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Salmon Stomach Contents From the Alaska Troll Logbook Program 1977-84

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SALMON STOMACH CONTENTS FROM THE
ALASKA TROLL LOGBOOK PROGRAM, 1977-84

by

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ABSTRACT

Stomach content samples from troll-caught salmon have been submitted voluntarily by participants in the Alaska Troll Logbook Program since 1977. These samples serve to confirm identifications of -foods reported in the logbooks, to document unusual prey and occurrences of prey outside expected geographical ranges, and to obtain information on life histories of several prey species. number of samples received each year is too small for statistical analysis of the feeding habits of salmon but indicates the variety of foods available to salmon each year.

Twenty-eight species of fish and 37 species (or categories) of invertebrates have been identified from 240 samples. The greatest variety of prey items came from chinook salmon (Oncorhynchus tshawytscha) and coho salmon (O. kisutch) samples, and the least from chum salmon (O. keta) and sockeye salmon (O. nerka) samples, as expected from the respective numbers of samples (97, 92, 5, and 1). Comparisons of species found in the samples to species recorded in the logbooks indicate that hard-to-identify and, unusual species are overrepresented in the samples. Juveniles of one species of squid (Loligo opalescens) and one of fish (Pleurogrammus monopterygius) were found outside their normal geographic ranges. Confirmed identifications of several species of juvenile rockfishes (Sebastes spp.) and juvenile sablefish (Anoplopoma fimbria) make logbook data useful in selecting the study areas and sampling periods for nonsalmonid investigations.

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INTRODUCTION

Pacific salmon (Oncorhynchus spp.) prey on over 40 species of fish and over 20 species of invertebrates (Thorsteinson 1982). Some prey species are rarely taken, while others may dominate the salmon diet for a period of time or within a specific area. Knowledge of salmon feeding habits is important to fishermen and resource managers. Through identification of stomach contents, fishermen may alter fishing strategies to be more effective. Resource managers may use the same information as an indicator of environmental conditions. Scientists may apply the data to qualitative (and occasionally quantitative), predictive models of fish movements, concentrations, growth, and survival..

Because of, the importance of and need for continuing data, stomach content records have been part of the Alaska Troll, Logbook Program since 1976. Logbook participants are asked to rank daily, by order of abundance or perceived importance, the food items of troll-caught salmon. Although the logbook contains illustrations of the most common food species, stomach samples are needed to confirm the fishermen's identifications. The samples also document unusual food items, presence of prey species outside normal geographic ranges, and provide information on life histories of some of these species. This report presents analyses of stomach content samples submitted by trollers from 1977 through 1984.

METHODS

Each year, waterproof labels (Fig. 1) and instructions for submittal of stomach samples are distributed to fishermen with the Alaska Trollers Association Logbooks. Some years, plastic bags for stomach collection

**U .S. NATIONAL MARINE FISHERIES SERVICE
AUKE BAY FISHERIES LABORATORY
FISHERMAN'S LOG BOOK COOPERATIVE STUDY
FISH FOOD SAMPLE**

Taken from
Kind of fish _____ **Length** _____

Locality, _____

D a t e _____ **T i m e** _____ **Depth** _____

Gear _____ **Bait used.** _____

Collected by _____

77-995

Figure 1. -- Alaska Troll Logbook Program stomach sample label.

(Whirlpacks') have also been supplied. The trollers collecting stomachs are asked to label and separately, bag the contents, from each fish. The samples may be preserved with chemical fixatives (formaldehyde, 'ethyl alcohol,, or isopropyl alcohol), salted, frozen, or kept on ice until delivered to a receiving station. In the past, samples have been left with representatives of the Alaska Department of Fish and Game (ADF&G) or cooperating fish processing plants or, in a few cases, delivered directly to the Auke Bay Laboratory. When delivered at a processing plant or to ADF&G, the samples are kept frozen (if not preserved in a chemical fixative) with salmon heads gathered for the ADF&G microwire tag-reading laboratory. The ADF&G then delivers the samples, to the Auke Bay Laboratory.

At the Auke Bay Laboratory, the samples are thawed, contents identified, and appropriate size measurements taken. Fish and invertebrates-, are identified to species when possible. Measurements are standard, lengths for fish, mantle lengths 'for cephalopods, and total lengths for crustaceans. and other invertebrates.'

RESULTS

Stomach samples have been taken each year since 1976 (Table 1). Unfortunately, the 1976 samples were lost in a Ketchikan cold storage plant. Additional samples are known to have been lost in 1980 and 1981 (personal communications from fishermen). Efforts to obtain samples were much reduced from 1982 through 1984; consequently, very few samples were obtained in spite of the nearly constant numbers of logbook participants.

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

Table 1.--Summary of, stomach samples received and participation by trollers, 1976-84.

Year	No. samples received	Logbooks returned	No. vessels sending samples	Analysis by
1976	0 ^a	52	--	--
1977	49	99	14+ ^b	Thorsteinson
1978	53 ^c	106	11+	Thorsteinson and Wing
1979	57	75	14+	Wing and Flora
1980	23	123	7+	Wing
1981	24	113	3	Wing
1982	6	116	3	Wing
1983	8	117	2	Wing
1984	20	90 (estimate)	5	Wing
Total no. samples	240			

^aSeveral samples were received at a Ketchikan cold storage plant in 1976 but were not forwarded to the Auke Bay Laboratory.

^bSome samples were received with incomplete collection tables.

^cIncludes 16 samples found dried and pasted in one logbook.

Stomach samples were submitted from the five salmon species harvested by the Alaska troll fishery (Appendix). Chinook salmon (Oncorhynchus tshawytscha) are most strongly represented (97) and found in all months, except December and January when few trollers are fishing. Coho salmon (O. kisutch) are second in number (92) but found only from July through November because the season is closed until mid-July and coho are generally not available after mid-October. The Alaskan trollers do not target on the remaining three species; thus, few stomachs were received from pink salmon (O. gorbuscha) (19), chum salmon (O. keta) (5), and sockeye salmon (O. nerka) (1). About 10% of the samples were received with labels that were either incomplete or missing entirely, - but in only 28 cases was the salmon species not known. Four samples of diseased or anomalous tissues were received.

Of the 235 stomach samples containing food, 174 contained fish remains. Twenty-eight species of fish were identified, although some larval fish could be identified only to family or genus level (Table 2). In most cases, only one species of fish was identified per sample because the fishermen selected the best specimens. In contrast, stomachs containing mostly invertebrates often had several species identified including larval or small juvenile fish (Appendix).

The most frequently encountered fish species was Pacific herring (Clupea harengus pallasii), followed by Pacific sand lance (Ammodytes hexapterus), prowlfish (Zaprora silenus), and sablefish (Anoplopoma fimbria) (Table 2). The herring and sablefish, unlike the other species, came mostly from unopened stomachs requested in 1977, 1978, and 1979. Other species were usually turned in as selected specimens--either because the fishermen wished to know the identity or considered the find unusual (personal communications with fishermen). Prowlfish, sablefish, and Pacific sandfish (Trichodon trichodon)

Table 2.--Fish species identified in stomach samples from the Alaska Troll Logbook Program, 1977-84.

