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**Thai Species of *Periacma* MEYRICK and Its Allied Two New Genera  
(Lepidoptera: Oecophoridae)<sup>1,2</sup>**

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**Abstract**

Two new Oecophorid genera *Irepacma* and *Ripeacma*, closely allied to *Periacma* MEYRICK, are proposed. Nineteen new species, of which 10 belong to *Periacma*, 3 to *Irepacma* and 6 to *Ripeacma*, are described from Thailand. *Periacma orthiodes* MEYRICK is recorded from Thailand for the first time. *Periacma conophanta* MEYRICK, occurring in Sri Lanka, is transferred to *Ripeacma*.

The Oecophorid genus *Periacma* includes 36 species, all belonging to the Oriental region except one extending into Japan. However, no species of the genus have hitherto been recorded from Thailand. In the course of lepidopterological expeditions of the University of Osaka Prefecture to Thailand in 1981 and 1983, 264 specimens belonging to *Periacma* and the allied genera were taken from 10 localities (Fig. 1) by the following microlepidopterists: Prof. H. KUROKO (the expedition leader), Dr S. MORIUTI, Dr A. LEWVANICH, Y. ARITA and Dr Y. YOSHIYASU. As a result of examination, 20 species were determined; one of them is *Periacma orthiodes* MEYRICK which is recorded here for the first time from Thailand, and the remaining 19, of which 10 are referable to *Periacma*, three to a new genus *Irepacma* and six to a new genus *Ripeacma*, are described as new to science in the present paper. The two new genera are very closely related to *Periacma* in superficial characters, but these three are clearly distinguished, in genitalia, from one another by the distinct differences.

Hosts of all the Thai species dealt with in this paper are unknown, but it is almost certain that the larvae are associated with fallen leaves of broad-leaved trees in tropical rain forests.

We have followed DOBIAS<sup>1)</sup> for the spelling of Thai place-names in Roman letters.

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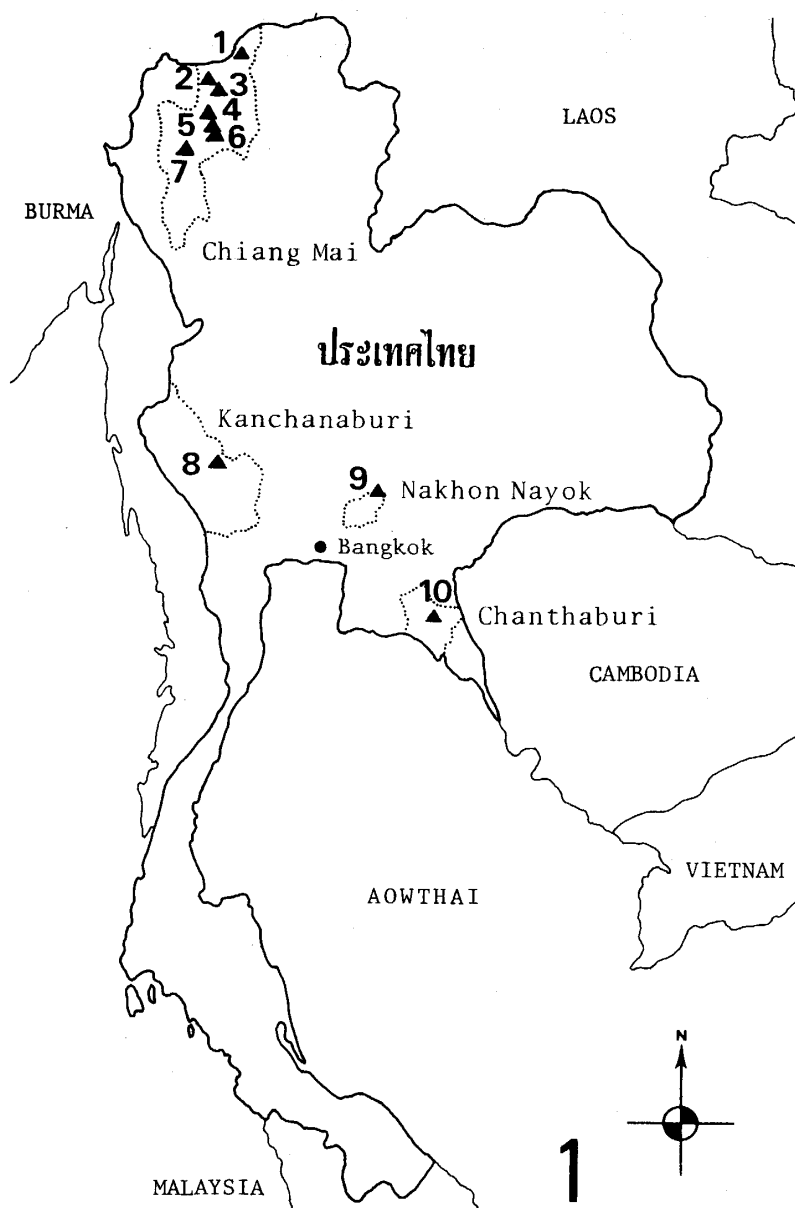


Fig. 1. Map of Thailand, showing the localities (1–10) at which specimens dealt with in this paper were collected in 1981 and 1983. (1) Doi Angkhang, (2) Doi Pakia, (3) Hui Nam Dung, (4) Mae-Sa, (5) Doi Chang Khian, (6) Doi Suthep, (7) Doi Inthanon, (8) Tham Than Lot, (9) Khao Yai, (10) Khao Soi Dao.

### Abbreviations

- BMNH Department of Entomology, British Museum (Natural History), London, U.K.  
 TDA Entomology and Zoology Division, Department of Agriculture, Bangkok, Thailand.  
 UOP Entomological Laboratory, University of Osaka Prefecture, Sakai, Japan.

### *Periacma* MEYRICK

*Periacma* MEYRICK, 1894, p. 21.<sup>2)</sup>—MEYRICK, 1910, p. 156–157.<sup>3)</sup>—MEYRICK, 1922, p. 194.<sup>4)</sup>—FLETCHER, 1929, p. 168.<sup>5)</sup>—GAEDE, 1939, p. 380.<sup>6)</sup>—CLARKE, 1963, p. 349.<sup>7)</sup>  
Type-species: *Periacma ferialis* MEYRICK, 1894. Original designation.

Head with rather loosely appressed scales. Tongue developed. Antenna 4/5 or nearly so, filiform, in ♂ thicker than in ♀; scape without pecten. Labial palpus very long, recurved, thickened with appressed scales; third segment completely lacking in ♂, and very slender and shorter than second segment in ♀. Forewing rather broad; costa gently arched; 12-veined; R<sub>1</sub> from before middle, R<sub>4</sub> and R<sub>5</sub> stalked, R<sub>5</sub> to costa or apex, M<sub>3</sub> nearer to M<sub>2</sub> than to Cu<sub>1a</sub>, Cu<sub>1a</sub> from angle, Cu<sub>1b</sub> from before angle, and Cu<sub>2</sub> absent. Hindwing under 1; elongate-ovate; all veins present; M<sub>3</sub> and Cu<sub>1a</sub> connate from angle; cilia under 1. Abdomen with tergites spined; ♂ with lateral tufts of long hairs in some species.

Male genitalia: Uncus well developed. Gnathos forming a spatulate plate in general and bowed backward. Anellus undeveloped. Valva with a distinct process at base of dorsal margin (dorso-proximal process); sacculus well produced. Aedeagus rather short. Cornutus present or absent.

Female genitalia: Lamella antevaginalis developed; apophysis anterioris present. Bursa copulatrix varied. Signum present or absent.

*Remarks.* The genus *Periacma* was established by MEYRICK<sup>2)</sup> in 1894 for three Upper Burmese species. In 1939 GAEDE<sup>6)</sup> listed 35 species as belonging to this genus. MEYRICK<sup>8)</sup> added one species in the same year. All of these species were described by Meyrick from the Oriental region. As pointed out by MEYRICK<sup>3)</sup> in 1910, the genus is clearly distinguished from the other Oecophorid genera by the absence of third segment of labial palpus in the male. However, the curious genus is heterogeneous in genital characters. We divide it into three genera, of which two—*Irepacma* and *Ripeacma*—are proposed as new. The marked generic separation between them is noted under the respective new genera.

*Periacma* is characterized by the two-segmented labial palpus in the male and by the presence of dorso-proximal process on the valva in the male genitalia.

### *Periacma orthiodes* MEYRICK

(Figs. 2, 26, 27, 45, 62)

*Periacma orthiodes* MEYRICK, 1894, p. 22.<sup>2)</sup>—MEYRICK, 1922, p. 194.<sup>4)</sup>—GAEDE, 1939, p. 382.<sup>6)</sup>—CLARKE, 1963, p. 361, pl. 177, figs. 3–3b.<sup>7)</sup>

♂, 12–14 mm. ♀, 14.5–16 mm. Head orange-yellow to ochreous-yellow. Antenna dark grey above. Palpus (Figs. 26, 27) ochreous-yellow; in ♀ second segment sometimes slightly marked with grey apically. Thorax orange-yellow to ochreous-yellow, usually with a narrow longitudinal dark purplish-grey median streak; tegula with a dark purplish-grey streak inside. Fore leg ochreous-yellow, the coxae being pale yellowish, more or less suffused with grey; femur and tibia largely infuscated; tarsus blackish-brown on posterior three segments. Mid leg ochreous-yellow; femur yellowish, suffused with grey; tibia more or less suffused with dark grey or dark brown inwardly; tarsus blackish-brown, with an orange-yellow apical ring on each of segments; outer spur largely suffused with dark brown. Hind leg predominantly yellowish; tarsus broadly suffused with dark grey on each segment dorsally and laterally; outer spurs

dark brown. Abdomen dark grey above, pale yellowish beneath; in ♂ side and anal tufts yellowish; in ♀ anal tuft orange-yellow. Forewing (Fig. 2) with  $R_5$  to apex; orange-yellow to ochreous-yellow, with some scattered dark fuscous scales; markings dark fuscous, slightly purplish-tinged; costa marked towards base; a suffused slender streak on vein Sc from base to about 1/3 of wing-length, and sometimes it is indistinct or absent; a streak above fold from near base to about middle of wing-length; a short streak above it beyond its middle; an elongate spot beneath fold from base of dorsum; a streak along dorsum extending to middle of wing-length, connected with the preceding at base; a moderately broad, very slightly curved fascia from costa just beyond middle to dorsum before tornus; a terminal fascia meeting the preceding fascia on tornus in some specimens or not meeting it in others; cilia concolorous with ground-colour of wing, occasionally scattered with dark brown on costa and tornus near base; dorsal cilia grey. Hindwing grey; cilia yellowish, on costa mixed with pale grey, and on termen with a pale greyish subbasal shade except round apex; dorsal cilia concolorous with, or a little paler than, hindwing.

Male genitalia: as in Figs. 45, 45a. Sacculus produced into a digitate process at apex. Aedeagus with a tooth on dorsal surface; cornutus a strong thorn.

Female genitalia: as in Fig. 62. Ductus bursae with a narrow, sclerotized, posterior portion. Signum small, armed with small spines.

*Specimens examined.* 33♂, 20♀.

Chiang Mai—2♂, Doi Angkhang, ca. 1450 m., 16. V. 1983 (H. KUROKO *et al.*), UOP; 3♂, 2♀, Doi Pakia, ca. 1500 m., 24. V. 1983 (H. KUROKO *et al.*), UOP; 1♂, Mae-Sa, ca. 500 m., 29. V. 1983 (H. KUROKO *et al.*), UOP; 8♂, 4♀, Doi Chang Khian, ca. 1250 m., 27. V. 1983 (H. KUROKO *et al.*), UOP; 18♂, 14♀, same locality, 29. V. 1983 (H. KUROKO *et al.*), BMNH, TDA and UOP.

Extra-limital material: 1♂ (holotype), labelled "Koni/ Burma/ NH. .9.88," BMNH.

*Distribution.* Northern Thailand and Upper Burma.

*Remarks.* This species originally described from a single male specimen taken at Koni, Upper Burma, is new to the fauna of Thailand.

It is very similar to the Assamese *P. iodesma* MEYRICK in superficial appearance, but differs from the latter in the colour of palpus in male: the outside is ochreous-yellow throughout in *orthiodes*, but is fuscous in apical 2/3 in *iodesma*. In male genitalia the sacculus digitate process of *orthiodes* is much shorter than that of *iodesma*; dorsal surface of aedeagus is armed with one tooth in *orthiodes*, but with several teeth in *iodesma*. This species is also allied to the next species; the discriminating characters are noted under the latter species.

### *Periacma kanchanaburiensis* sp. nov.

(Figs. 3, 46, 46a, 63)

♂, 12–13 mm. ♀, 13–14 mm. Similar to the preceding species (*orthiodes*), from which this species is difficult to separate, with certainty, on superficial characters, though the subbasal shade is absent or tends to vanish in the terminal cilia of hindwing. Forewing orange-yellow in ground-colour.

Male genitalia: as in Figs. 46, 46a. Similar to those of *orthiodes*, but sacculus longer and differently shaped (*cf.* Figs. 45a and 46a), aedeagus armed with three or five teeth instead of a single tooth, and cornutus produced at apical 1/3.

Female genitalia: as in Fig. 63. Differ from those of *orthiodes* in broader sclerotized, posterior portion of ductus bursae.

*Specimens examined.* 2♂, 2♀.

Holotype ♂, Kanchanaburi, Tham Than Lot, 20. VIII. 1981 (H. KUROKO *et al.*), UOP.

Paratypes: 1♂, 2♀, same data as type, TDA and UOP.

*Distribution.* Central Thailand.

*Remarks.* This species is very closely allied to *P. orthiodes* MEYRICK; the specific separation has been described above.

*Etymology.* The specific name is based on Kanchanaburi Province, Thailand.

### ***Periacma changkhanensis* sp. nov.**

(Figs. 4, 64)

♀, 15 mm. Head somewhat pale ochreous. Antenna dark grey, obscurely annulated with grey. Palpus orange-yellow, the second segment being largely suffused with ochre. Thorax ochreous, mixed with dark purplish-grey; tegula ochreous, largely suffused with dark purplish-grey. Fore leg yellow-ochreous; femur and tibia suffused with grey; posterior three tarsal segments blackish-brown. Mid leg yellow-ochreous, mixed with grey; tarsus blackish-brown, with a pale ochreous apical ring on each segment. Hind leg pale yellowish-ochreous; tarsus and spurs greyish. Abdomen not studied. Forewing (Fig. 4) with  $R_5$  to apex; ochreous, scattered with some dark fuscous scales; markings dark fuscous, slightly purplish-tinged; costa marked towards base; basal half largely suffused, except on costal area; a rather broad, weakly sinuate fascia from costa just beyond middle to dorsum before tornus; a terminal fascia tending to meet the preceding on tornus; cilia concolorous with ground-colour of wing, on dorsum grey. Hindwing grey; cilia a little pale grey, with a grey subbasal shade, round apex mixed with ochre.

