

Torodora pakiaensis, *T. puiana* and *Abrachmia kerasista* (Lepidoptera, Lecithoceridae, Torodorinae), three new species from Thailand

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Three new species, *Torodora pakiaensis* Park, *T. puiana* Park and *Abrachmia kerasista* Park are described and illustrated from Thailand.

The family Lecithoceridae is one of the highly diverse lepidopteran groups with 1260 species worldwide, but it still remains poorly studied (Park 2018, Park *et al.* 2020). *Torodora* Meyrick, 1894 is the largest genus of the subfamily Torodorinae, comprising more than 200 species worldwide excluding Nearctic and Neotropical regions. Most of the species (178) are known from the Oriental Region. The genus is defined by the forewing venation with M2 present in both wings, the male genitalia with well-developed uncus and the abdomen with spinose zones on the tergites. For the faunal study of the genus in Thailand, Park (2002) reviewed 20 species including 15 new species, and additional 10 species were described by Park (2007, 2010a, 2010b), and Park and Kim (2021). At present, there are 32 species in the genus *Torodora* known from Thailand including the two new species described here.

The genus *Abrachmia* Amsel, 1968, is a monotypic genus established with *A. justa* (Mey-

rick, 1910) from Sri Lanka. However, if *A. karachiella* Amsel, 1968 and *A. justa* are not synonyms, the genus is not monotypic. The genus is close to *Torodora* in the forewing pattern, but it differs by the venation with M2 and M3 nearly connate at base in the forewing, and hindwing without M2. The abdomen has spinose zones on the tergites.

Material and methods

This study is based on the material loaned from the Osaka Prefecture University in Japan (OPUJ) which was collected in Thailand during the lepidopterological expeditions in 1983–1985 and preserved in the university. The paratype of *Torodora pakiaensis* was provided by O. Karsholt, Zoological Museum, University of Copenhagen, Denmark (ZMUC). Photos of adults and genitalia were taken with a Leica S8APO camera equipped with a Leica video adapter 1.0× HC

