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A New Species of Marine Interstitial Tardigrada of the Genus *Hypsibius* from Hokkaido, Northern Japan

With 1 Text-figure

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ABSTRACT A new species of the genus *Hypsibius* (Eutardigrada, Macrobiotidae) is described from an interstitial habitat of Ishikari on the Japan Sea Coast of Hokkaido, Japan. The new species resembles *H. appelloefi* (Richters, 1908) in the structure of mouth parts, but apparently differs from the latter in the absence of microplacoid as well as eye pigment spots. This is the first record of marine species of Eutardigrada from Japan.

The marine tardigrade fauna of Japan has so far been poorly known. Up to the present two marine species belonging to the order Heterotardigrada have been recorded from Japan: *Echiniscoides sigismundi* (Schultze, 1865) by Morikawa (1951, 1965), *Actinarctus* sp. by Sudzuki (1979). Recently, I had an opportunity to examine some tardigrade specimens which were found among interstitial animals collected at an exposed sandy beach of Ishikari on the Japan Sea coast of Hokkaido, northern Japan, by Dr. T. Itô of Hokkaido University. Through a close examination, this material proved to be of a new species of the genus *Hypsibius* Ehrenberg (subgenus *Isohypsibius* Thulin) belonging to the family Macrobiotidae of the order Eutardigrada. Although the marine species of Eutardigrada, which are represented by three species of the genus *Hypsibius* (subgenus *Isohypsibius*) have been known from some coasts of the northern Europe facing the Atlantic Ocean, the North Sea, the Baltic Sea, and the Black Sea, no record of marine *Hypsibius* species has hitherto been published from the Pacific including its marginal seas; therefore, the occurrence of this new species in Japan will be of a significance for further considerations about zoogeography of marine tardigrades.

Order EUTARDIGRADA
Family Macrobiotidae

Hypsibius (Isohypsibius) itoi n. sp.

(Fig. 1)

Type-series. The following seven specimens were designated as the type-series: holotype and one paratype (29–VIII–1974, T. Itô leg.), four paratypes (30–VII–1973, T. Itô leg.), and one paratype (23–X–1973, T. Itô leg.). Type-locality: Ishikari, Hokkaido, northern Japan. The type-series is deposited in the Zoological Museum, Faculty of Science, Hokkaido University.

All the specimens, which were extracted from quantitative samples of intertidal or supralittoral sands by means of decanting and sieving method with tap-water (see Itô, 1980), were fixed with 2% formalin solution and mounted onto slides with Hoyer's medium.

Description. Body medium-sized, plump, and cuticle smooth. Legs of medium length. Eye pigment spots absent. Mouth tube relatively short and thick. Pharynx oval, containing apophysis and 3 macroplacoids. First macroplacoid nearly

