

Marine Isopoda from the Rocky Shore of Osaka Bay, Middle Japan (2)*

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大阪湾沿岸岩礁海岸産等脚目(2)

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前報にひきつづき、大阪市立自然史博物館に所蔵されている大阪湾沿岸岩礁海岸産の等脚目甲殻類について、主として有扇亜目コツブムシ科を中心に報告した。本科には形態の変異が顕著である種も多く含まれ、本報では原記載との相違がみられたものについては、その点を注記した。今回報告するのは、ミズムシ亜目の1追加種を含め、次の9種である。

Suborder Flabellifera 有扇亜目

Family Sphaeromatidae コツブムシ科

Cymodoce japonica RICHARDSON ニホンコツブムシ (ウミセミ)

Holotelson tuberculatus RICHARDSON チビウミセミ

Dynoides dentisimus SHEN シリケンウミセミ

Dynoidella conchicola NISHIMURA カイヤドリウミセミ

Gnorimosphaeroma rayi HOESTLANDT イソコツブムシ

G. latum NISHIMURA ハバヒロコツブムシ

G. salebrosum NISHIMURA ヨロイコツブムシ

Leptosphaeroma gottschei HILGENDORF ヒラタウミセミ

Suborder Asellota ミズムシ亜目

Family Janiridae ウミミズムシ科

Jaeropsis lobata RICHARDSON ヒラタウミミズムシ

Succeeding the previous report (NUNOMURA, 1975), which dealt with the suborders Anthuridea, Asellota, Valvifera and Oniscoidea, the present paper is intended to report the occurrences of eight species of the family Sphaeromatidae (suborder Flabellifera) and a single species of the family Janiridae (suborder Asellota) on the rocky shore of Osaka Bay, together with short notes on the morphological variations or taxonomic status of certain species.

The study is based wholly on the material deposited at the Osaka Museum of Natural History (OMNH), and the authors wish to express their hearty thanks to all the gentlemen who contributed to the augmentation in isopod collections at that institution.

* Contributions from the Osaka Museum of Natural History, No. 201.

* Contributions from the Seto Marine Biological Laboratory, No. 633.

Family SPHAEROMATIDAE

***Cymodoce japonica* RICHARDSON, 1906**

(Japanese name: Nihon-Kotsubumushi or Umisemi)

Cymodoce japonica RICHARDSON, 1906, Proc. U. S. Nat. Mus., vol. 31, pp. 7-8, fig. 11 (description, male). ———, RICHARDSON, 1909, Ibid., vol. 37, p. 92 (Hakodate, Otaru, Nanao, Mororan, Oki, Sea of Japan). ———, RICHARDSON, 1910, Bureau Fish. Document, no. 736, p. 28 (Mindanao). ———, THIELEMANN, 1910, Abh. Math.-Phys. Kl. K. Bayer. Akad. Wiss., Suppl.-Bd. 2, Abh. 3, pp. 53-56, figs. 48-51 (Sagami Bay, Yokohama; morphology). ———, GURJANOVA, 1936, Fauna SSSR, Rakoobraznye, tom VII, vyp. 3, pp. 117-119, fig. 66 (Peter the Great Bay, Port Arthur, Nagasaki, Yokohama, Hakodate; morphology, ecology). ———, SHIINO, 1944, Misc. Rep. Res. Inst. Nat. Resources, no. 7, pp. 8-12, figs. 7-9 (Akkeshi, Amakusa; morphology). ———, IWASA, 1947, Ill. Encycl. Fauna Japan, rev. ed., p. 818, fig. 2357 (male & female). ———, HATCH, 1947, Univ. Washington Publ. Biol., vol. 10, pp. 214-215, figs. 150-153 (Washington? introduced from Japan). ———, SHIINO, 1957, Wasman J. Biol., vol. 15, pp. 172-178, figs. 7-9 (Akkeshi, Amakusa; morphology). ———, SHIINO, 1965, New Ill. Encycl. Fauna Japan, vol. II, p. 547, fig. 738 (male & female).

