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***Barsine dingjiai* sp. n. from Lanyu Island (Taiwan) (Insecta, Lepidoptera: Erebiidae, Arctiinae, Lithosiini)**

Contribution to the moths of Taiwan 12¹

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Abstract

The species *Barsine dingjiai* sp. n. is described and illustrated from Lanyu Island (Taiwan). The genus *Barsine* HÜBNER, 1819 is recorded from Lanyu (Orchid) Island for the first time. The new species differs significantly from other species of this genus in the wing pattern as well as in the genitalic structures.

Introduction

Our investigation of the Insect fauna of Taiwan started with the DAAD project (No.: ID D/0039914 PPP-Taiwan) together with the National Chung Hsing University Taichung (CHU) in the year 2001 and since then many more excursions have been done. Lanyu Island could be visited during the joint projects with the Da-Yeh University with the staff and students.

Within the last decade, many papers were published on Taiwan (e. g. BUCHSBAUM & CHEN 2013, 2018, BUCHSBAUM & MILLER 2002, BUCHSBAUM et al. 2006, 2018a, 2018b).

Lanyu Island, also called Orchid Island, is a small island about 62 km southeast of Taiwan and about 110 km north of the Philippines. This small island has a size of about 45 km². Two thirds of Lanyu Island are natural forest. The highest mountain of this small island is 552 m asl. Many plants and animal species are endemic on Lanyu Island (CHAO et al. 2009, SHEN & TSAI 2002, YEH et al. 2008, SPÄTH et al. 2018, CHEN et al. 2017, HONDA et al. 2008, YANG & LIN 2013, WATANABE et al. 2015, SILER et al. 2014).

Lanyu Island and Green Island north of Lanyu Island are created by vulcanic activities and uplifted from a submarine arc about 2 – 3 Ma (Green Island 2.0 to 0.54 Ma and Lanyu Isl. 3.5 to 1.4 Ma) (CHEN et al. 2017, YANG et al. 1996). The special situation for Lanyu Island is its position in the biogeographical area near the Wallace line (HE et al. 2017, HOLT et al. 2012, OLSEN et al. 2001, TURNER et al. 2001). This area is known as one of the biodiversity hotspots in the world (e. g. MITTERMEIER et al. 2011, MYERS et al. 2000). It is considered that the Wallace line should be between Taiwan and Orchid Island because Lanyu (Orchid) Island is closer related to the north Philippines and belongs to the tropical rather than to the subtropical Taiwanese fauna (HE et al. 2017, OLSEN et al. 2001, HOLT et al. 2012).

***Barsine* WALKER, 1954**

This genus contains about 100 species which all occur in East Palaearctic and Oriental region (e. g. BUCSEK 2012, 2014, CERNY & PINRATANA 2009, FANG 2000, HOLLOWAY, 2001, VOLYNKIN 2017, 2018). In the last decades, numerous books and papers were published describing new *Barsine* species from e. g. Thailand, Borneo, Peninsula Malaysia, China and the Philippines (BUCSEK 2012, 2014, CERNY & PINRATANA 2009, HOLLOWAY 2001, FANG 2000, VOLYNKIN & CERNY, 2017, VOLYNKIN 2018, JOSHI et al. 2018, BAYARSAI-KHAN et al. 2018, DUBATOLOV et al. 2012, DUBATOLOV & BUSCEK 2013). The genus is heterogenous and probably related to *Mitochondria* HÜBNER, 1819.

The genus requires an integrative revision including molecular data (HOLLOWAY 2001; CERNY & PINRATANA 2009). All *Barsine* species are listed under the genus *Mitochondria* in the recent checklist of Taiwan (HEPPNER & INOUE 1992).

¹ Contribution to the moths of Taiwan 11: BUCHSBAUM et al. (2018a).



Fig. 1a: *Barsine dingjai* sp. n., ♂, holotype.



Fig 1b: *Barsine dingjai* sp. n., ♂, holotype underside.



Fig. 2a: *Barsine dingjai* sp. n., ♀, paratype.



Fig 2b: *Barsine dingjai* sp. n., ♀, paratype, underside.



Fig. 3: *Barsine dingjai* sp. n., ♂, resting on wood.



Fig. 4: *Barsine dingjai* sp. n., ♀, resting on wood.



Fig. 5: Male genitalia.

