

A REVISION OF THE *PTECTICUS TENEBRIFER* SPECIES GROUP (INSECTA: DIPTERA: STRATIOMYIDAE)

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ABSTRACT. - The *Ptecticus tenebrifer* species group is defined on the basis of wing venation and the characteristic, elongated and exposed male cerci. Three species are considered to be members of this group: *P. tenebrifer* (Walker), *P. remeans* (Walker) and *P. erectus*, new species. *Ptecticus erectus* is described and the other two species are redescribed. While *P. tenebrifer* is widely distributed in the eastern Palaearctic and also in part of the Oriental region, *P. remeans* appears to be limited to Celebes and *P. erectus* is known only from Thailand. The new species, *P. erectus*, differs from the related species by the predominantly yellow ground colour of the body and structures of the male genitalia. *P. illucens* Schiner and *P. sinensis* Pleske are definitely synonyms of *P. tenebrifer* (Walker).

KEY WORDS. - Stratiomyidae, Sarginae, *Ptecticus erectus*, new species, Oriental & Palaearctic regions, Thailand, taxonomy, new synonymy.

INTRODUCTION

During a study of comparatively extensive material of Stratiomyidae collected in Thailand and deposited mainly at the Kasetsart University, Bangkok, we found a male of *Ptecticus* that distinctly differs from all the other species of this genus described from the Oriental region. Externally it resembles *P. cingulatus* Loew by its size and the ground colour, but its male genitalia indicate a relationship to *P. tenebrifer* (Walker), especially their slender, long and posterodorsally exposed cerci. In addition to this new species and *P. tenebrifer* (Walker), the same type of male cerci are known only in *P. remeans* (Walker). A revision of this species group provided a good opportunity to re-examine *P. illucens* Schiner and *P. sinensis* Pleske, which have been considered to be possible synonyms of *P. tenebrifer* (Walker). In this way, the number of *Ptecticus* species known in the Oriental region has risen to 40 (cf. James, 1975; Rozkošný & Kovac, 1994, 1996, 1997, 1998; Rozkošný & Hauser, 1998).

SYSTEMATICS

FAMILY STRATIOMYIDAE

Ptecticus tenebrifer species group

In our opinion, the *P. tenebrifer* species group may be defined as follows: vein R2+3 arises at the anterior crossvein or slightly beyond it and it is distinctly shorter than Rs; the anterior crossvein is relatively strong, barely shorter than R2+3; the posterior crossvein is distinct, about 2-3 times as long as broad. Vein M1 arched in basal part but not sinuate, M3 slightly approaching M2 in middle and ending at the wing margin or almost so. Posterior, free ending branch of cubitus developed, only slightly shorter than the common (unforked) stem of Cu. Additional diagnostic characters are provided by the structure of the male genitalia. The male cerci are elongate conical and densely haired, oriented posterodorsally in lateral view. The aedeagus is compact and simple, partly asymmetrical in one species. A dorsal bridge above the lower part of the aedeagus projects posteriorly as a short or long process along the aedeagus

on each side. All species of this group possess a well developed inner projection of the second antennal segment characteristic for the majority of *Ptecticus* species.

***Ptecticus erectus*, new species**

(Figs. 1-2, 9)

Material examined. - Holotype: Male, Thailand, Bang Khen, 10. Oct. 1968, ? leg., in the Entomology Collection of Kasetsart University, Bangkok.

Diagnosis. - A chiefly yellow to yellowish brown species with pale yellowish to greyish tinged wings. The hind legs with a yellow pattern, abdomen spindle-shaped.

