

Parasitic Gastropods from Echinoderms of Japan

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After the writer had listed 27 parasitic gastropod species from various echinoderms of Japan in 1952, 6 species were added to that list in 1958 and 1974. In this report 38 parasitic species, including 6 new species, are described as follows.

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Family Eulimidae H. et A. ADAMS, 1854

Genus *Curveulima* LASERON 1955

Curveulima aurata (S. HIRASE, 1920)

Melanella aurata S. HIRASE, 1920, Zool. Mag., Tokyo, **32**, p. 345, pl. 6.

Host. Among spines on *Anthocidaris crassispina* (A. AGASSIZ) and *Stomopneustes variolaris* (LAMARCK), rarely on *Hemicentrotus pulcherrimus* (A. AGASSIZ), all littoral sea urchins at rocky shore.

Distribution. Kyushu to Honshu (north to Boso Peninsula).

Curveulima nishimurai HABE, 1958

Curveulima nishimurai HABE, 1958, Jap. J. Malac. Venus, **20**, p. 33, fig. 6.

Host. Among spines on *Hemicentrotus pulcherrimus* (A. AGASSIZ).

Distribution. Oga Peninsula, Akita Pref., Honshu.

Curveulima langfordi (DALL, 1925)

Strombiformis langfordi DALL, 1925, Nautilus, **38**, p. 97.

Strombiformis langfordi: KOSUGE, 1972, Illust. Type-specimens Moll. W. H. Dall, pl. 5, fig. 9.

Host. On *Anthocidaris crassispina* (A. AGASSIZ).

Distribution. Shimoda, Izu Peninsula, Honshu.

Curveulima akauni (HABE, 1952)

Balcis akauni HABE, 1952, Publ. Seto Mar. Biol. Lab., **2**, p. 38, pl. 6, fig. 5.

Host. Among spines on *Pseudocentrotus depressus* (A. AGASSIZ), *Temnotrema*

rubrum (DOEDERLEIN) and *Tripneustes gratilla* (LINNAEUS).

Distribution. Kushimoto and Shirahama, Wakayama Pref., Honshu.

Remarks. Though HABE described that the shell had brown dotted line on the body whorl, it is usually a transparently white shell.

Curveulima komaii (HABE, 1950)

Balcis komaii HABE, 1950, *Illust. Cat. Jap. Shells*, 1, p. 44.

Balcis komaii: HABE, 1952, *Publ. Seto Mar. Biol. Lab.*, 2, p. 37, pl. 6, fig. 10.

Host. On the arm of *Comanthus japonica* (J. MÜLLER), a littoral feather star of rocky shore.

Distribution. Minabe and Shirahama, Wakayama Pref., to Sagami Bay, Honshu.

Curveulima echinocardiophila sp. nov.

Shell rather large for the genus, elongated oval in shape, slightly curved to right from the frontal view, smooth and highly polished, translucently milky white in live specimens and snowy white in dead ones. Protoconch whorls two in number, small and snowy white, mammillate. Teleoconch whorls nine in number, attenuate to earlier whorls. Whorls rather flat with distinct sutures and varices running up along the right side from the penultimate whorl to earlier ones. Body whorl large, two-fifths the shell height, higher than broad and gently curved at the periphery. Outer margin weakly curved to the rounded basal margin, simple and somewhat produced forwards. Columellar margin thickened and reflexed over the closed umbilicus.

Operculum thin, ovate in shape, light yellow and paucispiral.

Height 13.0 mm and breadth 4.1 mm (holotype specimen preserved in the National Science Museum, NSMT-Mo. 52460).

Height 12.4 mm and breadth 3.8 mm (paratype specimen, NSMT-Mo 52461).

Height 12.0 mm and breadth 3.7 mm (paratype specimen, NSMT-Mo 52462).

Type-locality. Off Saijō City in Hiuchi-Nada of Seto-Naikai (Inland Sea of Japan) between Honshu and Shikoku at muddy bottom of 17 m deep.