Cymodoce affinis RICHARDSON, 1906, Proc. U. S. Nat. Mus., vol. 31, pp. 11-12, fig. 15 (female).

? *Cymodoce acuta* RICHARDSON, 1904, Proc. U. S. Nat. Mus., vol. 27, pp. 38-39, figs. 8-10. ———, THIELEMANN, 1910, Abh. Math.-Phys. Kl. K. Bayer. Akad. Wiss., Suppl.-Bd. 2, Abh. 3, p. 56.

Material Examined: 1 ♀ (OMNH-Ar-601), West coast of Tomogashima, Wakayama City, Wakayama Pref., coll. I. HAMATANI, July 30, 1954; 1 ♂, 1 ♀ (OMNH-Ar-602), Ôkawa, Wakayama City, Wakayama Pref., coll. I. HAMATANI, Aug. 15, 1954; 1 ♀ (OMNH-Ar-603), Ôkawa, Wakayama City, Wakayama Pref., coll. I. HAMATANI, Aug. 25, 1954; 1 ♂ (OMNH-Ar-604), Ôkawa, Wakayama City, Wakayama Pref., coll. I. HAMATANI, May 22, 1955; 1 ♀ (OMNH-Ar-605), Toyokunizaki, Misaki-chô, Osaka Pref., coll. Y. SHIBATA, May 12, 1964; 1 ♂, 1 ♀ (OMNH-Ar-606), Jôgasaki, Wakayama City, Wakayama Pref., coll. Y. FUKUI, Mar. 8, 1974; 1 ♂, 1 ♀ (OMNH-Ar-607), Tagurazaki, Wakayama City, Wakayama Pref., coll. N. NUNOMURA, Mar. 24, 1974.

***Holotelson tuberculatus* RICHARDSON, 1909**

(Japanese name: Chibi-umisemi)

Holotelson tuberculatus RICHARDSON, 1909, Proc. U. S. Nat. Mus., vol. 37, pp. 93-94, figs. 17-20 (Mororan; description). ———, GURJANOVA, 1936, Fauna SSSR, Rakoobraznye, tom VII, vyp. 3, pp. 112-114, fig. 63 (Peter the Great Bay; morphology, ecology). ———, IWASA, 1947, Ill. Encycl. Fauna Japan, rev. ed., p. 819, fig. 2358. ———, SHIINO, 1965, New Ill. Encycl. Fauna Japan, vol. II, p. 547, fig. 739. ———, KUSSAKIN, 1974, Rast. Zhivot. Mir Litorali Kuril. Ost., pp. 236-237, fig. 7 (Kunashiri, Shikotan; ecology).

Material Examined: 6 exs. (OMNH-Ar-608), Minami-tannowa, Misaki-chô, Osaka Pref., coll. I. HAMATANI, May 25, 1952; 1 ♂ (OMNH-Ar-609), Toyokunizaki, Misaki-chô, Osaka Pref., coll. Y. SHIBATA, May 12, 1964.

***Dynoides dentisinus* SHEN, 1929**

(Japanese name: Shiriken-umisemi)

Dynoides dentisinus SHEN, 1929, Bull. Fan Mem. Inst. Biol., vol. 1, pp. 65-78, figs. 1-23 (Pechihli Bay to Tsingtao; description, male only). ———, IWASA, 1947, Ill. Encycl. Fauna Japan, rev. ed., p. 819, fig. 2359 (male & female). ———, SHIINO, 1965, New Ill. Encycl. Fauna Japan, vol. II, p. 547, fig. 740 (do.) ———, KUSSAKIN, 1974, Rast. Zhivot. Mir Litorali Kuril. Ost., p. 238, fig. 9 (Kunashiri; ecology).

