



HOKKAIDO UNIVERSITY

Title	PART I -4. THE " OSHORO MARU " CRUISE 040 to JAPAN SEA, AND THE NORTHWEST PACIFIC OCEAN, THE BERING SEA and CHUKUCHI SEA IN JUNE - AUGUST 2017
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**THE "OSHORU MARU" CRUISE 040
TO JAPAN SEA, AND
THE NORTHWEST PACIFIC OCEAN, THE BERING SEA and CHUKCHI SEA
IN JUNE TO AUGUST 2017**

1. Cruise Itinerary

Cruise 040

Departure from Hakodate (Leg1)	June.	05, 2017
Start hydrographic research		06
Finish hydrographic research		09
Return to Hakodate		10
Departure from Hakodate (Leg2)		12
Arrival at Tokyo		15
Departure from Tokyo (Leg3)		18
Start hydrographic research		24
Date change, repeat June 27 th		27
Finish hydrographic research	July,	02
Arrival at Dutch Harbor		03
Departure from Dutch Harbor (Leg4)		06
Start hydrographic research		09
Finish hydrographic research and arrival at Nome		14
Departure from Nome and start hydrographic research (Leg5)		16
Date change, skip July 25 th		25
Finish hydrographic research		30
Return to Hakodate	August,	01

Total coverage 8487.7miles

(Leg1: 530.5n.m., Leg2: 672.8n.m., Leg3: 3382.5n.m., Leg4: 1053.4n.m., Leg5: 2848.5n.m.)

