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New *Spilarctia species* from Western Indonesia

(Lepidoptera, Arctiidae)

by

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Summary: Three new *Spilarctia* species from Indonesia are described. *S.* ***siberuta*** **spec. nov.** from Siberut Is., belongs to the *punctata*-group; it is characterised by a bright yellow ground colour to the wings and a valva with two short and broadly rounded apical processes, while in the related *S. punctata* (MOORE, 1859) the valva has a pointed ventral apical angle. *S. irina* **spec. nov.** from Sumatra belongs to the *S. ananda*-group, and is characterised by only one row of oblique spots on the forewings, which is double in *S. ananda* (ROEPKE, 1938), a strong red suffusion in the cell on the forewing underside, and its ♂ genitalia have wide valvae with an apex strongly curved outwards, and the apical lobe on vesica has no cornuti. *S.* ***flavorubida*** **spec. nov.** from Bali belongs to the *S. postrubida*-group, and this is characterised by an absence of dark spots on the outer part of the forewings, of the forewing upperside discal spot, and of any spots on the hindwing upperside; in the ♂ genitalia, there are few spine-like cornuti on the hind edge of vesica.

Zusammenfassung: Aus Indonesien werden drei neue *Spilarctia* -Arten beschrieben. *S. siberuta* **spec. nov.** von der Siberut Insel gehört zur punctata-Gruppe und wird durch eine leuchtend gelbe Grundfarbe der Flügel sowie durch zwei kurze und breit abgerundete apikale Fortsätze an der Valve charakterisiert, während bei der nahe stehenden *S. punctata* (MOORE, 1859) die Valve apikal einen spitzen , ventralen Winkel besitzt. *S. irina* DUBATOLOV **spec. nov.** aus Sumatra gehört zur *S. ananda*-Gruppe. Diese wird nur durch eine deutliche Punktreihe auf den Vorderflügeln, zweireihig bei *S. ananda* (ROEPKE, 1938) und eine starke Rotbeschuppung der Zellunterseite charakterisiert. Dazu besitzt das ♂ eine großflächige Valve deren Apex deutlich nach außen gebogen ist; die Vesicaspitze ohne Cornuti. *S.* ***flavorubida*** **spec. nov.** von Bali gehört der *S. postrubida*-Gruppe an und wird durch das Fehlen schwarzer Flecken auf dem Außenrand und des Diskalflecks der Vorderflügel sowie das Felen jeglicher Flecke auf der Hinterflügeloberseite charakterisieret; die Vesica des ♂ besitzt einige wenige nadelförmige Cornuti am Hinterrand.

In 2005, Mr. V. O. GURKO kindly sent a large set of tiger-moths collected in the West Indonesian islands Sumatra, Siberut and Bali, to the Siberian Zoological Museum's collection (SZMN) at the Institute of Animal Systematics and Ecology (Novosibirsk, Russia). Most specimens belong to the genus *Spilarctia* BUTLER, 1875. During their determination, three new species from this genus were discovered. Their descriptions are given below.

Spilarctia** (punctata) **siberuta** **spec. nov. (colour plate 9, fig. 1)

Material: Holotype ♂, Indonesia, Mentawai isls., Siberut isl., Bojakan, IX.2004, native collector leg. Paratypes: 12 ♂♂, the same locality. Deposited in SZMN.

Description: Forewing length 16-17 mm, wing expanse 31-35 mm. Antennae bipectinate, black, with a yellowish-white subapical section. Palpi short, straight, porrect, black, innerside of their basal part yellow. Head yellow, clothed in dense rough hairs, frons with bands of black hairs across the eyes. Thorax, as in all species of the punctata-group, without a dorsal longitudinal line. Wings bright yellow, forewings with the dorsal half of the antemedial and postdiscal black spots, and the costal spots, in rows. The discal spot is the largest spot on the forewing. There are also a few black submarginal dots in the subapical area. Forewing underside with large black discal spot and traces of the postdiscal black spot row from costa to vein Cu_2. Hindwing upperside and underside with a black round discal spot and a series of large oval black submarginal spots, those at the tornal angle being the largest.