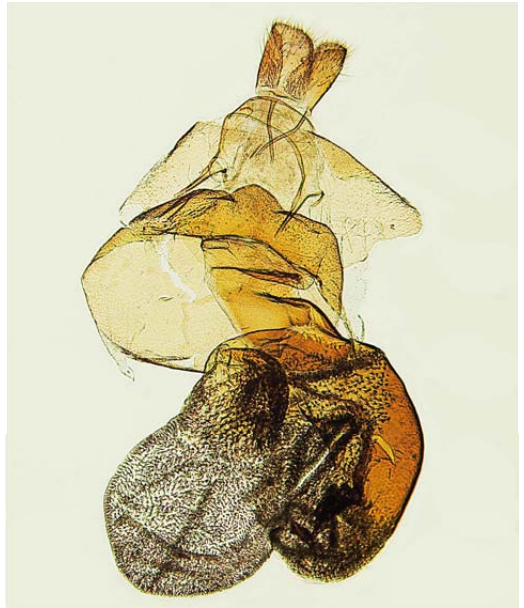


Fig. 6: Female genitalia.



Fig. 7: Habitat, type locality.



Fig. 8: Habiata at another collecting site.

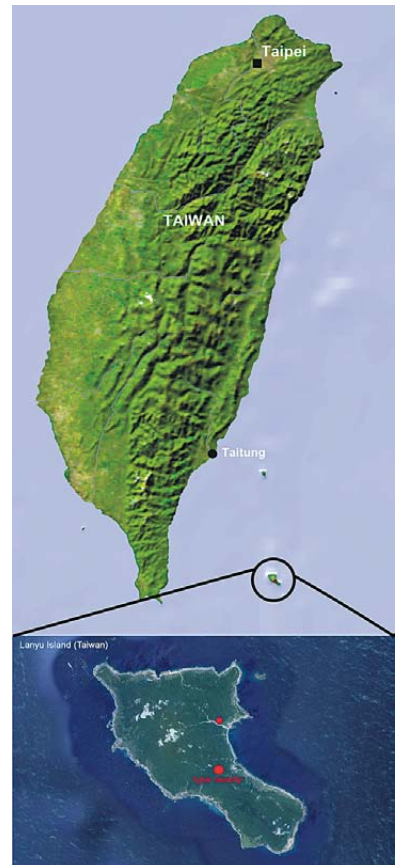


Fig. 9: Map with type locality.

Material, Methods and Locality

All specimens were collected by a 250 W mercury lamp. The lamp was placed at an exposed position on a small hill beside the weather station of Lanyu Island with an overview of the forest around (fig. 7 & 8).

The moths were collected with poison glasses and after their death pinned and stored for transport. Later, the moths were spread on normal spreading boards.

Genitalia preparation was done with KOH 10% and the genitalia mounted in Euparal. The genitalia slides were scanned with Nikon supercool Scan 3000 and prepared for publication with Adobe Photoshop 7.0.1.

The type locality is a hill in the south central mountains of Lanyu Island beside the weather station with an exposed view on the surrounding forest (Fig. 7 & 8). The weather was almost always warm, about 25°C, with few clouds and little wind during all the collections dates.

Barsine dingjiai sp. n. (Figs 1 – 6)

Holotype ♂, 23. May 2018, South Taiwan, Lanyu Island, Weather Station, 22°02'15N/121°33'29E, leg. Mei-Yu Chen & Ulf Buchsbaum. Holotype in Collection Zoologische Staatssammlung München (ZSM), later to be deposited in the National Museum of Nature Science (NMNS) Taichung

Paratypes 16 ♂, 20 ♀ 06 May 2017; 35 ♂, 13 ♀, 07. May 2017; 48 ♂, 33 ♀, 23. May 2018; 50 ♂, 51 ♀ 24. May 2018; 52 ♂, 22 ♀ 25. May 2018, South Taiwan, Lanyu Island, Weather Station, 22°02'15N/ 121°33'29E, leg. Mei-Yu Chen & Ulf Buchsbaum; 8 ♂, 24. May 2018; 1 ♂, 25 May 2018; 32 ♂ 26 May 2018 Taiwan, Taitung Co., Lanyu Island, Iranmylek (Dongqing) village, Hotel, 45 m NN, 22°3'31N/ 121°33'35E, leg. Mei-Yu Chen & U. Buchsbaum. Paratypes in Collection ZSM, NMNS, and in Collection Ding-Jia Chen (Taichung, Taiwan).

Description and differential diagnoses:

♂ wingspan 18 – 21 mm, Ø: 20.5 mm, right forewing length: 8 – 10 mm, Ø: 9.6 mm.

