731. NOTES ON THREE CYHERELOIDEA
OSTRACODES FROM THE RYUKYUS*

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Abstract. Further information on the geographical and depth distribution of
three species of the ostracode genus Cythereelloidea, previously reported from
the Ryukyus, is presented. C. senkakuensis is widely distributed in both area and depth,
whereas C. asatoensis and C. hanaii have restricted area distribution and occur within
narrow depth ranges. C. asatoensis has different surface ornamentation in successive
molt stages, but C. hanaii and C. senkakuensis show few changes through molt stages.
The right and left valves of C. hanaii have different ornamentation.

Introduction
Genus Cythereelloidea is one of the dominant constituents of tropical ostracode
assemblage. There are many studies on this genus in Southeast Asia (LEROY, 1940
and 1941, KINGMA, 1948, VAN DEN BOLD, 1950, KEIJ, 1964, HU, 1976 and 1977,
and HU and CHENG, 1977). Previously, one species of the genus Cythereelloidea was
reported from Honshu, Japan (ISHIZAKI, 1968) and nine species from the Ryukyus
(NOHARA, 1976).

Study of representatives of the genus indicates that the type specimens for the
species C. shinzatoensis and C. yakenaensis are juvenile instars, and further research
is necessary to identify their adult forms.

Sampling localities
The specimens discussed in this paper are mainly from dredged samples in the
southern part of East China Sea near Senkaku-retto and from coral reefs
southeast of Komesu of Okinawa-jima. The fossil specimens are from Somachi
Formation of Kikai-jima and Shinzato Tuff, Chinen Sands, and Naha Limestone
of Okinawa-jima.

The sampling localities are listed below.

Loc. 1.—Senkaku-retto, 48 Stations (Lat. 25°
45'9"-27°47'5"N, Long. 123°7'125°37'7"E)
Dredged sample: St. 8, Senkaku-retto, dark
brownish gray, fine to medium sand, 95 m
in depth, water temperature 18.5°C. in
depth of 85 m. Dredged sample, Recent.

Loc. 2.—Komesu, Itoman City, Okinawa-jima.
St. 1, Komesu traverse section, about one
hundred meters from shoreline, 2 m in
depth, 700 m S.E. of Komesu (Lat. 26°5'N,
Long. 127°43'E), Dredged sample, Recent.

Loc. 3a-d.—Somachi Formation, Kikai-jima. a,
No. 7512404A, 500 m east of Keraji (Lat.
28°7'N, Long. 128°59'E) gray siltstone,
Pliocene: b, No. 7512502A, 500 m north of
Nagamine (Lat. 28°21'N, Long. 129°39'E),
1 m above road, gray siltstone: c, No.
7512507, 300 m S.E. of Isago (Lat. 28°21'

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N, Long. 129°59'E), gray siltstone: d, No. 7512508C, 1,400 m S.E. of Isago (Lat. 28°21'N, Long. 129°59'E), 3 m above road, gray siltstone.

Loc. 4a-c.—Shinzato Tuff, Okinawa-jima. a, No. 75122902D, the type locality about five hundred meters southeast of Shinzato, Sashiki (Lat. 26°9'5"N, Long. 127°46'7"E), bluish gray silty sand, 1 m above the tuff bed of the base of the type locality, Pliocene: b, No. 7571602, about two hundred meters east of Yakena near harbour, Yonagusuku-son (Lat. 26°19'N, Long. 127°55'E), brownish gray sand: c, No. 7592601, 1 km north of Asato, Gushichan-son (Lat. 26°7'30"N, Long. 127°44'E), dark gray siltstone, 4 m above the cultivated land.

Loc. 5.—Chinen Sands, the type locality, about five hundred meters east of Kudeken, Chinen-son, Okinawa-jima. No. 7571703 (Lat. 26°10'N, Long. 127°49'E), 3 m above road, silty sand, Pleistocene.

Loc. 6a, b.—Naha Limestone. a, 100 m east of National highway 51 and south of Machinato river, Machinato, Urasoe City, Okinawa-jima, No. 7512302 (Lat. 26°10'N, Long. 127°44'E), soft brownish limestone, Pleistocene: b, siltstone included in Naha Limestone, Yokatsu Senior High School, 500 m south of Uchima, Yonagusuku-son (Lat. 26°19'N, Long. 127°54'E), gray siltstone.

Discussion

Recent species of the ostracode genus *Cytherelloidea* seem to be restricted to tropical and subtropical shallow marine waters (Morkhoven, 1963). In Japan, however, the geographical range of *Cytherelloidea munechikai* extends to the Uranouchi Bay of Kochi Prefecture (Ishizaki, 1968). The species is found in Somachi Formation of Kikai-jima (Loc. 3a-d), Pliocene Shinzato Tuff (Loc. 4a), and Pleistocene Chinen Sands of Okinawa-jima (Loc. 5).