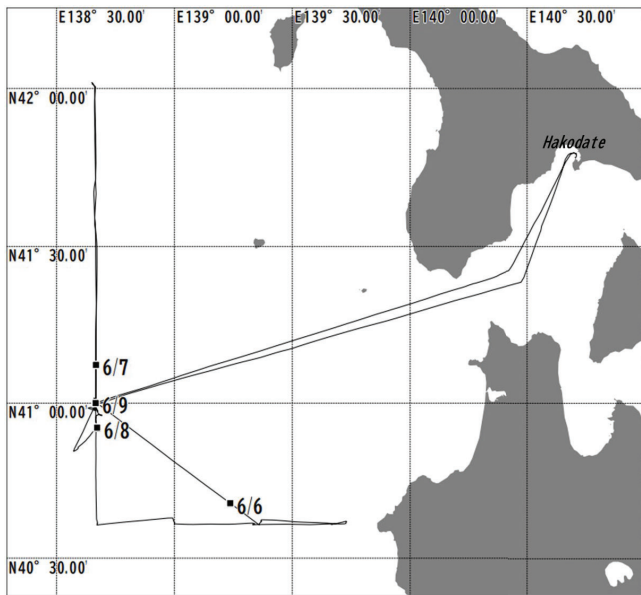


Fig. 1-1: Noon Position

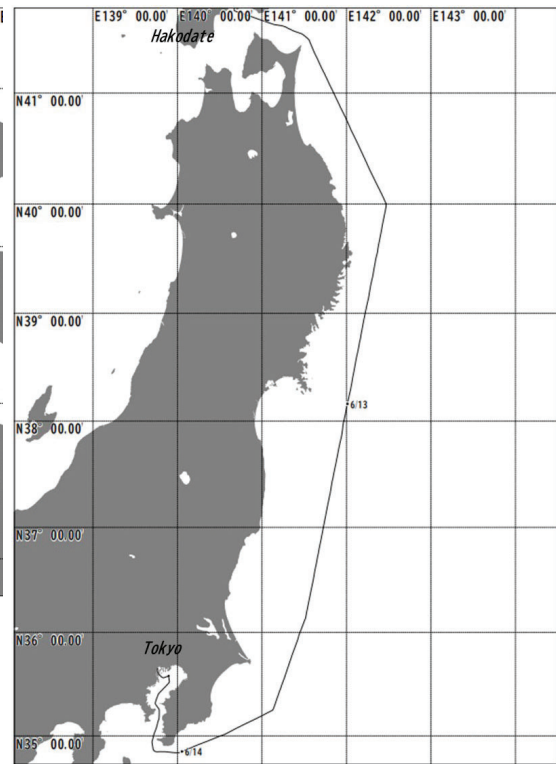


Fig. 1-2: Noon Position

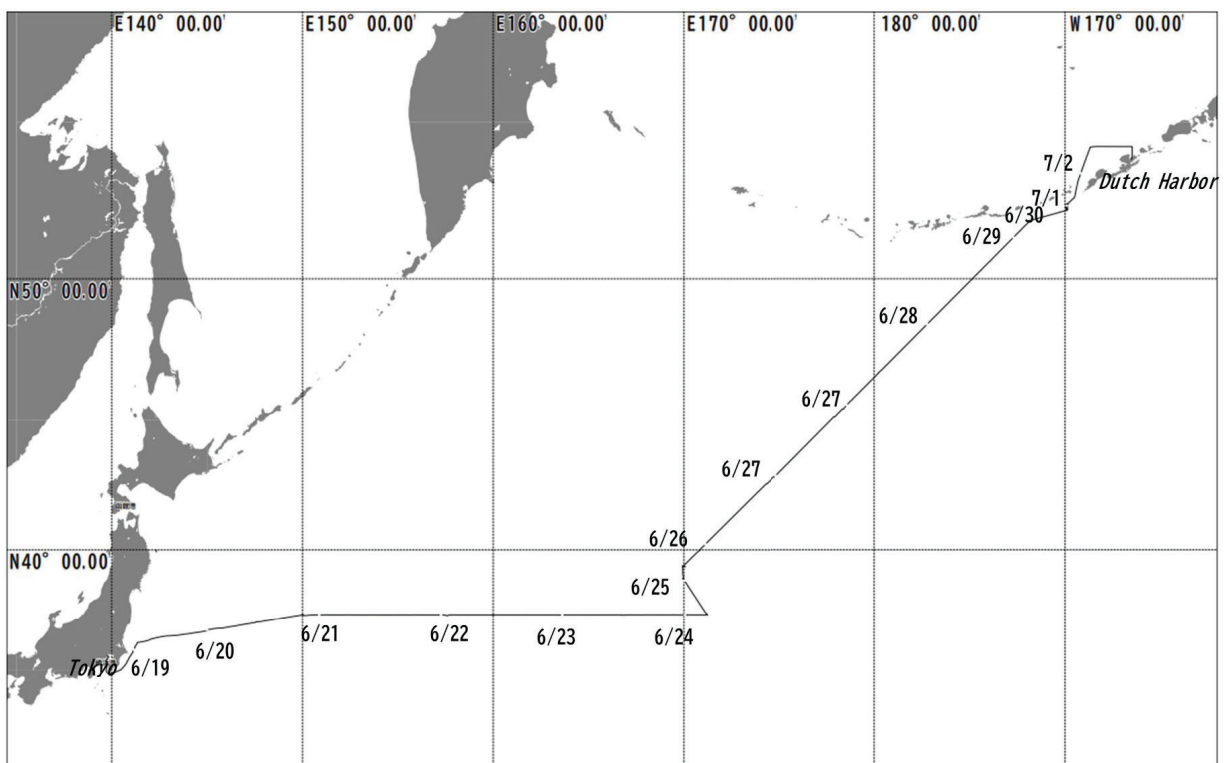


Fig. 1-3: Noon Position

