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New genera of Arctiinae (Lepidoptera, Arctiidae) **from South and East Asia**

Vladimir V. DUBATOLOV [1] and Yasunori KISHIDA [2]

[1] Siberian Zoological Museum, Institute of Animal Systematics and Ecology, SB RAS, Frunze street 11, Novosibirsk 91, 630091 Russia
[2] Kitazawa 5-20-1-103, Setagaya, Tokyo, 155-0031 Japan

Abstract Based on the male genitalia and somatic morphology, three new genera are established: *Tamilarctia* gen. nov. for *Phragmatobia fumipennis* Hampson, 1891 from South India, *Defreinarctia* gen. nov. for *Alphaea armini* De Freina, 1999 (type species) from North Burma and *Spilarctia dianxi* Fang et Cao, 1984 from Chinese Yunnan and North Vietnam, *Orhantarctia* gen. nov. for *Alphaea habibiei* Orhant, 1999 from Lombok Is. and *Diacrisia cymbalophoroides* Rothschild, 1910 from Flores Is. (Indonesia).

Although the genera of Palearctic Arctiinae have been worked out carefully during the last twenty years, it is not a case of the Oriental fauna. Having examined species from the Chinese and North Indian fauna, seven new genera were established (Dubatolov, 2003, 2004a, b). During the study of the male genitalia of Arctiinae species from South and East Asia , three more new genera have been found. Their descriptions are given below.

Tamilarctia Dubatolov et Kishida, **gen. nov.**

Type species: *Phragmatobia fumipennis* Hampson, 1891 (Figs 1, 2).

Antennae short, not longer than 1/3 of forewing length, bipectinae in males, biserrate in females. Pectination in males strongly reduced just before apex. Eyes large, oval and naked. Palpi of males very short, not longer than the very dense hairs on frons. Female palpi slightly longer and straight, covered with dense hairs. Proboscis poorly visible, short. Foretibiae simple, not shortened and broadened at apex, but with a narrow apical spine. Epiphysys almost reaching the top of tibia. Middle and hind tibiae only with a terminal pair of thick spurs. Claws without visible incision. Pilvilli very short. Vein R_2 on forewings stalked with R_{3+5} (venation type C by Sotavalta, 1964). Veins Rs and M_1 on hindwing clearly stalking on the 1/6 of their length. Wings one-coloured, brown in males, yellow in females. Tympanum with very large flat bubble (Fig. 8), weaker in females (Fig. 9).

Male genitalia (Fig. 10). Uncus broad triangular, with longitudinal chamfer of dorsal surface. "Collar" of proximal part of tegumen small. Valvae rectangular, with broad ragged rounding at apex. Juxta small, transversal. Aedeagus straight, with several groups of strong spine-like cornuti on vesica.

Composition. *Tamilarctia fumipennis* (Hampson, 1891) (**comb. nov.**).

Distribution. South India.

Material. *Tamilarctia fumipennis* (Hampson, 1891): 2 ♂ 2 ♀, India, Nilgiri Hills, Gudalur, 1200 m, X-XI. 1977, T. Hasegawa leg.

In the original description, *Tamilarctia fumipennis* (Hampson, 1891) was provisionally assigned to the genus *Phragmatobia* Stephens, 1828. Later, it was transferred either to *Creatonotos* Hübner, [1819] (Hampson, 1894), or to *Maenas* Hübner, [1819] (Hampson, 1901; Rothschild, 1914; Strand, 1919), but all these combinations seem to be incorrect. All the *Phragmatobia* species possess two pairs of spurs on hindtibiae and no apical spine on

foretibiae. *Creatonotos* species have a pair of spurs on hindtibiae, but also lacking an apical spine on foretibiae. Moreover, their valvae are quite long and narrow, with small processes on their inner side, and the juxta with a very long apical projection. *Maenas* turned out to be a junior homonym and is now named *Paralacydes* Aurivivillius, 1899 (Watson et al., 1980; Goodger & Watson, 1995); it currently includes nine Afrotropical species characterized by the narrow finger-like valvae and by the absence of the cornuti on vesica and the absence of the longitudinal chamfer on dorsal surface of the not-bifurcated uncus (Fig. 11). The presence of such longitudinal chamfer is common for all genera of the *Ocnogyna*-group. Nevertheless, in all these genera the tympanum is not so strongly developed as in the new genus. In other Spilosomini genera, the tympanum is more or less hypertrophied only in *Creataloum* Dubatolov, 2004, but to a significantly lesser degree.

