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**

1

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

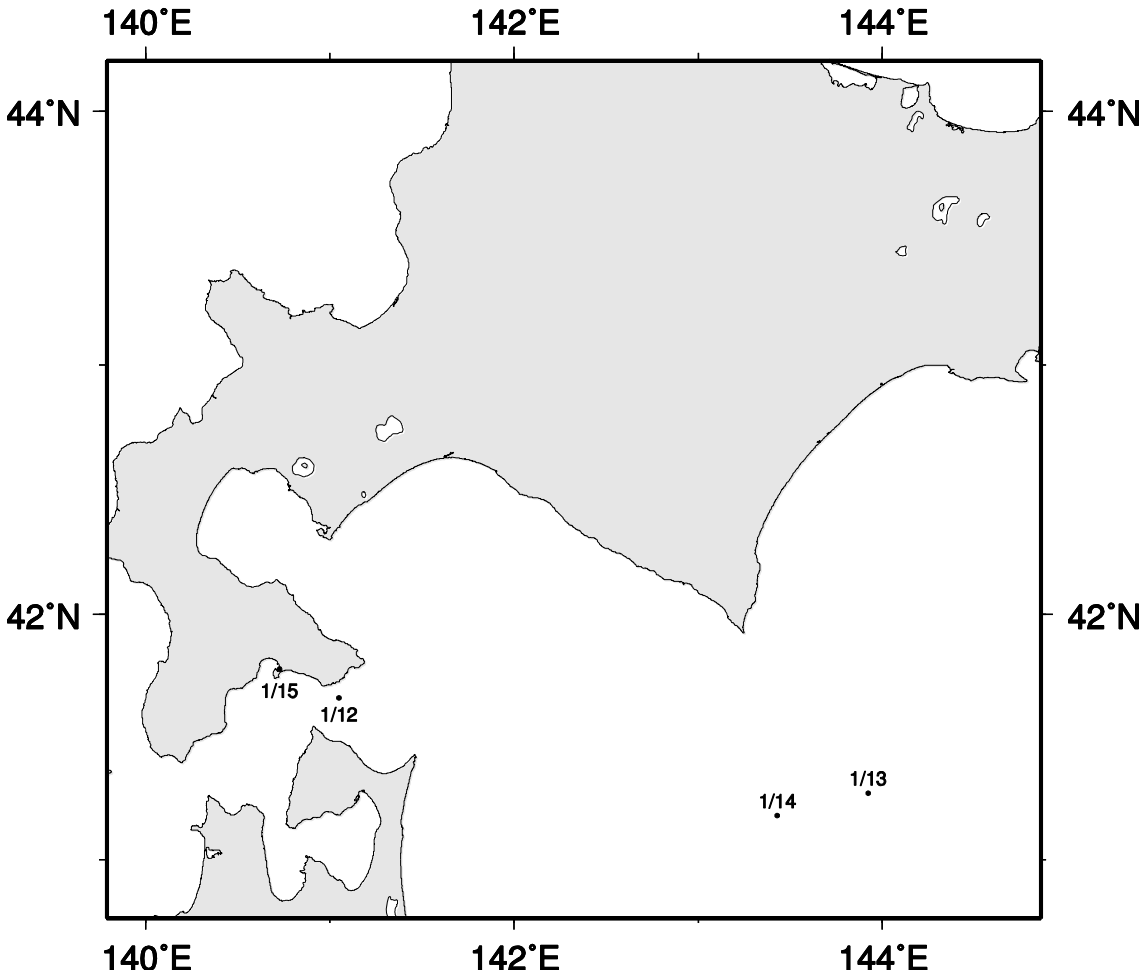

Figure 1. Noon position

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".

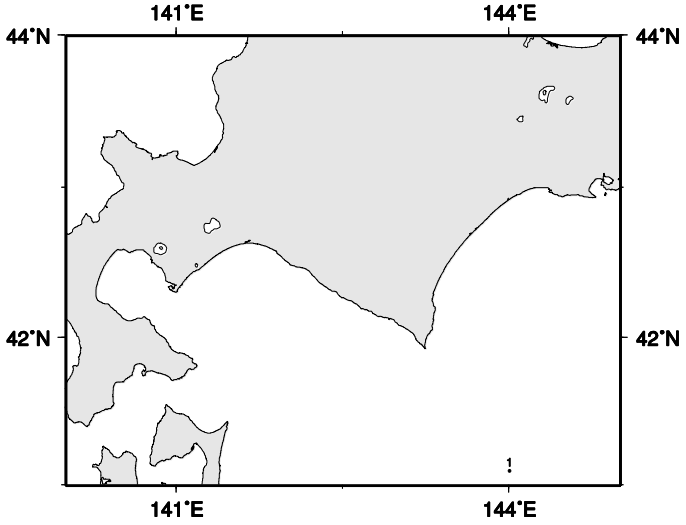

Figure 2. Oceanographic station

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	Position			S.M.T.		Length of wire	Angle of wire	Depth estimated by wire	Kind of	Flowmeter		Estimated volume of water	Wet weight (g)		Sample
no.	Lat. (N)	Lon.		Date	Hour	(m)	(°)	angle (m)	cloth	No.	Reading	filtered (m^3)	per haul	per 1000 m^3	no.
OS10001	41-05	144-01	E	13 Jan.	15:22	154	13	150	GG54	1858	1582	23.14	0.7	32	10001
(off Cape Erimo)									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	Wire length	Revolution								
No.	(m)	1	2	3	4	5	6	7	8	Mean
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

2

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			

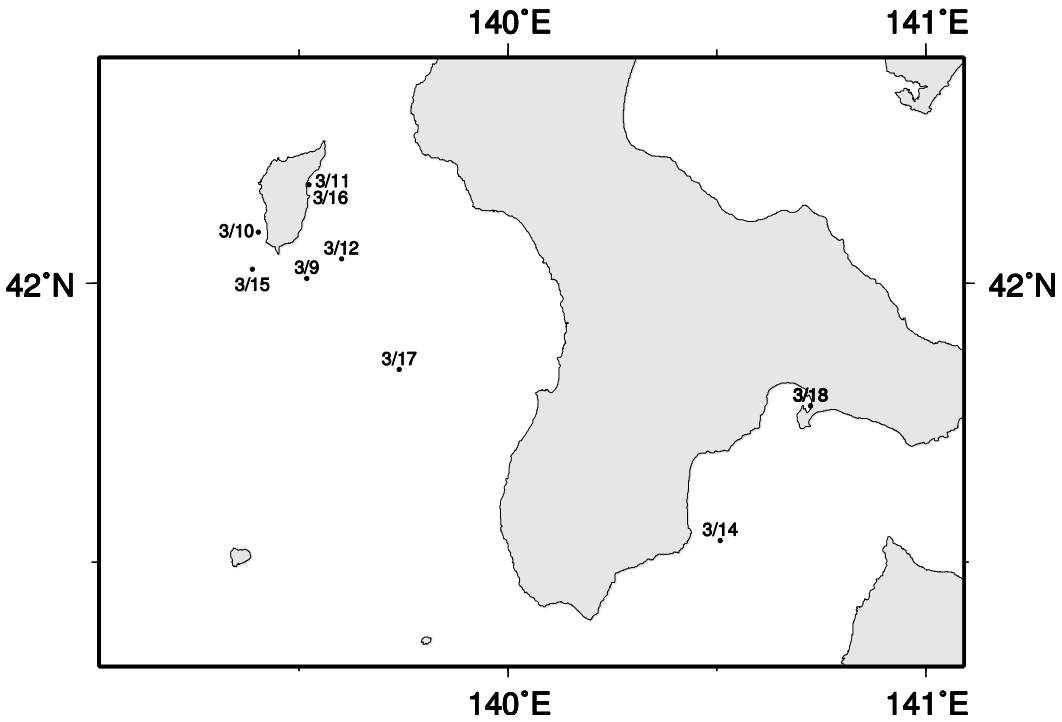

Figure 1. Noon position

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

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".

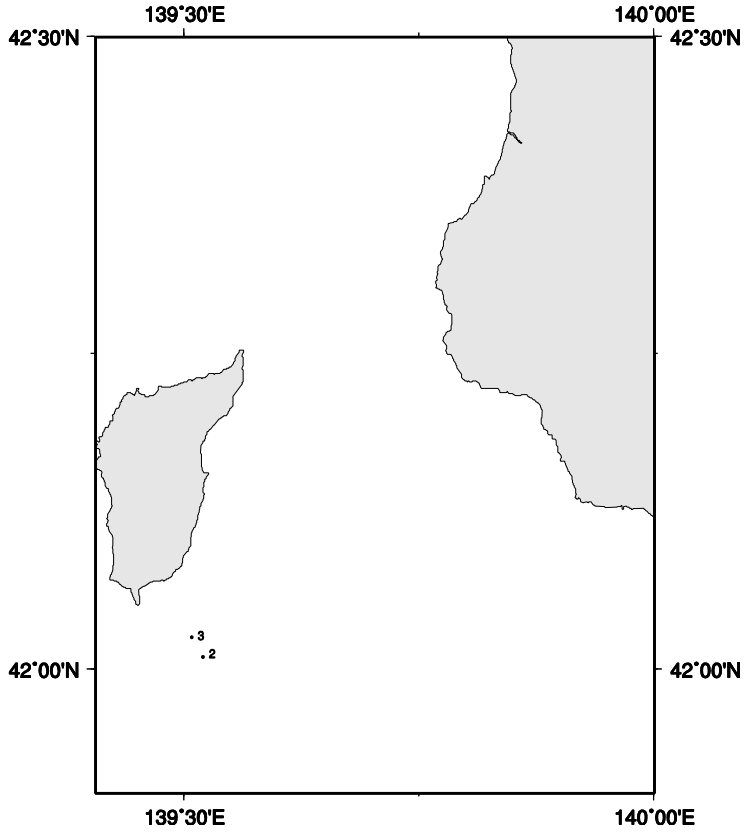

Figure 2. Oceanographic station

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		
Latitude	42-00.3N		
Longitude	139-31.1E		
Depth(m)	119		
Press.	Temp.	Sal.	SIG-T
5	7.815	34.067	26.568
10	7.832	34.070	26.568
20	7.834	34.070	26.568
30	7.800	34.071	26.573
40	7.738	34.073	26.584
50	7.667	34.069	26.592
75	6.601	34.069	26.739
100	5.938	34.074	26.828

Station	OS10003		
Latitude	42-01.2N		
Longitude	139-30.4E		
Depth(m)	120		
Press.	Temp.	Sal.	SIG-T
5	7.735	34.060	26.575
10	7.739	34.060	26.574
20	7.738	34.059	26.573
30	7.738	34.059	26.573
40	7.655	34.060	26.586
50	7.114	34.086	26.683
75	5.679	34.085	26.869
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.

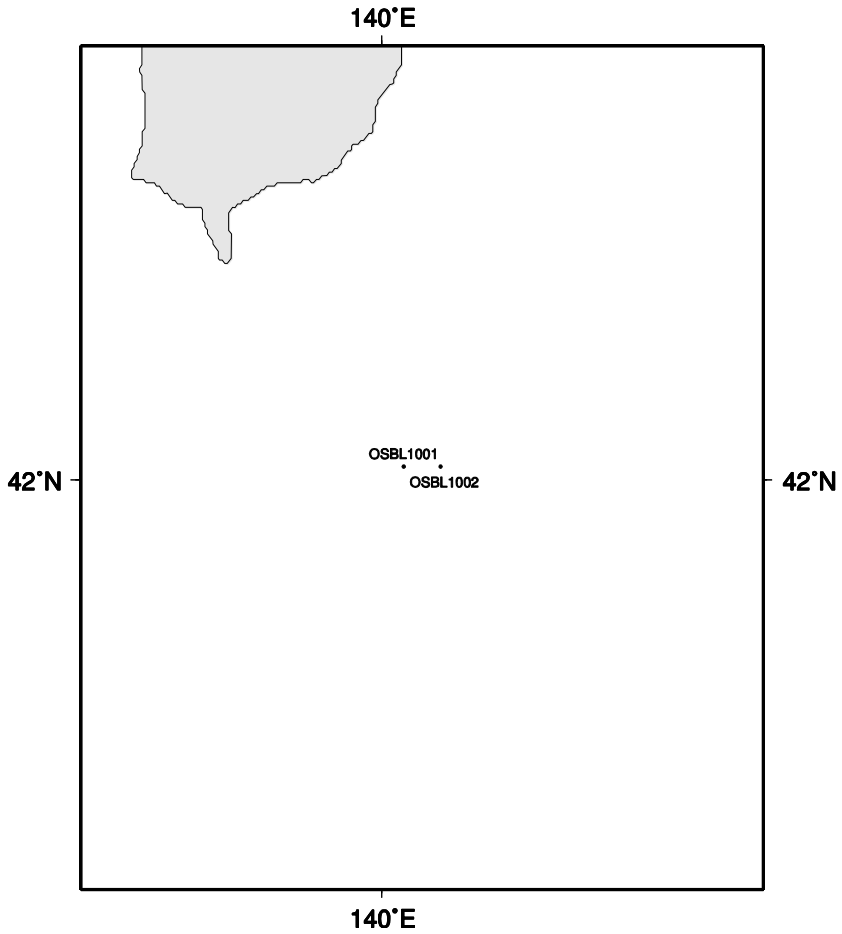

Figure 3. Locations of bottom long line research

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

3

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

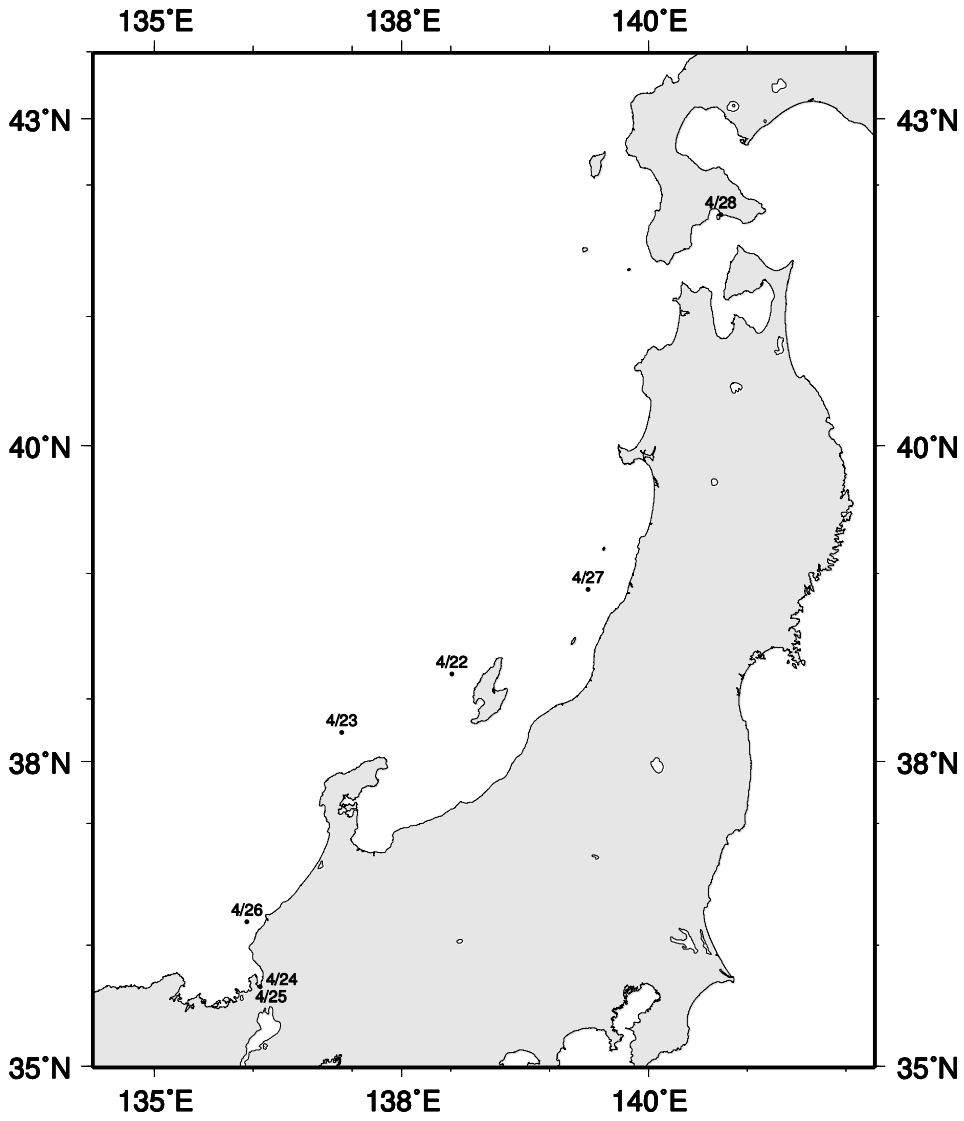

Figure 1. Noon position

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 Kajiwara
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

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”.

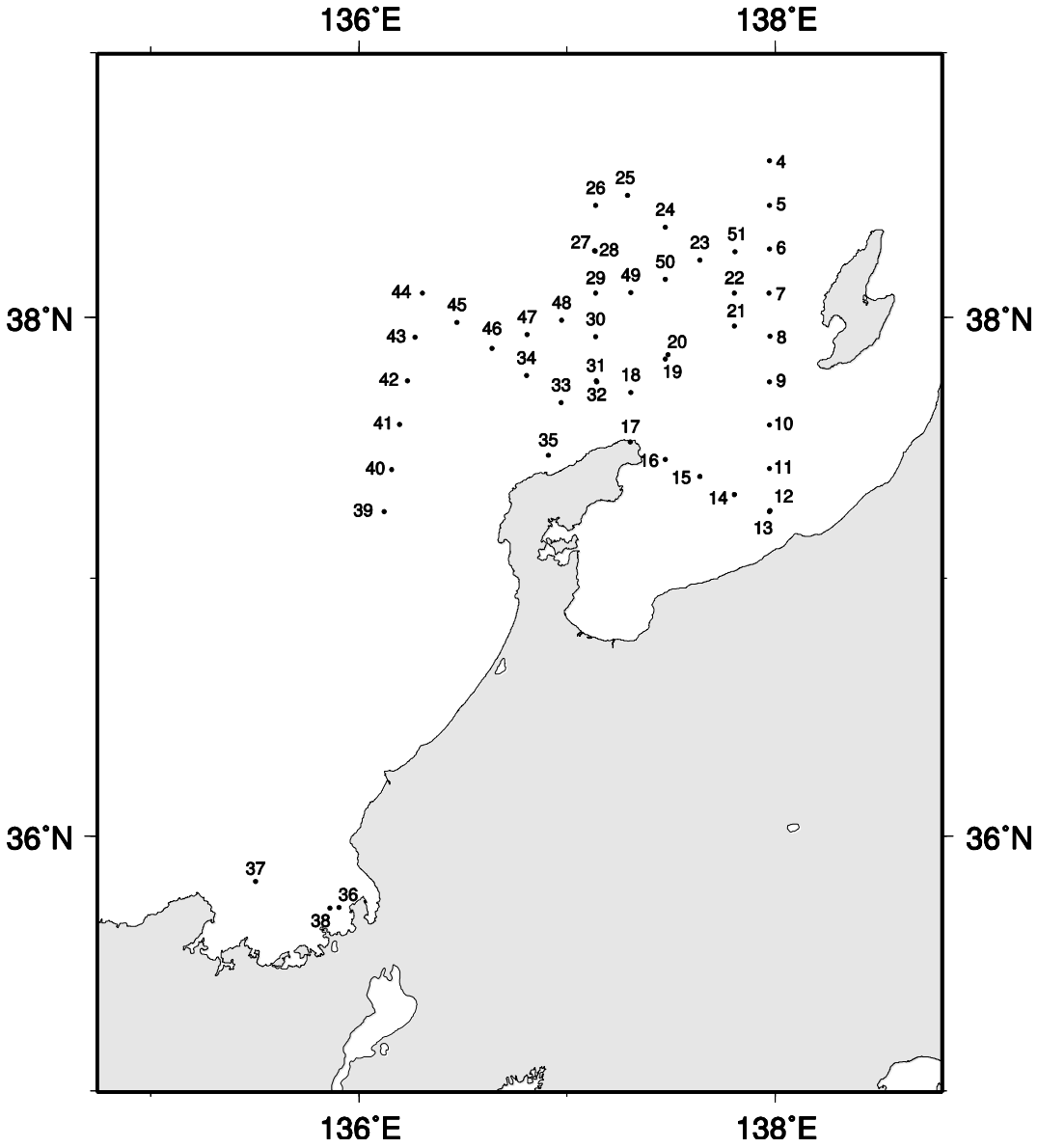

Figure 2. Oceanographic station

Table 1. List of Oceanographic Station

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
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
Longitude 138-00.0E
Latitude 38-40.0N
Depth(m) 1860

Press.	Temp.	Sal.	SIG-T
5	10.302	-	-
10	10.328	-	-
20	10.225	-	-
30	10.038	-	-
40	9.960	-	-
50	9.836	-	-
75	9.570	-	-
100	9.524	-	-
125	9.010	-	-
150	8.374	-	-
200	6.220	-	-
250	4.021	-	-
300	2.363	-	-
400	1.243	-	-

Station OS10005
Longitude 138-00.1E
Latitude 38-30.0N
Depth(m) 1550

Press.	Temp.	Sal.	SIG-T
5	10.210	-	-
10	10.211	-	-
20	10.148	-	-
30	9.864	-	-
40	9.938	-	-
50	9.925	-	-
75	9.590	-	-
100	9.540	-	-
125	9.360	-	-
150	8.812	-	-
200	6.099	-	-
250	4.732	-	-
300	2.727	-	-
400	1.336	-	-

Station OS10006
Longitude 138-00.1E
Latitude 38-20.0N
Depth(m) 1760

Press.	Temp.	Sal.	SIG-T
5	10.058	-	-
10	10.024	-	-
20	10.022	-	-
30	9.868	-	-
40	9.766	-	-
50	9.620	-	-
75	9.338	-	-
100	9.319	-	-
125	8.590	-	-
150	7.868	-	-
200	5.352	-	-
250	3.324	-	-
300	1.860	-	-
400	1.130	-	-

Station OS10007
Longitude 137-59.9E
Latitude 38-10.0N
Depth(m) 1867

Press.	Temp.	Sal.	SIG-T
5	9.839	-	-
10	9.811	-	-
20	9.820	-	-
30	9.880	-	-
40	9.888	-	-
50	9.776	-	-
75	9.269	-	-
100	8.414	-	-
125	7.340	-	-
150	6.098	-	-
200	3.892	-	-
250	2.000	-	-
300	1.347	-	-
400	0.897	-	-

Station OS10008
Longitude 138-00.1E
Latitude 38-00.2N
Depth(m) 1845

Press.	Temp.	Sal.	SIG-T
5	9.981	33.841	26.050
10	9.976	33.841	26.051
20	9.842	33.893	26.114
30	9.711	34.016	26.232
40	9.319	34.008	26.290
50	9.188	34.054	26.347
75	8.692	34.076	26.443
100	8.143	34.083	26.532
125	7.007	34.091	26.701
150	6.235	34.086	26.801
175	5.257	34.076	26.913
200	3.898	34.065	27.053
250	2.457	34.061	27.182
300	1.430	34.140	27.325
400	0.860	34.088	27.321

Station OS10009
Longitude 138-00.0E
Latitude 37-49.7N
Depth(m) 1732

Press.	Temp.	Sal.	SIG-T
5	9.899	-	-
10	9.899	-	-
20	9.910	-	-
30	9.978	-	-
40	9.832	-	-
50	9.740	-	-
75	9.490	-	-
100	9.110	-	-
125	8.340	-	-
150	7.454	-	-
200	4.719	-	-
250	2.500	-	-
300	1.617	-	-
400	0.910	-	-

Station OS10010
Longitude 138-00.0E
Latitude 37-39.9N
Depth(m) 1485

Press.	Temp.	Sal.	SIG-T
5	10.221	-	-
10	10.337	-	-
20	10.843	-	-
30	10.752	-	-
40	10.652	-	-
50	10.528	-	-
75	10.629	-	-
100	10.496	-	-
125	10.330	-	-
150	9.640	-	-
200	6.841	-	-
250	3.931	-	-
300	2.840	-	-
400	1.900	-	-

Station OS10011
Longitude 138-00.0E
Latitude 37-29.9N
Depth(m) 1118

Press.	Temp.	Sal.	SIG-T
5	10.381	-	-
10	10.391	-	-
20	10.340	-	-
30	10.244	-	-
40	10.142	-	-
50	10.140	-	-
75	9.700	-	-
100	9.620	-	-
125	9.530	-	-
150	9.230	-	-
200	5.682	-	-
250	2.540	-	-
300	1.350	-	-
400	0.893	-	-

Station OS10012
Longitude 138-00.0E
Latitude 37-20.0N
Depth(m) 565

Press.	Temp.	Sal.	SIG-T
5	10.163	33.024	25.382
10	10.173	33.177	25.500
20	10.146	33.503	25.759
30	9.996	33.929	26.116
40	10.052	34.000	26.162
50	9.986	34.007	26.179
75	9.723	34.015	26.229
100	9.637	34.048	26.270
125	9.442	34.058	26.309
150	9.044	34.071	26.384
175	7.805	34.087	26.586
200	5.210	34.071	26.914
250	2.476	34.060	27.180
300	2.293	34.146	27.264

Table 2. Oceanographic data (continued)

Station	OS10013
Longitude	138-00.2E
Latitude	37-20.2N
Depth(m)	577

Press.	Temp.	Sal.	SIG-T
5	10.179	-	-
10	10.140	-	-
20	10.030	-	-
30	10.020	-	-
40	10.010	-	-
50	9.960	-	-
75	9.740	-	-
100	9.620	-	-
125	9.390	-	-
150	8.982	-	-
200	5.113	-	-
250	2.570	-	-
300	1.593	-	-
400	0.901	-	-

Station	OS10014
Longitude	137-49.9E
Latitude	37-23.8N
Depth(m)	1553

Press.	Temp.	Sal.	SIG-T
5	10.139	-	-
10	10.101	-	-
20	9.988	-	-
30	9.782	-	-
40	9.780	-	-
50	9.680	-	-
75	9.480	-	-
100	9.440	-	-
125	9.110	-	-
150	7.163	-	-
200	3.101	-	-
250	1.822	-	-
300	1.503	-	-
400	1.017	-	-

Station	OS10015
Longitude	137-40.0E
Latitude	37-28.0N
Depth(m)	685

Press.	Temp.	Sal.	SIG-T
5	10.070	-	-
10	10.080	-	-
20	10.032	-	-
30	9.952	-	-
40	9.940	-	-
50	9.870	-	-
75	9.740	-	-
100	9.346	-	-
125	8.970	-	-
150	8.084	-	-
200	6.301	-	-
250	3.872	-	-
300	2.617	-	-
400	1.840	-	-

Station	OS10016
Longitude	137-30.0E
Latitude	37-32.0N
Depth(m)	785

Press.	Temp.	Sal.	SIG-T
5	10.019	-	-
10	10.011	-	-
20	10.000	-	-
30	10.002	-	-
40	9.990	-	-
50	9.812	-	-
75	9.630	-	-
100	9.526	-	-
125	9.410	-	-
150	8.854	-	-
200	5.112	-	-
250	3.002	-	-
300	1.790	-	-
400	1.036	-	-

Station	OS10017
Longitude	137-19.9E
Latitude	37-36.0N
Depth(m)	100

Press.	Temp.	Sal.	SIG-T
5	10.169	-	-
10	10.160	-	-
20	10.130	-	-
30	10.112	-	-
40	10.100	-	-
50	10.120	-	-
75	10.070	-	-
100	10.014	-	-
125	10.050	-	-
150	10.050	-	-
200	10.080	-	-
250	-2.220	-	-
300	-2.220	-	-
400	-2.220	-	-

Station	OS10018
Longitude	137-20.0E
Latitude	37-47.3N
Depth(m)	120

Press.	Temp.	Sal.	SIG-T
5	10.221	-	-
10	10.170	-	-
20	10.102	-	-
30	9.980	-	-
40	9.930	-	-
50	9.880	-	-
75	9.830	-	-
100	9.576	-	-
125	9.140	-	-
150	9.196	-	-
200	9.270	-	-
250	9.300	-	-
300	-2.220	-	-
400	-2.220	-	-

Station	OS10019
Longitude	137-30.0E
Latitude	37-55.0N
Depth(m)	450

Press.	Temp.	Sal.	SIG-T
5	2.250	-	-
10	2.221	-	-
20	2.022	-	-
30	1.830	-	-
40	1.654	-	-
50	1.608	-	-
75	1.410	-	-
100	1.300	-	-
125	1.180	-	-
150	1.060	-	-
200	0.880	-	-
250	0.898	-	-
300	0.900	-	-
400	0.910	-	-

