

1983, UNALAKLEET RIVER ESCAPEMENT PROJECT
SALMON ESCAPEMENT REPORT # 32

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INTRODUCTION

The Unalakleet River empties into Norton Sound approximately 130 miles southeast of Nome, is approximately 130 miles in length, and drains an area of 1,087 square miles. The Unalakleet River flows from the Nulato hills westward to the town of Unalakleet on the Bering Sea coast. Five major tributaries comprise the river, all of which support spawning salmon.

The town of Unalakleet is situated at the mouth of the Unalakleet River, the most important salmon producing river in Norton Sound. Historically, the people of the area have depended on the salmon runs for their livelihood; first, as food for themselves and their dogs and more recently as the basis of their cash economy.

Attempts to assess salmon escapement to the system have been made annually by aerial stream surveys, counting towers on the North River in 1973 and 1974 and on the Chirosky River during 1975 and 1976. Weather and water clarity have often limited these enumeration efforts but escapement estimates have ranged as high as 1,477 king (1977); 28,600 chum (1978); 491,706 pink (1978) and 1,184 coho salmon (1980), not including major tributaries.

A salmon subsistence survey is conducted by the Commercial Fisheries Division each year in Unalakleet. Results have indicated that subsistence catch averages have been increasing in recent years. The recent five-year average, 1978 to 1982, subsistence salmon catches were: 922 king, 4,694 coho, 13,019 pink and 3,840 chum salmon. Coho and pink salmon catches have shown the greatest increases due largely to increased returns of these species.

Commercial catches in the Unalakleet subdistrict have also increased due to increased effort, better technology and the increased returns of coho and pink salmon. The recent five-year average, (1978-1982), commercial catch for the Unalakleet subdistrict is 5,629 king, 28,427 coho, 131,016 pink and 43,086 chum salmon. In 1982 the average commercial fisherman received approximately \$6,000 from the sale of salmon.

Because of the importance of the commercial and subsistence

fisheries and the problems of estimating escapement in this subdistrict, side-scanning sonar was installed in 1982 in the Unalakleet River in hopes of gaining a more accurate estimate of escapement and at the very least, a more consistent index of salmon migration.

A test fishing program was in operation in 1981 in the lower four miles of the Unalakleet River. Indices from this study were instrumental in helping the area biologist set some commercial fishing periods. In 1982 sonar counts proved useful as an index of the coho salmon escapement and were used by the area biologist in extending the coho fishery.

A number of problems affecting sonar counts became more apparent during the 1983 season. These problems brought on by low river velocity (1.3 to 1.7 f.p.s.) and tidal fluctuations included milling salmon and allocating counts to five different fish classifications.

With increased harvest effort on the chinook population, a limited sport fish survey was begun.

This report presents the results of the Unalakleet sonar project's second year of operation and comparison of test fishing indices from 1981 to 1983.

METHODS

Project Deployment

Supplies and equipment were on-site and camp construction was completed on May 28. Both north and south bank counters were in operation on June 4. Sonar counter operation ceased on September 4, 91 days after counting was initiated. By September 6 the sonar camp had been dismantled and the equipment stored for the winter.

Test fishing began on May 27 and ended on September 23.

Sonar

The Electrodynamics Division of the Bendix Corporation developed a side-scanning hydroacoustic counter during the 1970's capable of detecting and counting salmon migrating along the banks of tributary streams. The side-scan sonar counter is designed to transmit a sonic beam along a 60 foot aluminum tube or substrate.

Echoes from fish passing through the beam are reflected to the transducer. The system's electronics interpret the strength and number of the echoes and tally fish counts.

Two Bendix side-scan counters, 1981 models, were used on the Unalakleet River. The respective 60-foot tubular aluminum substrates were deployed from opposite banks of the Unalakleet River. Both substrates were positioned so there was at least two feet of water over the sonar beam that is projected immediately above the substrate; that is, two feet over the transducer housing and seven feet over the target end of the substrate. It was found that three feet of water was needed as a buffer to eliminate "debris" counts due to wind ripples, flotsam and sudden water level changes. A small weir was placed to prevent fish passage inshore from the transducer on both sides of the river. The substrates were not located directly opposite each other. The north bank substrate was located 400 feet upstream from the south bank substrate which was placed in a nearly ideal river bottom profile. Unfortunately, mud shallows were opposite the south bank. During the season, fish behavior necessitated movement of the north bank substrate to a site 300 feet downstream of the south bank substrate.

The river width at this site is approximately 200 feet. The deepest channel is located about 80 feet from shore at the north bank substrate and about 100 feet from shore at the south bank substrate. Although one-third of the river is isonified by the sonar beams, if fish follow a depth contour then more than two-thirds of the possible fish paths would be covered by the sonar counters.

The substrates were moved several times during the summer because of water level changes or for cleaning. The substrates were guyed to two "dead men", each in the form of buried logs, held in place with fence posts. Stainless steel aircraft cable fastened to each end of the substrate was attached to respective dead men on shore.

The cables were roughly parallel and adjusted to hold the substrate perpendicular to shore. The inshore cable was long enough to allow the substrate to remain perpendicular to shore even though it might be moved 15 feet from shore. The easiest method of movement of the substrate was to use the hydrodynamic shape of the substrate to raise itself and push against the substrate with a "handy man" jack. The inshore footing could then be relocated with a minimum of

effort.

Although the current at the sonar site was insufficient to raise the tube to the surface, it did help in pulling it up to a point where it could be cleaned.

Calibration (a comparison of oscilloscope fish counts and sonar fish counts) was scheduled four times daily on both banks. The magnitude of the fish milling problem, compounded by slow fish passage, made this schedule impractical much of the summer. Calibration was attempted when usable results seemed impossible; it was not attempted at extreme rates of fish passage. Calibration was done by comparing echoes on a Tektronix 221 oscilloscope with counts of the sonar counter. Salmon passing through the sonar beam produce a distinctive oscilloscope trace. A count of 100 fish within 30 minutes, the maximum calibration period, was required before resetting the sonar fish velocity controls.

$$\% \text{ agreement} = \frac{\text{Sonar computer count}}{\text{Oscilloscope count}}$$

The % agreement was then used to adjust the daily counts. Agreement of less than 1 indicates the sonar was undercounting and greater than 1 indicates overcounting.

When the count agreement varied more than 15%, then the following equation was used to derive a new fish velocity:

$$\% \text{ agreement} \times \text{existing velocity} = \text{new velocity}$$

Milling fish became a problem on June 28 on the north bank when slow migrating and milling pink salmon, oscar, started "riding" the substrate turbulence wave. Based on counting tower observations, it was determined that all sixteen sectors were affected. On July 1 and 2, the substrate was moved approximately 700 feet downstream to the base of a small cliff with somewhat faster water velocity. Pink salmon began riding the substrate at the new site within hours. Oscars were not a problem on the south bank during this time; therefore, in order to estimate the passage on the north bank, the average hourly passage rate (percent per hour of the daily total) of the preceding three day period of the south bank was used to calculate daily totals for the

north bank based upon hours which were not apparently effected by oscar:

$$\text{Daily total--North} = \frac{\text{Total of valid hourly counts--north} \times \text{Preceding 3-day sum of daily counts--South}}{\text{Total of corresponding hourly counts for preceding 3 days--south.}}$$

After two weeks of attempting to deal with milling fish, the following policy was decided on. The sonar beam was raised slightly so that a strong target was seen in the four degree mode but a decrease in target strength was barely apparent in the two degree mode. The offshore end of the substrate was moved five feet downstream from the perpendicular placement used earlier. The beam was extended as far as possible beyond the target. These measures seemed to eliminate fish avoidance of the substrate as a problem.

Other milling problems were not satisfactorily resolved. Salmon moving downstream were not counted by the sonar but those same fish moving upstream could be counted by the sonar. It was decided to invalidate an hourly count if milling fish were observed from a tower or oscilloscope or if sonar criteria were not met. Disqualifying sonar criteria were hourly debris checks or a large fish count over 15. The large fish count indicated fish moving over the substrate in a tight school which was characteristic of milling behavior. King salmon in the Unalakleet did not seem to reflect a long enough signal to register as "large fish"; however, two or three small salmon could register if they were close to the same distance from the transducer and spaced in an overlapping manner.

Records of changes in counter settings, river conditions and other unusual occurrences were also used in adjusting daily sonar counts.

The large fish counter on the 1981 model sonar counter was ignored except as an index of milling fish.

Test Fishing

The same test fishing site as in 1981 and 1982 was used during the 1983 season.

The ten fathom 8 1/4" gillnet was set from May 27 to May 31. A twenty fathom 8 1/4" gillnet was set on June 1 and fished until June 4. From June 5 to September 4, the period of sonar operation, a rotating schedule of twelve hour time blocks over a period of three days was used. The nets used included:

1. 20 fm 8 1/4" mesh
2. 25 fm 5 1/4" mesh (June 5-August 10)/25 fm 5 7/8" mesh (August 11-September 4)
3. 25 fm 4" mesh
4. 15 fm variable mesh

The 25 fm 5 7/8" mesh gillnet was fished from September 5 to September 25. The 8 1/4" mesh net and the variable mesh net were fished concurrently. The three-day rotation schedule allowed each net to be fished during one 12-hour high tide/daylight period and one 12-hour low tide/night period. Nets were rotated at 0900 and 2100 daily. The 8 1/4" mesh net was removed from the rotation on July 21 because the chinook migration was completed.

The CPUE (catch/100 fm-hr) was calculated for the two most efficient nets for each species to be used in apportioning sonar counts. These CPUE's for chinook, coho, pink, chum and other species presumably detectable by sonar were totaled and the specie's CPUE divided by the total CPUE for all species to give the percent of the period's sonar counts to each specie. The seventh day of the week was apportioned by using the previous 3-day proportions for one half of the counts and the following 3-day proportions for the second half of the counts.