*Cytherelloidea senkakuensis* was originally reported from stations near Senkaku-retto where the species is common and occurs in the depth of 95 m to 370 m (Nohara and Tomoyose, 1977). This species is also found in very shallow water of coral reefs near Komesu in Southern Okinawa-jima (Loc. 2).

*Cytherelloidea hanaii* was first reported from the Shinzato Tuff of Yakena, Yonagusuku-son, Okinawa-jima (Loc. 4b). Other fossil specimens of this species have been found in different horizons of the type locality of the Pliocene Shinzato Tuff (Loc. 4a) and Pleistocene Chinen Sands (Loc. 5) of Okinawa-jima. Living specimens of *C. hanaii* have been recorded between the depth range of 100 m and 150 m near Senkaku-retto (Nohara and Tomoyose, 1977), and thus the distribution of this species seems to be restricted to narrow areas.

*Cytherelloidea asatoensis* was originally reported from the Pliocene Shinzato Tuff in the north of Asato, Gushichan-son, Okinawa-jima (Loc. 4c). Recent specimens are also found in stations near Senkaku-retto ranging from 100 m to 180 m in depth.

From Keij's measurements (1964), six molt stages seem to exist in *Cytherelloidea sabahensis* from Borneo. Specimens from the Ryukyus also suggest existence of at least five or six molt stages in our species as illustrated in Fig. 1.

The surface ornamentation is remarkably different between molt stages in some species and relatively conservative in the other. The surface ornamentation changes from young instar to mature form in *Cytherelloidea asatoensis* with increase in the size of valve (Fig. 1, f to a). On a juvenile valve (Fig. 1-f) only the marginal rim is well developed. In a later stage, central pit, median groove and an inner ridge appear. Thereafter two triangular pits develop: one in front of and the other just above the central
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pit (Fig. 1-e). In the next stage, inner ridge is completed (Fig. 1-d). The presence of three pits becomes distinct in the next stage (Fig. 1-c). Formation of all surface features is completed in adult minus one stage (Fig. 1-b). In the mature stage (Fig. 1-a) a wavy depression becomes clearer between the marginal rim and the inner ridge.

No clear change in surface ornamentation is apparent in the successive stages of *Cythonelloidea hanaii*. Even in the juvenile stage, marginal rim and ridge are well developed. In *Cythonelloidea senkansis*, surface ornamentation including ridges and pits changes slightly and more or less continuously with the increase in valve size.

The surface ornamentation is generally similar between the right and left valves, but sometimes different between the two valves, as is the case with *Cythonelloidea hanaii*. On the left valves of *C. hanaii* (Fig. 2-a), a thick ridge runs continuously from the posterodorsal margin toward anterior, turns toward posterior making an arch anteriorly, and terminates at the posterodorsal margin. On the right valve, however, posterodorsal and posteroventral ridges extend parallel to each other toward anterior (Fig. 2-b), but become obscure in the anterocentral area. Ridges of left and right valves have strongly different outline in dorsal view (Fig. 2-c). In the left, marginal rim, ridge, and dorsal pit are present; on the right, however, only the posterior ridge is distinctive. The differences of the surface ornamentation between the left and right valves may suggest unsym-

Fig. 1. Sketches of *Cythonelloidea asatoensis* from juvenile (f) to adult (a) stage. Magnification approximately ×30. Specimen from the type locality of Shinzato Tuff, Shinzato, Sashiki-son, No. 75122902 D (Loc. 4a).
earlier from the Ryukyu islands, new information on Cytherelloidea hanaii, C. asatoensis, C. senkakuensis, and C. mune-chikai is presented in this report. C. nagoensis, C. sp. A and C. sp. B occur very rarely and information at hand is not sufficient to estimate their distribution range.

Uncertainty exists concerning the diagnostic characters of two other species, C. shinzatoensis and C. yakenaensis, because the original descriptions were based on juvenile instars.

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References Cited


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琉球列島産貝形虫 Cytherelloidea 属について: 琉球列島産新生代貝形虫 Cytherelloidea 属の三種 C. hanaii, C. asatoensis, C. senkakuensis について検討した。C. hanaii と C. asatoensis は、それぞれ、100〜150 m、100〜180 m の深度分布を示しているが C. senkakuensis は、1〜300 m の深度分布を示している。

C. asatoensis は、殻の表面の装飾は脱皮ごとに変化を示していくが、C. hanaii と C. senkakuensis は装飾に顕著な変化は見られない。C. hanaii は左右の殻の装飾は異っている。野原潮秀