Description. - Head with frontal callus and vertex including upper middle part of occiput yellow, frons yellowish brown and ocellar triangle black. Frons at its narrowest point (i.e. just above frontal callus) slightly narrower than anterior ocellus. Eyes bare. Face and proboscis yellow, narrow middle part of lower face shining, with brownish median line. Both basal segments of antennae dark brown and blackish haired, flagellum paler, reddish brown, with transversely cut distal margin. Arista brown, almost twice as long as antenna; pedicel with very prominent inner projection. Postocular area not visible in lateral view. Hairs on head relatively long (at least some of them as long as scape), chiefly yellow, only below and above antennae partly brown, and blackish in upper part of head, i.e. in front of ocellar triangle, on ocellar triangle and vertex.

Thorax yellow and shining, without any pattern on scutum, only lower part of katepisternum, meron and katepimeron more brown. Thoracic pubescence golden yellow, relatively long but not too dense, mostly erect or semierect but partly appressed on scutum and pleura. Longest hairs present on proepisternum, laterotergites and mediotergite. Wings slightly infumated, more yellowish in anterior half and greyish at apex and along posterior margin. R2+3 arising just beyond anterior crossvein, shorter than Rs, anterior crossvein relatively strong, posterior crossvein distinct. M1 arched in basal part but not sinuate, M3 slightly approaching M2 in middle, ending close to wing margin. Halteres brown, with yellowish stem, posttegulae bearing mainly yellowish brown hairs. Legs chiefly yellow but all coxae and apical half of hind femur brown. Also two apical tarsomeres of fore and mid legs, apical half of hind tibia, and all hind tarsomeres brown to black and blackish haired.

Abdomen (Fig. 9) yellow in ground colour but with very extensive brown pattern consisting of transverse stripes. Tergite 1 with a broad transverse patch leaving broad lateral margins yellow and almost touching posterior margin in middle. Transverse stripe on tergite 2 broader than middle third and not reaching lateral margins.

Brown stripes on tergites 3 and 4 leaving only narrow posterior and lateral margins of tergites yellow, remainder of tergites dark brown. Venter shining dark brown, only sternite 2 yellow, with relatively small subquadrate middle patch.

Male genitalia (Figs. 1-2): Cerci elongated and densely haired, distinctly longer than epandrium. Ventral synsternite without any distal projections in middle. Gonostylus pointed apically and with a lobate inner process. Gonocoxal apodemes each with a slender posterior projection. Aedeagus compact, relatively slender, rounded on both ends, slightly narrowed towards apex and indistinctly constricted below middle.

Female. - Unknown.

Measurements. - Length: body 16.0 mm, wing 12.8 mm.

Derivatio nominis. - The specific name indicates the relatively elongated and posterodorsally exposed male cerci.

Distribution. - So far only the male holotype from Thailand is known.

Discussion. - The type of the wing venation and the characteristic male terminalia indicate a close relationship to the *P. tenebrifer* species group. However, the new species is much paler than the other two members of this group and its abdomen is transversely striped. Also the yellow coloration of the legs is much more extensive. The shape of the male genitalia indicates a close relationship especially to *P. tenebrifer* (Walker), though specific differences are clearly recognizable (the male cercus bears a more prominent lateral protuberance at the base, the inner process of the gonostylus is lobate and not pointed, the posterior margin of the synsternite bears no paired medial process, and the aedeagus is not dilated but narrowed towards apex).

***Ptecticus remeans* (Walker, 1860)**

(Figs. 3-5, 10)

Sargus remeans Walker, 1860: 96; Brunetti, 1923: 150; Lindner, 1935: 1949; James, 1975: 20.

Material examined. - Type material: There are two males in the British Museum of Natural History, both labelled "Celebes, Makassar, A. R. Wallace" and "Syntype *Sargus remeans* Walker, det. J. E. Chainey 1982". In addition, both specimens are provided with a round label with "Mak." and one of them (redecribed here) bears the specific name "*remeans*" in Walker's handwriting.

Other material examined: Indonesia, Celebes mer., Samanga, Nov. 1895, 2 males; Patunuang, Jan. 1896, 2 males; all H. Fruhstofer leg., all in the Museum of Natural History, Vienna.