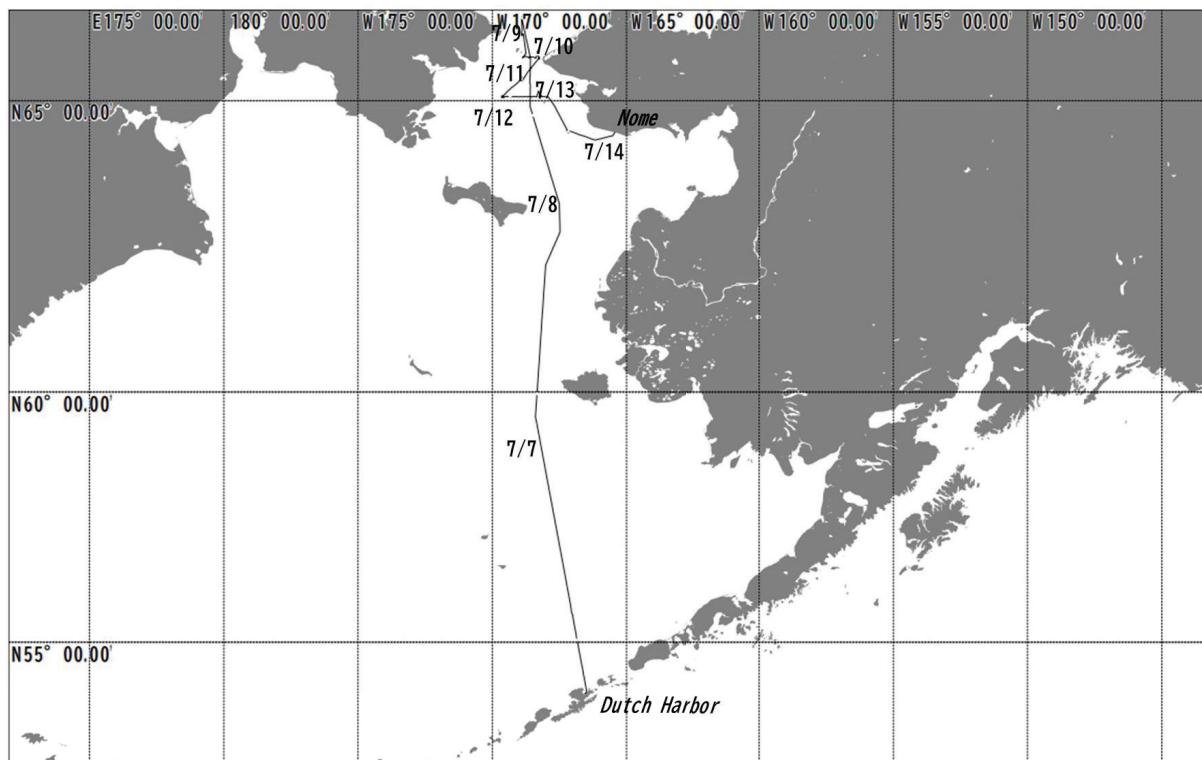


Fig. 1-4: Noon Position

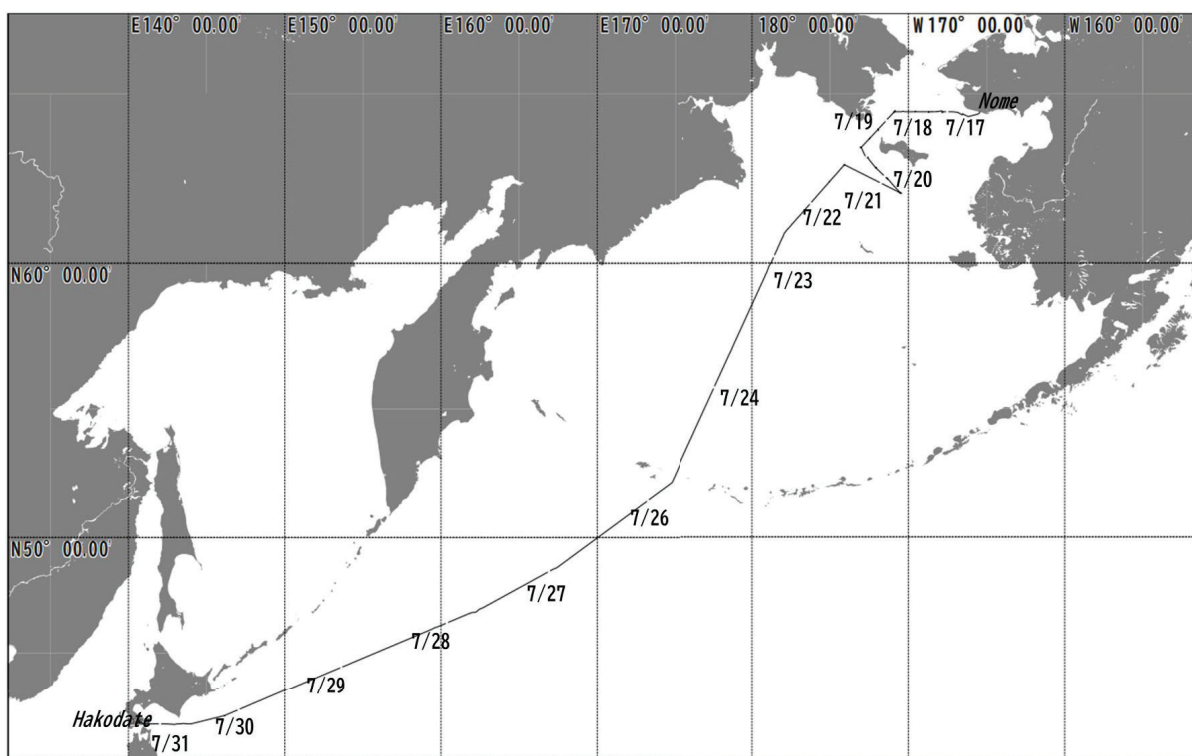


Fig. 1-5: Noon Position

2. Vessel Personnel

Crew: Captain: Associate Professor Shogo Takagi
And 31 persons

(Leg1)

Research Staff:

