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Discovery of the male of *Temnolopha matura* Diakonoff (Lepidoptera: Tortricidae: Olethreutini) in South Thailand

NANTASAK PINKAEW
Department of Entomology, Faculty of Agriculture at Kamphaeng Saen, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom 73140 Thailand. E-mail address: agrnsp@ku.ac.th

Temnolopha was proposed by Lower (1901) for two species; Fernald (1908) subsequently designated *T. mosaica* Lower as the type species of the genus. Diakonoff (1968) synonymized *Temnolopha* with *Phaecadophora* Walsingham but later (Diakonoff 1973) reinstated it as a valid genus. Members of the genus are medium-sized tortricid moths with long, porrect labial palpi with the median segment strongly sinuate and the apex conspicuously pointed (Lower 1901, Diakonoff 1973, Horak 2006). Wing venation is typical of Olethreutini, but the accessory cell is small with the chorda arising between R_2 and R_3 (Horak 2006). The male genitalia are characterized by a tegumen with a clavate or hooked and ventrally bristled uncus; large, flat, densely hairy, drooping socii; and at least slightly asymmetrical, broad valvae. The female has a single signum comprised of a patch of scobination with one or two larger central teeth and one or two flattened, elongate-to-quadrate sclerites (Diakonoff 1973, Horak 2006). The genus includes five species worldwide (Brown 2005): *Temnolopha mosaica* Lower from Australia, *T. sponditis* (Meyrick) from South Africa, *T. matura* Diakonoff from Borneo, *T. biguttata* Diakonoff from Borneo (Diakonoff 1973), and *T. abstrusana* Kuznetsov from Vietnam (Kuznetsov 1988).

Kuznetsov (1988) discovered and described an interesting character in *T. abstrusana* that is absent in the type species and thus not mentioned the generic description of *Temnolopha* - the hind tibiae are covered by long, dense scales with a contrasting black hair pencil reaching the middle pair of tibial spurs. The original description of *Temnolopha matura* was based on a female collected in Borneo, Indonesia in 1956, deposited in the Netherlands Centre for Biodiversity Naturalis (formerly Rijksmuseum van Natuurlijke Historie, Amsterdam, Netherlands) (RMNH) (Diakonoff 1973). The first specimen of *T. matura* from Thailand also was a female collected in 1987 by Moriuti, Saito, Arita, and Yoshiyasu from Phu Rua Wildlife Sanctuary, Loei Province and deposited in Osaka Prefecture University (OPU) (Kawabe 1989). During a survey for olethreutine moths from May 2006 to October 2008 in Khao Nan National Park, Nakhon Si Thammarat Province, southern Thailand, the first males of the *T. matura* were collected. The purpose of this paper is to describe and illustrate the male of this species.

***Temnolopha matura* Diakonoff, 1973**
(Figs. 1–7)

Temnolopha matura Diakonoff, 1973, Zool. Monogr. Rijksmus. Nat. Hist. 1: 322. Type locality: Indonesia (East Borneo, Tabang, Bengen River). Holotype (♀): RMNH.

Diagnosis. The wing pattern of *Temnolopha matura* is similar to that of *T. mosaica* but the former has pale sinuate striae distinctly edged with ochreous. The male hind tibia has a well-developed black hair pencil, which is present in *T. abstursana* but absent in all other known *Temnolopha* species. The male genitalia are very similar to those of *T. abstrusana* with the uncus gradually tapering; the valvae asymmetrical with a tooth on the edge of the basal excavation and a row of strong, blunt spines from the base of the costa; and a long, slender, tapering aedeagus with a dorsal process near the apex. *T. matura* differs from *T. abstrusana* by the presence of two distinct, long spines near the basal excavation on the right valve and by a bend in the aedeagus 1/3 from base rather than in the middle. The female genitalia have a subelliptical, complex sterigma fused with a long colliculum and a single signum comprised of a patch of scobination with usually a single, flattened tooth-shaped central sclerite.