♂ genitalia (fig. 1): Uncus broadly triangular, with an elongated apex. Valvae finger-like, noticeably widened at the apex forming two short rounded processes which are divided by a smooth incision. Aedeagus nearly straight, with an apical sclerotisation bearing a wide spine. Vesica reniform consists of two rounded lobes, the ventral edge of the proximal example exhibiting a patch of narrow spine-like cornuti.

Etymology: The new species adopts his name from the island of Siberut where it occurs.

Remarks: The new species differs from the related taxa, *S. punctata* (MOORE, 1859) from Java and Bali (colour plate 9, fig. 2) and *S. procedra* (SWINHOE, 1907) from Sumatra and Malaya (colour plate 9, fig. 3), by a bright yellow tone to the wing ground colour, which is paler yellow in the former and dull yellow in the latter. The presence of a large discal spot on the forewings also helps to distinguish the new species. Viewing the valva structure, the new species differs significantly from *S. procedra* SWINH. (fig. 3), the valvae of which are simple, finger-like, and rounded at thr apex, and from *S. congruenta* (THOMAS, [1993]) (fig. 4), the valvae of which have two narrow apical processes. The valva shape of the new species is similar only to *S. punctata* MOORE, with the valvae slightly widening at the apex, but their ventral apical part is noticeably pointed in *S. punctata* MOORE and broadly rounded in *S. siberuta* **spec. nov.** In any case, a very different wing colouration and noticeable differences in the valva structure led me to consider the species from Siberut new.

Spilarctia** (ananda) **irina** **spec. nov. (colour plate 9, fig. 5, 6)

Material: Holotype ♂: Indonesia, West Sumatra, Mt. Sanggul, 1300 m, VII.2004, native collector leg. Paratypes: 1 ♂, the same data as in the holotype; 2 ♂♂, Indonesia, West Sumatra, Harau valley, 700 m, V.2004, native collector leg. Deposited in SZMN.

Description: Forewing length 25-26 mm, wing expanse 49–52 mm. Antennae black, serrately-dentate. Palpi short, porrect, straight, with its basal part red, the second section black but red ventrally, the third portion short and black. Head covered with dense rough hairs, light yellow, frons with black narrow lines along the eyes. Thorax light yellow, with wide black longitudinal line, like in all species of the *S. ananda* ROEPKE-group. Forewing light yellow, with small black spots forming a V-like median row and a straight oblique row running

from the wing apex to the middle part of the hind margin; spots of both rows larger at the anal vein. There are isolated spots at the base of the forewing and on the first part of the discal vein. There is no black spot at the costa near the discal vein. Forewing underside with grey, not black spots, medial row absent, central cell with a wide red suffusion, and the oblique row of spots has a bifurcation between the discal vein and the wing apex. Hindwing upperside and underside light yellow, with a light rose tint in the anal section, a grey round discal spot and three submarginal spots, those at tornal angle being noticeably larger. Abdomen upperside bright red, underside yellow, VIII sternite lateral lobes elongate, forming a yellow rim of red colour on the abdomen from a dorsal view. Sides of abdomen with two rows of small black spots.

♂ genitalia (fig. 5): Uncus more or less oval, tapering to the apex and narrowing towards the base. A widening of the tegumen forms a wide "collar" Valva with a broad apical processus, the apex noticeably bent outside so that the outer valva margin is strongly concave at the apex. Ventral valva processus small, broadly triangular. Aedeagus with a strong apical sclerotization bearing three strong spines, while the vesica has a single patch of cornuti on the hind part of its outer margin.

Etymology: The species is named in honor of IRINA DENEKO.