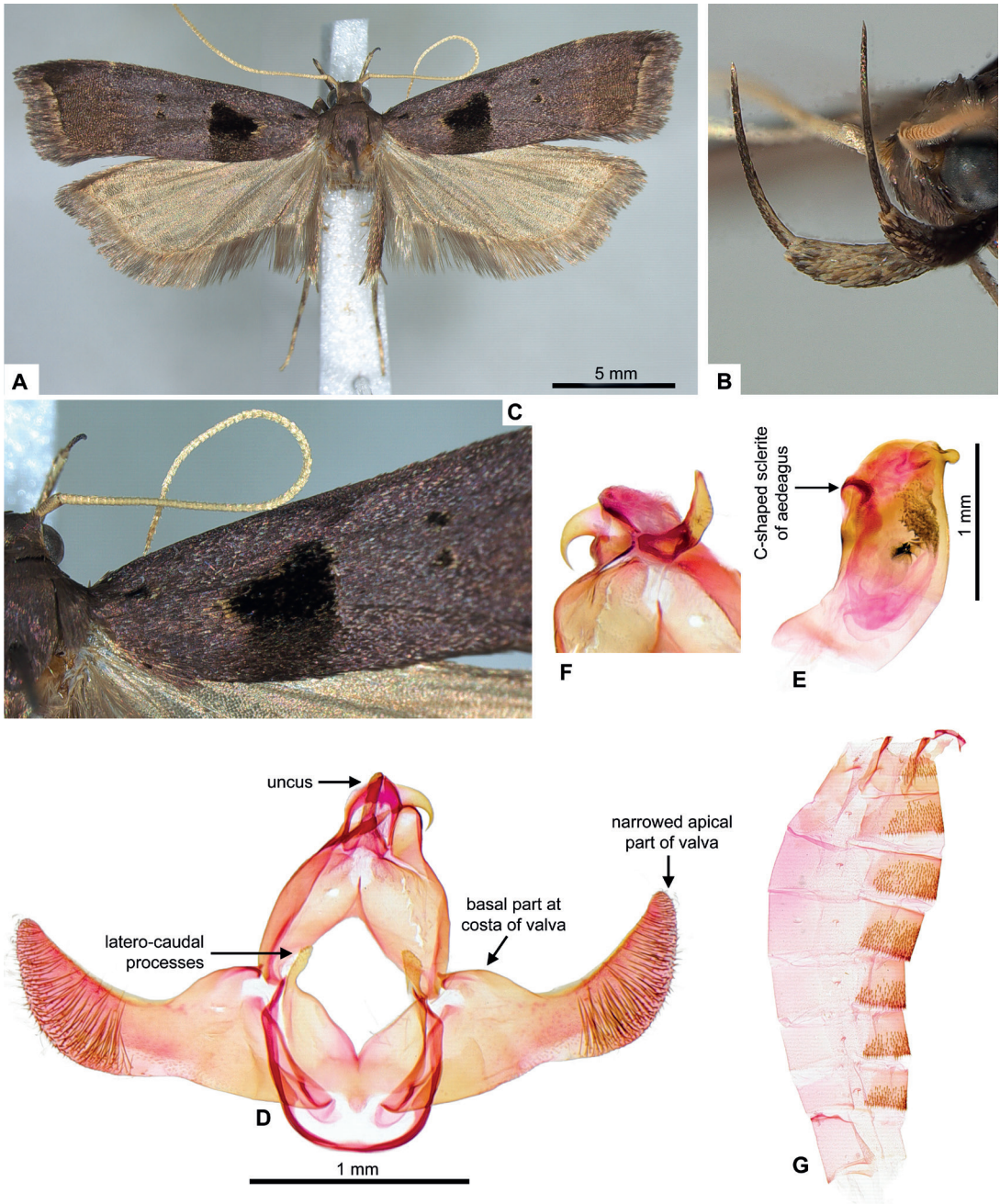


Fig. 1. *Torodora pakiaensis* *sp. nov.* — **A:** adult (from the holotype). — **B:** adult, labial palpi in lateral view. — **C:** antenna and basal part of forewing, close-up. — **D:** male genitalia (genitalia slide no. CIS-8155). — **E:** male genitalia (genitalia slide no. CIS-8155), aedeagus. — **F:** uncus + gnathos in the lateral view, close-up. — **G:** abdomen.

(C-mount adapter for Leica HC C-mounts, part no. 10450317). In the description of the new species, the color of adults is defined according to Kornerup and Wanscher (1978).

***Torodora pakiaensis* Park, *sp. nov.* (Fig. 1)**

MATERIAL EXAMINED. **Holotype:** ♂, Thailand, Chiang Mai Province, Doi Pakia, ca. 1500 m a.s.l., 5–7 September 1987, leg. Moriuti, Saito, Arita & Yoshimatsu, genitalia slide CIS

(Center for Insect Systematics) 8155 (OPUJ). **Paratype:** ♀, Thailand, Loei Province, Phu Luang Wildlife Sanctuary, 8–14 October 1984, 700–800 m a.s.l., Karsholt, Lomholdt & Nielsen (ZMUC).

ETYMOLOGY. The species name is derived from the type locality.

DIAGNOSIS. *Torodora pakiaensis* is similar to *T. parallaxis* (Meyrick, 1894) described from Myanmar. The former has antemedian blackish blotch fascia rectangular, not connected to inner margin, followed by a pair of black spots placed transversely between the antemedian blotch and termen; while in the latter, the blotch is triangular and distinctly connected to the inner margin, and with a pair of yellowish-white spots beyond. The male genitalia are also similar to in both species but can be distinguished by the following characters: uncus not exceeding the apex of the basal plate of valva; valva with broadly expanded costa in basal 1/4, then abruptly oblique; cucullus more narrowly produced apically; latero-caudal processes digitate, more or less stout, not pointed apically. The wing pattern in *T. pakiaensis* is more similar to that in *T. epiphorana* Park, but it is much larger (24 mm vs. 15.0–16.0 mm in *T. epiphorana*), the termen of forewing less concave beyond apex and termen of the hind wing less oblique.

DESCRIPTION. Male and female (Fig. 1A–C). Wingspan 24.0 mm.

Head: Dark brown dorsally, with yellowish-white erect scales laterally. Basal segment of antenna elongated, slightly dilated distally, yellowish white with brownish scales dorsally; flagellum yellowish-white throughout, lacking annulations. Second segment of labial palpus thickened, dark brown in basal 2/3 and speckled with yellowish-white scales gray on outer surface; 3rd segment slender, upturned, as long as 2nd segment, dark brown all around, but yellowish white in basal 1/3 dorsally.

