



HOKKAIDO UNIVERSITY

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THE “USHIO MARU”

CRUISE 139

CRUISE 140

CRUISE 141

IN JANUARY-FEBRUARY 2008

1. Cruise Itinerary

Cruise 139

Departure from Hakodate	Jan.	9	, 2008
Return to Hakodate		10	
Total coverage 6.3 miles			

Cruise 140

Departure from Hakodate	Jan.	21	, 2008
Arrival at and departure from Usujiri		21	
Start hydrographic research (US08001) and larvae net sampling		21	
Sampling by Frame Trawl net		21	
Arrival at Usujiri		22	
Departure from Usujiri		23	
Finish hydrographic research (US08013) and larvae net sampling		23	
Departure from Usujiri		26	
Return to Hakodate		26	
Total coverage 255.9 miles			

Cruise 141

Departure from Hakodate	Feb.	4	, 2008
Start hydrographic research (US08014) and larvae net sampling		4	
Finish hydrographic research (US08028) and larvae net sampling		5	
Return to Hakodate		6	
Total coverage 197.7 miles			

2. Vessel Personnel

Captain:		Associate Professor	Hidekazu Yamaguchi
Crew :	Chief Officer	Assistant Professor	Osamu Kimura
	Second Officer	Assistant Professor	Naoto Kobayashi
	And 13 men		

Cruise 139			
Research Staff:	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu

Graduate Students:	Laboratory of Marine Bioresource Science :	1 person
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Under Graduate Students:	Department of Marine Biological Science :	3 persons
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Cruise 140			
Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	Toshikuni Nakatani
	Associate Professor	(Laboratory of Marine Bioresource and Environment Sensing)	Tohru Mukai

Graduate Students :	Laboratory of Marine Bioresource Science :	2 persons
	Laboratory of Marine Bioresource and Environment Sensing :	1 person

Under Graduate Students :	Department of Marine Biological Science :	3 persons
	Department of Marine Production System Science :	3 persons

Cruise 141			
Research Staff :	Associate Professor	(Laboratory of Marine Bioresource Science)	Tetsuya Takatsu

Graduate Students :	Laboratory of Marine Bioresource Science :	1 person
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Under Graduate Students :	Department of Marine Biological Science :	3 persons
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3. Data on Temperature, Salinity, and Computed Dynamic Depth Anomaly

Hydrographic work on deck and the data processing were made by the deck officers, crews, research staff and cadets of the “Ushio Maru”.

Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19).

Dynamic computations were made using a desk-top computer aboard the “Ushio Maru”.

Figure 1: Oceanographic stations (Cruise 140)

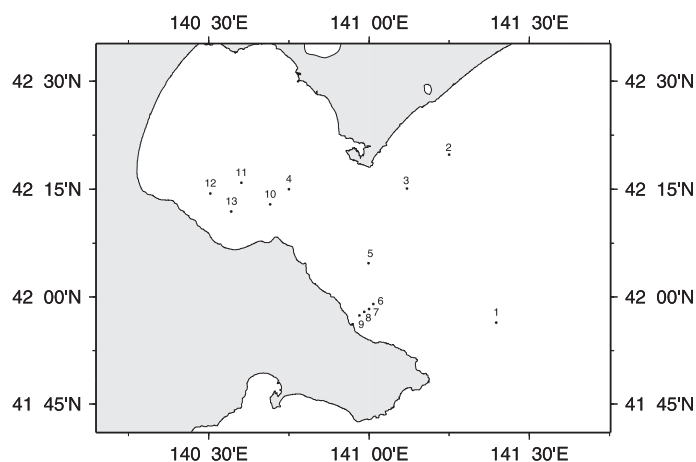


Figure 2: Oceanographic stations (Cruise 141)

