



HOKKAIDO UNIVERSITY

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4.

**THE "OSHO RO MARU" CRUISE 242
TO THE NORTHWEST PACIFIC OCEAN**

IN MAY 2012

1. Cruise Itinerary

Cruise 242

Departure from Hakodate	May	10	2012
Start hydrographic research (OS12015) and gillnet research (OSG1201)		14	
Finish gillnet research (OSG1203)		18	
Finish hydrographic research (OS12030)		22	
Return to Hakodate		23	
Total coverage 1782.9 miles			

2. Vessel Personnel

Crew:	Captain	Associate Professor	Shogo Takagi
			And 29 persons
Research Staff:	Associate Professor	(Laboratory of Strategic Studies on Marine Bioresource Conservation and Management)	
			Hideaki Kudo
	Teaching Assistant:		2 persons
	Graduate Students:		2 persons
	Under Graduate Students:		48 Persons
Total 53 persons			

3. Items of Research

Hydrographic observations: (Observation of Temperature, Salinity, and Computed Dynamic Depth Anomaly)

Hydrographic work on deck and the data processing were made by the Science officer, the deck officers, crews, research staff and cadets of the “Oshoro maru”. Temperature and salinity were measured by CTD (Seabird SBE-9Plus) and XCTD. Water and Plankton sampling were also carried out at almost hydrographic stations.

Fig.1, Table 1, 2, 10, 11

Biological research for fishes caught by non-selective drift gillnets:

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

Table 3, 4, 5, 6

Salmon hook-and-line research:

Hook-and-line and surface longline sampling to collect salmons, hook-and-line gears and surface longline were used along 155°E line in the Central North Pacific. 10 to 15 anglers were engaged in the work. These samplings were mainly conducted with observations when ship was under drifting.

Table 7, 8, 9

Table 1. List of Oceanographic station

Station	Lat.	Long.	Date (GMT)	Hour (GMT)	T.Z.	Depth	Col.	Tr.	SST	Wr.	Gear
OS12015	43-59.82N	154-59.73E	2012/5/14	2:09	10	5300	-	-	4.4	c	9Plus-0769
OS12016	43-14.02N	155-02.28E	2012/5/14	9:47	10	5530	-	-	5.7	c	9Plus-0769
OS12017	42-30.57N	155-00.41E	2012/5/15	1:25	10	5150	-	-	10.9	bc	9Plus-0769
OS12018	42-56.80N	155-00.82E	2012/5/15	8:43	10	5390	-	-	9.2	c	9Plus-0769
OS12019	41-45.40N	154-59.95E	2012/5/16	3:53	10	5537	-	-	11.1	c	9Plus-0769
OS12020	41-00.04N	154-59.84E	2012/5/16	9:43	10	5489	-	-	-	r	X-CTD
OS12021	40-15.25N	154-58.80E	2012/5/16	15:07	10	5550	-	-	-	r	X-CTD
OS12022	39-26.25N	154-52.91E	2012/5/17	11:45	10	5650	-	-	13.4	b	9Plus-0769
OS12023	38-45.06N	155-00.49E	2012/5/17	23:57	10	5758	-	-	18.0	r	X-CTD
OS12024	38-04.47N	143-51.04E	2012/5/20	8:29	9	6130	-	-	17.0	bc	9Plus-0769
OS12025	39-00.04N	142-01.12E	2012/5/21	6:06	9	217	-	-	12.8	bc	9Plus-0769
OS12026	38-59.98N	141-55.16E	2012/5/21	7:24	9	140	-	-	13.5	c	9Plus-0769
OS12027	39-29.94N	142-05.99E	2012/5/21	11:01	9	144	-	-	11.7	c	9Plus-0769
OS12028	39-29.98N	142-10.97E	2012/5/21	12:19	9	228	-	-	13.0	c	9Plus-0769
OS12029	39-59.94N	142-14.97E	2012/5/21	16:44	9	226	-	-	12.0	bc	9Plus-0769
OS12030	40-00.04N	142-06.47E	2012/5/21	18:14	9	127	-	-	10.8	bc	9Plus-0769