Defreinarctia Dubatolov et Kishida, **gen. nov.**

Type species: *Alphaea armini* de Freina, 1999 (Fig. 3).

Antennae short, not longer than 1/3 of forewing length. In male, they are serrate on the fore surface and pectinate on the hind surface. Eyes large, hemispherical and naked. Palpi straight, twice as long as dense hairs on frons. Proboscis not reduced, as long as the head width. Fore tibiae simple, narrow, without apical spine. Epiphysys almost reaching the top of tibia. Middle tibiae with a pair of narrow spurs, hind tibiae with two pairs of such spurs. Claws with slight incision at the middle. Pulvilli as long as claws. Vein R_2 on forewings stalking with R_{3+5} (according to Sotavalta, 1964, the venation type C). Veins Rs and M_1 on hindwing arising from a single point. Wings white, fore ones with rows of rounded spots, those of medial and postdiscal rows fused and forming bands; hindwings with several small marginal, medium-sized postdiscal and a single discal spots. Body yellow, patagia, tegulae and thorax with distinct black spots. Tympanum with small flattened inflation.

Male genitalia (Figs 12–15). Uncus broad triangular, strongly narrowing towards its base. "Collar" of the proximal part of tegumen broad. Valvae rectangular, with small or strong processes on the costa distad of the membranous part. Distal edge of valva with two or more small broad processes. Juxta very long, extended to apex. Aedeagus straight, with small terminal spines, vesica with several fields of small spine-like cornuti.

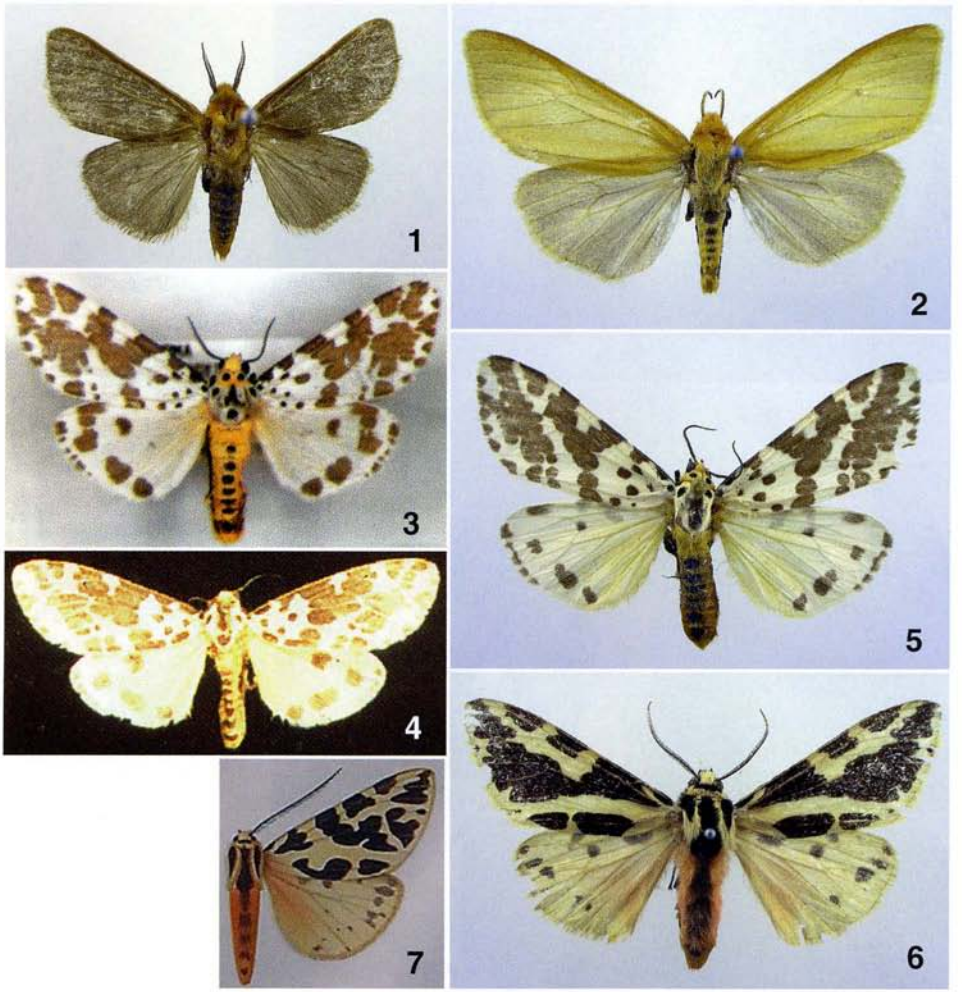
The genus is named in the honour of Mr Josef J. de Freina (Munich, Germany).