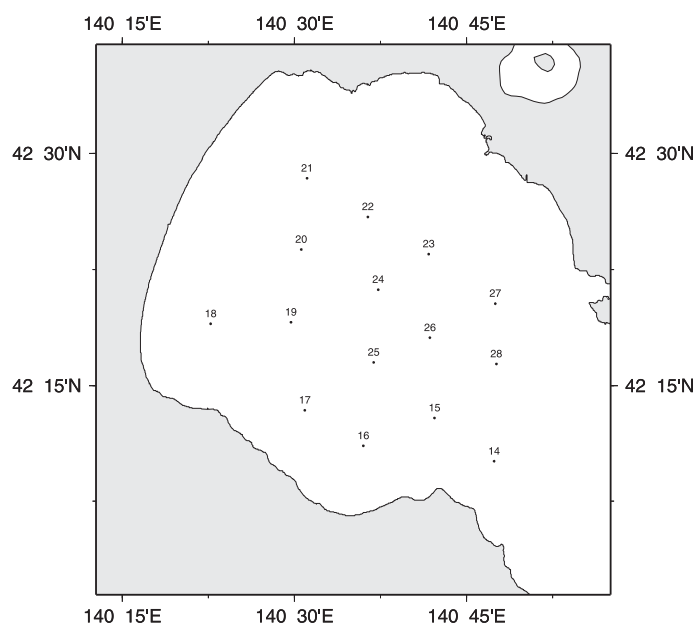


Table 1: List of oceanographic stations

Cruise 139 No Data

Cruise 140

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr. Bar.	(hPa)
US08001	41-56.4	141-23.8	1/21	1755-1803	355	NW-2	NW -1	NW -4	-2.2	8.0	s	1023.7
US08002	42-19.8	141-15.0	1/21	2315-2320	97	North-1	NW -2	North-3	-3.8	7.5	o	1023.8
US08003	42-15.1	141-07.1	1/22	0039-0043	83	NW -2	NW -1	NW -4	-2.9	7.4	s	1024.0
US08004	42-15.0	140-45.0	1/22	0245-0249	78	WNW-2	WNW-1	WNW-4	-2.4	7.0	c	1024.0
US08005	42-04.7	140-59.9	1/22	0445-0450	82	West-1	NNW-1	West-3	-2.6	7.9	c	1024.2
US08006	41-59.0	141-00.8	1/22	0547-0552	95	West-1	NW -1	West-3	-2.1	7.9	s	1024.1
US08007	41-58.3	141-00.0	1/22	0604-0609	90	WNW-1	NW -1	WNW-3	-2.6	7.7	s	1024.1
US08008	41-57.9	140-59.1	1/22	0620-0625	85	NW -1	NW -1	NW -3	-2.5	7.7	c	1024.1
US08009	41-57.4	140-58.2	1/22	0635-0640	79	West-1	NW -1	West-3	-2.4	7.9	s	1024.1
US08010	42-12.9	140-41.5	1/23	1314-1320	91	Calm	ESE-1	Calm	0.7	6.4	c	1019.2
US08011	42-15.9	140-36.1	1/23	1421-1427	92	Calm	ESE-1	Calm	-0.1	5.2	o	1018.5
US08012	42-14.4	140-30.3	1/23	1529-1534	81	Calm	ESE-1	Calm	0.0	5.2	c	1018.0
US08013	42-11.9	140-34.2	1/23	1625-1629	83	Calm	ESE-1	Calm	-0.1	5.1	c	1017.1