Remarks: The new species was figured by BARLOW (1982: pl. 24, fig. 15) as *Spilosoma ananda* ROEPKE from Malaya. It indeed belongs to the species group *S. ananda* (ROEPKE, 1938) (from Java and Bali) - *S. groganae* (HOLLOWAY, 1976) (from Borneo to Kalimantan). *S. irina* **spec. nov.** differs from the former (fig. 8, colour plate 9, fig. 5-6) by a single, not double oblique row of spots, an absence of submarginal spots and a spot on the costa near the discal vein on the forewings, by the more extended red colouration in the forewing cell underside, and by the presence of a rose tone at the hindwing anal margin. The second mentioned species, as seen on the nice photos by J. HOLLOWAY (1988), is characterised by fully rose-coloured hindwings (not mostly yellow, as in the new species), and a noticeable rose tint to the forewing ground colour, which is absent in both the new species and *S. ananda* (ROEPKE). *Spilarctia moorei* (SNELLEN, 1879) (colour plate 10, fig. 16) from Celebes (Sulawesi) belongs to the sibling *S. hypogopa* (HAMPSON, 1907) species group (DUBATOLOV & KISHIDA, 2006). According to the nice colour figure in the original description, the forewing spots are not arranged in clear rows, but weak submarginal dots are clearly visible in the medial part of the wing and the costal spot near the discal vein is well expressed, as in *S. ananda* (ROEPKE). At the same time, the red colouration in the cell of the forewing underside is well expressed, as in the new species *S. irina* **spec. nov.**

Viewing the ♂ genitalia, the new species (fig. 5), together with *S. groganae* (HOLLOWAY) (fig. 7), differs from *S. ananda* (ROEPKE) (fig. 6) in having a noticeably wider valva with the apex curved outwards and a vesica apical lobe without any cornuti, which are clearly visible in *S. ananda* (ROEPKE). Moreover, the latter species has more ventral spines on the aedeagus apex. The new species differs from *S. groganae* (HOLLOWAY) by the valva apex which is significantly bent outwards and by a deeply concave outer margin, while in *S. groganae* (HOLLOWAY), the valva apex is slightly curved outwards and the outer margin is only slightly concave. The ventral angle of the left valva is rounded, while in other species it is pointed.

All of the three species mentioned of the *S. ananda*-group have distinguishing characters of the same significance. There are two possibilities: either there is one species *S. ananda* ROEPKE with three different subspecies: the nominotypical from Java and Bali, *irina* DUBATOLOV from Sumatra and Malaya, and *groganae* (HOLLOWAY) from Borneo; or all three are different species. Because of the allopatric distribution, it is impossible to make a decision without hybridization experiments which should determine their status, subspecific or specific. Nevertheless, the specific status of *S. groganae* (HOLLOWAY) has been accepted here without discussion. Stability within the outer characters in *S. ananda* ROEPKE from West Java to Bali and in *S. irina* **spec. nov.** from West Sumatra to Malaya stands in favour of the specific status of these taxa, so I have treated them as different species.

Spilarctia** (postrubida) **f l a v o r u b i d a** **spec. nov. (colour plate 10, fig. 9-10)
Material: Holotype ♂: Indonesia, Bali, Tamblingan, VI.2004, native collector leg. Deposited in SZMN.

Description: Forewing length 18 mm, wing expanse 35 mm. Antennae light yellow, bipectinate. Palpi porrect, two basal sections rosy-red, apical one narrow and black. Head covered with light yellow hairs, frons at the eyes and palpi base with black hairs. Thorax, as in all species of the *S. postrubida* WILEMAN-group, with a narrow black longitudinal line. Forewing upperside yellow, with a single black spot at the base and two rows of spots: the medial one is better expressed at the costal and hind margins, and the postdiscal one runs directly from the dorsal margin to the base of vein M_2 and then is smoothly curved around the discal vein. Forewing underside rose-coloured in the medial part, and yellow at the base and outer margin; dark spots light grey, their positions being similar to those on the upperside. the discal and subbasal spots remaining well visible. Hindwing upperside of a unicolorous dark rose hue, underside yellowish-rose, with a weakly expressed discal spot.

♂ genitalia (fig. 9): Uncus elongate, oval and tapering to the apex, the proximal widening of the tegumen being well expressed. Valva elongate, with a narrow apical processus slightly bent inwards, ventral triangular processus very short and rounded, and there is only a trace of of one at the costa. The aedeagus has an apical sclerotization without any clear spine; vesica consists of the basal and apical rounded lobes, the latter having two spine-like cornuti patches, the hind one containing 13-15 cornuti which are fewer but larger than in the former.

