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Kasetsartra Pinkaew (Lepidoptera: Tortricidae: Olethreutinae), a new genus from Thailand with the description of its type species

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Abstract

Kasetsartra, **gen. nov.**, is described from Thailand based on the type species, *Kasetsartra fasciaura*, **sp. nov.** *Kasetsartra* is characterized by a unique wing pattern, a conspicuous uncus in the male genitalia, and a dorsally expanded corpus bursae in the female genitalia. Adults, wing venation, and genitalia are illustrated, and their structure suggests a position in the tribe Enarmoniini.

Key words: *Kasetsartra fasciaura,* Enarmoniini, Olethreutinae, Khao Yai National Park, new genus, new species

Introduction

A survey of tortricid moth diversity was conducted in the Khao Yai National Park during November 2009–October 2010 across various habitats: grassland, dry dipterocarp forest, dry evergreen forest, evergreen forest, and evergreen hill forest. Among the material were numerous specimens of an unusual and conspicuous, apparently unknown tortricid. The wing pattern suggested a member of the Enarmoniini, and genitalia dissection confirmed this assignment. The genus proved to be new to science and is here named to honor Kasetsart University. All the specimens were collected at a single location in lowland dry dipterocarp forest (Fig. 1) with *Dipterocarpus obtusifolius* Teijsm. ex Miq as the dominant tree.

FIGURE 1. Dry Dipterocarp forest at Khao Yai National Park.

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Materials and methods

All specimens in this study were collected in Khao Yai National Park. Latitude, longitude and elevation were recorded with a GARMIN GPSMAP 76CS. Adults were photographed with a Canon DSLR 5D mark II and a 100 mm macro lens. A Leica MZ95 stereomicroscope was used for examination and measurements, and a Leica DM750 connected to an ICC50 HD camera module was used to examine and photograph genitalia preparations. Forewing length was measured from the outer edge of the tegula at wing base to the outermost edge of the fringe scales at apex. Genitalia preparation methods were adapted from Common (1990). Terminology for forewing pattern and genitalic structures follows Horak (1991, 2006). The following abbreviations are used for depositories: KKIC, Kasetsart Kamphaengsaen Insect Collection; BMNH, Natural History Museum, London; ANIC, The Australian National Insect Collection; and THNHM, Thailand Natural History Museum, Thailand.

Kasetsartra Pinkaew, gen. nov.

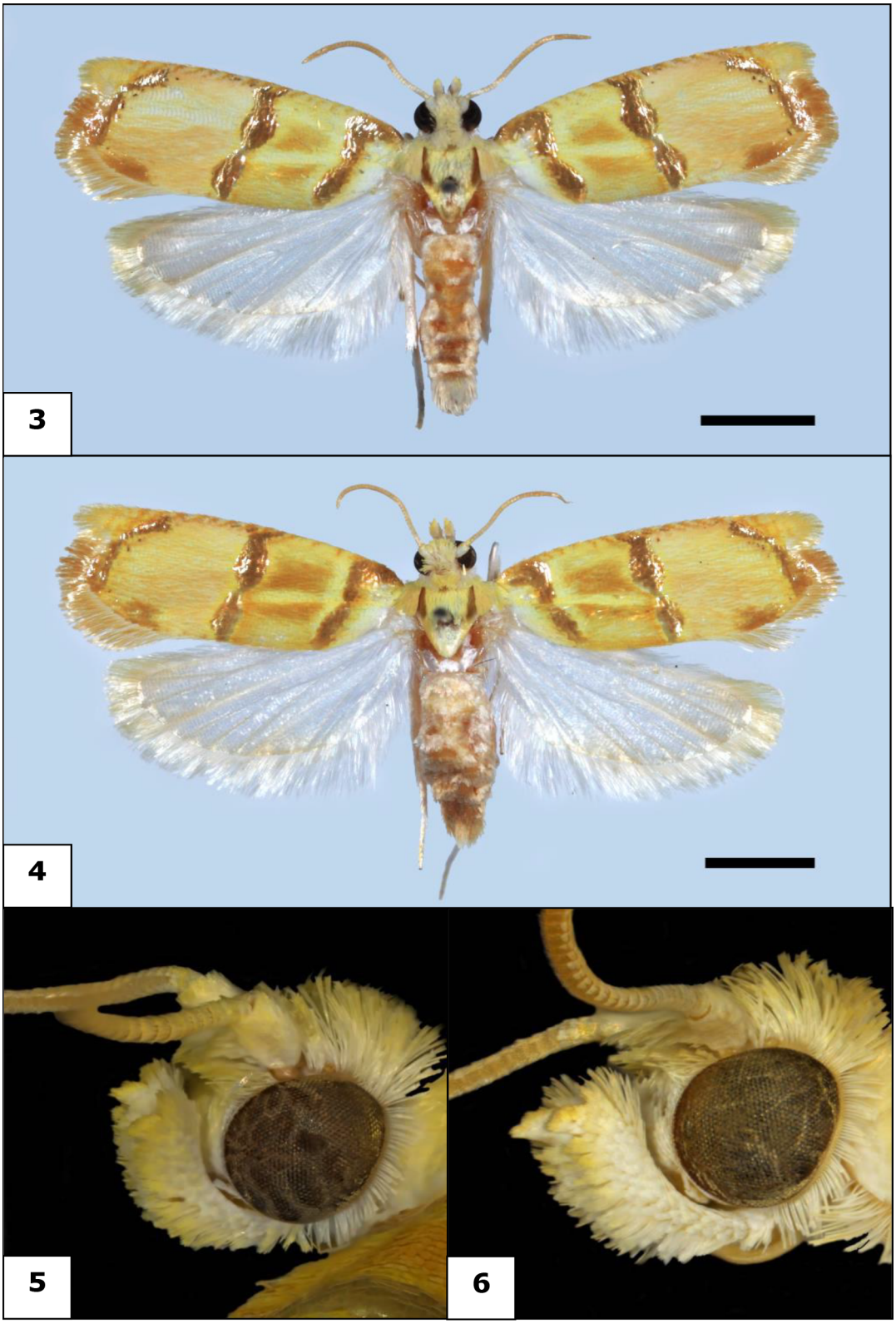
(Figs. 2−19)