Cruise 141

Station	Lat. (N)*	Long. (E)*	Date	S.M.T.	Depth	Wave	Swell	Wind	Air Temp.	Sea Temp.	Wr. Bar.	(hPa)
US08014	42-10.1	140-47.4	2/4	1426-1430	95	NW -1	ESE-1	NW -2	-0.8	4.5	bc	1013.9
US08015	42-12.9	140-42.2	2/4	1512-1517	91	WNW-2	ESE-1	WNW-3	-0.7	5.1	s	1014.2
US08016	42-11.1	140-36.0	2/4	1611-1615	82	NW -2	ESE-1	NW -4	-0.6	4.9	bc	1014.6
US08017	42-13.4	140-30.9	2/4	1710-1714	81	WNW-3	ESE-1	WNW-5	-0.8	4.8	c	1014.8
US08018	42-19.0	140-22.7	2/5	0717-0721	53	WSW-1	ESE-1	WSW-3	-2.7	4.8	s	1014.1
US08019	42-19.1	140-29.7	2/5	0822-0826	92	WSW-2	East-1	WSW-4	-2.1	5.1	o	1014.1
US08020	42-23.8	140-30.6	2/5	0919-0923	76	West-1	ESE-1	West-3	-2.0	5.2	bc	1014.1
US08021	42-28.4	140-31.1	2/5	1002-1006	78	West-1	ESE-1	West-2	-1.3	5.3	bc	1014.2
US08022	42-25.9	140-36.4	2/5	1042-1046	86	West-1	ESE-1	West-2	0.0	5.1	bc	1014.3
US08023	42-23.5	140-41.7	2/5	1123-1126	68	West-2	ESE-1	West-3	0.2	4.9	bc	1014.1
US08024	42-21.2	140-37.3	2/5	1200-1204	86	WNW-3	West-1	WNW-5	-0.7	5.5	s	1013.6
US08025	42-16.5	140-36.9	2/5	1251-1254	91	West-3	West-1	West-5	-0.3	5.0	bc	1013.4
US08026	42-18.1	140-41.8	2/5	1339-1342	67	West-3	West-1	West-5	-0.1	4.7	bc	1013.0
US08027	42-20.3	140-47.5	2/5	1425-1427	58	West-3	West-1	West-5	0.2	4.1	bc	1013.1
US08028	42-16.4	140-47.6	2/5	1500-1503	70	West-3	West-1	West-6	-0.1	4.5	bc	1013.0

