Indonemoura nohirae (OKAMOTO, 1922), comb. nov. (Plecoptera, Nemouridae) Newly Recorded from Japan, with a Redescription of Amphinemura longispina (OKAMOTO, 1922)

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Abstract Nemoura nohirae OKAMOTO, 1922, is transferred to the genus Indonemoura BAUMANN, 1975, so far unknown from Japan. Amphinemura longispina (OKAMOTO, 1922) is redescribed, since it has been confused with N. nohirae OKAMOTO. Indonemoura nohirae exhibits geographical variation in the shape of male paraproct.

Key words: Plecoptera; Nemouridae; Indonemoura; Amphinemura.

OKAMOTO (1922) described Nemoura (Protonemura) nohirae and N. (Amphinemura) longispina from Honshu in the second part of his monograph on the Japanese Plecoptera. These two species have been confused not only with each other but also with other nemourid species, and besides, their generic (or subgeneric) status has been problematical.

Kawai (1960, 1967) described and illustrated a stonefly species under the names of N. (Amphinemura) longispina (1960) and Amphinemura longispina (1967). In the former paper, he suggested that the species should be placed in Nemurella KEMPNY, 1898, or in an undescribed subgenus, because it is not typical of Amphinemura in the features of male genitalia and nymphal gills. Though it is superficially similar to N. longispina, his description and illustration clearly show that the species is in fact N. nohirae OKAMOTO. BAUMANN (1975), who was unaware of this misidentification, intended to assign the species to the genus Mesonemoura BAUMANN, 1975, but he mistook the name longispina (!) for the species (Dr. BAUMANN, pers. comm., led by an error made by KAWAI, 1960, legend of fig. 5 on p. 127).

A careful morphological study of ample materials from Honshu, Shikoku and Kyushu, has revealed that this species, N. nohirae, should be assigned to the genus Indonemoura BAUMANN, 1975, which is previously unknown from Japan. Though the types of N. nohirae and N. longispina are missing, the original descriptions and illustrations given by OKAMOTO (1922) include diagnostic features of respective species. Redescription of N. longispina (now placed in Amphinemura) below clearly shows the identity of the species in OKAMOTO's original sense, which is quite distinct from Indonemoura nohirae.
Specimens used in this study are preserved in 70–80% alcohol, and deposited in the collections of Dr. R. W. Baumann of the Brigham Young University (RWB), Dr. P. Zwick, of the Limnologische Flußstation des Max-Planck-Instituts für Limnologie (PZ), Dr. S. Uchida of the Lake Biwa Museum (SU) and the author (not indicated). They are collected by the author unless otherwise indicated.

Genus *Indonemoura* Baumann


According to Baumann (1975), this genus is characterized by 1) the sclerotized tigellus (Brinck, 1956; a spine arising from the apical half of the median lobe of the paraprocts), which is long, narrow and bearing one or more long prongs or projections, 2) the strongly sclerotized, long narrow outer lobe of paraprocts, often with one or more sharp prongs at the tip, and 3) the large heavily sclerotized subgenital plate which nearly covers very small vaginal lobet of female.

The male paraproct of *Nemoura nohirae* Okamoto is identical with the above mentioned characters (1, 2), and the assemblage is never found in nemourids except for *Indonemoura*, although the large tigellus on the median lobe of the paraproct exists in some species of the genus *Protonemura* Kemptny, 1898. Because of these agreements (1, 2), *N. nohirae* is transferred to the genus *Indonemoura*, although character (3) is not developed in *N. nohirae*, which is deemed to be primitive. The female has an enlarged vaginal lobe like that of *Protonemura*.

Nineteen species of this genus have been recorded from South and Central Asia (Baumann, 1975; Zwick, 1977; Zwick & Sivec, 1980), but has been unknown from East Asia. Its discovery from Japan suggests a wide distribution of this genus in Asia.

*Indonemoura nohirae* (Okamoto, 1922), comb. nov.

(Figs. 1–2)


*Nemoura* (*Amphinemuria*) longispina: Kawai, 1960, Mushi, Fukuoka, 34: 126, fig. 5 (also spelled *longicercia* [sic] in legend of fig. 5). Misidentification.


Additional references: Claassen (1940) for *N. nohirae*; Kohno (1957) for *N. (P.) nohirae*; Illies (1966) and Kawai (1976) for *P. nohirae*.

Okamoto (1922) described the forked outer lobe and the branched tigellus of the male paraproct (in Taf. IV/7 & 8). These characteristics agree well with the
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Fig. 1. Male of *Indonemoura nohira*(OKAMOTO). A–C, Terminalia in dorsal (A) and ventral (B) views; epiproct in lateral view (C), from Ishi-kawa, Kawachinagano-shi, Osaka. D–E, Variation of the paraproct, left outer lobe in dorsolateral view (E) and right tigellus in ventrolateral view (D): specimen from Tokyo (E1 & D2); Kanagawa (E2 & D1); Kyoto (E3); Nishikuma-keikoku, Kochi (D4 & E4); Mt. Ishizuchi, Ehime (E5 & D3); Tottori (D5).
male examined in this study, and with the male illustrated by Kawai (1967, fig. 9 C). This agreement is sufficient for identifying the males below with *nohirae*, although the type is presently missing.