Type species: *Kasetsartra fasciaura*, sp. nov.

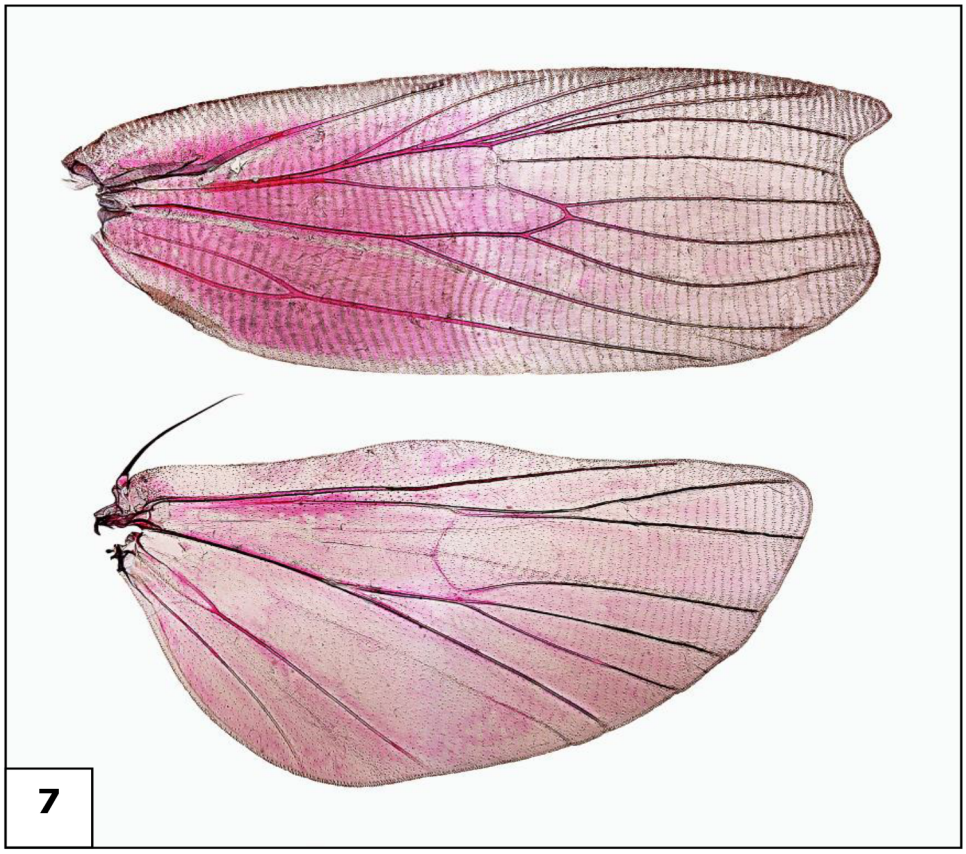
Diagnosis: The new genus is characterized in the forewing by a deep notch below the strongly projecting apex; in forewing venation by three distinct transverse fascia of slightly raised, metallic golden scales; and by the very unusual course of the M−stem to between M_1 and M_2, R_3 closely approximated basally and parallel to the stalk of R_4 and R_5, and CuA_1 from below the angle of the distally narrowed discal cell. Diagnostic characters in the male genitalia are the absence of a costal process; a divided uncus with two long, widely separate ovate lobes with a sclerotized hook on outer corner; small projecting socii; an ovate cucullus with a deep semicircular depression beyond the spiniform seta on the mediobasal area of the cucullus; and ventral margin of cucullus with a row of five curved spiniform setae. The female genitalia are characterized by the sterigma in a deep excavation of sternum VII, with two parallel longitudinal spinulose ridges; the absence of a colliculum; a dorsally expanded posterior part of corpus bursae; and two unequal, triangular to thorn-shaped signa, one very small.

