



First report on the Olethreutini (Lepidoptera: Tortricidae: Olethreutinae) of Lao PDR with descriptions of two new species

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Abstract

We present the results of the first study of the tortricid moths of Lao PDR (Laos), with this report focusing on the tribe Olethreutini. We report 27 species from Laos for the first time, including two that are described as new: *Diakonoffiana laosensis* Phewphanh and Pinkaew, **n.sp.**, and *Lobesia acicula* Phewphanh and Pinkaew, **n.sp.** As is typical of many inventories, over half of the species (i.e., 15) were documented by a single specimen.

Key words: Laos, new records, new species, Phou Khao Khouay National Park, Thailand, Vietnam

Introduction

While our knowledge of the tortricid fauna of Southeast Asia has increased considerably over the past two decades with studies of the family in Vietnam (e.g., Razowski 2009a, b, Nedoshivina 2013, Heppner & Bae 2015a, b, 2016, Vi 2015) and Thailand (e.g., Kawabe 1987, 1989, 1995, Bae 1995, Pinkaew 2007, Jaikla et al. 2013, Muadsub & Pinkaew 2014, Anan et al. 2016), the tortricid fauna of the Lao People's Democratic Republic (Laos) remains poorly. In order to remedy this shortcoming, a survey of the subfamily Olethreutinae (Tortricidae) was conducted through a collaboration between Kasetsart University (Thailand) and the National University of Laos (Lao PDR). This contribution focuses on the tribe Olethreutini, no species of which previously were reported from Laos; hence, all of the species listed herein are new records.

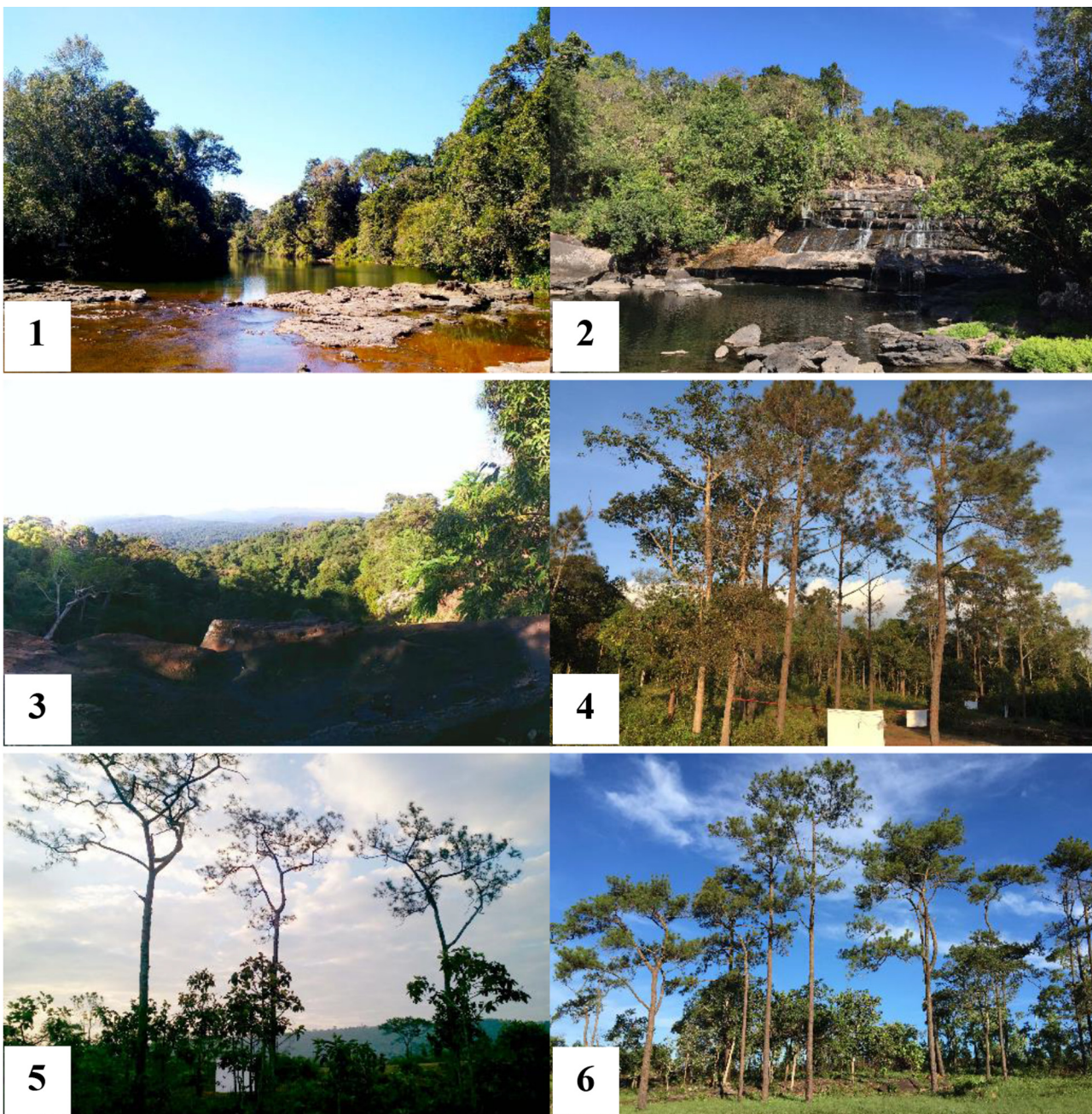
Materials and methods

This study is based on specimens collected in Phou Khao Khouay National Park, Laos, located 40 km northeast of Vientiane Province. The park encompasses about 2,000 km² in Xaisomboun Province, Vientiane Prefecture, Vientiane Province, and Bolikhamxai Province. The topography is mountainous with elevation varying from 200–1,761 m and includes sandstone cliffs, river gorges, and three large rivers with tributaries that flow into the Mekong River. The park has a monsoonal climate with a mean annual rainfall of 1,936 mm and a mean annual temperature of 26.6 °C with mean maximum and minimum temperatures of 31.6 °C and 21.5 °C, respectively. The vegetation varies from mixed deciduous forest in the lowlands to pine forest on mountain tops.

Specimens were collected at six sites in June 2016 and January 2017: Tad Leuk waterfall (Fig. 1), Bolikhamxai Province, 18°23'69"N, 103°04'30"E, ca. 211 m, deciduous forest; Tad Xay waterfall (Fig. 2), Bolikhamxai Province, 18°27'10"N, 103°08'66"E, ca. 312 m, deciduous forest; Phar Saed (Fig. 3), Bolikhamxai Province, 18°30'15"N, 102°57'92"E, ca. 628 m, deciduous forest mixed with pines; Ban Vung Heuo I (Fig. 4), Vientiane Province, 18°21'12"N, 102°48'85"E, ca. 740 m, montane evergreen forest mixed with pines; Ban Vung Heuo II (Fig. 5), Vientiane Province,

18°20'60"N; 102°47'91"E, ca. 785 m, pine forest mixed with dipterocarps; and Ban Vung Heuo III (Fig. 6), Vientiane Province, 18°22'72"N, 102°50'20"E, ca. 991 m, pine forest mixed with dipterocarps.

Adults were photographed with a Canon DSLR 5D mark II camera and a 100 mm macro lens. An Olympus SZ51 stereomicroscope was used for the examination of specimens and taking measurements; an Olympus CH2 compound microscope was used to examine genitalia preparations; a Leica DM750 connected with an ICC50 HD camera module was used to photograph genitalia; and the photos were customized using Adobe Photoshop. Forewing length was measured from the outer edge of the tegula at the wing base to the outermost edge of the fringe scales at the apex. Genitalia preparation methods were adapted from Common (1990). Terminology for forewing pattern and genitalia structures follows Horak (1991, 2006). All specimens are deposited in the Kasetsart Kamphaeng Saen Insect Collection, Nakhon Pathom, Thailand. Specimens were identified by comparison with descriptions and illustrations in Bae (1995), Diakonoff (1971, 1973), Kawabe (1987, 1989, 1995), Pinkaew (2007), and Promwong and Pinkaew (2011).



