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# Moths of Vietnam with special reference to Mt. Fan-si-pan Microlepidoptera 2: Eriocottidae

## (Lepidoptera, Ditrysia, Tineoidea)

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**Abstract**

The family Eriocottidae is recorded from Vietnam for the first time. Two new species were collected in the Fan-si-pan Mountains. They belong to the genus *Crepidochares* MEYRICK, hitherto known only from South America. The species are described as *C. fansipangensis* **sp. nov.** and *C. meosorum* **sp. nov.** Examination of material from Thailand resulted in the detection of additional 2 species: *C. thaiorum* **sp. nov.** and *C. suthepensis* **sp. nov.** The taxonomic position of the genus is discussed briefly.

**Zusammenfassung**

Aus Vietnam waren bisher keine Arten aus der Familie Eriocottidae bekannt. In den Bergen des Fan-si-pan wurden nun erstmals 2 Arten gesammelt, die sich als Vertreter der Gattung *Crepidochares* MEYRICK erwiesen. Bisher ist diese Gattung in ihrer Verbreitung auf Südamerika beschränkt gewesen. Die neuen Arten werden als *C. fansipangensis* **sp. nov.** und *C. meosorum* **sp. nov.** beschrieben. Gleichzeitig wird die Beschreibung von 2 weiteren Arten aus Thailand hinzugefügt: *C. thaiorum* **sp. nov.** und *C. suthepensis* **sp. nov.** Die Validität der Gattung wird diskutiert und bekräftigt.


## Introduction

It has long been known that species of the family Ericottidae occur in South East Asia. Most of the species belong to *Compsoctena* ZELLER (DIERL 1970, ROBINSON et. al. 1994, ZAGULAJEV 1988), and one species of *Eriocottis* ZELLER was found on Taiwan (ISSIKI 1930). However, the family seems to be more diverse in South Asia than has hitherto been recognised (ROBINSON et al. 1994). The detection of two new species in the Fan-si-pan

area of North Vietnam corroborates this recognition not only in terms of species number but also in the number of genera. Both species described in the present work belong to the genus *Crepidochares* MEYRICK. This genus was established for a South American species. Recently, some additional species have been included, all from different region within the Neotropics. The genus is unknown in the Palearctic Region, in Africa and Australia. In North America even the family is unrecorded (HODGES 1983). Thus, the discovery of *Crepidochares* species in Asia appears to be somewhat surprising. This reflects, however, more the poor research level on micromoth in South East Asia than a real case of a spectacular disjunction. It is obviously premature to draw far-reaching biogeographic inferences before the region is researched adequately.

The study of additional material of Ericottidae, collected in Thailand and deposited now in the Natural History Museum London (see ROBINSON et al. 1994) revealed another 2 species of the genus. Since the collecting sites in North Thailand and North Vietnam are separated by a distance of approximately 600 km only, it seems to be not unlikely, that the species occur in Vietnam too. Therefore, the description of both species is included in the present work.

### *Crepidochares fansipangensis* sp. nov.

Material: ♂ Holotype and 2 ♂♂ Paratypes, North-Vietnam, Fan-si-pan Mt., 2300 m, 27.iii.1995, leg. W. MEY; deposited in coll. MEY in the Zoological Museum Berlin.

Description: External features: Body length 4.5 mm, wing span 13–14.3 mm; head fuscous, with microtrichia on frons; vestiture rough, with piliform, beige scales on frons and vertex; ocelli present; antennae reaching beyond middle of forewings, scape with pecten; few scales on flagellomeres, forming an annulus at basal joints and being single in the distal half, each flagellomere covered with cilia (incl. sensillae trichodea), as long or longer than width of flagellomere; maxillary palpi 5-segmented, 3rd joint the longest, covered with beige scales; labial palpi 3-segmented, middle segment the longest, with beige scales and some lateral bristles; legs slender, fuscous dorsally and with bright scales on the tip of the segments; foretibia half length of femur; epiphysis present; tibia and tarsus smoothly scaled; inner spur of midleg twice as long as outer spur; spurs 0. 2. 4; forewing with 5 R and 3 M veins; R5 terminating shortly before apex on costa; wing surface densely covered with normal type scales (= slightly rounded, but dentate apical edge), arranged in small brown and beige patches, giving the wing a reticulate pattern, with a larger brown spot beyound middle of dorsum.