**Male.** Macropterous; forewing 8.0-11.0 mm long. General colour blackish; antennae, head, thoraces, legs and abdomen blackish; wings dark blackish. Outer margin of cervical sclerite slightly swollen and extending laterally. Sternite IX with a slender vesicle; subgenital plate weakly convex, expanded posteriorly, then tapering to a blunt tip. Tergites V to VIII weakly sclerotized along each anterior margin, covered with minute hairs except for a pair of small bald spots. Tergite IX sclerotized and bearing many short setae posteriorly on both sides of postero-mesal membranous field. Tergite X bearing short setae around epiproct, area below of which is membranous anteriorly and concave posteriorly. Cercus slender conical. Paraproct divided into three lobes: inner lobe sclerotized, extending backwards; median lobe small, with developed tigellus, which sometimes bears a short spine bent upwards along inner margin; outer lobe extended upwards, forming a spindle-like projection which bears one or more spines along the length. Epiproct with melanized sclerite each on basal, dorsal and ventral part, slightly asymmetrical in dorsal view. Dorsal sclerite extending anteriorly along both lateral sides as a paired arms; a branch of the arm forming a wide plate expanded dorsally; the left plate often slightly more expansive than the right one, and making the dorsal groove minute to the right. Ventral sclerite with a pair of small knobs near base, gradually protruded ventrally and narrowed towards apex; keel bearing many setae on surface; apex forming a filamentous projection internally.

**Female.** Similar in general features to male. Forewing 8.5-12.5 mm long.

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Fig. 2. Female of *Indonemoura nohirae* (OKAMOTO). A, Terminalia in ventral view. B, Vagina in dorsal view.
Sternite VII slightly extending posteromesally and sometimes weakly sclerotized to form pregenital plate. Sternite VIII with large subgenital plate and a pair of large round vaginal lobes. Subgenital plate shallowly indented on hind margin at midline, bearing a rugose groove along midline. Vagina sclerotized latero-ventrally and antero-internally.

Variation. This species shows some geographical variation in the shape of the tigellus and the outer lobe of the male paraproct. The tigellus is usually simple and spindle-shaped; it is wide and bears usually a short, sometimes a long spine on the inner margin in the males from Osaka, Ehime, Kōchi and Fukuoka Prefectures; it has blunt apex which bears one or two small spines in the males from Ōita and Kumamoto; a male from Tottori has several small spines at the apex and the inner side of the tigellus. The outer lobe of the male paraproct is simple without any spines nor forks in most males from Ehime and Kōchi, while it bears one spine near the base in the males from Tokyo, northern Yamanashi, Ōita and Kumamoto, and one or more spines near the apex in the males from Toyama, Osaka, Kōchi and Tottori; it is forked near the apex and often bears a few small spines in the males from Kanagawa, southern Yamanashi, Nara and Fukuoka. In the males from western Honshu (Tottori), Shikoku and Kyushu, the male epiproct is somewhat angulated ventrally and depressed at the apex, and the apical projection is not visible.

Distribution. Japan (Honshu, Shikoku, Kyushu). This species was described by Okamoto (1922) from central Honshu, and many distributional data were added by Kohn (1957) and Kawai (1960, 1967). Kohn did not redescribe the species, and Kawai misidentified it with longispina in his papers. It is therefore not certain if the distributional data of this species previously recorded really belong to this species or not. Kawai (1968) recorded A. longispina from Okinawa, Ishigaki and Iriomote Islands without illustrations.

Amphinemura longispina (Okamoto, 1922)

(Fig. 3)


Additional references: Claassen (1940), Illies (1966) and Zwick (1973) for Amphinemura longispina.

Male. Macropterous; forewing 5.5–6.5 mm long. General colour brown; wings subhyaline, brownish. Antennae, pterothoraces and legs brownish. Pronotum reddish brown, closely punctured or fully reticulate. Sternit IX with a slender vesicle; subgenital plate slender, rugose apex of which tapers to a blunt tip. Tergite IX sclerotized except for a wide membranous area on mid-line, bearing several bristles and setae posteriorly along the boundary of membranous and sclerotized areas. Tergite X weakly concave below epiproct and membranous at mid-line, and bearing some setae around the apex of epiproct. Cercus blunt. Paraproct divided into three lobes: inner lobe simple and extending posteriorly; median lobe elongate, extending upwards than inwards, apex forming a spindle notched ventrally and extending outwards; outer lobe rather small, without setae and spines. Epiproct with a slender process antero-mesally; dorsal sclerite extending anteriorly along both sides, then divided into two arms which bear many setae on each swollen apex; ventral sclerite extending anteriorly along keel, bearing many setae beneath swollen part near apex.

Female. Similar in general features to male. Forewing 6.5–8.0 mm long. Sternite VII with a small sclerotized pregenital plate postero-mesally. Each side of sternite VIII weakly sclerotized posteriorly. Subgenital plate large; both sides of hind end rounded expanded and covering small vaginal lobes, and bearing a deep...
notch on hind margin at mid-line. Vagina almost membranous but weakly sclerotized anteriorly.

Affinities. No similar species are known to the present author, although sim-
ilarly punctured pronotum has been observed in the members of the Asian *A. luteipes* group (Zwick, 1977; Zwick & Sivec, 1980). This species is easily separable from other relatives by the characteristic state of the male terminalia: the divided dorsal sclerite of the epiproct, and the spindle-like projection of the paraprocts.

**Distribution.** Japan (Honshu).


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References


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New Record of *Adalia bipunctata* (Linnaeus) (Coleoptera, Coccinellidae) from Japan

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Key words: *Adalia bipunctata*: Coccinellidae; new record from Japan.

*Adalia bipunctata* (Linnaeus) is a well-known predacious lady beetle distributed in Europe, Central Asia and North America (HODEK, 1973). This species has not been recorded from Japan (SASAJI, 1971; HIRASHIMA, 1989).

I collected two adults of *A. bipunctata* in Osaka, Japan. These are the first record