Test net data (Tables 5A, 5B, 5C and 5D) was calculated for the single most effective net for each species for separate analysis.

Weights, lengths and scale samples were taken from all chinook, coho and chum captured. Pink salmon were counted only. Tissue samples were taken from test net chinook salmon for electrophoretic studies coordinated by the Stock Separation Section of the Commercial Fisheries Division.

Counting Towers

Counting towers were erected immediately adjacent to the

onshore end of each substrate (Figure 2). As in 1982, the use of visual tower counts for comparison with sonar counts could not be relied upon due to river width, surface disturbances, etc; however, several short comparisons were possible. The towers proved invaluable in determining the presence of moribund fish, debris passage, presence of oscar, fish swimming behavior, etc. The 1983 low river level and generally less turbidity, as compared to 1982, allowed more rapid and concrete identification of the milling fish. Without use of the tower, the severity of the milling fish problem may not have been discovered.

Drift Sets/Beach Seines

Drift sets and beach seines were done for comparison with test net species apportionment and to determine fish passage beyond the sonar counting range. Drift sets were accomplished by drifting a 25 fm 5 1/4" gillnet perpendicular to the shore. The 25 fm net allowed the major portion of the river to be fished; thus, only one drift was done per set, as opposed to 1982 when a drift set was done near each bank. Set durations ranged from 5 to 17 minutes, dependent upon boat traffic, wind conditions, etc. Drift sets were done on July 19, 23 and 27 and August 3, 22, 23, 26 and 31.

Beach seines were accomplished by using a 25 fm 3" mesh seine immediately downstream of the south bank substrate. Shoreline conditions prevented seining near either north bank site. Beach seines on the south bank were done on July 20, 25 and 28 and August 1 and 29. Beach seines at mile 12, Unalakleet River, were done on August 4 and 24. High water levels prevented seining from August 4 to 24.

River Surveys

Two river surveys were attempted during 1983. A jet boat was taken up the North River on July 29. This proved to be early for carcass sampling but weather and equipment problems prevented a later survey.

A float trip of the Old Woman and upper Main River was also made. A plane landing mishap greatly reduced the scope of this trip. Weather prevented any follow up work.

Subsistence Surveys

A daily survey of three to five subsistence fishermen is

made from the time the first king salmon is caught, early in June, through the remainder of that month. These people must be trustworthy, conscientious about checking their nets and fairly successful. The average daily catch is compared to the previous day to develop the annual trend and the total catches and the annual trend is compared to past years. Commercial catch and effort data and the up-river test net data are used in conjunction with the subsistence catch to anticipate future catches and management strategies.

During late September an extensive door to door survey is made of Unalakleet. The Annual Management Report covers subsistence surveys in detail.

RESULTS

Subsistence Survey

The Unalakleet subsistence survey made in late September interviewed 74 subsistence fishermen, 68 of whom fished in the river and 17 who fished in the ocean. The catch was predominantly from the river with 1480 king, 6311 coho, 13458 pink and 4124 chum salmon reported. The ocean subsistence catch was 388 king, 577 coho, 350 pink and 277 chum salmon.

The mean chinook salmon catch per fisherman peaked on June 16. This compares with July 3 in 1982 and June 19-22 in 1981. All subsistence fishermen surveyed in 1983 were fishing within one mile of the river mouth.

Chinook subsistence survey results are presented in Table 1 and Figure 3. As in 1981 and 1982, the variances in nets, fishing times and net locations call for calculation of mean catch per fisherman as opposed to catch per unit effort.

Sonar

During the period from June 4 to September 4 the final sonar count was 322,494; 148,465 (46.0%) counts were tallied on the south bank and 174,029 (54.0%) counts were tallied on the north bank.

The daily sonar counts (Table 2) were adjusted by the test net proportions (Table 4) to give the following escapement estimates for the period June to September 4:

<u>Species</u>	<u>Total Count</u>	<u>% of Total</u>
Chinook	2,790	0.9
Coho	17,013	5.3
Pink	91,881	28.5
Chum	58,273	18.1
Other	<u>152,537</u>	<u>47.2</u>
	322,494	100.0

Tables 3A, 3B, 3C, 3D and 4D present this data by 3-day sample period. Based on discussions with Al Menin and Dave Gaudet about the ability of sonar counters to discriminate between various target shapes and sizes, any fish two and one half pounds or laterally compressed fish of one pound or larger could be counted by a sonar calibrated for pink salmon. Fish other than salmon considered countable by the sonar counter included arctic char, grayling, burbot and broad, humpback and Alaska whitefish.

Peak adjusted apportioned sonar counts were on June 23 for chinook, August 21 for coho, July 18 for pink and July 25 for chum salmon (Tables 3A, 3B, 3C and 3D, Figures 4A, 4B, 4C and 4D).

Representative passage rates on the south bank by sector and by hour for July 3-5 and August 21-23 are presented in Figures 6 and 7. These periods were chosen because of minimal adjustments to raw counts; north bank counts are not presented due to lack of relatively "clean" data for those periods.

Test Fishing

A total of 19 chinook (74% male - 26% female), 294 coho (61% male - 39% female), 1156 pink (52% male - 48% female) and 915 chum (54% male - 46% female) was captured from May 27 to September 23. The fish were sampled and delivered to Martha Nanouk, a local subsistence fisherman, as per agreement, for the use of her traditional set-net site.

Based on the single most effective test net CPUE, the chinook migration did not "peak" as such, but rather showed most consistent catches on June 22 and 23, coho migration peaked from August 10-14, pinks from July 18-22 and chum on July 13.

Comparisons of daily CPUE and cumulative CPUE for all salmon species are presented in Tables 5A, 5B, 5C and 5D and Figures 8 thru 15. Of interest, although not as useful for annual comparison due to different test net methods, net mesh sizes, fishing time, etc., the actual fish caught from 1981 to 1983 are:

<u>1981</u>	<u>1982</u>	<u>1983</u>
41 chinook	39 chinook	39 chinook
107 coho	310 coho	294 coho
1463 pink	5114 pink	1156 pink
722 chum	375 chum	915 chum

Age, Sex and Size Composition of Test Net Catches

An age analysis of scales collected during the project indicated the following age compositions: king salmon all gear sizes (4-2, 13%; 5-2, 22%; 5-3, 8%; 6-2, 32%; 7-2, 3%), coho salmon 5 1/4" and 5 7/8" gear (3-2, 0.5%; 4-3, 98%; 4-4, 0.5%; 5-4, 1%), chum salmon 5 1/4" and 5 7/8" gear (3-1, 2%; 4-1, 61%; 5-1, 37%). Tables 7 thru 9D show the age composition of the various species broken down by date and the mesh sizes used during the project.

Counting Towers

As cited, visual tower counts could not be made on the Unalakleet River due to river width, surface disturbances, turbidity, etc. However, visual observations proved invaluable in identifying spawning behavior, etc. and resulted in the downstream relocation of the north bank substrate and development of the method used to adjust north bank sonar counts.

Drift Sets/Beach Seines

Tables 6A and 6B present the results of drift sets and beach seines, respectively. Drift set results indicate that the portion of the river not isonified was not used by migrating salmon, ie., the species most countable, coho, pink and chum salmon, would seem to follow the banks and were counted by the side-scan sonar.

Beach seines proved useful in verifying the high presence of

species other than salmon, the relative abundance of coho salmon in August and the presence of spawning chum salmon in the south bank substrate area.

River Surveys/Aerial Surveys

On July 29th, 32 miles of the North River were surveyed by a two-person crew for the purpose of counting live chinook and sampling chinook carcasses. A total of 166 live chinook were counted and 3 chinook carcasses were sampled, with approximately half of the chinook counted between mile 25 and mile 32.

Originally the Old Woman River survey was to be a six-day trip. Due to the damage the plane suffered dropping the first crew member off, the second member and support gear was not available for the survey as planned. The survey of the Old Woman River, August 6-8, counted 60 king salmon but only four samples were collected. Weather prevented the survey of the main river.

King Salmon Sport Fish Survey

A sport fishing lodge on the Unalakleet River is responsible for the majority of the sport fishing effort. Periodic surveying of lodge personnel indicates that a fair quantity of king salmon are harvested by sport fishing. A quantitative survey was not done, however, due to limited time available. A total of 43 chinook was sampled from sport fishing catches.

DISCUSSION

River levels were lower than normal during the spring of 1983 due to the lack of snow accumulation the previous winter. The Unalakleet River cleared early and became quite low during late June and early July. The low water allowed the counting towers at the sonar site to be used during calm survey days, which wasn't possible during 1982.

Tower observations made as early as June 28 showed serious milling problems at the north bank sonar site. The sonar was moved to a new site on July 2. Milling fish were still a considerable problem at the new site but about half the hourly count were considered acceptable during mid-July. Milling salmon were a problem through most of the field season. Milling salmon of all four species were observed

during the latter half of each respective migration. Pink salmon presented the worst problem and chum the least. Unfortunately, milling pinks invalidated the chum count since the two runs overlap. Coho salmon exhibited some milling but an accurate evaluation of this problem was hampered by turbid water. Milling coho became a problem after August 20.

The milling observed from the towers was not apparent to the observer at the oscilloscope because of the overwhelming number of spikes present at that stage of the salmon migration. During 1982, when tower observations were not possible, the oscilloscope appeared to have an extraordinary number of spikes. The large pink salmon count recorded in 1982 may have been an artifact of milling behavior that was unobservable then. Commercial catch and test net catch statistics indicate a large pink salmon run. However, it is likely fish milling over the substrate exaggerated the sonar count although without tower observations it can not be proven.