Male genitalia (figs. 1–4): Segment 8 with slender sternite and plate-like tergite, entirely sclerotized; segment 9 annular, directed anteriorly with u-shaped saccus of vinculum and posteriorly with tegumen and uncus, ending in 2 blunt, short lobes; uncus only weakly differentiated from tegumen; gnathos a spoon-like plate, obliquely positioned and u-shaped in caudal view; basal part of valva moderately broad, more slender in posterior half; distal margin of sacculus with a bifid lobe, directed upwards, the inner lobe spinose, the outer plate-like; transtilla a narrow, bent bridge between bases of valvae; aedeagus relatively slender, without cornuti.

Derivatio nominis: The name is derived from the area of origin, the Fan-si-pan Mountain range.

The specimens were collected within the forest, in the sparse vegetation of a small brook in the daytime.

### *Crepidochares meosorum* sp. nov.

Material: ♂ Holotype, 2 ♂♂ and 5 ♀♀ Paratypes, North Vietnam, Fan-si-pan Mt., 1600 m, 25.–30.iii.1995, leg. W. MEY; 1 ♂, 1 ♀, Paratypes, North Vietnam, Okui-ho, 15 km north of Sa pa, 30.iii.1995; 2 ♀♀, loc. cit., 24.iii.1995, leg. W. MEY; deposited in coll. MEY in the Zoological Museum Berlin.

Description: External features: Body length 4 mm (♂♂) to 6 mm (♀♀); wing span 12 mm (♂♂) and 17–19 mm (♀♀); head fuscous; vestiture rough with beige, piliform scales on frons and vertex; a small tuft of brown hairs behind the eyes; ocelli present; antennae reaching beyound middle of forewing, shorter in females; scapus with pecten; some lamellar scales on dorsal side of basal flagellomeres, female antenna totally scaled; cilia (incl. sensillae trichodea) numerous in male, as long as the width of flagellomeres; in females cilia very small, only 2–3 per joint; maxillary palpi 5–segmented; labial palpi porrect, with varying numbers of lateral bristles; legs slender; tibia and tarsus sometimes annulated; fore tibia half length of femur; epiphysis present; hind tibia smoothly scaled in males, with semi-erect scales in females; inner spur of middle leg twice as long as outer spur; spurs 0. 2. 4.; forewings densely covered with brown and brown-tipped beige scales, weakly shining purple; microtrichia present; hindwings unicolourous brown.

Male genitalia (figs. 5–8): As in *C. fansipangensis* sp. nov., but valvae more stout and with a distally concave edge on ventral side; distal margin of sacculus bearing one spinose lobe, variably curved and directed distally; transtilla as a narrow bridge with a triangular process touching dorsal side of aedeagus; aedeagus broad, produced and pointed at ventral tip; opening of vesica on dorsal side; without cornuti.