Diagnosis. - A dark species including the intensively

blackish infuscated wings and dark hind legs. The yellow pattern of the thorax and legs is reduced, the abdomen is spindle-shaped.

Redescription. - Head predominantly dark, i.e. vertex, ocellar triangle and frons black, only frontal callus contrasting white, narrowest point of frons above frontal callus about as wide as anterior ocellus. Eyes bare. Antennae dark brown, face also somewhat brownish and proboscis yellow. Head pubescence generally blackish, only occiput and cheeks with some pale hairs.

Thorax dark brown to black, only postpronotal lobes (humeri), narrow subnotopleural stripe, upper posterior corner of katapisternum, and meron between base of hind coxa and halter yellowish. Wings intensively blackish infumated. R2+3 slightly shorter than Rs and distinctly arched, posterior crossvein very short, other wing venation as in *P. tenebrifer*. Halter dark with pale stem. Posttegulae with brownish hairs. Legs black, fore and mid tibiae pale yellow as well as fore and mid basitarsi.

Abdomen (Fig. 10) predominantly black but anterior margin of second abdominal segment with whitish yellow bifid spot and posterior corners of tergites 2-5 narrowly whitish translucent. Venter of second segment translucent white. Abdominal pubescence predominantly dark, only posterior corners of tergites 2-4 covered with silvery whitish hairs.

Male genitalia (Figs. 3-5): Cerci slightly sinuate in dorsal view and not dilated apically in lateral view as in *P. tenebrifer*. Short protuberances on posterior margin of synsternite shifted to the bases of dististyli and posterior appendages of gonocoxal apodemes very short, indistinct. Aedeagus broad at base, narrowed towards apex and with asymmetrical protuberance on each side.

Female. - No female was available. According to the original description (Walker, 1860), the female should be somewhat stouter than the male. Probably (as in the other species of *Ptecticus*) the female frons is somewhat broader than that of the male. However, this character could not be verified because Walker's original female has lost the head. No further differences except the terminalia are mentioned in the original description.

Measurements. - Length: body 14.0 - 21.0 mm, wing 11.0 - 18.6 mm.

Distribution. - In addition to the type specimens from Makasar in Sulawesi (Celebes) we studied further four males from the same island (see Material examined). Brunetti (1923) noted this species from Kandari in Celebes (April 1874, Beccari leg.) and Lindner (1935) recorded 4 additional males from Celebes (Bantimoeroeng, 25. May 1930, G. Heinrich leg. et coll.). Unfortunately, we have not succeeded in finding the latter material in the collection of G. Heinrich. There is no specimen in the Lindner collection in Stuttgart (H.-P.

Tschorsnig, pers. comm., May 7, 1999).

Discussion. - Walker (1860) based his original description on a headless female and a male. However, the original female has probably been lost because it was not found at the Natural History Museum, London, during a recent search. The original male is undoubtedly a member of this group because Walker (l.c.) noted: "Abdomen with lanceolate apical appendages". It may be identical with the male redescribed here although no pale pattern on the legs is mentioned in the original description, only in the short description of the female is noted "Anterior tibiae dingy whitish above". Owing to some insignificant differences between both syntypes (the legs are completely black and the translucent spots on abdominal tergites 3-5 are reduced in the second male), the specimen with Walker's label, which was redescribed here, may be designated as lectotype if this should prove necessary. This male is in good condition, while the right hind leg and apical segments of the abdomen are missing in the second male.

In comparison with *P. tenebrifer* (Walker), this species seems to be somewhat paler (see yellowish tibiae and basitarsi of fore and mid legs, pale abdominal spots on tergites 3 and 4 in addition to the pale pattern on the second abdominal segment); also the wings seem to be less intensively infumated. The abdomen is more spindle-shaped, not as clublike as in *P. tenebrifer* (Walker). Distinct differences were found in the structure of the male genitalia (see above).