Another problem observed during the 1983 field season was avoidance of the substrate by all fish species. This problem was at its worst when water was low and clear. Angling the substrate slightly downstream as it was after July 15, helped considerably. By extending the sonar beam periodically, it was determined that as visibility decreased, so did avoidance.

Species apportionment of the sonar count was done using test net catches. Some of the problems encountered with the sampling scheme should be pointed out. Test nets were assumed to sample the same portion of the river as the sonar. Since three net lengths were used, this seemed suspect. Different species migrate at different depths. The non-salmon species tend to migrate in shallow water near shore and generally the larger species migrate in deeper water nearer mid-stream. Since only a 15-fathom net of the most efficient type for non-salmon species was fished in the preferred habitat for these fish, it is likely that the calculated efficiency was too high. The other test nets were longer and also sampled some preferred areas for the targeted species.

The opposite case is true for king salmon. The 8 1/4" net is 20 fathoms long, 5 fathoms shorter than the other nets used on this project. This net does not cover all of the area preferred by king salmon. This means king salmon

escapement is probably underestimated but the 20 fathom net samples an area further out than the sonar counter even with its beam extended. So the number of king salmon counted by the sonar is over estimated. King salmon make up such a small percentage of the total salmon run that counting errors are more significant than this apportionment error.

Very few chum and pink salmon were caught in the offshore end of the nets. It is assumed these long nets had very little effect on the sonar count species apportionment.

CONCLUSION

The feasibility of counting salmon in the Unalakleet River using side-scanning sonar is unlikely due to milling fish and the inability to accurately apportion the sonar count to the various fish species. It is possible that a partial escapement count could be made further up river above one or more of the major tributaries to the system. The new north bank sonar site that showed some improvement over the former site had two differences that seemed to affect salmon migration. The current was faster over the substrate at the second site and the river gravels were less ideal spawning habitat. The new site was located below a rock bluff on the outside of a river bend.

There are two similar sites up river about ten miles where the current is faster and the bottom is even less conducive to spawning. During the 1984 field season a comparison of the smoother running south bank site and these up-river sites could be made. The best time to do this would be during August when only coho salmon are migrating. The counter should be operating by August 15 prior to milling activity and maintained for a week to evaluate if milling salmon became apparent later after the migration peaked. The south bank site could be used as a control for comparison to 1983.