Thorax: Tegula and thorax dark brown. Hind tibia with dark-brown rough scales beneath and above. Forewing elongated, dilated distally; ground color dark brown, with large, blackish rectangular antemedian patch before middle and pair of small rounded black spots, vertically located at end of cell; postmedian line weakly developed, slightly zigzagged, slightly convex medially; costa slightly oblique beyond 3/4; apex somewhat

sharply produced; termen slightly concave before middle; fringe concolorous with ground colour, with narrow yellowish-white basal line; venation with R1 arising beyond middle of cell; R2, from near upper corner of cell; R3 and R4 stalked about basal 2/5; R5 to termen; M2 close to M3; CuA1 and CuA1 stalked for basal 2/5; cell closed. Hind wing pale brownish gray; apex slightly produced; termen oblique, concave before middle; venation with M2 close to M3 at base; M3 and CuA1 short-stalked.

Abdomen (Fig. 1G): Spinose zones broadly developed, with minor spines; sternite VIII convex on caudal margin medially.

Male genitalia (Fig. 1D–F): Uncus rather stout, concave on ventral margin, strongly convex on dorsal margin medially, narrowed apically, not exceeding apex of the basal plate of valva. Basal plate of gnathos produced apically; median process rather large, strongly bent beyond 3/5. Valva broadly expanded on costa in basal 1/4, then oblique; cucullus as long as basal part of valva, with dense strong setae, sharply produced apically. Juxta large, deeply incised on caudal margin medially, with digitate, apically rounded latero-caudal processes, less than 1/2 the length of juxta; anterior margin with large semi-ovate protrusion medially. Aedeagus stout, bent at basal 1/3, about equal the width of the base of valva, with a nipple-shaped lobe near the end of dorsal surface; cornuti consisting of a C-shaped sclerite ventrally, a series of small conical spines beyond middle, followed by a sac of spinules ventro-distally.

Female genitalia: Abdomen missing.

DISTRIBUTION. Provinces of Chiang Mai and Loei, Thailand.

Torodora puiana Park, *sp. nov.* (Fig. 2)

MATERIAL EXAMINED. **Holotype:** ♀, Thailand, Chiang Mai Province, Doi Pui, ca. 1300 m a.s.l., 30 June 1983, genitalia slide CIS-8156 (OPUJ). **Paratype:** ♀, Thailand, Chiang Mai Province, Doi Chang Khian, ca. 1250 m a.s.l., 27 June 1983, leg. Kuroko, Moriuti, Arita & Yoshiyasu (OPUJ).

ETYMOLOGY. The species name is derived from the type locality.

DIAGNOSIS. *Torodora puiana* is similar to *T. canalis* Park, 2020 described from Laos by having a somewhat similar forewing pattern