♀ wingspan 19 – 22 mm, Ø: 21.2 mm, right forewing length: 9 – 11 mm, Ø: 10.4 mm.

Head, body, legs and antennae orange. Abdomen paler orange in female. Male abdomen with black hairbrushes. Forewings orange with large, strong black mark from base to median area, from median area to costa and to dorsum and from dorsum to subterminal region. Mid termen with slightly paler orange fringes. Palps orange. Legs orange with black tarsal claws.

Next similar species *B. aberrans* (BUTLER, 1877) with different marks and patches on the forewings. Black lines are thin and in zigzag lines in the post-median area and some small and short lines in sub-terminal area. In *B. callida* (FANG, 1991) marks and patches are brown and don't touch the base. Cilia dark brown.

Male genitalia: Uncus thin, long and pointed at the end. Anal tube less sclerotized. Valvae slender and pointed at the end. Saccus slender and rounded. Saccus pointed. In *B. aberrans* rounded. Valvae and saccus much shorter than in *B. aberrans*. Aedeagus with 27 cornuti and a cluster of about ten smaller cornuti at cocum. *B. aberrans* with less than ten (and smaller) cornuti.

Female genitalia: Papillae anales rounded. Ductus bursae wide, poorly sclerotized. Corpus bursae rounded with sclerotized marks. Ductus seminalis and bulla seminalis also rounded and stronger sclerotized. Differing from all other similar species like *B. aberrans*, *B. callida* and *B. punicea* in the structure of corpus bursae, ductus seminalis and bulla seminalis.

Distribution: *B. dingjiai* sp. n. is only known from Lanyu (Orchid) Island from two places, so we assume that the species is endemic on Lanyu Island.

Phenology: The authors also collected in October 2017 on Lanyu, but no specimen of the new species came to the light. So the authors consider that the main flight period is the second half of May.

Etymology:

The new species is named after Ding-Jia Chen in recognition of his always kind help during the joined excursions. He collected the first specimens of the new species during the excursion to Lanyu Island.

Remarks:

The next similar species *B. aberrans* is very widespread in the East Palaearctic region from Far East Russia, Korea, China and Japan, but not recorded from Taiwan (DUBATOLOV et al. 2012, HEPPNER & INOUE 1992) and *B. callida* is widespread and recorded from Northeast India, southwest China (Sichuan) (FANG 1991, 2000), North Thailand and north Vietnam, but also not known from Taiwan (CERNY & PINRATANA 2009, HEPPNER & INOUE 1992, JOSHI et al. 2018).

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Zusammenfassung

Die Art *Barsine dingjiai* sp. n. wird von der Insel Lanyu (Taiwan) beschrieben und abgebildet. Die Gattung *Barsine* wird damit zum ersten Mal von der Insel Lanyu (Orchid-Insel) nachgewiesen. Die neue Art unterscheidet sich deutlich von den anderen Arten dieser Gattung sowohl in der Flügelzeichnung als auch in den Genitalstrukturen.

