

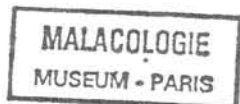
To Dr. B. Métraux  
with the best regards of family  
Hiroshi Noda

Molluscan fossils from the Ryukyu Islands,  
Southwestern Japan

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Part 1. Gastropoda and Pelecypoda from the Shinzato  
Formation in southeastern part of Okinawa-jima

Hiroshi Noda



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## Molluscan fossils from the Ryukyu Islands, Southwestern Japan

### Part 1. Gastropoda and Pelecypoda from the Shinzato Formation in southeastern part of Okinawa-jima

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Hiroshi Noda

#### Abstract

Among the 181 molluscan fossils from the Pliocene Shinzato Formation, 63 pelecypod fossils are first described 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, *Okinawanoarca*, *Ribriarca*, *Okinawavoluta* and *Kotakasyrinx*, and 39 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 preliminary 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

The present writer is very much indebted to the Late Dr. Katora Hatai, Professor Emeritus of the Tohoku University for the classification and biostratigraphic consideration of the present molluscan fossils. Deep appreciation is due to Professor Tamio Kotaka of Tohoku University and Professor Koichiro Masuda, Miyagi University of Education for their kind suggestions on the molluscan fossils from Okinawa. Acknowledgments are

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 sigmoidal growth lines without any nodes at shoulder. External surface of body whorl is almost weathered, but with indistinctly spiral furrows at lower part.

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

#### Family Tereberidae

Genus *Terebra* Bruguière, 1789

*Terebra shimajiriensis* MacNeil, 1960

Pl. 4, figs. 1a-1b

1960, *Terebra shimajiriensis* MacNeil, *USGS Prof. Pap.*, 339, 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 at lower subsutural area. Interspaces rather smooth but microscopic spiral striations. 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

1850, *Terebra torquata* Adams and Reeve, *Zool. Voy. H.M.S., Samarang*, 30, pl. 10, fig. 13. (*non vidi*).

1928, *Terebra naumanni*, Yokoyama, *Rep., Imp. Geol. Surv. Japan*, 101, 25, pl. 1, fig. 3.

1935, *Terebra torquata*, Nomura, *Sci. Rep., Tohoku Imp. Univ., 2nd Ser.*, 18(2), 102, pl. 6, fig. 25.

1960, —, MacNeil, *USGS Prof. Pap.*, 339, 125, pl. 15, figs. 18-19.

1960, *Terebra* aff. *torquata*, MacNeil, *Ibid.*, 125, pl. 6, fig. 25.

1970, *Terebra torquata*, Habe, and Kosuge, *Shells*, 101, pl. 40, fig. 5.

1974, *Cinguloterebra torquata*, Habe, *Col. Illust. Japan*, 2, 82, pl. 40, fig. 18.

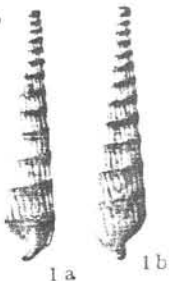
Shell high turrid in form. External surface sculptured by two paired but separated spiral cord where longitudinal knobs become stronger just below suture line. External surface including spiral cord with longitudinal knobs is sculptured with spiral lirae. Longitudinal ribs narrow and slightly discontinued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

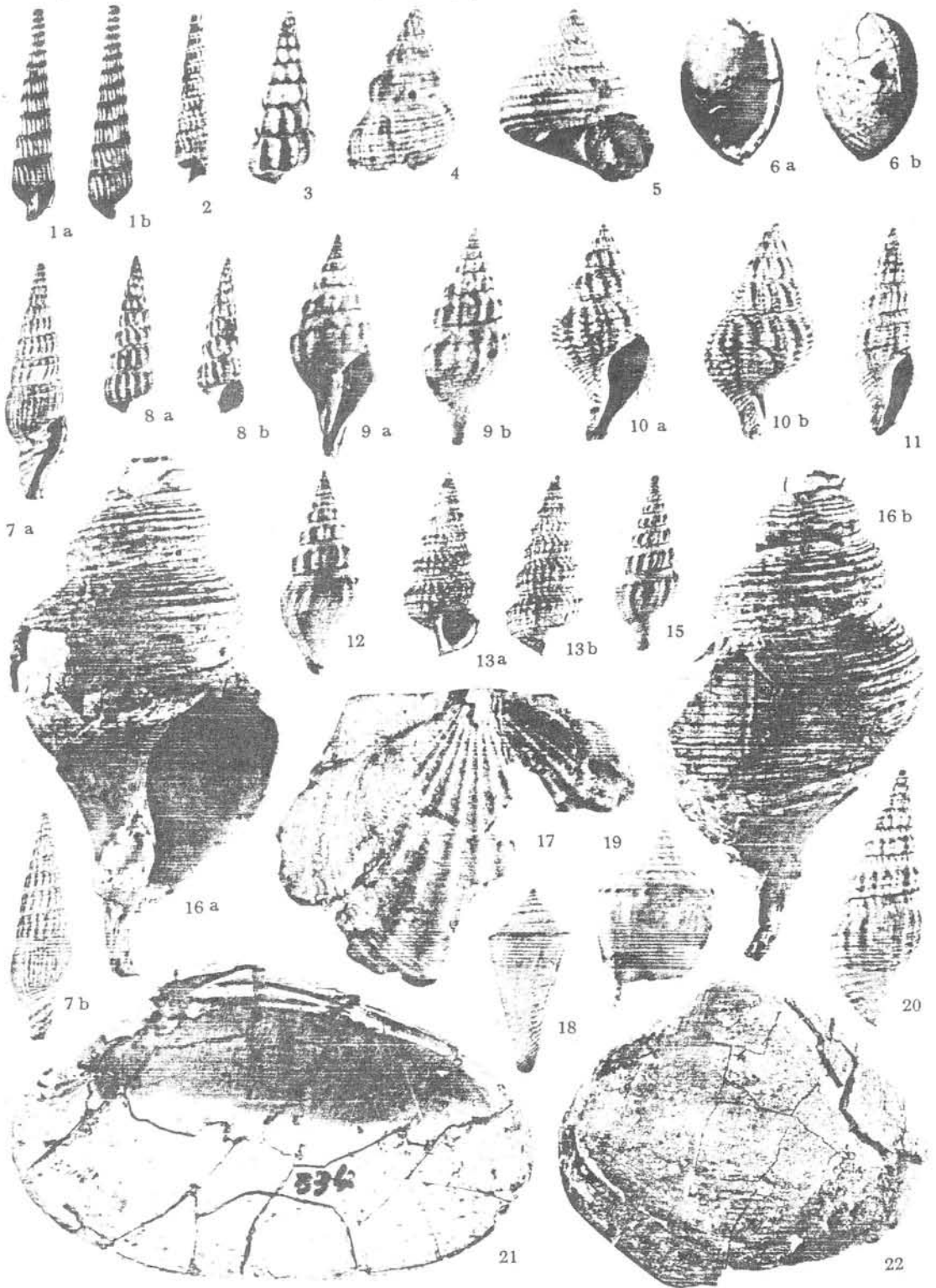
*Comparisons;* *Terebra cumingi* Deshayes is allied with the present species but the former has more distinct axial folds especially distinct on spiral cord of upper whorls. *T. triseriatus* (Gray) resembles very much the present species but it has only one subsutural cord.

