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Redescription of *Oreurinus cuspidatus* Ito (Diptera: Tephritidae)

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***Oreurinus cuspidatus* Ito, the type species of the monotypic genus *Oreurinus* Ito, is redescribed and illustrated in light of newly discovered male specimens from Korea. In Mt. Gachilbong, a number of males were found sitting on rocks along the mountain stream of deep woods, while only a single female was swept from nearby vegetation. Based on morphological data, especially using postabdominal structures, *Oreurinus* is placed in the *Trypeta* group of the subtribe Trypetina (Trypetinae: Trypetini).**

The genus *Oreurinus* based on a single new species was first proposed by Ito (1956) in his Japanese list of Tephritidae. However, this publication lacked necessary descriptions and type designations for taxonomically valid generic and specific names. Ito (1984) later indicated that his earlier new taxa designations were invalid for *nomen nudum*, and corrected this situation by providing generic and specific descriptions with valid type designations. *Oreurinus cuspidatus* Ito, the type species of this monotypic genus, was described based on two female specimens from Japan (Ito, 1984). He placed *Oreurinus* in the heterogeneous subfamily Trypetinae, but did not indicate the more narrowly defined systematic position of the genus (Ito, 1984). No information about males of *Oreurinus* was known until the present paper.

In an effort to redefine the tribe Trypetini, I have examined a number of trypetine taxa and found two subtribal groups within the tribe (Han, 1992; Han et al., 1993; Han, 1996). Based on the female postabdominal structures, I tentatively placed *Oreurinus* in the subtribe Trypetina (Han, 1992), but was not able to indicate their relationships within the subtribe. Fortunately, I lately happened to collect a number of Korean specimens of *O. cuspidatus* including both sexes (32 males and one female), which provided critical information about their phylogenetic position and range of morphological variation. Such information, by providing testable hypotheses, is especially important for my on-going study to resolve the basal phylogeny of Tephritidae using both morphological and molecular data (Han and McPheron, 1994; 1997). Therefore, in the present paper, the *Oreuninus cuspidatus* is redescribed and the systematic position of the genus is discussed.

The terminology and morphological interpretation used in this paper follow Han et al. (1993) and Han (1996). Acronyms of depositories cited in this paper are as follows: HUS, Entomological Institute, Hokkaido University, Sapporo 060, Japan; KNU, Department of Agricultural Biology, Kyungpook National University, Taegu 635, Korea; UOP, Entomological Laboratory, University of Osaka Prefecture, Mosu, Umemachi Sakai, Osaka 591, Japan; YSUW, Department of Life Science, Yonsei University, Wonju campus, Kangwondo 220-710, Korea.

Description

Genus *Oreurinus* Ito, 1984

Oreurinus Ito 1956: 24 (nomen nudum); 1984: 136 (original description).

Oreurinus cuspidatus Ito, 1984*

Oreurinus cuspidatus Ito 1956: 24 (nomen nudum); 1984: 137 (original description).

Description: Body yellow brown to orange brown ground color with extensive dark brown area; setae and setules dark brown; wing length 4.5-5.4 mm. Head (Figs. 1A and C) entirely yellow to orange brown with frontal-head ratio 0.41-0.47, eye ratio 0.70-0.77, genal-eye ratio 0.20-0.25; inner vertical seta 0.5-0.6 x as long as longest diameter of eye; outer vertical seta 0.3-0.6 x as long as inner vertical seta; postocellar seta 0.4-0.5 x as long as inner vertical seta; paravertical seta 0.3-0.6 x as long as postocellar seta; ocellar triangle dark brown, dark area cover slightly beyond triangle; ocellar seta 0.8-1.5 x as long as ocellar triangle; frons orange brown with sparse, fine, dark brown setules; 2 orbital setae; 3 frontal setae; aristal-antennal ratio 1.0-1.4; antennae closely situated each other; scape and pedicel with dark brown setules; arista short pubescent, basal 1/4 yellow