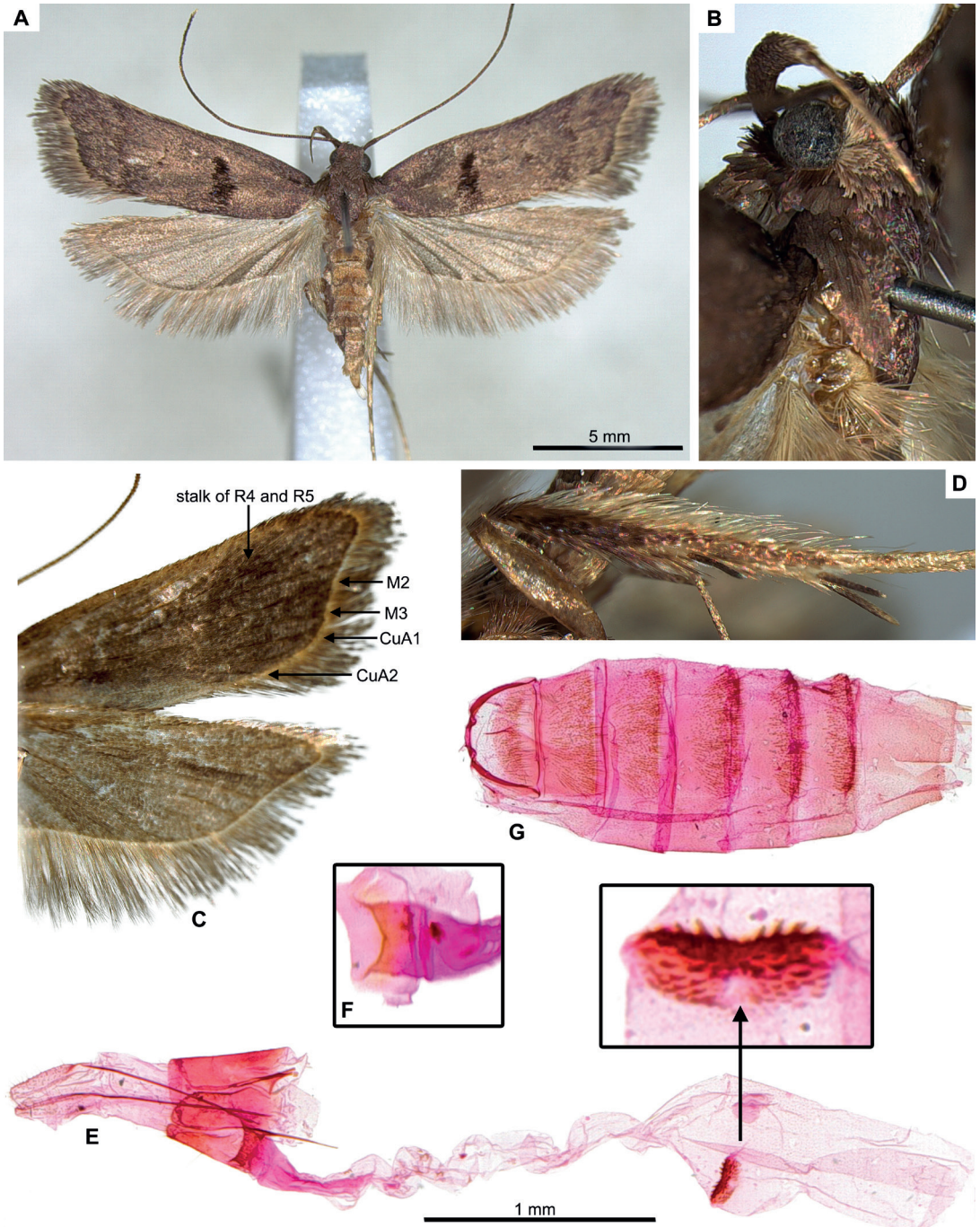


Fig. 2. *Torodora puiana* *sp. nov.* — **A:** adult (from the holotype). — **B:** adult (from the holotype), labial palpus and dorsal surface of thorax with tuft of hair-like scales. — **C:** under surface of wings. — **D:** hind tibia. — **E:** female genitalia (genitalia slide no. CIS-8175) with signum close-up. — **F:** female genitalia (genitalia slide no. CIS-8175), antrum of the paratype, close-up. — **G:** abdomen.

vertically elongated black antemedian fascia before middle of the forewing, but can be dis-

tinguished from *T. canalis* by the absence of the large, elliptical patch near the end of cell,

the termen concave medially on the forewing, and the spinose zones on the abdominal tergites broadly occupied with short spines. *Torodora canalis* has only a small, blackish spot near the end of cell, the termen is nearly straight, and the spinose zones have long, strong spines along posterior margin. The female genitalia differ from the known species of the genus by having a rectangular, sclerotized antrum and the signum strawberry-shaped, broadened transversally, with strong spines on upper margin and short particles on lower plate.

DESCRIPTION. Female (Fig. 2A–D). Wingspan 15.5–16.5 mm.

Head: Pale grayish brown dorsally, with orange-white erect scales laterally tipped with brownish orange apically. Basal segment of antenna elongated, dark brown all around; flagellum pale orange gray with brown annulations. Second segment of labial palpus thickened, arched, grayish brown on outer surface with yellowish-white scales apically; 3rd segment strongly slender, upturned, as long as 2nd segment, dark brown ventrally.

Thorax: Tegula and thorax grayish brown. Forewing elongated, slightly dilated distally; ground color grayish brown; antemedian fuscous patch vertically elongated, arising from inner margin and reaching the upper margin of cell, gradually narrowed anteriorly; with an indistinct narrow, vertical fascia which connects two stigmata at end of cell; fuscous postmedian line weakly developed, slightly zigzagged; costa slightly oblique beyond 3/4; apex obtuse; termen oblique, slightly concave medially; fringe concolorous with ground color; venation with R1 arising beyond middle of cell; R2, from near upper corner of cell; R3 and R4 stalked about basal 2/5; R5 to termen; M2 close to M3; CuA1 and CuA1 stalked for basal 2/5; cell closed. Hind wing grayish white, scattered with brownish scales; apex slightly produced; termen oblique, concave before middle; venation with M2 close to M3 at base; M3 and CuA1 short-stalked.