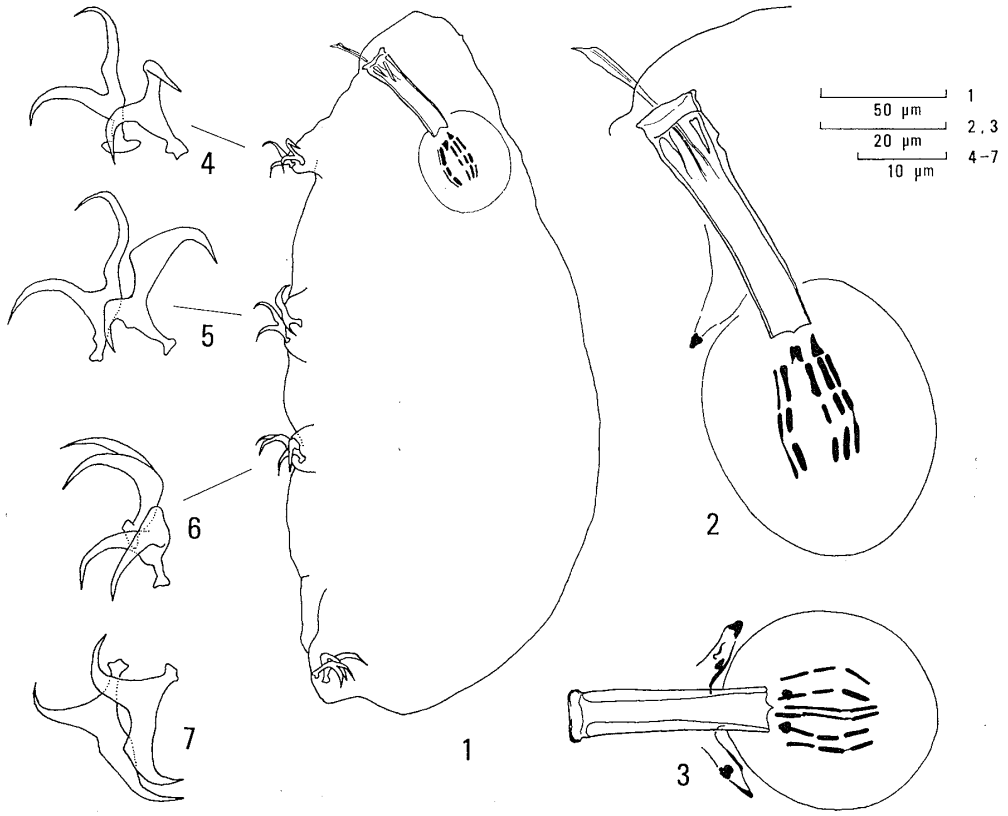

Fig. 1. *Hypsibius itoi* sp. nov. (1, 2 and 4–6, holotype; 3, 7, paratype-IV). —— 1, Habitus, lateral; 2, mouth parts, lateral; 3, ditto, dorsal; 4–7, claws of legs I–IV.

as long as or somewhat longer than third macroplacoid. Second macroplacoid shorter than first and third macroplacoids. Microplacoid absent. Claws relatively large, lacking in accessory points.

Measurements (in micra). I, holotype; II–VII, paratypes (II, 29–VIII–1974; III–VI, 30–VII–1973; VII, 23–X–1973).
L: length, W: width, D: distance.

	I	II	III	IV	V	VI	VII
Body L excluding leg IV	293	175	407	225	248	230	190
Body L including leg IV	307	192	433	—	258	253	202
Body W	—	56	—	81	—	—	51
Mouth parts L	78.8	53.3	84.9	59.1	—	72.4	—
Mouth tube L	42.2	28.4	43.5	33.2	36.9	40.3	35.1
Mouth tube, outer diameter	9.1	4.1	7.4	7.1	8.0	7.3	4.3
Mouth tube, inner diameter	5.8	3.6	5.8	3.1	5.8	5.3	3.2
Stylet supports D from base	15.6	12.6	—	10.8	10.2	—	10.0
Stylet supports-mouth D	36.2	23.1	40.3	29.1	35.5	36.9	30.5
Circular pharynx L	43.9	31.6	46.9	33.7	—	—	—
Circular pharynx W	36.6	24.9	41.2	31.8	—	—	—
Macroplacoid I L	5.5	3.6	6.1	4.6	4.8	5.8	3.8
Macroplacoid II L	3.6	2.6	4.7	4.0	4.1	3.6	2.6
Macroplacoid III L	5.2	2.9	6.2	4.5	4.3	5.5	3.3
Leg I L	23	15	28	—	23	20	14
Leg II L	21	—	28	—	22	16	13
Leg III L	21	—	25	—	23	13	13
Claw on leg IV L	19.6	10.3	21.5	17.5	18.5	17.5	13.5

Remarks. Up to the present, the following three species of the order Eutardigrada have been described from marine habitats: *Hypsibius* (*I.*) *stenostomus* (Richters, 1908), *H.* (*I.*) *appelloefi* (Richters), and *H.* (*I.*) *geddesi* Hallas, 1971. Because of the pronounced resemblance in not only their morphology but also habitats, these species are referred to the *H. stenostomus*-complex (Hallas, 1971).

The present new species also resembles these species and, especially, shows a close similarity to *H. appelloefi* in the arrangement of the macroplacoids. The new species, however, is easily distinguishable from any species of these by the lack of microplacoid and eye spots. Further, this species is characterized by the possession of a relatively wide mouth tube and smaller claws as compared with the others. Diagnostic characters among these species of *H. stenostomus*-complex are summarized in Table 1 on the basis of the information given by Richters (1908), Marcus (1936), Hallas (1971) and others.

The trivial name is given in honor of Dr. T. Itô who collected the present material.

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Table 1
Comparison of diagnostic characters among four marine species of *Hypsibius* and their distribution.

Character	*stenostomus*	*appelloefi*	*itoi* n. sp.	*geddesi*
Body	plump	plump	plump	not plump
Body length (μm)	up to 550	435–544	175–407, $\bar{x}$=253 (n=7)	258–518 $\bar{x}$=434 (n=5)
Inner diameter of mouth tube (μm)	ca. 1.5	3–3.9	3.1–5.8, $\bar{x}$=4.7 (n=7)	2.4–3.3, $\bar{x}$=2.8 (n=5)
Relation among the length of macroplacoids	1st≒3rd<2nd	2nd<3rd≦1st	2nd<3rd≦1st	3rd≦2nd<1st
Microplacoid	present	present	absent	present
Eye spots	present	present	absent	present
Length of claw on leg IV (μm)	32–39	35–46.0	10.3–21.5, $\bar{x}$=17.0 (n=7)	20.6–49.0, $\bar{x}$=37.7 (n=5)
Accessory points on the claws	present (small or completely lacking on some claws)	same as *stenostomus*	absent	present (absent in some specimens?)
Distribution	Baltic Sea, and Black Sea (?)	North Sea, Baltic Sea	Ishikari, Hokkaido Sea of Japan	Norwegian Sea, Kattegat Str.

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