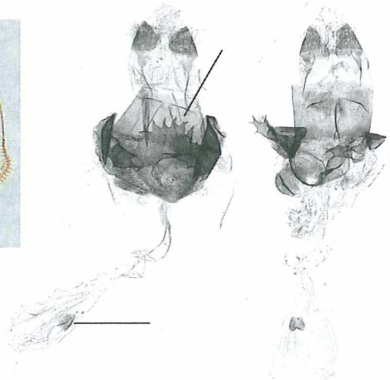


Fig. 554: Genitalia of *S. duplius*.

Bionomics. The moths seem to be local in Palawan and not so common (n = 19) as *argentifera*. Adults were in Palawan observed in i., ii., iii., vii. and xii. up to 800 m. Outside Palawan *duplius* flies throughout the year and was taken up to 1.600 m. The species occurs predominantly in primary and occasionally in secondary forests.

Distribution. Known from China, Indochina, Sumatra, Borneo and the Philippines: Palawan.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

125. *Spatalia raquelae* SCHINTLMEISTER, 1993:

144; pl. 29: 2 (*Allata raquelae*)

HT: ♂, Philippinen, Luzon, Quezon Prov., Quezon Forest Nat. Park, 14° 01' n. Breite, 122° 11' ö. Länge, 250 m – NHM, Wien, examined.

Within the large series (n > 120) of *Spatalia raquelae* from the Philippines no *argentifera* was ever found. Whereas in Palawan and Sulawesi only *argentifera* occurs and *raquelae* was never found. Both species seem to be strict allopatric.



Fig. 555: Distribution of *Spatalia raquelae*.

Diagnosis. *Spatalia raquelae* is indistinguishable from S. *argentifera* by any of the external features. But the male genitalia are different. They have the pair of relatively short symmetrical saccular valve processes, but the costal valve process is different in length. The best feature that separates *argentifera* and *raquelae* is the knob shaped uncus tip of the latter. The sclerotizations of the 8th abdominal segments resemble most other species of *Spatalia* and related genera. The female is characterized by the reniform shape of the signum and the rough serrated structures of the 9th sternite.

Variation. The individual variation of *raquelae* is as in *argentifera*, but melanistic forms are hitherto unknown. The male genitalia considerably vary in the shapes of the uncus (bilobed or unbilobed) and the left costal process of the valves, which can be smooth or displays a wide range of serration and varies in thickness. The female genitalia vary individually in the serrations of the 9th sternite and also, more slightly, in the shape of the signum.

Bionomics. The adults were observed during all months of the year, most commonly at lower altitudes up to 800 m. A few males were taken at 1.200 m and 1.600 m. The moths seem to prefer primary forests but were occasionally found in secondary forests and urban habitats.

Distribution. Endemic in the Philippines: Luzon, Mindoro, Samar, Panay, Negros, Leyte and Mindanao.

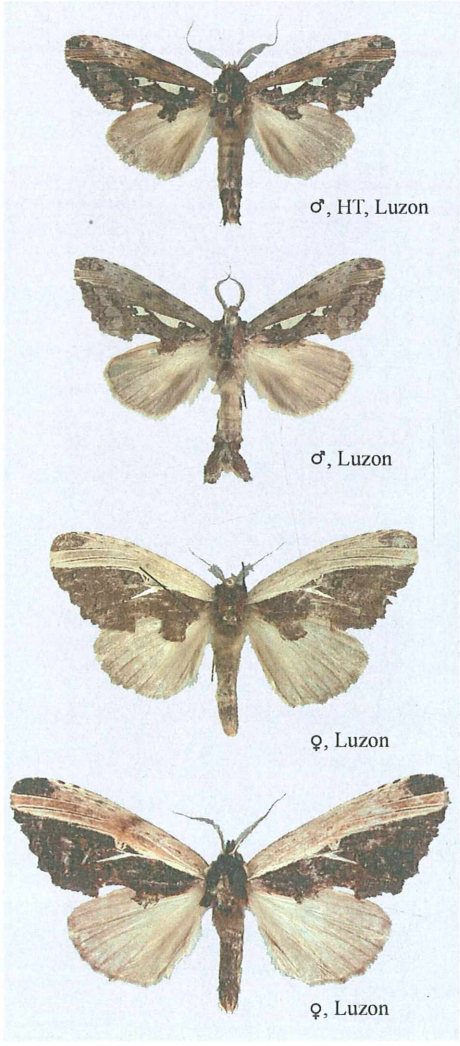


Fig. 556: Adults of *Spatalia raquelae*.

©Naturhistorisches Museum Wien, download unter www.biodiversitylibrary.org

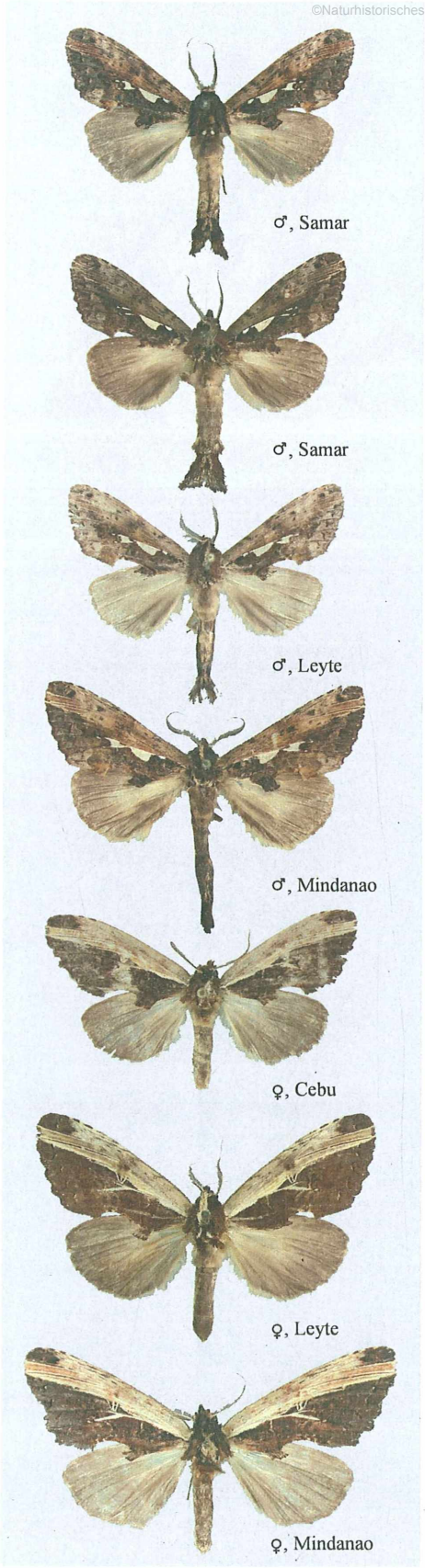


Fig. 557: Adults of *Spatalia raquelae.*

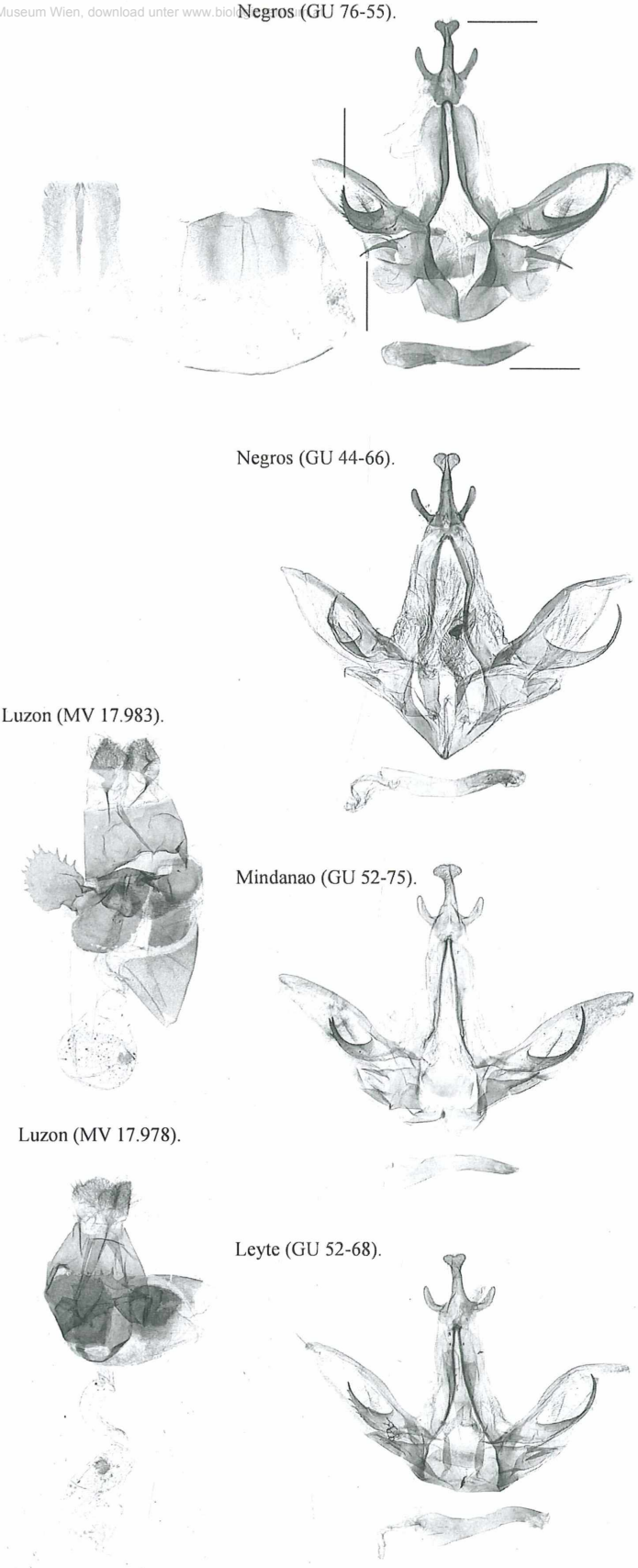


Fig. 558: Genitalia of *Spatalia raquelae.*

Download unter www.biologiezentrum.at

126. *Spatalia sikkima* Moore, 1879: 63

(*Celeia sikkima*)

ST's: 2 ♂♂, Darjiling [= NW India, Darjeeling] – ZMH, Berlin and BMNH, London, examined.

= *Allata* (*Celeia*) *licitus* Schintlmeister, 1989: 116;
HT: ♂, China, Hunan, Hengshan – Zoologisches Forschungsmuseum Alexander Koenig, Bonn, examined.

The first author found two „types" of *Celeia sikkima*, but reference to only one specimen of the coll. Staudinger (the first illustrated specimen here, ZMHB, Berlin labelled by Staudinger as „origin.") which was made in Moore's original description. Both specimens, which we treat here as Syntypes, differ slightly in wingshape and pattern. Dissection of male genitalia showed, that both are conspecific.



Fig. 559: Distribution of *Spatalia sikkima*.

Diagnosis. Males of *Spatalia sikkima* are characterized by shorter pectinations of the antennae and elongated forewing shape, compared to *S. argentifera* and related species. The tornus of the forewings is grey. The median transverse fascia of the forewings in the postmedian area forms a blackish triangle. The sexualdimorphic female is more fuscous in general appearance compared to *argentifera* and related species. The ground colour is never violet. The creamy costal streak is tinged brown near the apex. The female lacks any silver markings, which are characteristic for females of *argentifera, benderi* or *raquelae*. The male genitalia have only a single saccular valve process and can reliably be separated from the other congeners by the rectangular curved phallus and the broad socii. The sclerotizations of the 8th abdominal segments resemble most of the other species of *Spatalia* and related genera. The female is characterized by the shape of the signum and the serrated structures of the vaginal plate.
Variation. The individual variation in external appearance of *sikkima* is small. An almost blackish female from Thailand is illustrated in Schintlmeister & Pinratana (2007, pl. 38). It seems, that the species tend to vary geographically: Himalayan populations are in the series darker than Philippine specimens;

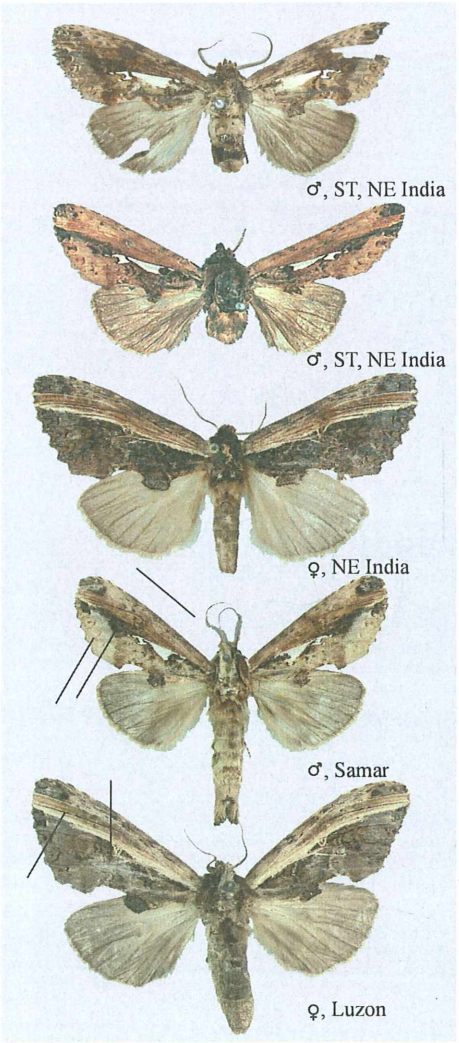


Fig. 560: Adults of *Spatalia sikkima*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

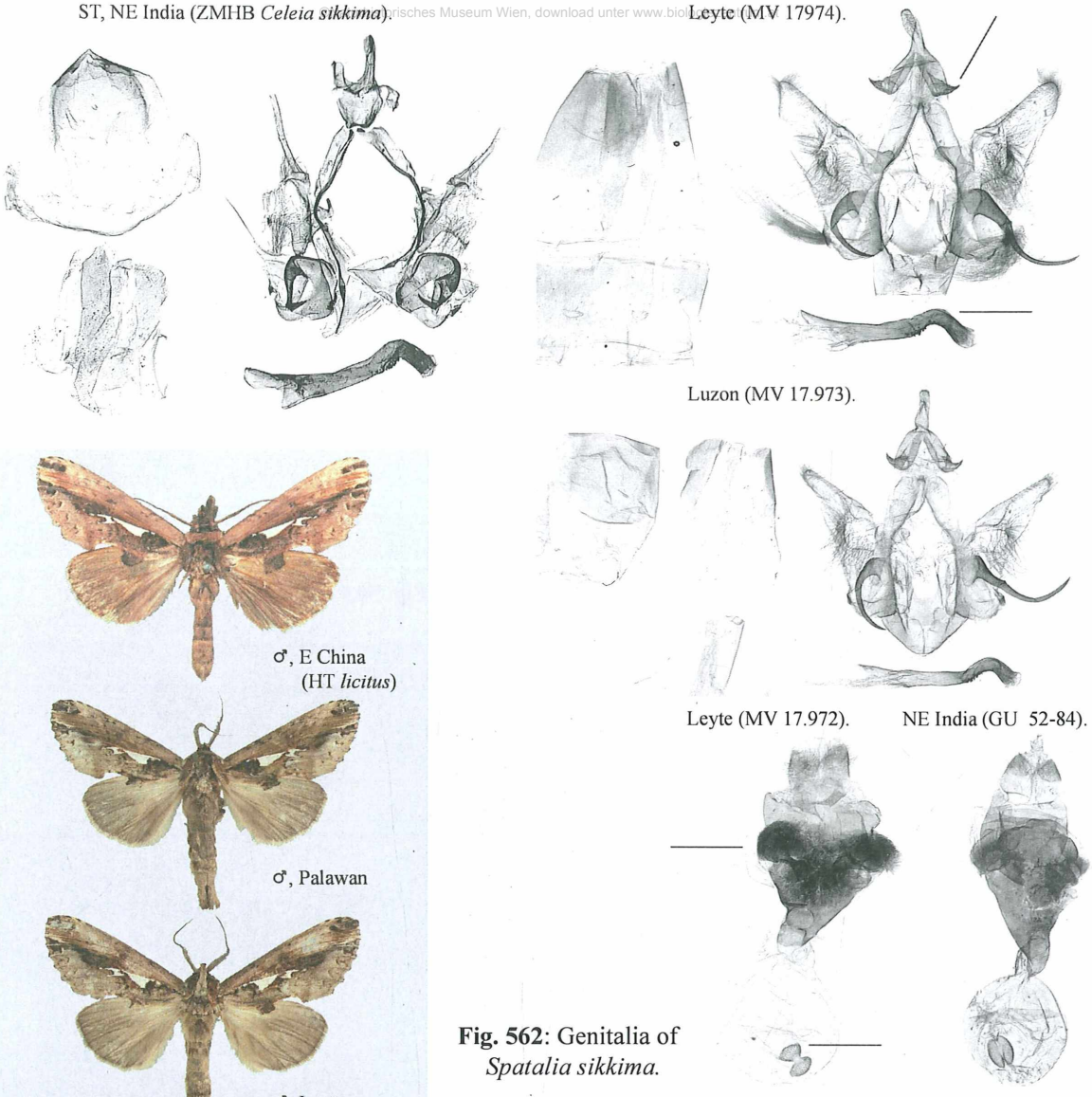


Fig. 562: Genitalia of *Spatalia sikkima.*

Fig. 561: Adults of *Spatalia sikkima.*

populations from SE China are slightly more reddish-brown compared to Philippine material. The male genitalia vary considerably in the shape and the thickness of the sacculus process, but no geographical correlation is evident.

Bionomics. The moths seem to be local and appear throughout the year (not observed in v.) mostly below 500 m. A few males were taken at altitudes between 1.700 m - 1.900 m. The species occur in primary and secondary forests as well as in urban habitats.

Distribution. Distributed in Nepal, N India, the Andaman Isls., Myanmar, China (except the northern parts), Indochina, Sundaland, Java, Sulawesi and the Philippines: Palawan, Luzon, Mindoro, Panay, Samar, Leyte and Mindanao.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Gonoclostera BUTLER, 1877: 475

Type-species: *Gonoclostera latipennis* BUTLER, 1877 [= *Pygaera timoniorum* BREMER, 1861]

= *Plusiogramma* HAMPSON, 1895: 278 (*Plusiogramma aurosigna* HAMPSON, 1895)

127. *Gonoclostera augesco* spec. nov.