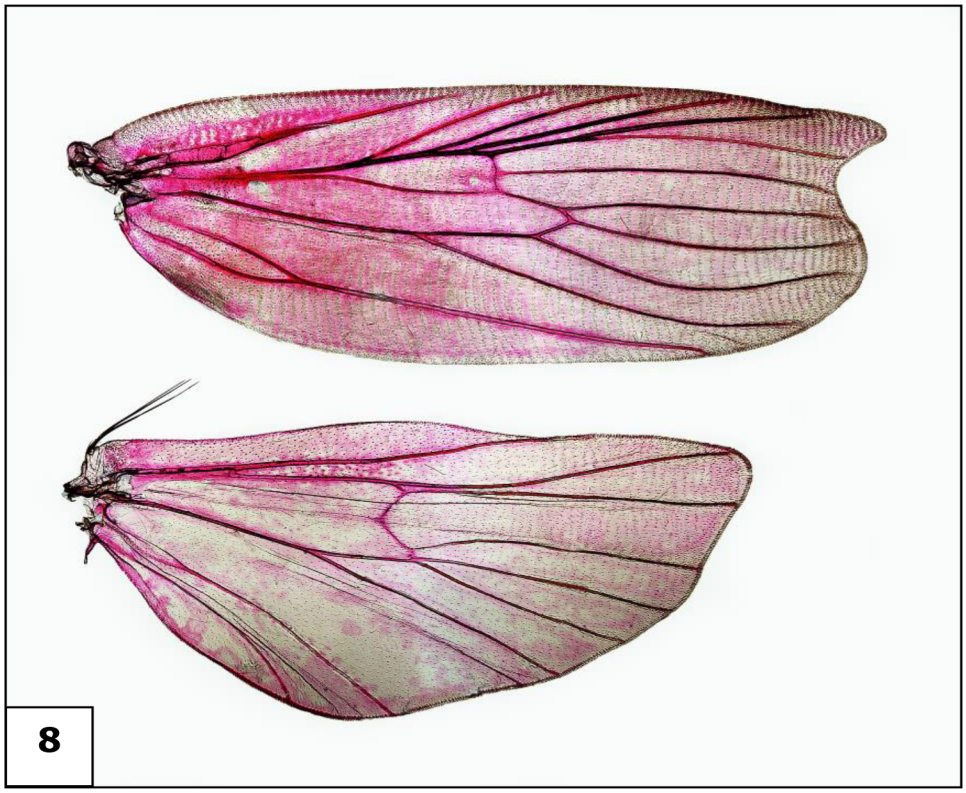
FIGURE 2. Living specimen of *Kasesartra fasciaura* on sheet.

Description. ***Head*** (Figs. 5−6). Frontal tuft moderately long, scales on lower frons short, appressed, yellowish white; vertex with raised yellow scales; labial palpus moderately long, sinuate and porrect, with short basal segment, second segment strongly curved, parallel-sided, with long anteriorly projecting transverse scales, nearly concealing apical segment, third segment very short, pointing ventrally, yellowish white. Antenna short; not reaching middle of forewing length, scape, pedicel and dorsal scaling on flagellum whitish, cilia minute; chaetosemata with long sensory setae.



FIGURES 3–6. Adults of *Kasetsartra fasciaura* (scale bars = 2 mm). 3. Male adult, holotype. 4. Female adult, paratype (np4325). 5. Male head, paratype (np4346). 6. Female head, paratype (np4447).





FIGURES 7–8. Wing venations of *Kasetsartra fasciaura.* 7. Male paratype (np3500). 8. Female paratype (np3224).

