

JC-97-17 Cruise Report
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Introduction

This report summarizes data collected by scientists from the National Marine Fisheries Service, Auke Bay Laboratory in Juneau, Alaska during the October survey of juvenile salmon and associated species. The survey was conducted aboard the NOAA Ship *John N. Cobb* between 2-7 October 1997 and was the last of five monthly cruises scheduled in the northern region of Southeast Alaska.

Methods

Seventeen of the twenty scheduled stations were at least partially sampled during the cruise and included: four stations along an offshore transect at Icy Point, four stations along a transect in Cross Sound, four stations along a transect in Icy Strait, one station along the upper Chatham transect (UCA), and four stations in the inshore waters (Table 1). Three stations along the upper Chatham transect (UCB, UCC, and UCD) were not sampled due to inclement weather. A 20-min surface rope trawl haul, a CTD cast, a double oblique bongo sample, and at least one vertical plankton sample with a conical net was taken at each station except ABM, UCA, and FPR. Shallow bottom depths prevented trawling at ABM, and inclement weather prevented trawl and bongo samples at UCA and FPR. All sampling occurred during daylight, between 0700 and 1500 hours (Table 2).

Oceanography

Oceanographic data were collected at each station before or immediately after the trawl haul. CTD data were collected with a Sea-Bird¹ SBE 19 Seacat profiler to 200 m or within 10 m of the bottom. Surface (2-m) temperature and salinity data were also collected at 1-minute intervals with a Sea-Bird SBE 21 thermosalinograph. A conical NORPAC net (50 cm, 243 micron mesh) was used for shallow (20-m) vertical samples; and a conical WP-2 net (57 cm, 202 micron mesh) was used for deep (200-m or 20-m from bottom) vertical samples. Both nets were used for deep vertical net samples at the Icy Point and Auke Bay Monitor stations (Table 2). Double oblique bongo samples were also taken to a depth of 200 m or within 20 m of the bottom using a 60-cm diameter frame with 505 and 333 micron mesh nets. A Bendix T1 bathykymograph was used to determine the maximum sampling depth. General Oceanics flow

¹Reference to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA.

meters were placed inside the bongo net frame and Roshiga flow meters were placed in the deep conical net frames to determine filtered volumes. Ambient light intensities (W/m^2) were recorded at each station with a Li-Cor Model 189 radiometer.

Fish sampling

Fish were sampled with a Nordic 264 rope trawl modified to fish the surface water directly astern of the ship. The trawl was 184 m long and had a mouth opening of 24 m \times 30 m (depth \times width). A pair of 3-m foam-filled Lite trawl doors, each weighing 544 kg (91 kg submerged), were used to spread the trawl open. The NOAA Ship *John N. Cobb* is a 29-m research vessel built in 1950 with a main engine of 325 horsepower and a cruising speed of 10 knots. Based on earlier gear trials, the actual fishing dimensions of the trawl was estimated to be 18 m vertical (head rope to foot rope) and 24 m horizontal (wingtip to wingtip), with a spread between the trawl doors ranging from 52 to 60 m. Mesh sizes of the trawl from the jib lines aft to the cod end were 162.6 cm, 81.3 cm, 40.6 cm, 20.3 cm, 12.7 cm, and 10.1 cm over the 129.6 m meshed portion of the rope trawl. A 6.1 m long, 0.8-cm knotless liner was sewn into the cod end. To keep the trawl headrope at the surface, a cluster of three meshed A-4 Polyform buoys were tethered to each wingtip of the headrope and two B-4 Polyform floats were attached to the center of the headrope. The trawl was fished with 137 m of 1.6-cm wire main warp attached to each door with three 55-m, two 1.0-cm, and one 1.3-cm wire bridles.

The trawl was fished for 20 min at 1.5 m/sec (3 knots), covering approximately 1.9 km (1.0 nautical mile) across a station. Over-water trawl speed was monitored from the vessel using an electromagnetic current meter (Marsh McBirney, Inc., Model 2000-21). Station coordinates were targeted as the midpoint of the trawl haul; however, current, swell, and wind conditions dictated the direction the trawl was set.