Composition. *Defreinarctia armini* (de Freina, 1999) (**comb. nov.**) and *D. dianxi* (Fang et Cao, 1984) (**comb. nov.**).

Distribution. North Burma (Myanmar), south part of Chinese Yunnan, North Vietnam.

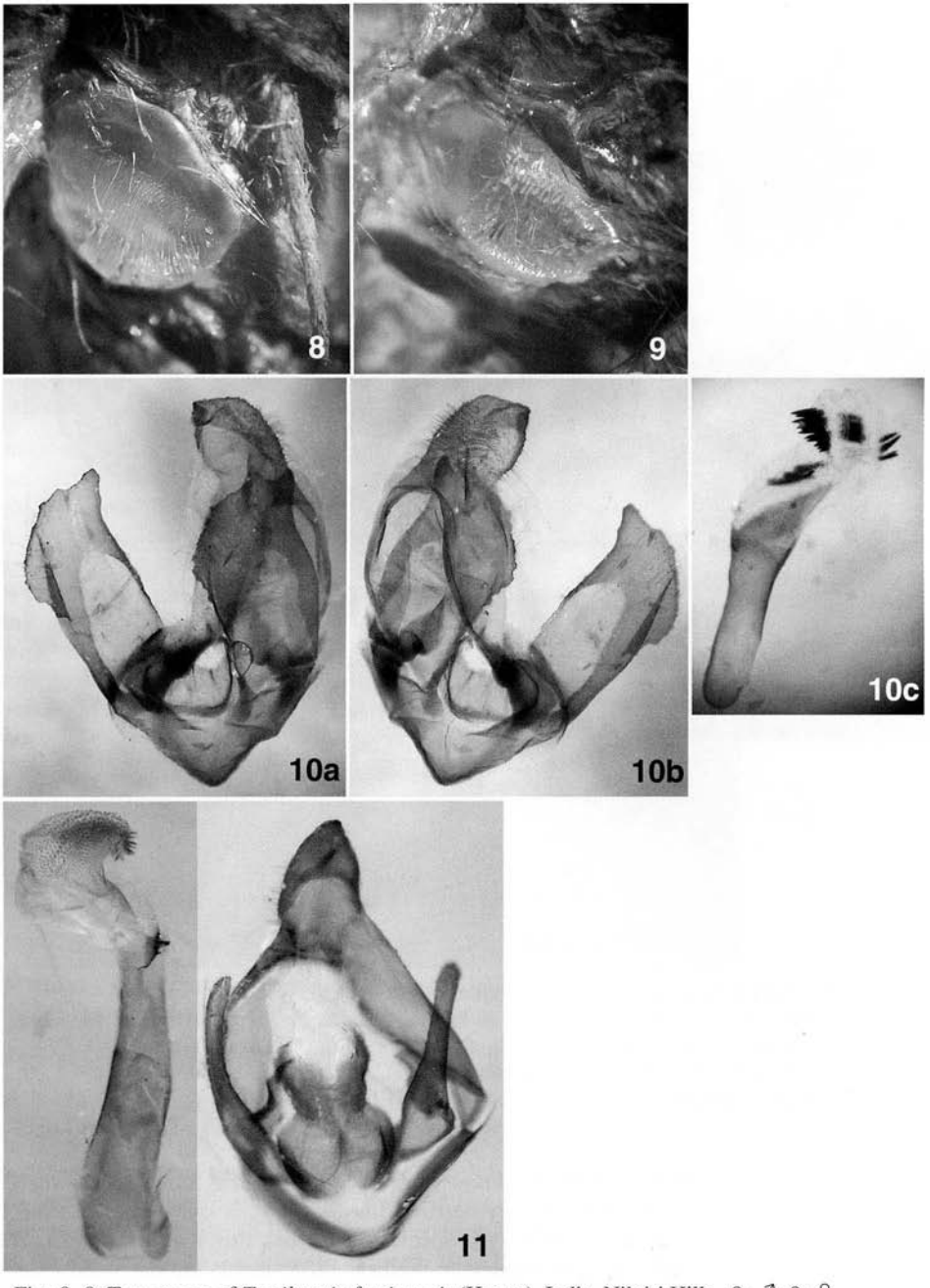
Material. *Defreinarctia dianxi* (Fang et Cao, 1984) (Fig. 5): 1 ♂, North Vietnam, Son La Prov., Deo Cao Pha, E of Ban Song, 420 m, 2-3. V. 995, Mamoru Owada leg.(NSMT),