Description. *Head*: Upper frons pale brown, lower frons with very short, appressed scales, pale grey; labial palpus moderately long, pointed and sinuate, first segment small and short, greyish white, second segment sinuate and distally

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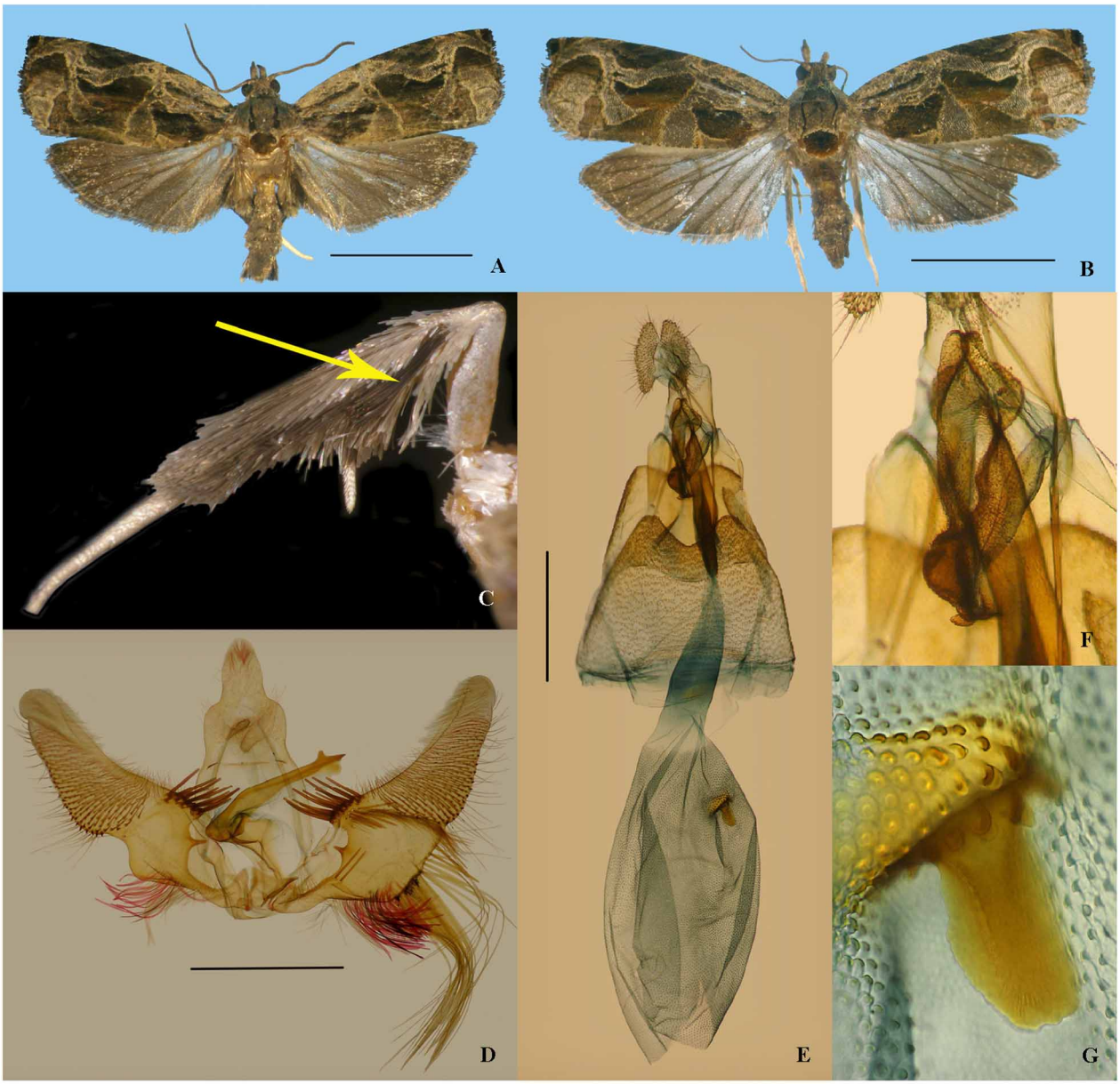

FIGURE 1. *Temnolopha matura* adults and genitalia. A. Male. B. Female. (A and B with scale bar = 5 mm.). C. Hindtibia with hair pencil of male. D. Male genitalia. E. female genitalia (D and E with scale bar = 1 mm.). F. Sterigma. G. Signum.

