



A new genus and species of the subfamily Philinae (Coleoptera: Vesperidae)

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Abstract

A new philine species belonging to a new genus, *Spiniphilus spinicornis* **gen. et sp. nov.**, is described from Yunnan, China. The genus differs from other genera of the Philinae in the male antennae, segments 3–10 of which bear a long flattened lateroapical spine. Female of *Heterophilus* is briefly described for the first time. Photographs of the habitus and some morphological details are provided and the genera of the Philinae are keyed.

Key words: *Spiniphilus spinicornis* **gen. et sp. nov.**, *Heterophilus*, Vesperidae, Philinae, Cerambycidae, China, Yunnan, key to genera

Introduction

In the Catalogue of Palaearctic Coleoptera (Löbl & Smetana, 2010), Vesperinae and Philinae were treated as subfamilies of Cerambycidae. However, according to Švácha, *et al.* (1997), the larval morphology and biology of the Philinae do not allow classification within the Cerambycidae s. str. and we follow that paper in considering the Philinae a subfamily of the Vesperidae.

Vesperidae sensu Švácha, *et al.* (1997) consists of the Mexican genus *Vesperoctenus* of uncertain taxonomic position and three subfamilies: Vesperinae (single Mediterranean genus *Vesperus* Dejean), Philinae (generally Oriental with one Afrotropical species) and Anoplodermatinae (Neotropical). The Philinae has so far included four genera: *Philus* Saunders, *Doesus* Pascoe, *Heterophilus* Pu and *Mantitheus* Fairmaire. In this paper we describe a new genus and species of the Philinae, *Spiniphilus spinicornis* **gen. et sp. nov.**, from Yunnan, China.

The holotype and two paratypes are deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZAS). An additional paratype is deposited in the personal collection of Mr. Changchin Chen, Tianjin, China (CCCC).

Spiniphilus **gen. nov.**

Type species: *Spiniphilus spinicornis* **sp. nov.**

Diagnosis. Differs from other genera of the Philinae by the spined male antennae (distal flagellum is strongly serrate also in *Philus rufescens* Pascoe). It also differs from *Heterophilus*, *Philus* (except for “*Philus*” *globulicollis* Thomson, see Švácha, *et al.*, 1997: 365–366) and *Doesus* by the plesiomorphic 2/2/2 (instead of 1/2/2) tibial spur formula. From *Mantitheus* and “*Philus*” *globulicollis* (sharing the 2/2/2 formula), it differs by the carinate lateral pronotal margins, and from the former also by the fully winged females and hind wings with very complete plesiomorphic venation.

Description. Head subvertical in front, slightly elongated and narrowed behind eyes; mandibles rather long, with sharp apex, crossed when closed; maxillae (Fig. 3b) relatively reduced, palps long and with dense setae, four-

segmented, the third segment shortest, terminal segment with apex truncated; galea with long setae, lacinia reduced; eyes large, emarginated, prominent, lower lobes anteriorly approaching genal margins. Antennae longer (male) or shorter (female) than the body, flagellomeres flattened, flagellomeres I to VIII prominently angulate lateroapically in females (making flagellum weakly serrate), in males the lateroapical angle produced into a long flattened spine (making flagellum pectinate); scape stout, shorter than other antennomeres except pedicel; last antennomere longest; third shorter (male) or longer (female) than fourth; fourth slightly shorter than (male) or subequal to (female) fifth. Prothorax with lateral margin in the form of a carina extending from base nearly to apex, curved downward to (but always retaining some distance from) outer angles of the procoxal cavities; latter cavities widely open posteriorly, intercoxal process broad, with broadened apex. Mesonotum widely and deeply emarginated anteriorly, with a median line, stridulatory plate absent. Elytra broader than prothorax, about three times as long as the maximum width near base, gradually narrower apically, and rounded at apex. Hind wings have a very complete plesiomorphic venation similar to that of *Philus*; females with normal elytra and wings. Legs rather long, fringed with hairs and pubescence; pro- and mesotibiae with short dents or teeth (shorter than surrounding pubescence) on outer side; tibial spur formula 2/2/2; tarsi with the third joints cleft, first joint shorter than the second and third combined. Fore coxae prominent, strongly transverse.