Station	OS10020
Longitude	137-30.7E
Latitude	37-56.0N
Depth(m)	620

Press.	Temp.	Sal.	SIG-T
5	9.831	-	-
10	9.813	-	-
20	9.812	-	-
30	9.802	-	-
40	9.443	-	-
50	9.448	-	-
75	8.639	-	-
100	7.626	-	-
125	5.880	-	-
150	4.542	-	-
200	2.699	-	-
250	1.520	-	-
300	1.163	-	-
400	0.821	-	-

Station	OS10021
Longitude	137-49-9E
Latitude	38-02.5N
Depth(m)	1783

Press.	Temp.	Sal.	SIG-T
5	9.199	-	-
10	9.171	-	-
20	9.170	-	-
30	9.150	-	-
40	7.955	-	-
50	7.435	-	-
75	6.259	-	-
100	5.554	-	-
125	4.330	-	-
150	3.308	-	-
200	2.068	-	-
250	1.348	-	-
300	1.020	-	-
400	0.787	-	-

Table 2. Oceanographic data (continued)

Station OS10022
Longitude 137-49.9E
Latitude 38-10.0N
Depth(m) 1874

Press.	Temp.	Sal.	SIG-T
5	9.109	-	-
10	9.041	-	-
20	8.063	-	-
30	7.346	-	-
40	6.802	-	-
50	6.514	-	-
75	5.760	-	-
100	5.018	-	-
125	3.570	-	-
150	2.592	-	-
200	1.711	-	-
250	1.240	-	-
300	1.003	-	-
400	0.793	-	-

Station OS10023
Longitude 137-39.9E
Latitude 38-17.5N
Depth(m) 1830

Press.	Temp.	Sal.	SIG-T
5	9.849	-	-
10	9.841	-	-
20	9.830	-	-
30	9.780	-	-
40	9.450	-	-
50	9.240	-	-
75	7.989	-	-
100	7.093	-	-
125	5.580	-	-
150	3.498	-	-
200	2.349	-	-
250	1.660	-	-
300	1.160	-	-
400	0.784	-	-

Station OS10024
Longitude 137-29.9E
Latitude 38-25.0N
Depth(m) 1215

Press.	Temp.	Sal.	SIG-T
5	9.980	-	-
10	9.998	-	-
20	9.958	-	-
30	9.920	-	-
40	9.722	-	-
50	9.658	-	-
75	9.250	-	-
100	8.894	-	-
125	7.940	-	-
150	6.924	-	-
200	4.682	-	-
250	2.631	-	-
300	1.627	-	-
400	0.960	-	-

Station OS10025
Longitude 137-19.1E
Latitude 38-32.2N
Depth(m) 1148

Press.	Temp.	Sal.	SIG-T
5	10.120	-	-
10	10.131	-	-
20	10.122	-	-
30	10.130	-	-
40	10.112	-	-
50	10.112	-	-
75	9.890	-	-
100	9.826	-	-
125	9.780	-	-
150	9.682	-	-
200	9.062	-	-
250	6.015	-	-
300	3.690	-	-
400	1.429	-	-

Station OS10026
Longitude 137-10.0E
Latitude 38-29.9N
Depth(m) 439

Press.	Temp.	Sal.	SIG-T
5	10.265	-	-
10	10.179	-	-
20	10.172	-	-
30	10.170	-	-
40	10.180	-	-
50	10.176	-	-
75	10.180	-	-
100	10.086	-	-
125	9.920	-	-
150	9.742	-	-
200	9.221	-	-
250	6.771	-	-
300	4.140	-	-
400	1.577	-	-

Station OS10027
Longitude 137-09.6E
Latitude 38-.19.6N
Depth(m) 1150

Press.	Temp.	Sal.	SIG-T
5	9.795	33.916	26.140
10	9.793	33.916	26.140
20	9.792	33.915	26.140
30	10.173	34.079	26.203
40	10.154	34.075	26.204
50	10.074	34.086	26.226
75	9.904	34.091	26.258
100	9.662	34.083	26.292
125	9.471	34.144	26.372
150	9.327	34.157	26.406
175	9.069	34.155	26.445
200	7.972	34.098	26.570
250	4.723	34.087	26.983
300	2.237	34.072	27.209
400	1.184	34.069	27.285

Station OS10028
Longitude 137-09.7E
Latitude 38-19.5N
Depth(m) 1150

Press.	Temp.	Sal.	SIG-T
5	9.849	-	-
10	9.831	-	-
20	9.830	-	-
30	10.063	-	-
40	10.160	-	-
50	10.110	-	-
75	9.819	-	-
100	9.710	-	-
125	9.520	-	-
150	9.296	-	-
200	7.982	-	-
250	4.652	-	-
300	2.230	-	-
400	1.203	-	-

Station OS10029
Longitude 137-10.0E
Latitude 38-09.9N
Depth(m) 823

Press.	Temp.	Sal.	SIG-T
5	10.010	-	-
10	10.009	-	-
20	9.998	-	-
30	10.032	-	-
40	10.052	-	-
50	9.910	-	-
75	9.800	-	-
100	9.328	-	-
125	8.950	-	-
150	8.306	-	-
200	5.892	-	-
250	3.481	-	-
300	2.087	-	-
400	0.974	-	-

Station OS10030
Longitude 137-09.9E
Latitude 38-00.0N
Depth(m) 260

Press.	Temp.	Sal.	SIG-T
5	9.939	-	-
10	9.930	-	-
20	9.910	-	-
30	9.910	-	-
40	9.854	-	-
50	9.800	-	-
75	9.650	-	-
100	9.450	-	-
125	9.300	-	-
150	8.568	-	-
200	6.082	-	-
250	3.392	-	-
300	3.243	-	-
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

Press.	Temp.	Sal.	SIG-T
5	11.690	-	-
10	11.681	-	-
20	11.420	-	-
30	11.274	-	-
40	11.064	-	-
50	10.622	-	-
75	10.330	-	-
100	10.294	-	-
125	10.200	-	-
150	9.782	-	-
200	8.115	-	-
250	3.715	-	-
300	1.300	-	-
400	1.460	-	-

Station	OS10041
Longitude	136-13.4E
Latitude	37-40.0N
Depth(m)	362

Press.	Temp.	Sal.	SIG-T
5	11.541	-	-
10	11.531	-	-
20	11.380	-	-
30	11.372	-	-
40	11.292	-	-
50	10.962	-	-
75	10.900	-	-
100	10.580	-	-
125	10.190	-	-
150	9.464	-	-
200	6.571	-	-
250	3.110	-	-
300	1.793	-	-
400	0.916	-	-

Station	OS10042
Longitude	136-15.7E
Latitude	37-50.0N
Depth(m)	820

Press.	Temp.	Sal.	SIG-T
5	11.541	-	-
10	11.550	-	-
20	11.344	-	-
30	10.990	-	-
40	10.592	-	-
50	10.500	-	-
75	9.860	-	-
100	9.670	-	-
125	9.090	-	-
150	8.282	-	-
200	4.482	-	-
250	2.369	-	-
300	1.380	-	-
400	0.760	-	-

Station	OS10043
Longitude	136-17.9E
Latitude	38-00.0N
Depth(m)	1740

Press.	Temp.	Sal.	SIG-T
5	10.720	-	-
10	10.719	-	-
20	10.640	-	-
30	10.628	-	-
40	10.570	-	-
50	10.392	-	-
75	10.200	-	-
100	10.004	-	-
125	9.570	-	-
150	8.572	-	-
200	5.050	-	-
250	2.329	-	-
300	1.373	-	-
400	0.860	-	-

Station	OS10044
Longitude	136-19.9E
Latitude	38-10.0N
Depth(m)	2542

Press.	Temp.	Sal.	SIG-T
5	10.320	-	-
10	10.310	-	-
20	10.312	-	-
30	10.047	-	-
40	10.280	-	-
50	10.152	-	-
75	9.901	-	-
100	9.648	-	-
125	9.210	-	-
150	9.140	-	-
200	6.611	-	-
250	3.270	-	-
300	1.783	-	-
400	0.977	-	-

Station	OS10045
Longitude	136-30.0E
Latitude	38-03.4N
Depth(m)	1308

Press.	Temp.	Sal.	SIG-T
5	10.510	-	-
10	10.518	-	-
20	10.422	-	-
30	10.222	-	-
40	10.176	-	-
50	10.175	-	-
75	10.010	-	-
100	9.906	-	-
125	9.690	-	-
150	9.392	-	-
200	6.610	-	-
250	2.882	-	-
300	1.843	-	-
400	0.801	-	-

Station	OS10046
Longitude	136-40.0E
Latitude	37-57.4N
Depth(m)	500

Press.	Temp.	Sal.	SIG-T
5	10.809	-	-
10	10.792	-	-
20	10.800	-	-
30	10.402	-	-
40	10.322	-	-
50	10.288	-	-
75	10.390	-	-
100	10.216	-	-
125	9.580	-	-
150	8.732	-	-
200	6.951	-	-
250	3.739	-	-
300	1.657	-	-
400	0.767	-	-

Station	OS10047
Longitude	136-50.1E
Latitude	38-00.6N
Depth(m)	338

Press.	Temp.	Sal.	SIG-T
5	10.121	-	-
10	10.121	-	-
20	10.122	-	-
30	10.106	-	-
40	9.992	-	-
50	9.812	-	-
75	9.590	-	-
100	9.390	-	-
125	9.260	-	-
150	8.910	-	-
200	6.175	-	-
250	3.020	-	-
300	1.493	-	-
400	1.080	-	-

Station	OS10048
Longitude	137-00.0E
Latitude	38-03.8N
Depth(m)	395

Press.	Temp.	Sal.	SIG-T
5	10.241	-	-
10	10.240	-	-
20	10.220	-	-
30	10.148	-	-
40	9.990	-	-
50	9.882	-	-
75	9.570	-	-
100	9.090	-	-
125	8.650	-	-
150	7.504	-	-
200	4.921	-	-
250	2.661	-	-
300	1.540	-	-
400	0.720	-	-

Station	OS10049
Longitude	137-20.0E
Latitude	38-10.1N
Depth(m)	1369

Press.	Temp.	Sal.	SIG-T
5	10.121	-	-
10	10.110	-	-
20	9.815	-	-
30	8.799	-	-
40	7.942	-	-
50	7.035	-	-
75	5.529	-	-
100	4.717	-	-
125	3.290	-	-
150	2.642	-	-
200	1.770	-	-
250	1.221	-	-
300	0.973	-	-
400	0.690	-	-

Station	OS10050
Longitude	137-30.0E
Latitude	38-13.1N
Depth(m)	990

Press.	Temp.	Sal.	SIG-T
5	9.890	-	-
10	9.891	-	-
20	9.872	-	-
30	9.624	-	-
40	8.775	-	-
50	8.055	-	-
75	6.620	-	-
100	6.032	-	-
125	4.820	-	-
150	3.932	-	-
200	2.169	-	-
250	1.440	-	-
300	1.027	-	-
400	0.743	-	-

Station	OS10051
Longitude	137-50.0E
Latitude	38-19.4N
Depth(m)	1850

Press.	Temp.	Sal.	SIG-T
5	10.470	-	-
10	10.468	-	-
20	10.085	-	-
30	9.970	-	-
40	9.890	-	-
50	9.622	-	-
75	9.550	-	-
100	9.252	-	-
125	8.830	-	-
150	8.222	-	-
200	5.631	-	-
250	2.950	-	-
300	1.857	-	-
400	1.030	-	-

4

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

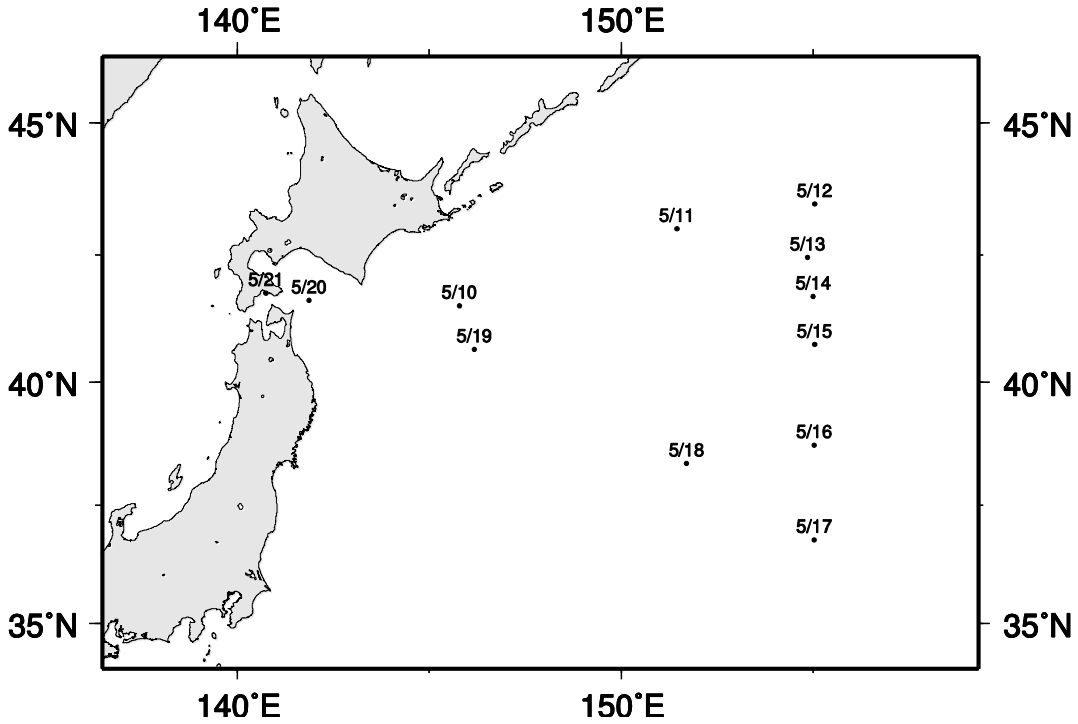

Figure 1. Noon position

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".

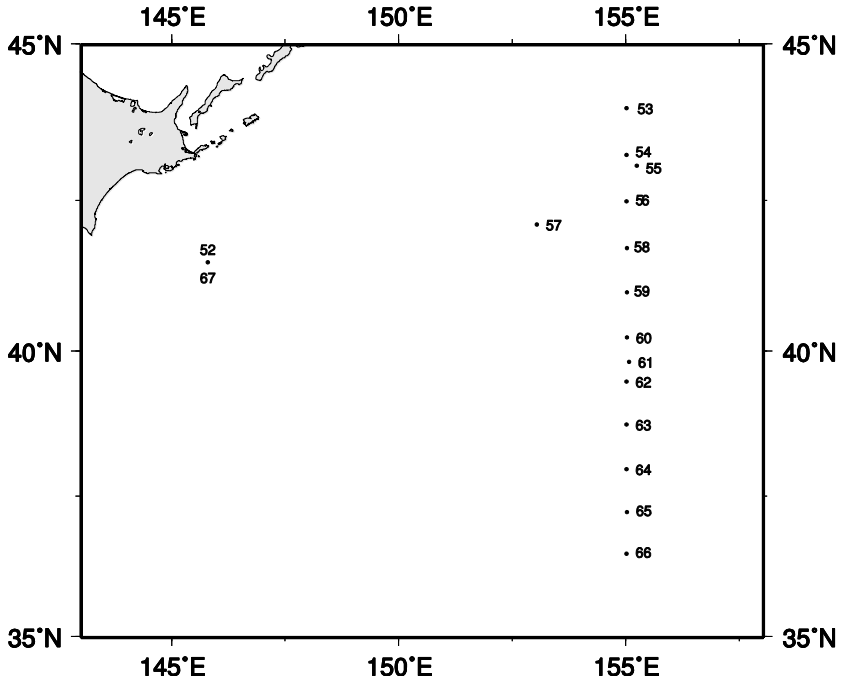

Figure 2. Oceanographic station

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
Longitude 145-46.8E
Latitude 41-30.1N
Depth(m) 6950

Press.	Temp.	Sal.	SIG-T
5	2.382	32.800	26.180
10	2.422	32.819	26.192
20	2.153	32.839	26.229
30	2.011	32.856	26.253
40	2.410	32.988	26.329
50	1.508	32.897	26.322
75	0.494	32.882	26.372
100	2.211	33.145	26.470
125	1.550	33.160	26.530
150	0.549	33.137	26.574
175	0.912	33.203	26.606
200	0.830	33.231	26.633
250	1.247	33.352	26.705
300	1.703	33.455	26.755
400	2.040	33.635	26.875
500	3.301	33.912	26.989
600	3.404	34.049	27.089
700	3.261	34.129	27.166
800	3.194	34.215	27.241
900	3.147	34.269	27.288
1000	2.968	34.320	27.345
1200	2.646	34.372	27.416
1500	2.443	34.468	27.509

Station OS10053
Longitude 155-00.0E
Latitude 44-00.0N
Depth(m) 5290

Press.	Temp.	Sal.	SIG-T
5	3.834	33.112	26.301
10	3.838	33.112	26.300
20	3.839	33.112	26.301
30	3.768	33.106	26.302
40	3.516	33.080	26.306
50	3.478	33.083	26.312
75	3.251	33.123	26.365
100	3.060	33.251	26.484
125	2.853	33.398	26.619
150	2.369	33.461	26.710
175	2.589	33.555	26.767
200	2.672	33.635	26.824
250	2.843	33.740	26.893
300	3.525	33.907	26.963
400	3.137	33.980	27.058
500	3.215	34.107	27.152
600	3.194	34.208	27.235
700	3.107	34.284	27.304
800	2.947	34.330	27.355
900	2.845	34.371	27.397
1000	2.713	34.408	27.438
1200	2.402	34.457	27.504
1500	2.196	34.527	27.577

Station OS10054
Longitude 155-00.0E
Latitude 43-15.2N
Depth(m) 5490

Press.	Temp.	Sal.	SIG-T
5	5.245	33.364	26.351
10	5.250	33.364	26.350
20	5.197	33.366	26.357
30	5.130	33.372	26.370
40	5.078	33.390	26.390
50	5.072	33.399	26.398
75	4.932	33.443	26.449
100	5.232	33.542	26.493
125	5.336	33.578	26.509
150	5.308	33.598	26.528
175	4.589	33.612	26.620
200	3.981	33.635	26.702
250	3.153	33.658	26.800
300	3.211	33.735	26.856
400	3.506	33.909	26.967
500	3.962	34.122	27.092
600	3.228	34.137	27.175
700	3.060	34.210	27.249
800	3.157	34.309	27.319
900	2.940	34.344	27.367
1000	2.762	34.389	27.418
1200	2.527	34.449	27.487
1500	2.270	34.518	27.564

Station OS10055
Longitude 155-13.3E
Latitude 43-04.9N
Depth(m) 5190

Press.	Temp.	Sal.	SIG-T
5	8.198	33.897	26.378
10	8.191	33.895	26.377
20	8.189	33.901	26.385
30	7.491	33.791	26.398
40	6.611	33.651	26.408
50	6.641	33.660	26.411
75	6.284	33.615	26.423
100	6.559	33.737	26.483
125	5.951	33.647	26.490
150	6.392	33.757	26.520
175	5.759	33.746	26.592
200	4.727	33.694	26.670
250	4.562	33.826	26.793
300	3.658	33.784	26.853
400	3.491	33.907	26.967
500	3.394	34.009	27.058
600	3.276	34.104	27.145
700	3.108	34.187	27.226
800	3.156	34.285	27.300
900	2.929	34.330	27.356
1000	2.800	34.372	27.402
1200	2.596	34.441	27.474
1500	2.290	34.509	27.555

Station OS10056
Longitude 155-00.0E
Latitude 42-29.9N
Depth(m) 5155

Press.	Temp.	Sal.	SIG-T
5	6.731	33.701	26.432
10	6.728	33.701	26.432
20	6.728	33.701	26.432
30	6.728	33.701	26.432
40	6.638	33.700	26.443
50	6.535	33.713	26.467
75	6.097	33.704	26.517
100	6.257	33.759	26.539
125	6.201	33.756	26.544
150	6.138	33.751	26.548
175	5.861	33.723	26.561
200	5.671	33.708	26.572
250	4.891	33.753	26.699
300	4.087	33.757	26.788
400	3.888	33.889	26.914
500	3.738	34.018	27.031
600	3.779	34.147	27.130
700	3.601	34.229	27.213
800	3.347	34.299	27.293
900	3.156	34.340	27.344
1000	2.866	34.371	27.395
1200	2.608	34.432	27.466
1500	2.270	34.504	27.552

Station OS10057
Longitude 153-01.5E
Latitude 42-07.5N
Depth(m) 5322

Press.	Temp.	Sal.	SIG-T
5	5.623	33.132	26.123
10	5.623	33.141	26.130
20	5.613	33.155	26.142
30	6.463	33.565	26.360
40	6.632	33.634	26.392
50	5.994	33.579	26.431
75	4.251	33.391	26.481
100	4.182	33.460	26.543
125	3.824	33.479	26.594
150	3.172	33.502	26.674
200	5.469	33.943	26.783
250	3.979	33.812	26.843
300	2.878	33.761	26.907
400	3.713	34.015	27.032
500	3.206	34.078	27.130
600	3.352	34.234	27.241
700	3.110	34.297	27.314
800	2.908	34.340	27.367
900	2.782	34.385	27.414
1000	2.637	34.428	27.461

Station OS10058
Longitude 155-00.7E
Latitude 41-44.3N
Depth(m) 5540

Press.	Temp.	Sal.	SIG-T
5	8.757	33.901	26.296
10	8.725	33.896	26.297
20	8.532	33.879	26.313
30	8.080	33.845	26.355
40	7.405	33.825	26.437
50	6.576	33.708	26.458
75	6.108	33.686	26.501
100	6.184	33.723	26.520
125	5.969	33.698	26.528
150	5.744	33.673	26.536
175	5.740	33.691	26.550
200	5.881	33.761	26.588
250	4.899	33.767	26.709
300	4.100	33.766	26.794
400	4.463	34.003	26.944
500	3.906	34.066	27.053
600	3.661	34.144	27.140
700	3.586	34.243	27.225
800	3.259	34.274	27.282
900	3.057	34.319	27.336
1000	2.874	34.363	27.388
1200	2.692	34.439	27.465
1500	2.326	34.503	27.547

Station OS10059
Longitude 155-00.1E
Latitude 41-00.0N
Depth(m) 5475

Press.	Temp.	Sal.	SIG-T
5	10.521	34.096	26.156
10	10.483	34.098	26.165
20	10.452	34.093	26.166
30	10.419	34.090	26.170
40	9.571	33.968	26.217
50	8.417	33.847	26.306
75	7.514	33.781	26.387
100	7.488	33.837	26.434
125	6.249	33.672	26.472
150	6.435	33.740	26.501
175	5.980	33.721	26.545
200	5.507	33.699	26.585
250	5.122	33.797	26.708
300	4.075	33.748	26.783
400	4.554	33.980	26.916
500	4.418	34.077	27.008
600	3.852	34.128	27.108
700	3.798	34.233	27.197
800	3.470	34.296	27.279
900	3.230	34.335	27.333
1000	3.016	34.377	27.387
1200	2.623	34.428	27.462
1500	2.315	34.506	27.550

Station OS10060
Longitude 155-00.2E
Latitude 40-15.0N
Depth(m) 5550

Press.	Temp.	Sal.	SIG-T
5	11.748	34.275	26.074
10	11.710	34.275	26.080
20	11.646	34.278	26.095
30	11.634	34.278	26.097
40	11.629	34.278	26.098
50	11.619	34.278	26.100
75	11.162	34.256	26.167
100	10.825	34.232	26.209
125	10.477	34.190	26.237
150	10.151	34.164	26.273
175	9.689	34.114	26.313
200	9.326	34.079	26.344
250	7.976	33.945	26.449
300	7.077	33.959	26.588
400	5.026	33.880	26.784
500	4.109	33.930	26.924
600	4.037	34.064	27.038
700	3.925	34.206	27.162
800	3.554	34.267	27.248
900	3.252	34.304	27.307
1000	3.073	34.355	27.364
1200	2.709	34.425	27.452
1500	2.339	34.499	27.543

Station OS10061
Longitude 155-02.9E
Latitude 39-50.2N
Depth(m) 5550

Press.	Temp.	Sal.	SIG-T
5	11.186	34.212	26.128
10	11.181	34.214	26.130
20	11.165	34.212	26.132
30	11.072	34.212	26.149
40	11.072	34.214	26.150
50	11.061	34.212	26.151
75	10.442	34.135	26.201
100	7.729	33.798	26.369
125	6.506	33.714	26.472
150	6.007	33.662	26.495
175	6.122	33.690	26.502
200	6.012	33.690	26.516
250	5.857	33.772	26.600
300	4.973	33.769	26.702
400	3.907	33.812	26.851
500	4.077	33.969	26.958
600	4.110	34.138	27.089
700	3.786	34.201	27.172
800	3.368	34.269	27.267
900	3.152	34.320	27.328
1000	2.994	34.352	27.368
1200	2.657	34.424	27.455
1500	2.352	34.503	27.545

Station OS10062
Longitude 155-00.0E
Latitude 39-30.0N
Depth(m) 5620

Press.	Temp.	Sal.	SIG-T
5	10.439	34.113	26.184
10	10.440	34.113	26.184
20	10.444	34.114	26.184
30	10.346	34.094	26.186
40	10.024	34.059	26.213
50	10.018	34.060	26.215
75	8.944	34.039	26.375
100	8.576	34.015	26.413
125	7.580	33.890	26.463
150	6.762	33.780	26.490
175	6.283	33.744	26.525
200	6.484	33.816	26.555
250	6.108	33.874	26.649
300	5.393	33.885	26.746
400	4.350	33.924	26.894
500	4.071	34.036	27.012
600	3.849	34.136	27.114
700	3.711	34.224	27.198
800	3.424	34.279	27.270
900	3.205	34.322	27.325
1000	3.057	34.368	27.375
1200	2.717	34.429	27.455
1500	2.326	34.505	27.549

Station OS10063
Longitude 154-59.8E
Latitude 38-45.6N
Depth(m) 5775

Press.	Temp.	Sal.	SIG-T
5	13.476	34.417	25.845
10	13.403	34.414	25.858
20	13.311	34.411	25.874
30	13.276	34.407	25.878
40	13.248	34.402	25.880
50	13.213	34.397	25.883
75	13.121	34.384	25.892
100	11.905	34.272	26.042
125	10.935	34.193	26.159
150	10.374	34.180	26.247
175	9.880	34.132	26.294
200	9.624	34.109	26.319
250	8.362	33.977	26.416
300	6.884	33.810	26.497
400	4.735	33.833	26.780
500	4.953	34.030	26.912
600	4.413	34.139	27.058
700	4.069	34.208	27.149
800	3.721	34.277	27.239
900	3.410	34.333	27.315
1000	3.144	34.375	27.373
1200	2.646	34.425	27.458
1500	2.383	34.497	27.537

Station OS10064
Longitude 154-59.6E
Latitude 37-59.5N
Depth(m) 5970

Press.	Temp.	Sal.	SIG-T
5	12.888	34.304	25.876
10	12.876	34.303	25.878
20	12.820	34.302	25.888
30	12.383	34.279	25.956
40	12.103	34.266	26.000
50	12.047	34.261	26.007
75	10.857	34.211	26.187
100	10.594	34.207	26.230
125	10.183	34.159	26.264
150	9.357	34.069	26.332
175	8.745	34.009	26.382
200	8.404	33.978	26.411
250	7.728	33.898	26.449
300	6.386	33.857	26.600
400	4.526	33.843	26.811
500	4.512	34.006	26.941
600	4.359	34.124	27.051
700	3.986	34.191	27.144
800	3.603	34.265	27.242
900	3.327	34.314	27.307
1000	3.039	34.354	27.366
1200	2.758	34.430	27.452
1500	2.380	34.502	27.542

Station OS10065
Longitude 155-00.4E
Latitude 37-14.4N
Depth(m) 5755

Press.	Temp.	Sal.	SIG-T
5	14.477	34.405	25.627
10	14.455	34.427	25.649
20	14.441	34.437	25.659
30	14.415	34.437	25.665
40	14.390	34.436	25.670
50	14.334	34.436	25.681
75	13.687	34.390	25.781
100	12.299	34.264	25.961
125	11.547	34.224	26.072
150	11.012	34.204	26.154
200	10.784	34.210	26.199
250	10.510	34.189	26.231
300	9.778	34.096	26.284
400	7.353	33.971	26.559
500	5.340	33.942	26.797
600	4.421	34.002	26.948
700	4.193	34.126	27.071
800	3.822	34.207	27.174
900	3.493	34.270	27.256
1000	3.223	34.314	27.317
1200	2.778	34.418	27.440
1500	2.361	34.508	27.548

Station OS10066
Longitude 154-59.9E
Latitude 36-30.0N
Depth(m) 5705

Press.	Temp.	Sal.	SIG-T
5	17.582	34.631	25.093
10	17.532	34.651	25.120
20	17.510	34.656	25.129
30	17.501	34.660	25.134
40	17.492	34.668	25.143
50	17.295	34.654	25.179
75	17.098	34.636	25.213
100	16.162	34.585	25.392
125	15.358	34.529	25.531
150	14.874	34.521	25.631
200	14.016	34.451	25.760
250	12.245	34.326	26.019
300	10.471	34.176	26.228
400	8.236	34.060	26.501
500	5.893	33.946	26.733
600	4.846	33.969	26.875
700	4.488	34.114	27.030
800	4.021	34.205	27.152
900	3.592	34.275	27.251
1000	3.301	34.349	27.338
1200	2.868	34.421	27.435
1500	2.412	34.521	27.554

Station OS10067
Longitude 145-46.8E
Latitude 41-30.1N
Depth(m) 6867

Press.	Temp.	Sal.	SIG-T
5	3.796	32.828	26.078
10	3.793	32.828	26.079
20	2.688	32.848	26.194
30	1.668	32.868	26.288
40	1.729	32.896	26.306
50	1.387	32.898	26.331
75	0.670	32.977	26.438
100	0.442	33.041	26.502
125	0.499	33.094	26.542
150	0.758	33.160	26.580
175	0.944	33.225	26.621
200	1.238	33.293	26.658
250	1.521	33.409	26.732
300	1.849	33.508	26.787
400	2.034	33.647	26.885
500	2.637	33.830	26.983
600	3.322	34.018	27.071
700	3.256	34.118	27.157
800	3.171	34.196	27.228
900	3.004	34.260	27.294
1000	2.844	34.315	27.352
1200	2.630	34.394	27.434
1500	2.307	34.469	27.522

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.

