

A NOTE ON ANTARCTIC BENTHIC MOLLUSKS COLLECTED
WITH A BEAM-TRAWL FROM BREID BAY BY THE 25TH
JAPANESE ANTARCTIC RESEARCH EXPEDITION

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Abstract: The molluscan specimens sorted out from benthos samples trawled from depths of 310 and 215 m in Breid Bay were studied. A single species of Polyplacophora, 7 gastropods, one scaphopod, 6 bivalves and 2 octopod cephalopods were identified. The general compositions of the present collection represents typical shelf fauna in the Antarctic.

1. Introduction

The Antarctic mollusks have been studied by many authorities, such as SMITH (1902, 1915), JOUBIN (1905, 1913), THIELE (1906, 1921), LAMY (1906, 1911), POWELL (1951, 1960), DELL (1964), NICOL (1966) and many others. DELL (1972) quoted that the Mollusca of the Antarctic have received a great deal of attention, perhaps at times too much attention. On the contrary, very few papers have been made public on mollusks collected by the Japanese Antarctic Research Expeditions. Only those available seem to be interim reports by HORIKOSHI and HOSHIAI (1977, 1978) and HORIKOSHI *et al.* (1979). Besides them, benthic mollusks collected from the Antarctic waters by the T. V. UMITAKA MARU were reported by TAKI (1961) and MURANO *et al.* (1982).

The summer party of the 25th Japanese Antarctic Research Expedition (JARE-25) headed by Dr. Y. NAITO, Associate Professor of the National Institute of Polar Research, undertook beam-trawl samplings at two stations, both located in the shelf zone at depths 310 and 215 m, respectively. The benthic molluscan materials sorted out from benthos samples then collected were kindly offered me by Dr. Y. NAITO for identification. This paper deals with a preliminary result of investigation of these specimens.

2. Material

Two beam-trawl stations are here symbolized as Stns. A and B. The date of sampling, position and depth for these stations are shown in Table 1 and Fig. 1. All molluscan specimens were preserved in a 40% alcohol when they came to my hand. A single specimen of *Laternula elliptica* collected by diving from a depth of about 10 m at Nisi-no-ura Cove (69°01'N, 39°34'E) near Syowa Station of the East Ongul Island was also placed for reference.

Table 1. Collecting stations of beam-trawl in 1984 (JARE-25).

Station	Date	Latitude	Longitude	Depth
A	February 11	70°14.0'S	24°23.9'E	310 m
B	February 19	70°14.5'S	23°58.2'E	215 m

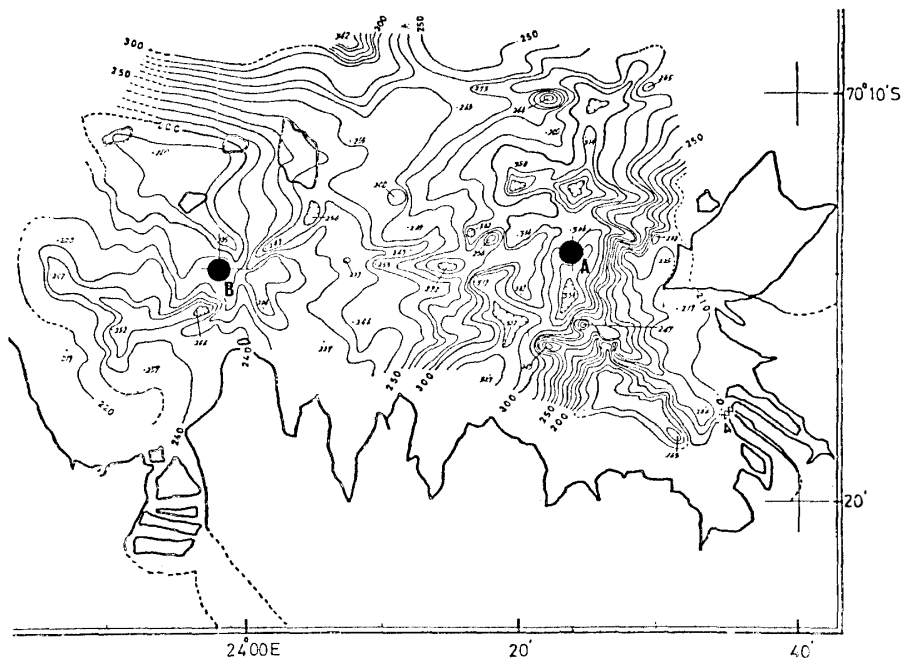


Fig. 1. Trawling sites (Stns. A and B) in Breid Bay (courtesy National Institute of Polar Research).