Fig 1. Oceanographic stations

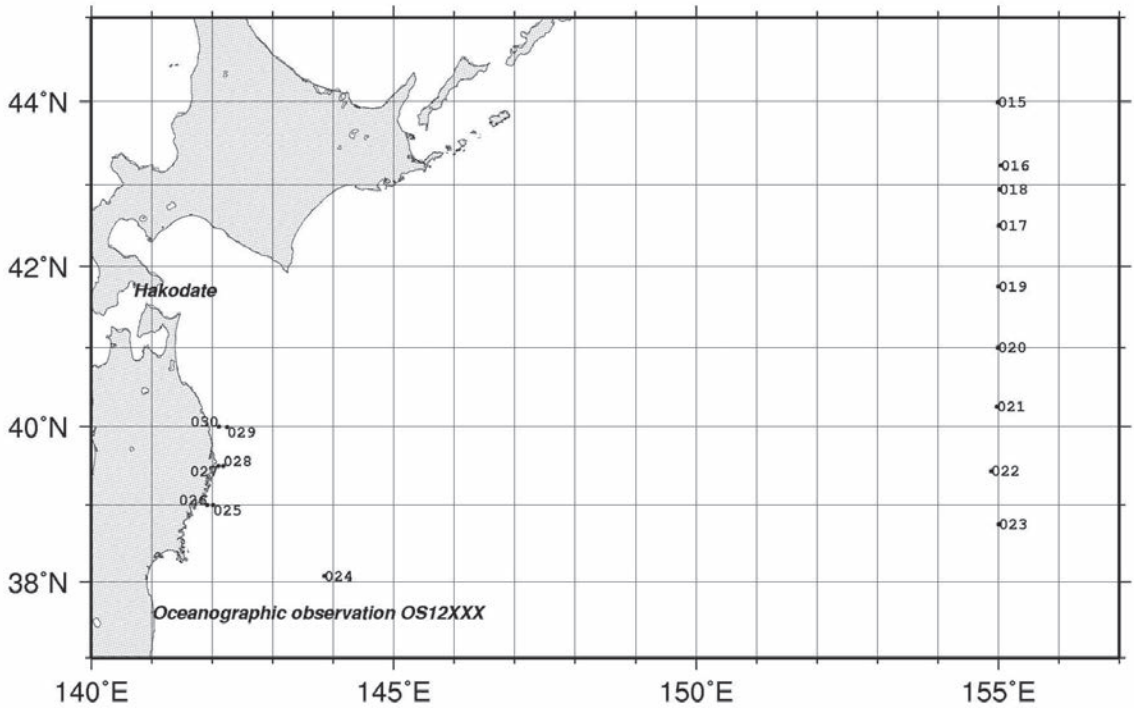


Table 2. Oceanographic data

Station OS12015			
Latitude 43-59.82N			
Longitude 154-59.73E			
Depth(m) 5300m			
Press.	Temp.	Sal.	SIG-T
5	3.789	32.999	26.216
10	3.785	33.000	26.216
20	3.733	33.000	26.221
30	3.512	32.999	26.241
40	3.072	33.018	26.297
50	2.618	33.058	26.368
75	2.364	33.170	26.477
100	2.548	33.223	26.505
125	3.065	33.343	26.556
150	3.481	33.512	26.654
175	2.550	33.493	26.721
200	2.811	33.581	26.769
250	3.202	33.755	26.873
300	3.276	33.851	26.943
400	3.423	34.016	27.060
500	3.314	34.111	27.146
600	3.213	34.201	27.228
700	3.050	34.260	27.290
800	2.921	34.326	27.354
900	2.743	34.370	27.405
1000	2.631	34.405	27.443
1200	2.395	34.462	27.509
1500	2.179	34.528	27.579
2000	1.858	34.600	27.663
2500	1.647	34.640	27.710
3000	1.535	34.661	27.735

Station OS12016			
Latitude 43-14.02N			
Longitude 155-02.28E			
Depth(m) 5530m			
Press.	Temp.	Sal.	SIG-T
5	5.585	33.035	26.050
10	5.577	33.035	26.051
20	5.223	33.020	26.080
30	4.390	33.048	26.193
40	2.702	33.118	26.408
50	2.527	33.130	26.432
75	2.266	33.110	26.437
100	1.810	33.108	26.470
125	2.178	33.237	26.546
150	1.997	33.364	26.661
175	2.629	33.549	26.759
200	3.009	33.664	26.818
250	3.207	33.782	26.894
300	3.417	33.897	26.966
400	3.485	34.046	27.078
500	3.272	34.147	27.179
600	3.113	34.222	27.254
700	2.980	34.282	27.314
800	2.865	34.330	27.362
900	2.718	34.378	27.413
1000	2.578	34.412	27.453
1200	2.371	34.463	27.511
1500	2.155	34.528	27.581

Station OS12017			
Latitude 42-30.57N			
Longitude 155-00.41E			
Depth(m) 5150m			
Press.	Temp.	Sal.	SIG-T
5	10.707	34.067	26.101
10	10.692	34.067	26.104
20	10.638	34.065	26.112
30	10.631	34.066	26.114
40	10.626	34.065	26.114
50	10.475	34.051	26.129
75	8.16	34.013	26.475
100	7.727	33.962	26.498
125	7.128	33.883	26.521
150	6.405	33.783	26.54
175	6.272	33.805	26.574
200	6.216	33.82	26.593
250	5.578	33.799	26.655
300	4.595	33.782	26.754
400	4.749	33.968	26.886
500	4.299	34.041	26.992
600	4.055	34.128	27.087
700	3.706	34.195	27.175
800	3.484	34.266	27.254
900	3.258	34.315	27.314
1000	3.057	34.356	27.366
1200	2.746	34.431	27.454
1500	2.349	34.499	27.542

Station OS12018			
Latitude 42-56.80N			
Longitude 155-00.82E			
Depth(m) 5390m			
Press.	Temp.	Sal.	SIG-T
5	9.126	33.757	26.125
10	9.157	33.768	26.128
20	8.987	33.766	26.154
30	9.047	33.785	26.159
40	8.748	33.791	26.211
50	6.815	33.755	26.463
75	6.773	33.807	26.509
100	5.21	33.584	26.529
125	4.652	33.561	26.573
150	3.886	33.51	26.612
175	4.073	33.575	26.645
200	2.607	33.502	26.723
250	3.573	33.721	26.811
300	3.418	33.756	26.853
400	3.299	33.915	26.991
500	3.964	34.132	27.099
600	3.349	34.16	27.182
700	3.1	34.222	27.255
800	3.007	34.289	27.317
900	2.839	34.326	27.362
1000	2.751	34.383	27.415
1200	2.496	34.45	27.491
1500	2.223	34.515	27.565

Station OS12019			
Latitude 41-45.40N			
Longitude 154-59.95E			
Depth(m) 5537m			
Press.	Temp.	Sal.	SIG-T
5	10.931	34.144	26.121
10	10.932	34.144	26.122
20	10.88	34.141	26.128
30	10.743	34.135	26.148
40	10.432	34.085	26.163
50	9.659	33.995	26.224
75	7.125	33.876	26.516
100	6.691	33.846	26.551
125	6.639	33.849	26.561
150	6.803	33.888	26.569
175	6.916	33.917	26.577
200	6.874	33.916	26.582
250	6.767	33.903	26.586
300	5.665	33.784	26.633
400	4.388	33.872	26.849
500	4.228	33.983	26.953
600	3.815	34.074	27.068
700	3.819	34.195	27.164
800	3.498	34.259	27.247
900	3.278	34.309	27.308
1000	3.102	34.358	27.364
1200	2.797	34.418	27.439
1500	2.408	34.486	27.527

Station OS12020			
Latitude 41-00.04N			
Longitude 154-59.84E			
Depth(m) 5489m			
Depth	Temp.	Sal.	SIG-T
5	10.404	34.008	-
10	10.385	34.018	-
20	10.366	34.017	-
30	9.502	34.019	-
40	8.523	34.028	-
50	8.332	34.023	-
75	8.162	34.011	-
100	7.939	33.991	-
125	7.757	33.976	-
150	7.439	33.943	-
175	6.656	33.859	-
200	6.381	33.837	-
250	6.131	33.883	-
300	4.997	33.845	-
400	4.797	34	-
500	4.388	34.076	-
600	4.142	34.177	-
700	3.755	34.257	-
800	3.422	34.319	-
900	3.261	34.372	-
1000	2.989	34.406	-
1200	2.664	34.472	-
1500	2.308	34.545	-