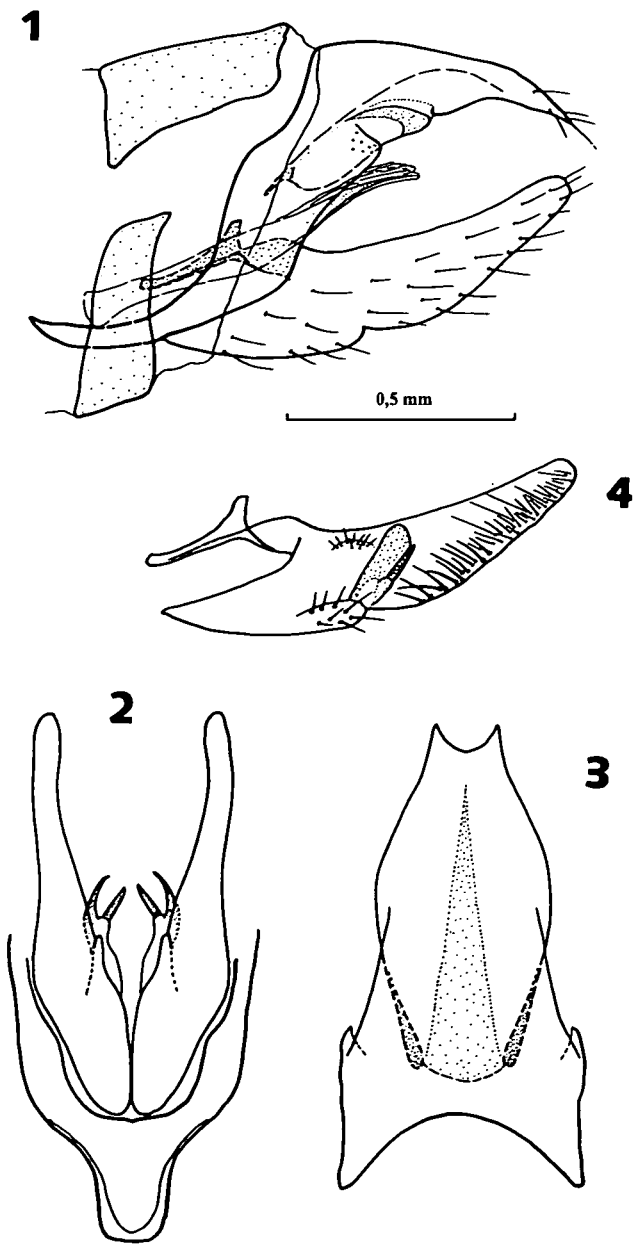
Female genitalia (figs. 9, 10): Segment 7 broader than preceding ones; ovipositor greatly elongated, telescoping; three paires of rod-like apophyses: 1 – posterior pair nearly as long as the whole abdomen, 2 – apophyses anteriores shorter but thicker, connected ventrally with a u-shaped, narrow clasp, which surrounds the ostium and antrum on the ventral side of segment 8; 3 – apophyses superiores of segment 8 fused in the middle, the anterior free parts are bent ventrally, fusing with the apophyses anteriores; no additional apophyses visible.

Derivatio nominis: The specific name is derived from "Meo", the name of the local tribe inhabiting the whole Fan-si-pan Mountain range.

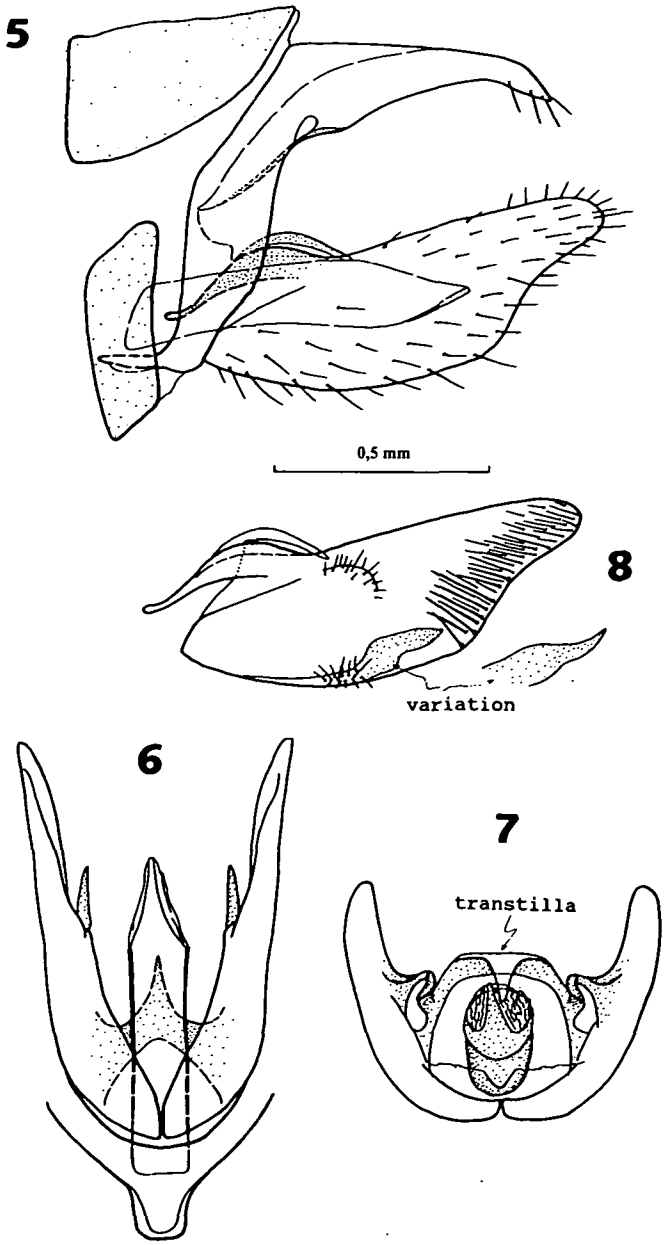
The specimens were found flying half a meter above ground of a pathway in the morning hours. The individuals of Okui-ho as well as some from the other locality were collected on the light.