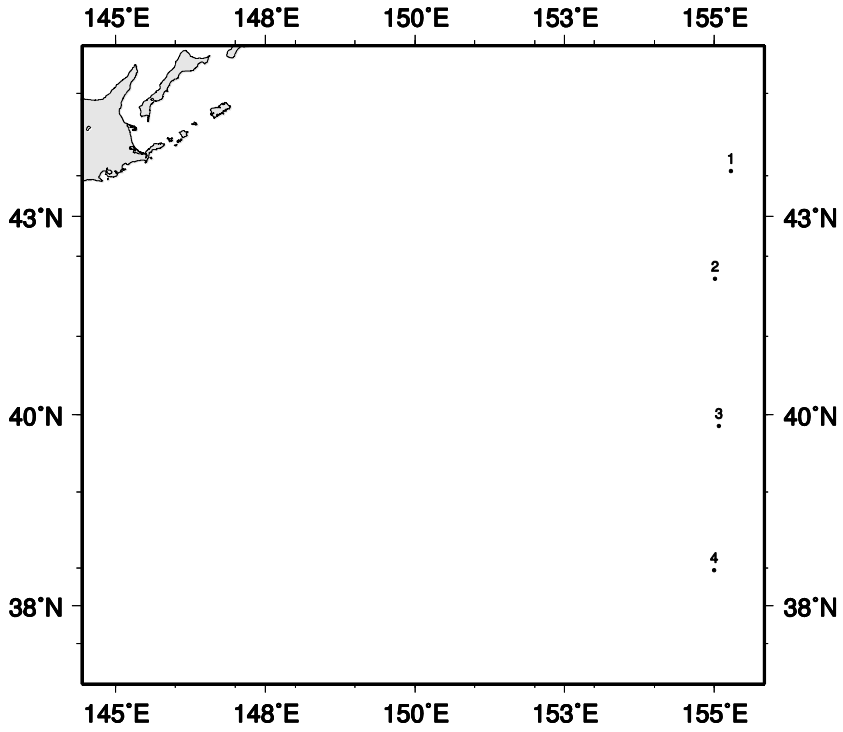

Figure 3. Locations of drift gillnet research

Table 3. Data on drift gillnet research

No. of research	Date and Time (S.M.T.) Net set		Net haul		T.D.	Position Lat.(N)	Long.		D.D.	Bottom depth(m)	Wr	Wind	S.T. (℃)	Tr (m)
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) 48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	Total
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)																				
	48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	Total
OSG1001	0	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	0
OSG1003	0	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	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
OSG1001	0	0	1	0	2	3	10	12	0	1	17	16	11	7	0	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	0	86
OSG1003	0	0	0	0	0	2	2	5	3	1	2	3	2	1	0	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	0

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
OSG1001	0	0	4	74	54	16	2	1	0	1	2	1	1	0	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	0	260
OSG1003	0	0	0	0	4	0	0	0	0	0	3	0	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	0

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
OSG1001	0	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	0
OSG1003	0	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	0

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
OSG1001	0	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	0
OSG1003	0	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	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
OSG1001	0	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	0
OSG1003	0	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	0

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

CHUM SALMON

St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (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	0		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	0		G02	A115	500	1715	M	5	G03	C106	521	2004	M	3
G01	C082	466	1200	0		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)
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. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (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 mumerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Common name	Station / Gear	OSG 1001					OSG 1002					OSG 1003					OSG 1004				
	Scientific name	C CPUE	C (%)	A	F	Total	C CPUE	C (%)	A	F	Total	C CPUE	C (%)	A	F	Total	C CPUE	C (%)	A	F	Total
Sockeye salmon	*Oncorhynchus nerka*	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	0.0 (0.0)	0	0	0
Chum salmon	*Oncorhynchus keta*	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	0.0 (0.0)	0	0	0
Pink salmon	*Oncorhynchus gorbuscha*	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	0.0 (0.0)	0	0	0
Coho salmon	*Oncorhynchus kisutch*	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	0.0 (0.0)	0	0	0
Chinook salmon	*Oncorhynchus tshawytscha*	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	0.0 (0.0)	0	0	0
Steelhead	*Oncorhynchus mykiss*	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	0.0 (0.0)	0	0	0
Boreal clubhook squid	*Onychoteuthis borealijaponica*	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	0.1 (21.1)	0	11	15
Eight-armed squid	*Gonatopsis borealis*	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	0.0 (0.0)	0	0	0
Flying squid	*Ommastrephes bartramii*	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	0.0 (5.3)	0	0	1
Blue shark	*Prionace glauca*	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	0.0 (0.0)	1	0	1
Salmon shark	*Lamna ditropis*	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	0.0 (0.0)	0	0	0
Spiny dogfish	*Squalus acanthias*	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	0.0 (0.0)	0	0	0
Japanese scaled sardine	*Sardinops melanostictus*	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	0.0 (0.0)	0	2	2
Japanese anchovy	*Engraulis japonicus*	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	0.4 (68.4)	4	8361	8378
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	8	8	0	0.0 (0.0)	0	0	0
Pacific saury	*Cololabis saira*	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	0.0 (0.0)	0	6	6
Pilotfish	*Naucrates ductor*	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	0.0 (5.3)	0	0	1
Pacific pomfret	*Brama japonica*	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	0.0 (0.0)	0	0	0
Chub mackerel	*Scomber japonicus*	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	0.0 (0.0)	0	1	1
Smalleye squaretail	*Tetragonurus atlanticus*	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	0.0 (0.0)	0	0	0
Atka mackerel	*Pleurogrammus monopterygius*	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	0.0 (0.0)	0	0	0
Common Murre	*Uria aalge*	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	0.0 (0.0)	0	0	0
Short-tailed shearwater	*Puffinus tenuirostris*	1	0.0 (0.5)	0	0	1	6	0.2 (1.7)			6	0	0.0 (0.0)	0	0	0	0	0.0 (0.0)	0	0	0
Horned puffin	*Fratercula corniculata*	0	0.0 (0.0)	0		0	0	0.0 (0.0)	1	0	1	0	0.0 (0.0)	0	0	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. (mm)	B. W. (gr)	St.	Gear	M. L. (mm)	B. W. (gr)	St.	Gear	M. L. (mm)	B. W. (gr)
				G04	C093	345	1319				

BOREAL CLUBHOOK SQUID

St.	Gear	M. L. (mm)	B. W. (gr)	St.	Gear	M. L. (mm)	B. W. (gr)	St.	Gear	M. L. (mm)	B. W. (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	G03	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. (mm)	B. W. (gr)	St.	Gear	F. L. (mm)	B. W. (gr)	St.	Gear	F. L. (mm)	B. W. (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. (mm)	B. W. (gr)	St.	Gear	F. L. (mm)	B. W. (gr)	St.	Gear	F. L. (mm)	B. W. (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 salmons, 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.

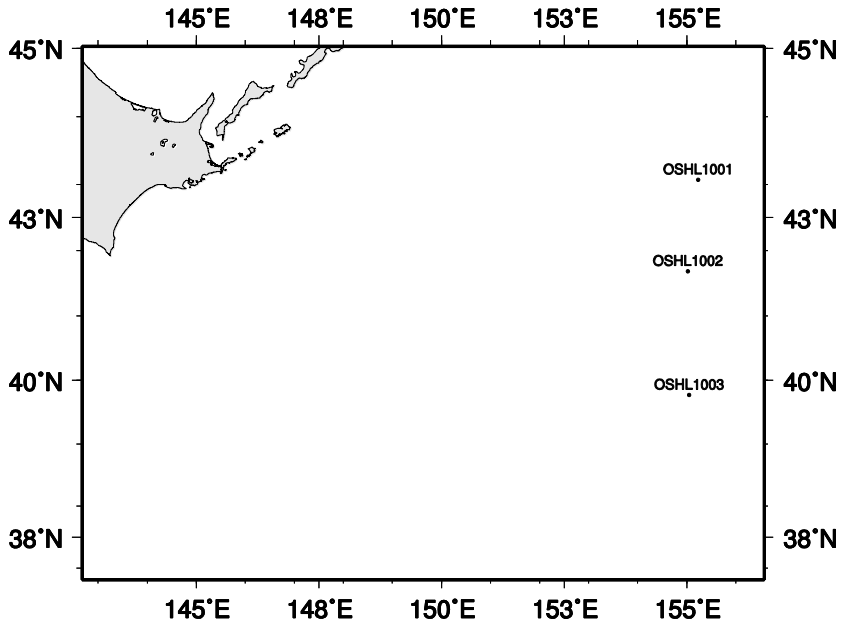

Figure 4. Locations of salmon hook-and-line Research

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	0		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

5

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 7th		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

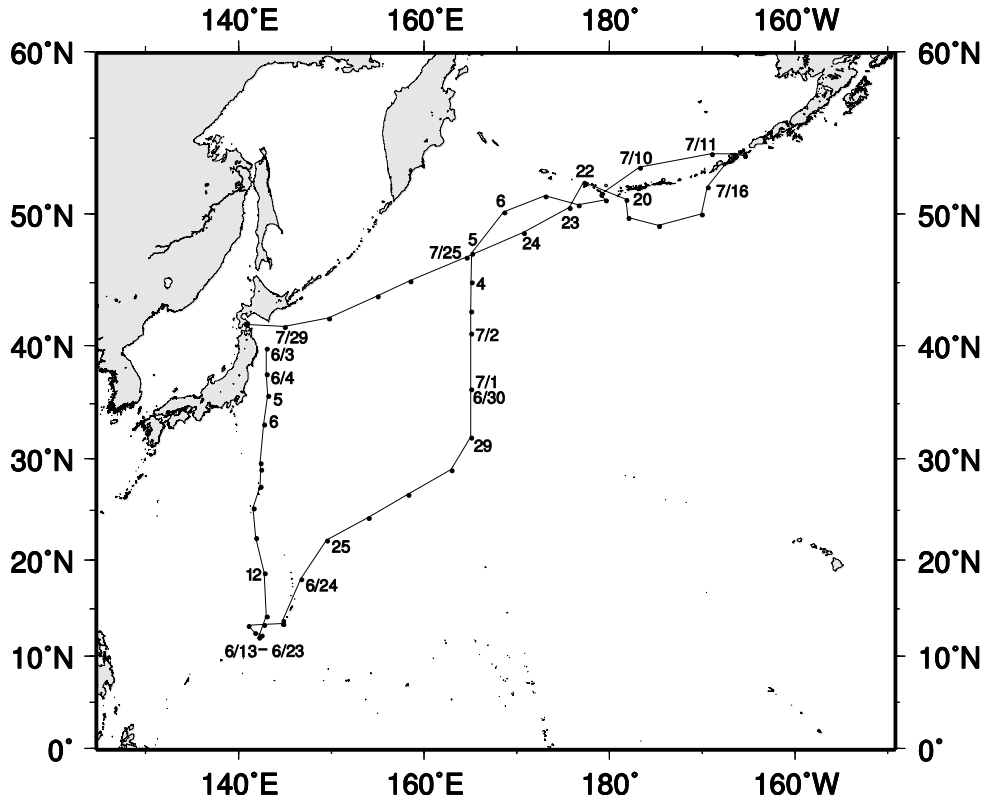

Figure 1. Track and Noon position

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-Maru)	
	Hakodate - Guam		Yoshiyuki Kajiwara
	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 (～1cm) and fine-scale(～10cm)　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”.

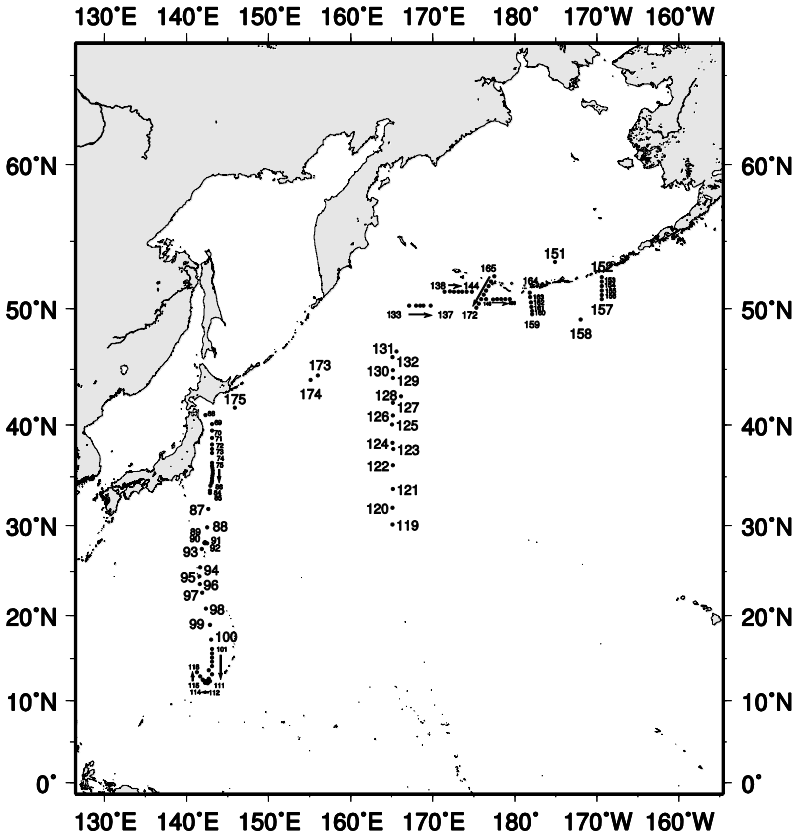

Figure 2. Oceanographic station

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	16.1	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	28-06.8N	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	23-30.1N	141-30.1E	6/10	1347	9	1170	-	-	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	14-29.8N	142-59.9E	6/13	0042	10	2200	-	-	-	b	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	2474	-	-	30.2	bc	19Plus-4636
OS10112	12-00.0N	142-29.8E	6/14	1034	10	3120	-	-	29.4	bc	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	4	16.8	11.7	f	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	2815	-	-	-	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	-	-	-	r	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	0933	-11	7050	-	-	8.2	f	9Plus-0769
OS10157	50-40.1N	170-30.0W	7/17	1420	-11	5435	3	19.1	8.1	f	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	4	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	49-59.9N	175-11.9E	7/23	0627	11	4617	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	4	9.4	15.4	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
Longitude	142-10.7E
Latitude	40-49.5N
Depth(m)	848

Press.	Temp.	Sal.	SIG-T
5	11.017	33.637	25.711
10	10.902	33.644	25.737
20	9.910	33.680	25.936
30	9.336	33.764	26.097
40	8.956	33.728	26.129
50	8.960	33.733	26.133
75	9.585	33.943	26.196
100	9.602	33.975	26.218
125	9.439	33.968	26.239
150	9.103	33.926	26.261
175	8.946	33.923	26.283
200	8.979	33.946	26.296
250	8.768	33.928	26.315
300	8.599	33.922	26.337
400	3.363	33.557	26.700
500	2.947	33.752	26.894

Station	OS10069
Longitude	143-00.2E
Latitude	40-00.7N
Depth(m)	1300

Press.	Temp.	Sal.	SIG-T
5	7.577	32.952	25.726
10	5.879	32.861	25.877
20	5.587	32.896	25.940
30	5.195	32.906	25.994
40	5.019	32.900	26.009
50	3.999	32.888	26.106
75	3.136	33.190	26.428
100	2.097	33.170	26.498
125	2.397	33.252	26.540
150	2.709	33.351	26.594
175	2.998	33.457	26.654
200	2.404	33.447	26.696
250	2.281	33.498	26.746
300	2.584	33.596	26.800
400	3.101	33.793	26.913
500	3.395	33.966	27.023
600	3.411	34.100	27.128
700	3.428	34.207	27.212
800	3.127	34.271	27.292
900	2.834	34.309	27.348
1000	2.748	34.359	27.396

Station	OS10070
Longitude	143-00.2E
Latitude	39-23.8N
Depth(m)	1865

Press.	Temp.	Sal.	SIG-T
5	9.599	33.201	25.614
10	7.868	33.064	25.773
20	6.115	32.961	25.927
30	7.628	33.358	26.038
40	7.626	33.504	26.153
50	8.192	33.679	26.208
75	8.152	33.779	26.292
100	8.106	33.865	26.367
125	7.488	33.822	26.423
150	6.606	33.769	26.502
175	5.033	33.555	26.526
200	3.542	33.414	26.570
250	4.411	33.594	26.625
300	3.127	33.511	26.685
400	2.420	33.557	26.783
500	2.760	33.709	26.875
600	3.250	33.941	27.017
700	3.357	34.076	27.115
800	3.347	34.198	27.212
900	3.023	34.253	27.287
1000	3.015	34.325	27.345
1200	2.618	34.408	27.447

Station	OS10071
Longitude	143-00.4E
Latitude	38-42.3N
Depth(m)	1650

Press.	Temp.	Sal.	SIG-T
5	16.087	34.015	24.970
10	16.029	34.009	24.979
20	15.943	34.129	25.091
30	15.271	34.038	25.171
40	15.172	34.086	25.229
50	14.920	34.061	25.265
75	11.633	33.845	25.761
100	10.705	34.161	26.175
125	7.172	33.632	26.318
150	6.616	33.673	26.425
175	6.055	33.628	26.462
200	7.483	33.962	26.534
250	6.957	33.972	26.615
300	5.338	33.830	26.708
400	4.178	33.848	26.852
500	4.800	34.100	26.984
600	4.248	34.165	27.096
700	3.944	34.234	27.183
800	3.594	34.270	27.246
900	3.423	34.342	27.320
1000	3.012	34.361	27.374

Station	OS10072
Longitude	142-59.7E
Latitude	38-04.6N
Depth(m)	1780

Press.	Temp.	Sal.	SIG-T
5	18.830	34.676	24.817
10	18.811	34.674	24.820
20	18.424	34.646	24.896
30	17.582	34.542	25.023
40	16.353	34.594	25.354
50	16.091	34.616	25.431
75	14.398	34.519	25.731
100	13.110	34.442	25.939
125	11.583	34.298	26.122
150	10.254	34.161	26.253
175	9.031	34.073	26.387
200	7.998	33.991	26.481
250	7.045	33.970	26.601
300	6.442	33.999	26.705
400	4.334	33.880	26.861
500	4.725	34.102	26.994
600	4.154	34.136	27.083
700	4.350	34.297	27.190
800	3.734	34.298	27.255
900	3.440	34.341	27.318
1000	3.072	34.357	27.365
1200	2.777	34.425	27.446
1500	2.401	34.504	27.541

Station	OS10073
Longitude	142-59.9E
Latitude	37-38.1N
Depth(m)	2580

Press.	Temp.	Sal.	SIG-T
5	17.495	34.172	24.761
10	17.200	34.146	24.812
20	14.693	34.126	25.365
30	12.474	34.051	25.762
40	9.582	33.679	25.990
50	8.351	33.603	26.124
75	8.582	33.866	26.296
100	6.654	33.684	26.429
125	7.475	33.950	26.525
150	4.830	33.627	26.606
175	2.901	33.456	26.661
200	2.545	33.483	26.713
250	3.000	33.659	26.815
300	3.100	33.746	26.875
400	3.296	33.944	27.015
500	3.475	34.073	27.101
600	3.932	34.257	27.202
700	3.380	34.277	27.273
800	3.333	34.359	27.342
900	3.032	34.393	27.398
1000	2.845	34.433	27.447
1200	2.510	34.494	27.524
1500	2.400	34.514	27.550

Station	OS10074
Longitude	142-59.9E
Latitude	37-13.7N
Depth(m)	4550

Press.	Temp.	Sal.	SIG-T
5	17.949	34.187	24.662
10	17.396	34.183	24.793
20	16.152	34.139	25.051
30	14.273	34.485	25.732
40	13.232	34.427	25.902
50	12.164	34.335	26.041
75	9.776	34.029	26.231
100	7.766	33.823	26.384
125	5.709	33.550	26.443
150	7.162	33.939	26.560
175	7.646	34.127	26.640
200	6.540	34.026	26.714
250	6.383	34.121	26.809
300	4.798	33.972	26.883
400	5.405	34.240	27.025
500	3.490	34.114	27.132
600	3.846	34.272	27.223
700	3.634	34.332	27.291
800	3.323	34.375	27.356
900	3.050	34.384	27.389
1000	2.899	34.422	27.433
1200	2.569	34.479	27.507
1500	2.267	34.533	27.576

Station	OS10075
Longitude	143-00.5E
Latitude	36-17.7N
Depth(m)	7200

Press.	Temp.	Sal.	SIG-T
5	20.143	34.577	24.401
10	20.202	34.582	24.389
20	18.845	34.529	24.700
30	18.207	34.548	24.875
40	17.244	34.563	25.120
50	16.307	34.552	25.333
75	14.797	34.540	25.661
100	13.499	34.491	25.897
125	12.577	34.425	26.031
150	10.842	34.185	26.170
175	9.025	33.932	26.278
200	6.686	33.641	26.390
250	8.120	34.070	26.526
300	7.753	34.171	26.659
400	3.626	33.742	26.822
500	3.602	33.931	26.976
600	3.600	34.046	27.067
700	3.391	34.110	27.139
800	3.412	34.221	27.225
900	3.170	34.287	27.300
1000	3.073	34.354	27.362
1200	2.749	34.426	27.449
1500	2.408	34.507	27.544

Station	OS10076
Longitude	143-00.0E
Latitude	35-59.8N
Depth(m)	0

Press.	Temp.	Sal.	SIG-T
5	20.432	-	-
10	20.121	-	-
20	19.900	-	-
30	19.554	-	-
40	18.382	-	-
50	17.744	-	-
75	16.930	-	-
100	15.720	-	-
125	14.820	-	-
150	13.874	-	-
200	12.251	-	-
250	10.768	-	-
300	9.763	-	-
400	7.526	-	-
500	5.960	-	-
600	5.090	-	-
700	4.140	-	-

Station	OS10077
Longitude	143-01.0E
Latitude	35-44.9N
Depth(m)	6580

Press.	Temp.	Sal.	SIG-T
5	22.458	34.740	23.891
10	22.424	34.736	23.898
20	21.949	34.719	24.018
30	20.854	34.728	24.326
40	20.691	34.727	24.370
50	20.469	34.727	24.430
75	19.855	34.727	24.591
100	18.265	34.581	24.886
125	16.698	34.580	25.263
150	16.331	34.597	25.361
175	15.069	34.493	25.566
200	13.770	34.486	25.838
250	11.957	34.416	26.144
300	7.969	33.872	26.393
400	6.423	33.872	26.607
500	6.922	34.246	26.836
600	5.483	34.214	26.996
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	OS10078
Longitude	143-06.0E
Latitude	35-29.9N
Depth(m)	0

Press.	Temp.	Sal.	SIG-T
5	22.619	-	-
10	22.570	-	-
20	22.470	-	-
30	22.328	-	-
40	22.272	-	-
50	21.918	-	-
75	21.570	-	-
100	20.604	-	-
125	20.110	-	-
150	19.440	-	-
200	17.581	-	-
250	15.573	-	-
300	13.277	-	-
400	9.663	-	-
500	7.619	-	-
600	5.901	-	-
700	3.726	-	-

Station	OS10079
Longitude	143-03.7E
Latitude	35-14.8N
Depth(m)	0

Press.	Temp.	Sal.	SIG-T
5	22.780	-	-
10	22.721	-	-
20	22.550	-	-
30	22.502	-	-
40	22.480	-	-
50	22.072	-	-
75	21.539	-	-
100	20.647	-	-
125	19.790	-	-
150	19.310	-	-
200	18.731	-	-
250	17.502	-	-
300	16.810	-	-
400	13.956	-	-
500	9.501	-	-
600	6.971	-	-
700	6.164	-	-

Station	OS10080
Longitude	143-02.1E
Latitude	35-00.0N
Depth(m)	0

Press.	Temp.	Sal.	SIG-T
5	21.681	-	-
10	21.640	-	-
20	21.290	-	-
30	20.962	-	-
40	20.810	-	-
50	20.584	-	-
75	19.580	-	-
100	19.020	-	-
125	18.810	-	-
150	18.658	-	-
200	18.411	-	-
250	18.119	-	-
300	17.640	-	-
400	15.240	-	-
500	12.200	-	-
600	9.431	-	-
700	6.204	-	-

Station	OS10081
Longitude	143-00.3E
Latitude	34-44.9N
Depth(m)	0

Press.	Temp.	Sal.	SIG-T
5	22.591	-	-
10	22.611	-	-
20	22.332	-	-
30	21.839	-	-
40	21.468	-	-
50	21.128	-	-
75	20.090	-	-
100	19.506	-	-
125	19.250	-	-
150	19.004	-	-
200	18.411	-	-
250	18.090	-	-
300	17.747	-	-
400	16.160	-	-
500	12.759	-	-
600	10.560	-	-
700	8.180	-	-

Station	OS10082
Longitude	142-58.6E
Latitude	34-30.0N
Depth(m)	0

Press.	Temp.	Sal.	SIG-T
5	21.881	-	-
10	21.859	-	-
20	21.643	-	-
30	21.450	-	-
40	21.155	-	-
50	20.900	-	-
75	20.079	-	-
100	19.350	-	-
125	19.140	-	-
150	18.884	-	-
200	18.451	-	-
250	17.770	-	-
300	17.080	-	-
400	15.620	-	-
500	13.100	-	-
600	10.629	-	-
700	7.984	-	-

Station	OS10083
Longitude	142-56.5E
Latitude	34-16.4N
Depth(m)	5280

Press.	Temp.	Sal.	SIG-T
5	21.776	34.757	24.095
10	21.613	34.746	24.132
20	20.264	34.699	24.462
30	20.089	34.703	24.512
40	19.963	34.699	24.542
50	19.603	34.663	24.609
75	19.321	34.664	24.682
100	18.837	34.691	24.827
125	18.617	34.689	24.880
150	18.508	34.692	24.910
175	18.423	34.691	24.930
200	18.316	34.688	24.955
250	17.939	34.687	25.047
300	17.524	34.705	25.162
400	15.651	34.615	25.530
500	13.502	34.479	25.888
600	10.283	34.292	26.350
700	8.098	34.232	26.656
800	4.545	33.849	26.814
900	4.892	34.104	26.977
1000	4.538	34.211	27.101
1200	3.562	34.328	27.296
1500	2.799	34.447	27.461
2000	2.109	34.564	27.614
2500	1.775	34.622	27.686
3000	1.610	34.650	27.721

Table 2. Oceanographic data (continued)

Station	OS10084
Longitude	142-47.5E
Latitude	34-00.0N
Depth(m)	0

Press.	Temp.	Sal.	SIG-T
5	20.379	-	-
10	20.302	-	-
20	19.900	-	-
30	19.722	-	-
40	19.678	-	-
50	19.442	-	-
75	19.099	-	-
100	18.760	-	-
125	18.650	-	-
150	18.464	-	-
200	18.309	-	-
250	17.899	-	-
300	17.440	-	-
400	15.776	-	-
500	13.691	-	-
600	10.489	-	-
700	6.023	-	-

