



HOKKAIDO UNIVERSITY

Title	3. The "Oshoro maru" Cruise 254 to the Western North Pacific Ocean in May 2013
Citation	海洋調査漁業試験要報, 57, 15-25
Issue Date	2016-03-31
Doc URL	https://hdl.handle.net/2115/77509
Type	dataset
File Information	Data.Rec.Oceanogr.Obs.Expl.Fish.57.15.pdf



THE "OSHO RO MARU" CRUISE 254 TO THE WESTERN NORTH PACIFIC OCEAN

IN MAY 2013

1. Cruise Itinerary

Departure from Hakodate	May	9, 2013
Start hydrographic research (OS13027) and longline research (OSS1301)		12
Finish longline research (OSS1302) and start gillnet research (OSG1301)		14
Finish hydrographic research (OS13033)		16
Finish gillnet (OSG1303)		17
Return to Hakodate		20
Total coverage 1803.6 miles		

2. Vessel Personnel

Crew:	Captain:	Associate Professor	Shogo Takagi
			And 28 men
Research Staff:	(Laboratory of Strategic Studies on Marine Bioresource Conservation and Management)		
			Hideaki Kudo
		Graduate Students	3 persons
		Under Graduate Students	48 persons
			Total 81 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 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 SBE-19Plus).

Water and Plankton sampling were also carried out at almost hydrographic stations. Water samplings by Niskin bottles Plankton sampling by NORPAC-net, lava-net and ring-net

Fig. 1 Table 1, 2

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, 7, 8

One set of drift gillnet was used to collect salmonids and other epipelagic fishes [Figs.1-(1),(2) and Table 1].

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

Stations	net	A-Gear		C-gear										Total
	Mesh size(mm)	112	115	48	55	63	72	82	93	106	121	138	157	
OSG1301-03	Number of tan	6	6	3	3	3	5	6	5	3	3	3	3	49

The net comprised of total 49 tans of C-Gear gillnet (non-selective varied research mesh, Takagi, 1975), and A-Gear gillnet (commercial 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.

Salmon Hook-and-Line and surface longline Research:

To collect salmon, hook-and-line gears and surface longline were used in Cruise #254.

Five to ten anglers were engaged in the work. These samplings were mainly conducted with observations when ship was under drifting.

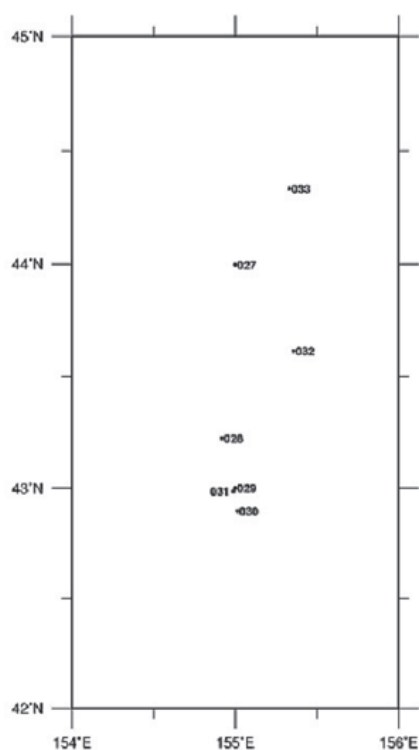


Fig. 1. Oceanographic stations

Table 1. List of Oceanographic station

Station	Lat.	Long.	Date (GMT)	Hour (GMT)	T.Z.	Depth	Col.	Tr.	SST	Wr.	Gear
OS13027	43-59.87N	154-59.95E	5/11	21:36	10	5305	-	-	4.3	o	9plus-0769
OS13027	43-58.87N	155-00.83E	5/12	2:12	10	5313	-	-	4.4	o	9plus-0769
OS13028	43-13.45N	154-55.07E	5/12	7:12	10	5421	-	-	5.1	o	9plus-0769
OS13029	43-00.03N	154-59.98E	5/14	2:08	10	5393	-	-	7.7	o	9plus-0769
OS13030	42-53.80N	155-00.65E	5/15	4:00	10	5300	-	-	6.8	c	9plus-0769
OS13031	42-59.08N	154-59.22E	5/15	9:00	10	5362	-	-	6.2	o	9plus-0769
OS13032	43-36.91N	155-21.45E	5/16	0:17	10	5491	-	-	4.6	bc	9plus-0769
OS13033	44-20.01N	155-19.85E	5/16	6:31	10	5326	-	-	4.7	o	9plus-0769

