



HOKKAIDO UNIVERSITY

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PART I

OSHORO MARU CRUISE FROM JANUARY TO DECEMBER IN 2010

I . Crew's List

Captain :		Shogo Takagi
Crew :	First Officer	Yoshihiko Kamei
	Second Officer	Keiichiro Sakaoka
		Naoki Hoshi
	Third Officer	Takuzo Abe
	Science Officer	Keiri Imai
		(Cruise 214 -)
	Chief Engineer	Jyunichi Kimura
	First Engineer	Fumio Fujimoto
	Second Engineer	Kazuya Sawanaka
	Jr. Second Engineer	Jumpei Shimura
		(- Cruise 216)
	Third Engineer	Kenichi Shindo
		(Cruise 217 -)
	Chief Radio Officer	Akio Kamijo
		(- Cruise 213)
		Satoshi Ishigaki
		(Cruise 214 -)
	Second Radio Officer	Satoshi Ishigaki
		(- Cruise 213)
	Boatswain	Yoshiharu Matsui
	Jr. Boatswain	Toshiharu Yosoe
	Quartermaster	Sen Sunakoma
		Yoshihiro Onodera
		Naoyuki Eda
		(- Cruise 216)
		Yutaka Takeda
		(Cruise 217 -)
		Tadashi Mishima
	Sailor	Daisuke Sasaki
		Shota Hagiwara
		Taishi Hama
		(Cruise 214 -)
	No.1 Oiler	Shuiti Hasegawa
	Junior No.1 Oiler	Kohya Nakamura
	Oiler	Takuya Takano
		Tohru Murakami
	Fireman	Keisuke Shindo
		Takaaki Arakawa
	Chief Steward	Yoshinori Sawada
		(- Cruise 213)
		Kazuhiro Ikeda
		(Cruise 214 -)
	Jr. Chief Steward	Kazuhiro Ikeda
		(- Cruise 213)
		Hajime Morihiro
		(Cruise 214 -)
	Head Steward	Kazuo Ishikawa
		(- Cruise 213)
		Hiroshi Nakamura

II . Particulars

Length (o.a.)	72.85 m
Length (p.p.)	66.00 m
Breadth (mid)	12.60 m
Depth (mid) Upper DK	5.70 m
Gross Tonnage (Domestic)	1,396.00 tons
International Gross Tonnage	1,792.00 tons
Main engine	2353 kW
Call Sign	JDVA

**THE " OSHORO MARU " CRUISE 211
TO THE OYASHIO REGION**

IN JANUARY 2010

1. Cruise Itinerary

Cruise 211

Departure from Hakodate

Jan. 12 2010

Start hydrographic research (OS10001)

13

Finish hydrographic research (OS10001)

13

Return to Hakodate

15

Total coverage 390.7 miles

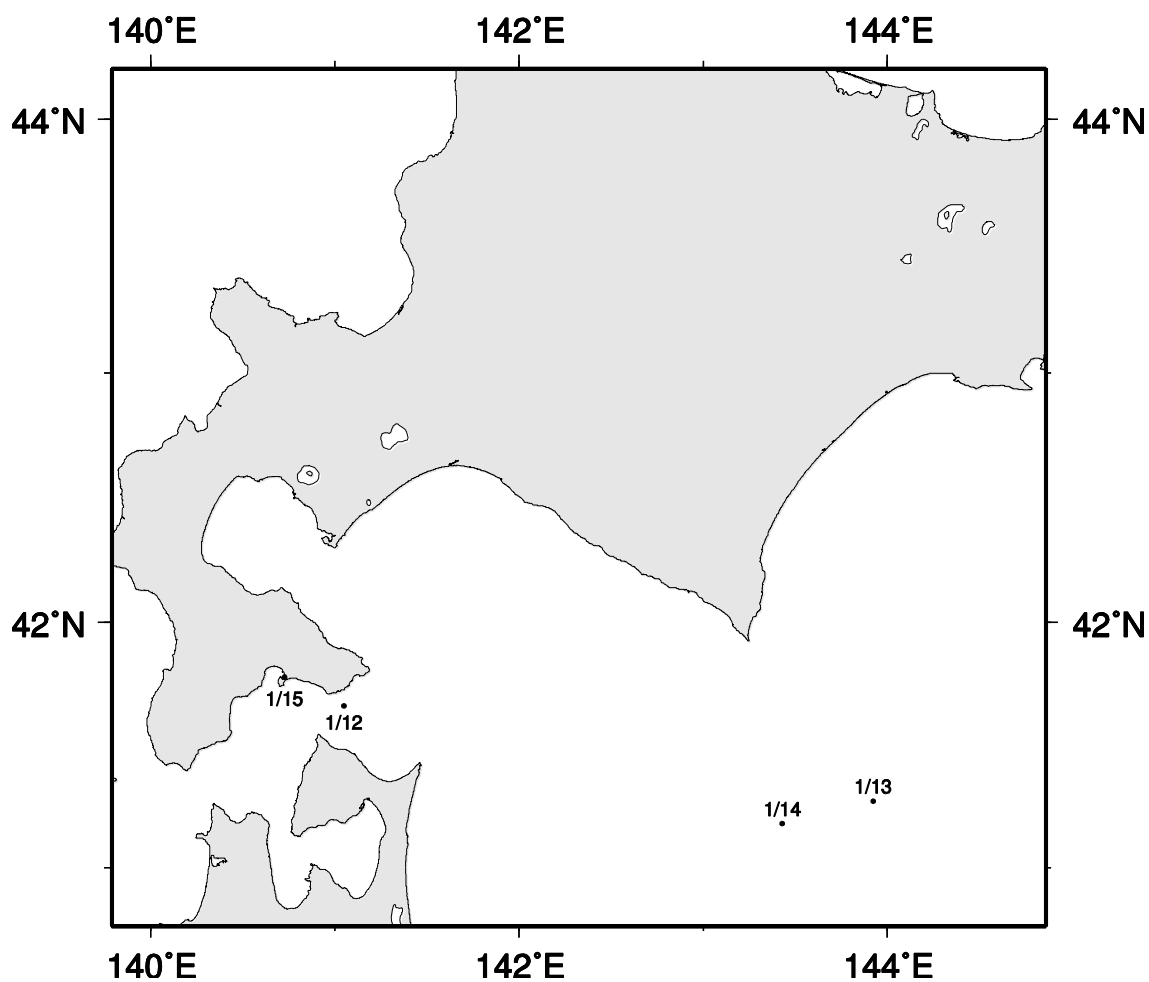


Figure 1. Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	First Officer	Instructor	Yoshihiko Kamei
	Second Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Technical official	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Chief Engineer	Instructor	Jyunichi Kimura
	And 24 men		

Cruise 211

Research Staff:	Associate Professor	(Laboratory of Marine Biodiversity)	Atsushi Yamaguchi
	Senior Curator	(Department of Botany, National Museum of Nature and Science)	Akihiro Tuji
	Research Student	(Institute of Geology and Paleontology, Graduate School of Science, Tohoku University)	Kaoru Ogane
	Graduate Students		2 persons
	Under Graduate Students		4 persons
	Total		39 persons

3. Items of Research

Hydrographic observations:	Fig. 2	Table 1, 2
Plankton Sampling		Table 3

4. 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 “Oshoro Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Oshoro Maru”.

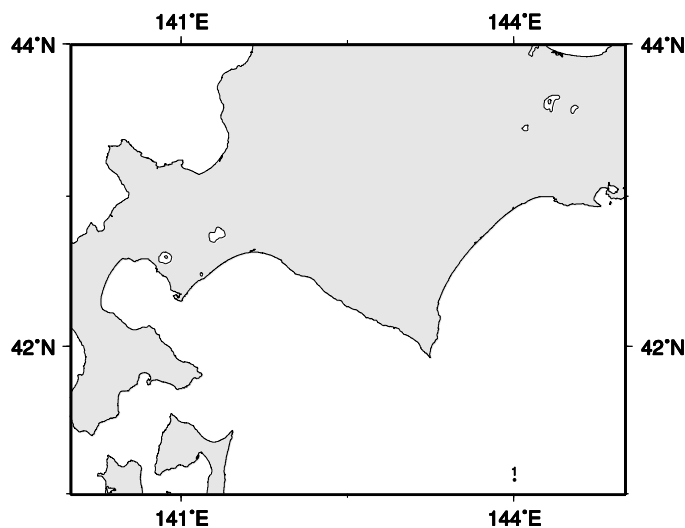


Figure 2. Oceanographic station

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS10001	41-06.0N	144-00.0E	1/13	1300	9	3417	4	14.7	1.5	-	9Plus-0769

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station		OS10001	
Longitude		144-00.1E	
Latitude		41-06.4N	
Depth(m)		3417	
Press.	Temp.	Sal.	SIG-T
5	4.372	33.262	26.366
10	4.380	33.263	26.365
20	4.381	33.263	26.366
30	4.379	33.262	26.365
40	4.381	33.263	26.365
50	4.391	33.264	26.365
75	4.439	33.272	26.366
100	4.059	33.282	26.414
125	3.252	33.353	26.548
150	3.185	33.470	26.648
175	2.999	33.527	26.709
200	2.946	33.554	26.736
250	2.863	33.656	26.824
300	3.506	33.814	26.891
400	3.330	33.917	26.990
500	3.178	34.039	27.102
600	3.032	34.140	27.196
700	3.020	34.224	27.264
800	2.953	34.304	27.334
900	2.821	34.352	27.384
1000	2.728	34.396	27.427
1200	2.531	34.462	27.497
1500	2.259	34.536	27.579
2000	2.043	34.577	27.630
2500	1.843	34.620	27.679
3000	1.583	34.663	27.733

5. Data on plankton collected by vertical hauls with a single or twin NORPAC net.

Vertical hauls with a single or twin-NORPAC net were made at hydrographic stations. This net was composed of 45 cm mouth diameter and 180 cm long conical one which was made of GG54 and XX13 having 0.33 mm and 0.10 mm mesh, respectively. The net was lowered to the estimated depth of 150 m, 500 m or near the bottom when the bottom depth was shallower than 150 m, and immediately hauled to the surface at a speed about 1 m s⁻¹. A flowmeter was mounted at the center of mouth of the net to estimate the volume water filtered. Sampling was conducted by research staffs and measurement of wet weight of the samples were made by A. Yamaguchi, K. Ishii, K. Matsuno, R. Saito, K. Ohgi, Y. Onishi, T. Homma, R. Ohashi, C. Tsukazaki, A. Kuroda, Y. Abe, M. Kawaguchi, T. Shiota, S. Mizuhara, K. Moribe and J. Fukuda (Laboratory of Marine Biology).

Table 3. Data on plankton collected by vertical hauls with a single or twin NORPAC net

GG54: 0.33 mm mesh, XX13: 0.10 mm mesh.

Station no.	Position			S.M.T.		Length of wire (m)	Angle of wire (°)	Depth estimated by wire (m)	Kind of cloth	Flowmeter		Estimated volume of water filtered (m ³)	Wet weight (g)		Sample no.
	Lat. (N)	Lon.		Date	Hour					No.	Reading		per haul	per 1000 m ³	
OS10001 (off Cape Erimo)	41-05	144-01	E	13 Jan.	15:22	154	13	150	GG54	1858	1582	23.14	0.7	32	10001
									XX13	3006	1650	23.92			10002
					15:34	532	20	500	GG54	1858	6022	88.07	12.2	138	10003
									XX13	3006	5600	81.19			10004

- 1) Exclusively phytoplankton
- 2) Including some fragments of medusae.
- 3) *Neocalanus* abundant.
- 4) Gelatinous zooplankton abundant.
- 5) Salpida abundant.
- 6) Chaetognaths abundant.

6. Data on calibration of flowmeters

Flowmeters used for plankton nets were calibrated once in the cruise.

Table 4. Calibration data on flowmeters used for a twin or single NORPAC net and other kind of nets.
50-m wire out near Hakodate, 15 January 2010.

Flowmeter No.	Wire length (m)	Revolution								Mean
		1	2	3	4	5	6	7	8	
RG1858	50	623*	538*	539	539	525*	560*	548	549	544
RG3006	50	651*	544	537*	540	540*	560	550	562*	549

*: omitted from calculation

THE " OSHORO MARU " CRUISE 213 TO THE OFF HIYAMA AREA

IN MARCH 2010

1. Cruise Itinerary

Cruise 213

Departure from Hakodate	Mar. 8, 2010
Start Bottom Long-line research (OSBL1001)	9
Start hydrographic research (OS10002)	9
Arrival at Okushiri	11
Departure from Okushiri	12
Arrival at Hakodate and change cadets	13
Departure from Hakodate	14
Finish Bottom Long-line research (OSBL1002)	15
Finish hydrographic research (OS10003)	15
Operating ROV	15
Arrival at Okushiri	16
Departure from Okushiri	17
Return to Hakodate	18
Total coverage 431.8 miles	

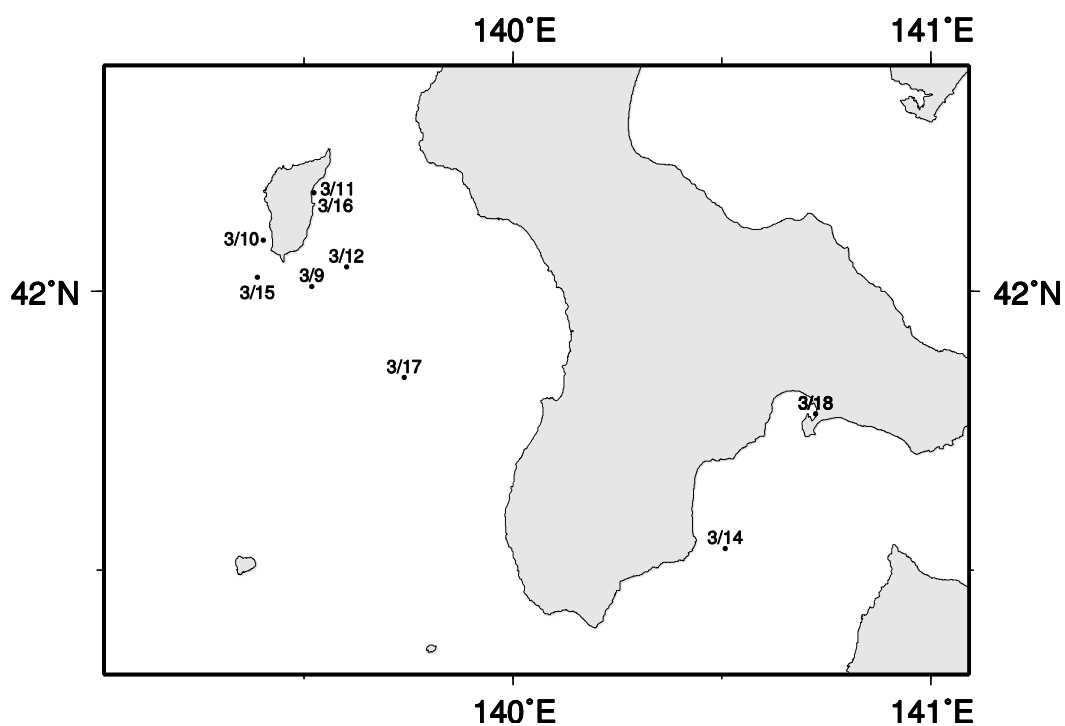


Figure 1. Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	First Officer	Instructor	Yoshihiko Kamei
	Second Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Technical official	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Chief Engineer	Instructor	Jyunichi Kimura
	And 23 men		

Cruise 213

Research Staff:

Associate Professor	(Laboratory of Marine Environment and Resource Sensing)	Yasuzumi Fujimori
Associate Professor	(Laboratory of Marine Environment and Resource Sensing)	Tohru Mukai
Professor	(Division of Bioengineering and Bioinformatics)	Hidemi Watanabe
Instructor	(Laboratory of Aquatic Ecosystem Conservation)	Jun Yamamoto
Research Fellow	(Graduate School of Information and Technology GCOE)	Toshiro Iwamori

Technical Staff:

Technical assistant	(KOWA Corporation)
Hiroyuki Saka, Katsuki Fujimoto, Osamu Numamoto, Takayuki Uemura, Naoki katsuta, Shinichi Fujita	

Teaching Assistant	2 persons
Graduate Students	3 persons
Under Graduate Students:	48 persons

Total	64persons
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3. Items of Research

Hydrographic observations:	Fig. 2 Table 1, 2
Bottom Long-line observations:	Fig. 3 Table 3

4. 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 “Oshoro Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Oshoro Maru”.

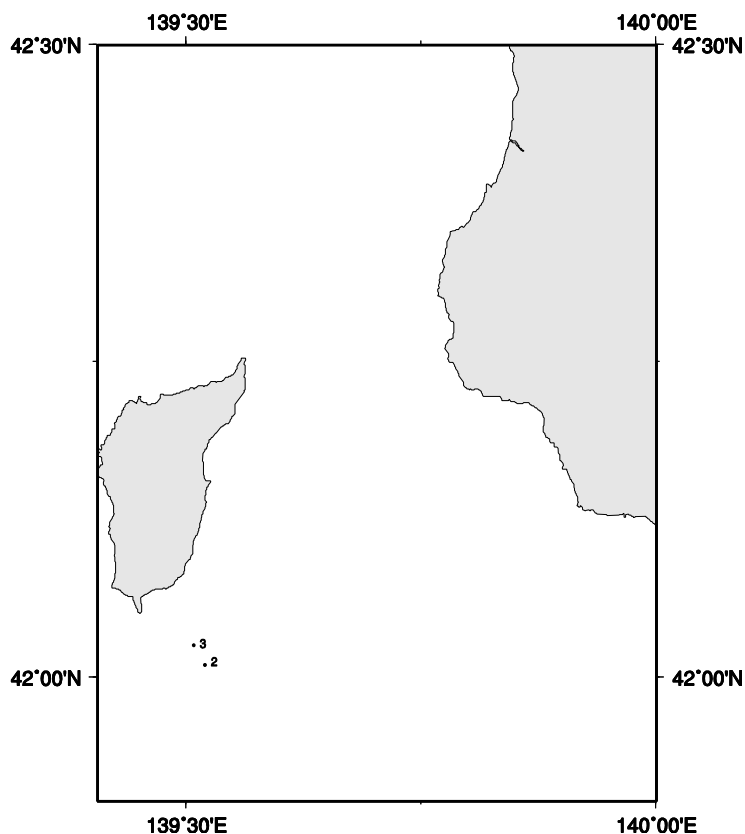


Figure 2. Oceanographic station

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS10002	42-00.3N	139-31.1E	3/9	0920	9	119	6	11.5	7.8	S	9Plus-0769
OS10003	42-01.2N	139-30.4E	3/15	0840	9	120	7	10.5	8.1	C	9Plus-0769

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS10002				Station OS10003			
Latitude 42-00.3N				Latitude 42-01.2N			
Longitude 139-31.1E				Longitude 139-30.4E			
Depth(m) 119				Depth(m) 120			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	7.815	34.067	26.568	5	7.735	34.060	26.575
10	7.832	34.070	26.568	10	7.739	34.060	26.574
20	7.834	34.070	26.568	20	7.738	34.059	26.573
30	7.800	34.071	26.573	30	7.738	34.059	26.573
40	7.738	34.073	26.584	40	7.655	34.060	26.586
50	7.667	34.069	26.592	50	7.114	34.086	26.683
75	6.601	34.069	26.739	75	5.679	34.085	26.869
100	5.938	34.074	26.828	100	4.893	34.077	26.956

5. Data on bottom long-line observations

Two operations of the bottom long line were carried out. These operation were supervised by the captain, and deck officers, crew, cadets and research staff were engaged in the work.

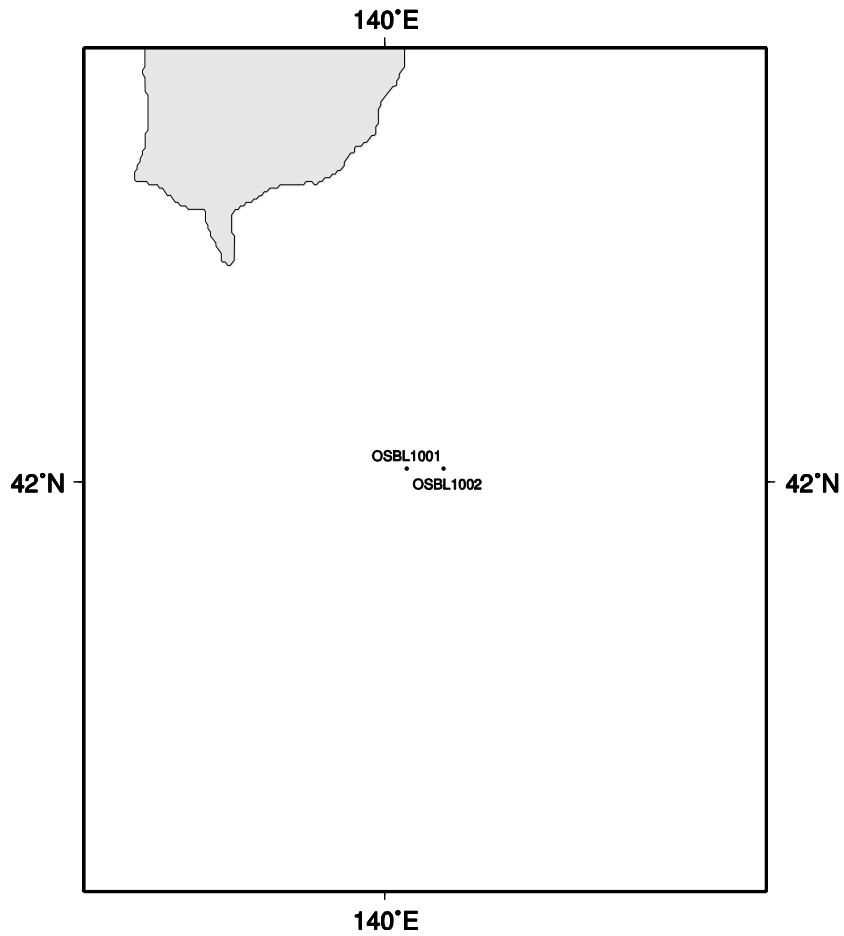


Figure 3. Locations of bottom long line research

Table 3. Data on bottom long line research

No. of research		OSBL1001	OSBL1002
Date		9-Mar	15-Mar
position of	Lat. (N)	42-00.2	42-00.2
line set	Long. (E)	139-30.4	139-31.1
Time(S.M.T.)	line set	0754	0755
Number of baskets		20	20
Surface temp. (°C)		-	7.7
Wether		s	s
Wind		West-3	South-3

Common name	Scientific name		
Spiny dogfish	<i>Squalus acanthias</i>	1	
Rajidae	Rajidae gen. sp.	9	5
Pacific cod	<i>Gadus macrocephalus</i>	3	3
Okhotsk atka mackerel	<i>Pleurogrammus azonus</i>	17	12
Gimlet-spine sculpin	<i>Taurocottus bergi</i>		1
Black edged sculpin	<i>Gymnocanthus herzensteini</i>	23	19
Elkhorn sculpin	<i>Alcichthys alcicornis</i>	2	1
Pointhead flounder	<i>Cleisthenes pinetorum</i>		1
Dusky sole	<i>Pleuronectes mochigarei</i>	2	3
Chestnut octopus	<i>Octopus conispadiceus</i>		1
Horsehair crab	<i>Erimacrus isenbeckii</i>	1	

THE " OSHORO MARU " CRUISE 214 TO THE JAPAN SEA

IN APRIL 2010

1. Cruise Itinerary

Cruise 214

Departure from Hakodate	Apr. 21, 2010
Start hydrographic research (OS10004)	22
Arrival at Tsuruga	24
Departure from Tsuruga	24
Arrival at Tsuruga	25
Departure from Tsuruga	26
Finish hydrographic research (OS10051)	27
Return to Hakodate	28

Total coverage 1204.7 miles

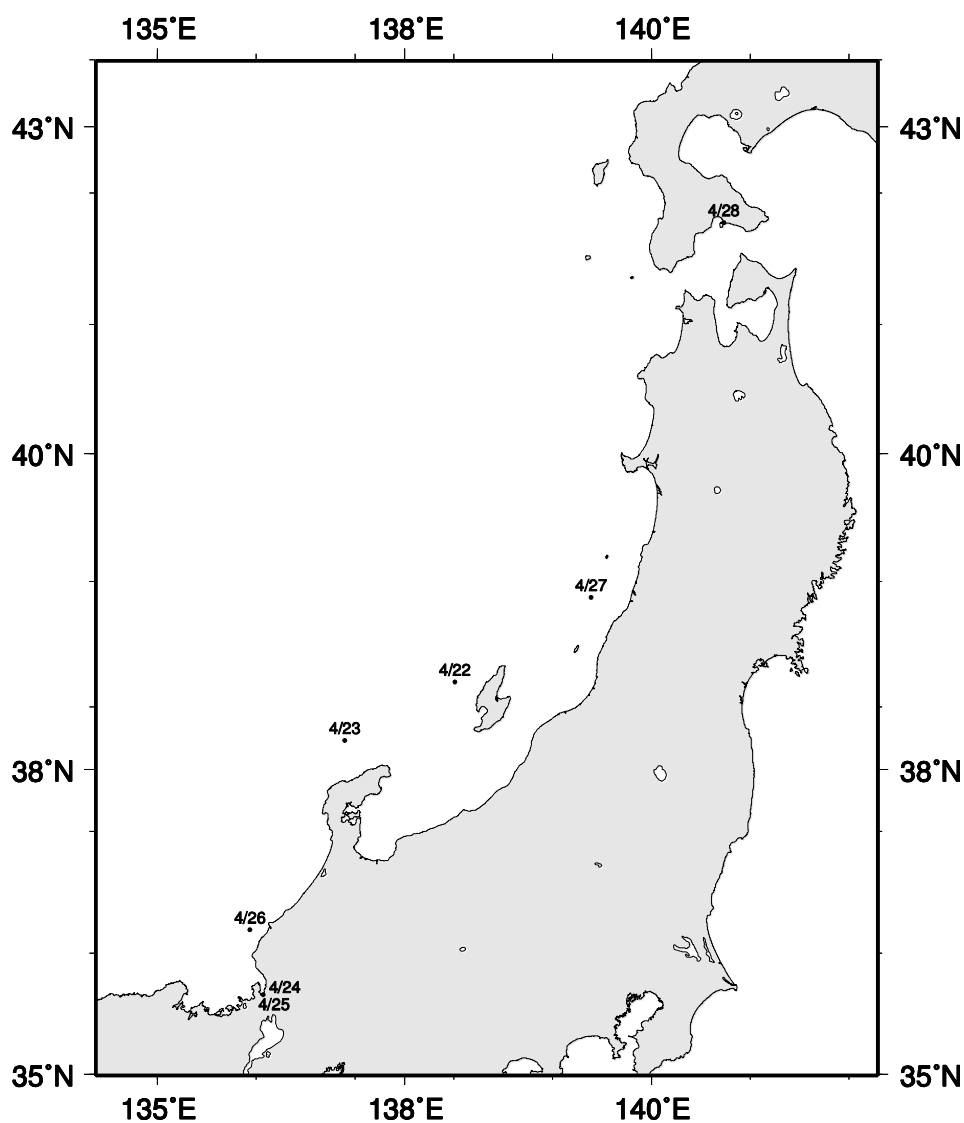


Figure 1. Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Instructor	Yoshihiko Kamei
	First Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Technical official	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 26 men		

Cruise 214

Research Staff:	Associate Professor	(Laboratory of Marine Environment Science)	Yutaka Isoda
	Associate Professor	(Faculty of Fisheries Training Ship Oshoro-Maru)	Yoshiyuki Kajiware
	Associate Professor	(Laboratory of Marine Environment engineering)	Masabumi Seto
	Associate Professor	(Laboratory of Microbial Ecology)	Ryuji Kondo
	Lecturer	(Laboratory of Marine Environment engineering)	Atsushi kaneda
	Instructor	(Laboratory of Microbial Ecology)	Yoshitake Takao
Teaching Assistant	4 persons		
Under Graduate Students:	54 persons		
	Total 64persons		

3. Items of Research

Hydrographic observations: Fig. 2 Table 1, 2

4. Data on Temperature, Salinity and Computed Dynamic Depth Anomaly

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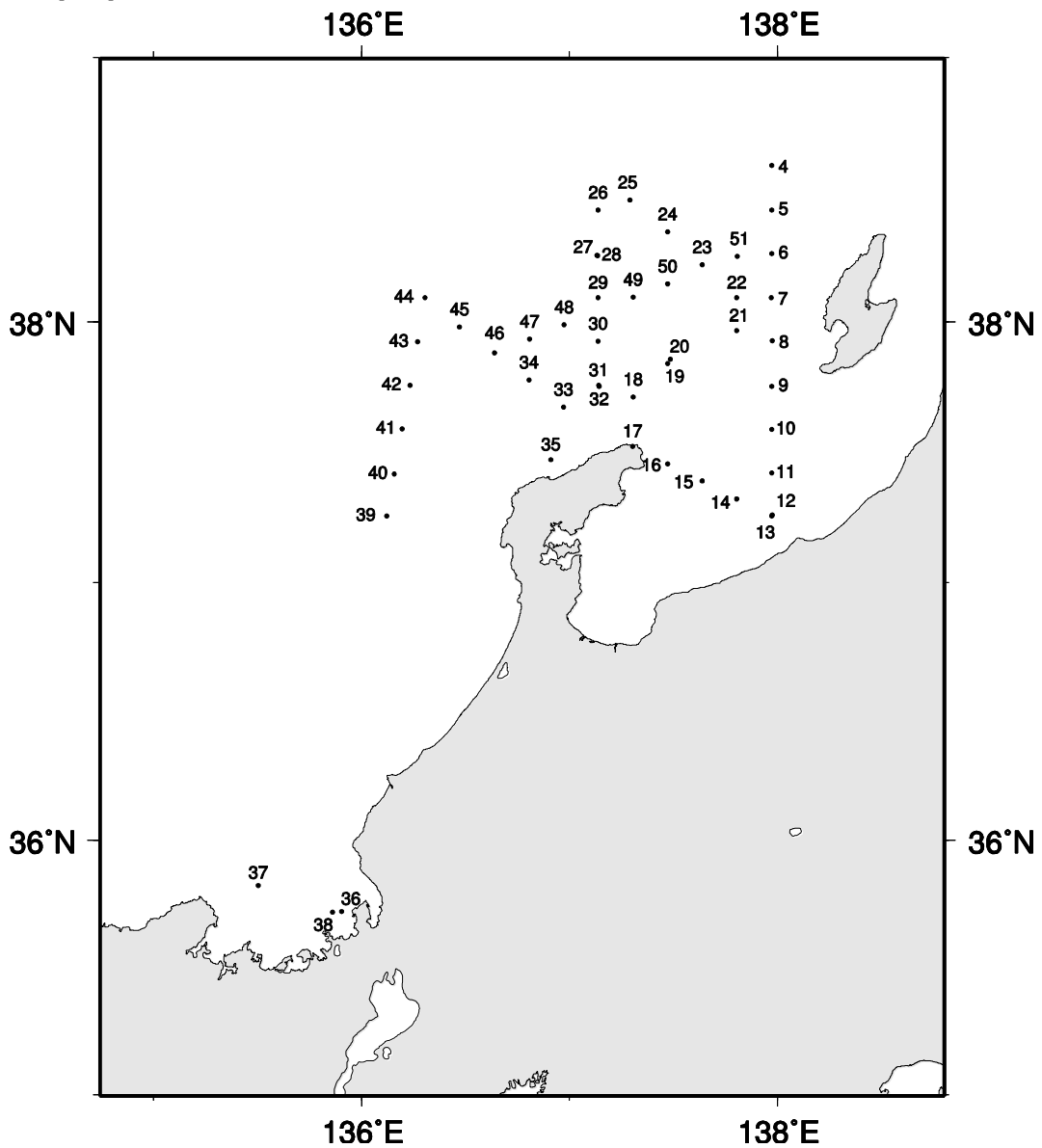


Figure 2. Oceanographic station

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS10004	38-40.0N	138-00.0E	4/22	0944	9	1860	-	-	-	r	XBT
OS10005	38-30.0N	138-00.1E	4/22	1030	9	1550	-	-	-	r	XBT
OS10006	38-20.0N	138-00.1E	4/22	1122	9	1760	-	-	-	r	XBT
OS10007	38-10.0N	137-59.9E	4/22	1113	9	1867	-	-	-	r	XBT
OS10008	38-00.2N	138-00.1E	4/22	1318	9	1845	-	-	10.3	o	9Plus-0769
OS10009	37-49.7N	138-00.0E	4/22	1453	9	1732	-	-	-	o	XBT
OS10010	37-39.9N	138-00.0E	4/22	1545	9	1485	-	-	-	r	XBT
OS10011	37-29.9N	138-00.0E	4/22	1638	9	1118	-	-	-	r	XBT
OS10012	37-20.0N	138-00.0E	4/22	1738	9	565	-	-	10.2	r	9Plus-0769
OS10013	37-20.2N	138-00.2E	4/22	1803	9	577	-	-	-	r	XBT
OS10014	37-23.8N	137-49.9E	4/22	1906	9	1553	-	-	-	r	XBT
OS10015	37-28.0N	137-40.0E	4/22	1950	9	685	-	-	-	r	XBT
OS10016	37-32.0N	137-30.0E	4/22	2035	9	785	-	-	-	r	XBT
OS10017	37-36.0N	137-19.9E	4/22	2115	9	100	-	-	-	o	XBT
OS10018	37-47.3N	137-20.0E	4/22	2216	9	120	-	-	-	r	XBT
OS10019	37-55.0N	137-30.0E	4/22	2316	9	450	-	-	-	o	XBT
OS10020	37-56.0N	137-30.7E	4/22	2321	9	620	-	-	-	o	XBT
OS10021	38-02.5N	137-49-9E	4/23	0014	9	1783	-	-	-	o	XBT
OS10022	38-10.0N	137-49.9E	4/23	0115	9	1874	-	-	-	c	XBT
OS10023	38-17.5N	137-39.9E	4/23	0211	9	1830	-	-	-	c	XBT
OS10024	38-25.0N	137-29.9E	4/23	0313	9	1215	-	-	-	o	XBT
OS10025	38-32.2N	137-19.1E	4/23	0409	9	1148	-	-	-	o	XBT
OS10026	38-29.9N	137-10.0E	4/23	0444	9	439	-	-	-	c	XBT
OS10027	38-19.6N	137-09.6E	4/23	0608	9	1150	-	-	-	c	19Plus-4636
OS10028	38-19.5N	137-09.7E	4/23	0644	9	1150	-	-	-	c	XBT
OS10029	38-09.9N	137-10.0E	4/23	0730	9	823	-	-	-	c	XBT
OS10030	38-00.0N	137-09.9E	4/23	0816	9	260	-	-	-	o	XBT
OS10031	37-49.9N	137-10.1E	4/23	0911	9	157	-	-	10.25	o	19Plus-4636
OS10032	37-49.7N	137-10.2E	4/23	0935	9	156	-	-	-	o	XBT
OS10033	37-44.9N	136-59.9E	4/23	1028	9	82	-	-	-	o	XBT
OS10034	37-51.2N	136-49.9E	4/23	1118	9	118	-	-	-	o	XBT
OS10035	37-33.0N	136-56.2E	4/23	1259	9	108	-	-	-	o	XBT
OS10036	35-47.9N	135-55.9E	4/24	1535	9	85	-	-	-	bc	9Plus-0769
OS10037	35-54.1N	135-31.9E	4/24	1845	9	212	-	-	12.9	bc	9Plus-0769
OS10038	35-47.8N	135-53.3E	4/25	0836	9	85	3	14.4	13	-	9Plus-0769
OS10039	37-20.0N	136-08.9E	4/26	1746	9	354	-	-	-	-	XBT
OS10040	37-29.6N	136-11.1E	4/26	1846	9	286	-	-	-	-	XBT
OS10041	37-40.0N	136-13.4E	4/26	1929	9	362	-	-	-	-	XBT
OS10042	37-50.0N	136-15.7E	4/26	2021	9	820	-	-	-	-	XBT
OS10043	38-00.0N	136-17.9E	4/26	2110	9	1740	-	-	-	-	XBT
OS10044	38-10.0N	136-19.9E	4/26	2201	9	2542	-	-	-	-	XBT
OS10045	38-03.4N	136-30.0E	4/26	2259	9	1308	-	-	-	-	XBT
OS10046	37-57.4N	136-40.0E	4/26	2351	9	500	-	-	-	-	XBT
OS10047	38-00.6N	136-50.1E	4/27	0039	9	338	-	-	-	-	XBT
OS10048	38-03.8N	137-00.0E	4/27	0125	9	395	-	-	-	-	XBT
OS10049	38-10.1N	137-20.0E	4/27	0249	9	1369	-	-	-	-	XBT
OS10050	38-13.1N	137-30.0E	4/27	0332	9	990	-	-	-	-	XBT
OS10051	38-19.4N	137-50.0E	4/27	0501	9	1850	-	-	-	-	XBT

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS10004				Station OS10005				Station OS10006			
Longitude 138-00.0E				Longitude 138-00.1E				Longitude 138-00.1E			
Latitude 38-40.0N				Latitude 38-30.0N				Latitude 38-20.0N			
Depth(m) 1860				Depth(m) 1550				Depth(m) 1760			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	10.302	-	-	5	10.210	-	-	5	10.058	-	-
10	10.328	-	-	10	10.211	-	-	10	10.024	-	-
20	10.225	-	-	20	10.148	-	-	20	10.022	-	-
30	10.038	-	-	30	9.864	-	-	30	9.868	-	-
40	9.960	-	-	40	9.938	-	-	40	9.766	-	-
50	9.836	-	-	50	9.925	-	-	50	9.620	-	-
75	9.570	-	-	75	9.590	-	-	75	9.338	-	-
100	9.524	-	-	100	9.540	-	-	100	9.319	-	-
125	9.010	-	-	125	9.360	-	-	125	8.590	-	-
150	8.374	-	-	150	8.812	-	-	150	7.868	-	-
200	6.220	-	-	200	6.099	-	-	200	5.352	-	-
250	4.021	-	-	250	4.732	-	-	250	3.324	-	-
300	2.363	-	-	300	2.727	-	-	300	1.860	-	-
400	1.243	-	-	400	1.336	-	-	400	1.130	-	-

Station OS10007				Station OS10008				Station OS10009			
Longitude 137-59.9E				Longitude 138-00.1E				Longitude 138-00.0E			
Latitude 38-10.0N				Latitude 38-00.2N				Latitude 37-49.7N			
Depth(m) 1867				Depth(m) 1845				Depth(m) 1732			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	9.839	-	-	5	9.981	33.841	26.050	5	9.899	-	-
10	9.811	-	-	10	9.976	33.841	26.051	10	9.899	-	-
20	9.820	-	-	20	9.842	33.893	26.114	20	9.910	-	-
30	9.880	-	-	30	9.711	34.016	26.232	30	9.978	-	-
40	9.888	-	-	40	9.319	34.008	26.290	40	9.832	-	-
50	9.776	-	-	50	9.188	34.054	26.347	50	9.740	-	-
75	9.269	-	-	75	8.692	34.076	26.443	75	9.490	-	-
100	8.414	-	-	100	8.143	34.083	26.532	100	9.110	-	-
125	7.340	-	-	125	7.007	34.091	26.701	125	8.340	-	-
150	6.098	-	-	150	6.235	34.086	26.801	150	7.454	-	-
200	3.892	-	-	175	5.257	34.076	26.913	200	4.719	-	-
250	2.000	-	-	200	3.898	34.065	27.053	250	2.500	-	-
300	1.347	-	-	250	2.457	34.061	27.182	300	1.617	-	-
400	0.897	-	-	300	1.430	34.140	27.325	400	0.910	-	-
				400	0.860	34.088	27.321				

Station OS10010				Station OS10011				Station OS10012			
Longitude 138-00.0E				Longitude 138-00.0E				Longitude 138-00.0E			
Latitude 37-39.9N				Latitude 37-29.9N				Latitude 37-20.0N			
Depth(m) 1485				Depth(m) 1118				Depth(m) 565			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	10.221	-	-	5	10.381	-	-	5	10.163	33.024	25.382
10	10.337	-	-	10	10.391	-	-	10	10.173	33.177	25.500
20	10.843	-	-	20	10.340	-	-	20	10.146	33.503	25.759
30	10.752	-	-	30	10.244	-	-	30	9.996	33.929	26.116
40	10.652	-	-	40	10.142	-	-	40	10.052	34.000	26.162
50	10.528	-	-	50	10.140	-	-	50	9.986	34.007	26.179
75	10.629	-	-	75	9.700	-	-	75	9.723	34.015	26.229
100	10.496	-	-	100	9.620	-	-	100	9.637	34.048	26.270
125	10.330	-	-	125	9.530	-	-	125	9.442	34.058	26.309
150	9.640	-	-	150	9.230	-	-	150	9.044	34.071	26.384
200	6.841	-	-	200	5.682	-	-	175	7.805	34.087	26.586
250	3.931	-	-	250	2.540	-	-	200	5.210	34.071	26.914
300	2.840	-	-	300	1.350	-	-	250	2.476	34.060	27.180
400	1.900	-	-	400	0.893	-	-	300	2.293	34.146	27.264

Table 2. Oceanographic data (continued)

Station OS10013				Station OS10014				Station OS10015			
Longitude 138°00.2E				Longitude 137°49.9E				Longitude 137°40.0E			
Latitude 37°20.2N				Latitude 37°23.8N				Latitude 37°28.0N			
Depth(m) 577				Depth(m) 1553				Depth(m) 685			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	10.179	-	-	5	10.139	-	-	5	10.070	-	-
10	10.140	-	-	10	10.101	-	-	10	10.080	-	-
20	10.030	-	-	20	9.988	-	-	20	10.032	-	-
30	10.020	-	-	30	9.782	-	-	30	9.952	-	-
40	10.010	-	-	40	9.780	-	-	40	9.940	-	-
50	9.960	-	-	50	9.680	-	-	50	9.870	-	-
75	9.740	-	-	75	9.480	-	-	75	9.740	-	-
100	9.620	-	-	100	9.440	-	-	100	9.346	-	-
125	9.390	-	-	125	9.110	-	-	125	8.970	-	-
150	8.982	-	-	150	7.163	-	-	150	8.084	-	-
200	5.113	-	-	200	3.101	-	-	200	6.301	-	-
250	2.570	-	-	250	1.822	-	-	250	3.872	-	-
300	1.593	-	-	300	1.503	-	-	300	2.617	-	-
400	0.901	-	-	400	1.017	-	-	400	1.840	-	-

Station OS10016				Station OS10017				Station OS10018			
Longitude 137°30.0E				Longitude 137°19.9E				Longitude 137°20.0E			
Latitude 37°32.0N				Latitude 37°36.0N				Latitude 37°47.3N			
Depth(m) 785				Depth(m) 100				Depth(m) 120			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	10.019	-	-	5	10.169	-	-	5	10.221	-	-
10	10.011	-	-	10	10.160	-	-	10	10.170	-	-
20	10.000	-	-	20	10.130	-	-	20	10.102	-	-
30	10.002	-	-	30	10.112	-	-	30	9.980	-	-
40	9.990	-	-	40	10.100	-	-	40	9.930	-	-
50	9.812	-	-	50	10.120	-	-	50	9.880	-	-
75	9.630	-	-	75	10.070	-	-	75	9.830	-	-
100	9.526	-	-	100	10.014	-	-	100	9.576	-	-
125	9.410	-	-	125	10.050	-	-	125	9.140	-	-
150	8.854	-	-	150	10.050	-	-	150	9.196	-	-
200	5.112	-	-	200	10.080	-	-	200	9.270	-	-
250	3.002	-	-	250	-2.220	-	-	250	9.300	-	-
300	1.790	-	-	300	-2.220	-	-	300	-2.220	-	-
400	1.036	-	-	400	-2.220	-	-	400	-2.220	-	-

Station OS10019				Station OS10020				Station OS10021			
Longitude 137°30.0E				Longitude 137°30.7E				Longitude 137°49.9E			
Latitude 37°55.0N				Latitude 37°56.0N				Latitude 38°02.5N			
Depth(m) 450				Depth(m) 620				Depth(m) 1783			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	2.250	-	-	5	9.831	-	-	5	9.199	-	-
10	2.221	-	-	10	9.813	-	-	10	9.171	-	-
20	2.022	-	-	20	9.812	-	-	20	9.170	-	-
30	1.830	-	-	30	9.802	-	-	30	9.150	-	-
40	1.654	-	-	40	9.443	-	-	40	7.955	-	-
50	1.608	-	-	50	9.448	-	-	50	7.435	-	-
75	1.410	-	-	75	8.639	-	-	75	6.259	-	-
100	1.300	-	-	100	7.626	-	-	100	5.554	-	-
125	1.180	-	-	125	5.880	-	-	125	4.330	-	-
150	1.060	-	-	150	4.542	-	-	150	3.308	-	-
200	0.880	-	-	200	2.699	-	-	200	2.068	-	-
250	0.898	-	-	250	1.520	-	-	250	1.348	-	-
300	0.900	-	-	300	1.163	-	-	300	1.020	-	-
400	0.910	-	-	400	0.821	-	-	400	0.787	-	-

