HOKKAIDO UNIVERSITY

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7

THE “OSHORO MARU” CRUISE 206
TO EAST OF TSUGARU STRAIT

IN SEPTEMBER TO OCTOBER 2009

1. Cruise Itinerary

Cruise 206			
Departure from Hakodate	Sep.	28	,2009
Start bottom trawl research (OST0908)		29	
Start hydrographic research (OS09144)		29	
Start saury gillnet (OSSG0901)	Oct.	1	
Arrival at Hakodate and change cadets		3	
Departure from Hakodate		3	
Finish bottom trawl research (OST0915)		5	
Finish hydrographic research (OS09152)		5	
Finish saury gillnet (OSSG0902)		7	
Return to Hakodate		8	

Total coverage 1226.2 miles

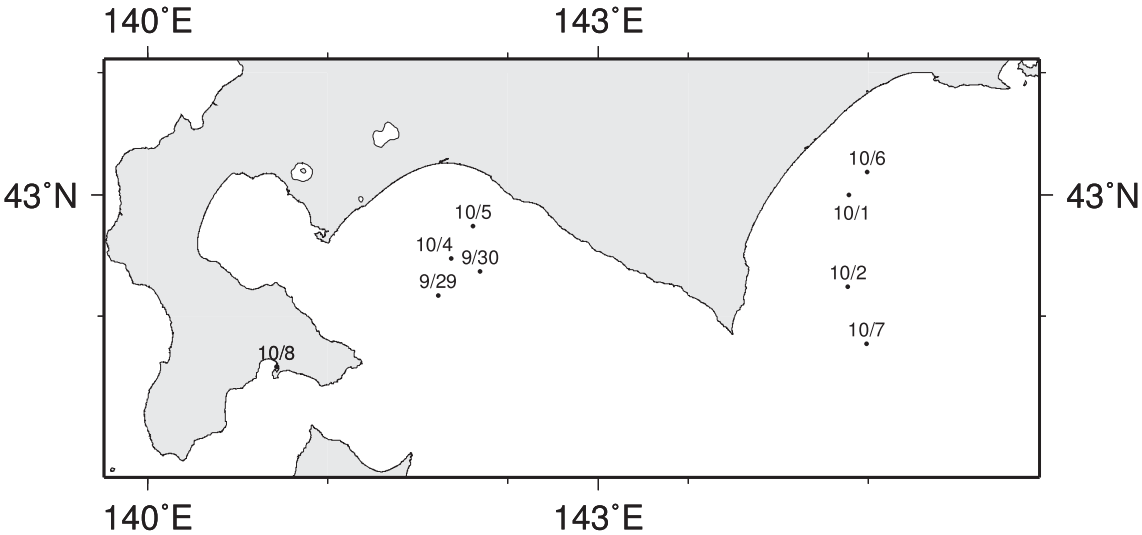

Figure 1: Noon position

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
	Chief Engineer	Instructor	Jyunichi Kimura
	And 25 men		

Cruise 206

Research Staff:	Professor	(Laboratory of Marine Environmental Science)	Kenshi Kuma
	Professor	(Laboratory of Marine Biology and Biodiversity)	Mamoru Yabe
	Accosiate Professor	(Laboratory of Marine Bio-resources Science)	Yutaka Watanuki
	Accosiate Professor	(Laboratory of Marine Environmental Science)	Isao Kudo
	Accosiate Professor	(Laboratory of Marine Bio-resources Science)	Takashi Matsuishi
	Accosiate Professor	(Laboratory of Marine Bio-resources Science)	Tetsuya Takatsu
	Accosiate Professor	(Laboratory of Marine Biology and Biodiversity)	Hisashi Imamura
	Instructor	(Laboratory of Marine ecosystem Change Analysis)	Yoko Mitani
	Teaching Assistant:		15 persons
	Cadets:		81 Cadets
	Total		139 persons

3. Items of 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
Saury floating gillnet research	Fig. 4	Table 5

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”.