Ptecticus tenebrifer (Walker, 1849)

(Figs. 6-8, 11)

Sargus tenebrifer Walker, 1849: 517; Coquillett, 1898: 308
Ptecticus illucens Schiner, 1868: 65; van der Wulp, 1885: 63;
James, 1975: 19

Macrosargus tenebrifer Bigot, 1879: 187

Ptecticus tenebrifer; Brunetti, 1907: 110; Pleske, 1926: 386,
1928: 73, 1930: 185; Lindner, 1933: 2; 1936: 34; Ôuchi,
1938: 50, 1940: 281; Lindner, 1940: 23, 1941: 95; James,
1950: 185; Lindner, 1954: 207, 1955: 220; James, 1975:
20; Nagatomi, 1975: 347; Rozkoň & Nartshuk, 1988:
52

Ptecticus sinensis Pleske, 1928: 73

Material examined. - Type material of *Sargus tenebrifer* Walker: Two syntypic females are deposited in the British Museum (Natural History) in London, both bearing the identical labels as follows: "China, Foo-chow-foo, pres. by G. J. Lay, 45-65" and "Syntype, *Sargus tenebrifer* Walker, det. J. E. Chainey 1982". Moreover, each female is labeled as "Syntype" with a round label bearing a blue marginal circle.

Type material of *Ptecticus illucens* Schiner: The male holotype is preserved in the Museum of Natural History, Vienna, and labelled "illucens", and "Alte Sammlung, China". Regarding its size (body length 13.8 mm), it is a relatively small specimen of *P. tenebrifer*. It was collected at Hong Kong according to the original description, the sex of the unique type specimen was originally not specified.

Type material of *P. sinensis* Pleske: The male holotype (not a female as noted in the original description) is preserved at the Zoological Institute of the Academy of Sciences, St. Petersburg and bears the locality label "China, Tientsin, 2 Aug. 1915, Y. Vasilyev leg."

Other material examined: China or., Tsingtan, Shantung, 1 female; Japan, Karuizawa, 26 Jul. 1953, 1 male, leg. P. Savolainen; both in the Faculty of Science, Masaryk University, Brno. Japan, 1 male, 2 females ("*P. tenebrifer*, det. Bischoff"); 1 male ("Weltreise Erz. Franz Ferd. 1893"); Kyoto, 8 Jul. 1924, 1 female, leg. Teranishi; all in the Museum of Natural History, Vienna.

Diagnosis. - A predominantly black species with the whitish frontal callus and a very limited pale pattern on the legs and abdomen. The abdomen conspicuously clublike.

Redescription. - Head dark brown to black. Vertex, frontal triangle and frons black but frontal callus contrasting white to yellow, membranous area of lower face more or less brownish to yellow. Frons at narrowest point, i.e. just above frontal callus, as broad as anterior ocellus. Eyes bare. Antenna black but inner side of pedicel and flagellomeres 2-3 as well as basal third of arista more brownish. Proboscis yellow to pale brown. Pubescence on vertex, ocellar triangle, frons and upper face blackish, that on occiput and cheeks sometimes partly pale.

Thorax dull dark brown to black. Only narrow upper margin of anepisternum, often also postpronotal lobes (humeral) and postalar calli as well as posterior margin of scutellum brownish yellow to reddish brown, in some specimens also upper posterior part of katepisternum and posterior part of anepimeron pale brown to whitish. Thoracic pubescence generally short, semi-appressed, black and golden yellow on scutum, predominantly whitish on lower pleura, but virtually absent in middle depressed part of anepisternum and meron. Propleura with long hairs varying from yellowish to black, laterotergites and mediotergite covered with long pale hairs. Wings brownish infumated, R veins as in the *Ptecticus aurifer* group and other species of *P. tenebrifer* group, i.e. R2+3 shorter than Rs, arising at cross-vein r-m and ending at the same point as R1. M1 slightly arched and M3 ending close to wing margin, virtually in the same short distance as M1 and M2. Posttegulae small, with pale hairs. Legs chiefly black and black haired. Only bases of fore and mid tibiae, mid basitarsus and usually also following tarsomere yellowish or yellowish brown. Hind legs completely black.