Etymology: The new species name consists of two Latin words: flava (yellow) and rubida (red).

Remarks: The new species belongs to the *Spilarctia postrubida* (WILEMAN, 1910)-*S. hypogopa* (HAMPSON, 1907) species group. It differs from the former species (colour plate 10, fig. 11-15) by an absence of dark spots in the outer part of the forewing, the forewing upperside discal spot, and any spots on the hindwing upperside, while in *S. postrubida* (WIL.) there are are a submarginal row of apical and/ or medial spots, and a discal spot and several spots (or at least the discal one) on the hindwings. *S. hypogopa* (HMPS.) (colour plate 11, fig. 17-20) is characterised by an absence of a rose or red tint on the wings, and by a reduction in the number of spots in both the medial and postdiscal rows on the forewing upperside except for those at the costal and hind margins.

Viewing the ♂ genitalia, the new species is mostclosely related to *S. postrubida* (WIL.) (fig. 10-12). The valva shape does not differ noticeably from that exhibited by geographical variation within *S. postrubida* (WIL.) valva. The position of two the cornuti patches is also identical, but the spine-like cornuti on the hind edge of vesica are not numerous as in *S. postrubida* (WIL.) (more than 20 specimens studied from Taiwan and dozens from Nepal and North Vietnam). Moreover, both *S. postrubida* (WIL.) and *S. hypogopa* (HMPS.) (fig. 13) have a good spine on the apical aedeagus sclerotisation, which is absent in the new species.

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Colour plate 9, p. 510
Fig. 1: *Spilarctia (punctata) siberuta* **spec. nov.**, paratype ♂, Indonesia, Mentawai isls., Siberut isl., Bojakan, IX.2004, native collector leg.
Fig. 2: *Spilarctia punctata* (MOORE, 1859) ♂, Indonesia, E Java, Mt. Argapura, IV.1995, anonymous leg., received from coll. Y. KISHIDA.
Fig. 3: *Spilarctia (punctata) procedra* (SWINHOE, 1907) ♂, Indonesia, West Sumatra, Harau valley, 700 m, V.2004, native collector leg.
Fig. 4: *Spilarctia (punctata) congruenta* (THOMAS, [1993]) ♂, Indonesia, Java, Buitenzorg., 27-29.VII.1907, BAR. BRÜGGEN leg.
Fig. 5-6: *Spilarctia (ananda) irina* **spec. nov.**, holotype ♂, Indonesia, West Sumatra, Mt. Sanggul, 1300 m, VII.2004, native collector leg., upperside (5), underside (6).
Fig. 7-8: *Spilarctia ananda* (ROEPKE , 1938) ♂, Indonesia, Bali, Tamblingan, VI.2004, native collector leg., upperside (7), underside (8).

Colour plate 10, p. 511
Fig. 9-10: *Spilarctia (postrubida) flavorubida* **spec. nov.**, holotype ♂, Indonesia, Bali, Tamblingan, VI.2004, native collector leg., upperside (10), underside (11).
Fig. 11-12: *Spilarctia postrubida* (WILEMAN, 1910) ♂, Taiwan (Formosa), Nan Tow, Wushe, 1966, received from coll. Y. KISHIDA, upperside (11), underside (12).
Fig. 13-14: *Spilarctia postrubida* (WILEMAN, 1910) ♂, Vietnam, Ninh Binh, Gia Vien, Cuc Phuong 160 m, 20-21.III.1998, K. YAZAKI leg., coll. Y. KISHIDA, upperside (13), underside (14).
Fig. 15: *Spilarctia postrubida* (WILEMAN, 1910) ♂, Nepal, Mechi, Godok, 14.IV 1993, coll. Y. KISHIDA.
Fig. 16: *Spilarctia moorei* (SNELLEN, 1879) ♂, figure from the original description by SNELLEN, 1879.

Colour plate 11, p. 512
Fig. 17-18: *Spilarctia hypogopa* (HAMPSON, 1907) ♂, Indonesia, West Sumatra, Harau valley, 700 m, V 2004, native collector leg., upperside (17), underside (18).
Fig. 19-20. *Spilarctia hypogopa* (HAMPSON, 1907) ♂, Indonesia, Bali, Tamblingan, VI.2004, native collector leg., upperside (19), underside (20).