Female genitalia: as in Fig. 64. Very similar to those of *orthiodes* and *kanchanaburiensis*. Ductus bursae with anterior membranous portion being broader than in *orthiodes* and with posterior sclerotized portion being much shorter than in *kanchanaburiensis*.

♂. Unknown.

*Specimen examined.* 1♀.

Holotype ♀, Chiang Mai, Doi Chang Khian, ca. 1250 m., 29. V. 1983 (H. KUROKO *et al.*), UOP.

*Distribution.* Northern Thailand.

*Remarks.* This species is very similar to the preceding two species, but may be easily distinguished by the darker forewing. In genitalia it is separated from them by the characters described above.

*Etymology.* The specific name is based on the type-locality.

### ***Periacma kunai* sp. nov.**

(Figs. 5, 65)

♀, 15–16.5 mm. Head light orange-yellow. Antenna dark grey, with yellowish annuli in apical 3/5. Palpus orange-yellow; second segment spotted with blackish-brown before apex. Thorax orange-yellow, in holotype slightly and in paratype largely suffused with dark purplish-grey in central area; tegula orange-yellow, in paratype broadly margined with dark purplish-grey inwardly. Fore leg pale yellowish; tibia and tarsus orange-yellow, the latter with posterior three segments blackish-brown. Mid leg pale yellowish; tibia orange-yellow, marked

with blackish-brown on both extremities; tarsus orange-yellow, with blackish-brown annuli; outer spur tinged with blackish-brown outwardly. Hind leg predominantly yellowish; outer spurs tinged with dark grey laterally. Abdomen not studied. Forewing (Fig. 5) with  $R_5$  to apex; orange-yellow, very sparsely scattered with dark fuscous scales; costa with a small pale grey dot at base; markings dark fuscous, slightly purplish-tinged; an ill-defined suffused streak on fold from before base to middle of wing-length; an elongate spot in disc just before middle; an irregular spot on base of dorsum; area between fold and dorsum largely sprinkled with dark fuscous scales; a rather narrow, very weakly curved fascia from costa just beyond middle to dorsum before tornus, where it unites with a narrow terminal fascia, from which some short striations radiate inwardly; cilia orange-yellow, on dorsum grey. Hindwing rather dark grey; cilia grey, with darker subbasal shade throughout, round apex yellowish-tinged.

Female genitalia: as in Fig. 65. Lamella antevaginalis asymmetrical, the left side being produced into a pocket, in which the ostium is located. Ductus bursae very broad and membranous anteriorly. Signum as in Fig. 65.

♂. Unknown.

*Specimens examined.* 2♀.

Holotype ♀, Chiang Mai, Doi Suthep, ca. 600 m., 20. V. 1983 (H. KUROKO *et al.*), UOP.

Paratype: 1♀, same data as type, TDA.

*Distribution.* Northern Thailand.

*Remarks.* This species is characterized by the asymmetrical lamella antevaginalis in the female genitalia, though its male is unknown.

*Etymology.* This species, of which the type-locality is Doi Suthep, is named after King KU NA (GUE NA), the ninth King of Chiang Mai, who in 1383 built the beautiful Wat Phra That Doi Suthep on the Doi Suthep mountain.

### *Periacma nualsriae* sp. nov.

(Figs. 6, 66)

♀, 13–13.5 mm. Superficially very similar to the preceding species (*kunai*); the discriminating characters are as follows: Antenna orange-yellow basally; scape orange-yellow. In fore tarsus only fifth segment blackish-brown. Forewing (Fig. 6) with more densely suffused markings in basal area; two fasciae not united on tornus, the terminal one being broader than in *kunai*, without striations. Abdomen, which has not been observed in *kunai*, grey above and pale yellowish beneath; anal tuft yellowish.

Female genitalia: as in Fig. 66. Lamella antevaginalis narrowly sclerotized posteriorly, and produced into a conspicuous process on each side. Ductus bursae short, broad, membranous throughout. Signum a weakly sclerotized plate with tiny teeth.

♂. Unknown.

*Specimens examined.* 2♀.

Holotype ♀, Kanchanaburi, Tham Than Lot, 20. VIII. 1981 (H. KUROKO *et al.*), UOP.

Paratype: 1♀, same data as type, TDA.

*Distribution.* Central Thailand.

*Remarks.* As described above, this species is very similar to *P. kunai* sp. nov. in superficial appearance. In the female genitalia, however, the two species are entirely different from each other, as illustrated (*cf.* Figs. 65 and 66).

*Etymology.* The name of this species is dedicated to Mrs Nualsri WONGSIRI, TDA.

***Periacma siamensis* sp. nov.**

(Figs. 7, 28, 29, 47, 67)

♂, 12.5 mm. ♀, 14.5 mm. Head yellowish-ochreous. Antenna dark grey, with obscure pale ochreous annuli. Palpus (Figs. 28, 29) yellowish-ochreous; in ♂ second segment largely suffused with blackish-brown outside; in ♀ second segment irrorated with blackish-brown laterally and third segment marked with a few blackish-brown dots laterally. Thorax and tegula yellowish-ochreous, mixed with dark grey. Legs yellowish; femora more or less sprinkled with dark grey; fore and mid tibiae orange-ochreous, more or less sprinkled with dark brown; fore tarsus orange-ochreous, with posterior three segments blackish-brown; mid tarsus broadly annulated with dark brown basally on each segment; hind tarsus somewhat marked with grey; all outer spurs tinged with grey outside. Abdomen not observed. Forewing (Fig. 7) with  $R_5$  to apex; yellowish-ochreous, sprinkled with dark fuscous scales throughout; markings dark fuscous, slightly purplish-tinged; costa with a dot at base; a rather broad oblique streak from dorsum before base reaching across fold; dorsal area between this and inner fascia densely irrorated with pigmented scales; a narrow, weakly curved fascia from costa beyond middle to dorsum before tornus; a terminal fascia slenderer than the preceding; the two fasciae never united in tornus; cilia yellowish-ochreous, with a very interrupted dark grey antemedian line; dorsal cilia pale grey. Hindwing grey, mixed with pale ochreous round apex; subbasal shade indistinct and slightly darker in colour.

Male genitalia: as in Fig. 47. Gnathal ventral plate strongly dilated laterally. Valva with large dorso-proximal process; sacculus large, and roundly produced at middle of ventral margin. Aedeagus bending apically, with a few small spatulate dorsal processes before apex and with a long, slender, strongly curved process on left side about basal 2/3; cornutus with a small but distinct thorn.

Female genitalia: as in Fig. 67. Lamella antevaginalis not produced into process on each side. Ductus bursae long, membranous except for a large, triangular, weakly sclerotized plate at posterior end.

*Specimens examined.* 1♂, 1♀.

Holotype ♂, Nakhon Nayok, Khao Yai, ca. 800 m., 14. VI. 1983 (H. KUROKO *et al.*), UOP.

Paratype: 1♀, same locality as type, 19. VI. 1983 (H. KUROKO *et al.*), UOP.

*Distribution.* Central Thailand.

*Remarks.* This species is easily characterized by the forewing with two narrow fasciae, though similar to *P. thamthanlotensis* sp. nov. in superficial appearance, as will be mentioned under the description of *thamthanlotensis*.

*Etymology.* The name of this Thai species is based on the former name for its homeland.

***Periacma thamthanlotensis* sp. nov.**

(Figs. 8, 48, 68)

♂, 14 mm. ♀, 14.5 mm. Superficially similar to the preceding species (*siamensis*), from which this species differs as follows: Head and forewing (Fig. 8) yellow-ochreous in ground-colour, which is more yellowish than in *siamensis*. In ♂ palpus unicolorous. Forewing with two distinct stigmata, *viz.*, first discal at 2/5 and plical just beyond it, and with somewhat broader fasciae. Hindwing darker, though grey.

Male genitalia: as in Fig. 48. Valva narrow, ending in a point; dorso-proximal process long. Sacculus asymmetrical: apical process of the left hooked, whereas that of the right bent



at apex; in left sacculus ventral margin with a small process about middle, while in right one margin with a large process before base. Aedeagus with slender, sinuate apical portion; cornutus absent.

Female genitalia: as in Fig. 68. Lamella antevaginalis asymmetrical, the right lobe being much larger than the left one, both lobes with a free process on lateral side. Ductus bursae short, membranous in posterior 2/3 and weakly sclerotized in anterior 1/3. Signum well sclerotized.

*Specimens examined.* 1♂, 1♀.

Holotype ♂, Kanchanaburi, Tham Than Lot, 21. VIII. 1981 (H. KUROKO *et al.*), UOP.

Paratype: 1♀, same data as type, UOP.

*Distribution.* Central Thailand.

*Remarks.* Although superficially similar to *P. siamensis* sp. nov., this species is readily separated from it, as described above. The two species can be easily separated by genitalia (*cf.* Figs. 47 and 48; Figs. 67 and 68). The female genitalia of this species are nearest to those of *P. nualsriae* sp. nov., but differ from the latter by the lamella antevaginalis and the signum. The figures of the two will show these differences adequately.

*Etymology.* The specific name is based on the type-locality.

### *Periacma wongsirii* sp. nov.

(Figs. 9, 30, 39, 49)

♂, 13–15 mm. Head yellow. Antenna grey, annulated with pale ochreous-yellow. Palpus (Fig. 30) with exceptionally broad second segment, bending strongly near base; yellow-ochreous; lateral side of second segment largely suffused with dark brown apically. Thorax and tegula yellow-ochreous, slightly mixed with grey or pale yellow. Legs predominantly pale yellow; fore and mid tibiae and tarsi tinged with ochre; fore tarsus blackish-brown on posterior three segments; mid tarsus largely suffused with blackish-brown; hind tarsus annulated with dark brown basally on each of posterior four segments. Abdomen grey above, yellowish-white beneath; side and anal tufts yellowish. Forewing (Figs. 9, 39) with  $R_5$  to apex; yellow-ochreous, sprinkled with dark fuscous scales throughout; markings dark fuscous, very slightly purplish-tinged; costa with a dot at base; an ill-defined suffused mark from dorsum near base, extending beyond fold; first discal stigma at 2/5; in some specimens several pigmented scales forming a plical stigma on fold at middle of wing-length; a narrow, weakly curved fascia from costa beyond middle to dorsum before tornus; a terminal fascia very narrow, not reaching to the preceding fascia; cilia yellow-ochreous, on dorsum grey. Hindwing grey; cilia pale grey, mixed with pale yellow round apex, with a little darker subbasal shade.

Male genitalia: as in Fig. 49. Sacculus with a symmetrical digitate process on dorsal margin well before rounded distal end; left sacculus with ventral margin strongly produced into a rounded process near base and right one with ventral margin produced into a triangular process near base. Aedeagus stout, with two lobes about apical 1/3, the left lobe being much larger than the right lobe; cornutus absent.

♀. Unknown.

*Specimens examined.* 12♂.

Holotype ♂, Kanchanaburi, Tham Than Lot, 20. VIII. 1981 (H. KUROKO *et al.*), UOP.

Paratypes: Kanchanaburi—9♂, same data as type, BMNH, TDA and UOP; 1♂, same locality, 21. VIII. 1981 (H. KUROKO *et al.*), UOP. Chanthaburi—1♂, Khao Soi Dao, ca. 400 m., 6. VI. 1983 (H. KUROKO *et al.*), UOP.

*Distribution.* Central Thailand.

*Remarks.* This species is easily recognized by the exceptionally broad second segment of labial palpus in the male, though its female is unknown.

*Etymology.* We are pleased to name this species after Dr Tanongchit WONGSIRI, Deputy Director-General of the Department of Agriculture, Thailand.

***Periacma angkhangensis* sp. nov.**

(Figs. 10, 40, 50, 69)

♂, 14–14.5 mm. ♀, 14–15 mm. Head pale orange-yellow, the face being paler. Antenna pale orange-yellow, ringed with dark brown; scape pale orange-yellow, mixed with blackish-brown above. Palpus orange-yellow forward, pale yellow backward, and sprinkled with some dark fuscous scales; in ♂ second segment tipped with blackish-brown; in ♀ second segment ringed with blackish-brown at apex. Thorax orange-yellow, somewhat or largely suffused with blackish-brown except each side; tegula orange-yellow. Legs pale greyish-yellow; fore and mid tibiae orange-yellow, more or less suffused with blackish-brown; fore tarsus orange-yellow, with blackish-brown posterior three segments; mid tarsus blackish-brown, with an orange-yellow apical ring on each segment. Abdomen without side tufts in ♂; grey; segmental margins and ventral surface yellowish-white; anal tuft yellowish-white in ♂, pale ochreous in ♀. Forewing (Figs. 10, 40) with termen strongly oblique;  $R_5$  to apex; orange-yellow, sprinkled with dark fuscous scales; costa with a dot at base; an elongate spot from dorsum near base, reaching across fold; two stigmata, *viz.*, first discal before  $2/5$  and plical at  $2/5$ , the two being sometimes enlarged to obliquely-elongate spots; a rather narrow, nearly straight fascia from costa at  $3/5$  to dorsum just before tornus; apical area densely suffused with pigmental scales, forming a spot, not a fascia; cilia orange-yellow, dotted with blackish-brown near base; dorsal cilia greyish. Hindwing grey; cilia a little paler than wing, round apex yellowish; a somewhat darker subbasal shade along termen including apical and terminal areas.

Male genitalia: as in Fig. 50. Gnathos short, broad, forming a round band. Valva with a short dorso-proximal process; sacculus with a large rounded lobe at base, the distal portion with three small triangular processes. Aedeagus produced posteriorly into two inwardly curved processes, the left being set with microscopic spines and the right being much larger and armed with many small teeth and spines; cornutus absent.

Female genitalia: as in Fig. 69. Lamella antevaginalis narrowly folded laterally on eighth abdominal sternite. Bursa copulatrix membranous throughout, except for a pair of small, lightly sclerotized plates before ostium; posterior part (antrum) wide, cupped and the remainder very broad; inception of ductus seminalis anterior to antrum.