Abdomen (Fig. 11) conspicuously clublike, constricted at base, black, but second segment translucent whitish with a differently shaped black dorsal mid spot. Lateral parts, especially of segments 1-3 with long and erect pale hairs, posterolateral corners of tergites 3-5 whitish haired.

Male genitalia (Figs. 6-8): Cerci elongated, about 1.5 times longer than epandrium, somewhat sinuate and dilated apically in lateral view. Proctiger considerably arched and sclerotized ventrally. Posterior margin of synsternite with a pair of low medial processes. Inner lobe of gonostylus pointed, gonocoxal apodemes missing but dorsal appendages of dorsal bridge well developed. Aedeagus simple and symmetrical, subcylindrical, dilated towards apex.

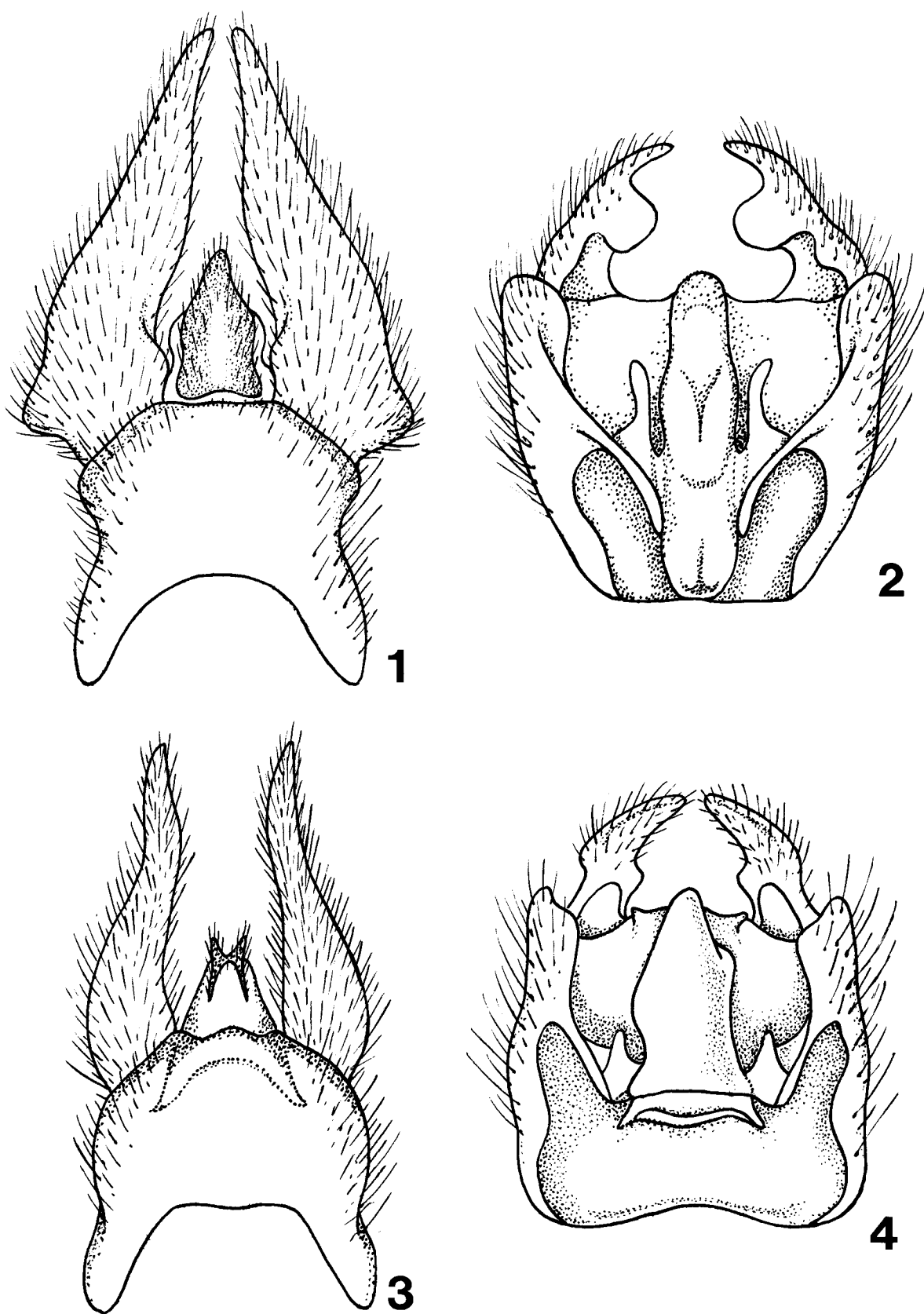
Female. - As in the male but the frons, as a rule, somewhat broader and the pubescence on the occiput and cheeks often completely black. We do not find any substantial differences in the size of the body and the length of wings between the sexes.