Host. On *Echinocardium cordatum* (PENNANT).

Distribution. Off Mukaishima, Hiroshima Pref., in Hiuchi-Nada.

Remarks. *Balcis luchuana* (PILSBRY) is somewhat close to this new species, but has the straight shell. This is larger than the preceding five species.

Genus *Balcis* LEACH, 1847

Balcis peronellicola KURODA et HABE, 1950

Balcis peronellicola KURODA et HABE, 1950, *Illust. Cat. Jap. Shells*, 1, p. 60.

Balcis peronellicola: HABE, 1952, *Publ. Seto Mar. Biol. Lab.*, 2, p. 37, pl. 6, fig. 10.

Host. On the oral side of *Peronella japonica* MORTENSEN.

Distribution. Kyushu to Honshu (north to Boso Peninsula on the Pacific coast).

Balcis robustus (A. ADAMS, 1861)

Eulima robusta A. ADAMS, 1861, Ann. Mag. nat. Hist., (3), 7, p. 125.

Balcis robustus: HABE, 1952, Publ. Seto Mar. Biol. Lab., 1, p. 75, pl. 6, fig. 4.

Host. On the oral side of *Astropecten polyacanthus* MÜLLER et TROSCHEL.

Distribution. Shirahama, Wakayama Pref., and Ago Bay, Mie Pref., Honshu, and Amakusa, Kyushu.

Balcis teramachii HABE, 1952

Balcis teramachii HABE, 1952, Publ. Seto Mar. Biol. Lab., 2, p. 76, pl. 6, figs. 26, 27.

Host. On the surface of *Mesothuria parva* (THEEL), a deep sea sea-cucumber.

Distribution. Tosa Bay, Shikoku, and Wakayama Pref., Honshu.

Balcis clypeastericola sp. nov.

(Pl. 2, fig. 1)

Shell attenuate to the small apex, rather solid, smooth and highly polished, milky white. Whorls 11 in number, feebly convex and with distinct sutures and varices on the right side of lower whorls. Body whorl large, about two-fifths of shell height, rounded at the periphery. Aperture rather small, ovate. Outer margin gently curved and produced forwards. Columellar margin thickened and rather straight.

Height 14.0 mm and breadth 4.4 mm (holotype specimen preserved in the National Science Museum, NSMT-Mo 52468).

Height 10.1 mm and breadth 3.6 mm (paratype young specimen, NSMT-Mo 52469).

Type-locality. Nada, Gobo City, Wakayama Pref., Honshu.

Host. On the oral side of *Clypeaster japonicus* DOEDERLEIN.

Remarks. *Balcis yamazii* HABE is the nearest ally to this new species, but has slender shell with obtusely angular periphery on the body whorl.

Balcis kuronamako HABE, 1952

Balcis kuronamako HABE, 1952, Publ. Seto Mar. Biol. Lab., 2, p. 73, pl. 6, fig. 20.

Host. On the surface of *Holothuria leucospilota* (BRANDT), a littoral black-colored sea-cucumber dwelling among gravel.

Distribution. Shirahama, Miotsu, Fukuro and Satono, Wakayama Pref., Honshu, and Kushikino, Kyushu.

Balcis soliduloides HABE, 1951

Balcis soliduloides HABE, 1951, Illust. Cat. Jap. Shells, 1, p. 94.

Balcis soliduloides: HABE, 1952, Publ. Seto Mar. Biol. Lab., 2, p. 74, pl. 6, fig. 25.

Host. On the surface of *Holothuria atra* JAEGER, *Bohadschia argus* (JAEGER) and *Stichopus chloronotus* BRANDT.

Distribution. Formosa to Wakayama Pref., Honshu.

Balcis yamazii HAbE, 1952

Balcis yamazii HAbE, 1952, Publ. Seto Mar. Biol. Lab., 2, p. 74, pl. 6, figs. 6, 9.

Host. On the surface of *Holothuria moebii* (LUDWIG).