*Specimens examined.* 5♂, 19♀.

Holotype ♂, Chiang Mai, Doi Angkhang, ca. 1450 m., 16. V. 1983 (H. KUROKO *et al.*), UOP.

Paratypes: Chiang Mai—1♂, 2♀, same data as type, UOP; 2♂, 5♀, Doi Inthanon, ca. 1300 m., 21. V. 1983 (H. KUROKO *et al.*), TDA and UOP; 12♀, Doi Pakia, ca. 1500 m., 24. V. 1983 (H. KUROKO *et al.*), BMNH and UOP; 1♂, Hui Nam Dung, ca. 1600 m., 26. V. 1983 (H. KUROKO *et al.*), UOP.

*Distribution.* Northern Thailand.

*Remarks.* This Thai species is similar to the Burmese *P. ferialis* MEYRICK, the type-species of the genus, in wing shape and maculation, but differs sharply from it in the venation, *i.e.*, the forewing with vein  $R_5$  running to apex in *angkhangensis* but to costa in

*ferialis*.

*Etymology*. The specific name is based on the type-locality.

***Periacma rumakomi* sp. nov.**

(Figs. 11, 51)

Described from a somewhat rubbed specimen. ♂, 12.5 mm. Head yellow. Antenna pale ochreous-yellow, the apical 4/5 being marked with dark grey dots above. Palpus predominantly deep yellow. Thorax deep yellow, mixed with dark grey; tegula yellow, slightly tinged with orange. Legs yellowish; fore tibia and tarsus tinged with pale orange. Abdomen not studied. Forewing (Fig. 11) with termen very oblique as in the preceding species; R<sub>5</sub> to apex; yellow, somewhat tinged with orange; markings dark fuscous, slightly purplish-tinged; costa with a dot at base; basal half with a suffusion except in costal area; a rather narrow fascia, of which the inner edge is gently curved, from costa beyond middle to tornus; an apical spot; cilia concolorous with ground-colour of wing, on dorsum grey. Hindwing grey; cilia grey, tinged with pale ochre on costa and termen; an indistinct greyish subbasal shade along termen.

Male genitalia: as in Fig. 51. Gnathos undeveloped. Valva with a few marginal spines round ventro-distal corner and with a similar spine on ventral margin at distal 3/4; dorso-proximal process long, slender and bulbed at apex; sacculus very long, produced distally into a long spatulate process; base with a long process: the process of right valva being simple, long and very slender in apical 3/7, and that of left one being short and dilated before apex. Aedeagus with basal expansion; vesica with a strong cornutus.

♀. Unknown.

*Specimen examined*. 1♂.

Holotype ♂, Kanchanaburi, Tham Than Lot, 20. VIII. 1981 (H. KUROKO *et al.*), UOP.

*Distribution*. Central Thailand.

*Remarks*. This species is distinct from the average species of *Periacma* by the absence of gnathos in the male genitalia. In placing this species in *Periacma*, we do so with some hesitation.

As already mentioned, the specimen of this species is not in good condition and better material may be necessary to separate it from *P. angkhangensis* sp. nov. The two species seem to be similar in superficial appearance, but are distinctly different in genitalia.

*Etymology*. We take pleasure in naming this Thai species for Mr Montri RUMAKOM, Director of the TDA.

***Periacma nakhonnayokensis* sp. nov.**

(Figs. 12, 52, 70)

♂, 15 mm. ♀, 17.5 mm. Head pale yellowish-ochreous, the face being much paler. Antenna pale ochreous, the basal part and scape being dark fuscous above; in ♀ banded with dark brown above. Palpus pale yellowish-ochreous; in ♂ second segment with a dark fuscous dot before apex laterally; in ♀ second segment sparsely sprinkled with dark fuscous dots laterally. Fore leg pale greyish-yellow; femur largely suffused with dark grey; tibia dark fuscous, with yellowish-ochreous at apex; tarsus yellowish-ochreous, the first segment being marked with blackish-brown at middle and the posterior three segments being blackish-brown. Mid and hind legs pale greyish-yellow; mid tarsus with imperfect broad blackish-brown

annuli. Abdomen: in ♂ not observed; in ♀ dark grey above, very pale grey beneath, and anal tuft pale ochreous. Forewing (Fig. 12) with  $R_5$  to apex; pale yellowish-ochreous; costa-tinged with pale grey basally, with a dark fuscous dot at base; dorsal area densely suffused with dark grey basally, the suffusion fading into pale grey distally; a distinct blackish first discal at 2/5; a smaller blackish plical before middle; a broad dark fuscous transverse fascia at 2/3, distinctly margined with nearly black inwardly; cilia (imperfect) concolorous with wing, on dorsum grey. Hindwing grey; cilia (imperfect) concolorous, with a distinct darker subbasal shade.

Male genitalia: as in Fig. 52. Gnathal ventral plate clothed with no spinules. Valva with a distinct triangular process on dorsal margin before round distal end; dorso-proximal process stout; sacculus symmetrical, narrowly extended distally. Aedeagus with apical 2/5 forming a digitate process, the ventral surface being saw-toothed in series; cornutus absent.

Female genitalia: as in Fig. 70. Lamella antevaginalis forming a pair of triangular processes. Ductus bursae sclerotized. Signa paired, elongate and toothed.

*Specimens examined.* 1♂, 2♀.

Holotype ♂, Nakhon Nayok, Khao Yai, ca. 800 m., 26. VIII. 1981 (H. KUROKO *et al.*), UOP.

Paratypes: 1♀, same locality as type, 27, VIII. 1981 (H. KUROKO *et al.*), UOP; 1♀, same locality, 18. VI. 1983 (H. KUROKO *et al.*), TDA.

*Distribution.* Central Thailand.

*Remarks.* This is a striking species with a broad dark transverse fascia on the forewing and the recognition of this species is easy.

*Etymology.* The specific name is based on Nakhon Nayok Province, Thailand.

### ***Irepacma* gen. nov.**

Type-species: *Irepacma pakiensis* MORIUTI, SAITO et LEWVANICH, sp. nov.

With characters of *Periacma*, but differing evidently in lacking the valval dorso-proximal process in male genitalia and in not possessing the apophysis anterioris in female.

Male genitalia: Uncus small, forming a digitate process. Gnathos not curved backward, the arms being very short. Anellus a small, lightly sclerotized plate. Valva without dorso-proximal process; sacculus produced posteriorly into a stout process, the ventral margin with a distinct process.

Female genitalia: Apophysis anterioris absent. Signum present or absent.

*Remarks.* This new genus is erected for three new Thai species. A number of previously described species belonging to *Periacma* will be transferred from *Periacma* to *Irepacma* when the genitalia have been examined in detail.

This genus is very closely allied to *Periacma*, as described above. It is also allied to the genus *Ripeacma*; the distinguishing characters are noted under the latter genus.

*Etymology.* The generic name is feminine and is an anagram of *Periacma* MEYRICK.

### ***Irepacma pakiensis* sp. nov.**

(Figs. 13–16, 31, 32, 53, 54, 71, 72)

♂, 15–16 mm. ♀, 15–18.5 mm. Variable in colour and markings.

♂. *Strongly maculate form*: Head pale orange-yellow. Antenna dark grey, indistinctly

annulated with pale grey apically. Palpus (Figs. 31, 32) orange-yellow. Thorax mottled dark grey and pale orange-yellow, occasionally pale orange-yellow laterally; tegula very dark grey. Fore and mid legs predominantly dark grey; fore tarsus dark fuscous on posterior three segments; mid tarsus very dark grey, with pale ochreous-yellow annuli. Hind leg pale yellowish-grey; tarsus pale grey. Abdomen fuscous, with pale yellowish-grey segmental margins; ventral side and anal tuft pale ochreous. Forewing (Fig. 13) with  $R_5$  to apex; mottled dark grey and ochreous; markings dark grey; costa densely suffused basally; a short, densely suffused streak below fold from dorsum at base; a fascia from costa just beyond middle to dorsum just before tornus; a terminal fascia very broad round apex; costal area with an ochreous patch between two fasciae; cilia pale yellowish-ochreous, with two interrupted dark grey median lines, on dorsum dark grey. Hindwing dark grey; cilia grey, mixed with pale yellow round apex, with dark grey subbasal and postmedian shades. *Weakly maculate form*: Fairly paler than the preceding form. Forewing (Fig. 14) pale ochreous, mottled with grey or dark grey throughout; the inner fascia interrupted or reduced to merely a short dark grey praeternal streak, which reaches about 2/3 across wing in some specimens; the outer fascia obsolete; cilia paler. Hindwing and cilia paler.

♀. Apparently similar to the weakly maculate form of ♂. *Strongly maculate form*: Forewing (Fig. 15) with the inner fascia entire or interrupted at middle; the outer fascia preserved or reduced to an apical spot; between these two costa with a pale ochreous patch. *Weakly maculate form*: Forewing (Fig. 16) mottled grey and pale ochreous throughout, with an only dark grey praeternal spot; both the outer fascia and the costal patch absent as in the ♂. Hindwing and cilia paler than those of the strongly maculate form of ♀.

Male genitalia: as in Figs. 53, 54. Sacculus with stout distal process; ventral margin with a distinct process, which is dull-pointed or round at apex. Aedeagus with dorsal surface armed with small preapical teeth, which vary in number and size, *i.e.*, one to three in number and sometimes one of them remarkably larger than others; cornuti composed of a cluster of spinules, one or two of them being much larger than others in general.

Female genitalia: as in Figs. 71, 72. Lamella antevaginalis not developed. Ostium wide, heavily sclerotized; ductus bursae well sclerotized in posterior 2/3. Signum varies in size (*cf.* Figs. 71 and 72).

*Specimens examined*. 21♂, 46♀.

Holotype ♂, Chiang Mai, Doi Pakia, ca. 1500 m., 24. V. 1983 (H. KUROKO *et al.*), UOP.

Paratypes: Chiang Mai— 11♂, 7♀, data as type, BMNH, TDA and UOP; 1♂, 3♀, Hui Nam Dung, ca. 1600 m., 26. V. 1983 (H. KUROKO *et al.*), UOP; 1♂, 3♀, Mae-Sa, ca. 500 m., 29. V. 1983 (H. KUROKO *et al.*), UOP; 6♂, 32♀, Doi Chang Khian, ca. 1250 m., 27. V. 1983 (H. KUROKO *et al.*), BMNH, TDA and UOP; 1♂, 1♀, Doi Inthanon, ca. 1300 m., 21. V. 1983 (H. KUROKO *et al.*), UOP.

*Distribution*. Northern Thailand.

*Remarks*. This species has two colour forms in both sexes, as described above, and some intermediate forms among these extremes are seen. A strongly maculate male specimen has been selected as the type (Fig. 13).

This species is allied to the following two species in genital characters, but these three species are appreciably different in superficial appearance.

*Etymology*. The specific name is based on the type-locality.

***Irepacma meksongseei* sp. nov.**

(Figs. 17, 33, 34, 41, 55, 73)

♂, 14.5–15 mm. ♀, 16–18 mm. Head orange-yellow, largely mixed with grey on centre of crown; face orange-yellow. Antenna in ♂ dark grey above, and orange-yellow, banded with dark grey beneath; in ♀ grey, tinged with orange-yellow basally above, and ochreous-yellow, banded with grey beneath; scape orange-yellow, densely suffused with dark grey above. Palpus (Figs. 33, 34) orange-yellow; in ♀ second segment marked with dark brown before apex. Thorax orange-yellow, broadly overcast with dark brown in median portion; tegula dark grey, slightly mixed with orange-yellow. Fore and mid legs orange-yellow; femora pale ochreous-yellow, suffused with grey; fore tibia suffused with dark grey; fore tarsus with blackish-brown on posterior three segments; mid tibia dark grey basally and preapically; mid tarsus broadly banded with blackish-brown laterally. Hind leg pale yellow; tibia yellow, mixed with pale grey posteriorly; tarsus broadly banded with dark grey laterally. Abdomen dark grey, the ventral surface being yellowish; anal tuft pale orange-yellow. Forewing (Figs. 17, 41) with  $R_5$  to apex; orange-yellow; markings dark fuscous, slightly purplish-tinged; a streak along costa on basal 1/5; a streak above fold from before base to about 3/5 of wing-length; a short streak beneath fold from base of dorsum to about 1/4 of wing-length; a streak along dorsum from well before base to about 3/5 of wing-length; these streaks, except costal one, frequently confluent, and occasionally forming a large suffused mark; a very broad, slightly curved fascia from costa about middle to dorsum in tornus, where it unites with a narrower terminal fascia; cilia orange-yellow, the outer half being pale yellow, with a dark grey postmedian line; tornal and dorsal cilia dark grey. Hindwing rather dark grey; costal and terminal cilia pale yellow, somewhat tinged with pale orange basally, with a broad dark brown subbasal and a narrow grey postmedian lines; dorsal cilia dark grey, with a dark brownish subbasal shade, which continues from terminal subbasal line.

Male genitalia: as in Fig. 55. Very similar to those of the preceding species (*pakiensis*). Valva narrow; saccular distal process clavate. Aedeagus with about seven deciduous spines on right side (only two spines are drawn in Fig. 55); cornuti composed of a long cluster of large spinules.

Female genitalia: as in Fig. 73. Very similar to those of *pakiensis*. Lamella postvaginalis with a small process between two larger processes. Lamella antevaginalis forming a sclerotized plate anterior to ostium; ductus bursae lightly sclerotized in about anterior half.

*Specimens examined.* 3♂, 23♀.

Holotype ♂, Nakhon Nayok, Khao Yai, ca. 800 m., 15. VI. 1983 (H. KUROKO *et al.*), UOP.

Paratypes: 2♂, 23♀, same locality as type, 14–22. VI. 1983 (H. KUROKO *et al.*), BMNH, TDA and UOP.

*Distribution.* Central Thailand.

*Remarks.* This species is readily characterized by the forewing with a broad dark fuscous V-shaped fascia in the distal half. The genitalia of this species are nearest to those of *P. pakiensis* sp. nov.

*Etymology.* This new Thai species is named in honour of Mr Boonsom MEKSONGSEE, TDA.