Table 2. Oceanographic data (continued)

Station OS10022				Station OS10023				Station OS10024			
Longitude 137-49.9E				Longitude 137-39.9E				Longitude 137-29.9E			
Latitude 38-10.0N				Latitude 38-17.5N				Latitude 38-25.0N			
Depth(m) 1874				Depth(m) 1830				Depth(m) 1215			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	9.109	-	-	5	9.849	-	-	5	9.980	-	-
10	9.041	-	-	10	9.841	-	-	10	9.998	-	-
20	8.063	-	-	20	9.830	-	-	20	9.958	-	-
30	7.346	-	-	30	9.780	-	-	30	9.920	-	-
40	6.802	-	-	40	9.450	-	-	40	9.722	-	-
50	6.514	-	-	50	9.240	-	-	50	9.658	-	-
75	5.760	-	-	75	7.989	-	-	75	9.250	-	-
100	5.018	-	-	100	7.093	-	-	100	8.894	-	-
125	3.570	-	-	125	5.580	-	-	125	7.940	-	-
150	2.592	-	-	150	3.498	-	-	150	6.924	-	-
200	1.711	-	-	200	2.349	-	-	200	4.682	-	-
250	1.240	-	-	250	1.660	-	-	250	2.631	-	-
300	1.003	-	-	300	1.160	-	-	300	1.627	-	-
400	0.793	-	-	400	0.784	-	-	400	0.960	-	-

Station OS10025				Station OS10026				Station OS10027			
Longitude 137-19.1E				Longitude 137-10.0E				Longitude 137-09.6E			
Latitude 38-32.2N				Latitude 38-29.9N				Latitude 38-19.6N			
Depth(m) 1148				Depth(m) 439				Depth(m) 1150			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	10.120	-	-	5	10.265	-	-	5	9.795	33.916	26.140
10	10.131	-	-	10	10.179	-	-	10	9.793	33.916	26.140
20	10.122	-	-	20	10.172	-	-	20	9.792	33.915	26.140
30	10.130	-	-	30	10.170	-	-	30	10.173	34.079	26.203
40	10.112	-	-	40	10.180	-	-	40	10.154	34.075	26.204
50	10.112	-	-	50	10.176	-	-	50	10.074	34.086	26.226
75	9.890	-	-	75	10.180	-	-	75	9.904	34.091	26.258
100	9.826	-	-	100	10.086	-	-	100	9.662	34.083	26.292
125	9.780	-	-	125	9.920	-	-	125	9.471	34.144	26.372
150	9.682	-	-	150	9.742	-	-	150	9.327	34.157	26.406
200	9.062	-	-	200	9.221	-	-	175	9.069	34.155	26.445
250	6.015	-	-	250	6.771	-	-	200	7.972	34.098	26.570
300	3.690	-	-	300	4.140	-	-	250	4.723	34.087	26.983
400	1.429	-	-	400	1.577	-	-	300	2.237	34.072	27.209
								400	1.184	34.069	27.285

Station OS10028				Station OS10029				Station OS10030			
Longitude 137-09.7E				Longitude 137-10.0E				Longitude 137-09.9E			
Latitude 38-19.5N				Latitude 38-09.9N				Latitude 38-00.0N			
Depth(m) 1150				Depth(m) 823				Depth(m) 260			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	9.849	-	-	5	10.010	-	-	5	9.939	-	-
10	9.831	-	-	10	10.009	-	-	10	9.930	-	-
20	9.830	-	-	20	9.998	-	-	20	9.910	-	-
30	10.063	-	-	30	10.032	-	-	30	9.910	-	-
40	10.160	-	-	40	10.052	-	-	40	9.854	-	-
50	10.110	-	-	50	9.910	-	-	50	9.800	-	-
75	9.819	-	-	75	9.800	-	-	75	9.650	-	-
100	9.710	-	-	100	9.328	-	-	100	9.450	-	-
125	9.520	-	-	125	8.950	-	-	125	9.300	-	-
150	9.296	-	-	150	8.306	-	-	150	8.568	-	-
200	7.982	-	-	200	5.892	-	-	200	6.082	-	-
250	4.652	-	-	250	3.481	-	-	250	3.392	-	-
300	2.230	-	-	300	2.087	-	-	300	3.243	-	-
400	1.203	-	-	400	0.974	-	-	400	-2.220	-	-

Table 2. Oceanographic data (continued)

Station		OS10031	
Longitude		137-10.1E	
Latitude		37-49.9N	
Depth(m)		157	
Press.	Temp.	Sal.	SIG-T
5	10.107	33.993	26.148
10	10.093	33.963	26.126
20	10.093	33.964	26.127
30	10.199	34.027	26.158
40	10.155	34.074	26.202
50	9.998	34.068	26.224
75	9.906	34.099	26.264
100	9.705	34.098	26.297

Station		OS10032	
Longitude		137-10.2E	
Latitude		37-49.7N	
Depth(m)		156	
Press.	Temp.	Sal.	SIG-T
5	10.211	-	-
10	10.210	-	-
20	10.218	-	-
30	10.232	-	-
40	10.204	-	-
50	10.018	-	-
75	9.931	-	-
100	9.542	-	-
125	9.130	-	-
150	8.239	-	-
200	7.939	-	-
250	-2.220	-	-
300	-2.220	-	-
400	-2.220	-	-

Station		OS10033	
Longitude		136-59.9E	
Latitude		37-44.9N	
Depth(m)		82	
Press.	Temp.	Sal.	SIG-T
5	10.470	-	-
10	10.472	-	-
20	10.423	-	-
30	10.400	-	-
40	10.382	-	-
50	10.382	-	-
75	10.038	-	-
100	10.000	-	-
125	10.000	-	-
150	10.020	-	-
200	-2.220	-	-
250	-2.220	-	-
300	-2.220	-	-
400	-2.220	-	-

Station		OS10034	
Longitude		136-49.9E	
Latitude		37-51.2N	
Depth(m)		118	
Press.	Temp.	Sal.	SIG-T
5	10.650	-	-
10	10.630	-	-
20	10.598	-	-
30	10.586	-	-
40	10.550	-	-
50	10.556	-	-
75	10.540	-	-
100	10.496	-	-
125	10.430	-	-
150	10.450	-	-
200	10.470	-	-
250	10.490	-	-
300	-2.220	-	-
400	-2.220	-	-

Station		OS10035	
Longitude		136-56.2E	
Latitude		37-33.0N	
Depth(m)		108	
Press.	Temp.	Sal.	SIG-T
5	10.600	-	-
10	10.561	-	-
20	10.500	-	-
30	10.472	-	-
40	10.372	-	-
50	10.204	-	-
75	9.780	-	-
100	9.674	-	-
125	9.780	-	-
150	9.800	-	-
200	9.781	-	-
250	9.801	-	-
300	-2.220	-	-
400	-2.220	-	-

Station		OS10036	
Longitude		135-55.9E	
Latitude		35-47.9N	
Depth(m)		85	
Press.	Temp.	Sal.	SIG-T
5	12.692	33.537	25.320
10	12.779	34.233	25.842
20	12.511	34.325	25.967
30	12.470	34.349	25.993
40	12.369	34.362	26.023
50	12.308	34.364	26.036

Station		OS10037	
Longitude		135-31.9E	
Latitude		35-54.1N	
Depth(m)		212	
Press.	Temp.	Sal.	SIG-T
5	12.532	34.122	25.805
10	12.478	34.142	25.831
20	12.338	34.300	25.981
30	12.318	34.344	26.019
40	12.223	34.383	26.068
50	12.111	34.388	26.093
75	11.650	34.354	26.153
100	11.214	34.293	26.186
125	10.718	34.229	26.225
150	10.302	34.189	26.267
175	9.383	34.144	26.386

Station		OS10038	
Longitude		135-53.3E	
Latitude		35-47.8N	
Depth(m)		85	
Press.	Temp.	Sal.	SIG-T
5	12.556	33.718	25.487
10	12.613	33.914	25.628
20	12.720	34.349	25.944
30	12.517	34.359	25.992
40	12.395	34.361	26.017
50	12.266	34.355	26.037

Station		OS10039	
Longitude		136-08.9E	
Latitude		37-20.0N	
Depth(m)		354	
Press.	Temp.	Sal.	SIG-T
5	11.879	-	-
10	11.888	-	-
20	11.593	-	-
30	11.090	-	-
40	10.748	-	-
50	10.550	-	-
75	10.370	-	-
100	10.200	-	-
125	10.120	-	-
150	9.800	-	-
200	7.564	-	-
250	3.351	-	-
300	1.537	-	-
400	0.597	-	-

Table 2. Oceanographic data (continued)

Station OS10040 Longitude 136-11.1E Latitude 37-29.6N Depth(m) 286				Station OS10041 Longitude 136-13.4E Latitude 37-40.0N Depth(m) 362				Station OS10042 Longitude 136-15.7E Latitude 37-50.0N Depth(m) 820			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	11.690	-	-	5	11.541	-	-	5	11.541	-	-
10	11.681	-	-	10	11.531	-	-	10	11.550	-	-
20	11.420	-	-	20	11.380	-	-	20	11.344	-	-
30	11.274	-	-	30	11.372	-	-	30	10.990	-	-
40	11.064	-	-	40	11.292	-	-	40	10.592	-	-
50	10.622	-	-	50	10.962	-	-	50	10.500	-	-
75	10.330	-	-	75	10.900	-	-	75	9.860	-	-
100	10.294	-	-	100	10.580	-	-	100	9.670	-	-
125	10.200	-	-	125	10.190	-	-	125	9.090	-	-
150	9.782	-	-	150	9.464	-	-	150	8.282	-	-
200	8.115	-	-	200	6.571	-	-	200	4.482	-	-
250	3.715	-	-	250	3.110	-	-	250	2.369	-	-
300	1.300	-	-	300	1.793	-	-	300	1.380	-	-
400	1.460	-	-	400	0.916	-	-	400	0.760	-	-

Station OS10043 Longitude 136-17.9E Latitude 38-00.0N Depth(m) 1740				Station OS10044 Longitude 136-19.9E Latitude 38-10.0N Depth(m) 2542				Station OS10045 Longitude 136-30.0E Latitude 38-03.4N Depth(m) 1308			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	10.720	-	-	5	10.320	-	-	5	10.510	-	-
10	10.719	-	-	10	10.310	-	-	10	10.518	-	-
20	10.640	-	-	20	10.312	-	-	20	10.422	-	-
30	10.628	-	-	30	10.047	-	-	30	10.222	-	-
40	10.570	-	-	40	10.280	-	-	40	10.176	-	-
50	10.392	-	-	50	10.152	-	-	50	10.175	-	-
75	10.200	-	-	75	9.901	-	-	75	10.010	-	-
100	10.004	-	-	100	9.648	-	-	100	9.906	-	-
125	9.570	-	-	125	9.210	-	-	125	9.690	-	-
150	8.572	-	-	150	9.140	-	-	150	9.392	-	-
200	5.050	-	-	200	6.611	-	-	200	6.610	-	-
250	2.329	-	-	250	3.270	-	-	250	2.882	-	-
300	1.373	-	-	300	1.783	-	-	300	1.843	-	-
400	0.860	-	-	400	0.977	-	-	400	0.801	-	-

Station OS10046 Longitude 136-40.0E Latitude 37-57.4N Depth(m) 500				Station OS10047 Longitude 136-50.1E Latitude 38-00.6N Depth(m) 338				Station OS10048 Longitude 137-00.0E Latitude 38-03.8N Depth(m) 395			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	10.809	-	-	5	10.121	-	-	5	10.241	-	-
10	10.792	-	-	10	10.121	-	-	10	10.240	-	-
20	10.800	-	-	20	10.122	-	-	20	10.220	-	-
30	10.402	-	-	30	10.106	-	-	30	10.148	-	-
40	10.322	-	-	40	9.992	-	-	40	9.990	-	-
50	10.288	-	-	50	9.812	-	-	50	9.882	-	-
75	10.390	-	-	75	9.590	-	-	75	9.570	-	-
100	10.216	-	-	100	9.390	-	-	100	9.090	-	-
125	9.580	-	-	125	9.260	-	-	125	8.650	-	-
150	8.732	-	-	150	8.910	-	-	150	7.504	-	-
200	6.951	-	-	200	6.175	-	-	200	4.921	-	-
250	3.739	-	-	250	3.020	-	-	250	2.661	-	-
300	1.657	-	-	300	1.493	-	-	300	1.540	-	-
400	0.767	-	-	400	1.080	-	-	400	0.720	-	-

Station OS10049 Longitude 137-20.0E Latitude 38-10.1N Depth(m) 1369				Station OS10050 Longitude 137-30.0E Latitude 38-13.1N Depth(m) 990				Station OS10051 Longitude 137-50.0E Latitude 38-19.4N Depth(m) 1850			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	10.121	-	-	5	9.890	-	-	5	10.470	-	-
10	10.110	-	-	10	9.891	-	-	10	10.468	-	-
20	9.815	-	-	20	9.872	-	-	20	10.085	-	-
30	8.799	-	-	30	9.624	-	-	30	9.970	-	-
40	7.942	-	-	40	8.775	-	-	40	9.890	-	-
50	7.035	-	-	50	8.055	-	-	50	9.622	-	-
75	5.529	-	-	75	6.620	-	-	75	9.550	-	-
100	4.717	-	-	100	6.032	-	-	100	9.252	-	-
125	3.290	-	-	125	4.820	-	-	125	8.830	-	-
150	2.642	-	-	150	3.932	-	-	150	8.222	-	-
200	1.770	-	-	200	2.169	-	-	200	5.631	-	-
250	1.221	-	-	250	1.440	-	-	250	2.950	-	-
300	0.973	-	-	300	1.027	-	-	300	1.857	-	-
400	0.690	-	-	400	0.743	-	-	400	1.030	-	-

THE " OSHORO MARU " CRUISE 215 TO THE NORTHWEST PACIFIC OCEAN

IN MAY 2010

1. Cruise Itinerary

Cruise 215

Departure from Hakodate

May 9 , 2010

Start hydrographic research (OS10052)

10

Start Gillnet research (OSG1001)

12

Finish Gillnet research (OSG1004)

17

Finish hydrographic research (OS10067)

19

Return to Hakodate

21

Total coverage 1991.5 miles

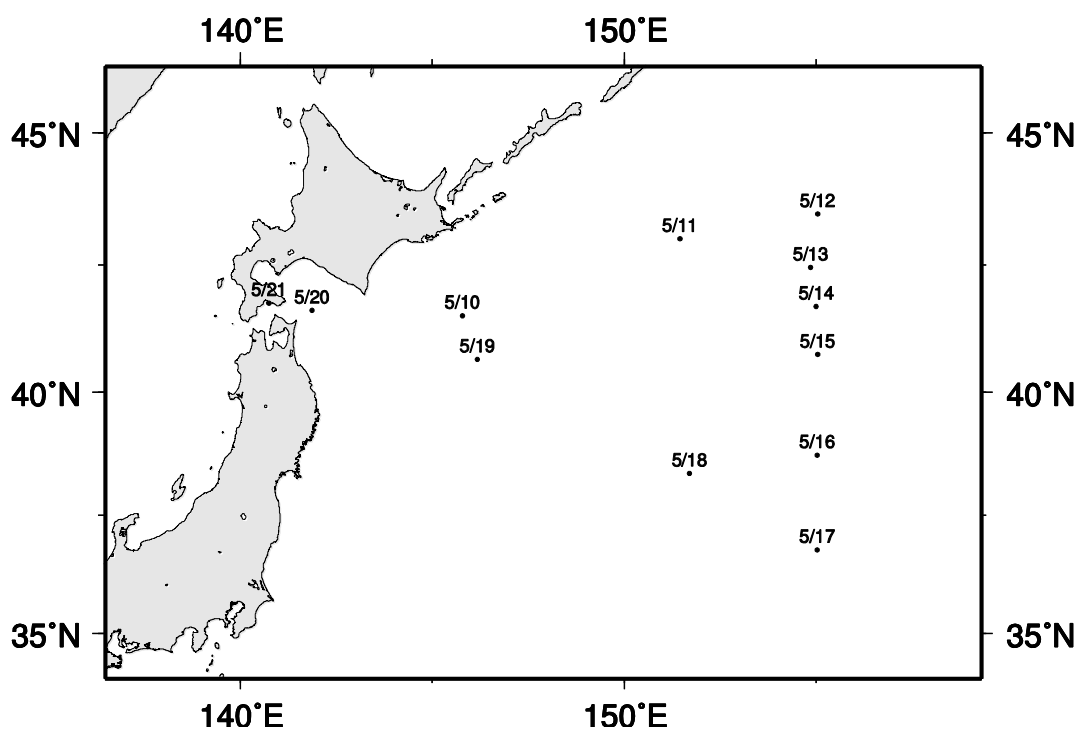


Figure 1. Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Instructor	Yoshihiko Kamei
	First Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Technical official	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 22 men		

Cruise 215

Research Staff:	Associate Professor	(Laboratory of Strategic Studies on Marine Bioresource Conservation and Management)	Hideaki Kudo
Research Fellow:	1 Person		
Teaching Assistant:	1 Person		
Graduate Students:	1 Person		
Under Graduate Students:	8 Persons		
	Total 12 persons		

3. Items of Research

Hydrographic observations:	Fig. 2	Table	1,2
Biological research for fishes caught by non-selective drift gillnets:	Fig. 3	Table	3 - 8
Salmon hook-and-line research:	Fig. 4	Table	9 - 11
Plankton sampling:		Table	12

4. 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 “Oshoro Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Oshoro Maru”.

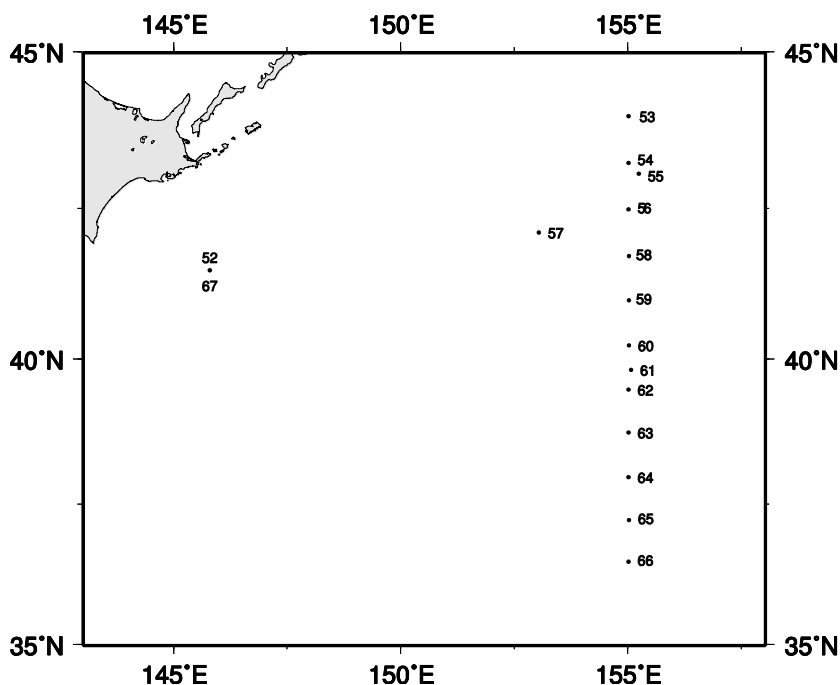


Figure 2. Oceanographic station

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS10052	41-30.1N	145-46.8E	5/10	0050	9	6950	5	5.5	3.5	b	9Plus-0769
OS10053	44-00.0N	155-00.0E	5/11	-	10	5290	-	-	-	o	19Plus-4636
OS10054	43-15.2N	155-00.0E	5/12	-	10	5490	4	-	-	f	19Plus-4636
OS10055	43-04.9N	155-13.3E	5/12	0842	10	5190	-	-	8.3	o	9Plus-91588
OS10056	42-29.9N	155-00.0E	5/13	0010	10	5155	-	-	7.1	o	19Plus-4636
OS10057	42-07.5N	153-01.5E	5/13	0938	10	5322	-	-	5.6	r	XCTD
OS10058	41-44.3N	155-00.7E	5/14	0304	10	5540	4	17.5	8.6	o	9Plus-91588
OS10059	41-00.0N	155-00.1E	5/14	2311	10	5475	3	13.8	10.6	c	9Plus-91588
OS10060	40-15.0N	155-00.2E	5/15	0452	10	5550	4	12.5	11.9	c	9Plus-91588
OS10061	39-50.2N	155-02.9E	5/15	0901	10	5550	-	-	11.2	c	9Plus-91588
OS10062	39-30.0N	155-00.0E	5/15	2015	10	5620	4	17.5	10.6	c	9Plus-91588
OS10063	38-45.6N	154-59.8E	5/16	0135	10	5775	4	12.4	13.5	c	9Plus-91588
OS10064	37-59.5N	154-59.6E	5/16	0743	10	5970	-	-	12.8	c	9Plus-91588
OS10065	37-14.4N	155-00.4E	5/16	2341	10	5755	4	15.4	14.5	o	XCTD-2
OS10066	36-30.0N	154-59.9E	5/17	0340	10	5705	4	14	17.6	bc	XCTD-2
OS10067	41-30.1N	145-46.8E	5/19	0809	9	6867	-	-	4.3	f	9Plus-91588

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS10052					Station OS10053					Station OS10054					Station OS10055				
Longitude 145-46.8E					Longitude 155-00.0E					Longitude 155-00.0E					Longitude 155-13.3E				
Latitude 41-30.1N					Latitude 44-00.0N					Latitude 43-15.2N					Latitude 43-04.9N				
Depth(m) 6950					Depth(m) 5290					Depth(m) 5490					Depth(m) 5190				
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T	
5	2.382	32.800	26.180		5	3.834	33.112	26.301		5	5.245	33.364	26.351		5	8.198	33.897	26.378	
10	2.422	32.819	26.192		10	3.838	33.112	26.300		10	5.250	33.364	26.350		10	8.191	33.895	26.377	
20	2.153	32.839	26.229		20	3.839	33.112	26.301		20	5.197	33.366	26.357		20	8.169	33.901	26.385	
30	2.011	32.856	26.253		30	3.768	33.106	26.302		30	5.130	33.372	26.370		30	7.491	33.791	26.398	
40	2.410	32.988	26.329		40	3.516	33.080	26.306		40	5.078	33.390	26.390		40	6.611	33.651	26.408	
50	1.508	32.897	26.322		50	3.478	33.083	26.312		50	5.072	33.399	26.398		50	6.641	33.660	26.411	
75	0.494	32.882	26.372		75	3.251	33.123	26.365		75	4.932	33.443	26.449		75	6.284	33.615	26.423	
100	2.211	33.145	26.470		100	3.060	33.251	26.484		100	5.232	33.542	26.493		100	6.559	33.737	26.483	
125	1.550	33.160	26.530		125	2.853	33.398	26.619		125	5.336	33.578	26.509		125	5.951	33.647	26.490	
150	0.549	33.137	26.574		150	2.969	33.461	26.710		150	5.308	33.598	26.528		150	6.392	33.757	26.520	
175	0.912	33.203	26.606		175	2.589	33.555	26.767		175	4.589	33.612	26.620		175	5.759	33.746	26.592	
200	0.830	33.231	26.633		200	2.672	33.635	26.824		200	3.981	33.635	26.702		200	4.727	33.694	26.670	
250	1.247	33.352	26.703		250	2.843	33.740	26.893		250	3.153	33.658	26.800		250	4.562	33.826	26.793	
300	1.703	33.455	26.755		300	3.325	33.907	26.963		300	3.211	33.735	26.856		300	3.658	33.784	26.853	
400	2.040	33.635	26.875		400	3.137	33.980	27.058		400	3.506	33.909	26.967		400	3.491	33.907	26.967	
500	3.301	33.912	26.989		500	3.215	34.107	27.152		500	3.962	34.122	27.092		500	3.394	34.009	27.058	
600	3.404	34.049	27.089		600	3.194	34.208	27.255		600	3.228	34.137	27.175		600	3.276	34.104	27.145	
700	3.261	34.129	27.166		700	3.107	34.284	27.304		700	3.060	34.210	27.249		700	3.108	34.187	27.226	
800	3.194	34.215	27.241		800	2.947	34.330	27.355		800	3.157	34.309	27.319		800	3.156	34.285	27.300	
900	3.147	34.269	27.288		900	2.845	34.371	27.397		900	2.940	34.344	27.367		900	3.252	34.330	27.356	
1000	2.968	34.320	27.345		1000	2.713	34.408	27.438		1000	2.762	34.389	27.418		1000	2.800	34.372	27.402	
1200	2.646	34.372	27.416		1200	2.402	34.457	27.504		1200	2.527	34.449	27.487		1200	2.596	34.441	27.474	
1500	2.443	34.468	27.509		1500	2.196	34.527	27.577		1500	2.270	34.518	27.564		1500	2.290	34.509	27.555	
Station OS10056					Station OS10057					Station OS10058					Station OS10059				
Longitude 155-00.0E					Longitude 153-01.5E					Longitude 155-00.7E					Longitude 155-00.1E				
Latitude 42-29.9N					Latitude 42-07.5N					Latitude 41-44.3N					Latitude 41-00.0N				
Depth(m) 5155					Depth(m) 5322					Depth(m) 5540					Depth(m) 5475				
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T	
5	6.731	33.701	26.432		5	5.623	33.132	26.123		5	8.757	33.901	26.296		5	10.521	34.096	26.156	
10	6.728	33.701	26.432		10	5.623	33.141	26.130		10	8.725	33.896	26.297		10	10.483	34.098	26.165	
20	6.728	33.701	26.432		20	5.613	33.155	26.142		20	8.532	33.879	26.313		20	10.452	34.093	26.166	
30	6.728	33.701	26.432		30	6.463	33.565	26.360		30	8.080	33.845	26.355		30	10.419	34.090	26.170	
40	6.638	33.700	26.443		40	6.632	33.634	26.392		40	7.405	33.825	26.437		40	9.571	33.968	26.217	
50	6.535	33.713	26.467		50	5.994	33.579	26.431		50	6.576	33.708	26.458		50	8.417	33.847	26.306	
75	6.097	33.704	26.517		75	4.251	33.391	26.481		75	6.108	33.686	26.501		75	7.514	33.781	26.387	
100	6.257	33.759	26.559		100	4.182	33.460	26.543		100	6.184	33.723	26.530		100	7.488	33.837	26.434	
125	6.201	33.756	26.544		125	3.824	33.479	26.594		125	5.969	33.698	26.528		125	6.249	33.672	26.472	
150	6.138	33.751	26.548		150	3.172	33.502	26.674		150	5.744	33.673	26.536		150	6.435	33.740	26.501	
175	5.861	33.723	26.561		200	5.469	33.943	26.783		175	5.740	33.691	26.550		175	5.980	33.721	26.545	
200	5.671	33.708	26.572		250	3.979	33.812	26.843		200	5.881	33.761	26.588		200	5.507	33.699	26.585	
250	4.861	33.753	26.698		300	2.878	33.761	26.907		250	4.899	33.767	26.709		250	5.122	33.797	26.679	
300	4.087	33.757	26.788		400	3.713	34.015	27.032		300	4.100	33.765	26.794		300	4.075	33.748	26.783	
400	3.888	33.889	26.914		500	3.206	34.078	27.130		400	4.463	34.003	26.944		400	4.554	33.890	26.916	
500	3.738	34.018	27.031		600	3.352	34.234	27.241		500	3.906	34.066	27.053		500	4.418	34.077	27.008	
600	3.779	34.147	27.130		700	3.110	34.297	27.314		600	3.661	34.144	27.140		600	3.852	34.128	27.108	
700	3.601	34.229	27.213		800	2.908	34.340	27.367		700	3.586	34.243	27.225		700	3.798	34.233	27.197	
800	3.347	34.299	27.293		900	2.782	34.385	27.414		800	3.259	34.274	27.282		800	3.470	34.296	27.279	
900	3.156	34.340	27.344		1000	2.637	34.428	27.461		900	3.057	34.319	27.326		900	3.230	34.335	27.333	
1000	2.866	34.371	27.395							1000	2.874	34.363	27.388		1000	3.016	34.377	27.387	
1200	2.608	34.432	27.466							1200	2.692	34.439	27.465		1200	2.623	34.428	27.462	
1500	2.270	34.504	27.552							1500	2.326	34.503	27.547		1500	2.315	34.506	27.550	
Station OS10060					Station OS10061					Station OS10062					Station OS10063				
Longitude 155-00.2E					Longitude 155-02.9E					Longitude 155-00.0E					Longitude 154-59.8E				
Latitude 40-15.0N					Latitude 39-50.2N					Latitude 39-30.0N					Latitude 38-45.5N				
Depth(m) 5550					Depth(m) 5550					Depth(m) 5620					Depth(m) 5775				
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T	
5	11.748	34.275	26.074		5	11.186	34.212	26.128		5	10.439	34.113	26.184		5	13.476	34.417	25.845	
10	11.710	34.275	26.080		10	11.181	34.214	26.130		10	10.440	34.113	26.184		10	13.403	34.414	25.858	
20	11.646	34.278	26.095		20	11.165	34.212	26.132		20	10.444	34.114	26.184		20	13.311	34.411	25.874	
30	11.634	34.278	26.097		30	11.072	34.212	26.149		30	10.346	34.094	26.186		30	13.276	34.407	25.878	
40	11.629	34.278	26.098		40	11.072	34.214	26.150		40	10.024	34.059	26.213		40	13.248	34.402	25.880	
50	11.619	34.278	26.100		50	11.061	34.212	26.151		50	10.018	34.060	26.215		50	13.213	34.397	25.883	
75	11.162	34.256	26.167		75	10.442	34.135	26.201		75	8.944	34.039	26.375		75	13.121	34.384	25.892	
100	10.825	34.232	26.209		100	7.729	33.798	26.369		100	8.576	34.015	26.413		100	11.905	34.272	26.042	
125	10.477	34.190	26.237		125	6.506	33.714	26.472		125	7.580	33.890	26.463		125	10.935	34.193	26.159	
150	10.151	34.164	26.273		150	6.072	33.662	26.495		150	6.762	33.780	26.490		150	10.374	34.180	26.247	
175	9.689	34.114	26.313		175	6.122	33.690	26.502		175	6.283	33.744	26.525		175				

5. Data on drift gillnet research

Four gillnet researches were performed during this cruise. The operations were supervised by the captain, and were conducted by deck officers, crews and research staff.

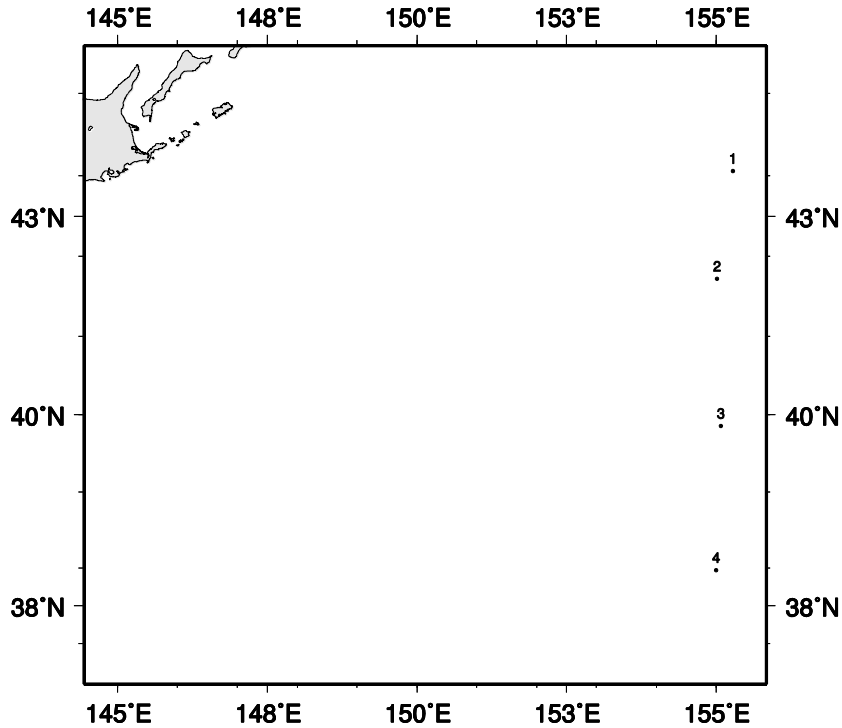


Figure 3. Locations of drift gillnet research

Table 3. Data on drift gillnet research

No. of	Date and Time (S.M.T.)				T.D.	Position			D.D.	Bottom depth(m)	Wr	Wind	S.T. (°C)	Tr (m)
research	Net set		Net haul			Lat.(N)	Long.							
OSG1001	13-May	1745-	14-May	0440-	10	43-04.0	155-16.0	(E)	275	5245	o	ESE-5	8.1	-
OSG1002	14-May	1745-	15-May	0423-	10	41-44.0	155-00.0	(E)	165	5548	o	NNW-5	7.8	-
OSG1003	15-May	1810-	16-May	0420-	10	39-52.0	155-04.0	(E)	30	5500	d	North-5	11.2	-
OSG1004	16-May	1850-	17-May	0423-	10	37-59.0	154-59.0	(E)	230	5970	o	NNE-3	12.8	-

T.D.: Time Difference between Greenwich Mean Time (G.M.T.) and S.M.T. D.D.: Direction of Drift toward
Wr.: Weather (o: 100% clouded, f: 75-99% clouded, d: drizzling rain) S.T.: Surface temperature Tr: Transparency

Table 4. Nets composition

No. of research	Mesh size (mm)																					Total
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	
OSG1001	3	3	3	3	3	3	3	3	3	3	5	5	3	3	0	0	1	1	0	1	0	49
OSG1002	3	3	3	5	5	5	3	3	3	3	5	2	3	0	0	0	1	1	0	1	0	49
OSG1003	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1	49
OSG1004	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1	49

Table 5. Data on catch number of salmonids by drift gillnet research

Sockeye (catch number)

No. of research	Mesh size (mm)																				Total
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42
OSG1001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Chum (catch number)

No. of research	Mesh size (mm)																				Total
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42
OSG1001	0	0	1	0	2	3	10	12	0	1	17	16	11	7	0	0	0	0	0	0	80
OSG1002	0	0	0	2	3	4	15	9	1	0	33	8	11	0	0	0	0	0	0	0	86
OSG1003	0	0	0	0	0	2	2	5	3	1	2	3	2	1	0	0	0	0	0	0	21
OSG1004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Pink (catch number)

No. of research	Mesh size (mm)																				Total
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42
OSG1001	0	0	4	74	54	16	2	1	0	1	2	1	1	0	0	0	0	0	0	0	156
OSG1002	0	0	8	97	92	53	3	1	0	0	3	2	1	0	0	0	0	0	0	0	260
OSG1003	0	0	0	0	4	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	7
OSG1004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Coho (catch number)

No. of research	Mesh size (mm)																				Total
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42
OSG1001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Chinook (catch number)

No. of research	Mesh size (mm)																				Total
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42
OSG1001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Steelhead (catch number)

No. of research	Mesh size (mm)																				Total
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42
OSG1001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 6. Biological characteristics of salmonids caught by drift gillnet research

CHUM SALMON																	
St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.
	(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)
G01	A112	560	2020	M	2	G01	C106	542	1854	F	45	G02	A118	512	1700	F	29
G01	A112	616	2890	F	35	G01	C106	592	2304	M	12	G02	A118	551	2025	F	53
G01	A112	511	1550	M	4	G01	C106	536	1603	M	9	G02	A118	550	2040	F	49
G01	A112	580	1860	M	2	G01	C106			F	37	G02	A118	523	1622	M	5
G01	A112	542	1880	M	7	G01	C121	540	1894	F	45	G02	A118	548	1836	F	62
G01	A112	532	1760	M	7	G01	C121	552	1987	M	5	G02	A118	592	2401	F	38
G01	A112	548	1910	M	7	G01	C121	530	1720	M	5	G02	A118	552	1996	F	42
G01	A112	556	1780	F	3	G01	C121	562	2056	M	10	G02	C072	530	1758	F	39
G01	A112	560	1836	M	2	G01	C121	576	2030	M	7	G02	C072	582	1911	M	6
G01	A112	544	1880	F	21	G01	C121	510	1600	M	6	G02	C082	541	1800	F	60
G01	A112	532	1620	F	15	G01	C121	536	1842	M	4	G02	C082	558	1980	F	66
G01	A112	528	1660	F	16	G01	C121	562	2407	M	21	G02	C082	528	1790	F	50
G01	A112	520	1890	F	31	G01	C121	564	2218	M	10	G02	C093	497	1480	F	31
G01	A112	520	1932	F	36	G01	C121	524	1530	F	24	G02	C093	540	1800	M	14
G01	A112	558	1900	F	34	G01	C121	536	1667	F	18	G02	C093	508	1480	F	45
G01	A112	570	2294	M	5	G01	C121	542	1780	M	5	G02	C106	538	2032	F	55
G01	A112	546	1920	F	32	G01	C157	532	1765	M	2	G02	C106	485	1200	F	10
G01	A115	600	2260	M	1	G02	A112	528	1719	M	5	G02	C106	492	1380	M	1
G01	A115	532	1560	F	27	G02	A112	478	1439	M	23	G02	C106	458	1109	M	2
G01	A115	542	1710	F	46	G02	A112	556	2123	M	15	G02	C106	536	1697	F	37
G01	A115	563	2000	F	42	G02	A112	542	1877	F	47	G02	C106	592	2306	M	4
G01	A115	556	1900	F	49	G02	A112	513	1766	M	7	G02	C106	532	1924	F	32
G01	A115	590	2400	F	32	G02	A112	533	1790	F	52	G02	C106	556	2024	F	23
G01	A115	591	2300	F	58	G02	A112	560	2011	M	5	G02	C106	542	1745	F	47
G01	A115	522	1780	F	25	G02	A112	560	1883	M	2	G02	C106	510	1776	M	6
G01	A115	560	2280	F	170	G02	A112	528	1769	M	61	G02	C106	536	1893	M	6
G01	A115	578	2050	F	65	G02	A112	530	2086	F	24	G02	C106	545	1822	M	2
G01	A115	514	1770	F	55	G02	A112	550	1913	F	3	G02	C106	586	2683	M	4
G01	A115	534	1730	F	42	G02	A112	496	1471	M	12	G02	C106	540	1748	F	38
G01	A115	575	1650	F	42	G02	A112	572	2130	M	23	G02	C106	550	1891	M	1
G01	A115	535	1730	F	43	G02	A112	528	1750	M	22	G02	C121	587	2227	M	3
G01	A115	530	1550	F	57	G02	A112	502	1654	M	32	G02	C121	524	1761	F	45
G01	A115	542	1660	M	6	G02	A112	532	1730	F	2	G02	C121	530	1756	M	3
G01	A118	596	2340	F	24	G02	A112	546	1850	M	11	G02	C121	603	2641	F	27
G01	A118	588	2200	F	33	G02	A112	564	2134	M	5	G02	C121	563	2149	M	5
G01	A118	570	2082	M	1	G02	A112	556	1987	M	51	G02	C121	604	2916	M	29
G01	A118	632	2720	M	5	G02	A112	550	1923	M	9	G02	C121	548	2140	F	54
G01	A118	542	1810	F	19	G02	A112	544	2355	M	8	G02	C121	536	2087	F	37
G01	A118	570	2132	M	10	G02	A112	570	2107	M	8	G02	C121	562	2059	M	2
G01	A118	580	2160	F	22	G02	A112	568	1995	M	7	G02	C138	592	2619	F	48
G01	A118	586	2391	F	50	G02	A112	523	1729	M	14	G03	A112	552	1843	F	18
G01	A118	554	1920	M	2	G02	A112	521	1851	F	41	G03	A112	554	2089	M	2
G01	A118	564	1950	F	26	G02	A112	479	1524	F	27	G03	A115	511	1621	F	32
G01	A121	498	1490	F	26	G02	A112	576	2247	F	28	G03	A115	550	2301	F	41
G01	A121	518	1728	M	8	G02	A112	580	2069	M	9	G03	A115	585	2204	F	31
G01	A121	532	1836	M	7	G02	A112	540	1937	F	40	G03	A118	565	2301	M	3
G01	A121	584	2066	M	6	G02	A112	530	1816	M	3	G03	A118	553	2213	M	5
G01	A121	540	1786	F	27	G02	A112	528	1822	M	7	G03	A121	547	2196	F	49
G01	A121	528	1800	F	38	G02	A112	484	1336	O		G03	C093	558	2221	F	70
G01	A121	534	1920	M	12	G02	A115	528	1855	F	39	G03	C093	586	2703	M	34
G01	C063	536	1932	M	32	G02	A115	518	1833	F	40	G03	C106	563	2057	F	20
G01	C082	500	1540	O		G02	A115	500	1715	M	5	G03	C106	521	2004	M	3
G01	C082	466	1200	O		G02	A115	517	1937	M	6	G03	C121	528	1931	F	13
G01	C093	546	1830	M	5	G02	A115	572	2200	F	27	G03	C121	532	2077	M	6
G01	C093	548	1860	M	7	G02	A115	540	1904	F	70	G03	C121	663	3310	M	3
G01	C106			M	6	G02	A115	514	1717	M	5	G03	C121	568	2102	M	1
G01	C106	484	1312	M	2	G02	A115	578	2354	M	9	G03	C121	600	2682	M	2
G01	C106	548	1665	M	9	G02	A118	554	2083	M	6	G03	C138	564	2304	M	5
G01	C106	558	2032	M	18	G02	A118	504	1661	F	36	G03	C138	562	2228	M	3
G01	C106	588	2024	M	5	G02	A118	552	2392	M	11	G03	C138	606	3034	M	12
G01	C106	510	1810	F	60	G02	A118	546	1689	M	4	G03	C157	700	4338	M	6

Table 6. Biological characteristics of salmonids caught by drift gillnet research (continued)