Thorax. Smooth, without raised scale tufts, yellow; legs unmodified. Forewing elongate with deeply notch below apex, strongly convex below notch, tornal area round, rather flattened when resting on substrate (Fig. 2), length 4.4−6.5 mm in males (n = 90) (Fig. 3), 6.4−6.7 mm in females (n = 59) (Fig. 4); costa slightly curved, male without costal fold; hindwing with cubital pecten well developed; forewing venation (Fig. 7−8) with discal cell 0.6x length of wing, narrowed apically to rounded point; M-stem extending from before R_1 to between M_1 and M_2, all veins present, R_1 from about middle of cell, base of R_2 roughly equidistant to R_1 and R_3, base of R_3 very close to and parallel with short stalk of R_4 and R_5, base of M_1 closer to stalk of R_4 and R_5 than to M_2, base of M_2 approximate to base of M_3, M_3 from apex of narrowed cell, base of CuA_1 from below apex of cell but closer to M_3 than to CuA_2, CuA_2 from 2/3 length of cell, CuP present near margin; 1A and 2A separate to 1/3 length from base, apical 2/3 fused to margin; pale yellow ground color throughout with patches of orange yellow suffusion, two patches parallel in medial area at about 1/3 length, one each on tornus and on termen below notch; with three broad transverse fascia of slightly raised, metallic golden scales; first fascia near wing base along base of costa and then angled and roughly straight to dorsum; second fascia before middle of wing, narrowed medially; third fascia narrower than other fascia, curved from small triangular mark at 3/4 costa to R_5 then obliquely along termen to CuA_2, with scattered small dark brown dots medially near its inner margin; tornus with elliptic patch of yellowish brown scales; costal strigulae well-developed as fine dark yellow streaks. Fringe yellowish white, with yellowish brown patch medially, without basal line. Underside yellowish white, some mottled traces of golden fascia. Hindwing frenulum with one bristle in male and three bristles in female, venation with R-stem well developed to base, base of M_1 close to Rs, base of M_2 distant from M_1 and much closer to M_3, M_3 and CuA_1 from angle of cell, CuA_2 from 0.63x length of cell, CuP very weak present towards margin, 1A+2A and 3A well developed, white above and below, with yellowish tinge along margin. Fringe white, slightly darker near apex.

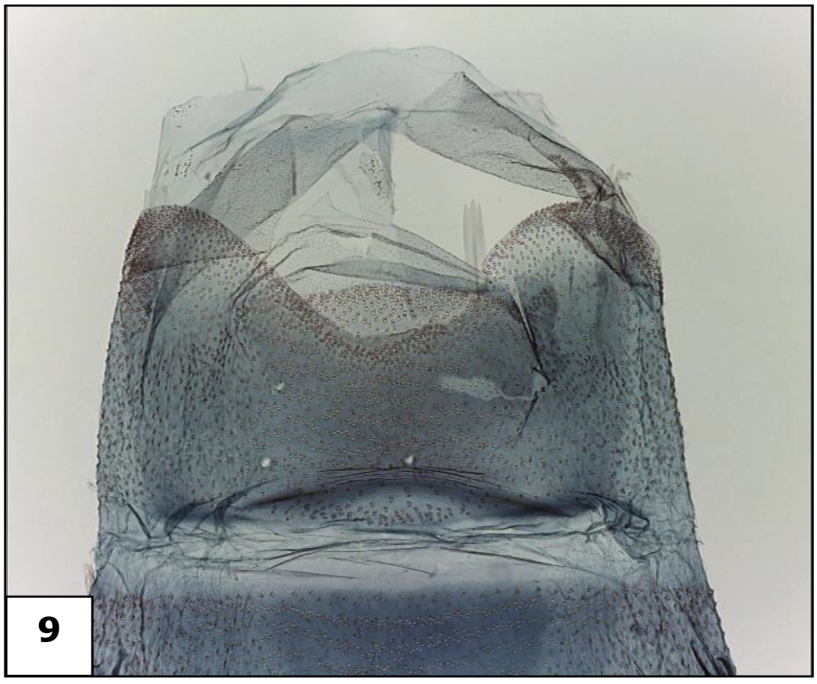
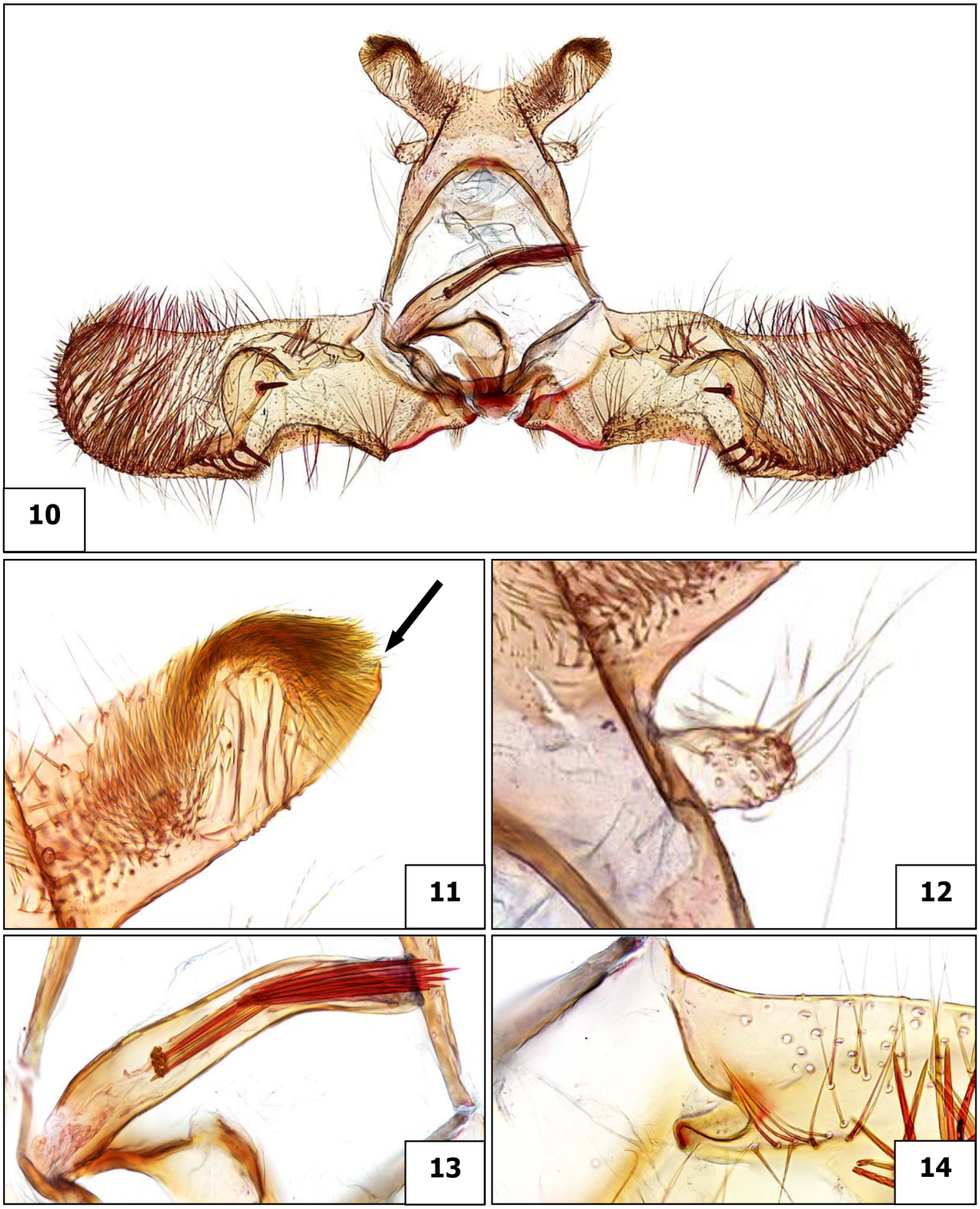


