

***Samia treadawayi* (Lepidoptera: Saturniidae), a new species from Palawan Island, Philippines**

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Abstract: During preparation of the revision of the genus *Samia* HÜBNER, 1819 (Lepidoptera: Saturniidae) differences between the population from the island of Palawan, Philippines, and the already known taxa from nearby Philippine islands and Borneo became obvious. Prior to the revision, I hereby describe this species as new: *Samia treadawayi* n. sp., male holotype in Senckenberg-Museum, Frankfurt am Main. Here I deal only with the description and some taxonomic notes on the other closely related taxa; further notes and comparisons will follow in the revision. The new species differs from its nearest relatives among the *Samia insularis*-group (compare REBEL 1925), *Samia luzonica* (WATSON, 1914) stat. nov. (= *Philosamia cynthia mindanaënsis* [sic] REBEL, 1923, syn. nov.), and *Samia tetrica* (REBEL, 1924), in ground colouration, wingshape, details in wing pattern and male genitalic structures. *S. treadawayi* is an endemic of Palawan, and therefore shows an interesting parallel to the other genus of Attacini, *Attacus* LINNAEUS, 1767, which also has an endemic species on Palawan.

***Samia treadawayi*, eine neue Art von der Insel Palawan, Philippinen (Lepidoptera: Saturniidae)**

Zusammenfassung: Im Rahmen der Vorbereitungen für die Revision der Gattung *Samia* HÜBNER, 1819 (Lepidoptera: Saturniidae) fiel unter anderem die Vertreterin von der philippinischen Insel Palawan durch ihre Unterschiede zu den schon bekannten *Samia*-Arten der Nachbarinseln auf. Sie soll hier vorab als neue Art beschrieben werden, umfassendere vergleichende Betrachtungen werden im Rahmen der Gesamtrevision publiziert werden: *Samia treadawayi* n. sp., Holotypus im Senckenberg-Museum Frankfurt am Main. Die Art unterscheidet sich von ihren nächsten Verwandten innerhalb der *insularis*-Gruppe (vgl. REBEL 1925), *Samia luzonica* (WATSON, 1914) stat. nov. (= *Philosamia cynthia mindanaënsis* [sic] REBEL, 1923, syn. nov.) und *Samia tetrica* (REBEL, 1924), durch die abweichende Grundfärbung, Flügelform, Zeichnungsdetails sowie die männlichen Genitalstrukturen. Die neue Art kommt endemisch nur auf Palawan vor und zeigt hierbei interessante Parallelen zur zweiten Attacini-Gattung *Attacus* LINNAEUS, 1767, die ebenfalls einen endemischen Vertreter für Palawan aufweist.

Introduction

The genus *Samia* which is currently being revised (PEIGLER & NAUMANN, in preparation) ranges widely in Asia, with some introduced populations in Europe and America (PEIGLER 1992). For the taxa from South East Asian islands and the Malay Peninsula REBEL (1925) introduced the term “*insularis*-group”, based only on wing pattern characters. Moreover, during the preliminary work for the revision, further typical features were found which separate this group from other groups in the genus. These are, for example, in male genitalia the always present second (or dorsal) process of the valva, in male forewings the more elongated falcate apex, and the ochreous to olive brown ground colour.

When examining museum and private collection specimens the very few known Palawan specimens at once were distinguished due to their different characters in comparison to the species from nearby areas like Borneo and the other Philippine islands which have been named before. When further material became available through the collection of Colin G. TREADAWAY and more dissections of male genitalia became possible, this first impression was confirmed. I decided to describe this species now as new prior to the revision to make the name available for the publication of the Philippine Saturniidae fauna published now by NÄSSIG & TREADAWAY (1998, in this issue).

Abbreviations

(Compare also NÄSSIG & TREADAWAY 1998, in this volume.)