Associate Professor (Laboratory of Marine Environmental Science, Hokkaido University)

Hakodate -Hakodate Yutaka Isoda

Associate Professor (Earth Environment Dynamics Research Institute for Applied Mechanics, Kyushu University)

Hakodate -Hakodate Tomoharu Senju

Research Fellow (Earth Environment Dynamics Research Institute for Applied Mechanics, Kyushu University)

Hakodate - Hakodate Tsutsumi Eisuke

Technical Support Staff (Earth Environment Dynamics Research Institute for Applied Mechanics, Kyushu University)

Hakodate - Hakodate Ryosuke Sakemi

Associate Professor (Faculty of Science, Department of Environmental Science, Niigata University)

Hakodate - Hakodate Kazuhiro Norisuye

Assistant Professor (Institute of Nature and Environmental Technology, Kanazawa University)

Hakodate - Hakodate Shinya Ochiai

Assistant Professor (Hydrospheric Atmospheric Science, Nagoya University)

Hakodate - Hakodate Masanori Ito

Senior Researcher (Center for Global Environmental Research, National Institute for Environmental Studies)

Hakodate - Hakodate Takafumi Aramaki

Other:

Cameraman (National Institute for Environmental Studies)

Hakodate - Hakodate Seizi Narita

Senior Researcher (Global Ocean Observation Research Center, JMSTEC)

Hakodate - Hakodate Yuichiro Kumamoto

Research Technician (Global Ocean Observation Research Center, JMSTEC)

Hakodate - Hakodate Kazuhiko Matsumoto

Research Technician (Earth Surface System Research Center, JMSTEC)

Hakodate - Hakodate Sasaoka Kosei

Director (NHK) Hakodate - Hakodate Syunsuke Maeda

Cameraman (NHK) Hakodate - Hakodate Tomohiro Kawasaki

Technician (Sanyo Techno Marine) Hakodate - Hakodate Yu Takabayashi

Graduate Student: 5 persons

Undergraduate Student: 4 persons

(Leg3 – Leg5)

Research Staff:

Associate Professor (Laboratory of Marine Environmental Science, Hokkaido University)		
	Tokyo - Hakodate	Atsushi Ooki
Lecturer (Pan-Okhotsk Research Center, Institute of Low Temperature Science, Hokkaido University)		
	Tokyo - Dutch Harbor	Tomohiro Nakamura
Associate Professor (Field Science Center for Northern Biosphere, Hokkaido University)		
	Tokyo - Nome	Yoko Mitani
Assistant Professor (Ocean Circulation Group, Atmosphere and Ocean Research Institute)		
	Tokyo - Dutch Harbor	Daigo Yanagimoto
Senior Researcher (Research Institute for Global Change Global Ocean Observation Research Center, JAMSTEC)		
	Tokyo - Dutch Harbor	Yoshimi Kawai
Professor (Field Science Center for Northern Biosphere, Hokkaido University)		
	Dutch Harbor - Nome	Masahiro Nakaoka
Associate Professor (Laboratory of Marine Environmental Science, Hokkaido University)		
	Dutch Harbor - Nome	Hiromichi Ueno
Associate Professor (Laboratory of Marine Biology and Marine Biodiversity, Hokkaido University)		
	Dutch Harbor - Hakodate	Atsushi Yamaguchi
Associate Professor (Laboratory of Marine Environment and Resource Sensing, Hokkaido University)		
	Dutch Harbor - Nome	Toru Hirawake
Specially Appointed Assistant Professor (Faculty of Fisheries Sciences, Hokkaido University)		
	Dutch Harbor - Hakodate	Makoto Sampei
Associate Professor (Laboratory of Marine Bioresource Science, Hokkaido University)		
	Nome - Hakodate	Orio Yamamura
Postdoctoral Researcher (Laboratory of Marine Environmental Science, Hokkaido University)		
	Nome - Hakodate	Bungo Nishizawa
	Graduate Student:	9 persons
	Undergraduate Student:	10 persons

3. Items of Research

Hydrographic observations: Temperature and salinity were measured by CTD (Seabird SBE-9Plus, SBE-19Plus, XCTD and XBT). Dynamic computations were made using a desk-top computer aboard the “*Oshoromaru*”. Water sampling were also carried out at almost every hydrographic stations.

Net sampling by MOHT, LARVA NET, CLOSING NET and BONGO NET for plankton collection, and NEUSTON NET for floating trash collection.

Bottom sampling by SEDIMENT MULTIPLE CORER and SMITH-MACINTYRE BOTTOM SAMPLER.