Station	OS10085
Longitude	142-44.8E
Latitude	33-30.0N
Depth(m)	0

Press.	Temp.	Sal.	SIG-T
5	21.559	-	-
10	21.531	-	-
20	20.972	-	-
30	20.162	-	-
40	19.900	-	-
50	19.592	-	-
75	19.350	-	-
100	18.920	-	-
125	18.700	-	-
150	18.582	-	-
200	18.401	-	-
250	18.012	-	-
300	17.633	-	-
400	15.901	-	-
500	13.548	-	-
600	10.119	-	-
700	7.031	-	-

Station	OS10086
Longitude	142-43.5E
Latitude	33-14.7N
Depth(m)	5730

Press.	Temp.	Sal.	SIG-T
5	20.759	34.662	24.302
10	20.660	34.660	24.327
20	20.370	34.651	24.398
30	20.278	34.648	24.420
40	19.886	34.650	24.524
50	19.357	34.688	24.691
75	19.008	34.705	24.793
100	18.745	34.697	24.854
125	18.620	34.691	24.881
150	18.531	34.693	24.905
175	18.443	34.689	24.924
200	18.391	34.692	24.939
250	18.081	34.698	25.021
300	17.586	34.710	25.151
400	16.087	34.644	25.454
500	13.681	34.494	25.862
600	10.499	34.294	26.315
700	7.334	34.161	26.712
800	5.692	34.163	26.929
900	4.619	34.154	27.048
1000	4.187	34.226	27.151
1200	3.455	34.343	27.318
1500	2.740	34.444	27.465

Station	OS10087
Longitude	142-33.5E
Latitude	31-35.7N
Depth(m)	6910

Press.	Temp.	Sal.	SIG-T
5	21.096	34.713	24.274
10	20.988	34.712	24.278
20	20.757	34.708	24.337
30	20.680	34.735	24.378
40	20.192	34.716	24.495
50	19.500	34.702	24.665
75	18.944	34.715	24.818
100	18.691	34.701	24.871
125	18.565	34.696	24.899
150	18.485	34.698	24.921
175	18.247	34.677	24.963
200	18.121	34.677	24.995
250	17.897	34.672	25.046
300	17.576	34.704	25.149
400	15.550	34.611	25.550
500	12.970	34.448	25.971
600	10.213	34.269	26.344
700	6.918	34.062	26.691
800	5.569	34.084	26.882
900	4.878	34.213	27.065
1000	4.103	34.252	27.181
1200	3.289	34.366	27.352
1500	2.643	34.475	27.498

Station	OS10088
Longitude	142-22.9E
Latitude	29-41.2N
Depth(m)	6580

Press.	Temp.	Sal.	SIG-T
5	21.051	34.636	24.203
10	21.036	34.637	24.208
20	21.018	34.637	24.212
30	20.987	34.634	24.219
40	20.466	34.615	24.344
50	19.158	34.639	24.705
75	18.531	34.662	24.881
100	18.211	34.663	24.962
125	17.985	34.669	25.022
150	17.900	34.666	25.041
175	17.776	34.685	25.086
200	17.579	34.694	25.141
250	16.966	34.694	25.288
300	16.096	34.646	25.453
400	13.504	34.474	25.883
500	10.448	34.255	26.294
600	7.323	34.058	26.632
700	5.517	34.048	26.860
800	4.757	34.149	27.028
900	4.239	34.214	27.136
1000	3.755	34.296	27.251
1200	3.143	34.404	27.396
1500	2.503	34.501	27.530

Station	OS10089
Longitude	142-09.2E
Latitude	28-06.8N
Depth(m)	1722

Press.	Temp.	Sal.	SIG-T
5	21.668	34.739	24.112
10	21.670	34.739	24.112
20	21.671	34.740	24.112
30	21.666	34.739	24.112
40	21.638	34.737	24.118
50	21.595	34.735	24.129
75	20.230	34.714	24.483
100	19.740	34.719	24.615
125	19.557	34.720	24.664
150	19.311	34.720	24.727
175	19.184	34.722	24.761
200	19.100	34.721	24.782
250	18.493	34.716	24.932
300	17.604	34.726	25.159
400	15.686	34.625	25.531
500	13.074	34.445	25.948
600	9.427	34.198	26.421
700	6.985	34.094	26.707
800	5.143	34.112	26.955
900	4.409	34.195	27.103
1000	3.868	34.286	27.232
1200	3.080	34.418	27.413
1500	2.551	34.503	27.528

Station	OS10090
Longitude	142-02.2E
Latitude	28-00.3N
Depth(m)	462

Press.	Temp.	Sal.	SIG-T
5	21.232	34.618	24.140
10	21.233	34.618	24.140
20	21.234	34.618	24.139
30	21.234	34.619	24.140
40	21.233	34.621	24.142
50	21.236	34.621	24.141
75	21.238	34.626	24.145
100	20.670	34.712	24.364
125	19.558	34.718	24.662
150	19.283	34.720	24.735
175	19.065	34.722	24.792
200	18.815	34.702	24.840
250	18.244	34.694	24.977
300	18.095	34.690	25.011
400	16.966	34.686	25.281

Station	OS10091
Longitude	142-08.5E
Latitude	27-58.9N
Depth(m)	1080

Press.	Temp.	Sal.	SIG-T
5	21.275	34.602	24.116
10	21.275	34.618	24.128
20	21.278	34.632	24.138
30	21.306	34.650	24.144
40	21.419	34.709	24.158
50	20.884	34.718	24.311
75	20.205	34.720	24.494
100	19.604	34.717	24.650
125	19.263	34.718	24.739
150	19.041	34.721	24.798
175	18.849	34.717	24.844
200	18.704	34.718	24.881
250	18.235	34.705	24.988
300	17.792	34.716	25.105
400	16.415	34.669	25.397
500	13.525	34.481	25.885
600	9.791	34.236	26.390
700	6.628	34.096	26.757
800	5.382	34.119	26.933
900	4.492	34.196	27.095
1000	3.824	34.293	27.242

Station	OS10092
Longitude	142-22.9E
Latitude	27-57.4N
Depth(m)	1512

Press.	Temp.	Sal.	SIG-T
5	21.797	34.706	24.051
10	21.759	34.724	24.075
20	21.755	34.730	24.081
30	21.747	34.734	24.086
40	21.513	34.725	24.144
50	20.558	34.709	24.392
75	19.913	34.717	24.569
100	19.509	34.715	24.673
125	19.371	34.715	24.708
150	19.096	34.718	24.781
175	18.937	34.718	24.822
200	18.629	34.705	24.890
250	18.354	34.706	24.959
300	17.618	34.719	25.150
400	15.562	34.612	25.548
500	12.791	34.418	25.984
600	10.538	34.259	26.281
700	6.962	34.080	26.699
800	5.522	34.103	26.902
900	4.569	34.176	27.070
1000	3.957	34.266	27.207
1200	3.184	34.391	27.382

Station	OS10093
Longitude	141-43.6E
Latitude	27-20.2N
Depth(m)	4045

Press.	Temp.	Sal.	SIG-T
5	23.451	34.798	23.649
10	22.808	34.769	23.813
20	22.431	34.752	23.908
30	22.301	34.746	23.940
40	21.988	34.749	24.031
50	21.842	34.750	24.072
75	21.118	34.748	24.270
100	20.366	34.742	24.468
125	19.901	34.735	24.586
150	19.634	34.735	24.655
175	19.180	34.730	24.769
200	18.824	34.732	24.861
250	17.910	34.720	25.079
300	16.679	34.676	25.341
400	14.820	34.564	25.675
500	12.306	34.396	26.061
600	9.769	34.246	26.402
700	7.211	34.155	26.724
800	5.657	34.163	26.934
900	4.483	34.229	27.122
1000	4.023	34.283	27.213
1200	3.179	34.404	27.393
1500	2.511	34.505	27.533
2000	1.987	34.590	27.644
2500	1.705	34.635	27.702
3000	1.585	34.656	27.728

Station	OS10094
Longitude	141-33.6E
Latitude	25-19.7N
Depth(m)	2830

Press.	Temp.	Sal.	SIG-T
5	23.674	34.220	23.147
10	23.649	34.389	23.282
20	23.429	34.479	23.414
30	22.761	34.486	23.612
40	22.536	34.569	23.739
50	21.432	34.678	24.131
75	20.465	34.700	24.409
100	19.585	34.700	24.641
125	19.109	34.704	24.767
150	18.695	34.700	24.870
175	18.342	34.704	24.961
200	17.942	34.694	25.052
250	17.516	34.705	25.164
300	16.996	34.699	25.284
400	14.620	34.548	25.706
500	11.864	34.348	26.108
600	9.019	34.154	26.453
700	6.540	34.062	26.742
800	5.203	34.112	26.948
900	4.402	34.204	27.111
1000	3.912	34.278	27.221
1200	3.137	34.427	27.415
1500	2.513	34.513	27.540

Station	OS10095
Longitude	141-25.6E
Latitude	24-21.2N
Depth(m)	576

Press.	Temp.	Sal.	SIG-T
5	23.602	34.300	23.228
10	23.535	34.414	23.334
20	22.673	34.533	23.673
30	21.711	34.631	24.018
40	21.304	34.656	24.149
50	20.610	34.690	24.363
75	19.328	34.705	24.712
100	18.664	34.693	24.872
125	18.434	34.696	24.932
150	18.223	34.705	24.991
175	18.005	34.709	25.048
200	17.716	34.710	25.119
250	16.936	34.693	25.294
300	16.684	34.681	25.344
400	14.345	34.536	25.755
500	12.164	34.394	26.087

Station	OS10096
Longitude	141-30.1E
Latitude	23-30.1N
Depth(m)	1170

Press.	Temp.	Sal.	SIG-T
5	27.403	34.471	22.190
10	27.351	34.504	22.232
20	26.346	34.894	22.845
30	25.901	34.911	22.997
40	25.117	34.905	23.234
50	24.486	34.897	23.418
75	22.836	34.841	23.860
100	21.620	34.797	24.170
125	21.257	34.850	24.309
150	19.931	34.781	24.613
175	19.104	34.767	24.816
200	18.478	34.763	24.972
250	17.055	34.715	25.283
300	16.308	34.674	25.426
400	13.676	34.479	25.851
500	10.663	34.268	26.265
600	8.176	34.144	26.575
700	6.055	34.121	26.851
800	4.833	34.229	27.083
900	4.251	34.291	27.196
1000	3.798	34.341	27.283

Station	OS10097
Longitude	141-47.1E
Latitude	22-30.0N
Depth(m)	1350

Press.	Temp.	Sal.	SIG-T
5	28.570	34.969	22.184
10	28.543	34.963	22.188
20	27.577	34.841	22.413
30	27.084	34.985	22.679
40	26.700	34.986	22.802
50	26.300	34.959	22.909
75	25.461	34.918	23.138
100	24.612	34.937	23.411
125	22.881	34.877	23.875
150	21.191	34.840	24.320
175	20.325	34.829	24.545
200	19.706	34.819	24.700
250	17.960	34.750	25.090
300	16.960	34.707	25.299
400	14.482	34.524	25.717
500	11.882	34.328	26.089
600	8.450	34.150	26.538
700	6.268	34.126	26.828
800	4.910	34.230	27.075
900	4.089	34.314	27.231
1000	3.536	34.387	27.345
1200	3.129	34.450	27.434

Station	OS10098
Longitude	142-14.2E
Latitude	20-43.3N
Depth(m)	3620

Press.	Temp.	Sal.	SIG-T
5	29.136	34.818	21.882
10	28.847	34.951	22.078
20	28.541	35.012	22.225
30	27.857	35.040	22.471
40	27.192	35.071	22.710
50	26.859	35.064	22.811
75	25.484	35.029	23.215
100	24.229	34.990	23.566
125	22.792	34.926	23.937
150	20.824	34.885	24.454
175	19.319	34.832	24.811
200	18.767	34.809	24.934
250	16.935	34.711	25.308
300	15.157	34.581	25.615
400	12.300	34.362	26.036
500	9.838	34.205	26.358
600	7.385	34.146	26.692
700	5.704	34.175	26.938
800	4.776	34.271	27.123
900	4.233	34.337	27.234
1000	3.790	34.433	27.356
1200	3.128	34.490	27.466

Station	OS10099
Longitude	142-45.0E
Latitude	18-48.8N
Depth(m)	2920

Press.	Temp.	Sal.	SIG-T
5	29.649	34.914	21.781
10	29.599	34.911	21.796
20	28.811	34.957	22.095
30	28.398	34.969	22.241
40	27.645	34.938	22.463
50	27.171	34.937	22.615
75	25.877	34.912	23.005
100	24.752	34.926	23.360
125	23.673	34.923	23.679
150	22.351	34.926	24.063
175	20.729	34.883	24.478
200	18.805	34.778	24.901
250	17.596	34.746	25.176
300	15.372	34.588	25.572
400	11.383	34.292	26.155
500	8.515	34.215	26.580
600	7.282	34.250	26.789
700	6.079	34.316	27.002
800	5.160	34.361	27.150
900	4.567	34.410	27.256
1000	4.138	34.466	27.347
1200	3.376	34.527	27.472
1500	2.704	34.567	27.566

Table 2. Oceanographic data (continued)

Station	OS10100
Longitude	142-54.3E
Latitude	17-06.8N
Depth(m)	3156

Press.	Temp.	Sal.	SIG-T
5	30.073	35.021	21.719
10	30.021	35.080	21.781
20	29.978	35.137	21.839
30	29.118	35.076	22.084
40	28.323	35.027	22.311
50	27.752	34.990	22.470
75	27.392	35.047	22.629
100	27.016	35.039	22.744
125	26.563	35.021	22.874
150	25.332	34.993	23.236
200	20.945	34.826	24.378
250	18.142	34.757	25.052
300	15.989	34.614	25.454
400	11.079	34.284	26.204
500	8.390	34.243	26.621
600	6.742	34.323	26.921
700	5.806	34.400	27.103
800	5.355	34.457	27.203
900	4.894	34.491	27.284
1000	4.475	34.517	27.351

Station	OS10101
Longitude	142-59.9E
Latitude	16-00.0N
Depth(m)	2534

Press.	Temp.	Sal.	SIG-T
5	30.026	34.899	21.644
10	30.005	34.925	21.671
20	29.910	34.942	21.716
30	29.824	34.967	21.764
40	28.821	35.020	22.141
50	28.440	35.011	22.261
75	27.522	35.032	22.576
100	27.299	35.152	22.738
125	26.843	35.132	22.869
150	26.036	35.143	23.132
200	22.211	35.059	24.205
250	18.399	34.807	25.026
300	14.598	34.499	25.674
400	10.421	34.310	26.341
500	7.648	34.278	26.759
600	6.421	34.363	26.995
700	5.788	34.421	27.122
800	5.259	34.480	27.233
900	4.736	34.525	27.329
1000	4.320	34.550	27.394

Station	OS10102
Longitude	143-00.0E
Latitude	15-30.0N
Depth(m)	2371

Press.	Temp.	Sal.	SIG-T
5	29.886	34.641	21.498
10	29.844	34.658	21.525
20	29.708	34.660	21.573
30	29.243	34.621	21.701
40	28.622	34.677	21.950
50	28.330	34.726	22.083
75	27.350	34.916	22.544
100	27.117	35.080	22.743
125	26.754	35.114	22.884
150	25.728	35.125	23.214
200	22.505	35.030	24.100
250	19.201	34.841	24.849
300	13.980	34.442	25.761
400	9.235	34.243	26.488
500	7.247	34.265	26.806
600	6.128	34.369	27.038
700	5.422	34.457	27.195
800	5.176	34.489	27.250
900	4.732	34.518	27.324
1000	4.186	34.560	27.417

Station	OS10103
Longitude	142-59.9E
Latitude	15-00.0N
Depth(m)	2314

Press.	Temp.	Sal.	SIG-T
5	29.807	34.650	21.532
10	29.807	34.672	21.548
20	29.764	34.728	21.605
30	29.542	34.716	21.671
40	28.722	34.665	21.907
50	28.522	34.770	22.052
75	27.694	34.920	22.436
100	27.074	35.113	22.781
125	26.539	35.117	22.954
150	25.598	35.131	23.259
200	22.107	35.047	24.225
250	18.060	34.739	25.058
300	14.058	34.425	25.731
400	9.884	34.263	26.396
500	7.827	34.242	26.704
600	6.553	34.352	26.969
700	5.627	34.448	27.163
800	4.928	34.494	27.283
900	4.505	34.523	27.353
1000	4.317	34.543	27.389

Station	OS10104
Longitude	142-59.9E
Latitude	14-29.8N
Depth(m)	2200

Press.	Temp.	Sal.	SIG-T
5	29.889	34.617	21.479
10	29.836	34.639	21.514
20	29.636	34.654	21.593
30	29.574	34.662	21.620
40	29.490	34.661	21.647
50	29.135	34.635	21.747
75	27.887	34.756	22.250
100	27.703	34.896	22.415
125	27.174	35.103	22.742
150	26.579	35.126	22.949
200	23.171	35.129	23.984
250	17.442	34.674	25.159
300	13.137	34.377	25.883
400	9.348	34.229	26.459
500	7.185	34.303	26.844
600	6.008	34.391	27.071
700	5.482	34.441	27.175
800	4.960	34.504	27.287
900	4.644	34.534	27.346
1000	4.177	34.559	27.417

Station	OS10105
Longitude	142-59.8E
Latitude	13-59.1N
Depth(m)	4312

Press.	Temp.	Sal.	SIG-T
5	29.950	34.676	21.503
10	29.866	34.695	21.546
20	29.812	34.710	21.575
30	29.541	34.694	21.655
40	28.963	34.649	21.815
50	28.698	34.653	21.906
75	27.793	34.801	22.315
100	27.406	35.039	22.619
125	27.030	35.113	22.795
150	25.515	35.150	23.299
200	21.507	35.001	24.357
250	16.563	34.632	25.336
300	12.933	34.376	25.923
400	9.166	34.305	26.548
500	7.605	34.382	26.847
600	6.414	34.429	27.048
700	5.476	34.474	27.202
800	4.924	34.515	27.300
900	4.608	34.526	27.344
1000	4.240	34.538	27.394

Station	OS10106
Longitude	142-35.1E
Latitude	13-30.0N
Depth(m)	3435

Press.	Temp.	Sal.	SIG-T
5	30.062	34.671	21.461
10	30.030	34.680	21.479
20	29.705	34.669	21.581
30	29.039	34.638	21.782
40	28.749	34.630	21.872
50	28.536	34.644	21.953
75	27.989	34.747	22.210
100	27.307	34.951	22.585
125	26.924	35.074	22.800
150	26.012	35.129	23.129
200	21.736	34.985	24.282
250	16.481	34.604	25.333
300	13.065	34.370	25.892
400	9.131	34.296	26.546
500	7.428	34.364	26.858
600	6.140	34.431	27.085
700	5.573	34.468	27.186
800	5.111	34.490	27.258
900	4.475	34.525	27.358
1000	4.250	34.542	27.396

Station	OS10107
Longitude	142-59.8E
Latitude	13-00.0N
Depth(m)	3142

Press.	Temp.	Sal.	SIG-T
5	30.089	34.601	21.399
10	30.094	34.636	21.424
20	30.041	34.651	21.453
30	29.452	34.638	21.643
40	28.913	34.621	21.811
50	28.624	34.628	21.912
75	27.792	34.741	22.270
100	27.435	34.890	22.497
125	27.060	35.073	22.756
150	26.206	35.104	23.049
200	20.787	34.894	24.472
250	16.630	34.626	25.315
300	13.589	34.436	25.837
400	9.245	34.307	26.536
500	6.972	34.371	26.927
600	6.056	34.444	27.106
700	5.383	34.511	27.243
800	4.891	34.533	27.318
900	4.459	34.548	27.378
1000	4.237	34.555	27.407

Station	OS10108
Longitude	142-35.1E
Latitude	12-30.0N
Depth(m)	3100

Press.	Temp.	Sal.	SIG-T
5	29.912	34.630	21.481
10	29.912	34.654	21.499
20	29.913	34.671	21.512
30	29.754	34.665	21.561
40	29.061	34.624	21.764
50	28.743	34.636	21.879
75	28.104	34.687	22.127
100	27.412	35.021	22.603
125	27.004	35.129	22.816
150	25.429	35.115	23.299
200	21.360	34.960	24.366
250	17.679	34.733	25.147
300	13.725	34.450	25.820
400	8.726	34.344	26.648
500	7.240	34.445	26.948
600	6.022	34.496	27.152
700	5.552	34.517	27.227
800	5.080	34.532	27.295
900	4.665	34.540	27.349
1000	4.187	34.556	27.413

Station	OS10109
Longitude	141-49.7E
Latitude	12-22.7N
Depth(m)	3900

Press.	Temp.	Sal.	SIG-T
5	29.718	34.625	21.543
10	29.728	34.638	21.550
20	29.728	34.647	21.556
30	29.728	34.652	21.560
40	29.707	34.651	21.567
50	29.111	34.624	21.747
75	28.489	34.616	21.948
100	27.729	34.711	22.268
125	27.067	35.014	22.709
150	25.929	35.097	23.131
200	21.343	34.971	24.379
250	15.627	34.581	25.511
300	12.575	34.382	25.999
400	8.887	34.378	26.649
500	7.802	34.479	26.894
600	6.610	34.467	27.052
700	5.772	34.505	27.190
800	5.341	34.519	27.254
900	4.810	34.539	27.332
1000	4.366	34.552	27.391

Station	OS10110
Longitude	142-09.4E
Latitude	11-59.8N
Depth(m)	4360

Press.	Temp.	Sal.	SIG-T
5	29.875	34.543	21.426
10	29.851	34.544	21.435
20	29.835	34.548	21.444
30	29.737	34.593	21.511
40	29.458	34.632	21.634
50	29.171	34.646	21.741
75	28.656	34.746	21.988
100	27.380	34.877	22.503
125	26.738	35.068	22.852
150	24.905	35.129	23.468
175	23.465	35.113	23.885
200	21.096	34.957	24.435
250	16.431	34.647	25.377
300	12.580	34.392	26.005
400	8.910	34.352	26.625
500	7.359	34.431	26.920
600	6.432	34.470	27.078
700	5.825	34.496	27.176
800	5.196	34.511	27.265
900	4.819	34.522	27.317
1000	4.380	34.534	27.375
1200	3.741	34.558	27.461
1500	2.916	34.588	27.564

Station	OS10111
Longitude	142-25.9E
Latitude	11-56.5N
Depth(m)	2474

Press.	Temp.	Sal.	SIG-T
5	30.062	34.450	21.293
10	30.032	34.456	21.306
20	29.901	34.510	21.393
30	29.866	34.529	21.417
40	29.651	34.563	21.515
50	29.153	34.596	21.704
75	28.236	34.664	22.064
100	27.339	34.953	22.568
125	26.794	35.093	22.853
150	24.910	35.103	23.448
175	21.420	34.988	24.364
200	19.977	34.877	24.669
250	14.528	34.502	25.690
300	11.776	34.358	26.132
400	9.042	34.349	26.602
500	7.474	34.429	26.902
600	6.473	34.473	27.075
700	5.847	34.504	27.180
800	5.377	34.513	27.245
900	4.865	34.527	27.316
1000	4.472	34.539	27.369

Station	OS10112
Longitude	142-29.8E
Latitude	12-00.0N
Depth(m)	3120

Press.	Temp.	Sal.	SIG-T
5	29.981	34.469	21.335
10	29.980	34.469	21.335
20	29.952	34.469	21.345
30	29.838	34.526	21.425
40	29.571	34.577	21.553
50	29.125	34.589	21.706
75	28.252	34.678	22.069
100	27.323	34.936	22.565
125	26.974	35.119	22.813
150	25.886	35.129	23.159
175	23.339	35.070	23.874
200	20.752	34.948	24.519
250	16.160	34.596	25.396
300	12.848	34.402	25.960
400	8.953	34.341	26.610

Station	OS10113
Longitude	142-11.0E
Latitude	12-11.2N
Depth(m)	2506

Press.	Temp.	Sal.	SIG-T
5	29.867	34.607	21.477
10	29.859	34.607	21.480
20	29.856	34.609	21.482
30	29.745	34.673	21.566
40	29.499	34.700	21.671
50	29.105	34.755	21.845
75	27.995	34.851	22.277
100	27.270	35.023	22.648
125	27.100	35.111	22.768
150	26.466	35.146	22.991
175	24.907	35.136	23.468
200	22.067	35.028	24.217
250	16.311	34.625	25.381
300	13.051	34.419	25.929
400	8.935	34.336	26.606

Station	OS10114
Longitude	142-30.1E
Latitude	12-16.2N
Depth(m)	3950

Press.	Temp.	Sal.	SIG-T
5	29.899	34.578	21.445
10	29.879	34.576	21.449
20	29.841	34.581	21.466
30	29.804	34.608	21.497
40	29.558	34.674	21.631
50	29.368	34.670	21.692
75	28.339	34.713	22.065
100	27.274	35.081	22.691
125	26.800	35.174	22.913
150	25.733	35.167	23.240
175	23.709	35.086	23.779
200	21.723	34.984	24.277
250	16.385	34.606	25.351
300	12.964	34.407	25.936
400	8.888	34.343	26.620

Station	OS10115
Longitude	142-43.3E
Latitude	12-09.9N
Depth(m)	3960

Press.	Temp.	Sal.	SIG-T
5	29.995	34.457	21.321
10	30.003	34.457	21.318
20	29.978	34.454	21.326
30	29.926	34.451	21.340
40	29.904	34.451	21.347
50	29.518	34.441	21.467
75	28.661	34.556	21.842
100	27.518	34.871	22.449
125	26.902	35.134	22.844
150	24.553	35.114	23.554
175	21.884	35.008	24.256
200	19.585	34.844	24.747
250	16.153	34.600	25.402
300	12.568	34.389	26.002
400	8.659	34.353	26.663
500	7.166	34.442	26.955
600	6.449	34.487	27.088
700	5.770	34.505	27.190
800	5.311	34.516	27.255
900	4.798	34.527	27.323
1000	4.373	34.540	27.380
1200	3.639	34.560	27.473
1500	2.827	34.592	27.575

Table 2. Oceanographic data (continued)

Station OS10116
Longitude 141-55.4E
Latitude 12-17.8N
Depth(m) 2038

Press.	Temp.	Sal.	SIG-T
5	29.861	34.704	21.552
10	29.841	34.705	21.559
20	29.844	34.704	21.558
30	29.779	34.683	21.559
40	29.061	34.615	21.740
50	28.903	34.638	21.824
75	28.272	34.658	22.041
100	27.762	34.874	22.376
125	27.052	35.129	22.799
150	25.440	35.115	23.280
175	22.682	35.066	24.068
200	19.938	34.880	24.687
250	16.131	34.617	25.413
300	12.930	34.394	25.930
400	9.061	34.356	26.601
500	7.739	34.474	26.899
600	6.750	34.492	27.053
700	6.014	34.493	27.150
800	5.460	34.510	27.232
900	5.003	34.521	27.294
1000	4.425	34.539	27.374
1200	3.681	34.560	27.469
1500	2.927	34.589	27.564

Station OS10117
Longitude 141-32.2E
Latitude 12-45.4N
Depth(m) 2780

Press.	Temp.	Sal.	SIG-T
5	29.895	34.623	21.482
10	29.832	34.638	21.514
20	29.821	34.653	21.529
30	29.670	34.638	21.569
40	29.120	34.607	21.731
50	28.933	34.593	21.783
75	28.250	34.611	22.023
100	27.431	34.830	22.454
125	26.914	35.026	22.767
150	25.613	35.111	23.239
200	21.474	34.991	24.359
250	17.357	34.684	25.187
300	13.704	34.430	25.809
400	9.300	34.315	26.534
500	7.491	34.402	26.879
600	6.332	34.434	27.063
700	5.280	34.478	27.229
800	4.937	34.518	27.301
900	4.432	34.546	27.379
1000	4.173	34.556	27.415

Station OS10118
Longitude 141-08.0E
Latitude 13-14.9N
Depth(m) 4440

Press.	Temp.	Sal.	SIG-T
5	30.184	34.709	21.445
10	30.132	34.707	21.462
20	29.965	34.701	21.514
30	29.923	34.700	21.528
40	29.896	34.696	21.534
50	29.617	34.657	21.599
75	28.143	34.818	22.211
100	27.256	35.029	22.658
125	26.462	35.121	22.980
150	25.372	35.133	23.328
175	23.992	35.137	23.748
200	22.689	35.092	24.093
250	17.798	34.711	25.100
300	13.592	34.426	25.828
400	9.368	34.316	26.523
500	7.377	34.345	26.850
600	6.323	34.395	27.033
700	5.487	34.468	27.196
800	5.022	34.499	27.275
900	4.620	34.521	27.339
1000	4.228	34.537	27.394
1200	3.534	34.559	27.483
1500	2.802	34.586	27.572
2000	2.089	34.626	27.665
2500	1.745	34.650	27.711
3000	1.616	34.665	27.733