After each haul, the fish were anesthetized, identified, enumerated, measured, labeled, bagged, and frozen. Tricaine methanesulfonate (MS-222) was used to anesthetize the fish. After the catch was sorted, fish and squid were measured to the nearest mm fork length (FL) (squid: mantle length) with a Limnotera FMB IV electronic measuring board. All fish and squid were measured except the few large catches of sablefish, squid, and capelin, which were subsampled for lengths. All fish were frozen immediately after lengths were recorded. For large catches of juvenile salmon, blue-ice packs were used to minimize tissue decomposition and gastric activity in the stomachs. All juvenile salmon were examined for the presence of coded-wire tags (CWTs) through either a visual scan of missing adipose fins or by the use of a CWT detector onboard the vessel.

Onboard diet analysis was completed after juvenile salmon and associated species were measured and frozen. The fish were measured, and weighed and their stomachs were removed, weighed, and classified by fullness. Stomach contents were removed, identified to the nearest convenient taxonomic level, and quantified to the nearest 10% of total volume. Empty stomachs were weighed, and content weight was determined by subtraction.

Results and Discussion

Surface (2-m) temperatures and salinities were higher over the shelf along the Icy Point transect than in the inside waters. Salinities were highest in Cross Sound and along the Icy Point

transect, and decreased with distance offshore. The lowest salinities were found near the Taku River at station TKI (Table 2). Surface temperatures and salinities on the outer coast were lower than measurements taken during the August survey (Orsi and Murphy 1997). Along the Icy Point transect temperature and salinity decreased from an average of 15.1°C to 12.0°C and from 31.0‰ to 30.4‰. In the inside waters, along the Icy Strait transect, surface temperatures also decreased from an average of 12.0°C to 9.4°C, but salinity increased from 25.3‰ to 27.9‰ (Table 2).

A visual scan of the zooplankton samples as they were collected, indicated considerable variability in the zooplankton samples among the stations. Zooplankton appeared to be most abundant in Icy Strait, due to large numbers of small to medium sized copepods (1.0-2.5 mm) and moderately high numbers of gammarid amphipods. Zooplankton composition in the coastal samples consisted of primarily small to medium sized copepods (1.0-2.5 mm), juvenile euphausiids, cheatognaths, and gammarid amphipods. Inshore samples had a high percentage of phytoplankton and small copepods (1.0-2.0 mm). Table 3 lists the haul numbers, net types, and bottle numbers of the zooplankton samples collected during the survey.

A total of 5,396 fish and squid were captured with the rope trawl, representing fifteen different species (Tables 4 and 5). The numbers of each fish species captured in order of decreasing abundance were: 4,710 sablefish (*Anoplopoma fimbria*), 257 capelin (*Mallotus villosus*), 200 pink salmon (*Oncorhynchus gorbushcha*), 41 chum salmon (*O. keta*), 27 Pacific herring (*Clupea harengus*), 18 sockeye salmon (*O. nerka*), 14 chinook salmon (*O. tshawytscha*), 12 Soft sculpin (*Gilbertidia sigalutes*), 10 Pacific spiny lumpsucker (*Eumicrotremus orbis*), 4 coho salmon (*O. kisutch*), 2 starry flounder (*Platichthys stellatus*), 1 walleye pollock (*Theragra chalcogramma*), 1 smooth lumpsucker (*Aptocyclus ventricosus*), 1 Pacific sandfish (*Trichodon trichodon*). In addition to the fish catch, 97 squid (Gonatidae) were captured.

Over the past five months of sampling, October was the only month in which the catches of salmon were higher in the outer coast region than the inside waters of Southeast Alaska. In October, over half of all the salmon were captured over the continental shelf at Icy Point; whereas only 15% of the salmon were captured in Icy Strait, which has been consistently the location of highest catches of salmon in previous months (Orsi et al. 1997). October was also the first month in which the number of pink salmon captured was significantly greater than chum salmon (Table 6).