Besides the type species from North Burma, which was well described by J. de Freina (1999), the new genus, also includes *Spilarctia dianxi* Fang et Cao, 1984 (Fig. 4) formerly known from Chinese Yunnan: Baoshan, Yunlong, Yaoguan (Fang, Cao, 1984). Both species are very similar by the wing and body colour pattern, but *D. armini* (de Freina, 1999) has the much longer valva and the uncus narrower at base (Fig. 12). The valvae of *D. dianxi* (Fang et Cao, 1984), according to figure in Fang (2000), are noticeably shorter and the uncus is not so narrow at base (Figs 13–14). We have found only one character, which could separate both species by the wing pattern: the subbasal spots behind the cell of forewings are small and black in males of *D. armini* (de Freina, 1999), differ by coloration from other spots, and noticeably broader and brown, like other spots on the forewings of *D. dianxi* (Fang et Cao, 1984). This character is common for the studied specimen from North Vietnam and the figure by Fang (2000: colour pl. 7, fig. 7) (Figs 4–5).

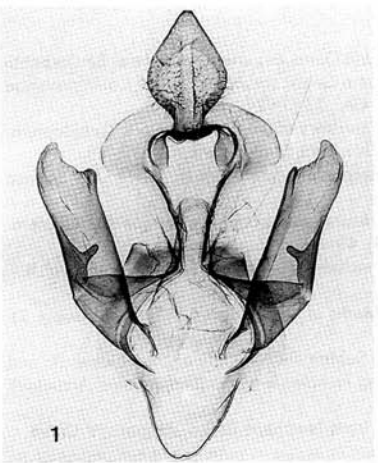


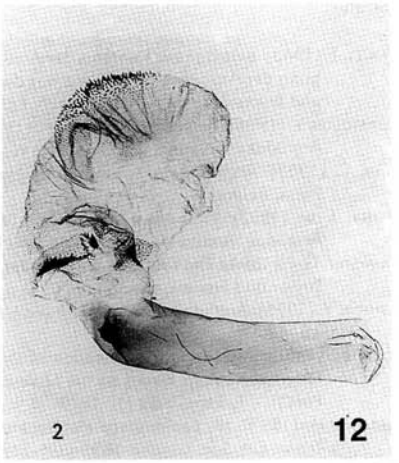
Figs 1–2. *Tamilarctia fumipennis* (Hmps.), India, Nilgiri Hills. 1: ♂; 2: ♀.
Figs 3–5. *Defreinarctia* spp. 3. *D. armini* de Freina, ♂ (after de Freina, 1999). 4. *D. dianxi* Fang et Cao, ♂ (after Fang, 2000). 5. *D. dianxi* Fang et Cao, ♂, North Vietnam.
Figs 6–7. *Orhantarctia* spp. 6. *O. habibiei* Orhant, ♂ , Indonesia, Lombok Is. 7. *O. cymbalophoroides* Rothsch., ♂ (after Rothschild, 1911).