HT: ♂, The Philippines, C. Palawan, W Victoria range 10 km E of Napsan, 300 m, 9°50'N, 118°35'E, 16.iii.2006 leg. J.H. LOURENS – NHM, Wien.

Paratypes (20 ♂♂):
Palawan: 4 ♂♂, W Victoria range 10 km E of Napsan, 300 m, 9°50'N, 118°35'E, 16.iii.2006; 1 ♂, E of Napsan, Salakot Falls, 250 m, 9°50'N, 118°37'E, 12. iii. 2006; 2 ♂♂, 5 km E of Napsan, 9°42.256'N, 118°31.034'E, 1.-2. xiii.2007; 9 ♂♂, Mt. Salakot Res., 800 m, 9°51'N, 118°38'E, 10.-27.ii.2000; 2 ♂♂, Mt. Matalingahan, abandoned village (Kibyawon) 8°46'59.0"N, 117°42'06.7" E, 950 m, 16.-19.v.2001 (GU 78-56); 1 ♂, ibid., 26.-30.v.2001; 1 ♂, ibid., 23.v.2001.



Fig. 563: Distribution of *G. augesco*.

Gonoclostera aurosigna (HAMPSON, 1895: 278) (HT: ♂, Tenasserim, Sukli, 75 km east of Moulmein – BMNH, London, examined) may be considered as a close relative of *augesco*. However, the taxonomy of *aurosigna* is somewhat doubtable: specimens from C Thailand have a similar shaped uncus as the illustrated holotype in SCHINTLMEISTER & PINRATANA (2007: 243, fig. 207) shows, while dissected specimens from NE India and Java have a clearly bilobed uncus with a pair of smaller projections, as illustrated. However, the new species from Palawan is clearly separable from *argentata* (OBERTHÜR, 1914) (HT: ♂, China, Ta-tsien-lou [Sichuan] – BMNH, London, examined) and *aurosigna* by the silvery-golden spots.

Diagnosis. Forewing length ♂♂ 14 mm - 18 mm (average 16 mm). Ground colour of the forewings is fuscous violet brown, with prominent silver spots at the base and the median area. The new species is distinguishable from *G. aurosigna* by the larger silver-golden decoration; the median spot is always confluent, whereas *aurosigna* or *argentata* have

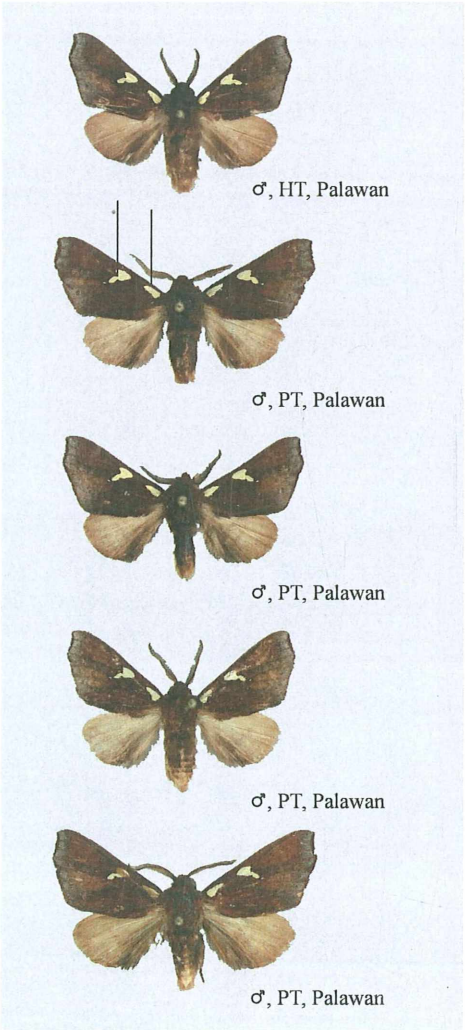
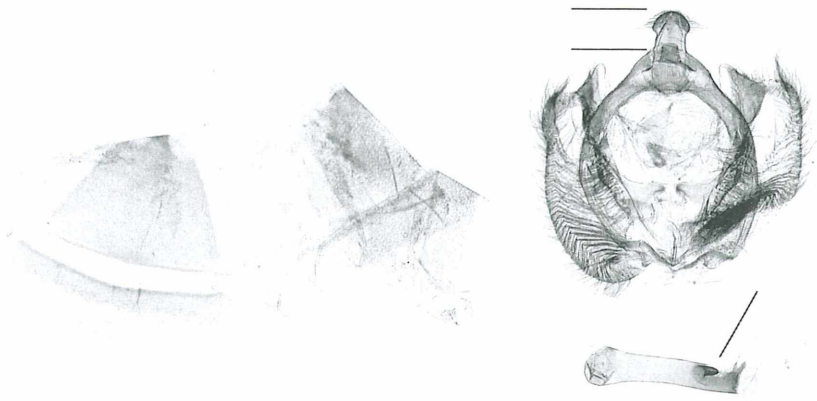


Fig. 564: Adults of *Gonoclostera augesco*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

G. augesco PT Palawan (GU 78-56)



G. aurosigna HT (BM # 912)

G. aurosigna Java (GU 53-85)

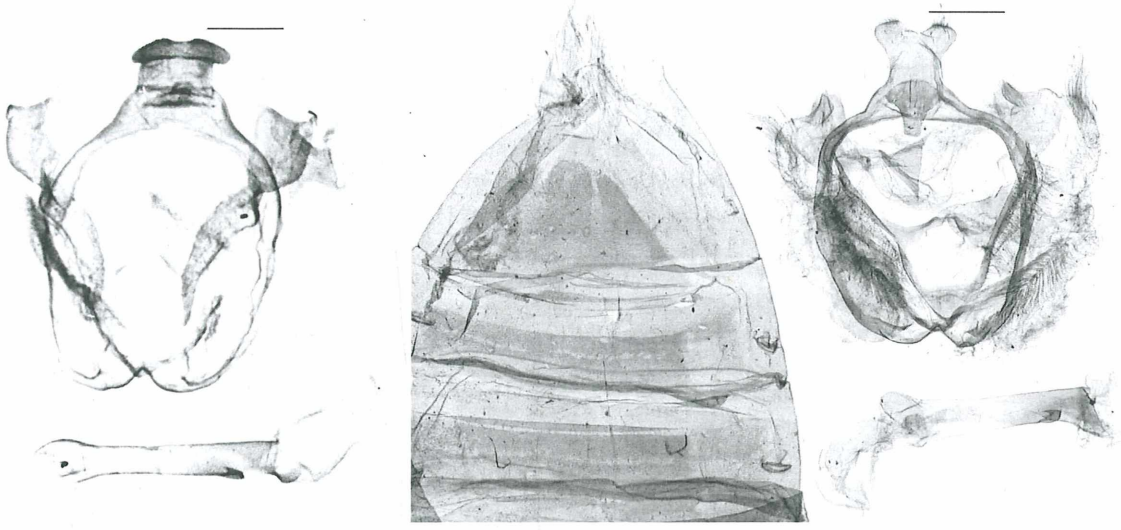


Fig. 566: Genitalia of *Gonoclostera.*

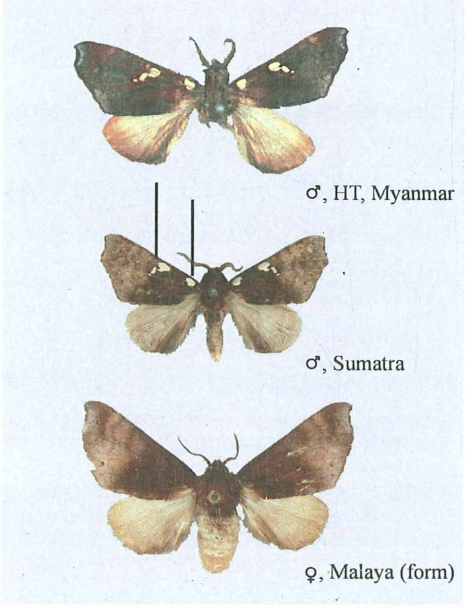


Fig. 565: Adults of *Gonoclostera aurosigna.*

the spot divided into three parts. No individuals with uniform brown coloured forewings, which appear occasionally in *aurosigna* or *argentata* were observed in *augesco.* The female is still unknown.

The male genitalia resemble *aurosigna* but the semicircular uncus is much more slender and not bilobed. The gnathos is shorter and broader than in *aurosigna.* The phallus displays a prominent spine as also seen in *aurosigna* and *argentata.* The 8th abdominal segments are without noteworthy modifications.

Variation. The type series is – apart from the size – very homogenous in its external appearance.

Bionomics. Restricted to primary forest up to 950 m.

Distribution. Endemic in the Philippines: Palawan.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Clostera Samouelle, 1819: 247

Type-species: *Phalaena curtula* Linnaeus, 1758

= *Ichtyura* Hübner, 1819: 162 (*Phalaena anastomosis* Linnaeus, 1758)
= *Melalopha* Hübner, 1822: 14, 16, 19 (*Phalaena curtula* Linnaeus, 1758)
= *Gaugamela* Walker, 1862: 138 (*Gaugamela atrifrons* Walker, 1862 [= *Clostera dorsalis* Walker, 1862: 138])
= *Neoclostera* Kiriakoff, 1963: 254 (*Neoclostera insignior* Kiriakoff, 1963 [= *Phalaena anastomosis* Linnaeus, 1758])
= *Xenoclostera* Kiriakoff, 1970 : 123 (*Xenoclostera argyrocraspeda* Kiriakoff, 1970) **syn. nov.**



Fig. 567: Distribution of *C. angularis*.

Clostera is a diverse and world-wide (except S America) distributed genus. The species within the genus are rather homogenous, however the group of European *Phalaena anastomosis* and two Philippine species have a distinctive saccular process of the valves. The third Philippine species, *Clostera angularis* could by external appearance and male genitalia be attributed to the *curtula* group, but shows modifications in the teguminal structures.
Once the genus of n > 40 species would be revised, subgenera could be allocated. In case of *Ichtyura dorsalis, Ichtyura,* the oldest available name, could be reestablished.

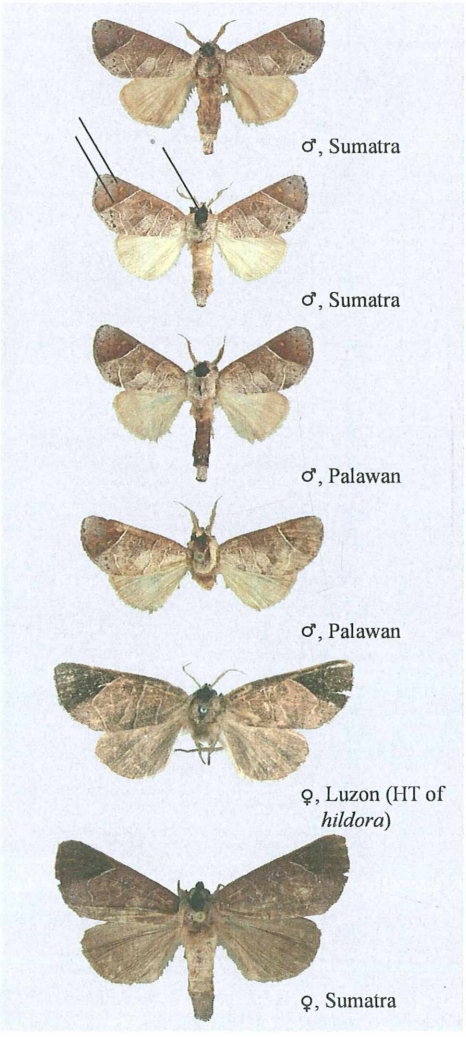


Fig. 568: Adults of *Clostera angularis*.

128. *Clostera angularis* (Snellen, 1895):

128 (*Ichtyura angularis*).
ST's: ♂, Ost-Sumatra, Deli [= Medan] in coll. Staudinger, ZMHU, Berlin, not examined and ♀, Java – coll. Snellen, not examined.

= *Pygaera hildora* Schaus, 1928: 90; HT: ♀, Luzon [Mt. Makiling] – # 33450, USNM, Washington – photograph examined, **syn. nov.**

Comparison of females of *Clostera angularis* from Java and Sumatra with the type photograph of *hildora* from Luzon lead to the synonymie of both

©Naturhistorisches Museum Wien, download unter www.biologiezentr

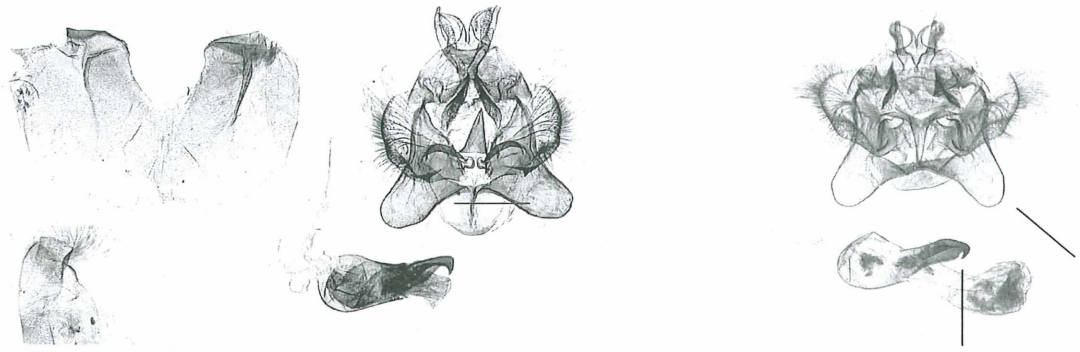


Fig. 570: Male genitalia of *Clostera angularis.*

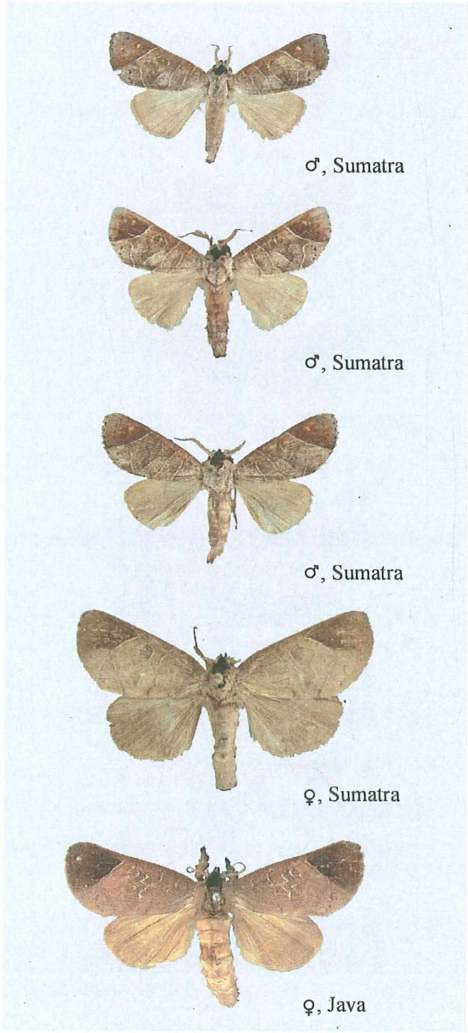


Fig. 569: Adults of *Clostera angularis.*

taxa. Dissected male genitalia from Palawan do not differ from Sumatran material. The Sumatran female of *angularis* illustrated in HOLLOWAY (1983 pl. 9: 11) rather resembles *Clostera transsecta* (DUDGEON, 1898), described from NE India, than our material of *angularis.*

Diagnosis. This species is charcterized by a reddish brown dark apical spot on the forewings bordered by a straight and contrasting white line. The sexualdimorphic female is fuscous brown with a less contrasting dark reddish brown apical spot.

The male genitalia have a larger projection of the tegumen near the saccus. The phallus bears a prominent sclerotized hook. The 8th sternite is deeply bilobed.

Variation. The specimens at hand vary individually slightly in the darkness of the ground colour and the contrast of the forewing markings.

Bionomics. The adults are rare in collections (n < 20). Both males from Palawan were collected in i. and xii. in primary forests at 220 m and 400 m.

Distribution. *Clostera angularis* is known from Java, Sundaland and the Philippines: Palawan and Luzon.

© Biologiezentrum Linz, Austria; download unter www.biologiezentrum.at

129. *Clostera bramah roepkei* ssp. nov.

HT: ♂, The Philippines, S Palawan, Rizal Prov. Matalingajan Mts., Ft. of Tres Marias mtn. sitio Kohot 70 m sec. forest 08°51'N, 117°30'E, 2. iii. 2006, J.H. LOURENS leg. – NHM, Wien.

Paratypes (3 ♂♂):
Palawan: 1 ♂, W Victoria range 10 km E of Napsan, 300 m, 09°50'N, 118°35'E, 16.iii.2006; 1 ♂, Brgy Piag, 7km E of Sicud, foot of Mt. Matalingajan 40 m, 08°51'.011'N, 117°32.154'E; 1 ♂, Mt. Salakot Res., 800 m, 9°51'N, 118°38'E, 10.-27.ii.2000 (MV 17994).

Etymology. In honour of Walter Karl Johann Roepke (*1882 Hohensalza, Germany – † 1961 Wageningen, The Netherlands) Professor at the Agricultural College, Wageningen. Roepke intensively worked on Sundanian and Javan Lepidoptera and described many new taxa.



Fig. 571: Distribution of *Clostera bramah.*

Diagnosis. Forewing length ♂♂ 11 mm - 12 mm. The new subspecies differs by a fuscous reddish-brown ground colour of all wings and a sligthly (2 mm - 3 mm) shorter forewing length from the nominotypical subspecies. *Clostera bramah* (ROEPKE, 1944): 40, fig. 28 (HT: ♀, W Java, Perbawattee – Nationaal Natuurhistorische Museum, Leiden, not examined) is characterized by yellowish apical markings near the costa of the forewings and a reddish brown dark apical spot on the forewings, which is bordered by a white zig-zag line. The discal spot on the forewings is marked by a fuscous brown circle (in ssp. *roepkei* only slightly darker than the fuscous brown ground colour and therefore less contrasting). The female of ssp. *roepkei* is unknown. The female of ssp. *bramah* is larger than the male and less sexualdimorphic.

