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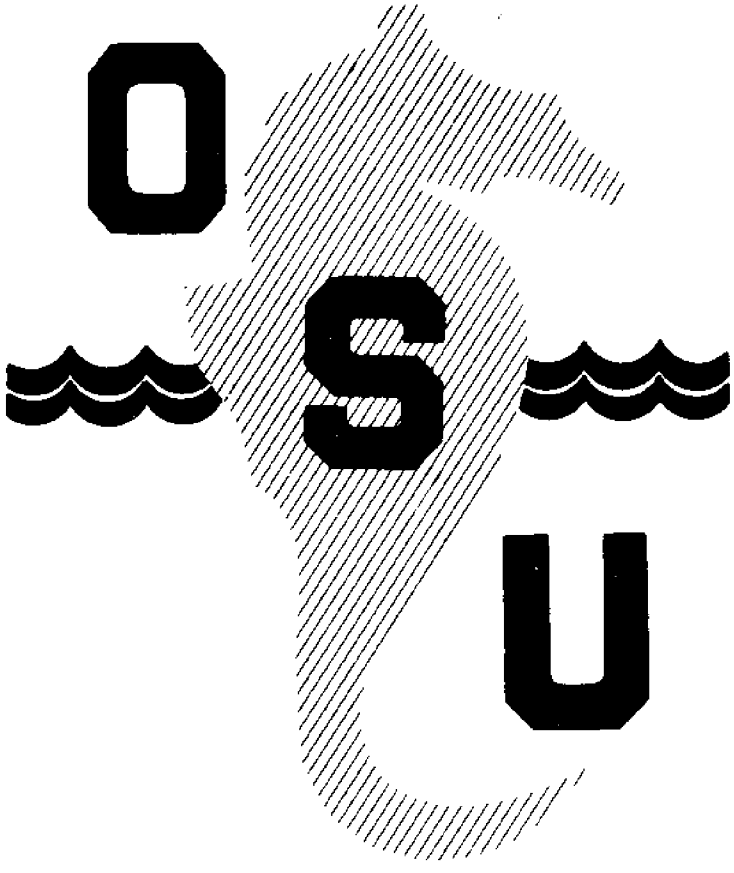

OREGON STATE UNIVERSITY

STUDIES OF JUVENILE SALMONIDS OFF THE OREGON AND WASHINGTON COAST, 1981

by

W. W. Wakefield, J. P. Fisher
and W. G. Pearcy

Oregon State University
Sea Grant College Program

Reference 81-13
November 1981
Cruise Report

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Correction to Oregon State University, School of Oceanography, Cruise Report, Reference 81-13:
page 11, paragr. 4, Two major length modes are apparent for each month: 81-260 mm and 321-560 mm, for May; 101-360 mm and 381-640 mm for June; 121-380 mm and 401-700 mm for July; 121-440 mm and 480-740 mm for August.

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CRUISE REPORT

Cruise Report
Reference 81-13
November 1981

G. Ross Heath
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ACKNOWLEDGMENTS

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TABLE OF CONTENTS

INTRODUCTION

The Oregon State University School of Oceanography conducted purse seining surveys of juvenile salmonids in the ocean off Oregon and Washington during spring and summer 1981. The objectives of the field study were: 1) To collect information on the distribution and abundance of juvenile salmonids off Oregon and Washington; and to relate distributional patterns to oceanographic conditions and forage availability; 2) To make observations on fish movement through recovery of fish marked with coded wire tags and fluorescent pigment; 3) To collect juvenile salmonids for studies of growth, condition and food habits; 4) To access the composition, abundance, and food habits of nekton co-occurring with juvenile salmonids.

MATERIALS AND METHODS

Study Area

Four cruises were conducted during the spring and summer of 1981 (May 16-25, June 9-18, July 9-19, August 8-19). The study area extended from 10 miles (all distances in nautical miles) south of Coos Bay, Oregon to 20 miles north of the Columbia River mouth, a total distance of 204 miles (Figure 1). Transects covered three areas: Columbia River plume (4 transects), off Central Oregon (3 transects), and off Coos Bay (3 transects). Additional transects off Point Lookout and the Siuslaw River were also sampled.

Purse seine stations were routinely located along each transect line at the 37-m depth contour, and at 4, 7, 10, 15 and 20 miles offshore. If salmonids were captured at 20 or more miles offshore additional stations were sampled at 5 miles intervals farther offshore until no salmonids were caught. At times, special sets were made in areas of sea bird feeding activity, fronts, plume boundaries, or in shallow (<37 m depth) waters.

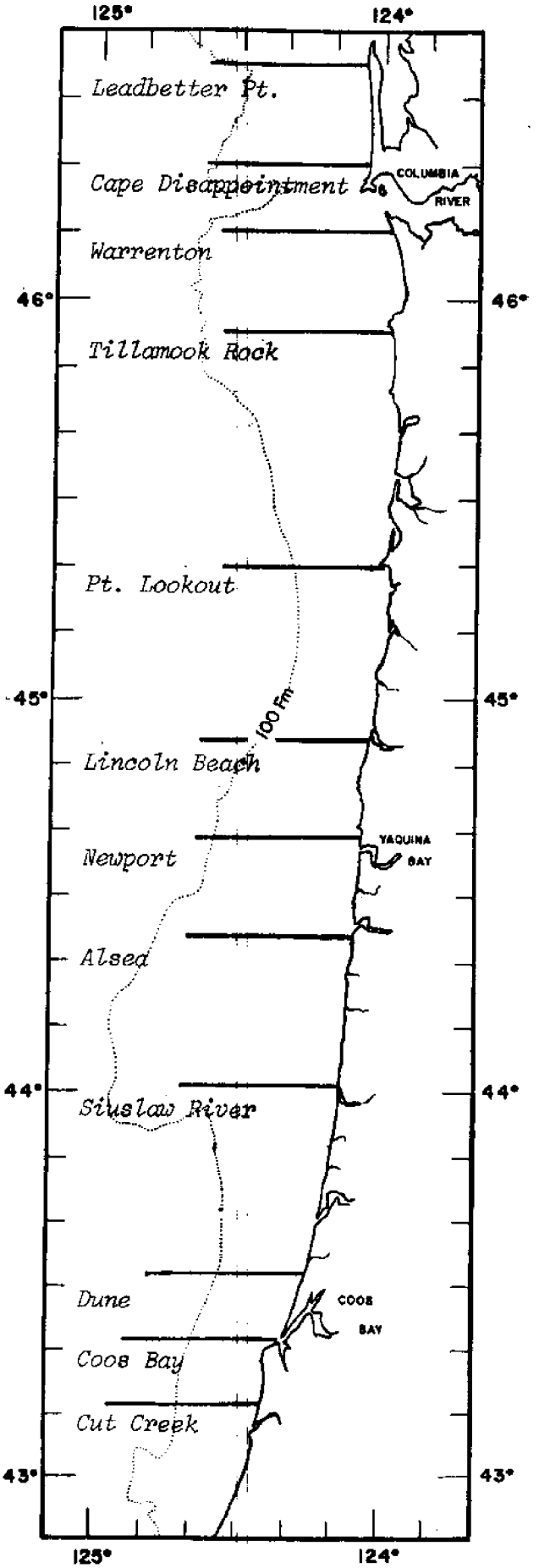


Figure 1. Location of transect lines sampled during spring and summer 1981.

Some stations were sampled repeatedly to collect information on set to set variation in catch, including day-night differences in availability to capture and feeding activity.

Fluorescent Pigment Marking Study

Approximately 1.5 million coho smolts were marked with three different colors of fluorescent pigment prior to their transport from Oregon Aqua-Foods Inc.'s (OAF) Springfield hatchery. These pigment marked fish were released from both Coos Bay and Yaquina Bay OAF facilities (Appendix A).

Seining

Fish were collected using two different herring seines from two different commercial fishing boats. During the May and June cruises a 457 m long seine was used. The main section of this net was 800 meshes deep, and constructed of 32 mm mesh. A 73 m, 600 mesh deep panel was attached to the end of the net towed by the seiner. An additional 30 mesh deep panel of 127 mm mesh was hung along the bottom of the net. The bunt was constructed of 19 mm mesh. (All mesh measurements are stretch measure). This seine was fished from the F/V KRISTIN GAIL, a 32 m crab fishing and tendering vessel. The actual fishing depth of this net was not measured, but was estimated to be about 9 m.

During the July and August cruises, a 457 m-long seine was used. The main section of this net was 1800 meshes deep, and constructed of 32 mm mesh. The bunt was a panel of 32 mm mesh, 37 m long and 1200 meshes deep. Additional 3 and 30 mesh deep panels of 101 mm mesh were hung along the top and bottom panels respectively. This net was fished from the F/V SOUPFIN, a 21 m drum seiner. Fishing depth was measured with a depth gauge to be about 15 m.

All sets were round hauls, where the net was laid out in a circle by seiner and skiff. The encircled surface area was similar for each set, about 16,600 m^2. After the circle was completed, the purse line and seine were hauled in simultaneously and pursing was completed when half the length of the seine had been retrieved (half-purse sets).

Zooplankton Sampling

Zooplankton tows were made routinely at the 4, 10, and 15 mile purse seine stations. Additional stations were occasionally sampled. Sampling gear consisted of 70 cm bongos fitted with two cylindrical-conical plankton nets, constructed of 0.571 and 0.333 mm mesh Nitex. Each net had an open area ratio of 10:1 to insure a high filtration efficiency. TSK flow meters were mounted off-center in each net to measure the filtered water volume. A time-depth recorder was attached to the cable below the bongos. An otter-kite depressor was employed to obtain a wire angle of 50-65°.

Zooplankton tows were made along depth contours at a speed of about 3 knots. Tows were oblique (5 m steps) from the surface to the bottom (or to 150 m in deeper water).

Hydrographic Data

Surface salinity, temperature, chlorophyll-a and phaeo-pigment measurements were taken at each station. Salinity samples were analyzed in the laboratory with a Guildline model 8400 Autosalinometer calibrated to a seawater standard. Chlorophyll-a, an estimate of living plant matter, was measured from 500 ml water samples filtered through 0.3 µm glass fiber filters. Chlorophyll-a content of the material on the filters was estimated by a fluorometric measurements of 90% acetone extracts with a model-10

Turner Designs Fluorometer. The quantity of phaeo-pigments (chlorophyll degradation products) present in each sample was estimated by measuring fluorescence of acetone extracts before and after acidification (Strickland and Parsons, 1972). Light intensity was measured in foot candles with a Spectra Lumicon Light Meter at each station. Water transparency was estimated with a 30 cm Secchi disc. Bathythermograph measurements (temperature as a function of depth) were taken during the first two cruises.

Processing the Catch at Sea

Depending on its size and/or composition, the catch was either dipnetted from the bunt, lifted aboard in the bunt, or brailed aboard. Large catches of jellyfish (and fish) were brailed aboard with a 32 mm mesh brail (May, June) or a 51 mm mesh sock sewn into the bunt (July and August). The total volume of jellyfish was measured in containers of known volumes, and a subsample was processed to obtain data on species composition, abundance and size-frequency (bell diameter). For purposes of shipboard separation of fish, all salmon $\geq$400 mm fork length (FL) were considered adults, and those <400 mm FL juveniles. Adult salmon were immediately transferred to holding tanks with circulating sea water. All juvenile salmon were placed in containers with MS 222 to reduce scale loss.

Juvenile salmon were identified to species, measured to the nearest millimeter (FL), individually wrapped in plastic bags along with a label identifying set number, species and length, and frozen. Occasionally a subsample of salmon was preserved in 10% formalin to provide information on differences between freezing and formalin preservation on the condition of stomach contents.

Blood and gill tissue were periodically obtained from juvenile salmon

for a study of blood osmolality and gill ATPase activity by John Oh of Oregon Aqua Foods, Inc.

Adult salmon were anesthesized with MS 222, identified, measured, sampled for scales, and examined for adipose fin clips or other external marks. Fishes with missing adipose fins were killed. All other salmon >400 mm FL were placed in a tank with circulating sea water and released after they recovered. To check for possible predation by adult salmon on juvenile salmon, a small number of adults were sacrificed for stomach content analysis when many juveniles were caught in the same set. Non-salmonid fishes and cephalopods were identified, counted, measured, and specimens were preserved for stomach content analysis.

Laboratory Processing Procedure

Each frozen (or preserved) juvenile salmon was given a serial number (collection year, seine set number and fish sequence number), weighed in its tared plastic bag, identified to species, remeasured, and examined for fluorescent pigment marks under ultraviolet light, adipose fin clip, and other marks. Scales from a subsample of up to ten fish of each salmonid species from each set were removed from the preferred area (see Scarnecchia, 1979) and mounted on gum cards in preparation for future growth studies. Heads from individuals with adipose fin clips were removed and sent to the Oregon Department of Fish and Wildlife for coded wire tag removal and decoding.

After a subsample of up to ten fish of each salmonid species from each seine haul were partially thawed, stomachs were removed and preserved in formalin for food habits analysis; livers and visceral fat with attached organs were removed, weighed and frozen for lipid analysis; otoliths were

removed for growth studies; and carcasses were examined for bacterial kidney disease by the Department of Microbiology (OSU). Some whole salmon were saved for extraction of total lipids and fatty acids.

RESULTS

Oceanographic Data

Data on surface water temperature, salinity, Secchi disc, and illumination are tabulated by seine set in Appendix B along with locations of 89 zooplankton collections. Chlorophyll-a and phaeopigment concentrations are listed in Appendix C.

Salmonid Catches

A total of 265 seine sets were made over a four month period from May through August. The seining effort varied from 63 to 68 sets for each 9 to 11-day cruise. Locations of sampling stations are shown in Figure 2 for each cruise. The June and August cruises included transects off southern Oregon. A description of the location and time for each seine set is given in Appendix B.

Table 1 summarizes the salmonid catch by species and cruise. A total of 2701 salmonids, representing seven species, was collected. Juvenile coho salmon were the most abundant salmonid in all months. Catches decreased over the four month period with 635, 463, 362, and 360 occurring in May, June, July, and August respectively. Adult coho, juvenile chinook, and juvenile chum ranked second through fourth in abundance, while searun cutthroat and steelhead trout ranked fifth and sixth. A total of 49 adult chinook and 30 pink salmon were collected. With the exception of one individual, all pink salmon were greater than 400 mm fork length. Only one adult and four juvenile sockeye were collected.