3. Results

The number of molluscan species and specimens by Class are summarized in Table 2. The total number of species in beam-trawl collection was 17 including both collected alive and dead. Only *Limopsis marionensis* was common to both stations. Results of identification, number of specimens, size and state of samples are shown in Table 3.

Table 2. Numbers of molluscan species and specimens (in parentheses) by Class.

Class	Stn. A		Stn. B	
	Taken alive	Empty shell	Taken alive	Empty shell
Polyplacophora	1 (1)	—	—	—
Gastropoda	2 (2)	1 (1)	1 (1)	3 (4)
Scaphopoda	—	—	—	1 (1)
Bivalvia	—	1 (1)	2 (2)	4 (5)
Cephalopoda	—	—	2 (2)	—
Total	3 (3)	2 (2)	5 (5)	8 (10)

Table 3. Identification of molluscan specimens with number, size and state of samples.

Loc.	Class	Species	No.	Size**	Remarks	Pl.-Fig.
Stn. A (310 m)	Polyplacophora	<i>Plaxiphora</i> sp.	1	BL 64 mm	Valves smashed	1-10, 2-23
	Gastropoda	<i>Faulsilunatia falklandica</i> (PRESTON, 1913)	1	SH 34.2	Apex eroded	1-7
		<i>Trophon scotianus</i> POWELL, 1951	1	SH 71.1		1-3
		<i>Pontiothauma ergata</i> HEDLEY, 1916	1*	SH 55.1		1-4
	Bivalvia	<i>Limopsis marionensis</i> E. A. SMITH, 1885	1*	SL 29.1	Left valve chipped	
Stn. B (215 m)	Gastropoda	<i>Paramphorella mawsoni</i> POWELL, 1958	1*	SL 30.9		1-1, 2
		<i>Amauropsis (Kerguelenatica) grisea</i> (MARTENS, 1878)	1	SH 7.5	Juvenile	
		<i>Pareuthria</i> sp.	2*	SH 17.9, 10.6		1-9
		<i>Amalda?</i> sp.	1	SH 17.1	Juvenile	1-8
	Scaphopoda	<i>Dentalium</i> sp.	1*	SH 45.5+	Broken into two	
	Bivalvia	<i>Limopsis marionensis</i> E. A. SMITH, 1885	1	SL 67.1		2-12
		<i>Lissarca notorcadensis</i> MELVILLE & STANDEN, 1907	1*	SL 14.8		2-13, 14
		<i>Limatula (Antarctolima) hodgsoni</i> E. A. SMITH, 1907	1	SH 27.5		2-18, 19
		<i>Cyclocardia astartoides</i> (MARTENS, 1878)	1/2*	SL 13.9	Left valve only	2-16, 22
		<i>Thracia meridionalis</i> E. A. SMITH, 1885	1*	SL 11.9	Right demolished	2-15
		<i>Cuspidaria tenella</i> E. A. SMITH, 1907	2*	SL 22.5, 23.0		2-17
	Cephalopoda	<i>Pareledone charcoti</i> (Joubin, 1905)	1	ML 31.5	Immature	3-25, 26
<i>Thaumeledone gunteri</i> ROBSON, 1930		1	ML 61.0		3-24, 27	
Nisi-no- ura	Bivalvia	<i>Laternula elliptica</i> (KING & BRODERIP, 1831)	1	SL 56.0		2-20, 21

Number of specimen with an asterisk (*) indicates empty (dead) specimen.