Table 2. Oceanographic data

Station OS13027				Station OS13028				Station OS13029			
Latitude 43-59.83N				Latitude 43-13.43N				Latitude 43-00.07N			
Longitude 154-59.97E				Longitude 154-55.11E				Longitude 155-00.03E			
Depth(m) 5305				Depth(m) 5421				Depth(m) 5393			
Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T	Press.	Temp.	Sal.	SIG-T
10	3.287	32.883	26.170	5	4.038	33.012	26.201	20	7.037	33.631	26.336
20	3.285	32.883	26.170	10	4.037	33.018	26.206	30	7.530	33.734	26.348
30	3.283	32.883	26.171	20	4.059	33.030	26.213	40	7.670	33.760	26.348
40	3.272	32.889	26.176	30	4.044	33.032	26.216	50	6.513	33.617	26.395
50	3.137	33.045	26.313	40	4.149	33.076	26.241	75	5.672	33.649	26.525
75	1.654	33.061	26.443	50	4.167	33.104	26.261	100	4.514	33.537	26.569
100	1.892	33.176	26.518	75	4.375	33.430	26.498	125	5.133	33.687	26.619
125	2.271	33.394	26.664	100	1.740	33.209	26.556	150	5.442	33.778	26.655
150	2.528	33.556	26.773	125	1.766	33.257	26.593	175	5.010	33.757	26.689
175	2.617	33.613	26.811	150	1.801	33.351	26.665	200	4.920	33.817	26.746
200	2.907	33.700	26.856	175	2.202	33.489	26.745	250	4.389	33.834	26.819
250	3.286	33.847	26.938	200	2.431	33.561	26.785	300	4.308	33.915	26.891
300	3.362	33.931	26.999	250	3.016	33.712	26.855	400	3.482	33.968	27.016
400	3.383	34.065	27.103	300	3.117	33.795	26.913	500	3.908	34.174	27.138
500	3.259	34.166	27.196	400	4.100	34.065	27.032	600	3.590	34.247	27.229
600	3.126	34.243	27.269	500	3.967	34.173	27.131	700	3.159	34.287	27.302
700	2.965	34.297	27.327	600	3.644	34.240	27.217	800	2.777	34.328	27.369
800	2.825	34.341	27.375	700	3.429	34.311	27.295	900	2.670	34.375	27.416
900	2.680	34.391	27.427	800	3.119	34.350	27.355	1000	2.587	34.401	27.444
1000	2.517	34.430	27.473	900	2.944	34.386	27.400	1200	2.481	34.435	27.480
1200	2.397	34.486	27.528	1000	2.714	34.412	27.441	1500	2.332	34.482	27.530
1500	2.164	34.540	27.590	1200	2.549	34.465	27.498				
2000	1.855	34.608	27.669	1500	2.217	34.526	27.575				
2500	1.633	34.646	27.717								
3000	1.521	34.667	27.742								
3500	1.463	34.679	27.756								
4000	1.454	34.686	27.761								
4500	1.470	34.690	27.764								
5000	1.516	34.691	27.761								