BMNH	The Natural History Museum (formerly British Museum (Natural History)), London, UK
CAZS	Collection Andreas ZWICK, Schlitz, Germany
CCGT	Collection Colin G. TREADAWAY, Limbach-Wagenschwend, Germany, assigned to SMFL
CPSA	Collection Richard S. PEIGLER, San Antonio, Texas, U.S.A.
CRBP	Collection Ronald BRECHLIN, Pasewalk, Germany
CSNB	Collection Stefan NAUMANN, Berlin, Germany
CWAN	Collection Wolfgang A. NÄSSIG, now in SMFL
SMFL	Lepidoptera collection in the Senckenberg-Museum, Frankfurt am Main
SNB [no.]	Dissection number of S. NAUMANN, Berlin
ZMHU	Zoologisches Museum der Humboldt-Universität, Berlin, Germany
ZMUC	Zoological Museum of the University of Copenhagen, Denmark
fw	forewing
hw	hindwing
lfw	length of forewing (maximum, measurement from base to apex)

Samia treadawayi, new species

Attacus Ricini: PAGENSTECHER (1890: 14): misidentification.

Attacus ricini: SEMPER (1896: 384; partim): misidentification.

Holotype (b&w Figs. 1, 2; see also colour plate 3, Fig. 16 in NÄSSIG & TREADAWAY 1998, in this issue): ♂, C. Palawan, Mt. Salakot, 350 m, 20. iii. 1996. GP 183/97 SNB = 1150/97 CWAN. CCGT, assigned to SMFL, Frankfurt/Main (SMFL-no. 4165). Red holotype label.

Paratypes (36 ♂♂, 7 ♀♀), all with blue paratype labels (b&w Fig. 3; see also Col. pl. 13, figs. 85, 86 in NÄSSIG & TREADAWAY 1998, in this issue): 1 ♂, 3 ♀♀: S. Palawan, nr. Brooke's Point, Mt. Bayog, 1 ♂ 20. iv. 1995, 1 ♀ Linao, 16. i. 1981, 1 ♀ 1. 1984 (b&w Fig. 3), CCGT; 1 ♀ 1000 ft., viii. 1984, ex CCGT in CSNB; GP ♀ 184 & ♀ 185/97 SNB = GP 1151 & 1152/97 CWAN. 1 ♂: C. Palawan, Napsan, Mt. Salakot, 700 m, 19.–20. ii. 1996, leg. PETERSEN, ZMUC. 2 ♂♂: C. Palawan, Mt. Salakot, 1 ♂ 600 m, 18. iii. 1996, 1 ♂ 16. vi. 1997, leg. TREADAWAY, CCGT. 1 ♀: Central Palawan, Mt. Salokot [sic], 500 m, 19. vii. 1984, leg. & coll. Bernard TURLIN, André-sy, France. 2 ♀♀: C. Palawan, Salakot Falls, 1 ♀ 16. i. 1993, 1 ♀ viii. 1993, CCGT. 1 ♂: Salakot Falls, Road, 300 m, 19. iii. 1996, leg. et in CAZS. 1 ♂: C. Palawan, Napsan, Salakot Falls, 330 m, 19.–20. iii. 1996, leg. PETERSEN, ex ZMUC in CSNB. 7 ♂♂: C. Palawan, Napsan, Salakot Falls, 330 m, 23.–25. iii. 1996, leg. PETERSEN, ZMUC. 2 ♂♂: C. Palawan, Irawan, 50 m, 15. iii. 1996, leg. PETERSEN, ZMUC. 2 ♂♂: C. Palawan, Solomon, 17. iii. 1996, CCGT (1 ♂ in CPSA). 7 ♂♂: N. Palawan, Languan, 200 m, 1 ♂ 5. vii. 1988, 1 ♂ 6. vii. 1988, 2 ♂♂ 8. vii. 1988, 2 ♂♂ 9. vii. 1988, 1 ♂ 10. vii. 1988, leg. SETTELE & TREADAWAY, CCGT, GP 1104 & 1105/97 CWAN. 4 ♂♂: Philippinen, Nord-Palawan, San Vicente, 20 km NEE [= ENE] Roxas, 10°21' N.L./119°10' E.Br., Mittelgebirgsurwald, 400 m, 12. i.–17. i. 1988, leg. ČERNÝ & SCHINTLMEISTER, 2 ♂♂ ex CWAN in SMFL (GP 1079/97 CWAN), 1 ♂ ex CWAN in CPSA, 1 ♂ ex CWAN in CSNB (GP 151/97 SNB). 1 ♂: Palawan, Narra, Mt. Victoria, 150 m, 14. iii. 1996, leg. PETERSEN, ZMUC. 1 ♀: Palawan, [18]88, PLATEN; coll. STAUDINGER, in ZMHU. 1 ♂: Philippinen, Palawan, xi. 1981, leg. Bernard TURLIN, CSNB, GP no. 29/96 SNB. 1 ♂: Philippinen, Palawan, Irawan, 50 m, 1. x. 1997, leg. PETERSEN, in CSNB. 5 ♂♂: Mt. Matalingahan [sic], 800 m, xii. 1997, leg. BAL, CRBP.