PINK SALMON																							
St.	Gear (mm)	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
G01	C072	350	451			G01	C082	410	700	M	4	G02	C072	341	357	M	1						
G01	C072	372	573	M	4	G01	C082	388	618	M	2	G02	C072	381	522	F	9						
G01	C072	380	616			G01	C082	374	612	F	18	G02	C072	368	453	F	9						
G01	C072	370	550			G01	C082	380	604	M	3	G02	C072	388	637	F	5						
G01	C072	378	531			G01	C082	344	460	M	1	G02	C072	362	467	F	5						
G01	C072	360	482			G01	C082	382	608	F	22	G02	C072	346	385	F	8						
G01	C072	388	688			G01	C082	390	671	F	13	G02	C072	406	654	F	8						
G01	C072	408	733	F	12	G01	C082	392	626	M	5	G02	C072	392	616	F	7						
G01	C072	324	402	M	1	G01	C082	558	524	M	5	G02	C072	402	656	F	7						
G01	C072	336	398	F	4	G01	C082	360	516	F	39	G02	C072	397		M	1						
G01	C072	370	552	M	2	G01	C082	370	588	F	8	G02	C072	370	540	M	2						
G01	C072	378	630			G01	C082	384	620	F	8	G02	C072	409	684	M	3						
G01	C072	368	568			G01	C082	676	532	F	8	G02	C072	378	531	F	8						
G01	C072	368	610			G01	C082	362	552	F	6	G02	C072	368	491	M	3						
G01	C072	372	565			G01	C082	392	693	M	2	G02	C072	389	564	F	5						
G01	C072	360	532			G01	C082	390	664	F	11	G02	C072	370	556	F	4						
G01	C072	362	514			G01	C082	380	595	M	1	G02	C072	401	683	F	16						
G01	C072	372	601			G01	C082	368	582	M	3	G02	C072	368	549	M	2						
G01	C072	362	532			G01	C082	432	838	M	3	G02	C072	418	743	F	17						
G01	C072	354	467			G01	C082	402	752	F	10	G02	C072	397	651	F	7						
G01	C072	388	605			G01	C082	408	715	M	2	G02	C072	436		M	5						
G01	C072	342	472			G01	C082	382	619	F	10	G02	C072	368	524	F	7						
G01	C072	388	614			G01	C082	394	710	M	2	G02	C072	354	414	M	1						
G01	C072	404	702			G01	C082	392	615	F	11	G02	C072	383		F	9						
G01	C072	356	467			G01	C082	394	653	M	4	G02	C072	390	620	F	7						
G01	C072	360	470			G01	C093			M	5	G02	C072	360	466	F	9						
G01	C072	410	706			G01	C093			M	7	G02	C072	386	638	F	14						
G01	C072	344	489			G01	C093	394	696	M	2	G02	C072	382	581	F	9						
G01	C072	354	484			G01	C093	398	680	M	6	G02	C072	363	506	M	2						
G01	C072	336	484			G01	C093	394	680	M	3	G02	C072	396	605	M	1						
G01	C072	366	547			G01	C093	470	1160	M	5	G02	C072	361	363	M	2						
G01	C072	392	615			G01	C093	410	782	F	14	G02	C072	374	433	F	7						
G01	C072	350	471	F	5	G01	C093	448	955	M	7	G02	C072	388	575	F	18						
G01	C072	368	617			G01	C093	372	694	F	21	G02	C072	406	582	F	13						
G01	C072	404	732	F	13	G01	C093	446	840	M	5	G02	C072	426	855	M	3						
G01	C072	362	482	F	6	G01	C093	386	660	F	13	G02	C072	396	650	M	5						
G01	C072	364	568	F	8	G01	C093	382	621	F	13	G02	C072	348	400	M	3						
G01	C072	366	463	M	2	G01	C093	426	625	M	5	G02	C072	382	520	F	5						
G01	C072	384	620	M	3	G01	C093	376	638	M	5	G02	C072	398	620	F	7						
G01	C072	360	551	F	8	G01	C093	420	808	M	6	G02	C072	388	656	F	2						
G01	C072	384	547	M	3	G01	C093	400	695	M	5	G02	C072	346	420	M	3						
G01	C072	368	527	F	8	G01	C106	440	976	M	6	G02	C072	368	560	F	12						
G01	C072	402	694	F	12	G01	C106	386	607	F	10	G02	C072	412	720	F	22						
G01	C072	348	476	M	2	G01	C121	374	570	M	4	G02	C072	363	460	F	11						
G01	C072	398	660	M	4	G01	C157	402	688	F	10	G02	C072	383	530	M	4						
G01	C072	372	471	F	8	G02	A112	456	1129	M	7	G02	C072	417	830	F	18						
G01	C072	400	691	M	4	G02	A112	496	1423	F	7	G02	C082	405	669	F	6						
G01	C072	366	520	M	2	G02	A112	398	710	F	13	G02	C082	368	515	F	2						
G01	C072	394	647	M	4	G02	A115	399		M	2	G02	C082	416	731	M	1						
G01	C072	364	598	F	10	G02	A115	378	522	M	2	G02	C082	403		F	11						
G01	C072	358	503	F	10	G02	A118	400	682	M	6	G02	C082	395	618	M	1						
G01	C072	364	528	F	8	G02	C063	358	463	F	5	G02	C082	382	616	F	9						
G01	C072	354	490	F	4	G02	C063	372	519	F	6	G02	C082	398	807	M	3						
G01	C082	358	532	M	2	G02	C063	355	446	F	3	G02	C082	414	705	M	1						
G01	C082	360	546	F	16	G02	C063	336	405	F	1	G02	C082	401	663	M	2						
G01	C082	384	586	F	11	G02	C063	336	397	M	1	G02	C082	370	557	F	10						
G01	C082	382	609	F	8	G02	C072	378	528	F	11	G02	C082	442	868	M	3						
G01	C082	358	542	F	6	G02	C072	363	542	M	1	G02	C082	392	574	F	6						
G01	C082	336	462	F	12	G02	C072	396	635	M	3	G02	C082	370	545	F	6						
G01	C082	430	816	M	1	G02	C072	362	533	F	16	G02	C082	432	815	M	2						
G01	C082	380	612	M	3	G02	C072	391	554	M	2	G02	C082	370	443	F	6						
G01	C082	376	695	F	11	G02	C072	376	488	F	3	G02	C082	382	599	M	2						
G01	C082	358	542	F	7	G02	C072	408	697	F	15	G02	C082	400	633	M	2						
G01	C082	384	620	M	2	G02	C072	340	424	F	5	G02	C082	404	676	F	14						
G01	C082	370	584	M	2	G02	C072	395	630	M	2	G02	C082	358	507	F	3						
G01	C082	424	790	M	2	G02	C072	346	416	M	2	G02	C082	376	630	F	10						
G01	C082	388	674	F	5	G02	C072	367	523	M	6	G02	C082	395	719	F	14						
G01	C082	364	546	F	4	G02	C072	358	504	M	1	G02	C082	367	607	M	3						
G01	C082	400	702	F	24	G02	C072	374	507	M	2	G02	C082	384	651	M	2						
G01	C082	400	620	M	2	G02	C072	388	604	M	6	G02	C082	382	505	M	1						

Table 6. Biological characteristics of salmonids caught by drift gillnet research (continued)

PINK SALMON																	
St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.
(mm)	(mm)	(mm)	(gr)		(gr)	(mm)	(mm)	(mm)	(gr)		(gr)	(mm)	(mm)	(mm)	(gr)		(gr)
G02	C082	391	691	F	23	G02	C082	386	573	F	10	G02	C093	422	760	F	12
G02	C082	420	702	F	5	G02	C082	402	708	F	21	G02	C093	406	780	M	2
G02	C082	382	605	M	5	G02	C082	369	557	F	10	G02	C093	396	710	M	2
G02	C082	420	755	M	7	G02	C082	377	555	M	2	G02	C093	402	640	F	10
G02	C082	390	679	M	2	G02	C082	396	654	M	2	G02	C093	391	600	M	5
G02	C082	395	665	F	10	G02	C093	409	700	F	13	G02	C093	409	680	F	13
G02	C082	408	754	M	4	G02	C093	429	720	M	6	G02	C093	410	700	F	16
G02	C082	462	1081	M	5	G02	C093	380	550	F	10	G02	C093	392	600	F	11
G02	C082	406	748	M	8	G02	C093	408	650	F	10	G02	C093	396	620	F	10
G02	C082	375	584	M	56	G02	C093	370		F	8	G02	C093	425	630	M	4
G02	C082	380	660	F	10	G02	C093	421		F	20	G02	C093	380	560	M	4
G02	C082	354	525	F	9	G02	C093	398		M	7	G02	C093	416	750	F	10
G02	C082	423	769	M	7	G02	C093	431		M	4	G02	C093	400	670	F	14
G02	C082	381	638	F	10	G02	C093	382		F	14	G02	C093	408	720	M	5
G02	C082	412	808	F	38	G02	C093	419		F	13	G02	C093	374	560	F	11
G02	C082	388	585	F	12	G02	C093	400		M	6	G02	C093	410	690	M	5
G02	C082	422	758	M	1	G02	C093	468	1060	M	9	G02	C093	408	700	M	7
G02	C082	405	694	M	2	G02	C093	402	680	F	10	G02	C093	470	1040	M	6
G02	C082	384	592	M	1	G02	C093	460	1060	M	8	G02	C093	414	700	F	14
G02	C082	377	633	M	6	G02	C093	402	640	M	4	G02	C106	432	925	M	2
G02	C082	380	560	M	1	G02	C093	405	840	F	20	G02	C106	420	857	M	5
G02	C082	410	712	M	3	G02	C093	406	660	F	15	G02	C106	450	937	M	3
G02	C082	393	696	M	3	G02	C093	428	780	M	5	G02	C121	393	642	M	3
G02	C082	408	705	M	5	G02	C093	424	780	M	4	G03	A112	469	1140	M	5
G02	C082	374	529	F	8	G02	C093	418	700	M	7	G03	A112	501	1541	M	4
G02	C082	410	750	F	16	G02	C093	400	680	M	3	G03	A112	502	1604	M	5
G02	C082	396	647	F	17	G02	C093	398	600	F	9	G03	C082	376	627	F	14
G02	C082	385	595	F	8	G02	C093	422	800	M	7	G03	C082	395	555	M	1
G02	C082	446	938	M	5	G02	C093	418	720	F	12	G03	C082	415	768	F	9
G02	C082	391	640	F	10	G02	C093	450	840	M	8	G03	C082	364	521	F	5
G02	C082	370	577	F	15	G02	C093	422	820	F	25						

Table 7. The number of organisms caught by drift gillnet during the Oshoro maru Cruise # 215 in May, 2010. CPUE and (%) indicate numerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Common name	Scientific name	Station Gear	OSG 1001				OSG 1002				OSG 1003				OSG 1004			
			C		A	F	Total	C		A	F	Total	C		A	F	Total	
			CPUE (%)					CPUE (%)					CPUE (%)					CPUE (%)
Sockeye salmon	<i>Oncorhynchus nerka</i>		0	0.0 (0.0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chum salmon	<i>Oncorhynchus keta</i>		29	1.0 (14.3)	51	0	80	34	0.9 (9.5)	52	0	86	13	0.4 (25.5)	8	0	21	0
Pink salmon	<i>Oncorhynchus gorbuscha</i>		152	5.1 (74.9)	4	0	156	254	7.1 (70.9)	6	0	260	4	0.1 (7.8)	3	0	7	0
Coho salmon	<i>Oncorhynchus kisutch</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0
Chinook salmon	<i>Oncorhynchus tshawytscha</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0
Steelhead	<i>Oncorhynchus mykiss</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0
Boreal clubhook squid	<i>Onychoteuthis borealijaponica</i>		20	0.7 (9.9)	0	0	20	60	1.7 (16.8)	0	0	60	13	0.4 (25.5)	0	0	13	4
Eight-armed squid	<i>Gonatopsis borealis</i>		0	0.0 (0.0)	0	0	0	2	0.1 (0.6)	0	0	2	7	0.2 (13.7)	0	0	7	0
Flying squid	<i>Onmmastrephes bartramii</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	1
Blue shark	<i>Prionace glauca</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0
Salmon shark	<i>Lamna ditropis</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	1	0	1	0
Spiny dogfish	<i>Squalus acanthias</i>		1	0.0 (0.5)	1	0	2	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0
Japanese scaled sardine	<i>Sardinops melanostictus</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0
Japanese anchovy	<i>Engraulis japonicus</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	13
Lantern fishes	Myxophidae		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	8	8	0
Pacific saury	<i>Cololabis saira</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0
Pilotfish	<i>Naucrates ductor</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	1
Pacific pomfret	<i>Brama japonica</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	14	0.5 (27.5)	7	1	22	0
Chub mackerel	<i>Scomber japonicus</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0
Snailye squaretail	<i>Tetragnonurus atlanticus</i>		0	0.0 (0.0)	0	0	0	2	0.1 (0.6)	0	0	2	0	0.0 (0.0)	0	0	0	0
Atka mackerel	<i>Pleurogrammus monopterygius</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0
Common Murre	<i>Uria aalge</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0
Short-tailed shearwater	<i>Puffinus tenuirostris</i>		1	0.0 (0.5)	0	0	1	6	0.2 (1.7)	0	0	6	0	0.0 (0.0)	0	0	0	0
Horned puffin	<i>Fratercula corniculata</i>		0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	1	0	1	0	0.0 (0.0)	0	0	0	0

Table 8. Biological characteristics of fishes caught by drift gillnet

NEON FLYING SQUID															
St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.
(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)
				G04	C093	345	1319								
BOREAL CLUBHOOK SQUID															
St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.	St.	Gear	M. L.	B. W.
(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)
G01	C072	316	640	G02	C072	302	494	G02	C093	310					
G01	C072	298	550	G02	C072	294	486	G02	C093	300					
G01	C072	332	710	G02	C072	316	681	G02	C093	318					
G01	C072	312	650	G02	C072	312	595	G02	C093	308					
G01	C072	292	600	G02	C072	312	547	G02	C093	314					
G01	C072	304	590	G02	C072	294	569	G02	C093	284	422				
G01	C072	304	580	G02	C072	296	479	G02	C093	314	325				
G01	C072	312	580	G02	C072	318	706	G02	C106	288					
G01	C072	335	620	G02	C072	284	477	G02	C055	224					
G01	C082	292	600	G02	C072	306	566	G03	C055	208					
G01	C082	304	610	G02	C072	296	513	G03	C055	228	213				
G01	C082	304	600	G02	C072	284	456	G03	C055	214	190				
G01	C082	314	580	G02	C072	306		G03	C055	221	212				
G01	C082	310	570	G02	C072	322		G03	C063	228	237				
G01	C082	314	680	G02	C072	308		G03	C063	234	255				
G01	C082	314	680	G02	C072	306		G03	C063	258	334				
G01	C082	318	700	G02	C072	298		G03	C072	278	470				
G01	C082	326	600	G02	C072	388		G03	C072	286	445				
G01	C082	290	560	G02	C082	298	643	G03	C072	274	393				
G01	C138	312	620	G02	C082	302	608	G03	C072	271	416				
G02	C063	282	504	G02	C082	388	469	G03	C082	324	679				
G02	C063	292	503	G02	C082	394	492	G04	C048	186	162				
G02	C063			G02	C082	294	605	G04	C048	208	209				
G02	C072	306		G02	C082	316		G04	C055	160	152				
G02	C072	286		G02	C082	310	593	G04	C072	260	431				
G02	C072	306		G02	C082	320	584	G04	F025	102	40				
G02	C072	252		G02	C082	332	670	G04	F029	103	29				
G02	C072	308	552	G02	C082	308	554	G04	F029	110	31				
G02	C072	284	495	G02	C082	306	543	G04	F033	122	55				
G02	C072	320	623	G02	C082	324	690	G04	F037	160	100				
G02	C072	304	563	G02	C082	342	768	G04	F037	165	103				
G02	C072	306	545	G02	C082	300	549	G04	F037	178	130				
G02	C072	318	605	G02	C082	318	494	G04	F042	142	83				
G02	C072	202	437	G02	C082	314	638	G04	F042	178	125				
G02	C072	300		G02	C093	320	630	G04	F042	164	112				
G02	C072	304	618	G02	C093	291	542	G04	F042	193	147				
PACIFIC SAURY															
St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.
(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)
G04	F019	150	12	G04	F033	282	96	G04	F033	280	90				
G04	F033	260	82	G04	F033	268	85	G04	F033	283	94				
PACIFIC POMFRET															
St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.	St.	Gear	F. L.	B. W.
(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)	(mm)	(mm)	(mm)	(gr)
G03	A115	402	1107	G03	C121	474	1759	G03	C138	460	1610				
G03	A115	400	1176	G03	C121	402	1343	G03	C157	436	1675				
G03	A121	450	1377	G03	C121	401	1162	G03	C157	406	1143				
G03	A121	412	1149	G03	C121	428	1290	G03	C157	460	1616				
G03	A121	406	1157	G03	C138	406	1118	G03	C157	459	1712				
G03	A121	418	1569	G03	C138	449	1617	G03	F029	415	1270				
G03	A121	407	1158	G03	C138	456	1595								
G03	C055	458	1583	G03	C138	418	1208								

6. Data on salmon hook-and-line Research

To collect salmon, hook-and-line gears were used along 155°E line in the Central North Pacific during Cruise#215. Five to ten anglers were engaged in the work. These samplings were mainly conducted with observations when ship was under drifting.

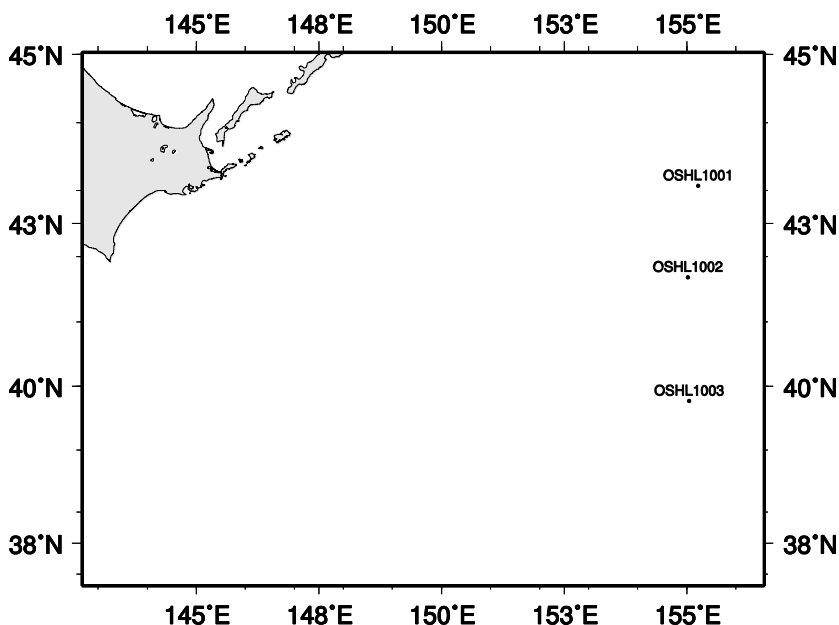


Figure 4. Locations of salmon hook-and-line Research

Table 9. List of hook-and-line sampling (OSHL 10XX) station during the "Oshoro Maru" Cruise #215

Station	Date and Time (S.M.T.)					Set Position		D.S.	No. of hooks	Wr.	Wind (Force)	Oceanographic Station No.
	Line set		Line haul		T.D.	Lat.	Long.					
OSHL 1001	13-May	20:30-	14-May	03:30-	10	43-05.0N	155-13.0E	-	-	d	East-5	OS10055
OSHL 1002	15-May	20:35-	16-May	03:15-	10	41-42.0N	155-00.0E	-	-	o	NNW-5	OS10058
OSHL 1003	16-May	21:30-	17-May	01:30-	10	39-47.0N	155-02.0E	-	-	d	NNW-4	OS10061

S.M.T. : Ship's Mean Time

T.D.: Time Difference between Greenwich Mean Time (G.M.T.) and S.M.T.

D.S. : Direction in which line was set Wr.: Weather (o: 100% clouded, f fog, d: drizzling rain)

Table 10. The catch number of each salmonid at each station where salmonids were collected by hook-and-line gear, surface longline

Station Name	Sampling gear	Species name						Total
		Sockeye	Chum	Pink	Coho	Chinook	Stellhead	
Cruise #215								
OSHL 1001	Hook-and-line	0	12	51	0	0	0	63
OSHL 1002	Hook-and-line	0	6	439	0	0	0	445
OSHL 1003	Hook-and-line	0	4	0	0	0	0	4
total		0	22	490	0	0	0	512

Table 11. Biological characteristics of salmonids caught by hook-and-line research

CHUM SALMON														
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
HL01	572	2360	F	55	HL01	482	1258	M	2	HL02	582	2190	F	20
HL01	539	1980	M	4	HL01	454	1037	F	12	HL02	532	1563	M	4
HL01	534	1764	M	5	HL01	452	1080	F	11	HL03	590	2000	F	28
HL01	558	2130	M	5	HL01	554	1860	F	64	HL03	540	2100	M	12
HL01	508	1620	M	6	HL02	595	2459	M	3	HL03	587	2530	M	23
HL01	604	2840	M	3	HL02	600	2390	M	2	HL03	610	2750	M	12
HL01	530	1980	F	40	HL02	529	1700	M	3					
HL01	568	2360	F	56	HL02	470	1208	M	2					
PINK SALMON														
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
HL01	380	590	F	6	HL01	391	500	M	4	HL02	438	930	M	5
HL01	400	720	M	4	HL01	389	600	F	7.3	HL02	422	830	M	2
HL01	402	730	M	2	HL01	370	500	M	1	HL02	385	651	F	9
HL01	397	633	M	2	HL01	378	537	M	1	HL02	410	650	F	7
HL01	352	594	O		HL01	430	777	M	4	HL02	405	660	M	4
HL01	382	630	F	9	HL01	391	610	M	1.3	HL02	368	570	M	2
HL01	405	727	M	2	HL01	400	630	M	1.9	HL02	378	569	F	5
HL01	364	541	F	5	HL01	408	650	M	6.7	HL02	418	837	F	16
HL01	414	729	M	3	HL01	378	520	M	0.9	HL02	380	574	F	6
HL01	485	574	M	2	HL01	376	580	M	1.7	HL02	400	657	F	14
HL01	400	683	M	3	HL01	420	730	M	0.7	HL02	382	598	M	3
HL01	365	540	F	4	HL01	355	415	F	4.2	HL02	390	577	F	8
HL01	390	600	F	10	HL01	387	600	M	1.5	HL02	385	623	F	13
HL01	386	641	M	2	HL01	380	570	F	10	HL02	392	728	F	12
HL01	490	510	F	5	HL02	391	670	F	12	HL02	393	690	F	10
HL01	370	570	F	6	HL02	355	470	F	4	HL02	395	459	M	2
HL01	415	766	F	10	HL02	379	617	F	9	HL02	401	688	M	2
HL01	429	805	M	2	HL02	390	709	F	14	HL02	391	655	F	9
HL01	360	551	F	7	HL02	392	632	F	7	HL02	363	528	M	2
HL01	383	584	M	2	HL02	391	665	F	6	HL02	336	426	M	2
HL01	352	462	M	1	HL02	397	670	M	4	HL02	329	430	F	12
HL01	394	660	F	11	HL02	382	634	F	11	HL02	374	514	M	2
HL01	382	641	M	2	HL02	388	566	F	10	HL02	386	548	F	9
HL01	375	573	F	5	HL02	389	666	M	3	HL02	400	752	M	4
HL01	376	530	M	3	HL02	411	676	M	1	HL02	398	680	F	9
HL01	400	659	M	3	HL02	377	559	M	2	HL02	370	541	F	8
HL01	408	700	M	4	HL02	358	525	M	2	HL02	409	663	F	8
HL01	421	770	F	21.7	HL02	394	683	F	9	HL02	400	655	F	14
HL01	387	600	F	11.8	HL02	374	587	F	6	HL02	388	622	F	10
HL01	411	750	M	2.3	HL02	420	769	M	2	HL02	362	497	M	1
HL01	396	595	M	1.2	HL02	401	676	F	10	HL02	376	564	F	9
HL01	420	770	F	18.8	HL02	409	738	M	3	HL02	399	643	M	4
HL01	404	690	F	13.2	HL02	361	461	F	6	HL02	401	742	M	6
HL01	371	540	F	6.6	HL02	408	712	F	13	HL02	400	725	F	16
HL01	398	640	M	1.5	HL02	418	795	M	4	HL02	435	830	M	4
HL01	404	670	F	27.8	HL02	386	564	M	2	HL02	400	661	M	3
HL01	372	560	M	1.4	HL02	375	565	F	8	HL02	419	686	M	2

7. Data on plankton collected by vertical hauls with twin NORPAC net.

Vertical hauls with twin-NORPAC net were made at hydrographic stations. This net was composed of 45 cm mouth diameter and 180 cm long conical one which was made of GG54 and XX13 having 0.33 mm and 0.10 mm mesh, respectively. The net was lowered to the estimated depth of 150 m, 500 m or near the bottom when the bottom depth was shallower than 150 m, and immediately hauled to the surface at a speed about 1 m s⁻¹. A flowmeter was mounted at the center of mouth of the net to estimate the volume water filtered. Sampling was conducted by research staffs and measurement of wet weight of the samples were made by A. Yamaguchi, K. Ishii, K. Matsuno, R. Saito, K. Ohgi, Y. Onishi, T. Homma, R. Ohashi, C. Tsukazaki, A. Kuroda, Y. Abe, M. Kawaguchi, T. Shiota, S. Mizuhara, K. Moribe and J. Fukuda (Laboratory of Marine Biology).

Table 12. Data on plankton samples collected by vertical hauls with twin NORPAC net.

GG54: 0.33 mm mesh, XX13: 0.10 mm mesh.

Station no.	Position			S.M.T.		Length of wire (m)	Angle of wire (°)	Depth estimated by wire angle (m)	Kind of cloth	Flowmeter		Estimated volume of water filtered (m ³)	Wet weight (g)		Sample no.
	Lat. (N)	Lon.		Date	Hour					No.	Reading		per haul	per 1000 m ³	
OS10052 (Site H)	41-30	145-47	E	10 May	11:20	150	1	150	GG54	2562	1420	22.33	23.0	1031	1) 10101
									XX13	3006	1161	16.84			1) 10102
					11:36	500	1	500	GG54	2562	4746	74.62	29.2	391	1) 10103
									XX13	3006	4356	63.20			1) 10104
OS10053 (St. KNOT)	44-00	155-00	E	12 May	4:26	152	9	150	GG54	2562	1827	28.73	15.3	532	10105
									XX13	3006	1811	26.27			10106
OS10054	43-15	155-00	E	12 May	13:52	152	10	150	GG54	2562	1720	27.04	12.4	459	10107
									XX13	3006	1598	23.18			10108
OS10055	43-04	155-14	E	12 May	20:21	151	5	150	GG54	2562	1642	25.82	10.7	413	10109
									XX13	3006	1568	22.75			10110
OS10058	41-45	155-00	E	14 May	14:42	163	23	150	GG54	2562	2074	32.61	6.5	200	10111
									XX13	3006	2056	29.83			10112
OS10059	41-00	155-00	E	15 May	10:35	152	10	150	GG54	2562	1758	27.64	4.3	155	10113
									XX13	3006	1640	23.79			10114
OS10060	40-15	155-00	E	15 May	15:52	151	8	150	GG54	2562	1678	26.38	8.0	304	2) 10115
									XX13	3006	1766	25.62			10116
OS10061	39-48	155-02	E	15 May	21:04	151	8	150	GG54	2562	1587	24.95	11.3	452	10117
									XX13	3006	1642	23.82			10118
OS10062	39-30	155-00	E	16 May	7:34	154	13	150	GG54	2562	1613	25.36	8.5	333	10119
									XX13	3006	1471	21.34			10120
OS10063	38-45	155-00	E	16 May	12:47	154	13	150	GG54	2562	1688	26.54	3.5	130	10121
									XX13	3006	1219	17.69			10122
OS10064	38-00	155-00	E	16 May	16:50	154	13	150	GG54	2562	1705	26.81	6.1	229	10123
									XX13	3006	1164	16.89			10124
OS10065	37-15	155-00	E	17 May	9:29	156	15	151	GG54	2562	1750	27.52	9.9	361	5) 10125
									XX13	3006	1717	24.91			10126
OS10066	36-30	155-00	E	17 May	13:51	151	5	150	GG54	2562	1498	23.55	5.9	252	10127
									XX13	3006	1333	19.34			10128
OS10067	41-30	145-47	E	19 May	18:30	153	11	150	GG54	2562	1500	23.59	28.6	1215	1) 10129
									XX13	3006	950	13.78			1) 10130
					18:45	518	15	500	GG54	2562	5180	81.45	31.6	389	1) 10131
									XX13	3006	4425	64.20			1) 10132

1) Exclusively phytoplankton

2) Including some fragments of medusae.

3) *Neocalanus* abundant.

4) Gelatinous zooplankton abundant.

5) *Salpida* abundant.

6) Chaetognaths abundant.

8. Data on Calibration of Flowmeters

Flowmeters used for plankton nets were calibrated once in the cruise.

Table 13. Calibration data on flowmeters used for a twin or single NORPAC net and other kind of nets.

100-m wire out at St. OS10067, 19 May 2010.

Flowmeter No.	Wire length (m)	Revolution						
		1	2	3	4	5	6	Mean
RG2562	100	1028	1003	1097*	977*	999	1016	1012
RG3006	100	1125*	1115	1091	1082*	1096	1083	1096

*: omitted from calculation

THE " OSHORO MARU " CRUISE 216 TO THE NORTHWEST PACIFIC OCEAN

IN JUNE-JULY 2010

1. Cruise Itinerary

Cruise 216

Departure from Hakodate	June	2,	2010
Start hydrographic research (OS10068)		3	
ROV diving trial		4	
Start mid-water trawl research (OSMT1001)		13	
Finish mid-water trawl research (OSMT1005)		16	
Arrival at Guam and change research staff		19	
Departure from Guam		23	
Start Gillnet research (OSG1005)		30	
Start salmon hook and line research (OSHL1004)	July	3	
Finish Gillnet research (OSG1009)		5	
Date change, repeat July 7 th		7	
Arrival at Dutch Harbor and change research staff		12	
Departure from Dutch Harbor		15	
Start salmon long line research (OSSL1001)		17	
Date change, skip July 21		20	
Finish salmon long line research (OSSL1006)		22	
Finish salmon hook and line research (OSHL1015)		26	
Finish hydrographic research (OS10175)		29	
Return to Hakodate		31	

Total coverage 9369.5miles 55days at sea and 5days in port

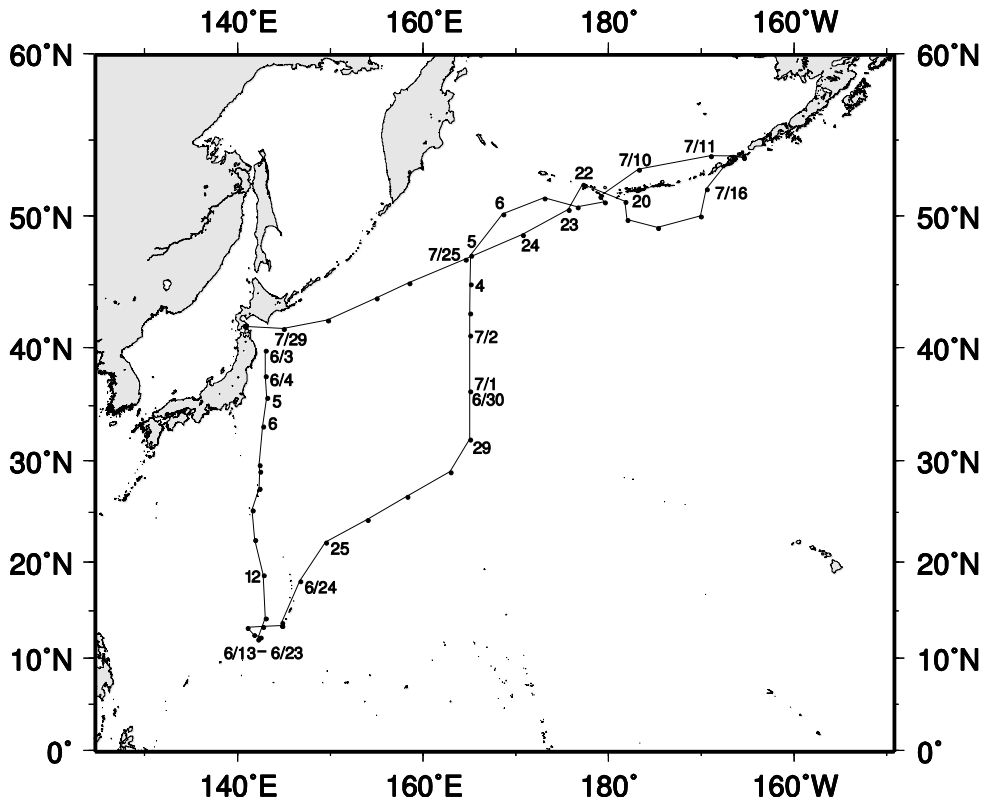


Figure 1. Track and Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Instructor	Yoshihiko Kamei
	First Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Technical official	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 24 men		

Cruise 216

Research Staff:	Instructor	(Field Science Center for Northern Biosphere, Hokkaido University)	
	Hakodate - Guam		BOWER John Richard
	Associate Professor	(Marine Biosciences Laboratory of Comparative Physiology)	
	Hakodate - Guam		Shigeho Ijiri
	Research Fellow	(Graduate School of Information and Technology GCOE)	
	Hakodate - Guam		Toshiro Iwamori
	Instructor	(Laboratory of Marine Environmental Science)	
	Guam - Hakodate		Hiromichi Ueno
	Research Worker	(Plant Research Department, National Museum of nature and Science)	
	Guam -Hakodate		Kaoru Ohgane
	Instructor	(Laboratory of Marine Environmental Science)	
	Hakodate - Dutch Harbor		Hiroji Onishi
	Associate Professor	(Faculty of Fisheries Training Ship Oshoro-Marui)	
	Hakodate - Guam		Yoshiyuki Kajiware
	Study Chief Editor	(Plant Research Department, National Museum of nature and Science)	
	Hakodate - Guam		Akihiro Tsuji
	Instructor	(Graduate School of Science, University of Tokyo)	
	Hakodate - Guam		Yoshihiro Niwa
	Associate Professor	(Laboratory of Marine Environment and Resource Sensing)	
	Hakodate - Dutch Harbor		Toru Hirawake
	Associate Professor	(TEIKYO University of Science & Technology)	
	Hakodate - Guam		Kyoichi Mori
	Associate Professor	(Laboratory of Marine Biodiversity)	
	Hakodate - Hakodate		Atsushi Yamaguchi
	Instructor	(Field Science Center for Northern Biosphere, Hokkaido University)	
	Hakodate - Guam		Jun Yamamoto
	Researcher	(Atmosphere Ocean Research Institute University of Tokyo)	
	Hakodate - Guam		Shun Watanabe
	Professor	(Division of Bioengineering and Bioinformatics, Hokkaido University)	
	Hakodate - Guam		Hidemi Watanabe
Graduate Students	9 persons		
Under Graduate Students	12 persons		
Foreign Scientists:	(Pacific Aquaculture and Coastal Resources Center, University of Hawaii at Hiro)		
	Hakodate - Hakodate		Keiko Sekiguchi
	Total 37 persons		

3. Items and Objects of Research

Items

Hydrographic observation by CTD, X-CTD XCP, and VMP-5500 casts:	Fig. 2	Table 1, 2
Biological research for fishes caught by non-selective drift gillnets:	Fig. 3	Table 3 - 8
Salmon longline and hook-and-line research:	Fig. 4	Table 9 - 11
Biological research for fishes caught by mid-water trawl observations:	Fig. 5	Table 12, 13
Biological research for squid caught by jigging:		
Plankton samplings by NORPAC-net, MTD-net, Closing-net, Bongo-net, and VMPS-net:		Table 14
Sediment sampling and observation by ROV and Smith-McIntyre Grab:		
Water samplings by Niskin bottles and underwater tug plane:		Table 16

Objects

CTD, X-CTD, and ADCP observation are performed, Recovery and installation of sediment-traps are performed for the purpose of investigating correspondence with a climate change and relation of an east-and-west subarctic gyre.

Study on experimental biology of marine zooplankton in the northern North Pacific.

Sediment sampling and observation on the abyssal sea floor by a ROV and sediment samplers in the continental shelf break off Sanriku, around Ogasawara Islands and Guam.

Bio-optical measurement using underwater radiometer and absorption/scattrometer.

Investigation of eel.

Persistent Organic Pollutants (POPs) in Oceanic Squids.

Marine mammal shipboard sighting survey.

Radiolarian and a study of a Classification the Habits of the Symbiosis Alga.

In order to clarify the relation between micro-scale ($\sim 1\text{cm}$) and fine-scale($\sim 10\text{cm}$) current shear in the deep ocean , we carry out micro-scale measurements using TurboMAP D2 and fine-scale measurements using XCP simultaneously.

Recoveries of two sediment traps.

Study on geochemistry and metal distributions in the water along the 170E line, Bering Sea.

Vertical distribution of diatom assemblages using sea waters obtained with CTD observation

Geographical distribution of diatom and radiolarian assemblages using plankton tows obtained with Twin Norpac plankton net.

Research of growth, feeding ecology and trophic dynamics of Pacific salmon in the North Pacific.

4. 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 “Oshoro Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Oshoro Maru”.

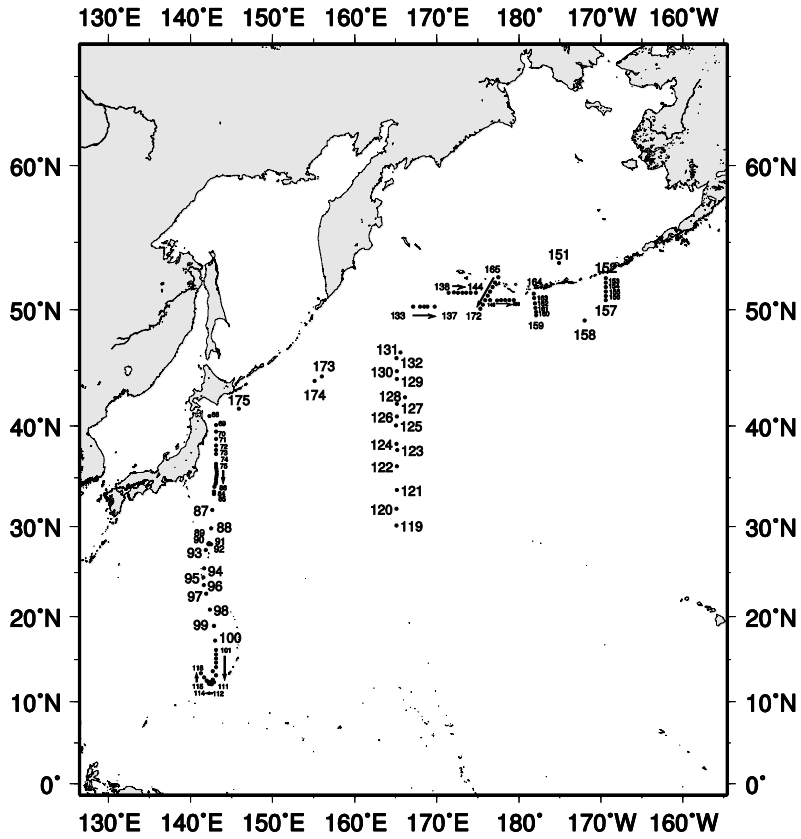


Figure 2. Oceanographic station

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark	
OS10068	40-49.5N	142-10.7E	6/2	1526	9	848	-	-	11.3	-	19Plus-4636	
OS10069	40-00.7N	143-00.2E	6/3	0002	9	1300	3	13.8	9.4	b	9Plus-0769	
OS10070	39-23.8N	143-00.2E	6/3	0500	9	1865	5	12.2	9.9	bc	19Plus-4636	
OS10071	38-42.3N	143-00.4E	6/3	1135	9	1650	-	-	16.2	bc	19Plus-4636	
OS10072	38-04.6N	142-59.7E	6/3	1901	9	1780	3	20	19.8	b	19Plus-4636	
OS10073	37-38.1N	142-59.9E	6/4	0020	9	2580	3	15.7	17.6	bc	9Plus-0769	
OS10074	37-13.7N	142-59.9E	6/4	0500	9	4550	3	15.7	18.1	bc	19Plus-4636	
OS10075	36-17.7N	143-00.5E	6/4	1905	9	7200	4	11.8	20.1	c	19Plus-4636	
OS10076	35-59.8N	143-00.0E	6/4	2239	9	0	-	-	-	c	XBT	
OS10077	35-44.9N	143-01.0E	6/5	0015	9	6580	3	14.8	22.3	c	9Plus-0769	
OS10078	35-29.9N	143-06.0E	6/5	0422	9	0	-	-	-	c	XBT	
OS10079	35-14.8N	143-03.7E	6/5	0548	9	0	-	-	-	c	XBT	
OS10080	35-00.0N	143-02.1E	6/5	0707	9	0	-	-	-	c	XBT	
OS10081	34-44.9N	143-00.3E	6/5	0830	9	0	-	-	-	c	XBT	
OS10082	34-30.0N	142-58.6E	6/5	0954	9	0	-	-	-	c	XBT	
OS10083	34-16.4N	142-56.5E	6/5	1129	9	5280	-	-	21.5	c	9Plus-0769	
OS10084	34-00.0N	142-47.5E	6/5	1958	9	0	-	-	-	c	XBT	
OS10085	33-30.0N	142-44.8E	6/5	2237	9	0	-	-	-	c	XBT	
OS10086	33-14.7N	142-43.5E	6/5	0014	9	5730	2	26.7	21	bc	9Plus-0769	
OS10087	31-35.7N	142-33.5E	6/6	1134	9	6910	-	-	21	bc	19Plus-4636	
OS10088	29-41.2N	142-22.9E	6/7	0014	9	6580	3	24.6	21.2	bc	9Plus-0769	
OS10089	29-06.8N	142-09.2E	6/7	1134	9	1722	-	-	21.9	c	19Plus-4636	
OS10090	28-00.3N	142-02.2E	6/7	1645	9	462	-	-	-	c	19Plus-4636	
OS10091	27-58.9N	142-08.5E	6/7	1945	9	1080	-	-	-	c	19Plus-4636	
OS10092	27-57.4N	142-22.9E	6/7	2351	9	1512	3	27	21.9	c	9Plus-0769	
OS10093	27-20.2N	141-43.6E	6/8	0838	9	4045	-	-	23.6	bc	9Plus-0769	
OS10094	25-19.7N	141-33.6E	6/10	0033	9	2830	2	28.5	23.8	c	9Plus-0769	
OS10095	24-21.2N	141-25.6E	6/10	0841	9	576	-	-	24.3	bc	19Plus-4636	
OS10096	24-00.1N	141-30.1E	6/10	1744	9	1347	-	-	27.6	bc	19Plus-4636	
OS10097	22-30.0N	141-47.1E	6/11	0012	9	1350	2	34.4	28.9	bc	9Plus-0769	
OS10098	20-43.3N	142-14.2E	6/11	1132	9	3620	-	-	29.2	bc	19Plus-4636	
OS10099	18-48.8N	142-45.0E	6/12	0019	9	2920	2	36.4	29.7	bc	9Plus-0769	
OS10100	17-06.8N	142-54.3E	6/12	1100	9	3156	-	-	30.98	c	XCTD1	
OS10101	16-00.0N	142-59.9E	6/12	1712	10	2534	-	-	-	bc	XCTD1	
OS10102	15-30.0N	143-00.0E	6/12	1942	10	2371	-	-	-	b	XCTD1	
OS10103	15-00.0N	142-59.9E	6/12	2210	10	2314	-	-	-	b	XCTD1	
OS10104	14-59.8N	142-59.9E	6/13	0042	10	2200	-	-	-	bc	XCTD1	
OS10105	13-59.1N	142-59.8E	6/13	0311	10	4312	-	-	-	bc	XCTD1	
OS10106	13-30.0N	142-35.1E	6/13	0541	10	3435	-	-	-	bc	XCTD1	
OS10107	13-00.0N	142-59.8E	6/13	0812	10	3142	-	-	-	bc	XCTD1	
OS10108	12-30.0N	142-35.1E	6/13	1046	10	3100	-	-	-	bc	XCTD1	
OS10109	12-22.7N	141-49.7E	6/13	2054	10	3900	-	-	-	bc	XCTD1	
OS10110	11-59.8N	142-09.4E	6/14	0022	10	4360	2	44.8	29.6	bc	9Plus-0769	
OS10111	11-56.5N	142-25.9E	6/14	0744	10	2535	-	-	30.2	bc	19Plus-4636	
OS10112	12-00.0N	142-29.8E	6/14	1034	10	3120	-	-	29.4	c	19Plus-4636	
OS10113	12-11.2N	142-11.0E	6/14	2239	10	2506	1	39	30	bc	19Plus-4636	
OS10114	12-16.2N	142-30.1E	6/15	0230	10	3950	-	-	29.9	b	19Plus-4636	
OS10115	12-09.9N	142-43.3E	6/15	0904	10	3960	-	-	29.8	bc	19Plus-4636	
OS10116	12-17.8N	141-55.4E	6/15	2354	10	2038	2	26.2	29.6	c	19Plus-4636	
OS10117	12-45.4N	141-32.2E	6/16	0325	10	2780	-	-	-	c	XCTD1	
OS10118	13-14.9N	141-08.0E	6/16	0629	10	4440	1	40	30.4	bc	9Plus-0769	
OS10119	30-00.0N	164-59.8E	6/28	2236	11	5860	-	-	25.6	c	19Plus-4636	
OS10120	31-45.4N	164-59.7E	6/29	0918	11	5870	2	23.5	24.6	bc	9Plus-0769	
OS10121	33-41.1N	165-00.3E	6/29	2001	11	6065	-	-	22.8	c	19Plus-4636	
OS10122	36-01.5N	165-00.7E	6/30	1027	11	5536	3	23	22.2	bc	XCTD2	
OS10123	37-39.4N	165-03.8E	6/30	2054	11	4346	-	-	21.1	d	9Plus-0769	
OS10124	38-14.4N	164-58.9E	7/1	1036	11	5110	3	22.9	21.1	c	XCTD2	
OS10125	39-58.1N	164-56.7E	7/1	0953	11	5455	-	-	17.2	d	9Plus-0769	
OS10126	40-47.8N	165-01.9E	7/2	1047	11	5390	5	13.8	17.3	c	XCTD2	
OS10127	41-57.4N	165-02.6E	7/2	1826	11	4260	-	-	16.8	bc	9Plus-0769	
OS10128	42-32.6N	165-59.9E	7/2	2133	11	5010	4	18.7	10.4	f	XCTD2	
OS10129	44-10.9N	165-01.4E	7/3	2107	11	5790	-	-	9.4	d	9Plus-0769	
OS10130	44-50.7N	165-00.3E	7/4	2343	11	5950	4	16.7	9.2	f	XCTD2	
OS10131	46-28.5N	165-27.9E	7/4	0917	11	5770	-	-	7.4	f	9Plus-0769	
OS10132	45-59.2N	165-00.1E	7/4	2316	11	5860	4	16.8	7.6	c	XCTD2	
OS10133	50-10.0N	167-00.1E	7/5	0418	11	4680	-	-	-	r	XCTD2	
OS10134	50-10.4N	167-50.5E	7/5	0815	11	4680	-	-	281.5	r	XCTD2	
OS10135	50-10.0N	168-20.0E	7/5	1037	11	3360	-	-	-	o	XCTD2	
OS10136	50-10.1N	168-46.6E	7/6	1302	11	5210	-	-	-	o	XCTD2	
OS10137	50-09.9N	169-39.8E	7/6	1652	11	3988	-	-	-	o	XCTD2	
OS10138	51-14.7N	171-20.2E	7/7	0126	11	4715	-	-	-	d	XCTD2	
OS10139	51-15.3N	171-59.8E	7/7	0348	11	4400	-	-	-	c	XCTD2	
OS10140	51-15.0N	172-29.6E	7/7	0547	11	5115	4	15.2	7.2	o	9Plus-0769	
OS10141	51-14.8N	173-00.0E	7/7	0958	11	5610	3	16.9	7.2	o	9Plus-0769	
OS10142	51-14.7N	173-29.1E	7/7	1336	11	6170	3	17.7	7.5	o	9Plus-0769	
OS10143	51-14.9N	173-59.8E	7/7	1740	11	6798	4	12.4	7.6	o	9Plus-0769	
OS10144	51-14.9N	174-40.0E	7/7	2220	11	7140	-	-	7.8	o	9Plus-0769	
OS10145	50-39.9N	176-24.9E	7/7	0857	-12	6350	4	14	7.1	o	9Plus-0769	
OS10146	50-39.0N	177-15.0E	7/7	0217	-12	7205	-	-	-	f	XCTD2	
OS10147	50-39.9N	177-44.8E	7/7	1618	-12	6375	4	12.2	8.4	o	9Plus-0769	
OS10148	50-40.0N	178-15.0E	7/7	2021	-12	5870	-	-	8.1	o	9Plus-0769	
OS10149	50-39.9N	178-44.6E	7/8	0016	-12	5400	-	-	7.6	f	9Plus-0769	
OS10150	50-40.1N	179-15.2E	7/8	0446	-12	5635	-	-	-	f	XCTD	
OS10151	53-27.6N	176-48.6W	7/10	1607	-12	3780	5	16	6.6	f	9Plus-0769	
OS10152	52-20.5N	170-29.9W	7/16	1634	-11	570	-	-	-	f	9Plus-0769	
OS10153	52-00.1N	170-30.3W	7/16	1920	-11	3361	4	12.2	8.3	o	19Plus-4636	
OS10154	51-40.4N	170-30.7W	7/17	0009	-11	4639	4	13.1	8.3	o	19Plus-4636	
OS10155	51-20.0N	170-30.0W	7/17	0445	-11	6237	-	-	8.1	f	19Plus-4636	
OS10156	51-00.0N	170-29.9W	7/17	0953	-11	7050	-	-	8.2	f	9Plus-0769	
OS10157	50-30.1N	170-30.9W	7/17	1420	-11	5470	3	19.1	8.1	o	9Plus-0769	
OS10158	49-04.8N	173-55.5W	7/18	0844	-11	5235	-	-	8.1	f	9Plus-0769	
OS10159	49-30.0N	179-59.8W	7/19	1615	-12	4955	3	17.7	8.2	f	9Plus-0769	
OS10160	49-45.0N	179-59.9W	7/19	2147	-12	5172	3	17.2	8.2	o	9Plus-0769	
OS10161	50-04.9N	179-55.0W	7/20	0445	-12	5969	4	12	8	o	9Plus-0769	
OS10162	50-25.0N	179-50.0W	7/20	0949	-12	6600	-	-	7.9	f	9Plus-0769	
OS10163	50-50.0N	179-45.8W	7/20	1753	-12	5470	4	14.5	8.4	m	9Plus-0769	
OS10164	51-09.9N	179-42.4W	7/21	0132	-12	3690	5	10.9	7.1	f	9Plus-0769	
OS10165	52-23.5N	177-23.1E	7/21	2042	-11	1938	3	17.9	7.8	f	9Plus-0769	
OS10166	52-0.06N	177-00.3E	7/22	0210	-11	1200	-	-	-	o	XCTD2	
OS10167	51-39.9N	176-41.8E	7/22	0503	11	2900	-	-	14	7.9	o	9Plus-0769
OS10168	51-20.0N	176-23.9E	7/22	1015	11	4570	-	-	8	o	9Plus-0769	
OS10169	51-00.5N	176-05.8E	7/22	1542	11	7180	3	14.4	8.2	o	9Plus-0769	
OS10170	50-39.9N	175-47.9E	7/22	2111	11	5400	3	13.8	7.9	o	9Plus-0769	
OS10171	50-20.3N	175-30.1E	7/23	0147	11	4610	3	17.2	8.8	o	9Plus-0769	
OS10172	49-29.9N	175-11.9E	7/23	0627	11	4610	4	14.1	8.7	c	9Plus-0769	
OS10173	44-23.6N	155-52.5E	7/26	1228	-10	5120	-	-	12.3	f	19Plus-4636	
OS10174	44-00.0N	155-00.0E	7/26	2000	-10	5308	-	-	9.4	f	9Plus-0769	
OS10175	41-30.2N	145-46.7E	7/28	1530	9	6915	-	-	18.9	f	9Plus-0769	