** BL: body length, ML: mantle length, SH: shell height, SL: shell length (all in mm).

4. Discussion

The empty specimens are thought to be fresh dead ones, not old deposits such as reworked fossil. Therefore, they are all taken together in considering molluscan assemblage of this area. In operating, trawl caught many large rocks and boulders indicating that the trawling sites were primarily the hard bottom upon which a large population of sponges grows (NAITO, personal communication). The constituents of the present catch contain some hard-bottom dwellers, such as *Plaxiphora* sp. and *Trophon scotianus* among others. However, occurrences of sandy-bottom dwelling gastropods, such as *Faulesilunatia falklandica* and many endobiotic bivalves suggest that there are considerable amounts of sandy sediment that filled interstices among stones. Catches of two species of octopods, *Pareledone charcoti* and *Thaumeledone gunteri*, are interesting. Their occurrences may indicate that mixture of stones and interstitial soft sediments creates complicated microtopography that provides them with good hiding places. There is a slight difference in depth between two stations, but it may be safe to discuss the matter by taking both together as such a depth difference may not affect spectacular differences between faunules.

DELL (1964, 1972) counted 309 molluscan species (among which 66 are bivalves) from the East Antarctic region. The present collection therefore covers a very small portion of the total molluscan fauna of the region. However, it is interesting to note here that six of eight "typical Antarctic bivalves" selected by him are included in the present collection. The bivalve species defined as "typical" by DELL (1972) are: *Adamussium colbecki*, *Limopsis marionensis*, *Cuspidaria tenella*, *Thracia meridionalis*, *Yoldia eightsi*, *Limatula hodgsoni*, *Laternula elliptica* and *Cyclocardia astartoides*.

Among those enumerated above, *Adamussium colbecki* is said to be common in the subtidal flat near Syowa Station, but none was found in the present catch. Nor *Neobuccinum eatoni*, which is one of the most abundant whelk around Syowa Station (HOSHIAI, 1982), occurred herein. The present collection may exhibit a different molluscan assemblage from that occupying a subtidal flat near Syowa Station, in spite of the fact that some members included in the present catch are known to have a wide bathymetrical range: e.g. *Limopsis marionensis* (144–914 m), *Lissarca notorcadensis* (18–720 m), *Limatula hodgsoni* (12–695 m), *Cyclocardia astartoides* (15–836 m), *Thracia meridionalis* (5–752 m) (all by DELL, 1972).

From a viewpoint of depth, both Stns. A and B are located on the shelf zone. In contrast to this fact, members of the genera *Pontiothauma*, *Limopsis*, *Thracia*, *Cuspidaria*, etc. may be elements that support the affinity of the Antarctic fauna to the bathyal fauna in lower latitudes.

Because of such a small collection, not much new conclusion may be drawn from the observation on it, but it is noteworthy that the present collection cuts a typical molluscan assemblage of the East Antarctic region without being disturbed, and represents a natural composition of species.

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Plate 1

- Figs. 1, 2. *Paramphorella mawsoni* POWELL, 1958 (Shell length 30.9 mm).
Figs. 3, 6. *Trophon scotianus* POWELL, 1951 (Shell height 71.1 mm).
Figs. 4, 5. *Pontiothauma ergata* HEDLEY, 1916 (Shell height 55.1 mm).
Fig. 7. *Faulsilunatia falklandica* (PRESTON, 1913) (Shell height 34.2 mm).
Fig. 8. *Amalda?* sp., juvenile (Shell height 17.1 mm).
Fig. 9. *Pareuthria* sp. (Shell height 17.9 mm).
Fig. 10. *Plaxiphora* sp. (Body length 64 mm).
Fig. 11. *Dentalium* sp. (Shell length 45.5+ mm).



Plate 2

- Fig. 12. *Limopsis marionensis* E. A. SMITH, 1885 (Shell length 67.1mm).
Figs. 13, 14. *Lissarca notorcadensis* MELVILLE & STANDEN, 1907 (Shell length 14.8mm).
Fig. 15. *Thracia meridionalis* E. A. SMITH, 1885 (Shell length 11.9mm).
Figs. 16, 22. *Cyclocardia astartoides* (MARTENS, 1878) (Shell length 13.9mm).
Fig. 17. *Cuspidaria tenella* E. A. SMITH, 1907 (Shell length 23.0mm).
Figs. 18, 19. *Limatula (Antarctolima) hodgsoni* E. A. SMITH, 1907 (Shell height 27.5mm).
Figs. 20, 21. *Laternula elliptica* (KING & BRODERIP, 1831) (Shell length 56.0mm).
Fig. 23. *Plaxiphora* sp. (Same specimen with Pl. 1, Fig. 10).