FIGURES 1–6. Collecting sites in Phou Khao Khouay National Park. 1. Tad Leuk waterfall 2. Tad Xay waterfall 3. Phar Saed 4. Ban Vung Heuo I 5. Ban Vung Heuo II 6. Ban Vung Heuo III.

Results

The field work resulted in a total of 65 specimens of Oletreutini representing 14 genera and 27 species. The most common species was *Gatesclarkeana idia* ($n = 12$ specimens), which is widespread throughout Southeast Asia. Fifteen of the species were represented by a single specimen. Two of the species represent undescribed taxa, and those are described below.

Diakonoffiana laosensis Phewphanh and Pinkaew, n.sp.

(Figs. 7–8, 35, 37, 39–43)

Diagnosis. *Diakonoffiana laosensis* is superficially most similar to *D. vindemians* (Meyrick, 1912) in forewing shape and pattern, but differs in having a silvery rhomboidal mark on the costa. The male genitalia are also most similar to those of *D. vindemians* with a curved and clavate uncus and an elongate ovate valva with a dilated cucullus, but they can be distinguished from those of the latter by the sacculus bearing asymmetrical processes dorsally, each with a cluster of spiniform setae, and only the right valva bearing a strong, short thorn-like process. The female genitalia also are similar to those of *D. vindemians* in having an aciculate, complex sterigma with two lateral aciculate knobs, a long ductus bursae, and a pear-shaped corpus bursae with plate-shaped signa. The female genitalia of *D. laosensis* differ by having a very short ductus bursae and a larger corpus bursae.

Description. Head: Upper frons brown to dark brown, lower frons white mixed with brown; vertex light brown mixed with brown; labial palpus porrect (Fig. 35), first segment greyish brown, second segment slightly expanded apically, pale brown mixed with brown, third segment rather short, pale brown. Antenna reaching middle of forewing, brown. Thorax: Pronotal collar, tegulae, and mesonotum brown to dark brown, posterior crest brown; hindtibia with tuft of long, pale brown scale pencils on dorsal inner surface (Fig. 37). Forewing subrectangular, slightly broadened towards termen, length 6.1–7.0 mm in male ($n = 11$) (Fig. 7), 7.0–7.3 mm in female ($n = 4$) (Fig. 8); costal margin distinctly curved near base then slightly curved to apex, with two distinct silvery striae and a silvery rhomboidal mark medially in male, mark squarish in female; termen rather straight, with two small white spots, one below apex between R_4 and R_5 and second between R_5 and M_1 , with a narrow, orange brown line between R_5 and M_3 ; tornus broadly rounded; forewing ground color greyish brown, with large, irregular, dark brown patch ventrobasally, with widened and curved band surrounding silvery rhomboidal mark, then extending along costa to termen, distal part with pinkish brown subcircular patch extending from R_5 to CuA_1 . Underside pale brown. Hindwing brown, slightly paler at base, underside pale brown. Abdomen: Male genitalia (Fig. 39–41) with tegumen triangular, with prominent, sclerotized shoulders, apex with group of moderately dense sockets (setae lost during dissection); uncus moderately long, clavate, apex with a brush of dense setae, sparsely setose basally; socii membranous with a vertical row of setae; gnathos with lateral arms sclerotized, medially fused with prominent triangular subscaphium; vinculum a moderately wide band; juxta large, subtriangular; caulis short, and anellus forming membranous ring surrounding basal one-third of phallus, phallus rather small, subtriangular, wide at base and tapering to apex, without cornuti; valva club-shaped; sacculus with moderately dense setae basally, ventral margin with a group of dense setae, with two asymmetrical spiniform setae developed into a processes on basal edge of excavation, only right valva bearing strong, stout, rather short thorn-like process; cucullus dilated with brush of spiniform setae. Female genitalia (Fig. 42–43) with tergum VIII smooth except for lateral subtriangular extension with group of scale sockets; sternum VII with deeply U-shaped posterior margin, papillae anales bearing dense setae; ostium associated with complex, spinulose lamella postvaginalis (Fig. 42), with a vertically folded median structure above, and two small dome-shaped lateral knobs; colliculum sclerotized, ductus bursae very short, ductus seminalis arising at intersection with corpus bursae; corpus bursae pear-shaped, with two unequal, strongly curved, plate-shaped signa.

Holotype. ♂, LAOS, Vientiane Prov., Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102°48'85"E, ca. 740 m, 11 Jun 2016, P. Phewphanh, pp00193 (genitalia slide PP00093).

Paratypes. 10♂, 4♀, LAOS: Vientiane Prov., Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102°48'85"E, ca. 740 m, 28 Jan 2017, P. Phewphanh, pp00476 (♂ genitalia slide PP00183). THAILAND: Prachinburi Prov., Khao Yai N.P., 14°11'02"N, 101°36'19"E, ca. 94 m, 18 June 2010, N. Pinkaew, np4477 (♂), Khao Yai N.P., 14°10'56"N, 101°28'39"E, ca. 201 m, 13 May 2010, N. Pinkaew, np4082 (♀ genitalia slide NP1459), Khao Yai

N.P., 14°23'56"N, 101°22'16"E, ca. 780 m, 9–12 Sep 2010, N. Pinkaew, np6722 (♂), N. Pinkaew, np6723 (♂), N. Pinkaew, np6724 (♂), Khao Yai N.P., 14°21'49"N, 101°24'37"E, ca. 1,140 m, 8 May 2010, N. Pinkaew, np3584 (♂), Khao Yai N.P., 14°11'02"N, 101°36'19"E, ca. 94 m, 24 Jan 2010, N. Pinkaew, np3403 (♂), Khao Yai N.P., 14°11'02"N, 101°36'19"E, ca. 94 m, 15 Feb 2010, N. Pinkaew, np3464 (♂). Chanthaburi Prov., Khao Khitchakut N.P., 12°50'21"N, 102°07'15"E, ca. 73 m, 21 Feb 2012, N. Pinkaew, np7715 (♀ genitalia slide NP3096), Khao Khitchakut N.P., 12°48'37"N, 102°09'11"E, ca. 92 m, 6 June 2013, N. Pinkaew, np5842 (♂ genitalia slide NP1982), Chanthaburi Prov., Ang-et Com. For., 12°36'04"N, 102°19'50"E, ca. 33 m, 22–23 Dec 2011, N. Pinkaew, np8743 (♀ genitalia slide NP3095), Trat Prov., Trat Agroforestry R.St., 12°23'43"N, 102°40'32"E, ca. 30 m, 18–19 Aug 2012, N. Pinkaew, np5307 (♂ genitalia slide NP1563). Nakhon Si Thammarat Prov., Khao Nan N.P., 08°51'47"N, 99°73'36"E, ca. 207 m, 19 Jan 2007, N. Pinkaew, np1973 (♀ genitalia slide NP1083).

Distribution. Laos and Thailand.

Etymology. The specific epithet *laosensis* refers to Laos, the country of the holotype.

***Dicephalarcha herbosa* (Meyrick, 1909)**

(Fig. 9)

Specimen examined. 1♂, LAOS: Xaisomboun Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102°57'92"E, ca. 628 m, 3 Jun 2016, P. Phewphanh, pp00062 (♂ genitalia slide PP00031).

Distribution. India, South Celebes, Java, Borneo, Bali Island, Moluccan Island, Thailand, and Laos (new record).