Station OS12021				
Latitude 40-15.25N				
Longitude 154-58.80E				
Depth(m) 5550				
Depth	Temp.	Sal.	SIG-T	
5	11.195	33.907	-	
10	11.129	33.93	-	
20	10.771	33.945	-	
30	8.979	33.95	-	
40	8.18	33.975	-	
50	8.046	33.97	-	
75	7.467	33.879	-	
100	6.639	33.786	-	
125	5.802	33.675	-	
150	5.305	33.614	-	
175	4.771	33.571	-	
200	5.554	33.748	-	
250	5.548	33.862	-	
300	4.137	33.752	-	
400	4.137	33.901	-	
500	4.385	34.067	-	
600	4.045	34.163	-	
700	3.718	34.228	-	
800	3.528	34.29	-	
900	3.176	34.331	-	
1000	2.985	34.371	-	
1200	2.701	34.446	-	

Station OS12022				
Latitude 39-26.25N				
Longitude 1547-52.91E				
Depth(m) 5650m				
Press.	Temp.	Sal.	SIG-T	
5	13.148	34.227	25.764	
10	13.163	34.232	25.765	
20	12.992	34.197	25.772	
30	12.17	34.134	25.884	
40	11.795	34.112	25.938	
50	10.63	34.061	26.11	
75	8.549	34.017	26.419	
100	8.004	34.004	26.491	
125	7.533	33.946	26.514	
150	7.02	33.892	26.543	
175	6.662	33.867	26.571	
200	6.552	33.864	26.584	
250	5.897	33.825	26.637	
300	5.264	33.84	26.725	
400	4.604	33.913	26.857	
500	4.319	34.018	26.972	
600	4.179	34.146	27.088	
700	3.733	34.193	27.171	
800	3.48	34.268	27.255	
900	3.308	34.313	27.308	
1000	3.071	34.358	27.366	
1200	2.703	34.423	27.451	
1500	2.328	34.494	27.54	

Station OS12023				
Latitude 38-45.06N				
Longitude 155-00.49E				
Depth(m) 5758				
Depth	Temp.	Sal.	SIG-T	
5	18.452	34.497	-	
10	18.216	34.506	-	
20	17.572	34.505	-	
30	17.285	34.498	-	
40	17.135	34.496	-	
50	16.581	34.528	-	
75	14.568	34.439	-	
100	13.361	34.42	-	
125	12.386	34.339	-	
150	11.579	34.267	-	
175	10.807	34.213	-	
200	10.158	34.151	-	
250	7.919	33.908	-	
300	5.64	33.613	-	
400	6.005	33.985	-	
500	4.995	34.025	-	
600	4.455	34.102	-	
700	4.117	34.175	-	
800	3.73	34.249	-	
900	3.427	34.298	-	
1000	3.217	34.339	-	
1200	2.782	34.41	-	
1500	2.347	34.485	-	

Station OS12024				
Latitude 38-04.47N				
Longitude 143-51.04E				
Depth(m) 6130m				
Press.	Temp.	Sal.	SIG-T	
5	16.021	34.278	25.187	
10	15.312	34.328	25.385	
20	14.972	34.337	25.467	
30	14.177	34.308	25.615	
40	12	34.187	25.958	
50	10.869	34.18	26.16	
75	9.539	34.063	26.297	
100	9.153	34.107	26.395	
125	8.141	33.994	26.463	
150	7.683	33.983	26.521	
175	7.08	33.973	26.599	
200	6.54	33.95	26.654	
250	6.53	34.067	26.747	
300	5.995	34.095	26.838	
400	4.607	34.06	26.974	
500	4.47	34.182	27.086	
600	4.031	34.241	27.179	
700	3.338	34.261	27.264	
800	3.171	34.33	27.335	
900	3.081	34.385	27.387	
1000	2.924	34.426	27.434	

Station OS12025				
Latitude 39-00.04N				
Longitude 142-01.12E				
Depth(m) 217m				
Press.	Temp.	Sal.	SIG-T	
5	11.466	33.486	25.513	
10	10.694	33.481	25.646	
20	9.768	33.536	25.848	
30	9.323	33.691	26.041	
40	9.141	33.775	26.136	
50	8.699	33.83	26.249	
75	8.338	33.876	26.341	
100	8.157	33.905	26.39	
125	8.078	33.903	26.401	
150	8.057	33.902	26.403	
175	7.998	33.901	26.411	
200	7.99	33.9	26.411	

Station OS12026				
Latitude 38-59.98N				
Longitude 141-55.16E				
Depth(m) 140m				
Press.	Temp.	Sal.	SIG-T	
5	12.628	33.715	25.47	
10	11.336	33.702	25.704	
20	11.04	33.787	25.824	
30	9.703	33.749	26.025	
40	8.878	33.735	26.147	
50	8.61	33.763	26.21	
75	8.29	33.819	26.303	
100	8.204	33.843	26.335	
125	8.13	33.863	26.362	

Station OS12027
Latitude 39-29.94N
Longitude 142-05.99E
Depth(m) 144m

Press.	Temp.	Sal.	SIG-T
5	10.635	33.333	25.542
10	10.607	33.341	25.553
20	9.04	33.457	25.904
30	8.735	33.537	26.014
40	8.76	33.614	26.071
50	8.236	33.607	26.145
75	8.48	33.877	26.32
100	8.485	33.878	26.32
125	8.476	33.882	26.324

Station OS12028
Latitude 39-29.98N
Longitude 142-10.97E
Depth(m) 228m

Press.	Temp.	Sal.	SIG-T
5	10.976	33.543	25.645
10	10.924	33.54	25.652
20	8.72	33.639	26.096
30	8.686	33.763	26.199
40	8.768	33.862	26.263
50	8.652	33.87	26.288
75	8.268	33.894	26.365
100	8.215	33.92	26.393
125	8.2	33.924	26.399
150	8.201	33.925	26.399
175	8.168	33.93	26.409
200	8.108	33.927	26.415

Station OS12029
Latitude 39-59.94N
Longitude 142-14.97E
Depth(m) 226m

Press.	Temp.	Sal.	SIG-T
5	10.845	33.569	25.689
10	10.934	33.549	25.657
20	8.794	33.507	25.982
30	9.268	33.741	26.09
40	8.286	33.711	26.219
50	8.434	33.886	26.334
75	8.346	33.922	26.375
100	8.163	33.921	26.402
125	7.956	33.903	26.419
150	7.129	33.814	26.467
175	5.83	33.672	26.524
200	5.858	33.679	26.526

Station OS12030
Latitude 40-00.04N
Longitude 142-06.47E
Depth(m) 127m

Press.	Temp.	Sal.	SIG-T
5	8.327	33.287	25.88
10	7.559	33.287	25.992
20	7.785	33.513	26.137
30	7.751	33.605	26.215
40	8.342	33.825	26.3
50	8.529	33.9	26.33
75	8.425	33.891	26.339
100	8.384	33.887	26.342

Table 3. Position and research conditions of surface drift gillnet sampling at each station during the *Oshoro maru* Cruise #242, 2012.