* * * * *

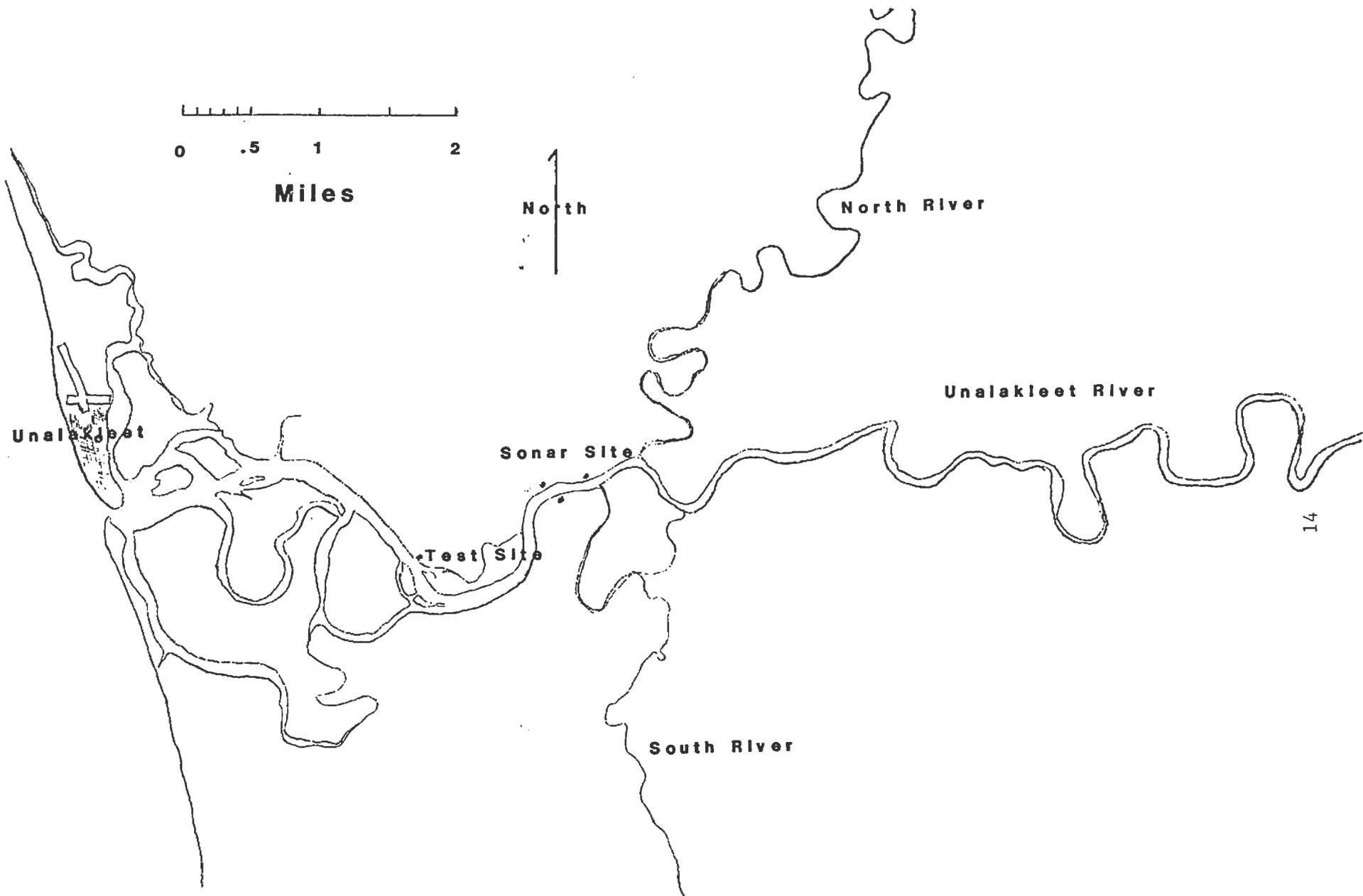


Figure 1. Unalakleet Escapement Project

Figure 2. Sonar Site Schematic

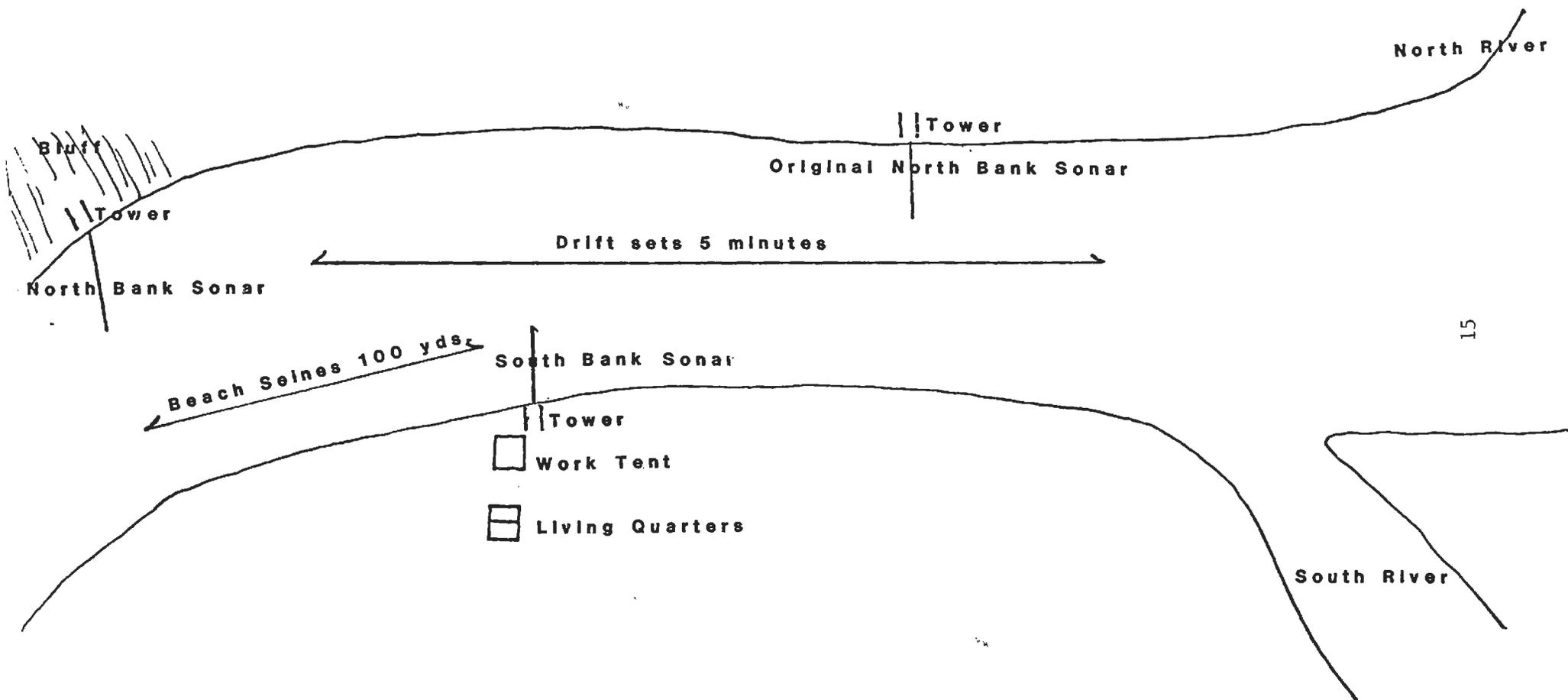


Figure 3. Unalakleet Subsistence Survey, 1983

King Salmon

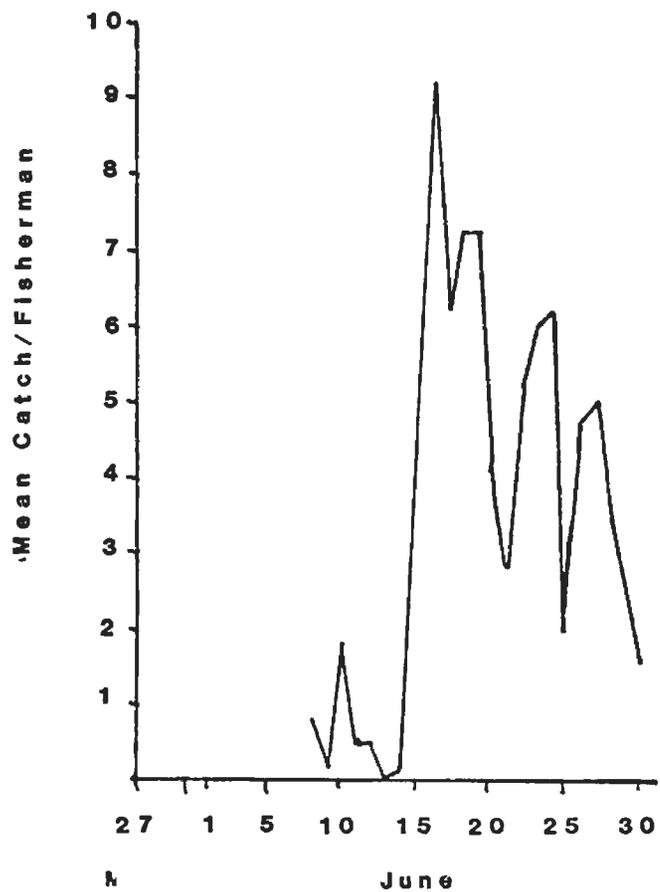


Figure 4A. Specie apportionment king salmon Unalakleet sonar, 1983

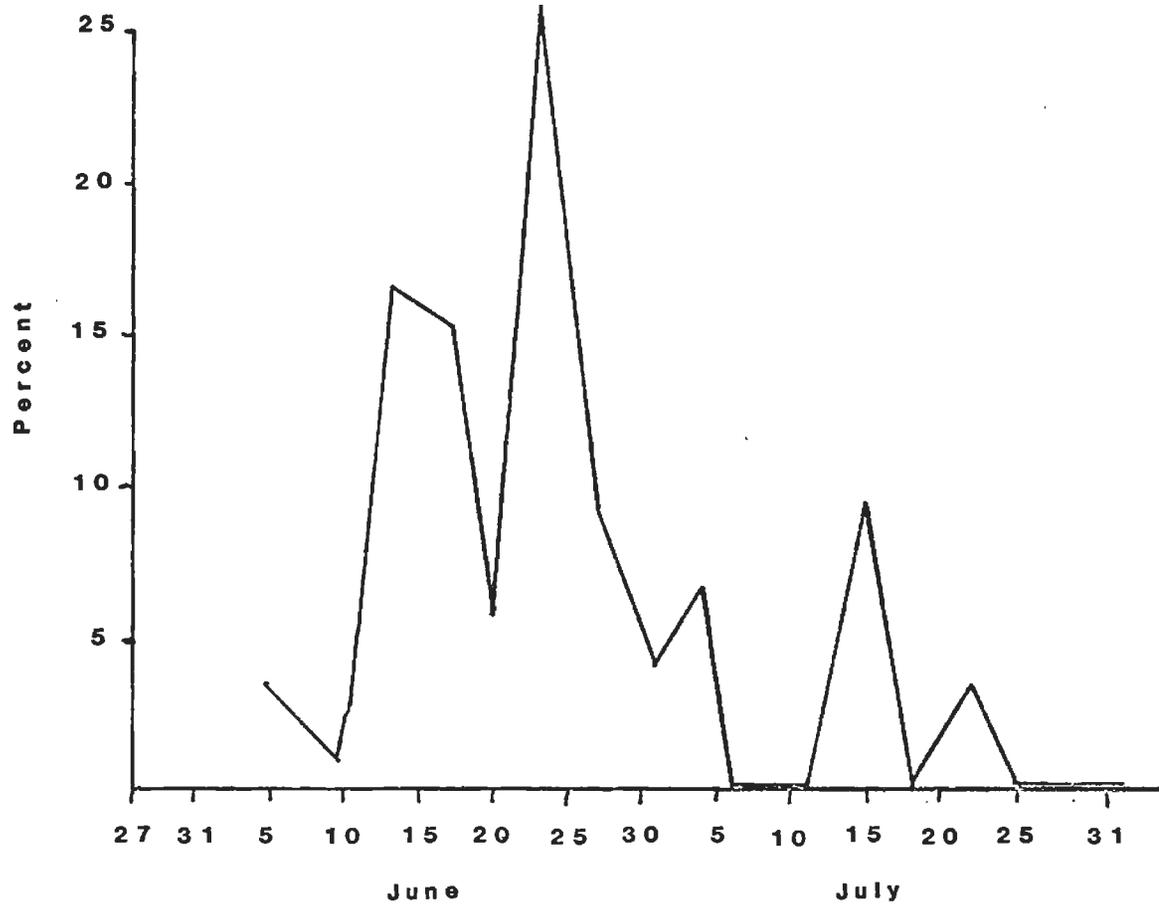