The male genitalia of ssp. *roepkei* are slightly different from ssp. *bramah* by the shorter saccular process of the valves and the shape of the tegumen process. Characteristic features of the male genitalia of *bramah* are the saccular process and the curved phallus.
Variation. The type series of ssp. *roepkei* varies slightly in the darkness of the ground colour and the forewing length. The range of variation in Sundaland is also narrow. There is virtually no individual

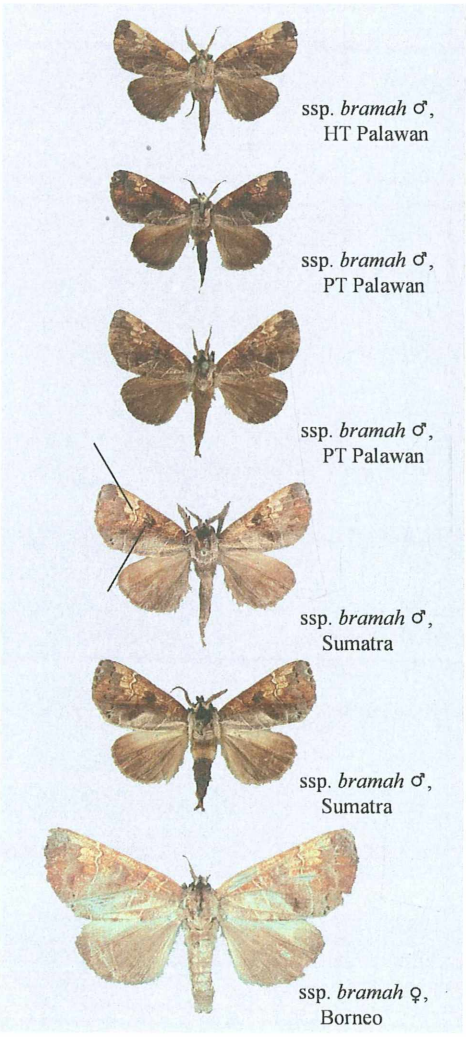
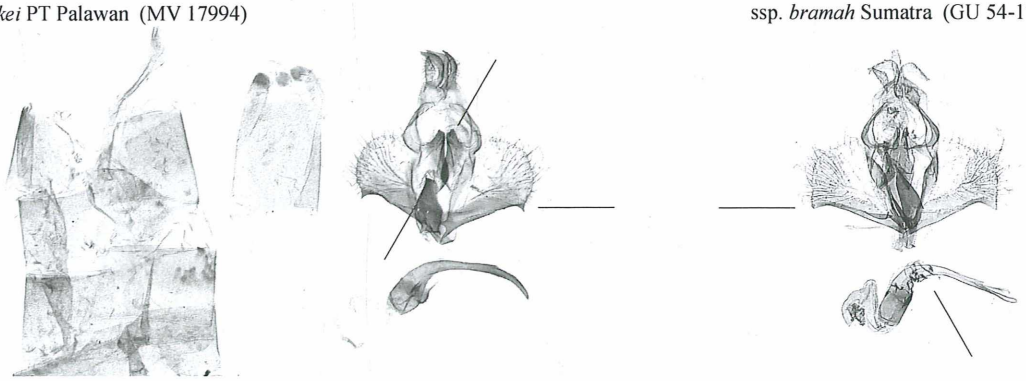


Fig. 572: Adults of *C. bramah.*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

ssp. *roepkei* PT Palawan (MV 17994)

ssp. *bramah* Sumatra (GU 54-17)



ssp. *bramah* Kalimantan (GU 54-21)

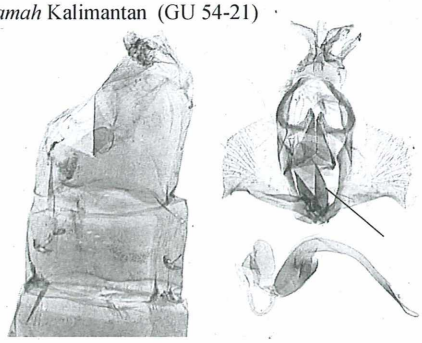


Fig. 573: Male genitalia of *Clostera bramah.*

variation in male genitalia with specimens from Sundaland and Indochina.

Bionomics. The adults are rare in Palawan. The type series was taken in secondary and primary forests at lower altitudes up to 800 m.

Distribution. *Clostera bramah bramah* is distributed in Java, Sundaland, Myanmar and S Vietnam. The ssp. *roepkei* is endemic in the Philippines: Palawan.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

130. *Clostera dorsalis* (WALKER, 1862):

1234 (*Ichtyura dorsalis*).
HT: ♂, [Borneo], Sarawak – Oxford University Museum of Natural History, examined.

= *Gaugamela atrifrons* WALKER, 1862: 138
HT: ♂, [Borneo], Sarawak – Oxford University Museum of Natural History, examined.
= *Pygaera geminata* GAEDE, 1930: 647, pl. 80: h
HT: ♂, Südost Sumatra – ZMHU, Berlin, examined.
= *Pygaera tapa* ROEPKE, 1944: 40, fig. 26; HT: ♂, E Java, Dunggo-Ardjuno – Nationaal Natuurhistorische Museum, Leiden, not examined.
= *Clostera deldeni* KIRIAKOFF, 1960: 11, fig. 6
HT: ♂, E Java, Bezoeki Wilis – Institut royal des Sciences naturelles, Bruxelles, examined.



Fig. 574: Distribution of *Clostera dorsalis*.

Clostera dorsalis is a very variable and common insect, which led to the description of numerous synonyms. Also the male genitalia are variable (e.g. shape of the uncus). It is very likely that there are several species in the complex, which, despited the rich available material from the Philippines and Sumatra (n > 100) could not be differentiated, because of all kinds of transient forms. In the n = 17 preparations also males were found with slightly asymmetric valves.

Diagnosis. The fuscous discal spot provides a good feature for identification, but is not always present. The apical area of the forewings is never contrasting coloured. The shape of the whitish lines on the forewings seems to be constant. The less variable female is rather uniform reddish brown coloured. The apical spot and the discal spot on the forewing are inconspicuous, somewhat more fuscous than the ground colour.

The male genitalia have a clubshaped or circular swollen uncus. The pair of tegumen processes is, apart from the larger phallus, the best feature for recognition of the species, apart from the larger phallus. The 8th abdominal segments are less modified. The female has a long ostium bursae of diagnostic shape and a circular shaped signum.

Variation. Perhaps one of the most variable notodontids. The male varies in size. The range of the ground colour of the forewings is from pale yellowish brown to uniform black. The hindwings

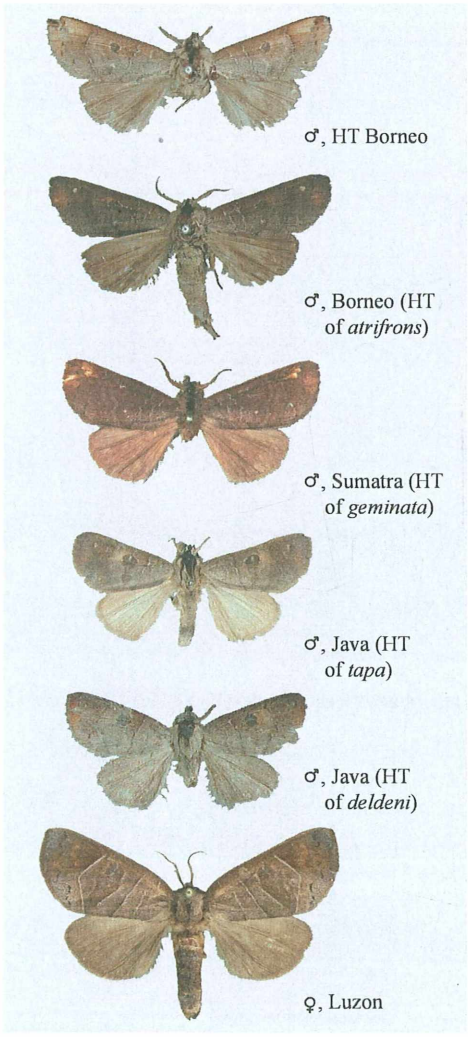


Fig. 575: Adults of *Clostera dorsalis*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

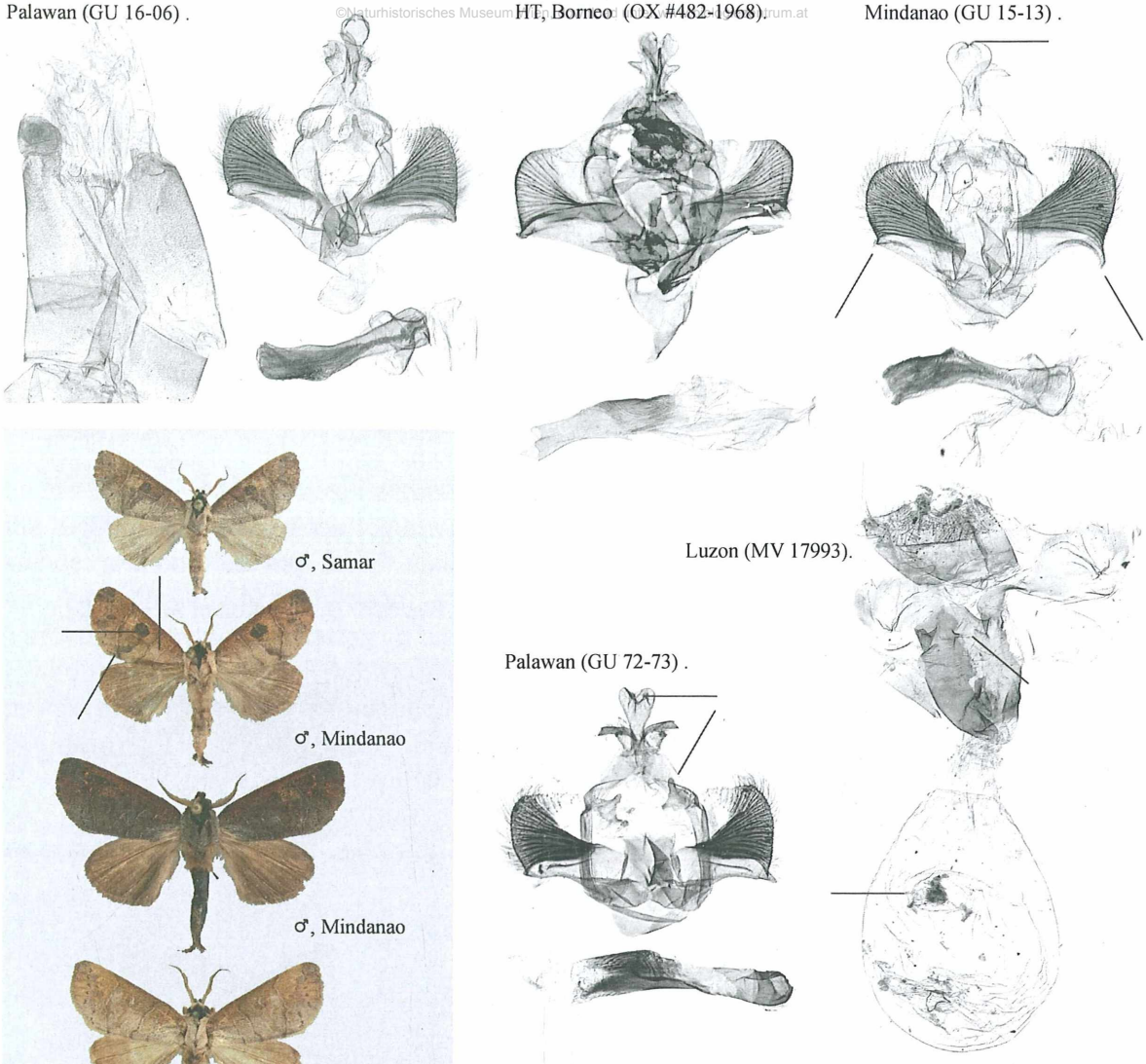


Fig. 577: Male genitalia of *Clostera dorsalis.*

Fig. 576: Adults of *Clostera dorsalis.*

vary from whitish-grey, yellowish brown to fuscous brown. The circular discal spot of the forewings is sometimes contrastingly blackish developed; other individuals display less contrasting marking or lack the spot. The female is less variable. A single female from Luzon (illustrated here) is somewhat chocolat-brown with more contrasting markings. The male genitalia vary strongly in the shape of the uncus (as illustrated) and less in the shape of the valves.

Bionomics. The common adults were observed throughout the year in primary forests and also urban areas up to 1.650 m, mostly below 1.000 m.

Distribution. *Clostera dorsalis* is known from Flores, Bali, Java, Sundaland, S Thailand and the Philippines: Palawan, Luzon, Marinduque, Mindoro, Samar, Negros, Leyte and Mindanao.

©Museum für Naturkunde Berlin, download unter www.biologiezentrum.at

Micromelalopha NAGANO, 1916: 10

Type-species: *Pygaera troglodyta* GRAESER, 1890

= *Bifurcifer* EBERT, 1968: 203 (*Bifurcifer afghanus* EBERT, 1968 [= *Ichtyura undulata* HAMPSON, 1891]
= *Erythroclostera* KIRIAKOFF, 1968: 255 (*Ichtyura castanea* ROTHSCHILD, 1915)
= *Closteroides* KIRIAKOFF, 1977: 33 (*Closteroides dorsalis* KIRIAKOFF, 1977 nec. TOMLIN, 1929: 258 (Mollusca)
= *Closterellus* FLETCHER, 1980: 41 (replacement name for *Closteroides*)

Micromelalopha consists of smaller moths, which are closely related to *Clostera*. The genus is taxonomical somewhat difficult, since the adults are very similar in external appearance, but have males with very diverse genitalia. Most illustrated males were genitalized after photographing to secure proper identification. *Micromelalopha* specimens are usually rare in collections, seemingly being local and with a narrow flight span.

131. *Micromelalopha melinau* HOLLOWAY, 1983: 94; pl. 9: 16; fig. 95.

HT: ♂, Borneo, Sarawak, Gunung Mulu Nat. Park, Site 24, W. Melinau Gorge, 270 m – BMNH, London, examined.

Diagnosis. This is the smallest *Micromelalopha*, occurring in the Philippines. There is a whitish marked postmedian fascia on the forewings and a small blackish discal spot. The female is unknown.

The male genitalia are distinguished by the subbasal process of the valves, the bilobed uncus and the shape of the pointed phallus.

Variation. The illustrated male genitalia do not differ from those of the HT male. The Bornean type series (n = 3) is too damaged, to be able to see differences in markings.

Bionomics. The single male from Palawan was collected in xii. at 40 m in a cleared forest farm. The type series from Borneo was taken in iii.-iv at 250 m.

Distribution. Known from Borneo and the Philippines: Palawan.



Fig. 578: Distribution of *M. melinau.*

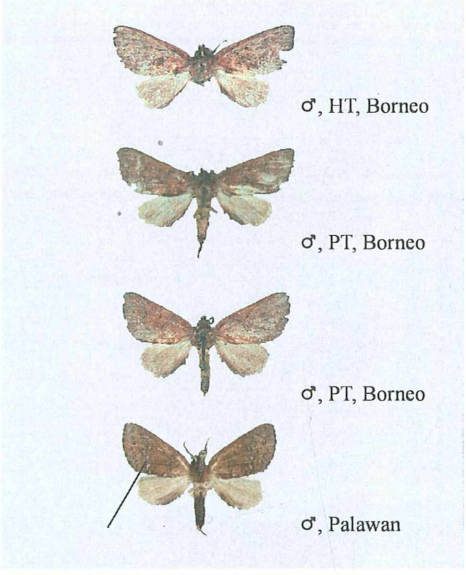


Fig. 579: Adults of *M. melinau.*

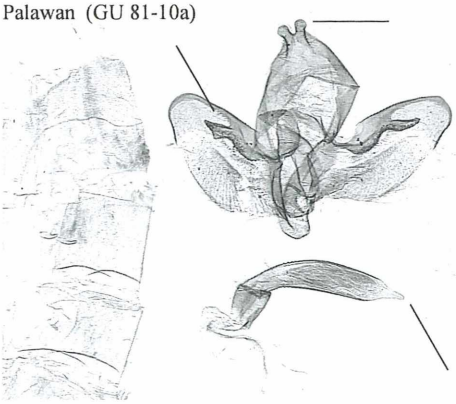


Fig. 580: Genitalia of *M. melinau.*

www.biologiezentrum.at

132. *Micromelalopha elachista* (West, 1932):

214 (*Ichtyura elachista*).

HT: ♂, Philippine Is., Luzon I., subprov. Benguet, Klondyke, 1.300 ft. – BMNH, London, examined.

Diagnosis. *Micromelalopha elachista* is an inconspicous species, that shows the typical colour and markings of most congeners. There are no specific external features, which can be used to separate *elachista* from other similar species. The presumed female is illustrated.

The male genitalia are characterized by the slightly bilobed and rather rectangular shaped uncus, the rounded valves (without processes) and the diagnostic shape of the tegumen. The phallus is slender and pointed, and the 8th abdominal segments are characteristically sclerotized.

Variation. There is variation in size of adults. The genitalia of the holotype slightly differ from the other mounted (n = 6) slides as illustrated.

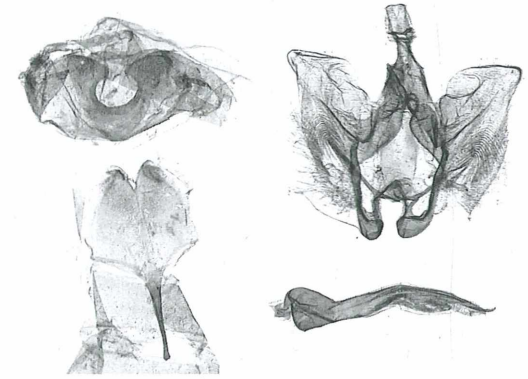
Bionomics. The adults appear infrequently (n = 15) in iv., v., vii., ix., x. and xii. up to 950 m, and most specimens were taken below 300 m.

Distribution. Endemic in the Philippines: Luzon.