Station	Date and Time (S.M.T.*1)				T.D.*2	Set Position		D.S.*3	bottom depth(m)	Wr*4	Wind (Force)	S.T.*5 (°C)
	Net set		Net haul			Lat.	Long.					
Cruise #242												
OSG 1201	May 14	1900-1930	May 15	0450-0537	+10h	43-16.0N	155-00.1 E	160	5500.0	o	NNW-5	5.9
OSG 1202	May 15	1756-1722	May 16	0452-0547	+10h	42-57.4N	155-01.0 E	340	5390.0	bc	NNE-3	9.4
OSG 1203	May 17	1752-1814	May 18	0439-0518	+10h	39-25.2N	154-58.8 E	230	5619.0	bc	WSW-4	13.6

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

*2 T.D. : Time Difference between Greenwich Mean Time (G.M.T.) and Ship's Mean Time (S.M.T.).

*3 D.S. : Direction of net set.

*4 Wr : Weather (bc: 25-75% clouded, c: 75-99% clouded, o: 100% clouded, f: fog).

*5 S.T. : Surface temperature

Table4. Details about each operation are shown in Table 2. The gillnet configuration is as follows:

Stations	net	A-Gear				C-gear										F-Gear								Total
	Mesh size (mm)	112	115	118	121	48	55	63	72	82	93	106	121	138	157	19	22	25	29	33	37	42		
OSG1201-02	Number	3	3	3	3	3	3	3	6	5	5	3	3	3	3	-	-	-	-	-	-	-	49	
OSG1203	of tan	3	3	3	3	3	3	3	3	3	3	3	3	3	3	-	-	-	-	-	0.5	-	42.5	

The net comprised of total 49 tans of A-Gear gillnet (non-selective varied research mesh, Takagi, 1975), A-Gear gillnet (commercial mesh), and F-Gear gillnet (spetal mesh). Each tan was 50m long. Gillnet gear was set in the evening, allowed to soak overnight, and retrieved in the following morning. The number of organisms caught was counted by species for mesh size. Catch per unit effort (CPUE) values were calculated as the number of fish caught by C-gear gillnet per tan.

Table 5. The number of organisms caught by drift gillnet during the Oshoro maru Cruise # 242, in May, 2012. CPUE and (%) indicate numerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Station		OSG 1201					OSG 1202					OSG 1203				
Common name	Scientific name	C		A	Total	C		A	Total	C		A	F	Total		
		CPUE (%)				CPUE (%)				CPUE (%)						
Sockeye salmon	<i>Oncorhynchus nerka</i>	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0		
Chum salmon	<i>Oncorhynchus keta</i>	11	0.3 (4.5)	26	37	51	1.4 (7.3)	34	85	2	0.1 (1.8)	7	0	9		
Pink salmon	<i>Oncorhynchus gorbuscha</i>	187	5.1 (77.3)	4	191	501	13.5 (71.7)	1	502	2	0.1 (1.8)	1	0	3		
Coho salmon	<i>Oncorhynchus kisutch</i>	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0		
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0		
Steelhead	<i>Oncorhynchus mykiss</i>	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0		
Boreal clubhook squid	<i>Onychoteuthis borealijaponicus</i>	42	1.1 (17.4)	0	42	138	3.7 (19.7)	0	138	81	2.7 (72.3)	0	0	81		
Eight-armed squid	<i>Gonatopsis borealis</i>	0	0.0 (0.0)	1	1	8	0.2 (1.1)	0	8	4	0.1 (3.6)	0	0	4		
Salmon shark	<i>Lamna ditropis</i>	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0	0.0 (0.0)	2	0	2		
Spiny dogfish	<i>Squalus acanthias</i>	1	0.0 (0.4)	0	1	1	0.0 (0.1)	0	1	0	0.0 (0.0)	0	0	0		
Pacific saury	<i>Cololabis saira</i>	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	3	3		
Pacific pomfret	<i>Brama japonica</i>	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	23	0.8 (20.5)	9	0	32		
Ancient murrelet	<i>Synthliboramphus antiquus</i>	0	0.0 (0.0)	1	1	0	0.0 (0.0)	0	0	0	0.0 (0.0)	0	0	0		
Tufted puffin	<i>Fratercula cirrhata</i>	1	0.0 (0.4)	0	1	0	0.0 (0.0)	1	1	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.
G01	A112	498	1860	1	22	G02	A121	518	1720	1	65
G01	A112	516	1822	2	7	G02	A121	578	2100	2	2
G01	A112	548	1944	1	43	G02	A121	542	1840	2	2
G01	A112	542	1958	1	37	G02	A121	501	1540	1	20
G01	A112	522	1843	2	18	G02	A121	533	1910	1	55
G01	A112	534	1562	2	7	G02	A121	563	2400	1	60
G01	A112	564	2279	2	12	G02	C082	487	1489	1	42
G01	A115	528	1870	1	50	G02	C093	462	1011	1	11
G01	A115	235	1924	2	5	G02	C093	548	1780	1	45
G01	A115	506	1671	1	35	G02	C093	597	2543	1	32
G01	A115	536	1924	2	26	G02	C093	513	1933	1	35
G01	A115	554	2158	1	37	G02	C093	416	842	2	1
G01	A115	532	1853	1	58	G02	C093	528	1814	1	38
G01	A115	550	1941	1	20	G02	C093	446	1016	1	7
G01	A115	538	2223	2	9	G02	C093	533	1859	1	51
G01	A115	536	2088	2	7	G02	C093	440	1036	2	1
G01	A115	498	1473	1	28	G02	C093	509	1609	1	44
G01	A118	560	2379	1	19	G02	C093	528	2058	2	12
G01	A118	530	1758	2	1	G02	C093	448	835	2	8
G01	A118	469	1549	2	4	G02	C093	487	1566	1	47
G01	A118	540	2380	1	75	G02	C106	464	1120	1	12
G01	A118	494	2797	1	29	G02	C106	550	2133	2	10
G01	A121	584	2429	2	8	G02	C106	502	1407	1	22
G01	A121	564	2248	1	31	G02	C106	470	1205	1	15
G01	A121	548	1907	2	5	G02	C106	486	1396	1	30
G01	A121	508	1642	1	30	G02	C106	524	1730	2	18
G01	C093	496	1559	1	27	G02	C106	504	1668	2	38
G01	C106	542	1990	2	8	G02	C106	559	2292	1	32
G01	C106	550	2233	1	23	G02	C106	598	2457	1	65
G01	C106	574	2131	1	18	G02	C106	553	1845	2	9
G01	C106	534	1748	1	40	G02	C106	545	1962	1	11
G01	C106	538	1978	2	1	G02	C106	478	1219	2	1
G01	C121	542	1934	1	51	G02	C106	484	1261	2	15
G01	C121	530	1852	1	32	G02	C106	470	1102	1	45
G01	C121	542	1958	1	48	G02	C106	525	1979	2	9
G01	C138	522	1752	2	3	G02	C106	488	1527	2	8
G01	C138	558	2116	2	5	G02	C121	632	2779	—	—
G02	A112	532	1842	2	3	G02	C121	547	2080	—	—
G02	A112	559	1733	1	60	G02	C121	547	2184	—	—
G02	A112	512	1854	2	2	G02	C121	480	1993	—	—
G02	A112	544	2060	1	51	G02	C121	561	2455	—	—
G02	A112	508	1805	2	11	G02	C121	541	1877	2	22
G02	A112	636	3142	1	46	G02	C121	562	1993	2	17
G02	A112	549	2151	2	4	G02	C121	554	1781	2	11
G02	A112	550	2069	1	31	G02	C121	500	1455	1	17
G02	A112	558	2036	1	44	G02	C121	524	1811	2	7
G02	A112	530	1920	2	8	G02	C121	492	1561	2	1
G02	A115	591	2600	2	28	G02	C121	538	2072	2	1
G02	A115	542	2100	1	25	G02	C121	568	2084	2	10
G02	A115	573	1200	2	2	G02	C138	524	1724	2	6
G02	A115	530	1880	1	170	G02	C138	539	1789	1	15
G02	A115	540	1900	1	32	G02	C138	504	1711	2	4
G02	A115	566	2400	1	66	G02	C138	538	1868	2	8
G02	A115	526	1840	2	2	G02	C138	508	1625	1	7
G02	A115	488	1310	1	14	G03	A112	548	2020	2	7
G02	A118	608	2867	1	33	G03	A115	564	2300	2	12
G02	A118	542	1900	1	35	G03	A115	558	2140	1	77
G02	A118	519	1479	1	17	G03	A115	530	1730	1	50
G02	A118	572	2502	2	5	G03	A118	518	1770	2	2
G02	A118	508	1644	1	32	G03	A121	554	2280	2	4
G02	A118	528	1965	1	49	G03	A121	514	1810	2	5
G02	A118	580	2426	2	1	G03	C106	530	2050	1	63
G02	A121	539	2100	1	54	G03	C106	526	1940	1	23
G02	A121	530	1950	2	65						
G02	A121	497	1600	1	30						