Etymology. The generic name is composed of *spini-* (referring to the spined male antennae) and *Philus* (the type genus of the subfamily Philinae). Gender masculine.

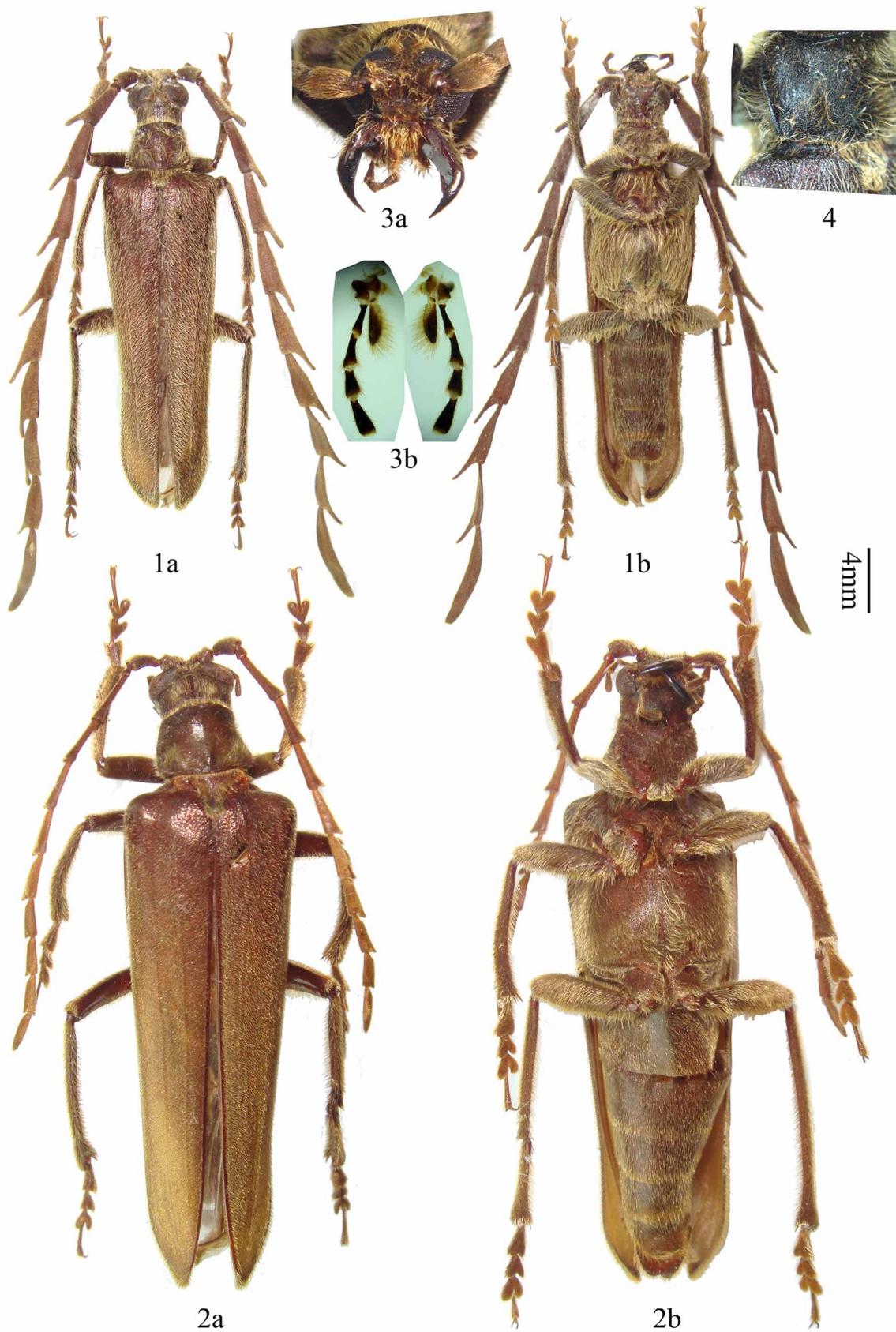
Distribution. That of the type species.