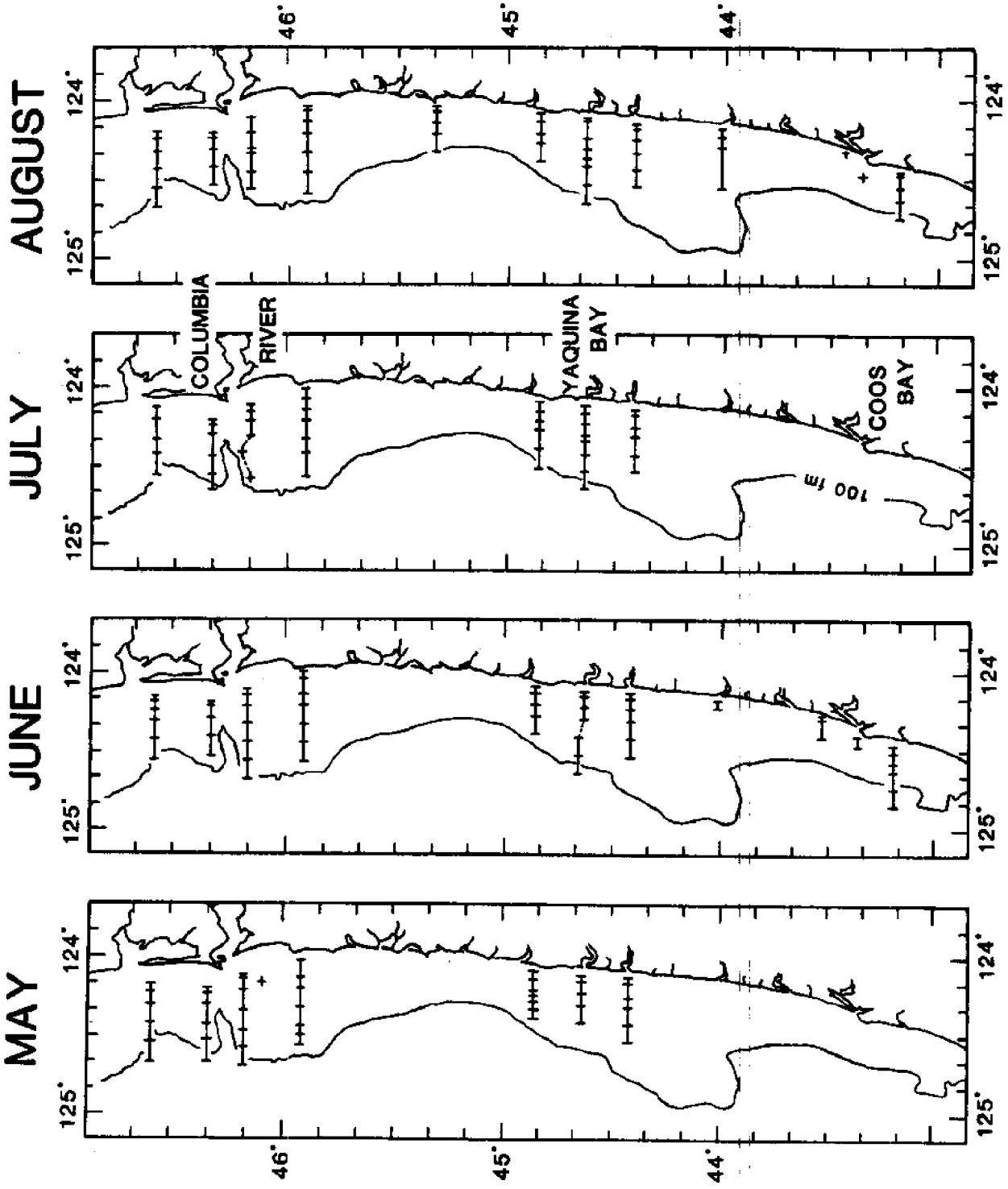


Figure 2. Location of purse seining stations along transect lines sampled during May, June, July, and August 1981.

TABLE 1. SUMMARY OF SALMON CATCH, AND CODED WIRE TAGGED INDIVIDUALS IN PURSE SEINE COLLECTIONS OFF OREGON AND WASHINGTON DURING SPRING AND SUMMER 1981 (PRELIMINARY DATA).[A]

	LENGTH RANGE (MM)	MAY TOTAL	(# AND %) CWT	JUNE TOTAL	(# AND %) CWT	JULY TOTAL	(# AND %) CWT	AUGUST TOTAL	(# AND %) CWT	TOTAL	(# AND %) CWT
COHO	≤ 400	635	(19, 3.0%)	463	(14, 3.0%)	362	(12, 3.3%)	360	(9, 2.5%)	1820	(54, 3.0%)
	> 400	59	(7, 11.9%)	106	(3, 2.8%)	81	(8, 9.9%)	42	(2, 4.8%)	288	(20, 6.9%)
CHINOOK	≤ 400	67	(4, 6.0%)	37	(1, 2.7%)	75	(3, 4.0%)	51	(1, 1.9%)	230	(9, 3.9%)
	> 400	4	(0, 0.0%)	18	(0, 0.0%)	18	(0, 0.0%)	9	(1,11.1%)	49	(1, 2.0%)
CHUM	≤ 400	39	(0, 0.0%)	30	(0, 0.0%)	30	(0, 0.0%)	34	(0, 0.0%)	130	(0, 0.0%)
PINK	≤ 400	0	(0, 0.0%)	0	(0, 0.0%)	1	(0, 0.0%)	0	(0, 0.0%)	1	(0, 0.0%)
	> 400	5	(0, 0.0%)	1	(0, 0.0%)	4	(0, 0.0%)	19	(0, 0.0%)	29	(0, 0.0%)
SOCKEYE	≤ 400	1	(0, 0.0%)	3	(0, 0.0%)	0	(0, 0.0%)	0	(0, 0.0%)	4	(0, 0.0%)
	> 400	0	(0, 0.0%)	0	(0, 0.0%)	1	(0, 0.0%)	0	(0, 0.0%)	1	(0, 0.0%)
STEELHEAD		32	(1, 3.2%)	25	(1, 4.0%)	2	(0, 0.0%)	1	(0, 0.0%)	60	(2, 3.3%)
CUTTHROAT		18	(0, 0.0%)	13	(0, 0.0%)	42	(0, 0.0%)	13	(0, 0.0%)	86	(0, 0.0%)
# OF SEINE SETS			63		67		68		67	265	

[A] INCLUDES DATA FOR EIGHT ADIPOSE CLIPPED JUVENILE COHO AND TWO ADIPOSE CLIPPED JUVENILE CHINOOK FROM WHICH CWT'S HAVE NET YET BEEN REMOVED.

Distribution and Abundance

Areal variation in catch, and variation in catch of repeated sets at a single station, are summarized for juvenile coho, chinook and chum salmon, and steelhead and cutthroat trout in Appendix D. Juvenile salmonids were collected throughout the study area from 37 m water depth to the shelf break (365 m). Seining stations were usually added at 5 mile intervals in an offshore direction until no salmonids were collected. The offshore extent of sampling generally reflects the westerly limit of salmonids in seine collections. With the exception of steelhead, salmonids were characteristically absent from collections in clear, "blue" oceanic water (Secchi disc reading >15 m). During May and June steelhead were most common in seine collections in clear water, 20 to 25 miles offshore in areas adjacent to the Columbia River. Steelhead were consistently found farther offshore than the other six salmonid species collected.

Monthly changes were evident in the catches of juvenile coho salmon along the coast. In May, catches along transects in the vicinity of Yaquina Bay were twice as large as those along transects in the Columbia River plume area. This pattern was reversed during June through August, with juvenile coho being more abundant along the northern Oregon and southern Washington coast. The July and August pattern is influenced by large catches off Tillamook Rock, 20 miles south of the Columbia River mouth.

Catches of juvenile chinook were largest in the vicinity of the Columbia River plume during most months. The relative abundance of chinook was always low off Tillamook Rock when compared to areas to the north.

Juvenile chum salmon were collected in low numbers compared to coho salmon. They were usually more common in collections along transects in

the Columbia River area than areas farther to the south.

Both steelhead and cutthroat trout were common in the May and June collections. Steelhead abundance in collections declined during July and remained low during August (Table 1). Both searun trout were more common in the vicinity of the Columbia River than in areas south of Tillamook Rock.

At stations where consecutive hauls were made, catches of juvenile salmonids were usually variable, but occasionally (August-Warrenton transect) quite similar. Examples of catches for repetitive sets over periods of up to nineteen hours are given in Table 2. Returning to sample a transect after a day or more yielded even larger differences in catches; e.g. 156 juvenile coho were collected along the Tillamook Rock transect on 20 May and a single juvenile was collected along the same transect four days later.

When juvenile coho salmon were abundant in collections at a station they were often abundant in collections at adjacent stations along the same transect.

Length-Frequency Data

Length-frequency distributions for all coho salmon collected are shown in Figure 3. Two major length modes are apparent for each month: 81-260 mm and 321-650 mm for June; 121-380 mm and 401-740 for July; 121-440 and 441-740 for August. The first mode for each month is mainly comprised of juvenile fish that entered the ocean in spring and summer 1981 (sub-yearling if accelerated hatchery fish and yearlings if wild or other hatchery fish). The second mode is mainly comprised of adult fish which have spent one winter in the ocean. Fish at the upper end of the first mode or lower end of the second mode could be either adults or juveniles. Scales analysis

Table 2. Number of juvenile salmonids in purse seine collections at stations where repetitve sets were made.

SPECIES-MONTH-TRANSECT	TIME (PDT) 0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	0100	0200	0300	0400	0500	0600	0700	0800	0900
Coho-May-Newport								16					58		27			9				6			33		0
Coho-June-Warrenton	50										1		10		27		15										
Coho-July-Cape Disapp.						0	1/1									5		0			0		1	2	2		
Chinook-July-Cape Disapp.						4	17/7									5		2			0		0	0	0		
Cutthroat-July-Cape Disapp.						0	3/1									6		2			4		6	1	2		
Coho-July-Tillamook											21	26	23			44							3				
Coho-August-Warrenton				27	26			20																			
Coho-August-Newport								12									3			5			3			0	

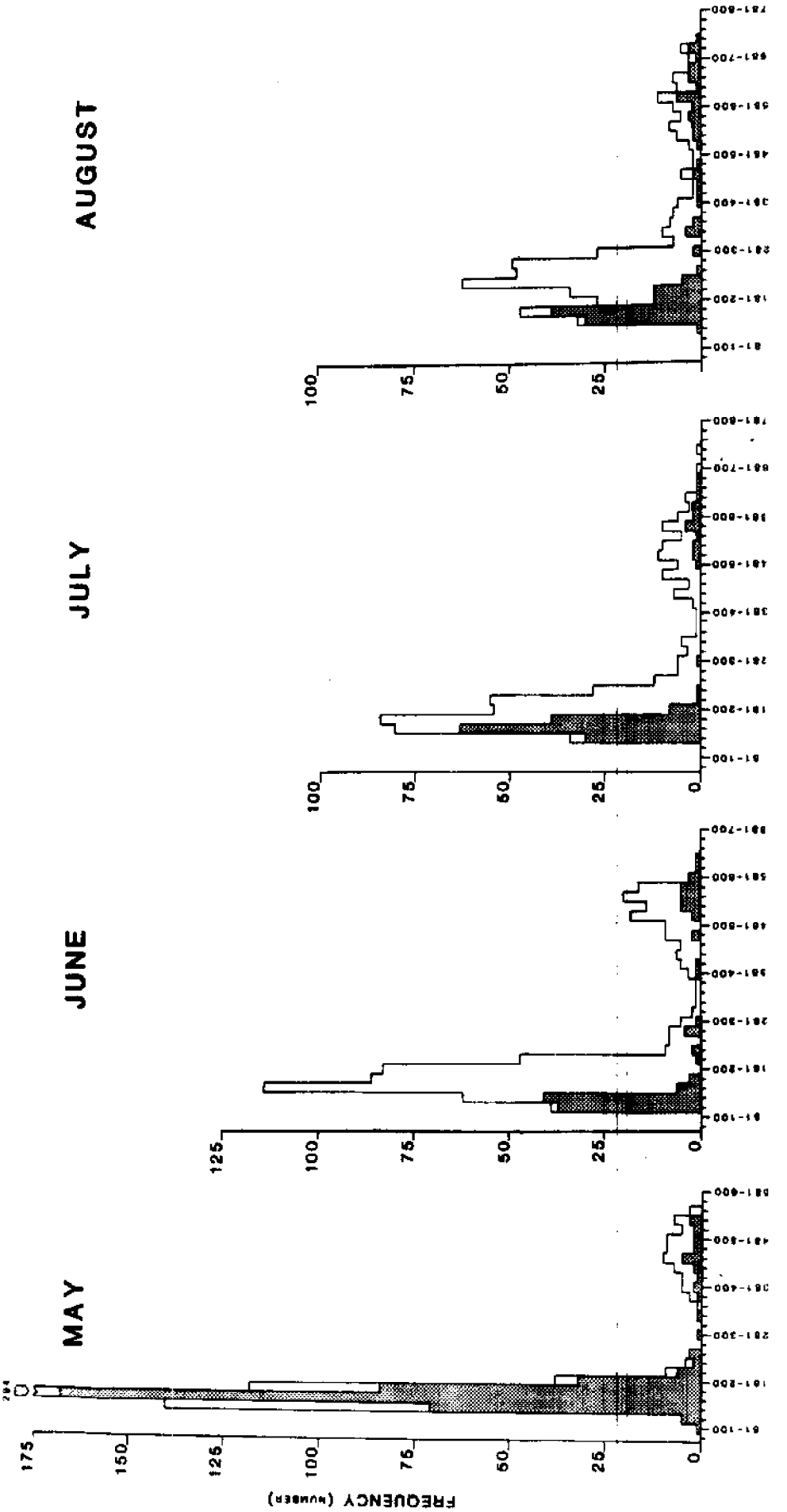


Figure 3. Length-frequency distributions of juvenile coho salmon collected off Oregon and Washington during spring and summer 1981. Stipple area represents the southern region (Cut Creek to Point Lookout), open histograms, the northern region (Tillamook Rock to Leadbetter Point). The maximum number shown for each size group represents the sum of numbers caught in both regions.

will be employed to determine age of these intermediate-sized fish.

The shaded bars in Figure 3 represent coho collected south of the Siletz River (or Pt. Lookout in the case of August) while the open bars represent fish collected north of Tillamook Rock. The sizes of juvenile coho caught in May are similar in both regions, but in June, July and August the sizes of juvenile coho caught in the southern area are appreciably smaller than those caught in the northern area. The sizes sampled in the southern region (shaded histograms) do not increase appreciably among cruises, but remain centered around 160-180 mm. In contrast, the mean sizes of fish collected in the vicinity of the Columbia River (open histograms) shift from about 160 mm to about 260 mm over the four month period.

Figure 3 shows the decline in numbers of juvenile coho collected during each month with a relatively constant seining effort, as well as an increase in the maximum size of adult coho between May and August.

Length distributions of chinook salmon show a modal peak at 200 mm in May; 100 mm in July and 140 mm in August (Figure 4). These July and August modes are comprised of fish collected almost exclusively from transects north of the Columbia River as only six juvenile chinook were captured south of Warrenton (Appendix D-2). These small chinook in the July and August collections are probably subyearling hatchery and/or wild chinook from the Columbia River.

Length-frequency distributions of chum salmon show that the size mode advances from 101-120 to 201-220 mm between May and August (Figure 5). The sample size is small, but as in the case of juvenile chinook, the number of fish collected in successive cruises south of Tillamook Rock declined.

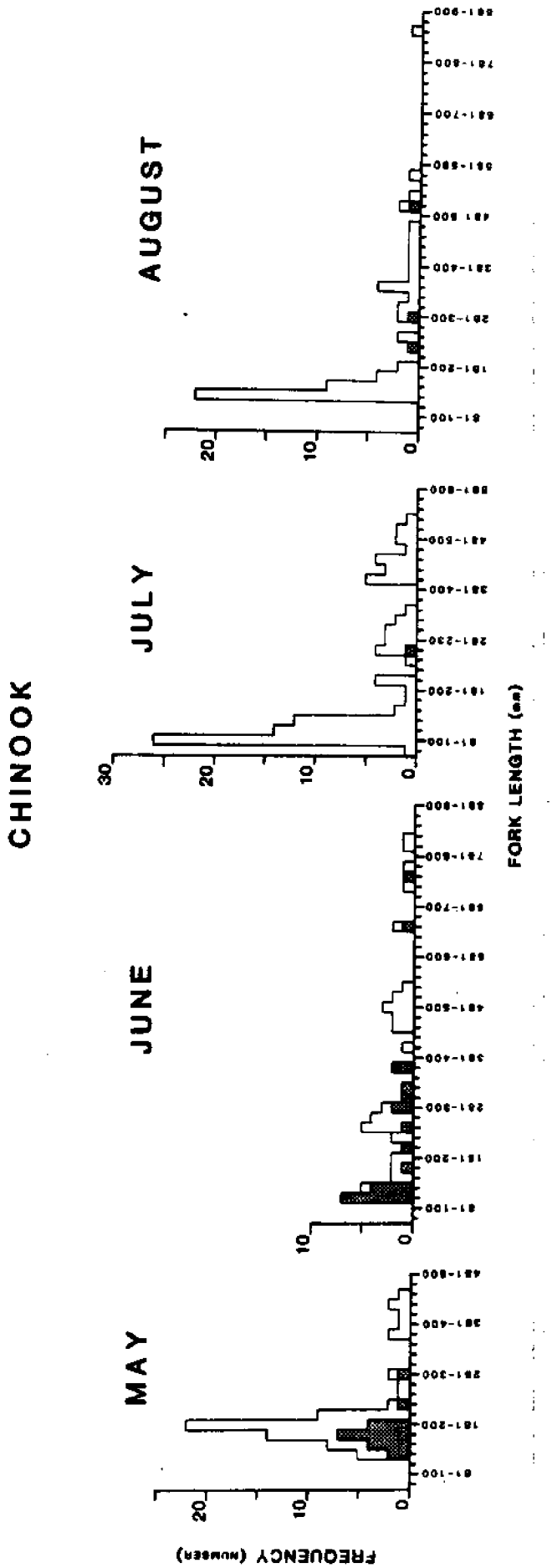


Figure 4. Length-frequency distributions of juvenile chinook salmon collected off Oregon and Washington during spring and summer 1981. Stipple area represents the southern region(Cut Creek to Point Lookout), open histograms, the northern region (Tillamook Rock to Leadbetter Point). The maximum number shown for each size group represents the sum of numbers caught in both regions.