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)
G01	A112	452	1060	–	–	G01	C093	382	766	2	1
G01	A112	450	1174	–	–	G01	C093	398	719	1	14
G01	A112	384	651	–	–	G01	C093	410	726	1	6
G01	A115	464	1128	2	5	G01	C093	376	598	1	12
G01	C072	396	666	2	4	G01	C093	398	748	2	3
G01	C072	442	173	2	5	G01	C093	388	668	2	2
G01	C072	400	695	2	5	G01	C093	390	670	2	3
G01	C072	428	875	2	6	G01	C093	408	753	2	2
G01	C072	368	546	2	5	G01	C093	386	652	2	2
G01	C072	384	654	1	14	G01	C093	426	889	1	8
G01	C072	400	726	2	6	G01	C093	398	694	2	4
G01	C072	392	654	1	12	G01	C093	456	1030	1	6
G01	C072	424	704	2	6	G01	C093	420	838	2	5
G01	C072	368	602	2	7	G01	C093	454	1046	1	26
G01	C072	352	553	2	5	G01	C093	432	900	2	6
G01	C072	382	627	2	2	G01	C093	426	890	1	5
G01	C072	438	935	2	4	G01	C093	408	713	1	5
G01	C072	406	689	1	9	G01	C093	408	752	1	15
G01	C072	400	737	1	5	G01	C093	424	814	1	14
G01	C072	414	771	1	16	G01	C093	406	823	1	21
G01	C072	386	645	1	8	G01	C093	410	719	1	8
G01	C072	410	757	2	3	G01	C093	404	725	2	2
G01	C072	380	615	2	3	G01	C093	450	1003	2	1
G01	C072	402	713	2	5	G01	C093	442	904	2	1
G01	C072	404	776	2	2	G01	C093	412	762	2	3
G01	C072	392	652	2	1	G01	C093	390	662	2	1
G01	C072	398	664	1	16	G01	C093	424	886	2	1
G01	C072	406	698	1	10	G01	C093	416	850	2	1
G01	C072	404	681	1	6	G01	C106	418	891	2	2
G01	C072	386	531	1	7	G01	C106	410	804	1	16
G01	C072	400	671	2	1	G01	C106	442	98	2	2
G01	C072	388	626	1	9	G01	C106	452	1082	2	3
G01	C072	400	649	2	3	G01	C106	450	933	2	12
G01	C082	366	566	2	1	G01	C121	432	863	2	1
G01	C082	422	743	2	3	G01	C121	368	606	2	2
G01	C082	444	1113	1	8	G02	A112	493	1214	2	4
G01	C082	422	784	2	10	G02	C055	339	423	1	4
G01	C082	392	748	2	1	G02	C063	392	698	1	8
G01	C082	400	718	2	3	G02	C063	300	375	1	14
G01	C082	400	644	1	19	G02	C063	370	566	2	7
G01	C082	374	592	2	1	G02	C063	356	452	1	5
G01	C082	360	596	2	1	G02	C063	362	446	1	9
G01	C082	418	768	1	7	G02	C063	359	496	2	8
G01	C082	400	638	2	1	G02	C063	360	467	2	3
G01	C082	398	666	2	1	G02	C063	350	452	2	6
G01	C082	384	553	2	2	G02	C063	320	349	2	5
G01	C082	368	533	2	1	G02	C063	374	577	2	4
G01	C082	374	567	1	7	G02	C063	358	449	2	5
G01	C082	392	662	1	10	G02	C063	337	418	1	6
G01	C082	406	736	1	7	G02	C063	343	391	1	10
G01	C082	414	723	2	3	G02	C063	376	526	2	9
G01	C082	404	809	2	2	G02	C063	380	578	1	4
G01	C082	380	624	2	2	G02	C063	352	417	1	10
G01	C082	414	760	1	20	G02	C063	335	372	2	5
G01	C082	418	748	2	3	G02	C063	356	511	2	6
G01	C082	416	758	2	5	G02	C063	312	340	2	6
G01	C082	404	691	2	3	G02	C063	363	414	1	9
G01	C082	398	677	1	17	G02	C063	329	393	2	4
G01	C082	358	683	2	5	G02	C063	338	393	1	10
G01	C082	428	835	2	5	G02	C063	302	268	1	9
G01	C082	354	475	1	7	G02	C063	351	417	1	10
G01	C082	410	691	1	9	G02	C063	356	429	1	8
G01	C082	420	770	2	2	G02	C063	354	449	1	9
G01	C093	428	793	2	6	G02	C063	344	425	2	6
G01	C093	418	829	1	9	G02	C063	376	501	2	8

