

SEAMOUNT FISHERY, FOREIGN VESSEL OBSERVER REPORT

KITAKAMI MARU (August 9-October 4, 1980)

By

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November 1980

KITAKAMI MARU

Vessel Statistics

Permit Number:	JA-80-0321A
Length	56.62 m
Gross tonnage:	549.86
Net tonnage:	215.92
Width:	9.20 m
Draft:	4.15 m
Engine type:	Diesel
Horsepower:	1,500
Hull Number:	100765
Registration Number:	TOEN-717
Company/owner:	Nippon Suisan, Ltd.
Vessel type:	Freezer-factory. Independent stern trawler
Year commissioned:	September 1966
Home port:	Konmon-Ko, Tobata, Japan

Personnel

Captain:	Masamichi Ooshio
Number of officers:	8
Number of crew:	22
Galley:	3
Total ship complement:	34
Experience in seamount fishery:	None

The Kitakami Maru was assigned to fish in the U.S. Fishery Conservation Zone (FCZ) on the Hancock Seamounts by Nippon Suisan, Ltd. The vessel left Japan on July 10, 1980 and began fishing at the Colahan and Milwaukee Seamounts. They fished outside the FCZ from July 20 to August 10, 1980. On August 11, they entered the FCZ and picked up the U.S. observer on Midway. Actual fishing in the FCZ began on August 12.

The Kitakami Maru, at 56 m, is probably the smallest trawler in the Nippon Suisan fleet. The company decided to use this vessel largely for economic reasons. It was thought that it would be economical to use the Kitakami Maru at the Hancock Seamounts anticipating small catches inside the FCZ, while the larger Aso Maru would be used to fish the other seamounts outside the FCZ.

The Kitakami Maru fished almost exclusively inside the FCZ from August 12-September 30, 1980. Every 10-14 days, they left the FCZ to offload their catch and to take on fuel and fresh supplies by docking with a cargo vessel that was resupplying vessels in the area. One day was spent fishing outside the FCZ during this period.

Trawl Gear

See Figure 1 for dimensions. The net was modified by replacing two of the center bobbins opposite the cod end with two large cylinder-shaped bobbins composed of hard rubber. This reduced "hangups" by allowing the net to "bounce" over small rocks and ledges.

Area of Operation

1. Outside of the FCZ.

Colahan Seamount (E bank), lat. 31°01'N, long. 175°52'E

2. FCZ.

- a. Southeast Hancock Seamount (J bank), lat. 29°43'-49'N, long. 179°02'-06'E

- b. Northwest Hancock Seamount (C bank), lat. 30°15'-16'N, long. 178°42'-44'E

- c. K bank, lat 29°40'N, long. 179°20'E

TRAWL RESULTS

Target Species

Common names:	Pelagic armorhead, boarfish
Japanese name:	Kusakari tsubodai
Scientific name:	<u>Pentaceros richardsoni</u>
Species code:	080

Common name:	Alfonsin
Japanese name:	Kinmedai
Scientific name:	<u>Beryx splendens</u>
Species code:	081

The general fishing strategy involved surveying the seamount area prior to setting the net each time a new area was fished. Fish concentrations on the seamounts were determined through the use of two Sanken fish finders. At this time, the direction and location of the tow on the seamount were determined and the ship was brought into position for the first pass. The net was lowered to the proper depth just prior to contact with the seamount. After contact, the net recorder was monitored to determine the density of fish entering the net and also to watch for "hangups." Trawling was conducted on the bottom, the cod end actually riding about 1 m off the bottom. Upon reaching the end of the seamount, the vessel retrieved the trawl doors, made a 90° turn, lowered the doors, and net, and resumed fishing. Several passes were often made before the net was hauled aboard ship. This was done to save fishing time, since the amount of fish caught on one pass was usually small. In calculating the catch per unit effort (CPUE), the fact that total trawling time is not the actual time on the bottom must be taken into consideration. Trawling time can be considered total

time per haul the net was in the water between the period of contact with the bottom on the first pass, and the time the net left the bottom on the last pass. At Southeast Hancock Seamount, this time averaged 97.4 minutes per haul for 110 hauls. The 61 hauls at Northwest Hancock Seamount averaged 85.4 minutes per haul. The two hauls on K bank averaged 10 minutes per haul.