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS10068				Station OS10069				Station OS10070				Station OS10071			
Longitude		Latitude		Longitude		Latitude		Longitude		Latitude		Longitude		Latitude	
142-10.7E		40-49.5N		143-00.2E		40-00.7N		143-00.2E		39-23.8N		143-00.4E		38-42.3N	
Depth(m)		848		Depth(m)		1200		Depth(m)		1865		Depth(m)		1650	
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	11.017	33.637	25.711	5	7.577	32.952	25.726	5	9.599	33.201	25.614	5	16.087	34.015	24.970
10	10.902	33.644	25.737	10	5.879	32.861	25.877	10	7.868	33.064	25.773	10	16.029	34.009	24.979
20	9.910	33.680	25.936	20	5.587	32.896	25.940	20	6.115	32.961	25.927	20	15.943	34.129	25.091
30	9.336	33.764	26.097	30	5.195	32.906	25.994	30	7.628	33.358	26.038	30	15.271	34.038	25.171
40	8.956	33.728	26.129	40	5.019	32.900	26.009	40	7.626	33.504	26.153	40	15.172	34.086	25.229
50	8.960	33.733	26.133	50	3.999	32.888	26.106	50	8.192	33.679	26.208	50	14.920	34.061	25.265
75	9.585	33.943	26.196	75	3.136	33.190	26.428	75	8.152	33.779	26.292	75	11.633	33.845	25.761
100	9.602	33.975	26.218	100	2.097	33.170	26.498	100	8.106	33.865	26.367	100	10.705	34.161	26.175
125	9.439	33.968	26.239	125	2.297	33.252	26.540	125	7.488	33.822	26.423	125	7.172	33.632	26.318
150	9.103	33.926	26.261	150	2.709	33.351	26.594	150	6.606	33.769	26.502	150	6.616	33.673	26.425
175	8.946	33.923	26.283	175	2.998	33.457	26.654	175	5.033	33.555	26.526	175	6.055	33.628	26.462
200	8.979	33.946	26.296	200	2.404	33.447	26.696	200	3.542	33.414	26.570	200	7.483	33.962	26.534
250	8.768	33.928	26.315	250	2.281	33.498	26.746	250	4.411	33.594	26.625	250	6.957	33.972	26.615
300	8.599	33.922	26.337	300	2.584	33.596	26.800	300	3.127	33.511	26.685	300	5.338	33.830	26.708
400	3.363	33.557	26.700	400	3.101	33.793	26.913	400	2.420	33.557	26.783	400	4.178	33.848	26.852
500	2.947	33.752	26.894	500	3.395	33.966	27.023	500	2.760	33.709	26.875	500	4.800	34.100	26.984
				600	3.411	34.100	27.128	600	3.250	33.941	27.017	600	4.248	34.165	27.096
				700	3.428	34.207	27.212	700	3.357	34.076	27.115	700	3.944	34.234	27.183
				800	3.127	34.271	27.292	800	3.347	34.198	27.212	800	3.594	34.270	27.246
				900	2.834	34.309	27.348	900	3.023	34.253	27.287	900	3.423	34.342	27.320
				1000	2.748	34.359	27.396	1000	3.015	34.325	27.345	1000	3.012	34.361	27.374
								1200	2.618	34.408	27.447				

Station OS10072				Station OS10073				Station OS10074				Station OS10075			
Longitude		Latitude		Longitude		Latitude		Longitude		Latitude		Longitude		Latitude	
142-59.7E		38-04.6N		142-59.9E		37-38.1N		142-59.9E		37-13.7N		143-00.5E		36-17.7N	
Depth(m)		1780		Depth(m)		2580		Depth(m)		4550		Depth(m)		7200	
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	18.830	34.676	24.817	5	17.495	34.172	24.761	5	17.949	34.187	24.662	5	20.143	34.577	24.401
10	18.811	34.674	24.820	10	17.200	34.146	24.812	10	17.396	34.183	24.793	10	20.202	34.582	24.389
20	18.424	34.646	24.896	20	14.693	34.126	25.365	20	16.152	34.139	25.051	20	18.845	34.529	24.700
30	17.582	34.542	25.023	30	12.474	34.051	25.762	30	14.273	34.485	25.732	30	18.207	34.548	24.875
40	16.353	34.594	25.354	40	9.582	33.679	25.990	40	13.232	34.427	25.902	40	17.244	34.563	25.120
50	16.091	34.616	25.431	50	8.351	33.603	26.124	50	12.164	34.335	26.041	50	16.307	34.552	25.333
75	14.398	34.519	25.731	75	8.582	33.866	26.296	75	9.776	34.029	26.231	75	14.797	34.540	25.661
100	13.110	34.442	25.939	100	6.654	33.684	26.429	100	7.766	33.823	26.384	100	13.499	34.491	25.897
125	11.583	34.298	26.122	125	7.475	33.950	26.525	125	5.709	33.550	26.443	125	12.577	34.425	26.031
150	10.254	34.161	26.253	150	6.450	33.627	26.606	150	7.162	33.839	26.560	150	10.842	34.185	26.170
175	9.031	34.073	26.387	175	2.901	33.456	26.661	175	7.646	34.127	26.640	175	9.025	33.932	26.278
200	7.998	33.991	26.481	200	2.545	33.483	26.713	200	6.540	34.026	26.714	200	6.686	33.641	26.390
250	7.045	33.970	26.601	250	3.000	33.659	26.815	250	6.383	34.121	26.809	250	8.120	34.070	26.526
300	6.442	33.999	26.705	300	3.100	33.746	26.875	300	4.798	33.972	26.883	300	7.753	34.171	26.659
400	4.334	33.880	26.861	400	3.296	33.944	27.015	400	5.405	34.240	27.025	400	3.626	33.742	26.822
500	4.725	34.102	26.994	500	3.475	34.073	27.101	500	3.490	34.114	27.132	500	3.602	33.931	26.976
600	4.154	34.136	27.083	600	3.932	34.257	27.202	600	3.846	34.272	27.223	600	3.600	34.046	27.067
700	4.350	34.297	27.190	700	3.380	34.277	27.273	700	3.634	34.332	27.291	700	3.391	34.110	27.139
800	3.734	34.298	27.255	800	3.333	34.359	27.342	800	3.323	34.375	27.356	800	3.412	34.221	27.225
900	3.440	34.341	27.318	900	3.032	34.393	27.398	900	3.050	34.384	27.389	900	3.170	34.287	27.300
1000	3.072	34.357	27.365	1000	2.845	34.433	27.447	1000	2.899	34.422	27.433	1000	3.073	34.354	27.362
1200	2.777	34.425	27.446	1200	2.510	34.494	27.524	1200	2.569	34.479	27.507	1200	2.749	34.426	27.449
1500	2.401	34.504	27.541	1500	2.400	34.514	27.550	1500	2.267	34.533	27.576	1500	2.408	34.507	27.544

Station OS10076				Station OS10077				Station OS10078				Station OS10079			
Longitude		Latitude		Longitude		Latitude		Longitude		Latitude		Longitude		Latitude	
143-00.0E		35-59.8N		143-01.0E		35-44.5N		143-06.0E		35-29.9N		143-03.7E		35-14.8N	
Depth(m)		0		Depth(m)		6580		Depth(m)		0		Depth(m)		0	
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	20.432	-	-	5	22.458	34.740	23.891	5	22.619	-	-	5	22.780	-	-
10	20.121	-	-	10	22.424	34.736	23.898	10	22.570	-	-	10	22.721	-	-
20	19.900	-	-	20	21.949	34.719	24.018	20	22.470	-	-	20	22.550	-	-
30	19.554	-	-	30	20.854	34.728	24.326	30	22.328	-	-	30	22.502	-	-
40	18.382	-	-	40	20.691	34.727	24.370	40	22.272	-	-	40	22.480	-	-
50	17.744	-	-	50	20.469	34.727	24.430	50	21.918	-	-	50	22.072	-	-
75	16.930	-	-	75	19.855	34.727	24.591	75	21.570	-	-	75	21.539	-	-
100	15.720	-	-	100	18.265	34.581	24.886	100	20.604	-	-	100	20.647	-	-
125	14.820	-	-	125	16.698	34.580	25.263	125	20.110	-	-	125	19.790	-	-
150	13.874	-	-	150	16.331	34.597	25.361	150	19.440	-	-	150	19.310	-	-
200	12.251	-	-	175	15.069	34.493	25.566	200	17.581	-	-	200	18.731	-	-
250	10.768	-	-	200	13.770	34.486	25.838	250	15.573	-	-	250	17.502	-	-
300	9.763	-	-	250	11.957	34.416	26.144	300	13.277	-	-	300	16.810	-	-
400	7.526	-	-	300	7.969	33.872	26.393	400	9.663	-	-	400	13.956	-	-
500	5.960	-	-	400	6.423	33.872	26.607	500	7.619	-	-	500	9.501	-	-
600	5.090	-	-	500	6.922	34.246	26.836	600	5.901	-	-	600	6.971	-	-
700	4.140	-	-	600	5.483	34.214	26.996	700	3.726	-	-	700	6.164	-	-
				700	4.531	34.233	27.120								
				800	3.899	34.262	27.210								
				900	3.527	34.320	27.293								
				1000	3.296	34.359	27.346								
				1200	2.909	34.430	27.438								
				1500	2.450	34.501	27.535								

Station OS10080				Station OS10082				Station OS10083			
Longitude		Latitude		Longitude		Latitude		Longitude		Latitude	
143-02.1E		35-00.0N		143-00.3E		34-44.5E		142-58.6E		34-30.0N	
Depth(m)		0		Depth(m)		0		Depth(m)		0	
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	21.681	-	-	5	22.591	-	-	5	21.881	-	-
10	21.640	-	-	10	22.611	-	-	10	21.859	-	-
20	21.293	-	-	20	22.332	-	-	20	21.643	-	-
30	20.962	-	-	30	21.839	-	-	30	21.450	-	-
40											

Table 2. Oceanographic data (continued)

Station OS10084				Station OS10085				Station OS10086				Station OS10087			
Longitude 142-47.5E				Longitude 142-44.8E				Longitude 142-43.5E				Longitude 142-33.5E			
Latitude 34-00.0N				Latitude 33-30.0N				Latitude 33-14.7N				Latitude 31-35.7N			
Depth(m) 0				Depth(m) 0				Depth(m) 5730				Depth(m) 6910			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	20.379	-	-	5	21.559	-	-	5	20.759	34.662	24.302	5	21.006	34.713	24.274
10	20.302	-	-	10	21.531	-	-	10	20.660	34.660	24.327	10	20.988	34.712	24.278
20	19.900	-	-	20	20.972	-	-	20	20.370	34.651	24.398	20	20.757	34.708	24.337
30	19.722	-	-	30	20.162	-	-	30	20.278	34.648	24.420	30	20.680	34.735	24.378
40	19.678	-	-	40	19.900	-	-	40	19.886	34.650	24.524	40	20.192	34.716	24.495
50	19.442	-	-	50	19.592	-	-	50	19.357	34.688	24.691	50	19.500	34.702	24.665
75	19.099	-	-	75	19.350	-	-	75	19.008	34.705	24.793	75	18.944	34.715	24.845
100	18.760	-	-	100	18.920	-	-	100	18.745	34.697	24.854	100	18.691	34.701	24.871
125	18.650	-	-	125	18.700	-	-	125	18.620	34.691	24.881	125	18.565	34.696	24.899
150	18.464	-	-	150	18.582	-	-	150	18.531	34.693	24.905	150	18.485	34.698	24.921
200	18.309	-	-	200	18.401	-	-	175	18.443	34.689	24.924	175	18.247	34.677	24.963
250	17.899	-	-	250	18.012	-	-	200	18.391	34.692	24.939	200	18.121	34.677	24.995
300	17.440	-	-	300	17.633	-	-	250	18.081	34.698	25.021	250	17.897	34.672	25.046
400	15.776	-	-	400	15.901	-	-	300	17.586	34.710	25.151	300	17.576	34.704	25.149
500	13.691	-	-	500	13.548	-	-	400	16.087	34.644	25.454	400	15.550	34.611	25.550
600	10.489	-	-	600	10.119	-	-	500	13.681	34.494	25.862	500	12.970	34.448	25.971
700	6.023	-	-	700	7.031	-	-	600	10.499	34.294	26.315	600	10.213	34.269	26.344
								700	7.334	34.161	26.712	700	6.918	34.062	26.691
								800	5.692	34.163	26.929	800	5.569	34.084	26.882
								900	4.619	34.154	27.048	900	4.878	34.213	27.065
								1000	4.187	34.226	27.151	1000	4.103	34.252	27.181
								1200	3.455	34.343	27.318	1200	3.289	34.366	27.352
								1500	2.740	34.444	27.465	1500	2.643	34.475	27.498
Station OS10088				Station OS10089				Station OS10090				Station OS10091			
Longitude 142-22.9E				Longitude 142-09.2E				Longitude 142-02.2E				Longitude 142-08.5E			
Latitude 29-41.2N				Latitude 28-06.8N				Latitude 28-00.3N				Latitude 27-58.9N			
Depth(m) 6580				Depth(m) 1722				Depth(m) 462				Depth(m) 1080			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	21.036	34.636	24.203	5	21.668	34.739	24.112	5	21.232	34.618	24.140	5	21.275	34.602	24.116
10	21.036	34.637	24.208	10	21.670	34.739	24.112	10	21.233	34.618	24.140	10	21.275	34.618	24.128
20	21.018	34.637	24.212	20	21.671	34.740	24.112	20	21.234	34.618	24.139	20	21.278	34.632	24.139
30	20.987	34.634	24.219	30	21.666	34.739	24.112	30	21.234	34.619	24.140	30	21.306	34.650	24.144
40	20.466	34.615	24.344	40	21.638	34.737	24.118	40	21.233	34.621	24.142	40	21.419	34.709	24.158
50	19.158	34.639	24.705	50	21.595	34.735	24.129	50	21.236	34.621	24.141	50	20.884	34.718	24.311
75	18.531	34.662	24.881	75	20.230	34.714	24.483	75	21.238	34.626	24.145	75	20.205	34.720	24.478
100	18.211	34.663	24.962	100	19.740	34.719	24.615	100	20.670	34.712	24.364	100	19.604	34.717	24.650
125	17.985	34.669	25.022	125	19.557	34.720	24.664	125	19.558	34.718	24.662	125	19.263	34.718	24.739
150	17.900	34.666	25.041	150	19.311	34.720	24.727	150	19.283	34.720	24.735	150	19.041	34.721	24.798
175	17.776	34.685	25.086	175	19.184	34.722	24.761	175	19.065	34.722	24.792	175	18.849	34.717	24.844
200	17.579	34.694	25.141	200	19.100	34.721	24.782	200	18.815	34.702	24.840	200	18.704	34.718	24.881
250	16.966	34.694	25.288	250	18.493	34.716	24.932	250	18.244	34.694	24.977	250	18.235	34.705	24.988
300	16.096	34.646	26.453	300	17.604	34.726	25.159	300	18.095	34.690	25.011	300	17.792	34.716	25.105
400	13.504	34.474	25.883	400	15.686	34.625	25.531	400	16.966	34.686	25.281	400	16.415	34.669	25.397
500	10.448	34.255	26.294	500	13.074	34.445	25.948	500	13.525	34.481	25.885	500	13.525	34.481	25.885
600	7.323	34.058	26.632	600	9.427	34.198	26.421	600	9.791	34.236	26.390	600	9.791	34.236	26.390
700	5.517	34.048	26.860	700	6.985	34.094	26.707	700	6.628	34.096	26.757	700	6.628	34.096	26.757
800	4.757	34.149	27.028	800	5.143	34.112	26.955	800	5.382	34.119	26.933	800	5.382	34.119	26.933
900	4.239	34.214	27.136	900	4.409	34.195	27.103	900	4.492	34.196	27.095	900	4.492	34.196	27.095
1000	3.755	34.296	27.251	1000	3.868	34.286	27.232	1000	3.824	34.293	27.242	1000	3.824	34.293	27.242
1200	3.143	34.404	27.396	1200	3.080	34.418	27.413								
1500	2.503	34.501	27.530	1500	2.551	34.503	27.528								
Station OS10092				Station OS10093				Station OS10094				Station OS10095			
Longitude 142-22.9E				Longitude 141-43.6E				Longitude 141-33.6E				Longitude 141-25.6E			
Latitude 27-57.4N				Latitude 27-20.2N				Latitude 25-19.7N				Latitude 24-21.2N			
Depth(m) 1512				Depth(m) 4045				Depth(m) 2830				Depth(m) 576			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	21.797	34.706	24.051	5	23.451	34.798	23.649	5	23.674	34.220	23.147	5	23.602	34.300	23.228
10	21.759	34.724	24.075	10	22.808	34.769	23.813	10	23.649	34.389	23.282	10	23.535	34.414	23.334
20	21.755	34.730	24.081	20	22.431	34.752	23.908	20	23.429	34.479	23.414	20	22.673	34.533	23.673
30	21.747	34.734	24.086	30	22.201	34.746	23.940	30	22.761	34.486	23.612	30	21.711	34.631	24.018
40	21.513	34.725	24.144	40	21.988	34.749	24.031	40	22.536	34.569	23.739	40	21.304	34.656	24.149
50	20.538	34.709	24.392	50	21.842	34.750	24.072	50	21.432	34.678	24.131	50	20.610	34.690	24.363
75	19.913	34.717	24.569	75	21.118	34.748	24.270	75	20.465	34.700	24.409	75	19.328	34.705	24.712
100	19.509	34.715	24.673	100	20.366	34.742	24.468	100	19.585	34.700	24.641	100	18.664	34.693	24.872
125	19.371	34.715	24.708	125	19.901	34.735	24.586	125	19.109	34.704	24.767	125	18.434	34.696	24.932
150	19.096	34.718	24.781	150	19.634	34.735	24.655	150	18.695	34.700	24.871	150	18.223	34.705	24.991
175	18.937	34.718	24.822	175	19.180	34.730	24.769	175	18.342	34.704	24.961	175	18.005	34.709	25.048
200	18.629	34.705	24.890	200	18.824	34.732	24.861	200	17.942	34.694	25.052	200	17.716	34.710	25.139
250	18.354	34.706	24.959	250	17.910	34.720	25.079	250	17.516	34.705	25.164	250	16.936	34.693	25.294
300	17.618	34.719	25.150	300	16.679	34.676	25.341	300	16.996	34.699	25.284	300	16.684	34.681	25.344
400	15.562	34.612	25.548	400	14.820	34.564	25.675	400	14.620	34.548	25.706	400	14.345	34.536	25.755
500	12.791	34.418	25.958	500	12.306	34.396	26.061	500	11.864	34.348	26.108	500	11.644	34.344	26.157
600	10.538	34.259	26.281	600	9.769	34.246	26.402	600	9.019	34.154	26.453	600	8.315	34.062	26.742
700	6.962	34.080	26.699	700	7.211	34.155	26.724	700	6.540	34.062	26.742	700	5.840	33.970	27.031
800	5.522	34.103	26.902	800	5.657	34.163	26.934	800	5.203	34.112	26.948	800	4.543	34.020	27.237
900	4.569	34.176	27.070	900	4.483	34.229	27.192	900	4.402	34.204	27.111	900	4.042	34.196	27.181
1000	3.957	34.266	27.207	1000	4.023	34.283	27.213	1000	3.912	34.278	27.221	1000	3.752	34.284	27.232
1200	3.184	34.391	27.382	1200	3.179	34.404	27.393	1200	3.157	34.417	27.401	1200	3.137	34.431	27.410
				1500	2.511	34.505	27.533	1500	2.513	34.513	27.540				
				2000	1.987	34.590	27.642								
				2500	1.705	34.635	27.704								

Table 2. Oceanographic data (continued)

Station OS10100					Station OS10101					Station OS10102					Station OS10103				
Longitude		142-54.3E			Longitude		142-59.9E			Longitude		143-00.0E			Longitude		142-59.9E		
Latitude		17-06.8N			Latitude		16-00.0N			Latitude		15-30.0N			Latitude		15-00.0N		
Depth(m)		3156			Depth(m)		2534			Depth(m)		2371			Depth(m)		2314		
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T	
5	30.073	35.021	21.719		5	30.026	34.899	21.644		5	29.886	34.641	21.498		5	29.807	34.650	21.532	
10	30.021	35.080	21.781		10	30.005	34.925	21.671		10	29.844	34.658	21.525		10	29.807	34.672	21.548	
20	29.978	35.137	21.839		20	29.910	34.942	21.716		20	29.708	34.660	21.573		20	29.764	34.728	21.605	
30	29.118	35.076	22.084		30	29.824	34.967	21.764		30	29.243	34.621	21.701		30	29.542	34.716	21.671	
40	28.323	35.027	22.311		40	28.821	35.020	22.141		40	28.622	34.677	21.950		40	28.722	34.665	21.907	
50	27.752	34.990	22.470		50	28.440	35.011	22.261		50	28.330	34.726	22.083		50	28.522	34.770	22.052	
75	27.392	35.047	22.629		75	27.522	35.032	22.576		75	27.350	34.916	22.544		75	27.694	34.920	22.436	
100	27.016	35.039	22.744		100	27.299	35.152	22.738		100	27.117	35.080	22.743		100	27.074	35.113	22.781	
125	26.563	35.021	22.874		125	26.843	35.132	22.869		125	26.754	35.114	22.884		125	26.539	35.117	22.954	
150	25.332	34.993	23.236		150	26.036	35.143	23.132		150	25.728	35.125	23.214		150	25.598	35.131	23.259	
200	20.945	34.826	24.378		200	22.211	35.059	24.205		200	22.505	35.030	24.100		200	22.107	35.047	24.225	
250	18.142	34.757	25.052		250	18.399	34.807	25.026		250	19.201	34.841	24.849		250	18.060	34.739	25.058	
300	15.989	34.614	25.454		300	14.598	34.499	25.674		300	13.980	34.442	25.761		300	14.058	34.425	25.731	
400	11.079	34.284	26.204		400	10.421	34.310	26.341		400	9.235	34.243	26.488		400	9.884	34.263	26.396	
500	8.890	34.243	26.621		500	7.648	34.278	26.759		500	7.247	34.265	26.806		500	7.827	34.242	26.704	
600	6.742	34.323	26.921		600	6.421	34.363	26.995		600	6.128	34.369	27.038		600	6.553	34.352	26.969	
700	5.806	34.400	27.103		700	5.788	34.421	27.122		700	5.422	34.457	27.195		700	5.627	34.448	27.163	
800	5.355	34.457	27.203		800	5.259	34.480	27.233		800	5.176	34.489	27.250		800	4.928	34.494	27.283	
900	4.894	34.491	27.284		900	4.736	34.525	27.329		900	4.732	34.518	27.324		900	4.505	34.523	27.353	
1000	4.475	34.517	27.351		1000	4.320	34.550	27.394		1000	4.186	34.560	27.417		1000	4.317	34.543	27.389	

Station OS10104					Station OS10105					Station OS10106					Station OS10107				
Longitude		142-59.9E			Longitude		142-59.8E			Longitude		142-35.1E			Longitude		142-59.8E		
Latitude		14-29.8N			Latitude		13-59.1N			Latitude		13-30.0N			Latitude		13-00.0N		
Depth(m)		2200			Depth(m)		4312			Depth(m)		3435			Depth(m)		3142		
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T	
5	29.889	34.617	21.479		5	29.950	34.676	21.503		5	30.062	34.671	21.461		5	30.089	34.601	21.399	
10	29.836	34.639	21.514		10	29.866	34.695	21.546		10	30.030	34.680	21.479		10	30.094	34.636	21.424	
20	29.636	34.654	21.593		20	29.812	34.710	21.575		20	29.705	34.669	21.581		20	30.041	34.651	21.453	
30	29.574	34.662	21.620		30	29.541	34.694	21.655		30	29.039	34.638	21.782		30	29.452	34.638	21.643	
40	29.490	34.661	21.647		40	28.963	34.649	21.815		40	28.749	34.630	21.872		40	28.913	34.621	21.811	
50	29.135	34.635	21.747		50	28.698	34.653	21.906		50	28.536	34.644	21.953		50	28.624	34.628	21.912	
75	27.887	34.756	22.250		75	27.793	34.801	22.315		75	27.989	34.747	22.210		75	27.792	34.741	22.270	
100	27.703	34.896	22.415		100	27.406	35.039	22.619		100	27.307	34.951	22.585		100	27.435	34.890	22.497	
125	27.174	35.103	22.742		125	27.030	35.113	22.795		125	26.924	35.074	22.800		125	27.060	35.073	22.756	
150	26.579	35.126	22.949		150	25.515	35.150	23.299		150	26.012	35.129	23.129		150	26.206	35.104	23.049	
200	23.171	35.129	23.984		200	21.507	35.001	24.357		200	21.736	34.985	24.282		200	20.787	34.894	24.472	
250	17.442	34.674	25.159		250	16.563	34.632	25.336		250	16.481	34.604	25.333		250	16.630	34.626	25.315	
300	13.137	34.377	25.883		300	12.933	34.376	25.923		300	13.065	34.370	25.892		300	13.589	34.436	25.837	
400	9.348	34.229	26.459		400	9.166	34.305	26.548		400	9.131	34.296	26.546		400	9.245	34.307	26.536	
500	7.185	34.303	26.844		500	7.695	34.382	26.847		500	7.428	34.364	26.858		500	6.972	34.371	26.927	
600	6.008	34.391	27.071		600	6.414	34.429	27.048		600	6.140	34.431	27.085		600	6.056	34.444	27.106	
700	5.482	34.441	27.175		700	5.476	34.474	27.202		700	5.573	34.468	27.186		700	5.383	34.511	27.243	
800	4.960	34.504	27.287		800	4.924	34.515	27.300		800	5.111	34.490	27.258		800	4.891	34.533	27.318	
900	4.644	34.534	27.346		900	4.608	34.526	27.344		900	4.475	34.525	27.358		900	4.459	34.548	27.378	
1000	4.177	34.559	27.417		1000	4.240	34.538	27.394		1000	4.250	34.542	27.396		1000	4.237	34.555	27.407	

Station OS10108					Station OS10109					Station OS10110					Station OS10111				
Longitude		142-35.1E			Longitude		141-49.7E			Longitude		142-09.4E			Longitude		142-25.9E		
Latitude		12-30.0N			Latitude		12-22.7N			Latitude		11-59.8N			Latitude		11-56.5N		
Depth(m)		3100			Depth(m)		3900			Depth(m)		4360			Depth(m)		2474		
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T	
5	29.912	34.630	21.481		5	29.718	34.625	21.543		5	29.875	34.543	21.426		5	30.062	34.450	21.293	
10	29.912	34.654	21.499		10	29.728	34.638	21.550		10	29.851	34.544	21.435		10	30.032	34.456	21.306	
20	29.913	34.671	21.512		20	29.728	34.647	21.556		20	29.835	34.548	21.444		20	29.901	34.510	21.393	
30	29.754	34.665	21.561		30	29.728	34.652	21.560		30	29.737	34.593	21.511		30	29.866	34.529	21.417	
40	29.061	34.624	21.764		40	29.707	34.651	21.567		40	29.458	34.632	21.634		40	29.651	34.563	21.515	
50	28.743	34.636	21.819		50	29.111	34.624	21.747		50	29.171	34.646	21.741		50	29.153	34.596	21.704	
75	28.104	34.687	22.127		75	28.489	34.616	21.948		75	28.656	34.746	21.988		75	28.236	34.664	22.064	
100	27.412	35.021	22.603		100	27.729	34.711	22.268		100	27.380	34.677	22.503		100	27.309	34.953	22.568	
125	27.004	35.129	22.816		125	27.067	35.014	22.708		125	26.738	35.068	22.852		125	26.794	35.093	22.853	
150	25.429	35.115	23.299		150	25.929	35.097	23.131		150	24.905	35.129	23.468		150	24.910	35.103	23.468	
200	21.360	34.960	24.366		200	21.343	34.971	24.379		175	21.465	35.113	23.885		175	21.420	34.988	24.344	
250	17.679	34.733	25.147		250	15.627	34.581	25.511		200	21.096	34.957	24.435		200	19.977	34.877	24.669	
300	13.725	34.450	25.820		300	12.575	34.382	25.999		250	16.431	34.647	25.377		250	14.528	34.502	25.690	
400	8.726	34.344	26.648		400	8.887	34.378	26.649		300	12.580	34.392	26.005		300	11.776	34.358	26.132	
500	7.240	34.445	26.948		500	7.802	34.479	26.894		400	8.910	34.352	26.625		400	9.042	34.349	26.601	
600	6.022	34.496	27.152		600	6.610	34.467	27.052		500	7.359	34.431	26.920		500	7.474	34.429	26.902	
700	5.552	34.517	27.227		700	5.772	34.505	27.190		600	6.432	34.470	27.078		600	6.473	34.473	27.075	
800	5.080	34.532	27.295		800	5.341	34.519	27.254		700	5.825	34.496	27.176		700	5.847	34.504	27.180	
900	4.665	34.540	27.349		900	4.810	34.539	27.332		800	5.196	34.511	27.265		800	5.377	34.513	27.245	
1000	4.187	34.556	27.413		1000	4.366	34.552	27.391		900	4.819	34.522	27.317						

Table 2. Oceanographic data (continued)

Station Longitude Latitude Depth(m)					OS10116 141°55.4E 12°17.8N 2038					Station Longitude Latitude Depth(m)					OS10117 141°32.2E 12°45.4N 2780					Station Longitude Latitude Depth(m)					OS10118 141°08.0E 13°14.9N 4440					Station Longitude Latitude Depth(m)					OS10119 164°59.8E 30°00.0N 5860				
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T											
5	29.861	34.704	21.552		5	29.895	34.623	21.482		5	30.184	34.709	21.445		5	25.455	34.477	22.807		5	25.455	34.477	22.807		5	25.455	34.477	22.807											
10	29.841	34.705	21.559		10	29.832	34.638	21.514		10	30.132	34.707	21.462		10	24.694	34.548	23.097		10	24.694	34.548	23.097		10	24.694	34.548	23.097											
20	29.844	34.704	21.558		20	29.821	34.653	21.529		20	29.965	34.701	21.514		20	22.047	34.571	23.861		20	22.047	34.571	23.861		20	22.047	34.571	23.861											
30	29.779	34.683	21.559		30	29.670	34.638	21.569		30	29.923	34.700	21.528		30	21.472	34.840	24.246		30	21.472	34.840	24.246		30	21.472	34.840	24.246											
40	29.601	34.615	21.740		40	29.120	34.607	21.731		40	29.896	34.696	21.534		40	21.201	34.939	24.395		40	21.201	34.939	24.395		40	21.201	34.939	24.395											
50	28.903	34.638	21.824		50	28.933	34.593	21.783		50	29.617	34.657	21.599		50	21.040	34.957	24.453		50	21.040	34.957	24.453		50	21.040	34.957	24.453											
75	28.272	34.658	22.041		75	28.250	34.611	22.023		75	28.143	34.818	22.211		75	19.945	34.963	24.669		75	19.945	34.963	24.669		75	19.945	34.963	24.669											
100	27.762	34.874	22.376		100	27.431	34.830	22.454		100	27.256	35.029	22.658		100	19.081	34.794	24.842		100	19.081	34.794	24.842		100	19.081	34.794	24.842											
125	27.052	35.129	22.799		125	26.914	35.026	22.767		125	26.462	35.121	22.980		125	18.342	34.714	24.965		125	18.342	34.714	24.965		125	18.342	34.714	24.965											
150	25.440	35.115	23.280		150	25.613	35.111	23.280		150	25.372	35.133	23.328		150	17.862	34.711	25.083		150	17.862	34.711	25.083		150	17.862	34.711	25.083											
175	22.682	35.066	24.068		175	22.474	34.991	24.359		175	23.992	35.137	23.748		175	17.519	34.703	25.161		175	17.519	34.703	25.161		175	17.519	34.703	25.161											
200	19.938	34.880	24.687		200	17.357	34.684	25.187		200	22.689	35.092	24.093		200	17.060	34.679	25.253		200	17.060	34.679	25.253		200	17.060	34.679	25.253											
250	16.131	34.617	25.413		300	13.704	34.430	25.809		250	17.798	34.711	25.100		250	16.265	34.631	25.402		250	16.265	34.631	25.402		250	16.265	34.631	25.402											
300	12.930	34.394	25.930		400	9.300	34.315	26.534		300	13.592	34.426	25.828		300	15.543	34.583	25.529		300	15.543	34.583	25.529		300	15.543	34.583	25.529											
400	9.061	34.356	26.601		500	7.491	34.402	26.879		400	9.368	34.316	26.523		400	13.562	34.464	25.863		400	13.562	34.464	25.863		400	13.562	34.464	25.863											
500	7.739	34.474	26.869		600	6.332	34.434	27.063		500	7.377	34.345	26.850		500	10.634	34.261	26.264		500	10.634	34.261	26.264		500	10.634	34.261	26.264											
600	6.750	34.492	27.053		700	5.280	34.478	27.229		600	6.323	34.395	27.033		600	7.644	34.051	26.579		600	7.644	34.051	26.579		600	7.644	34.051	26.579											
700	6.014	34.493	27.150		800	4.937	34.518	27.301		700	5.487	34.468	27.196		700	5.741	34.003	26.797		700	5.741	34.003	26.797		700	5.741	34.003	26.797											
800	5.460	34.510	27.232		900	4.432	34.546	27.379		800	5.022	34.499	27.275		800	4.798	34.083	26.971		800	4.798	34.083	26.971		800	4.798	34.083	26.971											
900	5.003	34.521	27.294		1000	4.173	34.556	27.415		900	4.620	34.521	27.339		900	4.205	34.194	27.124		900	4.205	34.194	27.124		900	4.205	34.194	27.124											
1000	4.425	34.539	27.374							1000	4.228	34.537	27.394		1000	3.805	34.278	27.232		1000	3.805	34.278	27.232		1000	3.805	34.278	27.232											
1200	3.681	34.560	27.469							1200	3.534	34.559	27.483		1200	3.110	34.382	27.389		1200	3.110	34.382	27.389		1200	3.110	34.382	27.389											
1500	2.927	34.589	27.564							1500	2.802	34.586	27.572		1500	2.479	34.504	27.535		1500	2.479	34.504	27.535		1500	2.479	34.504	27.535											
										2000	2.089	34.626	27.665																										
										2500	1.745	34.650	27.711																										
										3000	1.616	34.665	27.733																										

Station Longitude Latitude Depth(m)					OS10120 164°59.7E 31°45.4N 5870					Station Longitude Latitude Depth(m)					OS10121 165°00.3E 33°41.1N 6065					Station Longitude Latitude Depth(m)					OS10122 165°00.7E 36°01.5N 5536					Station Longitude Latitude Depth(m)					OS10123 165°03.8E 37°39.4N 4360				
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T											
5	24.301	34.458	23.144		5	22.679	34.610	23.730		5	20.744	34.423	24.125		5	18.233	34.541	24.840		5	18.233	34.541	24.840		5	18.233	34.541	24.840											
10	23.683	34.458	23.236		10	22.428	34.599	23.791		10	20.051	34.460	24.338		10	17.333	34.539	25.081		10	17.333	34.539	25.081		10	17.333	34.539	25.081											
20	21.446	34.486	23.982		20	21.531	34.579	24.028		20	19.495	34.469	24.490		20	15.649	34.570	25.267		20	15.649	34.570	25.267		20	15.649	34.570	25.267											
30	21.036	34.499	24.104		30	21.364	34.583	24.073		30	18.901	34.463	24.535		30	14.997	34.516	25.477		30	14.997	34.516	25.477		30	14.997	34.516	25.477											
40	20.330	34.735	24.474		40	20.728	34.629	24.274		40	16.903	34.444	25.111		40	13.883	34.439	25.778		40	13.883	34.439	25.778		40	13.883	34.439	25.778											
50	19.570	34.747	24.682		50	19.664	34.672	24.594		50	16.323	34.473	25.269		50	13.114	34.381	25.890		50	13.114	34.381	25.890		50	13.114	34.381	25.890											
75	18.612	34.657	24.858		75	18.829	34.703	24.836		75	14.672	34.439	25.611		75	12.589	34.338	25.961		75	12.589	34.338	25.961		75	12.589	34.338	25.961											
100	18.348	34.651	24.920		100	18.266	34.698	24.974		100	13.580	34.366	25.785		100	11.681	34.275	26.086		100	11.681	34.275	26.086		100	11.681	34.275	26.086											
125	17.857	34.629	25.024		125	17.802	34.698	25.061		125	12.980	34.331	25.897		125	10.348	34.262	26.138		125	10.348	34.262	26.138		125	10.348	34.262	26.138											
150	17.584	34.626	25.088		150	17.659	34.707	25.132		150	12.341	34.302	25.982		150	10.271	34.196	26.278		150	10.271	34.196	26.278		150	10.271	34.196	26.278											
200	17.078	34.605	25.194		175	17.486	34.709	25.174		200	11.093	34.211	26.145		200	8.949	34.131	26.446		200	8.949	34.131	26.446		200	8.949	34.131	26.446											
250	16.606	34.591	25.294		200	17.207	34.694	25.228		250	9.779	34.152	26.327		250	6.693	34.004	26.676		250	6.693	34.004	26.676		250	6.693	34.004	26.676											
300	15.710	34.533	25.435		250	16.417	34.669	25.395		300	8.261	34.100	26.481		300	5.137	33.985	26.853		300	5.137	33.985	26.853		300	5.137	33.985	26.853											
400	13.633	34.427	25.821		300	15.411	34.575	25.553		400	6.015	33.967	26.727		400	4.588	34.082	26.994		400	4.588	34.082	26.994		400	4.588	34.082	26.994											
500	10.500	34.213	26.252		400	12.455	34.385	26.022		500	5.153	34.019	26.880		500	4.276	34.167	27.095		500	4.276	34.167	27.095		500	4.276	34.167	27.095											
600	7.580	34.024	26.569		500	9.097	34.087	26.386		600	4.551	34.122	27.029		600	3.909	34.236	27.188		600	3.909	34.236	27.188		600	3.909	34.236	27.188											
700	5.794	34.000	26.788		600	6.826	34.037	26.683		700	4.104	34.212	27.149		700	3.536	34.299	27.275		700	3.536	34.299	27.275		700	3.536	34.299	27.275											
800	4.810	34.069	26.959		700	4.988	34.018	26.868		800	3.734	34.283	27.243		800	3.234	34.349	27.343		800	3.234	34.349	27.343		800	3.234	34.349	27.343											
900	4.225	34.179	27.110		800	4.521	34.147	27.033																															

Table 2. Oceanographic data (continued)