Abdomen (Fig. 1G): Spinose zones on upper surface broad from tergite I to IV and narrowly developed on tergite V and VII, with minor spines; sternite VIII with nearly straight caudal margin.

Female genitalia (Fig. 2E and F). Abdominal sternite VIII slightly emarginate at middle

on caudal margin. Apophyses anteriores about 1/3 the length of apophyses posteriores. Antrum rectangular, concave on caudal margin, with narrow latero-caudal processes. Ductus bursae long, as wide as antrum, coiled 4–5 times medially; ductus seminalis arising from about distal 1/4. Corpus bursae large, ovate; signum positioned near entrance, strawberry-shaped, broadened transversally, with strong spines on upper margin; lower plate broadened with short particles, emarginated medially on lower margin.

Male: unknown.

DISTRIBUTION. Chiang Mai Province, Thailand.

***Abrachmia kerasista* Park, sp. nov.** (Fig. 3)

MATERIAL EXAMINED. **Holotype:** ♀, Thailand, Chiang Mai Province, Doi Chang Khian, ca. 1250 m a.s.l., 25 October 1985, leg. Moriuti, Saito & Arita, genitalia slide CIS-8167 (OPUJ).

ETYMOLOGY. The species name is derived from the Greek, *keras* (= horn) with a Greek superlative ending, *-ista*, referring to the horn-shaped caudal processes of the juxta in the male genitalia.

DIAGNOSIS. *Abrachmia kerasista* is similar to *T. canalis* by having somewhat similar forewing pattern, but it certainly belongs to the genus *Abrachmia* as it has different venation in both wings, M2 and M3 nearly connate at base in the forewing, and M2 absent in the hindwing. The new species can be distinguished from *A. justa* Meyrick, 1910 (the type species) by the forewing pattern and the male genitalia which have a foot-shaped cucullus, the juxta has convex caudal margin, and the cornutus in the aedeagus is a U-shaped long stripe.

DESCRIPTION. Male (Fig. 3A–D). Wingspan 13.0 mm.

Head: Grayish brown dorsally, with rough orange-white erect scales laterally. Basal segment of antenna elongated, yellowish white dorsally, dark brown on anterior and posterior surface; flagellum pale orange white, with dark-brown annulations. Second segment of labial palpus thickened, grayish brown, with whitish scales apically on outer surface, grayish brown in basal 2/3 and white beyond on inner surface; 3rd segment strongly upturned, as long as 2nd segment, dark brown ventrally.

