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LECITHOCERIDAE (LEPIDOPTERA, GELECHIOIDEA) OF NEW GUINEA, PART III: A NEW GENUS *SCOLIZONA* WITH DESCRIPTION OF TWO NEW SPECIES

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ABSTRACT

As the third part of a serial study on the family Lecithoceridae (Lepidoptera, Gelechioidea) of New Guinea, a new genus, *Scolizona* **gen. nov.** is described, with the type species, *S. rhinoceros* (Diakonoff 1954) **comb. nov.** and two additional new species: *S. ulnaformis* **sp. nov.** and *S. palinoides* **sp. nov.** Adults, wing venations, the male genitalia of these three species, and the female genitailia of *S. ulnaformis* **sp. nov.** are illustrated, and a key to the species of the new genus is given.

Key Words: Taxonomy, new genus, new species, *Scolizona*, New Guinea

RESUMEN

En la tercera parte de una serie de estudios sobre la familia Lecithoceridae (Lepidoptera, Gelechioidea) de Nueva Guinea, se describe un nuevo género, *Scolizona* **gen. nov.** con la especie tipo, *S. rhinoceros* (Diakonoff 1954) **comb. nov.** y dos addicionales nuevas especies: *S. ulnaformis* **sp. nov.** y *S. palinoides* **sp. nov.** Se ilustran los adultos, la nervadura de las alas y los genitales de los machos de estas tres especies, los genitales de la hembra de *S. ulnaformis* **sp. nov.** y se provee una clave de las especies en este nuevo género.

The family Lecithoceridae (Gelechioidea) on the island of New Guinea (including West Papua (Irian Jaya) of Indonesia in the western part, and Papua New Guinea in the eastern part) is poorly known as well as other micro-moths. The family is mostly distributed in the Oriental and Australian Regions, comprising more than 1,100 species. The family is characterized by the very long antenna, usually longer than the forewing, and the male genitalia with gnathos bent downwards or absent. These characters are useful to differentiate from other gelechioid-moths. With respect to Lecithoceridae biology, the larva of *Crocanthes prasinopis* Meyrick (type species of the genus *Crocanthes* Meyrick) is reported to feed only on eucalypt leaves in Australia (Common 1990).

New Guinea is geographically close to Australia, but New Guinea's Lecithoceridae fauna differs greatly from that of Australia, with a very high endemism in the composition of the species, i.e., more than 90% of *Crocanthes* are unique to New Guinea. Gielis (2003), in his recent study for the family Pterophoridae of the island, also mentioned that the majorities of species of the 2 areas do not overlap in distribution. These results may, of course, inadequately reflect the actual diversity of species in the region, because it has been based on limited collecting results and some fragmentary reports by the few early workers, i.e., Walker (1864); Durrant (1915); and Meyrick (1910, 1918, 1925, 1929, 1931, 1938). Diakonoff (1954) published a comprehensive study for the microlepidoptera of New Guinea, listing 78 species of Lecithoceridae, as a part of Gelechiidae: 31 species of *Lecithocera*, 40 species of *Crocanthes*, and 7 species of little known genera, i.e., *Gonaepa* Meyrick, *Periphorectis* Meyrick, *Spenocrates* Meyrick, and *Asmenistis* Meyrick. His study was based on material collected in the western part of the island, Irian Jaya, Indonesia by the American-Netherlands-Indian Expedition (the 3rd Archbold Expedition) in 1938 and 1939 (Fig. 1). Park (2010) recently reported a new *Thubana* species for the first time from New Guinea and at the same time he reviewed the genus *Telephata* Meyrick, describing two new species. In addition, Park and Byun (2010) described, *Neopectinimura* Park, along with descriptions of 6 new species from Papua New Guinea.

The aim of this study was to identify undetermined materials of the family collected from Papua New Guinea since 1975 and that are preserved in the National Museum of Natural History (USNM), USA, and those from Irian Jaya of Indonesia in 2005 that are in the Zoological Museum Amsterdam (ZMAN), the Netherlands.