Remarks. The specimen was collected during the rainy season at 628 m in deciduous forest mixed with pines.

***Dudua aprobola* (Meyrick, 1886)**

(Fig. 10)

Specimen examined. 1♂, LAOS: Vientiane Prov., Ban Vung Heuo III, Phou Khao Khouay N.P., 18°22'72"N, 102°50'20"E, ca. 991 m, 18 Jun 2016, P. Phewphanh, pp00306 (♂ genitalia slide NP00151).

Distribution. Throughout the Indo-Australian region to the South Pacific Islands, including Sicily Island, Austral Island, North China, Taiwan, Japan, Thailand, and Laos (new record).

Remarks. Specimen was collected during the rainy season at 991 m in pine forest mixed with dipterocarps.

***Dudua charadraea* (Meyrick, 1909)**

(Fig. 11)

Specimen examined. 1♀, LAOS: Vientiane Prov., Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102°48'85"E, ca. 740 m, 11 Jun 2016, P. Phewphanh, pp00192 (♀ genitalia slide PP00092).

Distribution. Sri Lanka, Taiwan, West Java, West Sumatra, Thailand, and Laos (new record).

Remarks. Specimen was collected during the rainy season at 740 m in montane evergreen forest mixed with pines.

***Dudua tetanota* Meyrick, 1909**

(Fig. 12)

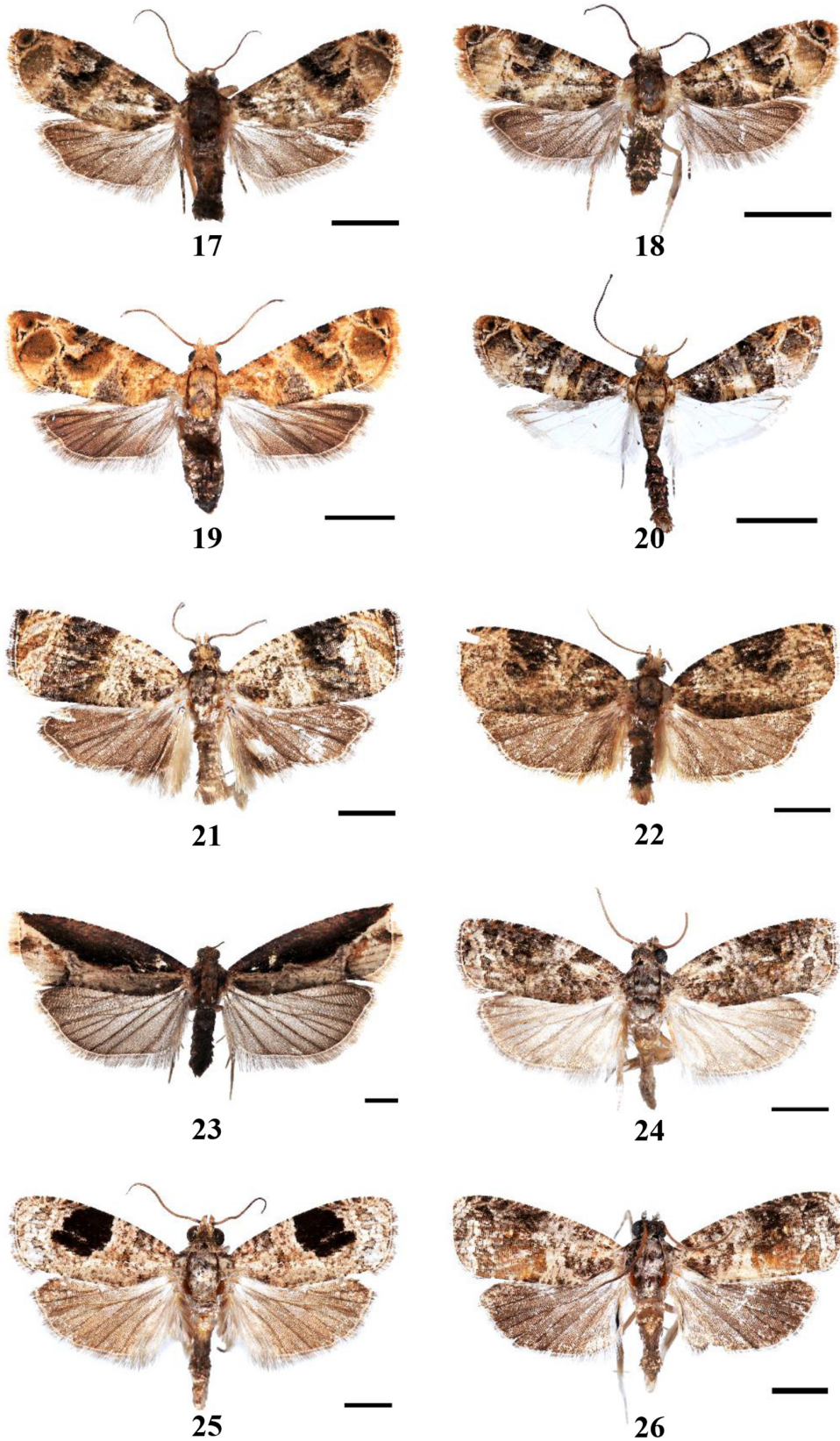
Specimen examined. 1♂, LAOS: Xaisomboun Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102°57'92"E, 628 m, 23 Jan 2017, P. Phewphanh, pp00365 (♂ genitalia slide PP00177).

Distribution. India (Assam), Celebes, Thailand, and Laos (new record).

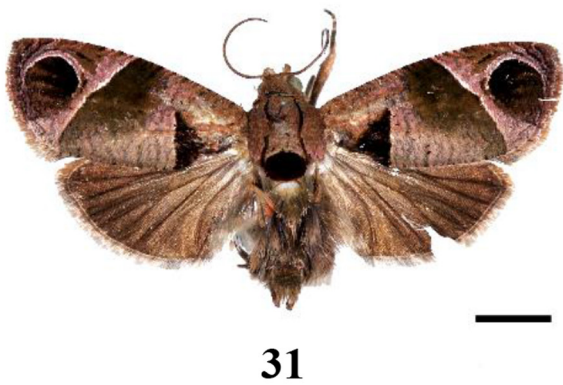
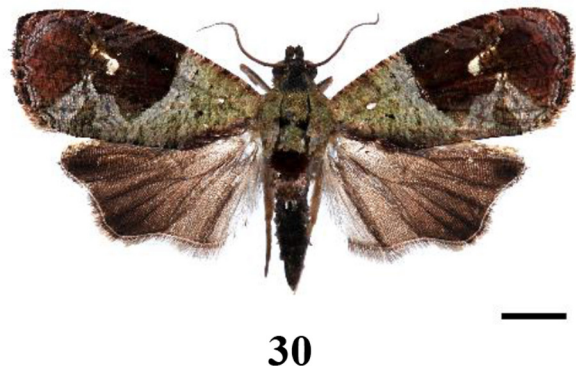
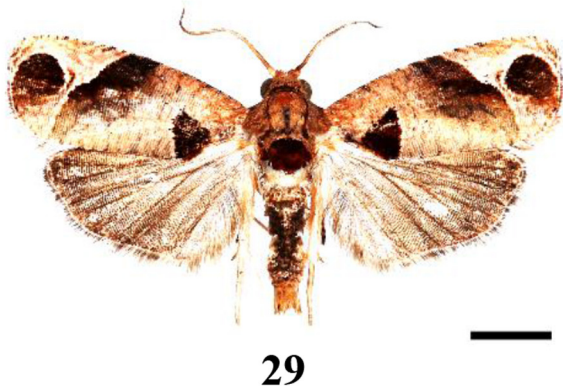
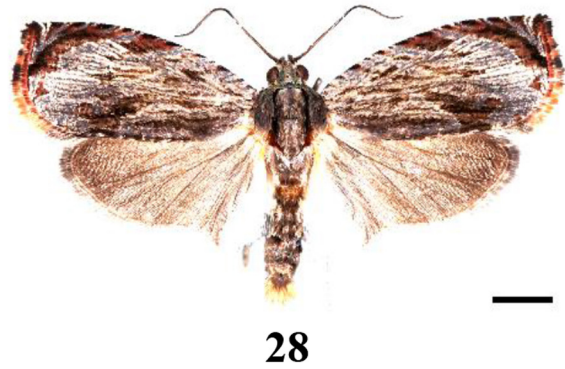
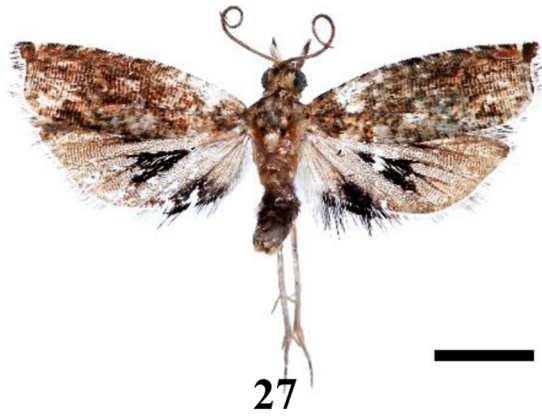
Remarks. Specimen was collected during the dry season at 628 m in deciduous forest mixed with pines.