Measurements. - Length: body 13.8 - 19.2 mm, wing 10.2 - 15.0 mm (11.0 - 22.0 mm and 9.0 - 17.0 mm according to Nagatomi, 1975).

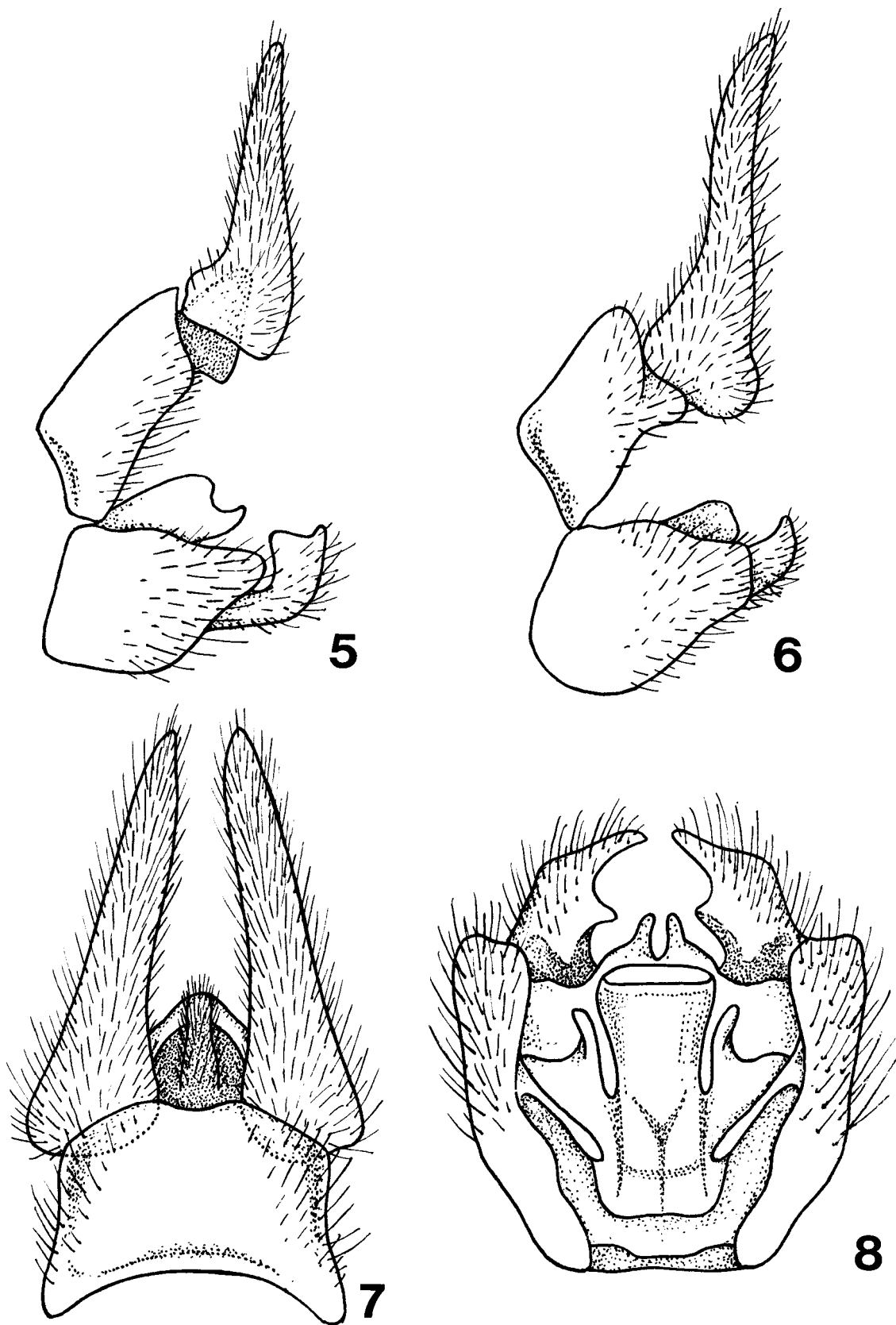
Variability. - In addition to the variable size and the differences between the sexes, some colour characters may also be variable. The frontal callus may be yellow rather than white and more or less darkened in lower half. The membranous area of the lower face is often almost yellow. The pale pattern of the thorax may be considerably reduced and hence only the posterior margin of scutellum may be brownish. Also the extent of the pale knees on the fore and mid legs is often variable. The dark pattern on tergite 2 seems to be extremely variable from the small rounded mid spot to the three longitudinal stripes (one medial and two lateral, and the medial spot sometimes in the form of an elongate triangle, dilated posteriorly). On the other hand, the translucent yellow colour of sternite 2 may extend to the posterior margin of sternite 1 and the anterior margin of sternite 3.