Material Examined: 24 ♂, 34 ♀ (OMNH-Ar-610), Ôkawa, Wakayama Pref., coll. N. NUNOMURA, Mar. 23, 1974; 1 ♂, 1 ♀ (OMNH-Ar-611), Ôkawa, Wakayama City, Wakayama Pref., coll. Y. NAKAJIMA, Mar. 23, 1974; 2 ♂, 5 ♀ (OMNH-Ar-612), Jôgasaki, Wakayama City, Wakayama Pref., among the colonies of algae, *Corallina* sp. and *Sargassum* sp., coll. N. NUNOMURA, Apr. 6, 1974; 1 ♀ (OMNH-Ar-613), Ebisuzaki, Wakayama City, Wakayama Pref., coll. N. NUNOMURA, Apr. 7, 1974; 1 ♂, 2 ♀ (OMNH-Ar-614), Jôgasaki, Wakayama City, Wakayama Pref., coll. N. NUNOMURA, June 2, 1974; 3 ♂, 9 ♀ (OMNH-Ar-615), Jôgasaki, Wakayama City, Wakayama Pref., among the colonies of red algae, *Corallina* spp., coll. Y. NAKAJIMA, May 11, 1975.

Remarks: An aberrant specimen is included in the museum collection. The specimen (OMNH-Ar-616) is a male and agrees quite well with the original description of *Dynoides dentisinus* SHEN except for lack of the characteristic large conical process pointed posteriorly and the sutures on the dorsal surface of pleon (Fig. 1). This specimen is thought, in all probability, to be a malformed male of *Dynoides dentisinus*. It was collected at Myôjinzaki, Misaki-chô, Osaka Pref. by N. NUNOMURA on Aug. 27, 1976.

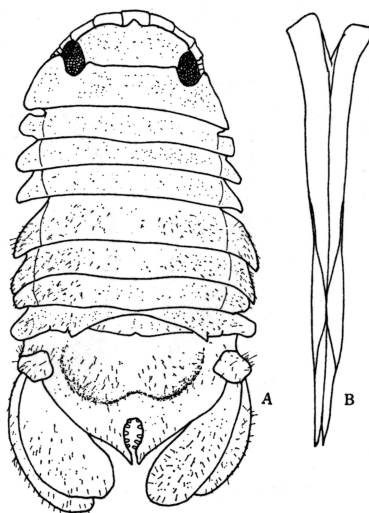


Fig. 1. An aberrant specimen (OMNH-Ar-616), possibly a malformed male of *Dynoides dentisinus* SHEN. A. Dorsal view. B. Penes.

***Dynoidella conchicola* NISHIMURA, 1976**

(Japanese name: Kaiyadori-umisemi)

Dynoidella conchicola NISHIMURA, 1976 b, Publ. Seto Mar. Biol., vol. 23, pp. 275~282, figs. 1~19 (Sirahama; description, ecology).

Material Examined: 1 ex. (OMNH-Ar-617), Toyokunizaki, Misaki-chô, Osaka Pref., coll. Y. SHIBATA, May 12, 1964; 4 exs. (OMNH-Ar-618), Tarui, Sennan City, Osaka Pref., coll. N. NUNOMURA, Oct. 29, 1974; 26 exs. (OMNH-Ar-619), Toyokunizaki, Misaki-chô, Osaka Pref., associated with the limpet, *Notoacmaea concinna concinna* (LISCHKE), coll. N. NUNOMURA, Oct. 30, 1974; 3 exs. (OMNH-Ar-620), Jôgasaki, Wakayama City, Wakayama Pref., coll. N. NUNOMURA, Apr. 6, 1974; 1 ex. (OMNH-Ar-621), Jôgasaki, Wakayama City,