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)
G02	C072	368	504	2	1	G02	C082	400	670	1	2
G02	C072	356	475	1	10	G02	C082	324	370	1	4
G02	C072	352	423	2	1	G02	C082	388	606	1	6
G02	C072	336	406	1	8	G02	C082	380	543	2	7
G02	C072	355	432	2	1	G02	C082	411	694	1	3
G02	C072	340	421	2	1	G02	C082	396	657	1	15
G02	C072	362	468	1	4	G02	C082	368	571	2	1
G02	C072	354	434	2	1	G02	C082	380	570	1	5
G02	C072	360	453	1	10	G02	C082	374	526	1	6
G02	C072	377	553	1	10	G02	C082	380	555	2	1
G02	C072	372	469	2	1	G02	C082	390	610	2	2
G02	C072	407	673	2	5	G02	C082	492	656	2	2
G02	C072	378	457	2	4	G02	C082	378	611	2	1
G02	C072	371	555	1	8	G02	C082	366	523	2	2
G02	C072	374	526	2	5	G02	C082	340	449	2	3
G02	C072	433	830	1	8	G02	C082	384	589	2	1
G02	C072	372	463	1	10	G02	C082	394	707	1	12
G02	C072	370	456	1	12	G02	C082	374	585	1	6
G02	C072	332	496	2	1	G02	C082	368	545	2	3
G02	C072	357	462	2	9	G02	C082	396	671	2	1
G02	C072	373	505	2	6	G02	C082	374	594	1	9
G02	C072	424	433	2	3	G02	C082	350	463	1	12
G02	C072	387	558	2	2	G02	C082	399	638	2	1
G02	C072	371	523	2	2	G02	C082	392	612	1	21
G02	C072	350	422	2	6	G02	C082	390	721	2	2
G02	C072	350	456	2	4	G02	C082	360	468	2	3
G02	C072	401	622	2	4	G02	C082	434	806	2	4
G02	C072	339	412	2	2	G02	C082	404	690	2	4
G02	C072	358	450	2	1	G02	C082	402	728	2	2
G02	C072	352	456	1	7	G02	C082	360	475	2	2
G02	C072	348	413	2	4	G02	C082	364	571	1	10
G02	C072	353	443	1	9	G02	C082	378	674	1	5
G02	C072	350	451	2	4	G02	C082	361	481	2	3
G02	C072	420	604	2	2	G02	C082	434	907	2	2
G02	C072	366	567	1	15	G02	C082	438	748	2	1
G02	C072	386	626	1	11	G02	C082	370	505	2	2
G02	C072	374	494	1	12	G02	C082	376	560	1	5
G02	C072	360	448	1	7	G02	C082	388	589	2	1
G02	C072	374	515	1	7	G02	C082	352	475	2	2
G02	C072	374	508	2	4	G02	C082	382	549	2	2
G02	C072	334	374	2	3	G02	C082	396	613	1	15
G02	C072	355	482	2	2	G02	C082	396	629	1	6
G02	C072	384	579	1	8	G02	C082	378	590	2	2
G02	C072	352	453	1	8	G02	C082	355	473	1	6
G02	C072	355	462	1	8	G02	C082	361	500	1	5
G02	C072	338	493	1	9	G02	C082	410	602	2	1
G02	C072	364	414	1	13	G02	C082	370	516	1	4
G02	C072	371	544	1	6	G02	C082	380	559	2	2
G02	C072	354	462	2	5	G02	C082	372	527	2	2
G02	C072	348	410	1	11	G02	C082	378	541	2	4
G02	C072	380	556	2	6	G02	C082	380	556	2	3
G02	C072	367	510	1	10	G02	C082	446	935	—	—
G02	C072	339	410	1	12	G02	C093	428	913	2	5
G02	C072	361	455	1	10	G02	C093	444	886	2	5
G02	C072	374	462	1	—	G02	C093	424	811	2	9
G02	C072	372	520	1	—	G02	C093	452	932	2	9
G02	C072	389	549	2	—	G02	C093	430	798	2	7
G02	C072	392	561	1	—	G02	C093	438	915	1	35
G02	C082	416	714	2	1	G02	C093	439	667	1	22
G02	C082	376	557	1	6	G02	C093	430	874	2	6
G02	C082	368	550	2	2	G02	C093	440	649	2	5
G02	C082	376	603	2	1	G02	C093	452	935	2	7
G02	C082	408	648	1	6	G02	C093	434	853	2	8
G02	C082	336	396	2	1						