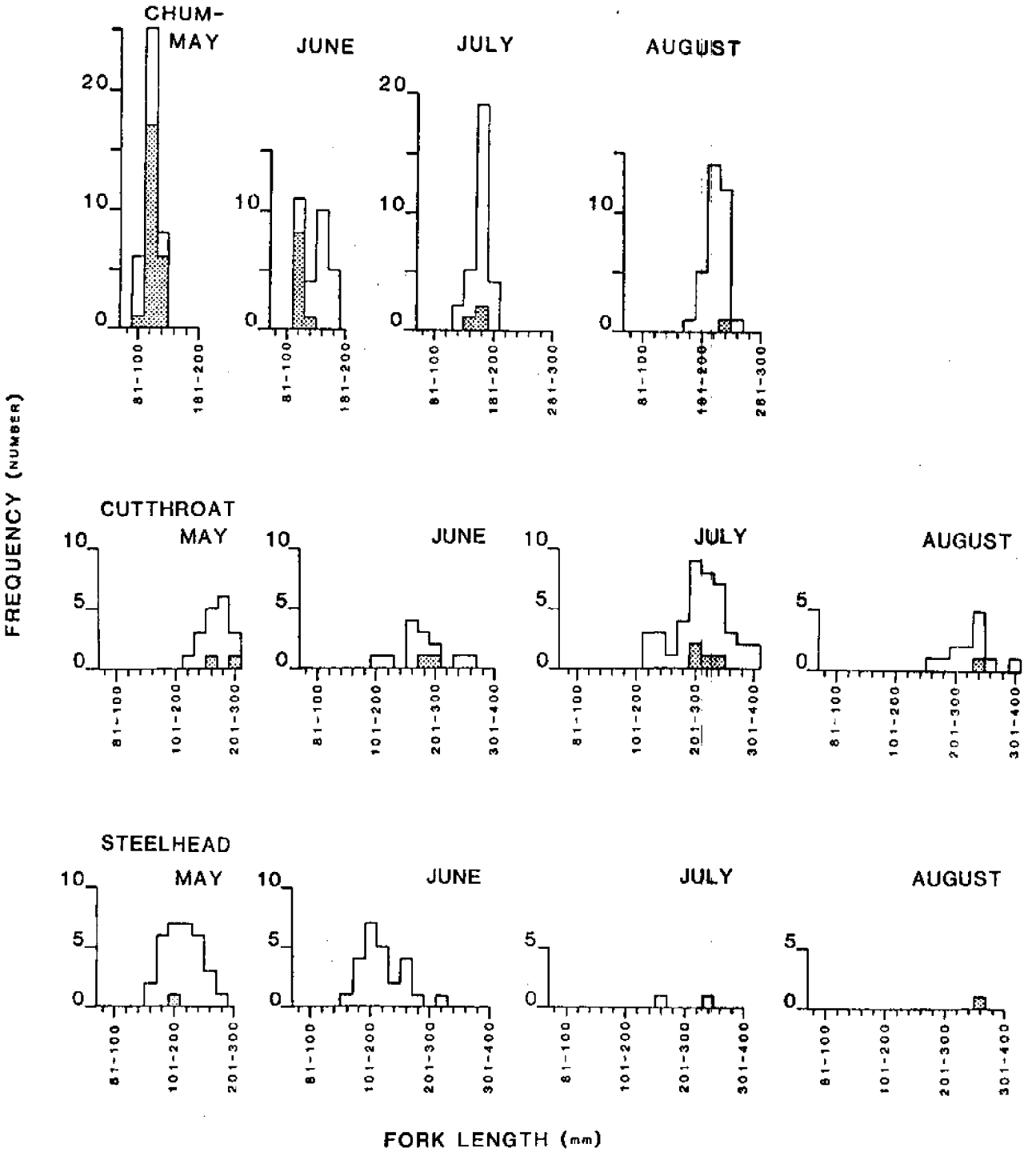


Figure 5. Length-frequency distributions of juvenile chum salmon, cutthroat and steelhead trout collected off Oregon and Washington during spring and summer 1981. Stippled areas represent the southern region (Cut Creek to Point Lookout), open histograms, the northern region (Tillamook Rock to Leadbetter Point). The maximum number shown for each size group represents the sum of numbers caught in both regions.

The length-frequency range for steelhead trout appears constant for May and June (Figure 5). Few steelhead were caught during July and August.

Modal lengths of cutthroat trout increased from 241-280 mm in May to 301-320 mm in August (Figure 5). No individuals greater than 300 mm in length were collected during May, whereas the majority of individuals collected during July and August were greater than 300 mm in length.

Tag Returns and Movements

Preliminary information on 76 coded wire tags (CWT) from juvenile and adult salmonids is summarized in Appendix E-1 and 2, including tag codes, hatchery, release site and date, recovery site and date, and length at capture. A total of 54 CWT were recovered from juvenile coho, 20 from adult coho, 9 from juvenile chinook, 1 from adult chinook, and 2 from juvenile steelhead (Table 3). Ten of these tags have not yet been decoded and a few more fish with missing adipose fins may be found as the remaining fish are processed. The percentage of juvenile coho with CWT's in seine collections ranged from 3.3% in July to 2.5% in August (Table 1).

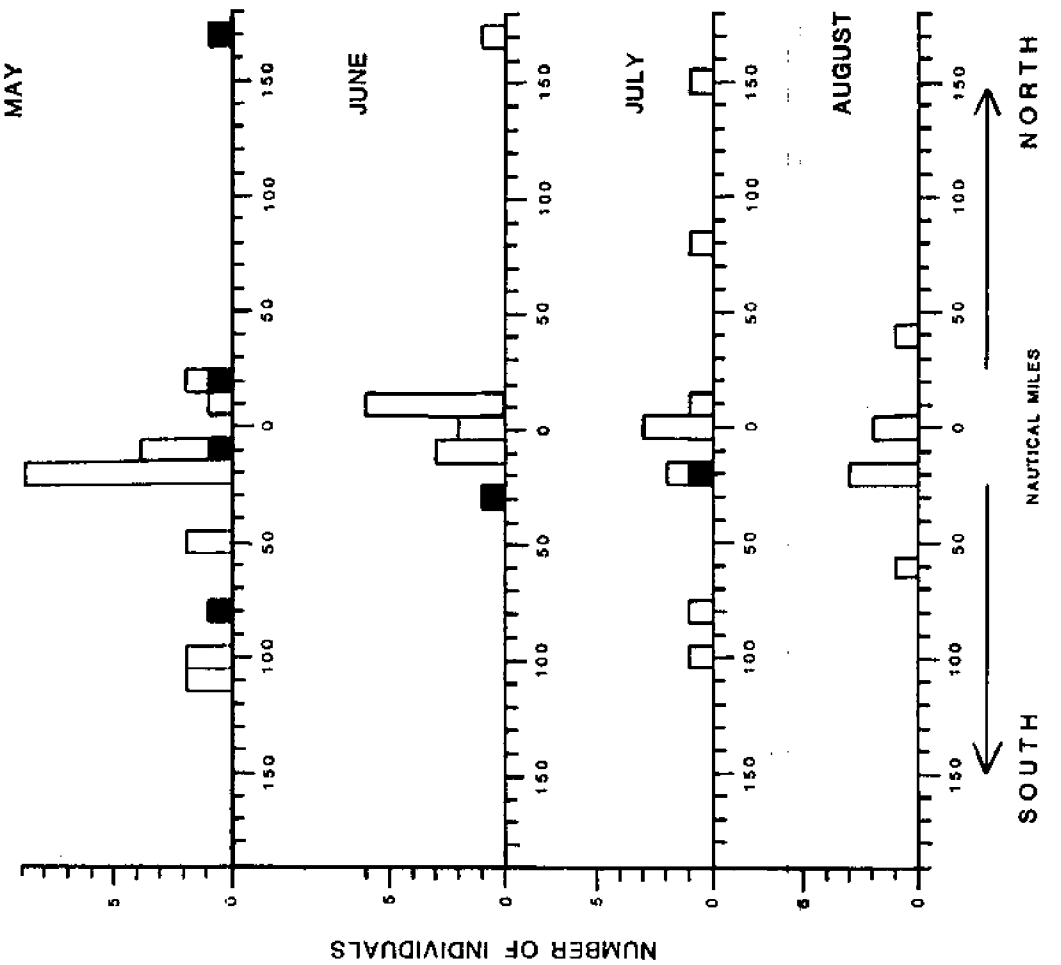
The north-south distance between point of ocean entry and location of capture for CWT juvenile coho (open) and chinook (solid) is shown in Figure 6. Sixty-eight percent of the juvenile coho were collected south of their point of ocean entry. Many of the coho were captured 5 to 20 miles north or south of the Columbia River. Those fish collected along the Warrenton and Cape Disappointment transects were often captured within the Columbia River plume even though they were recorded as north or south of the Columbia River mouth. Since the Columbia represents the largest point source of juvenile salmonids and our purse seining effort was mainly south of the Columbia River, the capture of more fish to the south than

Table 3. Summary by agency of coded wire tag information for salmonids captured in purse seine collections off Oregon and Washington during spring and summer 1981.

SPECIES	AGENCY* ODFW	WDF	OAF	ANAD	FWS	HOH	NMFS	IDFG	CDFG
Juvenile coho									
MAY	9	4	1	0	4	1	0	0	0
JUNE	4	1	2	5	0	0	0	0	0
JULY	3	1	4	1	0	0	0	0	0
AUGUST	1	1	2	1	1	0	0	0	0
Juvenile chinook	4	0	0	0	0	0	1	1	1
Steelhead	0	0	0	0	1	0	0	1	0
Adult coho	1	16	2	0	1	0	0	0	0
Adult chinook	0	1	0	0	0	0	0	0	0
Total	22	24	11	7	7	1	1	2	1

*ODFW, Oregon Dept. Fish & Wildlife; WDF, Wash. Dept. Fisheries; OAF, Oregon Aqua Foods Inc.; ANAD, Anadromous Inc.; FWS, Fish & Wildlife Service; HOH, Hoh tribe; NMFS, Nat. Mar. Fish. Service; IDFG, Idaho Dept. Fish & Game; CDFG, Calif. Dept. Fish & Game

Figure 6. North/south distance between point of ocean entry and location of capture for juvenile coho (open) and chinook (solid) salmon collected in purse seine sets off Oregon and Washington during spring and summer 1981.



the north of their river of ocean entry is expected.

Fish from the July and August cruises have not yet been examined for fluorescent pigment marks. A total of 25 pigment-marked OAF juvenile coho were recovered from the May and June collections.

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Scarnecchia, D.L. 1979. Factors affecting coho salmon production in Oregon. M.S. thesis, Oregon State University, Corvallis, OR, 100 pp.

Strickland, J.D.H. and T.R. Parsons. 1972. A Practical Handbook of Seawater Analysis. Fisheries Research Board of Canada, Bulletin 167, Ottawa, 310 pp.

Appendix A. Marking and release schedule for fluorescent pigment marked coho smolts marked at Oregon Aqua-Foods Inc.'s Springfield hatchery, and released at OreAqua's South Beach (Yaquina Bay) and Coos Bay facilities.

Typed	Date Marked and Transported	No. Marked	Pigment Color	Release Site	Date Released
Holdover Yearling	4/21/81	80,083	Red	Yaquina	5/11/81
Programmed Yearling	4/26/81	124,537	Green	Yaquina	5/11/81
		19,327	Yellow		
Programmed Yearling	4/27/81	48,826	Yellow	Yaquina	5/11/81
Programmed Yearling	4/28/81	158,442	Yellow	Yaquina	5/12/81
		431,215			
Zero-Age	5/22/81	114,055	Yellow	Coos	6/5/81
Zero-Age	5/23/81	68,736	Yellow	Coos	6/5/81
Zero-Age	5/30/81	266,125	Yellow	Coos	6/9/81
Zero-Age	5/13/81	321,445	Red	Yaquina	6/10/81 & 6/13/81
Zero-Age	5/26/81	290,450	Red	Yaquina	6/15/81
Zero-Age	6/12/81	103,056	Lt. Green	Yaquina	6/26/81
Zero-Age	6/13/81	102,247	Dk. Green	Yaquina	6/26/81
Zero-Age	6/13/81	90,632	Dk. Green	Yaquina	6/26/81
Zero-Age	6/14/81	91,109	Dk. Green	Yaquina	6/27/81
		1,447,855			

Appendix B. Station location and hydrographic data for purse seining cruises off Oregon and Washington during spring and summer, 1981.

MAY CRUISE

Set #	Date	Transect	Distance offshore (n. mi)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
KG 1	16 V	Newport	2.1	0640	0710	22	44 38.4	124 06.8	100	10.7	32.73	300	---	----	
2	16 V	Newport	3.8	1020	1047	26	44 39.5	124 08.8	280	11.1	32.59	1100	---	KGB1	
3	16 V	Newport	6.9	1229	1307	36	44 38.0	124 13.4	240	12.1	29.13	1400	---	----	
4	16 V	Newport	10.3	1425	1457	43	44 38.4	124 17.9	90	12.6	26.99	800	---	KGB2	
5	16 V	Newport	15.3	1703	1737	36	44 38.3	124 24.9	270	12.8	27.27	850	---	KGB3	
6	16 V	Newport	10.1	1854	1925	42	44 38.1	124 17.6	275	12.4	27.50	340	---	KGB4	repeat set
7	16 V	Newport	10.2	2053	2125	42	44 38.1	124 17.7	---	12.9	26.30	0.3	---	KGB5	repeat set
8	16 V	Newport	10.0	2342	0020	43	44 37.0	124 18.1	310	12.6	26.15	<0.1	---	KGB6	repeat set
9	17 V	Newport	10.3	0425	0459	42	44 38.5	124 18.0	---	12.2	27.37	<0.1	---	KGB7	repeat set
10	17 V	Newport	10.2	0702	0714	41	44 38.4	124 17.8	90	12.3	---	375	---	KGB8	repeat set
11	17 V	Newport	10.1	0904	0935	41	44 38.2	124 17.7	210	12.4	27.32	1000	---	----	repeat set
12	18 V	Alsea	2.2	1157	1219	22	44 24.8	124 07.9	---	12.6	---	900	---	----	
13	18 V	Alsea	4.3	1307	1332	27	44 25.1	124 10.8	225	13.0	27.66	2100	---	KGB9	
~~14~~	~~18 V~~	~~Alsea~~	~~7.1~~	~~1453~~	~~1520~~	~~35~~	~~44 25.0~~	~~124 15.0~~	~~295~~	~~13.2~~	~~28.21~~	~~290~~	---	----	aborted
15	18 V	Alsea	7.1	1718	1724	34	44 25.1	124 15.1	160	12.9	27.98	1300	---	----	
16	18 V	Alsea	10.0	1834	1901	37	44 25.0	124 19.0	270	12.1	29.70	400	---	KGB10	
17	18 V	Alsea	15.0	2051	2114	43	44 25.1	124 26.0	290	12.7	---	1.0	---	KGB11	
18	18 V	Alsea	19.3	2305	2338	53	44 25.0	124 31.9	115	12.3	29.88	<0.1	---	----	
19	19 V	Lincoln Beach	1.7	0745	0813	20	44 51.0	124 05.0	20	12.3	28.21	300	---	----	
20	19 V	Lincoln Beach	3.8	0904	0929	33	44 51.0	124 08.0	---	12.7	27.41	1000	---	KGB12	
21	19 V	Lincoln Beach	7.0	1055	1120	54	44 51.5	124 12.5	---	13.2	28.88	2500	---	KGB13	
22	19 V	Lincoln Beach	9.9	1248	1313	68	44 51.5	124 16.6	170	13.6	27.79	3000	---	----	

Appendix B.