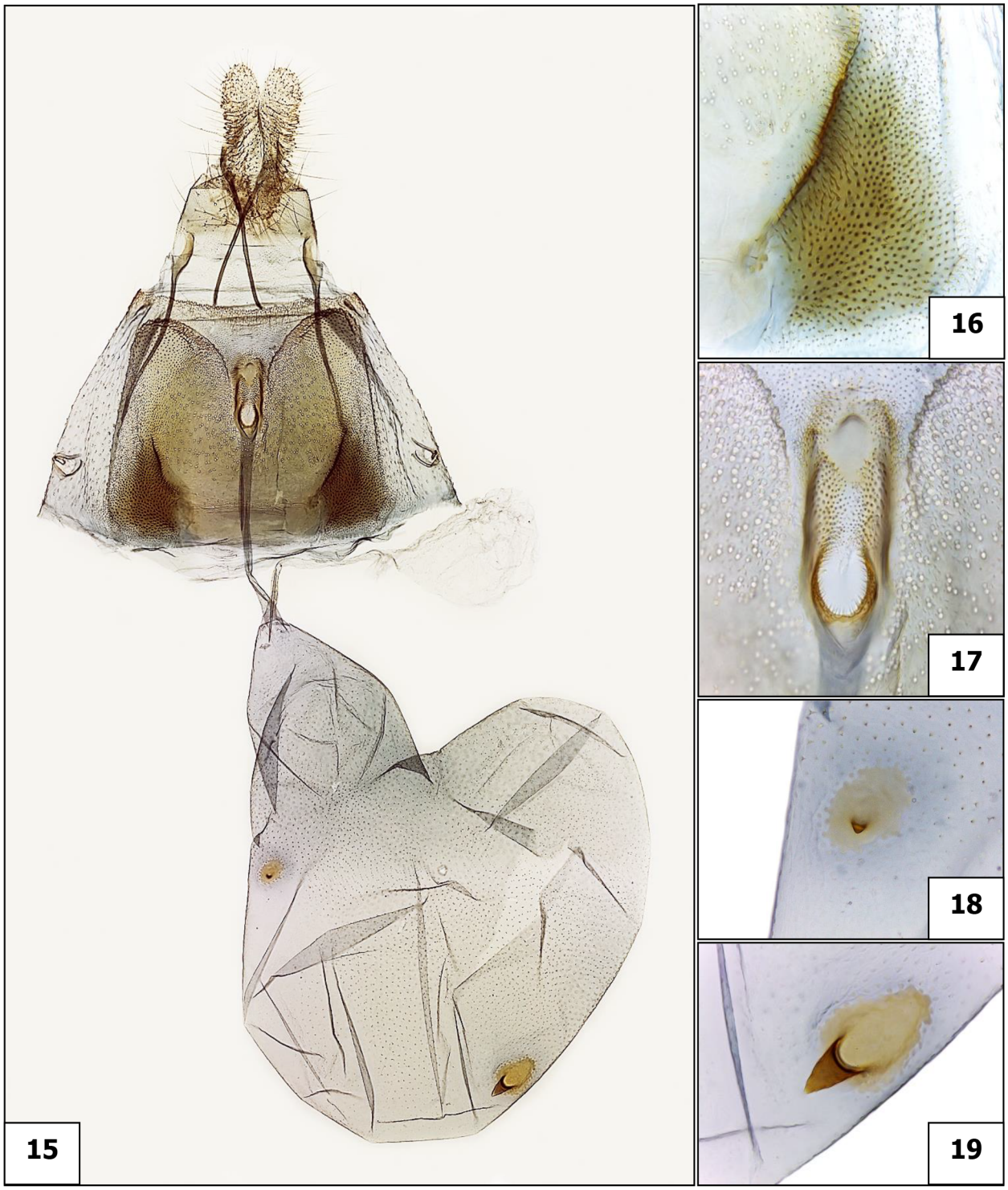
FIGURE 9. Male abdominal sternum VIII of *Kasetsartra fasciaura* (NP2780).