Distribution. Shirahama and Ugui, Wakayama Pref., Honshu.

Balcis astropectenicola KURODA et HAbE, 1950

Balcis astropectenicola KURODA et HAbE, 1950, Illust. Cat. Jap. Shells, 1, p. 60.

Balcis astropectenicola: HAbE, 1952, Publ. Seto Mar. Biol. Lab., 2, p. 75, pl. 6, fig. 16.

Host. On the oral side of *Astropecten polyacanthus* MÜLLER et TROSCHER, *Luidia maculata* MÜLLER et TROSCHER, *Luidia quinaria* MARTENS and *Asterias amurensis* LUTKEN, all of shallow water sea-stars.

Balcis shibana (YOKOYAMA, 1927)

Eulima (Leiostraca) shibana YOKOYAMA, 1927, Fac. Sci. Imp. Univ. Tokyo, (2), 1, p. 418, pl. 47, fig. 8.

Balcis shibana: KURODA & HAbE, 1971, Sea Shells Sagami Bay, p. 118 (Jap.), p. 77 (Eng.), pl. 108, fig. 4.

Host. On the surface of a deep sea sea-cucumber.

Distribution. Amadaiba in Sagami Bay, Honshu, at 150 m deep.

Genus *Mucronalia* A. ADAMS, 1860*Mucronalia lactea* (A. ADAMS, 1863)

Leiostraca (Mucronalia) lactea A. ADAMS, 1863, J. Linn. Soc. London, 7, p. 91.

Mucronalia lactea: KURODA & HAbE, 1950, Illust. Cat. Jap. Shells, 1, p. 58, pl. 10, fig. 11.

Host. Endoparasitic in an apod sea-cucumber, *Leptosynapta ooplax* (MARENZELLAR), at the intertidal fine sandy bottom.

Distribution. Tanabe Bay, Wakayama Pref., and Mukaijima, Hiroshima Pref., Honshu.

Mucronalia exilis A. ADAMS, 1862

Mucronalia exilis A. ADAMS, 1862, Ann. Mag. nat. Hist., (3), 9, p. 295.

Mucronalia exilis: KURODA & HAbE, 1950, Illust. Cat. Jap. Shells, 1, p. 58, pl. 10, fig. 12.

Host. On the disc edge of *Amphioplus miyadaii* MURAKAMI, a bristle star on muddy bottom in bays.

Distribution. Kyushu to Honshu (north to Wakayama Pref.).

Mucronalia gigas KURODA et HAbE 1950

Mucronalia gigas KURODA et HAbE, 1950, Illust. Cat. Jap. Shells, 1, p. 59, pl. 10, fig. 10.

Host. In an undetermined sea-cucumber.

Distribution. Miyako Islands, Ryukyu chain.

Genus *Echineulima* LÜTZEN et NIELSEN, 1975*Echineulima mittrei* (PETIT, 1851)

Stilifer mittrei PETIT, 1851, J. Conchyl., **2**, p. 27, pl. 2, figs. 8, 9.

Rosenia tokiokai HABE, 1952, Publ. Seto Mar. Biol. Lab., **2**, p. 42, pl. 6, figs. 3, 12, 13.

Host. On the oral side of *Diadema setosum* (GRAY), a sea urchin in shallow water.

Echineulima tokii (HABE, 1974)

Stylapex tokii HABE, 1974, Jap. J. Malac. Venus, **32**, pp. 117, 119, pl. 13, fig. 1.

Host. On the oral side of *Asthenosoma ijimai* YOSHIWARA.

Distribution. Nada, Wakayama Pref., Honshu.

Echineulima eburnea (DESHAYES, 1863)

(Pl. 3, fig. 5)

Stylifer eburnea DESHAYES, 1863, Cat. Moll. Reunion, **57**, p. 67, pl. 7, fig. 25.

Mucronalia philippinarum SCHEPMAN, 1909 (non SOWERBY, 1900), Siboga-Expeditie, **49 c**, p. 6.