***Irepacma lannathaiensis* sp. nov.**

(Figs. 18, 56, 74)

♂, 16 mm. ♀, 17–18 mm. Head orange-yellow; crown with fore part dark grey. Antenna dark fuscous above; ventral side pale greyish-yellow in ♂, and pale orange-yellow in ♀. Palpus orange-yellow; second segment marked with dark brown before apex laterally. Thorax dark fuscous, with a narrow orange-yellow band on each side; tegula dark fuscous. Fore leg fuscous, lightly tinged with orange-yellow; posterior three tarsal segments blackish-orange. Mid leg greyish; tibia fuscous, marked with dark orange-yellow at middle and apex; tarsus fuscous, with dark orange-yellow rings before and beyond middle. Hind leg pale yellowish, tinged with pale grey; tarsus largely suffused with dark brown laterally. Abdomen dark brown; ventral side and anal tuft yellowish. Forewing (Fig. 18) with  $R_5$  to apex; mottled dark fuscous and orange-yellow, densely suffused with dark fuscous scales basally, especially towards costa and dorsum, in general; in some specimens two blackish-fuscous stigmata scarcely recognizable, *i.e.*, first discal just before  $2/5$  and plical just beyond it; about distal half dark fuscous, faintly mixed with orange-yellow, and inwardly margined with a very narrow, weakly curved blackish-fuscous line, which runs from costa at  $2/5$  to dorsum before tornus; costa with a distinct, nearly triangular or ill-defined orange-yellow patch, more or less scattered with dark fuscous scales, at  $3/4$ ; cilia with basal  $1/3$  orange-yellow, tipped with dark grey along costa and round tornus; apical  $2/3$  pale yellow, with a dark grey preapical line; dorsal cilia dark grey. Hindwing rather dark grey; cilia grey, tinged with pale yellow on costa and termen; a dark grey subbasal shade all over and a dark grey preapical shade on costa and termen.

Male genitalia: as in Fig. 56. Valval dorsal margin broadly concave about middle; sacculus with inwardly curved distal process, and with a triangular median process on ventral margin; saccular base with a large, strongly sclerotized, folded plate. Aedeagus with dorsal surface denticulated on right side before apex; cornuti composed of a cluster of tiny spinules.

Female genitalia: as in Fig. 74. Lamella antevaginalis well developed, forming a large sclerotized plate, the posterior margin with a median emargination. Ostium wide; ductus bursae well sclerotized throughout. Signum absent.

*Specimens examined.* 3♂, 5♀.

Holotype ♂, Chiang Mai, Doi Chang Khian, ca. 1250 m., 27. V. 1983 (H. KUROKO *et al.*), UOP.

Paratypes: Chiang Mai— 1♀, same data as type, UOP; 1♂, 3♀, same locality, 29. V. 1983 (H. KUROKO *et al.*), TDA and UOP; 1♂, 1♀, Doi Inthanon, ca. 1300 m., 21. V. 1983 (H. KUROKO *et al.*), UOP.

*Distribution.* Northern Thailand.

*Remarks.* Although this species is near to the foregoing two species (*pakiensis* and *meksongseei*) in genital characters, it is readily separated from them in superficial appearance.

*Etymology.* The specific name is based on Lannathai (a "Hundred Thousand Rice Fields"), the first real northern Thai Kingdom.

***Ripeacma* gen. nov.**

Type-species; *Ripeacma nangae* MORIUTI, SAITO et LEWVANICH, sp. nov.

Similar to *Periacma* and *Irepacma*, differing from *Periacma* in the male genitalia without the dorso-proximal process on valva, and from *Irepacma* in the female genitalia with the

apophysis anterioris; also differing from them in the male genitalia with the well sclerotized anellus and with the hairy pad at dorso-proximal corner of valva.

The diagnostic characters of the genus are as follows:

Forewing with  $R_5$  running to costa, apex or termen.

Male genitalia: Uncus and gnathos variable in shape. Anellus well defined, sclerotized. Valva with conspicuous hairy pad at dorso-proximal corner and without dorso-proximal process; sacculus with simple ventral margin.

Female genitalia: Lamella antevaginalis produced anteriorly into a pair of lateral extensions. Apophysis anterioris present. Signum present or absent.

*Remarks.* Although very closely related to the genera *Periacma* and *Irepacma*, this new genus, as described above, can be distinctly separable from them by the genital characters. All the species of the genus are similar in coloration and markings to one another.

In addition to six new Thai species described in this paper, the following species is included in this genus.

*Ripeacma conophanta* (MEYRICK), 1910, p. 16 [*Periacma*],<sup>3)</sup> **comb. nov.** Lectotype ♂, Ceylon, Madulsima, BMNH, designated by CLARKE (1963, p. 353)<sup>7)</sup> [examined].

*Etymology.* The generic name is feminine, and an anagram of *Periacma* MEYRICK.

### ***Ripeacma chandratati* sp. nov.**

(Figs. 19, 35, 57)

♂, 14.5 mm. Head snow-white; crown dark grey. Antenna dark grey, with obscure paler annuli. Palpus (Fig. 35) nearly white outside and snow-white inside, the apical 3/7 of second segment being nearly black, with white extreme tip. Thorax dark brownish-grey. Legs whitish; fore femur lightly suffused with grey; fore tibia pale orange-yellow; fore tarsus pale yellow-ochreous, the first segment with brownish spot at middle and the third and fourth segments being dark fuscous; mid tibia pale yellowish-fuscous, marked with pale purplish-brown basally and apically; mid tarsus as in fore tarsus; hind tarsus lightly tinged with pale yellow; the second-fourth segments being largely suffused with dark brown. Abdomen not observed. Forewing (Fig. 19) broad, rather dilated; termen oblique, straight;  $R_5$  to termen beneath apex; mottled brown and pale brownish-grey, with a small pale ochreous spot on costa at 4/5; discal stigmata indiscernible; plical stigma obscurely darker just before middle of wing-length; cilia dark purplish-fuscous, the scales of basal third part being tipped with white. Hindwing with  $Cu_{1b}$  ordinarily veined; medium grey; cilia a little paler than wing, with a median shade, slightly tinged with pale buff, along termen.

Male genitalia: as in Fig. 57. Uncus with a pair of minute processes on distal margin. Gnathos Y-shaped, the apical portion being dilated laterally. Sacculus with distal portion armed with several teeth. Aedeagus produced apically into two processes, the right one being weakly serrate on ventral margin in apical half and pointed at apex, and the left being simple, ending in a round apex; cornuti absent.

♀. Unknown.

*Specimen examined.* 1♂.

Holotype ♂, Chiang Mai, Doi Chang Khian, ca. 1250 m., 27. V. 1983 (H. KUROKO *et al.*), UOP.

*Distribution.* Northern Thailand.

*Remarks.* This is an easily recognizable species. In male genitalia it is somewhat allied to but distinct from *R. conophanta* (MEYRICK) from Sri Lanka.

*Etymology.* We have named this Thai species after Mr Chirapanthu CHANDRATAT,



Sanpatong Rice Experiment Station, Sanpatong near Chiang Mai, in acknowledgement of his cordial help on many occasions.

***Ripeacma nangae* sp. nov.**  
(Figs. 20, 36, 37, 42, 58, 75)

♂, 11.5–12 mm. ♀, 12–13 mm. Head dark fuscous with purplish lustre; face pale brassy or pale yellowish-brassy. Antenna dark purplish-fuscous. Palpus (Fig. 36, 37) in ♂ pale ochreous; first segment brownish-grey in some specimens; second segment dark purplish-fuscous in apical 1/2 to 3/5, tipped with pale yellowish-ochre; in ♀ pale ochreous; first segment brownish-grey; second segment more or less suffused with purplish-fuscous, the apical quarter to half being entirely dark purplish-fuscous; third segment dark purplish-fuscous, tipped with pale yellowish-ochre. Thorax very dark purplish-fuscous. Legs pale leaden-grey; fore femur and tibia greyish; mid tibia entirely suffused with dark fuscous except at middle and before apex; hind tibia largely mixed with purplish-grey fore and mid tarsi nearly black, with pale ochreous annuli; hind tarsus dark fuscous, with yellowish annuli. Abdomen dark fuscous above and pale ochreous-grey beneath; in ♂ anal tuft and exposed genitalia pale yellowish-ochreous. Forewing (Figs. 20, 42) rather narrow; termen very oblique, straight;  $R_5$  to costa; very dark purplish-fuscous, with a small triangular ochreous-white spot on costa at 3/4; a few, irregularly placed white dots in disc about middle; stigmata very obscurely darker, *i.e.*, first discal at 1/3, second at 3/5, and plical, followed by a white dot, at 2/5, all or some of them being invisible in some specimens; cilia dark fuscous, some of scales being tipped with white. Hindwing (Fig. 42) with  $Cu_{1b}$  ordinarily veined in ♂; greyish-fuscous; cilia greyer than wing, with an indistinct darker subbasal shade.

Male genitalia: as in Fig. 58. Valva gradually dilated distally. Aedeagus with two apical processes, the ventral process being longer and broader, forming an elongate spatula, and the dorsal one being strongly sclerotized, with a hooked apex; no cornutus.

Female genitalia: as in Fig. 75. Lamella antevaginalis small. Ductus bursae short and well sclerotized throughout; corpus bursae very large, gradually dilated anteriorly; inception of ductus seminalis from corpus at posterior 1/7. (In the genitalia illustrated in Fig. 75, the posterior part of corpus bursae was drawn under shrunk condition.) Signum small.

*Specimens examined.* 20♂, 9♀.

Holotype ♂, Chiang Mai, Doi Angkhang, ca. 1450 m., 16. V. 1983 (H. KUROKO *et al.*), UOP.

Paratypes: Chiang Mai—1♂, same data as type, UOP; 13♂, 6♀, Doi Pakia, ca. 1500 m., 24. V. 1983 (H. KUROKO *et al.*), BMNH, TDA and UOP; 2♂, 1♀, Hui Nam Dung, ca. 1600 m., 26. V. 1983 (H. KUROKO *et al.*), UOP; 3♂, 2♀, Doi Chang Khian, ca. 1250 m., 29. V. 1983 (H. KUROKO *et al.*), UOP.

*Distribution.* Northern Thailand.

*Remarks.* This species is closely allied to the following two species (*yamadai* and *tirawati*); the separation of it from them is discussed under the latter respective species.

*Etymology.* This species is named after Lannathai's Princess NANG MUANG who distinguished herself by taking an active part in the fighting, wearing a man's clothes and riding an elephant, during the war with Ayutthaya in 1387.

***Ripeacma yamadai* sp. nov.**

(Figs. 21, 59, 76)

♂, 10.5–11 mm. ♀, 12–13 mm. Seemingly similar to the preceding species (*nangae*), from which it differs as follows: Forewing (Fig. 21) appreciably broader (7 : 6); termen less oblique; costal whitish spot tending to be a little larger. Hindwing with  $Cu_{1b}$  ordinarily veined as in *nangae*. Abdomen (in only 1 ♀ observed) very dark grey above and very pale ochreous-yellow beneath.

Male genitalia: as in Fig. 59. Very similar to those of *nangae*, but differ as follows: Valva not dilated, but parallel-sided. In aedeagus ventral process with apical part being much narrower, and dorsal process not hooked, the apex being dilated and the middle with a distinct triangular process.

Female genitalia: as in Fig. 76. Easily distinguishable from those of *nangae*. Lamella antevaginalis large, strongly produced anteriorly into a lobe on each side. Ductus bursae broad and membranous except for a short, lightly sclerotized, posterior portion; inception of ductus seminalis from ductus bursae at anterior 1/3. Signum elongate.

*Specimens examined.* 2♂, 3♀.

Holotype ♂, Nakhon Nayok, Khao Yai, ca. 800 m., 21. V. 1983 (H. KUROKO *et al.*), UOP.

Paratypes: Chiang Mai—1♀, same locality as type, 25. VIII. 1981 (H. KUROKO *et al.*), UOP; 1♂, 1♀, same locality, 27. VIII. 1981 (H. KUROKO *et al.*), TDA. Chanthaburi—1♀, Khao Soi Dao, ca. 400 m., 7. VI. 1983 (H. KUROKO *et al.*), UOP.

*Distribution.* Northern and Central Thailand.

*Remarks.* This species is closely allied to *R. nangae* sp. nov., but differs from the latter in the appearance and genitalia described above. It is also allied to *R. tirawati* sp. nov.; the discriminating characters are noted under *tirawati*.

*Etymology.* This species is named after Nagamasa YAMADA, a Japanese and the Governor of Nakhon Srithammarat in the Kingdom of Ayutthaya, poisoned to death in 1630. He bore the title of Phya Senaphimuk and took so prominent a part in the history of the Kingdom.

***Ripeacma tirawati* sp. nov.**

(Figs. 24, 60)

♂, 10.5 mm. Superficially similar to the preceding two species (*nangae* and *yamadai*), from which this species cannot be surely separable by the colour and markings. From both of them, however, it differs in the forewing with  $R_5$  running to apex instead of costa. From *nangae* it differs in the broader forewing with the less oblique termen. In palpus second segment with basal half yellowish. Forewing (Fig. 24) with shape as in *yamadai*. Hindwing with  $Cu_{1b}$  ordinarily veined as in *nangae* and *yamadai*. Abdomen not observed.

Male genitalia: as in Fig. 60. Very similar to those of *nangae* and *yamadai*, but differ as follows: Uncus with apical margin nearly straight instead of round. Saccular distal part much narrower than in both species. Aedeagus with three apical processes instead of two ones: the ventral and middle processes similar in shape to each other, narrowing apically, ending in a point, the ventral one being shorter than the middle one; the dorsal process shortest, very broad, with minutely serrate, rounded apical margin. The parallel-sided valva distinguishes *tirawati* from *nangae*.

♀. Unknown.

*Specimens examined.* 2♂.

Holotype ♂, Nakhon Nayok, Khao Yai, ca. 800 m., 16. VI. 1983 (H. KUROKO *et al.*), UOP.

Paratype: 1♂, same locality as type, 21. VI. 1983 (H. KUROKO *et al.*), UOP.

*Distribution.* Central Thailand.

*Remarks.* This species may be distinguishable from the foregoing two new species, *nangae* and *yamadai*, in the venation of forewing, and also from *nangae* in the shape of forewing, as described above. The most useful characters for specific separation are found in the genitalia described above (*cf.* Figs. 58–60).

*Etymology.* This specific name is dedicated to Mr Chalermwong TIRAWAT, TDA.