Abdomen. Posterior margin of sternum VIII with ventrolaterally projecting lobes, medially deeply excavated in male (Fig. 9). Male genitalia (Fig. 10) with tegumen moderately sclerotized, short and rather wide, with moderately long setae dorsally; uncus bifurcate, with separate lobes elongate, distally rounded, with small inwardly pointing, sclerotized hook on apicoventral corner (Fig. 11), with band of dense setae along apical margin and extending obliquely to base; socius (Fig. 12) a small, flat subquadrate lobe, moderately setose; gnathos membranous, arising from mid length of tegumen; vinculum short and rather narrow; juxta moderately large, triangular, caulis strong and rather short, anellus at basal third of phallus; phallus long and slender, slightly tapering to apex, apical third downcurved, with ca. 20 long cornuti with sockets (Fig. 13); valva straight, slightly widening

towards apex, with costal hook deflected to mediobasal margin and disconnected from tegumen (Fig. 14); ventral margin with shallow emargination before middle covered with dense microtrichiae; basal opening small and distally tapered; sacculus strongly sinuate, narrow with a small group of short, dense setae at base, and a second group of long and dense setae on a small, raised subtriangular lobe at 1/4 ventral margin; cucullus ovate, with rounded apex, densely setose, basomedially with deep semicircular depression, mediobasal margin with stout,



FIGURES 10–14. Morphological features of male genitalia of *Kasetsartra fasciaura* (holotype). 10. Genital capsule. 11. Uncus with apical hook (arrow). 12. Socii. 13. Phallus with cornuti. 14. Curved hook on mediobasal margin below costa.



FIGURES 15–19. Morphological features of female genitalia of *Kasetsartra fasciaura* (np1231). 15. Genitalia capsule. 16. Microtrichiae patch at anterior corner of abdominal setrnite VIII. 17. Ostium bursae and sterigma. 18. Left signum. 19. Right signum.

spiniform seta and ventral margin with five curved spiniform setae, decreasing in size apically. Female genitalia (Figs. 15–19) with papillae anales densely setose; tergum VIII with dense microtrichiae and sparse, long setae; sternum VII moderately sclerotized, more strongly anterolaterally, with dense microtrichia especially along hind margin and on anterolateral patches, posterior margin with deep and narrow medial excavation reaching to middle of sternum VII (Fig. 16); sterigma in excavation of sternum VII, lamella antevaginalis reduced to narrow rim, lamella postvaginalis with dense microtrichiae and a pair of setae, with two parallel longitudinal spinulose ridges,

gutter-shaped, leading to round entrance to ostium, with margin sclerotized and microtrichiae (Fig. 17); without colliculum; ductus bursae narrow and rather short; ductus seminalis arising from cervix, transition of corpus to ductus bursae; corpus bursae expanded dorsally, with two unequal signa, one very small (Fig. 18), the other triangular to thorn-shaped (Fig. 19).

