

Report on the Water Temperature of Mutsu Bay during 1950,

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Report on the Water Temperature of Mutsu Bay during 1950

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This article is a report on the observations of water temperature of Mutsu Bay during January to December, 1950.

a). Results from the previous year: In the report for 1949 (Bulletin of Marine Biology, vol. 4, nos. 2, 3, 4), it was expressed that the water temperature compared with normal years, was higher during January to March, lower during April to August and normal thereafter, except for a lowering in December. This abnormality is due to the general lowering of water temperature during 1949, resulting from the strong cold-water current from the Japan Sea.

b). Conditions of the water temperature during 1950: The results of the present observations following the general lowering of the previous year are shown in the following table.

Temperature and Specific Gravity of Mutsu Bay during 1950.

Depth (m)	Temperature (°C)											
	I.14	II.3	II.16	III.5	III.19	IV.1	IV.16	V.2	V.17	VI.4	VI.15	VII.6
0	8.08	6.86	7.80	6.49	6.82	8.53	9.29	8.87	11.09	14.00	16.78	21.29
5	8.09	7.68	8.14	6.71	7.56	8.43	9.71	9.29	11.09	14.00	16.78	21.29
10	8.08	7.51	8.21	6.72	7.23	7.64	9.15	9.91	12.10	12.67	13.20	18.33
20	8.06	7.13	8.19	6.74	7.04	7.54	8.22	11.01	12.19	11.65	12.75	18.24
30	8.08	7.11	8.17	6.79	6.97	6.97	8.12	12.28	12.77	11.29	12.38	17.34
Mean of Om, 10, 30m, (A)	8.08	7.16	8.06	6.67	7.01	7.71	8.85	10.35	11.99	12.65	14.12	18.99
Mean of 1927 ~1947 (B)	7.52	6.88	6.17	—	6.10	6.72	7.58	9.07	10.55	12.13	14.02	16.29
Difference between A and B	0.56	0.28	1.89	—	0.91	0.99	1.27	1.28	1.44	0.52	0.10	2.70
	VII.21	VIII.4	VIII.15	IX.7	IX.23	X.3	X.15	XI.3	XI.18	XII.4	XII.16	
0	22.46	23.49	25.39	27.79	21.87	20.16	19.43	14.94	13.18	11.83	9.45	
5	21.83	21.80	25.39	23.57	21.85	20.65	19.38	16.47	14.09	13.02	10.69	
10	20.18	20.25	23.84	22.98	21.27	20.17	19.41	16.45	14.29	13.40	11.11	
20	19.63	19.67	22.37	22.77	21.76	20.82	19.45	16.47	14.47	13.40	11.82	
30	19.25	18.61	19.62	22.30	21.50	20.82	19.49	16.47	14.58	13.40	11.83	
Mean of Om, 10, 30m, (A)	20.58	20.78	22.95	23.02	21.55	20.38	19.44	15.95	14.35	12.88	10.79	
Mean of 1927 ~1947 (B)	18.31	21.27	22.10	22.62	21.78	20.52	18.80	16.57	14.77	12.07	10.54	
Difference between A and B	2.27	-0.49	0.85	0.40	-0.23	-0.14	0.64	-0.62	-0.42	0.81	0.25	

Depth (m)	Specific Gravity (σ ₁₅)											
	I.14	II.3	II.16	III.5	III.19	IV.1	IV.16	V.2	V.17	VI.4	VI.15	VII.6
0	26.20	25.70	24.78	24.60	24.62	22.29	19.87	21.25	24.11	24.18	23.17	23.65
5	26.20	26.30	24.80	24.74	25.02	24.61	23.82	24.27	24.61	24.74	24.78	24.40
10	26.20	26.50	24.84	24.81	24.99	24.80	24.57	24.51	24.81	24.94	24.86	24.58
20	26.20	26.40	24.84	24.81	24.99	24.85	24.83	24.51	24.81	25.05	24.93	—
30	26.20	26.50	24.84	24.81	24.99	24.85	24.86	24.51	25.08	25.20	24.98	24.89
Mean of Om, 10m, 30m.	26.20	26.23	24.82	24.74	24.87	23.98	23.10	23.42	24.67	24.77	24.34	24.37
	VII.21	VIII.4	VIII.15	IX.7	IX.23	X.3	X.15	XI.3	XI.18	XII.4	XII.16	
0	23.05	24.86	24.75	25.07	24.86	24.60	24.63	23.09	—	24.18	23.61	
5	24.88	24.98	25.40	25.14	24.97	24.88	24.93	25.00	—	24.71	24.34	
10	24.88	25.20	25.40	25.16	25.10	25.05	25.01	25.02	—	24.91	24.58	
20	25.22	25.29	25.42	25.24	25.10	25.10	25.03	25.02	—	24.98	24.82	
30	25.45	25.39	25.47	25.26	25.12	25.12	24.70	25.02	—	24.98	24.82	
Mean of Om, 10m, 30m.	24.46	25.15	25.21	25.16	25.30	24.92	24.78	24.38	—	24.69	24.34	

The difference between the maximum and minimum water temperatures for 1950 and the normal years is as follows 0.56°C (Jan. 14), 0.28°C (Feb. 3), 1.89°C (Feb. 16), 0.91°C (Mar. 19), 0.99°C (April. 1), 1.27°C (Apr. 16), 1.28°C (May 2), 1.44°C (May 17), 0.52°C (June 4), 0.10°C (June 15), 2.70°C (July 6), 2.27°C (July 21), -0.49°C (Aug. 4), 0.85°C (Aug. 15), 0.40°C (Sept. 7), -0.23°C (Sept. 23), -0.14°C (Oct. 3), 0.64°C (Oct. 15), -0.62°C (Nov. 3), -0.42°C (Nov. 18), 0.81°C (Dec. 4), 0.25°C (Dec. 16).

Thus, from the differences in water temperature it is noticed that the maximum raise of 2.70°C occurred on July 6, followed by 0.62°C on July 21, 0.49°C on August 4 and 0.42°C on November 11, in the order given. During the latter half of the period of observation cases of low temperature were recorded but during the former half of the period, the water temperature remained high. As noticed from Table, considerably low temperature is observed in Mutsu Bay during November, but during the period of observation (23 times) low temperature was recorded only five times. The remaining observations showed the water temperature to be higher than that of the normal years. These results indicate that the water temperature for 1950 was higher than that of normal years.

The fluctuation in water temperature of Mutsu Bay is due chiefly to the strength of the cold and warm water currents flowing into the bay from the Japan Sea. The high water temperature of Mutsu Bay this year is due to the superiority of the warm water current flowing into the bay from the Japan Sea.

c). Water temperature and catch of codfish in Mutsu Bay: The water temperature of Mutsu Bay around the tenth of December is 11°C, thus the cold water plankton *Chaetoceros debilis* and *Ch. socialis* predominate. In the early latter part of November when the sea reaches this cold water condition in normal years the catch of codfish is believed to be good. However during November of

1950 the cold water plankton consisted predominantly of *Chaetoceros decipiens* and *Ch. didymus*, and *Ch. debilis* and *Ch. socialis* were not abundant, thus, it was judged that the conditions for codfish were not suitable. From the results of the previous year, it was presumed that the conditions for catching codfish were insuitable. Accordingly, the presumption was justified as the catch of codfish during the latter part of December was low, in fact, the lowest hitherto recorded.