***Ripeacma yaiensis* sp. nov.**

(Figs. 22, 23, 43, 44, 61, 77)

♂♀, 11–11.5 mm. Head fuscous, purplish-tinged; lower half of face pale yellowish-grey. Antenna dark fuscous, faintly annulated with dark grey. Palpus in ♂ pale yellowish-ochreous; in some specimens outside largely suffused with dark fuscous, the second segment being nearly entirely suffused in about apical half, and inside densely suffused with dark fuscous in about apical half; in others outside slightly suffused with dark grey, the second segment being nearly entirely suffused in about apical 2/5, tipped with yellowish-white; in ♀ both sides somewhat or densely suffused with dark fuscous. Thorax very dark fuscous, slightly mixed with grey. Legs predominantly yellowish-white; femora and tibiae partially suffused with dark fuscous; tarsi with dark fuscous third segments. Abdomen dark fuscous above, and mottled dark fuscous, greyish and whitish beneath; in ♂ anal tuft whitish and exposed genitalia pale ochreous; in ♀ anal tuft dark grey. Forewing (Figs. 22, 43) broad, dilated; termen obliquely sinuate; R<sub>5</sub> to termen beneath apex; dark grey, overlaid with dark fuscous throughout, with a fine purplish lustre in some lights; costa with a very small ochreous-white spot at 4/5; stigmata nearly black, *i.e.*, first discal about 2/5, second discal about 3/5, and plical beneath or beyond first discal; cilia dark purplish-fuscous, on dorsum dark grey. Hindwing (Figs. 43, 44): sexually dimorphic in some characters. ♀ of the ordinary type. In ♂ dorsum convex in anal part; Cu<sub>1b</sub> very short, rising from just beyond middle of lower margin of cell to dorsum at 3/8 of wing-length, and thence running along dorsal margin; Cu<sub>1b</sub>, Cu<sub>2</sub> and 1A+2A very close together on dorsum; dorsal base with a conspicuous tuft of long white hairs (Fig. 23). Hindwing very dark fuscous; cilia a little paler than wing, with darker subbasal shade.

Male genitalia: as in Fig. 61. Uncus narrow. Gnathos forming a rounded band. Sacculus with rounded apical margin. Aedeagus with three apical processes: ventral process narrow and shortest, middle process heavily sclerotized and hooked, and dorsal process broad and longest; no cornuti.

Female genitalia: as in Fig. 77. Lamella antevaginalis large, strongly produced into an anterior lobe on each side. Ductus bursae broad, sclerotized in posterior 2/3 and membranous in anterior 1/3; inception of ductus seminalis from anterior end of sclerotized portion. Signum elongate.

*Specimens examined.* 12♂, 4♀.

Holotype ♂, Nakhon Nayok, Khao Yai, ca. 800 m., 19. VI. 1983 (H. KUROKO *et al.*), UOP.

Paratypes: 11♂, 4♀, same locality as type, 17–21. VI. 1983 (H. KUROKO *et al.*), BMNH, TDA and UOP.

*Distribution.* Central Thailand.

*Remarks.* The conspicuous white hair pencil of the hindwing will immediately separate the

male of this species from that of other species of the genus and its allies. This species may easily be separable from its allied species by the sinuate termen on the forewing in both sexes.

As already mentioned, this species shows the sexual dimorphism in the hindwing, *i.e.*, its shape, its venation, and the presence or absence of long hair pencil.

*Etymology.* The name of this new species is based on its type-locality.

***Ripeacma Chiangmaiensis* sp. nov.**

(Figs. 25, 38, 78)

♀, 16 mm. Head dark greyish-fuscous; face pale ochreous-yellow in lower half. Antenna dark fuscous, obscurely annulated with dark grey; underside ochreous basally. Palpus (Fig. 38): second segment ochreous, somewhat tinged with brown outside and whitish-ochreous inside, both sides becoming darker apically; third segment ochreous, largely suffused with dark brown, tipped with ochreous-white. Thorax dark purplish-fuscous. Legs predominantly dark fuscous; tibiae partially marked with pale yellowish-ochre; tarsi with pale yellowish-ochreous annuli. Forewing (Fig. 25) rather broad, dilated; termen very oblique, straight; R<sub>5</sub> to termen just beneath apex; very dark purplish-fuscous, with a distinct large white spot, slightly tinged with ochre, on costa at 3/4; stigmata distinct, nearly black, *i.e.*, first discal just before 2/5, second at 3/5, and plical beyond first discal; cilia purplish-fuscous. Hindwing very dark fuscous; cilia a little paler than, and much greyer than, wing; subbasal shade indistinct.

Female genitalia: as in Figs. 78. Lamella antevaginalis produced into a distinct anterior process on each side. Ostium large and round; ductus bursae broad and very lightly sclerotized posteriorly; corpus bursae very large; inception of ductus seminalis at anterior end of ductus. Signum absent.

♂. Unknown.

*Specimens examined.* 2♀.

Holotype ♀, Chiang Mai, Doi Angkhang, ca. 1450 m., 16. V. 1983 (H. KUROKO *et al.*), UOP.

Paratype: 1♀, same data as type, TDA.

*Distribution.* Northern Thailand.

*Remarks.* This species differs from all other dark fuscous *Ripeacma* in the presence of the more conspicuous and larger white preapical spot on the costa of forewing.

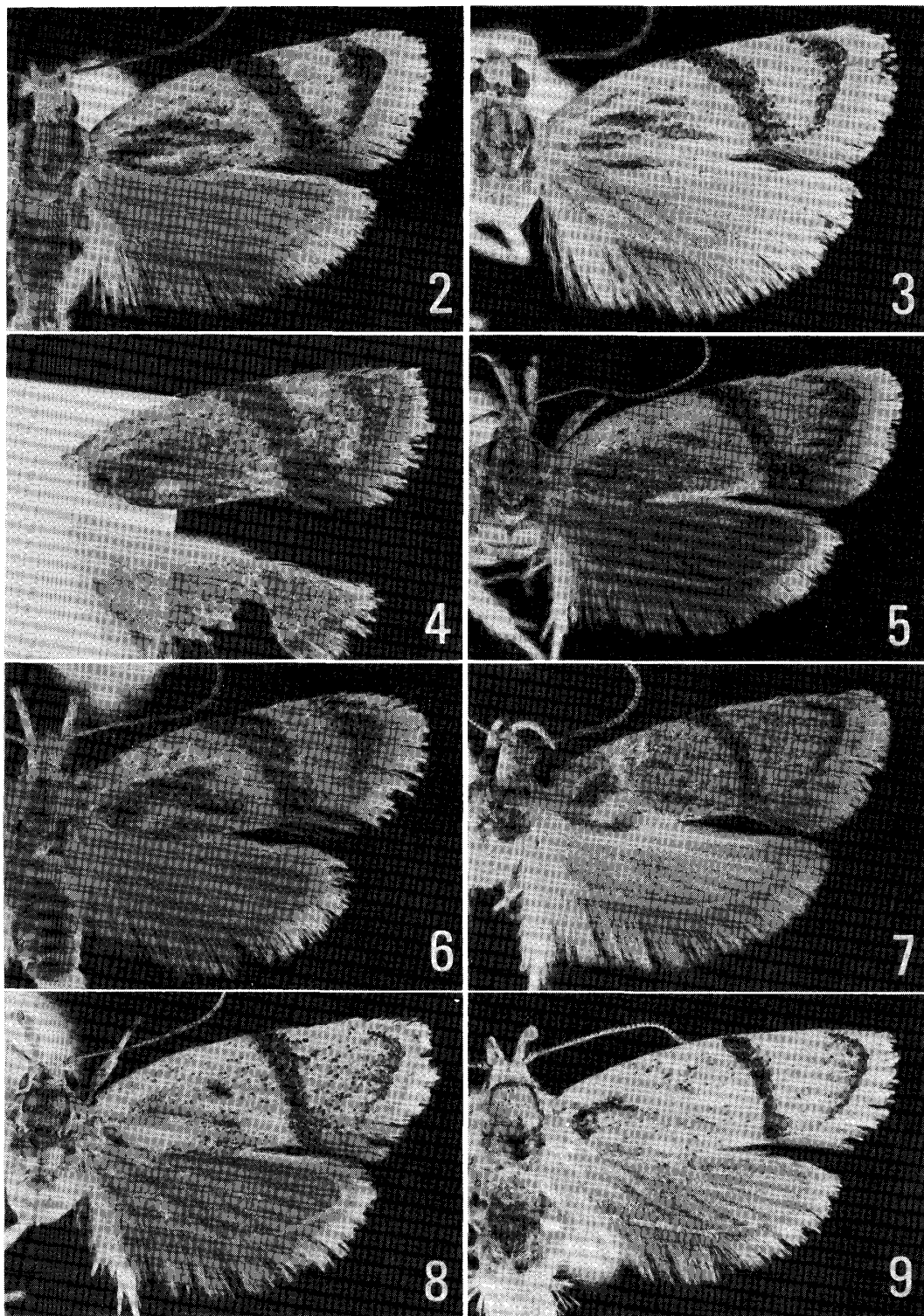
*Etymology.* This species is named after the northern Thai province of Chiang Mai.

**Acknowledgements**

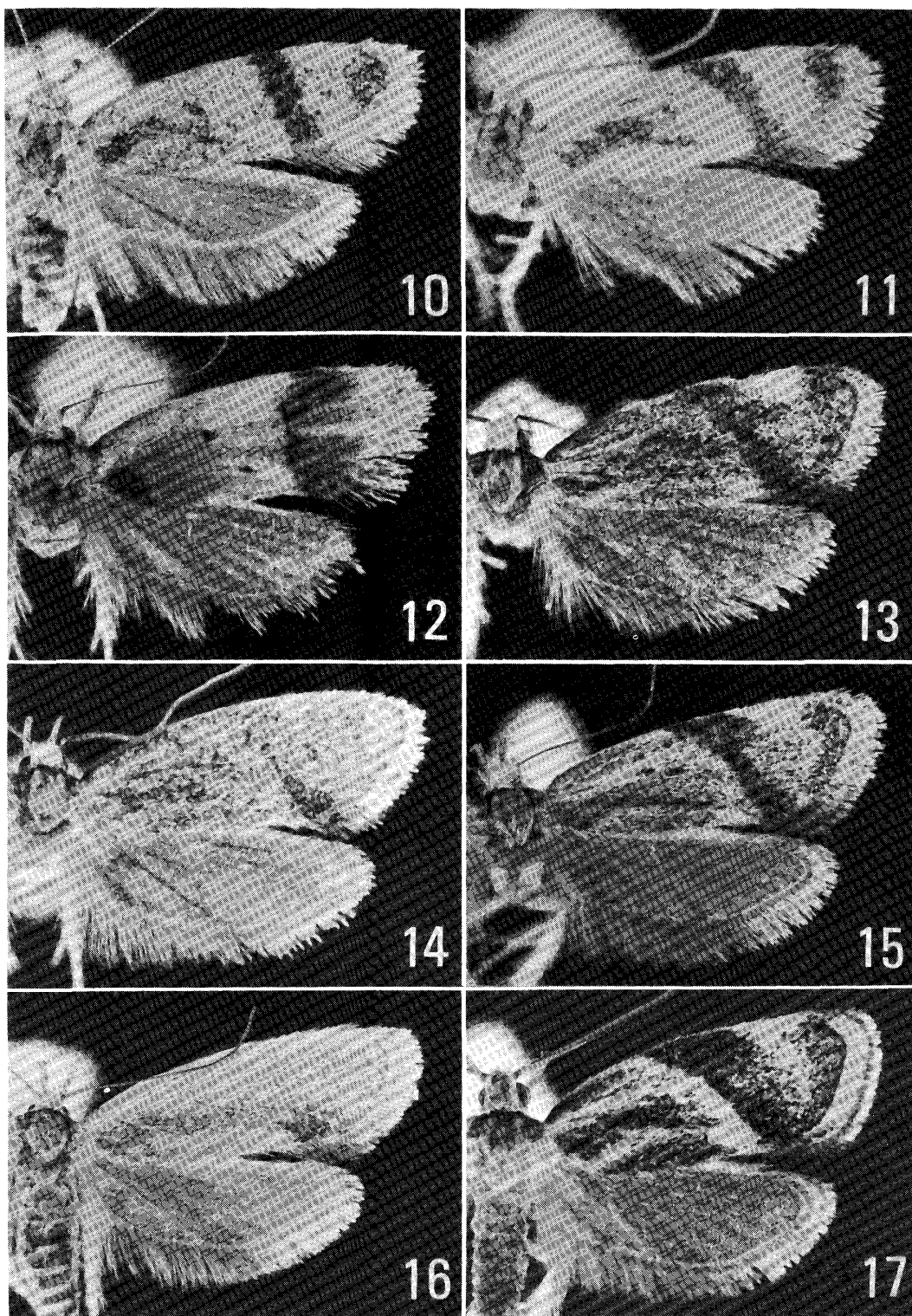
We wish to express our hearty thanks to Prof. H. KUROKO, of UOP, Mr Y. ARITA, of Meijo University, and Dr Y. YOSHIYASU, of Kyoto Prefectural University, for material. Two of us (S.M. & A.L.) are deeply indebted to many entomologists in TDA for generous help, especially Dr T. WONGSIRI, Mr M. RUMAKOM, Mrs N. WONGSIRI and Mr C. CHANDRATAT. One of us (S.M.) is particularly grateful to the authorities of the Thai Department of Agriculture and the Royal Thai Department of Forestry for their many courtesies extended to him during his stay in Thailand. Last but not least, his best thanks are due to Drs K. SATTLER and G. S. ROBINSON, of BMNH, for permission to study the Museum collections and for providing working facilities.

