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Taxonomic revision of the family Eosentomidae (Hexapoda: Protura) from Japan

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Abstract

The family Eosentomidae from Japan is revised. A new genus, *Osientomon*, is erected and a new species is ascribed to this genus. This new genus is characterized by the short, setiform sensillum *g*, absence of sensilla *e* and *b'1* on foretarsus, and S-shaped processus sternalis and duck's head type caput processus on the female squama genitalis. Two new species are added to the genus *Pseudanisentomon* and 19 new species and 1 new record of the genus *Eosentomon* are described. As a result, 43 species belonging to 4 genera are now recognized from Japan. Taxonomic keys are provided for the identification of the genera and species from Japan.

Key words: *Eosentomon*, key, new genus, new record, new species, *Osientomon*, *Paranisentomon*, *Pseudanisentomon*, taxonomy

Introduction

The family Eosentomidae is distributed worldwide and approximately 310 species have so far been recorded (Szeptycki, 2007). In Japan, Imadaté (1974b) published a monograph of Japanese Protura and summarized 13 species of this family. However, considerable materials have been collected since then by many persons throughout Japan, and the known fauna has been significantly increased, so that twenty species are currently known in three genera.

Since Imadaté (1974b) some new and useful characters for species diagnoses, especially for the genus *Eosentomon*, have been described, among which are the chaetotaxy of the head (Szeptycki, 1984) and the structure of some elements of the mouthparts (Bernard, 1990). Further, a classification of body setae according to their shape has been given by Bernard (1990) for *Eosentomon*. These characters so far have not been examined in many of the Japanese species.

I have examined large numbers of specimens collected from Japan, including type series of the Japanese species, and recognize 43 species belonging to four genera. In this study, I review all of the species of the family Eosentomidae from Japan.

History of taxonomic and systematic studies of Eosentomidae in Japan

Yoshii (1938) described the first species of Protura, *Acerentomon nippon*, assigning it to the family Acerentomidae. Imadaté (1954) summarized collecting records of Protura from Japan and reported the occurrence of *Eosentomon* for the first time. Although he considered the specimens to represent new species, he did not describe them but reported only the occurrence of the genus. A specimen of *Eosentomon* was reported from Yakushima Island (Imadaté, 1956), but it was a juvenile and could not be identified. The first eosentomid described from Japan was *E. tuxeni* Imadaté & Yosii (1959) (now *Pseudanisentomon tuxeni*). Since then, many new species have been described and faunistic knowledge of Japanese Eosentomidae has rapidly increased (Baba & Imadaté, 1964; Imadaté, 1961a, b, 1964a, 1965a, 1969, 1974a, b; Imadaté & Nishihira, 1961, 1963). Imadaté's monograph (1974b) summarized Japanese Protura, including 13 *Eosentomon* spp. representing 5 of Tuxen's species groups (1964). Zhang & Yin (1984) reviewed the subfamily Anisentominae and created three new genera, *Neanisentomon*, *Pseudanisentomon* and *Paranisentomon*, moving one Japanese species to the genus *Pseudanisentomon* and another to *Paranisentomon*. Since the publication of Imadaté's monograph (1974b), much material has been collected from many localities in Japan, which has greatly increased the faunistic knowledge of Protura in Japan (e.g., Imadaté, 1994a, 1995; Imadaté & Harada, 1983, 1987; Imadaté & Kinjo, 1985; Imadaté & Nakamura, 1989; Imadaté & Ohnishi, 1979, 1993; Imadaté & Tanaka, 1981, 1991). This material also has been used to describe numerous new species (Imadaté, 1994b, c; Nakamura, 1983a, b, 1996, 2004b).

asakawaense is a member of this group. Three other species, *E. furunoi*, *E. kantoense* and *E. spatulatum*, possibly belong to this group because they possess the semicircular caput processus, though lacking the accessory sclerotization.

Maya-group. This group is characterized by the processus sternalis of the indistinct or “dissolved” caput processus appearing as a free rod and the corpus processus coalescing with the lateral sclerotization of stylus to form a broad or narrower structure terminating in the filum processus. Three species, *E. calvum*, *E. nupri* and *E. zhanjian-gense*, possess the “dissolved” caput processus, and therefore are assigned to this group.

Unassigned species. *Eosentomon dounanense*, *E. morei* and *E. ornatum* do not correspond to any species group. Since female specimens of *E. kimum* have not been discovered, its species group assignment can not be determined.

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