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)
G02	C093	415	749	2	10	G02	C093	408	657	2	6
G02	C093	410	732	1	20	G02	C093	420	704	2	6
G02	C093	482	590	1	20	G02	C093	413	739	1	15
G02	C093	431	781	2	6	G02	C093	406	668	1	11
G02	C093	442	866	1	25	G02	C093	395	636	2	1
G02	C093	411	735	1	20	G02	C093	417	700	2	5
G02	C093	396	667	2	5	G02	C093	430	819	2	7
G02	C093	428	798	2	1	G02	C093	405	690	2	7
G02	C093	406	762	1	21	G02	C093	402	694	2	8
G02	C093	456	977	2	1	G02	C093	413	670	1	17
G02	C093	423	746	2	6	G02	C093	400	671	2	6
G02	C093	400	641	2	6	G02	C093	414	780	2	12
G02	C093	463	1081	1	14	G02	C093	400	690	1	14
G02	C093	407	719	2	8	G02	C093	410	712	2	6
G02	C093	438	882	2	6	G02	C106	419	797	–	–
G02	C093	426	839	2	4	G02	C106	426	909	–	–
G02	C093	380	668	2	13	G03	A115	532	2050	2	10
G02	C093	404	702	1	18	G03	C106	502	1500	2	7
G02	C093	409	772	1	16	G03	C106	456	1150	2	7
G02	C093	388	651	1	21						

Table 7. Position and research conditions of surface longline and hook-and-line sampling at each station during the *Oshoro maru* Cruise #242, 2012.

Station	Date and Time (S.M.T.*1)		T.D.*2	Set Position		D.S.*3	Number of baskets	bottom depth(m)	Wr*4	Wind (Force)	S.T.*5 (°C)		
	Line set	Line haul		Lat.	Long.								
Cruise #242													
OSHL1201	May 14	2000	May 15	0330	+10h	43-15.1N	154-59.9E	-	-	5550	c	West-4	5.9
OSSL 1201	May 15	0400-0418	May 15	0615-0715	+10h	43-10.6N	155-04.9E	325	10	5540	o	NW-5	5.5
OSHL1202	May 15	2100	May 16	0320	+10h	42-56.2N	155-05.2E	-	-	5360	bc	North-1	8.4
OSSL 1202	May 16	0400-0430	May16	0530-0720	+10h	42-58.1N	155-08.0E	315	19	5340	bc	SSE-3	8.7
OSHL1203	May 18	0000	May 18	0330	+10h	39-25.0N	154-53.0E	-	-	-	c	SSE-2	12.9

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

*2 T.D. : Time Difference between Greenwich Mean Time (G.M.T.) and Ship's Mean Time (S.M.T.).

*3 D.S. : Direction of line set.

*4 Wr : Weather (bc: 25-75% clouded, c: 75-99% clouded, o: 100% clouded).

*5 S.T. : Surface temperature

Table 8. 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 # 242, 2012.

Station Name	Sampling gear	Species name						Total
		Sockeye	Chum	Pink	Coho	Chinook	Stellhead	
Cruise #242								
OSHL 1201	Hook-and-line	0	3	79	0	0	0	82
OSSL 1201	Surface longline	0	1	55	0	0	1	57
OSHL 1202	Hook-and-line	0	2	460	0	0	0	462
OSSL 1202	Surface longline	0	9	29	0	0	0	38
OSHL 1203	Hook-and-line	0	4	1	0	0	0	5
Total		0	19	624	0	0	1	644

Table 9. 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)
HL01	580	2300	2	3	HL01	552	2050	-	-
HL01	563	2000	-	-					
SL01	403	741	2	3	SL01	389	704	2	2
HL02	554	2000	1	28	HL02	626	2650	2	3
SL02	506	1603	1	50	SL02	583	2430	1	54
SL02	564	2224	2	11	SL02	504	1554	2	10
SL02	489	1296	2	3	SL02	515	1539	2	8
SL02	556	1425	1	71	SL02	625	2999	2	14
SL02	494	1408	2	5					
HL03	516	1850	2	12	HL03	598	2630	2	5
HL03	514	1830	2	6	HL03	568	2270	2	3
Pink salmon									
St.	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)
HL01	450	1050	2	5	HL01	424	900	2	3
HL01	400	850	1	11	HL01	418	940	1	16
HL01	422	840	2	3	HL01	424	890	2	5
HL01	404	190	2	3	HL01	412	950	1	15
HL01	394	750	2	2	HL01	372	630	2	2
HL01	400	800	2	2	HL01	400	830	2	3
HL01	420	1050	2	7	HL01	434	850	2	3
HL01	414	940	2	4	HL01	378	730	2	3
HL01	362	700	2	2	HL01	438	980	2	5
HL01	386	850	2	5	HL01	384	700	1	9
HL01	412	700	1	11	HL01	390	710	2	2
HL01	410	780	2	5	HL01	366	740	2	5
HL01	396	720	2	3	HL01	370	690	2	4
HL01	436	910	2	5	HL01	332	630	2	4
HL01	414	690	2	5	HL01	388	890	1	15
HL01	384	700	2	3	HL01	392	710	2	5
HL01	386	780	2	3	HL01	423	950	2	3
HL01	394	630	2	5	HL01	414	830	1	9
HL01	384	650	2	3	HL01	444	980	2	4
HL01	420	900	2	3	HL01	443	900	2	2
HL01	368	720	1	10	HL01	396	750	1	6
HL01	402	810	2	3	HL01	426	810	1	11
HL01	414	800	-	-	HL01	406	650	-	-
HL01	391	750	-	-	HL01	371	600	-	-
HL01	422	790	-	-	HL01	378	610	-	-
HL01	414	710	-	-	HL01	426	830	-	-
HL01	446	880	-	-	HL01	372	630	-	-
HL01	422	790	-	-	HL01	380	610	-	-
HL01	416	780	-	-	HL01	396	670	-	-
HL01	424	790	-	-	HL01	456	900	-	-
HL01	408	850	-	-	HL01	380	530	-	-
HL01	402	700	-	-	HL01	387	790	-	-
HL01	396	770	-	-	HL01	425	780	-	-
HL01	454	690	-	-	HL01	393	679	-	-
HL01	394	730	-	-	HL01	429	780	-	-
HL01	412	760	-	-	HL01	402	670	-	-
HL01	420	850	-	-	HL01	424	960	-	-
HL01	380	670	-	-	HL01	440	950	-	-
HL01	396	670	-	-	HL01	418	890	-	-
HL01	458	960	-	-					