In an earlier report as part of this serial study on the Lecithoceridae (Lepidoptera, Gelechioidea)

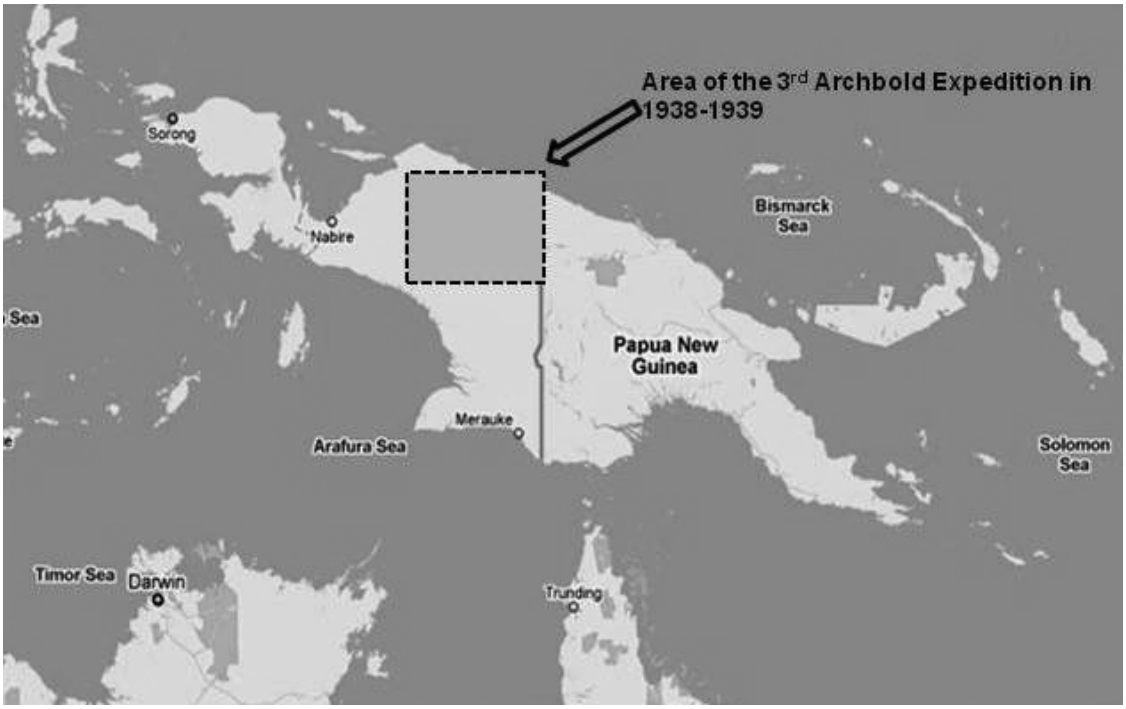


Fig. 1. Map of New Guinea (Indonesian part and Papua New Guinea) with the area of the 3rd Archbold Expedition in 1938-1939.

of New Guinea (Irian Jaya of Indonesia and Papua New Guinea), a new genus, *Onnuria* Park, **gen. nov.** including three new species, and *Hamatina* Park, **gen. nov.** including four new species were describes (Park 2011b, c).

Materials and Methods

This study is based (i) on specimens deposited in the National Museum of Natural History (USNM), Washington, D.C., USA, collected from Papua New Guinea by G. F. Hevel and R. E. Dietz IV in 1976, Scott E. and Pamela Miller in 1983, and V. O. Becker in 1992, and (ii) specimens in the Zoological Museum Amsterdam (ZMAN), The Netherlands, collected from Irian Jaya of Indonesia by Drs. Rob de Vos and colleagues in several expeditions during last two decades. All species described herein were compared with the types of *Lecithocera* described by Diakonff (1954), which are deposited in the Rijksmuseum van Natuurlijke Historie (RMNH), Leiden, The Netherlands. The new species also were compared with the original descriptions of some early known species of *Lecithocera* described by Durrant (1915) and Meyrick (1910, 1918, 1929, 1931, 1938) from New Guinea, the types of which could not be found. Indeed they probably are lost or have been destroyed (Clarke 1955: 31). The types of *L. deloma* Durrant, 1915 and *L. strigosa* Durrant, 1915 are known to be deposited in The Natural History Museum, London (BMNH), but they are not found. The locations of the types of 6 species described by Meyrick (i.e., *autodyas*, *coleasta*, *praecentrix*, *prudens*, *squamifera*, and *tamiodes*) are unknown, and the types of *strepsicrena* Meyrick, *stelophanes* Meyrick, and *staurophora* Meyrick are in the BMNH. *Lecithocera invariellla* Walker (1846) was listed in the key by Diakonoff (1954), but it was not described from New Guinea, but was erroneously cited from there. The new species of *Scolizona* **gen. nov.** described in this paper are easily distinguished from any of the above species by having a characteristically specialized labial palpus as a diagnostic character in their description.

The wingspan is measured from the left apex to the right apex of the forewing. Images of genitalia and wings were captured with the Automontage Microscopic System at the Florida State of Collection of Arthropods, Division of Plant Industry, Gainesville, Florida, USA. The color standard for the description of adults follows Kornerup and Wanscher (1978), and the morphological termi-

nology follows Park (1999). Types are deposited in the USNM or ZMAN on indefinite loan from Papua New Guinea or Indonesia.