Spiniphilus spinicornis sp. nov.

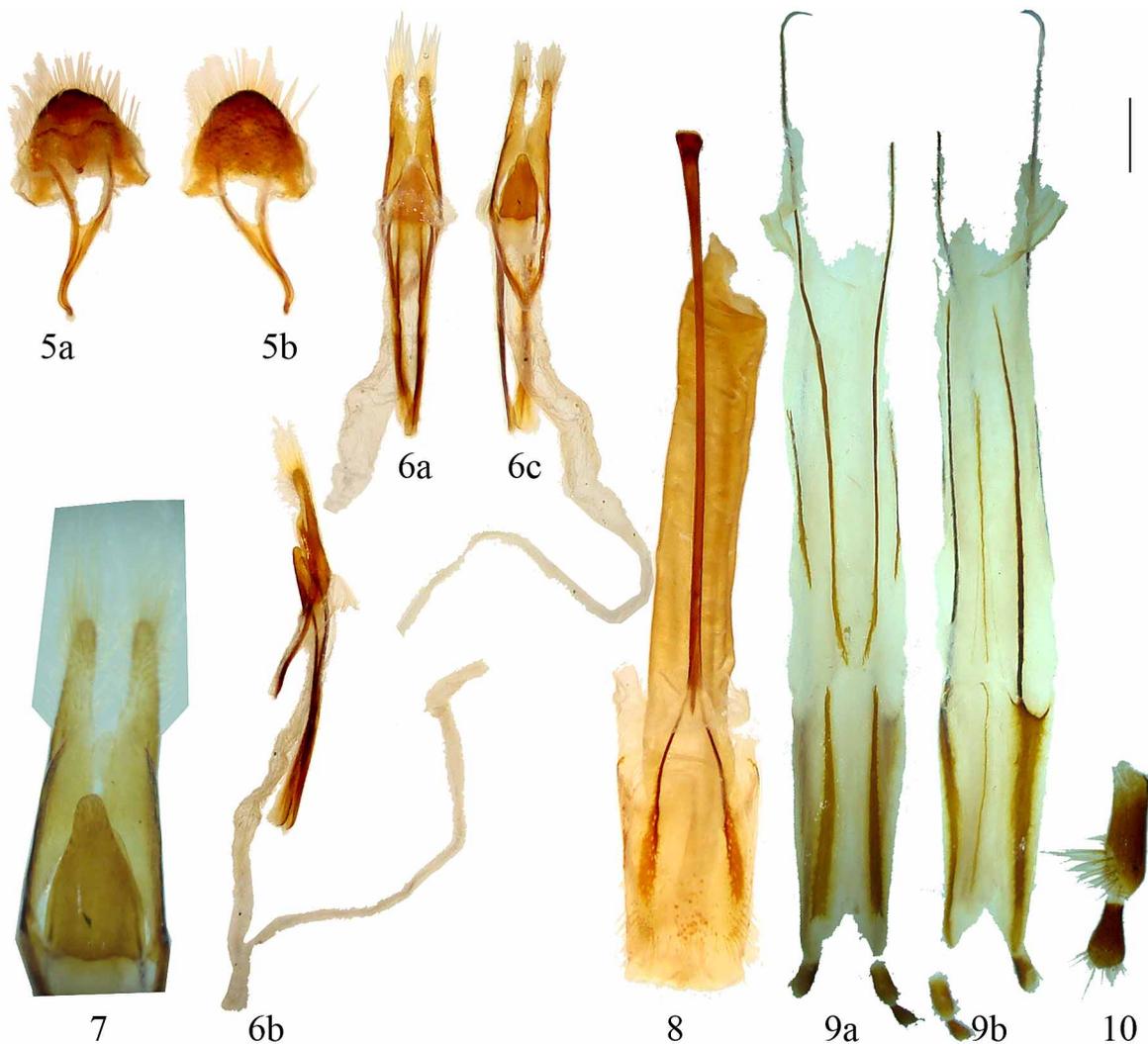
(Figs 1–12)