Station	OS13030		
Latitude	42-53.76N		
Longitude	155-00.69E		
Depth(m)	5300		
Press.	Temp.	Sal.	SIG-T
5	5.820	33.357	26.277
10	7.089	33.646	26.340
20	7.799	33.814	26.372
30	7.951	33.850	26.378
40	7.952	33.853	26.380
50	7.940	33.856	26.384
75	6.879	33.859	26.537
100	6.517	33.844	26.573
125	5.936	33.793	26.607
150	5.907	33.821	26.633
175	5.421	33.789	26.666
200	5.286	33.834	26.718
250	4.591	33.851	26.810
300	4.246	33.884	26.873
400	3.718	33.946	26.976
500	3.996	34.125	27.091
600	3.821	34.195	27.164
700	3.533	34.265	27.248
800	3.278	34.322	27.318
900	2.920	34.336	27.362
1000	2.819	34.388	27.413
1200	2.505	34.438	27.480
1500	2.326	34.509	27.552

Station	OS13031		
Latitude	42-59.07N		
Longitude	154-59.24E		
Depth(m)	5362		
Press.	Temp.	Sal.	SIG-T
5	5.212	33.164	26.196
10	4.918	33.155	26.222
20	4.828	33.152	26.229
30	4.833	33.157	26.233
40	4.910	33.183	26.245
50	4.906	33.415	26.429
75	5.073	33.593	26.552
100	4.568	33.577	26.595
125	4.627	33.634	26.634
150	4.249	33.615	26.659
175	3.157	33.536	26.703
200	3.346	33.619	26.751
250	4.584	33.866	26.822
300	4.142	33.896	26.893
400	3.222	33.936	27.016
500	3.873	34.145	27.119
600	3.633	34.240	27.218
700	3.381	34.297	27.288
800	3.225	34.347	27.343
900	2.909	34.361	27.384
1000	2.715	34.380	27.416
1200	2.525	34.433	27.475
1500	2.290	34.497	27.545

Station	OS13032		
Latitude	43-36.91N		
Longitude	155-21.44E		
Depth(m)	5491		
Press.	Temp.	Sal.	SIG-T
5	3.485	32.900	26.165
10	3.395	32.898	26.172
20	3.312	32.897	26.179
30	3.291	32.896	26.180
40	3.185	32.890	26.185
50	2.487	32.944	26.287
75	1.447	33.026	26.430
100	1.391	33.120	26.509
125	2.133	33.437	26.710
150	2.512	33.566	26.782
175	2.698	33.650	26.833
200	2.911	33.720	26.872
250	3.204	33.836	26.937
300	3.356	33.920	26.991
400	3.356	34.059	27.101
500	3.280	34.163	27.191
600	3.146	34.244	27.268
700	2.991	34.296	27.324
800	2.842	34.349	27.380
900	2.707	34.387	27.422
1000	2.583	34.422	27.460
1200	2.383	34.471	27.516
1500	2.193	34.532	27.581

Station	OS13033		
Latitude	44-20.01N		
Longitude	155-19.84E		
Depth(m)	5326		
Press.	Temp.	Sal.	SIG-T
5	3.609	32.919	26.169
10	3.272	32.916	26.197
20	3.191	32.918	26.207
30	3.163	32.919	26.209
40	3.152	32.918	26.21
50	3.142	32.919	26.211
75	2.029	32.996	26.364
100	1.612	33.037	26.427
125	1.622	33.105	26.481
150	2.091	33.347	26.641
175	2.543	33.572	26.785
200	2.823	33.671	26.839
250	3.077	33.781	26.905
300	3.25	33.881	26.969
400	3.326	34.031	27.081
500	3.31	34.138	27.168
600	3.183	34.222	27.247
700	3.027	34.28	27.308
800	2.86	34.335	27.367
900	2.719	34.376	27.412
1000	2.586	34.416	27.455
1200	2.406	34.48	27.522
1500	2.164	34.539	27.589

Table 3. List of salmon research stations, positions and date during the Oshoro maru Cruise #254 and #255, 2013. Oceanographic stations are adopted as the positons.

Oceanographic stations are adopted as the positions.