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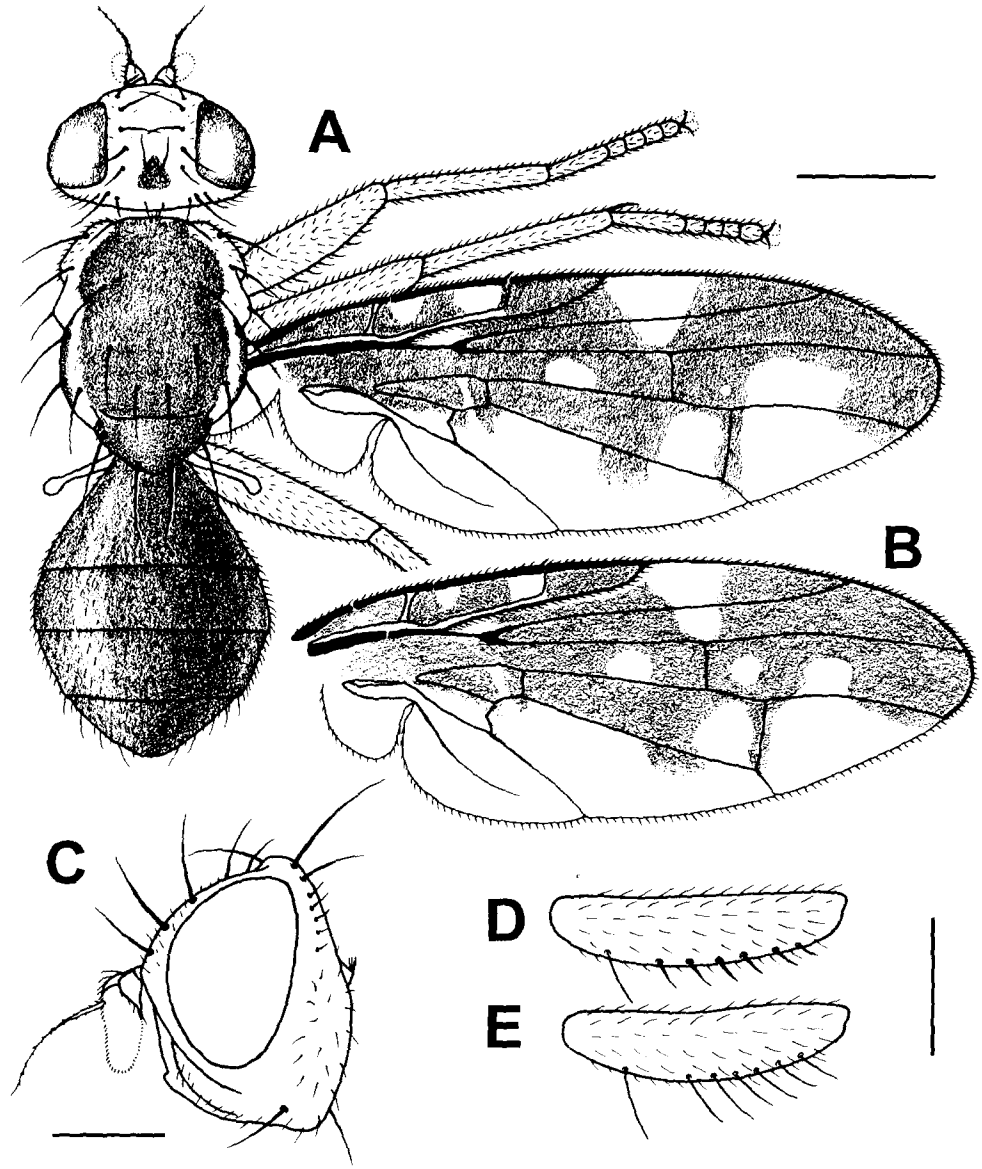

Fig. 1. *Oreurinus cuspidatus*. A, Male, dorsal view. B, Wing. C, Head, lateral view. D, Male fore femur, posterior view. E, Female fore femur, posterior view. Scale bars=0.5 mm (C, D, E) and 1.0 mm (A, B).