Prey fish	Salmon	Number of occurrences	Comments
Pacific herring <u>Clupea harengus</u> <u>pallasi</u>	Chinook Coho	14 10	Illustrated in logbook
Pink salmon <u>Oncorhynchus</u> <u>gorbuscha</u>	Coho	1	
Unidentified salmon <u>Oncorhynchus</u> sp.	Unidentified	1	
Surf smelt <u>Hypomesus pretiosus</u>	Coho	1	Smelts not separated by species in logbook
Capelin <u>Mallotus villosus</u>	Chinook Coho	2 1	
Eulachon (river smelt) <u>Thaleichthys pacificus</u>	Chinook	1	Capelin illustrated in logbook
Northern smoothtongue <u>Bathylagus stilbius</u>	Chinook Unidentified	1 1	
Northern lampfish <u>Stenobranchius</u> <u>Teucopsarus</u>	Chinook Coho Pink Sockeye	3 1 4 1	
Blue lanternfish <u>Tarletonbeania</u> <u>crenularis</u>	Chinook	1	
Unidentified lampfishes Myctophidae	Coho Pink	1 1	
Pacific cod <u>Gadus macrocephalus</u>	Unidentified	1	All juveniles

Table 2.--Continued.

Prey fish	Salmon	Number of occurrences	Comments
Walleye pollock <u>Theragra</u> <u>chalcogramma</u>	Chinook Coho Pink Unidentified	1 7 1 1	Illustrated in logbook
Unidentified Gadidae	Coho	1	
Saury <u>Cololabis</u> <u>saira</u>	Chinook Coho Unidentified	2 5 1	Illustrated in logbook
Threespine stickleback <u>Gasterosteus</u> <u>aculeatus</u>	Coho	1	
Pacific sandfish <u>Trichodon</u> <u>trichodon</u>	Coho	6	Illustrated in logbook
Ronquil or bathymaster Bathymasteridae	Chinook	2	Late larvae
Pricklebacks or shanny Stichaeidae	Chinook Coho Unidentified	2 1 1	Late larvae
Wolf-eel <u>Anarrhichthys</u> <u>ocellatus</u>	Chinook Coho Unidentified	6 3 1	Larvae; juveniles to 45 cm
Prowfish <u>Zaprora</u> <u>silenus</u>	Chinook Coho Unidentified	8 12 1	All juveniles Adult illustrated in logbook
Pacific sand lance <u>Ammodytes</u> <u>hexapterus</u>	Chinook Coho Chum Pink Unidentified	12 6 1 1 1	Mostly juveniles and some adults; both il- lustrated in logbook

Table 2.--Continued.

Prey fish	Salmon	Number of occurrences	Comments
Rockfishes (<u>Sebastes</u> spp.)			
<u>Sebastes alutus</u>	Chinook	2	
<u>Sebastes caurinus</u>	Chinook	1	All small juveniles
	Coho	1	(Age 0 ⁺ or 1 ⁺) fish
<u>Sebastes zacentrus</u>	Chinook	4	
	Coho	1	
Sablefish (black cod)			
<u>Anoplopoma fimbria</u>	Chinook	4	Juveniles; illustrated
	Coho	10	in logbook
	Unidentified	2	
Kelp greenling			
<u>Hexagrammos decagrammus</u>	Coho	2	
	Pink	1	
Rock greenling			
<u>Hexagrammos lagocephalus</u>	Coho	1	All pelagic juveniles
Ling cod			
<u>Ophiodon elongatus</u>	Coho	2	
Atka mackerel			
<u>Pleurogrammus monopterygius</u>		Coho	1
Irish lords			
<u>Hemilepidotus</u> spp.	Chinook	11	
	Coho	2	All pelagic post larvae
	Unidentified	1	
Big mouth sculpin			
<u>Hemitripterus bolini</u>	Chinook	1	Small juveniles
Arrowtooth flounder			
<u>Atheresthes stomias</u>	Chinook	2	Late larvae

samples often had labels asking for a return on the identifications. Larvae and early juveniles of Irish lords (Hemilepidotus spp.), greenlings (Hexagrammos spp.), rockfish (Sebastes spp.), and some other species were returned in response to our request for specimens of these groups.

Invertebrates were found in 79 of the samples, yielding 37 species or categories (Table 3). Cephalopods were most often submitted for identification (23 samples) and were represented by at least five species of squid and octopus spp. Euphausiids ranked second (21 samples, four species), with Thysanoessa spinifera the dominant species. Amphipods (six species), crab larvae (five species), pteropods (three species), and polychaete worms (two species) were modestly common. Copepods, isopods, hydromedusae ctenophores, and salps were found in single cases. The most unexpected invertebrate was a sponge, Esperiopsis digitata, probably a piece of drift mistakenly consumed.

The widest variety (15 species) of invertebrate foods was observed in the chinook salmon samples. However, variety in coho salmon and pink salmon samples was not significantly less (12 and 13 species, respectively). The low number (six) of species found in chum salmon stomachs reflects the low number of samples.

DISCUSSION

The collection of salmon stomachs by the Alaska Troll Logbook Program has several objectives. The primary objective is to confirm the identity of foods reported in the logbooks by the fishermen. The secondary objective is to document unusual prey and occurrences of prey outside their expected geographical ranges and to obtain information on life histories of several prey species. Collection of stomachs for quantitative analyses of salmon

Table 3.--Invertebrates identified in stomach samples from the Alaska Troll Logbook Program, 1977-84.

Prey fish	Salmon	Number of occurrences	Comments
Sponges (Porifera)			
<u>Esperiopsis digitata</u>	Chinook	1	Accidental
Jellyfish (Coelenterates)			
Unidentified Hydromedusae	Chum	2	
Comb Jellyfish (Ctenophores)			
<u>Mertensia ovum</u>	Chum	1	
Salps (Urochordates)			
<u>Salpa</u> sp.	Chum? Pink?	2	
Segmented worms (Polychaetes)			
<u>Nereis brandti</u>	Chinook	1	Up to 30 cm long
<u>Nereis</u> sp.	Chinook	5	Not <u>N. brandti</u>
Mollusca squids		17	
<u>Loligo opalescens</u>	Chinook	3	Includes range extension to Cross Sound
	Coho	1	
<u>Berryteuthis magister</u>	Chinook	2	
<u>Gonatopsis borealis</u>	Chinook	4	Squid not separated by species in logbook
	Coho	2	
<u>Gonatus madokai</u>	Chinook	1	
<u>Gonatus onyx</u>	Chinook	1	
<u>Gonatus</u> sp.	Chinook	3	
	Coho	1	
Octopus			
<u>Octopus</u> sp. (juveniles)	Chinook	6	
	Coho	1	
Snails (Pteropods)			
<u>Limacina helicina</u>	Chum	1	<u>Limacina helicina</u> Illustrated in Logbook
	Pink	1	
	Unidentified	5	
<u>Clio pyramidata</u>	Coho	2	
<u>Clione limacina</u>	Chum	4	
	Pink	2	
	Unidentified	1	

Table 3. -- Continued.