Outside the FCZ at Colahan Seamount, the four hauls averaged 115 minutes per haul. Of the 704.6 metric tons (MT) caught inside the FCZ between August 12-September 30, 1980, 654.0 MT or 93% consisted of pelagic armorhead. There were 31.7 MT of alfonsin caught, 4% of the total. Other species made up 3% of the catch or 18.9 MT.

During the survey, 41 out of 42 fishing days were spent inside the FCZ. One day was spent at Colahan Seamount. The catch consisted of 5.9 pelagic armorhead, 2 MT alfonsin, and 2 MT other species.

The largest single catch was at Northwest Hancock Seamount and consisted of 20.0 MT, 19 MT of which was pelagic armorhead. Out of 173 hauls inside the FCZ, 57 were greater than or equal to 5.0 MT. There were six zero hauls, four of these resulting from net "hangups." The average catch per haul was 4.1 MT. In the FCZ, 80% of the armorhead and 66% of the alfonsin were caught between 1800-0600 hours. The percentage of fish caught during these hours increased during the fishing season. During the last 2 weeks of fishing, 90% of the fish were caught between these hours.

SAMPLING RESULTS

1. Pelagic armorhead, Pentaceros richardsoni.

Morphology (hauls 1-69). Samples from hauls 1-69 were divided into two types of pelagic armorhead, fat and lean. These two body types may have significant genetic differences so they were recorded separately.

a. Southeast Hancock Seamount.

Lean type 57%

Number measured: 1,841

Sex ratio: Male 439 (55%)
Female 359 (45%)

Average length: 295 mm Range: 255-337 mm
Average weight: 0.48 kg

Fat type: 43%

Number measured: 1,372

Sex ratio: Male 239 (45%)
Female 292 (55%)

Average length: 308 mm Range: 287-344 mm
Average weight: 0.63 kg

b. Northwest Hancock Seamount

Lean type: 73%

Number measured: 627

Sex ratio: Male 226 (57%)
Female 168 (43%)

Average length: 295 mm Range: 261-335 mm
Average weight: 0.44 kg

Fat type: 27%

Number measured: 233

Sex ratio: Male 65 (52%)
Female 61 (48%)

Average length: 307 mm Range: 270-325 mm
Average weight: 0.63 kg

Morphology (hauls 70-167). After haul 70, it became increasingly more difficult to divide the armorhead into the two body types. A third intermediate body type became more prevalent. Because of this, samples from hauls 70-167 were divided into three body types: fat, lean, and medium.

a. Southeast Hancock Seamount

Lean type: 27%

Number measured: 378

Sex ratio: Male 166 (76%)
Female 53 (24%)

Average length: 292 mm Range: 258-323 mm
Average weight: 0.42 kg

Fat type: 16%

Number measured: 230

Sex ratio: Male 78 (51%)
Female 75 (49%)

Average length: 314 mm Range: 288-334 mm
Average weight: 0.67 kg

Medium type: 57%

Number measured: 805

Sex ratio: Male 302 (65%)
Female 162 (35%)

Average length: 304 mm Range: 280-326 mm
Average weight: 0.57 kg

b. Northwest Hancock Seamount

Lean type: 48%

Number measured: 320

Sex ratio: Male 197 (62%)
Female 121 (38%)

Average length: 292 mm Range: 261-342 mm
Average weight: 0.41 kg

Fat type: 8%

Number measured: 54

Sex ratio: Male 26 (59%)
Female 18 (41%)

Average length: 312 mm Range: 295-331 mm
Average weight: 0.68 kg

Medium type: 44%

Number measured: 292

Sex ratio: Male 162 (67%)
Female 79 (33%)

Average length: 306 mm Range: 275-334 mm
Average weight: 0.59 kg

2. Alfonsin

Morphology. Alfonsins made up a relatively small part of the total catch inside the FCZ. Of the 31.8 MT caught, approximately 50% could not be utilized commercially because of their small size. Although the other species of alfonsin, Beryx decadactylus, made up less than 1% of the total alfonsin caught, their incidence increased significantly during the last few days of fishing.

a. Southeast Hancock Seamount

Number measured: 907

Sex ratio: Male 41 (54%)
Female 35 (46%)

Average length: 217 mm Range: 152-358 mm
Average weight: 0.22 kg

b. Northwest Hancock Seamount

Number measured: 523

Sex ratio: Male 49 (53%)
Female 44 (47%)

Average length: 229 mm Range: 161-358 mm
Average weight: 0.31 kg

Ninety percent of the alfonsin sampled were less than 200 mm in length. At this size, they are often sexually immature. Therefore, the sex ratio reflects only a small percentage of the total sample.