brown, apically dark brown; face yellow brown; parafacial 0.3-0.5 x as wide as flagellomere 1; facial ridge with fine setules; genal seta strong; postgena strongly swollen with fine, dark brown setules; postgenal seta distinct; postocular setae extended 0.7x distance from upper eye margin to lower eye margin; occiput flat, yellow brown with dark brown supracervical setae; mouthparts short; maxillary palp with dark brown setules. Thorax (Fig. 1A) yellow brown to orange brown in ground color with largely dark brown dorsum; pale yellow streak present from postpronotal lobe, through upper anepisternum, to lower wing base; scutum shiny dark brown except narrow orange brown lateral margin; outer scapular setae distinguishable; dorsocentral seta 0.6-0.8x distance from level of intra-alar seta to postsutural supra-alar seta; notopleuron with dark brown tinge around posterior notopleural setae; scutellum almost bare, flat, entirely dark brown or sometimes posteromesally orange brown; basal scutellar setae 1.2-1.4 x as long as scutellum; apical setae 1.0-1.3 x as long as scutellum, parallel each other; pleura largely yellow brown to orange brown; proepisternum yellow brown, covered with fine dark brown setules; anepisternum orange brown with 2 setae with lower one slightly shorter than upper one; katepisternum orange brown, latero-ventrally with long dark brown setules; anepimeron, katepimeron orange brown; meron, katatergite and anatergite orange brown with dark brown tinge on

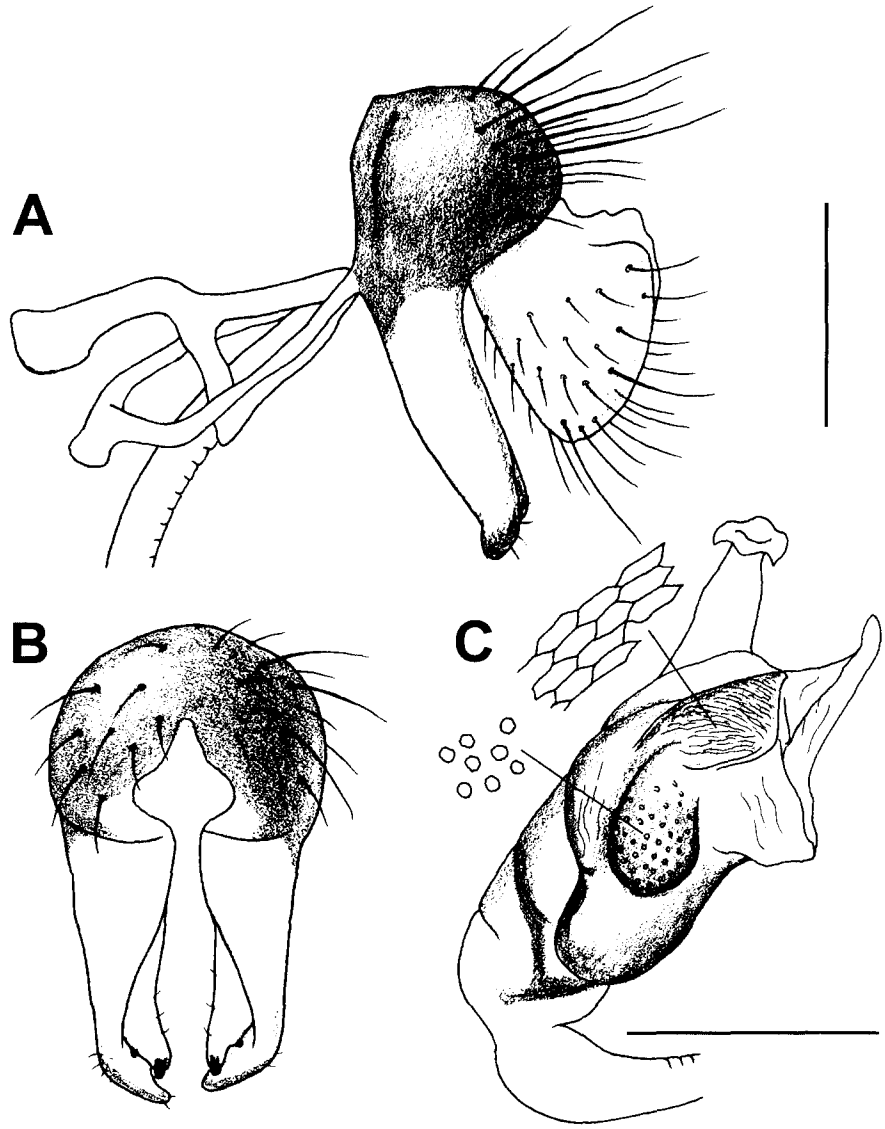

Fig. 2. *Oreurinus cuspidatus*, male. A, Epandrial complex, lateral view. B, Epandrial complex, posterior view (cerci not drawn). C, Distiphallus, lateral view (insets show detail, about 3x of original fig.). Scale bars=0.2 mm.

lower area; mediotergite shiny dark brown. Legs entirely yellow brown with dark brown setae and setules; fore femur with 6-7 posteroventral setae, posteroventral setae shorter and stronger in male (Fig. 1D and E); midtibia with spur as long as tibial width. Wing hyaline with dark brown pattern; wing pattern show intraspecific variation especially in size of hyaline spots on cell r4+5 (mostly as Fig. 1A, but rarely as Fig. 1B); wing-thorax ratio 2.5-2.8, vein R4+5 ratio 1.4-1.6, vein M ratio 0.28-0.35, subcostal-costal ratio 0.63-0.70; R4+5 with 5-6 tiny setules between node and r-m.