Description (based on three males and one female): Male: length: 22.8–26.0 mm, humeral width: 5.8–6.8 mm. Female: length: 37.0 mm, humeral width: 9.0 mm. Body uniformly reddish testaceous, covered with quite long tawny pubescence. Head narrower than prothorax, completely covered with long pubescence. Eyes protuberant, much more protruding than temples, upper eyelobes closer to each other than lower eyelobes (Fig. 3a). Male (Figs 1a–1b) antennae about one-fifth longer than body, with last two segments surpassing the elytral apex, with antennomeres III–X flattened and bearing a long lateroapical spine; scape stout, without a carina, last antennomere flat and long; relative lengths of segments from base to apex: 12:3:25:32:33:35:36:35:40:38:69. Female (Figs 2a–2b) antennae about two-thirds of body length, antennomeres III–X flattened and sharply angulate lateroapically; scape expanded, without a carina, last antennomere flat and long; relative lengths of segments from base to apex: 17:6:30:26:26:25:25:22:22:21:27. Prothorax tapering anteriorly, very finely punctured, with a lateral marginal carina running from base to about apical 1/5 (Fig. 4), anteriorly approaching but not touching procoxal cavity. Elytra densely punctured, much broader than prothorax and three times as long as humeral width; gradually tapering apically, without any carina; apex narrowly rounded. Hind wings (Figs 11–12) have a very complete plesiomorphic venation, medial field with five free veins and a large wedge cell, crossvein r4 without spur. Legs moderately flattened, with dense pubescence; hind femur reaching to second (female) or third (male) abdominal segment; first hind tarsal segment shorter than following two segments combined; apical margin of second tarsomere shallowly emarginate (to 1/10 to 1/5), third tarsomere deeply cleft to 2/3; male and female claws simple. Male terminalia (Figs 5–7): Tegmen length about 3.1 mm; lateral lobes slender, tapering apically, each about 0.6 mm long and 0.15 mm wide, apical half with setae shorter than lateral lobes; tegmen without roof, membranous dorsally; ring converging; median lobe plus median struts slightly curved in apical half, longer than tegmen (about 4:3); median struts about 5/8 of median lobe's length; dorsal plate slightly shorter than ventral plate; apex of ventral plate strongly projecting; median foramen not elongated; internal sac without any armature, not distinctly delimited from ejaculatory duct. Tergite VIII (Figs 5a–5b) slightly broader than long, apex rounded. Female terminalia (Figs 8–10): Paraproct long, baculum quite thick; coxite baculi very thick, about one half of the length of paraproct baculi; coxite lobes short, sclerotized except for basal and apical portions, with tactile hairs at the apices (Figs 9–10); stylus apical in position, moderate in size, sclerotized except for apex which bears tactile hairs (Fig. 10); dorsal baculi short and thick; proctiger extremely long, with two pairs of thin baculi, inner pair very long, much longer than paraproct baculi, outer pair less than one third of inner pair's length. Tignum shorter than abdomen.

Diagnosis. That of the genus.



FIGURES 1–4. *Spiniphilus spinicornis* sp. nov. 1–2. habitus. 1. holotype, male, from Yunnan. 2. paratype, female, from Yunnan. a. dorsal view. b. ventral view. 3a. head of male, frontal view. 3b. maxilla of male. 4. prothorax, dorsal-lateral view, showing the lateral margin. Scale 4 mm.



FIGURES 5–10. Terminalia of *Spiniphilus spinicornis* sp. nov. 5–7. male. 5. tergite VIII and ventrites VIII & IX. a. ventral view. b. dorsal view. 6–7. male genitalia. a. ventral view. b. lateral view. c. dorsal view. 7. showing apex of ventral plate and lateral lobes of tegmen. 8–10. female. 8. tignum. 9. ovipositor (internal reproductive organ destroyed). a. ventral view. b. dorsal view. 10. coxite lobe and stylus. Scale 1 mm.

Etymology. The species is named after the spined third to tenth antennomeres in the male.

Remarks. Though the only available female was unfortunately damaged by dermestid beetles, it could be concluded that the vaginal plates were absent, bursa copulatrix absent and spermatheca not forming a sclerotized capsule, but present as a large membranous pouch, not clearly distinguished from spermathecal duct (using the interpretation of Saito, 1990).