Figure 4B. Specie apportionment coho salmon Unalakleet sonar, 1983

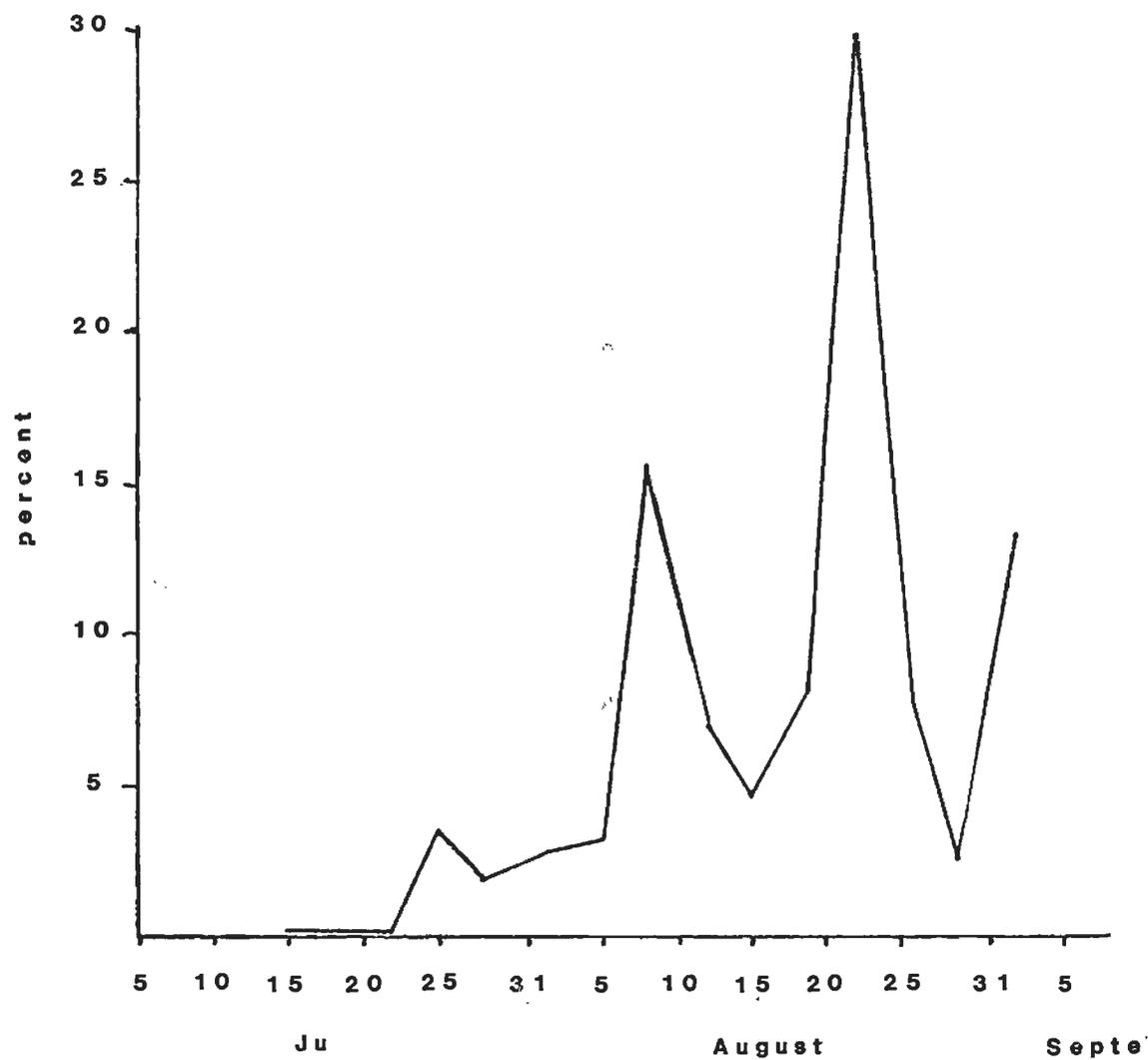


Figure 4C. Specie apportionment pink salmon Unalakleet sonar, 1983

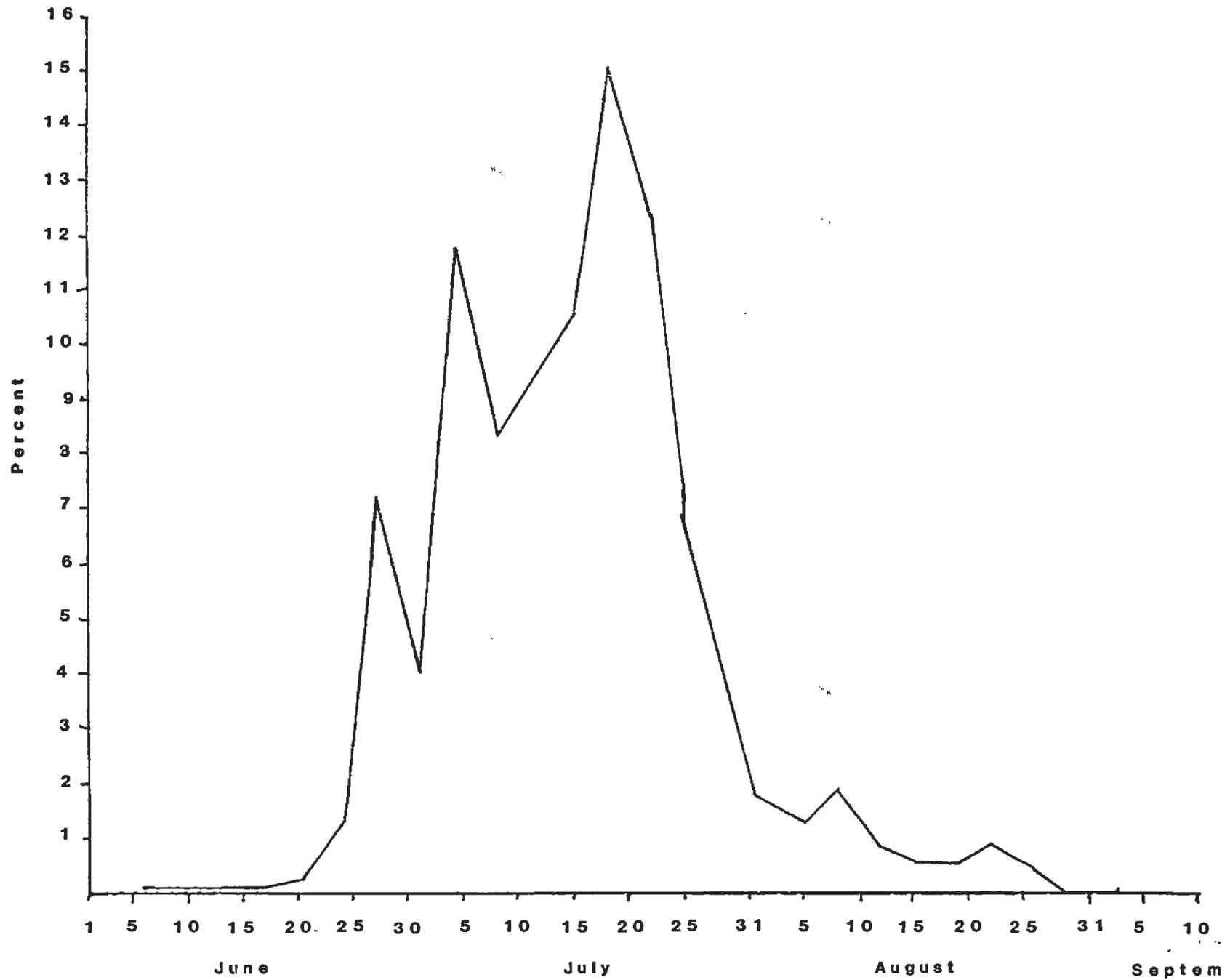


Figure 4D. Species apportionment chum salmon Unalakleet sonar, 1983

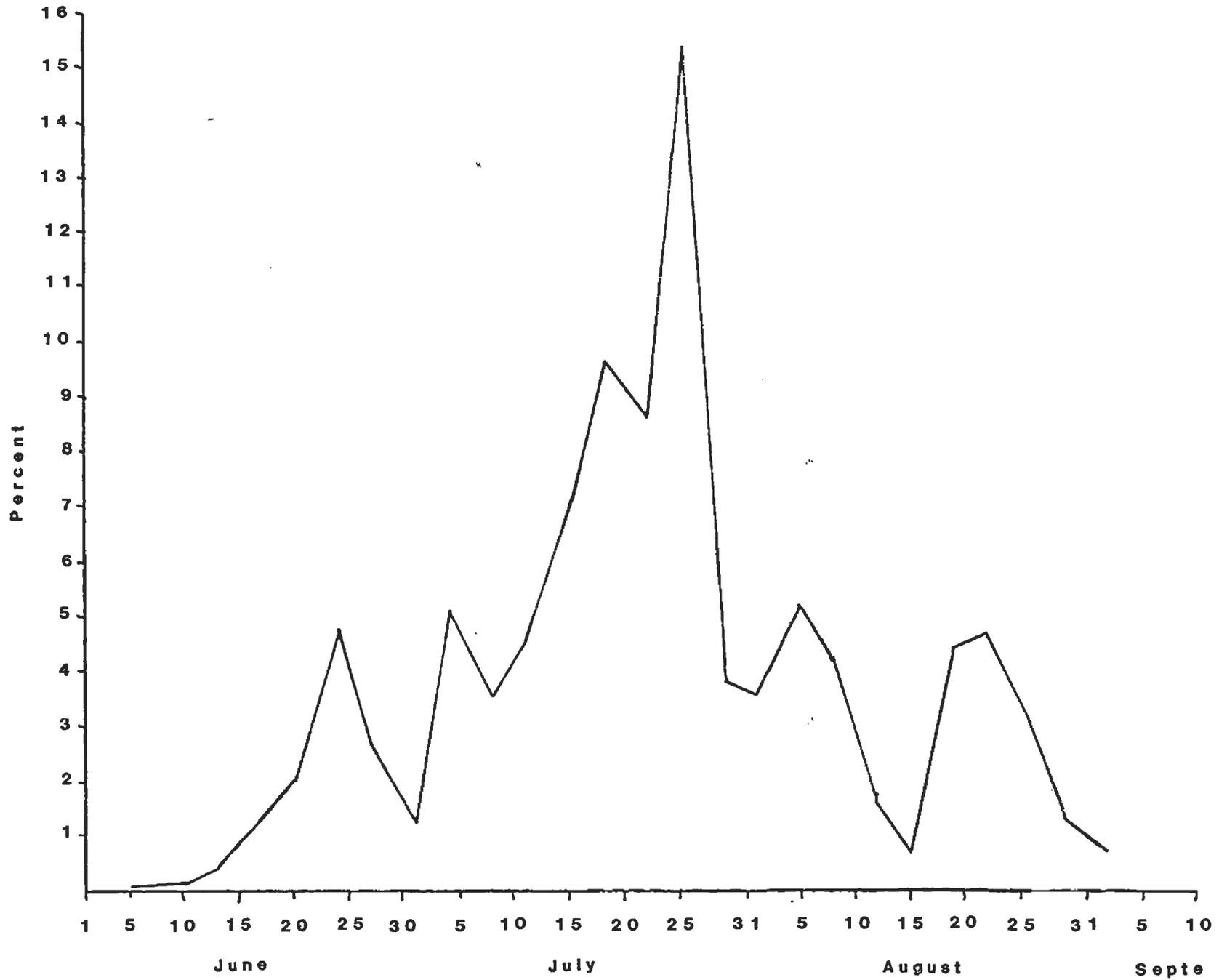


Figure 5. Specie apportionment Unalakleet sonar, 1983

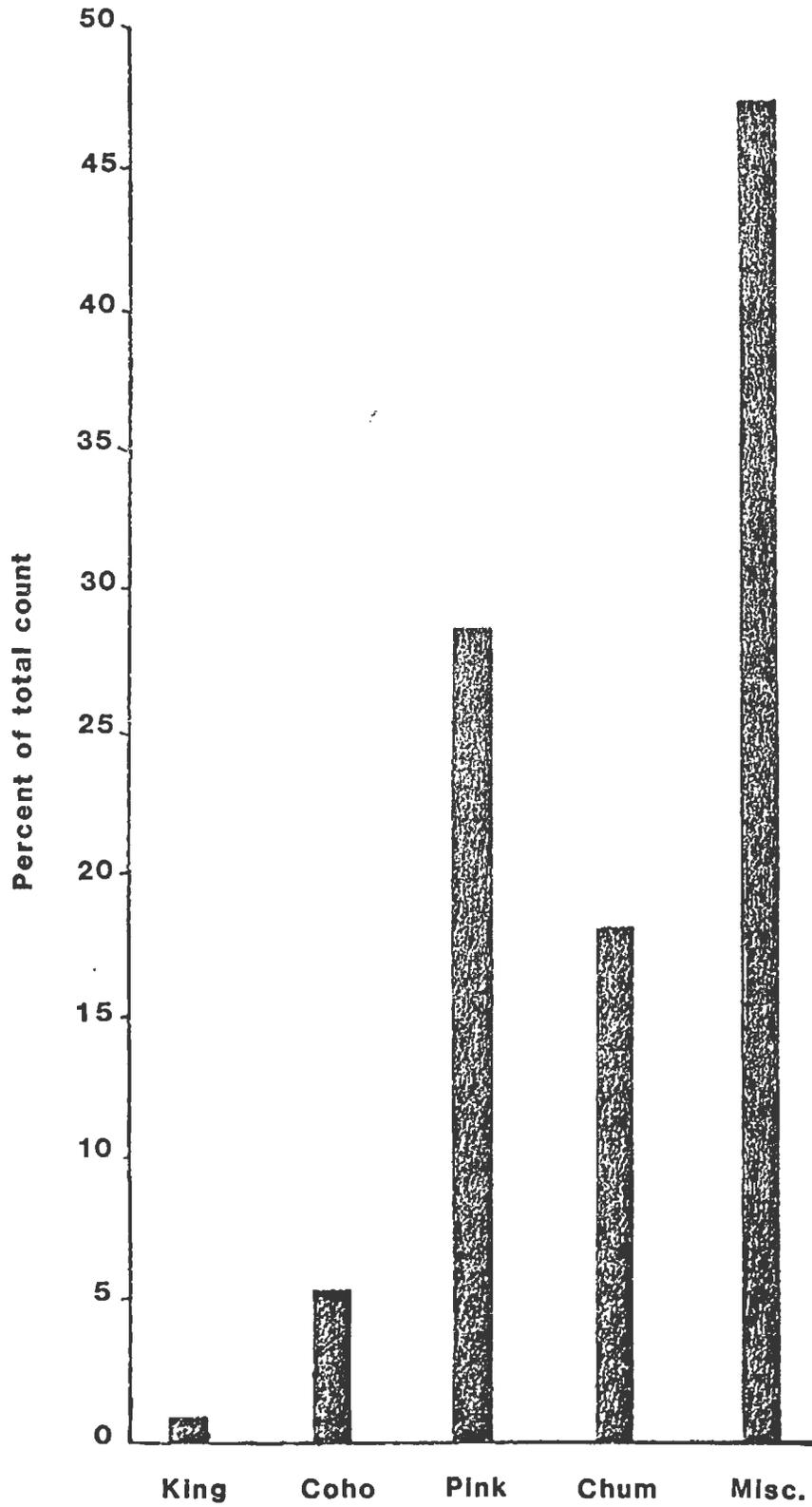