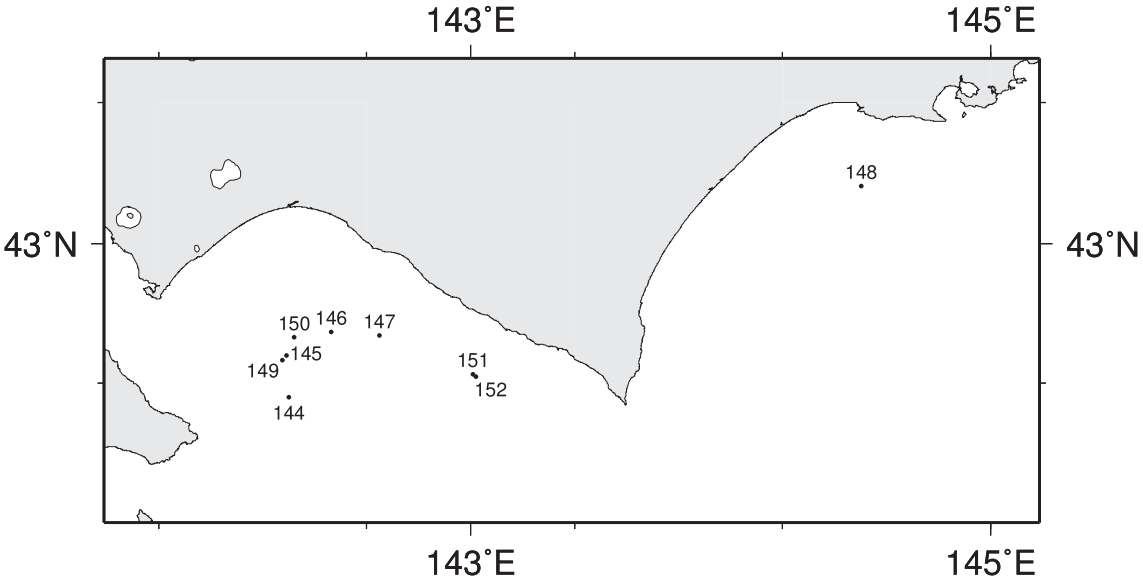

Figure 2: Oceanographic stations

Table 1: List of Oceanographic Stations

Station	Lat.(*)	Long.(*)	Date	S.M.T	T.Z.	Depth	COL.	TR.	S.S.T.	WR.	Remark
OS09144	41-57.0N	141-37.6E	9/29	1724	9	783	-	-	16.9	bc	9Plus-0769
OS09145	42-06.0N	141-37.0E	9/29	2051	9	719	-	-	16.3	-	9Plus-0769
OS09146	42-11.0N	141-49.8E	9/30	1100	9	813	5	14.4	16.4	bc	9Plus-0769
OS09147	42-10.4N	142-03.6E	9/30	1901	9	816	-	-	15.6	bc	9Plus-0769
OS09148	42-42.2N	144-22.7E	10/1	1735	9	598	-	-	-	bc	9Plus-0769
OS09149	42-05.0N	141-35.7E	10/4	1630	9	720	-	-	16.3	bc	9Plus-0769
OS09150	42-09.9N	141-39.1E	10/4	2100	9	718	-	-	15.1	-	9Plus-0769
OS09151	42-01.9N	142-30.7E	10/5	1610	9	730	-	-	16.5	-	9Plus-0769
OS09152	42-01.5N	142-31.6E	10/5	2000	9	730	-	-	16.1	-	9Plus-0769

(*):Fixed position by Global Positioning system

Table 2: Oceanographic data

Station	OS09144		
Longitude	41-57.0N		
Latitude	141-37.6E		
Depth(m)	783		
Press.	Temp.	Sal.	SIG-T
5	16.898	32.730	23.798
10	16.806	32.771	23.850
20	12.213	33.120	25.090
30	9.620	33.340	25.719
40	8.543	33.407	25.942
50	8.130	33.421	26.015
75	8.288	33.760	26.258
100	6.929	33.697	26.403
125	4.521	33.456	26.504
150	3.795	33.460	26.582
200	2.714	33.426	26.653
250	2.191	33.457	26.721
300	2.355	33.554	26.785
400	2.592	33.656	26.847
500	2.822	33.743	26.898

Station	OS09145		
Longitude	42-06.0N		
Latitude	141-37.0E		
Depth(m)	719		
Press.	Temp.	Sal.	SIG-T
5	16.531	33.063	24.138
10	16.530	33.063	24.138
20	14.688	33.043	24.532
30	11.233	33.123	25.273
40	10.948	33.246	25.420
50	10.258	33.352	25.622
75	7.662	33.416	26.079
100	6.367	33.422	26.259
125	5.177	33.458	26.433
150	4.001	33.397	26.511
200	3.144	33.418	26.609
250	2.566	33.469	26.700
300	2.362	33.530	26.766
400	2.647	33.688	26.868
500	2.990	33.856	26.973