Prey fish	Salmon	Number of occurrences	Comments
Crustaceans			
Krill (euphausiids)			
<u>Euphausia pacifica</u>	Coho	1	<u>Thysanoessa</u> sp. Illustrated in logbook
<u>Thysanoessa longipes</u>	Coho	1	
<u>Thysanoessa raschi</u>	Chinook	2	
	Pink	1	
<u>Thysanoessa spinifera</u>	Chinook	9	
	Coho	2	
	Pink	2	
	Unidentified	5	
Amphipoda			
<u>Themisto libellula</u>	Chinook	1	
	Coho	2	
<u>Themisto pacifica</u>	Chinook	1	
	Pink	2	
	Coho	1	
<u>Hyperia medusarum</u>	Unidentified	1	
<u>Primno macropa</u>	Coho	2	
	Pink	1	
<u>Eusirus</u> sp.	Pink	1	
<u>Cyphocaris challengerii</u>	Pink	1	
	Unidentified	6	
Crab larvae (zoea and megalopa)		11	
Brachyarian (True crabs)			
<u>Cancer</u> sp.	Coho	4	Contents were dominated by megalopa of <u>Oregonia</u> and <u>Cancer</u> sp. One pink contained all species and stages.
	Pink	5	
<u>Oregonia gracilis</u>	Pink	2	
	Coho	2	
<u>Chionoecetes</u> sp.	Pink	2	
	Pink	1	
Lithodid (Stone and king crabs)	Pink	1	
Paqurid (Hermit crabs)	Coho	1	
	Pink	2	
Isopods			
<u>Rocinella angustata</u>	Chinook	1	
	Unidentified	1	
<u>Gnorimosphaeroma oregonense</u>	Pink	1	
Copepods			
<u>Calanus plumchrus</u>	Chinook	1	Probably taken accidentally while feeding on euphausiids.
<u>Euchaeta elongata</u>	Pink	1	
Harpacticoid	Pink	1	

diets is a third, but minor, objective. The first two objectives are being met by the materials submitted; however, the collections are inadequate for statistical analyses.

Inspection of the species recorded in the logbooks compared to species submitted for identification indicates that the fishermen are conservative in their identifications of food fishes. Abundant and easily recognized fish such as herring and sand lance (needlefish) are underrepresented. Modestly common but harder to identify species such as prowfish, sand fish, and juvenile sablefish (black cod) were most often submitted in 1977 and 1978 prior to being included in the logbook identification guides. Less easily identified fishes that are juveniles or considered unusual have often been submitted in response to our request for these materials or because the fishermen wish to have them identified. Once the fishermen have learned to recognize certain species, they submit fewer specimens of those species.

Invertebrate prey have been more difficult for fishermen to identify. Krill (euphausiids) were initially lumped by fishermen with juvenile shrimp, and some of the earlier samples of krill were submitted as examples of what they called "baby shrimp." Since inclusion of illustrations in the logbooks, the incidence of shrimp reported in the logbooks has dropped to a relatively low (0.1 to 2.4% in 1983) frequency, in contrast to the high (up to 55%) frequencies in 1976 and 1977 for some outer coast areas and -months. No decapod shrimp have been found in any of the stomach contents submitted through 1984. Krill is the most frequently reported invertebrate prey and is most frequently reported during the spring chinook season. Other crustacean prey, especially crab larvae and amphipods, are identified only to the broad category because the fishermen have no common names for them and identification requires examination under a microscope. The isopods were

submitted because the individual fishermen considered these to be unusual foods. Copepods have not been selected for listing by the fishermen but were found mixed with euphausiids.

Squids and octopuses are noted in the 'logbooks but not identified to species by the fishermen. These, like the snails (pteropods), require detailed examination to be identified and were submitted at the request of the biologists to determine which squids and pteropods are taken by salmon. The most difficult invertebrate prey to identify have been the "jellies" (hydromedusae, comb jellyfish, and salps). Fishermen frequently mention a gray "mush" as common in chum salmon and pink salmon stomachs. The importance of these prey is difficult to assess because the various "jellies" in a partially digested state are hard to separate and because few chum salmon and pink salmon are examined. I found a fourth group of "jellies," Oikopleura sp. abundant in small (~30 cm) pink salmon off Noyes Island in 1982. These were, recognizable because stomachs were examined immediately after capture of the fish.

The secondary objective of the stomach collection has been realized in many cases. Records of some of the unusual prey animals, such as the Nereid worms, are useful in documenting the opportunistic feeding behavior of various salmon species and the seasonal abundance or susceptibility to predation of particular, animals. A side benefit of these identifications is the maintenance of interest by the fishermen, as well as the increasing awareness by fishermen of ecological interactions and use of biological principles in managing and maintaining the fishery. For example, fish species such as the walleye pollock, sculpins, and rockfishes are 'recognized as important components of salmon diets, whereas previously these were considered only as nuisance species. The question is slowly changing from "What good are they?" to "Who else eats them?"

The occurrences of saury (Cololabis saira), the market squid (Loligo opalescens), and possibly the pteropod Clio pyramidata are examples of prey animals found outside their expected ranges. The saury are usually associated with temperate oceanic waters. Their occurrence in the Alaskan troll-fishery areas is likely due to moderately (14°-16° C) warm waters of the southern and central Gulf of Alaska moving inshore during late summer or during warmer-than-average summers. The same may be true of the pteropod Clio pyramidata; however, very little data exist on the distribution and abundance of this snail in the Gulf of Alaska. The market squid is an inshore or neritic species. Prior to its occurrence in the logbook samples, it had not been recorded in Alaska since 1958. Reid (1961) recorded this species in Alaskan troll-caught salmon stomachs, but no additional specimens from southeastern Alaska were confirmed until about 1980. Logbook samples have confirmed the presence of juvenile Loligo as far north as Cross Sound. This may be indicative of a long-term warming trend (McLain 1984) or a population increase. In recent years, p o p u l a t i o n s in Washington and British Columbia also appear to have increased greatly.

The logbook stomach samples are a useful source of information on the life histories of several Alaskan fishes. Although the numbers of samples are still too few for drawing definitive conclusions, biologists are using the logbook reports and the confirmed identifications of juvenile fishes such as sablefish, rockfish, and salmon to select study areas and optimum sampling periods for investigation of nonsalmonid fishes.

The third objective of the logbook stomach samples has not been met--quite possibly because the first two objectives have higher priority and can be fulfilled with less effort. Obtaining quantitative information from stomach content data requires numerous samples each year and the inclusion of

both full and empty unopened stomachs. Few fishermen have time to voluntarily gather large numbers of stomachs' and keep the detailed records necessary for such a study. Additionally, most trollers have very limited space for frozen samples or to safely store formaldehyde-preserved samples. However, the fishermen will collect select samples to confirm identifications recorded in the logbooks and to satisfy their own curiosity about prey animals they consider rare or unusual. The latter is especially true if they believe the research biologist can obtain the needed information from a few select samples. To the biologists' advantage, this often results in higher, quality specimens than those available from unopened, frozen, stomach samples.

RECOMMENDATIONS AND CONCLUSION

The collection of stomach samples should be continued as a part of the Alaska Troll Logbook Program. To maintain the quality of food data in the logbooks, we need continuing samples to confirm the foods recorded and to obtain voucher specimens of rare or unusual foods. Additionally, the receipt of samples and their analyses within season can alert biologists to which species the fishermen have difficulty identifying or which occur in unusual numbers. This is an aid in planning the analyses of the logbook data. An increase in the number of samples is desirable.