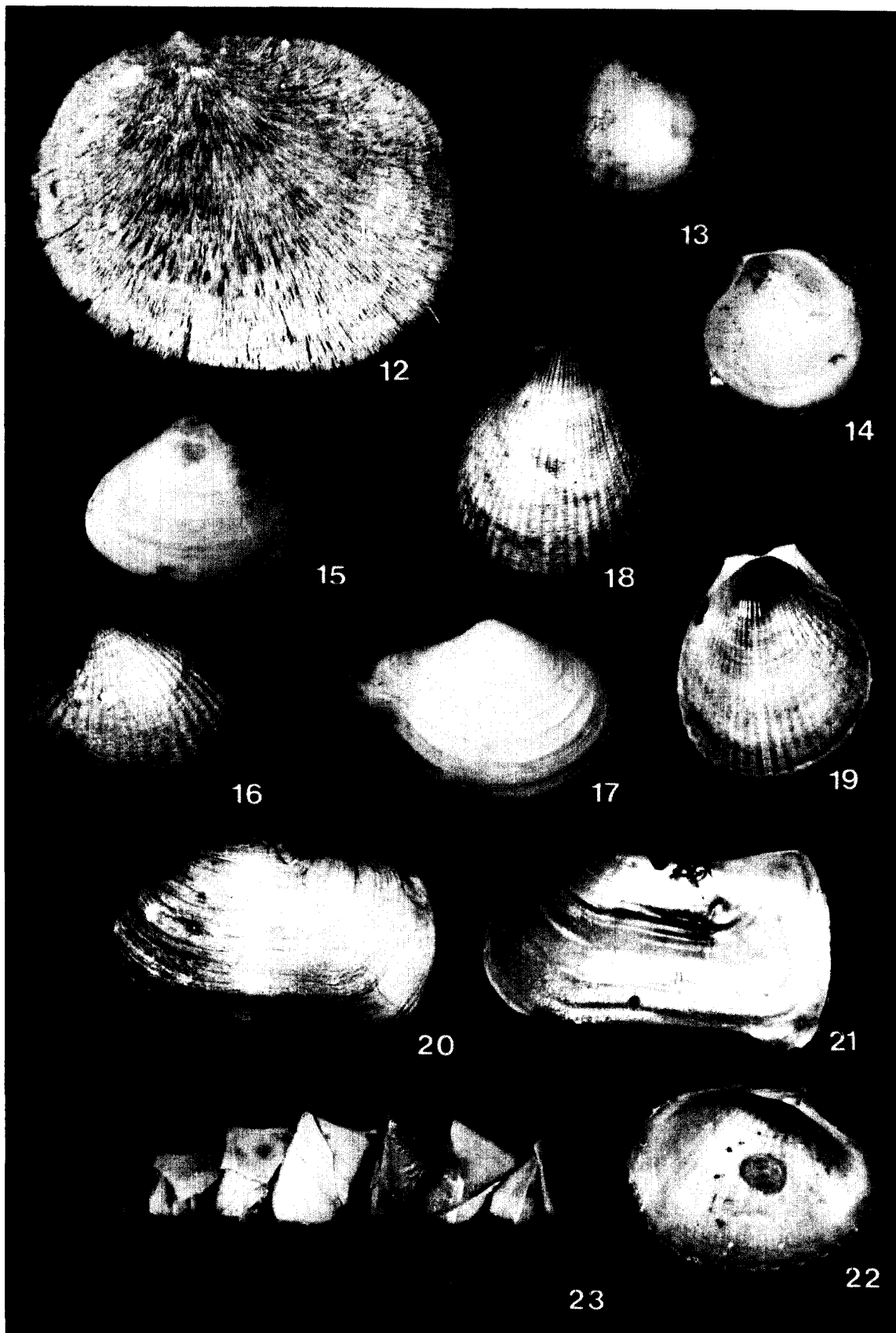


Plate 3

Figs. 24, 27. *Thaumeledone gunteri* ROBSON, 1930 (Mantle length 61.0 mm).

Figs. 25, 26. *Pareledone charcoti* (Joubin, 1905) (Mantle length 31.5 mm).