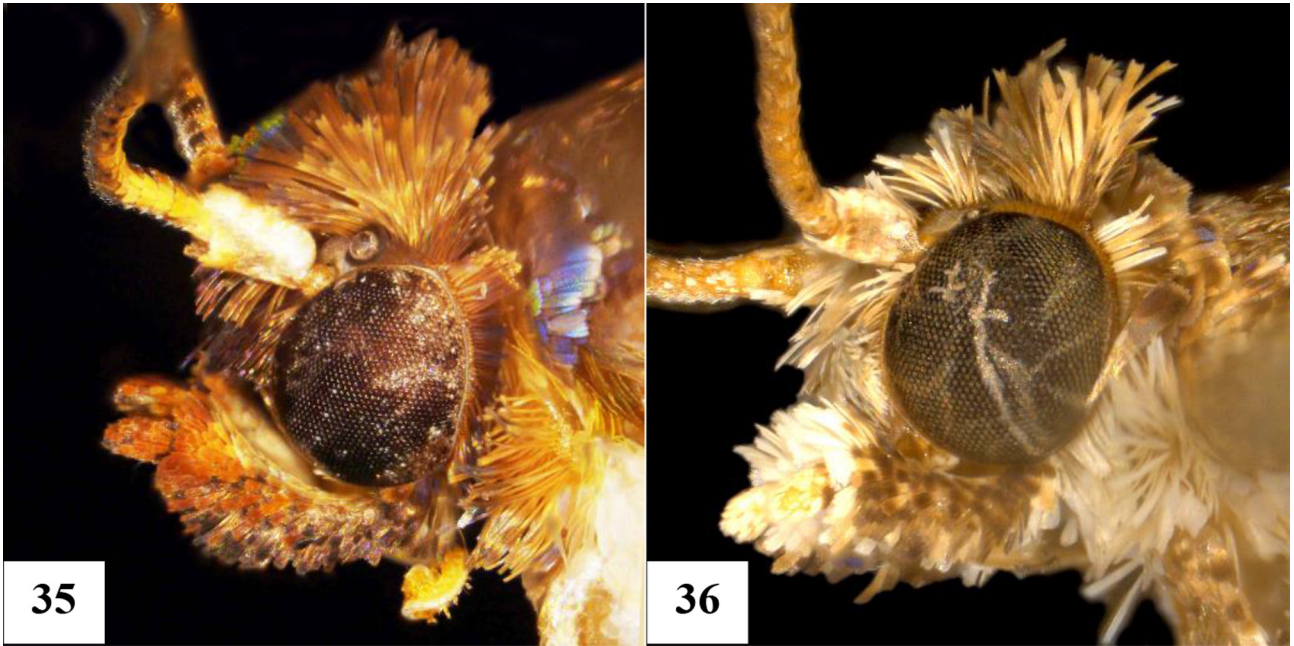
FIGURES 7–16. Wing patterns. 7. *Diakonoffiana laosensis*, n.sp. (holotype male) 8. *Do.* n.sp. (paratype female) 9. *Dicephalarcha herbosa* (Meyrick, 1909) 10. *Dudua aprobola* (Meyrick, 1886) 11. *Dudua charadraea* (Meyrick, 1909) 12. *Dudua tetanota* Meyrick, 1909 13. *Gatesclarkeana idia* Diakonoff, 1973 14. *Hedya iophaea* Meyrick, 1912 15. *Lobesia acicula*, n.sp. (holotype male) 16. *Lobesia aeolopa* Meyrick, 1907.



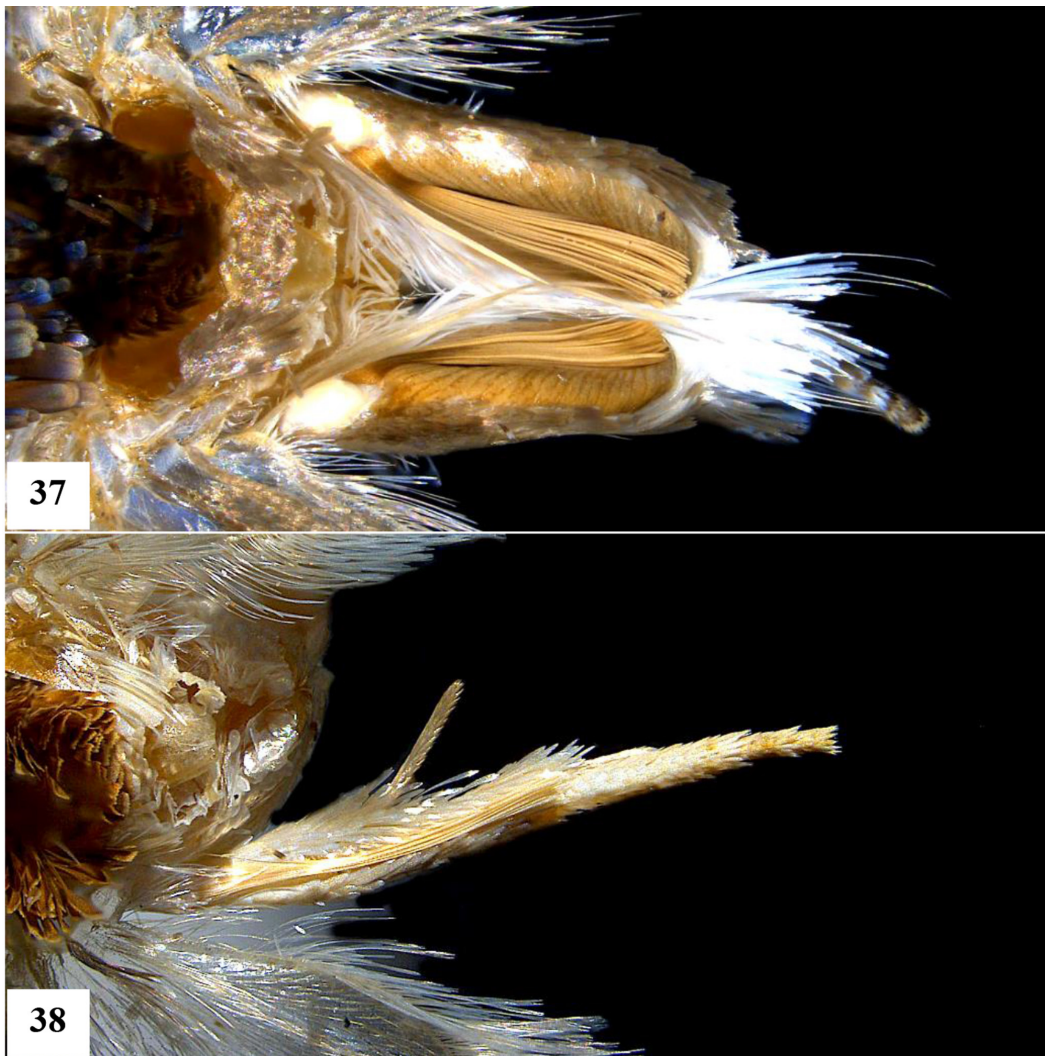
FIGURES 17–26. Wing patterns. 17. *Lobesia genialis* Meyrick, 1912 18. *Lobesia kurokoi* Bae, 1995 19. *Lobesia lithogonia* Diakonoff, 1954 20. *Lobesia moriutii* Bae, 1995 21. *Megalota fallax* Meyrick, 1909 22. *Megalota vera* Diakonoff, 1966 23. *Neopotamia divisa* Walsingham, 1900 24. *Ophiorrhabda cellifera* Meyrick, 1912 25. *Ophiorrhabda mormopa* (Meyrick, 1906) 26. *Ophiorrhabda philocompsa* (Meyrick, 1921).