Set #	Date	Transect	Distance Offshore (n. mi)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
KG 23	19 V	Lincoln Beach	15.0	1430	1501	83	44 51.6	124 23.8	---	12.9	27.91	2500	---	-----	
24	19 V	Lincoln Beach	12.3	1626	----	74	44 51.4	124 20.1	350	13.4	28.55	2300	---	-----	aborted
25	19 V	Lincoln Beach	12.3	1707	1733	74	44 50.8	124 20.2	---	----	-----	1800	---	KGB14	special sta.
26	19 V	Lincoln Beach	8.4	1928	1952	61	44 51.5	124 14.6	020	13.5	27.67	300	---	-----	
27	20 V	Tillamook Rock	1.9	0621	0657	20	44 55.0	124 00.9	310	13.3	27.54	1700	---	-----	
28	20 V	Tillamook Rock	4.0*	0742	0806	36	45 54.9	124 04.0	020	13.5	25.63	500	---	KGB15	
29	20 V	Tillamook Rock	7.2	0919	0949	44	45 55.0	124 08.4	---	13.3	17.03	2800	---	KGB16	
30	20 V	Tillamook Rock	10.0	1105	1130	57	45 55.1	124 12.5	000	13.2	26.21	600	---	KGB17-18	bird flock
31	20 V	Tillamook Rock	15.0	1505	1535	74	45 55.0	124 19.7	260	13.5	26.59	7500	---	-----	
32	20 V	Tillamook Rock	20.1	1718	1740	80	45 55.0	124 27.0	190	13.4	27.61	500	---	KGB19	
33	20 V	Tillamook Rock	24.9	1933	1959	90	45 55.0	124 33.9	195	12.9	-----	1500	---	-----	
34	20 V	Tillamook Rock	22.7	2058	----	80	45 55.0	124 38.4	210	12.9	-----	0.6	---	-----	aborted
35	21 V	Warrenton	20.7	0550	0559	71	46 10.0	124 28.0	270	12.1	29.79	135	---	KGB20	
36	21 V	Warrenton	25.2	0815	0858	83	46 10.0	124 34.4	070	12.4	29.25	400	---	-----	
37	21 V	Warrenton	25.2	0854	0917	83	46 09.7	124 34.3	100	----	-----	700	---	KGB21	repeat set
38	21 V	Warrenton	29.2	1105	1129	106	46 10.0	124 41.4	270	12.8	30.74	1100	---	-----	
39	21 V	Warrenton	20.9	1250	1328	71	46 10.1	124 28.5	220	12.4	-----	1800	---	-----	edge of plume
40	21 V	Warrenton	15.2	1431	1456	60	46 10.0	124 20.1	---	13.4	22.96	800	---	KGB22	
41	21 V	Warrenton	9.9	1630	1654	40	46 10.0	124 12.7	---	12.9	22.96	1500	---	--	
42	21 V	Warrenton	6.9	1747	1809	26	46 10.0	124 08.3	---	13.2	24.26	1300	---	KGB23	
43	21 V	Warrenton	6.1	1850	1925	21	46 10.0	124 07.0	---	13.4	24.33	600	---	-----	
44	22 V	C. Disappointment	5.6	1119	1146	20	44 20.1	124 11.9	---	13.7	-----	2000	---	-----	
45	22 V	C. Disappointment	7.0	1242	1323	28	46 20.0	124 14.1	120	13.8	15.20	3200	---	-----	

Appendix B.

Set #	Date	Transect	Distance offshore (n. mi.)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
KG 46	22 V	C. Disappointment	9.7	1416	----	42	46 20.1	124 18.0	---	14.1	14.96	2100	---	-----	aborted
47	22 V	C. Disappointment	15.0	1814	1841	68	46 20.0	124 25.4	320	12.9	29.35	900	---	KGB24	
48	22 V	C. Disappointment	20.0	2018	2041	73	46 20.0	124 32.2	---	13.0	15.20	150	---	-----	
49	22 V	C. Disappointment	20.0	2103	2123	73	46 19.8	124 32.6	060	13.0	30.86	0.3	---	KGB25	repeat set
50	22 V	C. Disappointment	25.8	2315	2344	500	46 20.0	124 39.8	225	12.9	31.57	<0.1	---	-----	
51	23 V	C. Disappointment	25.2	0019	0045	500	46 19.8	124 39.9	225	12.8	31.42	<0.1	---	-----	repeat set
52	23 V	Leadbetter Pt.	25.2	0620	0650	350	46 35.0	124 41.0	000	12.8	30.86	300	---	-----	
53	23 V	Leadbetter Pt.	20.0	0755	0818	175	46 35.0	124 32.8	340	12.7	30.90	900	---	-----	
54	23 V	Leadbetter Pt.	15.0	0932	0956	52	46 35.0	124 25.6	270	12.9	29.58	1200	---	KGB26	
55	23 V	Leadbetter Pt.	9.8	1131	1155	65	46 35.0	124 18.0	240	12.8	24.93	2100	---	KGB27	
56	23 V	Leadbetter Pt.	6.8	1326	1352	25	46 35.1	124 13.5	110	13.9	22.08	1100	---	KGB28	
57	23 V	Leadbetter Pt.	5.2	1508	1535	20	46 35.0	124 11.1	040	14.2	22.69	1200	---	KGB29	
58	24 V	Tillamook Rock	10.1	1016	----	57	45 55.0	124 12.8	350	12.8	29.24	650	---	-----	
59	24 V	Tillamook Rock	7.0	1140	1207	44	45 55.0	124 08.2	000	12.8	29.10	700	---	-----	
60	24 V	Tillamook Rock	3.9	1316	----	36	45 55.0	124 03.7	080	13.6	-----	790	---	-----	aborted
61	24 V	Tillamook Rock	3.8	1504	1530	35	45 55.2	124 03.7	090	13.4	29.14	300	---	-----	
62	24 V	Tillamook Rock	1.9	1619	1642	21	45 55.0	124 00.9	090	13.6	27.50	500	---	-----	
63	24 V	Tillamook Rock	15.0	1865	----	74	45 55.0	124 19.7	---	12.7	30.70	220	---	-----	
64	24 V	Dellmoor	10.2	2232	2257	43	46 05.0	124 10.4	150	13.2	27.81	<0.1	---	-----	special sta.
65	25 V	Warrenton	15.0	0047	0110	60	46 09.9	124 20.1	010	13.7	23.41	<0.1	---	KGB30	
66	25 V	Warrenton	10.0	0325	0349	38	46 10.2	124 12.3	100	13.3	25.33	<0.1	---	-----	
67	25 V	Warrenton	6.0	0542	0609	21	46 10.1	124 07.0	000	13.3	25.53	35	---	-----	
68	25 V	Warrenton	6.8	0643	0710	24	46 10.0	124 08.1	150	12.9	27.47	----	---	-----	repeat set

Appendix B.

JUNE CRUISE

Set #	Date	Transect	Distance offshore (n. mi.)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
KG 69	9 VI	Leadbetter Pt.	5.2	1052	1122	20	46 35.0	124 11.4	355	13.8	26.91	580	3.5	KGB31	
70	9 VI	Leadbetter Pt.	3.7	1255	1322	14	46 35.0	124 09.1	190	13.7	28.04	1700	4.0	-----	
71	9 VI	Leadbetter Pt.	6.8	1417	1446	25	46 35.0	124 13.6	105	13.4	29.40	1400	4.0	-----	
72	9 VI	Leadbetter Pt.	9.9	1550	1620	36	46 35.0	124 18.2	075	13.2	-----	780	6.5	KGB32	
73	9 VI	Leadbetter Pt.	15.0	1804	1835	52	46 35.0	124 25.4	085	13.7	31.092	450	7.0	KGB33	
74	9 VI	Leadbetter Pt.	20.7	2102	2108	110	46 34.9	124 33.5	075	13.6	31.47	29	---	-----	
75	10 VI	C.Disappointment	20.0	0640	0708	73	46 19.9	124 32.5	075	13.4	31.19	230	9.0	-----	
76	10 VI	C.Disappointment	15.2	0821	0900	68	46 20.0	124 25.0	030	14.2	24.92	1200	---	KGB34	
77	10 VI	C.Disappointment	10.0	1102	1132	44	46 20.1	124 18.3	090	14.8	20.11	900	2.5	KGB35	
78	10 VI	C.Disappointment	7.2	1329	1358	28	46 20.2	124 14.1	275	15.1	12.01	1500	1.3	-----	
79	10 VI	C.Disappointment	5.7	1452	1517	20	46 20.0	124 12.0	110	15.2	14.73	2200	1.5	KGB36	
80	10 VI	Warrenton	5.0	1718	1748	20	46 10.0	124 07.1	140	15.1	23.28	1100	6.5	KGB37	
81	10 VI	Warrenton	7.2	1842	1907	27	46 10.0	124 08.6	070	15.2	24.97	200	5.0	-----	
82	10 VI	Warrenton	10.0	2052	2114	40	46 10.0	124 12.8	080	15.0	26.76	75	---	KGB38	
83	11 VI	Warrenton	15.2	0638	0714	60	46 09.9	124 20.3	056	14.8	25.21	290	7.0	KGB39	
84	11 VI	Warrenton	20.0	0917	0943	70	46 10.0	124 27.1	010	14.8	24.65	1500	7.0	-----	
85	11 VI	Warrenton	25.0	1112	1135	83	46 10.0	124 34.3	050	14.1	31.09	1000	10.3	-----	
86	11 VI	Warrenton	25.0	1159	1220	84	46 09.8	124 34.2	310	14.3	29.69	----	---	KGB40	repeat set
87	11 VI	Warrenton	30.4	1402	1422	200	46 10.0	124 41.6	190	14.4	31.67	1700	15.0	-----	
88	11 VI	Warrenton	14.5	1710	1739	57	46 10.0	124 19.2	140	15.3	25.70	1000	6.0	KGB41	
89	11 VI	Warrenton	15.0	1929	1951	99	46 10.0	124 19.9	160	15.1	26.11	400	---	-----	repeat set

Appendix B.

Set #	Date	Transect	Distance offshore (n. mi.)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
KG 90	11 VI	Warrenton	15.6	2030	2051	61	46 10.0	124 20.8	130	15.0	26.09	140	6.0	-----	repeat set
91	11 VI	Warrenton	14.8	2322	2346	60	46 10.6	124 20.0	120	15.1	25.58	----	---	KGB42	repeat set
92	12 VI	Tillamook Rock	25.0	0846	----	93	45 55.0	124 34.1	160	13.8	31.32	600	11.0	-----	
93	12 VI	Tillamook Rock	20.0	1014	1039	80	45 55.0	124 27.0	070	14.2	28.12	900	7.0	-----	
94	12 VI	Tillamook Rock	15.4	1205	1225	74	45 55.0	124 20.0	115	15.0	24.93	2800	7.5	KGB43	
95	12 VI	Tillamook Rock	10.2	1400	1434	56	45 55.0	124 12.5	215	15.2	25.50	3000	5.8	KGB44	
96	12 VI	Tillamook Rock	6.8	1605	1632	44	45 55.0	124 08.1	190	14.8	27.33	9500	6.5	-----	
97	12 VI	Tillamook Rock	3.9	1719	1802	36	45 55.0	124 03.8	120	15.2	27.45	2500	6.5	KGB45	
98	12 VI	Tillamook Rock	1.7	2010	----	18	45 54.6	124 00.3	070	14.4	28.74	3500	5.5	-----	
99	13 VI	Lincoln Beach	2.0	1213	1240	25	44 51.4	124 05.5	080	14.9	28.32	3100	7.5	-----	
100	13 VI	Lincoln Beach	3.8	1426	1451	34	44 51.4	124 08.1	180	14.8	29.52	2900	7.0	KGB46	
101	13 VI	Lincoln Beach	7.0	1632	1656	54	44 51.4	124 12.6	110	14.7	29.73	2200	9.0	-----	
102	13 VI	Lincoln Beach	10.0	1835	1902	68	44 51.5	124 16.7	160	14.8	29.54	1200	7.5	KGB47	
103	13 VI	Lincoln Beach	15.0	2108	2129	82	41 51.5	124 23.8	085	14.7	29.77	17	---	KGB48	
104	14 VI	Newport	20.3	0648	0712	74	44 40.0	124 31.7	230	14.4	29.25	230	10.0	-----	
105	14 VI	Newport	24.6	0821	0839	152	44 40.0	124 38.6	180	14.7	29.33	1300	8.0	-----	
106	14 VI	Newport	15.0	1021	1044	49	44 39.9	124 24.4	030	14.9	29.26	2600	13.0	KGB49	
107	14 VI	Newport	9.8	1215	1239	41	44 38.4	124 17.5	125	15.7	28.42	2900	---	KGB50	
108	14 VI	Newport	7.0	1352	1422	35	44 38.4	124 13.4	190	15.4	28.72	2900	11.5	KGB51	
109	14 VI	Newport	3.7	1530	1558	26	44 38.4	124 09.1	220	15.3	-----	2700	8.0	-----	
110	14 VI	Newport	2.0	1722	1747	22	44 38.5	124 06.5	180	15.3	29.29	1700	5.0	-----	
111	15 VI	Alsea	2.1	0738	0758	21	44 25.0	124 08.0	090	13.9	30.08	500	5.0	-----	
112	15 VI	Alsea	4.4	0912	0937	26	44 25.0	124 10.6	090	14.6	29.99	1700	7.5	KGB52	

Appendix B.

Set #	Date	Transect	Distance offshore (n. mi.)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
KG113	15 VI	Alsea	7.0	1110	1137	35	44 24.8	124 14.9	090	15.7	29.47	2800	12.0	-----	
114	15 VI	Alsea	10.0	1226	1251	37	44 25.0	124 18.9	120	15.9	29.26	3000	12.5	KGB53	
115	15 VI	Alsea	15.0	1431	1450	42	44 24.9	124 26.0	020	15.9	29.44	3000	10.0	KGB54	
116	15 VI	Alsea	20.1	1622	1644	55	44 24.9	124 33.0	315	15.6	29.58	2700	15.0	-----	
117	15 VI	Alsea	20.1	1707	1729	54	44 24.3	124 33.2	225	15.6	29.58	2000	----	-----	
118	16 VI	Cut Creek	19.8	0550	0619	160	43 11.3	124 51.2	135	15.4	30.93	30	25.0	-----	
119	16 VI	Cut Creek	15.0	0740	0810	135	43 11.3	124 44.5	135	15.4	30.05	380	23.0	KGB55	
120	16 VI	Cut Creek	10.0	1010	1038	67	43 11.3	124 37.5	270	14.8	30.20	1400	12.0	KGB56	
121	16 VI	Cut Creek	7.0	1301	1331	46	43 11.3	124 33.6	270	14.8	30.12	2800	10.0	-----	
122	16 VI	Cut Creek	3.7	1441	1509	33	43 11.4	124 29.6	---	12.8	31.41	2600	12.8	KGB57	
123	16 VI	Cut Creek	2.0	1640	1704	22	43 11.4	124 26.7	0	12.8	31.79	1900	6.0	-----	
124	16 VI	Coos Bay	2.0	1954	2014	22	43 21.5	124 24.4	180	13.6	30.76	450	4.0	-----	
125	16 VI	Coos Bay	5.8	2128	2150	51	43 21.5	124 28.4	285	14.1	30.46	0.1	----	-----	
126	17 VI	Dune	1.4	0615	0702	21	43 31.4	124 16.7	145	14.4	30.06	500	8.0	-----	
~~127~~	~~17 VI~~	~~Dune~~	~~1.0~~	~~1745~~	~~0807~~	~~12~~	~~43 31.7~~	~~124 15.8~~	~~225~~	~~13.2~~	~~30.45~~	~~620~~	6.5	-----	
128	17 VI	Dune	1.0	0835	0901	13	43 31.4	124 16.0	0	----	-----	----	----	-----	
129	17 VI	Dune	1.0	1034	1059	12	43 31.7	124 15.8	225	13.3	30.70	2600	7.0	KGB58	
130	17 VI	Dune	7.2	1252	1319	60	43 31.5	124 24.5	225	13.4	31.01	3000	11.0	KGB59	
131	17 VI	Siuslaw River	1.9	1840	1911	25	44 01.2	124 11.0	225	14.2	29.87	220	4.0	-----	
132	17 VI	Siuslaw River	4.0	2001	2032	34	44 01.0	124 13.7	270	14.9	30.32	200	7.0	-----	
133	18 VI	Newport	2.3	0501	0530	22	44 38.3	124 06.8	090	14.6	29.80	0.2	----	-----	
134	18 VI	Newport	4.0	0646	0716	26	44 38.3	124 09.6	---	14.3	30.14	270	5.5	-----	
135	18 VI	Newport	5.6	0917	0950	31	44 38.4	124 11.5	090	14.6	29.20	300	8.0	-----	set on front

Appendix B.

