

THE BRIEF NOTES
ON
THE DIATOMS VEGETATION AT THE PRINCE OLAV
COAST, ANTARCTICA

By

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The writer had an opportunity to make investigation on the diatoms vegetation at Shinnaniwa Ice-Free Area on February 10, 1961, and the Mondaiiwa Ice-Free Area on February 20, 1961. The full report on the diatoms vegetation of the above two areas will be published in The Antarctic Record, No. 14 & 15 (now in the press) and in this article only an outline of the flora will be given.

I. SHINNANIWA ICE-FREE AREA

The Shinnaniwa Ice-Free Area is located at 67°57'S. and 47°29'E. It is known that many years had passed since the last glacial epoch, after which weathering was considerably active. Many weathered rocks, therefore, were found. Crowds of moss and lichen were seen in several places. The writer, who participated in the Third and Fifth Japanese Antarctic Research Expedition, found that moss and lichen of this area were most abundant on the Ongul Islands or along the Prince Olav Coast.

The moss found there and brought back to the laboratory was identified by Professor Yoshio Horikawa of the Hiroshima University, to comprise:

1. *Ceratodon purpureus*
2. *Bryum argenteum*
3. *Bryum inconnecum*

Because of the limited time the writer investigated only four ponds, from which a total of 18 algal samples were gathered in polyethylene bottles. Shinnaniwa was investigated on February 10, 1961, which is the early autumn at the Antarctic. The ponds at Station 1 & 3 were already frozen to a thickness of 0.5-1 cm. These ponds measured about eight to ten meters in diameter and about 80 cm in maximum depth (average: 30 cm.)

The environmental factors are shown in Table and among them feature was that nutritional salts such as P or NO₂, were of small amount and could hardly be analyzed by the standard quantitative method. The quantity of NH₃ was 1–2 mg/l (very little). SiO₂ was 21–28 mg/l (average) and pH was 6.9–7.0 (neutral).

Thirty-four taxon were found in his area, and among them five consisted of marine forms. The diatom vegetation in each pond was follows :-

Station 1 Sample:	9, <i>Hantzschia amphioxys</i> and 12 other taxon
2	10, <i>Nitzschia palea</i> and 19 other taxon
3	3, <i>Stauroneis anceps</i> and one other taxa
4	6, <i>Diploneis</i> sp. and 20 other taxon

II. MONDAIWA ICE-FREE AREA

The Mondaiwa Ice-Free Area is located at 68°21'5" S. and 42°15'13"E. It seems that not so many years had passed since the glacial epoch. Weathering was not recognized and weathered rocks were not found. No moss or lichen were seen. Only moraine was found at certain spots.

Thirty algal materials were collected in polyethylene bottles from eight ponds. The time to investigate the environmental factors in detail was insufficient and, therefore only an outline is presented in Table 1.

Table I.
Environmental factors at Shinnaniwa and Mondaiwa Ice-Free Area.

E. factor Station	Date	Time	AT°C	WT°C	pH	RpH	O ₂ a/L	P	SiO ₂	NH ₃	NO ₂	Cl/mg/L
Shinnaniwa	1	10 II'61	13 : 45	2.8	3.0	6.5	6.9	0	21	1	0	
	2	"		5.7	10.2	6.7	7.0					
	3	"	15 : 15	3.2	1.0	6.8	7.0	0	28	1	0	21.2
	4	"	15 : 45	2.8	5.8	6.8	7.0	9.81	0	27	2	0
Mondaiwa	1	20 II'61	13 : 15	4.2	2.1	6.8	7.1	0	20	0	0	358
	2	"				8.1		0	19	0	0	9,523
	3	"						0	20	0	0	4,952
	4	"										
	5	"										
	6	"										
	7	"						0	20	0	0	5,176
	8	"										

The investigated ponds measured 10–100 meter in diameter and were less than 60 cm in depth. The feature of these ponds was that the quantity of nutritional salts (P, NH₃, NO₂) was too small for quantitative analysis, being similar to the ponds of Shinnaniwa. SiO₂ was 19–20 mg/l (standard).

The ponds in the Mondaiwa Area can be classified into two, one is of fresh water and the other is of brackish water. The former consisted of Station 1 & 8.

The other five stations (Station 2~7) belonged to the latter. Concerning pH, the former was a little acidic and the latter was alkaline.

The Mondaiwa fresh water ponds contained more Chlor ion than those of Shinnaniwa. The water from Station 1 showed 358 mg/l. In case of the brackish water ponds, the Chlor ion content varied with each pond. The content was 4.95–9.523 mg/l. This is ca. 1/4–1/2 of sea water. Almost all of these brackish water ponds had hydrogen sulfide and odour. Their bottom muds were black in color.

The dominant species of the fresh water algae in the ponds to Mondaiwa were blue green algae and diatoms while those of the Shinnaniwa area were blue green algae only. The most dominant feature of the algal vegetation at Mondaiwa was that they had diatoms.

The diatoms vegetation of the fresh water ponds and brackish ponds were different. The former showed the *Navicula muticopsis* association and the latter the *Navicula cryptocephala* var. *intermedia*—*Navicula cryptocephala*—*Tropidoneis laevissima* association. The writer found 46 taxon of diatoms from these ponds. Thirty four taxon were already identified, and 24 taxon of them consisted of marine diatoms. The remaining 12 taxon have not yet been identified.

Station 1 (Fresh water pond) six samples, *Navicula muticopsis* and 6 other taxon. *Navicula muticopsis* association.

2 (Brackish pond) six samples, *Navicula cryptocephala* var. *intermedia* and 16 other taxon. *Navicula cryptocephala* var. *intermedia* association.

3 (Brackish pond) two samples, *Navicula cryptocephala* var. *intermedia*, *Navicula cryptocephala*, *Tropidoneis laevissima* and 16 other taxon. *Navicula cryptocephala* var. *intermedia*—*Navicula cryptocephala*—*Tropidoneis laevissima* association.

4. (Brackish pond) two samples, *Navicula cryptocephala*, *Navicula cryptocephala* var. *intermedia* and 4 other taxon. *Navicula cryptocephala*—*Navicula cryptocephala* var. *intermedia* association.

5 (Brackish pond) two samples, *Navicula cryptocephala* var. *intermedia* and 15 other taxon, *Navicula cryptocephala* var. *intermedia* association.

6 (Brackish pond) two samples, *Navicula cryptocephala* var. *intermedia*, *Tropidoneis laevissima* and 8 other taxon, *Navicula cryptocephala* var. *intermedia*—*Tropidoneis laevissima* association.

7 (Brackish pond) nine samples, *Tropidoneis laevissima*, *Navicula cryptocephala* var. *intermedia*, *Navicula cryptocephala* association and other 28 taxon. *Tropidoneis laevissima*—*Navicula cryptocephala* var. *intermedia*—*Navicula cryptocephala* association.

8 (Freshwater pond) one sample, *Navicula muticopsis* and 2 other taxon.

Comparing the diatoms vegetation of the Shinnaniwa Ice-Free Area with that of the Mondaiwa Ice-Free Area, the former was not so numerous in species and

much less than the latter in quantity. The writer found that the former had some marine diatoms whereas the latter had many of them. This is probably because many brackish water ponds were found there.