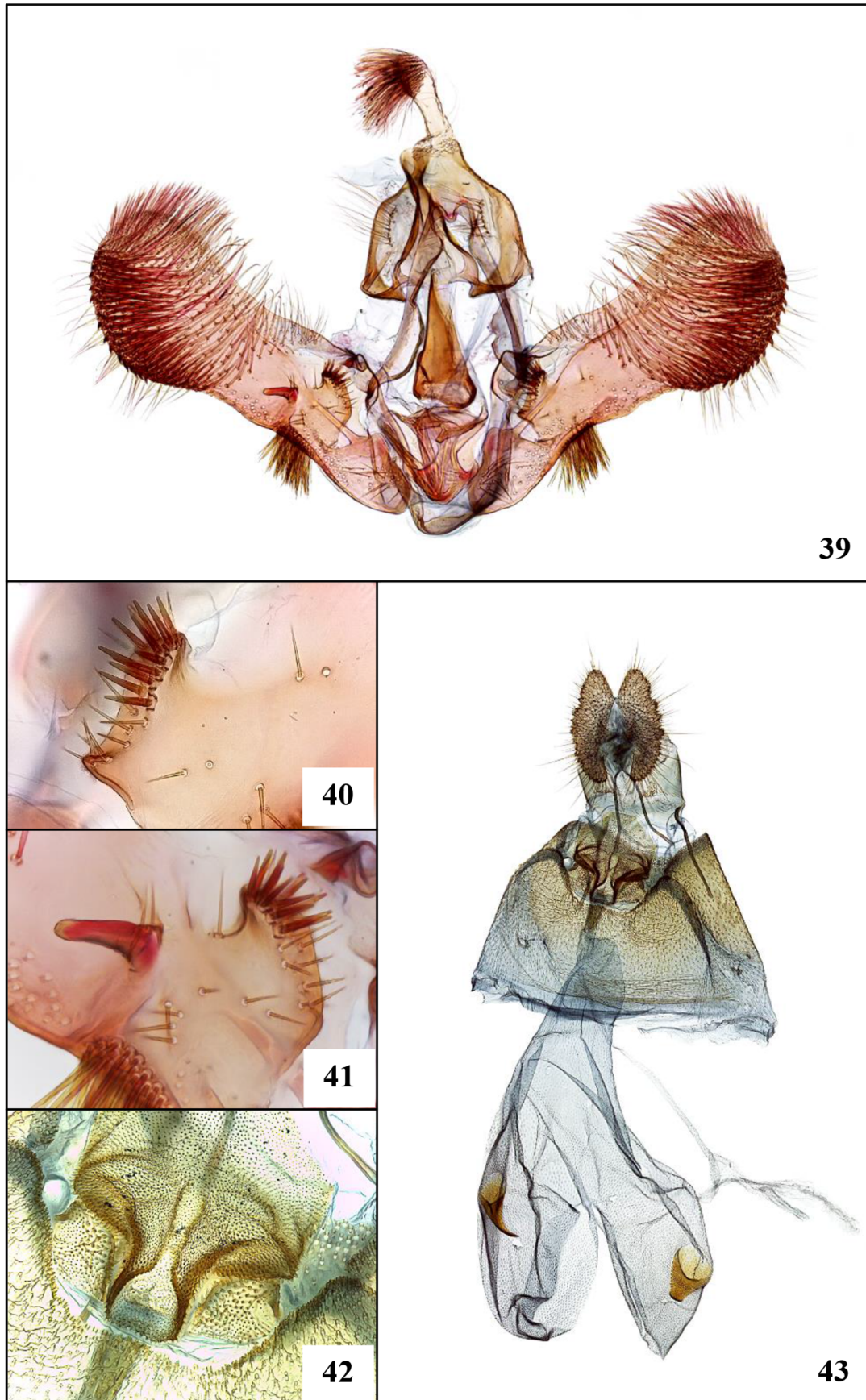
FIGURES 27–34 Wing patterns. 27. *Rhopaltriplasia anamilleta* Diakonoff, 1973 28. *Sisona albitibiana* (Snellen, 1902) 29. *Sorolopha archimedioides* (Meyrick, 1912) 30. *Sorolopha argyrota* Diakonoff, 1973 31. *Sorolopha cyclotoma* Lower, 1901 32. *Statherotis discana* (Felder & Rogenhofer, 1875) 33. *Statherotis leucaspis* (Meyrick, 1902) 34. *Sycacantha inodes* (Meyrick, 1911).



FIGURES 35–36 Head. 35. *Diakonoffiana laosensis*, n.sp. 36. *Lobesia acicula*, n.sp.



FIGURES 37–38 Hindtibia pencils. 37. *Diakonoffiana laosensis*, n.sp. 38. *Lobesia acicula*, n.sp.



FIGURES 39–43 *Diakonoffiana laosensis*, n.sp. 39. male genitalia 40. right sacculus 41. left sacculus 42. ostium and sterigma 43. female genitalia.

***Gatesclarkeana idia* Diakonoff, 1973**

(Fig. 13)

Specimens examined. 2♂, 10♀, LAOS: Bolikhamxai Prov., Tad Xay waterfall, Phou Khao Khouay N.P., 18°27'10"N, 103°08'66"E, ca. 312 m, 2 Jun 2016, P. Phewphanh, pp00008 (♀ genitalia slide PP00006), Phewphanh, pp00017 (♀), Phewphanh, pp00018 (♀), Phewphanh, pp00021 (♀), Phewphanh, pp00031 (♂), 25 Jan 2017, Phewphanh, pp00491 (♀), Tad Luek waterfall, Phou Khao Khouay N.P., 18°23'69"N, 103°04'30"E, ca. 211 m, 4 Jun 2016, P. Phewphanh, pp00105 (♀ genitalia slide PP00049), P. Phewphanh, pp00106 (♀), P. Phewphanh, pp00144 (♀), P. Phewphanh, pp00145 (♀), 24 Jan 2017, P. Phewphanh, pp00351 (♂ genitalia slide PP00159), pp00352 (♀ genitalia slide PP00229). Vientiane Prov., Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102°48'85"E, ca. 740 m, 11 Jun 2016, P. Phewphanh pp00189 (♀).