Numbers of chum salmon relative to pink salmon has steadily declined since juvenile salmon were first captured in June and may reflect the large pulse of hatchery chum migrating through this seaward migration corridor. Chum to pink salmon ratios declined from a high of 6.3 to 1 in June to 5.0 to 1 in July (Orsi et al. 1997). In August, pink salmon slightly outnumbered chum salmon by a ratio of 1.1 to 1 (Orsi et al. 1997), and by October, were the predominate salmon species, outnumbering chum salmon by a ratio of 4.8 to 1 (Table 6). Pink salmon were also the most frequently encountered fish species during the survey (Table 6). No CWTs were found in the salmon captured during the survey.

Average lengths of juvenile salmon varied considerably among species. Coho salmon had the largest average length of all salmon species (290 mm), followed by chinook (248 mm), chum (214 mm), pink (200 mm), and sockeye salmon (178 mm) (Table 6). Average lengths of pink, chum, and coho salmon increased by over 40 mm since the August survey (chum = 52 mm, pink = 45 mm, and coho = 42 mm), whereas the average lengths for sockeye and chinook salmon only increased by 23 mm and 26 mm, respectively (Orsi and Murphy 1997). The average length of

sablefish (266 mm) was slightly larger than pink and chum salmon and increased by 43 mm since August (Orsi and Murphy 1997).

The onshore movement of juvenile sablefish was apparent when comparing catches from August and October. In August, catches of juvenile sablefish were highest at the station farthest from shore (IPD; 65 km from shore), and declined with distance to shore (Orsi and Murphy 1997). Whereas, in October, catches of sablefish were highest at the station farthest inshore (IPA; 6.9 km from shore) and declined with distance from shore (Table 5). No juvenile sablefish were captured at the station closest to shore in August (Orsi and Murphy 1997); and no sablefish were captured at the station farthest from shore in October (Table 5). Additionally, October was the first month sablefish were captured in inside waters (Table 5).

Locations of peak abundance of forage species such as squid and capelin which could serve as an alternative prey source to salmon appeared to be consistent with distributions found in previous months of sampling in 1997. Catches of squid were highest along the Icy Point transect and increased with distance from shore in this survey and in May (Orsi 1997a). Catches of squid in all other months were low. Catches of capelin reached their peak abundance levels in Cross Sound in this survey and in June (Orsi, 1997b). Catches of capelin in all other months were low. The catch distribution of herring, however, was quite different than previous months (Orsi et al. 1997). In previous months, inshore stations (specifically, TKI and LFC) had consistently large catches of herring (Orsi et al. 1997). In this survey, all herring were captured at Cross Sound and Icy Point stations, and no herring were captured in the inshore stations (Table 5).

Onboard stomach analysis was performed on 1 adult Pacific sandfish and 10 juvenile sablefish. Crab megalops were the primary diet item of sablefish selected for onboard stomach analysis and the sandfish diet was unidentifiable. A number of the sablefish stomachs examined contained a high volume of liquid which may have been the result of regurgitation. As sablefish were being measured, one was found with a caudal fin protruding from its mouth. The fish was removed and identified as a juvenile chum salmon (121 mm) which was 87 mm smaller than the smallest chum salmon captured along the Icy Point transect and 93 mm smaller than the average length of chum salmon captured during the survey. This particular predation event may have been the result of predation in the trawl during sampling due to the large size of the salmon relative to the sablefish (222 mm), and because of the minimal digestion that had occurred; however it does point to the importance of size in determining predation risk regardless of whether predation occurred during sampling or not.