### *Crepidochares thaiorum* sp. nov.

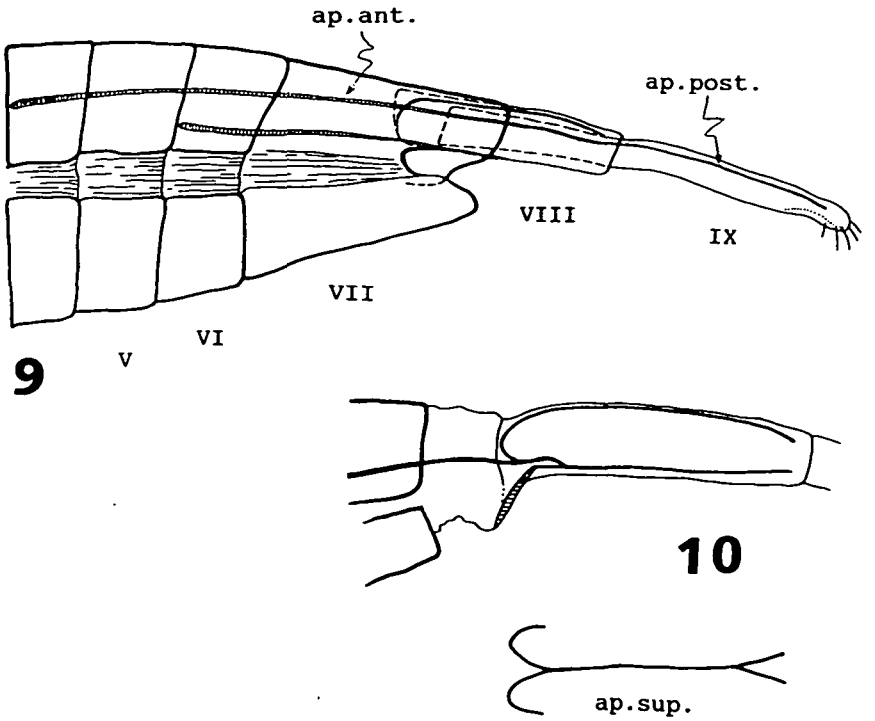
Material: 1 ♂ Holotype, 2 ♀♀ Paratypes, NW Thailand, Doi Inthanon National Park, 1200 m, Mae Parn Waterfall, 4.iv.1988, leg. T. W. HARMAN; 1 Paratype deposited in Zoological Museum Berlin, Holotype and ♀ Paratype in the Natural History Museum London.