SYSTEMATICS

Genus *Scolizona* Park, **gen. nov.**

Type species: *Lecithocera rhinoceros* Diakonoff, 1954: 47.

The new genus is one of the genera related to *Lecithocera* Herrich-Schäffer by having a similar venation and the male genital character. However, the genus is characterized by the uniquely specialized labial palpus: 1st segment relatively long; 2nd segment remarkably stout, strongly recurved backwards and exceeding vertex, with long hair-pencils apically; 3rd segment considerably variable in the size and shape, as long as the 2nd or much longer than 2nd segment, with long hair-pencils.

External Morphology. Head roughly scaled, with yellowish-brown to dark-brown scales dorsally. Antenna longer than forewing, with slender basal joint, without pectin; flagellum sometimes with blackish basal and preapical parts, with usually whitish apex. Labial palpus very stout, with appressed or rough scales; first segment relatively long, often about half the length of 2nd segment; 2nd segment flattened laterally, strongly recurved, longitudinally furrowed on inner surface with hair-like, long scale-tufts apically; 3rd segment as long as the 2nd, or extremely long, with hair-like, long scale-tufts, these hairs usually appressed, but sometimes erect (Figs. 3a and 4c). Forewing irregularly covered with dark brown scales, more densely scattered in base of costal area, with a pair of large blackish discal spots before middle and near end of cell, usually anterior one larger, elongate; apex more or less obtuse; termen sinuate; fringe usually with pale-orange basal line; venation with R_1 arising before middle of cell; distance R_1 and R_2 more than 1.5 times than that of R_2 and R_3; R_3 and R_{4+5} stalked before middle; R_4 and R_5 stalked for more than 2/3 length; R_5 reaching termen; M_1 close to R_{3+4+5}; M_2 approximate to M_3 at base; CuA_1 and CuA_2 short-stalked; anal vein well developed; cell closed with weak cross vein. Hindwing pale gray, slightly broader than forewing, nearly trapezoidal; apex more or less acute; termen slightly sinuate; venation with Rs and M_1 connate or short-stalked; M_2 well developed, closely approximated to M_3 at base or stalked with M_3+CuA_1; M_3 and CuA_1 short stalked; CuA_2 arising from near lower corner of cell; cell partly closed. Hind tibia roughly scaled all around. Abdomen has no spinous zones on tergites.

Male Genitalia. Basal lobes of uncus usually ovate, directed outwardly. Gnathos strongly bent preapically. Costal bar sharply angulated at middle. Valva broad basally; cucullus elongate, with one or double stout spikes under a row of comb in 2/3 length on ventral margin and dense bristles along ventral margin. Juxta deeply or slightly concave on caudal margin. Aedeagus very stout, bent medially, as long as valve or slightly longer, with complex of heavily sclerotized plates and broad plate with numerous spicules dorsally. Seventh sternite with long hair-pencils.

Distribution. Irian Jaya of Indonesia and Papua New Guinea.

Etymology. The generic name is derived from the Greek, *scoli* (= curved) and *zona* (= belt), referring to the strongly recurved labial palpus.

Remarks. This genus is remarkable for its large, recurved palpus which resembles those of many deltoids of Noctuidae.

KEY TO SPECIES OF THE GENUS *SCOLIZONA* PARK

1. Second segment of labial palpus curved, as long as 3rd; 3rd segment stout, nearly straight (Figs. 2a, 3a, b, c, and 5). 2

— Second segment of labial palpus slightly curved, less than 1/3 length of 3rd segment; 3rd segment extremely long, slender, bent before middle (Figs. 4a, b, and 6). . . . . *S. palinoides* Park, **sp. nov**.

2. Flagellum of antenna blackish in basal 1/8 and apical 1/8, grayish orange speckled with dark-brown scales between them; second segment of labial palpus strongly bent anteriorly; forewing brownish yellow, with R_4 and R_5 stalked beyond $_3$ and CuA_1 stalked for 1/3 length; male genitalia with more slender cucullus, with double spikes at 2/3 on ventral edge. . . . . *S. rhinoceros* (Diakonoff)