(*):Fixed position by Global Positioning System

Table 2: Oceanographic data

STATION US08001 LATITUDE 41-56.4 N LONGITUDE 141-23.8 E DEPTH (m) 355				STATION US08002 LATITUDE 42-19.8 N LONGITUDE 141-15.0 E DEPTH (m) 97				STATION US08003 LATITUDE 42-15.1 N LONGITUDE 141-07.1 E DEPTH (m) 83			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	8.325	33.883	26.348	5	7.652	33.899	26.460	5	7.865	33.917	26.443
10	8.317	33.884	26.350	10	7.649	33.899	26.460	10	7.877	33.918	26.442
20	8.332	33.890	26.353	20	7.721	33.915	26.463	20	7.882	33.916	26.440
30	8.330	33.894	26.356	30	7.734	33.916	26.462	30	7.874	33.913	26.438
40	8.330	33.898	26.359	40	7.736	33.914	26.460	40	7.904	33.935	26.452
50	8.330	33.900	26.361	50	7.735	33.912	26.458	50	7.842	33.933	26.459
75	8.335	33.909	26.367	75	7.712	33.914	26.463	75	7.798	33.934	26.466
100	8.316	33.905	26.366								
125	8.277	33.902	26.370								
STATION US08004 LATITUDE 42-15.0 N LONGITUDE 140-45.0 E DEPTH (m) 78				STATION US08005 LATITUDE 42-04.7 N LONGITUDE 140-59.9 E DEPTH (m) 82				STATION US08006 LATITUDE 41-59.0 N LONGITUDE 141-00.8 E DEPTH (m) 95			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	7.432	33.946	26.528	5	8.320	33.927	26.383	5	8.194	33.948	26.419
10	7.440	33.945	26.526	10	8.307	33.926	26.385	10	8.192	33.946	26.418
20	7.440	33.940	26.523	20	8.319	33.923	26.380	20	8.193	33.947	26.418
30	7.420	33.937	26.523	30	8.326	33.924	26.380	30	8.152	33.938	26.417
40	5.961	33.894	26.684	40	8.328	33.924	26.380	40	7.879	33.918	26.442
50	5.896	33.917	26.710					50	7.798	33.910	26.447
								75	7.680	33.893	26.452
STATION US08007 LATITUDE 41-58.3 N LONGITUDE 141-00.0 E DEPTH (m) 90				STATION US08008 LATITUDE 41-57.9 N LONGITUDE 140-59.1 E DEPTH (m) 85				STATION US08009 LATITUDE 41-57.4 N LONGITUDE 140-58.2 E DEPTH (m) 79			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	8.153	33.949	26.426	5	8.277	33.940	26.400	5	8.308	33.941	26.396
10	8.155	33.950	26.427	10	8.209	33.940	26.410	10	8.253	33.923	26.390
20	8.153	33.950	26.426	20	8.117	33.942	26.426	20	8.034	33.942	26.438
30	8.150	33.948	26.425	30	8.070	33.937	26.428	30	7.901	33.941	26.457
40	7.813	33.901	26.438	40	7.678	33.859	26.425	40	7.685	33.933	26.482
50	7.762	33.904	26.448	50	7.596	33.880	26.454	50	7.483	33.914	26.496
75	7.528	33.874	26.458	75	6.001	33.875	26.663	75	6.172	33.883	26.648
STATION US08010 LATITUDE 42-12.9 N LONGITUDE 140-41.5 E DEPTH (m) 91				STATION US08011 LATITUDE 42-15.9 N LONGITUDE 140-36.1 E DEPTH (m) 92				STATION US08012 LATITUDE 42-14.4 N LONGITUDE 140-30.3 E DEPTH (m) 81			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	6.232	33.932	26.679	5	5.642	33.869	26.703	5	5.672	33.899	26.723
10	6.021	33.908	26.687	10	5.650	33.909	26.734	10	5.682	33.911	26.731
20	5.800	33.901	26.709	20	5.650	33.908	26.733	20	5.677	33.909	26.731
30	5.751	33.902	26.716	30	5.650	33.909	26.734	30	5.671	33.909	26.731
40	5.694	33.896	26.718	40	5.652	33.910	26.735	40	5.661	33.908	26.732
50	5.693	33.897	26.719	50	5.649	33.910	26.735	50	5.662	33.908	26.731
75	5.583	33.887	26.725	75	5.648	33.911	26.736	75	5.623	33.911	26.738
STATION US08013 LATITUDE 42-11.9 N LONGITUDE 140-34.2 E DEPTH (m) 83				STATION US08014 LATITUDE 42-10.1 N LONGITUDE 140-47.4 E DEPTH (m) 95				STATION US08015 LATITUDE 42-12.9 N LONGITUDE 140-42.2 E DEPTH (m) 91			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	5.495	33.821	26.683	5	5.128	33.721	26.647	5	5.212	33.796	26.697
10	5.534	33.896	26.738	10	5.211	33.886	26.767	10	5.192	33.846	26.738
20	5.521	33.895	26.738	20	5.198	33.890	26.773	20	5.185	33.897	26.780
30	5.510	33.895	26.739	30	5.169	33.890	26.776	30	5.163	33.895	26.781
40	5.510	33.895	26.739	40	5.141	33.889	26.778	40	4.705	33.842	26.790
50	5.505	33.895	26.740	50	5.116	33.889	26.781	50	4.382	33.816	26.805
75	5.480	33.896	26.744	75	4.875	33.870	26.794	75	4.739	33.898	26.831

STATION US08016 LATITUDE 42-11.1 N LONGITUDE 140-36.0 E DEPTH (m) 82				STATION US08017 LATITUDE 42-13.4 N LONGITUDE 140-30.9 E DEPTH (m) 81				STATION US08018 LATITUDE 42-19.0 N LONGITUDE 140-22.7 E DEPTH (m) 53			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	4.749	33.666	26.646	5	4.699	33.787	26.747	5	4.599	33.762	26.739
10	4.767	33.745	26.707	10	4.754	33.891	26.823	10	4.678	33.898	26.837
20	4.780	33.893	26.823	20	4.762	33.896	26.827	20	4.677	33.895	26.835
30	4.777	33.895	26.824	30	4.762	33.895	26.826	30	4.685	33.894	26.833
40	4.771	33.894	26.824	40	4.752	33.894	26.826	40	4.687	33.895	26.834
50	4.767	33.894	26.824	50	4.744	33.894	26.827	50	4.688	33.894	26.833
75	4.759	33.894	26.825	75	4.730	33.893	26.828				