Figs. 1–4: *Crepidochares fansipangensis* sp. nov., male genitalia, 1 – lateral, 2 – ventral, 3 – dorsal, 4 – inner side of valva.




Figs. 5–8: *Crepidochares meosorum* sp. nov., male genitalia, 5 – lateral, 6 – ventral, 7 – caudal, 8 – inner side of valva.




Figs. 9, 10: *Crepidochares meosorum* sp. nov., female genitalia, 9 – lateral, 10 – segment 8, fully everted and appendices superiores, dorsal side.

Description: External features: Body length 6 mm (♂♂) to 8 mm (♀♀); wing span 16 mm (♂♂) and 22–23 mm (♀♀); head light brown; vestiture rough, with beige to yellow, piliform scales on frons and vertex; ocelli present; antennae of males reaching beyond middle of forewing, much shorter in females; scapus yellowish, with yellow scales and with pecten; lamellar scales on doral side of flagellomeres, basal joints with additional brown scales, female antenna entirely scaled; cilia numerous in male, as long as the width of the flagellomeres; in females cilia very small, only 2 per joint; maxillary palpi 5-segmented; labial palpi curved, covered with yellow piliform and lamellar scales; legs slender; tibia and tarsus unicolorous; fore tibia half length of femur; epiphysis present; hind tibia of female broad, with semi-erect scales; inner spur of midleg more than half length of outer spur; spurs 0. 2. 4.; forewing densely covered with light brown and brown scales, forming very weak and indistinct lines; some scattered purple shining scales present; hindwings unicolourous brown.