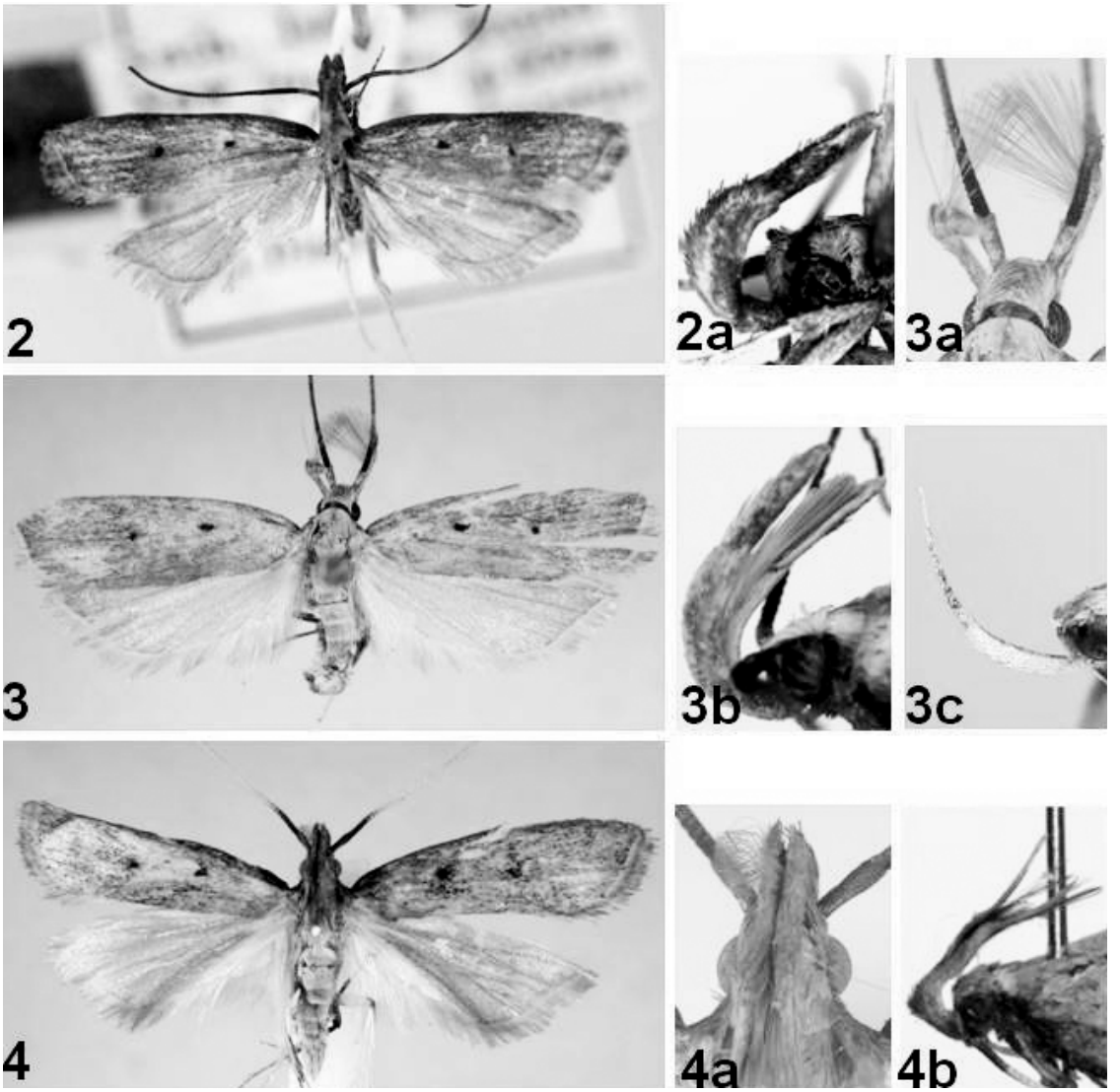
— flagellum of antenna blackish wholly, except orange white between apical 8th and 9th, with white apex; Second segment of labial palpus weakly bent; forewing yellowish brown, with R_4 and R_5 stalked beyond 2/3 (Fig. 7); hindwing venation with M_3 and CuA_1 stalked for 1/4 length; male genitalia with less slender cucullus, with a single spike at 2/3 on ventral edge . . . . . *S. ulnaformis* Park, **sp. nov**.

Scolizona rhinoceros (Diakonoff 1954), **comb. nov.**

(Figs. 2, 2a, 9, and 9a-b)

Lecithocera rhinoceros Diakonoff, 1954. Microl. New Guinea, 4: 47.