Distribution. Sri Lanka, Nepal throughout south-east Asia to Taiwan, Japan, New Guinea, Australia, Queensland, Thailand, and Laos (new record).

Remarks. Specimens were collected during the rainy season and dry season at 221–312 m in deciduous forest.

***Hedya iophaea* Meyrick, 1912**

(Fig. 14)

Specimens examined. 2♂, LAOS: Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102°48'85"E, ca. 740 m, 11 Jun 2016, P. Phewphanh, pp00181 (♂, genitalia slide PP00090), 28 Jan 2017, pp00481 (♂ genitalia slide PP00185).

Distribution. Japan, Taiwan, India, Sri Lanka, Thailand, and Laos (new record).

Remarks. Specimens were collected during the rainy season and dry season at 740 m in montane evergreen forest mixed with pines.

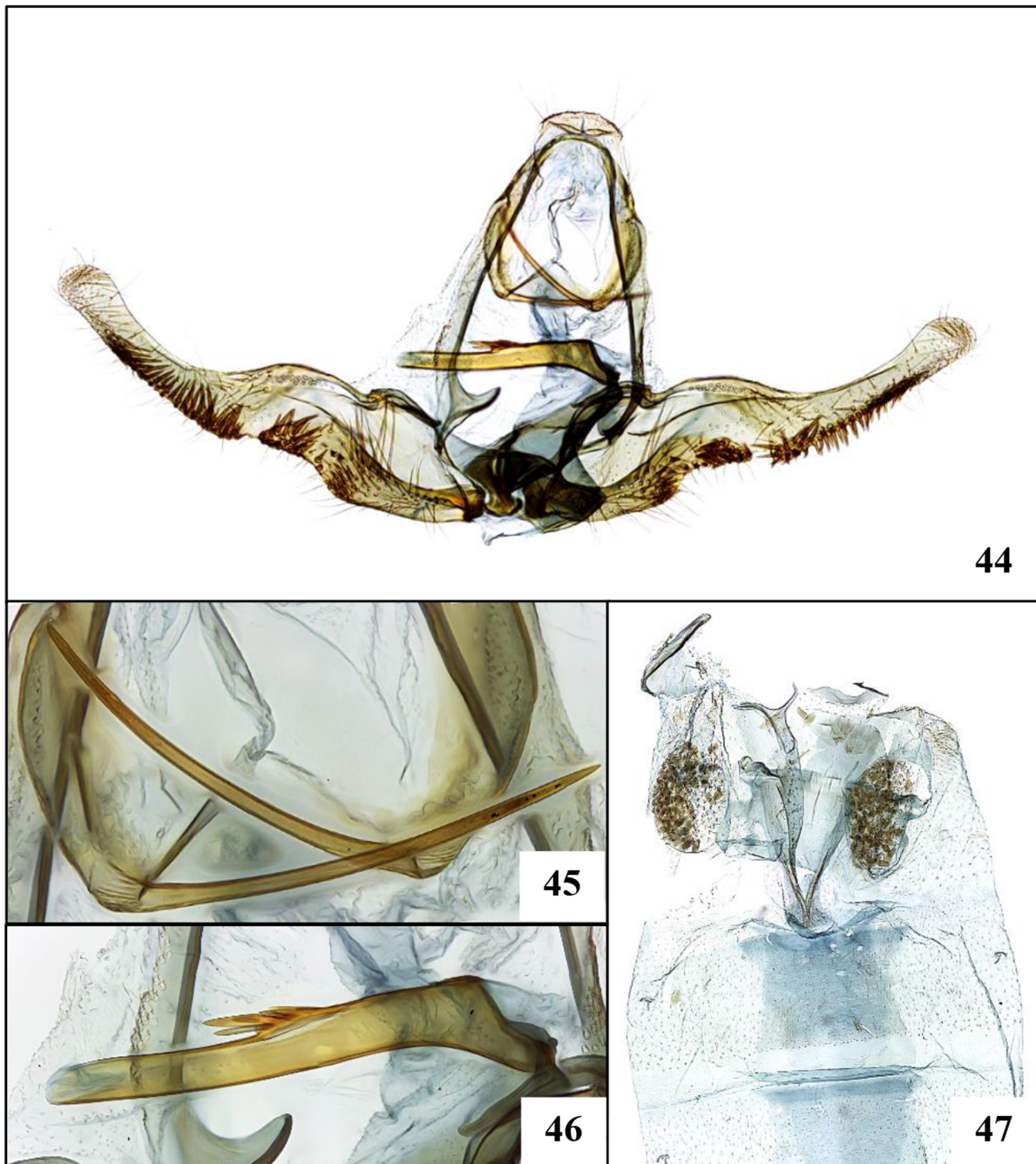
***Lobesia acicula* Phewphanh and Pinkaew, n.sp.**

(Figs. 15, 36, 38, 45–47)

Diagnosis. The forewing shape and pattern of this species is similar to those of most other *Lobesia* species with characteristic of forewing markings consisting roughly of transverse fascia in the basal half, a large circular blotch centered on the tornus, three pairs of costal strigulae before the apex, and a small round apical spot. The male genitalia of *Lobesia acicula* has a distinct gnathos that has a pair of pointed processes as in *L. physophora* (Lower, 1901) from Australia, *L. genialis* (Meyrick, 1912) from Sri Lanka, and *L. fetialis* (Meyrick, 1920) from India. In *L. acicula*, the processes are very long, narrow, needle-shaped, and have a smooth surface. In contrast, in other species the processes are much shorter with a surface of numerous aggregated sclerotized teeth.

Description. Head: Upper frons and lower frons white, vertex pale brown mixed with white, labial palpus porrect (Fig. 36), first segment white mixed with brown, second segment slightly expanded, brown to dark brown except white scales apically, third segment short and stout, white. Antenna long, reaching to beyond middle of wing length, scape white, pedicel and each flagellomere with basal half brown and apical half dark brown. Thorax: Pronotal collar, tegulae, and mesonotum pale brown, tegulae with transverse, dark brown band on basal third, mesonotum with narrow transverse band basally and medially, posterior crest pale brown to brown, hindtibia with long, yellowish white hair pencils on inner margin dorsally (Fig. 38). Forewing (Fig. 15) length 6.4–7.0 mm (n = 4) in male; costal margin nearly straight in basal half, convex in apical one-third, with well-developed system of strigulae, apex rounded, termen strongly oblique and slightly curved; ground color yellowish white; basal patch with irregular transverse fascia, brown mixed with dark brown, with dark brown, subtriangular dorsum patch; median patch with large, transverse fascia extending from costa to inner margin, outer edge pointing towards wing apex, dorsal half dark brown, basal half brown, with dark brown circular mark surrounded by narrow, curved line, dark brown, with a narrow, blackish line from base of R₅ to CuA₁; tornus with subtriangular patch, brown mixed with dark brown, apical one-third with light brown to brown subcircular patch between R₄ and M₃, edged with dark brown distally, with small, dark brown spots margined with brown on wing apex, with a curved, narrow line from costa to termen near wing apex. Underside pale brown, with yellowish white spots along costa. Hindwing pale

brown, becoming darker on wing apex. Underside light brown. Abdomen: Sternum II of male with a pair of large, lateral, elliptical pockets filled with modified scales (Fig. 47). Male genitalia (Fig. 44) with tegumen elongate-ovate, rather weakly sclerotized, with prominent apodemes for muscle M4, moderately large, curved lobes, pointed hook; uncus reduced to low bipartite projection on top of tegumen, sparsely setose; socii indistinct, forming lateral membranous lobes, sparsely setose; gnathos moderately sclerotized at base, with very long, narrow, slightly curved, sclerotized, needle-like process (Fig. 45); vinculum a weakly sclerotized band; juxta subtriangular; caulis long; anellus surrounding base of phallus; phallus long and slender, slightly curved medially, slightly tapered to apex, dorsomedially with group of spiniform setae (Fig. 46); valva long and narrow, ventral edge with a wide excavation, with group of spines; sacculus with moderately dense setae basally to medially; cucullus long and slender, dilated apically, with a row of moderately dense spines along ventral margin, except distal one-third with moderately dense setae.