Derivatio nominis: I name this new species in honour of Colin G. TREADAWAY, one of the foremost collectors of the Philippine Lepidoptera fauna, who obtained most specimens of the type series during his collecting trips to the Philippines or from local collectors.

Description

♂: Ground colour dark olive brown. Antennae quadripectinate, yellowish ochreous, 9.0 to 11.0 mm long (\bar{x} 10.0 mm, $n = 16$), rami in maximum 2.0 to 2.5 mm (\bar{x} 2.1 mm, $n = 18$). Head of ground colour, but frons some-

what lighter, ochreous, between head and thorax light greyish collar. Thorax and abdomen also of ground colour, separated by greyish collar, thorax laterally with greyish white pattern.

Fwl 56 to 62 mm (\emptyset 59.0 mm, $n = 18$). Wings with typical *Samia* pattern: Basal part of wing up to the postmedian band of ground colour, antemedian band narrow, whitish, posterior somewhat darker than ground colour, with its tip turning to the base of the ocellus. Fw ocellus 12 to 14 mm long in maximum diameter (\emptyset 12.9 mm, $n = 18$), anteriorly surrounded with darker ground colour, then from anterior to posterior very narrow white, clear, and broadly yellow, posteriorly suffused with dark brown, weakly curved. Ocellus usually touching the nearly straight, white, 0.6 to 1.0 mm broad postmedian band, which is bent posteriorly a bit at the ocellus and the inner margin of the wing. Postmedian area from anterior to posterior pinkish, then suffused with white and to the margin with dark brown scales, ending in an olive-brown submarginal area. Submarginal line dark brown, straight alongside a small indentation under the fw apex, marginal area again olive-brown. Fw apex violet, at its outer tip ending with a white zigzag-band, posteriorly of this pink, marginally yellow-ochreous. Subapical spot 3.5 to 5.0 mm in maximum diameter. Angle between outer margin and subapical margin on the average smaller than in the two other known taxa from nearby islands.

Hw of same colours as fw, with antemedian line bent along the upper margin of the wing and extending back into the postmedian band. Ocellus crescentic, 8.0 to 10.0 mm in diagonal maximum diameter (\emptyset 9.2 mm, $n = 18$). Postmedian band in apical half indented at the veins, apically ending with curve to apex. Outer margin with a second broader inner submarginal line which is broken at the veins. On the underside same pattern, but antemedian band missing. All colours with greyish suffusion.

♂ **genitalia** (Fig. 4): Of the same size as the closely related taxa handled with before. Saccus tapering, medially nearly rectangular. Dorsal process of valvae reduced to a small tip, ventral process quite long and bent. Dorsal apex of valvae and ventral edge up to the process with a row of hair bases. Aedeagus quite short and broad for the genus, ending with a heavily sclerotized, dentated apical spine on left side ventrolaterally. Vesica with three bulbs, a large dorsal one with very small more sclerotized field medially, a smaller left side ventrolateral one and a small right side lateral one which is directed distally.