Diagnosis. Wingspan, 19-21 mm. This species is hardly distinguishable from *S. ulnaformis* **sp.**

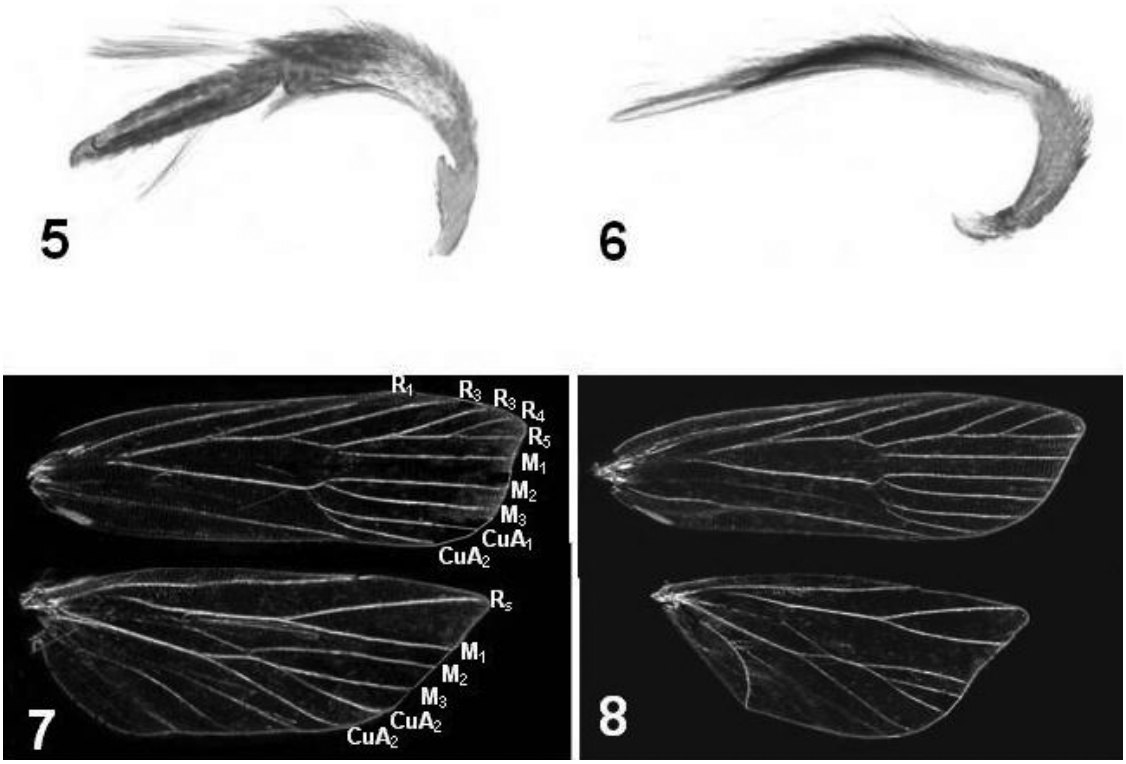


Figs. 2-4. Adults (a: head in dorsal respect; b: labial palpus in lateral respect): 2, *S. rhinoceros* (Diakonoff), holotype in RMNH; 2a, ditto, dorsal aspect of head part; 2b, ditto, labial palpus; 3, *S. ulnaformis* **sp. nov**., paratype 1; 3a, ditto, dorsal aspect of head part; 3b, ditto, labial palpus of male; 3c, lateral aspect of labial palpus of female; 4, *S. palinoides* **sp. nov**., paratype; 4a, ditto, dorsal aspect of head part; 4b, ditto, labial palpus.

nov. by external characters, but it has a slightly larger and darker forewing. The venation of both wings also differs slightly: R_4 and R_5 stalked for more than 2/3 length in the forewing and CuA_1 and CuA_2 with longer stalk than that of the latter. The male genitalia are also similar, but can be distinguished by the following description for the male genitalia: the cucullus more elongated, with nearly straight costal margin, with longer spike on ventral margin; and the aedeagus with cornutus-complex bearing elongate apical process and more heavily sclerotized dorsal projection.

Female. Unknown.

Male Genitalia (Figs. 9, 9a, and 9b): Very similar to those of *S. ulnaformis* **sp. nov**. but differs as follows: cucullus more elongated; costal edge nearly straight; spikes at 2/3 on ventral edge double, longer than comb; juxta with shorter caudal lobes; cornutus-complex with more elongate apical lobe and strong spike-like projection before middle dorsally; 7th sternite triangularly convex medially on posterior margin, whereas truncate medially in *S. ulnaformis* **sp. nov**. (Fig. 9b). Aedeagus with cornutus-complex consists of heavily sclerotized plates, with elongated apical process and a short, spike-like dorsal projection before



Figs. 5-8. Labial palpus (5-6): 5, *S. ulnaformis* **sp. nov**., paratype; 6, *S. palinoides* **sp. nov**., paratype. Wing venation (7-8): 7, *S. ulnaformis* **sp. nov**., paratype; 8, *S. palinoides* **sp. nov**., paratype.

middle; a broad plate with numerous spicules dorsally.