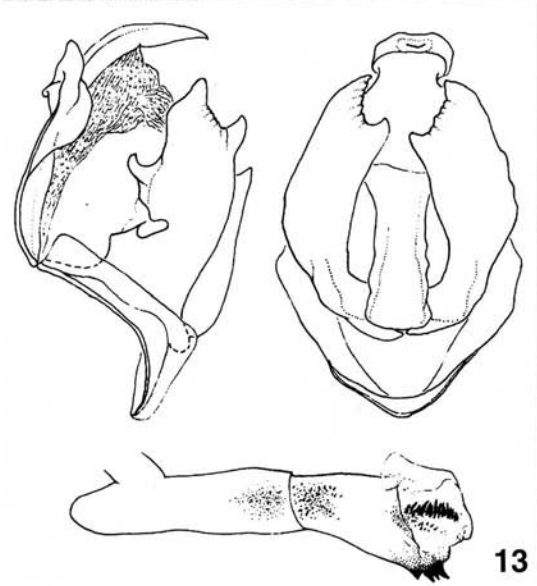
The new genus differs strongly from the known Spilosomini genera, for instance, such the abnormal uncus structure, which is strongly narrowed at the base, is only known in the two genera: *Juxtarctia* Kirti et Kaleka, 2002 (type species: *J. bispinuatus* Kirti et Kaleka, 2002, which is apparently a synonym of *multiguttata* Walker, 1855, based on the male genitalia structure), and *Rajendra* Moore, 1979 (type species: *Rajendra lativitta* Moore, 1879, which is a synonym of *perrottetii* Guérin-Méneville, [1844]). The latter possesses the similar rectangular valvae (Fig. 16), but with the ventral rather than the costal processes; moreover, the type species of this genus has subuncal processes on the tegumen branches, which are almost absent in the new genus. *Juxtarctia* Kirti et Kaleka, 2002 shows the very different valvae structure, with long apical processes and a triangular broadening of the ventral edge (Fig. 17). Species of the genus *Alphaea* Walker, 1855, to which the type species of the new

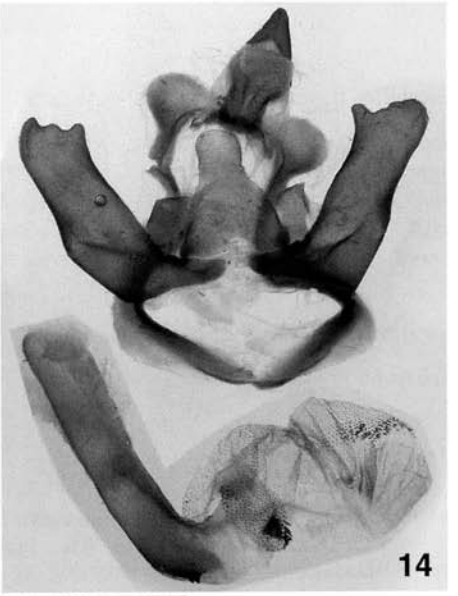


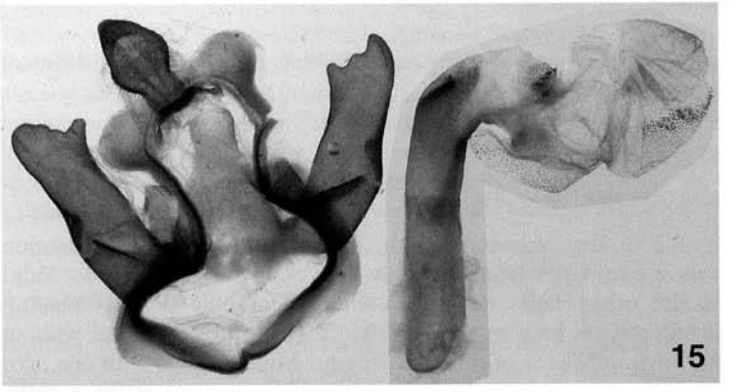
Figs 8–9. Tympanum of *Tamilarctia fumipennis* (Hmps.), India, Nilgiri Hills. 8: ♂; 9: ♀.
Fig. 10. Male genitalia of *Tamilarctia fumipennis* (Hmps.), India, Nilgiri Hills. a: ventral view; b: dorsal view; c: aedeagus.
Fig. 11. Male genitalia of *Paralacydes arborifera* (Butler, 1875), South Africa, Bloemfontein.