Station Name				Position		Date	
Oceano-graphic	Gillnet	Hook-and-Line	Surface longline	Latitude	Longitude	S.M.T.*1	T.D.*2
C254							
OS13028	OSG1301	OSHL1301	OSSL1301	43-13.5N	155-00.0E	May 12,14-15	+10h
OS13029			OSSL1302	43-00.0N	155-00.0E	May 14	
OS13030	OSG1302	OSHL1302		42-53.8N	155-00.7E	May 15	
OS13031				42-59.1N	154-59.2E	May 15-16	
OS13032		OSHL1303		43-36.9N	155-21.5E	May 16	
OS13033	OSG1303	OSHL1304		44-20.0N	155-19.9E	May 16	
C255							
OS13038		OSHL1305		56-00.4N	170-21.4W	Jun 22	-10h
OS13046		OSHL1306		55-36.2N	169-03.6W	Jun 24	
OS13060		OSHL1307		54-25.3N	166-20.6W	Jun 26	

*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.).

Table 4. Position and research conditions of surface drift gillnet sampling at each station during the Oshoro maru Cruise #254, 2013.

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.					
OSG 1301	May 14 1755-1820	May 15 0525-0620	+10h	43-14.4N	154-55.4 E	150	5445	o	NW-4	4.6
OSG 1302	May 15 1800-1825	May 16 0525-0625	+10h	42-56.1N	154-58.6 E	30	5340	o	NNE-3	5.4
OSG 1303	May 16 1800-1825	May 17 0425-0525	+10h	44-20.1N	155-19.2 E	135	5316	o	SE-4	4.1

*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 (o: 100% clouded).

*5 S.T. : Surface temperature

Table 5. The number of organisms caught by drift gillnet during the Oshoro maru Cruise # 254 in May, 2013. CPUE and (%) indicate numerical catch per tan and percentage of total catch by C-gear gillnet at the station, respectively.

Station		OSG 1301					OSG 1302					OSG 1303				
Common name	Scientific name	C		A	Total		C		A	Total		C		A	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)	4	4
Chum salmon	<i>Oncorhynchus keta</i>	12	0.3	(4.5)	9	21	6	0.2	(1.8)	11	17	29	0.8	(85.3)	28	57
Pink salmon	<i>Oncorhynchus gorbuscha</i>	251	6.8	(94.7)	8	259	310	8.4	(95.4)	4	314	0	0.0	(0.0)	0	0
Coho salmon	<i>Oncorhynchus kisutch</i>	0	0.0	(0.0)	0	0	0	0.0	(0.0)	0	0	0	0.0	(0.0)	0	0
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
Steelhead	<i>Oncorhynchus mykiss</i>	0	0.0	(0.0)	0	0	1	0.0	(0.3)	0	1	0	0.0	(0.0)	0	0
																0
Spiny dogfish	<i>Squalus acanthias</i>	0	0.0	(0.0)	0	0	2	0.1	(0.6)	0	2	0	0.0	(0.0)	0	0
Grey Fork-tailed Petrel	<i>Puffinus griseus</i>	0	0.0	(0.0)	0	0	2	0.1	(0.6)	0	2	0	0.0	(0.0)	0	0
Boreal clubhook squid	<i>Onychoteuthis borealijaponica</i>	0	0.0	(0.0)	0	0	3	0.1	(0.9)	0	3	0	0.0	(0.0)	0	0
Eight-armed squid	<i>Gonatopsis borealis</i>	2	0.1	(0.8)	0	2	1	0.0	(0.3)	0	1	5	0.1	(14.7)	0	5