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Literature Cited

- Orsi, J. A. 1997a. Unpublished cruise report JC-97-06, May 1997. Auke Bay Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 11305 Glacier Highway, Juneau, AK 99801-8626, USA.
- Orsi, J. A. 1997b. Unpublished cruise report JC-97-09, June 1997. Auke Bay Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 11305 Glacier Highway, Juneau, AK 99801-8626, USA.
- Orsi, J. A., and J. M. Murphy. 1997. Unpublished cruise report JC-97-14, August 1997. Auke Bay Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 11305 Glacier Highway, Juneau, AK 99801-8626, USA.
- Orsi, J. A., J. M. Murphy, and A. L. J. Brase. 1997. Survey of juvenile salmon in the marine waters of southeastern Alaska, May-August 1997. (NPAFC Doc. 277) 27 p. Auke Bay Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 11305 Glacier Highway, Juneau, AK 99801-8626, USA.

Table 1.--Localities and coordinates of stations sampled in marine waters of the northern region of Southeast Alaska, 2-7 October 1997.

Locality	Station	Latitude	Longitude	Offshore distance (km)	Inter-transect distance (km)	Depth (m)
Auke Bay	ABM	58° 22.00' N	134° 40.00' W	1.5	-----	60
Taku Inlet	TKI	58° 11.19' N	134° 11.71' W	2.2	-----	175
False Point Retreat	FPR	58° 22.00' N	135° 00.00' W	1.8	-----	680
Lower Favorite Channel	LFC	58° 20.98' N	134° 43.73' W	1.5	-----	75
Upper Chatham Strait	UCA	58° 04.57' N	135° 00.08' W	3.2	3.2	400
	UCB	58° 06.22' N	135° 00.91' W	6.4	3.2	100
	UCC	58° 07.95' N	135° 01.69' W	6.4	3.2	100
	UCD	58° 09.64' N	135° 02.52' W	3.2	3.2	200
Icy Strait	ISA	58° 13.25' N	135° 31.76' W	3.2	3.2	128
	ISB	58° 14.22' N	135° 29.26' W	6.4	3.2	200
	ISC	58° 15.28' N	135° 26.65' W	6.4	3.2	200
	ISD	58° 16.38' N	135° 23.98' W	3.2	3.2	234
Cross Sound	CSA	58° 09.53' N	136° 26.96' W	3.2	3.2	300
	CSB	58° 10.91' N	136° 28.68' W	6.4	3.2	60
	CSC	58° 12.39' N	136° 30.46' W	6.4	3.2	200
	CSD	58° 13.84' N	136° 32.23' W	3.2	3.2	200
Icy Point	IPA	58° 20.12' N	137°07.16' W	6.9	16.8	160
	IPB	58° 12.71' N	137°16.96' W	23.4	16.8	130
	IPC	58° 05.28' N	137°26.75' W	40.2	16.8	150
	IPD	57° 56.37' N	135°38.31' W	60.0	16.8	200

Table 2.--Numbers and types of data collected at each station during the juvenile salmon survey in the northern region of Southeast Alaska by the NOAA Ship *John N. Cobb*, 2-7 October 1997.

Date	Time	Haul	Station	Light (wt/m ²)	Temp (2m)	Salinity (2m)	Trawl	CTD	Norpac (20m)	Bongo	WP-2	Norpac (deep)
10/2/97	1030	1084	TKI	15	8.70	20.70	1	1	1	1	--	--
10/3/97	0831	1085	IPA	6	11.10	29.60	1	1	1	1	1	1
10/3/97	1111	1086	IPB	125	12.50	30.70	1	1	1	1	1	1
10/3/97	1338	1087	IPC	320	12.40	30.70	1	1	1	1	1	1
10/3/97	1702	1088	IPD	300	12.30	30.60	1	1	1	1	1	1
10/4/97	0835	1089	CSA	35	11.50	30.80	1	1	1	1	--	--
10/4/97	1018	1090	CSB	190	9.20	31.10	1	1	1	1	--	--
10/4/97	1210	1091	CSC	250	8.30	31.20	1	1	1	1	--	--
10/4/97	1400	1092	CSD	304	8.40	30.90	1	1	1	1	--	--
10/5/97	0831	1093	ISA	21	8.60	28.70	1	1	1	1	--	--
10/5/97	0958	1094	ISB	43	8.70	28.40	1	1	1	1	--	--
10/5/97	1151	1095	ISC	280	8.90	28.00	1	1	1	1	--	--
10/5/97	1331	1096	ISD	134	8.90	26.40	1	1	1	1	--	--
10/6/97	0758	1097	UCA ²	29	8.70	29.10	--	1	1	--	--	--
10/6/97	1250	1098	LFC	70	8.50	24.30	1	1	1	1	--	--
10/6/97	1401	1099	ABM ³	164	8.60	24.20	--	1	3	1	1	1
10/7/97	0852	1100	FPR ³	46	8.40	27.80	--	1	1	--	--	--