Increasing the number of samples turned in requires more activity by biologists using logbook food records. The highest numbers of samples were submitted during the 3 years 1977-79, when I participated in port meetings each spring. At those meetings, the fishermen were given a brief talk on why the samples were important, how to identify many of the foods, and which samples were particularly desired. The meetings also gave fishermen an opportunity to discuss with biologists the food species of their particular

interest. This personal interchange resulted in a greater number of useful samples in those 3 years than in years without personal contacts. Travel funds for these port meetings have not been available in recent years.

Another means of increasing samples would be, for biologists to have a more rapid means of returning the results of specific analyses to the fishermen, much in the manner that fishermen receive a response to tag returns. Presently, stomach samples are accumulated and processed only once or twice a year, and biologists have no means of directly contacting the fishermen. Interim reports through the Alaska Trollers Association were attempted in 1978 through 1981 (Thorsteinson 1978; Wing 1979, 1981; Wing and Thorsteinson 1979). These reports, however, appeared to stop at administrative levels and did not reach the fishermen. Possibly stomach analysis results could be featured irregularly in a newsletter to the troll fleet.

Obtaining sufficient samples for statistical analyses and particularly obtaining unopened stomachs may require an approach similar to that used by Reid (1961) in 1957-58. Reid supplied collecting equipment and purchased stomachs at the rate of one or two per day from each of 18 participating trollers. The monetary reward provided additional incentive for stomach collections. Although this may assure more samples, it would not necessarily be useful in confirming logbook identifications or in providing unusual or rare specimens. Studies requiring the purchase of samples should probably be used independently of the voluntary submittal program.

The salmon stomach contents collected by the Alaska Troll Logbook Program serve the primary purpose of confirming identifications of foods recorded in logbooks. They have documented unusual and rare prey species and have provided information on the natural history of species not normally available

through other research programs. The samples have not been adequate for quantitative analyses. Obtaining sufficient samples for quantitative analyses would require a willingness by research agencies to purchase samples and expand public relation contacts with the fishing fleet.

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APPENDIX

Table 1.--Analysis of 1977 Troll Logbook Program stomach samples.

Table 2.--Analysis of 1978 Troll Logbook Program stomach samples.

Table 3.--Analysis of 1979 Troll Logbook Program stomach samples.

Table 4.--Analysis of 1980 Troll Logbook Program stomach samples.

Table 5.--Analysis of 1981 Troll Logbook Program stomach samples.

Table 6.--Analysis of 1982 Troll Logbook Program stomach samples.

Table 7.--Analysis of 1983 Troll Logbook Program stomach samples.

Table 8.--Analysis of 1984 Troll Logbook Program stomach samples.

Table 9.--Items found in 16 samples pasted in one 1979 Troll Logbook Program logbook.

Table 1. -- Analysis of 1977 Logbook Program stomach samples.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
1	7/ 8/77	Cape Cross	Michael Douville		
2	7/17/77	Surge Bay	Grant Trask	3 Chinook	Prowfish (<u>Zaprora silenus</u>)
3	7/26/77	Cape Spencer	Bert Warm		
4	8/ 2/77	Fairweather	John Hohman	7 Coho	
5	8/ 6/77	Fairweather	Dorothy Osborne		
6	8/12/77	Cape Spencer	Ralph Guthrie		
7	8/18/77	Cape Spencer	Wally Warm		
8	8/19/77	Fairweather	K. F. Gdu		
9	8/24/77	Pt. Harris	Bert C. Warm		
10	--	Unknown	Dan Neff		
11	7/27/77	Deer Harbor	F/V <u>Renown</u>		
12	7/28/77	Deer Harbor	F/V <u>Renown</u>		Pacific sand lance (<u>Ammodytes hexapterus</u>)
13	7/28/77	Deer Harbor	F/V <u>Renown</u>	5 Chinook	
14	8/13/77	Surge Bay	Wally Warm	1 Pink	
15	8/28/77	Surge Bay	Ruth Kilppert		
16	9/ 4/77	Surge Bay	Wally Warm		
17	7/22/77	Deer Harbor	F/V <u>Renown</u>		

Table 1.--Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
18	7/28/77	Deer Harbor	Unknown		
19	7/28/77	Deer Harbor	Unknown	3 Chinook	Pacific herring (<u>Clupea harengus pallasii</u>)
20	7/28/77	Deer Harbor	Wally Warm	3 Coho	
21	8/13/77	Yakobi Rock	Wally Warm		
22	8/31/77	Cape Spencer	Wally Warm		
23	7/25/77	Cape Cross	Tom & Dorothy Osborne		
24	7/25/77	Surge Bay	Grant Trask		
25	7/27/77	Graves Harbor	F/V <u>Renown</u>		
26	8/ 5/77	Fairweather	Dorothy Osborne	2 Chinook	Juvenile sablefish (<u>Anoplopoma fimbria</u>)
27	8/19/77	Graves Harbor	Donna Love	3 Coho	
28	8/23/77	Table Bay	Michael Douville	3 Unknown	
29	9/ 1/77	Deer Harbor	Wally Warm		
30	--	Pelican	K. F. Gdu		
31	7/18/77	Cape Cross	Michael Douville	Coho	
32	8/10/77	Dixon Reef	Wally Warm	Coho	Juvenile walleye pollock (<u>Theragra chalcogramma</u>)
33	8/23/77	Kingsmill Point	Bert Warm	Coho	
34	8/31/77	Cape Spencer	Wally Warm	Coho	

Table 1.--Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
35	8/20/77	Noyes Is.	Craig Fishery	Coho	Unidentified Gadidae
36	6/ 8/77	Cape Cross	Tom & Dorothy Osborne	2 Chinook	Juvenile wolf-eel (<u>Anarrhichthys ocellatus</u>)
37	7/19/77	Cape Cross	John Hohman	1 Unknown	
38	--	Unknown	Pelican Cold Storage		
39	8/ 3/77	Gull Cove	Bert Warm	1 Pink	Northern lampfish (<u>Stenobranchius leucopsarus</u>)
40	--	Baker Is.	Grant Trask	1 Coho	Irish lord larvae (<u>Hemilepidotus</u> sp.)
41	7/25/77	Cape Cross	John Hohman	1 Coho	Crab megalops (Order Brachyura)
42	8/11/77	Noyes Is.	Craig Fishery	1 Pink	
43	8/29/77	Duke Is.	Michael Douville	1 Pink	Amphipods (<u>Cyphocaris challengerii</u>)
44	8/22/77	Coronation Is. Helm Point	M. Douville	1 Coho	Krill or euphausiids (<u>Thysanoessa spinifera</u>)
45	7/10/77	Fairweather	John & Maxine Hohman	1 Chum	Snails (mostly <u>Limacina helicina</u> with a few <u>Clione limacina</u>)
46	7/13/77	Fairweather	Michael Douville	Chinook	Northern eight-armed squid (<u>Gonatopsis borealis</u>)
47	7/31/77	Yakobi Rock	Wally Warm	Chinook	Gonatid squid (<u>Gonatus madokai</u>)
48	8/10/77	Noyes Island	Craig Fishery	1 Coho	Hepatoma (a cancerous liver)
49	8/11/77	Noyes Island	Craig Fishery	1 Coho	Empty stomach