FIGURES 44–47 *Lobesia acicula*, n.sp. 44. male genitalia 45. gnathos 46. phallus 47. abdominal sternum II.

Holotype. ♂, LAOS, Xaisomboun Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102°57'92"E, ca. 628 m, 3 Jan 2017, P. Phewphanh, pp0056 (genitalia slide PP00026).

Paratypes. 7♂, LAOS: Xiengkwang Prov., Phu Khun, 19°23'18"N, 102°25'33"E, ca. 1,325 m, 14 May 2010, N. Pinkaew, np4232 (♂ genitalia slide NP2794). THAILAND: Chiangmai Prov., Doi Suthep-Pui N.P., 18°48'41"N, 98°53'03"E, ca. 1,264 m, 30 Mar 2014, N. Patibhakyothin, np6296 (♂ genitalia slide NP2218), 18°48'54"N, 98°55'38"E, ca. 697 m, 1 Apr 2014, N. Patibhakyothin, np6383 (♂ genitalia slide NP2252). Nakhon Ratchasima Prov., Khao Yai N.P., 14°25'55"N, 101°24'05"E, ca. 700 m, 5 May 2016, N. Pinkaew, np8367 (♂ genitalia slide NP3313), N. Pinkaew, np8390 (♂ genitalia slide NP3314), N. Pinkaew, np8436 (♂ genitalia slide NP3315). Nakhon Nayok Prov., Khao Yai N.P., 14°17'13"N, 101°23'37"E, ca. 400 m, 2 May 2016, N. Pinkaew, np8528 (♂ genitalia slide NP3316).

Distribution. Laos and Thailand.

Etyymology. The specific epithet *acicula* refers to the long, narrow, needle-shaped socii.

***Lobesia aeolopa* Meyrick, 1907**

(Fig. 16)

Specimens examined. 2♂, 6♀ LAOS: Bolikhamxai Prov., Tad Xay waterfall, Phou Khao Khouay N.P., 18°27'10"N, 103°08'66"E, ca. 312 m, 2 Jun 2016, P. Phewphanh pp00005 (♂ genitalia slide PP00004), Tad Luek waterfall, Phou Khao Khouay N.P., 18°23'69"N, 103°04'30"E, ca. 211 m, 4 Jun 2016, P. Phewphanh, pp00104 (♀ genitalia slide PP00048). Xaisomboun Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102°57'92"E, ca. 628, 3 Jun 2016, P. Phewphanh, pp00059 (♀ genitalia slide PP00028), P. Phewphanh, pp00065 (♀ genitalia slide PP00033), P. Phewphanh, pp00066 (♂ genitalia slides PP00034), P. Phewphanh, pp00067 (♀ genitalia slide PP00035), P. Phewphanh, pp00069 (♀ genitalia slide PP00037), Tad Luek waterfall, Phou Khao Khouay N.P., 18°23'69"N, 103°04'30"E, ca. 211 m, 4 Jun 2016, P. Phewphanh, pp00104 (♀ genitalia slide PP00048).

Distribution. India, Sri Lanka, Myanmar, Java, Solomon Islands, Korea, Japan, Taiwan, Africa, Madagascar, Thailand, and Laos (new record).

Remarks. Specimen was collected during the rainy season at 211–628 m in deciduous forest and deciduous forest mixed with pines.

***Lobesia genialis* Meyrick, 1912**

(Fig. 17)

Specimen examined. 1♀, LAOS: Vientiane Prov., Ban Vung Heuo III, Phou Khao Khouay N.P., 18°22'72"N, 102°50'20"E, ca. 991 m, 27 Jun 2017, P. Phewphanh, pp00463 (♀ genitalia slide PP00168).

Distribution. Sri Lanka, Thailand, and Laos (new record).

Remarks. Specimen were collected during the rainy season at 991 m in pine forest mixed with dipterocarps.

***Lobesia kurokoi* Bae, 1995**

(Fig. 18)

Specimen examined. 1♀, LAOS: Xaisomboun Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102°57'92"E, ca. 628 m, 3 Jun 2016, P. Phewphanh, pp00054 (♀ genitalia slide PP00025).

Distribution. Thailand and Laos (new record).

Remarks. Specimen was collected during the rainy season at 628 m in deciduous forest mixed with pines.

***Lobesia lithogonia* Diakonoff, 1954**

(Fig. 19)

Specimens examined. 1♂, 2♀, LAOS: Xaisomboun Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102

°57'92"E, ca. 628 m, 3 Jun 2016, P. Phewphanh, pp00060 (♀ genitalia slide PP00029). Vientiane Prov., Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102°48'85"E, ca. 740 m, 11 Jun 2016, P. Phewphanh, pp00203 (♂ genitalia slide PP00100), P. Phewphanh, pp00231 (♀ genitalia slide PP00117).

Distribution. Sri Lanka, Java, Borneo, New Guinea, Thailand, and Laos (new record).

Remarks. Specimens were collected during the rainy season at 628–740 m in deciduous forest mixed with pines and montane evergreen forest mixed with pines.

Lobesia moriutii Bae, 1995

(Fig. 20)

Specimens examined. 2♂, LAOS: Xaisomboun Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102°57'92"E, ca. 628 m, 3 Jun 2016, P. Phewphanh, pp00068 (♂ genitalia slide PP00036), P. Phewphanh, pp00070 (♂ genitalia slide PP00038).

Distribution. Africa, New Guinea, Micronesia, Australia (Northern Territory, Queensland, New South Wales), Thailand, and Laos (new record).

Remarks. Specimens were collected during the rainy season at 628 m in deciduous forest mixed with pines.

Megalota fallax Meyrick, 1909

(Fig. 21)

Specimen examined. 1♂, LAOS: Vientiane Prov., Ban Vung Heuo III, Phou Khao Khouay N.P., 18°22'72"N, 102°50'20"E, ca. 991 m, 18 Jun 2016, P. Phewphanh, pp00309 (♂ genitalia slide PP00153).

Distribution. India, Thailand, and Laos (new record).

Remarks. Specimen was collected during the rainy season at 991 m in pine forest mixed with dipterocarps.

Megalota vera Diakonoff, 1966

(Fig. 22)

Specimen examined. 1♂, LAOS: Bolikhamxai Prov., Tad Xay waterfall, Phou Khao Khouay N.P., 18°27'15"N, 103°08'66"E, ca. 312 m, 25 Jan 2017, P. Phewphanh, pp00495 (♂ genitalia slide PP00181).

Distribution. New Guinea, Bismarck Islands, Bali Island, Moluccan Island, Australia, Thailand, and Laos (new record).

Remarks. Specimen was collected during the dry season at 312 m in deciduous forest.

Neopotamia divisa Walsingham, 1900

(Fig. 23)

Specimen examined. 1♀, LAOS: Vientiane Prov., Ban Vung Heuo III, Phou Khao Khouay N.P., 18°22'72"N, 102°50'20"E, ca. 991 m, 27 Jun 2017, P. Phewphanh, pp00460 (♀ genitalia slide PP00184).

Distribution. India (Assam: Naga Hills; Khasis) and Laos (new record).

Remarks. Specimen was collected during the dry season at 991 m in pine forest mixed with dipterocarps.