²Rope trawl and bongo data were not collected due to inclement weather.

³Rope trawl data were not collected due to shallow bottom depths.

Table 3.-- Bottle numbers, net types, mesh sizes, and filtered volumes of zooplankton samples taken during the juvenile salmon survey in the northern region of Southeast Alaska by the NOAA Ship *John N. Cobb*, 2-7 October 1997. Filtered volumes for the deep vertical plankton tows will be available after the flow meters are calibrated.

Haul	Station	Bottle	Net type	Mesh size (μm)	Depth (m)	Filtered volume (m^3)
1084	TKI	297	norpac	243	20	--
1084	TKI	298	bongo	333	130	170.78
1084	TKI	299	bongo	505	130	168.41
1085	IPA	300	norpac	243	20	--
1085	IPA	301	norpac	243	130	--
1085	IPA	302	wp-2	202	130	--
1085	IPA	303	bongo	333	110	149.56
1085	IPA	304	bongo	505	110	148.91
1086	IPB	305	norpac	243	20	--
1086	IPB	306	norpac	243	100	--
1086	IPB	307	wp-2	202	100	--
1086	IPB	308	bongo	333	90	122.37
1086	IPB	309	bongo	505	90	119.92
1087	IPC	310	norpac	243	20	--
1087	IPC	311	norpac	243	110	--
1087	IPC	312	wp-2	202	110	--
1087	IPC	313	bongo	333	100	116.5
1087	IPC	314	bongo	505	100	115.3
1088	IPD	315	norpac	243	20	--
1088	IPD	316	norpac	243	200	--
1088	IPD	317	wp-2	202	200	--
1088	IPD	318	bongo	333	220	234.66
1088	IPD	319	bongo	505	220	230.72
1089	CSA	320	norpac	243	20	--
1089	CSA	321	bongo	333	235	232.6
1089	CSA	322	bongo	505	235	229.2
1090	CSB	323	norpac	243	20	--
1090	CSB	324	bongo	333	40	59.9
1090	CSB	325	bongo	505	40	59.4
1091	CSC	326	norpac	243	20	--
1091	CSC	327	bongo	333	122	128
1091	CSC	328	bongo	505	122	121.8
1092	CSD	329	norpac	243	20	--
1092	CSD	330	bongo	333	170	203.3
1092	CSD	331	bongo	505	170	160.7
1093	ISA	332	norpac	243	20	--
1093	ISA	333	bongo	333	60	75.6
1093	ISA	334	bongo	505	60	73.76
1094	ISB	335	norpac	243	20	--
1094	ISB	336	bongo	333	170	187.94
1094	ISB	337	bongo	505	170	185.57
1095	ISC	338	norpac	243	20	--
1095	ISC	339	bongo	333	210	234.85
1095	ISC	340	bongo	505	210	231.08