Station	OS09146		
Longitude	42-11.0N		
Latitude	141-49.8E		
Depth(m)	813		
Press.	Temp.	Sal.	SIG-T
5	15.985	32.772	24.039
10	16.188	32.913	24.101
20	15.168	33.109	24.479
30	14.435	33.365	24.834
40	13.505	33.454	25.095
50	12.944	33.408	25.171
75	10.687	33.331	25.532
100	8.833	33.405	25.895
125	6.049	33.474	26.341
150	5.086	33.499	26.476
200	3.297	33.435	26.609
250	2.273	33.464	26.720
300	2.237	33.532	26.777
400	2.784	33.738	26.896
500	3.000	33.861	26.976

Station	OS09147		
Longitude	42-10.4N		
Latitude	142-03.6E		
Depth(m)	816		
Press.	Temp.	Sal.	SIG-T
5	17.093	33.108	24.042
10	16.541	33.044	24.121
20	14.686	33.207	24.658
30	13.407	33.456	25.116
40	13.197	33.481	25.178
50	13.022	33.492	25.221
75	12.432	33.500	25.342
100	8.107	33.484	26.068
125	5.636	33.485	26.401
150	4.009	33.416	26.525
200	2.377	33.373	26.639
250	2.307	33.468	26.721
300	2.385	33.549	26.779
400	2.691	33.719	26.890
500	2.973	33.849	26.969

Station	OS09148		
Longitude	42-42.2N		
Latitude	144-22.7E		
Depth(m)	598		
Press.	Temp.	Sal.	SIG-T
5	14.313	32.802	24.425
10	14.082	32.818	24.485
20	13.005	32.887	24.756
30	10.266	33.449	25.696
40	8.732	33.410	25.916
50	7.706	33.367	26.034
75	5.319	33.265	26.264
100	4.365	33.315	26.408
125	3.213	33.325	26.529
150	2.444	33.323	26.593
200	2.434	33.391	26.649
250	2.230	33.413	26.683
300	2.223	33.463	26.723
400	3.078	33.683	26.827
500	3.790	33.864	26.903

Station	OS09149		
Longitude	42-05.0N		
Latitude	141-35.7E		
Depth(m)	720		
Press.	Temp.	Sal.	SIG-T
5	16.127	32.843	24.061
10	15.791	33.069	24.310
20	15.282	33.153	24.487
30	14.100	33.247	24.812
40	11.054	33.483	25.585
50	9.931	33.473	25.772
75	10.245	33.967	26.104
100	9.038	33.835	26.200
125	5.808	33.514	26.402
150	4.465	33.461	26.514
200	2.851	33.378	26.603
250	2.544	33.425	26.667
300	2.377	33.482	26.726
400	2.485	33.623	26.830
500	2.921	33.802	26.936

	Station	OS09150	
	Longitude	42-09.9N	
	Latitude	141-39.1E	
	Depth(m)	718	
Press.	Temp.	Sal.	SIG-T
5	16.142	32.759	23.993
10	16.133	32.869	24.080
20	15.442	33.108	24.418
30	13.819	33.300	24.911
40	12.774	33.462	25.246
50	12.428	33.494	25.338
75	9.808	33.377	25.717
100	10.349	33.886	26.023
125	7.939	33.742	26.295
150	4.951	33.451	26.453
200	3.273	33.422	26.601
250	2.577	33.448	26.683
300	2.290	33.508	26.754
400	2.955	33.728	26.874
500	2.887	33.806	26.942

	Station	OS09151	
	Longitude	42-01.9N	
	Latitude	142-30.7E	
	Depth(m)	730	
Press.	Temp.	Sal.	SIG-T
5	16.186	32.859	24.060
10	16.113	32.900	24.108
20	14.944	33.177	24.580
30	13.993	33.362	24.924
40	13.412	33.411	25.080
50	12.305	33.482	25.353
75	9.903	33.482	25.783
100	9.533	33.898	26.169
125	7.371	33.758	26.389
150	6.993	33.791	26.467
200	4.221	33.550	26.610
250	3.459	33.577	26.707
300	3.240	33.633	26.773
400	3.428	33.795	26.884
500	3.016	33.871	26.982

	Station	OS09152	
	Longitude	42-01.5N	
	Latitude	142-31.6E	
	Depth(m)	730	
Press.	Temp.	Sal.	SIG-T
5	16.219	32.871	24.062
10	16.200	32.872	24.067
20	15.577	33.048	24.342
30	14.200	33.332	24.858
40	13.591	33.318	24.972
50	12.796	33.427	25.215
75	10.022	33.477	25.759
100	9.664	33.877	26.132
125	8.305	33.844	26.321
150	6.649	33.733	26.468
200	3.232	33.407	26.592
250	3.455	33.563	26.696
300	3.580	33.659	26.761
400	3.509	33.816	26.893
500	3.119	33.862	26.966

5. Data on bottom trawl research

Eight operations of the stern otter bottom trawl were carried out. These operations were supervised by the captain, and were conducted by deck officer, crew, research staff and cadets.