widened, yellowish grey with two distinct narrow band, dark brown, one extending from near dorsomedially to apicoventrally, the other extending obliquely from dorsobasally to apicoventrally, dorsoapically pale brown, apical segment moderately long, yellowish grey; vertex pale brown to brown. *Thorax*: Pronotal collar brown; tegulae greyish white on basal third, rest brownish grey; mesonotum light brown to brownish grey with posterior margin greyish white; posterior scale tuft present, brown. Forewing length 8.2 mm in male (n=1) (Fig. 1), 8.6–8.8 mm in female (n=2) (Fig.2); elongate subrectangular, costa lightly curved, male costal fold absent; termen straight; ground color greyish brown to light brown; costal strigulae 1 and 2 indistinct, strigulae 3–9 paired and separated by small dark brown spots; one-third of wing length basally forming irregular basal patch, present as a narrow longitudinal strip between Sc and R, dark brown, with the other large oblique patch, wedge-shaped, extending from inner margin basally to discal cell medially, dark brown; median patch also interrupted and irregular, extending from costa between strigulae 4 and 7 to inner margin, present as oblique tusk-shaped mark on costa, point curved upwardly, dark brown, its upper edge parallel to lower edge of tusk, brown to dark brown; preterminal mark light brown, extending from inner margin to M_3 together with distal striae; apical third of wing with large crescent-shaped mark, brown to dark brown, extending from R_5 to between CuA_1

and CuA_2. Underside pale brown to brown distally becoming paler basally; anal margin with distinct small anal lobe covered with dense scales in male. Hindwing brown with underside pale brown. Hind tibia thickened, modified in male, with a pencil of long, dense, black hair scales along basal third of tibia (Fig. 3). *Abdomen*: Pregenital abdomen in both sexes with two deep round dorsal depressions laterally toward base of tergum II. Male genitalia (Fig. 4) with tegumen roughly triangular, outer margin slightly concave in apical third, with distinct shoulders, sparsely setose; uncus subtriangular, rounded at apex, sparsely setose in basal third, below apex with dense patch of spines; socii drooping, membranous lobes, moderately long and rounded apically, covered with dense long thin hairs; gnathos a weakly sclerotized narrow band, arising from dorsal one-third of tegumen; anellus closely surrounding basal fifth of aedeagus; phallus long, slightly tapering to apex, dorsal margin angled one-third from base, with small sclerotized subtriangular lobe dorsoapically; valvae large and wide, asymmetrical, right valva wider in basal half with outer margin not concave and forming neck as in left one; sacculus with moderately dense long setae basally and on ventral edge with group of dense scales, right sacculus with group of very long curved bristles from outer surface which is absent on left valva, distal margin of basal excavation with sharply pointed triangular process, right valva in addition with two long spines near ventral margin of basal opening; cucullus wide, tapering to rounded at apex, covered with dense short spines and setae, right cucullus more narrowed towards apex and with a transverse row of dense bristles at base, left cucullus demarcated by a neck on ventral margin and with a more pronounced subapical notch; base of costa with a row of very thick, blunt spines, with a cluster of outwardly directed thinner spines beneath on right valva. Female genitalia (Fig. 5–7) with sternum VI posteriorly sclerotized, sternum VII sclerotized and posteriorly narrowed, posterior margin with a V-shaped excavation; tergum VII sclerotized with posterior margin slightly concave, tergum VIII with moderately dense short hairlike setae on triangular lateral extensions; papillae anales densely setose, lateral setae with papillose bases; sterigma (Fig. 6) vertically subelliptical, strongly sclerotized with dense microtrichia, rising above edge of sternum VII, with membrane laterally to sterigma lightly sclerotized with short and dense microtrichia near sterigma; lamella antevaginalis large, knoblike, lamella postvaginalis large, rooflike consisting of two pieces connected apically, swollen lateroventrally; colliculum strongly sclerotized, half as long as ductus bursa and fused with sterigma; ductus seminalis arising from near midlength of tegumen; corpus bursa ovate, with one signum (Fig. 7) consisting of a patch of scobination with usually one large central tooth, flattened, subrectangular, surrounded by small and erect sclerites.

Material examined. Thailand: Nakhon Si Thammarat Prov.: Khao Nan N.P., 8°46'55"N 99°47'44"E, ca 123 m, 4 May 2008 (1♂, genitalia slide NP1221), 8°46'14"N 99°48'10"E, ca 375 m, 12 May 2006 (1♀, genitalia slide NP810) (N. Pinkaew) in Kasatsart Kamphaengsaen Insect Collection (KKIC); Loei Prov.: Phu Rua , ca 800 m, 15–19 Aug 1987 (1♀) (Moriuti, Saito, Arita & Yoshiyasu), in OPU.

Distribution. Thailand and Indonesia.

Remarks. Specimens were collected during the summer season in evergreen forest.

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