STATION US08019 LATITUDE 42-19.1 N LONGITUDE 140-29.7 E DEPTH (m) 92				STATION US08020 LATITUDE 42-23.8 N LONGITUDE 140-30.6 E DEPTH (m) 76				STATION US08021 LATITUDE 42-28.4 N LONGITUDE 140-31.1 E DEPTH (m) 78			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	5.015	33.881	26.786	5	5.073	33.756	26.681	5	5.184	33.844	26.738
10	5.054	33.915	26.809	10	5.106	33.837	26.741	10	5.203	33.890	26.772
20	5.061	33.913	26.807	20	5.127	33.912	26.798	20	5.212	33.910	26.787
30	5.058	33.913	26.807	30	5.107	33.911	26.800	30	5.210	33.910	26.787
40	5.061	33.913	26.806	40	5.064	33.907	26.802	40	5.210	33.910	26.787
50	5.043	33.909	26.806	50	5.033	33.903	26.802	50	5.210	33.910	26.787
75	5.008	33.909	26.809	75	4.852	33.886	26.809	75	5.101	33.913	26.802

STATION US08022 LATITUDE 42-25.9 N LONGITUDE 140-36.4 E DEPTH (m) 86				STATION US08023 LATITUDE 42-23.5 N LONGITUDE 140-41.7 E DEPTH (m) 68				STATION US08024 LATITUDE 42-21.2 N LONGITUDE 140-37.3 E DEPTH (m) 86			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	4.971	33.851	26.768	5	4.732	33.576	26.576	5	5.391	33.863	26.728
10	4.986	33.870	26.781	10	5.152	33.663	26.598	10	5.408	33.920	26.772
20	4.994	33.904	26.807	20	5.512	33.897	26.741	20	5.382	33.915	26.770
30	4.987	33.903	26.807	30	5.506	33.901	26.745	30	5.361	33.914	26.772
40	4.978	33.902	26.807	40	5.513	33.911	26.752	40	5.346	33.914	26.774
50	4.944	33.900	26.809	50	5.462	33.911	26.758	50	5.266	33.912	26.782
75	4.901	33.897	26.812					75	4.941	33.893	26.804

STATION US08025 LATITUDE 42-16.5 N LONGITUDE 140-36.9 E DEPTH (m) 91				STATION US08026 LATITUDE 42-18.1 N LONGITUDE 140-41.8 E DEPTH (m) 67				STATION US08027 LATITUDE 42-20.3 N LONGITUDE 140-47.5 E DEPTH (m) 58			
Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T	Press.	Temp.	Salinity	Sigma-T
5	4.726	33.893	26.829	5	4.604	33.507	26.536	5	3.952	33.279	26.422
10	4.727	33.889	26.825	10	4.818	33.623	26.604	10	3.959	33.296	26.435
20	4.734	33.885	26.821	20	5.421	33.921	26.771	20	4.567	33.458	26.501
30	4.736	33.885	26.821	30	5.320	33.910	26.774	30	4.553	33.451	26.496
40	4.734	33.885	26.821	40	5.235	33.907	26.781	40	4.376	33.433	26.501
50	4.736	33.884	26.820	50	5.180	33.907	26.788	50	4.377	33.437	26.504
75	4.750	33.887	26.821								

STATION US08028 LATITUDE 42-16.4 N LONGITUDE 140-47.6 E DEPTH (m) 70			
Press.	Temp.	Salinity	Sigma-T
5	4.418	33.420	26.486
10	4.420	33.427	26.492
20	5.392	33.718	26.613
30	5.471	33.720	26.606
40	5.536	33.730	26.606
50	5.604	33.822	26.671