Station Longitude Latitude Depth(m)					OS10133 167-00.1E 50-10.0N 4680					Station Longitude Latitude Depth(m)					OS10134 167-50.5E 50-10.4N 2815					Station Longitude Latitude Depth(m)					OS10135 168-20.0E 50-10.0N 3360					Station Longitude Latitude Depth(m)					OS10136 168-46.6E 50-10.1N 5210				
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T						
5	6.868	32.768	25.679		5	6.794	32.978	25.854		5	4.484	33.086	26.214		5	6.852	32.905	25.789		5	6.852	32.916	25.797		5	6.852	32.916	25.797		5	6.852	32.916	25.797						
10	6.861	32.777	25.687		10	6.762	32.987	25.865		10	4.003	33.097	26.272		10	6.852	32.916	25.797		10	6.852	32.916	25.797		10	6.852	32.916	25.797		10	6.852	32.916	25.797						
20	6.843	32.785	25.695		20	6.216	32.977	25.928		20	3.504	33.107	26.329		20	6.847	32.917	25.799		20	6.847	32.917	25.799		20	6.847	32.917	25.799		20	6.847	32.917	25.799						
30	6.052	32.989	25.958		30	5.967	33.002	25.978		30	3.114	33.116	26.371		30	6.397	32.929	25.867		30	6.397	32.929	25.867		30	6.397	32.929	25.867		30	6.397	32.929	25.867						
40	5.504	33.042	26.066		40	5.164	33.025	26.091		40	2.884	33.126	26.399		40	3.908	33.021	26.221		40	3.908	33.021	26.221		40	3.908	33.021	26.221		40	3.908	33.021	26.221						
50	4.699	32.954	26.086		50	3.756	33.081	26.284		50	2.813	33.141	26.417		50	3.599	33.076	26.295		50	3.599	33.076	26.295		50	3.599	33.076	26.295		50	3.599	33.076	26.295						
75	3.491	33.012	26.254		75	3.112	33.115	26.371		75	2.884	33.184	26.446		75	3.082	33.152	26.403		75	3.082	33.152	26.403		75	3.082	33.152	26.403		75	3.082	33.152	26.403						
100	3.630	33.162	26.360		100	2.768	33.161	26.437		100	3.145	33.268	26.490		100	3.016	33.253	26.459		100	3.016	33.253	26.459		100	3.016	33.253	26.459		100	3.016	33.253	26.459						
125	4.078	33.446	26.542		125	2.839	33.183	26.449		125	3.579	33.386	26.544		125	2.652	33.273	26.538		125	2.652	33.273	26.538		125	2.652	33.273	26.538		125	2.652	33.273	26.538						
150	4.270	33.663	26.695		150	2.859	33.203	26.463		150	3.970	33.488	26.587		150	2.449	33.283	26.561		150	2.449	33.283	26.561		150	2.449	33.283	26.561		150	2.449	33.283	26.561						
200	3.792	33.853	26.895		200	4.004	33.535	26.891		200	4.199	33.656	26.697		200	4.118	33.671	26.717		200	4.118	33.671	26.717		200	4.118	33.671	26.717		200	4.118	33.671	26.717						
250	3.832	33.962	26.978		250	4.174	33.681	26.719		250	4.120	33.790	26.811		250	3.958	33.799	26.835		250	3.958	33.799	26.835		250	3.958	33.799	26.835		250	3.958	33.799	26.835						
300	3.796	34.025	27.031		300	4.064	33.800	26.825		300	4.010	33.882	26.896		300	3.918	33.896	26.916		300	3.918	33.896	26.916		300	3.918	33.896	26.916		300	3.918	33.896	26.916						
400	3.642	34.131	27.131		400	3.875	33.970	26.980		400	3.860	34.025	27.025		400	3.797	34.047	27.049		400	3.797	34.047	27.049		400	3.797	34.047	27.049		400	3.797	34.047	27.049						
500	3.470	34.210	27.211		500	3.715	34.109	27.106		500	3.710	34.134	27.127		500	3.659	34.153	27.147		500	3.659	34.153	27.147		500	3.659	34.153	27.147		500	3.659	34.153	27.147						
600	3.363	34.263	27.263		600	3.544	34.197	27.193		600	3.579	34.203	27.194		600	3.468	34.243	27.237		600	3.468	34.243	27.237		600	3.468	34.243	27.237		600	3.468	34.243	27.237						
700	3.149	34.321	27.329		700	3.414	34.256	27.253		700	3.385	34.283	27.277		700	3.308	34.290	27.290		700	3.308	34.290	27.290		700	3.308	34.290	27.290		700	3.308	34.290	27.290						
800	3.001	34.354	27.369		800	3.233	34.307	27.310		800	3.207	34.337	27.337		800	3.160	34.337	27.341		800	3.160	34.337	27.341		800	3.160	34.337	27.341		800	3.160	34.337	27.341						
900	2.867	34.392	27.412		900	3.059	34.382	27.386		900	3.059	34.382	27.386		900	2.985	34.379	27.391		900	2.985	34.379	27.391		900	2.985	34.379	27.391		900	2.985	34.379	27.391						
1000	2.715	34.429	27.455		1000	2.904	34.421	27.432		1000	2.904	34.421	27.432		1000	2.854	34.416	27.432		1000	2.854	34.416	27.432		1000	2.854	34.416	27.432		1000	2.854	34.416	27.432						
1200	2.451	34.491	27.527		1200	2.640	34.481	27.503		1200	2.640	34.481	27.503		1200	2.570	34.484	27.511		1200	2.570	34.484	27.511		1200	2.570	34.484	27.511		1200	2.570	34.484	27.511						
1500					1500	2.253	34.575	27.611		1500	2.253	34.575	27.611		1500	2.214	34.566	27.607		1500	2.214	34.566	27.607		1500	2.214	34.566	27.607		1500	2.214	34.566	27.607						

Station Longitude Latitude Depth(m)					OS10137 169-39.8E 50-09.9N 3988					Station Longitude Latitude Depth(m)					OS10138 171-20.2E 51-14.7N 4715					Station Longitude Latitude Depth(m)					OS10139 171-59.8E 51-15.3N 4400					Station Longitude Latitude Depth(m)					OS10140 172-29.0E 51-15.0N 5115				
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T						
5	7.044	32.960	25.806		5	7.034	32.849	25.720		5	6.146	32.927	25.897		5	6.959	32.846	25.728		5	6.959	32.846	25.728		5	6.959	32.846	25.728		5	6.959	32.846	25.728						
10	7.041	32.962	25.808		10	6.601	32.852	25.780		10	5.903	32.967	25.958		10	6.960	32.846	25.728		10	6.960	32.846	25.728		10	6.960	32.846	25.728		10	6.960	32.846	25.728						
20	6.988	32.972	25.823		20	5.946	32.836	25.850		20	5.844	32.980	25.976		20	6.706	32.846	25.761		20	6.706	32.846	25.761		20	6.706	32.846	25.761		20	6.706	32.846	25.761						
30	6.109	33.017	25.973		30	6.083	32.858	25.871		30	5.133	33.024	26.069		30	5.730	32.890	25.918		30	5.730	32.890	25.918		30	5.730	32.890	25.918		30	5.730	32.890	25.918						
40	5.572	33.060	26.072		40	6.048	32.888	25.878		40	3.699	33.107	26.310		40	4.758	32.953	26.079		40	4.758	32.953	26.079		40	4.758	32.953	26.079		40	4.758	32.953	26.079						
50	4.142	33.110	26.269		50	5.877	32.940	25.940		50	3.578	33.028	26.364		50	4.028	33.050	26.232		50	4.028	33.050	26.232		50	4.028	33.050	26.232		50	4.028	33.050	26.232						
75	2.582	33.215	26.496		75	4.341	33.095	26.236		75	3.230	33.187	26.418		75	3.233	33.094	26.343		75	3.233	33.094	26.343		75	3.233	33.094	26.343		75	3.233	33.094	26.343						
100	2.226	33.239	26.544		100	3.643	33.190	26.381		100	3.438	33.289	26.480		100	3.317	33.157	26.386		100	3.317	33.157	26.386		100	3.317	33.157	26.386		100	3.317	33.157	26.386						
125	2.178	33.276	26.577		125	3.603	33.265	26.525		125	3.538	33.376	26.540		125	3.660	33.262	26.437		125	3.660	33.262	26.437		125	3.660	33.262	26.437		125	3.660	33.262	26.437						
150	3.388	33.636	26.761		150	3.900	33.578	26.675		150	3.558	33.424	26.653		150	3.828	33.326	26.472		150	3.828	33.326	26.472		150	3.828	33.326	26.472		150	3.828	33.326	26.472						
200	3.781	33.904	26.936		200	3.953	33.849	26.875		200	4.018	33.578	26.653		200	3.765	33.360	26.505		200	3.765	33.360	26.505		200	3.765	33.360	26.505		200	3.765	33.360	26.505						
250	3.751	33.973	26.994		250	3.933	33.914	26.929		250	4.218	33.778	26.760		250	3.772	33.418	26.551		250	3.772	33.418	26.551		250	3.772	33.418	26.551		250	3.772	33.418	26.551						
300	3.734	34.044	27.053		300	3.873	33.975	26.984		300	4.198	33.841	26.844		300	4.060	33.562	26.636		300	4.060	33.562	26.636		300	4.060	33.562	26.636		300	4.060	33.562	26.636						
400	3.591	34.124	27.130		400	3.843	34.066	27.059		400	3.978	33.968	26.991		400	4.202	33.302	26.793		400	4.202	33.302	26.793		400	4.202	33.302	26.793		400	4.202	33.302	26.793						
500	3.420	34.208	27.214		500	3.583	34.208	27.198		500	3.749	34.082	27.081		500	4.198	33.376	26.871		500	4.198	33.376	26.871		500	4.198	33.376	26.871		500	4.198	33.376	26.871						
600	3.269	34.262	27.271		600	3.173	34.236	27.339		600	3.598	34.170	27.166		600	3.972	33.984	26.981		600	3.972	33.984	26.981		600	3.972	33.984	26.981		600	3.972	33.984	26.981						
700																																							

Table 2. Oceanographic data (continued).

Station OS10149					Station OS10150					Station OS10151					Station OS10152				
Longitude 178-44.6E					Longitude 179-15.2E					Longitude 176-48.6W					Longitude 170-29.0W				
Latitude 50-39.9N					Latitude 50-40.1N					Latitude 53-27.6N					Latitude 52-20.5N				
Depth(m) 5400					Depth(m) 5635					Depth(m) 3780					Depth(m) 570				
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T	
5	7.462	32.648	25.503		5	7.280	32.586	25.480		5	6.388	33.198	26.080		5	5.145	33.029	26.097	
10	7.012	32.710	25.613		10	7.183	32.601	25.505		10	6.361	33.196	26.082		10	5.061	33.082	26.148	
20	6.354	32.781	25.755		20	6.717	32.613	25.576		20	5.929	33.192	26.133		20	5.002	33.116	26.182	
30	5.721	32.850	25.888		30	6.872	32.719	25.640		30	5.907	33.193	26.136		30	4.961	33.171	26.230	
40	5.122	32.959	26.043		40	5.711	32.656	25.720		40	4.305	33.220	26.339		40	4.923	33.236	26.286	
50	4.911	33.046	26.137		50	4.874	32.741	25.899		50	3.285	33.299	26.501		50	4.880	33.274	26.320	
75	4.485	33.240	26.336		75	3.982	32.910	26.126		75	2.852	33.298	26.541		75	4.834	33.308	26.353	
100	4.409	33.339	26.423		100	3.823	33.074	26.272		100	2.726	33.305	26.556		100	4.765	33.346	26.390	
125	4.035	33.372	26.488		125	4.528	33.501	26.539		125	2.777	33.317	26.561		125	4.716	33.378	26.421	
150	3.923	33.483	26.587		150	4.646	33.732	26.710		150	2.835	33.327	26.564		150	4.716	33.387	26.428	
175	4.357	33.616	26.649		200	4.389	33.873	26.849		175	2.870	33.333	26.566		200	4.587	33.478	26.514	
200	4.439	33.709	26.714		250	3.853	33.917	26.942		200	2.900	33.338	26.567		250	4.289	33.579	26.626	
250	4.432	33.877	26.858		300	4.111	34.033	27.006							300	4.269	33.825	26.824	
300	4.178	33.969	26.948		400	3.854	34.105	27.089							400	3.968	34.117	27.087	
400	3.807	34.048	27.048		500	3.583	34.165	27.164							500	3.580	34.220	27.208	
500	3.682	34.155	27.146		600	3.443	34.235	27.233							600	3.187	35.673	26.809	
600	3.464	34.218	27.217		700	3.252	34.300	27.303											
700	3.348	34.273	27.272		800	3.071	34.348	27.358											
800	3.113	34.327	27.337		900	2.910	34.382	27.400											
900	2.965	34.359	27.377		1000	2.778	34.410	27.434											
1000	2.821	34.389	27.413		1200	2.485	34.472	27.509											
1200	2.509	34.452	27.491		1500	2.170	34.538	27.588											
1500	2.198	34.518	27.570																
2000	1.875	34.587	27.651																

Station OS10153					Station OS10154					Station OS10155					Station OS10156				
Longitude 179-30.3W					Longitude 179-30.7W					Longitude 179-30.0W					Longitude 179-29.9W				
Latitude 52-00.1N					Latitude 51-40.4N					Latitude 51-20.0N					Latitude 51-00.0N				
Depth(m) 3361					Depth(m) 4639					Depth(m) 6237					Depth(m) 7050				
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T	
5	8.860	32.369	25.080		5	7.955	32.386	25.385		5	7.740	32.576	25.408		5	7.809	32.402	25.419	
10	8.720	32.363	25.095		10	7.955	32.587	25.386		10	7.727	32.576	25.410		10	7.807	32.603	25.419	
20	7.864	32.471	25.305		20	7.936	32.588	25.389		20	7.650	32.580	25.423		20	7.695	32.603	25.436	
30	7.864	32.471	25.305		30	7.394	32.593	25.465		30	7.472	32.590	25.435		30	7.630	32.601	25.443	
40	6.269	32.644	25.621		40	6.723	32.630	25.612		40	7.084	32.620	25.640		40	7.549	32.607	25.459	
50	5.872	32.667	25.724		50	4.499	32.854	26.024		50	6.542	32.636	25.616		50	7.109	32.601	25.562	
75	5.285	32.905	25.982		75	4.079	33.191	26.339		75	4.199	32.818	26.029		75	4.520	32.801	25.984	
100	5.019	33.259	26.293		100	4.354	33.498	26.555		100	3.833	32.977	26.193		100	4.030	32.853	26.075	
125	5.031	33.536	26.511		125	4.423	33.785	26.775		125	3.840	33.121	26.308		125	4.008	32.933	26.182	
150	4.957	33.664	26.621		150	4.280	33.901	26.885		150	3.933	33.505	26.603		150	4.567	33.580	26.597	
175	4.767	33.799	26.749		175	4.232	33.952	26.928		175	4.329	33.799	26.797		175	4.838	33.778	26.725	
200	4.667	33.856	26.805		200	4.158	33.977	26.956		200	4.140	33.886	26.896		200	4.580	33.845	26.806	
250	4.210	33.921	26.900		250	4.099	34.025	27.001		250	4.018	33.977	26.971		250	4.099	33.923	26.919	
300	4.117	34.006	26.983		300	3.991	34.075	27.052		300	3.995	34.025	27.011		300	4.007	34.008	26.997	
400	3.982	34.093	27.067		400	3.838	34.142	27.120		400	3.909	34.109	27.086		400	3.844	34.129	27.109	
500	3.793	34.162	27.140		500	3.636	34.205	27.190		500	3.719	34.180	27.162		500	3.636	34.193	27.181	
600	3.567	34.228	27.217		600	3.481	34.248	27.240		600	3.513	34.239	27.272		600	3.445	34.241	27.240	
700	3.378	34.278	27.274		700	3.287	34.299	27.299		700	3.256	34.295	27.299		700	3.231	34.297	27.302	
800	3.184	34.321	27.326		800	3.153	34.330	27.336		800	3.052	34.342	27.355		800	3.076	34.331	27.344	
900	2.989	34.363	27.377		900	2.964	34.388	27.384		900	2.880	34.381	27.402		900	2.919	34.363	27.384	
1000	2.842	34.393	27.430		1000	2.798	34.402	27.436		1000	2.691	34.419	27.449		1000	2.780	34.393	27.420	
1200	2.568	34.450	27.484		1200	2.472	34.467	27.506		1200	2.434	34.474	27.515		1200	2.528	34.466	27.484	
1500	2.210	34.524	27.574		1500	2.148	34.537	27.589		1500	2.185	34.530	27.589		1500	2.210	34.514	27.565	
2000	1.874	34.595	27.657		2000	1.827	34.604	27.668		2000	1.867	34.597	27.650		2000	1.916	34.579	27.641	
2500	1.694	34.632	27.701		2500	1.645	34.649	27.711		2500	1.684	34.638	27.707		2500	1.720	34.620	27.689	
					3000	1.534	34.663	27.737		3000	1.541	34.663	27.736		3000	1.589	34.647	27.720	

Station OS10157					Station OS10158					Station OS10159					Station OS10160				
Longitude 170-30.0W					Longitude 173-55.5W					Longitude 179-59.8W					Longitude 179-59.9W				
Latitude 50-40.1N					Latitude 49-04.8N					Latitude 49-30.0N					Latitude 49-45.0N				
Depth(m) 5435					Depth(m) 5235					Depth(m) 4955					Depth(m) 5172				
Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T		Press.	Temp.	Sal.	SIG-T	
5	7.817	32.630	25.439		5	7.878	32.787	25.554		5	7.914	32.557	25.968		5	7.811	32.590	25.409	
10	7.814	32.629	25.439		10	7.880	32.787	25.553		10	7.903	32.556	25.969		10	7.799	32.591	25.411	
20	7.657	32.634	25.465		20	7.507	32.799	25.616		20	7.389	32.579	25.459		20	7.431	32.656	25.514	
30	7.389	32.656	25.520		30	7.137	32.818	25.682		30	6.726	32.655	25.539		30	7.162	32.663	25.556	
40	6.878	32.702	25.625		40	6.001	32.855	25.857		40	5.236	32.786	25.894		40	5.274	32.706	25.826	
50	6.123	32.754	25.763		50	4.554	32.948	25.987		50	4.440	32.901	26.072		50	5.452	32.775	25.961	
75	4.312	32.824	26.014		75	3.698	32.948	26.182		75	4.531	32.944	26.068		75	4.248	32.807	26.078	
100	3.829	32.874	26.112		100	3.436	33.053	26.292		100	3.981	33.149	26.316		100	4.198	33.263	26.365	
125	3.542	32.923	26.178		125	3.136	33.551	26.716		125	3.731	33.244	26.416		125	4.444	33.606	26.631	
150	3.423	33.196	26.475		150	3.172	33.651	26.783		150	4.423	33.331	26.574		150	4.410	33.751	26.750	
175	3.403	33.688	26.765		175	3.298	33.692	26.822		175	4.368	33.408	26.678		175	4.348	33.809	26.829	
200	3.353	33.830	26.800		200	3.315	33.768	26.873		200	4.433	33.766	26.799		200	4.262	33.855	26.876	
250	3.944	33.935	26.945		250	3.426	33.866	26.941		250	4.241	33.797	26.895		250	4.089	33.956	26.948	
300	3.765	34.073	26.995		300	3.477	33.946	26.999		300	3.507	33.981	26.986		300	3.965	34.029	27.010	
400	3.409	34.049	27.107		400	3.317	34.073	27.147		400	3.477	34.044	27.068		400	3.348	34.069	27.089	
500	3.405	34.170	27.185		500	3.399	34.												

Table 2. Oceanographic data (continued)

Station OS10165				Station OS10166				Station OS10167				Station OS10168			
Longitude 177-23.1E				Longitude 177-00.3E				Longitude 176-41.8E				Longitude 176-23.9E			
Latitude 52-23.5N				Latitude 52-0.06N				Latitude 51-39.9N				Latitude 51-20.0N			
Depth(m) 1938				Depth(m) 1200				Depth(m) 2900				Depth(m) 4570			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	7.578	33.014	25.775	5	6.484	32.983	25.898	5	7.638	32.640	25.472	5	7.914	32.732	25.498
10	7.563	33.014	25.777	10	6.147	33.017	25.968	10	7.111	32.700	25.592	10	6.776	32.783	25.702
20	6.995	33.048	25.882	20	5.294	33.087	26.126	20	6.344	32.804	25.774	20	5.782	32.977	25.981
30	6.763	33.064	25.925	30	4.990	33.126	26.191	30	5.853	32.858	25.878	30	4.915	33.076	26.160
40	4.697	33.132	26.228	40	4.742	33.150	26.237	40	5.663	32.909	25.941	40	4.790	33.098	26.190
50	3.044	33.168	26.419	50	4.446	33.163	26.279	50	5.205	32.934	26.015	50	4.732	33.159	26.246
75	2.774	33.248	26.506	75	4.288	33.242	26.359	75	4.530	33.026	26.162	75	4.431	33.227	26.332
100	1.932	33.213	26.545	100	3.919	33.256	26.407	100	4.451	33.189	26.299	100	4.359	33.277	26.379
125	1.881	33.231	26.563	125	3.630	33.307	26.476	125	4.531	33.439	26.489	125	4.258	33.319	26.423
150	2.144	33.272	26.576	150	3.362	33.416	26.588	150	4.376	33.568	26.609	150	4.167	33.399	26.495
175	3.557	33.483	26.623	200	3.423	33.484	26.636	175	4.315	33.632	26.666	175	4.174	33.500	26.575
200	3.743	33.555	26.662	250	3.640	33.553	26.671	200	4.383	33.722	26.730	200	4.203	33.606	26.657
250	3.929	33.747	26.796	300	3.650	33.718	26.801	250	4.305	33.868	26.854	250	4.175	33.706	26.739
300	3.889	33.836	26.872	400	3.650	33.899	26.945	300	4.178	33.952	26.934	300	4.131	33.879	26.881
400	3.811	33.986	26.999	500	3.620	34.036	27.057	400	4.026	34.035	27.016	400	3.884	34.022	27.020
500	3.677	34.077	27.085	600	3.490	34.167	27.174	500	3.896	34.095	27.077	500	3.837	34.126	27.108
600	3.551	34.139	27.146	700	3.417	34.207	27.213	600	3.681	34.129	27.125	600	3.485	34.184	27.188
700	3.390	34.203	27.213	800	3.309	34.252	27.259	700	3.605	34.199	27.189	700	3.360	34.242	27.246
800	3.257	34.247	27.260	900	3.138	34.300	27.314	800	3.431	34.244	27.242	800	3.106	34.291	27.310
900	3.097	34.296	27.314	1000	2.946	34.355	27.375	900	3.328	34.263	27.266	900	2.927	34.345	27.369
1000	2.934	34.336	27.361	1200	2.855	15.600	12.436	1000	3.172	34.291	27.303	1000	2.751	34.391	27.421
1200	2.620	34.412	27.450					1200	2.769	34.395	27.423	1200	2.481	34.453	27.494
1500	2.248	34.497	27.549					1500	2.343	34.487	27.533	1500	2.115	34.533	27.588
								2000	1.904	34.580	27.642	2000	1.839	34.592	27.657
								2500	1.738	34.615	27.684	2500	1.651	34.628	27.701
												3000	1.546	34.651	27.727

Station OS10169				Station OS10170				Station OS10171				Station OS10172			
Longitude 176-05.8E				Longitude 175-47.9E				Longitude 175-30.1E				Longitude 175-11.9E			
Latitude 51-00.5N				Latitude 50-39.9N				Latitude 50-20.3N				Latitude 49-59.9N			
Depth(m) 7180				Depth(m) 5400				Depth(m) 4610				Depth(m) 4617			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	7.952	32.659	25.442	5	7.545	32.776	25.592	5	8.525	32.800	25.469	5	8.627	32.764	25.425
10	8.130	32.661	25.418	10	7.260	32.814	25.662	10	8.316	32.788	25.491	10	7.452	32.779	25.607
20	6.797	32.734	25.661	20	5.946	32.981	25.964	20	7.190	32.800	25.660	20	6.944	32.801	25.694
30	5.055	32.977	26.066	30	4.678	32.947	26.083	30	6.906	32.813	25.709	30	6.574	32.806	25.747
40	4.900	33.086	26.169	40	4.296	33.014	26.176	40	6.667	32.821	25.746	40	5.443	32.852	25.922
50	4.701	33.120	26.218	50	4.393	33.121	26.252	50	5.119	32.862	25.968	50	4.571	32.897	26.055
75	4.500	33.179	26.286	75	4.518	33.234	26.328	75	3.626	32.933	26.179	75	3.584	33.030	26.260
100	4.380	33.261	26.364	100	4.534	33.312	26.388	100	3.159	32.978	26.257	100	4.044	33.328	26.452
125	4.226	33.330	26.435	125	4.627	33.445	26.484	125	3.447	33.376	26.548	125	3.425	33.528	26.671
150	4.106	33.416	26.515	150	4.322	33.481	26.544	150	3.861	33.757	26.812	150	3.845	33.806	26.852
175	4.212	33.537	26.601	175	4.342	33.537	26.587	175	3.897	33.862	26.891	175	3.909	33.903	26.922
200	4.182	33.621	26.670	200	4.306	33.614	26.652	200	3.873	33.909	26.931	200	3.866	33.957	26.970
250	4.209	33.813	26.820	250	4.255	33.761	26.774	250	3.842	33.995	27.002	250	3.815	34.008	27.016
300	4.131	33.929	26.921	300	4.119	33.870	26.875	300	3.817	34.059	27.056	300	3.777	34.063	27.063
400	3.801	34.041	27.043	400	3.718	34.053	27.061	400	3.638	34.140	27.139	400	3.598	34.164	27.162
500	3.728	34.162	27.147	500	3.652	34.162	27.154	500	3.423	34.219	27.222	500	3.416	34.215	27.220
600	3.505	34.224	27.218	600	3.327	34.235	27.244	600	3.193	34.284	27.296	600	3.248	34.276	27.284
700	3.208	34.265	27.279	700	3.100	34.305	27.321	700	3.038	34.324	27.342	700	3.051	34.310	27.330
800	3.027	34.315	27.336	800	2.908	34.348	27.373	800	2.877	34.357	27.383	800	2.933	34.348	27.371
900	2.867	34.358	27.385	900	2.786	34.383	27.412	900	2.718	34.394	27.427	900	2.767	34.384	27.415
1000	2.724	34.397	27.429	1000	2.633	34.417	27.452	1000	2.572	34.428	27.466	1000	2.626	34.420	27.455
1200	2.418	34.466	27.510	1200	2.364	34.476	27.522	1200	2.343	34.481	27.528	1200	2.368	34.476	27.522
1500	2.127	34.529	27.584	1500	2.111	34.533	27.589	1500	2.089	34.537	27.594	1500	2.090	34.537	27.594
2000	1.819	34.594	27.661	2000	1.818	34.595	27.662	2000	1.804	34.597	27.664	2000	1.794	34.599	27.667
2500	1.637	34.631	27.704	2500	1.640	34.630	27.703	2500	1.620	34.633	27.707	2500	1.619	34.634	27.708
3000	1.535	34.653	27.729	3000	1.523	34.655	27.732	3000	1.522	34.657	27.733	3000	1.516	34.655	27.732

Station OS10173				Station OS10174				Station OS10175			
Longitude 155-52.5E				Longitude 155-00.0E				Longitude 145-46.7E			
Latitude 44-23.6N				Latitude 44-00.0N				Latitude 41-30.2N			
Depth(m) 5120				Depth(m) 5308				Depth(m) 6915			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	11.451	32.596	24.815	5	15.281	32.562	24.032	5	17.758	32.828	23.665
10	9.637	32.857	25.337	10	14.911	32.915	24.384	10	14.880	33.485	24.830
20	7.680	32.883	25.654	20	11.432	32.886	25.052	20	11.754	33.795	25.699
30	5.140	32.959	26.036	30	6.622	32.914	25.826	30	9.129	33.825	26.177
40	3.209	33.020	26.282	40	5.135	32.980	26.059	40	8.905	33.837	26.223
50	2.674	33.045	26.352	50	3.750	33.006	26.224	50	8.846	33.887	26.271
75	2.163	33.060	26.405	75	2.799	33.073	26.365	75	8.082	33.849	26.358
100	1.587	33.081	26.464	100	1.815	33.057	26.429	100	6.411	33.732	26.498
125	1.636	33.195	26.552	125	1.924	33.182	26.521	125	4.657	33.524	26.543
150	2.250	33.419	26.686	150	2.703	33.434	26.661</				

5. Data on drift gillnet research

Five gillnet researches were performed during this cruise. The operations were supervised by the captain, and were conducted by deck officers, crews and research staff.

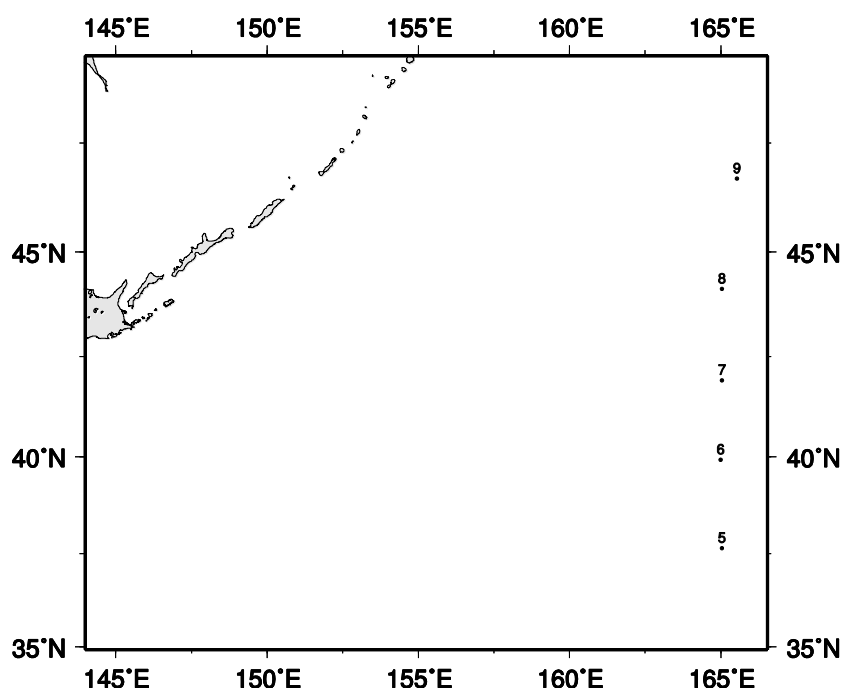


Figure 3. Locations of drift gillnet research

Table 3. Data on drift gillnet research

No. of research	Date and Time (S.M.T.)		T.D.	Position		D.D.	Bottom depth(m)	Wr	Wind	S.T. (°C)	Tr (m)
	Net set	Net haul		Lat.(N)	Long.						
OSG1005	30-Jun 1845-	1-Jul 0453-	11	37-40.0	165-00.0 (E)	90	5190	o	WNW-2	20.7	-
OSG1006	1-Jul 1855-	2-Jul 0452-	11	39-57.0	164-58.0 (E)	270	5480	o	SSE-1	17.5	-
OSG1007	2-Jul 1752-	3-Jul 0458-	11	41-56.0	165-00.0 (E)	60	4260	f	WSW-3	12.4	-
OSG1008	3-Jul 1854-	4-Jul 0425-	11	44-09.0	165-00.0 (E)	40	5782	f	WSW-4	9.6	-
OSG1009	4-Jul 1900-	5-Jul 0422-	11	46-43.2	165-30.0 (E)	320	5752	f	ESE-4	7.7	-

T.D.: Time Difference between Greenwich Mean Time (G.M.T.) and S.M.T. D.D : Direction of Drift toward
 Wr.: Weather (o: 100% clouded, f: 75-99% clouded, d: drizzling rain) S.T. : Surface temperature Tr : Transparency

Table 4. Nets composition

No. of research	Mesh size (mm)																					Total
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	
OSG1005	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1	49
OSG1006	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1	49
OSG1007	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1	49
OSG1008	3	3	3	3	3	3	3	3	3	3	3	6	3	4	0	0	1	1	0	1	0	49
OSG1009	3	3	3	3	3	3	3	3	3	3	4	6	5	4	-	-	-	-	-	-	-	49

Table 5. Data on catch number of salmonids by drift gillnet research

Sockeye (catch number)

No. of research	Mesh size (mm)																					
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	Total
OSG1005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	0

Chum (catch number)

No. of research	Mesh size (mm)																					
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	Total
OSG1005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1007	0	0	0	2	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	9
OSG1008	0	0	0	0	4	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6
OSG1009	0	0	1	2	3	4	0	2	2	0	3	9	2	0	-	-	-	-	-	-	-	28

Pink (catch number)

No. of research	Mesh size (mm)																					
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	Total
OSG1005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1008	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
OSG1009	0	0	0	5	34	96	49	9	0	0	28	51	35	7	-	-	-	-	-	-	-	314

Coho (catch number)

No. of research	Mesh size (mm)																					
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	Total
OSG1005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1008	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
OSG1009	0	0	0	1	0	0	1	0	1	0	0	4	2	0	-	-	-	-	-	-	-	9

Chinook (catch number)

No. of research	Mesh size (mm)																					
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	Total
OSG1005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	0

Steelhead (catch number)

No. of research	Mesh size (mm)																					
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	Total
OSG1005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSG1008	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
OSG1009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	0

Table 6. Biological characteristics of salmonids caught by drift gillnet research

CHUM SALMON																	
St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.
	(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)
G07	A121	438	972	M	1	G09	A112	444	981	M	2	G09	C072	352	474	M	2
G07	C072	405	756	F	5	G09	A112	591	2620	F	80	G09	C072	484	1722	F	19
G07	C072	440	999	F	7	G09	A112	542	1853	F	13	G09	C082	438	906	F	10
G07	C082	417	849	F	8	G09	A115	550	2048	M	5	G09	C082	428	882	M	1
G07	C082	451	974	M	1	G09	A115	592	2579	M	13	G09	C082	440	960	M	1
G07	C082	392	730	F	4	G09	A115	606	2819	M	34	G09	C106	418	780	F	4
G07	C082	443	1051	M	2	G09	A115	512	1514	F	16	G09	C106	515	1589	M	5
G07	C093	418	877	F	6	G09	A115	448		F	3	G09	C106	450	949	M	2
G07	C106	454	1175	M	1	G09	A115	558	2384	F	45	G09	C106	490	1387	M	2
G08	A121	570	2400	F	46	G09	A115	555	2152	M	2	G09	C121	654	3300	F	54
G08	C082	414	813	F	6	G09	A115	500	1489	F	30	G09	C121	625	3076	M	11
G08	C082	414	825	M	1	G09	A115	618	3102	M	87	G09	C121	658	2800	M	7
G08	C082	425	833	M	1	G09	A118	542	1921	F	38	G09	C121	535	1728	F	93
G08	C082	426	864	M	1	G09	A118	612	2882	F	86						
G08	C093	415	818	M	1	G09	C063	328	409	M	1						
PINK SALMON																	
St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.
	(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)		(mm)	(mm)	(gr)		(gr)
G08	A115	494	1238	M	8	G09	A115	456	1070	M	18	G09	C082	446	1082	F	81
G08	C082	440	1068	F	67	G09	A115	450	1160	F	60	G09	C082	462	1092	F	56
G08	C093	470	1161	F	51	G09	A115	470	1170	M	20	G09	C082	457	1131	M	18
G09	A112	462	1241	M	21	G09	A115	474	1150	M	20	G09	C082	464	1174	F	68
G09	A112	448	1000	F	53	G09	A115	469	1100	M	15	G09	C082	466	1219	F	65
G09	A112	452	1035	F	55	G09	A115	453	1100	M	27	G09	C082	450	1187	F	63
G09	A112	451	1160	M	28	G09	A115	472	1220	M	62	G09	C082	435	1049	M	25
G09	A112	470	1170	F	45	G09	A115	469	1270	M	43	G09	C082	472	1228	F	63
G09	A112	467	1207	M	29	G09	A115	465	1200	F	64	G09	C082	453	1148	F	67
G09	A112	439	1192	F	37	G09	A118	464	1214	M	59	G09	C082	462	1283	F	55
G09	A112	465	1142	F	75	G09	A118	488	1282	M	18	G09	C082	445	1092	F	53
G09	A112	450	1314	M	30	G09	A118	440	1090	F	40	G09	C082	441	1040	F	36
G09	A112	454	1259	M	50	G09	A118	474	1268	F	78	G09	C082	436	721	F	31
G09	A112	466	1106	F	46	G09	A118	458	1240	F	38	G09	C082	440	960	F	33
G09	A112	444	1204	F	54	G09	A118	461	1098	M	17	G09	C082	461	1022	F	41
G09	A112	462	1241	F	73	G09	A118	436	1088	M	39	G09	C082	444	1045	F	35
G09	A112	457	1081	F	62	G09	A118	474	1338	M	20	G09	C082	458	1080	M	38
G09	A112	456	1209	F	95	G09	A118	482	1360	M	58	G09	C082	454	1171	M	16
G09	A112	452	1260	F	51	G09	A118	458	1241	M	14	G09	C082	480	1263	M	8
G09	A112	476	1279	F	101	G09	A118	483	1372	F	15	G09	C082	453	1124	M	33
G09	A112	472	1293	M	34	G09	A118	466	1232	M	20	G09	C082	435	1080	F	49
G09	A112	454	1203	F	48	G09	A118	454	1199	M	12	G09	C082	454	1170	M	34
G09	A112	478	1308	M	31	G09	A118	446	1074	M	12	G09	C082	452	1066	M	27
G09	A112	464	1280	F	58	G09	A118	463	1214	M	23	G09	C082	468	109	M	12
G09	A112	462	1285	F	59	G09	A118	457	1161	M	15	G09	C082	456	1126	F	55
G09	A112	461	1141	M	37	G09	A118	446	1181	F	62	G09	C082	460	1079	F	66
G09	A112	444	1298	M	20	G09	A118	442	1037	M	32	G09	C082	449	1120	M	38
G09	A112	462	1011	M	15	G09	A118	456	1166	M	18	G09	C082	448	1172	M	25
G09	A112	468	1180	M	27	G09	A118	481	1399	M	47	G09	C082	444	1068	F	49
G09	A112	452	1100	M	12	G09	A118	444	1142	M	21	G09	C082	460	1108	F	56
G09	A115	466	1200	M	18	G09	A118	455	1211	F	71	G09	C093	462	1131	M	5
G09	A115	456	1150	F	17	G09	A118	456	1190	M	48	G09	C093	471	1190	M	47
G09	A115	476	1180	M	20	G09	A118	468	1280	M	31	G09	C093	456	1232	F	70
G09	A115	454	1130	M	53	G09	A118	464	1252	M	13	G09	C093	438	991	F	68
G09	A115	434	970	F	23	G09	A118	440	1134	F	44	G09	C093	428	964	M	48
G09	A115	468	1270	M	75	G09	A118	442	1091	F	54	G09	C093	458	1147	F	60
G09	A115	448	1120	F	63	G09	A118	455	1120	M	26	G09	C093	452	1228	M	16
G09	A115	409	1000	M	52	G09	A118	471	1251	F	72	G09	C093	456	1010	F	50
G09	A115	494	1340	M	15	G09	A118	444	1047	M	15	G09	C093	439	1121	M	16
G09	A115	456	1180	M	48	G09	A121	463	1260	M	32	G09	C093	440	1012	F	54
G09	A115	445	1210	M	44	G09	A121	453	1050	F		G09	C093	430	969	M	21
G09	A115	469	1270	M	80	G09	A121	460	1200	M	59	G09	C093	406	777	M	10
G09	A115	482	1240	F	80	G09	A121	462	1190	F	14	G09	C093	436	1010	F	66
G09	A115	456	1080	M	20	G09	C072	443	1017	F	72	G09	C093	425	927	F	50
G09	A115	452	1170	F	73	G09	C072	460	1162	F	83	G09	C093	448	1115	F	64
G09	A115	435	1050	M	25	G09	C072	444	1049	M	34	G09	C093	446	1098	M	29
G09	A115	458	1070	F	18	G09	C072	455	1082	F	74	G09	C093	464	1092	F	68
G09	A115	461	1160	F	90	G09	C072	441	1090	F	66	G09	C093	465	1141	F	84
G09	A115	459	1150	M	24	G09	C082	449	1181	F	47	G09	C093	446	1071	F	88
G09	A115	475	1250	F	72	G09	C082	474	1222	F	62	G09	C093	452	1198	M	76
G09	A115	440	1040	M	35	G09	C082	451	1013	F	43	G09	C093	446	1101	M	20

Table 6. Biological characteristics of salmonids caught by drift gillnet research (continued)

PINK SALMON																	
St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.
(mm)	(mm)	(mm)	(gr)		(gr)	(mm)	(mm)	(mm)	(gr)		(gr)	(mm)	(mm)	(mm)	(gr)		(gr)
G09	C093	406	803	F	5	G09	C106	449	980	F	47	G09	C106	462	1166	M	14
G09	C093	461	1250	F	56	G09	C106	466	1181	F	63	G09	C106	450	1128	F	53
G09	C093	442	1052	F	58	G09	C106	450	1123	F	69	G09	C106	453	1054	F	56
G09	C093	472	1218	F	64	G09	C106	467		F	45	G09	C106	453	1118	F	54
G09	C093	458	1137	F	63	G09	C106	432		F	59	G09	C106	494	1011	F	52
G09	C093	443	1024	F	51	G09	C106	456	1050	F	62	G09	C106	451	1079	F	57
G09	C093	424	847	F	25	G09	C106	485	1327	M	14	G09	C106	449	1015	F	43
G09	C093	440	1119	M	93	G09	C106	442	989	M	11	G09	C106	462	1170	M	18
G09	C093	451	1071	F	51	G09	C106	445	904	M	10	G09	C106	444	1060	F	55
G09	C093	466	1218	F	79	G09	C106	461	1175	F	46	G09	C106	470	1155	M	12
G09	C106	456	1007	F	50	G09	C106	431	974	M	28	G09	C106	484	1265	M	25
G09	C106	466	1203	F	59	G09	C106	437	1089	F	51	G09	C121	449	1239	F	46
G09	C106	457	1210	F	47	G09	C106	462	1179	M	12	G09	C121	483	1324	M	16
G09	C106	439	1026	F	50	G09	C106	469	1150	F	49	G09	C121	481	1241	M	16
G09	C106	463	1156	F	77	G09	C106	452	1049	F	93	G09	C121	468	1227	M	32
G09	C106	448	1106	M	20	G09	C106	435	935	F	45	G09	C121	475	1221	M	45
G09	C106	462	1074	F	33	G09	C106	444		F	56	G09	C121	470	1333	M	24
G09	C106	478	1209	F	66	G09	C106	452	1081	M	18	G09	C121	455	1082	F	54
G09	C106	454	1104	F	44	G09	C106	458	1147	M	10	G09	C121	492	1470	M	42
G09	C106	450	1096	M	18	G09	C106	442	1018	F	30	G09	C121	476	1391	M	40
G09	C106	459	1153	F	57	G09	C106	455	1159	M	34						
G09	C106	460	1163	F	77	G09	C106	443	898	M	9						
COHO SALMON																	
St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.
(mm)	(mm)	(mm)	(gr)		(gr)	(mm)	(mm)	(mm)	(gr)		(gr)	(mm)	(mm)	(mm)	(gr)		(gr)
G08	A118	546	1877	F	27	G09	A115	503	1441	F	32	G09	C072	495	1405	F	26
G08	C072	480	1215	F	28	G09	A115	558	2054	F	47	G09	C106	506	1576	M	23
G09	A115	515	1625	M	10	G09	A118	525	1750	M	8	G09	C121	456	1189	M	8
G09	A115	557	2339	F	48	G09	A118	548	1873	M	9						
STEELHEAD SALMON																	
St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.	St.	Gear	F. L.	B. W.	Sex	G. W.
(mm)	(mm)	(mm)	(gr)		(gr)	(mm)	(mm)	(mm)	(gr)		(gr)	(mm)	(mm)	(mm)	(gr)		(gr)
G08	A118	566	1781	M	2												

Table 7-1. The number of organisms caught by drift gillnet during the Oshoro maru Cruise # 216, Leg 2, in late June to early July, 2010. CPUE and (%) indicate numerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Station		OSG 1005					OSG 1006					OSG 1007				
Common name	Scientific name	C		A	F	Total	C		A	F	Total	C		A	F	Total
		CPUE (%)					CPUE (%)					CPUE (%)				
Sockeye salmon	<i>Oncorhynchus nerka</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Chum salmon	<i>Oncorhynchus keta</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	8	0.3 (5.9)	1	0	9
Pink salmon	<i>Oncorhynchus gorbuscha</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Coho salmon	<i>Oncorhynchus kisutch</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Steelhead	<i>Oncorhynchus mykiss</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Japanese common squid	<i>Todarodes pacificus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	1	1
Boreal clubhook squid	<i>Onychoteuthis borealijaponica</i>	0	0.0 (0.0)	0	2	2	0	0.0 (0.0)	0	3	3	8	0.3 (5.9)	0	1	9
Eight-armed squid	<i>Gonatopsis borealis</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	1	0.0 (0.7)	0	0	1
Flying squid	<i>Ommastrephes bartramii</i>	52	1.7 (57.1)	0	7	59	8	0.3 (36.4)	0	8	8	0	0.0 (0.0)	0	0	0
Luminous flying squid	<i>Eucoteuthis Luminosa</i>	0	0.0 (0.0)	0	3	3	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Blue shark	<i>Prionace glauca</i>	1	0.0 (1.1)	0	0	1	4	0.1 (18.2)	6	0	10	1	0.0 (0.7)	0	0	1
Cigar shark	<i>Isistius brasiliensis</i>	1	0.0 (1.1)	0	0	1	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Japanese anchovy	<i>Engraulis japonicus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	4371	4371	0	0.0 (0.0)	0	0	0
Lantern fishes	Myctophidae	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Pacific saury	<i>Cololabis saira</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	32	32	21	0.7 (15.4)	0	273	294
Flyingfishes	Exocoetidae	18	0.6 (19.8)	0	2	20	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Yellowtail	<i>Seriola lalandi</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	8	0	8	0	0.0 (0.0)	0	0	0
Pilotfish	<i>Naucrates ductor</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Dolphinfish	<i>Coryphaena hippurus</i>	1	0.0 (1.1)	0	0	1	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Pacific pomfret	<i>Brama japonica</i>	16	0.5 (17.6)	0	2	18	8	0.3 (36.4)	0	0	8	72	2.4 (52.9)	33	5	110
Chub mackerel	<i>Scomber japonicus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	17	17	2	0.1 (1.5)	0	0	2
Bigeye tuna	<i>Thunnus obesus</i>	1	0.0 (1.1)	0	0	1	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Albacore	<i>Thunnus alalunga</i>	1	0.0 (1.1)	0	1	2	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Smalleye squaretail	<i>Tetragonurus atlanticus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	23	0.8 (16.9)	0	0	23
Pacific barrelfish	<i>Hyperoglyphe japonica</i>	0	0.0 (0.0)	0	0	0	2	0.1 (9.1)	0	0	2	0	0.0 (0.0)	0	0	0
Grey Fork-tailed Petrel	<i>Puffinus griseus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	1	0	1
Dall's porpoise	<i>Phocoena dalli</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0