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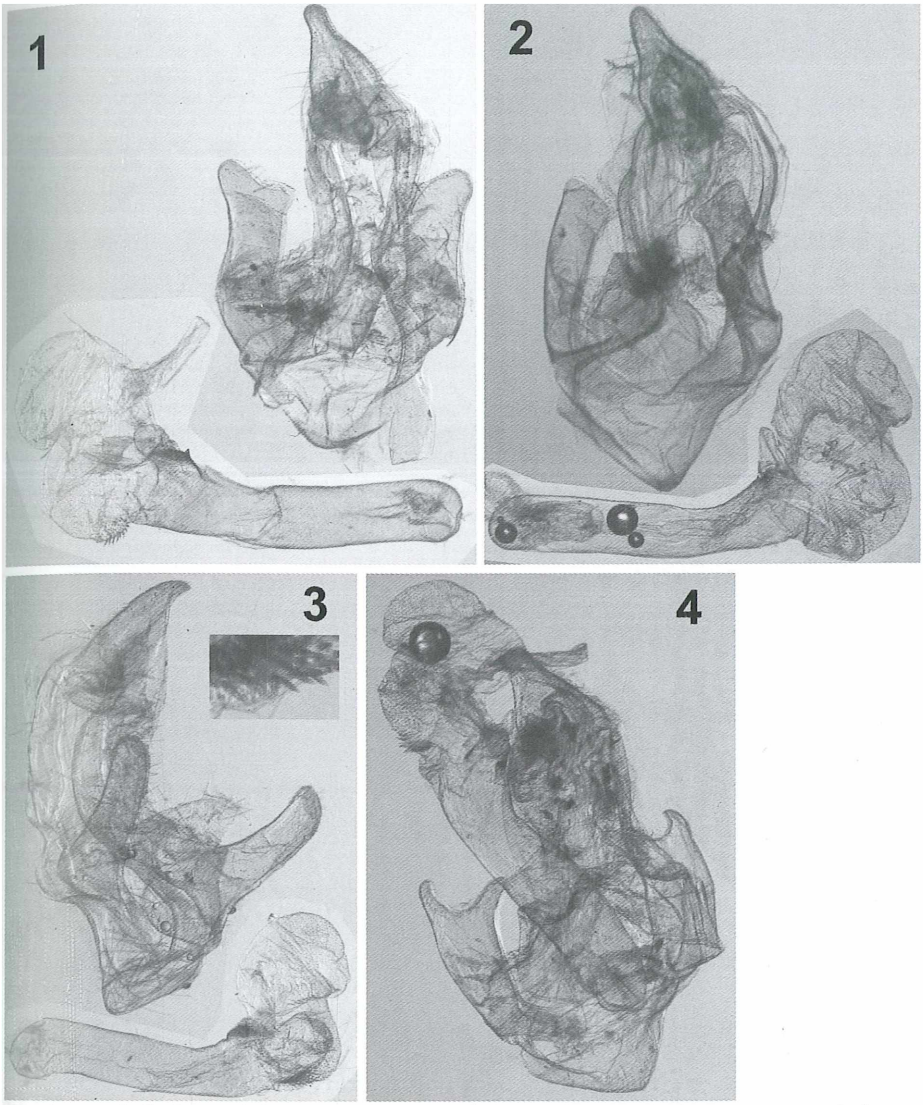

Fig. 1: ♂ genitalia (general view and aedeagus) of *Spilarctia (punctata) siberuta* **spec. nov.**, holotype, Indonesia, Mentawai isls., Siberut isl., Bojakan, IX.2004, native collector leg.
Fig. 2: ♂ genitalia of *Spilarctia punctata* (Moore, 1859) ♂, Indonesia, E Java, Mt. Argapura, IV.1995, anonymous leg., received from coll. Y. Kishida.
Fig. 3: ♂ genitalia (general view, aedeagus and magnification view of cornuti) of *Spilarctia (punctata) procedra* (Swinhoe, 1907), Indonesia, West Sumatra, Harau valley, 700 m, V.2004, native collector leg.
Fig. 4: ♂ genitalia of *Spilarctia (punctata) congruenta* (Thomas, [1993]), Indonesia, Java, Buitenzorg., 27-29.VII.1907, Bar. Brüggen leg.