Figure 6. Sector distribution of counts Unalakleet sonar, 1983

(south bank)

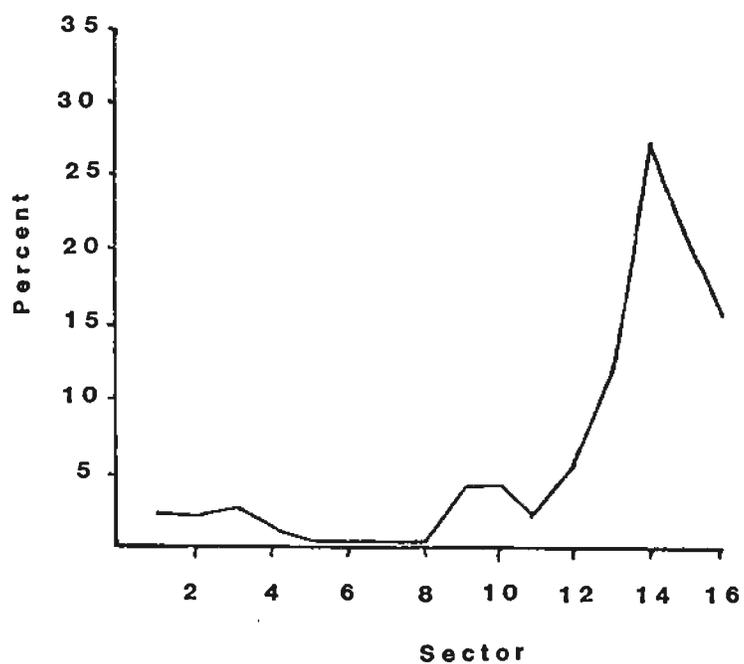
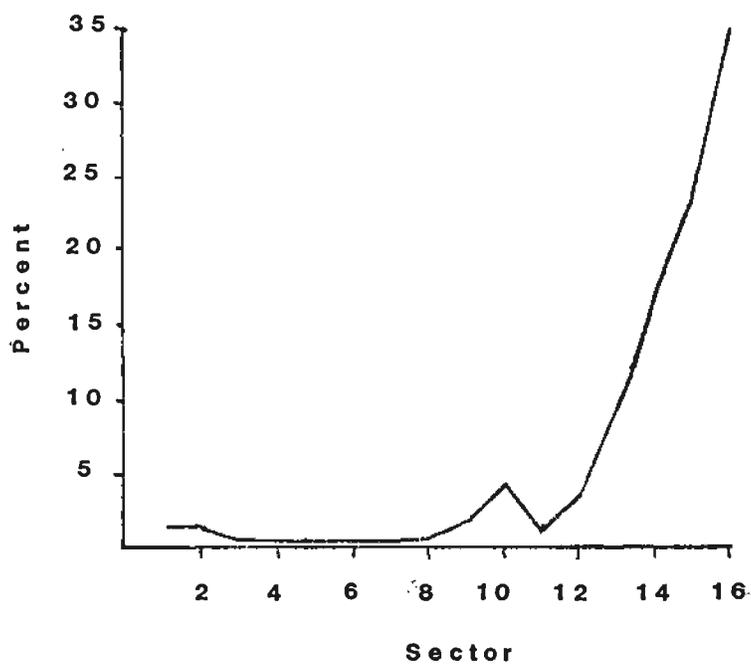


Figure 7. Hourly distribution of counts Unalakleet sonar, 1983
(south bank)

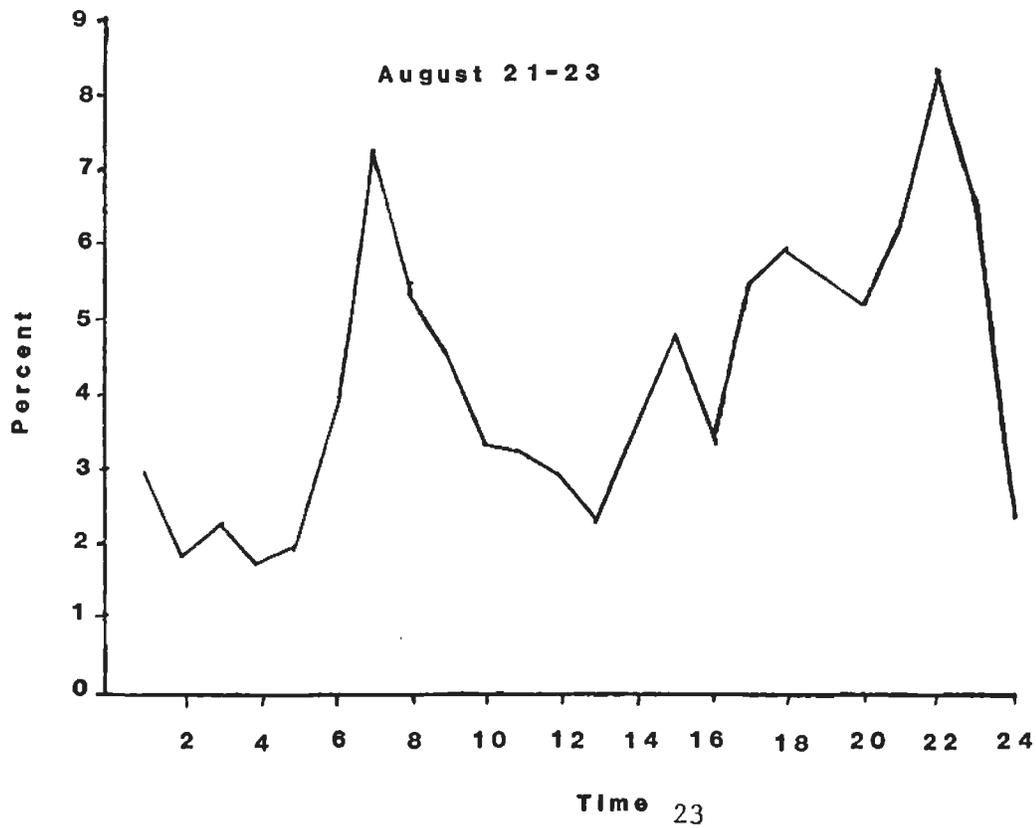
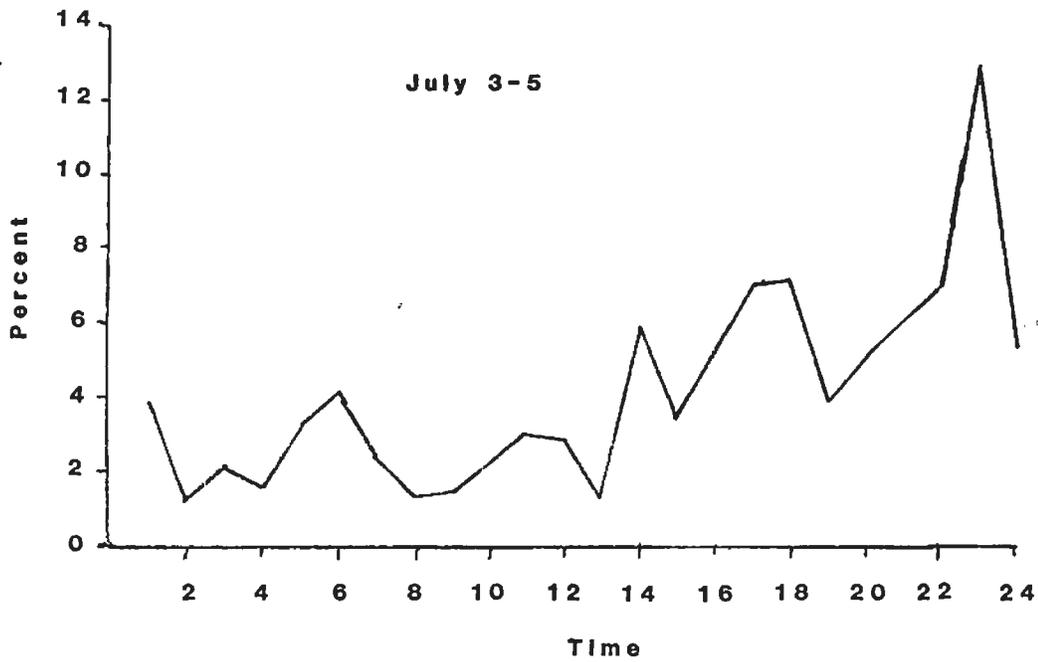


Figure 8. Unalakleet River Test Fishing Daily King CPUE in 8 1/4" mesh, 1983.