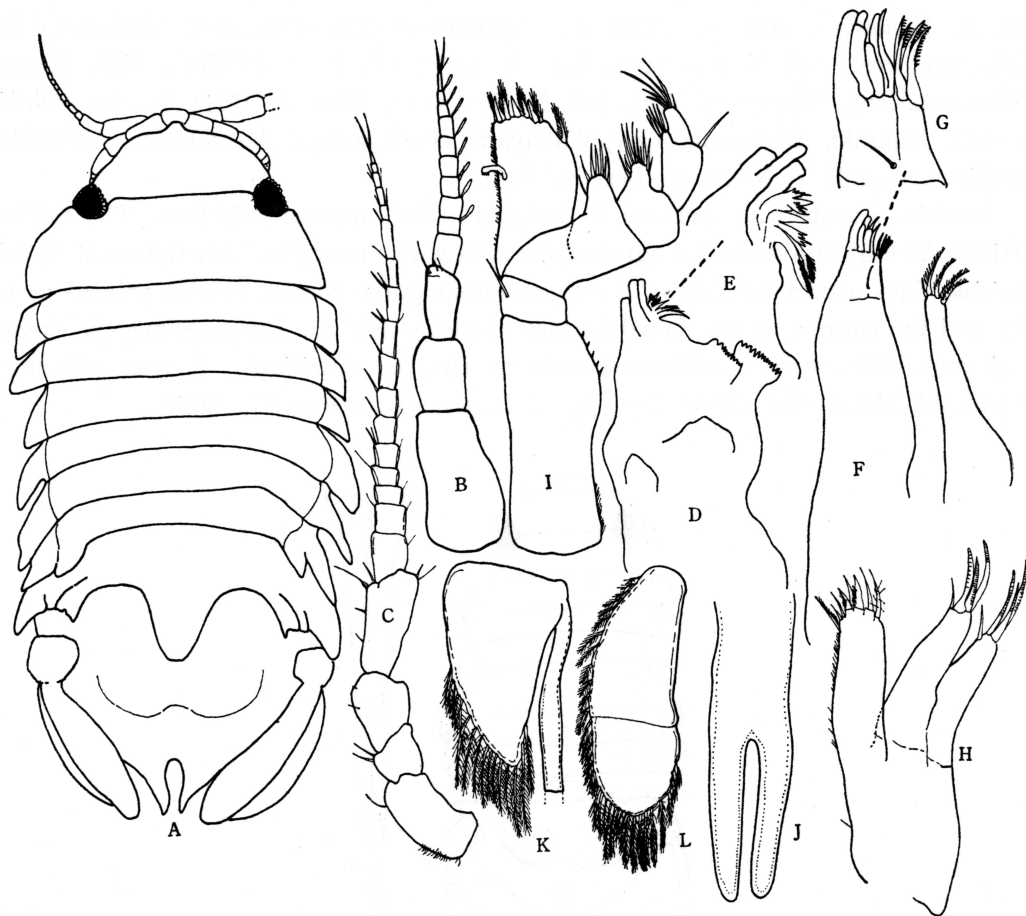


Fig. 2. A male specimen of *Dynoidella conchicola* NISHIMURA, with a dorsal process (OMNH-Ar-628). A. Dorsal view. B. First antenna. C. Second antenna. D-E. Right mandible. F-G. First maxilla. H. Second maxilla. I. Maxilliped. J. Penes. K. Second pleopod. L. Third pleopod.

Wakayama Pref., associated with the limpet, *Notoacmaea concinna concinna*, coll. N. NUNOMURA, May 11, 1975; 2 exs. (OMNH-Ar-622), Jôgasaki, Wakayama City, Wakayama Pref., coll. N. NUNOMURA, Oct. 20, 1975; 1 ex. (OMNH-Ar-623), Tagurazaki, Wakayama City, Wakayama Pref., coll. N. NUNOMURA, May 15, 1976; 5 exs. (OMNH-Ar-624), Jôgasaki, Wakayama City, Wakayama Pref., coll. N. NUNOMURA, May 30, 1976; 1 ex. (OMNH-Ar-625), Nagasaki (Misaki-Kôen), Misaki-chô, Osaka Pref., coll. N. NUNOMURA, July 9, 1976; 3 exs. (OMNH-Ar-626), Myôjinzaki, Misaki-chô, Osaka Pref., coll. N. NUNOMURA, July 12, 1976; 9 exs. (OMNH-Ar-627), Myôjinzaki, Misaki-chô, Osaka Pref., coll. N. NUNOMURA, Aug. 27, 1976.