Haul	Station	Bottle	Net type	Mesh size (μm)	Depth (m)	Filtered volume (m^3)
1096	ISD	341	norpac	243	20	--
1096	ISD	342	bongo	333	220	212.25
1096	ISD	343	bongo	505	220	208.83
1097	UCA	344	norpac	243	20	--
1097	UCA	345	bongo	333	240	237.4
1097	UCA	346	bongo	505	240	231.13
1098	LFC	348	norpac	243	20	--
1098	LFC	349	bongo	333	90	90.75
1098	LFC	350	bongo	505	90	86.86
1099	ABM	351	norpac	243	20	--
1099	ABM	352	norpac	243	20	--
1099	ABM	353	norpac	243	20	--
1099	ABM	354	norpac	243	45	--
1099	ABM	355	wp-2	202	45	--
1099	ABM	356	bongo	333	45	54.64
1099	ABM	357	bongo	505	45	53.78
1100	FPR	358	norpac	243	20	--

Table 4.-- Numbers of salmon caught and frozen during the juvenile salmon survey in the northern region of Southeast Alaska by the NOAA Ship *John N. Cobb*, 2-7 October 1997. All salmon were measured.

Date	Haul	Station	Species	Stage	Total caught	Frozen individually	Frozen group
10/2/1997	1084	TKI	Chinook	Juvenile	8	8	0
10/3/1997	1085	IPA	Pink	Juvenile	114	51	63
10/3/1997	1085	IPA	Chum	Juvenile	11	11	0
10/3/1997	1085	IPA	Sockeye	Juvenile	3	3	0
10/3/1997	1085	IPA	Coho	Juvenile	1	1	0
10/3/1997	1086	IPB	Pink	Juvenile	3	3	0
10/3/1997	1086	IPB	Sockeye	Juvenile	2	2	0
10/3/1997	1087	IPC	Pink	Juvenile	4	4	0
10/3/1997	1087	IPC	Sockeye	Juvenile	1	1	0
10/4/1997	1089	CSA	Pink	Juvenile	23	23	0
10/4/1997	1089	CSA	Chum	Juvenile	8	8	0
10/4/1997	1089	CSA	Sockeye	Juvenile	2	2	0
10/4/1997	1089	CSA	Sockeye	Juvenile	2	2	0
10/4/1997	1090	CSB	Pink	Juvenile	24	24	0
10/4/1997	1090	CSB	Chum	Juvenile	3	3	0
10/4/1997	1090	CSB	Sockeye	Juvenile	4	4	0
10/4/1997	1090	CSB	Sockeye	Juvenile	4	4	0
10/4/1997	1091	CSC	Pink	Juvenile	4	4	0
10/4/1997	1092	CSD	Pink	Juvenile	2	2	0
10/4/1997	1092	CSD	Chum	Juvenile	4	4	0
10/4/1997	1092	CSD	Sockeye	Juvenile	2	2	0
10/4/1997	1092	CSD	Chinook	Juvenile	2	2	0
10/4/1997	1092	CSD	Chinook	Juvenile	2	2	0
10/5/1997	1093	ISA	Pink	Juvenile	4	4	0
10/5/1997	1093	ISA	Chum	Juvenile	4	4	0
10/5/1997	1095	ISC	Pink	Juvenile	9	9	0
10/5/1997	1095	ISC	Chum	Juvenile	7	8	0
10/5/1997	1095	ISC	Coho	Juvenile	1	1	0
10/5/1997	1095	ISC	Chinook	Juvenile	4	4	0
10/5/1997	1096	ISD	Pink	Juvenile	6	6	0
10/5/1997	1096	ISD	Sockeye	Juvenile	4	4	0
10/5/1997	1096	ISD	Coho	Juvenile	2	2	0
10/6/1997	1098	LFC	Chum	Juvenile	1	1	0
10/6/1997	1098	LFC	Pink	Juvenile	7	7	0
Total =					277	215	63

Table 5.-- Numbers of nonsalmonid fish and squid caught, measured, and frozen during the juvenile salmon survey in the northern region of Southeast Alaska by the NOAA Ship *John N. Cobb*, 2-7 October 1997.