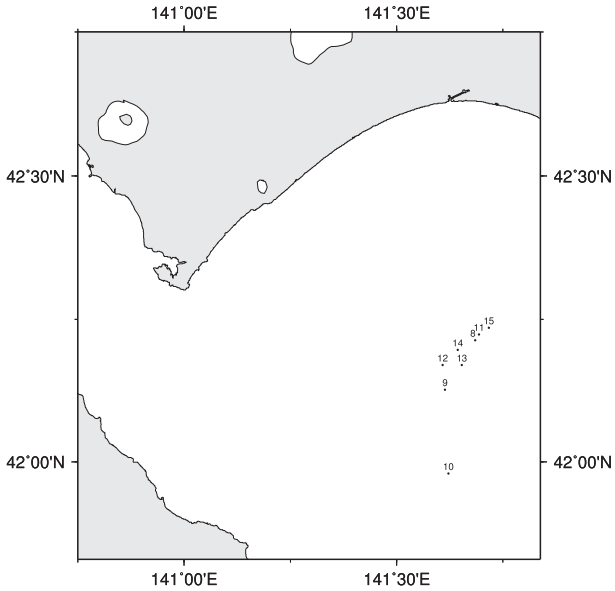

Figure 3: Locations of bottom trawl research

Table 3: Data on bottom trawl research during the ”Oshoro Maru” Cruise#206

No. of research	Date and time of net tow (S.M.T.)		Position Lat.(N)	Long.(E)	Direction of tow	Speed of tow(K’ t)	Bottom depth(m)	Wr	Wind (force)
OST0908	29-Sep	0745-0845	42-12.8	141-41.1	300	3.5	800	bc	NNW-3
OST0909	29-Sep	1110-1210	42-07.6	141-36.8	160	3.0	650-750	bc	WNW-5
OST0910	29-Sep	1433-1533	41-58.8	141-37.3	170	3.5	750-790	bc	West-5
OST0911	30-Sep	0840-0940	42-13.4	141-41.6	110	-	580-760	b	WSW-3
OST0912	4-Oct	0725-0825	42-10.2	141-36.5	180	3.5	600	c	West-3
OST0913	4-Oct	1040-1140	42-10.2	141-39.2	010	-	725	c	SSE-2
OST0914	4-Oct	1400-1500	42-11.8	141-38.6	200	4.5	640-700	c	South-3
OST0915	5-Oct	0725-0825	42-14.1	141-43.0	270	3.5	740	bc	WSW-4

Wr.: Weather (b: 0-25% clouded, bc: 25-75% clouded, c:75-99% clouded)