Remarks: The present tiny sphaeromatid, recently described on the specimens found attached beneath limpets or limpet-like snails (*Cellana* and *Theliostyla*) in Sirahama, Wakayama Prefecture, was also discovered in Osaka Bay in association with the limpet so far as collector's notes were available, though the host species was different from those in Sirahama. It seems that the isopod takes refuge under the limpet or limpet-like snail met with most commonly in respective places, since *Notoacmaea concinna concinna* is one of the most common limpets in Osaka Bay while *Cellana* and *Theliostyla* are abundant intertidal snails in Sirahama.

As regards the taxonomic status of the present species, on the other hand, there is a possibility that it might be a juvenile form of *Dynoides dentisinus* SHEN. A single specimen (OMNH-Ar-628) from Koike, Misaki-chô, Osaka Pref., coll. N. NUNOMURA, Mar. 28, 1975 is very interesting in this connection (Fig. 2). It is a male and agrees on the whole well with the description of *Dynoidella conchicola*, but it has a blunt conical process pointed posteriorly on the dorsal surface of pleon though not so long as in *Dynoides dentisinus* SHEN. The specimen measures 5.0 mm in body length. To much regret, it is not known whether the specimen was associated with a snail or was found in the free-living state.

***Gnorimosphaeroma rayi* HOESTLANDT, 1969**

(Japanese name: Iso-kotsubumushi)

Exosphaeroma oregonensis (DANA), THIELEMANN, 1910, Abh. Math.-Phys. Kl. K. Bayer. Akad. Wiss., Suppl.-Bd. 2, Abh. 3, pp. 51-53, figs. 41-47 (Misaki; morphology). ———, SHIINO, 1960, Encycl. Zool. Ill. Col., vol. IV, p. 125, pl. 62, fig. 11.

Neosphaeroma oregonensis (DANA), GURJANOVA, 1936, Fauna SSSR, Rakoobraznye, tom VII, vyp. 3, pp. 123-124, fig. 70 (Maritime Coast, Tartary Straits; morphology, ecology). ———, IWASA, 1947, Ill. Encycl. Fauna Japan, rev. ed., p. 818, fig. 2355.

Gnorimosphaeroma oregonensis (DANA), SHIINO, 1965, New Ill. Encycl. Fauna Japan, vol. II, p. 546, fig. 736.

Gnorimosphaeroma rayi HOESTLANDT, 1969, C. R. Acad. Sci. Paris, tome 268, pp. 325-327 (description). ———, HOESTLANDT, 1973, Arch. Zool. exp. gén., tome 114, pp. 380-390, figs. 19-26 (morphology). ———, HOESTLANDT, 1975, Publ. Seto Mar. Biol. Lab., vol. 22, pp. 31-46, figs. 1, 4-10 (morphology, distribution).

? *Exosphaeroma oregonensis* (DANA) ?, TATTERSALL, 1925, Mem. Asiat. Soc. Bengal, vol. 6, pp. 421-

422, pl. XVI, figs. 1-5 (Shanghai, fresh water; morphology).

? *Exosphaeroma oregonensis* (DANA), UÉNO, 1936, Bull. Biogeogr. Soc. Japan, vol. 6, p. 248 (Kunashiri). ———, SHIINO, 1944, Misc. Rep. Res. Inst. Nat. Resources, no. 7, pp. 12-15, figs. 10-11 (Akkeshi, Tsuiyama; morphology, ecology).

? *Exosphaeroma ovata* GURJANOVA, SHIINO, 1957, Wasman J. Biol., vol. 15, pp. 178-182, figs. 10-11 (Akkeshi, Tsuiyama; morphology, ecology).

Material Examined: 51 exs. (OMNH-Ar-629), Takinochaya, Tarumi, Kôbe City, Hyôgo Pref., coll. Y. SHIBATA, Mar. 28, 1960; 1 ♂ (OMNH-Ar-630), Honmachi, Izumi-Sano City, Osaka Pref., coll. N. NUNOMURA, Oct. 29, 1974; 306 exs. (OMNH-Ar-631), Hama-Kôshien, Nishinomiya City, Hyôgo Pref., among the colonies of the barnacle, *Balanus (Balanus) amphitrite amphitrite* DARWIN, coll. N. NUNOMURA, Nov. 3, 1974; 11 exs. (OMNH-Ar-632), Hama-Kôshien, Nishinomiya City, Hyôgo Pref., coll. Y. FUJITA, Nov. 17, 1975; 1 ex. (OMNH-Ar-633), Nagasaki (Misaki-Kôen), Misaki-chô, Osaka Pref., coll. N. NUNOMURA, Aug. 13, 1976.