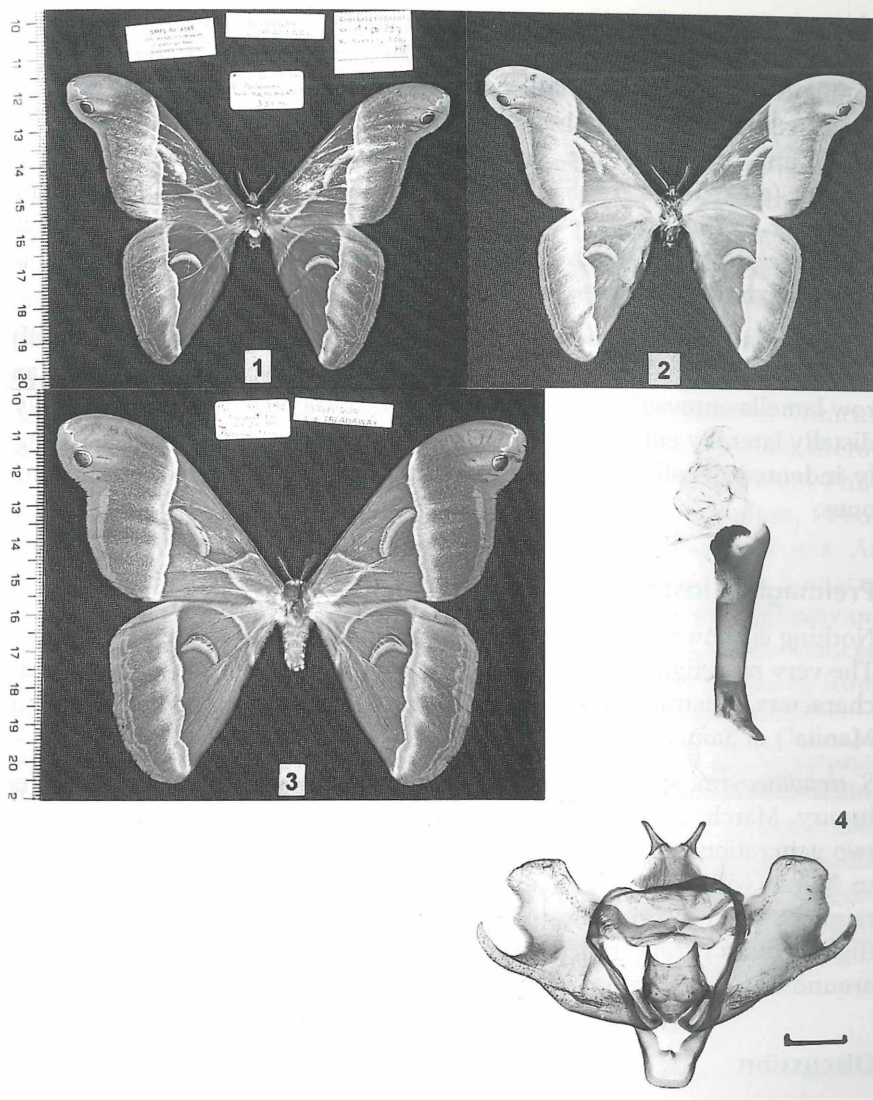


Fig. 1: HT ♂ of *Samia treadawayi* n. sp., upperside. Fig. 2: HT ♂ of *Samia treadawayi* n. sp., underside. Fig. 3: PT ♀ of *Samia treadawayi* n. sp. (S. Palawan, Brooke's Point, Mt. Bayog, 1. 1984), upperside. — Scale in cm with subdivisions in mm. — Fig. 4: ♂ genitalia of *Samia treadawayi* n. sp., PT, dissection no. W. A. NÄSSIG 1079/97, aedeagus separate. — Scale 1 mm, for both parts. — All photographs W. A. NÄSSIG. — Additional illustrations in colour see in NÄSSIG & TREADAWAY (1998, in this issue): col. pl. 3, Fig. 16 (HT ♂), and col. pl. 13, Figs. 85 (♂), 86 (♀).