Table 4: Data on catches by bottom trawl research

		OST 0908		OST 0909		OST 0910		OST 0911		OST 0912		OST 0913		OST 0914		OST 0915	
Japanese name	Scientific Name	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Sokogangiei-rui	*Bathyraja* sp.	2	0.45	11	1.0	118	0.9	3	1.0	2	0.7	-	-	-	-	3	0.75
Kurosokogisu	*Notacanthus chemnitzi*	1	1.0	7	5.5	1	0.7	3	2.1	1	0.1	2	1.3	-	-	1	0.8
Irakoanago	*Synaphobranchus kaupii*	47	42.5	16	6.8	24	15.5	24	17.5	17	13.5	13	11	27	18.5	22	18.5
Kongouanago	*Simenchelys parasiticus*	-	-	1	0.2	-	-	1	0.1	-	-	8	0.41	-	-	-	-
Ryukyuhoraanago	*Ilyophis brunneus*	-	-	1	0.03	1	0.01	1	0.05	-	-	-	-	13	0.5	-	-
Shigiunagi	*Nemichthys scolopaceus*	1	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Togariichimonjiiwashi	*Leuroglossus schmidti*	-	-	2	0.05	-	-	-	-	-	-	-	-	2	0.01	-	-
Sokoiwashi	*Lipolagus ochotensis*	1	0.01	-	-	-	-	-	-	-	-	-	-			-	-
Kurosokoiwashi	*Pseudobathylagus milleri*	2	0.1	-	-	5	0.7	3	0.3	-	-	-	-	-	-	3	0.35
Yokoeso	*Gonostoma gracile*	1	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demeeso	*Benthalbella linguidens*	-	-	-	-	-	-	1	0.3	-	-	-	-	-	-	-	-
Mamehadaka	*Lampanyctus jordani*	5	0.3	8	0.1	12	0.3	23	0.8	18	0.9	17	0.5	49	1.3	16	0.35
Todohadaka	*Diaphus theta*	-	-	-	-	1	0.02			-	-	-	-	-	-	-	-
Mikadohadaka	*Nannobrachium regale*	-	-	-	-	3	0.15	1	0.2	-	-	-	-	-	-	-	-
Suketoudara	*Theiragra chalcogramna*	-	-	-	-	-	-	-	-	-	-	-	-	1	0.6	-	-
Munedara	*Coryphaenoides pectoralis*	4	6.5	2	4.6	-	-	48	155	2	7.5	5	11.5	-	-	-	-
Ibarahige	*Coryphaenoides acrolepis*	-	-	-	-	-	-	-	-	-	-	-	-	1	0.74	-	-
Onihige	*Coelorinchus gilberti*	1	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Karafutosokodara	*Coryphaenoides cinereus*	127	28.5	132	32.5	159	36.5	91	75	128	30.5	124	29.5	78	19.5	154	37.5
Karasudara	*Halargyreus johnsonii*	-	-	-	-	-	-	4	1.6	-	-	-	-	-	-	-	-
Kanadadara	*Antimora microlepis*	25	5.4	68	15.5	77	17.5	64	13.5	50	10	53	10.5	57	12.5	48	9.5
Itohikidara	*Laemonema longipes*	144	129.5	121	167.5	233	144	180	110	849	504	451	289.5	430	252	354	205.4
Sokodara-rui	Macrouridae sp.	-	-	1	1.5	-	-	-	-	-	-	1	0.9	-	-	-	-
Togerakudaankou	*Oneirodes thompsoni*	-	-	-	-	-	-	1	0.2	-	-	-	-	-	-	-	-
Osaga	*Sebastes iracundus*	2	10.0	-	-	-	-	-	-	-	-	-	-	3	5.8	-	-
kichiji	*Sebastolobus macrochir*	234	55.5	235	49.5	179	32.5	187	44	119	40	226	46.5	259	52.7	297	61.5
Uranaikajika	*Dasycottus setiger*	-	-	8	0.7	-	-	-	-	-	-	-	-	-	-	-	-
Kobushikajika	*Malacocottus zonurus*	1	0.1	-	-	-	-	-	-	1	0.1	-	-	-	-	-	-
Ganko	*Dasycottus setiger*	4	1.15	-	-	7	0.8	3	0.9	1	0.1	6	0.7	5	0.62	10	0.78
Nyudoukajika	*Psychrolutes phrictus*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.88
Hirainkiuo	*Paraliparis grandis*	-	-	-	-	-	-	3	1.5	-	-	4	2.25	-	-	-	-
Inkiuo-rui	*Paraliparis* sp.	-	-	-	-	-	-	-	-	-	-	-	-	3	1.66	6	6.45
Shirogenge	*Bothrocana molle*	187	112	1066	266.8	129	68.5	176	84	426	114.3	292	105	533	172	468	174.5
Kantengenge	*Bothrocara tanakae*	12	6.5	9	5.9	-	-	9	4.5	13	6.0	5	1.7	11	5.4	11	8.5
Yawaragenge	*Lycodapus microchir*	-	-	-	-	-	-	-	-	-	-	-	-	3	0.1		
Nezumiginpo	*Lumpenella longirostris*	9	0.6	27	1.46	119	10	25	2.0	16	1.0	14	1.02	28	2.4	20	1.1
Ibodai-rui	*Centrolophidae* sp.	-	-	-	-	-	-			1	1.0	-	-	-	-	-	-
Aburagarei	*Atheresthes evermanni*	2	3.3	-	-	1	2.1	2	4.85	3	3.6	2	3.5	1	1.11	1	2.5
Benizuwaigani	*Chionoecetes japonicus*	15	7.5	63	39.5	16	4.0	22	12	43	22	34	14.5	27	12	15	8.5
Ezobai-rui	Buccinidae spp.	34	3.7	14	1.3	93	3.3	11	1.12	10	0.5	43	4.0	-	-	53	4.7
Tako-rui	Octopuses	20	9.5	30	12.5	43	13.5	11	5.2	10	5.9	20	9.5	40	21	27	15.5
Mendako		1	1.82	5	3.7	4	3.3	2	3.3	2	1.5	1	2.0	1	1.6	-	-
Ika-rui	Squids	35	12.5	92	27.5	12	3.5	38	18.5	71	27	43	14.5	56	16.5	53	20.5