Host. On the oral side of *Heterocentrotus mammillatus* (LINNAEUS) and *Heterocentrotus trigonarius* (LAMARCK).

Distribution. Réunion in the Indian Ocean to Indonesia and Ogasawara Islands (Bonin Islands) far south of Tokyo.

Genus *Stylapex* IREDALE, 1925*Stylapex philippinarum* (SOWERBY, 1900)

Mucronalia philippinarum SOWERBY, 1900, Proc. malac. Soc. London, **4**, p. 127, pl. 11, fig. 5.

Mucronalia mittrei: HABE, 1944 (non PETIT, 1851), Jap. J. Malac. Venus, **13**, p. 192, fig. 14.

Stylapex philippinarum: HABE, 1952, Publ. Seto Mar. Biol. Lab., **2**, p. 38, pl. 6, figs. 23, 24.

Host. On the oral side of the littoral eight armed sea star, *Coscinasterias acutispina* (STIMPSON).

Distribution. Philippines to Honshu (north to Boso Peninsula).

Stylapex zebra sp. nov.

(Pl. 1, fig. 1)

Shell small, thin, smooth and polished, transparently glassy, visible brown stripes on the mantle, pyramidally ovate in shape and with 8 whorls. Each whorl moderately convex and with weak growth lines. Body whorl large, about a half of shell height, well rounded at the periphery. Aperture large, ovate and with roundly curved outer margin and slightly curved columellar margin.

Operculum thin, pale yellow, ovate in shape and paucispiral.

Height 5.3 mm and breadth 3.5 mm (holotype specimen preserved in the National Science Museum, NSMT-Mo 52467).

Height 4.0 mm and breadth 2.6 mm (paratype specimen, NSMT-Mo 52471).

Type-locality. Sakai, Minabe, Wakayama Pref., Honshu.

Host. On the disc edge of the bristle star, *Ophiothrix* sp.

Remarks. This is easily recognized by the brown longitudinal stripes on the mantle visible through the transparent shell.

Stylapex koyamai sp. nov.

Shell medium in size for the genus, translucently milky white, smooth and highly polished, pupiform in shape with a spire of 11 whorls, slightly shelf below the sutures. Protoconch whorls 3 in number, snowy white, small but mammillate. Teleoconch whorls weakly convex and without any varice. Body whorl large, two-fifths the shell height, inflated and roundly curved on the base. Aperture ovate and rounded to the basal margin. Outer margin thin and sharp, slightly curved and weakly produced forwards. Columellar margin nearly straight and reflexed over the closed umbilicus.

Height 8.0 mm and breadth 3.5 mm (holotype specimen preserved in the National Science Museum, NSMT-Mo 52459).

Type-locality. Tsui, Minabe, Wakayama Pref., Honshu.

Host. On the surface of an undetermined sea-cucumber.

Remarks. This is a very characteristic species in having the pupa-like shell. *Chryseulima solitaria* LASERON, 1955, parasitic on a sea-cucumber at Long Reef near Sydney, Australia, is somewhat allied to this new species in the shell slightly shelf below the sutures, but has the spire attenuating to the apex.

Genus *Goodingia* LÜTZEN, 1972

Goodingia ophiuraphila (HABE, 1974)

(Pl. 2, fig. 4)

Mucronalia ophiuraphila HABE, 1974, Jap. J. Malac, Venus, **32**, pp. 117, 119, pl. 8, fig. 2.

Host. On the disc edge of bristle star, *Ophiothrix koreana* DUNCAN.

Distribution. Wakayama Pref. to Sagami Bay, Honshu.

Genus *Stilimella* LASERON, 1955

Stilimella kawamurai sp. nov.