Station OS10119
Longitude 164-59.8E
Latitude 30-00.0N
Depth(m) 5860

Press.	Temp.	Sal.	SIG-T
5	25.455	34.477	22.807
10	24.694	34.548	23.097
20	22.047	34.571	23.861
30	21.472	34.840	24.246
40	21.201	34.939	24.395
50	21.040	34.957	24.453
75	19.945	34.863	24.669
100	19.081	34.794	24.842
125	18.342	34.714	24.965
150	17.862	34.711	25.083
175	17.519	34.703	25.161
200	17.060	34.679	25.253
250	16.265	34.631	25.402
300	15.543	34.583	25.529
400	13.562	34.464	25.863
500	10.634	34.261	26.264
600	7.644	34.051	26.579
700	5.741	34.003	26.797
800	4.798	34.083	26.971
900	4.205	34.194	27.124
1000	3.805	34.278	27.232
1200	3.110	34.392	27.389
1500	2.479	34.504	27.535

Station OS10120
Longitude 164-59.7E
Latitude 31-45.4N
Depth(m) 5870

Press.	Temp.	Sal.	SIG-T
5	24.301	34.458	23.144
10	23.683	34.458	23.326
20	21.446	34.486	23.982
30	21.036	34.499	24.104
40	20.330	34.735	24.474
50	19.570	34.747	24.682
75	18.612	34.657	24.858
100	18.348	34.651	24.920
125	17.857	34.629	25.024
150	17.584	34.626	25.088
200	17.078	34.605	25.194
250	16.606	34.591	25.294
300	15.710	34.533	25.455
400	13.633	34.427	25.821
500	10.500	34.213	26.252
600	7.580	34.024	26.569
700	5.794	34.000	26.788
800	4.810	34.069	26.959
900	4.225	34.179	27.110
1000	3.796	34.256	27.215
1200	3.163	34.379	27.374
1500	2.504	34.501	27.531

Station OS10121
Longitude 165-00.3E
Latitude 33-41.1N
Depth(m) 6065

Press.	Temp.	Sal.	SIG-T
5	22.679	34.610	23.730
10	22.428	34.599	23.791
20	21.531	34.579	24.028
30	21.364	34.583	24.073
40	20.728	34.629	24.274
50	19.664	34.672	24.594
75	18.829	34.703	24.836
100	18.266	34.698	24.974
125	17.902	34.698	25.061
150	17.659	34.707	25.132
175	17.486	34.709	25.174
200	17.207	34.694	25.228
250	16.417	34.669	25.395
300	15.411	34.575	25.553
400	12.455	34.385	26.022
500	9.097	34.087	26.386
600	6.826	34.037	26.683
700	4.988	34.018	26.898
800	4.521	34.147	27.053
900	4.037	34.230	27.169
1000	3.673	34.294	27.257
1200	3.091	34.391	27.391

Station OS10122
Longitude 165-00.7E
Latitude 36-01.5N
Depth(m) 5536

Press.	Temp.	Sal.	SIG-T
5	20.744	34.423	24.125
10	20.051	34.460	24.338
20	19.495	34.469	24.490
30	19.301	34.463	24.535
40	16.903	34.444	25.111
50	16.323	34.473	25.269
75	14.672	34.439	25.611
100	13.580	34.366	25.785
125	12.890	34.331	25.897
150	12.341	34.302	25.982
200	11.093	34.211	26.145
250	9.779	34.152	26.327
300	8.261	34.040	26.481
400	6.015	33.957	26.727
500	5.153	34.019	26.880
600	4.551	34.122	27.029
700	4.104	34.212	27.149
800	3.734	34.282	27.243
900	3.424	34.346	27.323
1000	3.162	34.404	27.394
1200	2.677	34.480	27.499
1500	2.321	34.549	27.584

Station OS10123
Longitude 165-03.8E
Latitude 37-39.4N
Depth(m) 4346

Press.	Temp.	Sal.	SIG-T
30	18.323	34.541	24.840
40	17.333	34.539	25.081
50	16.649	34.570	25.267
75	15.097	34.516	25.577
100	13.883	34.439	25.778
125	13.114	34.381	25.890
150	12.589	34.338	25.961
175	11.681	34.275	26.086
200	11.348	34.262	26.138
250	10.271	34.196	26.278
300	8.949	34.131	26.446
400	6.693	34.004	26.676
500	5.137	33.983	26.853
600	4.588	34.082	26.994
700	4.276	34.167	27.095
800	3.909	34.236	27.188
900	3.536	34.299	27.275
1000	3.246	34.349	27.343
1200	2.835	34.427	27.443
1500	2.396	34.504	27.542
2000	1.962	34.583	27.641
2500	1.694	34.633	27.702
3000	1.556	34.658	27.732

Station OS10124
Longitude 164-58.9E
Latitude 38-14.4N
Depth(m) 5110

Press.	Temp.	Sal.	SIG-T
5	20.982	34.466	24.094
10	20.527	34.465	24.215
20	18.906	34.456	24.630
30	17.082	34.446	25.071
40	16.385	34.463	25.247
50	15.750	34.503	25.423
75	14.748	34.448	25.602
100	13.991	34.411	25.734
125	13.423	34.392	25.837
150	12.830	34.360	25.931
200	11.438	34.243	26.107
250	10.301	34.193	26.271
300	9.084	34.109	26.407
400	6.543	33.972	26.671
500	5.118	33.976	26.850
600	4.396	34.062	26.999
700	4.127	34.161	27.106
800	3.698	34.220	27.196
900	3.458	34.293	27.278
1000	3.187	34.345	27.345
1200	2.793	34.423	27.443
1500	2.346	34.505	27.547

Station OS10126
Longitude 165-01.9E
Latitude 40-47.8N
Depth(m) 5390

Press.	Temp.	Sal.	SIG-T
5	17.156	34.354	24.982
10	16.262	34.360	25.105
20	15.956	34.378	25.279
30	15.803	34.378	25.314
40	14.934	34.370	25.501
50	14.675	34.373	25.559
75	12.894	34.355	25.915
100	12.426	34.344	25.998
125	11.911	34.307	26.068
150	11.540	34.293	26.127
175	11.245	34.282	26.172
200	10.949	34.257	26.206
250	10.527	34.227	26.257
300	9.637	34.132	26.335
400	8.305	34.037	26.472
500	6.053	33.944	26.712
600	4.911	34.003	26.895
700	4.443	34.086	27.013
800	4.077	34.174	27.121
900	3.715	34.247	27.216
1000	3.419	34.305	27.291
1200	2.996	34.385	27.394
1500	2.551	34.470	27.502
2000	2.035	34.569	27.624
2500	1.766	34.622	27.687
3000	1.593	34.654	27.726

Station OS10127
Longitude 165-02.6E
Latitude 41-57.4N
Depth(m) 4260

Press.	Temp.	Sal.	SIG-T
5	11.300	33.049	25.303
10	10.467	33.051	25.351
20	8.009	33.121	25.798
30	6.782	33.186	26.019
40	5.832	33.218	26.165
50	5.332	33.230	26.234
75	4.256	33.232	26.354
100	3.803	33.238	26.404
125	3.538	33.259	26.446
150	4.009	33.369	26.488
175	4.543	33.578	26.598
200	4.428	33.674	26.687
250	3.797	33.717	26.786
300	3.692	33.790	26.854
400	3.653	33.926	26.967
500	3.711	34.081	27.084
600	3.544	34.171	27.173
700	3.364	34.244	27.248
800	3.182	34.304	27.313
900	3.008	34.347	27.363
1000	2.842	34.384	27.407
1200	2.553	34.444	27.481
1500	2.267	34.514	27.561
2000	1.944	34.586	27.644
2500	1.694	34.633	27.701
3000	1.556	34.658	27.731

Station OS10128
Longitude 165-59.9E
Latitude 42-32.6N
Depth(m) 5010

Press.	Temp.	Sal.	SIG-T
5	9.909	33.051	25.446
10	9.826	33.067	25.472
20	9.197	33.119	25.615
30	8.441	33.137	25.746
40	5.599	33.163	26.150
50	5.344	33.183	26.196
75	4.465	33.223	26.325
100	4.166	33.270	26.393
125	4.563	33.415	26.467
150	5.036	33.526	26.503
200	4.841	33.686	26.652
250	4.514	33.790	26.770
300	4.077	33.831	26.848
400	3.767	33.946	26.971
500	3.737	34.081	27.082
600	3.530	34.165	27.169
700	3.335	34.244	27.251
800	3.124	34.292	27.309
900	2.901	34.346	27.372
1000	2.770	34.395	27.423
1200	2.505	34.466	27.503
1500	2.210	34.534	27.582

Station OS10129
Longitude 165-01.4E
Latitude 44-10.9N
Depth(m) 5790

Press.	Temp.	Sal.	SIG-T
5	9.291	33.175	25.643
10	9.283	33.175	25.645
20	8.756	33.188	25.738
30	7.868	33.195	25.876
40	6.136	33.265	26.165
50	5.742	33.268	26.216
75	4.871	33.295	26.338
100	5.096	33.383	26.382
125	5.177	33.446	26.423
150	5.383	33.514	26.453
175	5.590	33.579	26.480
200	5.759	33.646	26.512
250	5.106	33.709	26.640
300	4.528	33.762	26.746
400	4.000	33.895	26.907
500	4.043	34.055	27.030
600	3.829	34.153	27.129
700	3.707	34.245	27.215
800	3.446	34.293	27.279
900	3.238	34.330	27.328
1000	3.021	34.362	27.374
1200	2.722	34.429	27.454
1500	2.373	34.498	27.540
2000	1.996	34.578	27.634
2500	1.753	34.624	27.690
3000	1.606	34.651	27.723

Station OS10130
Longitude 165-00.3E
Latitude 44-50.7N
Depth(m) 5950

Press.	Temp.	Sal.	SIG-T
5	8.784	33.257	25.787
10	8.774	33.274	25.802
20	8.746	33.280	25.811
30	7.639	33.332	26.016
40	5.908	33.357	26.266
50	5.381	33.348	26.322
75	4.730	33.388	26.427
100	4.711	33.413	26.449
125	4.839	33.463	26.475
150	5.076	33.513	26.488
200	5.105	33.648	26.592
250	4.413	33.714	26.720
300	3.735	33.736	26.807
400	3.886	33.888	26.913
500	3.755	34.007	27.021
600	3.615	34.111	27.118
700	3.444	34.198	27.204
800	3.342	34.288	27.285
900	3.142	34.335	27.341
1000	2.971	34.375	27.389
1200	2.657	34.438	27.467
1500	2.300	34.511	27.556

Station OS10131
Longitude 165-27.9E
Latitude 46-28.5N
Depth(m) 5770

Press.	Temp.	Sal.	SIG-T
5	7.337	32.975	25.778
10	7.329	32.974	25.778
20	6.503	33.040	25.941
30	6.221	33.033	25.971
40	5.761	33.047	26.039
50	4.294	33.107	26.251
75	3.330	33.101	26.340
100	3.248	33.154	26.389
125	2.987	33.213	26.460
150	2.981	33.355	26.574
175	3.125	33.560	26.725
200	3.044	33.612	26.773
250	3.251	33.730	26.849
300	3.127	33.795	26.911
400	3.316	33.956	27.023
500	3.419	34.093	27.122
600	3.248	34.167	27.198
700	3.108	34.232	27.263
800	2.974	34.285	27.316
900	2.891	34.339	27.367
1000	2.753	34.382	27.414
1200	2.477	34.442	27.486
1500	2.208	34.511	27.564
2000	1.903	34.587	27.648
2500	1.681	34.632	27.702
3000	1.558	34.656	27.729

Station OS10132
Longitude 165-00.1E
Latitude 45-59.2N
Depth(m) 5860

Press.	Temp.	Sal.	SIG-T
5	7.376	32.966	25.766
10	7.366	32.973	25.773
20	7.304	32.977	25.784
30	6.480	33.032	25.937
40	5.095	33.203	26.240
50	4.858	33.230	26.288
75	3.755	33.163	26.349
100	3.628	33.260	26.439
125	4.480	33.494	26.539
150	4.565	33.492	26.629
200	3.007	33.591	26.760
250	3.086	33.706	26.844
300	3.223	33.795	26.903
400	3.364	33.945	27.009
500	3.411	34.077	27.110
600	3.304	34.168	27.193
700	3.102	34.238	27.268
800	2.952	34.297	27.328
900	2.839	34.350	27.381
1000	2.697	34.393	27.428
1200	2.461	34.451	27.494
1500	2.181	34.518	27.571

Table 2. Oceanographic data (continued)

Station	OS10133
Longitude	167-00.1E
Latitude	50-10.0N
Depth(m)	4680

Press.	Temp.	Sal.	SIG-T
5	6.868	32.768	25.679
10	6.861	32.777	25.687
20	6.843	32.785	25.695
30	6.052	32.989	25.958
40	5.504	33.042	26.066
50	4.699	32.954	26.086
75	3.491	33.012	26.254
100	3.630	33.162	26.360
125	4.078	33.446	26.542
150	4.270	33.663	26.695
200	3.792	33.853	26.895
250	3.832	33.962	26.978
300	3.796	34.025	27.031
400	3.642	34.131	27.131
500	3.470	34.210	27.211
600	3.363	34.263	27.263
700	3.149	34.321	27.329
800	3.001	34.354	27.369
900	2.867	34.392	27.412
1000	2.715	34.429	27.455
1200	2.451	34.491	27.527

Station	OS10134
Longitude	167-50.5E
Latitude	50-10.4N
Depth(m)	2815

Press.	Temp.	Sal.	SIG-T
5	6.794	32.978	25.854
10	6.762	32.987	25.865
20	6.216	32.977	25.928
30	5.967	33.002	25.978
40	5.164	33.025	26.091
50	3.756	33.081	26.284
75	3.112	33.115	26.371
100	2.768	33.161	26.437
125	2.839	33.183	26.449
150	2.859	33.203	26.463
200	4.004	33.535	26.621
250	4.174	33.681	26.719
300	4.064	33.800	26.825
400	3.875	33.970	26.980
500	3.715	34.109	27.106
600	3.544	34.197	27.193
700	3.414	34.256	27.253
800	3.233	34.307	27.310

Station	OS10135
Longitude	168-20.6E
Latitude	50-10.0N
Depth(m)	3360

Press.	Temp.	Sal.	SIG-T
5	4.484	33.086	26.214
10	4.003	33.097	26.272
20	3.504	33.107	26.329
30	3.114	33.116	26.371
40	2.884	33.126	26.399
50	2.813	33.141	26.417
75	2.884	33.184	26.446
100	3.145	33.268	26.490
125	3.579	33.386	26.544
150	3.970	33.488	26.587
200	4.199	33.656	26.697
250	4.120	33.790	26.811
300	4.010	33.882	26.896
400	3.860	34.025	27.025
500	3.710	34.134	27.127
600	3.579	34.203	27.194
700	3.385	34.283	27.277
800	3.207	34.337	27.337
900	3.059	34.382	27.386
1000	2.904	34.421	27.432
1200	2.640	34.481	27.503
1500	2.253	34.575	27.611

Station	OS10136
Longitude	168-46.6E
Latitude	50-10.1N
Depth(m)	5210

Press.	Temp.	Sal.	SIG-T
5	6.852	32.905	25.789
10	6.852	32.916	25.797
20	6.847	32.917	25.799
30	6.397	32.929	25.867
40	3.908	33.021	26.221
50	3.599	33.076	26.295
75	3.082	33.152	26.403
100	3.016	33.253	26.489
125	2.652	33.273	26.536
150	2.449	33.283	26.561
200	4.118	33.671	26.717
250	3.958	33.799	26.835
300	3.918	33.896	26.916
400	3.797	34.047	27.049
500	3.659	34.153	27.147
600	3.468	34.243	27.237
700	3.308	34.290	27.290
800	3.160	34.337	27.341
900	2.985	34.379	27.391
1000	2.854	34.416	27.432
1200	2.570	34.484	27.511
1500	2.214	34.566	27.607

Station	OS10137
Longitude	169-39.8E
Latitude	50-09.9N
Depth(m)	3988

Press.	Temp.	Sal.	SIG-T
5	7.044	32.960	25.806
10	7.041	32.962	25.808
20	6.988	32.972	25.823
30	6.109	33.017	25.973
40	5.572	33.060	26.072
50	4.142	33.110	26.269
75	2.582	33.215	26.496
100	2.226	33.239	26.544
125	2.178	33.276	26.577
150	3.388	33.636	26.761
200	3.781	33.904	26.936
250	3.751	33.973	26.994
300	3.734	34.044	27.053
400	3.591	34.124	27.130
500	3.420	34.208	27.214
600	3.269	34.262	27.271
700	3.118	34.312	27.325
800	2.977	34.341	27.361
900	2.846	34.383	27.406
1000	2.684	34.414	27.446
1200	2.440	34.471	27.512
1500	2.165	34.533	27.584

Station	OS10138
Longitude	171-20.2E
Latitude	51-14.7N
Depth(m)	4715

Press.	Temp.	Sal.	SIG-T
5	7.034	32.849	25.720
10	6.601	32.852	25.780
20	5.946	32.836	25.850
30	6.083	32.884	25.871
40	6.048	32.888	25.878
50	5.877	32.940	25.940
75	4.341	33.095	26.236
100	3.643	33.190	26.381
125	3.603	33.365	26.525
150	3.800	33.578	26.675
200	3.953	33.849	26.875
250	3.933	33.914	26.929
300	3.873	33.975	26.984
400	3.843	34.066	27.059
500	3.583	34.208	27.198
600	3.173	34.336	27.339
700	2.888	34.410	27.424
800	2.779	34.444	27.461
900	2.685	34.463	27.485
1000	2.594	34.487	27.512
1200	2.399	34.529	27.562
1500	2.104	34.598	27.641

Station	OS10139
Longitude	171-59.8E
Latitude	51-15.3N
Depth(m)	4400

Press.	Temp.	Sal.	SIG-T
5	6.146	32.927	25.897
10	5.903	32.967	25.958
20	5.844	32.980	25.976
30	5.133	32.993	26.069
40	3.699	33.107	26.310
50	3.578	33.160	26.364
75	3.230	33.187	26.418
100	3.438	33.289	26.480
125	3.538	33.376	26.540
150	3.558	33.424	26.576
200	4.018	33.578	26.653
250	4.218	33.738	26.760
300	4.198	33.841	26.844
400	3.978	33.998	26.991
500	3.749	34.082	27.081
600	3.598	34.170	27.166
700	3.458	34.234	27.231
800	3.277	34.298	27.299
900	3.145	34.339	27.344
1000	3.005	34.372	27.383
1200	2.719	34.448	27.470
1500	2.325	34.534	27.572

Station	OS10140
Longitude	172-29.6E
Latitude	51-15.0N
Depth(m)	5115

Press.	Temp.	Sal.	SIG-T
5	6.959	32.846	25.728
10	6.960	32.846	25.728
20	6.706	32.846	25.761
30	5.730	32.890	25.918
40	4.758	32.953	26.079
50	4.028	33.050	26.232
75	3.233	33.094	26.343
100	3.317	33.157	26.386
125	3.660	33.262	26.437
150	3.828	33.326	26.472
175	3.765	33.360	26.505
200	3.772	33.418	26.551
250	4.060	33.562	26.636
300	4.202	33.702	26.733
400	4.138	33.876	26.878
500	3.972	33.984	26.981
600	3.820	34.070	27.065
700	3.697	34.127	27.122
800	3.574	34.171	27.170
900	3.456	34.211	27.212
1000	3.323	34.250	27.256
1200	3.064	34.323	27.339
1500	2.631	34.428	27.461
2000	2.110	34.543	27.597

Station	OS10141
Longitude	173-00.0E
Latitude	51-14.8N
Depth(m)	5610

Press.	Temp.	Sal.	SIG-T
5	7.051	32.821	25.696
10	7.046	32.822	25.697
20	6.344	32.835	25.799
30	5.839	32.877	25.895
40	4.470	33.001	26.148
50	3.929	33.053	26.245
75	3.773	33.135	26.325
100	3.590	33.166	26.367
125	3.771	33.270	26.432
150	3.630	33.325	26.490
175	3.653	33.381	26.533
200	3.871	33.467	26.579
250	4.020	33.583	26.657
300	4.161	33.677	26.718
400	4.075	33.858	26.870
500	3.964	33.961	26.964
600	3.941	34.026	27.017
700	3.773	34.088	27.083
800	3.645	34.145	27.142
900	3.531	34.187	27.186
1000	3.403	34.228	27.231
1200	3.158	34.298	27.310
1500	2.721	34.408	27.438
2000	2.141	34.537	27.589

Station	OS10142
Longitude	173-29.1E
Latitude	51-14.7N
Depth(m)	6170

Press.	Temp.	Sal.	SIG-T
5	7.249	32.836	25.681
10	7.233	32.836	25.682
20	6.203	32.844	25.824
30	6.017	32.856	25.856
40	4.469	33.010	26.155
50	3.908	33.045	26.241
75	3.209	33.086	26.339
100	3.218	33.122	26.367
125	3.406	33.219	26.427
150	3.543	33.308	26.485
175	3.598	33.359	26.520
200	3.802	33.451	26.573
250	4.150	33.596	26.654
300	4.243	33.724	26.746
400	4.024	33.892	26.902
500	3.969	34.012	27.003
600	3.759	34.087	27.084
700	3.619	34.148	27.147
800	3.466	34.205	27.207
900	3.310	34.251	27.259
1000	3.179	34.291	27.302
1200	2.865	34.371	27.395
1500	2.448	34.465	27.507

Station	OS10143
Longitude	173-59.8E
Latitude	51-14.9N
Depth(m)	6798

Press.	Temp.	Sal.	SIG-T
5	7.471	32.657	25.509
10	7.275	32.682	25.556
20	6.799	32.780	25.697
30	6.162	32.752	25.757
40	5.420	32.783	25.870
50	5.034	32.904	26.010
75	4.604	33.133	26.238
100	4.365	33.251	26.358
125	4.284	33.353	26.447
150	4.183	33.426	26.515
175	4.159	33.488	26.567
200	4.239	33.575	26.628
250	4.172	33.701	26.735
300	4.282	33.852	26.843
400	4.129	33.995	26.974
500	3.949	34.096	27.072
600	3.670	34.179	27.166
700	3.351	34.227	27.236
800	3.190	34.278	27.291
900	3.048	34.325	27.342
1000	2.900	34.357	27.381
1200	2.610	34.424	27.460
1500	2.213	34.512	27.563
2000	1.886	34.584	27.648

Station	OS10144
Longitude	174-40.0E
Latitude	51-14.9N
Depth(m)	7140

Press.	Temp.	Sal.	SIG-T
5	7.437	32.646	25.506
10	7.091	32.645	25.552
20	6.325	32.673	25.673
30	6.101	32.737	25.752
40	5.383	32.777	25.870
50	4.139	32.786	26.011
75	3.824	32.970	26.189
100	4.115	33.233	26.369
125	4.464	33.530	26.569
150	4.408	33.669	26.685
175	4.375	33.734	26.740
200	4.321	33.814	26.810
250	4.264	33.903	26.886
300	3.913	33.943	26.954
400	3.824	34.065	27.060
500	3.664	34.159	27.151
600	3.480	34.225	27.222
700	3.219	34.274	27.286
800	3.048	34.321	27.338
900	2.859	34.365	27.391
1000	2.758	34.398	27.426
1200	2.469	34.455	27.497
1500	2.162	34.525	27.578
2000	1.835	34.592	27.658

Station	OS10145
Longitude	176-24.9E
Latitude	50-39.9N
Depth(m)	6350

Press.	Temp.	Sal.	SIG-T
5	6.950	32.778	25.675
10	6.771	32.799	25.716
20	5.725	32.876	25.908
30	5.152	32.943	26.027
40	4.805	33.006	26.116
50	4.553	33.065	26.190
75	4.368	33.232	26.342
100	4.305	33.303	26.405
125	4.290	33.336	26.433
150	4.217	33.362	26.461
175	4.006	33.444	26.548
200	4.209	33.555	26.615
250	4.200	33.728	26.754
300	4.340	33.883	26.862
400	3.865	33.984	26.992
500	3.596	34.091	27.103
600	3.379	34.182	27.197
700	3.279	34.244	27.256
800	3.068	34.292	27.313
900	2.997	34.339	27.358
1000	2.815	34.379	27.406
1200	2.544	34.445	27.482
1500	2.195	34.518	27.570
2000	1.867	34.589	27.653

Station	OS10146
Longitude	177-15.0E
Latitude	50-39.0N
Depth(m)	7205

Press.	Temp.	Sal.	SIG-T
5	7.549	32.561	25.423
10	7.169	32.569	25.482
20	6.088	32.648	25.684
30	5.139	32.865	25.967
40	4.430	32.916	26.085
50	4.121	33.025	26.203
75	4.420	33.232	26.337
100	4.231	33.318	26.425
125	4.143	33.373	26.478
150	4.201	33.457	26.538
200	4.243	33.762	26.776
250	4.251	33.903	26.888
300	4.131	33.996	26.974
400	3.872	34.117	27.097
500	3.672	34.175	27.163
600	3.491	34.234	27.228
700	3.250	34.275	27.283
800	3.136	34.322	27.331
900	2.967	34.355	27.373
1000	2.814	34.379	27.406
1200	2.440	34.454	27.498
1500	2.144	34.512	27.569

Station	OS10147
Longitude	177-44.8E
Latitude	50-39.9N
Depth(m)	6375

Press.	Temp.	Sal.	SIG-T
5	7.727	32.592	25.422
10	7.433	32.628	25.491
20	5.780	32.856	25.885
30	5.558	33.056	26.070
40	4.731	33.042	26.153
50	4.263	33.036	26.197
75	4.028	33.185	26.340
100	4.297	33.427	26.504
125	4.269	33.586	26.634
150	4.028	33.647	26.707
175	4.053	33.703	26.749
200	4.282	33.853	26.844
250	4.027	33.920	26.924
300	3.921	33.976	26.979
400	3.856	34.106	27.090
500	3.692	34.186	27.169
600	3.450	34.234	27.232
700	3.254	34.293	27.297
800	3.089	34.332	27.343
900	2.886	34.369	27.391
1000	2.739	34.404	27.433
1200	2.498	34.455	27.494
1500	2.169	34.524	27.577
2000	1.857	34.590	27.655

Station	OS10148
Longitude	178-15.0E
Latitude	50-40.0N
Depth(m)	5870

Press.	Temp.	Sal.	SIG-T
5	7.896	32.613	25.415
10	7.543	32.648	25.492
20	5.892	32.691	25.741
30	5.356	32.865	25.942
40	5.239	32.964	26.034
50	4.991	32.976	26.072
75	4.786	33.139	26.223
100	4.497	33.216	26.316
125	4.268	33.326	26.428
150	4.227	33.509	26.577
175	4.339	33.664	26.688
200	4.255	33.794	26.801
250	4.021	33.876	26.890
300	3.995	33.978	26.974
400	3.892	34.101	27.082
500	3.685	34.173	27.160
600	3.250	34.192	27.217
700	3.256	34.288	27.293
800	3.113	34.325	27.336
900	2.956	34.359	27.377
1000	2.821	34.388	27.413
1200	2.532	34.446	27.484
1500	2.192	34.519	27.571
2000	1.869	34.588	27.652

Table 2. Oceanographic data (continued)

Station	OS10149
Longitude	178-44.6E
Latitude	50-39.9N
Depth(m)	5400

Press.	Temp.	Sal.	SIG-T
5	7.462	32.648	25.503
10	7.012	32.710	25.613
20	6.354	32.781	25.755
30	5.721	32.850	25.888
40	5.122	32.959	26.043
50	4.911	33.046	26.137
75	4.485	33.240	26.336
100	4.409	33.339	26.423
125	4.035	33.372	26.488
150	3.923	33.483	26.587
175	4.357	33.616	26.649
200	4.439	33.709	26.714
250	4.332	33.877	26.858
300	4.178	33.969	26.948
400	3.807	34.048	27.048
500	3.682	34.155	27.146
600	3.464	34.218	27.217
700	3.348	34.273	27.272
800	3.113	34.327	27.337
900	2.965	34.359	27.377
1000	2.821	34.389	27.413
1200	2.509	34.452	27.491
1500	2.198	34.518	27.570
2000	1.875	34.587	27.651