3. Other commercial species

The only other species that was utilized as a commercial product in significant quantities was Hyperoglyphe japonica. Often 25-30 large (5-10 kg) individuals were caught in an average haul. Another species caught in large quantities was Erythocles schlegelii. These were not utilized as a commercial product.

4. Coral

No precious coral was uprooted inside or outside of the FCZ.

SHIPBOARD PRODUCTS (HANCOCK SEAMOUNTS)

Species Product

1. Pelagic armorhead

Frozen fish (headed and gutted)	385.6 MT
Fish meal and oil	0

The body of pelagic armorhead ranged from 56-60% of total weight after machine processing.

2. Alfonsin

Frozen whole or headed and gutted	9.5 MT
Fish meal and oil	0

3. Other species

Frozen whole or filleted	5.1 MT
Fish meal and oil	0

By Products

The Kitakami Maru did not have a fish meal factory. All of the waste products were discarded. In addition, about 50% of the total alfonsin and all of the other species not used as commercial products were discarded. Alfonsin were usually too small in size or sustained too much damage during the long hauls to be used as commercial products. A rough estimate of 40-50 MT of whole fish (alfonsin and other species) were simply thrown overboard.

ITINERARY

August	9	- Departed Honolulu, Hawaii Arrived Midway
	11	- Embarked <u>Kitakami Maru</u>
	12	- Began sampling
September	24	- Transferred to <u>Aso Maru</u> Began sampling
	30	- Transferred back to <u>Kitakami Maru</u>
October	2	- Arrived Midway
	4	- Arrived Honolulu

NOTE: After my transfer to the Aso Maru, observer Gordon Tribble was picked up on Midway by the Kitakami Maru. He remained on board during the period of September 27-30. The 2 days that Mr. Tribble sampled aboard the Kitakami Maru have been incorporated into these results.

RECORDS

The following records were kept:

Scientists Log
Daily Trawl Haul Form
Species Composition From Basket Samples
Size-Frequency Log

OBSERVERS: Alan R. Everson, Southwest Fisheries Center Honolulu Laboratory,
National Marine Fisheries Service, NOAA, Honolulu, Hawaii 96812,
August 9-September 24, 1980

Gordon W. Tribble, Southwest Fisheries Center Honolulu Laboratory,
National Marine Fisheries Service, NOAA, Honolulu, Hawaii 96812,
September 26-October 4, 1980.

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Table 1.--Trawl catches by species and area (in metric tons).

Species	Fishery Conservation Zone	Outside
Armorhead	654.0	5.9
Alfonsin	31.7	0.2
<u>Others (listed below)</u>	18.9	0.2
<u>Erythrocles schlegelii</u>		<u>Grammatonotus laysanus</u>
<u>Hyperoglyphe japonica</u>		<u>Promethichthys prometheus</u>
<u>Polymixia japonica</u>		<u>Etmopterus villosus</u>
<u>Zenopsis nebulosa</u>		Myctophidae spp.
<u>Antigonia eos</u>		Oncocephalidae spp.
<u>Scomber japonicus</u>		Sternoptychidae sp.
<u>Macrorhamphosus gracilus</u>		<u>Stethopristes eos</u>
<u>Laemonema rhodochir</u>		<u>Hoplostethus mediterraneus</u>
<u>Decapterus russelli</u>		Lepidopidae sp.
<u>Ariomma lurida</u>		<u>Prionace glauca</u>
<u>Chascanopsetta prorigera</u>		<u>Parabothus coarctatus</u>
<u>Ruvettus pretiosus</u>		<u>Beryx decadactylus</u>
<u>Squalus blainvillei</u>		<u>Priacanthus boops</u>
Alopiidae sp.		<u>Hexanchus grisens</u>
Scorpaenidae sp.		
Total	704.6	6.3

Note: Checklist incomplete pending further identification of specimens.

Table 2.--Catch-per-unit-effort by species and area.