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

## Explanation of Plate 4

- Figs. 1a-1b, *Terebra shimajiriensis* MacNeil,  $\times 1$ , Loc. no. 414-4, IGUT no. 10556. p. 55.  
 Fig. 2, *Myurella torquata* (Adams and Reeve),  $\times 1$ , Loc. no. 66, IGUT no. 10557. p. 55.  
 Figs. 3, 8a-8b, *Turriscala (Clariscala) shimajiriensis* MacNeil, Fig. 3;  $\times 5$ , Loc. no. 317, IGUT no. 10559-1, Figs. 8a-8b;  $\times 1.5$ , Loc. no. 317, IGUT no. 10559. p. 56.  
 Fig. 4, *Neograleus* sp. indet.,  $\times 2$ , Loc. no. 414-4, IGUT no. 10526. p. 49.  
 Fig. 5, *Machaeroplex nyssona* (Dall),  $\times 3$ , Loc. no. 71U, IGUT no. 10111. p. 9.  
 Figs. 6a-6b, *Sabatia japonica* Habe,  $\times 5$ , Loc. no. 347, IGUT no. 10586. p. 62.  
 Figs. 7a-7b, *Uromitra noharai* Noda, n. sp.,  $\times 1$ , Loc. no. 334, IGUT no. 10474, Paratype. p. 31.  
 Figs. 9a-9b, *Pseudoinquisitor* sp. indet.,  $\times 1.5$ , Loc. no. 334, IGUT no. 10296. p. 45.  
 Figs. 10a-10b, *Neograleus loochooensis* MacNeil,  $\times 2$ , Loc. no. 435, IGUT no. 10525. p. 48.  
 Figs. 11, 20, *Crassispira noharai* Noda, n. sp., Fig. 11;  $\times 1$ , Loc. no. 334, IGUT no. 10486-2, Paratype, Fig. 20;  $\times 2$ , Loc. no. 334, IGUT no. 10503, Holotype. p. 46.  
 Fig. 12, *Compsodrillia* sp. B,  $\times 1.5$ , Loc. no. 347, IGUT no. 10515. p. 47.  
 Figs. 13a-13b, *Mathilda okinawa* Noda, n. sp.,  $\times 3$ , Loc. no. 3756, IGUT no. 10569, Paratype. p. 59.  
 Fig. 15, *Compsodrillia* sp. C,  $\times 1$ , Loc. no. 334, IGUT no. 10518. p. 48.  
 Figs. 16a-16b, *Neptunea noboriensis* Ozaki,  $\times 1$ , Loc. no. 435, IGUT no. 10491. p. 19.  
 Fig. 17, *Amussiopecten* sp.,  $\times 1$ , Loc. no. 71U, IGUT no. 10369. p. 83.  
 Fig. 18, *Conasprella cancellata* (Hwass),  $\times 1.5$ , Loc. no. 71U, IGUT no. 10546. p. 53.  
 Fig. 19, *Conasprella* sp. indet.,  $\times 2$ , Loc. no. 435, IGUT no. 10550. p. 54.  
 Fig. 21, *Akebiconcha kawamurai* Kuroda,  $\times 1$ , Loc. no. 334, IGUT no. 10403. p. 89.  
 Fig. 22, *Euicroa kannoi* Noda, n. sp.,  $\times 1$ , Loc. no. 334, IGUT no. 10425, Paratype. p. 94.





Y. Kikuchi photo.

56. p. 55.  
7. p. 55.  
no. 317, IGUT

Paratype. p. 31.  
p. 45.  
25. p. 48.  
T no. 10486-2,

569, Paratype.

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9.

re. p. 94.