Material Examined. Male (holotype in Rijksmuseum of Natuurlijke Historie (RMNH), Leiden), Araucaria Camp, 800 m, 21 iii 1939, slide no. 962 D.; 1 ♂, Indonesia, Irian Jaya, Kokamatan Oksibil, Mobilabol 1,340 m, 4°54'S 140°37'E, 21-25 ii 2005, disturbed montane forest, UNCEN-ZMA Expedition Papua Indonesia 2005, gen. slide no. CIS-5951/Park

Distribution. Irian Jaya (Indonesia).

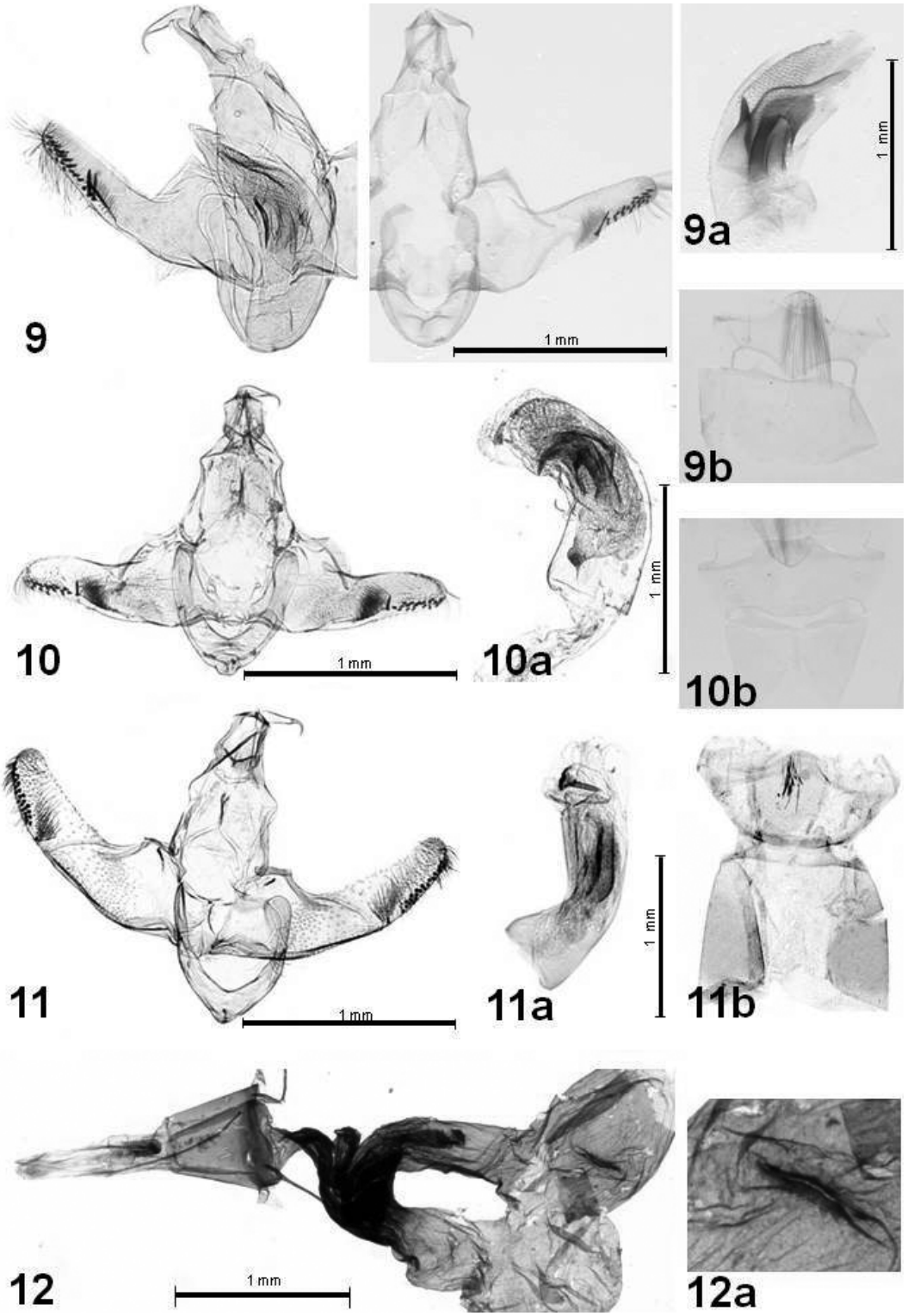
Remarks. After the species was described by Diakonoff (1954), an additional male was newly found in the area not far from the type locality.

Scolizona ulnaformis Park, **sp. nov**.