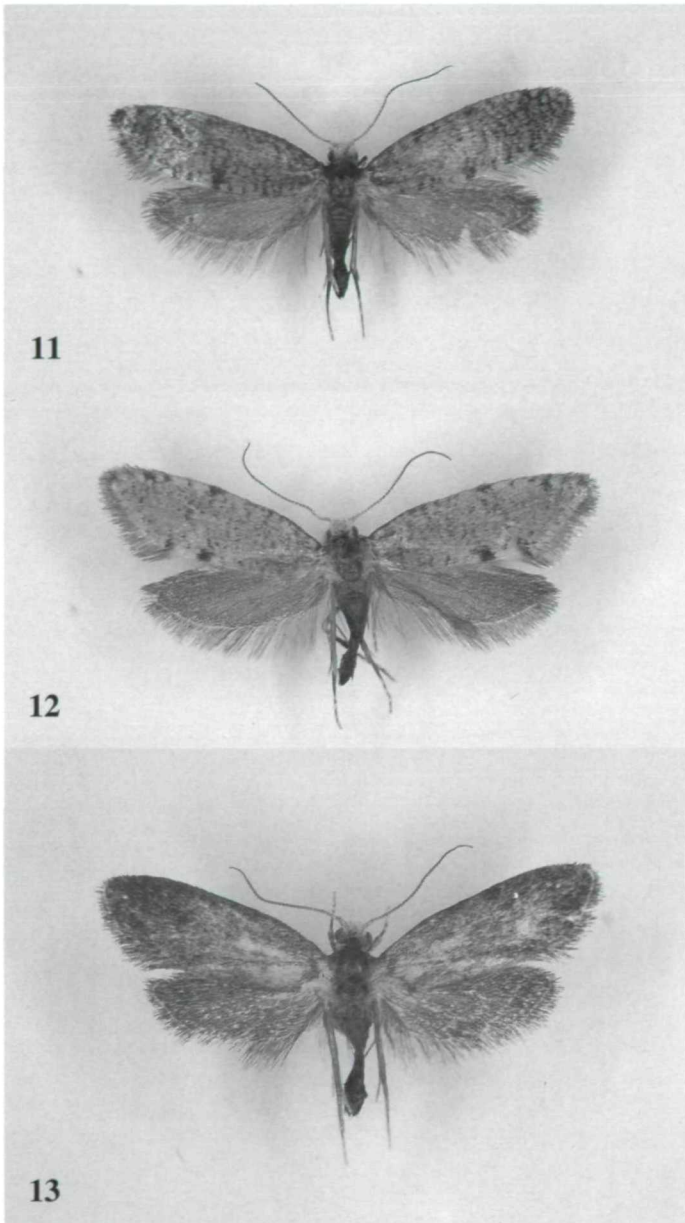
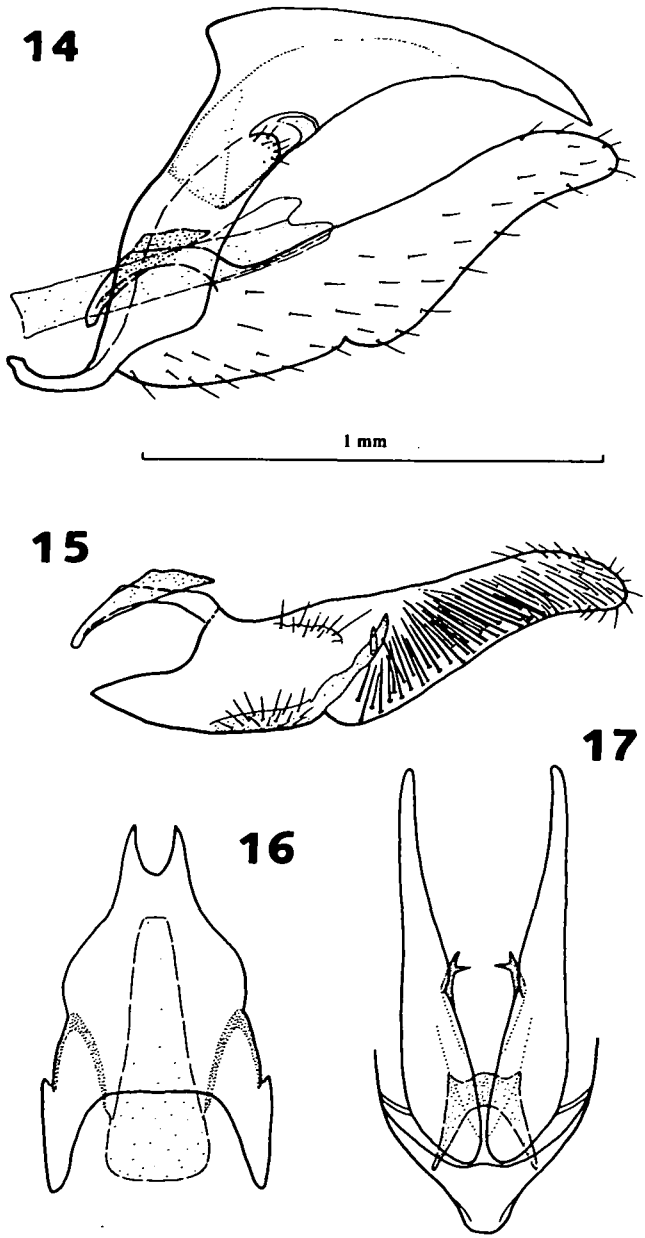
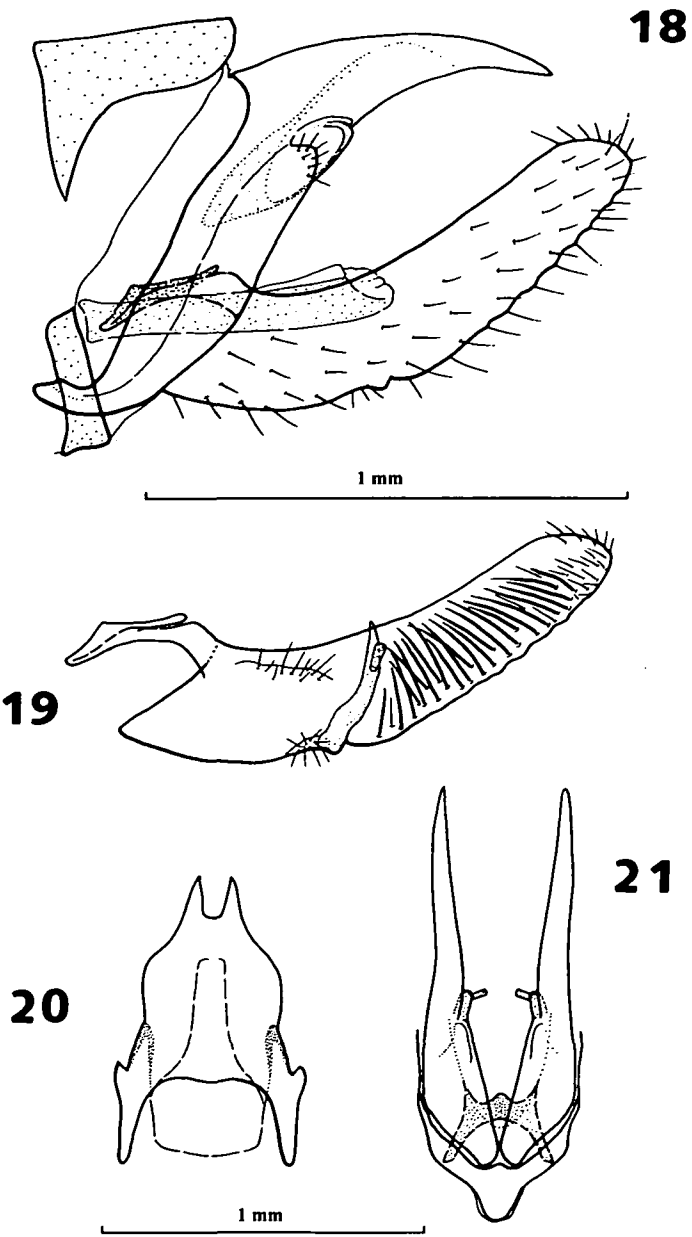