Table 2.--Analysis of 1978 Troll Logbook Program stomach samples.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents and size of prey
1	5/16/78	Deer Harbor	Dave Belles	Chinook	2 Irish lord (<u>Hemilepidotus</u> sp., 25-28 mm)
2	5/24/78	Deer Harbor	Darrel Rodgers	Chinook	1 Irish lord (<u>Hemilepidotus</u> sp., 26 mm)
3	6/ 9/78	Cape Fairweather	Eric Wyatt	Chinook	<u>Octopus</u> sp. (25 mm ML)
4	6/ 9/78	Cape Fairweather	Eric Wyatt	Chinook	Euphausiids (krill, 20-25 mm) <u>Thysanoessa spinifera</u> (1,000's)
5	6/15/78	Deer Harbor	Darrel Rodgers	Chinook	<u>Octopus</u> sp. (30 mm ML)
6	6/27/78	Location unknown	Flo Kinney	Coho	2 Sandfish (~25 mm) 3 <u>Octopus</u> sp. (~20 mm ML)
7	6/28/78	Spencer Spit	Flo Kinney	Chinook	1 Prowfish 4 Irish lords
8	6/28/78	Spencer Spit	Flo Kinney	Chinook	1 <u>Octopus</u> sp. 20 <u>Amphipods</u> (<u>Themisto pacifica</u>)
9	6/28/78	Surge Bay	Bert Warm	Coho	1 Irish lord (24 mm)
10	7/6/78	Funter Bay	Dick Hand	Pink	Larval pollock
11	7/8/78	Surge Bay	Wally Warm, Jr.	Coho	2 Walleye pollock (40-50 mm)
12	7/29/78	Dixon Harbor	Charles E. Wood	Coho	1 Wolf-eel (245 mm)
13	8/1/78	Cape Cross	Bert Warm	Chinook	1 Prowfish (155 mm)
14	8/14/78	Hoktaheen	Bert Warm	Coho	1 Stomach from cleaned salmon (250 mm)

Table 2. --Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents and size of prey
15	8/14/78	Cape Ommaney	Charles Thatcher	Coho	"Diseased kidney specimen" (bacterial kidney disease)
16	8/19/78	Location unknown	W. A. Warm	Coho	1 Juvenile herring (70 mm)
17	8/24/78	Graves Harbor	Bert Warm	Coho	3 Sandfish (70-90 mm)
18	8/24/78	West Yakobi Is.	Lou Barr	Chinook	9 Wolf-eels (345-410 mm)
19	8/25/78	Lituya Bay	Lou Barr	Coho	Pteropods (snails, <u>Clio pyramidata</u>)
20	8/26/78	LaPerouse Glacier	Bert Warm	Coho	1 Sandfish (87 mm)
21	8/31/78	Surge Bay	Bert Warm	Coho	2 Sablefish (Black cod, 155-170 mm)
22	9/1/78	Surge Bay	Bert Warm	Coho	1 Sand lance (needlefish, 175 mm)
23	9/1/78	Surge Bay	Bert Warm	Chinook	2 Wolf-eels (370-430 mm)
24	9/2/78	Unknown	F/V <u>Olympic</u>	Coho	4 Sandfish (65-90 mm)
25	9/3/78	Surge Bay	Bert Warm	Coho	3 Pink salmon (210-220 mm)
26	9/4/78	Surge Bay	Bert Warm	Coho	1 Herring (180 mm)
27	9/5/78	Cross Sound	W. A. Warm	Coho	3 Sandfish (70-90 mm)
28	9/7/78			Coho	1 Sandfish (75 mm)
29	9/7/78			Coho	Juvenile pollock (65-80 mm)

Table 2.--Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents and size of prey
30	9/-/78	Cape Cross	Tom Osborne	Chinook	1 Sablefish (151 mm)
31	9/-/78	Cape Cross	Tom Osborne	Chinook	1 Prowfish (191 mm)
32	9/-/-	Cape Cross	Tom Osborne	Chinook	1 Blue lanternfish (60 mm)
33	9/-/78	Cape Cross	Tom Osborne	Chinook	1 Saury (220 mm)
34	9/-/78	Cape Cross	Tom Osborne	Chinook	1 Saury (260 mm)
35	9/-/78	Cape Cross	Tom Osborne	Chinook	Fluid filled cysts caused by unidentified parasite
36	-/-/78	West Yakobi Is.	Lou Barr	Unknown	2 Prowfish (137-160 mm)
37	No label		Unknown		1 Juvenile salmon (<u>Oncorhynchus</u> sp., 95 mm)

Table 3.--Analysis of 1979 Troll Logbook Program stomach samples.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
1	4/19/79	Noyes Is.	C. Thatcher	Chinook	22 Large Polychaete worms (probably <u>Nereis brandti</u>) 1 small larval fish
2	5/21/79	Noyes Is.	C. Thatcher	Chinook	~36 Sand lance (needlefish, 95-110 mm; 95 g in stomach, intestine packed with vertebrae and other sand lance bones)
3	6/ 1/79	Fairweather	J. Siebert	Chinook	1 Eulachon (river smelt, <u>Thaleichthys pacificus</u>)
4	6/ 5/79	Inner Fairweather Bank	F/V <u>Pacific Sun</u>	Chinook	14 Euphausiids (krill) 1 fish skeleton (100 mm)
5	6/ 7/79	Inner Fairweather Bank	F/V <u>Pacific Sun</u>	Chinook	2 Herring (large)
6	6/ 8/79	Kruzof Is.	R. Guhl	Chinook	1 Parasitic isopod (<u>Rocinella angustata</u>) (Often seen attached to sides of fish.)
7	6/10/79	Inner Fairweather Bank	F/V <u>Pacific Sun</u>	Chinook	21 Post-larval fish (either pricklebacks or gunnels) 1 Unidentifiable fish
8	6/10/79	Inner Fairweather Bank	F/V <u>Pacific Sun</u>	Chinook	Empty
9	6/11/79	Hoktaheen	R. Smith	Chinook	6 Post-larval <u>Hemilepidotus</u> sp. (true Irish lords)

Table 3.--Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
10	6/14/79	Off Lituya	Nick Yurko	Chinook	17 Post-larval <u>Hemilepidotus</u> sp. (true Irish lords, nice specimens) 3 <u>Octopus</u> sp. (small)
11	6/16/79	Off Lituya	Nick Yurko	Chinook	~90 Sand lance (needlefish) 34 <u>Euphasiids</u> (krill) 1 <u>Calanus plumchrus</u> (copepod)
12	6/17/79	Shelikof Bay	Eric Wyatt	Chinook	1 Herring 8 Sand lance (needlefish)
13	6/18/79	Area 113	F/V <u>Vibes</u>	Chum	~160 <u>Clione limacina</u> (a planktonic shell-less snail; large)
14	6/18/79	Cape Edgecumbe	F/V <u>Pacific Sun</u>	Chinook	1 Herring (large) 1 Herring (probably)
15	6/18/79	Cape Edgecumbe	F/V <u>Pacific Sun</u>	Unknown	109 Sand lance (needlefish, 2.5-6.5 inches long)
16	6/21/79	Inside Fairweather	Wally A. Warm, Jr.	Coho	1 Post-larval <u>Stichaeiid</u> (shanny or prickleback)
17	6/22/79	No Location	Wally A. Warm, Jr.	Chinook	5 Post-larval Irish lords
18	7/10/79	Three Hill Is.	J. Craig	Coho	5 Sand lance (small) 6 Capelin (large)
19	7/12/79	Idaho Inlet	K. Hazard	Pink	1 Amphipod (<u>Eusirus</u> sp.) 1 Unidentified crustacean A few snails (<u>Limacina helicina</u>) A few crab larvae A few fish vertebrae