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

Sockeye Salmon											
St.	Gear	F.L.	B.W.	Sex	G.W.	St.	Gear	F.L.	B.W.	Sex	G.W.
G03	A115	580	2415	2	2	G03	A115	548	2000	1	31
G03	A115	608	2980	2	24						
G03	A112	570	1943	1	22						
Chum Salmon											
St.	Gear	F.L.	B.W.	Sex	G.W.	St.	Gear	F.L.	B.W.	Sex	G.W.
G01	A112	506	1530	2	5	G01	A112	492	1207	1	17
G01	A115	556	2092	1	41	G01	A112	484	1381	1	26
G01	A115	530	1684	2	6	G01	A115	498	1496	1	11
G01	A115	490	1430	1	33	G01	A115	486	1496	1	15
G01	C106	520	1708	2	3	G01	A115	530	1725	1	20
G01	C106	528	1713	2	3	G01	C106	534	1811	1	46
G01	C106	510	1829	1	29	G01	C106	550	1750	2	4
G01	C106	542	1657	1	18	G01	C106	504	1613	2	4
G01	C106	504	1582	2	6	G01	C106	500	1526	1	24
G01	C121	590	2439	1	20	G01	C138	484	1279	1	13
G01	C138	550	1783	2	2						
G02	C093	551	1915	2	6	G02	C106	528	1780	1	41
G02	C138	608	2365	2	4	G02	C093	486	1429	1	20
G02	A112	458	1199	–	–	G02	C106	549	1856	2	3
G02	A112	520	1705	–	–						
G02	A112	553	1825	2	4	G02	A112	528	1648	1	18
G02	A112	590	2238	2	4	G02	A112	526	1741	1	17
G02	A112	510	1678	2	4	G02	A112	558	1839	2	7
G02	A112	537	1760	1	18	G02	A112	444	1071	2	6
G02	A112	528	1565	1	19	G02	A112	438	944	2	13
G02	A115	540	1522	2	2	G02	A112	396	697	1	8
G03	C082	510	1502	1	56						
G03	C093	558	1972	2	23	G03	C093	550	2005	1	38
G03	C093	536	1654	2	7						
G03	C106	566	1806	1	36	G03	C106	530	1621	1	47
G03	C106	524	1530	1	28	G03	C106	540	1741	1	42
G03	C106	557	1922	1	40	G03	C106	578	2340	2	14
G03	C106	565	1963	1	46	G03	C106	545	1777	2	9
G03	C106	555	1967	2	8	G03	C106	557	2100	1	56
G03	C106	572	2172	2	10	G03	C106	543	1655	1	22
G03	C106	526	1735	2	10						
G03	C121	582	2181	1	39	G03	C121	538	1801	2	7
G03	C121	562	1840	2	5	G03	C121	550	2036	2	5
G03	C121	555	1830	1	23	G03	C121	552	1930	1	33
G03	C121	545	1931	2	5	G03	C121	540	1645	1	18
G03	C138	546	1870	2	6						
G03	A112	512	1618	2	5	G03	A112	535	1673	1	35
G03	A112	540	1770	1	48	G03	A112	519	1796	2	7
G03	A112	530	1874	1	29	G03	A112	492	1443	1	25
G03	A112	502	1565	2	4	G03	A112	546	1796	1	24
G03	A112	550	2100	2	13	G03	A112	546	1723	2	4
G03	A112	517	1603	1	36	G03	A112	546	2164	1	42
G03	A112	565	2040	2	4						
G03	A115	560	1972	1	23	G03	A115	581	2220	0	10
G03	A115	539	2084	1	46	G03	A115	502	1720	0	15
G03	A115	540	1935	1	42	G03	A115	552	1943	1	48
G03	A115	508	1581	1	34	G03	A115	511	1589	2	35
G03	A115	535	1893	1	93	G03	A115	514	1550	1	44
G03	A115	576	2165	0	15	G03	A115	502	1314	2	16
G03	A115	553	1992	0	11	G03	A115	507	1600	1	43