6. Data on floating gillnet research

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

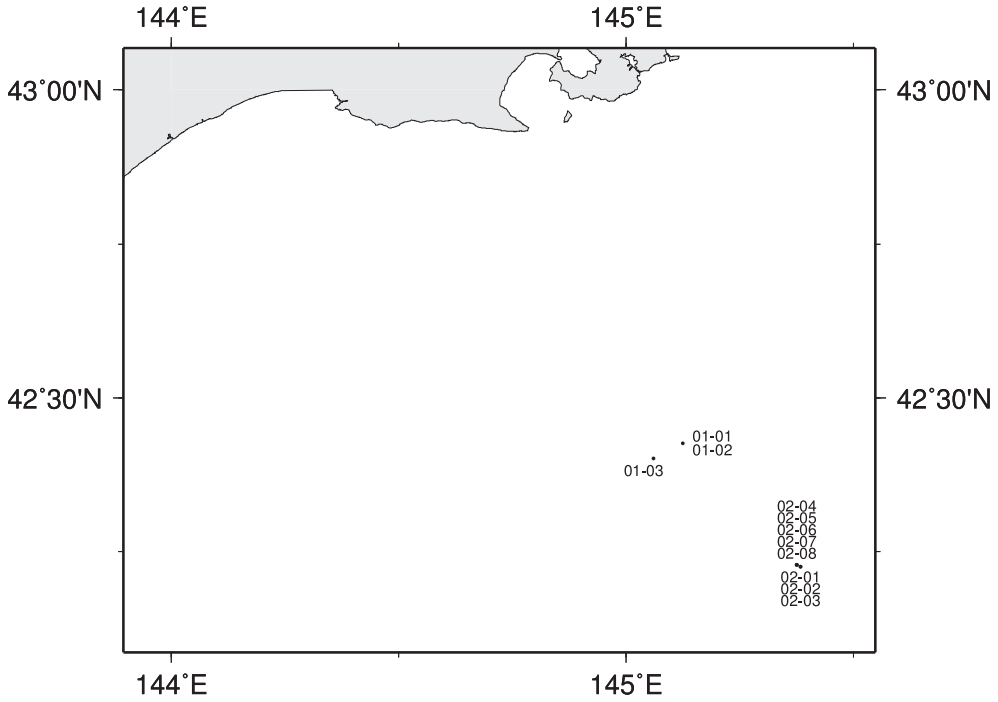

Figure 4: Locations of floating gillnet research

Table 5: Data on floating gill net research

No. of research		OSSG 0901-01	OSSG 0901-02	OSSG 0901-03	OSSG0902-01	OSSG0902-02	OSSG0902-03	OSSG0902-04	OSSG0902-05	OSSG0902-06	OSSG0902-07	OSSG0902-08
Date		1-Oct	1-Oct	2-Oct	6-Oct	6-Oct	6-Oct	6-Oct	7-Oct	7-Oct	7-Oct	7-Oct
position of	Lat. (N)	42-25.6	42-25.6	42-24.1	42-13.5	42-13.5	42-13.5	42-13.7	42-13.7	42-13.7	42-13.7	42-13.7
net set	Long. (E)	145-07.5	145-07.5	145-03.6	145-23.0	145-23.0	145-23.0	145-22.5	145-22.5	145-22.5	145-22.5	145-22.5
Time(S.M.T.)	net set	2330	2330	0215	2100	2140	2215	2335	0030	0120	0225	0300
Mesh size(mm)		42	42	42	42	42	42	42	42	42	42	42
Surface temp. (°C)		13.1	13.1	13.3	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
Weather		bc	bc	bc	bc	bc	bc	bc	bc	bc	bc	bc
Wind (force)		SSE-3	SSE-3	SSE-3	Calm	Calm	Calm	Calm	Calm	Calm	Calm	Calm
Pacific saury		643	201	316	81	472	375	300	200	2160	360	400
Japanese common squid					1							
Mackerels							2					

Weather (bc: 25-75% clouded)