Molluscan fossils from the Ryukyu Islands, Southwestern Japan

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Abstract

Among the 181 molluscan fossils from the Pliocene Shinzato Formation, 63 pelecypod fossils are first described in systematically from the formation. New and extinct species are of 47.5% to the total number of species which is very high percentage. Among 56 Recent species recorded from the Shinzato Formation, many species are known from the abyssal seas. Four new genera, Okinawanarca, Ribriarca, Okinawavoluta and Ketaboryinx, and 59 new species and 1 new subspecies are described.

Key words: Molluscan fossils, Shinzato Formation, abyssal forms, Pliocene, Okinawa.

Introduction

Since the Neogene gastropods have been first described by MacNeil in 1960 who mentioned at that time about 150 pelecypods from the Shimajiri Formation were to be considered in a later report, no other attempts are made to record the molluscan fossil from the Shinzato Formation in Okinawa-jima, excluding a short note on pteropod fossils (Noda, 1972) and preliminarily note on abyssal molluscan fossils (Noda, 1976, 1977; Noda and Ogasawara, 1976). During the geological survey in the Ryukyu Islands, much more interesting molluscan fossils are collected from the Shimajiri Group. The present article is one of the serial studies on those molluscan fossils.

Paleontological and paleoecological considerations on the molluscan fauna in the Ryukyu Islands will be discussed in the final part of the studies. In this article, gastropods and pelecypods from the Shinzato Formation in southeastern part of Okinawa-jima will be described. Pelecypod fossils from the Shinzato Formation are first described in this paper. Some characteristics of those molluscan fossils are also mentioned.

Acknowledgments

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species in having rather smooth shoulder and high spires but the former has more distinct spiral grooves on lower half of body whorl.

**Locality and number of individual:**
Loc. no. 334, 1 specimen.

**Remarks:** The present specific name is dedicated to Prof. Hisao Nakagawa of the Institute of Geology and Paleontology, Tohoku University in Sendai, who has greatly contributed towards the geology of Okinawa-islands.

"Conus" sp.

Spire is low and slightly concaved with dense sigmoid growth lines without any nodes at shoulder. External surface of body whorl is almost weathered, but with indistinctly spiral furrows at lower part.

**Locality and number of individuals:**
Loc. no. 71U, 1 specimen; Loc. no. 123, 1 specimen; Loc. no. 129, 1 specimen.

**Family Tereberidae**

**Genus Terebra** Bruguère, 1789

*Terebra shimajiriensis* MacNeil, 1960

Pl. 4, figs. 1a-1b

1960, *Terebra shimajiriensis* MacNeil, USGS Prof. Pap., 333, p. 126, pl. 6, fig. 30.

Full grown specimen (14 whorls are preserved in 33.1 mm in shell height) was collected, but its apex was missing.

External surface sculptured with slightly inclined axial ribs (20 in number at the last whorl) with roof-like topped being weak at upper subsutural area and distinct somewhat nodous on younger stage. Lower subsutural area. Interspaces rather smooth but microscopic spiral variations. Columella short and curved. Siphonal canal moderate and turned posteriorly.

**Locality and number of individual:**
Loc. no. 414-4, 1 specimen.

**Genus Myurella** Hinds, 1854

*Myurella torquata* (Adams and Reeve, 1850)

Pl. 4, fig. 2


1960, ——, MacNeil, USGS Prof. Pap., 338, pl. 15, figs. 18-19.


Shell high turrid in form. External surface sculptured by two paired but separated spiral cord where longitudinal knobs become stronger just below suture line. External surface with spiral cord with longitudinal knobs is sculptured with spiral lirae. Longitudinal ribs narrow and slightly discontinued between abapical two spiral cords. Base narrow with spiral and axial ribs. Siphonal canal short and turned posteriorly. One columellar fold visible.

**Comparisons:** *Terebra cumingi* Deshayes is allied with the present species but the former has more distinct axial folds especially distinct on spiral cord of upper whorls. *T. triseriatus* (Gray) resembles very much the present species but it has only one subsutural cord.

**Locality and number of individual:**
Loc. no. 66, 1 specimen.
Explanation of Plate 4

Figs. 1a-1b, *Terebra shimaajiriosis* MacNeil, ×1, Loc. no. 414-4, IGUT no. 10536. p. 55.

Fig. 2, *Myurella torquata* (Adams and Reeve), ×1, Loc. no. 66, IGUT no. 10577. p. 55.

Figs. 3, 8a-8b, *Turriscala (Clariscalca) shimaajiriosis* MacNeil, Fig. 3; ×3, Loc. no. 317, IGUT no. 10559-1, Figs. 8a-8b; ×1.5, Loc. no. 317, IGUT no. 10559. p. 56.

Fig. 4, *Neoagreus* sp. indet., ×2, Loc. no. 414-4, IGUT no. 10528. p. 49.

Fig. 5, *Machaeroplex nipponica* Habe, ×5, Loc. no. 71U, IGUT no. 10111. p. 9.

Figs. 6a-6b, *Sabatia japonica* Habe, ×5, Loc. no. 347, IGUT no. 10515. p. 47.

Figs. 7a-7b, *Uromitra noharai* Noda, n. sp., ×1, Loc. no. 334, IGUT no. 10474, Paratype. p. 31.

Figs. 8a-9b, *Pseudoinquisitator* sp. indet., ×1.5, Loc. no. 334, IGUT no. 10296. p. 45.

Figs. 10a-10b, *Neoagreus loochooonsis* MacNeil, ×2, Loc. no. 435, IGUT no. 10525. p. 48.

Fig. 11, 20, *Grasuspira noharai* Noda, n. sp., Fig. 11; ×1, Loc. no. 334, IGUT no. 10487-2, Paratype, Fig. 20: ×2, Loc. no. 334, IGUT no. 10503, Holotype. p. 46.

Fig. 12, *Compsodrillia* sp. B, ×1.5, Loc. no. 347, IGUT no. 10515. p. 47.


Fig. 15, *Compsodrillia* sp. C, ×1, Loc. no. 334, IGUT no. 10518. p. 48.

Figs. 16a-16b, *Neptunea noboriensis* Ozaki, ×1, Loc. no. 435, IGUT no. 10491. p. 19.

Fig. 17, *Amussiopecten* sp., ×1, Loc. no. 71U, IGUT no. 10399. p. 83.

Fig. 18, *Conasprella cancellata* (Hwass), ×1.5, Loc. no. 71U, IGUT no. 10345. p. 53.

Fig. 19, *Conasprella* sp. indet., ×2, Loc. no. 435, IGUT no. 10550. p. 54.

Fig. 21, *Ahebiconcha kawamurai* Kuroda, ×1, Loc. no. 334, IGUT no. 10403. p. 89.

Fig. 22, *Eucrosia kannoi* Noda, n. sp., ×1, Loc. no. 334, IGUT no. 10425, Paratype. p. 94.
Plate 4

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Y. Kikuchi photo.