(Figs. 3, 3a-c, 5, 7, 10, 10a-b, and 12)

Diagnosis. This new species is externally very similar to the type species, *S. rhinoceros* (Diakonoff), but can be distinguished by the wholly blackish antenna with whitish color between apical 8th and 9th; the forewing brownish yellow, with venation R_4 and R_5 stalked beyond ¾ and CuA_1 with longer stalk in the hindwing; the backish basal part of flagellum shorter, the 2nd segment of labial palpus less bent anteriorly; the male genitalia with a single spike at 2/3 on ventral edge, whereas double spikes in *S. rhinoceros*. The new species is distinguished from the following new species by the labial palpus with shorter thickened 3rd segment, whereas *S. palinoides* **sp. nov**. has an extremely long 3rd segment, as illustrated in Figs. 4a and 4b.

Description. Male & Female (Figs. 3, 3a-c, 5, and 7). Wingspan, 18.0-19.0 mm. External morphology: Head brownish yellow to yellowish brown. Antenna with basal joint slender, blackish dorsally, grayish orange ventroapically, without pectin; flagellum wholly blackish except orange white part between apical 8th and 9th, with white apex. Labial palpus (Fig. 5) very stout; 1st segment relatively long, about half length of 2nd segment; 2nd segment thickened, brownish orange, speckled with dark-brown scales on outer surface, orange white and longitudinally furrowed on inner surface with hair-like, long scale-tuft apically; 3rd segment as long as 2nd, darker than 2nd on outer surface, with hair-like, long scale-tuft on inner surface, these hairs usually appressed, but sometimes erect (Figs. 3a and 5); apex obtuse. Tegula and thorax brownish yellow to yellowish brown. Forewing uniformly covered with brown-



Figs. 9-12. Male genitalia (a: aedeagus; b: 7th-8th abdominal segments): 9. *S. rhinoceros* Diakonoff: left- holotype with aedeagus; right- gen. slide no. CIS-5951; 10, *S. ulnaformis* **sp. nov.**, gen. slide no. CIS-5707; 11, *S. palinoides* **sp. nov.**, gen. slide no. CIS-5703; 12, Female genitalia of *S. ulnaformis* **sp. nov.**, gen. slide no. CIS-5960; 12a, Close-up signum.

ish scales throughout; a pair of large blackish discal spots before middle and at end of cell, usually middle one larger; apex more or less obtuse; termen sinuate; fringe yellowish brown, with pale-orange basal line; venation (Fig. 7) with R_1 arising before middle of cell; distance R_1-R_2 about 1.5 times as long as R_2-R_3; R_3 and R_{4+5} stalked for about 1/3 length; R_4 and R_5 stalked for 2/3 length; R_5 reaching termen; M_1 closed to R_{3+4+5}; M_2 nearly parallel to M_1, closer to M_3 at base; CuA_1 and CuA_2 stalked for 1/5 length of CuA_1; anal vein well developed; cell closed with weak cross vein. Hindwing pale gray, slightly broader than forewing, nearly trapezoidal; apex more or less acute; termen slightly sinuate; fringe yellowish brown, with pale orange basal line; venation with Rs and M_1 connate; M_2 well developed, closed to M_3 at base; M_3 and CuA_1 stalked for 2/5 length; CuA_2 arising from near lower corner of cell; cell open. Abdomen brownish yellow dorsally; spinous zones on tergites absent.

Male Genitalia (Figs. 10 and 10a-b). Basal lobes of uncus ovate, directed outwardly, forming Y-shape. Gnathos strongly bent preapically. Costal bar sharply angulated at middle. Valva broad basally, concave medially; cucullus nearly ovate, with gently arched costal margin, with dense bristles along ventral margin; with a single, small spike under a row of comb in 2/3 length on ventral margin, length of spike shorter than comb. Juxta deeply concave on caudal margin; caudal lobes long, about half the length of juxta. Aedeagus stout, bent medially; cornuti consist of complex of heavily sclerotized plates, with strongly curved apical process; median spike-like projection absent; with a broad plate with numerous spicules dorsally. Seventh sternite with long hair-pencil, truncate medially on posterior margin.

Female Genitalia (Fig. 12). Apophyses anteriores about 1/2 length of apophyses posteriores. Ostial plate wide, membranous. Ductus bursae narrow in posterior 1/3, broad in anterior 2/3; ductus seminalis arising beyond middle, as broad as anterior part of ductus bursae, with large accessory sac. Corpus bursae ovate, relatively small; signum long, with transverse median groove.