Table 3. -- Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
20	7/12/79	Icy Strait	K. Hazard	Pink	~100 Snails (<u>Limacina helicina</u>) 3 Amphipods (<u>Themisto pacifica</u>) 2 Amphipods (<u>Primno macropa</u>) 4 Copepods (<u>Euchaeta japonica</u>) A few crab larvae 1 Harpacticoid copepod
21	7/15/79	Inian Is.	D. Page	Pink	Euphausiids (<u>Thysanoessa spinifera</u>)
22	7/23/79	Three Hill Is.	Joe A. Craig	Coho	60 Sand lance (juveniles)
23	7/23/79	Three Hill Is.	Joe A. Craig	Coho	103 Sand lance (juveniles)
24	7/26/79	Inian Is.	F/V <u>Euphoria</u>	Pink	1 Lanternfish (<u>Stenobranchius leucopsarus</u> , 10.9 cm).
25	7/26/79	Cape Edgumbe	Al Brookman	Coho	2 Herring 5 Herring (probable)
26	7/26/79	Cape Edgumbe	Al Brookman	Coho	1 Herring 2 Herring (probable)
27	7/26/79	Cape Edgumbe	Al Brookman	Chinook	1 Herring
28	7/26/79	Cape Edgumbe	Al Brookman	Chinook	1 Herring
29	7/27/79	Cape Edgumbe	Al Brookman	Chinook	1 Herring 1 Herring (probable)
30	7/27/79	Vitshari Rocks	Al Brookman	Coho	2 Herring

Table 3. --Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
31	7/28/79	Vitshari Rocks	Al Brookman	Chinook	20 Sand lance (needlefish)
32	7/28/79	Biorka Is.	Al Brookman	Coho	1 Herring 1 Herring (probable)
33	7/28/79	Surge Bay	Eric Wyatt	Coho	57 Sand lance (needlefish)
34	7/28/79	Cross Sound Pass	T. Akely	Pink	2 Lanternfish (<u>Stenobranchius leucopsarus</u> , 10.2-10.4 cm)
35	7/30/79	Surge Bay	Eric Wyatt	Chinook	100 Sand lance (needlefish)
36	July 79	Icy Strait	--	Pink	1 Lanternfish (Myctophidae, possibly a <u>Stenobranchius</u>) 1 Euphausiid (<u>Thysanoessa</u> sp.) A few snails <u>Limacina helicina</u>
37	8/ 8/79	No Location	F/V <u>Euphoria</u>	Coho	1 Prowfish
38	8/ 8/79	Area 154	F/V <u>Euphoria</u>	Coho	1 Sablefish (black cod)
39	8/15/79	Cross Sound	Wally A. Warm, Jr.	Coho	1 Prowfish
40	8/21/79	Cross Sound	Eric Wyatt	Coho	2 Juvenile sablefish 1 Juvenile prowfish 3 Juvenile sand lance 2 Northern eight-armed squid (<u>Gonatopsis borealis</u>)
41	8/25/79	Cross Sound	Wally A. Warm, Jr.	Coho	1 Saury
42	8/28/79	Hoktaheen 113	F/V <u>Euphoria</u>	Coho	2 Saury

Table 3. -- Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
43	8/28/79	Hoktaheen 113	F/V <u>Euphoria</u>	Chinook	1 Prowfish
44	8/30/79	Cross Sound	Bert C. Warm	Chinook	1 Saury
45	8/31/79	Cross Sound	Ginny J. Warm	Coho	1 Saury
46	8/31/79	Cross Sound	Konnie Z. Warm	Coho	1 Juvenile sablefish
47	9/ 2/79	Salisbury Sound	Richard J. Guhl	Coho	1 Juvenile sablefish
48	9/ 4/79	Pt. Amelia, Kruzof Is.	Richard J. Guhl	Coho	1 Saury
49	9/ 6/79	Hoktaheen	--	Coho	1 Northern eight-armed squid (<u>Gonatopsis borealis</u>)
50	--	Cape Edgecumbe	Eric Wyatt	Coho	7 Herring (large)
51	--	Coronation Is.	Label disintegrated	--	5 Juvenile pollock 6 Juvenile squid A few euphausiids
52	--	No Label	--	--	2 Juvenile sablefish 2 Saury
53	--	No Label	--	--	1 Juvenile sablefish
54	--	No Label	--	--	1 Juvenile Pacific cod

Table 3.--Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
55	--	No Label	--	--	164 Post-larval Irish lords (<u>Hemilepidotus</u> sp.) 25 Post-larval fish (either prickle-backs or gunnels).
56	--	No Label	--	--	1 Possibly a larval wolf-eel
57	--	No Label	--	--	1 Parasitic isopod (<u>Rocinella angustata</u>)

Table 4.--Analysis of 1980 Troll Logbook Program stomach samples.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
1	5/24/80	Fairweather Grounds	Mary Todd Andersen	Chinook	2 Herring (19-23 cm) Euphausiids (<u>Thysanoessa spinifera</u>)
2	late July 80	Fairweather Grounds	Mike Reddekopp	Chinook	1 Juvenile herring (6.9 cm)
3	late July 80	Fairweather Grounds	Mike Reddekopp	Chinook	11 Juvenile pollock (5.5-6.5 cm)
4	late July 80	Fairweather Grounds	Mike Reddekopp	Chinook	1 Juvenile sablefish (12.5 cm)
5	late July 80	Fairweather Grounds	Mike Reddekopp	Chinook	1 Juvenile prowfish (13.5 cm)
6	late July 80	Fairweather Grounds	Mike Reddekopp	Chinook	2 Squid (<u>Gonatus</u> sp.)
7	8/4/80	Cape Edgecumbe	Grant H. Trask	Coho	1 Juvenile wolf eel (45 cm)
8	8/4/80	Spencer Flats	Wally A. Warm, Jr.	Coho	1 Juvenile prowfish (14.6 cm)
9	8/5/80	Spencer Flats	Wally A. Warm, Jr.	Coho	1 Juvenile pollock (8.0 cm)
10	8/7/80	Surge Bay	Wally A. Warm, Jr.	Chinook	1 Herring (22 cm)
11	8/7/80	Surge Bay	Wally A. Warm, Jr.	Coho	1 Herring (21 cm)
12	8/7/80	Hoktaheen	Lou Barr	Pink	300+ Shelled snails (<u>Limacina helicina</u>) A few shell-less snails (<u>Clione limacina</u>)
13	8/8/80	Dixon Harbor	Wally A. Warm, Jr.	Coho	100's of crab larvae (two species)