Male abdomen (Fig. 1A): Shiny dark brown; genitalia with epandrium dark brown with dark brown setules; surstylus largely yellow brown with dark brown apex (Fig. 2A); inner surstylus with subapical prensiseta much smaller than apical prensiseta (Fig. 2B); aedeagal apodeme wide, fan shaped; distiphallus (Fig. 2C) with apico-dorsal rod distinct, trumpet shape; median granulate sclerite elliptic in outline; dorsal sclerite with pattern of closely approximated, narrowly oblong cells.

Female abdomen: Oviscape (Fig. 3A) dark brown with dark brown setules, with a pair of short apico-ventral setae, no dorsal setae; eversible membrane with taeniae about 2/5 as long as total length of membrane, medially with strong triangular teeth, posteriorly with tiny triangular teeth; aculeus wide, parallel-sided, apical 3/7

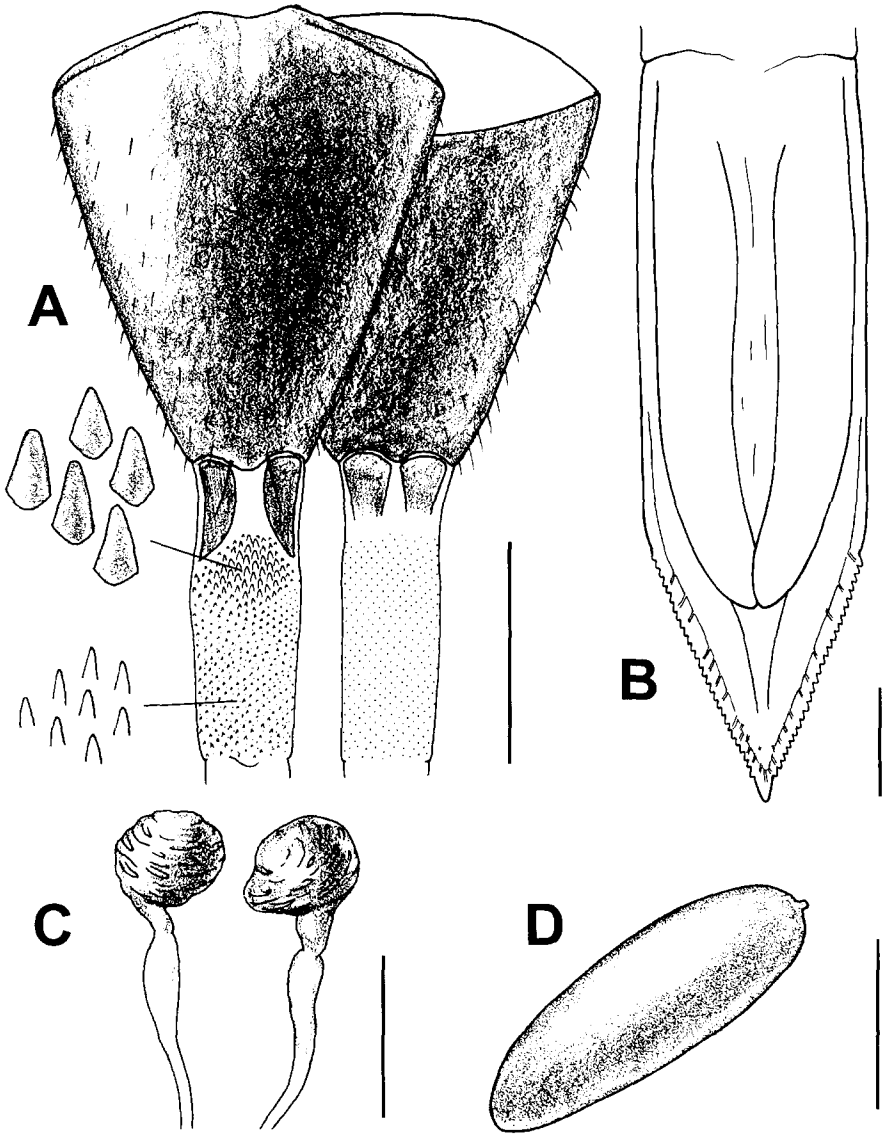

Fig. 3. *Oreurinus cuspidatus*, female. A, Ventral and dorsal view of oviscape and eversible membrane (insets show detail, about 10x of original Fig.). B, Aculeus, ventral view. C, Spermathecae. D, Egg. Scale bars=0.1 mm (B, C) and 0.5 mm (A, D).

tapered with fine lateral serrations (Fig. 3B); 2 small spermathecae pale brown with weak transverse spinular pattern (Fig. 3C); apical portion of spermathecal duct slightly swollen and darkened. Egg narrowly elliptic in outline with tiny micropylar end (Fig. 3D).

Type data: Holotype ♀, JAPAN: Honshu, Kuroya (Uzen), S. Ito; left wing mounted between small pieces of cover glasses and pinned separately; abdomen dissected and kept in a genitalia vial (UOP); Ito (1984) mentioned that the type had been collected on *Fagus*. Paratype ♀, Hokkaido, Maruyama (Isikari), 10.V.1935, I. Okada (HUS).

Specimens examined: Japan: Holotype ♀ (see "*Type data*"); Korea: Kangwon- do, Hongchun-gun, Nae-myon, Mt. Gachilbong, 25.V. 1996, 32♂, 1♀, H.Y. Han & H.W. Byun, all the males were found sitting on rocks along the mountain stream of deep woods, and the single female was swept from nearby vegetation (YSUW); Kyunggi-do, Pochun-gun, Mt. Soyosan, 15.V. 1982, 1♀, Y.J. Kwon (KNU).

Distribution: Korea (new record) and Japan.

Biology: Even though biology of *Oreurinus cuspidatus* is unknown, the larvae are likely to be leaf miners because *Trypeta* group taxa are mainly known to mine

the leaves of Compositae, Araliaceae, Lardizabalaceae, and Verbenaceae (Han et al. 1993).