Upper-air observation using radiosondes

Set and retrieve the sediment trap mooring

4. Data on salmon longline and hook-and-line research

Table 1. Position and research conditions of surface longline and hook-and-line sampling at each station.

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.						
OSHL1705	Jun. 29	2230	Jun. 30	0230	-12h, -11h	51-56.1N	171-45.9W	-	-		d	South-2	6.7
OSHL1706	Jul. 02	0100	Jul. 02	0505	-10h	52-25.1N	169-53.9W	-	-		o	SW-4	8.9
OSHL1707	Jul. 21	0000	Jul. 21	0300	-11h	62-10.0N	170-30.2W	-	-	47	f	West-2	9.7
OSSL1702	Jul. 21	0350-0420	Jul. 21	0550-0715	-11h	62-09.9N	170-31.3W	110	30	47	f	West-2	9.7

*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 (d: drizzle or fine rain, f: fog, o: 100% clouded).

*5 S.T. : Surface temperature

Table 2. 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	
OSHL 1705	Hook-and-line	3	0	16	0	0	0	19
OSHL 1706	Hook-and-line	9	3	28	1	0	0	41
OSHL 1707	Hook-and-line	0	0	4	0	0	0	4
OSSL 1702	Surface longline	9	3	9	2	1	0	24
Total		21	6	57	3	1	0	88

Table 3. Biological characteristics of salmonids caught by hook-and-line gear and surface longline research

Sockeye salmon											
St.	Gear	F.L. (mm)	B.W. (g)	Sex	G.W. (g)	St.	Gear	F.L. (mm)	B.W. (g)	Sex	G.W. (g)
HL05	O000	498	1260	1	11	SL02	B000	550	2050	1	195
		494	1520	1	37			474	1250	2	1
		502	1610	1	36			513	1460	2	1
		576	2450	1	210			536	1740	2	1
HL06	O000	442	1110	2	34			572	2360	1	195
		576	2300	2	33			481	1330	1	16
		574	2150	1	98			516	1530	2	1
		586	2150	2	13			482	1360	1	15
		578	2040	1	93			569	2380	1	200
		604	2750	2	28						
		582	2380	1	85						
		540	1880	1	88						

Chum salmon

St.	Gear	F.L. (mm)	B.W. (g)	Sex	G.W. (g)	St.	Gear	F.L. (mm)	B.W. (g)	Sex	G.W. (g)
HL06	O000	410	660	1	5	SL02	B000	635	3400	2	255
		416	800	1	8			624	3260	1	280
		433	840	1	12			604	2850	2	1

Pink salmon

St.	Gear	F.L. (mm)	B.W. (g)	Sex	G.W. (g)	St.	Gear	F.L. (mm)	B.W. (g)	Sex	G.W. (g)
HL05	O000	516	1640	1	110	HL06	O000	496	1580	1	35
		430	880	1	30			494	1340	1	150
		468	1180	2	53			508	1400	2	50
		466	1180	1	88			468	1210	1	65
		450	1260	2	66			476	1220	1	85
		460	1310	1	75			448	980	1	30
		473	1260	1	63			491	1340	2	30
		474	1350	2	50			434	870	2	10
		480	1340	1	78			473	1170	2	45
		488	1410	2	56			476	1260	2	25
		428	1240	2	14			458	1350	2	40
		416	810	1	70			452	1130	1	50
		461	1220	1	73			475	1230	2	25
		480	1420	2	37			461	1170	1	70
		442	1040	1	75			443	1090	1	75
HL06	O000	421	920	2	32	HL07 SL02	O000 B000	482	1540	2	155
		503	1650	1	85			428	920	2	24
		448	958	1	45			450	1140	1	130
		470	1180	1	55			442	1150	1	125
		466	1110	2	10			592	2250	2	190
		442	1070	2	75			500	1480	2	150
		493	1380	2	15			504	1490	1	185
		450	1130	2	20			444	1020	1	126
		480	1300	2	10			459	1330	2	109
		486	1290	1	100			455	1220	2	89
		437	1040	2	70			510	1540	2	125
		431	920	1	80			518	1580	2	110
		536	1750	2	40			487	1320	2	135
		452	1070	1	40						

Coho salmon

St.	Gear	F.L. (mm)	B.W. (g)	Sex	G.W. (g)
HL06	O000	596	2420	1	40
SL02	B000	590	2640	1	265
SL02	B000	619	3200	2	215

Chinook salmon

St.	Gear	F.L. (mm)	B.W. (g)	Sex	G.W. (g)
SL02	B000	678	3150	2	1