References

- BAYARSAIKHAN, U., D.-J. LEE & Y.-S. BAE (2018): A revision of *Barsine* WALKER, 1854 (Lepidoptera: Erebidae, Arctiinae) in Cambodia, with a new record. – *Journal of Asia-Pacific Biodiversity* **11**: 377–385.
- BUCHSBAUM, U. & M.-Y. CHEN (2013): A new *Terthreutis* Meyrick, 1918 species from Taiwan (Lepidoptera, Tortricidae). – *Entomofauna* **34** (26): 349 – 356.
- BUCHSBAUM, U. & M.-Y. CHEN (2018): A new Alucitidae species from Taiwan (Insecta, Lepidoptera). – *Spixiana* (Manuscript submitted for publication).
- BUCHSBAUM, U., M.-Y. CHEN & D.-J. CHEN (2019): *Pterotopteryx taoa* sp. n. from Lanyu Island (Taiwan) (Insecta, Lepidoptera, Alucitidae). – *Spixiana* (Manuscript submitted for publication).
- BUCHSBAUM, U., M.-Y. CHEN & V. V. ZOLOTUHN (2006): *Thyris alex* sp. n. – new Thyrididae species from Taiwan and new record of this genus and the subfamily for Taiwan with notes to biology, distribution and DNA analyses and notes on the system of the genus (Insecta, Lepidoptera). – *Journal of the Zoological Society Wallacea* **2**: 54 – 62.
- BUCHSBAUM, U., L.-P. HSU, D.-J. CHEN & J. GREHAN (2018a): A new *Endoclita* (C.- R. FELDER, 1874) from the high mountains of Taiwan with notes about its evolutionary origins. – *Zootaxa* (in press).
- BUCHSBAUM, U., A. SCHINTLMEISTER & M.-Y. CHEN (2018b): *Mangea dabanga* nov. sp., a new notodontid from Taiwan (Lepidoptera: Notodontidae). – *Entomofauna*, Ansfelden **39/2** (16): 808 – 816.
- BUCHSBAUM, U. & M. A. MILLER (2002): *Leucoblepsis taiwanensis* sp. n., a new species of Drepanidae from Taiwan (Insecta: Lepidoptera). – *Formosan Entomologist* **22**: 101 – 114.
- BUCSEK, K. (2012): Erebidae, Arctiinae (Lithosiini, Arctiini) of Malay Peninsula – Malaysia. – Institut of Zoology SAS, Bratislava, 170 pp, 23 b&w plates, 28 colour plates.
- BUCSEK, K. (2014): Erebidae, Arctiinae (Lithosiini, Arctiini) of Malay Peninsula Supplementum – Malaysia. – Institut of Zoology SAS, Bratislava, 42 p., 5 b&w plates, 7 colour plates.
- CERNY, K. & A. PINRATANA (2009): Moths of Thailand, Vol. **6**: Arctiidae. – Brothers of Saint Gabriel in Thailand, Bangkok. 283 p., 4 b&w pls., 52 colour pls.
- CHAO, W.-C., G.-Z. M. SONG, K.-J. CHAO, C.-C. LIAO, S.-W. FAN, S.-H. WU, T.-H. HSIEH, I.-F. SUN, Y.-L. KUO & C.-F. HSIEH (2009): Lowland rainforest in southern Taiwan and Lanyu, at the northern boarder of Paleotropics and the influence of monsoon wind. – *Plant Ecology*. DOI 10.1007/s11258-009-9694-0
- CHEN, M.-Y., W. SPEIDEL, U. BUCHSBAUM & G. BEHOUNEK (2013): A new *Amphipyra* (OCHSENHEIMER, 1816) from Taiwan, with description of larva, pupa and biology (Lepidoptera, Noctuidae, Amphipyriinae) – *Nachrichten des Entomologischen Vereins Apollo*, N. F., Frankfurt (Main) **33** (4): 167 – 176.
- CHEN, Y.-T., H.-Y. TSENG, M.-L. JENG, Y.-C. SU, W.-S. HUANG & C.-P. LIN (2017): Integrated species delimitation and conservation implications of an endangered weevil *Pachyrhynchus sonani* (Coleoptera: Curculionidae) in Green and Orchid Island of Taiwan. – *Systematic Entomology* **43**: 796 – 813.