Table 4.--Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
14	8/13/80	Timbered Is.	D. Pitcher	Coho	1 Juvenile kelp greenling (8.0 cm, <u>Hexagrammos decagrammus</u>)
15	8/26/80	Hoktaheen	Lou Barr	Chinook	1 Juvenile rockfish (<u>Sebastes</u> sp. #1)
16	8/26/80	Hoktaheen	Lou Barr	Coho	1 Juvenile rockfish (<u>Sebastes</u> sp. #2)
17	8/28/80	Hoktaheen	Lou Barr	Coho	1 Squid (<u>Gonatus</u> sp.)
18	8/29/80	LaPerouse Glacier	Lou Barr	Coho	1 Surf smelt (<u>Hypomesus pretiosus</u>)
19	8/29/80	LaPerouse Glacier	--	Coho	1 Juvenile pink salmon (16 cm)
20	8/31/80	Lituya Bay	Lou Barr	Coho	1 Juvenile rockfish (<u>Sebastes</u> sp.)
21	9/2/80	Cape Edgcumbe	Grant H. Trask	Coho	1 Saury (30+ cm)
22	9/6/80	Hoktaheen	Lou Barr	Chinook	1 Sponge (<u>Esperiopsis digitata</u>)
23	8/12/80	Icy Point	Bert C. Warm	Coho	Well developed paired testes with poorly developed, stringy ovarian tissue

Table 5. --Analysis of 1981 Troll Logbook Program stomach samples.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
1	5/ 5/81	No local given	Earl E. Krygier	Chinook	1 herring (12 cm) 1 unidentified fish backbone Several polychaete worms (<u>Nereis</u> sp.)
2	5/ 9/81	Polka Rock	Earl E. Krygier	Chinook	1 Sand lance (12 cm) 1 Stickleback (6 cm) 50+ Polychaete worms (<u>Nereis</u> sp.)
3	5/25/81	Hoktaheen	Lou Barr	Chinook	37 Big mouth sculpins (<u>Hemitripterus bolini</u> , 5-6 cm) 1 Irish Lord (<u>Hemilepidotus</u> sp., 2+ cm)
4	6/ 2/81	Hoktaheen	Lou Barr	Chinook	60 Euphausiids (<u>Thysanoessa spinifera</u> , 22-27 cm) 1 Capelin ? (8.5 cm) 3 Irish Lords (<u>Hemilepidotus</u> sp., ~2.7 cm)
5	6/ 7/81	Hoktaheen	Lou Barr	Chum	100's Shell-less snails (<u>Clione limacina</u>)
6	6/10/81	Hoktaheen	Lou Barr	Chinook	14 Irish lords (<u>Hemilepidotus</u> sp., 22-32 cm)
7	6/15/81	Hoktaheen	Lou Barr	Chinook	1 <u>Octopus</u> sp (1 cm) 2 or 3 Irish lords (2.5 cm) 4+ Euphausiids (<u>Thysanoessa spinifera</u> , 2.5 cm)
8	6/23/81	Hoktaheen	Lou Barr	Chinook	1 Herring 1 Sand lance 70 Euphausiids (<u>T. spinifera</u>)
9	6/24/81	Hoktaheen	Lou Barr	Chum	1 Sand lance (~5 cm) <u>Hydromedusae</u> sp. ? remains

Table 5.--Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
10	7/ 7/81	Hoktaheen	Lou Barr	Chinook	5 Northern eight-armed squid (<u>Gonatopsis borealis</u> , 36-70 cm ML)
11	7/ 8/81	Hoktaheen	Lou Barr	Pink	60 Shell-less snails (<u>Clione limacina</u>) 10 Post-larval herring (<u>Clupea harengus</u>) 1 unidentified fish backbone
12	7/13/81	Pt. Wimbleton	Lou Barr	Pink	3 Beach pill bugs (isopoda, <u>Gnorimosphaeroma oregonense</u>)
13	7/13/81	Pt. Wimbleton	--	Pink	3 Juvenile kelp greenling (<u>Hexagrammos decagrammus</u> , 5.3-6.1 cm SL)
14	7/14/81	N. Inian Pass	Lou Barr	Sockeye	1 Lanternfish (<u>Stenobranchius leucopsarus</u>)
15	7/15/81	Hoktaheen	Lou Barr	Pink	1 Snail (<u>Limacina helicina</u>) A few zoea of Pagurid crab A few zoea of Lithodid crab A few zoea of Brachyuran crab Many melopa of Brachyuran crab Mostly spider crabs (<u>Oregonia</u> sp.) A few Tanner crabs (<u>Chionoecetes</u> sp.) A few unidentified crabs (<u>Cancer</u> ? sp.)
16	7/16/81	Hoktaheen	Heather Barr	Coho	Hermit crab zoea (<u>Pagurus</u> sp.) Brachyuran crab zoea (<u>Oregonia</u> sp.) Brachyuran crab megalopa (<u>Cancer</u> ? sp.)
17	7/19/81	Hoktaheen	Lou Barr	Chinook	<u>Gonatopsis borealis</u> (4.8 cm ML)
18	7/20/81	No location	Lou Barr	Unknown	Snails (6 <u>Clione limacina</u> and 100's of <u>Limacina helicina</u>)

Table 5. --Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
19	7/29/81	Graves Harbor	Lou Barr	Chinook	2 squid (<u>Gonatus</u> sp., 2.9-3.6 cm ML)
20	7/30/81	Three Hills Is.	S. Ford ADF&G	Coho	1 Juvenile Atka mackere1 (<u>Pleurogrammus monopterygius</u> , 12.8 mm SL)
21	8/1/81	Astrolabe	Heather Barr	Pink	1 Euphausiid (<u>Thysanoessa spinifera</u>) 1 Amphipod (<u>Themisto pacifica</u>) Crab Megalopa (<u>Chionoecetes</u> and <u>Cancer</u> ? spp.)
22	8/30/81	Hoktaheen	Lou Barr	Coho	1 Sand lance (9.0 cm TL) 22+ Crab megalopa (<u>Cancer</u> ? sp.)
23	9/19/81	Willoughby Is.	Lou Barr	Chinook	1 Capelin (<u>Mallotus villosus</u> , 9.5 cm TL)
24	9/19/81	Willoughby Is.	Lou Barr	Chinook at 10 fathoms	1 Lanternfish (<u>Stenobranchius leucopsarus</u> , 5.2 cm TL still alive when stomach was opened)

Table 6.--Analysis of 1982 Troll Logbook Program stomach samples.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
1	4/10/82	Whale Bay Baranof Is.	Lou Barr	Chinook	3 <u>Hemilepidotus</u> sp. 1 <u>Sebastes</u> sp. 2 <u>Loligo opalescens</u> 7 <u>Thysanoessa spinifera</u> 2 <u>Polychaetes (Nereis sp.)</u>
2	4/14/82	Whale Bay	Lou Barr	Chinook	1 <u>Loligo opalescens</u>
3	4/8/82	Windy Passage	Lou Barr	Chinook	~60 <u>Thysanoessa spinifera</u> 1 <u>T. longipes</u>
4	6/25/82	Whale Bay	Grant Trask	Chinook	5 <u>Sebastes alutus</u>
5	5/30/82	Fairweather Grounds	Tony Lickler	Chinook	8 <u>Octopus</u> sp.
6	8/18/82	Sarge Bay	Lou Barr	Coho	1 <u>Loligo opalescens</u>