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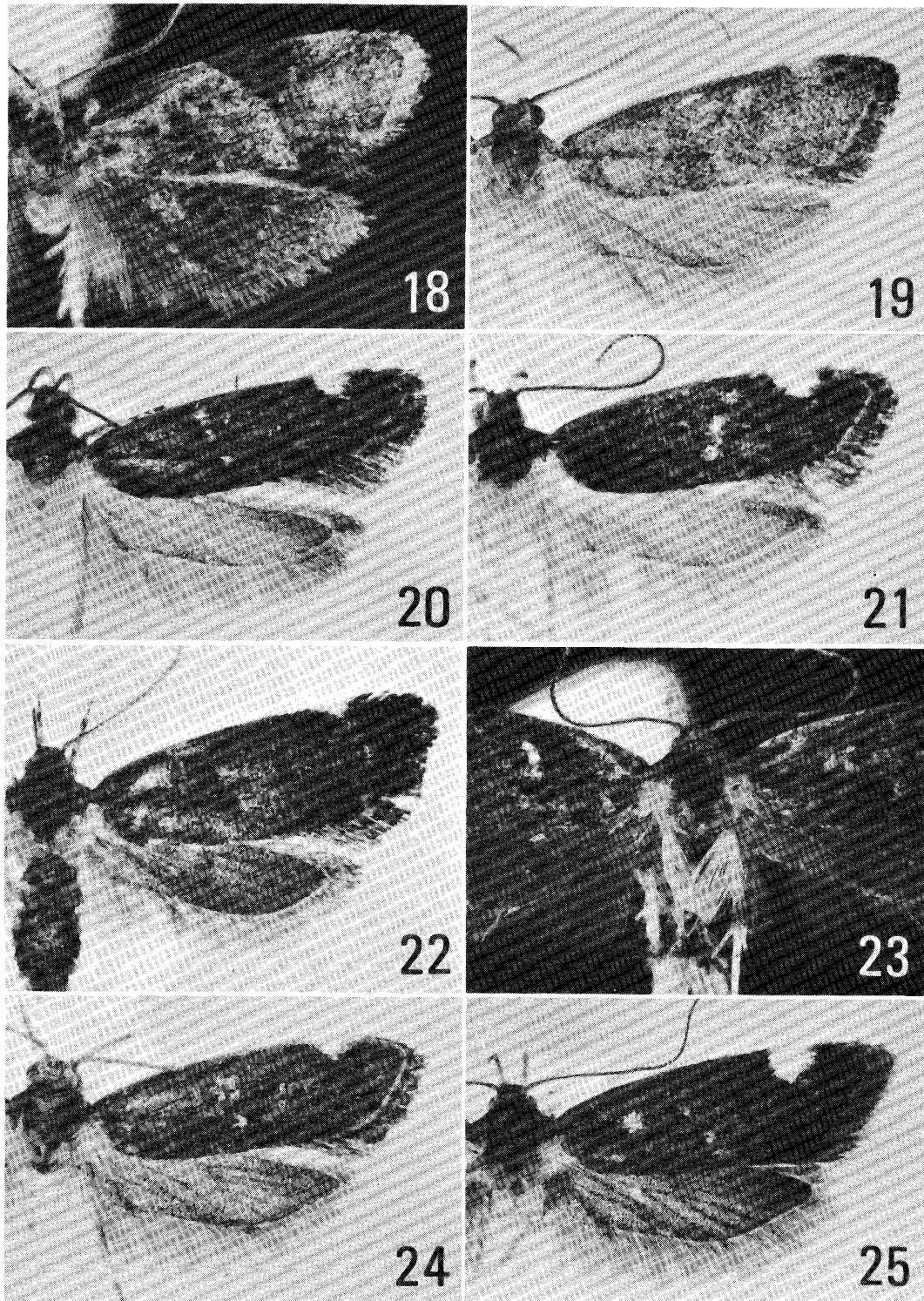
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Figs. 2-8. Wings. (2) *Periacma orthiodes* MEYRICK, ♂, Doi Chang Khian. (3) *P. kanchanaburiensis* sp. nov., ♂, holotype. (4) *P. changkhanensis* sp. nov., ♀, holotype. (5) *P. kunai* sp. nov., ♀, paratype, Doi Suthep. (6) *P. nualsriae* sp. nov., ♀, paratype, Tham Than Lot. (7) *P. siamensis* sp. nov., ♂, holotype. (8) *P. thamthanlotensis* sp. nov., ♀, paratype, Tham Than Lot. (9) *P. wongsirii* sp. nov., ♂, paratype, Khao Soi Dao.

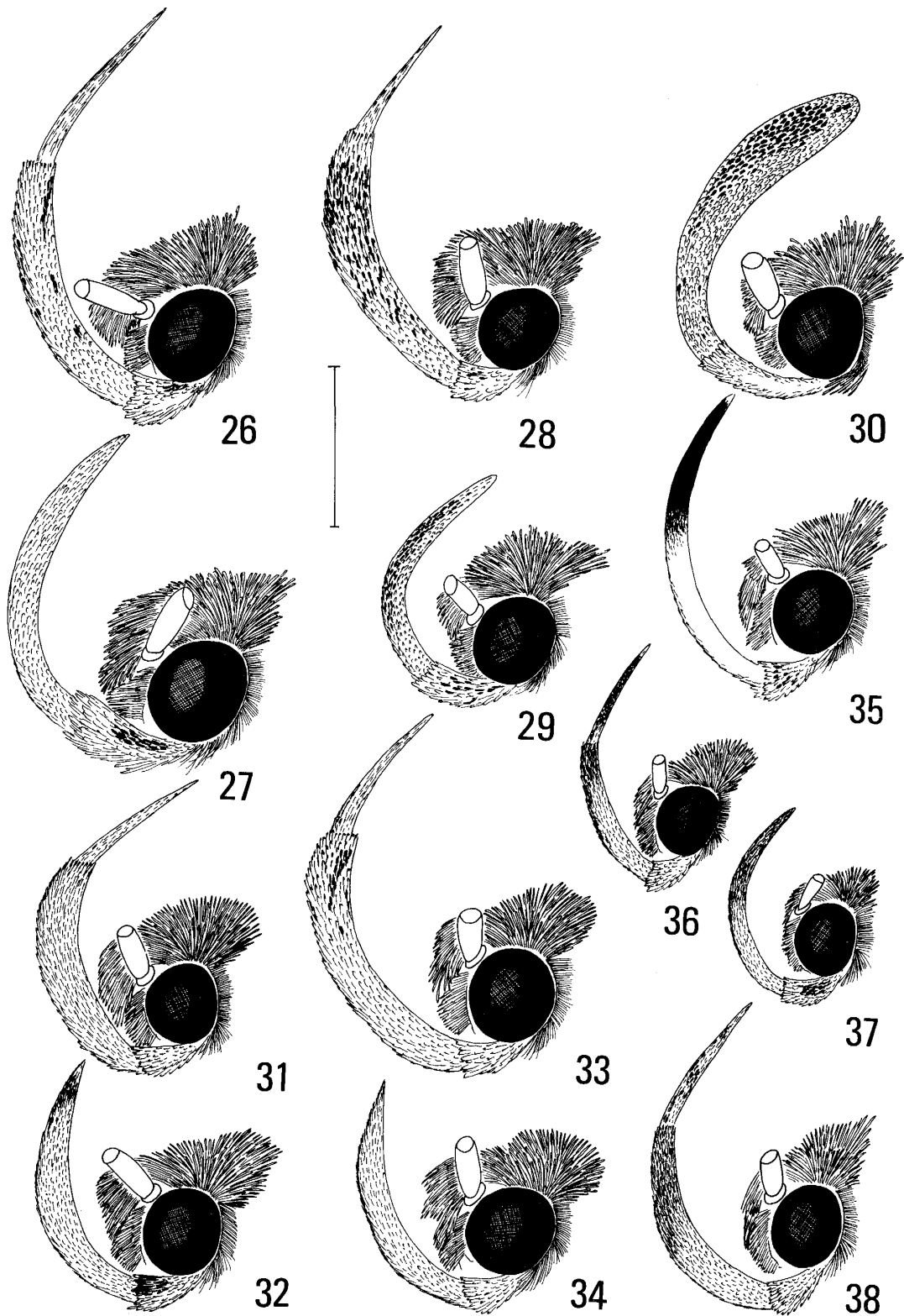


Figs. 10–17. Wing. (10) *Periacma angkhangensis* sp. nov., ♀, paratype, Doi Pakia. (11) *P. rumakomi* sp. nov., ♂, holotype. (12) *P. nakhonnayokensis* sp. nov., ♀, paratype, Khao Yai. (13) *Irepacma pakiensis* sp. nov., ♂, holotype. (14) *Do.*, ♂, paratype, Doi Chang Khian. (15) *Do.*, ♀, paratype, Doi Pakia. (16) *Do.*, ♀, paratype, Doi Chang Khian. (17) *I. meksongseei* sp. nov., ♂, paratype, Khao Yai.

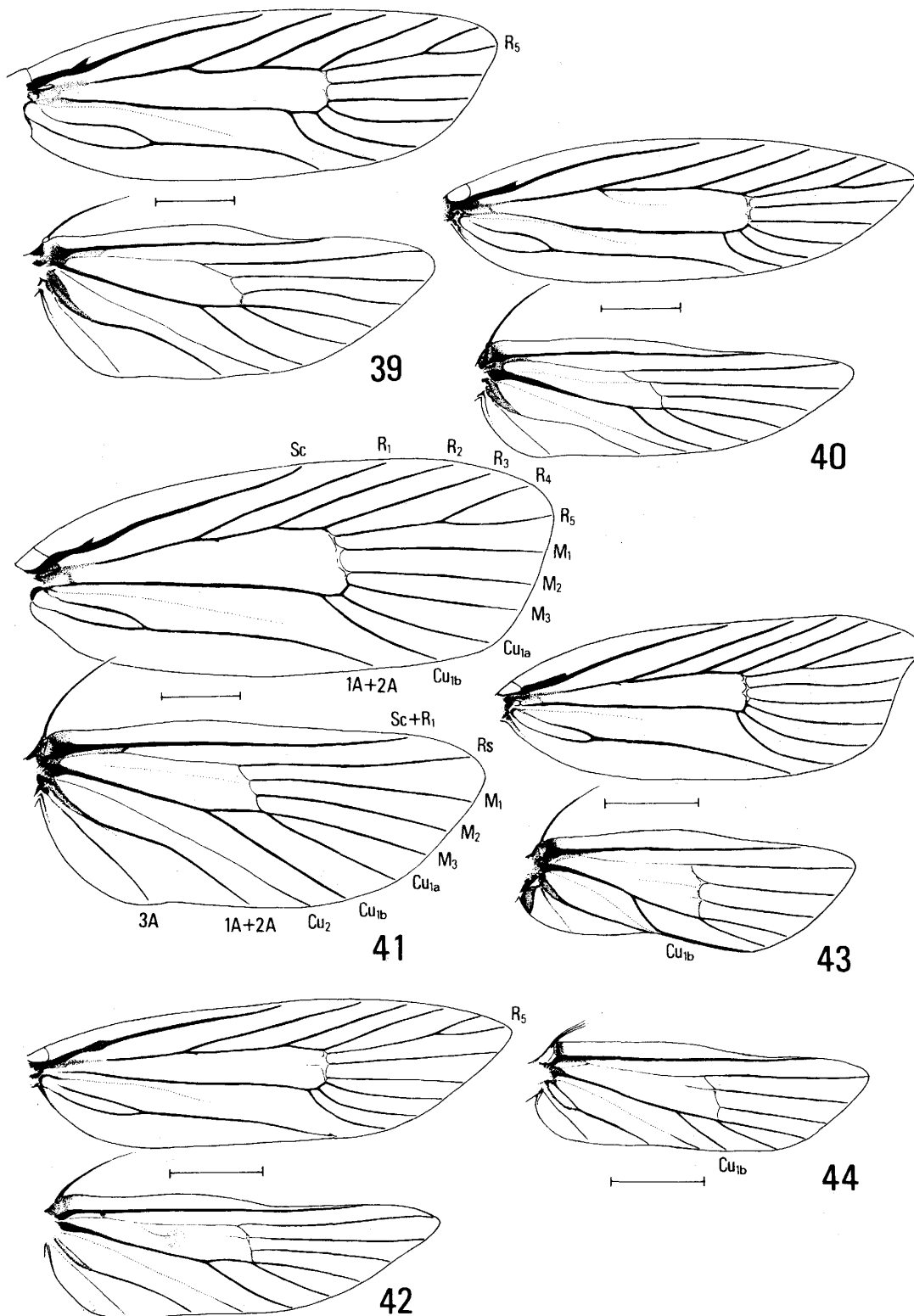


Figs. 18–25. Wing. (18) *Irepacma lannathaiensis* sp. nov., ♂, holotype. (19) *Ripeacma chandratati* sp. nov., ♂, holotype. (20) *R. nangae* sp. nov., ♂, holotype. (21) *R. yamadai* sp. nov., ♂, holotype. (22) *R. yaiensis* sp. nov., ♀, paratype, Khao Yai. (23) *Do.*, ♂, showing hair pencil on hind wing; paratype, Khao Yai. (24) *R. tirawati* sp. nov., ♂, paratype, Khao Yai. (25) *R. chiangmaiensis* sp. nov., ♀, holotype.