The biology of the species is unknown, the available specimens were attracted to a light trap. However, the mouthparts suggest that the adults probably do not feed, like the adults of *Philus*.

Based on our observation on the material in IZAS, we hereby confirm the tibial spur formula of *Heterophilus* (not hitherto mentioned in any published description) to be 1/2/2 in both male and the undescribed brachypterous female.

Distribution. China: Yunnan.

Material examined. Holotype (26.0 mm long), male, China, Yunnan prov., Yingjiang (24°46'N, 97°58'E), 1700 m, 1980.IV.15, leg. Ping Gao (IZAS). Paratypes: 1 female (37.0 mm long), same data as holotype but 1980.IV.21; 2 males, Yunnan prov., Tengchong county, Longchuanjiang (24°55'N, 98°42'E), alt. 1050 m, 2006.V.16, leg. Ping Zhao by light trap (IZAS & CCCC).



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FIGURES 11–12. Left hind wings of *Spiniphilus spinicornis* sp. nov. 11. male. 12. female.



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FIGURES 13–14. Left hind wings of *Mantitheus pekinensis* Fairmaire. 13. male. 14. female.

Key to genera of Philinae

(based on personal observation and Švácha *et al.*, 1997)

- | | | |
|---|---|---|
| 1 | The tibial spur formula 2/2/2 (fore tibia with two spurs) | 2 |
| - | The tibial spur formula 1/2/2 (fore tibia with only one spur) | 4 |

- 2 Lateral pronotal margins carinate; antennomeres III-X spined (male) or sharply angulate (female). *Spiniphilus* **gen. nov.**
 - Lateral pronotal carinae absent or only posterior rudiments present; antennae simple 3
 3 Male wings with complete venation, medial region with 5 free veins, females with normal elytra and wings "*Philus*" *globulicollis* Thomson
 - Male wings with simplified venation with only four free veins in medial region (Fig. 13), female micropterous (Fig. 14) and with strongly abbreviated elytra *Mantitheus* Fairmaire
 4 Male wings with simplified venation (Fig. 15), female micropterous (Fig. 16) and with abbreviated elytra (last two abdominal segments not covered); mesonotum without longitudinal median line; antennae shorter, male antennae shorter than body length, antennomere V of male extends to the basal pronotal margin, female antennae never extending to the middle of elytra, antennomere V does not reach basal pronotal margin; the undescribed females (Figs 16–18) are brachypterous and with somewhat shortened elytra *Heterophilus* Pu
 - The wings with very complete plesiomorphic venation; mesonotum (with or without stridulatory area) divided by a more or less complete longitudinal median line; antennae longer, male antennae subequal to or longer than body length, antennomere IV of male and V of female extends to the basal pronotal margin, female antennae usually extending to the middle of elytra; females (even if possibly flightless) have normal elytra and wings *Philus* Saunders & *Doesus* Pascoe