Species	Haul	Station	Caught	Measured	Frozen		Stomach Analysis
					Individual	Group	
Spiny lumpsucker	1084	TKI	2	2	0	0	0
Starry flounder	1084	TKI	1	1	0	0	0
Pacific sandfish	1084	TKI	1	1	0	0	1
Sablefish	1085	IPA	4512	100	0	482	0
Pacific herring	1085	IPA	4	4	0	4	0
Sablefish	1086	IPB	51	51	0	51	0
Sablefish	1087	IPC	111	111	0	111	10
Squid	1088	IPD	97	75	0	0	0
Sablefish	1089	CSA	5	5	0	5	0
Capelin	1089	CSA	28	11	0	11	0
Pacific herring	1089	CSA	3	3	0	3	0
Starry flounder	1089	CSA	1	1	0	0	0
Sablefish	1090	CSB	29	29	0	29	0
Pacific herring	1090	CSB	11	11	0	11	0
Capelin	1091	CSC	103	43	0	43	0
Pacific herring	1091	CSC	1	1	1	0	0
Spiny lumpsucker	1091	CSC	1	1	0	0	0
Capelin	1092	CSD	124	24	0	24	0
Pacific herring	1092	CSD	8	8	0	8	0
Capelin	1093	ISA	2	2	0	2	0
Soft sculpin	1093	ISA	1	1	0	0	0
Spiny lumpsucker	1093	ISA	2	2	0	0	0
Soft sculpin	1094	ISB	8	8	0	0	0
Spiny lumpsucker	1094	ISB	4	4	0	0	0
Sablefish	1095	ISC	2	2	0	2	0
Soft sculpin	1095	ISC	2	2	0	0	0
Spiny lumpsucker	1095	ISC	1	1	0	0	0
Walleye pollock	1095	ISC	1	1	0	0	0
Soft sculpin	1096	ISD	1	1	0	0	0
Smooth lumpsucker	1096	ISD	1	1	0	0	0
Total			5118	507	1	803	11

Table 6.-- Length, frequency of occurrence (FO), and life history stage (LHS) of measured fish and squid captured with a rope trawl in the marine waters of the northern region of Southeast Alaska aboard the NOAA ship *John N. Cobb*, 2-7 October 1997.

Common name	Species	n	Fork length (mm) ³			FO	LHS ¹
			Min	Max	Avg		
Pink salmon	<i>Oncorhynchus gorbuscha</i>	200	159	243	200.0	11	J
Chum salmon	<i>O. keta</i>	41	145	318	214.2	7	J
Sockeye salmon	<i>O. nerka</i>	18	139	213	177.7	7	J
Chinook salmon	<i>O. tshawytscha</i>	14	195	311	248.0	3	J
Coho salmon	<i>O. kisutch</i>	4	277	301	289.5	3	J
Sablefish	<i>Anoplopoma fimbria</i>	299 ²	199	287	226.2	6	J
Capelin	<i>Mallotus villosus</i>	79 ²	37	109	80.1	4	L,J,I
Squid ³	Gonatidae	75 ²	27	45	35.7	1	J
Pacific herring	<i>Clupea harengus</i>	27	71	204	169.6	5	J,I,A
Soft sculpin	<i>Gilbertidia sigalutes</i>	12	20	35	27	4	J
Pac. spiny lump sucker	<i>Eumicrotremus orbis</i>	10	0	81	54.3	5	J,I,A
Starry flounder	<i>Platichthys stellatus</i>	2	298	333	315.5	2	I,A
Walleye pollock	<i>Theragra chalcogramma</i>	1	338	338	338	1	I,A
Smooth lump sucker	<i>Aptocyclus ventricosus</i>	1	184	184	184	1	I,A
Pacific sandfish	<i>Trichodon trichodon</i>	1	194	194	194	1	A

¹ L=larvae, J=juvenile or post larvae in first year at sea (i.e., age -.0), I=immature age -.1 or older in pre-spawn condition, and A=adult near age of maturity.

² Numbers captured were: 4,710 sablefish, 257 capelin, and 97 squid.

³ Mantle lengths were used for squid