Distribution. - A common northeastern Oriental and southeastern Palaearctic species (cf. James, 1975; Rozkošný & Nartshuk, 1988) which is well known to occur in the Far East of Russia (from the Amur and Khabarovsk regions to the vicinity of Vladivostok; Pleske, 1926, 1928, 1930; Zimina, 1976, 1985), Korea (Pleske, 1926; Ôuchi, 1938, 1940), China (from Manchuria to Hongkong; Walker, 1849; Schiner, 1868; Pleske, 1926; Lindner, 1933; Ôuchi, 1938, 1940; Lindner, 1940, 1941, 1954, 1955), Japan (from Hokkaido to Ryukyu Is.; van der Wulp, 1885; Brunetti, 1907; Nagatomi 1975), Okinawa (Ôuchi, 1940; James, 1950), Taiwan (Ôuchi, 1938, 1940; Nagatomi, 1975).

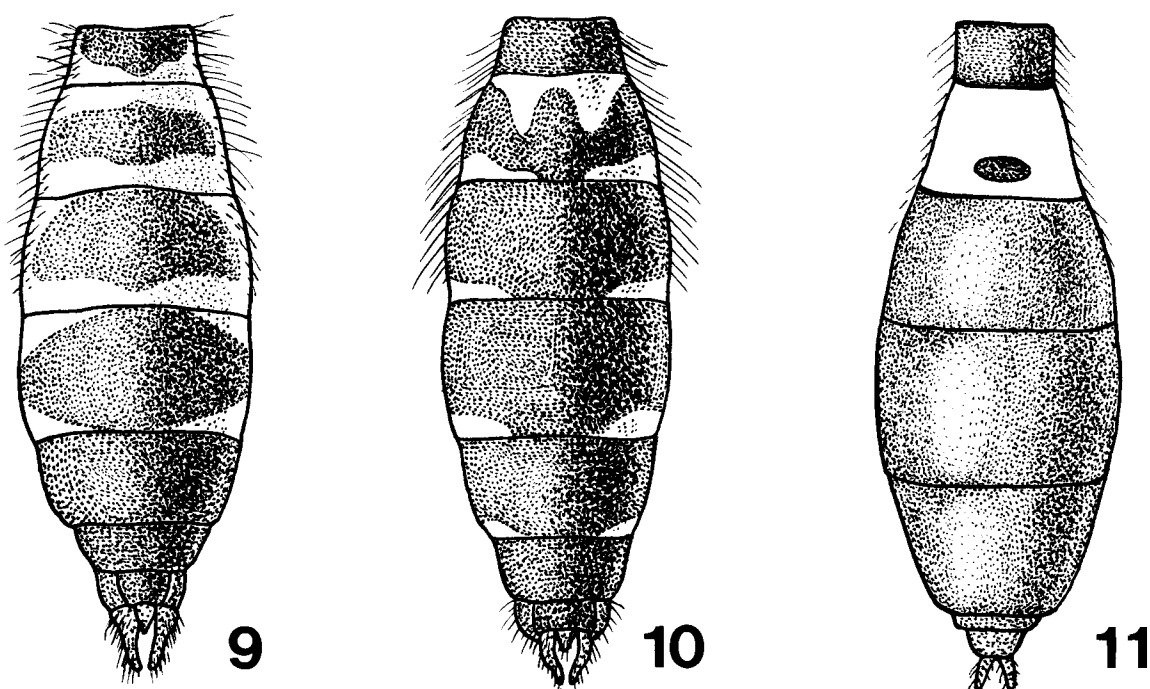
Discussion. - There are no doubts about the identity of this species. Lindner (1936) and Ôuchi (1940) suggested *P. illucens* Schiner was a possible synonym of this species, but James (1975) did not accept this suggestion without a revision based on the type examinations. We can confirm that the original description of *P. illucens* as well as the holotype of this species agree well with the recent concept of *P. tenebrifer*. *P. sinensis* Pleske is



Figs. 1-4. Male terminalia of *Plecticus* species. 1-2 - *P. erectus*, new species. 3-4 - *P. remeans* (Walker). 1, 3 - epandrium, proctiger and cerci. 2, 4 - ventral part of terminalia in dorsal view.