Taxonomic remarks. There is still no single apomorphy known to define Enarmoniini, but the external characters of *Kasetsartra*, especially the shape and venation of its forewing with R_3 closely approximated and parallel to the stalk of R_4 and R_5, and with CuA_1 originating from below the angle of the cell, strongly suggest a placement in this tribe. The genitalia corroborate such an assignment, with the ductus seminalis originating from the junction of ductus and corpus bursae in the female, and the male with a tuft of setae from the sacculus. Given that nearly all Olethreutini have R_4 and R_5 separate, with *Demeijerella* Diakonoff one of the rare exceptions, and the large majority of Eucosmini lack 3A in the hindwing, in conjunction with a non-microtrichiate sterigma, *Kasetsartra* would be referred to the Enarmoniini simply by default.

The position of *Kasetsartra* within the Enarmoniini is not clear, and the genus is so derived that it is not possible to suggest a sister taxon. The forewing venation is overall rather plesiomorphic with only R_4 and R_5 short-stalked, but the unique course of the M-stem to between M_1 and M_2 together with the outwardly angled crossvein at the junction with the M-stem are remarkable, and the apically narrowed discal cell is also unique. Two additional derived features in the forewing are each shared by different enarmoniine genera. *Balbidomaga* Diakonoff and *Ancylophyes* Diakonoff share the very close approximation of the base of R_3 to the stalk of R_4 and R_5, and in *Periphoeba* Bradley R_3 and R_4 are very close and parallel in their basal half. However, the genitalia of *Kasetsartra* do not suggest a close relationship with any of these genera. The origin of CuA_1 from distinctly below the angle of the cell in the forewing is shared only with *Irianassa* Diakonoff which otherwise has very different venation and dissimilar genitalia. In *Metaselena* Diakonoff CuA_1 originates from well below the angle of the cell in both wings, but again, the genitalia do not support a close relationship.

***Kasetsartra fasciaura*, sp. nov.**
(Figs .2−19)

Diagnosis: As for genus.

Description: As for genus.

Material examined. **Holotype**: ♂. Thailand: Prachinburi Prov.: Khao Yai N.P. 14˚10′56″N, 101˚28′39″E, 201 m, 23 Jan 2010, N. Pinkaew; ♂ specimen no. np4397 (genitalia slide NP1259), Deposited in KKIC. **Paratypes:** 89♂, 59♀ all collected by N. Pinkaew. Thailand: Prachinburi Prov.: Khao Yai N.P., 14˚10′56″N, 101˚28′39″E, 201 m, 12 Nov 2009, ♀ specimen no. np3202 (genitalia slide NP3022), ♀ specimen no. np3256 (genitalia slide NP3027), ♀ specimen no. np3224 (wing slide), 11 Dec 2009, ♀ specimen no. np3232 (genitalia slide NP3025), ♀ specimen no. np3255 (genitalia slide NP2781), ♀ specimen no. np3238, 23 Jan 2010, ♂ specimen no. np3388 (genitalia slide NP3032), ♂ specimen no. np3392 (genitalia slide NP3033), ♂ specimen no. np3359, ♂ specimen no. np3374, ♀ specimen no. np3367 (genitalia slide NP3030), ♀ specimen no. np3362, ♀ specimen no. np3395, 14 Feb 2010, ♂ specimen no. np3413, ♀ specimen no. np3441, ♀ specimen no. np3457, 11 Mar 2010, ♂ specimen no. np3614 (genitalia slide NP2780), ♂ specimen no. np3500 (wing slide), ♂ specimen no. np3507, ♂ specimen no. np3556, ♂ specimen no. np3569, ♂ specimen no. np3612, ♀ specimen no. np3498, ♀ specimen no. np3503, ♀ specimen no. np3511, ♀ specimen no. np3529, ♀ specimen no. np3530, ♀ specimen no. np3545, ♀ specimen no. np3548, ♀ specimen no. np3551, ♀ specimen no. np3603, ♀ specimen no. np3618, 8 Apr 2010, ♂ specimen no. np3786, ♂ specimen no. np3862, ♂ specimen no. np3863, ♂ specimen no. np3938, ♀ specimen no. np3788, ♀ specimen no. np3791, ♀ specimen no. np3795, ♀ specimen no. np3800, ♀ specimen no. np3812, ♀ specimen no. np3814, ♀ specimen no. np3839, ♀ specimen no. np3952, ♀ specimen no. np3939, 13 May 2010, ♂ specimen no. np4095 (genitalia slide NP3034), ♂ specimen no. np4123 (wing slide), ♂ specimen no. np4047, ♂ specimen no. np4057, ♂ specimen no. np4064, ♂ specimen no. np4066, ♂ specimen no. np4070, ♂ specimen no. np4083, ♂ specimen no. np4094, ♂ specimen no. np4102, ♂ specimen no. np4106, ♂ specimen no. np4107, ♂ specimen no. np4111, ♂ specimen no. np4118, ♂ specimen no. np4121, ♂ specimen no. np4126, ♂ specimen no. np4127, ♀ specimen no. np4042, ♀ specimen no. np4067, ♀ specimen no. np4072, ♀ specimen no. np4085, ♀ specimen no. np4108, 17 Jun 2010, ♂ specimen no. np4324, ♂ specimen no. np4327, ♂ specimen no. np4336, ♂ specimen no.