JULY CRUISE

Set #	Date	Transect	Distance offshore (n. mi.)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
SF140	9 VII	Leadbetter Point	5.2	1115	1136	20	46 35.1	124 07.5	200	13.9	-----	2500	4.0	----	
141	9 VII	Leadbetter Point	8.6	1253	1317	30	46 35.0	124 12.3	200	13.8	31.56	900	4.5	----	
142	9 VII	Leadbetter Point	10.5	1412	1433	37	46 35.0	124 19.8	220	14.7	31.41	1000	4.5	SFB1	
143	9 VII	Leadbetter Point	15.0	1655	1714	55	46 35.0	124 25.5	280	14.7	31.61	2000	4.5	----	
144	9 VII	Leadbetter Point	20.8	1826	1844	122	46 35.4	124 33.8	260	14.7	31.32	1200	9.5	----	
145	9 VII	Leadbetter Point	14.9	2029	2046	52	46 35.0	124 25.3	250	14.2	31.41	150	5.5	----	
146	9 VII	Leadbetter Point	11.3	2149	2212	39	46 35.0	124 20.0	240	13.7	31.81	0.1	---	----	
147	10 VII	C.Disappointment	5.7	0750	0809	20	46 20.1	124 11.9	220	15.3	11.65	540	2.0	----	
148	10 VII	C.Disappointment	6.7	0927	0946	26	46 20.4	124 13.5	230	14.8	13.86	450	2.0	----	
149	11 VII	Warrenton	6.0	0906	0926	22	46 10.2	124 07.0	230	13.7	27.17	900	---	----	
150	11 VII	Warrenton	7.8	0958	1006	28	46 09.7	124 09.0	180	13.4	26.31	1800	2.0	----	
151	11 VII	Warrenton	6.3	1111	1129	29	46 10.2	124 08.8	230	14.2	26.09	2000	3.5	----	
152	11 VII	Warrenton	13.5	1257	1314	56	46 10.9	124 18.0	200	17.8	18.15	2500	2.0	----	
153	11 VII	Warrenton	9.9	1435	1441	40	46 10.2	124 12.6	230	16.9	22.20	9500	2.5	----	
~~154~~	~~11 VII~~	~~Warrenton~~	~~9.9~~	~~1510~~	~~1530~~	~~40~~	~~46 09.8~~	~~124 12.4~~	~~220~~	~~14.6~~	~~26.34~~	~~2500~~	~~2.0~~	~~SFB2~~	~~repeat set~~
155	11 VII	Warrenton	17.2	1820	----	70	46 12.2	124 24.4	220	17.1	18.56	1200	2.5	----	aborted
156	11 VII	Warrenton	17.2	1908	1927	71	46 12.2	124 24.4	280	15.8	20.89	1200	2.5	----	2.3 mi. off transect
157	11 VII	Warrenton	25.4	2057	2114	260	46 09.8	124 34.6	210	14.8	31.18	50	---	----	
158	12 VII	C.Disappointment	24.7	0621	0641	450	46 20.2	124 39.3	180	14.7	31.29	200	7.5	----	
159	12 VII	C.Disappointment	20.4	0758	0818	74	46 19.9	124 33.1	230	14.7	16.45	1000	3.0	----	
160	12 VII	C.Disappointment	15.3	0919	0939	64	46 20.7	124 25.7	180	15.4	13.36	1000	2.0	SFB3	
161	12 VII	C.Disappointment	10.0	1145	1214	41	46 20.4	124 18.2	220	16.2	14.67	3100	2.5	SFB4	

Appendix B.

Set #	Date	Transect	Distance Offshore (n. mi.)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
SF162	12 VII	C.Disappointment	9.6	1233	1251	41	46 20.0	124 17.8	---	16.0	15.06	280	2.5	----	
163	12 VII	C.Disappointment	9.5	1317	1337	41	46 19.9	124 17.5	250	16.4	14.94	200	---	----	
164	12 VII	C.Disappointment	7.2	1459	1516	30	46 19.9	124 14.4	270	16.4	16.55	1600	---	----	
165	12 VII	C.Disappointment	7.2	1530	----	30	46 19.7	124 14.4	200	16.7	16.55	3300	---	----	aborted
166	12 VII	C.Disappointment	7.1	1601	1611	29	46 19.2	124 14.4	---	16.7	16.48	2600	---	----	repeat set
167	12 VII	C.Disappointment	5.7	1709	1725	20	46 20.2	124 12.0	250	17.3	15.21	2600	---	----	
168	12 VII	C.Disappointment	10.0	2134	2153	44	46 20.1	124 18.4	210	16.4	14.01	0.3	---	----	
169	12 VII	C.Disappointment	10.0	2346	0005	44	46 20.1	124 18.4	230	15.0	17.16	<0.1	---	SFB5	repeat set
170	13 VII	C.Disappointment	10.0	0231	0252	43	46 20.0	124 18.3	240	15.2	17.70	<0.1	---	----	aborted
171	13 VII	C.Disappointment	10.1	0329	0347	44	46 19.9	124 18.5	220	15.1	17.68	<0.1	---	SFB6	repeat set
172	13 VII	C.Disappointment	10.1	0525	----	42	46 20.0	124 18.3	180	15.0	18.81	10	2.0	----	repeat set
173	13 VII	C.Disappointment	10.1	0612	0629	44	46 20.0	124 18.5	180	15.0	17.43	80	2.0	----	repeat set
174	13 VII	C.Disappointment	10.0	0659	0714	43	46 19.9	124 18.3	270	15.0	18.46	200	2.0	----	repeat set
175	13 VII	Tillamook Rock	1.4	1525	1543	20	45 55.4	124 00.7	180	14.5	28.60	3000	3.0	----	
176	13 VII	Tillamook Rock	4.2	1633	1648	38	45 54.9	124 04.1	250	15.2	28.69	1100	3.5	----	
177	13 VII	Tillamook Rock	7.0	1725	1740	45	45 55.0	124 08.2	245	16.3	24.50	500	---	----	
178	13 VII	Tillamook Rock	6.3	1819	1835	45	45 55.4	124 07.5	210	15.4	22.97	650	2.5	----	repeat set
179	13 VII	Tillamook Rock	7.0	1924	1944	46	45 55.4	124 08.2	210	16.3	22.76	300	3.0	----	repeat set
180	13 VII	Tillamook Rock	7.0	2132	2153	46	45 55.4	124 08.2	200	16.4	19.98	0.2	---	----	repeat set
181	14 VII	Tillamook Rock	7.0	0517	0535	45	45 55.4	124 08.2	180	15.1	27.05	1.0	2.5	----	repeat set
182	14 VII	Tillamook Rock	9.8	0625	0643	57	45 55.3	124 12.5	230	14.9	23.34	140	3.0	SFB7	
183	14 VII	Tillamook Rock	15.4	0909	0926	75	45 55.0	124 20.2	240	15.8	17.46	1000	3.5	SFB8	
184	14 VII	Tillamook Rock	18.8	1026	1044	80	45 55.0	124 25.0	210	16.0	19.98	1300	7.5	----	

Appendix B.

Set #	Date	Transect	Distance offshore (n. mi.)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (‰)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
SF185	15 VII	~~Newport~~ Tillamook Rock	25.1	1146	1204	92	45 55.0	124 34.1	---	15.4	31.40	1700	---	----	
186	17 VII	Newport	4.8	0718	0735	25	44 37.8	124 09.0	180	9.1	33.47	200	9.5	----	
187	17 VII	Newport	6.9	0812	0829	35	44 38.3	124 13.5	---	11.3	32.54	500	7.5	----	
188	17 VII	Newport	10.2	0912	0929	42	44 38.3	124 18.0	220	11.6	32.33	600	4.0	SFB9	
189	17 VII	Newport	10.2	0939	0957	42	44 38.3	124 18.0	200	11.9	32.36	410	---	----	repeat set
190	17 VII	Newport	11.3	1052	1111	42	44 38.6	124 19.6	180	12.5	32.08	600	4.5	----	bird flock
191	17 VII	Newport	11.8	1136	----	40	44 38.2	124 20.3	220	12.3	31.92	850	5.0	----	repeat set
192	17 VII	Newport	15.2	1513	1529	40	44 38.3	124 25.0	280	14.0	31.76	1400	5.0	----	
193	17 VII	Newport	15.3	1551	1609	39	44 38.2	124 25.1	240	14.2	31.80	1100	5.0	----	repeat set
194	17 VII	Newport	20.3	1726	1744	74	44 38.3	124 32.2	---	14.2	31.16	780	5.0	----	
195	17 VII	Newport	24.6	1840	1856	141	44 38.3	124 38.2	---	14.3	29.17	300	7.0	----	
196	18 VII	Lincoln Beach	20.2	0800	0815	114	44 51.6	124 30.8	280	15.3	28.57	250	10.5	----	
197	18 VII	Lincoln Beach	15.0	0906	0921	84	44 51.7	124 23.8	230	15.0	30.04	400	10.0	----	
198	18 VII	Lincoln Beach	9.7	1016	1032	69	44 51.2	124 16.3	300	15.1	31.00	400	10.0	SFB11	
199	18 VII	Lincoln Beach	7.2	1210	1226	57	44 51.2	124 12.8	---	14.4	30.94	1700	9.0	SFB12	
200	18 VII	Lincoln Beach	7.5	1245	1302	56	44 50.9	124 13.4	225	14.6	33.25	2000	9.0	----	repeat set
201	18 VII	Lincoln Beach	2.0	1357	1413	20	44 51.4	124 05.5	180	12.4	32.13	1800	6.0	----	
202	18 VII	Lincoln Beach	5.3	1459	1513	36	44 51.7	124 08.7	---	13.9	32.13	2000	4.5	----	
203	18 VII	Newport	2.0	1702	1718	20	44 38.3	124 06.7	---	11.7	33.34	1500	7.0	----	
204	18 VII	Alsea	2.3	2003	2009	23	44 24.9	124 08.3	220	12.9	32.82	200	4.5	----	
205	18 VII	Alsea	3.9	2052	2108	27	44 24.8	124 10.5	200	10.6	33.12	28	4.0	----	
206	18 VII	Alsea	7.3	2203	2220	35	44 25.0	124 15.2	---	12.9	32.39	<0.1	---	----	
207	18 VII	Alsea	10.0	2300	2319	39	44 24.8	124 19.0	240	12.6	32.21	<0.1	---	----	
208	19 VII	Alsea	14.7	0025	0046	42	44 24.8	124 25.7	---	13.2	31.93	<0.1	---	----	
209	19 VII	Alsea	19.4	0140	0200	53	44 25.2	124 32.0	---	13.6	31.77	<0.1	---	----	

Appendix B.

AUGUST CRUISE

Set #	Date	Transect	Distance offshore (n. mi.)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
SF210	8 VIII	C.Disappointment	5.9	0828	----	25	46 19.0	124 12.6	---	14.8	17.74	1100	---	-----	aborted
211	10 VIII	C.Disappointment	5.4	0851	0909	20	46 20.0	124 12.0	250	15.0	19.11	1200	2.0	-----	
212	10 VIII	C.Disappointment	7.2	1006	1022	29	46 20.0	124 14.1	240	15.7	17.64	1200	2.5	-----	
213	10 VIII	C.Disappointment	10.2	1148	----	43	46 20.0	124 18.5	220	15.9	18.86	1900	3.0	-----	
214	10 VIII	C.Disappointment	15.4	1314	1331	70	46 20.1	124 25.8	290	15.1	32.44	2200	4.0	-----	
215	10 VIII	C.Disappointment	19.9	1430	1452	74	46 19.7	124 32.4	---	15.1	32.44	2200	7.0	-----	
216	11 VIII	Leadbetter Pt.	24.9	0957	1014	350	46 35.2	124 39.8	240	14.1	32.09	800	3.5	-----	
217	11 VIII	Leadbetter Pt.	19.7	1109	1125	100	46 35.2	124 32.4	250	13.7	32.30	1100	3.0	-----	
218	11 VIII	Leadbetter Pt.	15.1	1214	1229	53	46 35.3	124 25.5	250	15.0	32.70	1100	6.5	SFB13	
219	11 VIII	Leadbetter Pt.	10.2	1435	1451	35	46 35.0	124 18.5	300	14.1	32.78	1000	3.0	SFB14	
220	11 VIII	Leadbetter Pt.	7.0	1614	1630	26	46 35.6	124 13.8	230	13.8	32.85	700	4.0	-----	
221	11 VIII	Leadbetter Pt.	5.1	1721	1738	20	46 35.1	124 11.1	260	13.4	32.73	550	---	SFB15	
222	12 VIII	Warrenton	24.8	0709	0730	82	46 10.3	124 34.0	260	15.3	32.04	220	12.0	-----	
223	12 VIII	Warrenton	19.2	0856	0914	71	46 10.8	124 26.4	250	15.0	32.16	650	12.0	-----	
224	12 VIII	Warrenton	14.8	1011	----	59	46 09.5	124 19.3	220	15.7	20.75	1400	4.0	-----	
~~225~~	~~12 VIII~~	~~Warrenton~~	14.8	1048	----	59	46 09.5	124 19.3	270	15.6	22.21	1500	3.5	SFB16	repeat set
226	12 VIII	Warrenton	13.8	1426	1442	58	46 10.1	124 18.3	260	16.3	23.09	2100	3.5	-----	repeat set
227	12 VIII	Warrenton	9.8	1536	1551	40	46 09.9	124 12.5	270	16.5	22.26	900	3.0	SFB17	
228	12 VIII	Warrenton	5.8	1813	----	20	46 09.5	124 6.4	260	14.7	24.83	300	3.0	SFB18	
229	13 VIII	Tillamook	25.0	0700	0720	80	45 56.7	124 35.2	240	15.6	32.41	130	12.0	-----	
230	13 VIII	Tillamook	20.0	0826	0845	79	45 55.3	124 27.2	240	15.3	28.99	160	4.0	-----	
231	13 VIII	Tillamook	14.7	1019	1037	74	45 55.2	124 19.7	230	15.4	25.12	400	3.5	SFB19	
232	13 VIII	Tillamook	14.8	1217	1233	75	45 55.3	124 19.8	270	15.6	25.71	800	3.0	-----	repeat set
233	13 VIII	Tillamook	10.1	1329	1345	57	45 55.3	124 12.8	240	14.5	31.04	900	5.0	SFB20	

Appendix B.