Table 7-2. The number of organisms caught by drift gillnet during the Oshoro maru Cruise # 216, Leg 2, in late June to early July, 2010. CPUE and (%) indicate numerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Station		OSG 1008					OSG 1009		
Common name	Scientific name	C		A	F	Total	C		Total
		CPUE (%)					CPUE (%)		
Sockeye salmon	<i>Oncorhynchus nerka</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Chum salmon	<i>Oncorhynchus keta</i>	5	0.2 (9.3)	1	0	6	14	0.5 (6.7)	28
Pink salmon	<i>Oncorhynchus gorbuscha</i>	2	0.1 (3.7)	1	0	3	193	6.4 (91.9)	314
Coho salmon	<i>Oncorhynchus kisutch</i>	1	0.0 (1.9)	1	0	2	3	0.1 (1.4)	9
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Steelhead	<i>Oncorhynchus mykiss</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Japanese common squid	<i>Todarodes pacificus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Boreal clubhook squid	<i>Onychoteuthis borealijaponica</i>	1	0.0 (1.9)	0	0	1	0	0.0 (0.0)	0
Eight-armed squid	<i>Gonatopsis borealis</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Flying squid	<i>Ommastrephes bartramii</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Luminous flying squid	<i>Eucoteuthis Luminosa</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Blue shark	<i>Prionace glauca</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Cigar shark	<i>Isistius brasiliensis</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Japanese anchovy	<i>Engraulis japonicus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Lantern fishes	Myctophidae	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Pacific saury	<i>Cololabis saira</i>	2	0.1 (3.7)	0	728	730	0	0.0 (0.0)	0
Flyingfishes	Exocoetidae	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Yellowtail	<i>Seriola lalandi</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Pilotfish	<i>Naucrates ductor</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Dolphinfish	<i>Coryphaena hippurus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Pacific pomfret	<i>Brama japonica</i>	43	1.4 (79.6)	13	1	57	0	0.0 (0.0)	0
Chub mackerel	<i>Scomber japonicus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Bigeye tuna	<i>Thunnus obesus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Albacore	<i>Thunnus alalunga</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Smalleye squaretail	<i>Tetragonurus atlanticus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Pacific barrelfish	<i>Hyperoglyphe japonica</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Grey Fork-tailed Petrel	<i>Puffinus griseus</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0
Dall's porpoise	<i>Phocoena dalli</i>	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	1

Table 8. Biological characteristics of fishes caught by drift gillnet

NEON FLYING SQUID											
St.	Gear (mm)	M. L. (mm)	B. W. (gr)	St.	Gear (mm)	M. L. (mm)	B. W. (gr)	St.	Gear (mm)	M. L. (mm)	B. W. (gr)
G05	F042	198	201	G05	C063	242	187	G05	C055	200	227
G05	F042	192	192	G05	C063	183	402	G05	C055	226	291
G05	F042	175	145	G05	C063	225	169	G05	C055	193	199
G05	F042	189	175	G05	C063	202	325	G05	C055	199	197
G05	F042	153	87	G05	C063	222	213	G05	C055	200	
G05	F042	175	132	G05	C063	226	323	G05	C055	196	
G05	F042	190	194	G05	C063	193		G05	C055	210	
G05	C048	214	217	G05	C063	240		G05	C055	201	
G05	C048	186	146	G05	C063	205		G05	C055	178	
G05	C048	171	111	G05	C063	230		G05	C055	196	
G05	C048	199	184	G05	C063	210		G05	C055	164	
G05	C048	180	130	G05	C063	230		G05	C055	196	
G05	C048	209	197	G05	C063	184		G05	C055	192	
G05	C048	229	322	G05	C063	163		G06	C055	235	335
G05	C093	280	608	G05	C063	205		G06	C055	200	184
G05	C063	245	367	G05	C072	229	304	G06	C055	226	316
G05	C063	200	212	G05	C072	249	373	G06	C055	241	365
G05	C063	260	441	G05	C072	243	404	G06	C055	237	330
G05	C063	206	189	G05	C072	238		G06	C055	257	431
G05	C063	200	208	G05	C082	238		G06	C082	246	387
G05	C063	202	184	G05	C055	228	313	G06	C072	238	380
G05	C063	180	210	G05	C055	199	182				
BOREAL CLUBHOOK SQUID											
St.	Gear (mm)	M. L. (mm)	B. W. (gr)	St.	Gear (mm)	M. L. (mm)	B. W. (gr)	St.	Gear (mm)	M. L. (mm)	B. W. (gr)
G05	F022	90	22	G07	C048	206	223	G07	C093	343	890
G05	F029	103	35	G07	C048	284	129	G07	C093	361	935
G06	F033	140	69	G07	C048	298	160	G07	F033	135	62
G06	F037	146	73	G07	C048	298	156	G08	C082	294	601
G06	F037	131	61	G07	C063	276	379				
PACIFIC SAURY											
St.	Gear (mm)	F. L. (mm)	B. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)
G06	F025	109	20	G07	C048	305	135	G07	F033	305	129
G06	F029	294	121	G07	C048	296	137	G07	F033	304	115
G06	F029	300	126	G07	C048	309	154	G07	F033	291	134
G06	F029	300	132	G07	C048	305	152	G07	F033	304	135
G06	F029	298	127	G07	C048	313	171	G07	F033	290	107
G06	F029	290	112	G07	C048	307	150	G07	F033	308	130
G06	F029	299	129	G07	C048	292	130	G07	F033	300	121
G06	F029	310	145	G07	C048	300	133	G07	F033	276	92
G06	F029	305	123	G07	C048	199	144	G07	F033	293	126
G06	F029	246	69	G07	F029	296	118	G07	F033	310	150
G06	F029	295	121	G07	F029	289	105	G07	F033	298	119
G06	F029	288	114	G07	F029	314	130	G07	F033	292	120
G06	F029	248	69	G07	F029	291	106	G07	F033	293	115
G06	F029	300	127	G07	F029	290	113	G07	F033	312	135
G06	F029	300	126	G07	F029	291	139	G07	F033	303	135
G06	F029	305	131	G07	F029	290	127	G07	F033	304	119
G06	F029	301	123	G07	F029	303	132	G07	F033	292	126
G06	F029	295	114	G07	F029	291	129	G07	F033	291	99
G06	F029	297	122	G07	F029	323	141	G07	F033	296	123
G06	F029	311	136	G07	F029	305	151	G07	F033	300	121
G06	F029	300	118	G07	F029	300	128	G07	F033	302	117
G06	F029	315	149	G07	F029	303	157	G07	F033	302	117
G06	F029	290	111	G07	F029	309	151	G07	F037	315	137
G06	F029	300	127	G07	F029	300	114	G07	F037	310	138
G06	F029	313	131	G07	F029	297	108	G07	F037	300	125
G06	F037	302	123	G07	F029	300	121	G07	F037	303	130
G06	F037	313	125	G07	F029	291	108	G07	F037	305	127
G06	F037	310	133	G07	F033	300	130	G07	F037	311	145
G07	C048	312	141	G07	F033	303	124	G07	F037	305	138
G07	C048	309	170	G07	F033	288	110	G07	F037	305	140
G07	C048	291	144	G07	F033	298	113	G07	F037	297	122
G07	C048	300	149	G07	F033	302	125	G07	F037	309	133
G07	C048	304	152	G07	F033	307	135	G07	F037	297	117
G07	C048	312	154	G07	F033	394	129	G07	F037	282	113
G07	C048	303	149	G07	F033	304	122	G07	F037	217	149

Table 8. Biological characteristics of fishes caught by drift gillnet (continued)

				PACIFIC SAURY							
St.	Gear (mm)	F. L. (mm)	B. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)
G07	F037	298	137	G07	F042	308	141	G08	F029	291	122
G07	F037	324	157	G07	F042	300	126	G08	F029	282	103
G07	F037	308	136	G07	F042	314	144	G08	F029	292	126
G07	F037	306	139	G07	F042	309	138	G08	F029	287	111
G07	F037	308	145	G07	F042	311	164	G08	F029	290	116
G07	F037	306	127	G07	F042	305	139	G08	F037	286	109
G07	F037	310	127	G07	F042	294	134	G08	F037	302	131
G07	F037	301	131	G07	F042	303	125	G08	F037	291	120
G07	F037	282	113	G07	F042	304	124	G08	F037	298	114
G07	F037	298	139	G07	F042	320	138	G08	F037	292	116
G07	F037	292	114	G08	C048	320	146	G08	F037	298	117
G07	F037	299	117	G08	C048	310	140	G08	F037	294	121
G07	F037	303	126	G08	F029	292	120	G08	F037	308	125
G07	F037	293	145	G08	F029	292	112	G08	F037	302	123
G07	F037	295	126	G08	F029	290	123	G08	F037	293	128
G07	F037	291	134	G08	F029	286	110	G08	F037	311	145
G07	F037	314	135	G08	F029	282	120	G08	F037	283	111
G07	F042	319	131	G08	F029	290	106	G08	F037	293	119
G07	F042	318	140	G08	F029	292	113	G08	F037	296	114
G07	F042	315	152	G08	F029	210	139	G08	F037	297	133
G07	F042	312	135	G08	F029	286	106	G08	F037	298	125
G07	F042	303	134	G08	F029	295	115	G08	F037	300	133
G07	F042	303	124	G08	F029	306	122	G08	F037	306	134
G07	F042	305	127	G08	F029	300	117	G08	F037	301	111
G07	F042	300	134	G08	F029	284	105	G08	F037	308	120
G07	F042	298	139	G08	F029	279	107	G08	F037	298	129
G07	F042	308	135	G08	F029	304	122	G08	F037	312	138
G07	F042	308	137	G08	F029	294	121	G08	F037	286	105
G07	F042	301	128	G08	F029	290	124	G08	F037	294	139
G07	F042	285	113	G08	F029	284	105	G08	F037	290	111
G07	F042	290	125	G08	F029	292	113	G08	F037	310	131
G07	F042	310	138	G08	F029	286	105	G08	F037	310	139
G07	F042	313	136	G08	F029	301	123	G08	F037	310	124
G07	F042	291	132	G08	F029	301	125	G08	F037	288	120
G07	F042	313	139	G08	F029	296	125	G08	F037	283	115
G07	F042	314	136	G08	F029	304	127				
G07	F042	299	138	G08	F029	306	122				
				PACIFIC POMFRET							
St.	Gear (mm)	F. L. (mm)	B. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)
G05	C048	120	29	G07	A112	426	1589	G07	C072	441	1377
G05	C048	141	54	G07	A112	453	1529	G07	C093	450	1735
G05	C048	116	29	G07	A115	456	1683	G07	C093	420	1420
G05	C048	159	37	G07	A115	404	1261	G07	C093	460	1817
G05	C048	119	30	G07	A115	416	1231	G07	C093	404	1230
G05	C048	115	33	G07	A115	420	1375	G07	C093	420	1339
G05	C048	122	35	G07	A115	450	1368	G07	C106	442	1465
G05	C048	142	51	G07	A115	444	1546	G07	C106	428	1378
G05	C055	150	58	G07	A115	464	1759	G07	C121	432	1402
G05	C055	153	65	G07	A115	420	1530	G07	C121	435	1415
G05	C055	158	63	G07	A115	454	1510	G07	C121	412	1313
G05	C055	134	42	G07	A115	411	1205	G07	C121	440	1353
G05	C063	160	73	G07	A115	406	1184	G07	C121	400	1185
G05	C063	151	59	G07	A115	408	1152	G07	C121	436	1430
G05	C063	163	76	G07	A115	446	1658	G07	C121	396	1148
G05	C063	182	113	G07	A118	424	1526	G07	C121	412	1189
G05	F025	142	53	G07	A118	423	1257	G07	C121	394	1150
G05	F037	100	20	G07	A118	416	1320	G07	C121	420	1367
G06	C055	172	88	G07	A118	420	1523	G07	C121	452	1526
G06	C055	161	74	G07	A118	405	1226	G07	C138	450	1545
G06	C072	166	90	G07	A118	424	1335	G07	C138	426	1240
G06	C082	206	168	G07	A118	438	1300	G07	C138	444	1797
G06	C082	293	135	G07	A118	411	1279	G07	C138	413	1352
G06	C082	200	157	G07	A118	443	1578	G07	C138	488	1758
G06	C082	222	225	G07	A121	420	1206	G07	C138	452	1529
G06	C082	183	128	G07	A121	413	1271	G07	C138	416	1259
G07	A112	448	1613	G07	A121	409	1131	G07	C138	450	1726
G07	A112	430	1455	G07	A121	402	1118	G07	C138	442	1536
G07	A112	434	1301	G07	A121	418	1246	G07	C138	423	1352

Table 8. Biological characteristics of fishes caught by drift gillnet (continued)

				PACIFIC POMFRET							
St.	Gear (mm)	F. L. (mm)	B. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)
G07	C138	430	1541	G07	F025	410	1236	G08	C121	450	1572
G07	C157	450	1544	G07	F029	458	1886	G08	C121	406	1153
G07	C157	416	1247	G07	F029	405	1227	G08	C121	454	1538
G07	C157	402	1165	G07	F033	430	1630	G08	C121	426	1200
G07	C157	402	1142	G07	F037	458	1567	G08	C121	406	1193
G07	C157	452	1583	G08	A112	418	1273	G08	C138	430	1417
G07	C157	427	1417	G08	A112	402	1230	G08	C138	404	1254
G07	C157	430	1557	G08	A115	410	1180	G08	C138	418	1389
G07	C157	432	1407	G08	A115	424	1240	G08	C138	412	1267
G07	C157	434	1313	G08	A115	421	1220	G08	C138	424	1356
G07	C157	434	1477	G08	A115	420	1320	G08	C138	435	1585
G07	C157	420	1253	G08	A115	449	1600	G08	C138	439	1645
G07	C157	414	1152	G08	A115	434	1330	G08	C138	426	1313
G07	C157	433	1466	G08	A115	426	1440	G08	C138	420	1145
G07	C157	412	1201	G08	A115	406	1160	G08	C138	414	1300
G07	C157	462	1719	G08	A118	424	1288	G08	C138	460	1557
G07	C157	440	1299	G08	A118	412	1356	G08	C138	422	1444
G07	C157	440	1613	G08	A121	424	1760	G08	C138	444	1514
G07	C157	401	1184	G08	C082	436	1542	G08	C138	400	1339
G07	C157	420	1600	G08	C082	414	1262	G08	C138	400	1193
G07	C157	443	1579	G08	C093	433	1369	G08	C138	462	1646
G07	C157	440	1487	G08	C121	412	1224	G08	C157	454	1733
G07	C157	463	1821	G08	C121	414	1400	G08	C157	435	1444
G07	C157	418	1239	G08	C121	404	1180	G08	C157	454	1585
G07	C157	443	1372	G08	C121	406	1210	G08	C157	410	1361
G07	C157	438	1533	G08	C121	432	1450	G08	C157	451	1690
G07	C157	417	1456	G08	C121	412	1200	G08	C157	432	1456
G07	C157	408	1367	G08	C121	432	1247	G08	C157	434	1463
G07	C157	427	1290	G08	C121	421	1320	G08	C157	422	1338
G07	C157	474	1848	G08	C121	406	1277	G08	C157	432	1393
G07	C157	407	1206	G08	C121	429	1256	G08	F037	426	1540
				ALBACORE							
St.	Gear (mm)	F. L. (mm)	B. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)	St.	Gear (mm)	F. L. (mm)	B. W. (gr)
G05	C048	670	6230	G05	F025	494	2467				

6. Salmon Longline and Hook-and-Line Research

[Longline Sampling]

Six operations using a salmon longline were performed. Ten baskets (hachi) of salmon longline were used in each operation. Basket was composed of 111 m of main line with 49 branch lines and 127m of main line with 34 branch lines. The branch lines, each with hooks hung to about 2m depth. These operations were supervised by the captain, Deck officers, crews, cadets, and research staffs were engaged in the work.

[Hook-and-Line Sampling]

To collect salmon, hook-and-line gears were used in the Central North Pacific and in the Bering Sea during Cruise#216. Five to ten anglers were engaged in the work. These samplings were mainly conducted with observations when ship was under drifting.

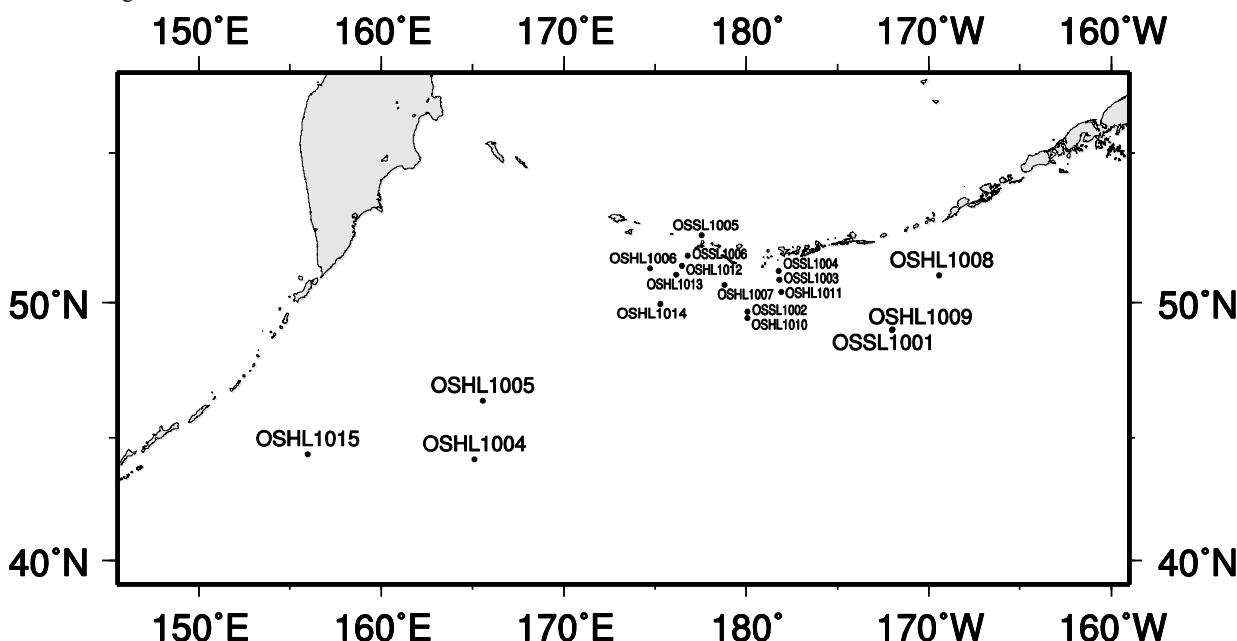


Figure 4. Location of salmon longline and hook-and-line research

Table 9. List of hook-and-line sampling (OSHL 10XX) station and salmon long line sampling (OSSL 10XX) station during the "Oshoro Maru" Cruise #216

Station	Date and Time (S.M.T.)					Set Position		D.S.	No. of hooks	Wr.	Wind (Force)	Oceanographic Station No.
	Line set		Line haul		T.D.	Lat.	Long.					
OSHL 1004	4-Jul	21:30-	5-Jul	03:00-	11	44-12.0N	165-01.0E	-	-	d	WSW-5	OS10129
OSHL 1005	5-Jul	21:30-	6-Jul	03:00-	11	46-28.0N	165-28.0E	-	-	f	ESE-5	OS10131
OSHL 1006	7-Jul	22:30-	7-Jul	01:30-	11/-12	51-15.0N	174-40.0E	-	-	o	NE-5	OS10144
OSHL 1007	8-Jul	00:15-	8-Jul	02:00-	-12	50-40.0N	178-45.0E	-	-	f	NE-5	OS10149
OSHL 1008	16-Jul	22:30-	17-Jul	01:30-	-11	51-00.0N	170-30.0W	-	-	f	Calm	OS10156
OSHL 1009	17-Jul	22:00-	18-Jul	02:30-	-11/-12	49-05.0N	173-56.0W	-	-	f	SSW-3	OS10158
OSSL 1001	18-Jul	21:00-	19-Jul	02:00-	-11	49-04.0N	173.55.0W	40	720	f	SW-5	OS10158
OSHL 1010	20-Jul	04:30-	20-Jul	07:30-	-12	49-30.0N	180.00.0	-	-	o	WSW-4	OS10159
OSSL 1002	20-Jul	08:58-	20-Jul	13:40-	-12	49-43.0N	180.00.0	60	720	o	WSW-5	OS10160
OSHL 1011	20-Jul	22:00-	21-Jul	01:45-	-12	50-25.0N	179.50.0W	-	-	o	WSW-4	OS10162
OSSL 1003	20-Jul	05:03-	20-Jul	09:47-	-12	50-50.0N	179.44.0W	75	720	o	SW-4	OS10163
OSSL 1004	20-Jul	12:45-	20-Jul	16:22	-12	51-09.0N	179.43.0W	65	720	o	SW-3	OS10164
OSSL 1005	22-Jul	06:52-	22-Jul	09:52-	11	52-22.0N	177.28.0E	100	480	f	SW-2	OS10165
OSSL 1006	22-Jul	15:24-	22-Jul	18:25-	11	51-41.0N	176.42.0E	90	480	o	West-4	OS10167
OSHL 1012	22-Jul	21:30-	23-Jul	00:20-	11	51-20.0N	176.24.0E	-	-	o	WSW-3	OS10168
OSHL 1013	23-Jul	02:45-	23-Jul	05:00-	11	51-01.0N	176.06.0E	-	-	d	West-3	OS10169
OSHL 1014	23-Jul	18:00-	23-Jul	20:40-	11	50-00.0N	175.12.0E	-	-	o	SW-3	OS10172
OSHL 1015	26-Jul	22:00-	27-Jul	02:00-	10	44-24.0N	155.53.0E	-	-	f	SE-2	OS10173

Table 10. The catch number of each salmonid at each station where salmonids were collected by hook-and-line gear, surface longline in the Oshoro maru Cruise #216-Leg 2-3, 2010.

Station Name	Sampling gear	Species name						Total
		Sockeye	Chum	Pink	Coho	Chinook	Stellhead	
Cruise #216- Leg 2								
OSHL 1004	Hook-and-line	0	2	1	1	0	1	5
OSHL 1005	Hook-and-line	0	3	60	1	0	0	64
OSHL 1006	Hook-and-line	1	2	0	0	0	0	3
OSHL 1007	Hook-and-line	1	1	0	0	0	0	2
Subtotal		2	8	61	2	0	1	74
Cruise #216- Leg 3								
OSHL 1008	Hook-and-line	1	0	0	1	0	0	2
OSSL 1001	Surface longline	2	0	0	10	0	0	12
OSHL 1009	Hook-and-line	4	0	0	6	0	1	11
OSSL 1002	Surface longline	1	3	1	20	1	6	32
OSHL 1010	Hook-and-line	0	0	0	1	0	0	1
OSHL 1011	Hook-and-line	1	5	1	0	0	2	9
OSSL 1003	Surface longline	8	20	2	9	3	1	43
OSSL 1004	Surface longline	1	15	0	2	0	0	18
OSSL 1005	Surface longline	0	15	0	1	0	0	16
OSSL 1006	Surface longline	11	4	0	1	0	0	16
OSHL 1012	Hook-and-line	3	26	0	5	0	0	34
OSHL 1013	Hook-and-line	0	0	0	2	0	0	2
OSHL 1014	Hook-and-line	0	3	0	1	0	0	4
OSHL 1015	Hook-and-line	0	1	0	0	0	0	1
Subtotal		32	92	4	59	4	10	201

Table 11. Biological characteristics of salmonids caught by hook-and-line research

SOCKEYE SALMON														
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
HL06	480	1240	M	1	SL01	484	1222	M	1	SL06	496	1498	M	2
HL07	476	1290	F	11	SL02	606	3112	M	63	SL06	634	3822	M	10
HL08	502	1560	M	5	SL03	350	500	F	2	SL06	530	2052	F	11
HL09	512	1620	M	6	SL03	451	1150	M	1	SL06	476	1448	F	5
HL09	612	3282	M	42	SL03	410	780	M	1	SL06	492	1575	M	2
HL09	542	2380	F	33	SL03	440	880	F	7	SL06	571	2782	F	90
HL09	600	3204	M	21	SL03	606	3150	M	10	SL06	468	1400	F	8
HL11	486	1483	M	5	SL03	464	1300	F	7	SL06	464	1297	F	5
HL12	481	1420	F	60	SL03	433	1100	F	8	SL06	462	1263	M	2
HL12	480	1340	M	2	SL03	500	1920	M	3	SL06	440	1102	F	5
HL12	500	1830	M	2	SL04	506	1706	F	54					
SL01	480	1592	F	7	SL06	468	1247	M	2					
CHUM SALMON														
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
HL04	431	963	M	2	HL12	646	3710	M	88	SL04	602	2615	M	7
HL04	437	979	M	2	HL12	660	3640	M	60	SL04	572	1850	F	16
HL05	422	860	M	4	HL12	654	3600	F	240	SL04	638	3084	F	67
HL05	561	2030	F	59	HL12	592	2300	M	15	SL04	610	2792	F	56
HL05	537	1900	F	48	HL12	568	1980	F	53	SL04	568	2161	F	90
HL06	608	2890	M	10	HL14	632	3110	F	108	SL04	428	930	M	2
HL06	542	2060	M	4	HL14	538	1680	F	44	SL04	572	2250	M	4
HL07	652	3370	M	25	HL14	558	2110	F	52	SL04	700	4374	M	27
HL11	664	3880	M	55	HL15	700	4900	M	90	SL04	506	1554	M	1
HL11	700	4564	M	26	SL02	410	885	M	40	SL04	594	2646	M	2
HL11	591	2440	F	58	SL02	396	745	F	6	SL04	596	2623	M	24
HL11	712	5200	F	58	SL02	466	1149	M	9	SL04	340	442	M	2
HL11	524	1666	M	2	SL03	571	2140	F	51	SL04	598	2643	M	4
HL12	616	3000	M	25	SL03	580	2660	F	43	SL05	412	825	F	5
HL12	614	2490	F	85	SL03	404	790	M	2	SL05	436	909	M	1
HL12	568	2010	F	64	SL03	538	2000	M	2	SL05	675	4122	F	165
HL12	642	3250	F	96	SL03	481	1300	F	10	SL05	506	1639	M	2
HL12	600	2550	M	26	SL03	331	405	F	2	SL05	595	2384	M	8
HL12	592	2500	M	52	SL03	416	862	M	2	SL05	600	2905	M	98
HL12	576	2600	M	22	SL03	434	890	M	2	SL05	538	1945	M	1
HL12	582	2200	F	70	SL03	331	450	F	2	SL05	580	2451	M	8
HL12	597	2570	M	43	SL03	568	2320	F	110	SL05	598	2714	M	1
HL12	624	3110	M	14	SL03	508	2100	M	3	SL05	542	1730	F	53
HL12	550	2050	F	64	SL03	304	285	F	1	SL05	696	4360	M	46
HL12	648	3160	F	70	SL03	510	1350	F	15	SL05	698	4512	F	128
HL12	604	2690	M	76	SL03	570	2350	F	105	SL05	648	3540	F	94
HL12	558	2030	F	58	SL03	622	2650	F	70	SL05	322	384	F	1
HL12	570	2220	F	120	SL03	450	950	M	1	SL05	604	2689	F	72
HL12	600	2440	M	20	SL03	516	1600	F	16	SL06	316	388	M	1
HL12	570	2610	F	64	SL03	646	3430	F	260	SL06	522	1860	F	15
HL12	527	1950	F	150	SL03	563	2000	M	7	SL06	434	938	M	1
HL12	610	2730	M	25	SL03	500	1380	F	14	SL06	415	988	M	2
HL12	648	3130	F	120	SL04	630	3280	M	28					
HL12	704	4470	M	45	SL04	582	2381	F	58					
PINK SALMON														
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
HL04	469	1179	F	35	HL05	444	1030	F	76	HL05	480	1280	F	85
HL05	466	1310	M	35	HL05	445	1130	F	50	HL05	457	970	F	70
HL05	446	1180	F	87	HL05	470	1220	M	19	HL05	455	1040	F	62
HL05	428	950	F	51	HL05	417	1150	F	76	HL05	431	880	M	29
HL05	453	1200	M	50	HL05	416	1080	F	83	HL05	450	1070	M	37
HL05	466	1300	M	28	HL05	440	1020	F	64	HL05	443	1070	F	54
HL05	427	880	F	37	HL05	445	1120	M	32	HL05	440	1000	F	45
HL05	457	1200	F	83	HL05	455	1150	M	20	HL05	416	830	M	30
HL05	473	1340	F	88	HL05	430	950	M	35	HL05	452	1060	M	19
HL05	459	1230	F	66	HL05	498	1520	M	80	HL05	446	1000	F	57
HL05	452	1030	M	33	HL05	461	1650	F	66	HL05	440	1090	F	50
HL05	474	1230	F	88	HL05	474	1730	F	54	HL05	422	890	M	26
HL05	457	1150	F	60	HL05	440	1050	F	55	HL05	456	1070	F	54
HL05	464	1300	F	69	HL05	448	1120	F	45	HL05	479	1350	F	80
HL05	458	1200	F	75	HL05	441	970	F	48	HL05	465	1030	F	46
HL05	451	1140	F	49	HL05	466	1130	F	62	HL05	460	1040	M	15

Table 11. Biological characteristics of salmonids caught by hook-and-line research (continued)

PINK SALMON														
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
HL05	457	1040	F	52	HL05	434	920	M	33	HL05	481	1290	F	73
HL05	451	1020	M	38	HL05	418	850	M	25	HL11	480	1390	M	49
HL05	439	1000	F	74	HL05	467	1160	M	24	SL02	488	1576	F	98
HL05	452	1150	M	70	HL05	443	1050	F	54	SL03	456	1200	F	83
HL05	473	1200	M	54	HL05	461	1250	F	100	SL03	480	1300	F	36
HL05	434	1040	F	68	HL05	449	1070	F	67					
COHO SALMON														
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
HL04	486	1226	F	29	SL01	544	1812	M	8	SL02	502	1658	F	36
HL05	532	1840	M	29	SL01	436	937	M	9	SL02	506	1693	M	13
HL08	692	4136	M	108	SL01	600	2800	M	19	SL02	514		M	7
HL08	632	3670	F	114	SL01	576	2546	F	98	SL02	498	1790	F	53
HL09	514	1541	F	32	SL01	558	2242	F	60	SL02	500	1690	M	17
HL09	482	1463	F	27	SL01	520	1881	M	8	SL02	564		F	15
HL09	474	1371	M	24	SL01	513	1700	F	28	SL02	474	1437	M	15
HL09	530	1924	F	64	SL01	631	3590	F	98	SL03	456	1320	M	43
HL09	600	2995	M	40	SL02	550	2250	F	80	SL03	546	1900	F	82
HL09	506	1717	M	22	SL02	516	1905	F	52	SL03	524	1930	F	93
HL10	568	2120	F	77	SL02	416	1016	M	12	SL03	554	2350	F	71
HL12	644	3540	F	240	SL02	514	1845	M	38	SL03	516	1700	M	18
HL12	512	1770	M	2	SL02	436	725	M	3	SL03	472	1580	M	52
HL12	505	1370	F	34	SL02	522	1947	M	20	SL03	578	2450	F	70
HL12	572	2540	F	160	SL02	518	1686	F	66	SL03	376	607	M	20
HL12	615	2790	M	34	SL02	530	1480	F	48	SL03	586	2760	M	91
HL13	670	3700	M	29	SL02	531	2031	M	89	SL04	410	810	M	3
HL13	452	1180	F	48	SL02	588	2494	M	26	SL04	544	2255	M	100
HL14	591	2400	F	92	SL02	530		F	74	SL05	484	1438	M	44
SL01	514	1794	F	34	SL02	510	1760	M	16	SL06	617	2850	M	14
SL01	628	3060	F	35	SL02	490	1449	F	45					
CHINOOK SALMON														
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
SL02	612	3164	F	23	SL03	558	2350	F	12	SL03	656	4500	F	27
SL03	618	3000	M	3										
STEELHEAD SALMON														
St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)	St.	F. L. (mm)	B. W. (gr)	Sex	G. W. (gr)
HL04	566	1428	M	3	SL02	756	4330	M	45	SL02	647	2766	F	31
HL09	734	3948	F	79	SL02	492	1166	M	5	SL02	594	1926	M	2
HL11	724	3804	M	10	SL02	802	4860	F	9	SL03	732	4200	M	10
HL11	710	3272	M	7	SL02	688	3156	F	10					

7. Data on mid-water trawl research

Five operations of the stern otter trawl were carried out. These operation were supervised by the captain, Deck officer, crew, research staff, and cadets were engaged in the work.

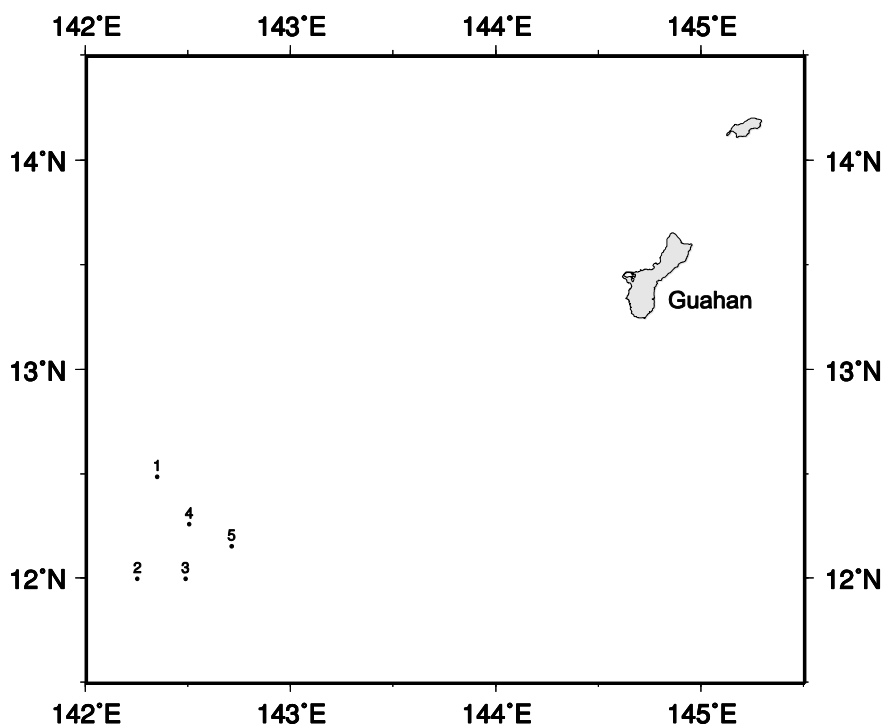


Figure 5. Locations of mid-water trawl research

Table 12. Data on mid-water trawl research during the “Oshoro Maru” Cruise #216

No. of research	Date and time of net tow (S.M.T.)		Position		Direction	Speed of	Bottom depth(m)	Wr	Wind
			Lat.(N)	Long.(E)	of tow	tow(K' t)			
OSMT1001	13, 14-Jun	2133-0648	12-29.4	142-20.8	270~300	4.2	2634	bc	East-4
OSMT1002	14-Jun	1300-1650	12-00.1	142-14.9	090	3.5	3282	bc	ESE-4
OSMT1003	14, 15-Jun	2103-0648	12-00.1	142-29.1	270~300	4.0	3200	bc	ENE-4
OSMT1004	15-Jun	1257-1637	12-15.8	142-30.1	260~230	3.4	3965	bc	ESE-3
OSMT1005	15, 16-Jun	2101-0649	12-09.4	142-42.5	270~253	3.0	3210	bc	East-3

S.T. : Surface temperature

Wr.: Weather (bc: 25-75% clouded)

Table 13. Data on catches by bottom trawl research

Japanese name	Scientific Name	OSMT 1001		OSMT 1002		OSMT 1003		OSMT 1004		OSMT 1005	
		Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Darumazame	<i>Isistius brasiliensis</i>	1	0.04	1	0.05	-	-	-	-	-	-
Unagi-ruir	<i>Anguilliformes</i> spp.	14	0.037	5	0.025	5	0.08	5	0.006	6	0.071
Shigiunagi	<i>Nemichthys scolopaceus</i>	3	0.01	2	0.002	2	0.001	3	0.011	7	0.075
Nokobaunagi	<i>Serrivomer sector</i>	-	-	62	2.83	-	-	-	-	4	0.01
Akayagara	<i>Fistularia petimba</i>	1	0.007	-	-	-	-	-	-	-	-
Hurisodeuo-ruir	<i>Trachipteridae</i> sp.	-	-	-	-	2	0.036	-	-	-	-
Shimagatsuo	<i>Brama japonica</i>	1	0.6	-	-	-	-	1	0.018	-	-
Mukashikurotachi	<i>Scombrobrax heterolepis</i>	2	0.088	-	-	6	0.210	-	-	1	0.044
Kurotachikamasu-ruir	<i>Gempylidae</i> sp.	-	-	-	-	2	0.09	1	0.01	8	0.06
Iboda-ruir	<i>Psenopsis</i> sp.	1	0.08	-	-	-	-	-	-	-	-
Other fishes	<i>Actinopterygii</i> spp.	2588	7.3	85	0.38	2394	8.50	74	0.44	2616	7.30
Ebi-ruir	<i>Decapoda</i> spp.	810	1	34	0.04	2842	3.33	35	0.02	1102	1.22
Akaika-ruir	<i>Ommastrephidae</i> sp.	-	-	-	-	7	0.06	-	-	11	0.10
Tobiika	<i>Sthenoteuthis oualaniensis</i>	-	-	-	-	1	0.25	-	-	2	0.80
Hotaruikamodoki-ruir	<i>Enoploteuthidae</i> spp.	120	0.265	-	-	-	-	-	-	32	0.13
Tsumeika-ruir	<i>Onychoteuthidae</i> sp.	16	0.065	-	-	-	-	-	-	-	-
Muchiika-ruir	<i>Mastigoteuthidae</i> sp.	-	-	-	-	-	-	-	-	4	0.85
Hiregireka	<i>Ctenopteryx siculus</i>	-	-	-	-	-	-	-	-	2	0.02
Gomaifuika-ruir	<i>Histioteuthidae</i> sp.	-	-	-	-	-	-	-	-	11	0.27
Yatsudeika-ruir	<i>Octopoteuthidae</i> sp.	4	0.432	-	-	-	-	-	-	-	-
Samehadahozukiika-ruir	<i>Cranchiidae</i> sp.	1	0.002	-	-	2	0.18	-	-	2	0.31
Dangoiak-ruir	<i>Sepiolidae</i> sp.	-	-	-	-	-	-	-	-	2	0.01
Hirobireika-ruir	<i>Taningia</i> sp.	-	-	-	-	3	0.31	-	-	-	-
Komoridako	<i>Vampyroteuthis infernalis</i>	-	-	-	-	1	0.01	-	-	-	-
Tosoku-ruir	<i>Cephalopoda</i> spp.	16	1	5	0.03	228	0.61	3	0.00	-	-

8. Data on plankton collected by vertical hauls with a single or twin NORPAC net.

Vertical hauls with a single or twin-NORPAC net were made at hydrographic stations. This net was composed of 45 cm mouth diameter and 180 cm long conical one which was made of GG54 and XX13 having 0.33 mm and 0.10 mm mesh, respectively. The net was lowered to the estimated depth of 150 m, 500 m or near the bottom when the bottom depth was shallower than 150 m, and immediately hauled to the surface at a speed about 1 m s⁻¹. A flowmeter was mounted at the center of mouth of the net to estimate the volume water filtered. Sampling was conducted by research staffs and measurement of wet weight of the samples were made by A. Yamaguchi, K. Ishii, K. Matsuno, R. Saito, K. Ohgi, Y. Onishi, T. Homma, R. Ohashi, C. Tsukazaki, A. Kuroda, Y. Abe, M. Kawaguchi, T. Shiota, S. Mizuhara, K. Moribe and J. Fukuda (Laboratory of Marine Biology).

Table 14. Data on plankton collected by vertical hauls with a single or twin NORPAC net.

GG54: 0.33 mm mesh, XX13: 0.10 mm mesh.

Station no.	Position			S.M.T.		Length of wire (m)	Angle of wire (°)	Depth estimated by wire angle (m)	Kind of cloth	Flowmeter		Estimated volume of water filtered (m ³)	Wet weight (g)		Sample no.
	Lat. (N)	Lon.		Date	Hour					No.	Reading		per haul	per 1000 m ³	
OS10068	40-50	142-10	E	3 June	1:06	152	9	150	GG54	2562	1565	21.48	25.8	1201	10201
									XX13	3006	1421	19.98			10202
OS10069	40-01	142-58	E	3 June	9:59	151	6	150	GG54	2562	1511	20.73	8.2	395	10203
									XX13	3006	1462	20.56			10204
OS10070	39-24	143-02	E	3 June	15:20	153	12	150	GG54	2562	1588	21.79	3.8	174	10205
									XX13	3006	1585	22.29			10206
OS10071	38-42	143-00	E	3 June	21:59	164	24	150	GG54	2562	2105	28.89	11.3	390 1)	10207
									XX13	3006	1532	21.54			10208
OS10072	38-05	143-00	E	4 June	5:18	156	16	150	GG54	2562	1868	25.63	4.2	163	10209
									XX13	3006	1605	22.57			10210
OS10073	37-40	143-00	E	4 June	10:38	158	18	150	GG54	2562	1699	23.31	8.8	376 1)	10211
									XX13	3006	1499	21.08			10212
OS10074	37-14	143-00	E	4 June	15:10	155	15	150	GG54	2562	1550	21.27	6.8	319	10213
									XX13	3006	1475	20.74			10214
					20:40	156	16	150	GG54	2562	1706	23.41	6.0	257	10215
									XX13	3006	1299	18.27			10216
OS10075	36-18	143-00	E	5 June	5:17	151	5	150	GG54	2562	1695	23.26	16.8	724 1)	10217
									XX13	3006	1216	17.10			10218
OS10077	35-45	143-01	E	5 June	10:35	150	0	150	GG54	2562	1425	19.55	1.5	77	10219
									XX13	3006	1358	19.10			10220
OS10083	34-14	142-53	E	5 June	22:46	155	15	150	GG54	2562	1868	25.63	7.3	284 2)	10221
									XX13	3006	1777	24.99			10222
OS10086	33-15	142-43	E	6 June	10:26	152	11	149	GG54	2562	1540	21.13	2.0	96	10223
									XX13	3006	1500	21.09			10224
OS10087	31-36	142-33	E	6 June	21:55	152	11	149	GG54	2562	1570	21.54	0.8	39	10225
									XX13	3006	1400	19.69			10226
OS10088	29-41	142-23	E	7 June	10:47	151	5	150	GG54	2562	1560	21.41	2.3	106	10227
									XX13	3006	1595	22.43			10228
OS10089	28-07	142-09	E	7 June	22:03	151	5	150	GG54	2562	1558	21.38	2.3	106	10229
									XX13	3006	1668	23.46			10230
OS10092	27-58	142-23	E	8 June	10:01	152	9	150	GG54	2562	1767	24.25	2.1	85	10231
									XX13	3006	1526	21.46			10232
OS10093	27-21	141-44	E	8 June	21:20	152	9	150	GG54	2562	1643	22.55	1.3	60	10233
									XX13	3006	1598	22.47			10234
OS10094	25-19	141-33	E	10 June	10:41	159	19	150	GG54	2562	2006	27.53	1.3	47	10235
									XX13	3006	1864	26.21			10236
OS10095	23-30	141-30	E	10 June	23:52	151	5	150	GG54	2562	1440	19.76	0.9	48	10237
									XX13	3006	1428	20.08			10238
OS10097	22-30	141-47	E	11 June	10:20	151	6	150	GG54	2562	1595	21.89	0.9	40	10239
									XX13	3006	1476	20.76			10240
OS10098	20-44	142-15	E	11 June	21:51	152	10	150	GG54	2562	1528	20.97	1.4	65	10241
									XX13	3006	1516	21.32			10242
OS10099	18-49	142-45	E	12 June	10:32	155	14	150	GG54	2562	1758	24.12	1.0	43	10243
									XX13	3006	1725	24.26			10244
OS10100	17-07	142-54	E	12 June	20:35	151	8	150	GG54	2562	1500	20.58	1.2	59	10245
									XX13	3006	1453	20.43			10246
OS10108	12-30	142-23	E	13 June	21:02	162	21	151	GG54	2562	2110	28.95	0.7	24	10247
									XX13	3006	2063	29.01			10248
OS10110	12-00	142-10	E	14 June	11:34	150	1	150	GG54	2562	1467	20.13	0.8	42	10249
									XX13	3006	1425	20.04			10250
OS10111	11-57	142-26	E	14 June	18:55	160	19	151	GG54	2562	1804	24.76	0.7	29	10251
									XX13	3006	1859	26.14			10252
OS10113	12-12	142-11	E	15 June	9:14	167	26	150	GG54	2562	2158	29.61	1.0	34	10253
									XX13	3006	1978	27.81			10254
OS10115	12-10	142-43	E	15 June	20:17	153	11	150	GG54	2562	1500	20.58	1.4	70	10255
									XX13	3006	1552	21.82			10256
OS10116	12-18	141-56	E	16 June	10:24	152	9	150	GG54	2562	1553	21.31	1.3	63	10257
									XX13	3006	1552	21.82			10258
OS10118	13-15	141-08	E	16 June	20:39	155	14	150	GG54	2562	1892	25.96	1.1	43	10259
									XX13	3006	1600	22.50			10260
				17 June	9:45	167	26	150	GG54	2562	2001	27.46	0.7	27	10261
									XX13	3006	2020	28.41			10262
					21:40	159	19	150	GG54	2562	2039	27.98	0.9	33	10263
									XX13	3006	1995	28.05			10264
OS10119	30-00	165-00	E	28 June	23:54	158	19	149	GG54	2562	1689	25.18	1.6	65	10265
									XX13	3006	1570	22.10			10266
OS10120	31-45	165-00	E	29 June	8:57	162	22	150	GG54	2562	2087	31.12	1.5	49	10267
									XX13	3006	1960	27.59			10268
OS10121	33-41	165-00	E	29 June	21:20	153	12	150	GG54	2562	1698	25.32	2.7	108	10269
									XX13	3006	1676	23.59			10270
OS10122	35-58	165-00	E	30 June	8:58	151	6	150	GG54	2562	1503	22.41	2.4	106	10271
									XX13	3006	1195	16.82			10272
OS10123	37-40	165-03	E	30 June	19:50	152	10	150	GG54	2562	1481	22.08	3.2	145	10273
									XX13	3006	1485	20.91			10274
OS10124	38-14	165-00	E	1 July	9:01	153	11	150	GG54	2562	1642	24.48	2.8	115	10275
									XX13	3006	1463	20.60			10276
OS10125	39-57	164-56	E	1 July	19:56	150	1	150	GG54	2562	1410	21.02	362.2	17232 5)	10277
									XX13	3006	1284	18.08			10278
OS10126	40-45	165-00	E	2 July	8:59	158	18	150	GG54	2562	1843	27.48	61.1	2222 5)	10279
									XX13	3006	1705	24.00			10280

1) Exclusively phytoplankton

2) Including some fragments of medusae.