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)
G01	A115	460	1098	2	8	G01	A115	460	1167	2	5
G01	A115	450	1080	2	2	G01	A115	462	1103	2	3
G01	C093	422	—	—	—	G01	C093	436	950	2	3
G01	C093	454	995	1	8	G01	C093	400	757	2	3
G01	C093	444	975	2	2	G01	C093	426	780	1	9
G01	C093	406	701	2	5	G01	C093	414	826	2	3
G01	C093	432	864	2	1	G01	C093	394	716	2	1
G01	C093	412	771	2	3	G01	C093	400	729	1	30
G01	C093	414	910	2	3	G01	C093	440	1061	1	30
G01	C093	426	846	2	3	G01	C093	418	873	2	3
G01	C093	394	771	2	2	G01	C093	414	804	2	2
G01	C093	418	854	1	13	G01	C093	432	924	2	2
G01	C093	400	726	2	2	G01	C093	436	823	2	3
G01	C093	420	840	1	8	G01	C093	410	832	2	1
G01	C093	390	760	1	9	G01	C093	438	915	2	3
G01	C093	384	712	2	2	G01	C093	412	835	1	32
G01	C093	424	820	1	25	G01	C093	418	873	2	1
G01	C093	420	800	1	16	G01	C093	524	1696	2	2
G01	C093	428	772	2	2	G01	C093	414	784	2	4
G01	C093	410	870	2	2	G01	C093	410	792	2	2
G01	C093	422	787	1	12	G01	C093	428	868	1	19
G01	C093	424	870	2	2	G01	C093	412	790	2	2
G01	A115	458	991	2	5	G01	C093	404	764	2	4
G01	A115	462	1237	2	6	G01	C093	412	90	2	1
G01	C093	398	731	2	1	G01	C093	412	774	2	6
G01	C093	420	866	1	14	G01	C093	422	817	1	16
G01	C093	400	737	1	6	G01	C093	412	786	2	6
G01	C093	436	937	2	3	G01	C093	434	904	2	5
G01	C093	394	752	1	16	G01	C093	426	905	2	2
G01	C093	462	1153	2	3	G01	C093	424	915	1	15
G01	C093	390	663	2	2	G01	C093	436	876	2	2
G01	C093	456	1096	2	4	G01	C093	422	793	2	3
G01	C093	410	772	1	12	G01	C093	398	696	2	2
G01	C072	420	857	2	2	G01	C072	422	879	1	19
G01	C072	428	938	1	9	G01	C072	398	700	1	13
G01	C072	384	542	2	1	G01	C072	396	710	2	3
G01	C106	446	1042	2	6	G01	C106	430	834	2	4
G01	C106	442	960	2	3	G01	C106	426	929	2	5
G01	C106	452	1111	2	4	G01	C106	424	945	2	4
G01	C106	468	1092	2	2	G01	C106	418	855	2	2
G01	C106	396	757	1	8	G01	C106	452	1029	2	4
G01	C106	422	843	1	6						
G01	C082	422	800	1	9	G01	C082	422	868	2	2
G01	C082	410	822	1	9	G01	C082	428	745	1	11
G01	C082	414	886	2	4	G01	C082	416	804	1	9
G01	C082	424	914	2	4	G01	C082	380	665	1	3
G01	C082	398	720	2	2	G01	C082	400	742	2	1
G01	C082	418	859	2	3	G01	C082	378	680	2	2
G01	C082	400	736	2	2	G01	C082	406	825	1	11
G01	C082	402	700	2	2	G01	C082	422	855	2	2
G01	C082	416	772	2	4	G01	C082	394	764	2	2
G01	C082	402	746	1	15	G01	C082	422	867	2	6
G01	C082	426	799	2	8	G01	C082	400	712	2	2
G01	C082	400	698	1	8	G01	C082	422	884	1	44
G01	C082	426	792	2	2	G01	C082	420	791	2	2
G01	C082	396	682	2	1	G01	C082	420	795	2	2
G01	C082	398	801	1	18	G01	C082	414	891	2	2
G01	C082	420	862	2	7	G01	C082	414	745	1	6
G01	C082	434	881	2	4	G01	C082	410	784	2	12
G01	C082	400	785	1	13	G01	C082	388	762	2	2
G01	C082	436	995	1	12	G01	C082	426	826	2	2
G01	C082	420	869	2	4	G01	C082	416	893	2	5