Set #	Date	Transect	Distance offshore (n. mi.)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
SF234	13 VIII	Tillamook	6.5	1543	1602	45	45 55.7	124 07.9	---	14.2	31.87	800	4.5	-----	
235	13 VIII	Tillamook	6.8	1644	1655	45	45 55.4	124 08.2	240	14.2	31.97	900	---	-----	
236	13 VIII	Tillamook	4.2	1753	----	38	45 55.0	124 04.2	240	14.6	32.15	400	5.5	SFB21	
237	13 VIII	Tillamook	2.8	2000	2019	30	45 54.9	124 02.3	230	14.4	32.14	58	5.5	-----	
238	14 VIII	Point Lookout	15.3	0723	0738	100	45 20.1	124 19.8	250	15.5	28.53	35	7.0	-----	
239	14 VIII	Point Lookout	10.3	0850	0906	83	45 20.2	124 12.8	280	14.5	31.79	----	9.0	-----	
240	14 VIII	Point Lookout	6.9	1026	1042	59	45 20.1	124 08.2	---	14.5	31.89	450	5.0	-----	
241	14 VIII	Point Lookout	3.9	1118	1133	40	45 20.1	124 04.0	---	14.3	31.95	600	5.0	-----	
242	14 VIII	Point Lookout	2.2	1206	----	24	45 19.4	124 01.1	220	13.5	32.36	650	3.5	-----	
243	15 VIII	Newport	1.9	1117	1135	20	44 38.3	124 06.3	220	13.4	33.01	850	7.0	-----	
244	15 VIII	Newport	2.5	1216	1233	25	44 38.2	124 07.3	190	13.3	33.10	980	---	SFB22	
245	15 VIII	Newport	7.2	1406	1423	36	44 38.3	124 13.8	230	13.0	33.12	1050	4.0	-----	
246	15 VIII	Newport	10.4	1506	1522	44	44 38.4	124 18.2	220	12.5	33.00	980	3.0	SFB23	
247	15 VIII	Newport	14.9	1641	1659	36	44 38.2	124 24.7	240	13.9	32.34	820	5.0	SFB24	
~~248~~	~~15 VIII~~	~~Newport~~	~~19.7~~	~~1843~~	~~1901~~	~~72~~	~~44 38.2~~	~~124 31.8~~	~~200~~	~~15.0~~	~~31.86~~	~~740~~	~~5.5~~	~~-----~~	
249	15 VIII	Newport	25.2	1952	2008	130	44 38.3	124 38.8	---	15.0	31.66	260	5.5	-----	
250	15 VIII	Newport	7.1	2252	2308	37	44 38.3	124 14.1	220	12.7	34.94	----	---	-----	
251	16 VIII	Newport	6.9	0143	0200	36	44 38.3	124 13.9	210	12.1	32.96	----	---	-----	repeat set
252	16 VIII	Newport	6.9	0430	0447	36	44 38.7	124 13.4	220	12.2	32.85	----	---	-----	repeat set
253	16 VIII	Newport	7.2	0803	0824	35	44 38.3	124 13.8	240	12.1	32.86	200	3.5	-----	repeat set
254	16 VIII	Lincoln Beach	1.3	1429	1448	20	44 51.7	124 04.4	240	13.2	33.18	1300	3.5	-----	
255	16 VIII	Lincoln Beach	4.3	1540	1556	35	44 51.6	124 08.8	240	12.9	33.05	900	5.0	SFB25	
256	16 VIII	Lincoln Beach	7.2	1652	----	55	44 51.4	124 12.8	220	12.5	32.97	950	---	-----	aborted

Appendix B.

Set #	Date	Transect	Distance offshore (n. mi.)	Time Start	Time Pursed	Depth (fathoms)	Latitude	Longitude	Net open to (° true)	Temp (°C)	Salinity (°/₀₀)	Illumination (fc)	Secchi (M)	Zooplankton tow #	Comments
SF257	16 VIII	Lincoln Beach	7.2	1716	1749	56	44 51.4	124 12.8	220	----	-----	650	---	-----	
258	17 VIII	Lincoln Beach	10.0	0621	0638	62	44 51.5	124 16.7	200	12.6	32.92	13	4.5	-----	
259	17 VIII	Lincoln Beach	15.7	0732	0747	81	44 51.5	124 23.7	210	14.5	31.40	190	9.0	-----	
260	17 VIII	Alsea	19.9	1108	1124	56	44 24.8	124 32.8	230	14.6	32.41	1100	13.0	-----	
261	17 VIII	Alsea	15.2	1217	1233	44	44 25.2	124 26.2	230	14.0	32.47	750	14.0	-----	
262	17 VIII	Alsea	10.3	1353	1407	38	44 25.0	124 19.6	230	13.2	32.66	1000	6.5	SFB26	
263	17 VIII	Alsea	7.0	1530	1546	36	44 25.1	124 14.7	---	13.3	33.40	800	---	SFB27	
264	17 VIII	Alsea	3.9	1659	1715	27	44 25.2	124 10.1	220	13.1	33.40	610	4.5	SFB28	
265	17 VIII	Alsea	2.5	1814	1829	20	44 25.2	124 08.6	240	12.5	33.42	250	---	-----	
266	18 VIII	Cut Creek	15.2	0926	0942	168	43 11.4	124 44.7	---	15.0	32.41	400	18.0	-----	
267	18 VIII	Cut Creek	10.4	1034	----	70	43 11.2	124 37.9	---	14.1	32.72	390	17.0	-----	
268	18 VIII	Cut Creek	6.7	1133	1149	44	43 11.6	124 33.0	220	13.3	32.89	1000	10.5	SFB29	
269	18 VIII	Cut Creek	3.9	1318	1334	33	43 11.5	124 28.3	230	12.6	33.08	1700	11.5	-----	
270	18 VIII	Cut Creek	2.2	1359	1414	25	43 11.5	124 27.0	220	11.7	33.44	1300	11.5	-----	
271	18 VIII	Coos Bay	5.9	1557	1614	52	43 21.4	124 28.5	250	14.3	32.79	900	11.0	-----	
272	18 VIII	North Spit	1.5	1736	1752	24	43 26.4	124 19.0	220	12.7	32.97	580	10.0	-----	
273	19 VIII	Siuslaw	18.6	0704	0721	78	44 01.0	124 33.5	240	14.5	32.32	60	16.0	-----	
274	19 VIII	Siuslaw	6.8	0915	0931	47	44 01.0	124 17.5	240	13.9	32.72	500	15.0	-----	
275	19 VIII	Siuslaw	3.6	1005	1021	32	44 01.2	124 13.2	---	13.5	32.65	700	13.0	-----	
276	19 VIII	Siuslaw	3.8	1037	1052	32	44 00.8	124 13.4	---	13.5	32.66	780	13.0	-----	
277	19 VIII	Siuslaw	1.4	1118	1134	21	44 01.0	124 10.2	220	13.1	32.83	900	14.0	SFB30	

Appendix C. Surface concentration of chlorophyll-a and phaeo-pigments at purse seining stations off Oregon and Washington during spring and summer 1981.

Set No.	Chlorophyll-a µg/l	Phaeo-pigments µg/l	Set No.	Chlorophyll-a µg/l	Phaeo-pigments µg/l
KG - 1	3.65	0.62	34	-	-
2	-	-	35	1.29	0.43
3	3.92	0.50	36	0.15	0.07
4	1.15	0.20	37	-	-
5	0.63	0.15	38	0.20	0.04
6	2.31	0.52	39	2.12	0.32
7	-	-	40	3.06	0.61
8	-	-	41	1.78	0.31
9	-	-	42	1.57	0.42
10	0.69	0.32	43	1.39	0.19
11	0.76	0.46	44	2.40	0.90
12	2.17	0.48	45	2.93	0.74
13	1.04	0.27	46	2.33	0.84
14	2.21	0.54	47	1.02	0.20
15	-	-	48	-	-
16	5.93	2.73	49	0.18	0.08
17	0.77	0.22	50	0.18	0.04
18	-	-	51	-	-
19	3.36	0.52	52	-	-
20	0.83	0.22	53	0.22	0.14
21	0.32	0.13	54	0.93	0.10
22	0.27	0.08	55	3.44	0.43
23	0.26	0.09	56	3.36	0.37
24	0.19	0.06	57	-	-
25	-	-	58	0.54	0.17
26	-	-	59	0.73	0.17
27	1.38	0.19	60	0.63	0.15
28	1.91	0.08	61	0.87	0.06
29	1.87	0.73	62	1.04	0.13
30	2.12	0.01	63	0.29	0.10
31	1.91	0.13	64	1.46	0.25
32	1.42	0.19	65	1.55	0.20
33	0.23	0.05	66	2.47	0.12

Appendix C. (continued)

Set No.	Chlorophyll-a µg/l	Phaeo-pigments µg/l	Set No.	Chlorophyll-a µg/l	Phaeo-pigments µg/l
KG - 67	-	-	102	0.46	0.16
68	-	-	103	0.86	0.22
69	5.30	0.58	104	-	-
70	4.98	0.30	105	0.18	0.08
71	3.04	0.17	106	0.29	0.14
72	1.07	0.27	107	0.46	0.13
73	0.46	0.18	108	0.36	0.05
74	0.28	0.09	109	1.17	0.28
75	0.37	0.12	110	1.44	0.37
76	2.02	0.39	111	3.94	0.90
77	3.22	0.01	112	1.06	0.16
78	3.71	0.99	113	0.32	0.04
79	4.13	1.16	114	-	-
80	1.48	0.29	115	1.16	0.04
81	1.43	0.13	116	0.33	0.08
82	0.60	0.13	117	0.29	0.06
83	0.34	0.13	118	0.09	0.07
84	0.57	0.20	119	0.05	0.04
85	0.49	0.08	120	0.21	0.08
86	-	-	121	-	-
87	0.21	0.01	122	6.04	0.42
88	0.32	0.10	123	4.22	0.67
89	0.34	0.17	124	10.8	0.15
90	-	-	125	1.59	0.61
91	-	-	126	1.26	0.30
92	0.77	0.04	127	3.12	0.14
93	0.89	0.10	128	-	-
94	0.74	0.08	129	3.83	0.47
95	0.51	0.14	130	1.04	0.19
96	0.78	0.20	131	4.08	0.03
97	0.53	0.08	132	1.16	0.09
98	0.37	0.24	133	3.01	0.32
99	1.32	0.37	134	3.38	0.48
100	0.28	0.09	135	1.32	0.23
101	0.47	0.13			

Appendix C. (continued)

Set No.	Chlorophyll-a µg/l	Phaeo-pigments µg/l	Set No.	Chlorophyll-a µg/l	Phaeo-pigments µg/l
SF - 141	2.24	1.57	176	4.49	0.55
142	0.79	0.36	177	3.26	0.65
143	2.89	0.43	178	3.10	0.91
144	0.39	0.13	179	3.60	1.19
145	1.45	0.51	180	-	-
146	-	-	181	2.91	0.79
147	2.08	1.39	182	5.06	0.21
148	3.70	1.53	183	2.98	0.79
149	13.76	1.92	184	2.79	0.33
150	12.88	2.00	185	0.31	0.25
151	8.72	0.40	186	1.34	0.52
152	2.77	0.95	187	9.50	0.83
153	5.50	0.80	188	7.53	2.15
154	-	-	189	-	-
155	3.68	1.06	190	4.06	2.65
156	5.47	1.96	191	3.56	0.79
157	0.24	0.26	192	3.26	0.65
158	0.41	0.30	193	-	-
159	3.32	0.68	194	3.79	1.15
160	4.08	0.52	195	1.16	0.49
161	3.00	0.15	196	-	-
162	3.82	0.90	197	0.61	0.19
163	2.99	0.63	198	0.56	0.22
164	3.65	0.75	199	1.02	0.27
165	-	-	200	0.90	0.32
166	-	-	201	2.54	0.48
167	2.71	1.19	202	5.72	1.33
168	-	-	203	3.07	0.04
169	-	-	204	5.60	1.49
170	-	-	205	6.48	2.18
171	-	-	206	-	-
172	5.18	1.92	207	-	-
173	-	-	208	-	-
174	-	-	209	-	-
175	2.73	0.84	210	-	-

Appendix C. (continued)

Set No.	Chlorophyll-a µg/l	Phaeo-pigments µg/l	Set No.	Chlorophyll-a µg/l	Phaeo-pigments µg/l
SF - 211	-	-	246	10.12	1.24
212	-	-	247	3.37	0.76
213	10.07	0.01	248	1.08	0.96
214	2.41	0.73	249	0.77	0.50
215	1.16	0.41	250	-	-
216	12.80	2.88	251	-	-
217	7.38	4.20	252	-	-
218	1.47	0.20	253	6.68	1.34
219	7.72	2.66	254	4.55	1.52
220	6.28	0.08	255	1.98	0.83
221	6.52	0.52	256	3.38	2.05
222	0.50	0.33	257	-	-
223	0.73	0.16	258	5.70	2.02
224	9.96	0.80	259	0.66	0.61
225	-	-	260	0.50	0.20
226	5.06	0.24	261	0.67	0.19
227	13.12	0.80	262	2.84	0.90
228	7.49	2.01	263	0.72	0.56
229	0.72	0.26	264	2.15	0.76
230	4.98	0.90	265	5.38	1.46
231	8.00	1.40	266	0.65	0.86
232	6.09	1.94	267	0.53	0.40
233	2.71	0.60	268	1.88	0.36
234	2.41	0.33	269	1.99	0.53
235	3.10	0.57	270	0.46	1.00
236	1.37	0.29	271	2.59	0.29
237	0.97	0.49	272	1.30	0.67
238	3.76	0.52	273	0.48	0.45
239	0.77	0.27	274	0.75	0.70
240	1.17	0.76	275	1.10	0.56
241	2.61	1.50	276	1.03	0.86
242	11.52	1.08	277	1.04	0.39
243	1.38	0.76			
244	1.04	0.76			
245	6.76	1.16			

Appendix D-1. Summary of number of juvenile coho salmon in purse seine sets off Oregon and Washington ("-" indicates no seine set, "( )" indicates number of adipose clipped fish).

MAY

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	23 V 81	-	12 (1)	-	3	1	0	0	0	-	
Cape Disappointment	22 V 81	-	4	-	0	0	5 (1)	0	0	-	
								0	0		
Warrenton	21 V 81	-	1	-	18 (1)	1	9	20 (1)	0	0	
									8		
	24-25 V 81	-	0	-	0	3	18	-	-	-	
Tillamook Rock	20 V 81	-	1	0	5	133 (9)	7	13	0	-	
	24 V 81	-	0	0	0	0	1	-	-	-	
Yaquina Bay Area:											
Lincoln Beach	20 V 81	-	15	4	17 (1)	1	0	-	-	-	8.5/3,12.5/17(2)
Newport	16 V 81	-	25	1	0	16	0	-	-	-	
						58					
						27					
						9					
	17 V 81					6					
						33 (2)					
						0					
Alsea Bay	18 V 81	-	0	16	46 (1)	21	50 (1)	0	-	-	

JUNE

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	9 VI 81	0	30	-	3	1	0	0	-	-	
Cape Disappointment	10 VI 81	-	87 (1)	-	47	7 (1)	0	0	-	-	
Warrenton	10&11 VI 81	-	48 (1)	-	2	12	50 (1)	29	1	0	
							1		3		
							10				
							27 (1)				
							15 (1)				
Tillamook Rock	12 VI 81	-	0	0	1	0	2	0	0	-	
Yaquina Bay Area:											
Lincoln Beach	13 VI 81	-	1	0	0	0	0	-	-	-	
Newport	14 VI 81	-	4	6	0	6	0	14(1)	0	-	
	18 VI 81	-	0	0	-	-	-	-	-	-	5.6/0
Alsea Bay	15 VI 81	-	0	0							
Siuslaw River Area:											
Siuslaw River	17 VI 81	-	3	0	-	-	-	-	-	-	
Coos Bay Area:											
Dune	17 VI 81	51 (4)	0	-	0	-	-	-	-	-	
		0									
		1									
Coos Bay	16 VI 81	-	3 (1)	0	-	-	-	-	-	-	
Cut Creek	16 VI 81	-	0	0	0	0	0	0	-	-	

Appendix D-1.