Station	OS10150
Longitude	179-15.2E
Latitude	50-40.1N
Depth(m)	5635

Press.	Temp.	Sal.	SIG-T
5	7.280	32.586	25.480
10	7.183	32.601	25.505
20	6.717	32.613	25.576
30	6.872	32.719	25.640
40	5.711	32.636	25.720
50	4.874	32.741	25.899
75	3.982	32.910	26.126
100	3.823	33.074	26.272
125	4.528	33.501	26.539
150	4.646	33.732	26.710
200	4.389	33.873	26.849
250	3.833	33.917	26.942
300	4.111	34.033	27.006
400	3.854	34.105	27.089
500	3.583	34.165	27.164
600	3.443	34.235	27.233
700	3.252	34.300	27.303
800	3.071	34.348	27.358
900	2.910	34.382	27.400
1000	2.778	34.410	27.434
1200	2.485	34.472	27.509
1500	2.170	34.538	27.588

Station	OS10151
Longitude	176-48.6W
Latitude	53-27.6N
Depth(m)	3780

Press.	Temp.	Sal.	SIG-T
5	6.388	33.198	26.080
10	6.361	33.196	26.082
20	5.929	33.192	26.133
30	5.907	33.193	26.136
40	4.305	33.220	26.339
50	3.285	33.299	26.501
75	2.832	33.298	26.541
100	2.726	33.305	26.556
125	2.777	33.317	26.561
150	2.835	33.327	26.564
175	2.870	33.333	26.566
200	2.900	33.338	26.567

Station	OS10152
Longitude	170-29.9W
Latitude	52-20.5N
Depth(m)	570

Press.	Temp.	Sal.	SIG-T
5	5.145	33.029	26.097
10	5.061	33.082	26.148
20	5.002	33.116	26.182
30	4.961	33.171	26.230
40	4.923	33.236	26.286
50	4.880	33.274	26.320
75	4.834	33.308	26.353
100	4.765	33.346	26.390
125	4.716	33.378	26.421
150	4.716	33.387	26.428
200	4.587	33.478	26.514
250	4.289	33.579	26.626
300	4.269	33.825	26.824
400	3.968	34.117	27.087
500	3.580	34.220	27.208
600	3.187	33.673	26.809

Station	OS10153
Longitude	170-30.3W
Latitude	52-00.1N
Depth(m)	3361

Press.	Temp.	Sal.	SIG-T
5	8.873	32.372	25.080
10	8.860	32.369	25.080
20	8.720	32.363	25.095
30	7.864	32.471	25.305
40	6.269	32.648	25.661
50	5.872	32.667	25.724
75	5.285	32.905	25.982
100	5.019	33.259	26.293
125	5.031	33.536	26.511
150	4.957	33.664	26.621
175	4.767	33.799	26.749
200	4.667	33.856	26.805
250	4.210	33.925	26.909
300	4.117	34.006	26.983
400	3.982	34.093	27.067
500	3.793	34.162	27.140
600	3.567	34.229	27.217
700	3.378	34.278	27.274
800	3.184	34.321	27.326
900	2.989	34.363	27.377
1000	2.842	34.393	27.415
1200	2.568	34.450	27.484
1500	2.210	34.524	27.574
2000	1.874	34.595	27.657
2500	1.694	34.632	27.701

Station	OS10154
Longitude	170-30.7W
Latitude	51-40.4N
Depth(m)	4639

Press.	Temp.	Sal.	SIG-T
5	7.955	32.586	25.385
10	7.955	32.587	25.386
20	7.936	32.588	25.389
30	7.394	32.593	25.465
40	6.723	32.663	25.612
50	4.499	32.854	26.024
75	4.079	33.191	26.339
100	4.354	33.498	26.555
125	4.423	33.785	26.775
150	4.260	33.901	26.885
175	4.232	33.952	26.928
200	4.158	33.977	26.956
250	4.099	34.025	27.001
300	3.991	34.075	27.052
400	3.838	34.142	27.120
500	3.636	34.205	27.190
600	3.481	34.248	27.240
700	3.287	34.299	27.299
800	3.153	34.330	27.336
900	2.964	34.368	27.384
1000	2.798	34.402	27.426
1200	2.472	34.467	27.506
1500	2.148	34.537	27.589
2000	1.827	34.604	27.668
2500	1.645	34.640	27.711
3000	1.534	34.663	27.737

Station	OS10155
Longitude	170-30.0W
Latitude	51-20.0N
Depth(m)	6237

Press.	Temp.	Sal.	SIG-T
5	7.740	32.576	25.408
10	7.727	32.576	25.410
20	7.650	32.580	25.423
30	7.472	32.590	25.455
40	7.084	32.630	25.540
50	6.542	32.636	25.616
75	4.199	32.818	26.029
100	3.833	32.977	26.193
125	3.840	33.121	26.308
150	3.933	33.505	26.603
175	4.329	33.799	26.797
200	4.140	33.886	26.886
250	4.018	33.977	26.971
300	3.995	34.025	27.011
400	3.909	34.109	27.086
500	3.719	34.180	27.162
600	3.513	34.239	27.229
700	3.256	34.295	27.299
800	3.052	34.342	27.355
900	2.880	34.381	27.402
1000	2.691	34.419	27.449
1200	2.434	34.474	27.515
1500	2.185	34.530	27.580
2000	1.867	34.597	27.659
2500	1.664	34.638	27.707
3000	1.541	34.663	27.736

Station	OS10156
Longitude	170-29.9W
Latitude	51-00.0N
Depth(m)	7050

Press.	Temp.	Sal.	SIG-T
5	7.809	32.602	25.419
10	7.807	32.603	25.419
20	7.695	32.603	25.436
30	7.630	32.601	25.443
40	7.549	32.607	25.459
50	7.109	32.661	25.562
75	4.520	32.801	25.984
100	4.030	32.853	26.075
125	3.608	32.935	26.182
150	4.567	33.580	26.597
175	4.838	33.778	26.725
200	4.580	33.845	26.806
250	4.099	33.923	26.919
300	4.007	34.008	26.997
400	3.844	34.129	27.109
500	3.636	34.193	27.181
600	3.445	34.245	27.240
700	3.231	34.297	27.302
800	3.076	34.331	27.344
900	2.919	34.363	27.384
1000	2.780	34.393	27.420
1200	2.528	34.446	27.484
1500	2.210	34.514	27.565
2000	1.916	34.579	27.641
2500	1.730	34.620	27.689
3000	1.589	34.647	27.720

Station	OS10157
Longitude	170-30.0W
Latitude	50-40.1N
Depth(m)	5435

Press.	Temp.	Sal.	SIG-T
5	7.817	32.630	25.439
10	7.814	32.629	25.439
20	7.657	32.634	25.465
30	7.389	32.656	25.520
40	6.878	32.702	25.625
50	6.123	32.754	25.763
75	4.486	32.836	26.015
100	3.829	32.874	26.112
125	3.542	32.923	26.178
150	3.423	33.196	26.407
175	3.609	33.668	26.765
200	3.953	33.830	26.860
250	3.944	33.935	26.945
300	3.765	33.975	26.995
400	3.504	34.084	27.107
500	3.405	34.170	27.185
600	3.317	34.244	27.252
700	3.117	34.293	27.310
800	2.972	34.335	27.357
900	2.810	34.374	27.402
1000	2.685	34.404	27.438
1200	2.456	34.457	27.500
1500	2.173	34.522	27.575
2000	1.863	34.589	27.653
2500	1.661	34.629	27.701
3000	1.544	34.653	27.728

Station	OS10158
Longitude	173-55.5W
Latitude	49-04.8N
Depth(m)	5235

Press.	Temp.	Sal.	SIG-T
5	7.878	32.787	25.554
10	7.880	32.787	25.553
20	7.507	32.799	25.616
30	7.137	32.818	25.682
40	6.001	32.855	25.857
50	4.554	32.948	26.097
75	3.696	32.948	26.183
100	3.436	33.053	26.292
125	3.136	33.551	26.716
150	3.172	33.651	26.793
175	3.208	33.692	26.822
200	3.315	33.768	26.873
250	3.426	33.866	26.941
300	3.477	33.946	26.999
400	3.517	34.077	27.100
500	3.399	34.168	27.184
600	3.266	34.234	27.249
700	3.127	34.281	27.300
800	2.973	34.326	27.350
900	2.846	34.362	27.389
1000	2.696	34.402	27.435
1200	2.458	34.458	27.500
1500	2.199	34.516	27.568
2000	1.884	34.587	27.650

Station	OS10159
Longitude	179-59.8W
Latitude	49-30.0N
Depth(m)	4955

Press.	Temp.	Sal.	SIG-T
5	7.914	32.557	25.368
10	7.903	32.556	25.369
20	7.389	32.579	25.459
30	6.726	32.695	25.639
40	5.236	32.786	25.894
50	4.440	32.901	26.072
75	4.122	33.045	26.221
100	3.981	33.149	26.316
125	3.731	33.244	26.416
150	4.423	33.531	26.574
175	4.531	33.677	26.678
200	4.343	33.766	26.769
250	3.421	33.797	26.886
300	3.507	33.885	26.945
400	3.577	34.044	27.068
500	3.458	34.143	27.158
600	3.318	34.221	27.233
700	3.163	34.271	27.289
800	3.004	34.316	27.339
900	2.867	34.357	27.384
1000	2.741	34.389	27.420
1200	2.448	34.459	27.502
1500	2.157	34.525	27.578
2000	1.857	34.590	27.654
2500	1.654	34.631	27.703
3000	1.540	34.653	27.729
3500	1.476	34.668	27.745
4000	1.461	34.676	27.753
4500	1.487	34.679	27.754

Station	OS10160
Longitude	179-59.9W
Latitude	49-45.0N
Depth(m)	5172

Press.	Temp.	Sal.	SIG-T
5	7.811	32.590	25.409
10	7.799	32.591	25.411
20	7.431	32.656	25.514
30	7.162	32.663	25.556
40	5.274	32.706	25.826
50	4.542	32.775	25.961
75	3.976	32.971	26.175
100	4.198	33.263	26.385
125	4.444	33.606	26.631
150	4.410	33.751	26.750
175	4.246	33.817	26.820
200	4.262	33.885	26.872
250	4.069	33.956	26.948
300	3.965	34.020	27.010
400	3.836	34.106	27.092
500	3.623	34.178	27.170
600	3.424	34.239	27.238
700	3.211	34.288	27.298
800	2.981	34.336	27.357
900	2.787	34.385	27.413
1000	2.652	34.418	27.452
1200	2.394	34.473	27.517
1500	2.083	34.539	27.596
2000	1.786	34.600	27.668
2500	1.616	34.636	27.710
3000	1.516	34.657	27.733
3500	1.460	34.670	27.748
4000	1.452	34.677	27.754
4500	1.483	34.680	27.754
5000	1.519	34.682	27.753

Station	OS10161
Longitude	179-55.0W
Latitude	50-04.9N
Depth(m)	5969

Press.	Temp.	Sal.	SIG-T
5	7.825	32.537	25.365
10	7.815	32.538	25.367
20	7.800	32.539	25.370
30	7.191	32.593	25.497
40	7.046	32.600	25.522
50	5.232	32.783	25.892
75	4.319	32.993	26.158
100	4.471	33.222	26.402
125	4.449	33.563	26.596
150	4.315	33.677	26.701
175	4.335	33.725	26.737
200	4.296	33.801	26.802
250	4.183	33.907	26.898
300	4.059	33.979	26.968
400	3.779	34.098	27.091
500	3.512	34.187	27.188
600	3.272	34.247	27.259
700	3.050	34.311	27.330
800	2.887	34.354	27.380
900	2.735	34.397	27.427
1000	2.553	34.437	27.475
1200	2.287	34.495	27.544
1500	2.040	34.548	27.606
2000	1.755	34.605	27.674
2500	1.600	34.637	27.712
3000	1.502	34.658	27.735
3500	1.452	34.670	27.749
4000	1.447	34.677	27.755
4500	1.474	34.680	27.756
5000	1.515	34.682	27.754

Station	OS10162
Longitude	179-50.0W
Latitude	50-25.0N
Depth(m)	6600

Press.	Temp.	Sal.	SIG-T
5	7.724	32.574	25.408
10	7.724	32.574	25.408
20	7.234	32.583	25.484
30	6.981	32.613	25.542
40	6.303	32.660	25.666
50	4.781	32.798	25.954
75	4.327	33.007	26.168
100	4.418	33.224	26.331
125	4.564	33.430	26.479
150	4.430	33.611	26.637
175	4.369	33.699	26.713
200	4.320	33.780	26.783
250	4.175	33.888	26.883
300	4.077	33.980	26.967
400	3.841	34.090	27.079
500	3.586	34.152	27.153
600	3.347	34.227	27.236
700	3.161	34.284	27.299
800	2.961	34.339	27.361
900	2.791	34.378	27.407
1000	2.603	34.423	27.460
1200	2.335	34.483	27.530
1500	2.052	34.545	27.603
2000	1.782	34.602	27.670
2500	1.614	34.635	27.709
3000	1.509	34.657	27.734
3500	1.460	34.669	27.748
4000	1.446	34.677	27.755
4500	1.474	34.680	27.756
5000	1.513	34.682	27.754

Station	OS10163
Longitude	179-45.8W
Latitude	50-50.0N
Depth(m)	5470

Press.	Temp.	Sal.	SIG-T
5	8.208	32.475	25.261
10	8.209	32.475	25.261
20	7.848	32.514	25.344
30	6.815	32.699	25.631
40	5.760	32.831	25.868
50	5.394	33.027	26.066
75	4.672	33.124	26.224
100	4.886	33.425	26.439
125	4.785	33.530	26.534
150	4.558	33.556	26.580
175	4.430	33.656	26.672
200	4.450	33.734	26.732
250	4.429	33.846	26.824
300	4.264	33.925	26.904
400	4.050	34.030	27.010
500	3.828	34.093	27.082
600	3.513	34.201	27.200
700	3.305	34.256	27.263
800	3.179	34.308	27.316
900	3.034	34.340	27.355
1000	2.929	34.360	27.381
1200	2.626	34.428	27.462
1500	2.223	34.512	27.563
2000	1.890	34.583	27.646
2500	1.681	34.625	27.696
3000	1.558	34.650	27.725
3500	1.488	34.666	27.743
4000	1.470	34.675	27.751
4500	1.483	34.679	27.754
5000	1.530	34.681	27.752

Station	OS10164
Longitude	179-42.4W
Latitude	51-09.9N
Depth(m)	3690

Press.	Temp.	Sal.	SIG-T
5	6.812	32.838	25.741
10	6.696	32.842	25.759
20	6.106	32.922	25.898
30	5.055	33.172	26.220
40	5.001	33.192	26.242
50	4.813	33.246	26.306
75	4.688	33.289	26.353
100	4.674	33.294	26.359
125	4.628	33.303	26.371
150	4.610	33.315	26.383
175	4.616	33.335	26.397
200	4.592	33.347	26.409
250	4.496	33.386	26.451
300	4.476	33.411	26.473
400	4.241	33.632	26.673
500	4.080	33.827	26.845
600	3.905	34.094	27.075
700	3.613	34.195	27.184
800	3.321	34.257	27.262
900	3.121	34.314	27.326
1000	2.976	34.354	27.371
1200	2.571	34.436	27.473
1500	2.236	34.509	27.559
2000	1.888	34.582	27.645
2500	1.695	34.621	27.692
3000	1.581	34.646	27.721
3500	1.504	34.663	27.740

Table 2. Oceanographic data (continued)

Station OS10165
Longitude 177-23.1E
Latitude 52-23.5N
Depth(m) 1938

Press.	Temp.	Sal.	SIG-T
5	7.578	33.014	25.775
10	7.563	33.014	25.777
20	6.995	33.048	25.882
30	6.763	33.064	25.925
40	4.697	33.132	26.228
50	3.044	33.168	26.419
75	2.774	33.248	26.506
100	1.932	33.213	26.545
125	1.881	33.231	26.563
150	2.144	33.272	26.576
175	3.557	33.483	26.623
200	3.743	33.555	26.662
250	3.929	33.747	26.796
300	3.889	33.836	26.872
400	3.811	33.986	26.999
500	3.677	34.077	27.085
600	3.551	34.139	27.146
700	3.390	34.203	27.213
800	3.257	34.247	27.260
900	3.097	34.296	27.314
1000	2.934	34.336	27.361
1200	2.620	34.412	27.450
1500	2.248	34.497	27.549

Station OS10166
Longitude 177-00.3E
Latitude 52-0.06N
Depth(m) 1200

Press.	Temp.	Sal.	SIG-T
5	6.484	32.983	25.898
10	6.147	33.017	25.968
20	5.294	33.087	26.126
30	4.990	33.126	26.191
40	4.742	33.150	26.237
50	4.446	33.163	26.279
75	4.288	33.242	26.359
100	3.919	33.256	26.407
125	3.630	33.307	26.476
150	3.362	33.416	26.588
200	3.423	33.484	26.636
250	3.640	33.553	26.671
300	3.650	33.718	26.801
400	3.650	33.899	26.945
500	3.620	34.036	27.057
600	3.490	34.167	27.174
700	3.417	34.207	27.213
800	3.309	34.252	27.259
900	3.138	34.300	27.314
1000	2.946	34.355	27.375
1200	2.855	15.600	12.436

Station OS10167
Longitude 176-41.8E
Latitude 51-39.9N
Depth(m) 2900

Press.	Temp.	Sal.	SIG-T
5	7.638	32.640	25.472
10	7.111	32.700	25.592
20	6.344	32.804	25.774
30	5.853	32.858	25.878
40	5.663	32.909	25.941
50	5.205	32.934	26.015
75	4.530	33.026	26.162
100	4.451	33.189	26.299
125	4.531	33.439	26.489
150	4.376	33.568	26.609
175	4.315	33.632	26.666
200	4.383	33.722	26.730
250	4.305	33.868	26.854
300	4.178	33.952	26.934
400	4.026	34.035	27.016
500	3.896	34.095	27.077
600	3.681	34.129	27.125
700	3.605	34.199	27.189
800	3.431	34.244	27.242
900	3.328	34.263	27.266
1000	3.172	34.291	27.303
1200	2.769	34.395	27.423
1500	2.343	34.487	27.533
2000	1.904	34.580	27.642
2500	1.738	34.615	27.684

Station OS10168
Longitude 176-23.9E
Latitude 51-20.0N
Depth(m) 4570

Press.	Temp.	Sal.	SIG-T
5	7.914	32.722	25.498
10	6.776	32.783	25.702
20	5.782	32.977	25.981
30	4.915	33.076	26.160
40	4.790	33.098	26.190
50	4.732	33.159	26.246
75	4.431	33.227	26.332
100	4.359	33.277	26.379
125	4.258	33.319	26.423
150	4.167	33.399	26.495
175	4.174	33.500	26.575
200	4.203	33.606	26.657
250	4.175	33.706	26.739
300	4.131	33.879	26.881
400	3.884	34.022	27.020
500	3.837	34.126	27.108
600	3.485	34.184	27.188
700	3.360	34.242	27.246
800	3.106	34.291	27.310
900	2.927	34.345	27.369
1000	2.751	34.391	27.421
1200	2.481	34.453	27.494
1500	2.115	34.533	27.588
2000	1.839	34.592	27.657
2500	1.651	34.628	27.701
3000	1.546	34.651	27.727

Station OS10169
Longitude 176-05.8E
Latitude 51-00.5N
Depth(m) 7180

Press.	Temp.	Sal.	SIG-T
5	7.952	32.659	25.442
10	8.130	32.661	25.418
20	6.797	32.734	25.661
30	5.055	32.977	26.066
40	4.900	33.086	26.169
50	4.701	33.120	26.218
75	4.500	33.179	26.286
100	4.380	33.261	26.364
125	4.226	33.330	26.435
150	4.106	33.416	26.515
175	4.212	33.537	26.601
200	4.182	33.621	26.670
250	4.209	33.813	26.820
300	4.131	33.929	26.921
400	3.801	34.041	27.043
500	3.728	34.162	27.147
600	3.505	34.224	27.218
700	3.208	34.265	27.279
800	3.027	34.315	27.336
900	2.867	34.358	27.385
1000	2.724	34.397	27.429
1200	2.418	34.466	27.510
1500	2.127	34.529	27.584
2000	1.819	34.594	27.661
2500	1.637	34.631	27.704
3000	1.535	34.653	27.729

Station OS10170
Longitude 175-47.9E
Latitude 50-39.9N
Depth(m) 5400

Press.	Temp.	Sal.	SIG-T
5	7.545	32.776	25.592
10	7.260	32.814	25.662
20	5.946	32.981	25.964
30	4.678	32.947	26.083
40	4.296	33.014	26.176
50	4.393	33.121	26.252
75	4.518	33.234	26.328
100	4.534	33.312	26.388
125	4.627	33.445	26.484
150	4.322	33.481	26.544
175	4.342	33.537	26.587
200	4.306	33.614	26.652
250	4.255	33.761	26.774
300	4.119	33.870	26.875
400	3.718	34.053	27.061
500	3.652	34.162	27.154
600	3.327	34.235	27.244
700	3.100	34.305	27.321
800	2.908	34.348	27.373
900	2.786	34.383	27.412
1000	2.633	34.417	27.452
1200	2.364	34.476	27.522
1500	2.111	34.533	27.589
2000	1.818	34.595	27.662
2500	1.640	34.630	27.703
3000	1.523	34.655	27.732

Station OS10171
Longitude 175-30.1E
Latitude 50-20.3N
Depth(m) 4610

Press.	Temp.	Sal.	SIG-T
5	8.525	32.800	25.469
10	8.316	32.788	25.491
20	7.190	32.800	25.660
30	6.906	32.813	25.709
40	6.667	32.821	25.746
50	5.119	32.862	25.968
75	3.626	32.933	26.179
100	3.159	32.978	26.257
125	3.447	33.376	26.548
150	3.861	33.757	26.812
175	3.897	33.862	26.891
200	3.873	33.909	26.931
250	3.842	33.995	27.002
300	3.817	34.059	27.056
400	3.638	34.140	27.139
500	3.423	34.219	27.222
600	3.193	34.284	27.296
700	3.038	34.324	27.342
800	2.877	34.357	27.383
900	2.718	34.394	27.427
1000	2.572	34.428	27.466
1200	2.343	34.481	27.528
1500	2.089	34.537	27.594
2000	1.804	34.597	27.664
2500	1.620	34.633	27.707
3000	1.522	34.657	27.733

Station OS10172
Longitude 175-11.9E
Latitude 49-59.9N
Depth(m) 4617

Press.	Temp.	Sal.	SIG-T
5	8.627	32.764	25.425
10	7.452	32.779	25.607
20	6.944	32.801	25.694
30	6.574	32.806	25.747
40	5.443	32.852	25.922
50	4.571	32.897	26.055
75	3.584	33.030	26.260
100	4.044	33.328	26.452
125	3.425	33.528	26.671
150	3.845	33.806	26.852
175	3.909	33.903	26.922
200	3.866	33.957	26.970
250	3.815	34.008	27.016
300	3.777	34.063	27.063
400	3.598	34.164	27.162
500	3.416	34.215	27.220
600	3.248	34.276	27.284
700	3.051	34.310	27.330
800	2.933	34.348	27.371
900	2.767	34.384	27.415
1000	2.626	34.420	27.455
1200	2.368	34.476	27.522
1500	2.090	34.537	27.594
2000	1.794	34.599	27.667
2500	1.619	34.634	27.708
3000	1.516	34.655	27.732

Station OS10173
Longitude 155-52.5E
Latitude 44-23.6N
Depth(m) 5120

Press.	Temp.	Sal.	SIG-T
5	11.451	32.596	24.815
10	9.637	32.857	25.337
20	7.680	32.883	25.654
30	5.140	32.959	26.036
40	3.209	33.020	26.282
50	2.674	33.045	26.352
75	2.163	33.060	26.405
100	1.587	33.081	26.464
125	1.636	33.195	26.552
150	2.250	33.419	26.686
175	2.772	33.619	26.803
200	3.065	33.729	26.865
250	3.205	33.844	26.944
300	3.264	33.914	26.994
400	3.321	34.039	27.088
500	3.284	34.157	27.186

Station OS10174
Longitude 155-00.0E
Latitude 44-00.0N
Depth(m) 5308

Press.	Temp.	Sal.	SIG-T
5	15.281	32.562	24.032
10	14.911	32.915	24.384
20	11.432	32.886	25.052
30	6.622	32.914	25.826
40	5.135	32.980	26.059
50	3.750	33.006	26.224
75	2.799	33.073	26.365
100	1.815	33.057	26.429
125	1.924	33.182	26.521
150	2.703	33.434	26.661
175	3.471	33.638	26.755
200	3.119	33.662	26.806
250	3.001	33.747	26.885
300	3.164	33.864	26.963
400	3.287	34.000	27.061
500	3.128	34.095	27.151
600	3.143	34.194	27.229
700	2.951	34.256	27.296
800	2.864	34.315	27.350
900	2.842	34.376	27.401
1000	2.609	34.397	27.438
1200	2.398	34.457	27.504
1500	2.159	34.524	27.578
2000	1.869	34.593	27.656
2500	1.659	34.633	27.704
3000	1.541	34.655	27.731

Station OS10175
Longitude 145-46.7E
Latitude 41-30.2N
Depth(m) 6915

Press.	Temp.	Sal.	SIG-T
5	17.758	32.828	23.665
10	14.880	33.485	24.830
20	11.754	33.795	25.699
30	9.129	33.825	26.177
40	8.905	33.837	26.223
50	8.846	33.887	26.271
75	8.082	33.849	26.358
100	6.411	33.732	26.498
125	4.657	33.524	26.543
150	4.456	33.565	26.598
175	3.523	33.481	26.624
200	3.163	33.482	26.659
250	2.590	33.535	26.751
300	2.730	33.631	26.816
400	3.257	33.852	26.946
500	3.469	34.068	27.098
600	3.343	34.163	27.185
700	3.430	34.257	27.252
800	2.934	34.272	27.310
900	2.830	34.327	27.363
1000	2.737	34.373	27.408
1200	2.593	34.455	27.486
1500	2.296	34.517	27.561
2000	1.964	34.586	27.643
2500	1.735	34.627	27.693
3000	1.609	34.649	27.721

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.