Fig. 582: Distribution of *M. elachista.*

HT, Luzon (BM# 38)



Luzon (MV 17995)

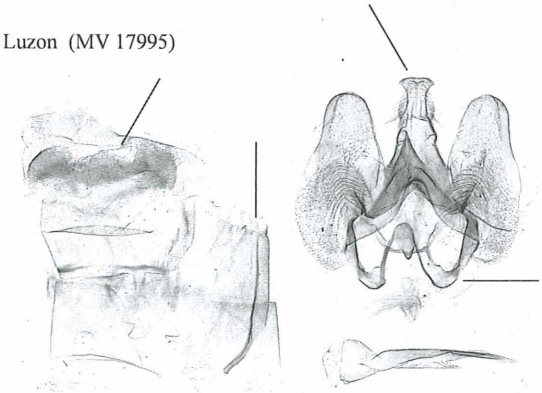


Fig. 581: Genitalia of *Micromelalopha elachista.*

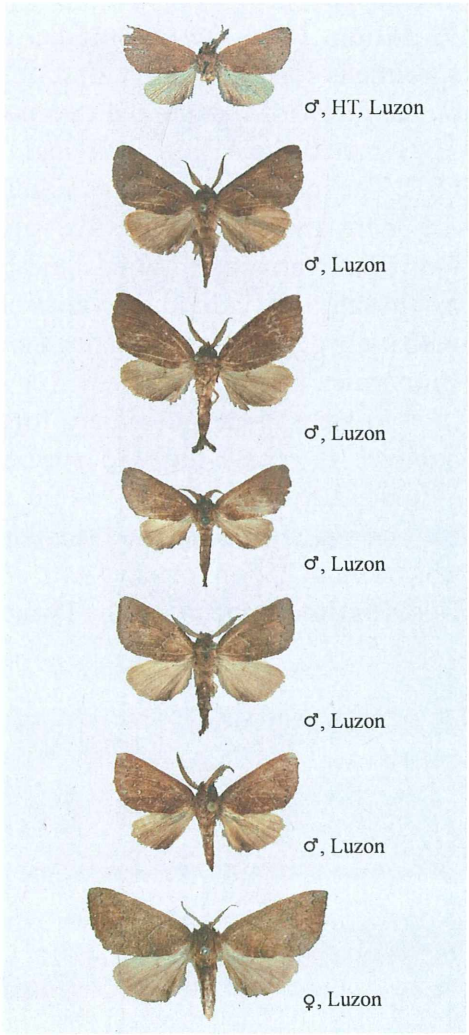


Fig. 583: Adults of *M. elachista.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

133. *Micromelalopha pamina* SCHINTLMEISTER, 1993: 147; pl. 30: 1, pl. 31: 6.

HT: ♂, Philippinen, N Luzon, Mts. Prov., Chatol, 1.950 m, 15 km SE Bontoc, 117°02‘ ö. Länge, 121°03‘ n. Breite – NHM, Wien, examined.

Diagnosis. Similar to *M. elachista*, but the wings are broader in shape and the wings are deeper reddish brown coloured. The presumed female, which was collected at the type locality of *pamina*, resembles the male, but the ground colour is paler and more orange tinged.

The male genitalia are characterized by the diagnostic saccular projection of the valves and the bilobed, circular uncus. The phallus is broad, the 8th abdominal segments are specifically sclerotized as illustrated.

Variation. There are two smaller and slightly paler specimens (one of them with a postmedian shadow on the forewings) under the examined (n = 4) males. They match the HT in their male genitalia (n = 3 GU). The male genitalia vary slightly in the shape of the uncus and the shape of the valves. The range of individual variation in Sundaland is also low. There is virtually no individual variation in comparison with male genitalia in Sundaland and Indochina.

Bionomics. The adults are rare. The known specimens (n = 5) were taken in primary forests and in urban habitats. It seems that the species prefers higher altitudes between 800 m - 1.900 m than *elachista,* but one male (the illustrated small adult, GU 22-06a) was taken at 250 m together with *elachista*.

Distribution. Endemic in the Philippines: Luzon.



Fig. 585: Distribution of *M. pamina.*

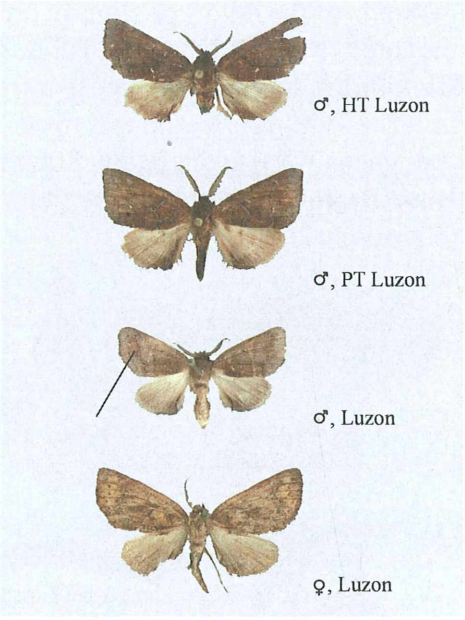


Fig. 586: Adults of *Micromel. pamina.*

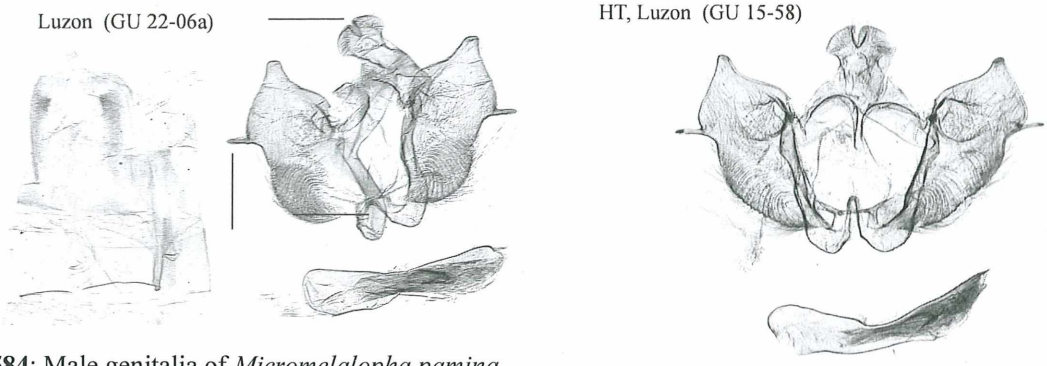


Fig. 584: Male genitalia of *Micromelalopha pamina.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

134. *Micromelalopha argentea* SCHINTLMEISTER, 1993: 147; pl. 30: 3, 31: 7.

HT: ♂, Philippinen, Mindanao, Bukidnon, 40 km NW Maramag, Dalondong, 800 m, Talakag, 7°53' n. Breite, 124°40'ö. Länge – NHM, Wien, examined.

Diagnosis. *Micromelalopha argentea* can readily be identified by the contrasting white frons. The postmedian and the basal fascia of the forewings are conspicuous shining and silver coloured. Occasionally there is a orange basal spot present. The female is still unknown.

The male genitalia can be distinguished by the apical shape of the valves. There is a pair of costal projections of the valves. The phallus ist rectangularly curved and not pointed. The distal border of the 8th sternite is strongly sclerotized.

Variation. There is some variation in the wing colour, which ranges from pale reddish brown to deep violet brown. The silver fasciae are sometimes rather weakly developed. The forewing length is also subject to individual variation. Mindanao specimens are generally 1 mm - 2 mm larger than specimens from Samar or Luzon. The male genitalia are virtually not variable.

Bionomics. The adults appear uncommon (n = 12) in primary forests at altitudes between 40 m - 1.250 m. The moths were observed in iii., vii. and ix.-xii.

Distribution. Endemic in the Philippines: Luzon, Samar and Mindanao.



Fig. 588: Distribution of *M. argentea*

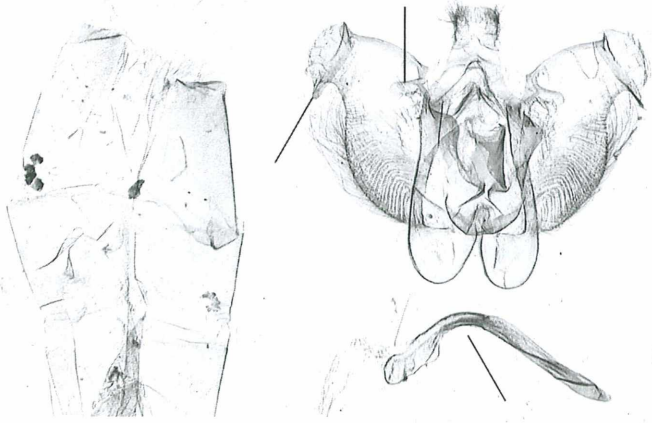


Fig. 587: Genitalia of *M. argentea* PT, Mindanao (GU 15-38).

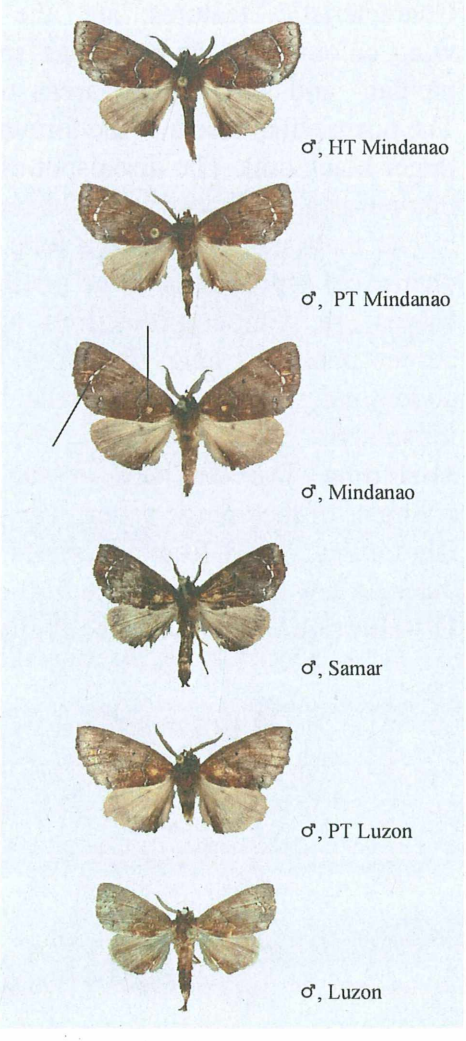


Fig. 589: Males of *M. argentea.*

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

135. *Micromelalopha flammea* spec. nov.

HT: ♂, Philippines, Z Palawan, Mt. Salakot Res., 800 m, 9°51'N, 118°38'E, 121°03'E, 10.-27.ii.2000 leg. GORBATSHEV & SINIAEV – NHM, Wien.

Paratypes (11 ♂♂):
Palawan: 9 ♂♂, Mt. Salakot Res., 800 m, 9°51'N, 118°38'E, 10.-27.ii.2000 (GU 75-95, 74-16, MV 18012); 1 ♂, Mt. Matalingajan, 8°47'.12.5"N, 117°42'.11.5", 20.v.2001, 1 ♂, Brgy. Culasian Pinagar, 37 m, 08°48.460'N, 117°28.530'E, 8.-10.xii.2007 (GU 51-77a).

Diagnosis. Forewing length 13 mm. The type series resembles in external appearance some individual forms of the Taiwanese *M. baibarana* MATSUMURA, 1929, which have, however, very different genitalia (SCHINTLMEISTER 2008, fig. 2025). However *flammea* is the sister species of the following new species. Characteristic features are the reddish brown wing colour with larger orange spots in the basal-median- and submarginal areas of the forewings. The postmedian fascia of the forewings is marked by larger black dots. The discalspot of the forewings is marked as a small black dot. The female is unknown.

The male genitalia have a long ventrally curved uncus and a prominent large gnathos. The rounded valves are without projections or processes. The curved phallus is long, slender and pointed. The 8th abdominal segments are specifically sclerotized as illustrated.

Variation. The darkness of the wings and the contrasts of the orange pattern vary individually.

Bionomics. Apart from the series taken in Salakot during a few nights, only one further male is known.

Distribution. Endemic in the Philippines: Palawan.



Fig. 591: Distribution of *M. flammea.*

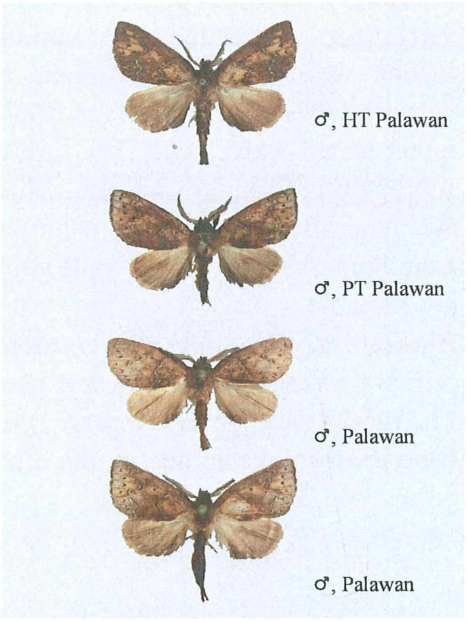


Fig. 592: Adults of *M. flammea.*

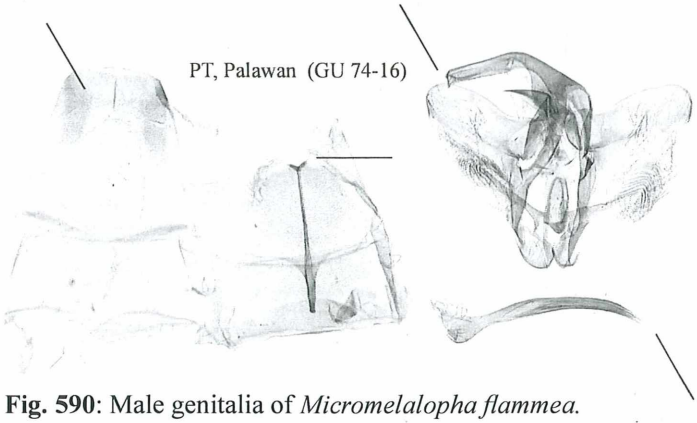
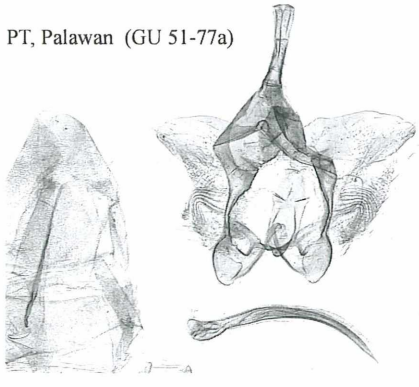


Fig. 590: Male genitalia of *Micromelalopha flammea.*



www.biologiezentrum.at

136. *Micromelalopha uniformis* spec. nov.

HT: ♂, The Philippines, C Samar, 8 km SE of Bagacay, prim forst road 250 m, 11°48.025'N, 125°14.610'E, 26.iii.2009 leg. J.H. Lourens – NHM, Wien.

Paratypes (5 ♂♂):
Samar: 4 ♂♂, 8 km SE of Bagacay, 250 m, 11°48.025'N, 125°14.610'E, 26.iii.2009; 1 ♂, ibid. 4 km SE of Bagacay, 25.vi.2006 (MV 17.988).

Species with a prolonged uncus as in *M. flammea*, *uniformis* or *uncinatus* were hitherto unknown in *Micromelalopha*. *M. uniformis* is the sister species of *M. flammea*, which might be also a subspecies. Because of the occurence of a (doubtless distinct) further species of the group in Mindanao and differences in male genitalia we treat *uniformis* as a bona fide species.



Fig. 594: Distribution of *M. uniformis*.

Diagnosis. Forewing length 11.5 mm - 12.5 mm, slightly smaller than *M. flammea*. The forewings are uniform fuscous reddish brown; the black markings are inconspicous. The postmedian fascia of the forewings is marked by a few white scales. There are no orange areas on the forewings as in *flammea*. The female is still unknown.

The male genitalia resemble those of *flammea*, but the long uncus is somewhat shorter, and the pointed phallus rather straight and shorter. The 8th sternite has a wider and deeper notch; the 8th tergite is differently sclerotized than in *flammea*.

Variation. There is virtually no individual variation, except for slightly differences in forewing length.

Bionomics. All adults were taken in primary lowland forest at altitudes up to 250 m.

Distribution. Endemic in the Philippines: Samar.

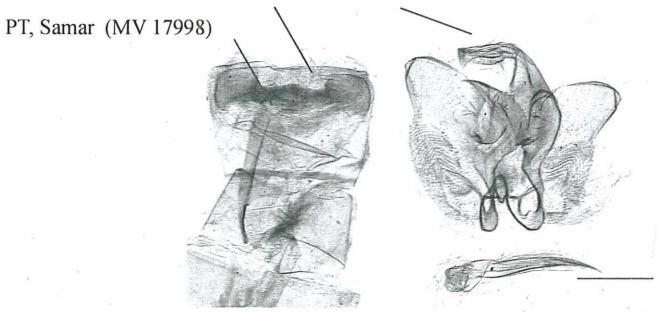


Fig. 593: Male genitalia of *Micromelalopha uniformis*.

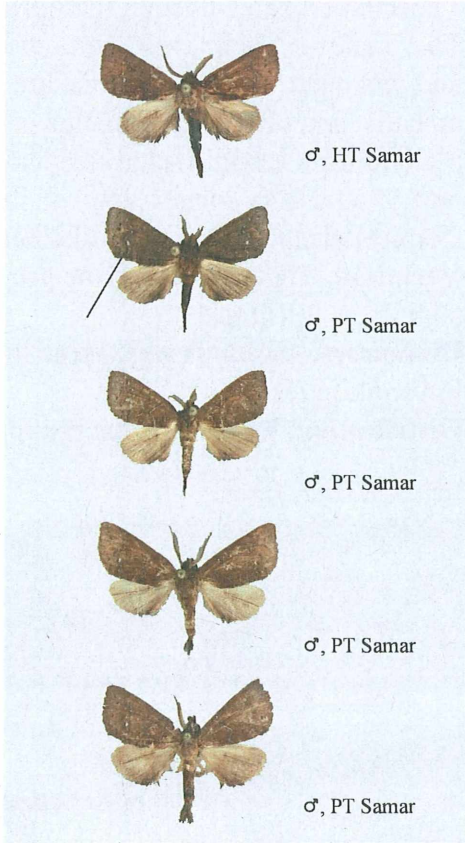


Fig. 595: Males of *M. uniformis*.