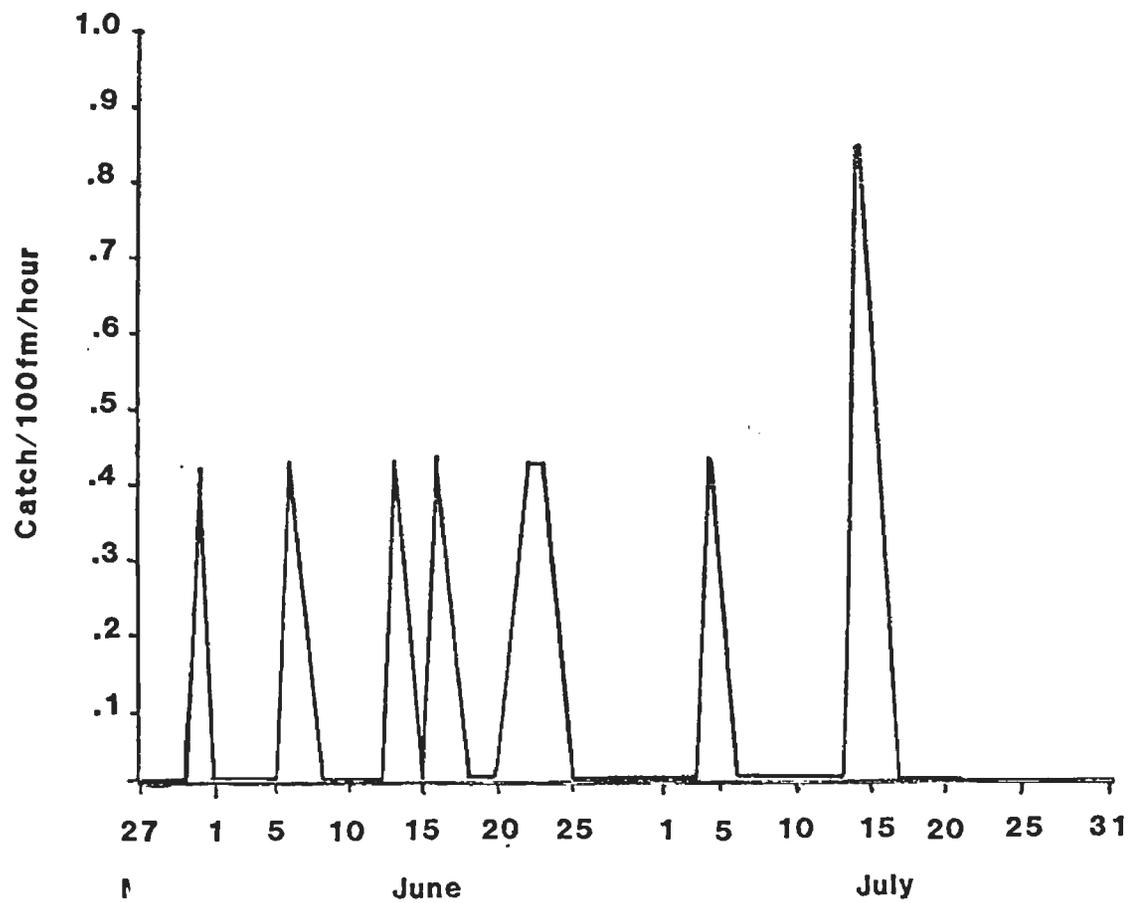


Figure 9. Unalakleet River Test Fishing Cumulative King CPUE in 8 1/4" mesh, 1983.

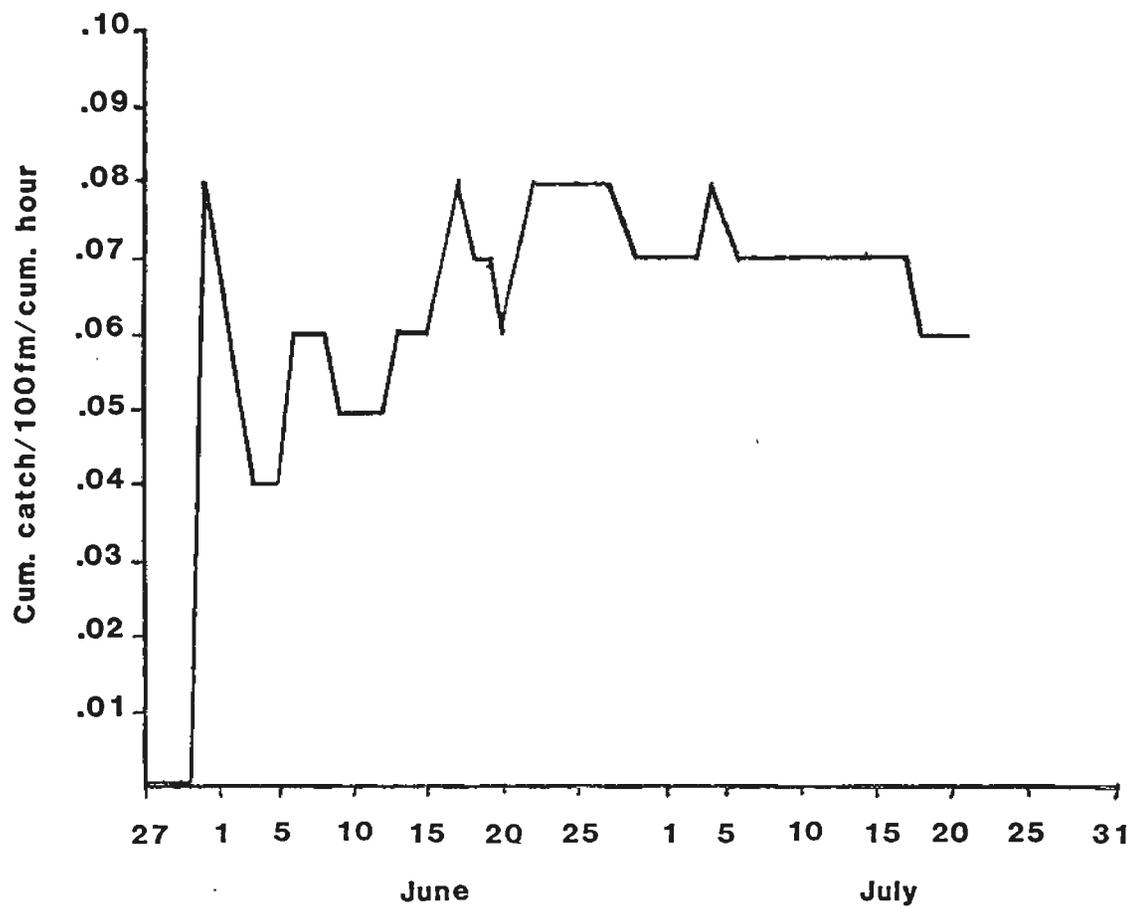


Figure 10. Unalakleet River Test Fishing Daily Coho CPUE in 5 7/8" mesh, 1983.