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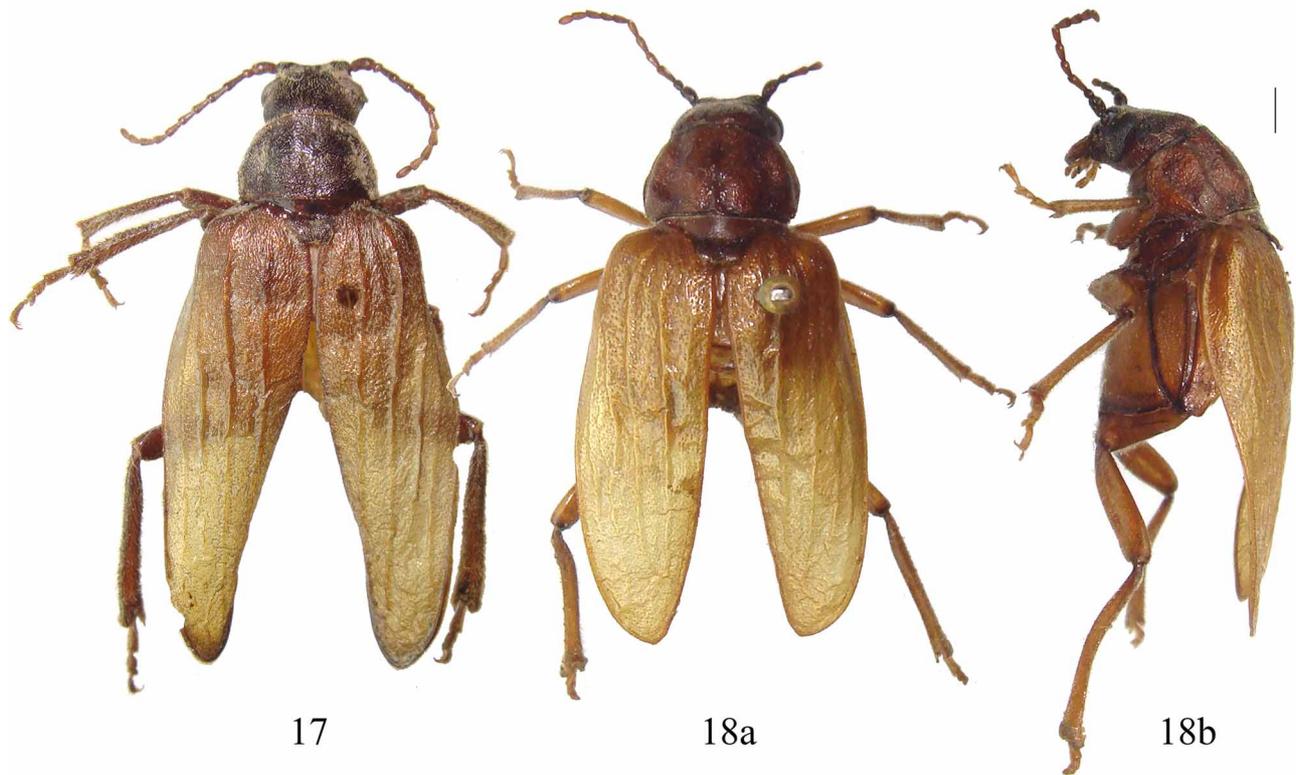
FIGURES 15–16. Left hind wings of *Heterophilus* spp. 15. male, from Xizang, Nanmulin, Tubujia. 16. female, from Xizang, Nanmulin, Tubujia.

Notes. According to Švácha, *et al.*(1997), there are no sharp mutually exclusive differences between *Philus* and *Doesus*, and several species described under *Philus* were treated by those authors as of uncertain generic position.

Descriptions of the female of *Heterophilus* spp. (based on two female specimens in IZAS, Figs 16–18): Head subvertical in front; mandibles rather long, with sharp apex, crossed when closed; maxillae relatively reduced, palps long and with apical setae, four-segmented, third segment shortest, terminal segment tapering distally; galea with dense setae, lacinia reduced; eyes moderately sized, slightly emarginated, lower lobes hardly seen in frontal view. Antennae normal and short, never extending to the middle of elytra; scape stout, third antennomere longest; fourth to tenth very slightly diminishing. Prothorax with lateral margin in the form of a carina extending from base to apex; procoxal cavities widely open posteriorly, intercoxal process broad, curved downwards and with narrower apex. Mesonotum without median line, stridulatory plate absent. Elytra broader than prothorax, about two times as

long as the maximum width near base, gradually narrower apically, gradually diverging at suture, apex only reaching fourth abdominal segment. Hind wings strongly reduced (Fig. 16). Legs rather long, fringed with hairs; pro- and mesotibiae with short dents or teeth (shorter than surrounding hairs) on outer side; tibial spur formula 1/2/2; tarsi with the third joints cleft, first joint slightly shorter than second and third combined. Fore coxae prominent, strongly transverse.

Material examined. 1 female, China, Xizang prov., Jiacha, 1984.VI.15, leg. Qu (IZAS); 1 female, China, Xizang prov., Namulin, Tubujia, 1983.VII.19, leg. Xuqiang Lei, Ciduo (IZAS).



FIGURES 17–18. Females of *Heterophilus* spp. 17. from Xizang, Jiacha. 18. from Xizang, Namulin, Tubujia. a. dorsal view. b. lateral view.

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