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)
G01	C082	402	711	1	7	G01	C082	396	690	1	8
G01	C082	404	792	1	14	G01	C082	416	818	1	7
G01	C082	400	759	2	3	G01	C082	424	845	2	3
G01	C082	436	863	2	3	G01	C082	402	703	1	8
G01	C082	416	806	2	1	G01	C082	394	724	1	9
G01	C082	408	729	2	2	G01	C082	408	765	1	16
G01	C082	402	718	1	18	G01	C082	432	830	2	3
G01	C082	408	743	2	4	G01	C082	406	772	2	4
G01	C082	394	648	1	8	G01	C082	418	833	2	2
G01	C082	426	826	2	4	G01	C082	404	722	2	2
G01	A112	404	649	2	1	G01	A112	434	953	2	4
G02	C063	401	761	1	11	G02	C063	421	841	2	7
G02	C063	405	796	2	3						
G02	C072	400	687	1	13	G02	C072	396	670	1	20
G02	C072	396	708	1	14	G02	C072	408	683	1	10
G02	C072	415	790	2	2						
G02	C082	394	705	2	4	G02	C082	414	833	1	11
G02	C082	426	889	2	3	G02	C082	393	704	1	16
G02	C082	450	1004	2	4	G02	C082	400	737	2	6
G02	C082	412	773	2	2	G02	C082	416	742	2	4
G02	C082	420	817	2	2	G02	C082	431	796	2	4
G02	C082	420	816	2	6	G02	C082	438	894	1	16
G02	C082	430	876	2	3	G02	C082	415	794	1	9
G02	C082	415	775	2	5	G02	C082	417	763	2	1
G02	C082	410	725	2	8	G02	C082	411	751	1	15
G02	C082	430	858	2	3	G02	C082	396	692	2	6
G02	C082	408	717	2	3	G02	C082	396	716	2	3
G02	C082	390	746	2	3	G02	C082	404	725	2	4
G02	C082	406	732	1	15	G02	C082	438	898	2	3
G02	C082	411	777	2	4	G02	C082	427	824	1	27
G02	C082	412	830	1	30	G02	C082	410	748	2	3
G02	C082	400	748	1	12	G02	C082	427	835	2	3
G02	C082	410	719	2	4	G02	C082	426	859	2	3
G02	C082	393	688	2	5	G02	C082	390	705	2	3
G02	C082	394	688	1	13	G02	C082	396	664	2	2
G02	C082	398	731	1	12	G02	C082	416	803	1	17
G02	C082	429	878	2	3	G02	C082	407	685	2	1
G02	C082	397	706	2	3	G02	C082	404	727	2	1
G02	C082	390	674	2	4	G02	C082	423	741	1	7
G02	C082	447	846	1	11	G02	C082	396	714	2	2
G02	C082	398	715	2	3	G02	C082	402	694	1	22
G02	C082	408	793	1	16	G02	C082	410	782	2	3
G02	C082	414	849	2	3	G02	C082	405	788	2	2
G02	C082	399	682	1	15	G02	C082	410	776	1	17
G02	C082	395	724	1	14	G02	C082	413	839	2	3
G02	C082	412	775	1	12	G02	C082	398	665	1	3
G02	C093	418	768	1	10	G02	C093	414	760	2	4
G02	C093	417	774	2	8	G02	C093	405	792	2	2
G02	C093	420	808	2	3	G02	C093	402	726	1	13
G02	C093	406	767	1	10	G02	C093	409	702	2	8
G02	C093	409	740	2	2	G02	C093	421	934	2	2
G02	C093	410	733	1	8	G02	C093	400	692	1	5
G02	C093	429	807	1	12	G02	C093	431	940	1	32
G02	C093	399	730	2	3	G02	C093	396	691	2	2
G02	C093	403	760	1	13	G02	C093	433	843	2	3
G02	C093	409	806	1	14	G02	C093	431	882	1	18
G02	C093	405	795	1	23	G02	C093	414	820	1	10
G02	C093	419	783	1	14	G02	C093	408	770	1	9
G02	C093	415	772	1	27	G02	C093	397	708	2	2
G02	C093	393	754	2	10	G02	C093	408	812	2	2
G02	C093	402	672	2	2	G02	C093	404	813	1	15