♀: Ground colouration and pattern as in the males, but with different form and size of wings, as typical for the genus, and different measurements as follows: Antennae quadripectinate, brownish, 7.0 to 9.0 mm long (\emptyset 8.0 mm, $n = 2$; in most specimens missing), rami in maximum 1.2 to 1.5 mm (\emptyset 1.4 mm, $n = 5$). Fw 48 (a single, very small specimen) to 72 mm (\emptyset 62.2 mm, $n = 5$). Fw ocellus 9 to 15.5 mm long in maximum diameter (\emptyset 12.1 mm, $n = 5$), subapical spot 3.0 to 5.5 mm in maximum diameter. Hw ocellus with a larger hyaline portion, 6.0 to 12.0 mm in diagonal maximum diameter (\emptyset 9.3 mm, $n = 5$).

♀ **genitalia**: Lamella postvaginalis strongly sclerotized, curved roundly medially and distally, ventrally composed of two separated plates. Narrow lamella antevaginalis, with ductus bursae slightly sclerotized dorsally, distally laterally enlarged. Oviporus with quite large anal papilles, strongly indented distally. Posterior apophyses 1.5 times longer than anterior ones.

Preimaginal instars and biological observations

Nothing is known so far about the preimaginal instars of the new species. The very poor figure of a larva in SEMPER (1898), which shows no specific characters, illustrates (according to the text) the Luzon population ("near Manila") of *Samia luzonica*.

S. treadawayi n. sp. was collected thus far in the months of January, February, March, April, July, August and November which could indicate two generations a year, one during (relatively) dry season from January to March with single early or late flying specimens, and one after the raining season during July to August. PETERSEN (pers. comm.) reports a flight activity period from 21.00 to 24.00 h, and again a high-activity hour around 5.00 h just before sunrise.

Discussion

S. treadawayi n. sp. can be separated from the two other nearest relatives and all other *Samia* species by the characters described above. The two other taxa from nearby islands with which I deal here, I assign full specific rank due to their different external and genitalic morphology: *Samia luzonica* (WATSON, 1914), stat. nov. (= *Philosamia cynthia mindanaënsis* [sic] REBEL, 1923, syn. nov.) from the other Philippine islands, and *Samia tetrica* (REBEL, 1924) from Borneo and the Malay Peninsula. (This species

was cited as *Samia borneensis* sp. rev. in BARLOW [1983] respectively with stat. n. in HOLLOWAY [1983] which is a junior synonym of *S. tetrica*. In HOLLOWAY 1987 it was cited as *S. tetrica* but no comment on the new status was given.)

S. tetrica is a small, dark grey-brown species with quite falcate fw apex, even more so than in *S. treadawayi* n. sp., and generally is less colourful. Pattern, wing shape, and measurements of *S. luzonica* are described by NÄSSIG & TREADAWAY (1998, in this issue), further comparisons, comments and a classification within the genus will follow in the revision of the genus *Samia*.

Samia from Palawan was cited before only twice in literature: PAGENSTECHER (1890) wrote of a single specimen which he determined as "*Attacus Ricini*" according to inaccurate black & white figures in some older literature. SEMPER (1896) again mentioned "*Attacus ricini*" from different Philippine islands ("more than 100 specimens from Luzon, Mindoro, Cebu, and Palawan"), following the wrong determination of PAGENSTECHER. At least he compared the Philippine material with specimens from Sumatra and Borneo and found similarities. However, *Samia ricini* (DONOVAN, 1798) (for the taxonomic status of this domesticated form see PEIGLER 1992) does not occur in the wild in the Philippines, as far as known from museum specimens and recently collected material.

When examining the first Palawan *Samia* specimens it was not so surprising to find that an undescribed species existed on this island: The second genus of Attacini on Palawan, the genus *Attacus*, also has an endemic species, *Attacus lemairei* PEIGLER, 1985. Obviously, Palawan has been isolated for such a long time that its Saturniidae had enough time to evolve endemic species, and it is so distant from the other islands that minimal gene flow with the other species from nearby islands was possible since.

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