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

137. *Micromelalopha uncinatus* spec. nov.

HT: ♂, The Philippines, S Mindanao, Davao Oriental, Aliwagwag, primary forest, 90 m, 07°43.667'N, 126°17.304'E, 30.iv.-1.v.2008, leg. J.H. Lourens (MV 17997) – NHM, Wien.

Paratypes (11 ♂♂, 1 ♀):

Mindanao: 3 ♂♂, Davao Oriental, Aliwagwag, 90 m, 07°43.667'N, 126°17.304'E, 30.iv.-1.v.2008; 4 ♂♂, Surigao del sur, San Augustin Brgy. Gata, 140 m, 08°43.308'N, 126°05.691'E, 17.-18.iii.2009; 1 ♂, N of Lianga, 13 km W of Diatagon, 450 m, 08°44.475'N, 126°05.632'E, 22.-23.iii.2007 (MV 17996); 1 ♂, 12 km N Lianga, Hanayan, 350 m, 08°42'N, 126°05'E, 29.ix.-1.xii.2005; 1 ♂, Misamis Prov., Mt. Malasag, 300 m, 8.-15.ii.1996 (GU 76-60); 1 ♀, ibid., 300 m, 10.-22.02.1996; 1 ♂, Mt. Tagubod, i.1997 (MV 17992).



Fig. 597: Distribution of *M. uncinatus*.

Diagnosis. Forewing length ♂♂ 13 mm - 14 mm, slightly larger than *M. uniformis*; ♀ 16 mm. Not separable from *uniformis* by external appearance. The forewings are uniform fuscous reddish brown; the black markings are inconspicous. The postmedian fascia of the forewings is marked by a few white scales. The female is paler in ground colour and slightly larger. The male genitalia resemble those of *uniformis* and *flammea,* but the valves are slightly pointed apically, and the straight phallus is thicker and bears a prominent, strongly sclerotized hook. The ventrally curved uncus is longer than in *uniformis.* The 8th sternite is deeply bilobed and distinctively sclerotized.

Variation. The darkness of the ground colour varies slightly as illustrated.

Bionomics. All adults were taken in primary forest at lower altitudes up to 450 m.

Distribution. Endemic in the Philippines: Mindanao.

HT, Mindanao (MV 17997)

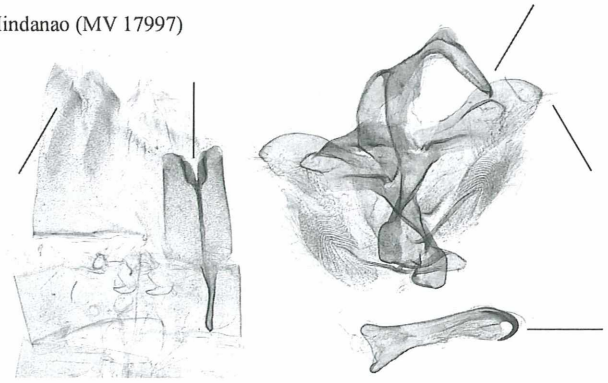


Fig. 596: Male genitalia of *Micromelalopha uncinatus*.

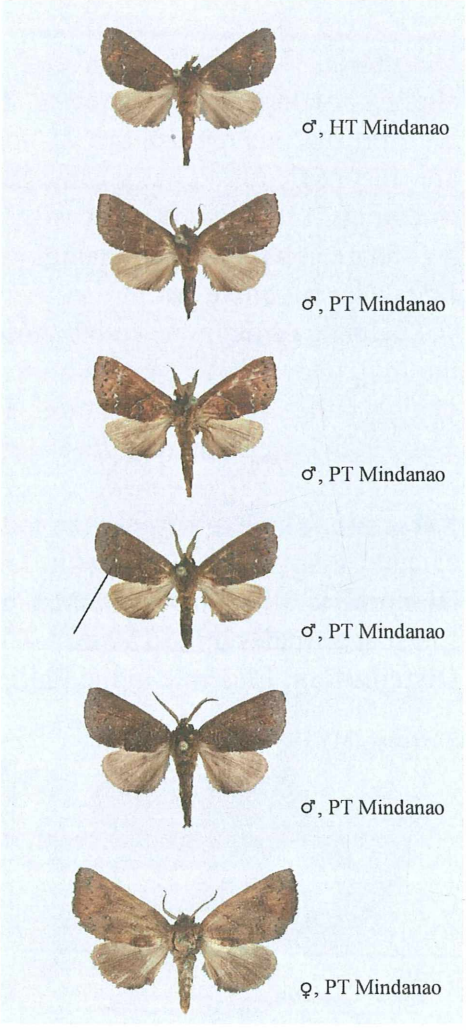


Fig. 598: Adults of *M. uncinatus*.

© Biodiversity Heritage Library, http://www.biodiversitylibrary.org/; download unter www.biologiezentrum.at

138. *Micromelalopha palawana* SCHINTLMEISTER, 1993: 146, pl. 30: 4, pl. 31: 1, 2 (*Micromelalopha celebesa palawana*) **stat. nov.**
HT: ♂, Philippinen, Nord-Palawan, S. Vicente, 20 km NEE Roxas, 10°21'n. Breite, 119°10'ö. Länge, 400 m – NHM, Wien, examined.

The group of *M. palawana* includes the following species (with identical appearance):

M. leucoretha (TAMS, 1935): 42 (HT: ♂, Singapore – BMNH, London examined) (*Ichtyura leucoretha*);
M. sumatrana SCHINTLMEISTER, 1994: 231, pl. 4: 18, pl. 6: 1 (HT: ♂, N Sumatra, Tarut, 1.200 m, GU 15-27 – coll. A. SCHINTLMEISTER, Dresden, examined) (*Micromelalopha celebesa sumatrana*) stat. nov.; and
M. celebesa (TAMS, 1935): 43 (HT: ♂, Sulawesi, not examined) (*Ichtyura leucoretha celebesa*).

The relatively large male genitalia of these species, have in comparison to other congeners (illustrated here on the same scale), a distinctive saccular valve process, a clasper-like projection – which is sometimes reduced – and a further process at the costa of the valves.

KIRIAKOFF (1968: 255) introduced *Erythroclostera* as genus name with *Ichyura castanea* ROTHSCHILD, 1915 (HT: ♀, [W Papua, Utakwa river], Base camp [sea level] – BMNH, London, examined) as type-species. Unfortunately he illustrated the wrong male genitalia of *celebesa* and used them also for the genus diagnosis. He did not dissect the female holotype of *castanea* – see also HOLLOWAY (1983: 95). According to the Code of Zoological Nomenclature Art. 70.3 the type species of *Erythroclostera* therefore becomes *Ichtyura leucoretha celebesa*. Because of the analogue features of the male genitalia and also similar external appearance (strong body, forewing shape) *Erythroclostera* can be designated as a subgenus name for the species group of *leucoretha*. The morphological differences between *sumatrana*, *palawana* and *celebesa* are significant, however, more quantitative than structural. We treat them here as distinct species



Fig. 599: Distribution of *M. palawana*.

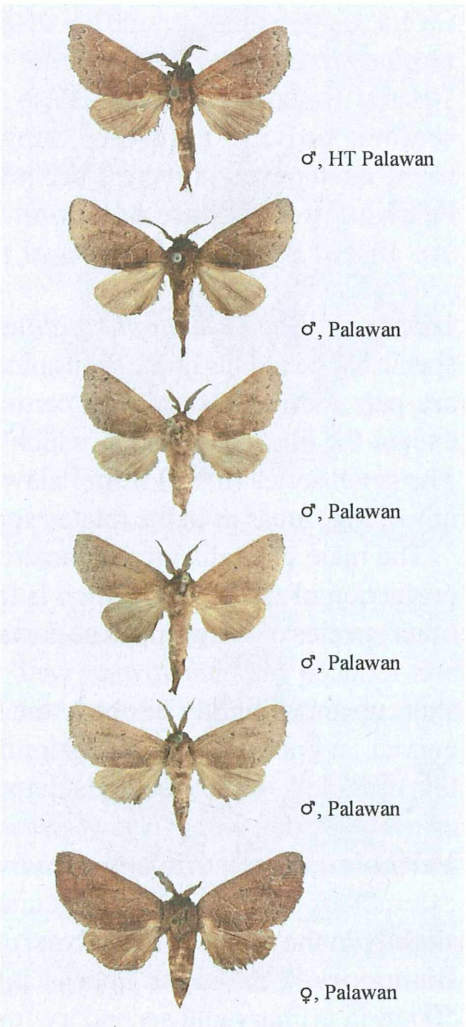


Fig. 600: Adults of *M. palawana*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



Fig. 601: Male genitalia of *M. palawana* PT Palawan (GU 14-93).

because sympatrical species in the genus show in China only minor genitalia differences (e.g. *M. troglodyta* GRAESER, 1890/*vicina* KIRIAKOFF, 1963/ *sieversi* STAUDINGER, 1892). Also biogeographical reasons provide a further support to consider them as separate species, because Sulawesi and Palawan do not share notodontid-species, which are absent in the other parts of the Philippines.

Diagnosis. *Micromelalopha palawana* is the largest species of the genus in the Philippines. The forewings are pale reddish brown with contrastless markings, except the black discalspot, which is rather distinct. The small series (n = 8) from Palawan does not show any orange areas as in the related species (see above).

The male genitalia are characterized by a saccular projection of the valves, which is thicker than in the other species of the group. The costal valve processes are reduced (in *sumatrana* well developed). The short uncus is slightly bilobed, the slender phallus is curved and pointed. The 8th abdominal segments are less modified; the 8th sternite is shaped and sclerotized as usual for the genus (e.g. *M. flammea*).

Variation. There is virtually no individual variation in external appearance. The male genitalia (= 3 GU) vary slightly in the shape of the valves, uncus and phallus.

Bionomics. The adults appear infrequently up to 500 m in primary and secondary forests.

Distribution. Endemic in the Philippines: Palawan.

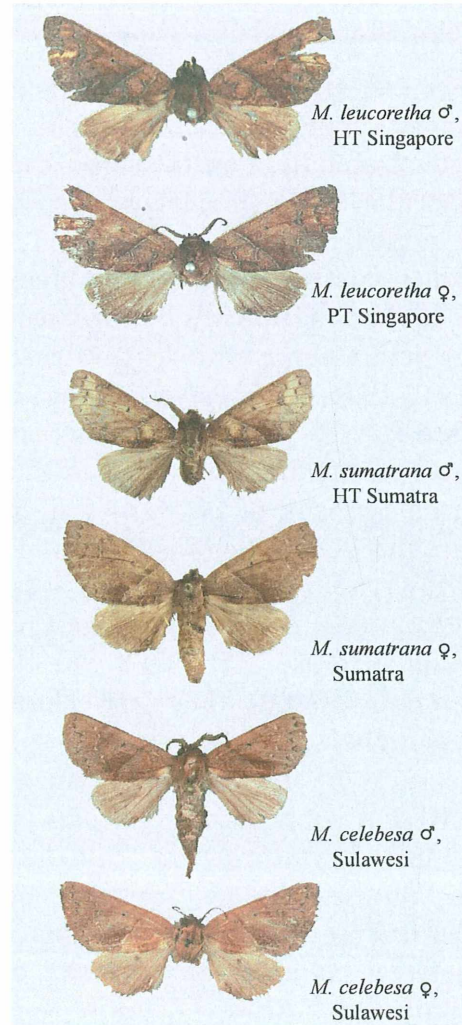


Fig. 602: Adults of *Micromelalopha*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

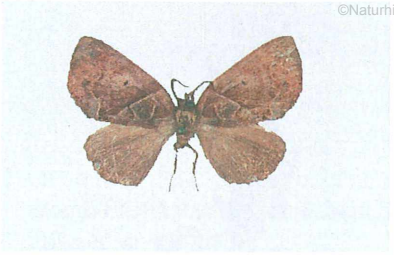
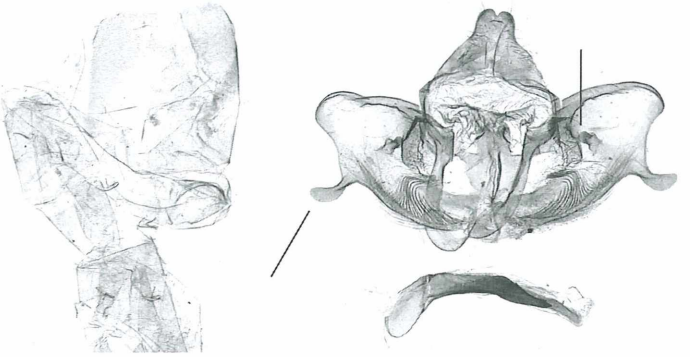


Fig. 603: *M. castanea* ♀, HT W Papua.

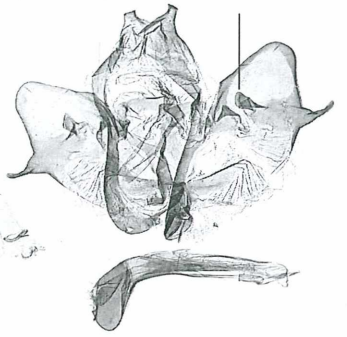
M. palawana Palawan (MV 17999)



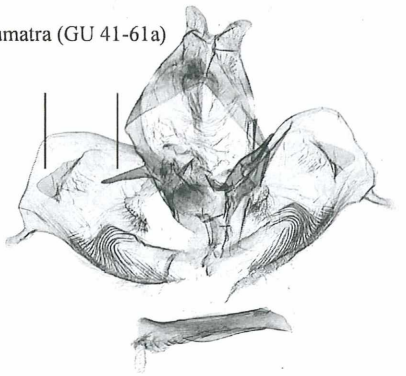
M. castanea HT W Papua (BM# 1177)



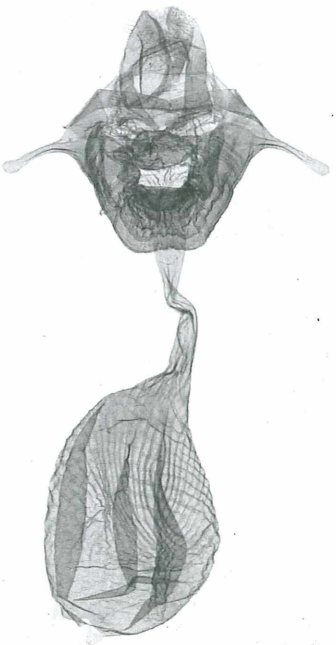
M. celebesa Sulawesi (GU 44-65)



M. sumatrana Sumatra (GU 41-61a)



M. leucoretha PT Singapore (BM# 1175)



M. sumatrana PT Sumatra (GU 15-67)



M. leucoretha Sumatra (GU 19-48)

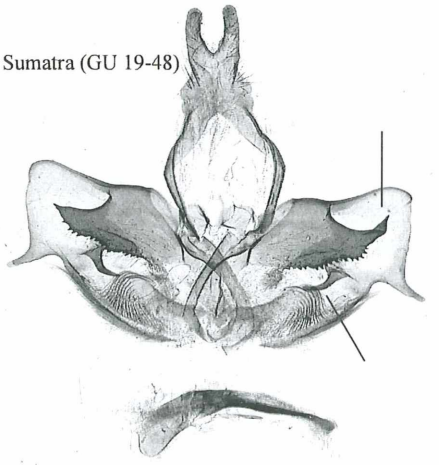


Fig. 604: Genitalia of *Micromelalopha palawana, leucoretha, celebesa* and *sumatrana* (scale = 0,72).

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Paracyphanta Sugi, 1994: 53

Type-species: *Paracyphanta kurokoi* Sugi, 1994

The genus *Paracyphanta* was reviewed by Schintlmeister (2008). All species of this interesting genus are very rare in collections (n = 16 specimens in four species are alltogether known). We tried many times to collect further material at the type locality of *lourensi*, but so far to no avail.

136. *Paracyphanta lourensi* Schintlmeister, 2008: 99; pl. 1: 9; pl. 2: 15

HT: ♂, Philippinen, Leyte, Hilusig, W Mahaplag, Mt. Balocawe, 10°43'N, 124°55'E, 600 m – coll. A. Schintlmeister, Dresden, examined.

Diagnosis. The species is unmistakable by the green coloured forewings and the pale yellowish-white hindwings. It differs from *postlutea* Sugi, 1994: 56, figs. 3, 7 (HT: ♂, Sulawesi, Puncak Dingin, 1.700 m – in coll.S. Sugi, Tokyo not examined) by the more conspicous marked blackish-brown median- and submarginal fasciae of the forewing. The female is still unknown. It could resemble the female of *P. rothi* Schintlmeister, 2008.

The male genitalia are distinguished by the shape of the sacculus of the divided valves. The phallus is short and distally characteristically sclerotized. The 8th abdominal segments are not modified.

Bionomics. There is only one male known, which was taken in v. in hilly Dipterocarp forest at 600 m.

Distribution. Endemic in the Philippines: Leyte.

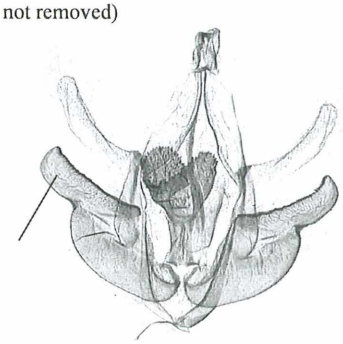


Fig. 605: Genitalia of *P. lourensi* HT, Leyte (88-31).



Fig. 606: Distribution of *P. lourensi*.