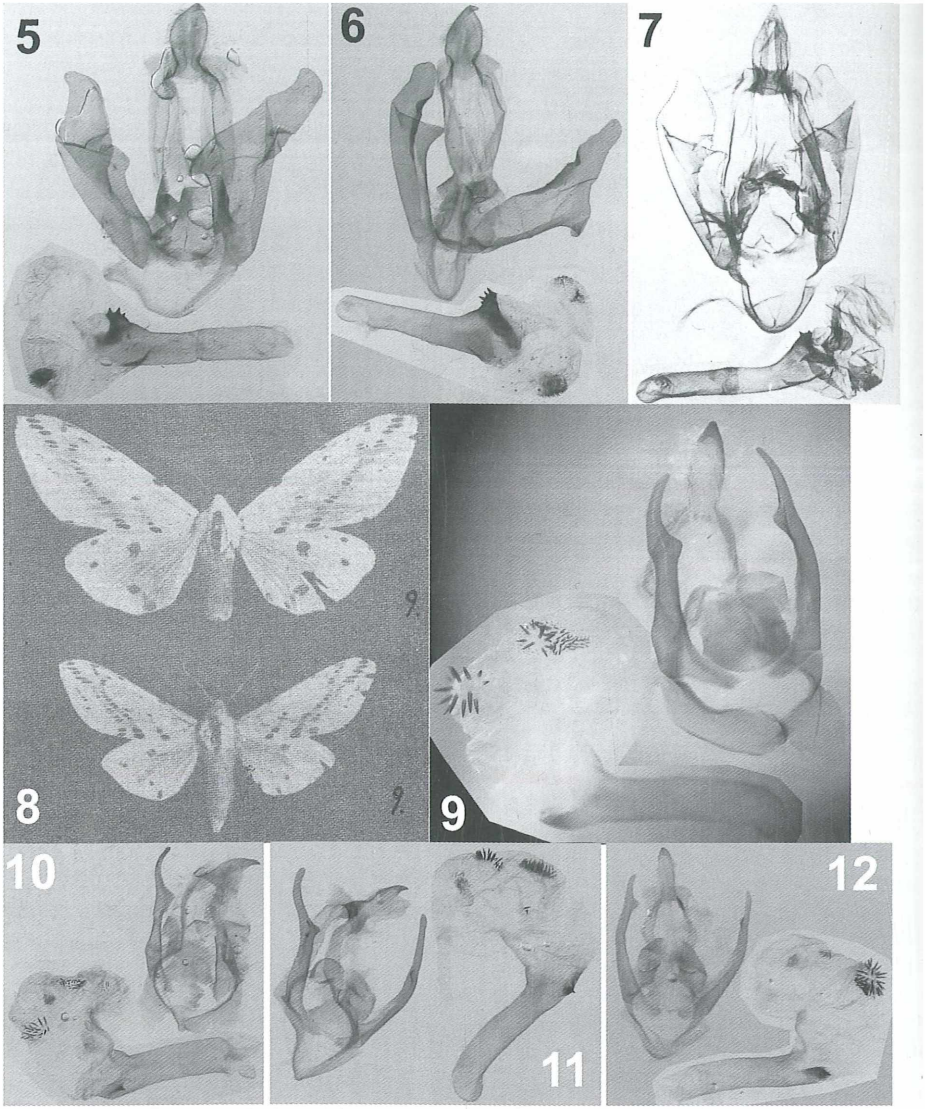

Fig. 5: ♂ genitalia (general view and aedeagus) of *Spilarctia (ananda) irina* **spec. nov.**, holotype ♂, Indonesia, West Sumatra, Mt. Sanggul, 1300 m, VII.2004, native collector leg.
Fig. 6: ♂ genitalia (general view and aedeagus) of *Spilarctia ananda* (ROEPKE, 1938), Indonesia, Bali, Tamblingan, VI.2004, native collector leg.
Fig. 7: ♂ genitalia (general view and aedeagus) of *Spilarctia groganae* (HOLLOWAY, 1976), from: HOLLOWAY(1988), general view (7), aedeagus (8). Contimued on p. 214