Fig. 11: *C. fansipangensis* sp. nov., Holotype.
Fig. 12: *C. fansipangensis* sp. nov., Paratype.
Fig. 13: *C. meosorum* sp. nov., Holotype.




Figs. 14–17: *Crepidochares thaiorum* sp. nov., male genitalia, 14 – lateral, 15 – inner side of valva, 16 – dorsal, 17 – ventral.




Figs. 18–21: *Crepidochares suthepensis* sp. nov., male genitalia, 18 – lateral, 19 – inner side of valva, 20 – dorsal, 21 – ventral.

Male genitalia (figs. 14–16): As in *C. fansipangensis* sp. nov., but tegumen and valvae more elongate; sclerotisation of segment 8 not visible; saccus short and v-shaped; tegumen long, with deeply excised apex in dorsal view (? uncus); valvae distally with a concave edge on ventral side; distal margin of sacculus with a slender spinose lobe, bifurcate in the apical third, with subapical spine directed medially; transtilla as a broad bridge between the bases of valvae; aedeagus stout, with a short, subapical membraneous lobe on the dorsal side (? vesica).

Derivatio nominis: The epitheton is derived from "Thai", the name of the majority of people in Thailand.

### *Crepidochares suthepensis* sp. nov.

Material: ♂ Holotype, NW Thailand, Chiang Mai, Doi Suthep-Pui National Park, 1200 m, 5.v. 1988, leg. G. S. ROBINSON; 3 ♂♂ and 13 ♀♀ Paratypes, l. c., 1250–1490 m, 24.–31.v.1989, leg. I. J. KITCHING & A. M. COTTON; types are deposited in the Natural History Museum London and Zoological Museum Berlin (1 ♂, 1 ♀ Paratypes).