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)
G02	C093	390	756	2	3	G02	C093	418	764	2	5
G02	C093	400	719	2	2	G02	C093	405	753	1	22
G02	C093	422	854	2	4	G02	C093	419	763	2	3
G02	C093	408	758	1	9	G02	C093	418	771	1	14
G02	C093	400	724	2	3	G02	C093	399	680	1	7
G02	C093	392	724	1	8	G02	C093	410	763	2	2
G02	C093	440	873	2	3	G02	C093	399	693	1	8
G02	C093	409	739	1	16	G02	C093	418	701	2	2
G02	C093	425	879	1	19	G02	C093	375	623	2	3
G02	C093	411	749	2	2	G02	C093	420	850	2	3
G02	C093	417	824	2	3	G02	C093	414	750	2	3
G02	C093	435	968	1	15	G02	C093	406	758	1	4
G02	C093	424	798	2	1	G02	C093	385	709	2	1
G02	C093	402	720	2	10	G02	C093	407	813	1	32
G02	C093	425	835	2	4	G02	C093	393	725	1	10
G02	C106	437	933	1	20	G02	C106	454	1039	2	3
G02	C106	458	987	2	3	G02	C106	445	1026	1	32
G02	A115	458	1123	2	4						

Steel head											
St.	Gear	F.L.	B.W.	Sex	G.W.	St.	Gear	F.L.	B.W.	Sex	G.W.
G02	C072	673	3130	1	25						

Table 7. Position and research conditions of surface longline and hook-and-line sampling at each station during the *Oshoro maru* Cruise #254 and #255, 2013.

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.						
C254													
OSSL1301	May 12	1635-1705	May 12	1915-2020	+10h	43-14.8N	154-56.5E	230	20	5463	o	East-3	4.4
OSSL 1302	May 14	0400-0430	May 14	0820-1015	+10h	42-59.7N	155-00.0E	160	30	5388	o	NNW-6	6.8
OSHL1301	May 14	2030	May 15	0400	+10h	43-11.3N	154-57.8E	-	-	5495	o	NNW-3	4.7
OSHL1302	May 15	2130	May16	0340	+10h	42-53.8N	155-00.1E	-	-	-	o	calm	6.9
OSHL1303	May 16	1000	May 16	1130	+10h	43-36.9N	155-21.6E	-	-	-	o	SSE-2	4.2
OSHL1304	May 17	2020	May 17	0230	+10h	44-19.1N	155-17.4E	-	-	5250	o	SE-4	4.1
C255													
OSHL1305	Jun 22	2035	Jun 22	2140	-10h	56-00.4N	170-21.4W	-	-	800	o	NNE-4	6.4
OSHL1306	Jun 24	0130	Jun 24	0220	-10h	55-36.2N	169-03.6W	-	-	1712	f	NW-3	6.7
OSHL1307	Jun 26	2110	Jun 27	0300	-10h	54-25.3N	166-20.6W	-	-	575	o	NNW-2	6.8

*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 (o: 100% clouded, f: fog).

*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 # 254 and # 255, 2013.

Station Name	Sampling gear	Species name						Total
		Sockeye	Chum	Pink	Coho	Chinook	Stellhead	
C254								
OSSL 1301	Surface longline	0	1	88	0	0	0	89
OSSL 1302	Surface longline	0	0	100	0	0	0	100
OSHL 1301	Hook-and-line	0	1	18	0	0	0	19
OSHL 1302	Hook-and-line	0	0	90	0	0	0	90
OSHL 1303	Hook-and-line	0	0	1	0	0	0	1
OSHL 1304	Hook-and-line	1	3	0	0	0	0	4
C255								
OSHL 1305	Hook-and-line	0	2	0	0	0	0	2
OSHL 1306	Hook-and-line	5	2	0	0	0	0	7
OSHL 1307	Hook-and-line	4	7	0	0	0	0	11
Total		10	16	297	0	0	0	323