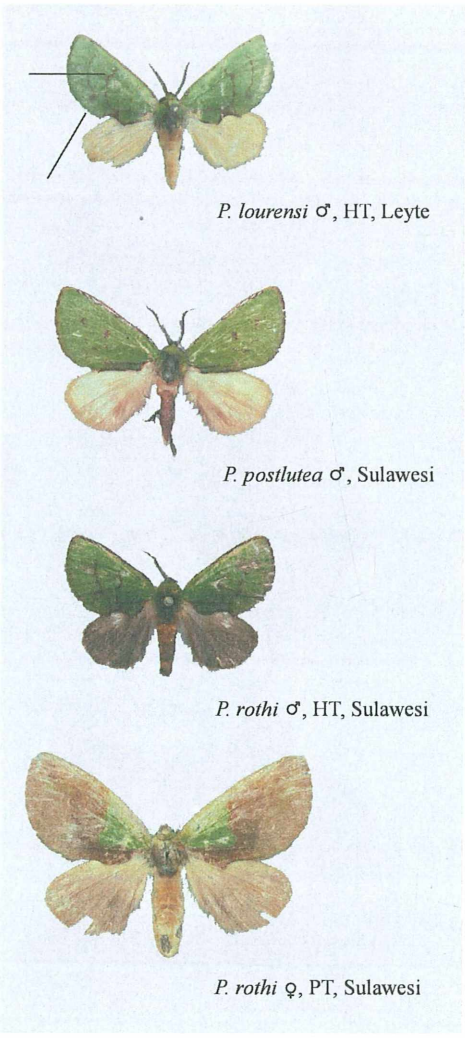


Fig. 607: Adults of *Paracyphanta*.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

References

BARLOW, H. 1982: An introduction to the moths of South East Asia. 305 pp. + 50 pls. - Kuala Lumpur: the author.

BENDER, R. 1985: Notodontidae von Sumatra. – Heterocera Sumatrana **5**, 122 pp., 14 pls., Heterocera Sumatrana Society, Keltern.

BENDER, R. & W. DIERL [1977]: Kommentiertes Verzeichnis der Notodontidae Sumatras (Lepidoptera). – Zeitschrift Arbeitsgemeinschaft Österreichischer Entomologen **28**: 117-131.

BETHUNE-BAKER, G.T. 1904: New Lepidoptera from British New Guinea. – Novitates Zoologicae **11**: 367-381; pls. 4 - 6.

BRYK, F. 1949: Entomological Results from the Swedish Expedition 1934 to Burma and British India. Lepidoptera: Notodontidae STEPHENS, Cossidae NEWMAN und Hepialidae STEPHENS. – Arkiv för Zoologi **42** A: 1-51, pl. 1-4.

BURGESS, P.F. 1969: Ecological factors in the hill and mountain forests of the States of Malaysia. – Malayan Nature Journal **22**: 119-128.

BUTLER, A.G. 1872: Description of a new Genus and Species of Heterocerous Lepidoptera. – The Annales and Magazine of natural History. (4th series) **10**: 125-126.

– 1877: Descriptions of new species of Heterocera from Japan. Part I Sphinges and Bombyces. – The Annales and Magazine of natural History. (4th series) **20**: 393-404, 473-483.

– 1878: Illustrations of Typical Specimens of Lepidoptera Heterocera in the Collection of the British Museum. **2**: 11-13, London.

– 1879: Illustrations of Typical Specimens of Lepidoptera Heterocera in the Collection of the British Museum **3**: i-xviii, 1-82, pls. 41-60, London.

– 1881: Descriptions of new Genera and Species of Heterocous Lepidoptera from Japan. – Transactions of the Entomological Society of London pp. 1 - 23.

– 1886: Illustrations of typical specimens of Lepidoptera Heterocera in the collection of the British Museum. **6**. xiii + 89 pp., pls. 101–120. London.

– 1892: On a collection of Lepidoptera from Sandakan, N. E. Borneo. – Proceedings of the Zoological Society of London **1892**: 120–133, pl. 6.

CERNY, K. 1993: A contribution to the knowledge of the genus *Doliche* WALKER (Lepidoptera: Arctiidae, Lithosiinae) from the Philippines. – Nachrichten entomologischer Verein Apollo, Supplement **12**: 31-98.

DEHARVENG, L. & E. P. DE OLIVEIRA 1996: *Paracerura virgata* n. g., n. sp. (Collembola, Isotomidae), nouveau Collembole d' Amazonie centrale. – Revue Suisse de Zoologie **101**: 441-446.

DE JONG, R. 1998: Halmahera and Seram: different histories, but similar butterfly faunas. – In: HALL, R. & HOLLOWAY, J. D. (eds.), Biogeography and geological evolution of SE Asia. Backhuys, Leiden: 315-325.

DENIS, M. & I. SCHIFFERMÜLLER 1775: Ankündung eines systematischen Werkes von den Schmetterlingen der Wienergegend - Beck, Wien, 323 pp., 2 pls.

DICKERSON R.E. 1928: Distribution of life in the Philippines. Monographs of the Bureau of Science, Manila **2**: 1-322 + 42 pls.

DIERL, W. 1976: Neue Notodontidae (Lep.) aus Asien. – Entomologische Zeitschrift, Frankfurt/M. **86**: 83-85.

– 1976: Notizen zur Kenntnis der Gattungsgruppe *Allata* WALKER (Lepidoptera, Notodontidae). – Entomologische Zeitschrift, Frankfurt/M. **86**: 209-214.

DRUCE, H. 1901: Descriptions of some new species of Heterocera. – The Annales and Magazine of natural History. (7th series) **7**: 74-79.

DUDGEON, G.C. 1898: A catalogue of the Heterocera of Sikhim and Bhutan Part III. – Journal of the Bombay Natural History Society **11**: 624-634.

DYAR, H.G. 1897: A generic revision of the Ptilodontidae and Melalophidae. – Transactions and Proceedings of the Entomological Section of the Academy of Natural Sciences **24**: 1-20.

ECKWEILER, W. 2001: Entomologische Praxis: Schattenfreie Fotografie von Insekten mit Hilfe einer Ringleuchte. – Nachrichten entomologischer Verein Apollo, Frankfurt/Main, Neue Folge, **22** (3: 136.

EECKE, R. van 1929: De Heterocera van Sumatra. – Zoologische Mededeelingen Leiden **8**: 154-217, **9**: 28-49, 257-299, **10**: 90-157, **11**: 49-145, **12**: 28-175.

– 1930: De Heterocera van Sumatra, eerste deel.– E. J. Brill, Leiden 456 pp.; 13 pls.

Environmental Science for Social Change (2002: Decline of Philippine Forests. – Makati, Philippines: ESSC Inc. and Bookmark.

FELDER, C. 1861: Lepidopterorum Amboinensium

a Dre. L. DOLESCHALL annis 1856-1858 collectorum species novae diagnosibus collustrate a Dre. C. FELDER. II. Heterocera. A. in: FRAUENFELD, G. von: Berichte über weitere Bearbeitung der Novara-Sammlungen und Fortsetzungen der Diagnosen neuer Lepidopteren von Dr. C. FELDER. – Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. Mathematisch-Naturwissenschaftliche Classe. **43**: 25-44.

FELDER, C. & A.F. ROGENHOFER 1874: Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Beihilfen des Commodore B. von WÜLLERSTORF-URBAIR. Zoologischer Theil Zweiter Abtheilung. – pls. 75-120, 10 pp., Wien.

FIBIGER, M. & J.D. LAFONTAINE 2005: A review of the higher classification of the Noctuoidea (Lepidoptera) with special reference to the Holarctic fauna. – Esperiana **11**: 7-82.

Forest Management Bureau (FMB) 2004: Philippine Forest Cover by region and Province. Website: http://forestry.denr.gov.ph/landusereg.htm (last visited 19.ix.2010).

FU, C.M. & H.R. TZUOO 2004: Moths of Anmashan **2**, 263 pp.; pls. 32-60, Taichung Nature Research Society, Taichung.

GAEDE, M. 1930: Notodontidae. – In: A. SEITZ (ed.): Die Großschmetterlinge der Erde, Band **10** Indoaustralische Spinner und Schwärmer. – pp. 607-655; pls. A. Kernen, Stuttgart.

– 1933: Notodontidae. – In: A. SEITZ (ed.): Die Großschmetterlinge der Erde, Band **2** Supplement Palaearktische Spinner und Schwärmer. – pp. 173 - 186, pls., A. Kernen, Stuttgart.

– 1934: In: E. STRAND (ed.: Lepidopterorum Catalogus pars **59** Notodontidae. – 351 pp., Junk, Berlin.

GERMAR, E.F. 1812: Systematis Glossatorum Prodromus, sistens Bombycum species secundum oris partium diversitates in nova genera distributas. – 51 pp., Reclam, Lipsiae.

GOEZE, I. A. E. 1781: Entomologische Beiträge zu des Ritters Linne 12. Ausgabe des Natursystems. Bd. **3** Theil 3, 48 + 439 pp., Weidmann, Leipzig.

GRÜNBERG, K. 1912: Notodontidae. – In: A. SEITZ (ed.: Die Großschmetterlinge der Erde, Band **2** Paläarktische Bombyciden und Sphingiden. – pp. 284 - 319; pls. 44-49, 56. A. Kernen, Stuttgart.

HALL, R. 1998: The plate tectonics of Cenozoic SE Asia and the distribution of land and sea. – in HALL, R. & HOLLOWAY, J.D. (eds.), Biogeography and geological evolution of SE Asia. – Backhuys, Leiden, pp. 315-325.

HALL, R. & HOLLOWAY, J.D. (eds.) 1998: Biogeography and geological evolution of SE Asia. – Backhuys, Leiden, ii + 417 pp.

HAMPSON, G.F. 1893: The Fauna of British India including Ceylon and Burma. Family Notodontidae. – Moths **1**: 124-177.

– 1895: Descriptions of new Heterocera from India – Transactions of the Entomological Society of London, pp. 277-315.

– 1896: The Fauna of British India including Ceylon and Burma. Family Notodontidae. – Moths **4**: 453-461.

– 1898: In: DUDGEON, G. C.: A catalogue of the Heterocera of Sikhim and Bhutan Part III. – Journal of the Bombay Natural History Society **11**: 624-634.

HEPPNER, J.B. 1991: Faunal regions and the diversity of Lepidoptera. – Tropical Lepidoptera **2**, Supplement **1**: 1-85.

HOGENES, W. & C.G. TREADAWAY 1998: The Sphingidae (Lepidoptera) of the Philippines. – Nachrichten entomologischer Verein Apollo, Supplement **17**: 17-132.

HOLLOWAY, J. D. 1976: Moths of Borneo with special Reference to Mount Kinabalu. – 264 pp. The Malayan Nature Society, Kuala Lumpur.

– 1982: Appendix. – In: BARLOW, H. 1982: An introduction to the moths of South East Asia. 305 pp. + 50 pls. - Kuala Lumpur.

– 1983: The Moths of Borneo **4**. Notodontidae. – The Malayan Nature Journal **37**: 1-107; pls. 1-9.

– 1983: The biogeography of the macrolepidoptera of south-eastern Polynesia. – GeoJournal **7**: 517-525.

– 1984: Lepidoptera and the Melanesian Arcs. In: RADOVSKY, F.J., P.H. RAVEN & S.H. SOHMER (eds): Biogeography of the Tropical Pacific. – pp 129-169, Association of Systematic Collections & Bernice P. Bishop Museum, Honolulu.

– 1984: The larger moths of Gunung Mulu National Park; a preliminary assessment of their distribution, ecology and potential as environmant indicators. – In: JERMY, A.C. & K.P. KAVANAGH, (eds), Gunung Mulu National Park, Sarawak, Part II. Sarawak Museum Journal **30**: (Special Issue **2**) 89-131.

– 1986: Lepidoptera faunas of high mountains in the Indo-Australian tropics. – In: VUILLEUMIER, F & F. MONASTERIO (eds.) High altitude tropical biogeography. – pp. 533-556. – Oxford University Press, New York.

– 1987: Macrolepidoptera diversity in the Indo-Australian tropics: geographic, biotopic and taxonomic variations. – Biological Journal of the Linnean Society **30** 325-341.

– 1987: Lepidoptera patterns involving Sulawesi:

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

What do they indicate of past geography? – In: WITHMORE, T.L. (ed.) Biogeographic Evolution, pp. 101-118. – Oxford Claringdon Press.

– 1991: Pattern of moth speciation in the Indo-Australian archipelago. – In: DUDLEY, E.C. (ed.): Evolution on island archipelagos: the emerging picture-symposium. In: The unity of evolutionary biology. – Proceedings of the fourth international congress of Systematic and evolutionary biology **1**: 340-372. Dioscorides Press, Portland.

– 1993: Aspects of the biogeography and ecology of the Seram moth fauna. – In: EDWARDS, I.D., MACDONALD, A.A. & J. PROCTOR (eds): The natural history of Seram. Intercept, Andover: pp. 91-114.

HOLLOWAY, J. D. & R. BENDER 1985: Further notes on the Notodontidae of Sumatra, with description of seven new species - Heterocera Sumatrana, Göttingen **5**: 102-112.

HUKE, R.E. 1982: Agroclimatic and dry-season maps of south, southeast, and east Asia. – International Rice Research Institute, Los Baños, Laguna, Philippines.

KOCAK, A.Ö. & M. KEMAL 2006: Checklist of the family Notodontidae in Thailand (Lepidoptera). – Miscellaneous Papers, Centre for Entomological Studies Ankara **104**: 1-8.

KIRIAKOFF, S.G. 1959: Entomological results of the Swedish expedition 1934 to Burma and British India. Lepidoptera: Family Notodontidae. – Arkiv för Zoologi Ser. 2 Band **12** (20: 313-333+1 pl.

– 1960: Les Notodontidae (Lepidoptera) de la collection VAN DELDEN. – Bulletin Institut royal des Sciences naturelles de Belgique **36** 17: 1-12.

– 1962: Notes sur les Notodontidae (Lepidoptera) *Pydna* WALKER et genres voisins (Deuxieme partie). – Bulletin et Annales Société d'Entomologi de Belgique **98**: 149-214, 6 pls.

– 1962: Die Notodontiden der Ausbeuten H. HÖNES aus Ostasien (Lepidoptera Notodontidae). – Bonner zoologische Beiträge **13**: 219-236.

– 1963: The systematic position of the so - called Subfamily Platychasmatinae NAKAMURA, 1956 (Notodontidae). – Journal of the Lepidopterists' Society **17**: 33-34.

– 1963: Die Notodontiden der Ausbeuten H. HÖNES aus Ostasien (Lepidoptera Notodontidae). – Bonner zoologische Beiträge **14**: 248-293.

– 1967: New genera and species of Oriental Notodontidae (Lepidoptera). – Tijdschrift voor Entomologie **110**: 37-64.

– 1967: Lepidoptera Familia Notodontidae Pars secunda Genera Palaearctica. – In: P. WYTSMAN (ed.): Genera Insectorum fasc. **217 B:** 238 pp. +7 pls., Kraainem.

– 1967c: On the Notodontidae (Lepidoptera) from New Guinea in the Leiden Museum. – Zoologische Mededelingen **42**: 189-214.

– 1968: Lepidoptera Familia Notodontidae Pars tertia Genera Indo-Australica. – In: P. WYTSMAN (ed.): Genera Insectorum fasc. **217 C:** 269 pp. +11 pls., Kraainem.

– 1970: New or less known Indo-Australian Notodontidae (Lepidoptera). – Tijdschrift voor Entomologie **113**: 105-123.

– 1974: Neue und wenig bekannte asiatische Notodontidae (Lepidoptera). – Veröffentlichungen der Zoologischen Staatssammung München **17**: 371-421 +5 pls.

KITCHING, I.J. & RAWLINS, J.E. 1999: The Noctuoidea.pp.355-401.–In: KRISTENSEN, N.P.(ed.): Lepidoptera, Moths and Butterflies. 1. Evolution, Systematics, and Biogeography. In: FISCHER, M (ed.: Handbuch der Zoologie 4. Arthropoda: Insecta (35). 491 pp., Berlin, New York.

KOBAYASHI, H., Y. KISHIDA & M. WANG (2007: Several new species of the genus *Phalera* Notodontidae, Lepidoptera). – Tinea **19**: 274-292.

KOBAYASHI, H. & Y. KISHIDA 2004: New species of the genus *Saliocleta* (Lepidoptera, Notodontidae) from Myanmar and Vietnam. – Transactions of the lepidopterological Society of Japan **55**: 83-87.

– 2007: On some species of the genus *Hexafrenum* MATSUMURA including three new species Notodontidae, Lepidoptera). – Tinea **20**: 45-58.

– 2008: New taxa of the genus *Gangarides* from Indonesia and Philippines, with the specimens list of NSMT collection (Lepidoptera, Notodontidae). – Tinea **20** (3: 181.

– 2008: A new species of the genus *Calyptronotum* (Notodontidae, Lepidoptera). – Tinea **20** (4: 193-200.

LATTIN, G. de 1967: Grundriss der Zoogeographie – 602 pp., Gustav Fischer, Jena.

LEECH, J. H. 1889: On a collection on Lepidoptera from Kiukiang. – Transactions of the entomological Society London pp. 99-148.

LINNAEUS, C. 1758: Systema naturae. Per regna tria naturae, secundum classes, ordines genera species, cum characteribus, differentiis, synonymis, locis. – Edn. 10 vol. **1**, 2+824 pp., Laurentii Slavii, Holmiae.

MATSUMURA, S. 1920: [New genera and new species of the Notodontidae from Japan]. – Zoological Magazine Tokyo **32**: 139-151.

– 1922: [A critical review to MARUMO's paper on the Notodontidae, with descriptions of new species.]. – Zoological Magazine Tokyo **34**: 517-523.