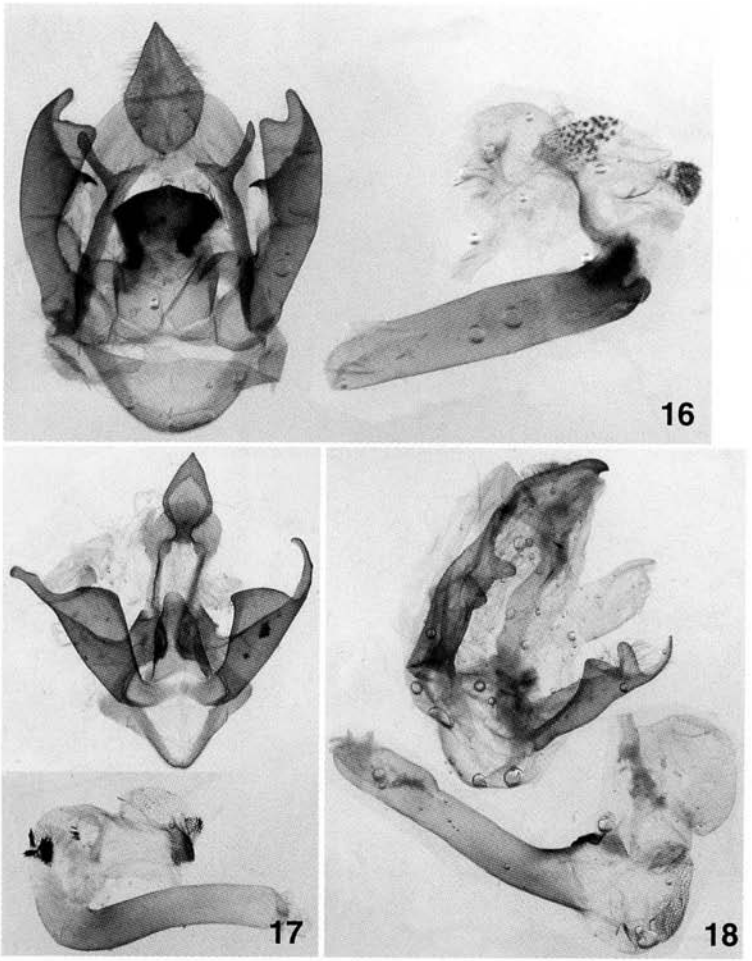








Figs 12–15. Male genitalia of *Defreinarctia* spp. 12. *D. armini* de Freina (after de Freina, 1999). 13. *D. dianxi* Fang et Cao (after Fang, 2000). 14-15. *D. dianxi* Fang et Cao, North Vietnam. 14: ventral view; 15: dorsal view.



Figs 16–18. Male genitalia. 16. *Rajendra perrottettii* Guér.-Mén., India, Maharashtra, Malavli. 17. *Juxtarctia multiguttata* Wlk., India, Sikkim. 18. *Alphaea fulvohirta* Wlk., Nepal, Godavari.

genus was originally assigned, have an apical spine on foretibiae, and the clearly different male genitalic structure (Fig. 18).

Orhantarctia Dubatolov et Kishida, **gen. nov.**

Type species: *Alphaea habibiei* Orhant, 1999 (Fig. 6).

Antennae long, apparently 1/2 of the forewing length, bipectinate in males, pectination gradually decreasing towards apex. Eyes large, strongly convex, ovoid and naked. Palpi stout, slightly longer than the dense hairs on frons, with apical unit slightly bending downwards. Proboscis not reduced, as long as the head width. Fore tibiae simple, without apical spine. Epiphysys reaching apical 1/4 of the tibia length. Middle tibiae with one pair, hind one with two pairs of long narrow spurs. Claws with slight incision at the middle. Pulvilli as long as claws. Vein R_2 on forewings stalking with R_{3+5} (according to Sotavalta, 1964, the venation type C). Veins Rs and M_1 on hindwing arising from a single point. Wings

Fig. 19. Male genitalia of *Orhantarctia habibiei* Orhant, Indonesia, Lombok Is.

whitish, with a characteristic pattern of dark spots. Tympanum with small flattened inflation.

Male genitalia (Fig. 19). Uncus triangular. "Collar" of proximal part of tegumen broad. Tegumen branches moderately broad. Costal-basal parts of valvae narrow, strongly sclerotized and fused to vinculum branches. Valvae strongly sclerotized, rhomboidal, with narrowly extended triangular apex, bearing triangular subapical processes on costa. Juxta short. Aedeagus only slightly curved, with apical sclerotization, covered with spines. Vesica without cornuti.

The genus is named in the honour of Mr Georges E. R. J. Orhant (Wailly-Beaucamp, France).

Composition. *Orhantarctia habibiei* (Orhant, 1999) (**comb. nov.**) and *O. cymbalophoroides* (Rothschild, 1910) (**comb. nov.**).

Distribution. Indonesia: Lombok and Flores Is.

Material. *Orhantarctia habibiei* (Orhant, 1999): 1 ♂, Indonesia, Lombok Is., 3. I. 1984, anonymous leg.