JULY

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	9 VII 81	-	3	-	4	5 7	0 1	0	-	-	
Cape Disappointment	10 VII 81	-	0	-	0	-	-	-	-	-	
	12 VII 81	-	2	-	1 (1) 0	0 1 1 5 0 0 1 2 2	0	4	0	-	
Warrenton	11 VII 81	-	1	-	0 0	0 1	0	-	0	-	17.2/3
Tillamook Rock	13&14 VII 81	-	0	6	21 (1) 26 23 44 (2) 3	18	23 (1)	19	0		
Yaquina Bay Area:											
Lincoln Beach	16 VII 81	-	0	3	3 2	8 (1)	0	0	-	-	
Newport	17 VII 81	-	0	0	0	3 7	26 21 (1)	3	0	-	11.3/10(3),11.8/46(2)
Alsea	18 VII 81	-	0	1	5	1	1	3	-	-	

AUGUST

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	11 VIII 81	-	1	-	3	7	8	2	1	-	
Cape Disappointment	10 VIII 81	-	1	-	0	5	16	1	-	-	
Warrenton	12 VIII 81	-	4	-	-	4(1)	27 (1) 26 20 (1)	0	0	-	
Tillamook Rock	13 VIII 81	-	0	5	18 (2) 3	31 (1)	26 21 (1)	16 (1)	0	-	
Pt. Lookout Area:											
Pt. Lookout	14 VIII 81	-	1	1	3	0	0	-	-	-	
Yaquina Bay Area:											
Lincoln Beach	16-17 VIII 81	-	5	2	3	8	0	0	-	-	
Newport	15 VIII 81	-	24 (2)	3	12 3 5 3 0	7	0	4	1	-	
Alsea	17 VIII 81	-	3	4	5	14	0		-	-	
Siuslaw River Area:											
Siuslaw River	19 VIII 81	-	0	2 (1) 2	0	-	-	0	-	-	
Coos Bay Area:											
Coos Bay	18 VIII 81	-	-	-	-	-	-	-	-	-	
Cut Creek	18 VIII 81	-	0	0	1	0	0	-	-	-	5.9/0
*North Spit	18 VIII 81	1.5 mi, 0									

Appendix D-2. Summary of number of juvenile chinook salmon in purse seine sets off Oregon and Washington ("-" indicates no seine set, "( )" indicates number of adipose clipped fish).

MAY

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	23 V 81	-	12(1)	-	1	2	1	0	0	-	
Cape Disappointment	22 V 81	-	3	-	2	1	1	0 0	0 0	-	
Warrenton	21 V 81	-	4	-	3	8(1)	2	1	0 0	0	
	24&25 V 81	-	0	-	0	1 0	2				
Tillamook Rock	20 V 81	-	0	0	1	0	0	0	0	-	
	24 V 81	-	0	0	0	0	0	-	-	-	
Yaquina Bay Area:											
Lincoln Beach	20 V 81	-	3	0	3	0	0	-	-	-	8.5/3(1),12.5/0
Newport	16 V 81	-	0	0	-	0 0 0 2	0	-	-	-	
	17 V 81					0 2 0					
Alsea Bay	18 V 81	-	2	1	0	2(1)	2	0	-	-	

JUNE

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	9 VI 81	2	5	-	2	0	0	0	-	-	
Cape Disappointment	10 VI 81	-	3	-	1	2	0	0	-	-	
Warrenton	10&11 VI 81	-	0	-	1	0	1 0 0 0 0	0	0 0	0	
Tillamook Rock	12 VI 81	-	0	0	0	0	1	0	0	-	
Yaquina Bay Area:											
Lincoln Beach	13 VI 81	-	0	0	0	0	0	-	-	-	
Newport	14 VI 81	-	1	1	0	0	0	0	0	-	
	18 VI 81	-	0	0	-	-	-	-	-	-	5.6/0
Alsea Bay	15 VI 81	-	1	0	0	0	0	0 0	-	-	
Siuslaw River Area:											
Siuslaw River	17 VI 81	-	3	0	-	-	-	-	-	-	
Coos Bay Area:											
Dune	17 VI 81	4 2 2	0	-	0	-	-	-	-	-	
Coos Bay	16 VI 81	-	3	0	-	-	-	-	-	-	
Cut Creek	16 VI 81	-	1	2 (1)	0	0	0	0	-	-	

Appendix D-2.

JULY

TRANSECT	SAMPLING DATE	10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	
Columbia River Area:											
Leadbetter Pt.	9 VII 81	-	3	-	1	0 1	0 0	0	-	-	
Cape Disappointment	10 VII 81	-	4	-	0	-	-	-	-	-	
	12 VII 81	-	6	-	8 (1) 3	4 17 7 4 2 0 0 0 0	2	0	0	-	
Warrenton	11 VII 81	-	3	-	2 2 (1)	0 0	2	1	0	-	17.2/1
Tillamook Rock	13&14 VII 81	-	1	0	0 1 0 0 0	0	1 (1)	0	0	-	
Yaquina Bay Area:											
Lincoln Beach	18 VII 81	-	0	0	0	0	0	0	-	-	
Newport	17 VII 81	-	1	0	0	0 0	0 0	0	0	-	11.3/0,11.8/0
Alsea	18 VII 81	-	0	0	0	0	0	0	-	-	

AUGUST

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	
Columbia River Area:											
Leadbetter Pt.	11 VIII 81	-	10	-	8	11	0	0	0	-	
Cape Disappointment	10 VIII 81	-	6	-	0	0	3	0	-	-	
Warrenton	12 VIII 81	-	5 (1)	-	-	4	0 2 0	0	0	-	
Tillamook Rock	13 VIII 81	-	0	0	0	0	0 1	0	0	-	
Pt. Lookout Area:											
Pt. Lookout	14 VIII 81	-	0	1	0	0	0	-	-	-	
Yaquina Bay Area:											
Lincoln Beach	16-17 VIII 81	-	0	2	0	0	0	0	-	-	
Newport	15 VIII 81	-	0	0	1 0 1 0 0	0	0	0	0	-	
Alsea	17 VIII 81	-	0	0	0	0	0	0	0	-	
Siuslaw River Area:											
Siuslaw River	17 VIII 81	-	0	0 0	0	-	-	0	-	-	
Coos Bay Area:											
Coos Bay*	18 VIII 81	-	-	-	-	-	-	-	-	-	5.9/0
Cut Creek	18 VIII 81	-	0	0	0	0	0	-	-	-	
*North Spit	18 VIII 81	1.5 mi, 0									

Appendix D-3. Summary of number of juvenile chum salmon in purse seine sets off Oregon and Washington ("-" indicates no seine set, "( )" indicates number of adipose clipped fish).

MAY

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	23 V 81	-	0	-	0	0	0	0	0	-	
Cape Disappointment	22 V 81	-	0	-	0	0	0	0 0	0 0	-	
Warrenton	21 V 81	-	0	-	1	0	0	0	0 0	0	
	24&25 V 81	-	8	-	0	0 0	0	-	-	-	
Tillamook Rock	20 V 81	-	5	0	0	0	0	0	0	-	
	24 V 81	-	0	0	0	0	0	-	-	-	
Yaquina Bay Area:											
Lincoln Beach	20 V 81	-	0	0	1	0	0	-	-	-	8.5/0,12.5/0
Newport	16 V 81	-	0	0	-	0 0 0 0	0	0	-	-	
	17 V 81					0 0 0					
Alsea	18 V 81	-	0	19	5	0	0	0	-	-	

JUNE

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	9 VI 81	0	0	-	0	2	2	0	-	-	
Cape Disappointment	10 VI 81	-	0	-	0	0	0	-	-	-	
Warrenton	10&11 VI 81	-	9	-	0	2	3 0 1 0 0	2	0 0	0	
Tillamook Rock	12 VI 81	-	0	0	0	0	0	0	0	-	
Yaquina Bay Area:											
Lincoln Beach	13 VI 81	-	0	0	0	2	0	-	-	-	
Newport	14 VI 81	-	0	0	0	2	0	3	0	-	
	18 VI 81	-	0	0	-	-	-	-	-	-	5.6/0
Alsea Bay	15 VI 81	-	0	0	1	0	0	1 0	-	-	
Siuslaw River Area:											
Siuslaw River	17 VI 81	-	0	0	-	-	-	-	-	-	
Coos Bay Area:											
Dune	17 VI 81	0 0 0	-	-	0	-	-	-	-	-	
Coos Bay	16 VI 81	-	0	0	-	-	-	-	-	-	
Cut Creek	16 VI 81	-	0 0	-	0	0	0	0	-	-	

Appendix D-3.

JULY

TRANSECT	SAMPLING DATE	10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	9 VII 81	-	0	-	1	0 22	2 0	0	-	-	
Cape Disappointment	10 VII 81	-	0	-	0	-	-	-	-	-	
	12 VII 81	-	0 0	- -	0 0	0 0 0 0 0 0 0 0 0 0	0	0	0	-	
Warrenton	11 VII 81	-	0	-	0 0	0 0	0	0	0	-	17.2/0
Tillamook Rock	13-14 VII 81	-	0	0	0 0 0 0 0	2	0	0	0	-	
Yaquina Bay Area:											
Lincoln Beach	18 VII 81	-	0	0	0 0	0	0	0	-	-	
Newport	17-18 VII 81	-	0	0	0	0 0	1 0	0	0	-	11.3/0,11.8/3
Alsea	18 VII 81	-	0	0	0	0	0	0	-	-	

AUGUST

TRANSECT	SAMPLING DATE	10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
		SAMPLING STATIONS									
Columbia River Area:											
Leadbetter Pt.	11 VIII 81	-	0	-	0	0	0	1	3	-	
Cape Disappointment	10 VIII 81	-	0	-	0	0	22	0	-	-	
Warrenton	12 VIII 81	-	0	-	-	0	1 0 0	0	0	-	
Tillamook Rock	13 VIII 81	-	0	2	0 0	5	0 0	0	0	-	
Pt. Lookout Area:											
Pt. Lookout	14 VIII 81	-	0	0	1	0	0	-	-	-	
Yaquina Bay Area:											
Lincoln Beach	16 VIII 81	-	0	0	0	1	0	0	-	-	
Newport	15 VIII 81	-	0	0	0 0 0 0 0	0	0	0	0	-	
Alsea	17 VIII 81	-	0	0	0	0	0	-	-	-	
Siuslaw River Area:											
Siuslaw River	19 VIII 81	-	0	0 0	0	-	-	0	-	-	
Coos Bay Area:											
Coos Bay*	16 VIII 81	-	-	-	-	-	-	-	-	-	5.9/0
Cut Creek	18 VIII 81	-	0	0	0	0	0	-	-	-	
*North Spit	18 VIII 81	1.5 mi, 0									

Appendix D-4. Summary of juvenile number of steelhead trout in purse seine sets off Oregon and Washington ("-" indicates no seine set, "( )" indicates number of adipose clipped fish).

MAY

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	23 V 81	-	1	-	0	1	1	1	1	-	
Cape Disappointment	22 V 81	-	0	-	0	0	5	0 5	1 0	- -	
Warrenton	21 V 81	-	0	-	0	0	0	3	1 0	0	
	24 V 81	-		-				-	-	-	
Tillamook Rock	20 V 81	-	1	0	0	0	0	8	0	-	
	24 I 81	-	0	0	0	0	0	-	-	-	
Yaquina Bay Area:											
Lincoln Beach*	20 V 81	-	0	0	0	0	0	-	-	-	8.5/0,12.5/0
Newport	16 V 81	-	0	0	-	0 0 0 0 0 0 0	0	-	-	-	
	17 V 81										
Alsea Bay	18 V 81	-	0	0	1	0	0	0	-	-	

JUNE

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	9 VI 81	0	0	-	2	1 (1)	2	5	-	-	
Cape Disappointment	10 VI 81	-	0	-	0	0	0	1	-	-	
Warrenton	10&11 VI 81	-	0	-	0	0	0 0 1 0 1	0	1 5	0	
Tillamook Rock	12 VI 81	-	0	0	0	0	0	6	0	-	
Yaquina Bay Area:											
Lincoln Beach	13 VI 81	-	0	0	0	0	0	-	-	-	
Newport*	14 VI 81	-	0	0	0	0	0	0	0	-	
	18 VI 81	-	0	0	-	-	-	-	-	-	5.6/0
Alsea Bay	15 VI 81	-	0	0	0	0	0	0 0	-	-	
Siuslaw River Area:											
Siuslaw River	17 VI 81	-	0	0	-	-	-	-	-	-	
Coos Bay Area:											
Dune	17 VI 81	0 0 0	0	-	0	-	-	-	-	-	
Coos Bay	16 VI 81	-	0	0	-	-	-	-	-	-	
Cut Creek	16 VI 81	-	0	-	0	0	0	0	-	-	

Appendix D-4.

JULY

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	9 VII 81	-	0	-	0	0	0 0	0 0	-	-	
Cape Disappointment	10 VII 81	-	0	-	0	-	-	-	-	-	
	12 VII 81	-	0	-	0 0	0 0 0 1 0 0 0 0 0	0	1	0	-	
Warrenton*	11 VII 81	-	0	-	0 0	0 0	0	-	0 0	-	17.2/0
Tillamook Rock	13&14 VII 81	-	0	0	0 0 0 0 0	0	0	0	0	-	
Yaquina Bay Area:											
Lincoln Beach	18 VII 81	-	0	0	0 0	0	0	0	-	-	
Newport**	17 VII 81	-	0	0	0	0 0	0 0	0	0	-	11.3/0,11.8/0
Alsea Bay	18 VII 81	-	0	0	0	0	0	0	-	-	

AUGUST

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	11 VIII 81	-	0	-	0	0	0	0	0	-	
Cape Disappointment	10 VIII 81	-	2	-	0	0	0	0	-	-	
Warrenton	12 VIII 81	-	0	-	-	0	0 0 0	-	0	-	
Tillamook Rock	13 VIII 81	-	0	0	0 0	0	0 0	0	0	-	
Pt. Lookout Area:											
Pt. Lookout	14 VIII 81	-	0	0	0	0	0	-	-	-	
Yaquina Bay Area:											
Lincoln Beach	16 VIII 81	-	0	0	0	0	0	0	-	-	
Newport	15 VIII 81	-	0	0	0 0 0 0 0	0	0	0	0	-	
Alsea	17 VIII 81	-	0	0	0	0	0	0	-	-	
Siuslaw River Area:											
Siuslaw River	19 VIII 81	-	0	0 0	0	-	-	0	-	-	
Coos Bay Area:											
Coos Bay*	18 VIII 81	-	-	-	-	-	-	-	-	-	5.9/0
Cut Creek	18 VIII 81	-	0	0	0	0	0	-	-	-	
*North Spit	18 VIII 81	1.5 mi, 0									

Appendix D-5. Summary of number of cutthroat trout in purse seine sets off Oregon and Washington ("-" indicates no seine set, "( )" indicates number of adipose clipped fish).

MAY

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	23 V 81	-	1	-	1	3	0	0	0	-	
Cape Disappointment	22 V 81	-	0	-	0	0	0	0	0	-	
Warrenton	21 V 81	-	0	-	0	0	0	6	0 0	0	
	24&25 V 81	-	0	-	0	0	2	-	-	-	
Tillamook Rock	20 V 81	-	0	0	2	1	0	0	-	-	
	24 V 81	-	0	0	0	0	0	-	-	-	
Yaquina Bay Area:											
Lincoln Beach	20 V 81	-	0	0	2	0	0	-	-	-	8.5/0,12.5/0
Newport	16 V 81	-	0	0	-	0 0 0 0 0	0	-	-	-	
	17 V 81					0 0 0					
Alsea Bay	18 V 81	-	0	0	0	0	0	0	-	-	

JUNE

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	9 VI 81	0	1	-	2	0	0	0	-	-	
Cape Disappointment	10 VI 81	-	3	-	5	0	0	0	-	-	
Warrenton	10&11 VI 81	-	0	-	0	0	0 0 0 0 0	0	0 0	0	
Tillamook Rock	12 VI 81	-	0	0	0	0	0	0	0	-	
Yaquina Bay Area:											
Lincoln Beach	13 VI 81	-	0	0	0	0	0	-	-	-	
Newport	14 VI 81	-	0	0	0	0	0	0	0	-	
	18 VI 81	-	0	0	-	-	-	-	-	-	5.6/0
Alsea	15 VI 81	-	0	0	0	0	0	0 0	-	-	
Siuslaw River Area:											
Siuslaw River	17 VI 81	-	1	0	-	-	-	-	-	-	
Coos Bay Area:											
Dune	17 VI 81	0 0 1	0	-	0	-	-	-	-	-	
Coos Bay	16 VI 81	-	0	0	-	-	-	-	-	-	
Cut Creek	16 VI 81	-	0	-	0	0	0	0	-	-	

Appendix D-5.