– 1925: [On the Formosan Notodontidae.] – Zoological Magazine Tokyo **37**: 391-409, pls. 6-7.
– 1929: Generic revision of the Palaearctic Notodontidae. – Insecta matsumurana **4**: 78-93, 1 pl.
MAYR, E. 1967: Artbegriff und Evolution. – 617 pp., Paul Paray, Hamburg und Berlin.
MELL, R. – 1930: Undescribed Lepidoptera from China III. Notodontidae. – Lingnan Science Journal **9**: 377-380.
MILLER, J. S. 1991: Cladistics and classification of the Notodontidae (Lepidoptera: Noctuoidea) based on larval and adult morphology. – Bulletin of the American Museum Natural History **204**: 1-230.
MOORE, F. [1860] In: HORSFIELD, T. & F. MOORE: A catalogue of the lepidopterous Insects in the Museum at the East-India House. – Vol. **2**: i-vi, 279-440, pls. 13-23, 7A-13A, Allan & Co., London.
– 1866: On the lepidopterous insects of Bengal. – Proceedings of the Zoological Society of London pp. 755-822.
– 1879: Descriptions of new Indian lepidopterous insects from the collection of the late Mr. W.S. ATKINSON. – Part **2**., pp. 89-198, pls. 4-5., Calcutta.
– 1881: Descriptions of new Genera and Species of Asiatic Lepidoptera Heterocera. – Proceedings of the Zoological Society of London **1881**: 326-380; pls. 37-38.
– 1882 - 1883: The Lepidoptera of Ceylon, Vol. **2**. 62 pp., pls 72-143., L. Reeve & Co., London.
– 1883: Descriptions of new Genera and Species of Asiatic Lepidoptera Heterocera. – Proceedings of the Zoological Society of London **1883**: 15-17; pls. 5-6.
– 1888: Descriptions of new Genera and Species of Lepidoptera Heterocera, collected by Rev. J. H. HOCKING, chiefly in the Kangra District, N. W. Himalaya. – Proceedings of the Zoological Society of London pp. 390-401.
NÄSSIG, W.A. 1988: A rearing of the carterpillars of *Cerura malaysiana* HOLLOWAY 1982 (Lep. Notodontidae). – Heterocera Sumatrana **2**(6: 59-66.
NÄSSIG, W.A. & C.G. TREADAWAY 1998: The Saturniidae (Lepidoptera) of the Philippines. – Nachrichten entomologischer Verein Apollo, Supplement **17**: 223-424.
NAGANO, K. 1916: Life-History of some japanese Lepidoptera containing new genera and species. – Bull. Nawa ent. Lab. **1**: 1-96, 1-27.
NAKAMURA, M. 1956: Contribution to the knowledge of some Japanese Notodontid-moths. – Tinea, Tokyo **3**: 142-143.
– 1976: Some Notodontidae from Malaysia and Burnei (Lepidoptera). – Tyo to Ga **27**: 35-42.
– 1976: Philippine Notodontidae (Lepidoptera) taken by the Entomological survey of the Japan Entomological Academy in Cooperation with Nanzan University and San Carlos University in 1970. – Tyo to Ga **27**: 138-142.
OBERTHÜR, CH. 1884: Lépidoptères de l'Asie orientale. – Études d'Entomologie **10**: 13-35; pls. 1-3, Rennes, Oberthür et fils.
– 1894: II. Lépidoptères d l'Asie. – Études d'Entomologie **18**: 11-54; pl. 1-8; Rennes, Oberthür et fils.
– 1911: Explication des planches publiées dans le volume V des Études de Lépidoptérologie comparée. – Études de Lépidoptérologie comparée **5**., 345 pp., pls. 59-86, Imprimerie Oberthür, Rennes.
ONG, P.S. 2002: Current status and prospects of protected areas in the light of the Philippine biodiversity conservation priorities. – In: H.M. TSAI. (ed.): Proceedings of the Fourth Conference on the Protected Areas of East Asia: Benefits beyond Boundaries in East Asia. pp. 95-125. Taipei, Taiwan: Yangmingshan National Park.
ONG, P.S., AFUANG, L.E. & R.G. ROSELL-AMBAL 2002: Philippine Biodiversity Conservation Priorities: a Second Iteration of the National Biodiversity Strategy and Action Plan. Manila, Philippines: DENR, Biodiversity Conservation Program-UP Center for Integrative and Development Studies, & Conservation International.
PAGENSTECHER, A.F. 1890: Heteroceren der Insel Palawan. – Deutsche Entomologische Zeitschrift Iris, Dresden **3**: 1-33.
ROEPKE, W. 1943: On the genera *Dudusa* WALK. and *Tarsolepis* BUTL. in the Dutch East Indies (Lepidopt. Het., Fam. Notodontidae). – Tijdschrift voor Entomologie **86**: 77-83.
– 1943: Remarks on new or little known Indomalayan Moths (Lepid. Heteroc.). – Natuurhistorisch Maandblad **32**: 78-80, 93-94, 102-103.
– 1944: Remarks on new or little known Indomalayan Moths (Lepid. Heteroc.). – Natuurhistorisch Maandblad **33**: 1-5, 19-22, 39-40.
ROTHSCHILD, W. 1915: Lepidoptera of the British ornithologists' union and WOLLASTON expeditions in the Snow mountains: southern Dutch New Guinea. Macrolepidoptera. pp. 1-148, Zoological Museum Tring.
– 1917: On some apparently new Notodontidae. – Novitates Zoologicae **24**: 231-264; pls. 3-8.
SAMOUELLE, G. 1819: The entomologists useful compendium, or an introduction to the knowledge of british Insects .. – 496 pp +12 pls., Boys, London.

SCHAUS, W. 1928: New moths of the family Ceruridae (Notodontidae) in the United States-National Museum. – Proceedings U. S. National Museum **73** 19: 1-90.

SCHINTLMEISTER, A. 1981: Fünf neue Notodontidae aus Sumatra - Atalanta **12**: 285-291.

– 1984: Saisondimorphismus im Genitalapparat bei Spatalia Hübner, [1819] 1816. (Lepidoptera: Notodontidae). – Neue Entomologische Nachrichten **7**: 12-15.

– 1989: A contribution to knowledge of the moths fauna of Thailand (Lepidoptera: Notodontidae, Lymantriidae). – Tinea **12**: 215-230.

– 1989: Zoogeographie der palaearktischen Notodontidae (Lepidoptera). – Neue Entomologische Nachrichten **25**: 1-117.

– 1991: Die Gattung *Stauropus* Germar, 1812 in den Philippinen (Lepidoptera, Notodontidae). – Deutsche Entomologische Zeitschrift, N.F. **38**: 109-118.

– 1992: Die Zahnspinner Chinas (Lepidoptera, Notodontidae) Nachrichten des entomologischen Vereins Apollo, Frankfurt/Main, Neue Folge, Suppl. 1991) **11**: 1-343.

– 1993: Die Zahnspinner der Philippinen Ergebnisse zweier Sammelreisen 1988 (Lepidoptera: Notodontidae). – Nachrichten des entomologischen Vereins Apollo, Frankfurt/Main, Neue Folge, Suppl. **12**: 99-174.

– 1994: Check-list of the Notodontidae of Sundaland (excluding Java) with description of new species (Lepidoptera, Notodontidae). – Heterocera Sumatrana, Göttingen **7**: 207-252.

– 1997: Moths of Vietnam with special reference to Mt. Fan-si-pan. Family: Notodontidae. – Entomofauna Supplement **9**: 33-248.

– 2002: Entomologische Praxis: Digitalisierung mikroskopischer Genitalpräparate. – Nachrichten entomologischer Verein Apollo,Frankfurt/Main, Neue Folge **22** (4: 243-244.

– 2002: Das Genus *Paracerura* gen. nov. und seine Arten in der orientalischen Region (Lepidoptera: Notodontidae). – Nachrichten des entomologischer Vereins Apollo, Neue Folge **23** (3: 105-117.

– 2003: Sammeln von Nachtfaltern in den Tropen Südost-Asiens am Beispiel der Familie der Zahnspinner (Lepidoptera, Notodontidae) Phyllodrom Journal **2**: 55-58; 1 pl. – Abhandlungen und Berichte aus der Regenwaldforschung, Leipzig.

– 2003: Die Gattung *Stauropus* Germar, 1812 (Lepidoptera: Notodontidae). – Nachrichten des entomologischen Vereins Apollo, Neue Folge **24** (3: 97-118.

– 2003: The Zoogeography of Taiwan's Notodontidae (Lepidoptera). – Journal of the Zoological Society Wallacea **1**: 15-26.

– 2004: Die Gattung *Cerasana* WALKER, 1862 (Lepidoptera: Notodontidae). – Nachrichten entomologischer Verein Apollo, Frankfurt/Main, Neue Folge, **25** (4: 195-204.

– 2006: Die Gattung *Netria* WALKER, 1855 (Lepidoptera, Notodontidae). – Nachrichten entomologischer Verein Apollo, Frankfurt/Main, Neue Folge, **27** 1/2: 65-94.

– 2008: Palaearctic Macrolepidoptera **1**. Notodontidae. – 482 pp. Stenstrup, Apollo Books.

– 2008: Die Gattung *Paracyphanta* SUGI, 1994 (Lepidoptera, Notodontidae, Platychasmatinae). – Nachrichten entomologischer Verein Apollo, Frankfurt/Main, Neue Folge, **29** (3): 97-100.

SCHINTLMEISTER, A & CH.L. FANG 2001: New and less known Notodontidae from mainland China (Insecta, Lepidoptera, Notodontidae). – Neue Entomologische Nachrichten **50**: 1-143.

SCHINTLMEISTER, A. & A. PINRATANA 2007: Moths of Thailand **5**. Notodontidae 320 pp. 45 pls., Brothers of St. Gabriel in Thailand, Bangkok.

SEMPER, G. 1896 1902: Die Nachtfalter Heterocera. – In: C. SEMPER: Reisen im Archipel der Philippinen. Zweiter Theil Wissenschaftliche Resultate **6**: 86-728; pl. 50-66, C. W. Kreidel, Wiesbaden.

SETTELE, J. 1993: Lepidopterological research in the Philippines. – a short survey. – Nachrichten entomologischer Verein Apollo, Supplement **12**: 12-22.

SNELLEN, P. 1895: Verzeichnis der Lepidoptera Heterocera von Dr. B. HAGEN gesammelt in Deli (Ost - Sumatra). – Deutsche Entomologische Zeitschrift Iris **8**: 121-151.

STAUDINGER, O. 1887: Neue Arten und Varietäten von Lepidopteren aus dem Amur-Gebiete. – In: N.M. Romanoff (ed.), Mémoires sur les Lépidoptères **3**: 126-232, pl. vi-xii.

STEPHENS, J. F. 1828 - 1846: Illustrations of British Entomology; or, a synopsis of indigenous insects, containing their generic and specific distinctions; with an account of their metamorphoses, times of appearance, localities, food, and economy, as far as practicable. – Haustellata, vol. **1**, 152 pp. + pls. 1-12; vol. **2** (1829) 203 pp.; pls. 13-24.

STRAND, E. 1916: H. SAUTER's Formosa Ausbeute: Hepialidae, Notodontidae und Drepanidae. – Archiv für Naturgeschichte **81A**: 12: 150-165.

SUGI, S. 1979: An illustrated Catalogue of the Type-material of the Notodontidae Described by Matsumura, with Designations of Lectotypes and

Notes on Synonymies (Lepidoptera). – Tyo to Ga **30**: 1-48.
– 1982: Notodontidae. – In: H. INOUE (ed.): Moths of Japan in two volumes. – 966 pp + 552 pp. + 392 pls., Kodansha, Tokyo.
– 1987: The Thailand Notodontidae 1. – Tinea **12** (Supplement): 303-307.
– 1987: (ed.): Larvae of larger Moths in Japan. – 453 pp, 120 pls., Kodansha, Tokyo.
– 1992: Notodontidae. – In: HARUTA (ed.): Moths of Nepal, Part 1. – Tinea **13**, Suppl. 2: 95-122; pl. 27-32.
– 1993: Notodontidae. – In: HARUTA (ed.): Moths of Nepal, Part 2. – Tinea **13**, Suppl. 3: 148-159; pl. 64.
– 1994: A new species of *Euhampsonia* Dyar from Thailand (Lepidoptera, Notodontidae). – Tyo to Ga **45**: 115-118.
– 1994: *Paracyphanta* new genus and *Cyphanta* WALKER, two genera in the 'quadrifid' Notodontidae (Lepidoptera). – Tinea **14**: 53-60.
– 1994: Notodontidae – In: HARUTA (ed.): Moths of Nepal, Part 3 - Tinea **14**, Suppl. 1: 163-171; pl. 95-96.
– 1995: Notodontidae – In: HARUTA (ed.: Moths of Nepal, Part 4 - Tinea **14**, Suppl. 2: 110-116; pl. 118.
– 1998: Notodontidae – In: HARUTA (ed.): Moths of Nepal, Part 5. – Tinea **15**, Suppl. 1: 69-78, pl. 137.
Swedish Space Corporation 1988: FSF 101. – Mapping of the Natural Conditions of the Philippines, Project Reports.
SWINHOE, C. – 1903: Descriptions of new Eastern Moths. – The Annals and Magazine of Natural History (7) 12: 193- 201.
TREADAWAY, C.G. 1998: Short introduction to Philippine natural and geological history and its relevance for Lepidoptera. – Nachrichten entomologischer Verein Apollo, Supplement **17**: 7-16.
TURNER, A.J. 1903: Revision of Australian Lepidoptera. – Proceedings of the Linnean Society New South Wales **28**: 42-92.
WALKER, F. 1855: List of specimens of Lepidopterous Insects in the Collection of the British Museum **4**: 776-976, **5**: 977-1257, **6**: 1258-1507 Edward Newman, London.
– 1862: Catalogue of the Heterocerous Lepidopterous Insects collected at Sarawak, in Borneo, by Mr. A.R. WALLACE, with descriptions of new species. – Journal and Proceedings of the Linnean Society (Zoology) **6**: 82-145, 171-198.
WATSON, A.D., D.S.FLETCHER & I.W.B. NYE 1980: Noctuoidea (part: Arctiidae, Cocytiidae, Ctenuchidae, Dilobidae, Dioptidae, Lymantriidae, Notodontidae, Strepsimanidae, Thaumetopoeidae, Thyretidae. – In: NYE, I.W.B.: The generic names of Moths of the world **2**, 228 pp., Trustees of the British Museum (Natural History), London.
WEST, R.J. 1932: Further Descriptions of new species of Japanese, Formosan and Philippine Heterocera. – Novitates Zoologicae **37**: 207-228.
WHITEFORD, H.N., 1911: The Forests of the Philippines – Part I. Forest types and products. – Bulletin 10, Bureau of Printing, Manila.
WIKRAMANAYAKE, E.D., E. DINERSTEIN, C. LOUCKS, D. OLSON, J. MORRISON, J. LAMOREUX, M. MCKNIGHT, & P. HEDAO (eds.) 2002: Terrestrial Ecoregions of the Indo-Pacific: A Conservation Assessment. – Island Press. Washington, D.C.
WILEMAN, A.E. 1910: Some new Lepidoptera Heterocera from Formosa. – Entomologist **43**: 285-291,
WU, C.S. & CH.L. FANG 2003: Lepidoptera: Notodontidae. – Fauna sinica (Insecta) **31**, 27+952 pp.,8 pls., Science Press, Beijing.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Synopsis of Taxonomic changes

Newly described taxa

New species

Ortholomia ***osica*** spec. nov.
Ortholomia ***squalida*** spec. nov.
Ambadra ***irinae*** spec. nov.
Saliocleta ***commutatis*** spec. nov.
Saliocleta ***flaveolus*** spec. nov.
Oaura ***schausi*** spec. nov.
Teleclita ***didyma*** spec. nov.
Syntypistis ***aswang*** spec. nov.
Syntypistis ***dila*** spec. nov.
Syntypistis ***tala*** spec. nov.
Cerasana ***pagenstecheri*** spec. nov.
Omichlis ***samar*** spec. nov.
Mesophalera ***palawana*** spec. nov.
Calyptronotum ***jonathan*** spec. nov.
Calyptronotum ***johannes*** spec. nov.
Calyptronotum ***hannah*** spec. nov.
Hyperaeschrella ***sororcula*** spec. nov.
Phalera ***knoblichi*** spec. nov.
Gonoclostera ***augesco*** spec. nov.
Micromelalopha ***flammea*** spec. nov.
Micromelalopha ***uniformis*** spec. nov.
Micromelalopha ***uncinatus*** spec. nov.