Holotype: Male, Papua New Guinea, Morobe Pr., Wau, Wau Ecol. Inst., 12-24 vii, 1983, S.E. & P.M. Miller, 1,200 m, Second Montane For., gen. slide No. CIS-5707/Park. Paratypes: 1 ♂, same locality as the holotype, 25-31 vii 1983, S.E. & P.M. Miller, 1,200 m, secondary Montane For., gen. slide No. CIS-5703/Park; 3 ♂, Morobe Prov., Wau, 8-14 xii 1976, mercury vapor light, C. F. Havel && R. F. Dietze; 9♂, 2♀, Morobe, 17-30 IX 1992, V. O. Becker, Col. Becker, PNG. 840, gen. slide No. CIS-5660/Park (male); 2 ♂, Papua New Guinea, Madang, Brahman Mission, 200 m, 11-15, X 1992, V. O. Becker Col.; Col. Becker, PNG 2991, gen. slide No. CIS-5704/Park.

Distribution. Papua New Guinea (Morobe).

Etymology. The species name is derived from Latin, *ulna* (= elbow) and *formis* (= forma), referring to the shape of labial palpus.

Scolizona palinoides Park, **sp. nov**.

(Figs. 4, 4a-b, 6, 8, 11, and 11a-b)

Diagnosis. The new species is distinguished from the preceding new species, *S. ulnaformis* **sp. nov.**, by the extremely long 3rd segment of labial palpus as in the figures 4b and 6. The structure of the male genitalia also can be a good separation character, with a nail-like projection apically in the aedeagus.

Description. Male (Figs. 4, 4a-b, 6, and 8). Wingspan, 18.0-20.0 mm. External characters: Head yellowish brown. Antenna with slender, blackish basal segment, without pectin; flagellum blackish in basal 1/8 length and in apical 1/8 length, orange white wholly between them. Labial palpus characteristic, with exceptionally unusual shape: 1st segment relatively long, about 1/3 as long as 2nd segment; 2nd segment thickened, triangularly dilated apically, dark brown on ventro-outer surface; 3rd segment more than 3 times as long as 2nd, basal half thickened, yellowish white, with long hair-like scale tuft ventrally, then slightly bent, narrowed toward apex, with acute apex (Fig. 6). Tegula and thorax yellowish brown. Forewing with dark-brown scales irregularly scattered, especially dense in basal area and below discal spots; a pair of large blackish discal spots before middle and near end of cell, usually middle one elongate; apex more or less acute; termen oblique, sinuate; fringe yellowish brown, with pale-orange basal line; venation (Fig. 8) similar to that of *ulnaformis* **sp. nov**. Hindwing pale gray, with dark-brown scales sparsely scattered in the lower part of discal cell, broader than forewing, nearly trapezoidal; apex more or less acute; termen slightly sinuate; fringe yellowish brown, with pale orange basal line; venation with M_2 and M_3+CuA_1 stalked for 1/4 length, whereas approximated in the latter as shown in the Fig. 7. Fore leg dark brown on femur and tibia ventrally; mid leg dark brown on femur and basal half of tibia, then yellowish white speckling with brownish scales; hind tibia slender, yellowish white. Abdomen pale orange; anal tuft orange; spinous zones on tergites absent.

Male Genitalia (Figs. 11 and 11a-b). Uncus similar to that of *S. ulnaformis* and gnathos more slender. Costal bar less sharply angulated at middle. Valva broad basally, concave medially; cucullus with slightly concave or nearly straight costal margin; bristles on ventral margin more dense; spike at base of comb on ventral margin very small, about half length of that of *S. ulnaformis*. Juxta slightly concave on caudal margin, with

small emargination at middle; caudal lobes not developed. Aedeagus stout, bent at basal 1/3; cornuti consist of two heavily sclerotized long plates, a plate with dense spicules, and with a nail-like strong spike apically.

Holotype: Male, Papua New Guinea, Morobe Pr., Wau, Wau Ecol Inst., 25-31 vii, 1983, S. E. & P. M. Miller, 1,200m. UV Light, Montane For., gen. slide No. CIS-5703/Park. *Paratypes*: 6 ♂, same locality, 12-24 vii 1983, gen. slide No. CIS-5747/Park, -5749/Park; 2♂, same locality, 1-10 viii 1983; 1 ♂, same locality, 23-31 viii 1983.

Distribution. Papua New Guinea (Morobe).

Etymology. The species name is derived from the Greek, *palin* (=backward) with suffix *-oides.*

Remarks. This new species has some differences from *S. ulnaformis* **sp. nov**. by the extremely long 3rd segment of the labial palpus, and the hindwing venation with M_2 stalked with M_3 and CuA_1, whereas they are free in *S. ulnaformis* **sp. nov**. However, the author placed tentatively these two species in the same new genus *Scolizona* **gen. nov.** because they are very similar in other external and male genital characters. It is needed a further study when additional species are found.

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