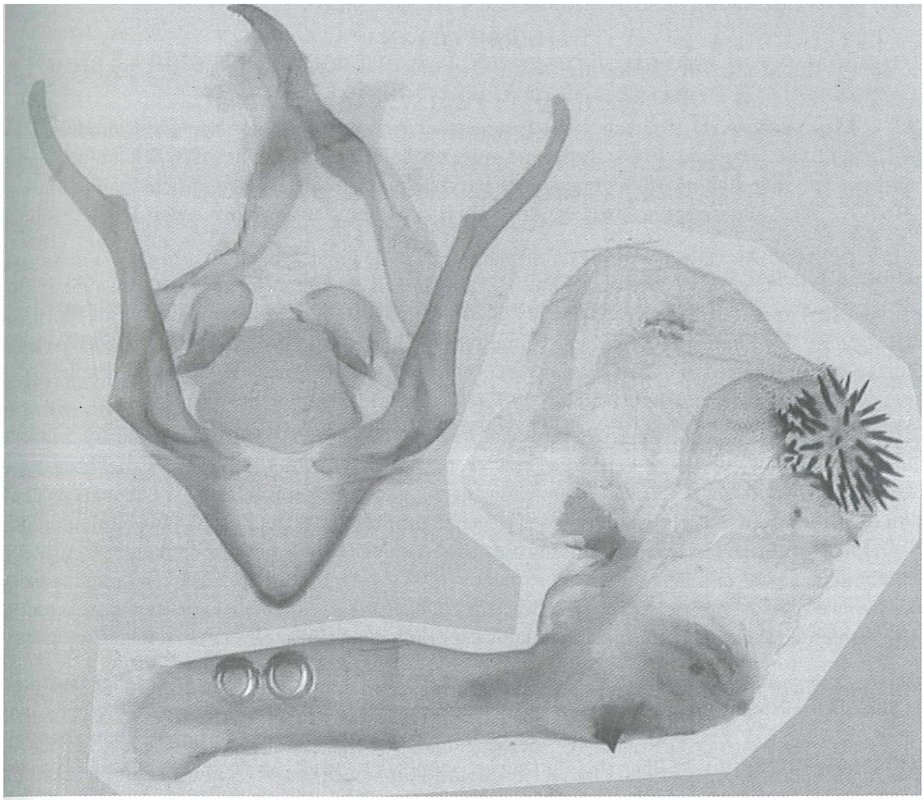

Fig. 13: ♂ genitalia (general view and aedeagus) of *Spilarctia hypogopa* (HAMPSON, 1907), Indonesia, West Sumatra, Harau valley, 700 m, V 2004, native collector leg.

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Fig. 8: *Spilarctia anada* (ROEPKE, 1938), Indonesia, West Java, Perbawatti, figures from the original description by ROEPKE (1938).
Fig. 9: ♂ genitalia (general view and aedeagus) of *Spilarctia (postrubida) flavorubida* **spec. nov.**, holotype, Indonesia, Bali, Tamblingan, VI.2004, native collector leg.
Fig. 10: ♂ genitalia (general view and aedeagus) of *Spilarctia postrubida* (WILEMAN, 1910), Taiwan (Formosa), Nan Tow, Wushe, 1966, received from coll. Y. KISHIDA.
Fig. 11: ♂ genitalia (general view and aedeagus) of *Spilarctia postrubida* (WILEMAN, 1910), Vietnam, Ninh Binh, Gia Vien, Cuc Phuong 160 m, 20-21.III.1998, K. YAZAKI leg., Y. KISHIDA coll.
Fig. 12: ♂ genitalia (general view and aedeagus) of *Spilarctia postrubida* (WILEMAN, 1910), Nepal, Mechi, Godok, 14.IV 1993, coll. Y. KISHIDA.