***Gnorimosphaeroma latum* NISHIMURA, 1968**

(Japanese name: Habahiro-kotsubumushi)

Gnorimosphaeroma lata NISHIMURA, 1968, Publ. Seto Mar. Biol. Lab., vol. 16, pp. 273-280, figs. 1-5 (Sirahama; description).

Material Examined: 9 ♂, 3 ♀ (OMNH-Ar-634), Nagasaki (Misaki-Kôen), Misaki-chô, Osaka Pref., coll. Y. SHIBATA, Mar. 9, 1959; 13 exs. (OMNH-Ar-635), Kada, Wakayama City, Wakayama Pref., coll. N. NUNOMURA, Mar. 13, 1975; 28 exs. (OMNH-Ar-636), Tagura-

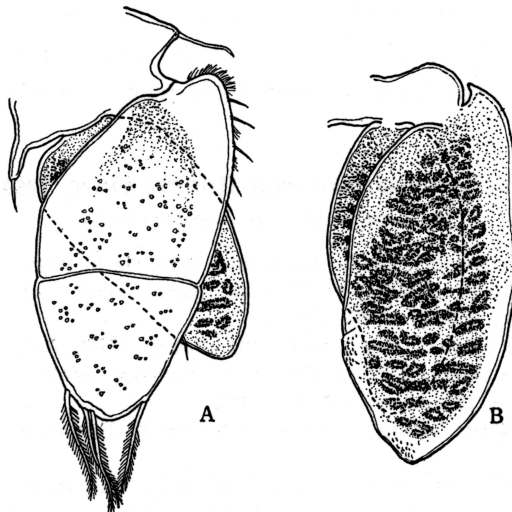


Fig. 3. Pleopods of *Gnorimosphaeroma latum* NISHIMURA, male, from the coast of Misaki-chô, Osaka Prefecture (OMNH-Ar-634). A. Fourth pleopod. B. Fifth pleopod.

zaki, Wakayama City, Wakayama Pref., coll. N. NUNOMURA, Mar. 13, 1975; 27 exs. (OMNH-Ar-637), Koike, Misaki-chô, Osaka Pref., coll. N. NUNOMURA, Mar. 28, 1975; 12 exs. (OMNH-Ar-638), Kada, Wakayama City, Wakayama Pref., coll. N. NUNOMURA, Jan. 19, 1976; 5 exs. (OMNH-Ar-639), Nagasaki (Misaki-Kôen), Misaki-chô, Osaka Pref., coll. N. NUNOMURA, Aug. 13, 1976.

Remarks: The exopod of 4th pleopod is usually incompletely segmented, and that of 5th pleopod not segmented and lacks squamiferous areas on inner margin in the specimens from Sirahama, the type locality (NISHIMURA, 1968). Among the samples from Nagasaki (Misaki-Kôen), Misaki-chô (OMNH-Ar-634), on the other hand, some male specimens were found to have the exopod of 4th pleopod completely segmented and that of 5th pleopod slightly notched and bearing two squamiferous areas on inner margin (Fig. 3).

***Gnorimosphaeroma salebrosum* NISHIMURA, 1969**

(Japanese name; Yoroï-kotsubumushi)

Gnorimosphaeroma salebrosum NISHIMURA, 1969, Publ. Seto Mar. Biol. Lab., vol. 16, pp. 385-393, figs. 1-5 (Sirahama; description).