Besides the type species, which occurs in Lombok Is., the new genus also includes *Diacrisia cymbalophoroides* Rothschild, 1910 (Fig. 7) from the neighbour-ing Flores Is. (Indonesia). The latter species was transferred to *Alphaea* Walker, 1855 by Orhant (1999), who described the specific characters and distribution of both species. Nevertheless, he was mistaken in placing these species to *Alphaea* without any comments. All the species of the latter genus possess apical spines on foretibiae and the clearly different male genitalic structure (Fig. 18). We are unaware of any Oriental genera, which can be closely related to the *Orhantarctia* species; the valva shape, the broad tegumen branches, the fusion of the costal-basal part of valvae with vinculum branches are very characteristic and unique.

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specimens.

References

Dubatolov, V.V., 2003. Three new genera of Chinese Arctiinae (Lepidoptera, Arctiidae). *Tinea* **17** (5): 255–265.

———, 2004a. Some generic changes in Arctiinae from South Eurasia with description of three new genera (Lepidoptera, Arctiidae). *Atalanta* **35** (1/2): 73–83, pl. 4a.

———, 2004b. A new genus is established for *Bombyx lineola* Fabricius, 1793, with systematic notes on the genus *Aloa* Walker, 1855 (Lepidoptera, Arctiidae). *Atalanta* **35** (3/4): 297–307, pl. 16b.

Fang, C.-L., 2000. *Fauna Sinica* (Insecta) **19**. Lepidoptera. Arctiidae. 590 pp., 20 pls. Scientific Press, Beijing. (In Chinese).

Fang, C.-L. & Cao, W.-C., 1984. New species of Arctiidae from Yunnan (Lepidoptera). *Entomotaxonomia* **6** (2–3): 175–177 (in Chinese).

Freina, J. J. de, 1999. Beschreibung von zwei neuen Arctiidenarten aus Osttibet und Burma sowie Bemerkungen und Ergänzungen zum Artenspektrum der Gattung *Eospilarctia* Koda, 1988 (Lepidoptera, Arctiidae, Arctiinae). *Atalanta* **30** (1/4): 179–186, pl. 14b.

Goodger, D. T. & A. Watson, 1995. *The Afrotropical tiger-moths. An illustrated catalogue, with generic diagnosis and species distribution, of the Afrotropical Arctiinae (Lepidoptera: Arctiidae).* 55 pp. Apollo Book Aps., Stenstrup, Denmark:

Hampson, G. F., 1891. The Lepidoptera Heterocera of the Nilgiri District. *Illustrations of typical specimens of Lepidoptera Heterocera of the British Museum* **8**: I–IV, 1–144, pls. 139–156.

———, 1894. *The fauna of British India, including Ceylon and Burma* (Moths) **2**. XXII+609 pp. London.

———, 1901. Catalogue of the Arctiadae (Arctianae) and Agaristidae in the collection of the British Museum (Natural History). *Catalogue of the Lepidoptera Phalaenae in the collection of the British Museum (Natural History)* **3**. XII+609 pp., pls 36–54. London.

Kirti, J. S. & A. S. Kaleka, 2002. A new genus and two new species of Arctiinae, Arctiidae: Lepidoptera, from India. *J. Bombay nat. Hist. Soc.* **99** (1): 79–85.

Orhant, G., 1999. *Alphaea habibiei* n. sp., espéce confondue (Lepidoptera Arctiidae). *Bull. Soc. ent. Mulhouse* **1999**: 61–63.

Rothschild, W., 1910–1911. Catalogue of the Arctianae in the Tring museum, with notes and descriptions of new species. *Novit. zool.* **17** (1): 1–85, (2): 113–188, pls 11–14, **18**: pls 3–6.

———, 1914. Arctiidae, subfamilie Arctiinae. *In* Seitz, A. (Ed.), *Die Gross-Schmetterlinge der Erde* **10**: 236–263. Alfred Kernen, Stuttgart.

Sotavalta, O., 1964. Studies on the variation of the wing venation of certain tiger moths (Lep. Arctiidae, Subfam. Arctiinae). *Annls. Acad. Sci. fenn* (Ser. A) **4** (Biologica). 42 pp. Helsinki.

Strand, E., 1919. Arctiidae: subfam. Arctiinae. *In* Wagner, H. (Ed.), *Lepidopterorum Catalogus* **22**. 416 pp. S. W. Yunk, Berlin.

Watson, A., D. S. Fletcher & I. W. B. Nye, 1980. *The Generic Names of Moths of the World* **2**. 228 pp. Trustes of the Brit. Mus. (Nat. Hist.), London.