Shell rather large for the group, thin and fragile, translucently light yellow and with a pyramidally elevated spire of 10 whorls. Protoconch whorls 2 in number, small and pointed to the apex, and snowy white. Teleoconch whorls with weak growth lines and distantly placed fine spiral grooves. Body whorl large and globose, about a half of shell height and with strongly and roundly curved periphery. Aperture roundly ovate. Outer margin thin and sharp, strongly curved at the peripheral

corner. Columellar margin also strongly curved, slightly thickened. Umbilicus closed.

Height 12.6 mm and breadth 7.9 mm (holotype specimen preserved in the National Science Museum, NSMT-Mo 52463).

Height 11.8 mm and breadth 6.8 mm (paratype specimen, NSMT-Mo 52464).

Height 6.8 mm and 3.2 mm (paratype specimen, NSMT-Mo 52465).

Type-locality. Off Choshi, Chiba Pref., Honshu, at about 150 m deep.

Host. On an undetermined deep sea eight-armed sea-star.

Remarks. *Stilimella* (?) *guentheri* (ANGAS, 1877) from Lifu, Loyalty Islands (HEDLEY, 1913), is an allied species to this new species in shape, but has the smooth and horn-colored shell. *Annulobalcis prionocidaricola* HABE, 1974, is another ally in shape, but has regularly arranged distinct spiral grooves all over the surface of shell.

Genus *Annulobalcis* HABE, 1965

Annulobalcis yamamotoi HABE, 1974

Annulobalcis yamamotoi HABE, 1974, Jap. J. Malac. Venus, **32**, pp. 118, 120, pl. 13, fig. 3.

Host. On the arms of *Tropiometra afra macrodiscus* (HARA), shallow water feather star of rocky shore.

Distribution. Wakayama Pref. to Miura Peninsula, Honshu.

Annulobalcis prionocidaricola HABE, 1974

(Pl. 2, fig. 2)

Annulobalcis prionocidaricola HABE, 1974, Jap. J. Malac. Venus, **32**, pp. 118, 120, pl. 13, figs. 7, 8.

Host. Among spines on *Prionocidaris baculosa annulifera* (LAMARCK).

Distribution. Nada, Gobo City, Wakayama Pref., Honshu.

Family Stiliferidae ROSEN, 1910

Genus *Stilifer* BRODERIP, 1832

Stilifer ovoideus H. et A. ADAMS, 1850

Stilifer astericola H. et A. ADAMS, 1850, Moll. Zool. Voy. Samarang, **47**, pl. 17, fig. 5 (non BRODERIP, 1832).

Stilifer ovoideus H. et A. ADAMS, 1855, Gen. Rec. Moll., **1**, p. 239, pl. 25, fig. 4.

Stilifer japonica SOWERBY, 1878, Conch. Icon., *Stilifer*, sp. 8.

Stilifer celebensis S. HIRASE, 1932, Proc. malac. Soc. London, **20**, pp. 73–76, pl. 7, figs. 7–8 (non KÜKENTHAL, 1897).

Stilifer ovoideus: HABE, 1952, Publ. Seto Mar. Biol. Lab., **2**, p. 40, pl. 6, fig. 19.

Host. In the gall on arms of *Certonardoa semiregularis* (MÜLLER et TROSCHEL), a littoral sea-star of rocky shore.

Distribution. Indonesia to Honshu (north to Boso Peninsula).

Stilifer ophidiastericola HAbE, 1951

Stilifer ophidiastericola HAbE, 1951, *Illust. Cat. Jap. Shells*, **1**, p. 94.

Stilifer ophidiastericola HAbE, 1952, *Publ. Seto Mar. Biol. Lab.*, **2**, p. 40, pl. 6, fig. 19.

Host. In the gall on arms of *Ophidiaster cribularium* LUTKEN, *O. lorioli* FISCHER, *O. confertus* CLARK and *O. granifer* LUTKEN.

Distribution. Indonesia to Honshu (north to Kii Peninsula).

Stilifer kochiana SOWERBY, 1901

Stilifer kochiana SOWERBY, 1901, *Proc. malac. Soc. London*, **4**, p. 209, pl. 22, fig. 6.