- DUBATOLOV, V. V. & K. BUCSEK (2013): New species of lichen-moths from South-East Asia (Lepidoptera, Noctuoidea, Lithosiini). – *Tinea* **22** (4): 279 – 291.
- DUBATOLOV, V. V., Y. KISHIDA & W. MIN (2012): New records of lichen-moths from Nanling Mts., Guangdong, South China, with description of new genera and species (Lepidoptera, Arctiidae, Lithosiinae). – *Tinea* **22** (1): 25 – 52.
- FANG, C. (2000): *Fauna Sinica (Insecta)* **19**. Lepidoptera. Arctiidae. – Science Press Beijing. 589 p, 20 b&w and colour pls.
- HE, J., H. KREFT, E. GAO, Z. WANG & H. JIANG (2017): Pattern and drivers of zoogeographical regions of terrestrial vertebrates in China. – *Journal of Biogeography* **44**: 1172 – 1184.
- HEPPNER J. B. & H. INOUE (1992): *Lepidoptera of Taiwan*. Volume **1**, Part 2: Checklist. – Association for Tropical Lepidoptera, Gainesville. 276 pp.
- HOLLOWAY, J. D. (2001): The moths of Borneo, part 7. Family Arctiidae, subfamily Lithosiinae. – *Malayan Nature Journal* (**55**): 279 – 486.
- HOLT, B. G., J.-P. LESSARD, M. K. BORREGAARD, S. A. FRITZ, M. B. ARAÚJO, D. DIMITROV, P.-H. FABRE, C. H. GREHAM, G. R. GRAVES, K. A. JONSSON, D. NOGUÉS-BRAVO, Z. WANG, R. J. WHITTAKER, J. FJELDSA, C. RAHBK (2013): An Update of Wallace's Zoogeographic Regions of the World. – *Science*, **339** (6115): 74-8. 1/10.1126/science.1228282.
- HONDA, M., T. OKAMOTO, T. HIKIDA & H. OTA (2008): Molecular Phylogeography of the endemic Five-lined Skink (*Plestiodon marginatus*) (Reptilia: Scincidae) of the Ryukyu Archipelago, Japan, with special references to the relationship of a northern Tokara population. – *Pacific Science* **62** (3): 351 – 362.
- JOSHI R., N.. SINGH & A. V. VOLYNKIN (2018): New data on the genus *Barsine* WALKER, 1854 from India, with description of a new species (Lepidoptera: Erebiidae: Arctiinae: Lithosiini). – *Zootaxa* **4425** (3): 456 – 470.
- MITTERMEIER, R. A. N. MYERS, J. B. THOMSEN, G. A. B. DA FONSECA & S. OLIVIERI (1998): Biodiversity Hotspots and Major Tropical Wilderness Areas: Approaches to Setting Conservation Priorities. – *Conservation Biology* **12** (3): 516 – 520.
- MYERS, N., R. A. MITTERMEIER, C. G. MITTERMEIER, G. A. B. DA FONSECA & J. KENT (2000): Biodiversity hotspots for conservation priorities. – *Nature* **403**: 853 – 858.
- OLSON, D. M. & E. DINERSTEIN (2002): The Global 200: Priority Ecoregions for Global Conservation. – *Annals of the Missouri Botanical Garden* **89**: 199 – 224.
- SHEN H.-P. & C.-F. TSAI (2002): Earthworm Fauna of the Lanyu Island (Botel Tabago). – *Endemic Species Research* **4** (2): 1 – 8.
- SILER, C. D., J. R. OAKS, K. COBB, H. OTA & R. M. BROWN (2014): Critically endangered island endemic or peripheral population of widespread species? Conservation genetics of Kikichi's gecko and the global challenge of protecting peripheral oceanic island endemic vertebrates. – *Diversity and Distribution*. **20** (7): 756–772.
- SPÄTH, T., M.-L. BAI, L. L. SEVERINGHAUS, & B. A. WALTHER (2018): Distribution, habitat, and conservation status of the near-threatened Japanese Paradise-Flycatcher (*Terpsiphone atrocaudata periphthal-mica*) on Lanyu, Taiwan. – *Avian Conservation & Ecology* **13** (1): 7.
- TURNER, H., P. HOVENKAMP & P. C. VAN WELZEN (2001): Biogeography of Southwest Asia and the West Pacific. – *Journal of Biogeography* **28**: 217 – 230.
- VOLYNKIN A. V. (2018): Four new species of the genus *Barsine* WALKER, 1854 (Lepidoptera: Erebiidae, Arctiinae). – *Far Eastern Entomologist* **359**: 1 – 18.
- VOLYNKIN A. V. & K. CERNY (2017): On taxonomy of the genus *Barsine* WALKER, 1854 (Lepidoptera: Erebiidae: Arctiinae). – *Far Eastern Entomologist* **346**: 17 – 32.

- WATANABE, K. T.-Y. A. YANG, C. NISHIHARA, T.-L. HUANG, K. NAKUMARA, C.-I PENG & T. SUGAWARA (2015). – Distyly and floral morphology of *Psychotria cephalophora* (Rubiaceae) on the oceanic Lanyu (Orchid) Island, Taiwan. – *Botanical Studies* **56**: 10.
- YANG, J.-D. & S.-H. LIN (2013): *Pycnolejeunea minutilobula*, a newly recorded liverwort from Orchid Island of Taiwan. – *Lindbergia* **36**: 15 – 18.
- YANG, T.-F., T. LEE, C.-H. CHEN, S.-N. CHENG, U. KNITTEL, R. S. PUNONGBAYAN & A. R. RASDAS (1996): A double island arc between Taiwan and Luzon: consequence of right subduction. – *Tectonophysics* **258**: 85 – 101.
- YEH, C.-L., J.-H. CHEN, C.-R. YEH, S.-Y. LEE, C.-W. HONG, T.-H. CHIU & Y.-Y. SU (2008): *Musa yamiensis* C. L. YEH & J. H. CHEN (Musaceae), a new species from Lanyu, Taiwan. – *Gardens' Bulletin Singapore* **60** (1): 165 – 172.

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