3) *Neocalanus* abundant.

4) Gelatinous zooplankton abundant.

5) *Salpida* abundant.

6) Chaetognaths abundant.

Table 14. Data on plankton collected by vertical hauls with a single or twin NORPAC net. (continued)

GG54: 0.33 mm mesh, XX13: 0.10 mm mesh.															
Station no.	Position		S.M.T.		Length of wire (m)	Angle of wire (°)	Depth estimated by wire (m)	Kind of cloth	Flowmeter		Estimated volume of water filtered (m ³)	Wet weight (g)		Sample no.	
	Lat. (N)	Lon.	Date	Hour					No.	Reading		per haul	per 1000 m ³		
OS10127	41-58	165-03	E	2 July	21:11	151	6	150	GG54	2562	1462	21.80	7.5	346 3)	10281
									XX13	3006	1310	18.44			10282
OS10128	42-29	165-00	E	3 July	9:01	153	11	150	GG54	2562	1513	22.56	12.6	560 3)	10283
									XX13	3006	1415	19.92			10284
OS10129	44-11	165-01	E	3 July	20:14	158	18	150	GG54	2562	1638	24.42	11.6	475 3)	10285
									XX13	3006	1662	23.40			10286
OS10130	44-49	165-00	E	4 July	9:00	150	2	150	GG54	2562	1381	20.59	19.9	969 3)	10287
									XX13	3006	1322	18.61			10288
OS10131	46-29	165-28	E	4 July	20:15	158	18	150	GG54	2562	1828	27.25	8.0	292 3)	10289
									XX13	3006	1793	25.24			10290
OS10132	47-00	165-00	E	5 July	8:49	151	5	150	GG54	2562	1548	23.08	8.7	377 3)	10291
									XX13	3006	1535	21.61			10292
OS10140	51-15	172-30	E	7 July	7:52	163	23	150	GG54	2562	1695	25.27	3.4	136 3)	10293
									XX13	3006	1585	22.31			10294
OS10141	51-15	173-00	E	7 July	11:25	159	19	150	GG54	2562	1677	25.00	18.7	747 3)	10295
									XX13	3006	1640	23.09			10296
OS10142	51-15	173-29	E	7 July	15:30	157	17	150	GG54	2562	1640	24.45	5.5	226	10297
									XX13	3006	1542	21.71			10298
OS10143	51-15	174-00	E	7 July	20:34	151	7	150	GG54	2562	1430	21.32	7.3	343	10299
									XX13	3006	1255	17.67			10300
OS10144	51-14	174-38	E	7 July	0:14	155	14	150	GG54	2562	1590	23.71	4.8	204	10301
									XX13	3006	1403	19.75			10302
OS10145	50-39	176-25	E	7 July	9:50	164	24	150	GG54	2562	1999	29.80	3.7	126	10303
									XX13	3006	1976	27.82			10304
OS10147	50-40	177-45	E	7 July	18:13	151	5	150	GG54	2562	1495	22.29	4.5	203	10305
									XX13	3006	1394	19.62			10306
OS10148	50-40	178-14	E	7 July	21:34	151	8	150	GG54	2562	1658	24.72	13.9	564	10307
									XX13	3006	1410	19.85			10308
OS10149	50-40	178-44	E	8 July	2:26	155	14	150	GG54	2562	1828	27.25	6.6	242	10309
									XX13	3006	1541	21.69			10310
OS10151	53-28	176-49	W	10 July	14:46	153	12	150	GG54	2562	1623	24.20	2.7	112	10311
									XX13	3006	1550	21.82			10312
OS10153	52-00	170-33	W	16 July	10:44	150	3	150	GG54	2562	1460	22.44	5.6	248	10313
									XX13	3006	1392	20.00			10314
OS10154	51-40	170-32	W	16 July	15:34	151	9	149	GG54	2562	1500	23.05	4.2	181	10315
									XX13	3006	1437	20.65			10316
OS10155	51-19	170-33	W	16 July	20:34	151	5	150	GG54	2562	1432	22.01	9.3	424	10317
									XX13	3006	1432	20.58			10318
OS10156	51-00	170-32	W	17 July	1:00	151	7	150	GG54	2562	1338	20.56	3.6	177	10319
									XX13	3006	1200	17.24			10320
OS10157	50-40	170-33	W	17 July	6:08	150	4	150	GG54	2562	1418	21.79	8.2	376	10321
									XX13	3006	1219	17.52			10322
OS10158	49-05	173-56	W	17 July	23:30	153	12	150	GG54	2562	1448	22.25	9.6	430	10323
(St. S.A)									XX13	3006	1422	20.43			10324
OS10159	49-31	179-59	W	19 July	7:40	153	12	150	GG54	2562	1458	22.41	3.8	169	10325
									XX13	3006	1240	17.82			10326
OS10160	49-46	179-59	W	19 July	12:51	151	6	150	GG54	2562	1460	22.44	4.1	181	10327
									XX13	3006	1420	20.40			10328
OS10161	50-07	179-56	W	19 July	20:01	155	15	150	GG54	2562	1664	25.57	6.7	264	10329
									XX13	3006	1558	22.39			10330
OS10162	50-26	179-50	W	20 July	1:32	151	7	150	GG54	2562	1435	22.06	5.7	260	10331
									XX13	3006	1405	20.19			10332
OS10163	50-50	179-46	W	20 July	4:30	160	20	150	GG54	2562	2015	30.97	5.6	182	10333
									XX13	3006	1865	26.80			10334
OS10164	51-11	179-42	W	20 July	15:43	155	14	150	GG54	2562	1642	25.24	5.2	208	10335
									XX13	3006	1558	22.39			10336
OS10165	52-24	177-23	E	22 July	9:10	152	10	150	GG54	2562	1505	23.13	1.8	76	10337
									XX13	3006	1353	19.44			10338
OS10167	51-40	176-42	E	22 July	17:52	152	9	150	GG54	2562	1555	23.90	5.6	234	10339
									XX13	3006	1148	16.50			10340
OS10168	51-20	176-25	E	23 July	0:02	155	14	150	GG54	2562	1515	23.28	5.9	254	10341
									XX13	3006	1475	21.20			10342
OS10169	51-01	176-06	E	23 July	5:07	153	12	150	GG54	2562	1865	28.66	2.9	103	10343
									XX13	3006	1699	24.41			10344
OS10170	50-40	175-49	E	23 July	10:25	153	12	150	GG54	2562	1480	22.75	3.4	150	10345
									XX13	3006	1432	20.58			10346
OS10171	50-21	175-32	E	23 July	14:50	163	23	150	GG54	2562	1672	25.70	9.7	376	10347
									XX13	3006	1660	23.85			10348
OS10172	50-01	175-13	E	23 July	20:25	156	15	151	GG54	2562	1534	23.58	11.2	477	10349
									XX13	3006	1420	20.40			10350
Extra 1	48-02	168-18	E	24 July	21:08	156	16	150	GG54	2562	1628	25.02	4.1	163	10351
									XX13	3006	1605	23.06			10352
Extra 2	46-14	162-15	E	25 July	21:09	161	21	150	GG54	2562	1825	28.05	10.3	368	10353
									XX13	3006	1830	26.30			10354
OS10173	44-24	155-53	E	26 July	22:11	152	10	150	GG54	2562	1599	23.19	8.9	382	10355
									XX13	3006	1518	21.81			10356
OS10174	44-01	155-02	E	27 July	8:04	153	13	149	GG54	2562	1647	25.31	6.5	256	10357
(St. KNOT)									XX13	3006	1502	21.58			10358
Extra 3	43-07	152-59	E	27 July	21:08	160	20	150	GG54	2562	1940	29.82	21.5	723 3)	10359
									XX13	3006	1938	27.85			10360
OS10175	41-30	145-46	E	29 July	2:33	151	7	150	GG54	2562	1453	22.33	7.9	354	10361
(Site H)									XX13	3006	1452	20.86			10362
					2:54	518	15	500	GG54	2562	4918	75.59	21.0	278	10363
									XX13	3006	4520	64.95			10364

1) Exclusively phytoplankton

2) Including some fragments of medusae.

3) *Noctulanus* abundant.

4) Gelatinous zooplankton abundant.

5) *Salpida* abundant.

6) Chaetognaths abundant.

9. Data on Calibration of Flowmeters

Flowmeters used for plankton nets were calibrated once in the cruise.

Table 15. Calibration data on flowmeters used for a twin NORPAC net and other kind of nets.

100-m wire out at 13°16'N, 141°11'E in 17 June 2010.

Flowmeter No.	Wire length (m)	Revolution							Mean
		1	2	3	4	5	6	7	
RG116	100	1205	1263*	1192	1265*	1181	1187	1172*	1191
RG2562	100	1310*	1235*	1276	1252	1257	1261	1249	1259
RG3006	100	1270*	1214*	1235	1223	1234	1238	1225	1231
RG3024	100	1242	1279*	1191	1205	1215	1228	1154*	1216

*: omitted from calculation

Table 15. Calibration data on flowmeters used for a twin NORPAC net and other kind of nets.

100-m wire out at 53°27'N, 176°48'W in 10 July 2010.

Flowmeter No.	Wire length (m)	Revolution							Mean
		1	2	3	4	5	6		
RG116	100	1138	1138	1151*	1122	1099	1090*		1124
RG1855	100	1072	1125	1150*	1091	1069	1052*		1089
RG1859	100	1135	1153	1167*	1138	1225	1111*		1163
RG2562	100	1073	1075	1111*	1069	1048*	1050		1067
RG3006	100	1130	1140	1167*	1134	1115	1100*		1130

*: omitted from calculation

Table 15. Calibration data on flowmeters used for a twin NORPAC net and other kind of nets.

100-m wire out at 41°30'N, 145°46'E in 29 July 2010.

Flowmeter No.	Wire length (m)	Revolution							Mean
		1	2	3	4	5	6	7	
RG1859	100	1072	1062	1082	1059	1060	1100*	1043*	1067
RG2562	100	1178*	1038	1010*	1017	1042	1062	1015	1035
RG3006	100	1115	1100	1090	1160*	1109	1120	1070*	1107

*: omitted from calculation

10. Data on nutrients

Seawater samples were collected with Niskin bottles on the CTD system. The samples for nutrient analysis were stored in polythylene bottles and kept in a freezer at -20. Nutrients were analyzed in the laboratory with Technicon Auto-analyzer.

Table 16. Data on nutrients

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	0.1	2.7	0.01	0.09
20	0.5	3.5	0.06	0.14
50	2.9	4.6	0.32	0.28
100	9.3	12.6	0.03	0.66
150	12.4	17.6	0.02	0.88
200	13.4	20.1	0.02	0.97
300	21.4	36.1	0.01	1.53
400	27.7	53.1	0.01	1.98
500	33.6	73.4	0.01	2.42
600	37.8	89.8	0.01	2.73
800	41.9	113.9	0.00	2.99
1000	43.1	129.7	0.00	3.02
1250	44.0	141.5	0.00	3.10
1500	43.9	153.9	0.00	3.00
1750	43.2	159.4	0.00	3.03
2000	42.4	156.1	0.00	2.91
2500	40.4	155.1	0.00	2.72
3000	38.9	158.8	0.00	2.73

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	1.1	6.0	0.05	0.20
20	1.3	6.1	0.05	0.22
50	3.6	7.7	0.13	0.37
100	9.9	13.6	0.09	0.74
150	12.2	16.8	0.02	0.90
200	11.3	15.7	0.02	0.86
300	13.8	20.0	0.02	1.04
400	20.0	32.4	0.02	1.50
500	28.9	55.3	0.01	2.11
600	35.2	77.2	0.01	2.59
800	40.8	96.6	0.01	2.93
1000	42.9	124.5	0.01	3.06
1250	43.8	143.6	0.00	3.14
1500	41.2	147.8	0.00	3.03
1750	43.5	154.4	0.01	3.10
2000	42.6	163.9	0.00	3.06
2500	40.8	163.1	0.00	2.91
3000	39.1	153.4	0.01	2.77

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	12.7	24.2	0.18	1.15
20	13.5	155.2	0.00	2.74
50	15.4	159.6	0.00	2.78
100	19.7	164.2	0.00	3.00
150	21.2	158.5	0.00	3.05
200	27.8	159.9	0.00	3.15
300	37.8	155.7	0.00	3.13
400	40.4	145.3	0.00	3.13
500	42.3	132.0	0.00	3.15
600	43.1	118.7	0.00	3.10
800	43.9	106.5	0.00	3.04
1000	43.8	96.0	0.00	2.92
1250	43.9	81.4	0.00	2.74
1500	44.2	50.3	0.00	2.01
1750	43.1	34.0	0.01	1.61
2000	42.2	31.2	0.03	1.55
2500	40.5	26.2	0.24	1.34
3000	39.0	25.2	0.18	1.24

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	12.8	35.3	0.21	1.61
20	12.9	165.8	0.00	2.82
50	14.9	167.6	0.00	2.92
100	17.0	171.2	0.00	3.06
150	17.2	168.5	0.00	3.09
200	17.8	166.3	0.00	3.17
300	31.2	158.2	0.00	3.19
400	37.2	143.2	0.00	3.18
500	40.3	124.7	0.00	3.13
600	41.7	113.6	0.00	3.04
800	43.0	101.5	0.00	2.94
1000	43.6	84.3	0.00	2.73
1250	44.0	64.0	0.00	2.33
1500	43.8	28.5	0.01	1.40
1750	42.3	26.7	0.00	1.38
2000	42.5	25.5	0.01	1.39
2500	40.7	24.8	0.36	1.33
3000	38.5	23.5	0.19	1.23

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	18.0	28.4	0.22	1.53
20				
50	19.2	168.2	0.00	2.82
100	22.1	171.5	0.00	2.94
150	27.3	176.8	0.01	3.09
200	32.5	177.6	0.01	3.14
300	42.1	175.5	0.01	3.21
400	43.4	161.1	0.00	3.24
500	43.0	158.4	0.01	3.27
600	43.9	145.7	0.01	3.25
800	44.0	131.6	0.00	3.23
1000	44.5	120.6	0.01	3.17
1250	44.2	111.0	0.01	3.19
1500	43.9	99.3	0.01	3.11
1750	42.7	74.2	0.00	2.54
2000	42.2	52.6	0.01	2.14
2500	40.2	38.3	0.08	1.82
3000	38.9	35.7	0.26	1.70

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	15.5	171.0	0.01	3.01
20	17.2	159.8	0.00	3.18
50	25.8	136.2	0.00	3.19
100	29.2	122.5	0.00	3.17
200	33.4	102.6	0.01	3.10
300	38.3	77.6	0.00	2.71
500	44.1	66.3	0.01	2.44
750	44.9	53.0	0.02	2.19
1000	45.1	42.4	0.41	2.00
1500	45.2	26.9	0.23	1.48
2000	41.9	23.2	0.19	1.41

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	15.6	50.3	0.01	
20	16.0	40.0	0.56	1.94
50	24.3	23.3	0.21	1.42
100	28.4	171.5	0.00	3.08
200	34.5	154.7	0.00	3.18
300	36.0	129.7	0.00	3.17
400	42.0	116.2	0.00	3.17
500	43.6	98.5	0.00	3.06
750	45.0	90.9	0.01	2.96
1000	44.6	79.5	0.01	2.65
1500	45.1	69.5	0.01	2.51
2000	43.9	22.4	0.21	1.40

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	15.5	177.3	0.01	3.02
20	16.0	167.6	0.01	3.15
50	25.2	143.4	0.01	3.19
100	28.9	127.7	0.01	3.17
200	34.6	105.5	0.01	3.13
300	38.1	94.6	0.02	3.00
400	42.6	83.6	0.01	2.76
500	44.5	70.5	0.02	2.50
750	44.9	52.0	0.03	2.15
1000	45.2	43.6	0.65	1.96
1500	44.8	25.5	0.21	1.44
2000	43.4	24.2	0.20	1.42

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	13.1	178.0	0.00	2.98
20	14.7	174.3	0.01	3.12
50	20.1	151.4	0.00	3.19
100	29.4	139.1	0.00	3.19
200	35.4	112.7	0.00	3.18
300	41.2	102.6	0.01	3.13
400	44.5	87.7	0.03	2.91
500	45.2	74.0	0.02	2.55
750	45.1	59.1	0.26	2.22
1000	45.1	37.1	0.33	1.74
1500	44.2	28.7	0.20	1.38
2000	42.5	25.6	0.16	1.27

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	10.6	176.3	0.01	2.94
20	12.2	173.4	0.00	3.10
50	21.0	158.1	0.00	3.20
100	32.3	144.7	0.00	3.20
200	40.7	119.3	0.01	3.17
300	43.6	106.1	0.01	3.14
400	44.4	100.2	0.01	3.07
500	44.7	87.2	0.03	2.89
750	45.1	56.9	0.04	2.36
1000	45.2	33.0	0.52	1.76
1500	44.1	25.0	0.15	1.25
2000	42.1	22.9	0.13	1.15

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	15.6	28.2	0.23	1.67
20	18.3	178.7	0.00	3.12
50	25.5	174.3	0.00	3.24
100	29.0	155.0	0.00	3.34
200	34.6	142.0	0.01	3.31
300	41.8	122.2	0.01	3.23
400	44.6	111.0	0.01	3.29
500	43.6	91.1	0.02	3.10
750	44.8	72.7	0.04	2.65
1000	45.1	57.8	0.24	2.33
1500	44.1	48.5	0.28	2.13
2000	42.5	34.1	0.27	1.69

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	17.5	70.1	0.04	2.38
20	22.8	170.6	0.00	3.14
50	26.6	166.9	0.00	3.20
100	32.8	153.8	0.00	3.37
200	41.3	138.8	0.00	3.38
300	42.8	118.0	0.00	3.35
400	44.1	112.2	0.00	3.33
500	45.0	102.8	0.02	3.16
750	45.2	86.8	0.02	3.07
1000	45.2	62.6	0.06	2.56
1500	41.6	44.4	0.07	2.19
2000	42.3	40.5	0.27	1.98

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	12.4	16.8	0.16	1.33
20	15.6	22.4	0.22	1.51
50	23.7	44.5	0.29	2.01
100	27.4	54.9	0.28	2.22
200	39.5	82.8	0.04	2.90
300	41.7	104.4	0.03	3.06
400	44.2	112.4	0.01	3.21
500	44.8	121.7	0.00	3.27
750	45.0	141.0	0.00	3.29
1000	44.1	154.1	0.00	3.26
1500	43.8	171.2	0.00	3.18
2000	42.2	174.2	0.00	3.06

Depth (m)	NO ₃ + NO ₂	Si	NO ₂	P
10	14.8	31.4	0.16	1.50
20	16.4	33.5	0.18	1.60
50	25.4	48.8	0.25	2.13
100	30.2	60.3	0.21	2.39
200	38.0	78.0	0.10	2.85
300	43.8	95.8	0.01	3.22
400	44.7	105.5	0.00	3.37
500	44.8	118.9	0.00	3.37
750	44.9	136.2	0.00	3.12
1000	44.9	147.5	0.00	3.11
1500	43.9	169.3	0.00	3.02
2000	42.0	172.6	0.00	2.88

THE " OSHORO MARU " CRUISE 220 EAST OF TSUGARU STRAIT

IN SEPTEMBER - OCTOBER 2010

1. Cruise Itinerary

Cruise 220

Departure from Hakodate

Sep. 28, 2010

Bottom trawl research (OST1001-03)

30

Start hydrographic research (OS10176)

30

Finish hydrographic research (OS10179)

Oct. 1

Return to Hakodate

3

Total coverage 564.2 miles

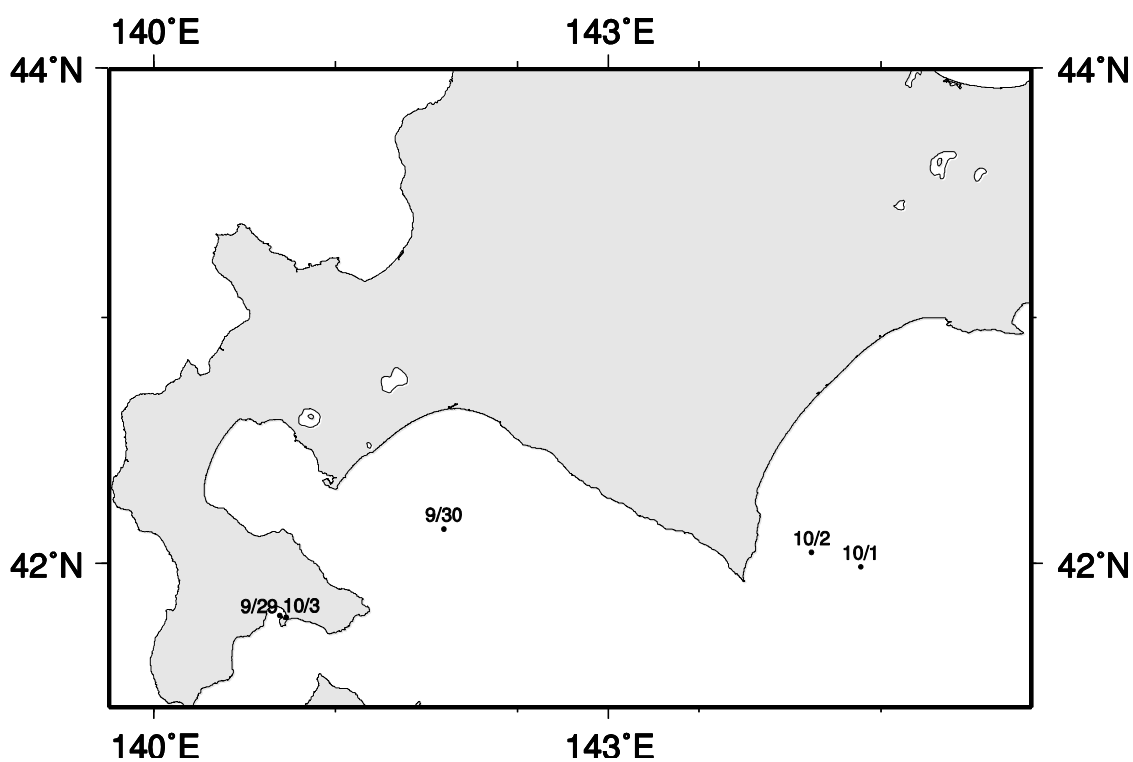


Figure 1. Noon position

		2. Vessel Personnel	
Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Associate Professor	Yoshihiko Kamei
	First Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Technical official	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
And 24 men			

		Cruise 220	
Research Staff:		Professor	(Laboratory of Marine Environmental Science) Shigeru Montani
		Professor	(Laboratory of Marine Bio-resources Science) Tetsuya Takatsu
		Associate Professor	(Laboratory of Marine Ecology) Yutaka Watanuki
		Associate Professor	(Laboratory of Marine Bio-resources Ecology) Takashi Matsuishii
		Associate Professor	(Laboratory of Marine Biology and Biodiversity) Hisashi Imamura
		Associate Professor	(Laboratory of Marine Biodiversity) Atsushi Yamaguchi
Teaching Assistant:		8 Persons	
Under Graduate Students:		56 Persons	
		Total 70 persons	

3. Items of Training and Research

A short cruise to conduct shipboard training in hydrographic observations, plankton samplings, sighting survey of marine mammals, and biological processing of trawl catch for undergraduate students in the Department of Marine Biological Science.

Hydrographic observations : Fig. 2, Table 1,2

Bottom trawl observations : Fig. 3, Table 3,4

4. 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 “Oshoro Maru”. Temperature and salinity were measured by CTD (Seabird SBE9Plus and SBE-19). Dynamic computations were made using a desk-top computer aboard the “Oshoro Maru”.

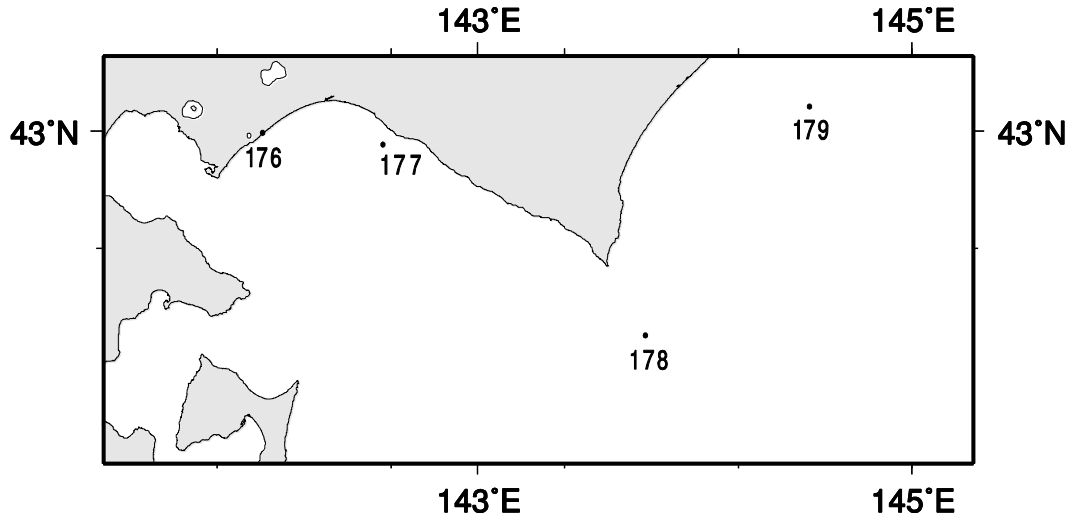


Figure 2. Oceanographic station

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS10176	42-16.1N	141-16.1E	9/30	0824	9	640	-	-	18.3	bc	9Plus-0769
OS10177	42-13.4N	141-57.6E	9/30	1113	9	743	-	-	18.2	bc	9Plus-0769
OS10178	41-32.5N	143-28.2E	9/30	2140	9	871	-	-	19.3	bc	9Plus-0769
OS10179	42-21.6N	144-24.9E	10/1	0858	9	1410	-	-	17.1	c	9Plus-0769

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS10176				Station OS10177				Station OS10178				Station OS10179			
Longitude 141-16.1E				Longitude 141-57.6E				Longitude 143-28.2E				Longitude 144-24.9E			
Latitude 42-16.1N				Latitude 42-13.4N				Latitude 41-32.5N				Latitude 42-21.6N			
Depth(m) 640				Depth(m) 743				Depth(m) 871				Depth(m) 1410			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	18.109	33.356	23.986	5	18.197	33.350	23.960	5	19.577	33.463	23.700	5	17.114	33.288	24.174
10	18.076	33.355	23.994	10	18.203	33.349	23.958	10	19.564	33.462	23.702	10	17.072	33.328	24.215
20	17.774	33.303	24.028	20	18.044	33.346	23.995	20	18.727	33.536	23.971	20	16.332	33.395	24.438
30	16.253	33.817	24.780	30	17.978	33.455	24.094	30	18.776	33.658	24.052	30	13.903	33.643	25.158
40	13.963	33.785	25.256	40	15.387	33.836	24.990	40	18.297	33.675	24.184	40	12.323	33.707	25.524
50	13.001	33.703	25.388	50	13.221	33.792	25.413	50	15.952	33.878	24.896	50	11.376	33.718	25.709
75	8.787	33.636	26.083	75	8.659	33.674	26.133	75	13.307	34.118	25.648	75	10.607	34.062	26.114
100	5.516	33.457	26.393	100	7.472	33.609	26.258	100	12.536	34.067	25.761	100	9.325	33.983	26.269
125	4.550	33.385	26.445	125	5.445	33.472	26.413	125	6.437	33.515	26.324	125	7.878	33.842	26.382
150	3.360	33.316	26.509	150	3.145	33.352	26.556	150	3.837	33.348	26.489	150	7.617	33.926	26.486
175	2.698	33.282	26.539	175	2.301	33.323	26.605	175	2.526	33.275	26.549	175	7.051	33.904	26.548
200	2.425	33.291	26.570	200	2.122	33.349	26.639	200	2.153	33.299	26.597	200	3.739	33.515	26.631
250	2.083	33.379	26.667	250	2.021	33.403	26.691	250	2.031	33.396	26.684	250	2.446	33.432	26.681
300	2.228	33.483	26.739	300	2.156	33.492	26.751	300	1.688	33.438	26.743	300	2.392	33.479	26.722
400	2.594	33.664	26.854	400	2.708	33.701	26.874	400	2.319	33.589	26.816	400	3.392	33.739	26.842
500	3.103	33.881	26.982	500	3.234	33.923	27.004	500	3.133	33.861	26.963	500	3.441	33.877	26.948

5. Data on bottom trawl research

Three operations of the stern otter bottom trawl were carried out. These operation were supervised by the captain, Deck officer, crew, research staff, and cadets were engaged in the work.

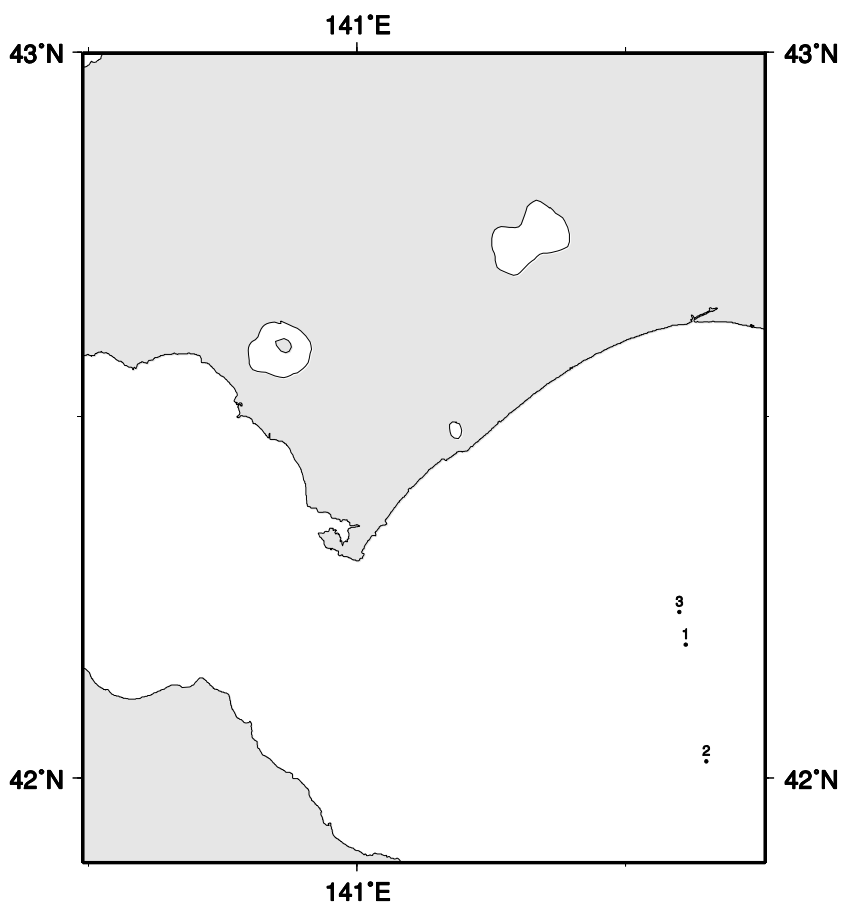


Figure 3. Locations of bottom trawl research

Table 3. Data on bottom trawl research during the “Oshoro Maru” Cruise#220

No. of research	Date and time of net tow (S.M.T.)		Position		Direction of tow	Speed of tow(K' t)	Bottom depth(m)	Wr	Wind
			Lat.(N)	Long.(E)					
OST1001	30-Sep	0627-0735	42-11.2	141-36.6	180	-	690	bc	West-4
OST1002	30-Sep	1006-1104	42-01.5	141-38.9	315->000->010	3.0	810-675	bc	West-3/5
OST1003	12-Jul	1337-1430	42-13.9	141-35.9	080	3.1	615-716	bc	SSW-2/3

S.T. : Surface temperature

Wr.: Weather (r: rain, o: 100% clouded, d: drizzling rain, f: fog, bc: 25-75% clouded)

Table 4. Data on catches by bottom trawl research

Japanese name	Scientific Name	OST 1001		OST 1002		OST 1003	
		Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Ribonkasube	<i>Bathyraxia diplotaenia</i>	1	0.30	10	1.15	3	0.25
Aryushankasube	<i>Bathyraxia aleutica</i>	-	-	-	-	1	0.75
Onagakasube	<i>Rhinoraxia longicauda</i>	2	0.10	-	-	-	-
Irakoanago	<i>Synaphobranchus kaupii</i>	17	11.00	8	4.00	41	24.00
Yukihoraanago	<i>Ilyopsis nygeli</i>	5	0.20	4	0.12	5	0.20
Kongouanago	<i>Simenchelys parasiticus</i>	-	-	1	0.25	-	-
Kurosokogisu	<i>Notacanthus chemnitzii</i>	-	-	-	-	1	0.90
Togariichimonjiwashi	<i>Leuroglossus schmidtii</i>	-	-	2	0.01	-	-
Sokoiwashi	<i>Lipolagus ochotensis</i>	-	-	-	-	1	0.02
Horaieso	<i>Chauliodus sloani</i>	1	0.10	-	-	1	0.10
Hoteieso	<i>Photonectes albipennis</i>	-	-	1	0.10	2	0.10
Nagahadaka	<i>Symbolophorus californiensis</i>	-	-	-	-	2	0.12
Sekkihadaka	<i>Stenobrachius namochir</i>	-	-	1	0.01	1	0.05
Mamehadaka	<i>Lampanyctus jordani</i>	6	0.10	7	0.10	20	0.35
Hadakaiwashi	<i>Diaphus watasei</i>	-	-	1	0.01	-	-
Karasudara	<i>Halargyreus johnsonii</i>	1	0.20	-	-	-	-
Kanadadara	<i>Antimora microlepis</i>	31	5.50	25	4.80	-	-
Itohikidara	<i>Laemonema longipes</i>	1853	1228.80	2690	1829.20	550	349.00
Karafutosokodara	<i>Coryphaenoides cinereus</i>	40	8.50	21	4.80	55	9.80
Togerakudaanko	<i>Oneirodes thompsoni</i>	-	-	-	-	1	0.30
Hiregurokonnyakuuo	<i>Careproctus marginatus</i>	-	-	-	-	1	0.10
Hirainkuo	<i>Paraliparis grandis</i>	2	1.30	-	-	6	2.40
Shirohigekonnyakuuo	<i>Paraliparis barbifer</i>	-	-	-	-	1	0.01
Shirogenge	<i>Bothrocara molle</i>	301	134.00	446	139.00	259	259.00
Kantengenge	<i>Bothrocara tanakae</i>	3	0.70	16	8.50	18	8.00
Nezumiginpo	<i>Lumpenella longirostris</i>	27	1.80	68	4.60	22	19.40
kichiji	<i>Sebastolobus macrochir</i>	120	24.50	165	29.80	246	45.50
Ganko	<i>Dasyctotus setiger</i>	1	0.10	2	0.15	9	0.75
Kobushikajika	<i>Malacocottus zonurus</i>	-	-	1	0.10	1	0.10
Samegare	<i>Clidoderma asperrimum</i>	-	-	-	-	1	0.55
Benizuwaigani	<i>Chionoecetes japonicus</i>	20	15.50	21	12.00	16	11.00
Ezobai-rui	Buccinidae spp.	-	-	23	2.30	37	3.00
Ika-rui	Squids	36	16.85	24	9.00	28	15.10
Yanagidako	<i>Octopus conispadiceus</i>	14	5.40	32	13.00	23	9.30
Mendako	<i>Opishoteuthis depressa</i>	-	-	2	2.55	-	-

**THE " OSHORO MARU " CRUISE 221 TO THE JAPAN SEA
AND SETO INLAND SEA**

IN OCTOBER-NOVEMBER 2010

1. Cruise Itinerary

Cruise 221

Departure from Hakodate	Oct. 22, 2010
Start hydrographic research (OS10180)	22
Arrival at Nagasaki	28
Departure from Nagasaki	31
Finish hydrographic research (OS10190)	Nov. 6
Return to Hakodate	7

Total coverage 2109.0miles 14days at sea and two days at port

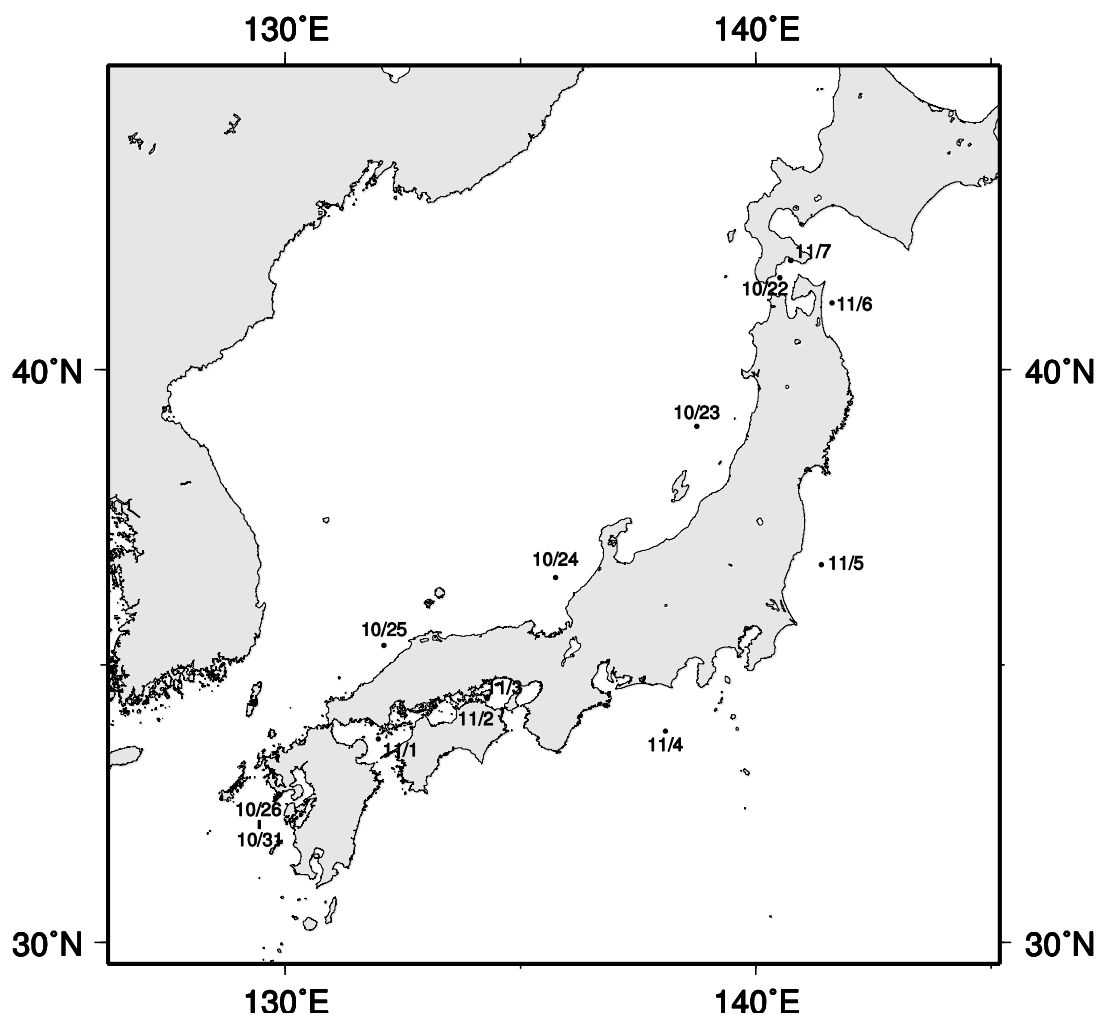


Figure 1. Noon position

2. Vessel Personnel			
Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Associate Professor	Yoshihiko Kamei
	First Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Technical official	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 23 men		
Cruise 221			
Under Graduate instructor:	Associate Professor	(Laboratory of Marine Bioresource and EnvironmentSensing)	Toru Mukai
	Instructor	(Field Science Center for Northern Biosphere, Hokkaido University)	Jun Yamamoto
	Research Fellow	(Graduate School of Information and Technology GCOE)	Toshiro Iwamori
Guest Scientist	Associate Professor	(Graduate School of Environmental Science)	Yutaka Watanabe
	Hakodate - Nagasaki	(Institute of Low Temperature Science, Hokkaido University)	Jun Nishioka
	Associate Professor	(faculty of fishing sciences, Chonnam National University)	Miyuki Hirose
	Nagasaki - Hakodate		
	Invitation professor		
	Hakodate - Nagasaki		
Teaching Assistant:	3 Person		
Graduate Students:	3 Persons		
Under Graduate Students:	19 Persons		
	Total 31 persons		

3. Items of Research

Hydrographic observations:
 Biological research for squid caught by jigging:
 Plankton and jellyfish samplings by NORPAC-net, FMT-net:
 Sediment sampling and observation by Smith-McIntyre Grab:
 Water samplings by Niskin bottles and underwater tug plane:

Fig. 2 Table 1,2

4. Data on Temperature, Salinity and Computed Dynamic Depth Anomaly

Hydrographic work on deck and the data processing were made by the deck officers, Science officer, crews, research staff and cadets of the “Oshoromaru”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus and SBE-19Plus). Dynamic computations were made using a desk-top computer aboard the “Oshoromaru”. Water and Plankton sampling were also carried out at almost hydrographic stations.