JULY

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Ledbetter Pt.	9 VII 81	-	0	-	0	0	0 0	0 0	-	-	
Cape Disappointment	10 VII 81	-	2	-	0	-	-	-	-	-	
	12 VII 81	-	1	-	1 1	0 1 1 6 2 4 6 1 2	1	0	0	-	
Warrenton	11 VII 81	-	1	-	1 0	0 0	1	0	0 0	-	17.2/0
Tillamook	13&14 VII 81	-	1	0	1 0 0 1 0	0	0	0	0	-	
Yaquina Bay Area:											
Lincoln Beach	18 VII 81	-	0	0	0 0	0	0	0	-	-	
Newport	17 VII 81	-	0	0	2	0	0 0	0	0	-	11.3/0,11.8/0
Alsea Bay	18 VII 81	-	0	0	0	2	0	0	-	-	

AUGUST

TRANSECT	SAMPLING DATE	SAMPLING STATIONS 10-14 fm	20 fm	4 mi	7 mi	10 mi	15 mi	20 mi	25 mi	30 mi	OTHER (n.mi./#)
Columbia River Area:											
Leadbetter Pt.	11 VIII 81	-	0	-	0	0	0	0	0	-	
Cape Disappointment	10 VIII 81	-	2	-	1	4	0	0	0	-	
Warrenton	12 VIII 81	-	0	-	-	1	3 1 1	0	0	-	
Tillamook Rock	13 VIII 81	-	0	0	0 0	0	0 0	0	0	-	
Pt. Lookout Area:											
Pt. Lookout	14 VIII 81	-	0	0	0	0	0	-	-	-	
Yaquina Bay Area:											
Lincoln Beach	16 VIII 81	-	0	0	0	0	0	-	-	-	
Newport	15 VIII 81	-	0	0	0 0 0 0 0	0	0	0	0	-	
Alsea	17 VIII 81	-	0	1	0	0	0	1	-	-	
Siuslaw River Area:											
Siuslaw River	18 VIII 81	-	0	0 0	0	-	-	0	-	-	
Coos Bay Area:											
Coos Bay*	18 VIII 81	-	-	-	-	-	-	-	-	-	5.9/0
Cut Creek	18 VIII 81	-	0	0	0	0	0	-	-	-	
*North Spit	18 VIII 81	1.5 mi, 0									

Appendix E-1. Summary of coded wire tag recoveries for juvenile salmonids collected off Oregon and Washington during spring and summer 1981 (Preliminary data).

SPECIES	BROOD YR.	TAG CODE	HATCHERY	RELEASE SITE	OCEAN ENTRY SITE	RELEASE DATE	RECOVERY DATE	DAYS SINCE RELEASE	SEINE SET #	TRANSECT	NORTH-SOUTH DISTANCE FROM OCEAN ENTRY	LENGTH AT RECOVERY (mm)
Coho	79	05-07-39	Quinault L.	Hoh River	Hoh River	10-17 III 81	20 V 81	64-71	30	Tillamook Rock	110 S	143
Coho	79	07-21-13	Big Creek	Big Creek	Columbia R.	20 IV 81	16 V 81	26	6	Newport	97 S	146
Coho	79	07-21-17	Big Creek	Big Creek	Columbia R.	20 IV 81	18 V 81	28	17	Alsea	110 S	142
Coho	79	07-21-18	Big Creek	Big Creek	Columbia R.	20 IV 81	22 V 81	32	47	Cape Dis.	5 N	154
Coho	79	07-21-22	Big Creek	Big Creek	Columbia R.	5 V 81	11 VI 81	37	91	Warrenton	5 S	177
Coho	79	07-21-23	Big Creek	Big Creek	Columbia R.	8 VI 81	17 VII 81	41	190	Newport	97 S	186
Coho	79	07-21-25	Big Creek	Big Creek	Columbia R.	8 VI 81	11 VI 81	3	91	Warrenton	5 S	153
Coho	79	07-21-30	Cascade	Big Creek	Columbia R.	6 V 81	11 VI 81	36	83	Warrenton	5 S	183
Coho	79	07-21-32	Cascade	Big Creek	Columbia R.	6 VII 81	12 VII 81	6	164	Cape Dis.	5 N	138
Coho	79	07-21-32	Cascade	Big Creek	Columbia R.	6 VII 81	18 VII 81	12	198	Lincoln Beach	80 S	156
Coho	79	07-22-56	Sandy	Cedar Creek	Columbia R.	1 V 81	20 V 81	19	30	Tillamook Rock	20 S	146
Coho	79	07-22-62	Sandy	Cedar Creek	Columbia R.	1 V 81	20 V 81	19	30	Tillamook Rock	20 S	140
Coho	79	07-22-62	Sandy	Cedar Creek	Columbia R.	1 V 81	20 V 81	19	30	Tillamook Rock	20 S	136
Coho	79	07-22-57	Sandy	Cedar Creek	Columbia R.	1 V 81	10 VI 81	41	77	Cape Dis.	5 N	190
Coho	79	63-21-06	Grays River	Grays River	Columbia R.	30 IV 81	18 V 81	18	10	Newport	97 S	159
Coho	79	63-21-06	Grays River	Grays River	Columbia R.	30 IV 81	20 V 81	20	30	Tillamook Rock	20 S	135
Coho	79	63-21-06	Grays River	Grays River	Columbia R.	30 IV 81	21 V 81	21	42	Warrenton	5 S	132
Coho	79	63-22-43	Grays River	Grays River	Columbia R.	30 IV 81	14 VII 81	75	183	Tillamook Rock	20 S	240
Coho	79	63-21-50	Washougal R.	Washougal R.	Columbia R.	30 IV 81	20 V 81	20	30	Tillamook Rock	20 S	134
Coho	79	63-21-51	Washougal R.	Washougal R.	Columbia R.	27 V 81	10 VI 81	14	79	Cape Dis.	5 N	139
Coho	79	63-22-03	Washougal R.	Washougal R.	Columbia R.	27 V 81	12 VIII 81	77	233	Tillamook Rock	20 S	256

Appendix E-1. Summary of coded wire tag recoveries for juvenile salmonids collected off Oregon and Washington during spring and summer 1981 (Preliminary Data).

SPECIES	BROOD YR.	TAG CODE	HATCHERY	RELEASE SITE	OCEAN ENTRY SITE	RELEASE DATE	RECOVERY DATE	DAYS SINCE RELEASE	SEINE SET #	TRANSECT	NORTH-SOUTH DISTANCE FROM OCEAN ENTRY	LENGTH AT RECOVERY (mm)
Coho	79	05-08-26	Eagle Creek	Eagle Creek	Columbia R.	22 IV 81	20 V 81	28	30	Tillamook Rock	20 S	153
Coho	79	05-08-27	Eagle Creek	Eagle Creek	Columbia R.	21 IV 81	20 V 81	29	30	Tillamook Rock	20 S	150
Coho	79	05-08-28	Eagle Creek	Eagle Creek	Columbia R.	21 IV 81	20 V 81	29	30	Tillamook Rock	20 S	150
Coho	79	05-08-28	Eagle Creek	Eagle Creek	Columbia R.	21 IV 81	13 VIII 81	114	230	Tillamook Rock	20 S	286
Coho	79	05-08-28	Eagle Creek	Eagle Creek	Columbia R.	21 IV 81	21 V 81	30	35	Warrenton	5 S	144
Coho	79	07-23-15	Nehalem	Fishhawk Cr.	Nehalem R.	15 III 81	20 V 81	66	21	Lincoln Beach	48 S	172
Coho	79	07-23-16	Nehalem	N. Nehalem R.	Nehalem R.	1 V 81	19 V 81	18	25	Lincoln Beach	48 S	151
Coho	79	07-23-23	Siletz	Siletz R.	Siletz R.	1 V 81	18 V 81	17	10	Newport	17 S	150
Coho	80	07-23-57	Cedar Creek	Nestucca R. to	Trask R.	21 IV-8 V 81	12 VIII 81	96-113	226	Warrenton	36-54 N	163
Coho	79	60-33-47	OAF	South Beach	Yaquina Bay	11 V 81	18 V 81	7	15	Alsea	11 S	140
Coho	80	60-33-60	OAF	South Beach	Yaquina Bay	12 VI 81	14 VI 81	2	104	Newport	2 N	124
Coho	80	60-33-61	OAF	South Beach	Yaquina Bay	21 VI 81	17 VII 81	26	190	Newport	2 N	167
Coho	80	60-33-61	OAF	South Beach	Yaquina Bay	21 VI 81	17 VII 81	26	191	Newport	2 N	181
Coho	80	60-03-62	OAF	South Beach	Yaquina Bay	7 VII 81	15 VIII 81	39	243	Newport	2 N	138
Coho	80	60-34-03	OAF	South Beach	Yaquina Bay	2 VIII 81	15 VIII 81	13	243	Newport	2 N	144
Coho	80	60-34-12	OAF	South Beach	Yaquina Bay	6 VII 81	17 VII 81	11	193	Newport	2 N	139
Coho	80	60-33-54	OAF	Coos Bay	Coos Bay	5 VI 81	17 VI 81	12	127	Dune	10 N	121
Coho	80	60-34-11	OAF	Coos Bay	Coos Bay	16 VI 81	17 VII 81	31	190	Newport	77 N	153
Coho	79	62-22-05	Anad.	Jordon Pt.	Coos Bay	18 V-1 VI 81	17 VI 81	16-30	127	Dune	10 N	173
Coho	79	62-22-05	Anad.	Jordon Pt.	Coos Bay	18 V-1 VI 81	19 VIII 81	79-92	275	Siuslaw River	40 N	337
Coho	79	62-26-05	Anad.	Jordon Pt.	Coos Bay	1 VI-15 VI 81	16 VI 81	1-15	124	Coos Bay	-0-	156
Coho	79	62-26-05	Anad.	Jordon Pt.	Coos Bay	1 VI-15 VI 81	13 VII 81	28-42	177	Tillamook Rock	154 N	223
Coho	79	62-27-05	Anad.	Jordon Pt.	Coos Bay	1 VI-15 VI 81	17 VI 81	2-16	127	Dune	10 N	169

Appendix E-1. Summary of coded wire tag recoveries for juvenile salmonids collected off Oregon and Washington during spring and summer 1981 (Preliminary Data).

SPECIES	BROOD YR.	TAG CODE	HATCHERY	RELEASE SITE	OCEAN ENTRY SITE	RELEASE DATE	RECOVERY DATE	DAYS SINCE RELEASE	SEINE SET #	TRANSECT	NORTH-SOUTH DISTANCE FROM OCEAN ENTRY	LENGTH AT RECOVERY (mm)
Coho	79	62-28-04	Anad.	Jordon Pt.	Coos Bay	8 VI 81	17 VI 81	9	127	Dune	10 N	179
Coho	79	62-47-04	Anad.	Jordon Pt.	Coos Bay	18 V-1 VI 81	10 VI 81	9-23	80	Warrenton	170 N	199
Chinook(F)	79	06-61-09	Trinity R.	Trinity R.	Klamath R.	X 80	18 V 81	~210	16	Alsea	168 N	290
Chinook(F)	80	03-17-33		McNary Dam	Columbia R.		12 VIII 81		228	Warrenton	5 S	137
Chinook(S)	79	07-22-20	McKenzie	McKenzie R.	Columbia R.	16 III 81	23 V 81	68	57	Leadbetter Pt.	20 N	277
Chinook(S)	79	07-22-53	Marion Forks	N. Santiam R.	Columbia R.	16-24 III 81	22 V 81	59-67	65	Warrenton	5 S	185
Chinook(S)	79	07-22-54	Marion Forks	N. Santiam R.	Columbia R.	16-18 III 81	14 VII 81	118-120	183	Tillamook Rock	20 S	214
Chinook(S)	79	10-22-36	Rapid River	Rapid R.	Columbia R.	17 II-12 IV 81	19 V 81	37-91	26	Lincoln Beach	80 S	145
Chinook(S)	79	07-22-29	Rock Creek	Rock Creek	Umpqua R.	26 II 81	16 VI 81	105	122	Cut Creek	29 S	295
Steelhead	80	05-07-58	Quinault NFH	Cook Creek	Quinault R.	27 III-22 V 81	9 VI 81	18-74	72	Leadbetter Pt.	46 S	172
Steelhead	80	10-22-52	Dworshak	Clearwater St.	Columbia R.	4 V 81	21 V 81	17	35	Warrenton	5 S	206

Appendix E-2. Summary of coded wire tag recoveries for adult salmonids collected off Oregon and Washington during spring and summer 1981 (Preliminary Data).

SPECIES	BROOD YR.	TAG CODE	HATCHERY	RELEASE SITE	OCEAN ENTRY SITE	RELEASE DATE	RECOVERY SITE	SEINE SET #	TRANSECT	NORTH-SOUTH DISTANCE FROM OCEAN ENTRY	LENGTH AT RECOVERY (mm)
Coho	78	63-16-34	Puyallup	Voight Creek	Puget Sound	IV 80	9 VII 81	140	Leadbetter Pt.	108 S*	468
Coho	78	63-20-49	Fox Is. Pens	Echo Bay	Puget Sound	VII 80	13 VII 81	173	Cape Dis.	123 S*	502
Coho	78	63-21-19	Seattle Marine	Elliot Bay	Puget Sound	V 80	11 VII 81	154	Warrenton	133 S*	414
Coho	78	63-19-09	Wild Fish	Skykomish R.	Puget Sound	IV 80	17 VII 81	194	Newport	228 S*	564
Coho	78	07-20-33	Sandy	Cedar Creek	Columbia R.	V 80	23 V 81	56	Leadbetter Pt.	20 N	455
Coho	78	05-06-38	Willard	Yakima R.	Columbia R.	X 79	16 V 81	7	Newport	97 S	514
Coho	78	63-19-54	Washougal	Washougal R.	Columbia R.	VII 80	21 V 81	41	Warrenton	5 S	344
Coho	78	63-19-54	Washougal	Washougal R.	Columbia R.	VII 80	11 VI 81	84	Warrenton	5 S	417
Coho	78	63-19-54	Washougal	Washougal R.	Columbia R.	VII 80	12 VIII 81	227	Warrenton	5 S	486
Coho	78	63-19-54	Washougal	Washougal R.	Columbia R.	VII 80	14 VII 81	181	Tillamook Rock	20 S	505
Coho	78	63-19-54	Washougal	Washougal R.	Columbia R.	VII 80	21 V 81	41	Warrenton	5 S	442
Coho	78	63-19-55	Washougal	Washougal R.	Columbia R.	VII 80	13 VII 81	173	Cape Dis.	5 N	567
Coho	78	63-20-38	Washougal	Washougal R.	Columbia R.	VI 80	16 V 81	6	Newport	97 S	507
Coho	78	63-20-38	Washougal	Washougal R.	Columbia R.	VI 80	21 V 81	41	Warrenton	5 S	466
Coho	78	63-20-38	Washougal	Washougal R.	Columbia R.	VI 80	10 VI 81	77	Cape Dis.	5 N	390
Coho	78	63-20-38	Washougal	Washougal R.	Columbia R.	VI 80	12 VIII 81	227	Warrenton	5 S	427
Coho	78	63-20-37	Washougal	Washougal R.	Columbia R.	VI 80	11 VII 81	153	Warrenton	5 S	495
Coho	78	63-20-37	Washougal	Washougal R.	Columbia R.	VI 80	14 VII 81	181	Tillamook Rock	20 S	585
Coho	79	60-31-53	OAF	Yaquina Bay	Yaquina Bay	VI 80	16 V 81	7	Newport	2 N	437
Coho	78	60-43-33	OAF	Yaquina Bay	Yaquina Bay	VIII 80	11 VI 81	83	Warrenton	-	495
Chinook(F)		63-20-30	Coulter Creek	Coulter Creek	Puget Sound	26 V 80	12 VIII 81	225	Warrenton	133 S*	443

* Distance from Cape Flattery