Remarks: Wing pattern of this species is somewhat similar to that of *Acidiella* spp., but can be distinguished by having dark brown supracervical setae and almost entirely dark brown thoraic dorsum and abdomen (Fig. 1A).

Discussion: In the present study, *Oreurinus* is recognized as an additional member of the *Trypeta* group (subtribe Trypetina), which is a complex of genera characterized by the presence of the median granulate sclerite on the distiphallus (Fig. 2C) and the reduced subapical prensiseta (Fig. 2B) (see also Han et al., 1993; 1994a). The former is recognized as a synapomorphy for the subtribe Trypetina and the latter as a synapomorphy for the *Trypeta* group (Han et al., 1993). It has been indicated that similar granulated distiphallic areas were observed in some other taxa (Jenkins, 1996), but the granulated sclerite in Trypetina is clearly distinguished from the granulation sometimes found outside of the subtribe; in Trypetina, it is almost always extensive and well defined as elliptic to round shape bound by a basal to dorsal furrow bordering it from adjacent area (Fig. 2C; see also Han et al., 1993; 1994a; 1994b). Furthermore, it is almost always found in combination with two other characteristics: 1) dorsal sclerite with pattern of closely approximated, narrowly oblong cells (Fig. 2C); 2) aculeus wide, dorso-ventrally flattened, and apically tapered with lateral serrations (Fig. 3B). These characteristics, although not found together, have been sometimes observed outside of Trypetina (Han, 1992). Therefore, further investigation, preferably using non-morphological data set, is needed to determine whether they represent synapomorphy or convergence.

Within the *Trypeta* group, phylogenetic relationships among 13 included genera are not resolved. Superficially, *Oreurinus* has a wing pattern similar to that of *Acidiella* spp., but it was suggested that wing pattern is not a reliable indicator of generic relationships within Tephritidae (Han, 1996). I was not able to indicate any possible morphological synapomorphy relating *Oreurinus* to the other genera of the *Trypeta* group. A molecular study using 16S ribosomal DNA sequences to resolve relationships among the genera of the tribe Trypetina is under investigation (Han, unpublished data).

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