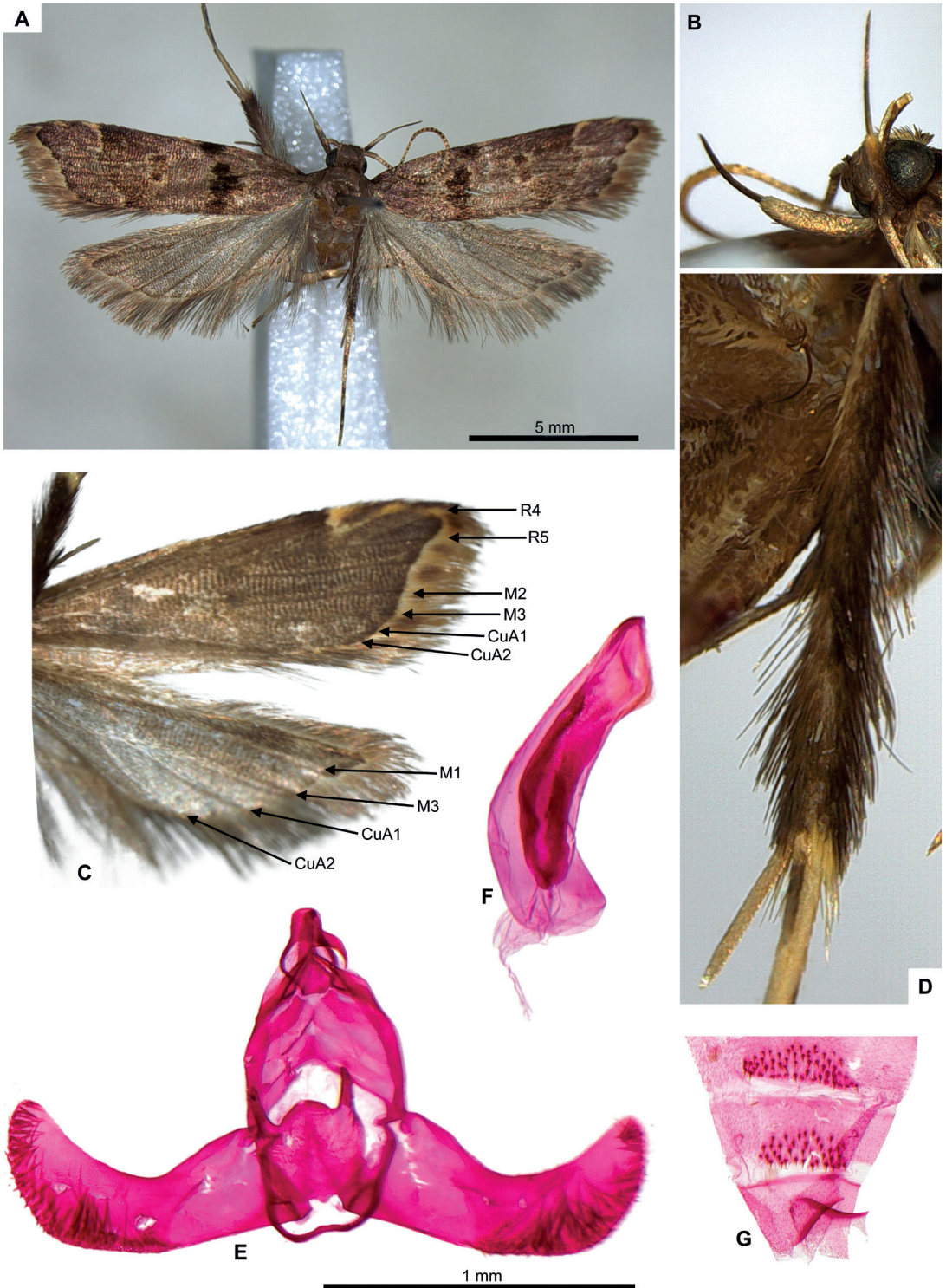


Fig. 3. *Abrachmia kerasista* sp. nov. — **A:** adult (from the holotype). — **B:** adult (from the holotype), labial palpi. — **C:** under surface of wings. — **D:** hind tibia. — **E:** male genitalia (genitalia slide no. CIS-8167). — **F:** male genitalia (genitalia slide no. CIS-8167), aedeagus. — **G:** abdomen. R4 = radius vein 4, R5 = radius vein 5, M1 = media vein 1, M2 = media vein 2, M3 = media vein 3, CuA1 = cubitus + anal vein 1, CuA2 = cubitus + anal vein 2.

Thorax: Tegula grayish brown, with black scales along anterior margin; thorax grayish brown dorsally. Hind tibia grayish brown on outer surface, with rough scales above; 1st tarsus long, yellowish white with broad, grayish-brown band medially; 2nd and 3rd tarsi black with narrow white band medially. Forewing ground color grayish brown; antemedian black patch well-developed, arising from costa, disconnected on R vein, and reaching the inner margin, median part broadly expanded inwardly; a pair of dark brown spots near the end of cell, surrounded by orange white scales, positioned vertically, instead of postmedian line narrow, yellowish orange, slightly zigzagged, convex medially; apex produced; termen oblique, sinuate, with black scales along margin; fringe colorous with ground color; basal white line weakly developed; venation with R2 arising from near upper corner of cell; R3, R4 and R5 on a common stalk; R5 to termen; M2 and M3 nearly connate at base; CuA1 and CuA2 short-stalked; cell closed. Hind wing grayish white; apex sharply produced; venation with M2 absent; M3 and CuA1 short stalked.

Abdomen (Fig. 3G): Spinous zones broadly developed; sternite VIII broad, with slightly sclerotized posterior margin.

Male genitalia (Fig. 3E and F): Uncus rather small, gently curved downward. Basal plate of gnathos hat-shaped, rounded on caudal margin. Tegumen weakly sclerotized, roundly concave on anterior margin. Valva moderately broad basally, narrowed toward middle; costa deeply concave; ventral margin nearly straight; cucullus about equal the length of basal part of valva, upturned, narrowed apically, with strong seta along margin; sacculus not developed. Juxta large, strongly convex on caudal margin; caudal processes horn-shaped, heavily sclerotized, about 1/2 the length of juxta; anterior margin triangularly produced medially. Aedeagus slightly

shorter than valva, bent at basal 1/3; dorsal margin slightly produced apically; cornutus long, U-shaped, stripes of different length, arising from near base.

Female: unknown.

DISTRIBUTION. Chiang Mai Province, Thailand.

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