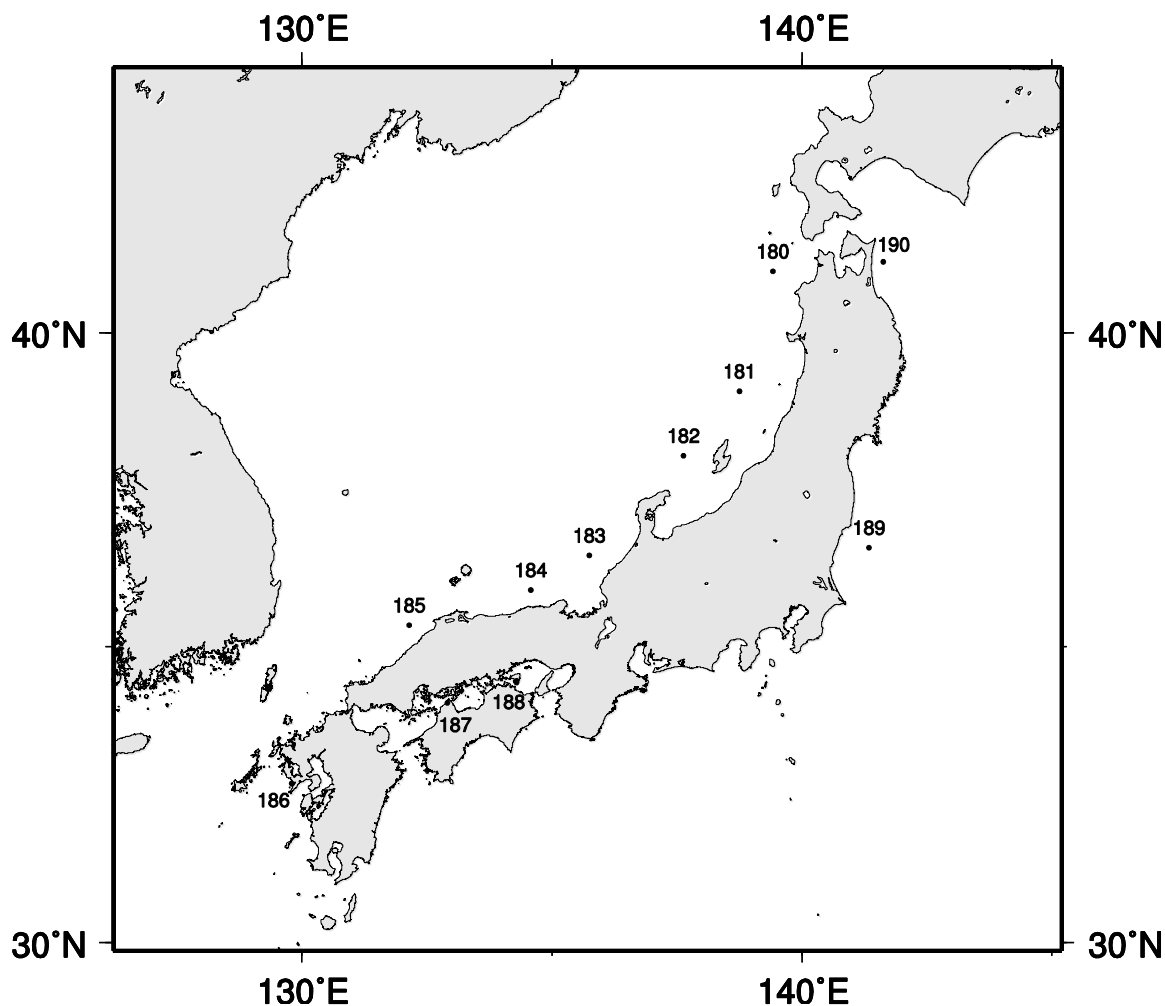


Figure 2. Oceanographic station

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS10180	40-57.1N	139-23.7E	10/22	1157	9	2430	-	-	20.4	bc	9Plus-0769
OS10181	39-06.6N	138-43.3E	10/23	0111	9	520	3	23	21.7	bc	9Plus-0769
OS10182	38-05.4N	137-36.2E	10/23	1015	9	1489	-	-	22.5	bc	9Plus-0769
OS10183	36-30.6N	135-43.2E	10/24	0102	9	510	3	12	22.8	bc	9Plus-0769
OS10184	35-57.1N	134-33.0E	10/24	1015	9	284	-	-	21.6	r	9Plus-0769
OS10185	35-22.8N	132-06.8E	10/25	0114	9	156	3	16	23.5	c	9Plus-0769
OS10186	32-45.1N	129-46.2E	10/27	0635	9	59	-	-	22.9	bc	19Plus-4636
OS10187	34-05.7N	132-52.9E	11/1	0735	9	42	-	-	21.9	bc	19Plus-4636
OS10188	34-25.7N	134-15.7E	11/2	0457	9	24	-	-	21.6	c	19Plus-4636
OS10189	36-38.1N	141-18.5E	11/4	2332	9	496	-	-	18.5	bc	19Plus-4636
OS10190	41-06.1N	141-35.7E	11/6	0251	9	538	-	-	17.3	b	19Plus-4636

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station		OS10180	
Longitude		139-23.7E	
Latitude		40-57.1N	
Depth(m)		2430	
Press.	Temp.	Sal.	SIG-T
5	20.594	32.801	22.929
10	20.599	32.800	22.927
20	20.412	32.802	22.978
30	17.331	33.563	24.333
40	15.814	33.933	24.969
50	14.312	34.207	25.508
75	10.632	34.187	26.207
100	7.705	34.131	26.634
125	5.815	34.089	26.856
150	3.921	34.048	27.037
175	2.979	34.067	27.142
200	2.330	34.067	27.198
250	1.544	34.074	27.264
300	1.073	34.073	27.295
400	0.732	34.073	27.317
500	0.565	34.073	27.327

Station		OS10183	
Longitude		135-43.2E	
Latitude		36-30.6N	
Depth(m)		510	
Press.	Temp.	Sal.	SIG-T
5	22.924	32.545	22.095
10	22.927	32.545	22.093
20	22.929	32.545	22.093
30	22.929	32.545	22.093
40	23.323	33.151	22.439
50	22.570	33.671	23.048
75	18.719	34.067	24.379
100	16.392	34.240	25.074
125	14.254	34.348	25.630
150	10.572	34.245	26.264
175	8.097	34.152	26.593
200	5.242	34.091	26.927
250	2.056	34.065	27.218
300	1.233	34.071	27.283
400	0.693	34.072	27.319

Station		OS10186	
Longitude		129-46.2E	
Latitude		32-45.1N	
Depth(m)		59	
Press.	Temp.	Sal.	SIG-T
5	23.134	33.487	22.748
10	23.133	33.487	22.749
20	23.165	33.570	22.803
30	22.825	33.915	23.159
40	22.475	34.083	23.383
50	21.944	34.137	23.575

Station		OS10189	
Longitude		141-18.5E	
Latitude		36-38.1N	
Depth(m)		496	
Press.	Temp.	Sal.	SIG-T
5	18.202	33.582	24.137
10	18.197	33.582	24.138
20	18.072	33.609	24.190
30	18.070	33.611	24.191
40	17.944	33.645	24.248
50	17.933	33.648	24.254
75	17.758	33.670	24.312
100	17.418	34.047	24.682
125	13.899	34.211	25.564
150	13.445	34.455	25.879
175	12.469	34.390	26.028
200	9.905	34.244	26.377
250	6.343	33.866	26.613
300	5.119	33.823	26.728
400	4.340	33.945	26.911

Station		OS10181	
Longitude		138-43.3E	
Latitude		39-06.6N	
Depth(m)		520	
Press.	Temp.	Sal.	SIG-T
5	21.657	32.863	22.690
10	21.640	32.861	22.693
20	21.630	32.861	22.695
30	20.650	32.841	22.945
40	20.628	32.911	23.004
50	19.424	34.033	24.174
75	16.245	34.319	25.167
100	14.378	34.346	25.602
125	11.562	34.243	26.083
150	9.682	34.163	26.351
175	8.549	34.147	26.521
200	6.650	34.108	26.763
250	3.323	34.075	27.117
300	2.145	34.070	27.215
400	1.065	34.072	27.295

Station		OS10184	
Longitude		134-33.0E	
Latitude		35-57.1N	
Depth(m)		284	
Press.	Temp.	Sal.	SIG-T
5	21.683	32.777	22.617
10	21.666	32.777	22.622
20	21.684	32.787	22.625
30	21.693	32.826	22.651
40	18.468	34.051	24.430
50	17.157	34.215	24.875
75	15.494	34.330	25.346
100	12.833	34.326	25.904
125	10.697	34.252	26.247
150	8.375	34.159	26.557
175	5.524	34.091	26.893
200	3.822	34.083	27.074
250	1.757	34.074	27.248

Station		OS10187	
Longitude		132-52.9E	
Latitude		34-05.7N	
Depth(m)		42	
Press.	Temp.	Sal.	SIG-T
5	22.095	32.649	22.407
10	22.102	32.649	22.404
20	22.098	32.650	22.406
30	22.073	32.650	22.413
40	22.074	32.647	22.410

Station		OS10190	
Longitude		141-35.7E	
Latitude		41-06.1N	
Depth(m)		538	
Press.	Temp.	Sal.	SIG-T
5	17.302	33.511	24.300
10	17.299	33.513	24.303
20	17.151	33.527	24.347
30	16.965	33.541	24.402
40	16.792	33.551	24.451
50	16.428	33.547	24.531
75	15.734	33.622	24.747
100	15.565	33.657	24.812
125	15.414	33.666	24.852
150	14.703	33.751	25.073
175	11.203	33.850	25.833
200	6.299	33.505	26.331
250	2.989	33.354	26.571
300	2.347	33.438	26.693
400	2.906	33.729	26.879
500	3.287	33.943	27.015

Station		OS10182	
Longitude		137-36.2E	
Latitude		38-05.4N	
Depth(m)		1489	
Press.	Temp.	Sal.	SIG-T
5	22.322	32.756	22.424
10	22.316	32.756	22.426
20	22.298	32.757	22.432
30	22.131	32.765	22.484
40	22.077	32.800	22.526
50	20.778	33.958	23.760
75	17.058	34.244	24.920
100	14.558	34.344	25.562
125	10.812	34.197	26.184
150	9.496	34.154	26.376
175	7.329	34.116	26.676
200	4.817	34.085	26.970
250	2.013	34.073	27.228
300	1.320	34.072	27.278
400	0.808	34.073	27.312
500	0.602	34.073	27.325

Station		OS10185	
Longitude		132-06.8E	
Latitude		35-22.8N	
Depth(m)		156	
Press.	Temp.	Sal.	SIG-T
5	23.492	33.424	22.597
10	23.484	33.423	22.599
20	23.179	33.333	22.619
30	23.176	33.358	22.638
40	23.237	33.425	22.672
50	22.449	33.774	23.161
75	19.367	34.252	24.356
100	17.063	34.331	24.986
125	15.394	34.403	25.424

Station		OS10188	
Longitude		134-15.7E	
Latitude		34-25.7N	
Depth(m)		24	
Press.	Temp.	Sal.	SIG-T
5	21.764	31.905	21.933
10	21.765	31.899	21.928
20	21.790	31.908	21.929

**THE " OSHORO MARU " CRUISE 223 TO WATERS EAST OF HONSHU
AND TO THE OGASAWARA ISLANDS**

IN DECEMBER 2010

1. Cruise Itinerary

Cruise 223

Departure from Hakodate	Dec. 6, 2010
Start hydrographic research (OS10191)	6
Arrival at Yokohama	9
Departure from Yokohama	12
Start vertical long-line research (OSVL1001)	14
Start mid-water trawl research (OSMT1006)	14
Arrival at Futami	16
Departure from Futami	18
Finish mid-water trawl research (OSMT1009)	19
Finish vertical long-line research (OSVL1006)	19
Finish hydrographic research (OS10200)	19
Arrival at Shiogama	21

Total coverage 1984.5miles 14days at sea and three days in port

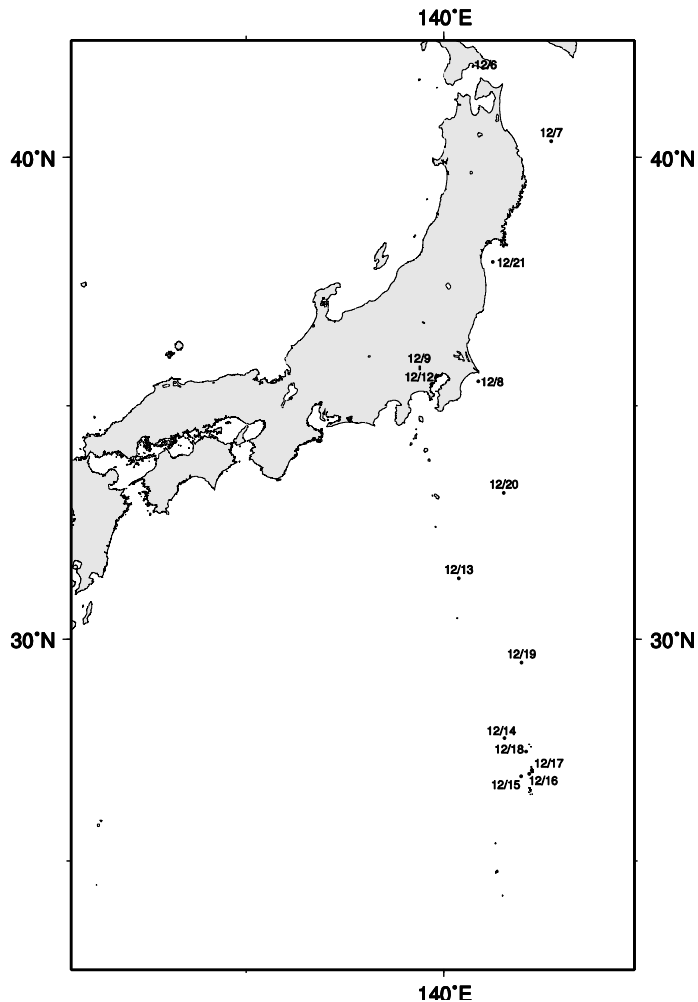


Figure 1. Noon position

2. Vessel Personnel

Captain:		Associate Professor	Shogo Takagi
Crew:	Chief Officer	Associate Professor	Yoshihiko Kamei
	First Officer	Instructor	Keiichiro Sakaoka
	Second Officer	Technical official	Naoki Hoshi
	Third Officer	Technical official	Takuzo Abe
	Science Officer	Technical official	Keiri Imai
	Chief Engineer	Instructor	Jyunichi Kimura
	And 24 men		

Cruise 223

Under Graduate instructor:	Associate Professor	(Department of Marine Science and Resources, Nihon University)	
	Yokohama - Shiogama		Takahito Kojima
	Associate Professor	(Teikyo University of Science and Technology)	
	Yokohama - Shiogama		Kyoichi Mori
	Technical official	(Department of Marine Science and Resources, Nihon University)	
	Yokohama - Shiogama		Yuya Makiguchi
	Research Worker	(Plant Research Department, National Museum of nature and Science)	
	Yokohama - Shiogama		Kaoru Ohgane
Guest Scientist:	Professors emeritus	(Division of Marine Bioresource and Environmental Science, Hokkaido University)	
	Hakodate - Shiogama		Kazuhiro Nakaya
	Professor	(Division of Bioengineering and Bioinformatics, Hokkaido University)	
	Hakodate - Yokohama		Hidemi Watanabe
	Professor	(Division of Bioengineering and Bioinformatics, Hokkaido University)	
	Hakodate - Yokohama		Kazuhisa Sueoka
	Instructor	(Field Science Center for Northern Biosphere, Hokkaido University)	
	Hakodate - Yokohama		Jun Yamamoto
	Research Worker	(Teikyo University of Science and Technology)	
	Yokohama - Shiogama		Saeko Kumagai
	Research Worker	(Graduate school of arts and sciences, International Christian University)	
	Yokohama - Shiogama		Keiko Sekiguchi
	Research Fellow	(Graduate School of Information and Technology GCOE)	
	Hakodate - Shiogama		Toshiro Iwamori
Technical Staff:	Technical assistant	(KOWA Corporation)	
	Hakodate - Yokohama		Hiroyuki Saka, Osamu Numamoto, Takayuki Uemura

Teaching Assistant:	3 Person	
Graduate Students:	2 Persons	
Under Graduate Students:	31 Persons	
	(Hokkaido University)	3 Persons
	(Department of Marine Science and Resources, Nihon University)	21 Persons
	(Teikyo University of Science and Technology)	4 Persons
	(Faculty of Science, Tohoku University)	1 Person
	(Faculty of Agriculture, Utsunomiya University)	2 Persons
	Total 50 persons	

3. Items of Research

Hydrographic observations:

Fig. 2 Table 1,2

Biological research for fishes caught by vertical long-line:

Fig. 3 Table 3

Biological research for fishes caught by mid-water trawl observations:

Fig. 4 Table 4,5

Sediment sampling and observation by ROV and Smith-McIntyre Grab:

4. Data on Temperature, Salinity and Computed Dynamic Depth Anomaly

Hydrographic work on deck and the data processing were made by the deck officers, Science officer, crews, research staff and cadets of the “Oshoromaru”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus, SBE-19Plus and XCTD2). Dynamic computations were made using a desk-top computer aboard the “Oshoromaru”. Water and Plankton sampling were also carried out at almost hydrographic stations.

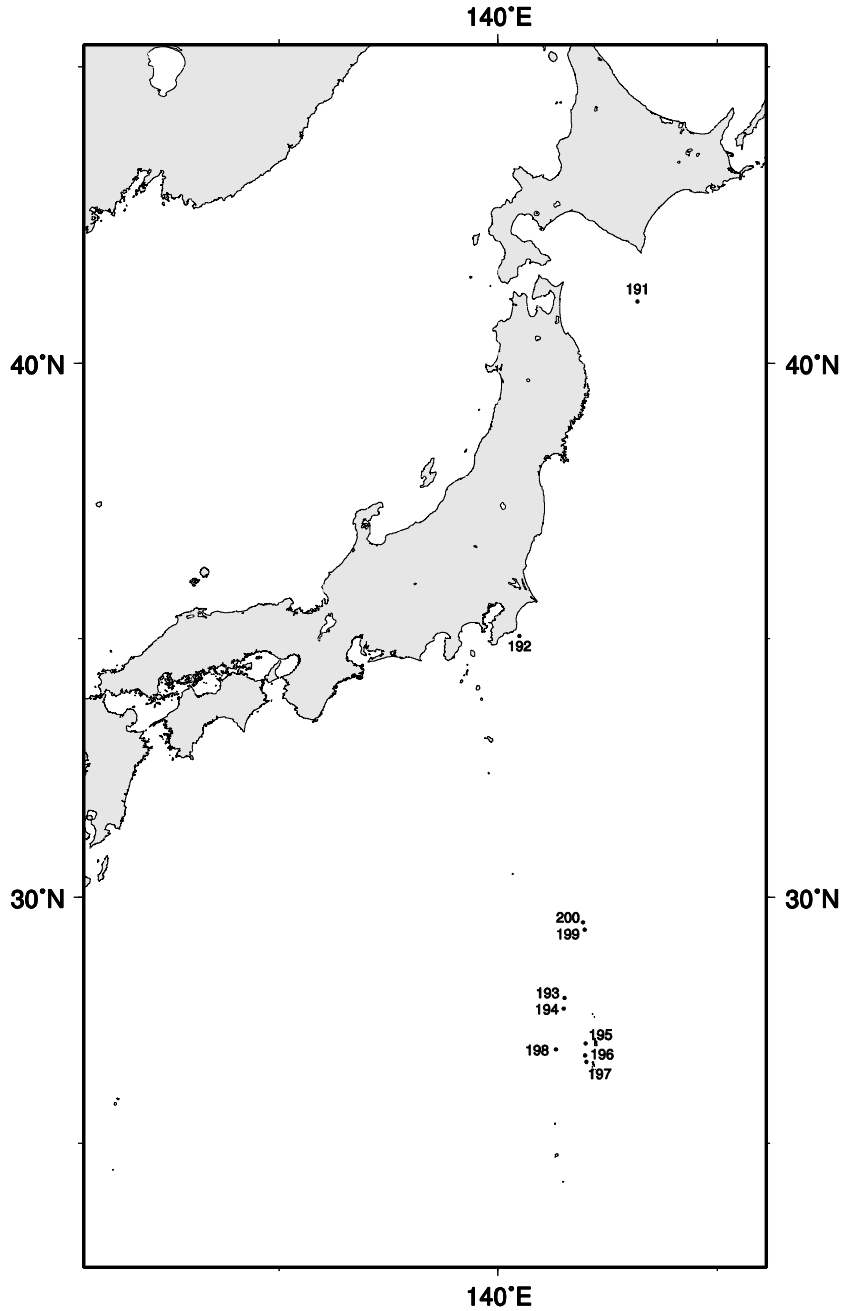


Figure 2. Oceanographic station

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS10191	41-05.6N	143-09.7E	12/6	2104	9	2017	-	-	8.8	c	19Plus-4636
OS10192	35-04.1N	140-28.0E	12/7	0546	9	121	-	-	20.1	bc	19Plus-4636
OS10193	28-00.1N	141-30.0E	12/13	2143	9	4150	-	-	24.9	bc	XCTD-2
OS10194	27-47.2N	141-28.8E	12/14	0000	9	4140	2	26	24.4	bc	9Plus-0769
OS10195	27-04.7N	141-58.7E	12/14	2204	9	1170	2	24	23	c	9Plus-0769
OS10196	26-79.9N	141-57.8E	12/15	0421	9	1985	2	33.8	24.5	c	9Plus-0769
OS10197	26-41.9N	141-59.6E	12/15	1053	9	1131	-	-	-	c	XCTD-2
OS10198	26-57.4N	141-18.2E	12/15	2216	9	1210	2	28	22.6	c	9Plus-0769
OS10199	29-22.3N	141-57.2E	12/18	2120	9	3105	-	-	-	bc	XCTD-2
OS10200	29-31.2N	141-55.3E	12/19	0415	9	4320	2	25.7	21.6	c	9Plus-0769

(*) : Fixed position by Global Positioning System

Table 2. Oceanographic data

Station OS10191 Longitude 143-09.7E Latitude 41-05.6N Depth(m) 2017				Station OS10192 Longitude 140-28.0E Latitude 35-04.1N Depth(m) 121				Station OS10193 Longitude 141-30.0E Latitude 28-00.1N Depth(m) 4150				Station OS10194 Longitude 141-28.8E Latitude 27-47.2N Depth(m) 4140			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	7.860	33.276	25.941	5	19.600	34.496	24.482	5	24.238	34.656	23.312	5	24.300	34.714	23.335
10	7.861	33.277	25.941	10	19.605	34.496	24.481	10	24.234	34.666	23.321	10	24.252	34.714	23.350
20	7.857	33.279	25.943	20	19.440	34.487	24.518	20	24.229	34.666	23.322	20	24.253	34.714	23.350
30	7.856	33.279	25.943	30	19.323	34.502	24.562	30	24.224	34.666	23.324	30	24.247	34.713	23.351
40	7.822	33.267	25.938	40	18.783	34.502	24.691	40	24.009	34.639	23.367	40	24.177	34.708	23.368
50	7.750	33.264	25.947	50	18.784	34.504	24.697	50	23.288	34.611	23.557	50	24.132	34.708	23.382
75	7.741	33.262	25.946	75	18.608	34.511	24.747	75	22.841	34.587	23.668	75	23.885	34.715	23.460
100	5.059	33.281	26.305	100	18.419	34.511	24.794	100	22.319	34.621	23.842	100	21.523	34.761	24.169
125	3.508	33.260	26.449					125	20.915	34.640	24.244	125	20.271	34.753	24.502
150	3.024	33.337	26.555					150	19.872	34.654	24.533	150	19.193	34.722	24.759
175	2.755	33.382	26.616					200	18.613	34.635	24.841	175	18.430	34.708	24.942
200	2.221	33.353	26.635					250	17.954	34.624	24.996	200	18.130	34.702	25.012
250	2.262	33.425	26.689					300	17.428	34.621	25.122	250	17.600	34.692	25.134
300	2.431	33.496	26.733					400	14.729	34.484	25.634	300	17.174	34.690	25.235
400	2.900	33.693	26.880					500	11.119	34.256	26.175	400	14.738	34.561	25.690
500	2.900	33.847	26.974					600	7.697	34.050	26.572	500	11.441	34.336	26.178
600	3.219	34.009	27.074					700	5.734	34.054	26.838	600	8.650	34.173	26.526
700	3.230	34.115	27.157					800	5.066	34.139	26.985	700	6.259	34.171	26.865
800	3.168	34.199	27.230					900	4.174	34.222	27.149	800	5.279	34.217	27.022
900	3.097	34.300	27.317					1000	3.775	34.295	27.248	900	4.361	34.264	27.163
1000	2.933	34.344	27.367					1200	3.172	34.397	27.388	1000	3.893	34.315	27.252
1200	2.669	34.429	27.458					1500	2.494	34.508	27.537	1200	3.224	34.406	27.391
1500	2.374	34.503	27.543									1500	2.511	34.514	27.540

Station OS10195 Longitude 141-58.7E Latitude 27-04.7N Depth(m) 1170				Station OS10196 Longitude 141-57.8E Latitude 26-79.9N Depth(m) 1985				Station OS10197 Longitude 141-59.6E Latitude 26-41.9N Depth(m) 1131				Station OS10198 Longitude 141-18.2E Latitude 26-57.4N Depth(m) 1210			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	22.901	34.660	23.704	5	24.634	34.723	23.242	5	24.283	34.659	23.301	5	22.609	34.594	23.738
10	22.887	34.659	23.707	10	24.612	34.723	23.249	10	24.273	34.669	23.311	10	22.613	34.595	23.737
20	22.778	34.654	23.735	20	24.492	34.722	23.284	20	24.155	34.677	23.353	20	22.610	34.598	23.741
30	22.694	34.647	23.771	30	24.317	34.721	23.336	30	24.136	34.680	23.361	30	22.525	34.632	23.790
40	22.378	34.639	23.837	40	24.021	34.728	23.430	40	24.116	34.686	23.371	40	22.306	34.645	23.862
50	22.308	34.639	23.857	50	23.779	34.721	23.495	50	24.087	34.685	23.379	50	22.242	34.650	23.884
75	22.049	34.685	23.964	75	22.813	34.723	23.777	75	23.257	34.682	23.620	75	22.104	34.677	23.944
100	21.294	34.743	24.218	100	21.267	34.755	24.235	100	20.943	34.695	24.279	100	21.077	34.699	24.244
125	19.860	34.746	24.605	125	20.338	34.765	24.493	125	19.965	34.688	24.534	125	20.509	34.693	24.393
150	18.999	34.735	24.819	150	19.547	34.750	24.689	150	19.456	34.662	24.647	150	19.623	34.699	24.631
175	18.615	34.726	24.909	175	18.865	34.731	24.850	200	18.033	34.667	25.010	175	18.728	34.704	24.864
200	18.325	34.716	24.974	200	18.466	34.722	24.943	250	17.242	34.644	25.184	200	18.101	34.701	25.018
250	17.475	34.700	25.170	250	17.884	34.711	25.079	300	16.373	34.612	25.364	250	17.427	34.692	25.176
300	16.898	34.683	25.295	300	17.015	34.687	25.271	400	14.552	34.504	25.687	300	16.717	34.668	25.326
400	15.021	34.578	25.642	400	14.748	34.552	25.682	500	11.578	34.296	26.122	400	14.823	34.561	25.672
500	11.691	34.357	26.148	500	11.759	34.365	26.142	600	8.824	34.170	26.496	500	11.530	34.352	26.174
600	8.997	34.206	26.497	600	9.132	34.223	26.488	700	6.579	34.108	26.773	600	8.811	34.207	26.527
700	6.463	34.144	26.816	700	6.943	34.152	26.758	800	5.249	34.135	26.961	700	6.383	34.156	26.837
800	5.357	34.174	26.979	800	5.390	34.148	26.954	900	4.338	34.227	27.136	800	4.985	34.187	27.033
900	4.336	34.250	27.154	900	4.392	34.236	27.138	1000	3.750	34.316	27.268	900	4.174	34.263	27.182
1000	3.644	34.342	27.299	1000	3.820	34.320	27.264	1200	3.710	34.596	12.479	1000	3.753	34.324	27.274
								1500	5.130	15.787	12.471				

Station OS10199 Longitude 141-57.2E Latitude 29-22.3N Depth(m) 3105				Station OS10200 Longitude 141-55.3E Latitude 29-31.2N Depth(m) 4320			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
5	22.613	34.558	23.711	5	21.683	34.660	24.048
10	22.614	34.569	23.719	10	21.679	34.661	24.049
20	22.613	34.581	23.728	20	21.666	34.659	24.052
30	22.617	34.586	23.731	30	21.637	34.659	24.060
40	22.615	34.584	23.730	40	21.627	34.659	24.063
50	22.578	34.588	23.743	50	21.624	34.662	24.065
75	22.288	34.595	23.831	75	21.625	34.662	24.066
100	21.509	34.671	24.106	100	21.383	34.708	24.167
125	20.355	34.671	24.418	125	19.505	34.726	24.682
150	19.282	34.667	24.696	150	18.998	34.719	24.807
200	18.544	34.669	24.885	175	18.576	34.711	24.908
250	17.702	34.645	25.074	200	18.208	34.703	24.993
300	17.326	34.643	25.163	250	17.597	34.700	25.140
400	15.287	34.550	25.563	300	16.783	34.686	25.324
500	12.161	34.347	26.052	400	14.551	34.552	25.724
600	8.986	34.171	26.472	500	11.436	34.356	26.194
700	6.684	34.119	26.768	600	8.197	34.159	26.584
800	5.681	34.153	26.923	700	5.931	34.086	26.839
900	4.678	34.202	27.079	800	4.881	34.137	27.004
1000	4.001	34.269	27.205	900	4.244	34.224	27.144
1200	3.172	34.394	27.386				
1500	2.484	34.501	27.532				

5. Data on vertical long line research

Six operations using a vertical long-line were performed. The gear comprised by four types of main line (270,400,500,600m) with a weight attached to one end, a buoy attached to the other end, and six branch lines (18m-for tuna and 4m-for squid) attached to the main line. These operations were supervised by the captain, Deck officers, Science officer, crews, cadets, and research staffs were engaged in the work.

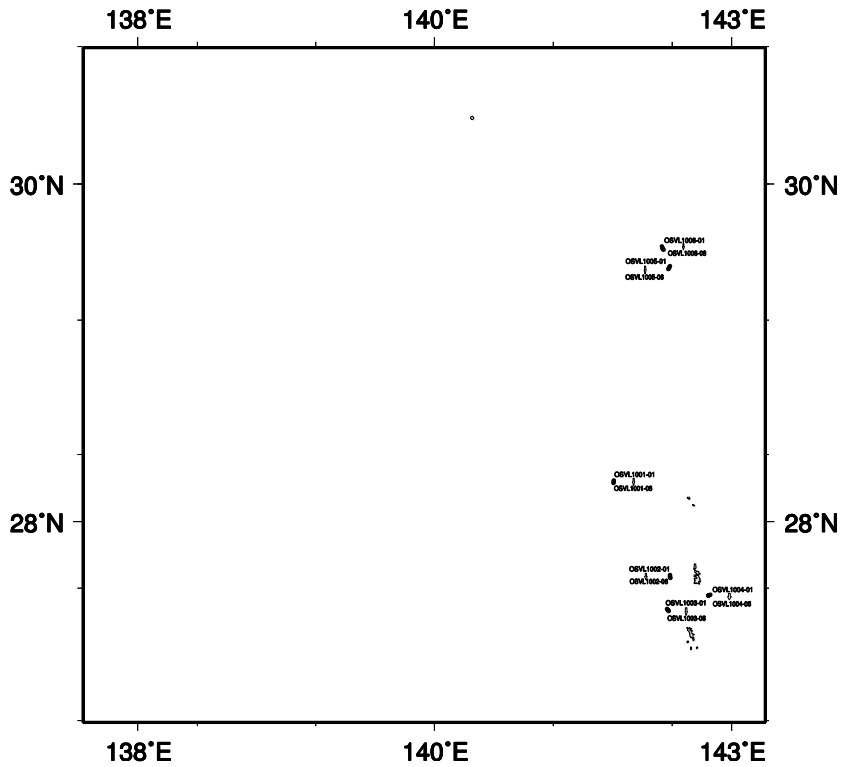


Figure 3. Locations of vertical long line research

Group		A	B	C	D
Main line	(m)	270	400	500	600
Three branch line(for tuna)	(m)	18	18	18	18
Three branch line(for squid)	(m)	4	4	4	4

Table 3. Data on vertical long line research

No. of research		OSVL 1001-01	OSVL 1001-02	OSVL 1001-03	OSVL 1001-04	OSVL 1001-05	OSVL 1001-06
Date		14-Dec					
position of	Lat. (N)	27-48.9	27-48.7	27-48.6	27-48.3	27-48.1	27-47.8
line set	Long. (E)	141-30.0	141-30.0	141-30.0	141-30.0	141-30.0	141-29.8
Time	Line set	0806	0816	0826	0830	0836	0843
(S.M.T.)	Line haul	1156-1344					
Length of main line(m)		270	400	500	600	400	500
Depth(m)		4143					
Surface temp. (°C)		24.2					
Wether		bc					
Wind		SSW5					
Flying squid		1		1		1	

No. of research		OSVL 1002-01	OSVL 1002-02	OSVL 1002-03	OSVL 1002-04	OSVL 1002-05	OSVL 1002-06
Date		15-Dec					
position of	Lat. (N)	27-06.3	27-06.1	27-05.7	27-05.5	27-05.2	27-05.0
line set	Long. (E)	141-58.3	141-58.4	141-58.4	141-58.5	141-58.5	141-58.6
Time	Line set	0630	0635	0643	0648	0654	0656
(S.M.T.)	Line haul	0924-1123					
Length of main line(m)		500	400	600	500	400	500
Depth(m)		1150					
Surface temp. (°C)		23.7					
Wether		c					
Wind		NNW3					
Flying squid		1		1			
Bigeye tuna							

No. of research		OSVL 1003-01	OSVL 1003-02	OSVL 1003-03	OSVL 1003-04	OSVL 1003-05	OSVL 1003-06
Date		15-Dec					
position of	Lat. (N)	26-51.1	26-50.9	26-50.7	26-50.4	26-50.2	26-50.1
line set	Long. (E)	141-56.9	141-57.1	141-57.3	141-57.4	141-57.6	141-57.7
Time	Line set	1248	1255	1300	1306	1311	1316
(S.M.T.)	Line haul	1433-1628					
Length of main line(m)		600	600	500	500	400	400
Depth(m)		2430					
Surface temp. (°C)		22.4					
Wether		o					
Wind		NW3					
Diamondback squid		1					
Bigeye tuna				2			
Sickle pomfret		1					

No. of research		OSVL 1004-01	OSVL 1004-02	OSVL 1004-03	OSVL 1004-04	OSVL 1004-05	OSVL 1004-06
Date		16-Dec					
position of	Lat. (N)	26-57.0	26-57.1	26-57.2	26-57.2	26-57.3	26-57.5
line set	Long. (E)	142-17.6	142-17.8	142-18.0	142-18.2	142-18.4	142-18.7
Time	Line set	0636	0642	0647	0653	0659	0705
(S.M.T.)	Line haul	0855-1047					
Length of main line(m)		400	400	500	500	600	600
Depth(m)		1283					
Surface temp. (°C)		22.5					
Wether		o					
Wind		ENE3					
Flying squid				2			
Bigeye tuna							
Sickle pomfret						1	

No. of research		OSVL 1005-01	OSVL 1005-02	OSVL 1005-03	OSVL 1005-04	OSVL 1005-05	OSVL 1005-06
Date		19-Dec					
position of	Lat. (N)	29-23.0	29-23.2	29-23.5	29-23.7	29-23.9	29-24.2
line set	Long. (E)	141-57.6	141-57.8	141-57.9	141-58.0	141-58.2	141-58.3
Time	Line set	0636	0642	0648	0653	0659	0705
(S.M.T.)	Line haul	0925-1107					
Length of main line(m)		400	400	500	500	600	600
Depth(m)		3300					
Surface temp. (°C)		22.5					
Wether		bc					
Wind		North3					
Flying squid						1	1
Diamondback squid							1
Sickle pomfret				2			

No. of research		OSVL 1006-01	OSVL 1006-02	OSVL 1006-03	OSVL 1006-04	OSVL 1006-05	OSVL 1006-06
Date		19-Dec					
position of	Lat. (N)	29-32.9	29-32.6	29-32.3	29-31.9	29-31.6	29-31.4
line set	Long. (E)	141-54.3	141-54.5	141-54.6	141-54.8	141-54.9	141-55.1
Time	Line set	1240	1247	1255	1259	1301	1310
(S.M.T.)	Line haul	1440-1655					
Length of main line(m)		500	500	600		500	500
Depth(m)		4280					
Surface temp. (°C)		21.6					
Wether		bc					
Wind		North4					
Flying squid							
Oil fish				1			
Sickle pomfret		1		1		1	

6. Data on mid-water trawl research

Four operations of the stern otter trawl were carried out. These operations were supervised by the captain, and were conducted by deck officers, crews, cadets and research staffs. The data of catch were recorded by the deck officers and research staff.

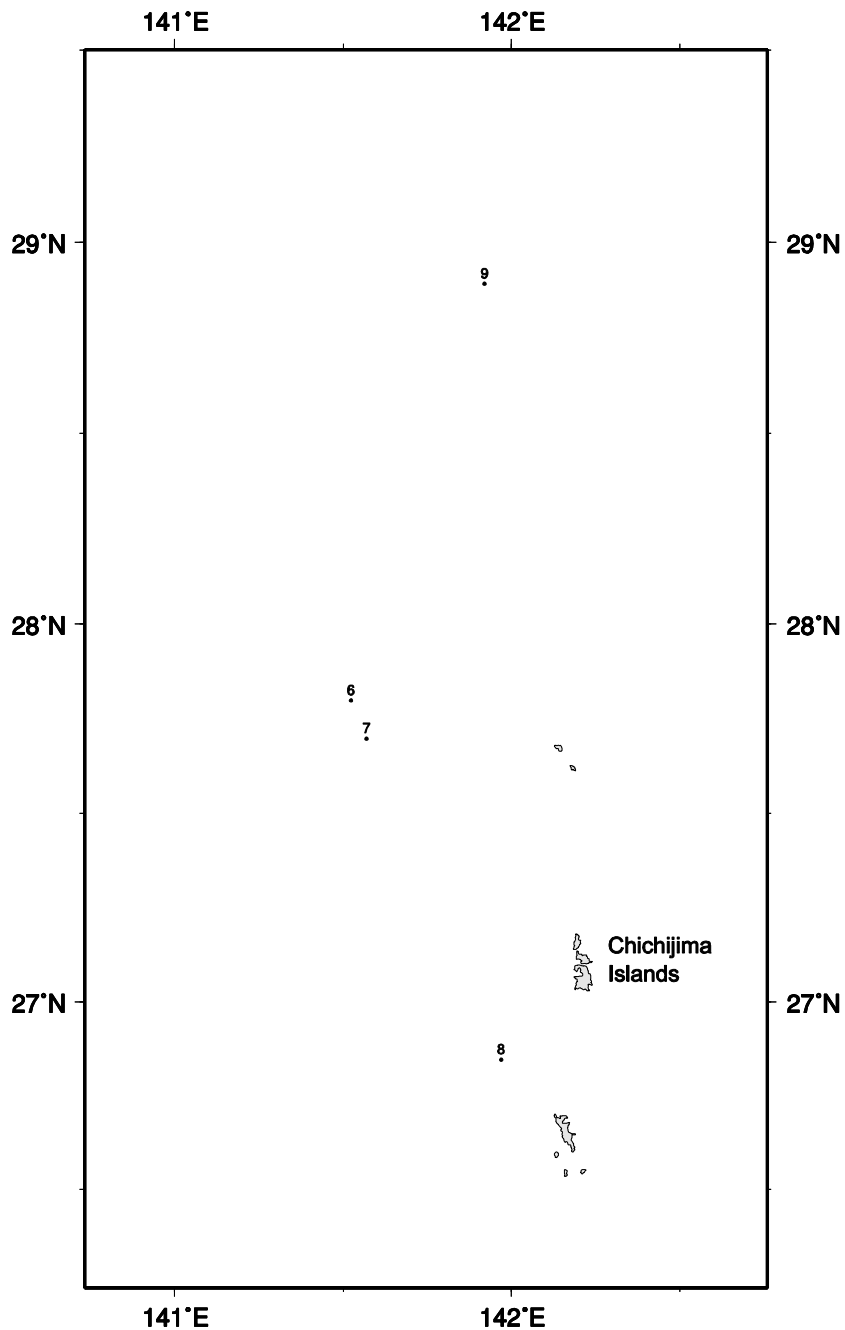


Figure 4. Locations of bottom trawl research

Table 4. Data on bottom trawl research during the “Oshoro Maru” Cruise#223

No. of research	Date and time of net tow (S.M.T.)		Position		Direction of tow	Speed of tow(K' t)	Bottom depth(m)	Wr	Wind
			Lat.(N)	Long.(E)					
OSMT1006	14-Dec	1408-1450	27-48.0	141-31.2	-	4.2	4144	bc	sw-5
OSMT1007	14-Dec	1614-1738	27-42.0	141-34.0	185~125	3.0	4143	bc	sw-5
OSMT1008	15-Dec	1641-1753	26-50.9	141-58.0	200	3.5	1670	c	nnw-3
OSMT1009	18-Dec	2000-2120	28-53.7	141-55.0	350	3.0	2117	bc	nnw-4

S.T.: Surface temperature

Wr: Weather (r: rain, o: 100% clouded, d: drizzling rain, f fog, bc: 25-75% clouded)

Table 5. Data on catches by bottom trawl research

Japanese name	Scientific Name	OSMT 1006		OSMT 1007		OSMT 1008		OSMT 1009	
		Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Darumazame	<i>Isistius brasiliensis</i>	-	-	1	0.64	-	-	1	0.30
Kohiredarumazame	<i>Isistius plutodus</i>	-	-	-	-	-	-	1	0.14
Unagi-ru	<i>Anguilliformes</i> spp.	7	0.01	-	-	-	-	-	-
Shigunagi	<i>Nemichthys scolopaceus</i>	-	-	6	0.03	1	0.001	1	0.003
Nokobaunagi	<i>Serrivomer sector</i>	-	-	15	1.58	7	0.1	27	0.47
Sokoivashi-ru	<i>Bathylagidae</i> spp.	-	-	3	0.05	1	0.02	8	0.18
Demenigisu-ru	<i>Opisthoproctidae</i> sp.	-	-	-	-	-	-	2	0.02
Sekitoriwashi-ru	<i>Alepocephalidae</i> sp.	-	-	2	0.1	-	-	-	-
Yokoeso-ru	<i>Gonostomatidae</i> spp.	10	0.14	107	0.6	4	0.05	36	0.27
Muneeso-ru	<i>Sternoptychidae</i> spp.	1	0.003	32	0.08	35	0.07	51	0.23
Horaieso-ru	<i>Chauliodontidae</i> spp.	-	-	47	0.99	9	0.12	97	1.63
Tokagehadaka-ru	<i>Astronesthidae</i> spp.	-	-	7	0.69	1	0.49	-	-
Hoteieso-ru	<i>Melanostomiidae</i> spp.	-	-	9	0.84	13	0.84	40	1.63
Hokiboshieso-ru	<i>Malacosteidae</i> spp.	-	-	-	-	10	0.2	5	0.07
Mitsumatayariuo-ru	<i>Idiacanthidae</i> spp.	-	-	6	0.02	11	0.09	2	0.04
Hudeeso-ru	<i>Notosudidae</i> sp.	-	-	-	-	-	-	3	0.02
Hadakaivashi-ru	<i>Mycetophidae</i> spp.	1	0.004	1055	4.14	373	1.12	917	4.07
Hadakaeso-ru	<i>Paralepididae</i> sp.	-	-	-	-	1	0.003	-	-
Kibahadaka	<i>Omosudis lowei</i>	-	-	2	0.02	-	-	-	-
Yarieso-ru	<i>Evermannellidae</i> sp.	-	-	-	-	-	-	6	0.21
Kawarihiredara	<i>Melanonus zugmayeri</i>	-	-	-	-	-	-	1	0.07
Saiuo-ru	<i>Bregmacerotidae</i> sp.	-	-	5	0.01	-	-	30	0.08
Sokodara-ru	<i>Macrouridae</i> sp.	-	-	-	-	4	0.26	-	-
Chochinanko-ru	<i>Ceratioidei</i> spp.	-	-	1	0.18	-	-	2	0.09
Chochinanko	<i>Himantolophus groenlandicus</i>	-	-	-	-	1	0.32	-	-
Onikinme	<i>Anoplogaster cornuta</i>	-	-	3	0.07	-	-	3	0.16
Kabutouo-ru	<i>Melamphidae</i> sp.	-	-	27	0.27	9	0.05	80	0.58
Akakujirauodamashi	<i>Barbourisia rufa</i>	-	-	1	0.01	-	-	1	0.08
Hurisodeuo-ru	<i>Trachipteridae</i> sp.	-	-	-	-	-	-	1	0.30
Kushisumikuiuo	<i>Howella parini</i>	-	-	3	0.05	-	-	18	0.19
Yaegisu	<i>Caristius macropus</i>	-	-	4	0.60	-	-	6	2.62
Kurobozagisu-ru	<i>Chiasmodontidae</i> sp.	1	0.003	-	-	1	0.04	3	0.04
Kurotachikamasu-ru	<i>Gempylidae</i> sp.	1	0.01	6	0.06	1	0.01	4	0.71
Kurokasago	<i>Ectreposebastes imus</i>	-	-	-	-	-	-	1	0.04
Shirokasago	<i>Pleurogrammus monoptyerygiu</i>	-	-	-	-	1	0.20	2	0.17
Hakohugu-ru	<i>Ostraciidae</i> sp.	-	-	-	-	-	-	1	0.01
Ebi-ru	<i>Decapoda</i> spp.	-	-	97	0.50	42	0.25	304	1.18
Tosoku-ru	<i>Cephalopoda</i> spp.	-	-	83	2.94	30	0.53	38	1.86
Kurage-ru	<i>Cnidaria</i> spp.	-	-	33	0.38	-	-	59	3.66