New subspecies

Dudusa minor ***rufa*** ssp. nov.
Dudusa minor ***expectata*** ssp. nov.
Tarsolepis remicauda ***fuscata*** ssp. nov.
Gargetta hampsoni ***occulta*** ssp. nov.
Gargetta divisa ***orienta*** ssp. nov.
Ambadra sibena ***canescens*** ssp. nov.
Ambadra irinae ***complicata*** ssp. nov.
Stauropus hannemanni ***najade*** ssp. nov.
Stauropus hannemanni ***triade*** ssp. nov.
Stauropus orientalis ***distinguenda*** ssp. nov.
Stauropus orientalis ***quadriga*** ssp. nov.
Syntypistis basivirens ***viridibasis*** ssp. nov.
Syntypistis pamela ***caeca*** ssp. nov.
Syntypistis pallidifascia ***juttamariae*** ssp. nov.
Syntypistis comatus ***mananangai*** ssp. nov.
Parasinga lichenina ***penatus*** ssp. nov.
Cerasana pagenstecheri ***lechneri*** ssp. nov.
Omichlis divisa ***matrucula*** ssp. nov.
Omichlis diversa ***hinumbian*** ssp. nov.
Omichlis diversa ***lidum*** ssp. nov.
Disparia diluta ***russus*** ssp. nov.
Higena similis ***samarensis*** ssp. nov.
Clostera bramah ***roepkei*** ssp. nov.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Lectotype designations

Teleclita cathana SCHAUS, 1928
Snellentia divaricata GAEDE, 1930
Phalera surigaona SCHAUS, 1928
Phalera mangholda SCHAUS, 1928

New Synonymies

Coscodaca KIRIAKOFF, 1968 syn. nov. of *Caschara* WALKER, 1862
Gangarides sugii ***pulcher*** KOBAYASHI & KISHIDA 2008 **syn. nov.** of *Gangarides* ***sugii*** SCHINTLMEISTER, 1993
Gangarides sugii ***palawanensis*** KOBAYASHI & KISHIDA 2008 **syn. nov.** of *Gangarides* ***sugii*** SCHINTLMEISTER, 1993
Gangarides sugii ***negrosanus*** KOBAYASHI & KISHIDA 2008 syn. nov. of *Gangarides* ***sugii*** SCHINTLMEISTER, 1993
Osica turneri ***albiplaga*** GAEDE, 1930, syn. nov. of *Besida* ***xylinata*** WALKER, 1865
Besida ***vinvalva*** SCHAUS, 1928, syn. nov. of *Besida* ***xylinata*** WALKER, 1865
Bireta (*Norraca*) ***sabulosa*** KIRIAKOFF, 1962 syn. nov. of *Saliocleta* ***nonagrioides***
Ceira sabulosa ***luzonica*** SCHINTLMEISTER, 1993 syn. nov. of *Pydna odrana* ***odrana*** SCHAUS, 1928
Norraca ***uncinata*** SEMPER, 1902 syn. nov. of *Norraca* ***longipennis*** MOORE, 1881
Norraca ***ordgara*** SCHAUS, 1928 syn. nov. of *Norraca* ***longipennis*** MOORE, 1881
Furcula ***hapala*** WEST, 1932 syn. nov. of *Cerura* ***liturata*** WALKER, 1855
Quadricalcarifera fasciata ***tanakai*** NAKAMURA, 1976 syn. nov. of *Stauropus comatus* ***comatus*** LEECH, 1889
Quadricalcarifera ***ferrea*** KIRIAKOFF, 1967 syn. nov. of *Stauropodopsis grisescens* ***celebensis*** ROEPKE, 1944
Quadricalcarifera ***rhypara*** KIRIAKOFF, 1970 syn. nov. of *Stauropodopsis grisescens* ***celebensis*** ROEPKE, 1944
Cerasana anceps ***butzi*** SCHINTLMEISTER 2005 syn. nov. of *Natada* ***lutea*** PAGENSTECHER, 1890
Fentonia ***maguila*** SCHAUS, 1928 syn. nov. of *Fentonia* ***viridinota*** HAMPSON, 1896
Chadisra ***luzonensis*** KIRIAKOFF, 1970 syn. nov. of *Pheosia* ***calapana*** (SEMPER, 1898)
Phalera ***lacrima*** KOBAYASHI & KISHIDA, 2007 syn. nov. of *Phalera* ***phillipae*** HOLLOWAY & BENDER, 1995
Phalera ***melantata*** WEST, 1932 syn. nov. of *Fentonia* ***erconvalda*** SCHAUS, 1928
Pygaera ***hildora*** SCHAUS, 1928 syn. nov. of *Ichtyura* ***angularis*** (SNELLEN, 1895)

Status changes and new combinations

Allata WALKER, 1862 stat. nov. as a subgenus of *Spatalia* HÜBNER, 1819
Celeia WALKER, 1865 stat. nov. as a subgenus of *Spatalia* HÜBNER, 1819
Erconholda KIRIAKOFF, 1968 stat. nov. as a subgenus of *Phalera* HÜBNER, 1819
Gargetta curvaria luzonica SEMPER, 1896 stat. nov as a subspecies
Gargetta curvaria umbrina KIRIAKOFF, 1974 comb. et stat. nov. (*Stictogargetta umbrina*)
Lasioceros euteles (WEST, 1932) comb. nov. (*Gargetta*)
Saliocleta odrana celebensis (KIRIAKOFF, 1970) comb. et stat. nov. as a subspecies (*Norraca*)
Saliocleta semperi (Schintlmeister, 1993) comb. nov. (*Ceira*)
Kamalia malaysiana palawana (SCHINTLMEISTER, 2002) comb. nov. (*Paracerura*)
Kamalia rosea rosea (SCHINTLMEISTER, 1993) comb. nov. (*Paracerura*)
Kamalia rosea gentilis (SCHINTLMEISTER, 2002) comb. nov. (*Paracerura*)
Kamalia robusta robusta (SCHINTLMEISTER, 1993) comb. nov. (*Paracerura*)
Cerasana anceps lutea (PAGENSTECHER, 1890) stat. nov. as a subspecies
Pseudostauropus ocularis (SEMPER, 1898) comb. nov. (*Stauropus*)
Fusadonta albipuncta (GAEDE, 1930) comb. nov. (*Notodonta*)
Caschara acharista (WEST, 1932) comb. nov. (*Spatalia*)
Micromelalopha ***palawana*** SCHINTLMEISTER, 1993 stat. nov. as a species
Micromelalopha ***sumatrana*** SCHINTLMEISTER, 1993 stat. nov. as a species

Syntypistis ***kiriakoffi*** nom. nov. for *Quadricalcarifera alboviridis* KIRIAKOFF, 1970 (nec *Stauropus alboviridis* ROTHSCHILD, 1917, secondary homonym).

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Index

Acrosema 284
acharista 306; figs. 538, 540, 541
acuta (*Turnaca*) 102
acuta (*Phalera*) 286; figs. 503
acutoides 286; figs. 502, 503
adustum 246; figs. 431, 432
albibasis 160; figs. 275, 276, 277
albiplaga 62
albipuncta 238; figs. 414, 415, 416
albonotata 88; figs. 145
alboviridis 176
albovittata 84; figs. 140a, 140b
Allata 308
Allodonta 270
alternus 156; figs. 267
Ambadra 92
annulata 146
anceps 204; fig. 352
angularis 320; figs. 568, 569, 570
Anticyra 284
Antiphalera 228
apiculatus 254; figs. 446
Archigargetta 230
argentata 136
argentea 329; figs. 587, 589
argentifera 308; figs. 543, 544, 545, 553
aroa 82; figs. 138, 139
arikana 136
*aswang*168; figs. 287, 288
Atornoptera 92
atrifrons 324; fig. 575
augesco 318; figs. 564, 566
aurora 121
aurosigna 318; figs. 565, 566
austrocollaris 270; fig. 476

baibarana 136
bambusicola 180; figs. 311
barasamphia 118; figs. 198, 199
basipuncta 208; figs. 358, 359
basivirens 174; figs. 297, 298, 299
Benbowia 150
benderi (*Porsica*) 70; figs. 115, 116
benderi (*Spatalia*) 308; figs. 547, 549, 553
benderoides 70; figs.114, 115, 116
besida 67; figs. 105
Besida 62
bicolor 193; figs. 332
Bifurcifer 326
bioculata 186; fig. 322
bipartita 200; figs. 345
bipunctus 234; figs. 407, 408
birmicola 292
borneensis 44; figs. 64, 69, 70, 71
borneensis (*diluta*) 260; figs. 457, 459
bramah 322; figs. 572, 573
briachisia 146; figs. 248, 249, 250, 251
brunnea 156; figs. 267, 268, 269, 272
Brykia 88
butzi 204; fig. 352

caeca 176; figs. 303, 304
calapana 262; figs. 461, 462, 463
callista 126; fig. 210a
Calyptronotum 244
canescens 93; figs.153, 154, 155
Caschara 306
castanea 333; fig. 603
cathana 140; figs. 239, 241
cebuensis 266; figs. 470, 472
Ceira 104
celebesa 333; figs. 602, 604
Celeia 316
celebensis (*Dudusa*) 40; figs. 62, 64
celebensis (*Ambadra*) 92; figs. 153, 154
celebensis (*Syntypistis*) 180; figs. 311
celebica 108; figs. 179, 181
centrobrunnea 184; fig. 317
Cerasana 204
cernyi 216; figs. 373, 373a, 374
charistera 180; figs. 311, 312
Chloroceramis 218
Chlorostauropus 150
cihuai 292
Clostera 320
Closterellus 326
Closteroides 326
clothus 230; figs. 400
combusta 290; figs. 509, 510, 511
comatus 186; figs. 322, 323, 324, 326
commutatis 116; figs. 194, 195, 196
complicata 97; figs.158, 159
concentrica 184 *Chadisra* 262
confusum 244; figs. 426
Coscodaca 306
costalis 309; figs. 548, 549
curvaria 80; figs. 134, 135
damodara 136
deldeni 324; figs. 575
didyma 144; figs. 244, 245, 246
diehli 139; figs. 235, 237
dila 170; figs. 290, 291
diluta 260; figs. 457
dimorpha 226; figs. 394, 395

Dinara 284
Disparia 260
distinguenda 164; figs. 284, 285
divaricata 282; figs. 494, 495, 496
diversa 222; figs. 386, 388
divisa 78; figs. 131, 132
dorsalis 324; figs. 575, 576, 577
dudgeoni 162
Dudusa 39
duplius 312; figs. 551, 552, 553, 554
dympna 138; figs. 232, 234
dyspines 80; fig. 134, 135

Egonocia 168
elachista 327; figs. 581, 583
Epistauropus 254
ercona 118; fig. 198
Erconholda 284
erconvalda 302; figs. 530, 531, 532
Erythroclostera 326
Euhampsonia 60
Eupydna 126
euteles 82; figs.137, 139
expectata 42; figs. 63, 64, 65, 66, 67

fajardoi 99; figs. 160, 162
fallax 74
familiaris 280; figs. 490, 491, 492
fasciata 236; figs. 410, 412
Fentonia 234
ferinus 270; figs. 474, 475, 476
ferrea 180; fig. 311
ferrifusa 218; figs. 376, 379
flammea 330; figs. 590, 592
flaveolus 120; figs. 200, 202
Formofentonia 232
formosana 236
fortunatorum 102; figs.168, 169
fraseriana 180; figs. 311, 313, 314, 315
Fusadonta 238
fuscata 46; figs. 74, 75, 76, 76a
fuscicollis 230

Gangarides 54
Gargetta 76
Gaugamela 320
geminata 324
gentilis 132; figs.222, 223
Gonoclostera 318
Gragulina 228
grotei 292; figs. 513, 514, 515, 520
gualberta 246; figs. 430, 431, 432

Hammatophora 284
hampsoni 76; figs. 127, 128
hannah 252; figs. 442, 443, 444
hannemanni 152; figs. 261, 262, 265
hapala 136; fig. 229
hasegawai 186
haxairei 214
Hemifentonia 236
Hexafrenum 270
Higena 266
hildora 320; fig. 568
hinumbian 223; figs. 387, 388
Horishachia 284
horsfieldi 88; figs. 144, 145, 146
hunyada 126; figs. 210a, 210b, 210c, 213
Hunyada 126
Hyperaeschra 90
Hyperaeschrella 276

Ichtyura 320
insulicola 276; figs. 487, 488
intermediata 72; figs. 118, 119, 120
irinae 96; figs.157, 159

japonica 236
johannes 250; figs. 438, 439, 440
jonathan 248; figs. 434, 435, 436
juttamariae 184; figs. 319, 320

Kamalia 130
kiriakoffi 176; figs. 302
knoblichi 288; figs. 505, 506, 507
kochi 53; figs. 81, 83, 85
Kumataia 276

lacrima 284
Lasioceros 82
lechneri 207; figs. 355, 356
leucoretha 333; figs. 602, 604
lichenina 192; figs. 332, 334
licitus 316
lidum 222; figs. 387, 388
lignea 310; fig. 548
lineolata 290
Liparopsis 138
Litoscelis 82
liturata 136; figs. 229, 230, 231
Loda 264
l*onga* 298; figs. 520, 522, 523, 524
longipennis 121; figs. 203, 205, 206
lourensi 336; figs. 605, 607
lunae 264; figs. 465, 466, 467
lutea 204; figs. 352, 353, 354
luzonensis (*Somera*) 212; figs. 366, 367
luzonensis (*Chadisra*) 262; fig. 462
luzonensis (*Higena*) 266; figs. 470, 472

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

© Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

luzonica (*Gargetta*) 80; figs. 134, 135
luzonica (*Saliocleta*) 108; fig. 178

maguila 220 fig. 378, 381
Maguila 218
major 150; figs. 257, 258, 259, 263
malaysiana 130; figs. 216, 218
mananangai 186; figs. 324, 325, 326
mangholda 304; figs. 534, 535, 536
marconia 126; fig. 210a
matrucula 223; figs. 387, 388
Medanella 221
Melalopha 320
maternalis 274; figs. 482, 484
melantata 302; fig. 530
melinau 326; figs. 579, 580
Mesophalera 240
Micromelalopha 326
minahassae 132
mindanaensis (*Mesophalera*) 240; figs. 419, 420
mindanaensis (*Higena*) 267; figs. 471, 472
mindorensis 266; figs. 266, 472
minor 39; figs. 61, 65
Mismia 126

najade 152; figs. 262, 265
nana 218; fig. 376
nannion 120; figs. 200
negrosanus 56
nephodes 158; figs. 271, 273
Neocerura 136
Neoclostera 320
Neopheosia 236
Neostauropus 150
Netria 196
nieuwenhuisi 218; fig. 376
nigribasalis 190; figs. 328
nigribasis 276; fig. 486
nonagrioides 104, 116; figs. 170, 171
Notodontella 218

Oaura 121
obfuscata 292
obscura 236; figs. 411, 412
obscuratus 162; fig. 279
occidentalis 278; figs. 488c, 488d
occulta 76; figs. 126, 128
ochropis 90; fig. 148
ocularis 258; figs. 453, 454, 455
odrana 108; figs. 171, 177, 178, 180
ordgara 121; fig. 205, 206
Omestia 168
Omichlis 222
orbifer 232; figs. 404, 405
orienta 76; figs. 130, 132
orientalis 164; figs. 283, 285
Ortholomia 62
osica 66; figs. 104, 105, 107, 108
Osica 62
ovalis 184; fig. 317
Oxoia 148

pagenstecheri 206; figs. 355, 356
palawana (*Kamalia*) 130; figs.216, 218
palawana (*Netria*) 202; figs. 343, 348, 349, 350
palawana (*Mesophalera*) 242; figs. 422, 423
palawana (*Micromelalopha*) 333; figs. 600, 601, 604
palawanensis 56
palladina 178; figs. 306, 308, 309
pallida 90; figs. 148, 149, 150
pallidabasis 196; figs. 341, 342
pallidifascia 184; figs. 317, 318
pamela 176; figs. 301, 304
pamina 328; figs. 584, 586
pantaena 101; figs.166, 169
Pantanopsis 139
Panteleclita 148
Paracerura 130
Paracyphanta 336
Paräfentonia 236
Parasinga 192
Parathemerastis 62
penatus 192; figs. 332, 333, 334
Periergos 126
Phalera 284
Phalerominus 284
Pheosilla 238
philippina (*Phycidopsis*) 86; figs. 141, 142
philippina (*Netria*) 200; figs. 343, 345, 346
philippinica 240; figs. 418, 419, 420
phillipae 284; figs. 498, 499, 500
Phycidopsis 84
plagosus 256; figs. 450, 451
Plusiograma 318
Podocryptula 218
Polyaeschra 276
Porsica 70
pseudomaternalis 274; figs. 483, 484
Pseudostauropus 256
pulcher 56
punctifascia 74; figs. 122, 123, 124
punctifera 306; figs. 539, 541
Pydna 126

Quadricalcarifera 168
quadriga 164; figs. 285, 285a

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

racquelae 314; figs. 556, 557, 558
rafflesi 92; figs. 153, 154, 155
raya 286
remicauda 46; figs. 73, 74, 76, 76a
rhypara 180; fig. 311
robusta 134; figs. 225, 226, 227
Roepkeella 230
roepkei (*Euhampsonia*) 60; figs. 97, 98, 99
roepkei (*Clostera*) 322; figs. 572, 573
Rodneya 216
rosea (*Gangarides*) 54; figs. 87, 88, 89, 95
rosea (*Kamalia*) 132; figs. 219, 221, 222, 227
rufa 39; figs. 62, 65
russus 260; figs. 457, 458, 459

sabulosa 105; figs. 170, 171
Saliocleta 104
samar 225; figs. 390, 391
samarensis 267; figs. 471, 472
schausi 124; figs. 208, 209
schintlmeisteri 267; figs. 471, 472
Semidonta 276
semperi 112; figs. 185, 187, 188, 189
septentrionalis 164; figs. 283, 284, 285
serratifera 60; figs. 61
siadonta 72
sibena 92; figs. 152, 154
sikkima 316; figs. 560, 561, 562
similis (*Stauropus*) 152; figs. 261, 263, 264, 265
similis (*Omichlis*) 226; figs. 393, 394, 395
similis (*Higena*) 266; figs. 469, 472
singapura 244; figs. 426, 427, 428
Sinodonta 276
smaragdiplena 148; figs. 253, 254, 255
Snellentia 282
Somera 212
sordida 106; figs. 171, 173, 174, 175, 180
sororcula 278; figs. 488b, 488c, 488d
splendida 50; figs. 78, 79, 80, 82
squalida 68; figs. 105, 110, 111, 112
Spatalia 308
spinosa 128; figs. 210c, 211, 212, 214
Stauroplitis 146
Stauropodopsis 168
Stauropus 150
strigata 140; figs. 241
subterminalis 221; figs. 382, 384
sugii 56; figs. 91, 92, 93, 94, 95
sulawesianus 156; figs. 267
sumatrana (*Somera*) 212; figs. 365, 367
sumatrana (*Antiphalera*) 228; figs. 397, 398
sumatrana (*Disparia*) 260; figs. 458
sumatrana (*Micromelalopha*) 333; figs. 602, 604
sundana (*Phycidopsis*) 84; figs. 140a, 140b
sundana (*Teleclita*) 140; figs. 242
sundana (*Disparia*) 260; figs. 458
sundana (*Phalera*) 294; figs. 517, 518, 519
suriga 100; figs. 163, 164
Suriga 92
surigaona 300; figs. 526, 527, 528
synthesina 272; figs. 478, 479, 480
Syntypistis 168

Taiwa 168
tala 172; figs. 293, 294
tanakai 186; fig. 322
tapa 324; figs. 575
Tarsolepis 46
Teleclita 140
Terasion 150
tornalis 230; figs. 400
triade 153; figs. 262, 265
tropica 190; figs. 328, 329, 330

ubalvia 111; figs. 182, 184
ulrikae 210; figs. 361, 362, 363
umbrosa 172; figs. 294, 295
uncinata 121; fig. 203
uncinatus 332; figs. 596, 598
uniformis 331; figs. 593, 595

Vaneeckia 168
venosa 126; fig. 210b
vethi 44; figs. 64, 70
vinacaeus 254; figs. 446, 447, 448
vinvalva 62; fig. 103
virens 214; figs. 369, 370, 371
virescens 162; figs. 279, 280, 281
viridescens (*Parasinga*) 194; figs. 336, 337, 338
viridescens (*Netria*)196; figs. 340, 342
viridibasis 174; figs. 298, 299
viridifusca 212
viridigrisea 230; figs. 400, 401, 402
viridimaculata 186; fig. 322
viridimargo 178; figs. 307, 309
viridinota 218; figs. 378, 381

walshae 242; fig. 424
widagdoi 114; figs. 191, 192

Xenoclostera 320
xylinata 62; figs.101, 102, 103, 104, 105