Table 7. --Analysis of 1983 Troll Logbook Program stomach samples.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents
1	7/1/83	Hoktaheen	Lou Barr	Chinook	1 <u>Loligo opalescens</u>
2	7/13/83	Hoktaheen	Lou Barr	Chum	3 <u>Mertensia ovum</u> Hydromedusae <u>Clione limacina</u>
3	7/19/83	Dixon Harbor	Lou Barr	Coho	1 <u>Ophiodon elongatus</u>
4	9/9/83	Surge Bay	Lou Barr	Coho	<u>Clio pyramidata</u>
5	Summer 83	Whale Bay	Jenifer Thomas	Coho	4 <u>Anarrhichthys ocellatus</u>
6	10/13/83	Seymour Canal	Lou Barr	Chinook	1 <u>Gonatopsis borealis</u> 1 <u>Gonatus onyx</u>
7	11/28/83	Dorn Island Seymour Canal	Lou Barr	Chinook	3 <u>Stenobranchius leucopsarus</u> 9 <u>Mallotus villosus</u> (60-75 mm SL)
8	3/19/83	Torch Bay	Lou Barr	Chinook	Polychaete worms (<u>Nereis</u> sp.)

Table 8. -- Analysis of 1984 Troll Logbook Program stomach samples.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents and size of prey
1	2/13/84	Bug Is. Seymour Canal	Lou Barr	Chinook	Euphausiids (<u>T. raschii</u> , 9-19 mm)
2	2/23/84	Dorn Is. Seymour Canal	Lou Barr	Chinook	8 <u>Themisto libellula</u> (20-24mm)
3	2/28/84	Shelikof Bay Kruzof Is.	Lou Barr	Chinook	~30 <u>Sebastes</u> sp. (25-30 mm)
4	3/8/84	Cape Edgumbe	Lou Barr	Chinook	1 Wolf-eel 1 Polychaete larvae (<u>Nereis</u> sp., 45 mm)
5	3/21/84	Cape Edgumbe	Lou Barr	Chinook	1 <u>Sebastes</u> sp. (105 mm) 1 <u>Bathymaster</u> sp. (42 mm) 4 <u>Thysanoessa spinifera</u> (~20 mm)
6	4/ 2/84	Shelikof Bay	Lou Barr	Chinook	2 Octopus sp. (10-13 mm)
7	6/10/84	Fairweather Grounds	F/V <u>Kraken</u>	Chinook	24 <u>Atheresthes stomias</u> (~30 mm) 2 <u>Bathymaster</u> sp. (42-44 mm) 1 <u>Berryteuthis magister</u> (45 mm) 15 <u>Thysanoessa spinifera</u> (24-26 mm)
8	6/29/84	Fairweather Grounds	F/V <u>Kraken</u>	Chinook	36 <u>Atheresthes stomias</u> (32-43 mm) 2 <u>Hemilepidotus</u> sp. (27-28 mm) 1 <u>Gonotus</u> sp. (32 mm) 26 <u>T. spinifera</u> (24-26 mm)
9	7/ /84	Off Yakobi Is.	--	Coho	5 <u>Hexagrammos decagrammus</u> (kelp greenling, 62-67 mm)
10	Late July 84	Near Lituya Bay	W. Warm	Coho	1 <u>Hexagrammos lagocephalus</u> (rock greenling, 67 mm)

Table 8.--Continued.

Sample	Date	Collection Location	Collector	Salmon species	Stomach contents and size of prey
11	8/12/84	Off Lituya Bay	Lou Barr	Coho	1 <u>Ophiodon elongatus</u> (lingcod, 128 mm) 1 <u>Hypomesus pretiosus</u> (surf smelt, 148 mm)
12	8/26/84 9/8/84 9/25/84	N. Inian Pass N. Inian Pass Idaho Inlet	W. Warm Lou Barr Lou Barr	Coho Coho Coho	2 <u>Stenobranchius leucopsarus</u> (52-96 mm) 2 <u>Gasterosteus aculeatus</u> (5-63 mm) 24 <u>Euphausia pacifica</u> (16-21 mm) 10 <u>Thysanoessa spinifera</u> (23-26 mm) 18 <u>Themisto libellula</u> (18-20 mm) 1 <u>Themisto pacifica</u> (5 mm) 1 <u>Primo macropa</u> (10 mm) 1 Myctophid
13	8/ 1/84	Cape Edgumbe	F/V <u>Mickey V</u>	Coho	1 <u>Anoplopoma fimbria</u> (123 mm)
14	7/19/84	Cape Edgumbe	F/V <u>Mickey V</u>	Coho	10 ³ Crab megalopa (75 cc) 1 <u>Ammodytes hexapterus</u> (70 mm) 1 <u>Anoplopoma fimbria</u> ? (55 mm)
15	6/24/84	Amelia Pt	F/V <u>Mickey V</u>	Chinook	5 <u>Ammodytes hexapterus</u> (108-121 mm)
16	7/12/84	Fairweather Grounds	F/V <u>Kraken</u>	Chinook	1 <u>Sebastes alutus</u> (108 mm) 1 <u>Bathylagus stilbius</u> (50 mm) 8 <u>Gonatus madokai</u> (~50 mm)
17	7/19/84	Fairweather Grounds	F/V <u>Kraken</u>	Chinook	3 <u>Bathylagus stilbius</u> ? (50-67 mm) 1 <u>Atheresthes stomias</u> (115 mm) 2 <u>Ammodytes hexapterus</u> , 80-95 mm 3 <u>Anarrhichthys ocellatus</u> (260, 285, and 400 mm)
18	10/14/84	Seymour Canal	Lou Barr	Chinook	2 <u>Stenobranchius leucopsarus</u> (97-100 mm)

Table 8.--Continued.

Sample	Date	Collection location	Collector	Salmon species	Stomach contents and size of prey
19	11/19/84	Pt. Hugh	Lou Barr	Chinook	2 <u>Berrytheuthys magister</u> (30-35 mm ML)
20	11/19/84	Pt. Hugh	Lou Barr	Coho	1 <u>Mallotus villosus</u> (70 mm SL) 1 <u>Mallotus villosus</u> ? (40 mm SL) 5 <u>Primno macropa</u> (13-14 mm) 15 <u>Themisto libellula</u> (19-24 mm)

Table 9.--Items found in 16 samples pasted in one 1979 Troll Logbook Program logbook.

Species	Occurrences	Comment
1. <u>Salpa</u> sp.	2	Accompanied by drawing
2. <u>Bathylagus stilbius</u>	1	California smoothtongue
3. Unidentified fish	1	Otolith and vertebrae
4. <u>Thysanoessa spinifera</u>	3	Large specimens
5. <u>Thysanoessa longipes</u>	1	From coho salmon
6. <u>Thysanoessa</u> sp.	2	Probably <u>T. spinifera</u>
7. <u>Cyphocaris challengeri</u>	6	Common hooded amphipod
8. <u>Hyperia medusarum</u>	1	Commonly with jellyfish
9. Crab zoea	3	One from pink salmon
11. <u>Limacina helicina</u>	1	Most common pteropod
12. Unidentified dried flesh	1	Probably bait discard