Area	No. hauls	Total minutes (trawl in water)	Armorhead		Alfonsin		Other species		All species	
			Total catch (kg)	Kg/min	Total catch (kg)	Kg/min	Total catch (kg)	Kg/min	Total catch (kg)	Kg/min
Southeast Hancock Seamount	102	9,650	461,100	47.78	23,700	2.46	14,100	1.46	498,900	51.70
Northwest Hancock Seamount	59	5,050	192,900	38.20	7,800	1.54	4,600	0.96	205,300	40.65
K Bank	2	10	0	--	200	20.0	200	20.0	400	40.0
Colahan	4	460	5,900	12.83	200	0.43	200	0.43	6,300	13.70
			659,900		31,900		19,100		710,900	

NET DIMENSIONS AND CHARACTERISTICS

Type of Vessel Stern trawler

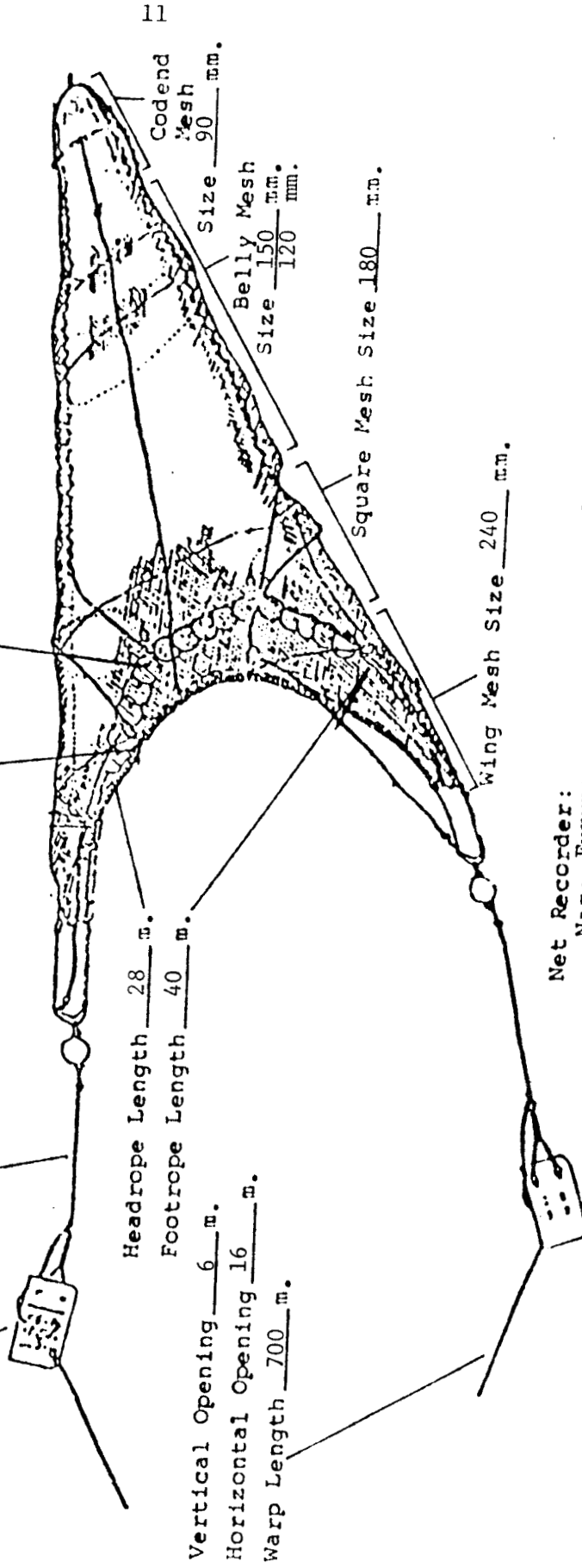
Observation Period August 11-September 30, 1980

Trawl Doors: Shape Rectangular
 Type Longitudinal
 Dimensions 2 m. x 3 m.
 Weight 1,200 kg.

Dandyline Length 80 m.