Stilifer utinomii HAbE, 1951, *Illust. Cat. Jap. Shells*, **1**, p. 93.

Stilifer utinomii: HAbE, 1952, *Publ. Seto Mar. Biol. Lab.*, **2**, p. 40, pl. 6, fig. 22.

Host. In the gall of arms of *Linckia guildingii* GRAY and *L. laevigata* (LINNAEUS).

Distribution. Tropic Pacific region to Honshu (north to Kii Peninsula).

Stilifer sphaeroconchus HAbE, 1974

Stilifer sphaeroconchus HAbE, 1974, *Jap. J. Malac Venus*, **32**, pp. 118, 121, pl. 13, figs. 4–5.

Host. In the gall on arms of *Tropimetra afra macrodiscus* (HARA).

Distribution. Nagashima-cho, Mie Pref., Honshu.

Genus *Rosenia* SCHEPMAN, 1913*Rosenia castanea* (DALL, 1925)

Stilifer castanea DALL, 1925, *Nautilus*, **38**, p. 97.

Stilifer perdepressus DALL, 1925, *ibid.*, p. 97.

Rosenia castanea: HAbE, 1952, *Publ. Seto Mar. Biol. Lab.*, **2**, p. 81, pl. 6, figs. 7–8.

Stilifer perdepressus KOSUGE, 1972, *Illust. Type-Specimens Moll. W. H. Dall*, pl. 6, fig. 3.

Host. Among spines of the littoral sea urchin, *Pseudocentrotus depressus* (A. AGASSIZ).

Distribution. Kyushu to Honshu (north to Boso Peninsula).

Rosenia yamamotoi HAbE, 1952

Rosenia yamamotoi HAbE, 1952, *Publ. Seto Mar. Biol. Lab.*, **2**, p. 41, pl. 6, fig. 21.

Host. Among spines of *Temnotrema sculptum* (A. AGASSIZ).

Distribution. Wakayama Pref., and Oga Peninsula, Akita Pref., Honshu.

Genus *Kiramodulus* KURODA, 1949*Kiramodulus lacteus* KURODA, 1949

(Pl. 1, fig. 2; Pl. 3, figs. 1, 2, 6, 7)

Kiramodulus lacteus KURODA, 1949, *Jap. J. Malac. Venus*, **15**, pp. 72–75, fig. 1.

Host. On the surface of deep sea sea-star *Aphroditaster* sp. collected from fine sandy bottom of about 100–200 m deep.

Distribution. Tosa Bay, Shikoku, to Enshu-Nada, Honshu.

Genus *Granulithyca* nov.

Type-species: *Granulithyca nardoafrianti* sp. nov.

Shell small, rather thin and fragile, glassy white, globular in shape with a snowy white mammillate protoconch whorls of 3 in number. Teleoconch whorls 2.5 in number, rapidly increasing their breadth and rather flat on the upper side. Surface with spiral cords of 10–15 in number crossed by the growth grooves forming a granulated appearance. Aperture large, widely lunate. Outer margin roundly arcuate and crenulate by the endings of spiral cords on the surface. Columellar margin also strongly arcuate and slightly thickened. Umbilicus shallowly perforated. Operculum missing.

Remarks. This new genus differs from *Kiramodulus* KURODA, 1949, in having distinctly granulated sculpture on the surface of shell and very low spire and strongly curved columellar margin.

Granulithyca nardoafrianti sp. nov.

(Pl. 2, fig. 3; Pl. 3, figs. 3, 4)

Diagnosed as in the genus.

Height 4.7 mm and breadth 4.8 mm (holotype specimen preserved in the National Science Museum, NSMT–Mo 52470).

Height 3.6 mm and breadth 3.7 mm (paratype specimen, NSMT–Mo 52466).

Type-locality. Sakai, Minabe, Wakayama Pref., Honshu.

Host. On the arms of *Nardoa frianti* KOEHLER.