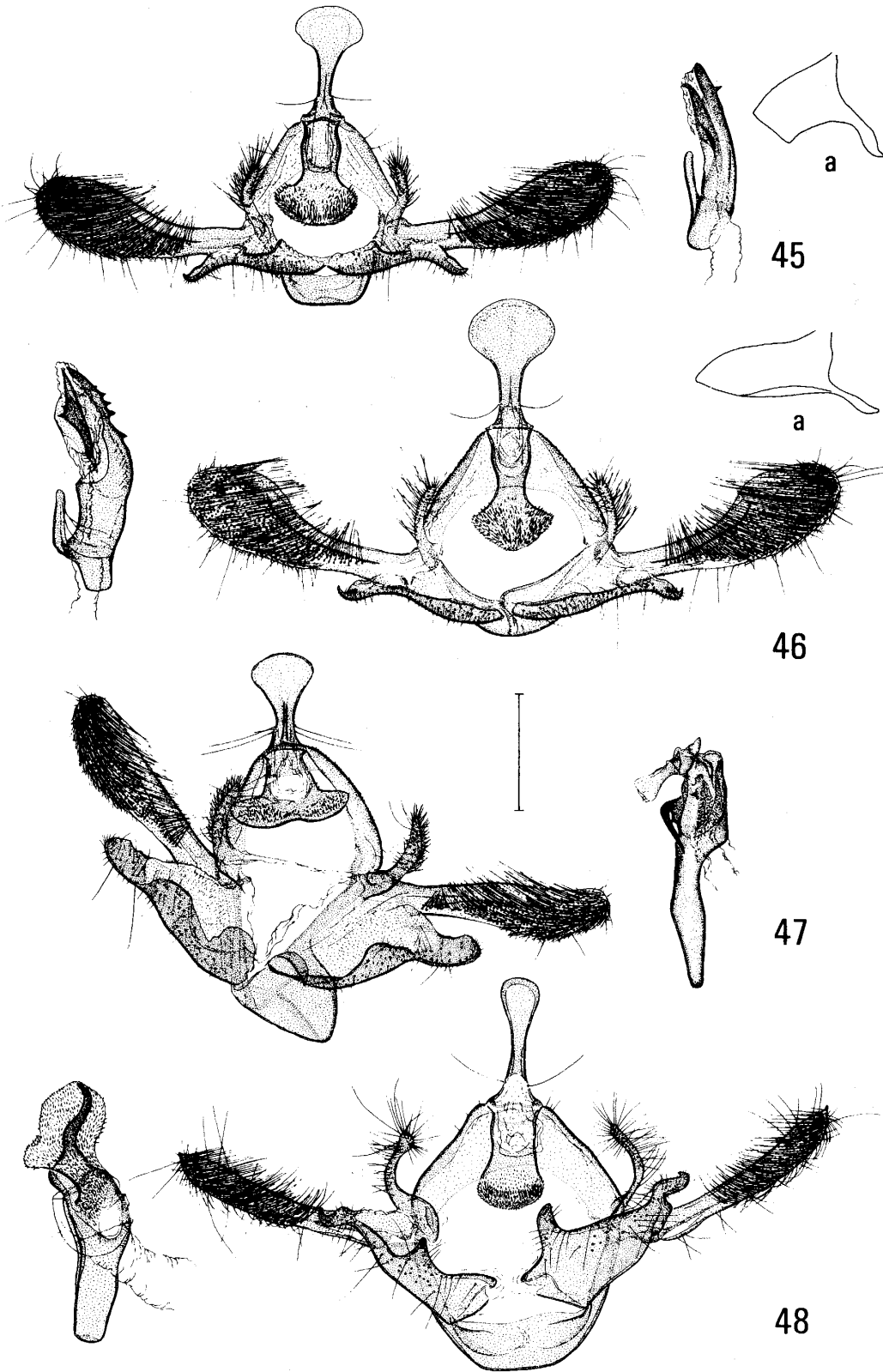




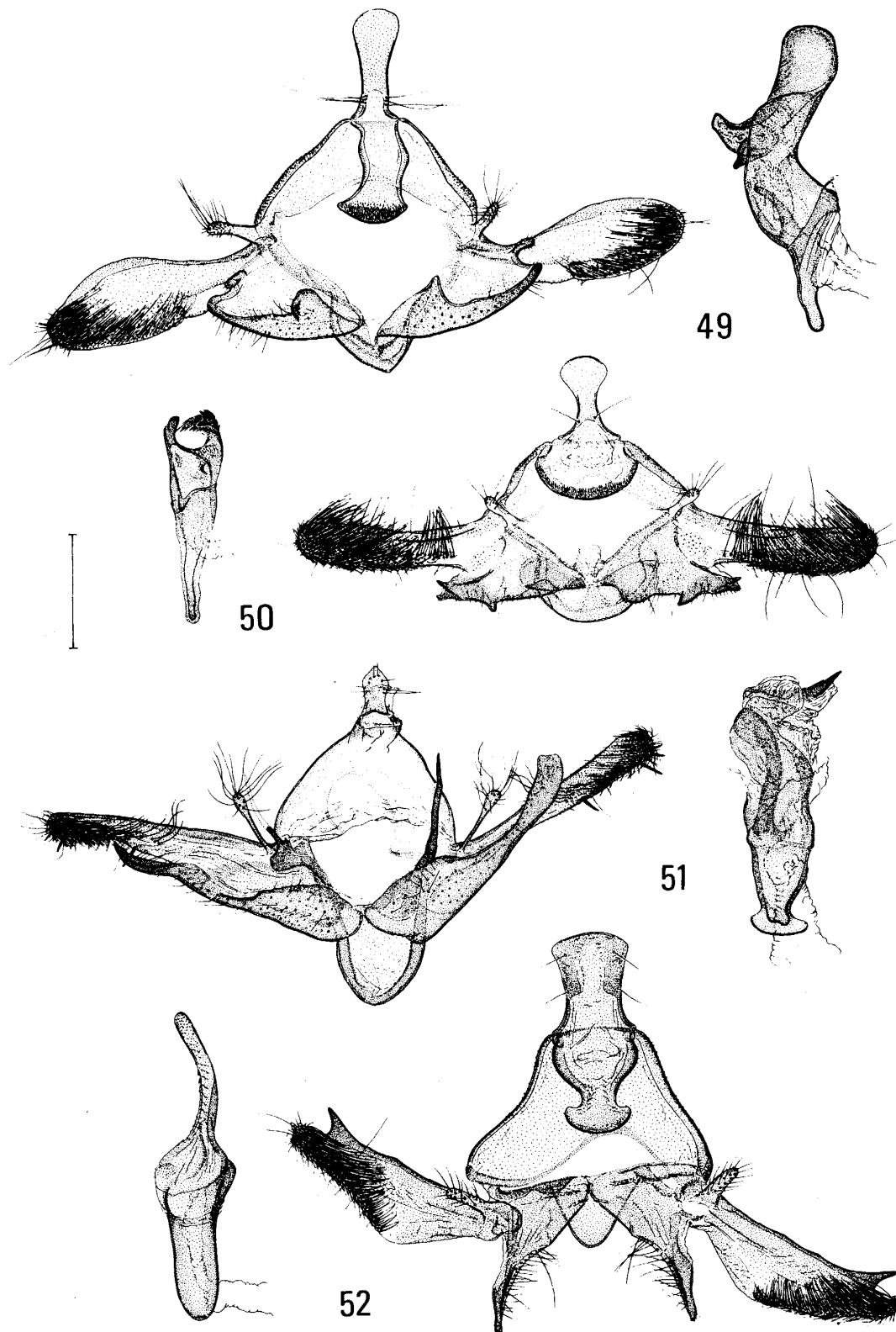
Figs. 26–38. Heads. (26) *Periacma orthiodes* MEYRICK, ♀, Doi Chang Khian. (27) *Do.*, ♂, Doi Angkhang. (28) *P. siamensis* sp. nov.; ♀, paratype, Khao Yai. (29) *Do.*, ♂, holotype. (30) *P. wongsirii* sp. nov., ♂, holotype. (31) *Irepacma pakiensis* sp. nov., ♀, paratype, Doi Pakia. (32) *Do.*, ♂, holotype. (33) *I. meksongseei* sp. nov., ♀, paratype, Khao Yai. (34) *Do.*, ♂, holotype. (35) *Ripeacma chandratati* sp. nov., ♂, holotype. (36) *R. nangae* sp. nov., ♀, paratype, Doi Pakia. (37) *Do.*, ♂, holotype. (38) *R. Chiangmaiensis* sp. nov., ♀, holotype. (All drawn to one scale; scale = 1 mm.)



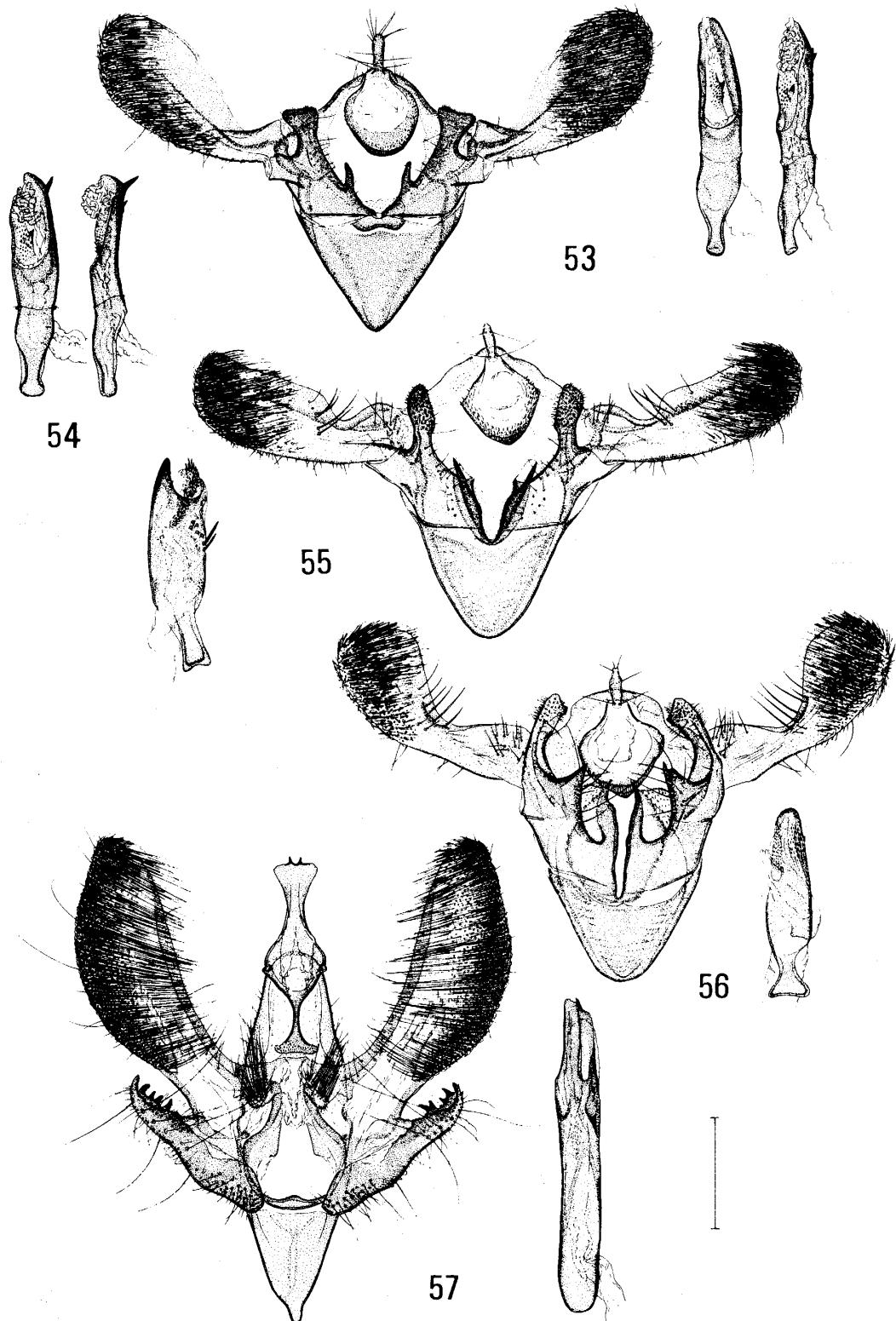
Figs. 39-44. Wings. (39) *Periacma wongsirii* sp. nov., ♂, paratype, Tham Than Lot. (40) *P. angkhangensis* sp. nov., ♂, paratype, Doi Inthanon. (41) *Irepacma meksongseei* sp. nov., ♂, holotype. (42) *Ripeacma nangae* sp. nov., ♂, paratype, Doi Pakia. (43) *R. yaiensis* sp. nov., ♂, paratype, Khao Yai. (44) *Do.*, hindwing, ♀, paratype, Khao Yai. (Scale = 1 mm.)



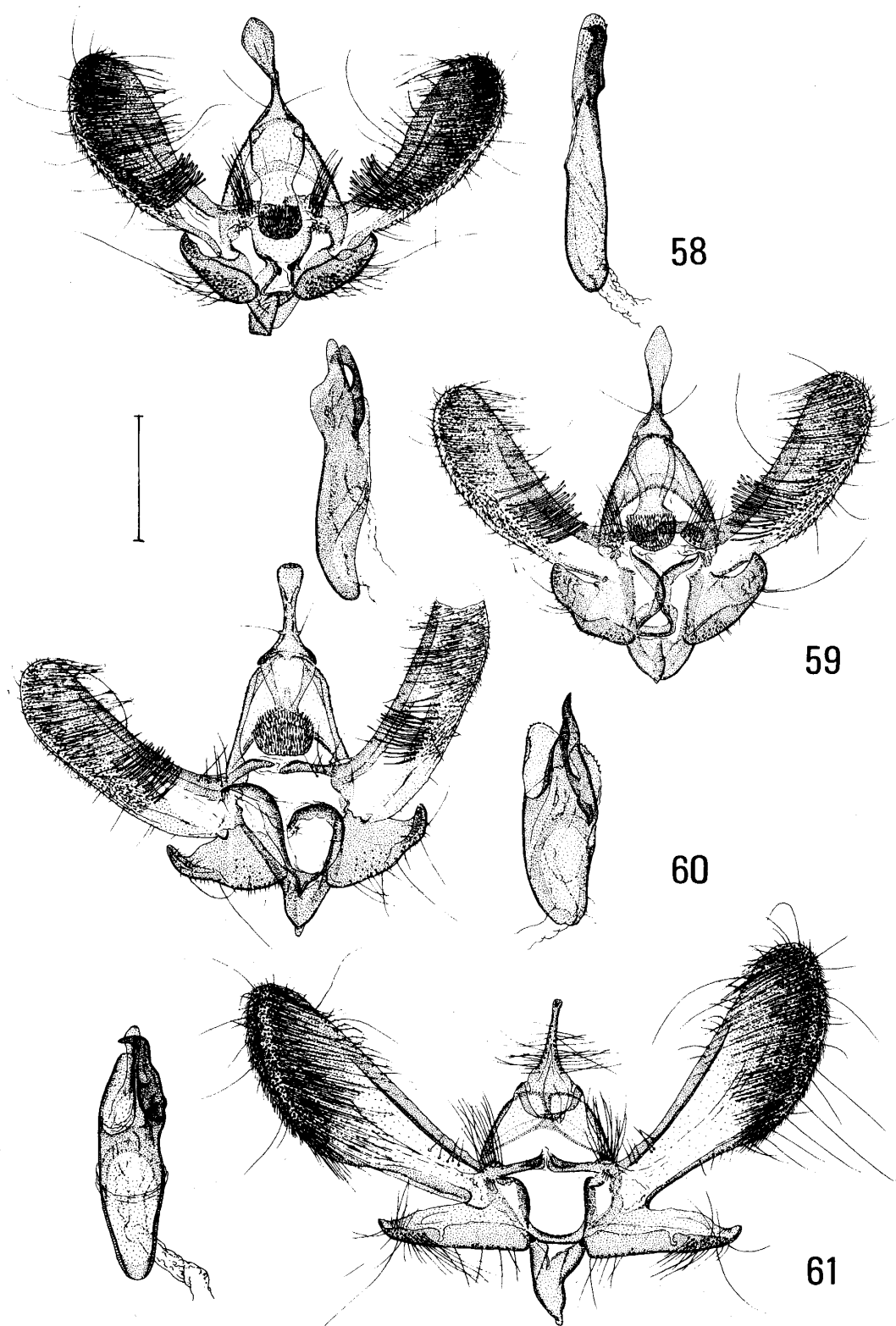
Figs. 45–48. Male genitalia; (a) right sacculus. (45) *Periacma orthiodes* MEYRICK, Doi Angkhang; (a) Mae-Sa. (46) *P. kanchanaburiensis* sp. nov., holotype; (a) paratype, Tham Than Lot. (47) *P. siamensis* sp. nov., holotype. (48) *P. thamthanlotensis* sp. nov., holotype. (All drawn to one scale; scale = 0.5 mm.)