Material Examined: 9 exs. (OMNH-Ar-640), Nagasaki (Misaki-Kôen), Misaki-chô, Osaka Pref., coll. Y. SHIBATA, Apr. 26, 1960; 17 exs. (OMNH-Ar-641), Toyokunizaki, Misaki-chô, Osaka Pref., coll. Y. SHIBATA, May 12, 1964; 19 exs. (OMNH-Ar-642), Nagasaki (Misaki-Kôen), Misaki-chô, Osaka Pref., coll. N. NUNOMURA, Aug. 9, 1976; 19 exs. (OMNH-Ar-643), Myôjinzaki, Misaki-chô, Osaka Pref., coll. N. NUNOMURA, Aug. 27, 1976.

***Leptosphaeroma gottschei* HILGENDORF, 1885**

(Japanese name: Hirata-umisemi)

Leptosphaeroma Gottschei HILGENDORF, 1885, Sitzungsber. Naturforsch. Freunde Berlin, Jahrg. 1885, pp. 185-187 (Mogi, Kyushu; description).

Leptosphaeroma gottschei HILGENDORF, NISHIMURA, 1976a, Publ. Seto Mar. Biol. Lab., vol. 23, pp. 169-177, figs. 1-26 (Kôbe, Amakusa; redescription, juvenile form).

Material Examined: 11 exs. (OMNH-Ar-644), North coast of Tomogashima, Wakayama City, Wakayama Pref., coll. I. HAMATANI, July 4, 1954; 2 ♂ (OMNH-Ar-645), Takinochaya, Tarumi, Kôbe City, Hyôgo Pref., coll. Y. SHIBATA, Mar. 28, 1960. These two specimens were already cited in NISHIMURA's paper (NISHIMURA, 1976a); 8 exs. (OMNH-Ar-646), Toyokunizaki, Misaki-chô, Osaka Pref., coll. Y. SHIBATA, May 12, 1964; 4 exs. (OMNH-Ar-647), Toyokunizaki, Misaki-chô, Osaka Pref., coll. N. NUNOMURA, Aug. 12, 1976.

Family JANIRIDAE

***Jaeropsis lobata* RICHARDSON, 1899**

(Japanese name: Hirata-umimizumushi)

Jaeropsis lobata RICHARDSON, 1899, Proc. U. S. Nat. Mus., vol. 21, pp. 859-860 (Monterey Bay; description). ———, RICHARDSON, 1905, Bull. U. S. Nat. Mus. 54, pp. 477-478, figs. 533-536 (morphology). ———, HATCH, 1947, Univ. Washington Publ. Biol., vol. 10, p. 173, fig. 34 (Oregon). ———, SHINO, 1965, New Ill. Encycl. Fauna Japan, vol. II, p. 551, fig. 754.

Material Examined: 1 ex. (OMNH-Ar-273), Toyokunizaki, Misaki-chô, Osaka Pref., coll. N. NUNOMURA, June 27, 1976; 1 ex. (OMNH-Ar-274), Toyokunizaki, Misaki-chô, Osaka Pref., coll. Y. SHIBATA, May 12, 1964.

SUPPLEMENT

In the previous paper (NUNOMURA, 1975), the genus *Leptanthura* was erroneously placed in the family Anthuridae; correctly, however, it should be included in the family Paranthuridae. The first author wishes to apologize and to correct this mistake.

REFERENCES

- NISHIMURA, S. 1968. *Gnorimosphaeroma lata* n. sp., a new marine isopod from Kii, Japan. Publ. Seto Mar. Biol. Lab., 16: 273-280.
- . 1976a. Redescription of *Leptosphaeroma gottschei* Hilgendorf (Isopoda, Sphaeromatidae), with some biological notes. Ibid., 23: 169-177.
- . 1976b. *Dynoidella conchicola*, gen. et sp. nov. (Isopoda, Sphaeromatidae), from Japan, with a note on its association with intertidal snails. Ibid., 23: 275-282.
- NUNOMURA, N. 1975. Marine Isopoda from the rocky shore of Osaka Bay, Middle Japan (1). Bull. Osaka Mus. Nat. Hist., 29: 15-35.
- SHEN, C. J. 1929. Description of a new isopod, *Dynoides dentisinus*, from the coast of North China. Bull. Fan Mem. Inst. Biol., 1: 63-78.