Description: External features: Body length 4–5 mm (♂♂), 6–7 mm (♀♀); wing span 13 mm (♂♂) to 17 mm (♀♀); head fuscous; vestiture rough, with piliform, yellowish scales on frons and vertex, some brown hairs behind the eyes; ocelli present; antennae black, reaching beyond middle of forewing; scape with yellow pecten and yellow scales, sharply contrasting with the dark scape; few scales on the dorsal side of flagellomeres, each flagellomere densely covered with cilia, as long or longer than width of flagellomere; maxillary palpi 5-segmented, 3rd joint the longest; labial palpi 3-segmented, curved, with yellow broad and piliform scales, few brown lateral bristles; legs slender, fuscous with yellowish scales on the dorsal tip of tibia and tarsal joints; foretibia half length of femur; legs smoothly scaled, only ventral side of hindlegs with semi-erect scales; spurs 0. 2. 4.; wing surface covered with normal type scales, brown and dark brown tipped, forming a very indistinct and diffuse reticulate pattern; purple shining scales present.

Male genitalia (figs. 18–21): As in *C. fansipangensis* sp. nov., but segment 8 with shild-like tergite and narrow sternite, entirely sclerotized; tegumen with uncus not surpassing valvae; saccus of vinculum short and v-shaped in ventral view; valvae slightly curved upwards, not tapering towards apex, densely covered with thick hairs on the inner side; bifid lobe of sacculus' distal margin directed upwards, the inner lobe spinose, the outer small, short and rod-like; transtilla with a small distal extension; aedeagus relatively short and broad, without cornuti.

Derivatio nominis: The name is derived from the terra typica of the species, the Doi Suthep Mountain.

The ♂ holotype is figured in ROBINSON et al. (1994:250, plate 3, fig. 21) (*Eriocottis* spec.).

## Discussion

The examination of the four species revealed 3 characters, which had not been noted explicitly in recent definitions of genera of Eriocottidae (DAVIS 1990, NIELSEN 1978,

NIELSEN & ROBINSON 1990, ROBINSON 1988):

1. The structure of antennal flagellomeres is clearly different between males and females. Although this sexual dimorphism is a common feature in Tineidae, it has not been demonstrated yet in Eriocottidae.
2. The foretibia is shortened remarkably.
3. The inner spur of midtibia is twice as long as the outer spur.

The distribution of these traits should be examined to specify their taxonomic or systematic value.

The four new species of *Crepidochares* can be divided into two groups: The *fansipangensis*-group with *C. fansipangensis* sp. nov., *C. thaiorum* sp. nov. and *C. suthepensis* sp. nov. The grouping is based on the presence of the bifid saccular lobe in the male. The other group contains only *C. meosorum* sp. nov., whose saccular lobe is simple. The triangular process of the transtilla is an additional specialisation of that species.

The genus *Crepidochares* MEYRICK, 1922 was recently revised by DAVIS (1990). He considered the spine-like process arising from the saccular lobe at the base of the male valva to be a synapomorphy of the genus. The character distinguishes *Crepidochares* from the closely related genus *Eriocottis* ZELLER, 1847, where the ventral edge of the valva bears a spinose process. The processes in the two genera differ both in position and origin, suggesting that they are indeed not homologous structures and that the genera are correctly separated. Furthermore, no species have been found which display a process that might be interpreted as intermediate. Additional support for maintaining *Crepidochares* as distinct lies in the structure of the transtillae. In *Crepidochares* the transtillae form a continous band, whereas in *Eriocottis* (and *Deuterotinea*) these structures are clearly separated.

The habitat of *Crepidochares* also differ from that of the other genera. *Eriocottis* and *Deuterotinea* are distributed in xerophytic biotopes of Mediterranean type ecosystems, which extend from Southern Europe to Middle Asia (ZAGULAJEV 1988). The neotropical species of *Crepidochares* have, however, been found in more temperate forests of high elevations in the tropics, in the Valdivian forests and in the lowland rain forests. The habitats of the new species in the Fan-si-pan Mts. of Vietnam and in the mountains of Thailand coincides very well with the climate conditions of some of the habitats in South America. Thus, the ecological requirements of the species appear to be considerable homogenous. In summary, *Crepidochares* and *Ericottis* are sufficiently defined genera reflecting different evolutionary lines.

**Acknowledgement**

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