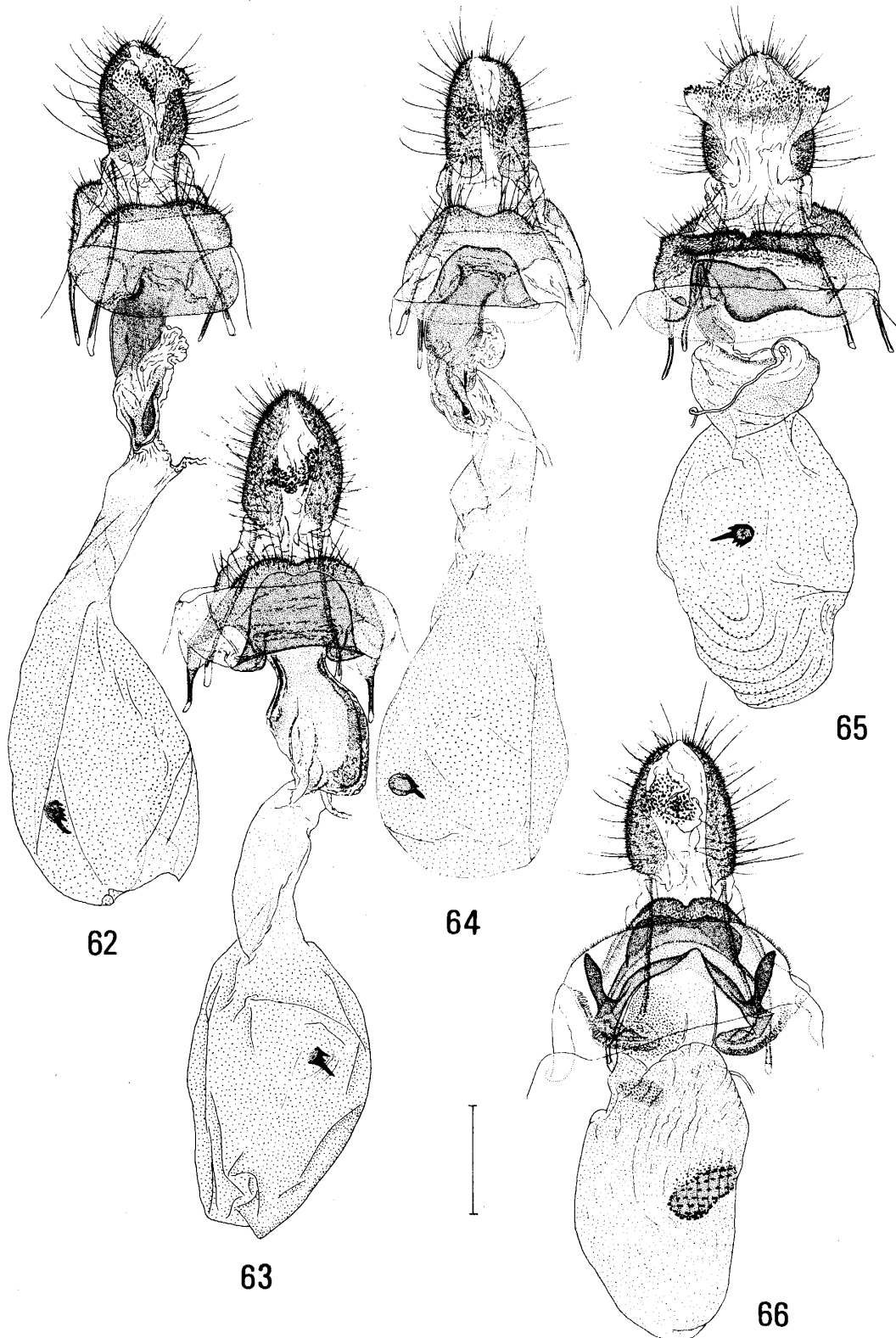
Figs. 49-52. Male genitalia. (49) *Periacma wongsirii* sp. nov., holotype. (50) *P. angkhangensis* sp. nov., holotype. (51) *P. rumakomi* sp. nov., holotype. (52) *P. nakhonayokensis* sp. nov., holotype. (All drawn to one scale; scale = 0.5 mm.)



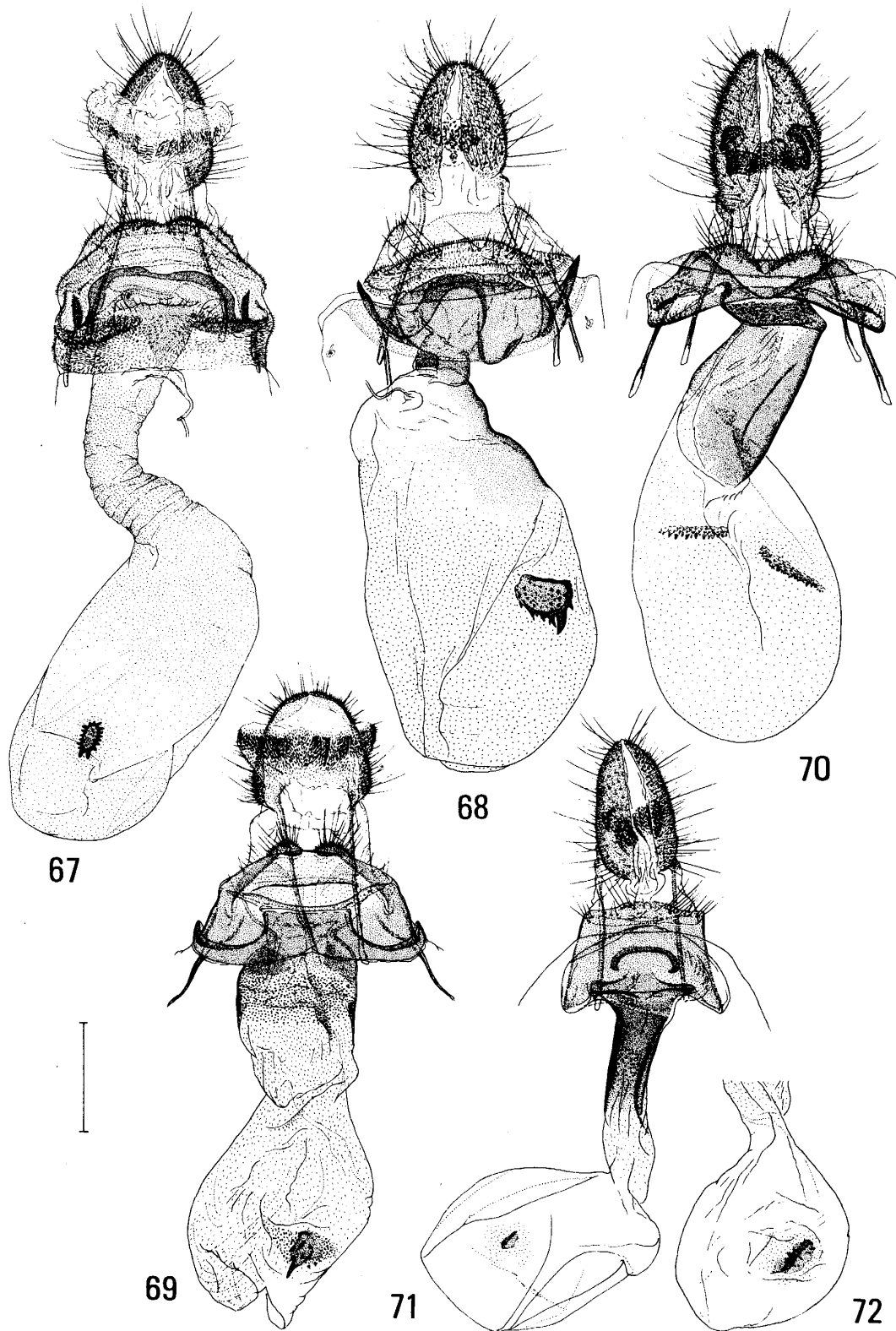
Figs. 53–57. Male genitalia. (53) *Irepacma pakiensis* sp. nov., holotype. (54) *Do.*, aedeagi, paratype, Doi Chang Khian. (55) *I. meksongseei* sp. nov., holotype. (56) *I. lamathaiensis* sp. nov., holotype. (57) *Ripeacma chandratati* sp. nov., holotype. (All drawn to one scale; scale = 0.5 mm.)



Figs. 58-61. Male genitalia. (58) *Ripeacma nangae* sp. nov., holotype. (59) *R. yamadai* sp. nov., holotype. (60) *R. tirawati* sp. nov., holotype. (61) *R. yaiensis* sp. nov., holotype. (All drawn to one scale; scale = 0.5 mm.)

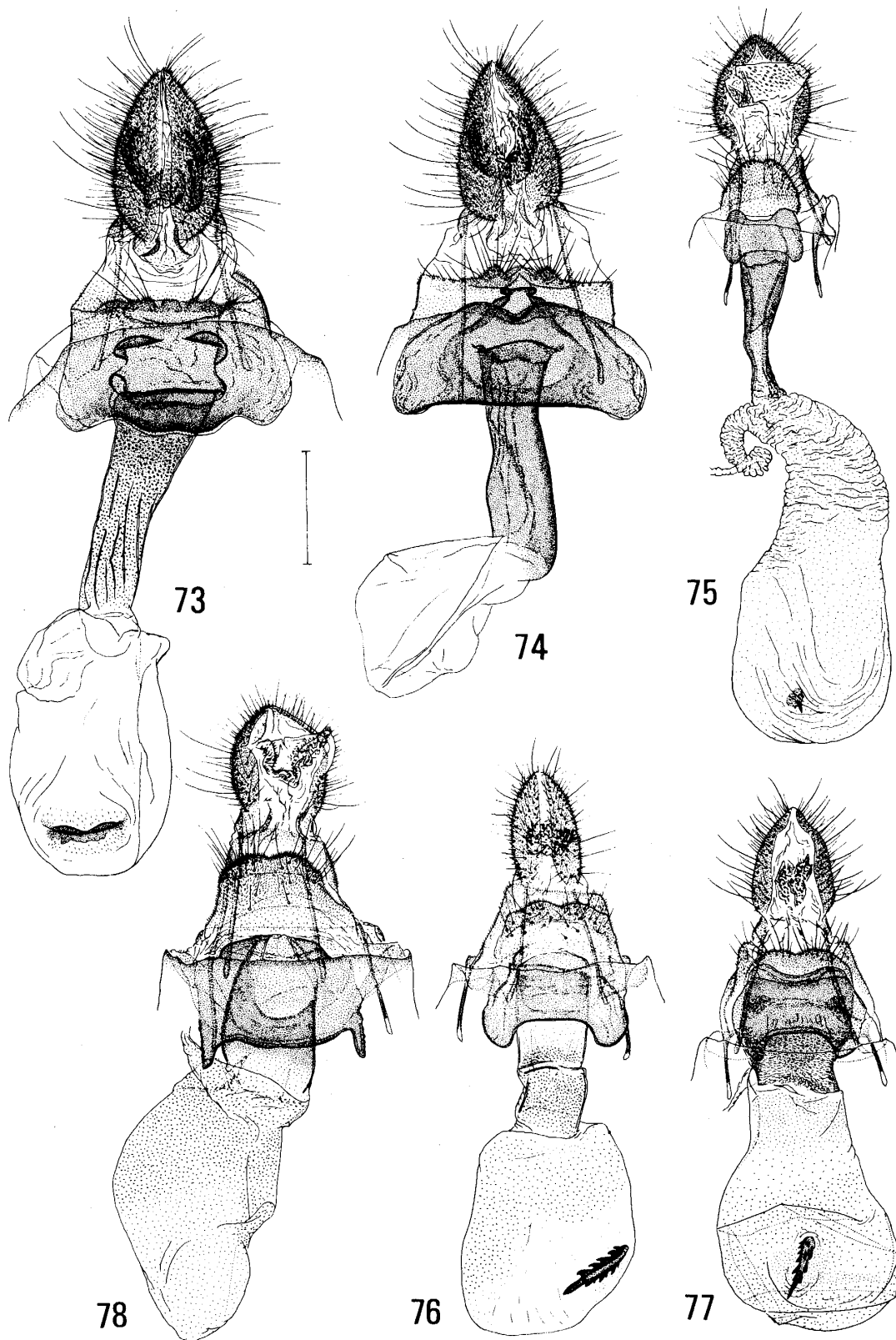


Figs. 62–66. Female genitalia. (62) *Periacma orthiodes* MEYRICK, Doi Chang Khian. (63) *P. kanchanaburiensis* sp. nov., paratype, Tham Than Lot. (64) *P. changkhanensis* sp. nov., holotype. (65) *P. kunai* sp. nov., holotype. (66) *P. nualsriai* sp. nov., holotype. (All drawn to one scale; scale = 0.5 mm.)



Figs. 67-72. Female genitalia. (67) *Periacma siamensis* sp. nov., paratype, Khao Yai. (68) *P. thamthanlotensis* sp. nov., paratype, Tham Than Lot. (69) *P. angkhangensis* sp. nov., paratype, Doi Pakia. (70) *P. nakhonnayokensis* sp. nov., paratype, Khao Yai. (71) *Irepacma pakiensis* sp. nov., paratype, Doi Pakia. (72) *Do.*, corpus bursae, paratype, Doi Chang Khian. (All drawn to one scale; scale = 0.5 mm.)





Figs. 73–78. Female genitalia. (73) *Irepacma meksongseei* sp. nov., paratype, Khao Yai. (74) *I. lannathaiensis* sp. nov., paratype, Doi Chang Khian. (75) *Ripeacma nangae* sp. nov., paratype, Doi Pakia. (76) *R. yamadai* sp. nov., paratype, Khao Soi Dao. (77) *R. yaiensis* sp. nov., paratype, Khao Yai. (78) *R. Chiangmaiensis* sp. nov., holotype. (All drawn to one scale; scale = 0.5 mm.)