np4346, ♂ specimen no. np4347, ♂ specimen no. np4360, ♂ specimen no. np4361, ♂ specimen no. np4365, ♂ specimen no. np4366, ♂ specimen no. np4369, ♂ specimen no. np4370, ♂ specimen no. np4382, ♂ specimen no. np4385, ♂ specimen no. np4387, ♂ specimen no. np4388, ♂ specimen no. np4391, ♂ specimen no. np4392, ♂ specimen no. np4393, ♂ specimen no. np4398, ♂ specimen no. np4399, ♂ specimen no. np4401, ♂ specimen no. np4410, ♂ specimen no. np4414, ♂ specimen no. np4415, ♂ specimen no. np4418, ♂ specimen no. np4419, ♂ specimen no. np4422, ♂ specimen no. np4425, ♂ specimen no. np4426, ♂ specimen no. np4427, ♂ specimen no. np4430, ♂ specimen no. np4431, ♂ specimen no. np4432, ♂ specimen no. np4435, ♂ specimen no. np4438, ♂ specimen no. np4439, ♂ specimen no. np4440, ♂ specimen no. np4441, ♂ specimen no. np4442, ♂ specimen no. np4443, ♂ specimen no. np4445, ♂ specimen no. np4450, ♂ specimen no. np4451, ♂ specimen no. np4454, ♂ specimen no. np4455, ♂ specimen no. np4457, ♂ specimen no. np4458, ♂ specimen no. np4459, ♀ specimen no. np4325 (genitalia slide NP1231), ♀ specimen no. np4331 (genitalia slide NP2782), ♀ specimen no. np4354 (genitalia slide NP2783), ♀ specimen no. np4326, ♀ specimen no. np4390, ♀ specimen no. np4400, ♀ specimen no. np4406, ♀ specimen no. np4408, ♀ specimen no. np4411, ♀ specimen no. np4423, ♀ specimen no. np4447, ♀ specimen no. np4449, 7 Jul 2010, ♂ specimen no. np4515 (genitalia slide NP2784), ♂ specimen no. np4500, ♂ specimen no. np4503, ♂ specimen no. np4540, ♂ specimen no. np4554, ♂ specimen no. np4556, ♀ specimen no. np4502, ♀ specimen no. np4505, ♀ specimen no. np4528, ♀ specimen no. np4533, ♀ specimen no. np4538, ♀ specimen no. np4546, ♀ specimen no. np4559, ♀ specimen no. np4566, ♀ specimen no. np4570 deposited in KKIC; 12 Nov 2009, ♀ specimen no. np3221 (genitalia slide NP3023) 23 Jan 2010, ♂ specimen no. np3356 (genitalia slide NP3028) deposited in BMNH; 12 Nov 2009, ♀ specimen no. np3231 (genitalia slide NP3024), 23 Jan 2010, ♂ specimen no. np3363 (genitalia slide NP3029) deposited in ANIC; 12 Nov 2009, ♀ specimen no. np3243 (genitalia slide NP3026), 23 Jan 2010, ♂ specimen no. np3387 (genitalia slide NP3031) deposited in THNHM.

Etymology: The specific epithet refers to the golden (= *aura*) transverse band (= *fascia*) of the forewing.

Distribution: The species is known only from central Thailand, collected in dry dipterocarp forest of the Khao Yai National Park, with *Dipterocarpus obtusifolius* as the dominant tree.

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Literature cited

Common, I.F.B. (1990) *Moths of Australia*. Melbourne University Press, Melbourne, 535 pp.

Horak, M. (1991) Morphology. *In*: Van der Geest, L.P.S.& Evenhuis, H.H. (Eds.), *World Crop Pests. Vol. 5. Tortricid pests, their biology, natural enemies and control*. Elsevier, Amsterdam, pp. 1–22

Horak, M. (2006) *Monographs on Australia Lepidoptera, Volume 10: Olethreutine Moths of Australia (Lepidoptera: Tortricidae)*. CSIRO Publishing, Collingwood, 522 pp.