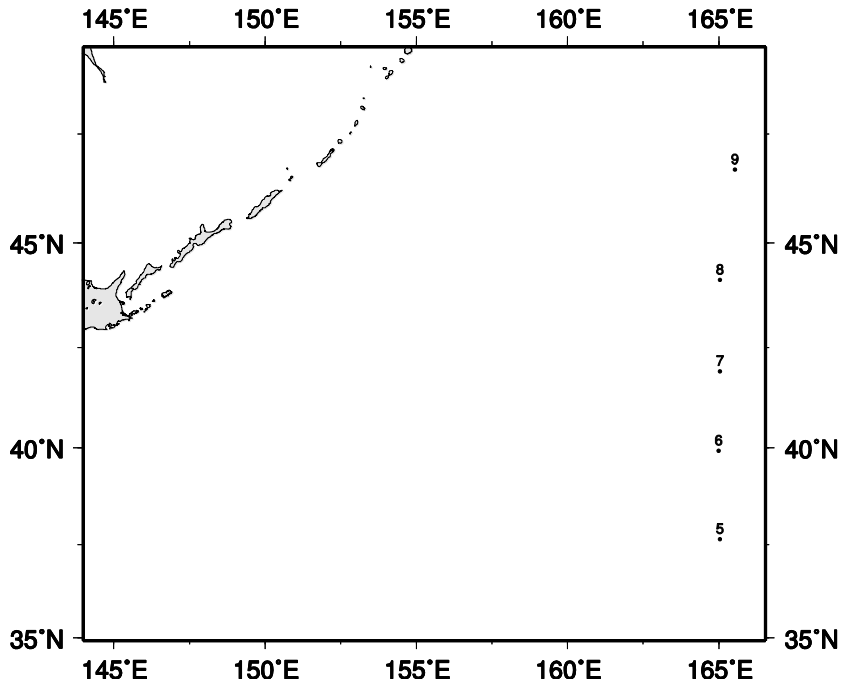

Figure 3. Locations of drift gillnet research

Table 3. Data on drift gillnet research

No. of research	Date and Time (S.M.T.) Net set	Net haul	T.D.	Position Lat.(N)	Long.		D.D.	Bottom depth(m)	Wr	Wind	S.T. (℃)	Tr (m)
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) 48	55	63	72	82	93	106	121	138	157	112	115	118	121	19	22	25	29	33	37	42	Total
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. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (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. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (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. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	Sex	G.W. (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 mumerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Common name	Station / Gear / Scientific name	OSG 1005 C	CPUE	(%)	A	F	Total	OSG 1006 C	CPUE	(%)	A	F	Total	OSG 1007 C	CPUE	(%)	A	F	Total
Sockeye salmon	*Oncorhynchus nerka*	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	*Oncorhynchus keta*	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	*Oncorhynchus gorbuscha*	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	*Oncorhynchus kisutch*	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	*Oncorhynchus tshawytscha*	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	*Oncorhynchus mykiss*	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	*Todarodes pacificus*	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	*Onychoteuthis borealijaponicu*	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	*Gonatopsis borealis*	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	*Ommastrephes bartramii*	52	1.7	(57.1)	0	7	59	8	0.3	(36.4)	0	0	8	0	0.0	(0.0)	0	0	0
Luminous flying squid	*Eucleoteuthis Luminosa*	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	*Prionace glauca*	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	*Isistius brasiliensis*	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	*Engraulis japonicus*	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	*Cololabis saira*	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	*Seriola lalandi*	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	*Naucrates ductor*	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	*Coryphaena hippurus*	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	*Brama japonica*	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	*Scomber japonicus*	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	*Thunnus obesus*	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	*Thunnus alalunga*	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	*Tetragonurus atlanticus*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0	0	23	0.8	(16.9)	0	0	23
Pcific barrelfish	*Hyperoglyphe japonica*	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	*Puffinus griseus*	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	*Phocoena dalli*	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 mumerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Common name	Station / Gear / Scientific name	OSG 1008 C	CPUE	(%)	A	F	Total	OSG 1009 C	CPUE	(%)	A	Total
Sockeye salmon	*Oncorhynchus nerka*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Chum salmon	*Oncorhynchus keta*	5	0.2	(9.3)	1	0	6	14	0.5	(6.7)	14	28
Pink salmon	*Oncorhynchus gorbuscha*	2	0.1	(3.7)	1	0	3	193	6.4	(91.9)	121	314
Coho salmon	*Oncorhynchus kisutch*	1	0.0	(1.9)	1	0	2	3	0.1	(1.4)	6	9
Chinook salmon	*Oncorhynchus tshawytscha*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Steelhead	*Oncorhynchus mykiss*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Japanese common squid	*Todarodes pacificus*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Boreal clubhook squid	*Onychoteuthis borealijaponicu*	1	0.0	(1.9)	0	0	1	0	0.0	(0.0)	0	0
Eight-armed squid	*Gonatopsis borealis*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Flying squid	*Ommastrephes bartramii*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Luminous flying squid	*Eucleoteuthis Luminosa*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Blue shark	*Prionace glauca*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Cigar shark	*Isistius brasiliensis*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Japanese anchovy	*Engraulis japonicus*	0	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	0
Pacific saury	*Cololabis saira*	2	0.1	(3.7)	0	728	730	0	0.0	(0.0)	0	0
Flyingfishes	Exocoetidae	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Yellowtail	*Seriola lalandi*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Pilotfish	*Naucrates ductor*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Dolphinfish	*Coryphaena hippurus*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Pacific pomfret	*Brama japonica*	43	1.4	(79.6)	13	1	57	0	0.0	(0.0)	0	0
Chub mackerel	*Scomber japonicus*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Bigeye tuna	*Thunnus obesus*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Albacore	*Thunnus alalunga*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Smalleye squaretail	*Tetragonurus atlanticus*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Pcific barrelfish	*Hyperoglyphe japonica*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Grey Fork-tailed Petrel	*Puffinus griseus*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	0	0
Dall's porpoise	*Phocoena dalli*	0	0.0	(0.0)	0	0	0	0	0.0	(0.0)	1	1

Table 8. Biological characteristics of fishes caught by drift gillnet

NEON FLYING SQUID

St.	Gear	M.L. (mm)	B.W. (gr)	St.	Gear	M.L. (mm)	B.W. (gr)	St.	Gear	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	M.L. (mm)	B.W. (gr)	St.	Gear	M.L. (mm)	B.W. (gr)	St.	Gear	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	F.L. (mm)	B.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	St.	Gear	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	F.L. (mm)	B.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	St.	Gear	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	F.L. (mm)	B.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	St.	Gear	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	F.L. (mm)	B.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	St.	Gear	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	F.L. (mm)	B.W. (gr)	St.	Gear	F.L. (mm)	B.W. (gr)	St.	Gear	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 salmons, 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.

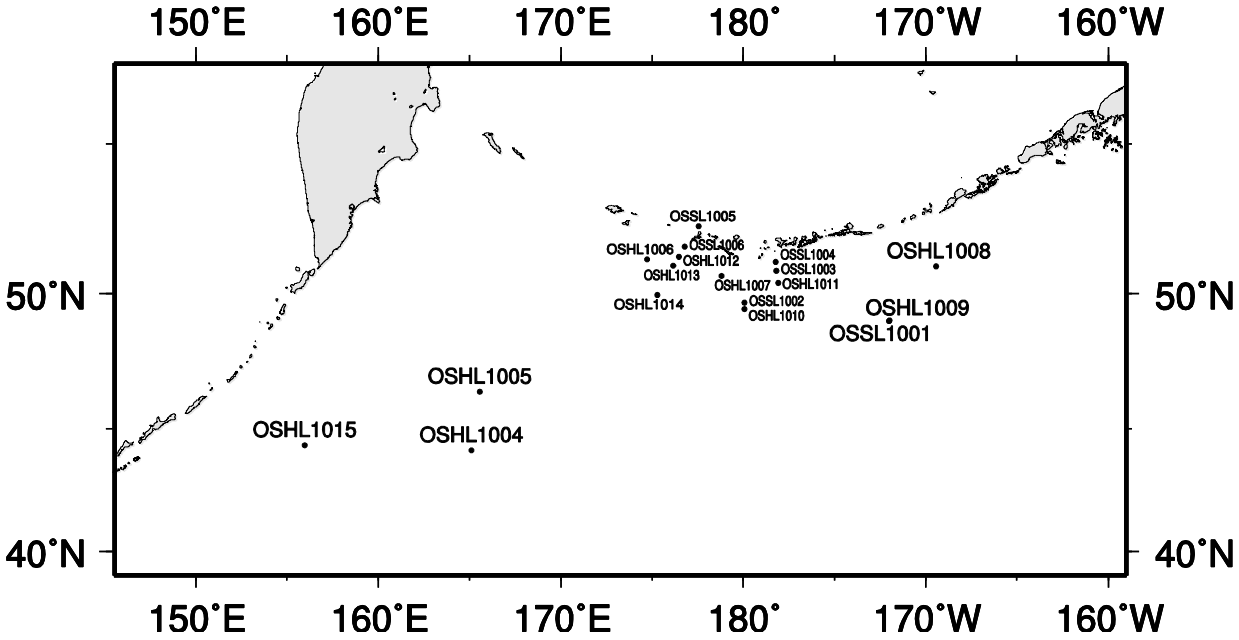

Figure 4. Location of salmon longline and hook-and-line research

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.

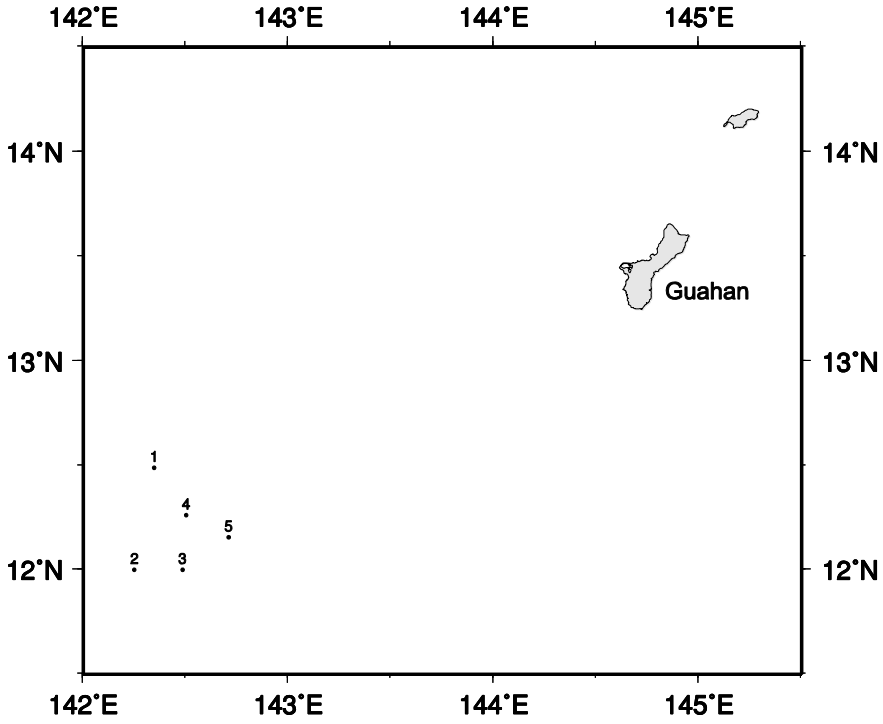

Figure 5. Locations of mid-water trawl research

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 Lat.(N)	Position Long.(E)	Direction of tow	Speed of tow(K′ t)	Bottom depth(m)	Wr	Wind
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	*Isistius brasiliensis*	1	0.04	1	0.05	-	-	-	-	-	-
Unagi-rui	Anguilliformes spp.	14	0.037	5	0.025	5	0.08	5	0.006	6	0.071
Shigiunagi	*Nemichthys scolopaceus*	3	0.01	2	0.002	2	0.001	3	0.011	7	0.075
Nokobaunagi	*Serrivomer sector*	-	-	62	2.83	-	-	-	-	4	0.01
Akayagara	*Fistularia petimba*	1	0.007	-	-	-	-	-	-	-	-
Hurisodeuo-rui	Trachipteridae sp.	-	-	-	-	2	0.036	-	-	-	-
Shimagatsuo	*Brama japonica*	1	0.6	-	-	-	-	1	0.018	-	-
Mukashikurotachi	*Scombrolabrax heterolepis*	2	0.088	-	-	6	0.210	-	-	1	0.044
Kurotachikamasu-rui	Gempylidae sp.	-	-	-	-	2	0.09	1	0.01	8	0.06
Ibodai-rui	*Psenopsis* sp.	1	0.08	-	-	-	-	-	-	-	-
Other fishes	Actinopterygii spp.	2588	7.3	85	0.38	2394	8.50	74	0.44	2616	7.30
Ebi-rui	Decapoda spp.	810	1	34	0.04	2842	3.33	35	0.02	1102	1.22
Akaika-rui	Ommastrephidae sp.	-	-	-	-	7	0.06	-	-	11	0.10
Tobiika	*Sthenoteuthis oualaniensis*	-	-	-	-	1	0.25	-	-	2	0.80
Hotaruikamodoki-rui	Enoploteuthidae spp.	120	0.265	-	-	-	-	-	-	32	0.13
Tsumeika-rui	Onychoteuthidae sp.	16	0.065	-	-	-	-	-	-	-	-
Muchiika-rui	Mastigoteuthidae sp.	-	-	-	-	-	-	-	-	4	0.85
Hiregireka	*Ctencpteryx siculus*	-	-	-	-	-	-	-	-	2	0.02
Gomafuika-rui	Histioteuthidae sp.	-	-	-	-	-	-	-	-	11	0.27
Yatsudeika-rui	Octopoteuthidae sp.	4	0.432	-	-	-	-	-	-	-	-
Samehadahozukiika-rui	Cranchiidae sp.	1	0.002	-	-	2	0.18	-	-	2	0.31
Dangoiak-rui	Sepiolidae sp.	-	-	-	-	-	-	-	-	2	0.01
Hirobireika-rui	*Taningia* sp.	-	-	-	-	3	0.31	-	-	-	-
Komoridako	*Vampyroteuthis infernalis*	-	-	-	-	1	0.01	-	-	-	-
Tosoku-rui	Cephalopoda 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 Lat. (N)	Lon.		S.M.T. Date	Hour	Length of wire (m)	Angle of wire (°)	Depth estimated by wire angle (m)	Kind of cloth	Flowmeter No.	Reading	Estimated volume of water filtered (m^3)	Wet weight (g) per haul	per 1000 m^3	Sample no.
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 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	
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. SA)									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	1509	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) *Neocalanus* 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	Wire length	Revolution							
No.	(m)	1	2	3	4	5	6	7	Mean
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	Wire length	Revolution						
No.	(m)	1	2	3	4	5	6	Mean
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	Wire length	Revolution							
No.	(m)	1	2	3	4	5	6	7	Mean
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

OS10123

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

OS10125

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

OS10127

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

OS10129

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

OS10131

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

OS10140

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

OS10141

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

OS10142

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

OS10143

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

OS10144

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

OS10145

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

OS10147

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

OS10148

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

OS10149

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

6

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

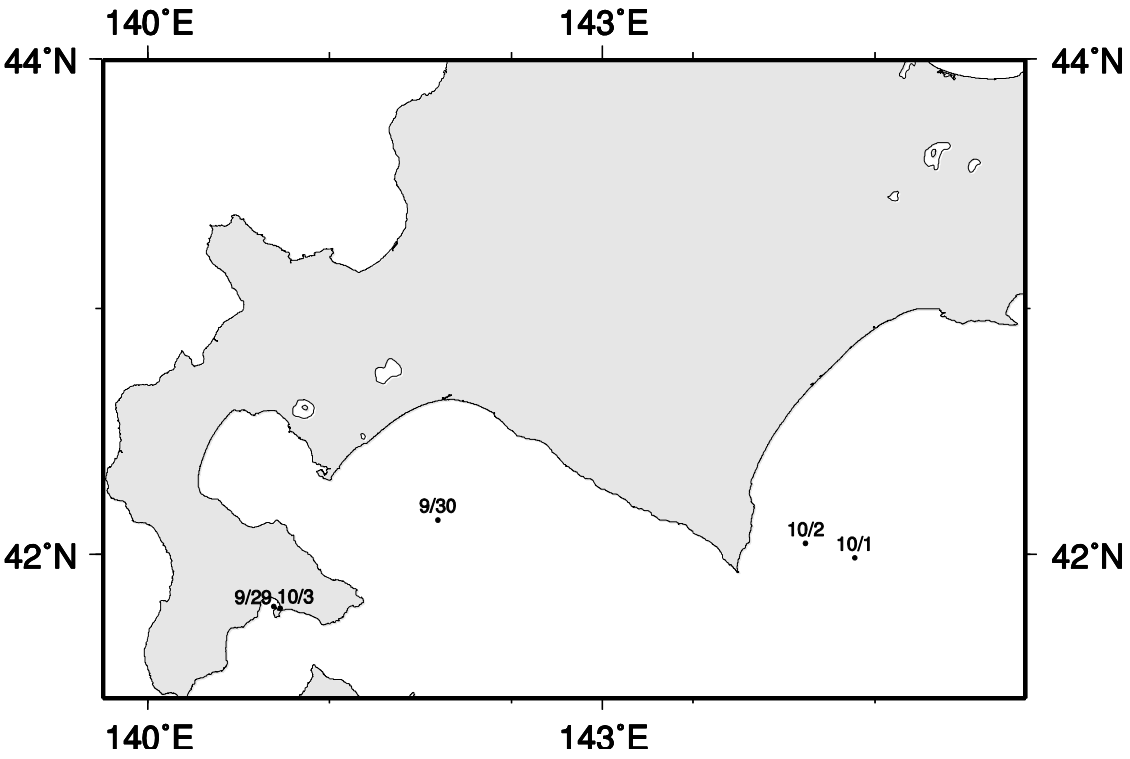

Figure 1. Noon position

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 Matsuishi
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".

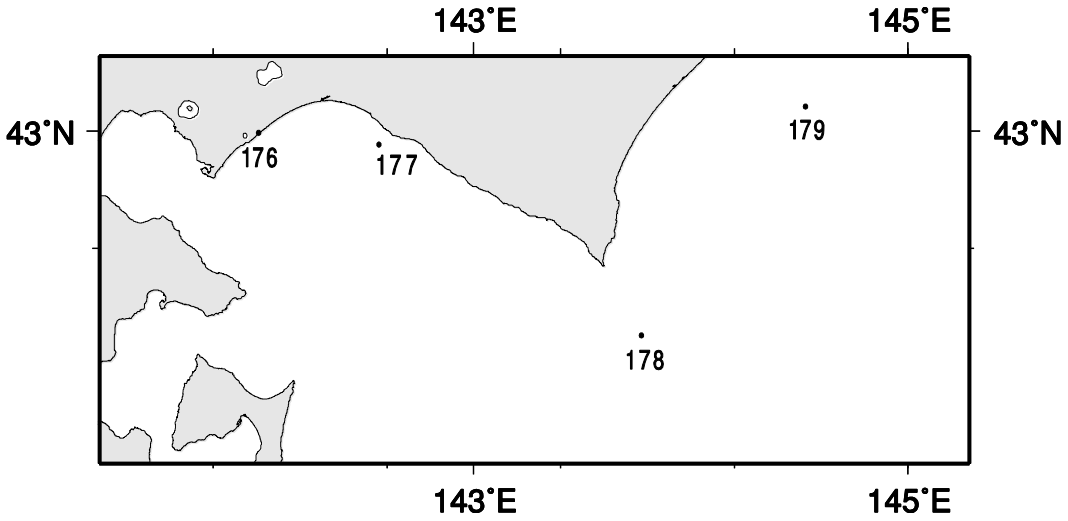

Figure 2. Oceanographic station

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		
Longitude	141-16.1E		
Latitude	42-16.1N		
Depth(m)	640		
Press.	Temp.	Sal.	SIG-T
5	18.109	33.356	23.986
10	18.076	33.355	23.994
20	17.774	33.303	24.028
30	16.253	33.817	24.780
40	13.963	33.785	25.256
50	13.001	33.703	25.388
75	8.787	33.636	26.083
100	5.516	33.457	26.393
125	4.550	33.385	26.445
150	3.360	33.316	26.509
175	2.698	33.282	26.539
200	2.425	33.291	26.570
250	2.083	33.379	26.667
300	2.228	33.483	26.739
400	2.594	33.664	26.854
500	3.103	33.881	26.982

Station	OS10177		
Longitude	141-57.6E		
Latitude	42-13.4N		
Depth(m)	743		
Press.	Temp.	Sal.	SIG-T
5	18.197	33.350	23.960
10	18.203	33.349	23.958
20	18.044	33.346	23.995
30	17.978	33.455	24.094
40	15.387	33.836	24.990
50	13.221	33.792	25.413
75	8.659	33.674	26.133
100	7.472	33.609	26.258
125	5.445	33.472	26.413
150	3.145	33.352	26.556
175	2.301	33.323	26.605
200	2.122	33.349	26.639
250	2.021	33.403	26.691
300	2.156	33.492	26.751
400	2.708	33.701	26.874
500	3.234	33.923	27.004

Station	OS10178		
Longitude	143-28.2E		
Latitude	41-32.5N		
Depth(m)	871		
Press.	Temp.	Sal.	SIG-T
5	19.577	33.463	23.700
10	19.564	33.462	23.702
20	18.727	33.536	23.971
30	18.776	33.658	24.052
40	18.297	33.675	24.184
50	15.952	33.878	24.896
75	13.307	34.118	25.648
100	12.536	34.067	25.761
125	6.437	33.515	26.324
150	3.837	33.348	26.489
175	2.526	33.275	26.549
200	2.153	33.299	26.597
250	2.031	33.396	26.684
300	1.688	33.438	26.743
400	2.319	33.589	26.816
500	3.133	33.861	26.963

Station	OS10179		
Longitude	144-24.9E		
Latitude	42-21.6N		
Depth(m)	1410		
Press.	Temp.	Sal.	SIG-T
5	17.114	33.288	24.174
10	17.072	33.328	24.215
20	16.332	33.395	24.438
30	13.903	33.643	25.158
40	12.323	33.707	25.524
50	11.376	33.718	25.709
75	10.607	34.062	26.114
100	9.325	33.983	26.269
125	7.878	33.842	26.382
150	7.617	33.926	26.486
175	7.051	33.904	26.548
200	3.739	33.515	26.631
250	2.446	33.432	26.681
300	2.392	33.479	26.722
400	3.392	33.739	26.842
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.

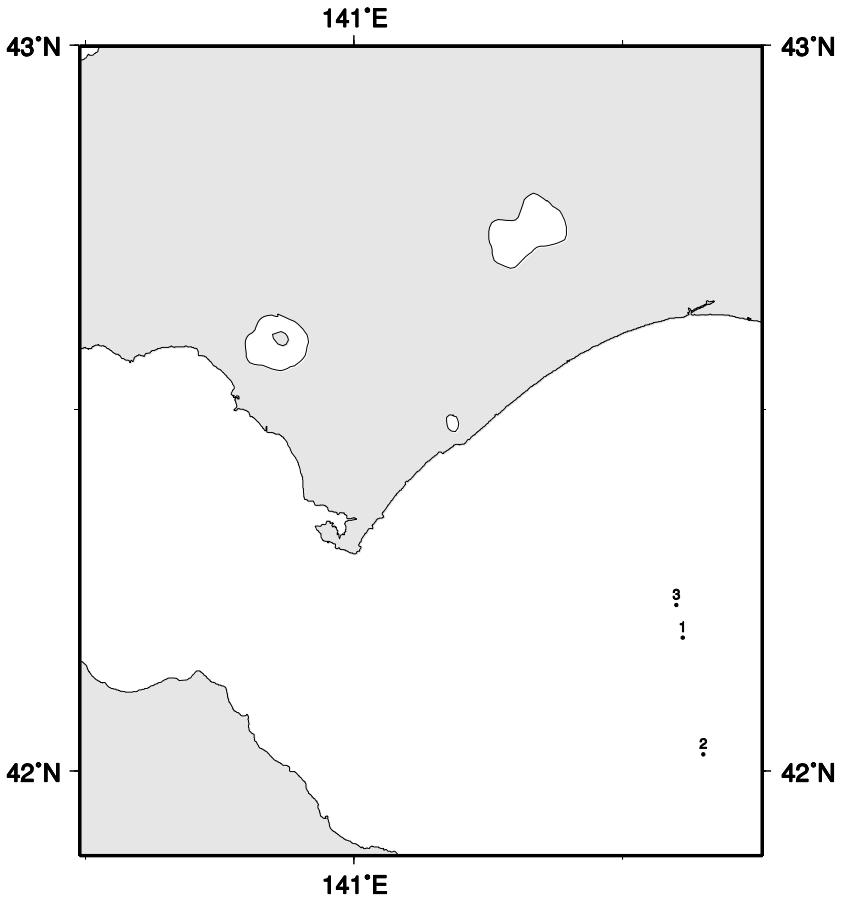

Figure 3. Locations of bottom trawl research

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 Lat.(N)	Position Long.(E)	Direction of tow	Speed of tow(K′ t)	Bottom depth(m)	Wr	Wind
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	*Bathyraja diplotaenia*	1	0.30	10	1.15	3	0.25
Aryushankasube	*Bathyraja aleutica*	-	-	-	-	1	0.75
Onagakasube	*Rhinoraja longicauda*	2	0.10	-	-	-	-
Irakoanago	*Synaphobranchus kaupi*	17	11.00	8	4.00	41	24.00
Yukihoraanago	*Ilyophis nygeli*	5	0.20	4	0.12	5	0.20
Kongouanago	*Simenchelys parasiticus*	-	-	1	0.25	-	-
Kurosokogisu	*Notacanthus chemnitzii*	-	-	-	-	1	0.90
Togariichimonjiiwashi	*Leuroglossus schmidti*	-	-	2	0.01	-	-
Sokoiwashi	*Lipolagus ochotensis*	-	-	-	-	1	0.02
Horaieso	*Chauliodus sloani*	1	0.10	-	-	1	0.10
Hoteieso	*Photonectes albipennis*	-	-	1	0.10	2	0.10
Nagahadaka	*Symbolophorus californiensis*	-	-	-	-	2	0.12
Sekkihadaka	*Stenobrachius nannochir*	-	-	1	0.01	1	0.05
Mamehadaka	*Lampanyctus jordani*	6	0.10	7	0.10	20	0.35
Hadakaiwashi	*Diaphus watasei*	-	-	1	0.01	-	-
Karasudara	*Halargyreus johnsonii*	1	0.20	-	-	-	-
Kanadadara	*Antimora microlepis*	31	5.50	25	4.80	-	-
Itohikidara	*Laemonema longipes*	1853	1228.80	2690	1829.20	550	349.00
Karafutosokodara	*Coryphaenoides cinereus*	40	8.50	21	4.80	55	9.80
Togerakudaanko	*Oneirodes thompsoni*	-	-	-	-	1	0.30
Hiregurokonnyakuuo	*Careproctus marginatus*	-	-	-	-	1	0.10
Hirainkiuo	*Paraliparis grandis*	2	1.30	-	-	6	2.40
Shirohigekonnyakuuo	*Paraliparis barbulifer*	-	-	-	-	1	0.01
Shirogenge	*Bothrocana molle*	301	134.00	446	139.00	259	259.00
Kantengenge	*Bothrocara tanakae*	3	0.70	16	8.50	18	8.00
Nezumiginpo	*Lumpenella longirostris*	27	1.80	68	4.60	22	19.40
kichiji	*Sebastolobus macrochir*	120	24.50	165	29.80	246	45.50
Ganko	*Dasycottus setiger*	1	0.10	2	0.15	9	0.75
Kobushikajika	*Malacocottus zonurus*	-	-	1	0.10	1	0.10
Samegarei	*Clidoderma asperrimum*	-	-	-	-	1	0.55
Benizuwaigani	*Chionoecetes japonicus*	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	*Octopus conispadiceus*	14	5.40	32	13.00	23	9.30
Mendako	*Opishoteuthis depressa*	-	-	2	2.55	-	-

7

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

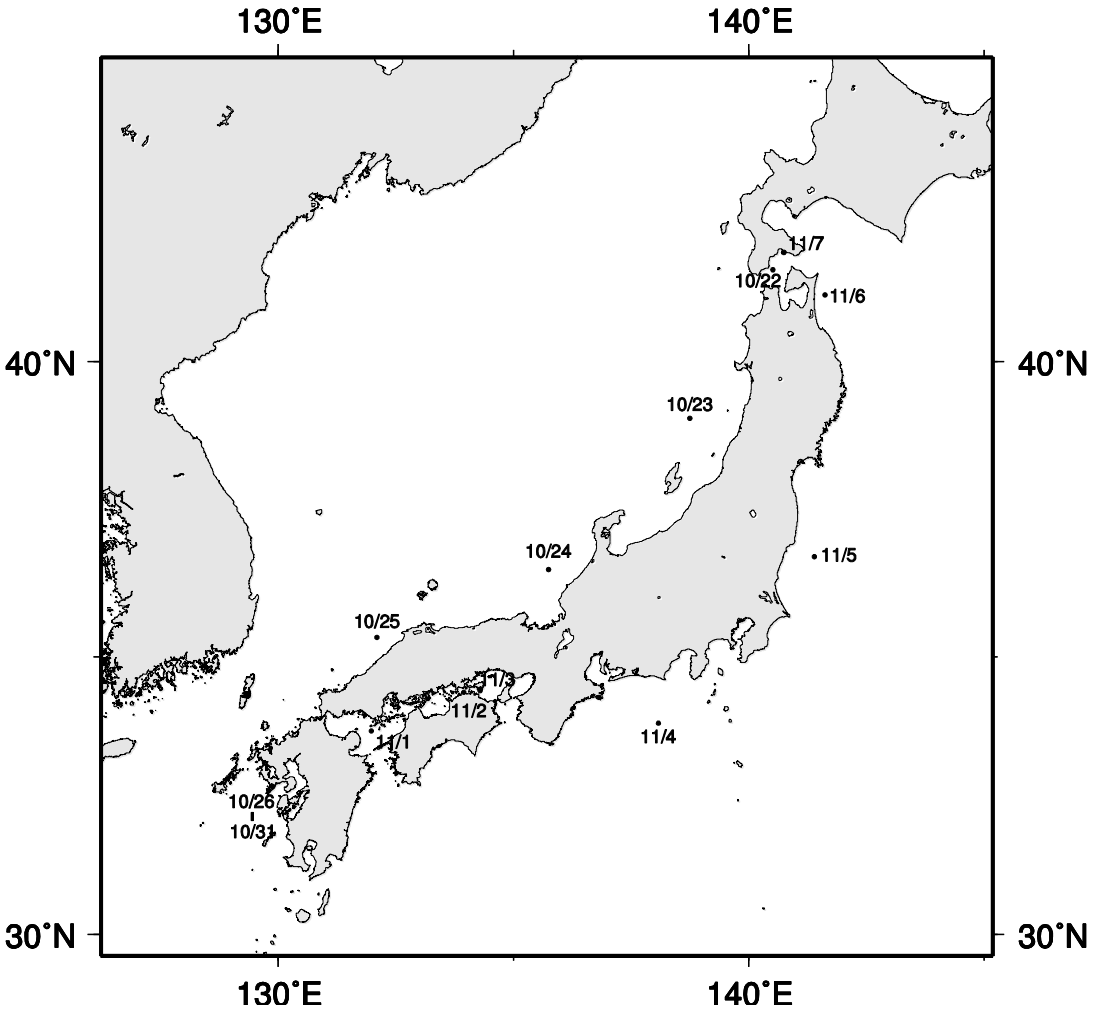

Figure 1. Noon position

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 Hakodate - Nagasaki	(Graduate School of Environmental Science)	Yutaka Watanabe
Associate Professor Nagasaki - Hakodate	(Institute of Low Temperature Science, Hokkaido University)	Jun Nishioka
Invitation professor Hakodate - Nagasaki	(faculty of fishing sciences, Chonnam National University)	Miyuki Hirose

Teaching Assistant:	3 Person
Graduate Students:	3 Persons
Under Graduate Students:	19 Persons
	Total 31 persons

3. Items of Research

Hydrographic observations: Fig. 2 Table 1,2
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:

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.