Figs. 5-8. Male terminalia of *Ptecticus* species. 5 – *P. remeans* (Walker). 6-8 – *P. tenebrifer* (Walker). 5, 6 – terminalia in lateral view. 7 – epandrium, proctiger and cerci. 8 – ventral part of terminalia in dorsal view.



Figs. 9-11. Abdomen of *Ptecticus* species in dorsal view. 9 – *P. erectus*, new species, 10 – *P. remeans* (Walker), 11 – *P. tenebrifer* (Walker).

based on a teneral, not fully coloured male which is more reddish brown than black. However, all the structural characters, including the characteristically shaped abdomen with the translucent second abdominal segment and the species-specific male terminalia are identical to *P. tenebrifer*. The synonymy of *P. sinensis* Pleske with *P. tenebrifer* (Walker) was preliminary proposed by Rozkošný & Nartshuk (1988) and it is confirmed here.

Key to the species of *Ptecticus tenebrifer* group

1. Ground colour of body yellow, basal half of hind femur and basal half of hind tibia yellow, abdomen transversely striped (Fig. 9). *P. erectus*, new species
- Ground colour of body black, hind leg completely black, abdomen chiefly black, not transversely striped 2
2. Abdomen spindle-shaped (Fig. 10), posterior margin of synsternite without a pair of short processes in middle, aedeagus subconical and asymmetrical (Fig. 4) *P. remeans* (Walker)
- Abdomen clublike, constricted at base (Fig. 11), posterior margin of synsternite with a pair of short processes in middle, aedeagus subcylindrical and symmetrical (Fig. 8) *P. tenebrifer* (Walker)

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