Pink salmon

St.	F.L.	B.W.	Sex	G.W.	St.	F.L.	B.W.	Sex	G.W.
	(mm)	(gr)		(gr)		(mm)	(gr)		(gr)
SL01	418	784	1	20	SL01	389	663	2	3
SL01	432	822	1	22	SL01	383	630	2	2
SL01	358	561	2	5	SL01	443	1068	2	16
SL01	386	593	2	3	SL01	378	644	2	2
SL01	390	672	2	1	SL01	410	788	1	20
SL01	343	500	2	1	SL01	390	705	2	2
SL01	420	840	1	23	SL01	404	472	2	3
SL01	388	611	1	18	SL01	363	543	2	1
SL01	397	611	1	12	SL01	402	677	2	1
SL01	387	665	2	2	SL01	424	830	1	20
SL01	419	817	2	2	SL01	378	613	1	16
SL01	424	821	1	13	SL01	411	744	2	8
SL01	416	759	2	3	SL01	390	606	2	4
SL01	489	684	2	2	SL01	374	629	1	9
SL01	402	703	2	2	SL01	426	848	2	3
SL01	422	897	1	32	SL01	458	1064	1	6
SL01	391	659	2	5	SL01	368	545	2	2
SL01	431	884	1	27	SL01	366	635	2	1
SL01	404	766	2	2	SL01	384	599	2	2
SL01	440	971	1	27	SL01	386	602	1	10
SL01	406	755	2	5	SL01	398	700	2	2
SL01	448	911	2	5	SL01	406	690	2	5
SL01	423	847	2	5	SL01	414	809	2	2
SL01	391	631	2	3	SL01	372	580	2	3
SL01	366	489	1	6	SL01	390	633	1	15
HL02	382	548	2	2	HL02	380	602	1	9
HL02	381	526	2	2	HL02	380	532	2	1
HL02	397	632	2	3	HL02	432	817	2	3
HL02	395	632	1	7	HL02	378	609	1	4
HL02	423	739	2	2	HL02	386	614	2	1
HL02	371	543	2	2	HL02	460	966	2	2
HL02	390	664	1	12	HL02	410	721	2	5
HL02	380	537	2	1	HL02	396	642	2	2
HL02	460	742	1	13	HL02	364	538	1	8
HL02	404	740	2	3	HL02	372	535	2	1
HL02	354	462	1	5	HL02	368	634	2	2
HL02	402	692	2	3	HL02	368	575	1	6
HL02	416	740	2	9	HL02	374	604	2	2
HL02	368	533	2	2	HL02	368	514	2	2
HL02	415	742	1	13	HL02	362	500	2	1
HL02	412	685	2	2	HL02	386	577	2	2
HL02	333	432	1	5	HL02	388	648	1	12
HL02	388	584	1	6	HL02	380	628	1	6
HL02	380	650	2	2	HL02	364	643	2	1
HL02	376	518	2	1	HL02	442	936	1	20
HL02	390	666	1	9	HL02	358	511	2	1
HL02	320	382	2	1	HL02	402	739	1	7
HL02	450	911	2	3	HL02	324	378	2	2
HL02	421	736	2	3	HL02	400	670	1	16
HL02	375	532	2	4	HL02	410	718	1	10
HL02	380	573	2	3	HL02	348	417	1	10
HL02	380	532	2	2	HL02	402	707	2	1
HL02	368	533	2	1	HL02	394	649	2	1
HL02	429	790	1	18	HL02	396	617	2	2
HL02	420	715	1	11	HL02	412	764	2	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)
SL02	334	360	1	2	SL02	357	454	1	11
SL02	366	520	2	13	SL02	350	439	1	10
SL02	435	852	2	7	SL02	390	570	1	16
SL02	388	606	2	7	SL02	394	604	1	9
SL02	396	470	2	6	SL02	396	663	2	5
SL02	375	488	2	5	SL02	368	516	1	15
SL02	346	391	1	11	SL02	360	496	1	12
SL02	374	468	1	12	SL02	333	386	2	6
SL02	430	772	2	7	SL02	407	726	2	9
SL02	434	375	2	5	SL02	377	549	1	18
SL02	375	559	2	6	SL02	382	510	1	15
SL02	422	783	1	21	SL02	371	516	2	5
SL02	418	775	2	7	SL02	381	572	1	12
SL02	352	495	2	5	SL02	451	694	1	19
SL02	422	777	1	16	HL03	460	1180	2	4

Steelhead

St.	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)	St.	F.L. (mm)	B.W. (gr)	Sex	G.W. (gr)
SL01	658	3446	1	33					

Table 10. Data on plankton collected by vertical hauls with a 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. (E)	Date	Hour					No.	Reading		per haul	per 1000 m ³				
OS12015 (Site H)	43-59	154-59	14 May	14:32	500	1	500	GG54	2562	3846	74.2	19.7	266	2)	12001		
							XX13	1858	3815	67.7						12002	
					150	1	150	GG54	2562	1278	24.7				1.8	72	12003
							XX13	1858	1218	21.6						12004	
OS12016	43-14	155-04	14 May	21:19	151	8	150	GG54	2562	1350	26.1	12.9	493		12005		
								XX13	1858	1229	21.8				12006		
OS12017	42-30	155-01	15 May	12:43	150	1	150	GG54	2562	1185	22.9	7.2	317		12007		
								XX13	1858	1134	20.1				12008		
OS12018	42-56	155-06	15 May	20:01	150	4	150	GG54	2562	1351	26.1	10.8	413		12009		
								XX13	1858	1272	22.6				12010		
OS12019	41-45	154-58	16 May	15:17	151	8	150	GG54	2562	1160	22.4	13.9	621		12011		
								XX13	1858	1250	22.2				12012		
OS12022	39-26	154-53	17 May	23:13	150	3	150	GG54	2562	1421	27.4	12.0	438		12013		
								XX13	1858	1347	23.9				12014		
OS12023	38-45	155-00	18 May	9:31	153	#	150	GG54	2562	1427	27.5	11.4	415		12015		
								XX13	1858	1290	22.9				12016		

1) Exclusively phytoplankton

2) Including some fragments of medusae.

3) *Neocalanus* abundant.

4) Gelatinous zooplankton abundant.

5) Doliolids abundant.

6) Salps abundant.

Table 11. Calibration data on flowmeters used for a twin or single NORPAC net and other kind of nets.

50-m wire out at 38-04N, 143-52E in 26 May 2012.

Flowmeter No.	Wire length (m)	Revolution						Mean
		1	2	3	4	5	6	
RG1858	50	458*	449	452	449	440*	443	448
RG2562	50	408	410	420	421*	407*	410	412

*: omitted from calculation