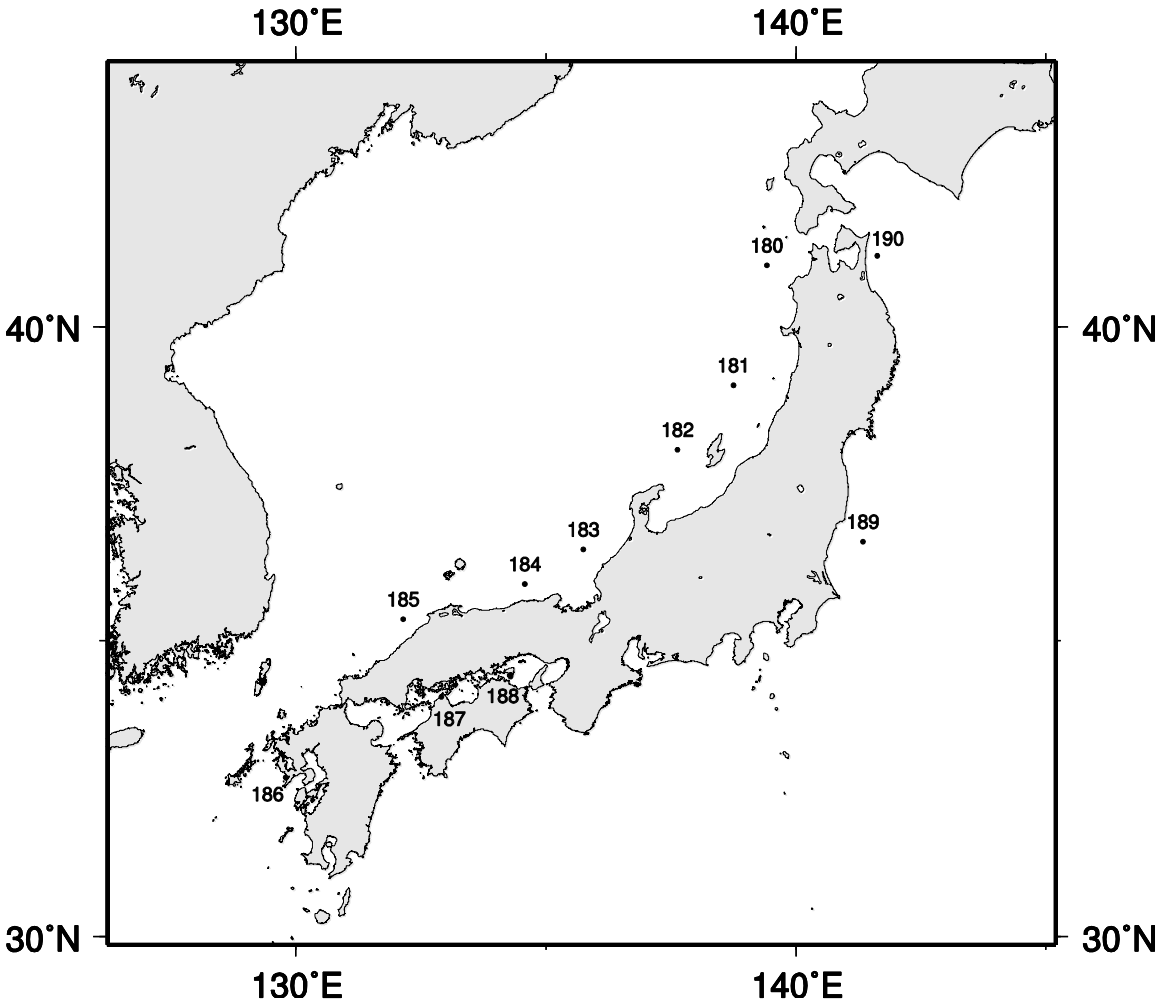

Figure 2. Oceanographic station

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 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 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 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 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 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 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 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 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

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 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

8

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

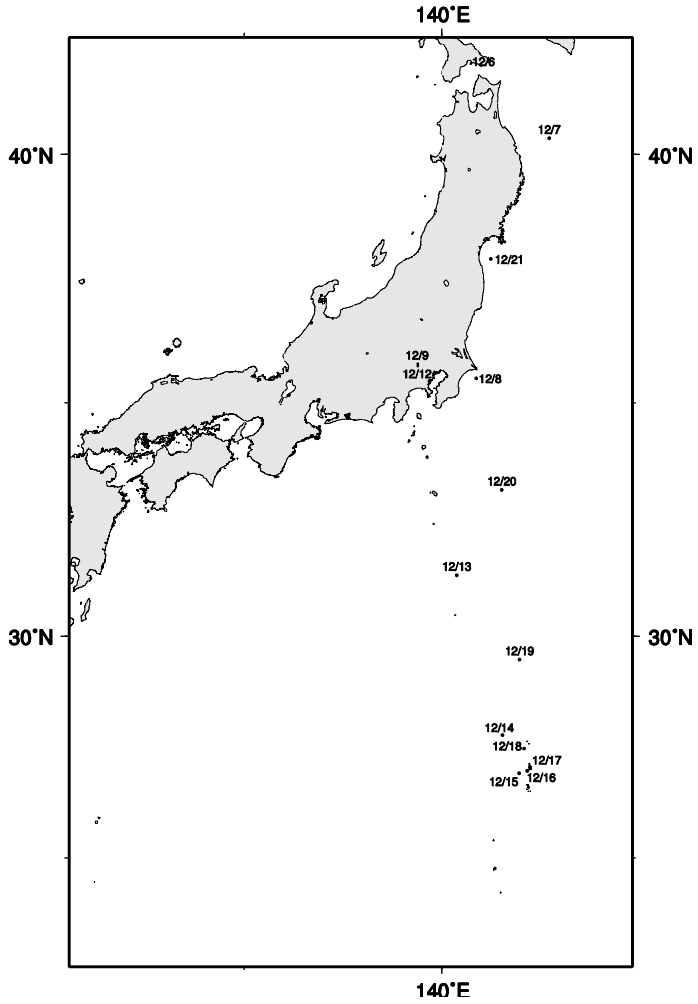

Figure 1. Noon position

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.

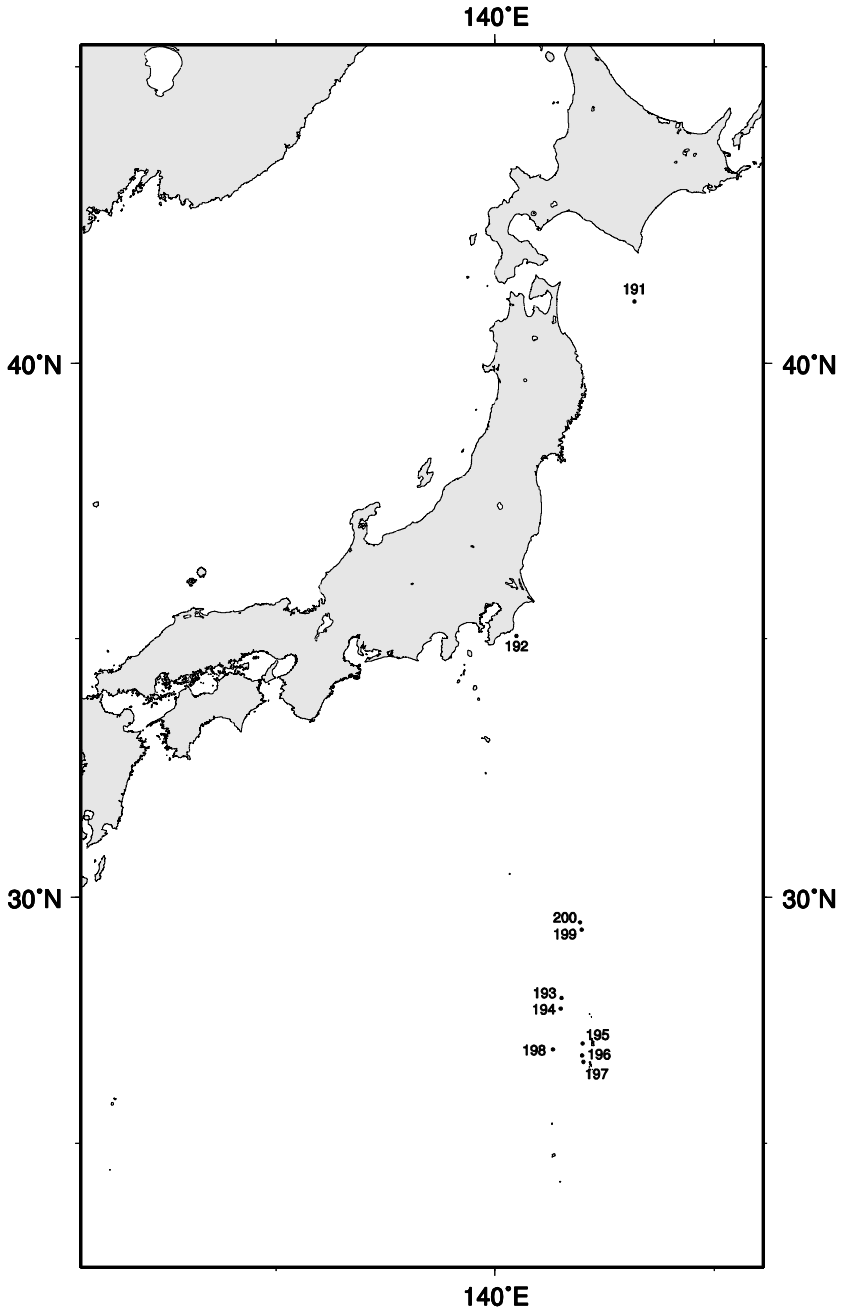

Figure 2. Oceanographic station

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

Press.	Temp.	Sal.	SIG-T
5	7.860	33.276	25.941
10	7.861	33.277	25.941
20	7.857	33.279	25.943
30	7.856	33.279	25.943
40	7.822	33.267	25.938
50	7.750	33.264	25.947
75	7.741	33.262	25.946
100	5.059	33.281	26.305
125	3.508	33.260	26.449
150	3.024	33.337	26.555
175	2.755	33.382	26.616
200	2.221	33.353	26.635
250	2.262	33.425	26.689
300	2.431	33.496	26.733
400	2.800	33.693	26.860
500	2.900	33.847	26.974
600	3.219	34.009	27.074
700	3.230	34.115	27.157
800	3.168	34.199	27.230
900	3.097	34.300	27.317
1000	2.933	34.344	27.367
1200	2.669	34.429	27.458
1500	2.374	34.503	27.543

Station OS10192
Longitude 140-28.0E
Latitude 35-04.1N
Depth(m) 121

Press.	Temp.	Sal.	SIG-T
5	19.600	34.496	24.482
10	19.605	34.496	24.481
20	19.440	34.487	24.518
30	19.323	34.502	24.562
40	18.793	34.502	24.691
50	18.784	34.504	24.697
75	18.608	34.511	24.747
100	18.419	34.511	24.794

Station OS10193
Longitude 141-30.0E
Latitude 28-00.1N
Depth(m) 4150

Press.	Temp.	Sal.	SIG-T
5	24.238	34.656	23.312
10	24.234	34.666	23.321
20	24.229	34.666	23.322
30	24.224	34.666	23.324
40	24.009	34.639	23.367
50	23.288	34.611	23.557
75	22.841	34.587	23.668
100	22.319	34.621	23.842
125	20.915	34.640	24.244
150	19.872	34.654	24.533
200	18.613	34.635	24.841
250	17.954	34.624	24.996
300	17.428	34.621	25.122
400	14.729	34.484	25.634
500	11.119	34.256	26.175
600	7.697	34.050	26.572
700	5.734	34.054	26.838
800	5.066	34.139	26.985
900	4.174	34.222	27.149
1000	3.775	34.295	27.248
1200	3.172	34.397	27.388
1500	2.494	34.508	27.537

Station OS10194
Longitude 141-28.8E
Latitude 27-47.2N
Depth(m) 4140

Press.	Temp.	Sal.	SIG-T
5	24.300	34.714	23.335
10	24.252	34.714	23.350
20	24.253	34.714	23.350
30	24.247	34.713	23.351
40	24.177	34.708	23.368
50	24.132	34.708	23.382
75	23.885	34.715	23.460
100	21.523	34.761	24.169
125	20.271	34.753	24.502
150	19.193	34.722	24.759
175	18.430	34.708	24.942
200	18.130	34.702	25.012
250	17.600	34.692	25.134
300	17.174	34.690	25.235
400	14.738	34.561	25.690
500	11.441	34.336	26.178
600	8.650	34.173	26.526
700	6.259	34.171	26.865
800	5.279	34.217	27.022
900	4.361	34.264	27.163
1000	3.893	34.315	27.252
1200	3.224	34.406	27.391
1500	2.511	34.514	27.540

Station OS10195
Longitude 141-58.7E
Latitude 27-04.7N
Depth(m) 1170

Press.	Temp.	Sal.	SIG-T
5	22.901	34.660	23.704
10	22.887	34.659	23.707
20	22.778	34.654	23.735
30	22.634	34.647	23.771
40	22.378	34.639	23.837
50	22.308	34.639	23.857
75	22.049	34.685	23.964
100	21.294	34.743	24.218
125	19.860	34.746	24.605
150	18.999	34.735	24.819
175	18.615	34.726	24.909
200	18.325	34.716	24.974
250	17.475	34.700	25.170
300	16.898	34.683	25.295
400	15.021	34.578	25.642
500	11.691	34.357	26.148
600	8.997	34.206	26.497
700	6.463	34.144	26.816
800	5.357	34.174	26.979
900	4.336	34.250	27.154
1000	3.644	34.342	27.299

Station OS10196
Longitude 141-57.8E
Latitude 26-79.9N
Depth(m) 1985

Press.	Temp.	Sal.	SIG-T
5	24.634	34.723	23.242
10	24.612	34.723	23.249
20	24.492	34.722	23.284
30	24.317	34.721	23.336
40	24.021	34.728	23.430
50	23.779	34.721	23.495
75	22.813	34.723	23.777
100	21.267	34.755	24.235
125	20.338	34.765	24.493
150	19.547	34.750	24.689
175	18.865	34.731	24.850
200	18.466	34.722	24.943
250	17.884	34.711	25.079
300	17.015	34.687	25.271
400	14.748	34.552	25.682
500	11.759	34.365	26.142
600	9.132	34.223	26.488
700	6.943	34.152	26.758
800	5.390	34.148	26.954
900	4.392	34.236	27.138
1000	3.820	34.320	27.264

Station OS10197
Longitude 141-59.6E
Latitude 26-41.9N
Depth(m) 1131

Press.	Temp.	Sal.	SIG-T
5	24.283	34.659	23.301
10	24.273	34.669	23.311
20	24.155	34.677	23.353
30	24.136	34.680	23.361
40	24.116	34.686	23.371
50	24.087	34.685	23.379
75	23.257	34.682	23.620
100	20.943	34.695	24.279
125	19.965	34.688	24.534
150	19.456	34.662	24.647
200	18.033	34.667	25.010
250	17.242	34.644	25.184
300	16.373	34.612	25.364
400	14.552	34.504	25.687
500	11.578	34.296	26.122
600	8.824	34.170	26.496
700	6.579	34.108	26.773
800	5.249	34.135	26.961
900	4.338	34.227	27.136
1000	3.750	34.316	27.268
1200	3.710	15.696	12.479
1500	5.130	15.787	12.471

Station OS10198
Longitude 141-18.2E
Latitude 26-57.4N
Depth(m) 1210

Press.	Temp.	Sal.	SIG-T
5	22.609	34.594	23.738
10	22.613	34.595	23.737
20	22.610	34.598	23.741
30	22.525	34.632	23.790
40	22.306	34.645	23.862
50	22.242	34.650	23.884
75	22.104	34.677	23.944
100	21.077	34.699	24.244
125	20.509	34.693	24.393
150	19.623	34.699	24.631
175	18.728	34.704	24.864
200	18.101	34.701	25.018
250	17.427	34.692	25.176
300	16.717	34.668	25.326
400	14.823	34.561	25.672
500	11.530	34.352	26.174
600	8.811	34.207	26.527
700	6.383	34.156	26.837
800	4.985	34.187	27.033
900	4.174	34.263	27.182
1000	3.753	34.324	27.274

Station OS10199
Longitude 141-57.2E
Latitude 29-22.3N
Depth(m) 3105

Press.	Temp.	Sal.	SIG-T
5	22.613	34.558	23.711
10	22.614	34.569	23.719
20	22.613	34.581	23.728
30	22.617	34.586	23.731
40	22.615	34.584	23.730
50	22.578	34.588	23.743
75	22.288	34.595	23.831
100	21.509	34.671	24.106
125	20.355	34.671	24.418
150	19.282	34.667	24.696
200	18.544	34.669	24.885
250	17.702	34.645	25.074
300	17.326	34.643	25.163
400	15.287	34.550	25.563
500	12.161	34.347	26.052
600	8.986	34.171	26.472
700	6.684	34.119	26.768
800	5.681	34.153	26.923
900	4.678	34.202	27.079
1000	4.001	34.269	27.205
1200	3.172	34.394	27.386
1500	2.484	34.501	27.532

Station OS10200
Longitude 141-55.3E
Latitude 29-31.2N
Depth(m) 4320

Press.	Temp.	Sal.	SIG-T
5	21.683	34.660	24.048
10	21.679	34.661	24.049
20	21.666	34.659	24.052
30	21.637	34.659	24.060
40	21.627	34.659	24.063
50	21.624	34.662	24.065
75	21.625	34.662	24.066
100	21.383	34.708	24.167
125	19.505	34.726	24.682
150	18.998	34.719	24.807
175	18.576	34.711	24.908
200	18.208	34.703	24.993
250	17.597	34.700	25.140
300	16.783	34.686	25.324
400	14.551	34.552	25.724
500	11.436	34.356	26.194
600	8.197	34.159	26.584
700	5.931	34.086	26.839
800	4.881	34.137	27.004
900	4.244	34.224	27.144

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.

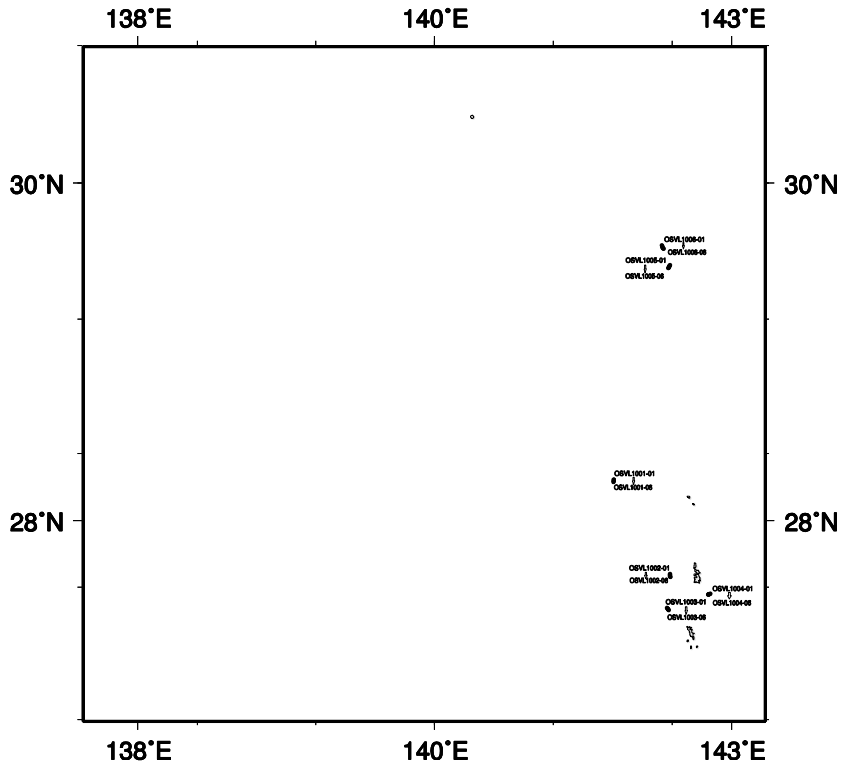

Figure 3. Locations of vertical long line research

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							
Bigeye tuna		1		1			

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	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.

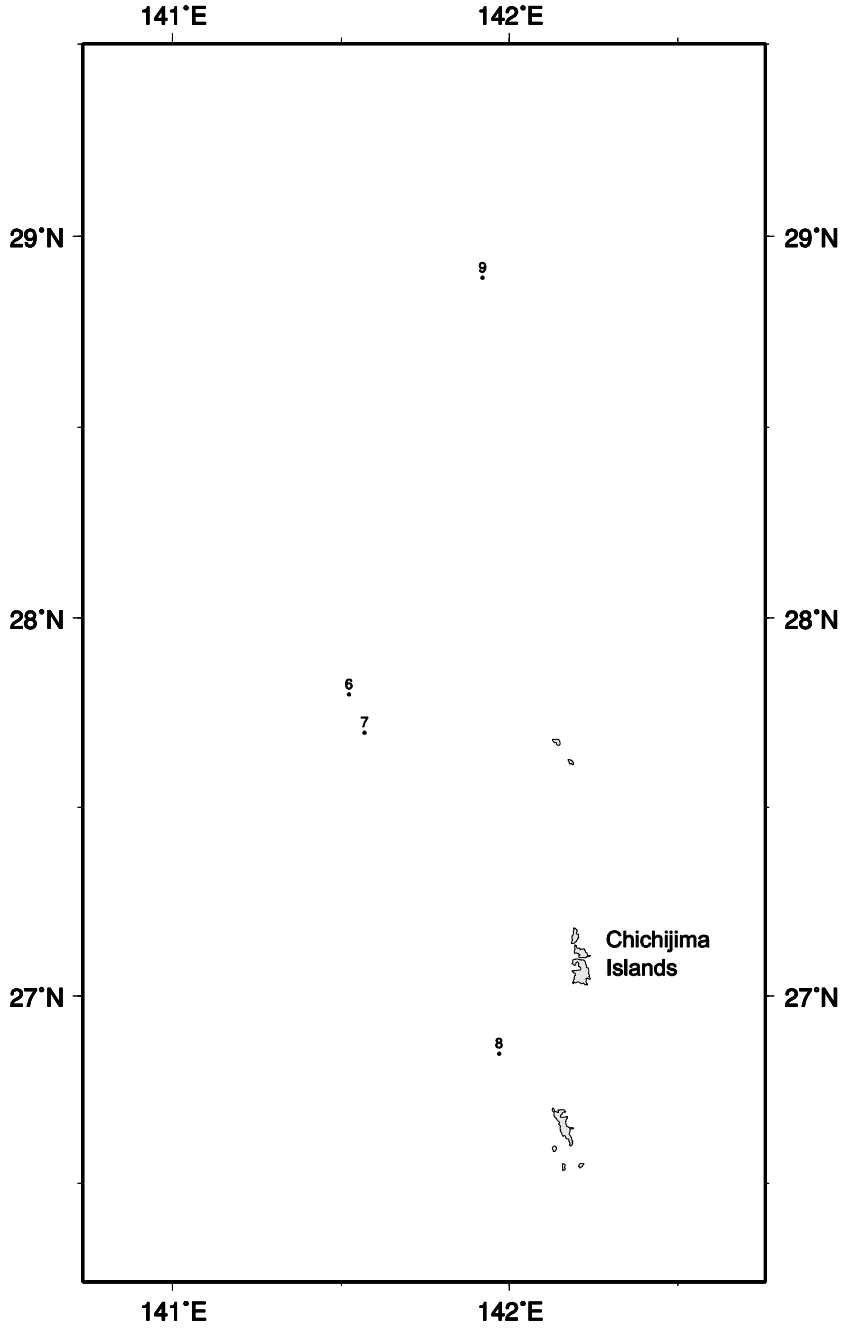

Figure 4. Locations of bottom trawl research

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 Lat.(N)	Position Long.(E)	Direction of tow	Speed of tow(K′ t)	Bottom depth(m)	Wr	Wind
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	*Isistius brasiliensis*	-	-	1	0.64	-	-	1	0.30
Kohiredarumazame	*Isistius plutodus*	-	-	-	-	-	-	1	0.14
Unagi-rui	Anguilliformes spp.	7	0.01	-	-	-	-	-	-
Shigiunagi	*Nemichthys scolopaceus*	-	-	6	0.03	1	0.001	1	0.003
Nokobaunagi	*Serrivomer sector*	-	-	15	1.58	7	0.1	27	0.47
Sokoiwashi-rui	Bathylagidae spp.	-	-	3	0.05	1	0.02	8	0.18
Demenigisu-rui	Opisthoproctidae sp.	-	-	-	-	-	-	2	0.02
Sekitoriiwashi-rui	Alepocephalidae sp.	-	-	2	0.1	-	-	-	-
Yokoeso-rui	Gonostomatidae spp.	10	0.14	107	0.6	4	0.05	36	0.27
Muneeso-rui	Sternoptychidae spp.	1	0.003	32	0.08	35	0.07	51	0.23
Horaieso-rui	Chauliodontidae spp.	-	-	47	0.99	9	0.12	97	1.63
Tokagehadaka-rui	Astronesthidae spp.	-	-	7	0.69	1	0.49	-	-
Hoteieso-rui	Melanostomiidae spp.	-	-	9	0.84	13	0.84	40	1.63
Hokiboshieso-rui	Malacosteidae spp.	-	-	-	-	10	0.2	5	0.07
Mitsumatayariuo-rui	Idiacanthidae spp.	-	-	6	0.02	11	0.09	2	0.04
Hudeeso-rui	Notosudidae sp.	-	-	-	-	-	-	3	0.02
Hadakaiwashi-rui	Myctophidae spp.	1	0.004	1055	4.14	373	1.12	917	4.07
Hadakaeso-rui	Paralepididae sp.	-	-	-	-	1	0.003	-	-
Kibahadaka	*Omosudis lowei*	-	-	2	0.02	-	-	-	-
Yarieso-rui	Evermannellidae sp.	-	-	-	-	-	-	6	0.21
Kawarihiredara	*Melanonus zugmayeri*	-	-	-	-	-	-	1	0.07
Saiuo-rui	Bregmacerotidae sp.	-	-	5	0.01	-	-	30	0.08
Sokodara-rui	Macrouridae sp.	-	-	-	-	4	0.26	-	-
Chochinanko-rui	Ceratioidei spp.	-	-	1	0.18	-	-	2	0.09
Chochinanko	*Himantolophus groenlandicus*	-	-	-	-	1	0.32	-	-
Onikinme	*Anoplogaster cornuta*	-	-	3	0.07	-	-	3	0.16
Kabutouo-rui	Melamphaidae sp.	-	-	27	0.27	9	0.05	80	0.58
Akakujirauodamashi	*Barbourisia rufa*	-	-	1	0.01	-	-	1	0.08
Hurisodeuo-rui	Trachipteridae sp.	-	-	-	-	-	-	1	0.30
Kushisumikuiuo	*Howella parini*	-	-	3	0.05	-	-	18	0.19
Yaegisu	*Caristius macropus*	-	-	4	0.60	-	-	6	2.62
Kurobozugisu-rui	Chiasmodontidae sp.	1	0.003	-	-	1	0.04	3	0.04
Kurotachikamasu-rui	Gempylidae sp.	1	0.01	6	0.06	1	0.01	4	0.71
Kurokasago	*Ectreposebastes imus*	-	-	-	-	-	-	1	0.04
Shirokasago	*Pleurogrammus monopterygiu*	-	-	-	-	1	0.20	2	0.17
Hakohugu-rui	Ostraciidae sp.	-	-	-	-	-	-	1	0.01
Ebi-rui	Decapoda spp.	-	-	97	0.50	42	0.25	304	1.18
Tosoku-rui	Cephalopoda spp.	-	-	83	2.94	30	0.53	38	1.86
Kurage-rui	Cnidaria spp.	-	-	33	0.38	-	-	59	3.66