Remarks. This new species is rather rarely parasitic on the arms of *Nardoa frianti* collected by the gill net setting the submarine reefs at about 50 m deep.

Genus *Robillardia* SMITH, 1889

Robillardia cernica SMITH, 1889

Robillardia cernica SMITH, 1889, Ann. Mag. nat. Hist., (6), 3, p. 270.

Robillardia cernica: LÜTZEN & GOODING, 1973, Det. Kong. Dansk Vidensk. Selsk Biol. Skr., 20 (4), pp. 1–22, pls. 1–4.

Host. Endoparasitic in *Heterocentrotus mammillatus* (LINNAEUS).

Distribution. Gulf of Aqaba, Red Sea, Easter Island, South-east Pacific and Osagasawara Islands.

Remarks. This species has been reported to be the endoparasite of the littoral sea urchin *Echinometra mathaei* (DE BLAINVILLE) and *E. insularis* (H. L. CLARKE) from the Gulf of Aqaba, and from Easter Island, respectively. Therefore, this large sea urchin is a new record to the hosts of this species.

Family Thycidae THIELE, 1931
Genus *Thyca* H. et A. ADAMS, 1854

Thyca crystallina (GOULD, 1846)

(Pl. 1, fig. 3)

Capulus crystallina GOULD, 1846, Proc. Boston Soc. nat. Hist., **2**, p. 161.

Hipponyx crystallina: TRYON, 1886, Man. of Conch., **8**, p. 136, pl. 41, figs. 18–19.

Thyca crystallina: SCHEPMAN, 1909, Siboga-Expeditie, **49 b**, p. 94.

Host. On the arms of *Linkia laevigata* (LINNAEUS).

Distribution. Indonesia, Hawaii, the Philippines and Japan (north to Kii Peninsula, Honshu).

Remarks. This genus is very similar to the genera *Kiramodulus* and *Granulithyca* in the parasitic habit to sea-star and the structure of soft part, suggesting a close relationships among these genera.

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Explanation of Plates 1–3

Plate 1

- Fig. 1. *Stylapex zebra* sp. nov. parasitic on the disc edge of the bristle star, *Ophiothrix* sp.
 Fig. 2. Two specimens (smaller male and larger female) of *Kiramodulus lacteus* KURODA parasitic on the arm of deep-sea sea-star, *Aphroditaster* sp.
 Fig. 3. Two specimens of *Thyca crystallina* (GOULD) parasitic on the arms of the blue sea-star, *Linckia laevigata* (LINNAEUS).

Plate 2

- Fig. 1. *Balcis clypeastericola* sp. nov., parasitic on the oral side of *Clypeaster japonicus* DOEDERLEIN.
 Fig. 2. Five specimens of *Annulobalcis prionocidaricola* H_{ABE} parasitic on *Prionocidaris baculosa annulifera* (LAMARCK).
 Fig. 3. *Granulithyca nardoafrianti* gen. et sp. nov. parasitic on the arm of *Nardoa frianti* KOHLER.
 Fig. 4. *Goodingia ophiuraphila* (H_{ABE}) parasitic on an undetermined bristle star, *Ophiothrix koreana* DUNCAN.

Plate 3

- Fig. 1. A specimen of *Kiramodulus lacteus* KURODA parasitic on the arm of the deep-sea sea-star, *Aphroditaster* sp.
 Fig. 2. Three specimens of *Kiramodulus lacteus* KURODA parasitic on the edge of *Aphroditaster* sp. collected from off Esuzaki, Wakayama Pref., Honshu.
 Figs. 3–4. The holotype specimen of *Kiramodulus nardoafrianti* sp. nov. from off Minabe, Wakayama Pref., Honshu.
 Fig. 5. A specimen of *Echineulima eburnea* (DESHAYES) removed from the host, *Heterocentrotus mammillaris* (LINNAEUS).
 Fig. 6. A male specimen of *Kiramodulus lacteus* KURODA.
 Fig. 7. A female specimen of *Kiramodulus lacteus* KURODA.