Floats: Number 30-36 pieces
 Size 300-360 mm
 Material Cycolac
 Shape Round

Bobbins: Number 23 pieces
 Size 530 mm
 Material Rubber and iron
 Shape Round



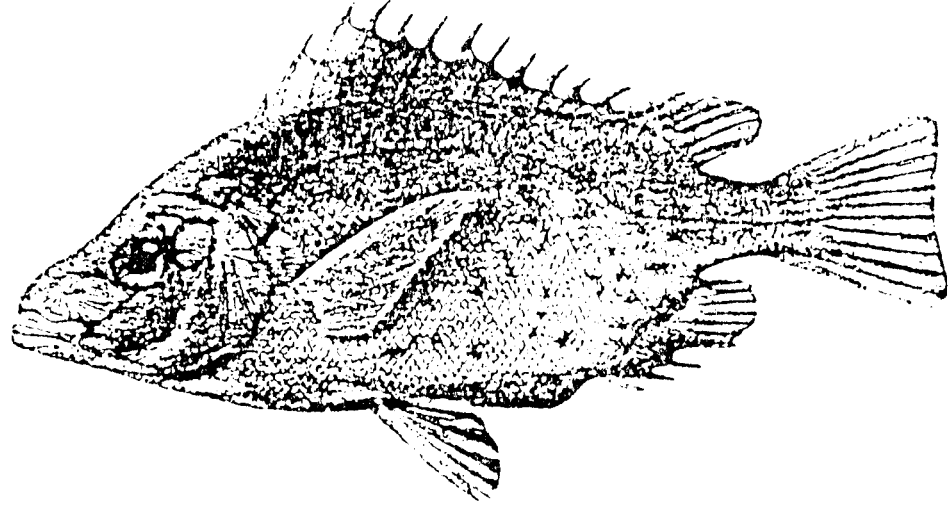
Net Recorder:

Name Furuno
 Model Number 1330323
 Frequency 60 Khz

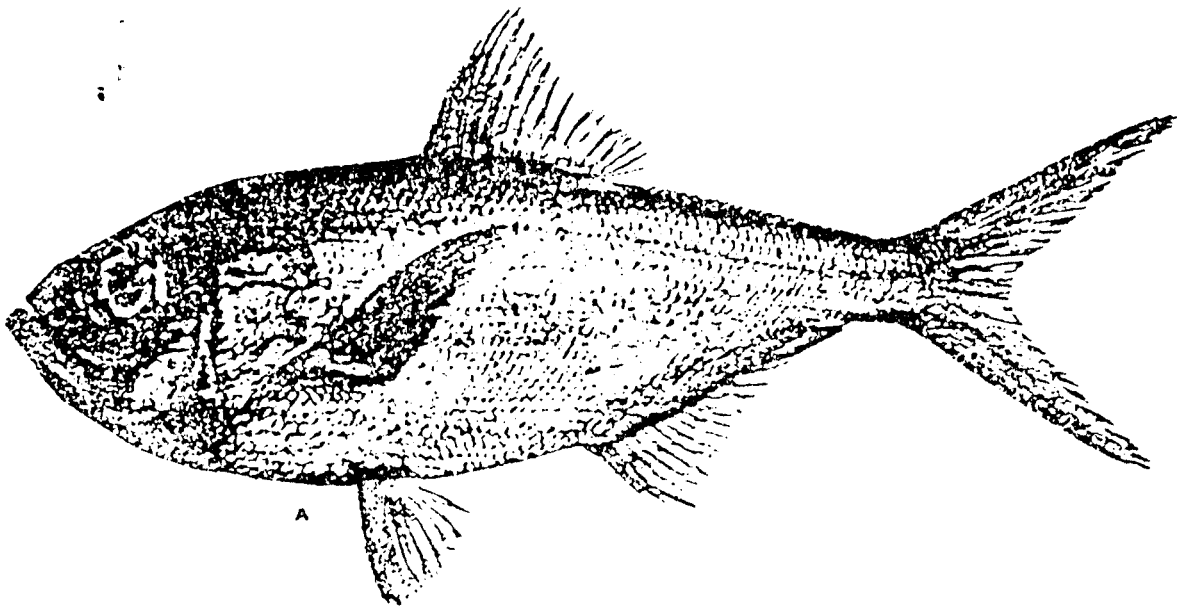
Fish Finder:

Name Raiyo-Denki
 Model Number 1802
 Frequency 60 Khz
 Paper Type Wet X Dry
 Speed of Advance 12 mm/min

Figure 1.--Kitakami Maru



Pelagic armorhead (Pentaceros richardsoni)



Alfonsin (Beryx splendens)

Figure 3.--Illustrations of adult armorhead and alfonsin.