Ophiorrhabda cellifera Meyrick, 1912

(Fig. 24)

Specimens examined. 2♂, LAOS: Vientiane Prov., Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102

48°85'E, ca. 740 m, 11 Jun 2016, P. Phewphanh, pp00172 (♂ genitalia slide PP00084), P. Phewphanh, pp00178 (♂ genitalia slide PP00087).

Distribution. Sri Lanka, India (Pusa, Coorg), Malaya, and Laos (new record).

Remarks. Specimens were collected during the rainy season at 740 m in montane evergreen forest mixed with pines.

***Ophiorrhada mormopa* (Meyrick, 1906)**

(Fig. 25)

Specimen examined. 1♂, LAOS: Vientiane Prov., Ban Vung Heuo III, Phou Khao Khouay N.P., 18°22'72"N, 102°50'20"E, ca. 991 m, 18 Jun 2016, P. Phewphanh, pp00308 (♂ genitalia slide PP00152).

Distribution. Phillippine Islands, India, Sri Lanka, Sumatra, Borneo, Celebes, Thailand, and Laos (new record).

Remarks. Specimen was collected during the rainy season at 991 m in montane pine forest.

***Ophiorrhada philocompsa* (Meyrick, 1921)**

(Fig. 26)

Specimen examined. 1♂, LAOS: Bolikhamxai Prov., Tad Luek waterfall, Phou Khao Khouay N.P., 18°23'69"N, 103°04'30"E, ca. 211 m, 4 Jun 2016, P. Phewphanh, pp00112 (♂ genitalia slide PP00053).

Distribution. Java, Thailand, and Laos (new record).

Remarks. Specimen was collected during the rainy season at 211 m in deciduous forest.

***Rhopaltriplasia anamilleta* Diakonoff, 1973**

(Fig. 27)

Specimens examined. 2♂, LAOS: Bolikhamxai Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102°57'92"E, ca. 628 m, 23 Jan 2017, P. Phewphanh, pp00360 (♂ genitalia slide PP00157), P. Phewphanh, pp00367 (♂ genitalia slide PP00156).

Distribution. New Guinea, Thailand, and Laos (new record).

Remarks. Specimens were collected during the rainy season at 628 m in deciduous forest mixed with pines.

***Sisona albitibiana* (Snellen, 1902)**

(Fig. 28)

Specimens examined. 6♂, 3♀, LAOS: Bolikhamxai Prov., Tad Xay waterfall, Phou Khao Khouay N.P., 18°27'10"N, 103°08'66"E, ca. 312 m, 2 Jun 2016, P. Phewphanh, pp00041 (♀ genitalia slide PP00019), P. Phewphanh, pp00044 (♀ genitalia slide PP00020). Xaisomboun Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102°57'92"E, ca. 628 m, 3 Jun 2016, P. Phewphanh, pp00080 (♂), P. Phewphanh, pp00082 (♂), Tad Luek waterfall, Phou Khao Khouay N.P., 18°23'69"N, 103°04'30" E, ca. 211 m, 4 Jun 2016, P. Phewphanh, pp00134 (♂ genitalia slide PP00064), 24 Jan 2017, P. Phewphanh, pp00358 (♀ genitalia slide PP00210). Vientiane Prov., Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102°48'85" E, ca. 740 m, 11 Jun 2016, P. Phewphanh, pp00237 (♂), Ban Vung Heuo II, Phou Khao Khouay N.P., 18°20'60"N, 102°47'91"E, ca. 785 m, 17 Jun 2016, P. Phewphanh, pp00294 (♂), P. Phewphanh, pp00295 (♂).

Distribution. West Java, West Celebes, Thailand, and Laos (new record).

Remarks. Specimens were collected during the rainy season at 211–785 m in deciduous forest, deciduous forest mixed with pines, montane evergreen forest mixed with pines and pine forest mixed with dipterocarps.

***Sorolopha archimedi* (Meyrick, 1912)**

(Fig. 29)

Specimen examined. 1♂, LAOS: Vientiane Prov., Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102°48'85"E, ca. 740 m, 11 Jun 2016, P. Phewphanh, pp00168 (♂ genitalia slide PP00081).

Distribution. China, Hong Kong, Sri Lanka, India, Java, Thailand, and Laos (new record).

Remarks. Specimen was collected during the rainy season at 740 m in montane evergreen forest mixed with pines.

***Sorolopha argyropa* Diakonoff, 1973**

(Fig. 30)

Specimen examined. 1♂, LAOS: Vientiane Prov., Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102°48'85"E, ca. 740 m, 11 Jun 2016, P. Phewphanh, pp00233 (♂ genitalia slide PP00119).

Distribution. Borneo, Thailand, and Laos (new record).

Remarks. Specimen was collected during the rainy season at 740 m in montane evergreen forest mixed with pines.

***Sorolopha cyclotoma* Lower, 1901**

(Fig. 31)

Specimen examined. 1♂, LAOS, Xaisomboun Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102°57'92"E, ca. 628 m, 3 Jun 2016, P. Phewphanh, pp00075 (♂ genitalia slide PP00043).

Distribution. South New Guinea, Australia (Queensland), Thailand, and Laos (new record).

Remarks. Specimen was collected during the rainy season at 628 m in deciduous forest mixed with pines.

***Statherotis discana* (Felder & Rogenhofer, 1875)**

(Fig. 32)

Specimens examined. 2♂, LAOS: Bolikhamxai Prov., Tad Xay waterfall, Phou Khao Khouay N.P., 18°27'10"N, 103°08'66"E, ca. 312 m, 2 Jun 2016, P. Phewphanh, pp00023 (♂). Xaisomboun Prov., Phar Saed, Phou Khao Khouay N.P., 18°30'15"N, 102°57'92"E, ca. 628 m, 3 Jun 2016, P. Phewphanh, pp00073 (♂ genitalia slide PP00042).

Distribution. Taiwan, Philippine Islands, India, Java, Solomon Islands, Moluccan Islands, Thailand, and Laos (new record).

Remarks. Specimens were collected during the rainy season at 312–628 m in deciduous forest and deciduous forest mixed with pines.

***Statherotis leucaspis* (Meyrick, 1902)**

(Fig. 33)

Specimen examined. 1♂, LAOS: Bolikhamxai Prov., Tad Luek waterfall, Phou Khao Khouay N.P., 18°23'69"N, 103°04'30"E, ca. 211 m, 24 Jan 2017, P. Phewphanh, pp00350 (♂ genitalia slide PP00234).

Distribution. Maldives Islands, Java, Marshall Islands, Ellis Island, Thailand, and Laos (new record).

Remarks. Specimen was collected during the rainy season at 211 m in deciduous forest.

Sycacantha inodes (Meyrick, 1911)

(Fig. 34)

Specimens examined. 4♂, LAOS: Bolikhamxai Prov., Tad Xay waterfall, Phou Khao Khouay N.P., 18°27'10"N, 103°08'66"E, ca. 312 m, 2 Jun 2016, P. Phewphanh, pp00022 (♂). Vientiane Prov., Ban Vung Heuo I, Phou Khao Khouay N.P., 18°21'12"N, 102°48'85"E, ca. 740 m, 11 Jun 2016, P. Phewphanh, pp00236 (♂ genitalia slide PP00121), P. Phewphanh, pp00239 (♂ genitalia slide PP00123), Tad Luek waterfall, Phou Khao Khouay N.P., 18°23'69"N, 103°04'30"E, ca. 211 m, 24 Jan 2017, P. Phewphanh, pp00357 (♂ genitalia slide PP00158).

Distribution. Bawean Island, East Borneo, Thailand, and Laos (new record).

Remarks. Specimens were collected during the rainy season at 740 m in montane evergreen forest mixed with pines.

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