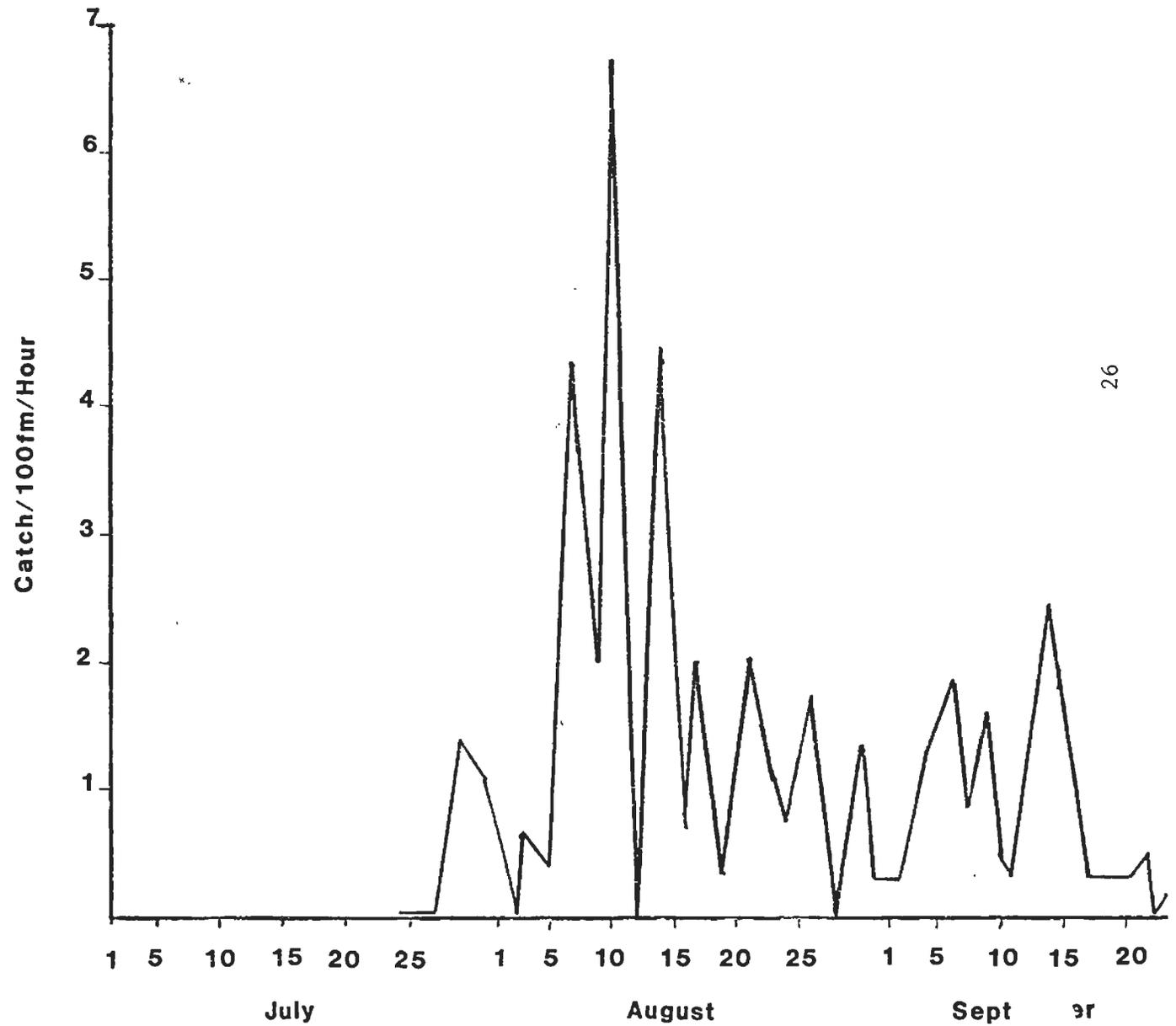


Figure 11. Unalakleet River Test Fishing Cumulative Coho CPUE in 5 7/8" mesh, 1983.

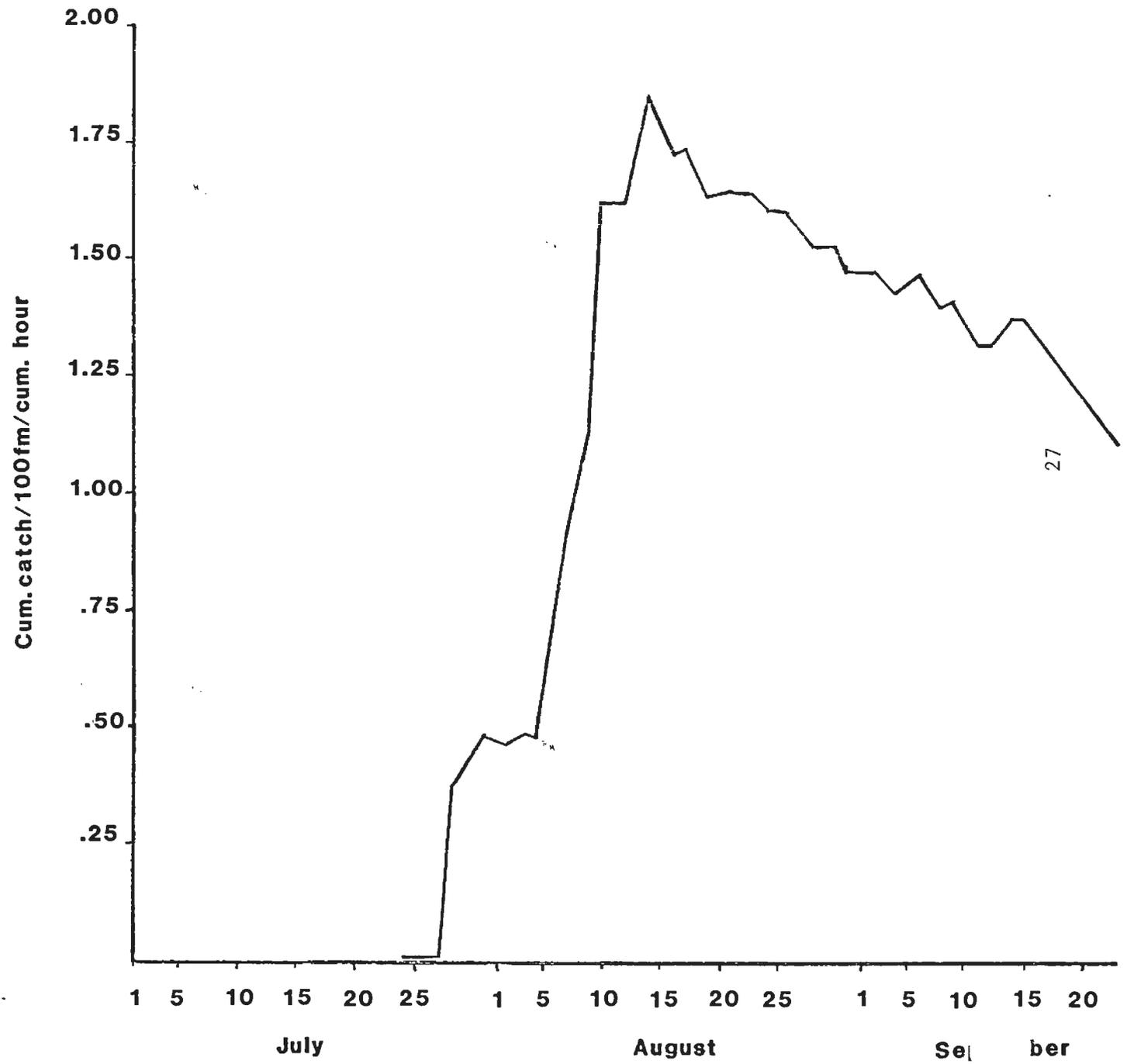


Figure 12. Unalakleet River Test Fishing Daily Pink CPUE in 4" mesh ,1983.

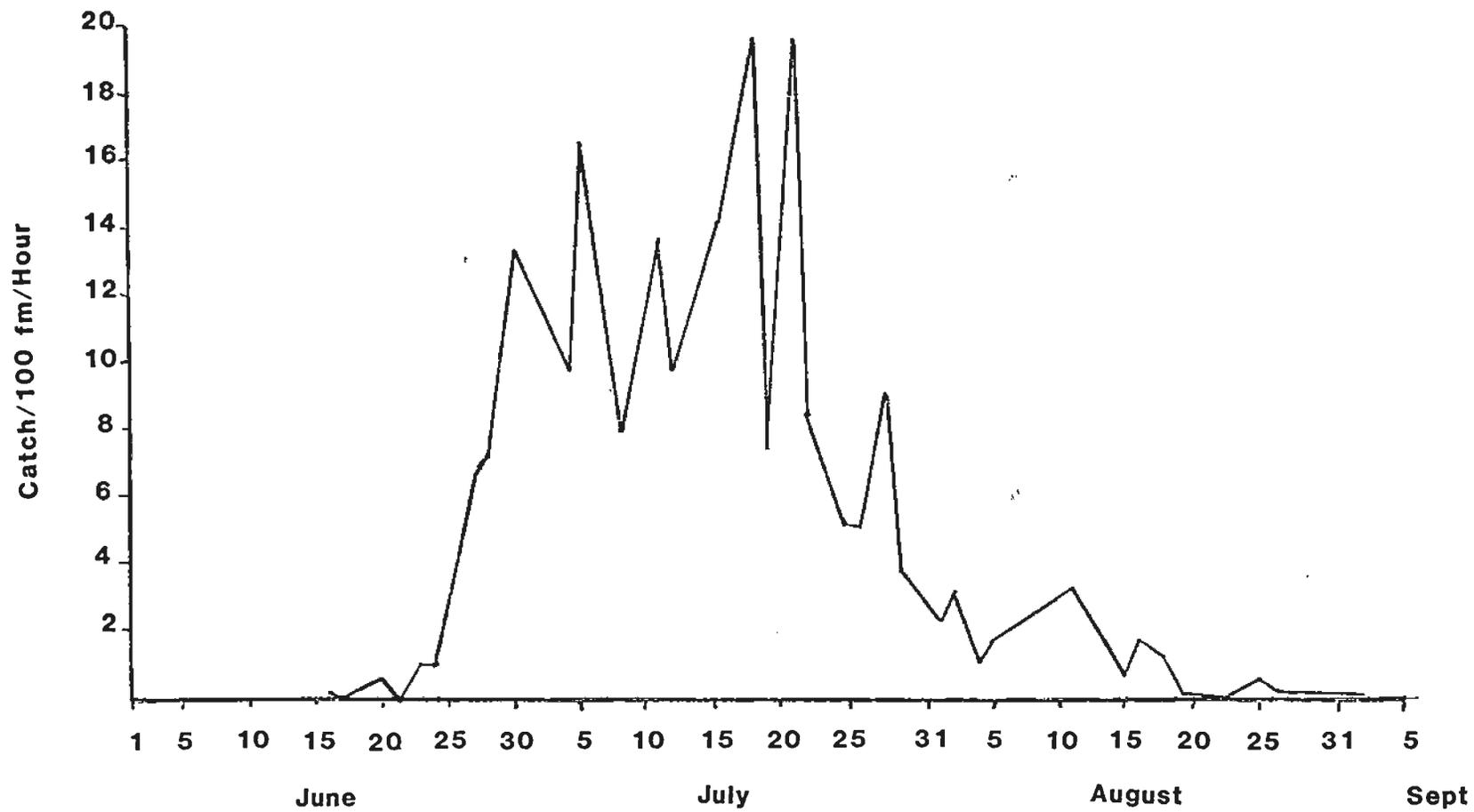


Figure 13. Unalakleet River Test Fishing Cumulative Pink CPUE in 4" mesh , 1983.

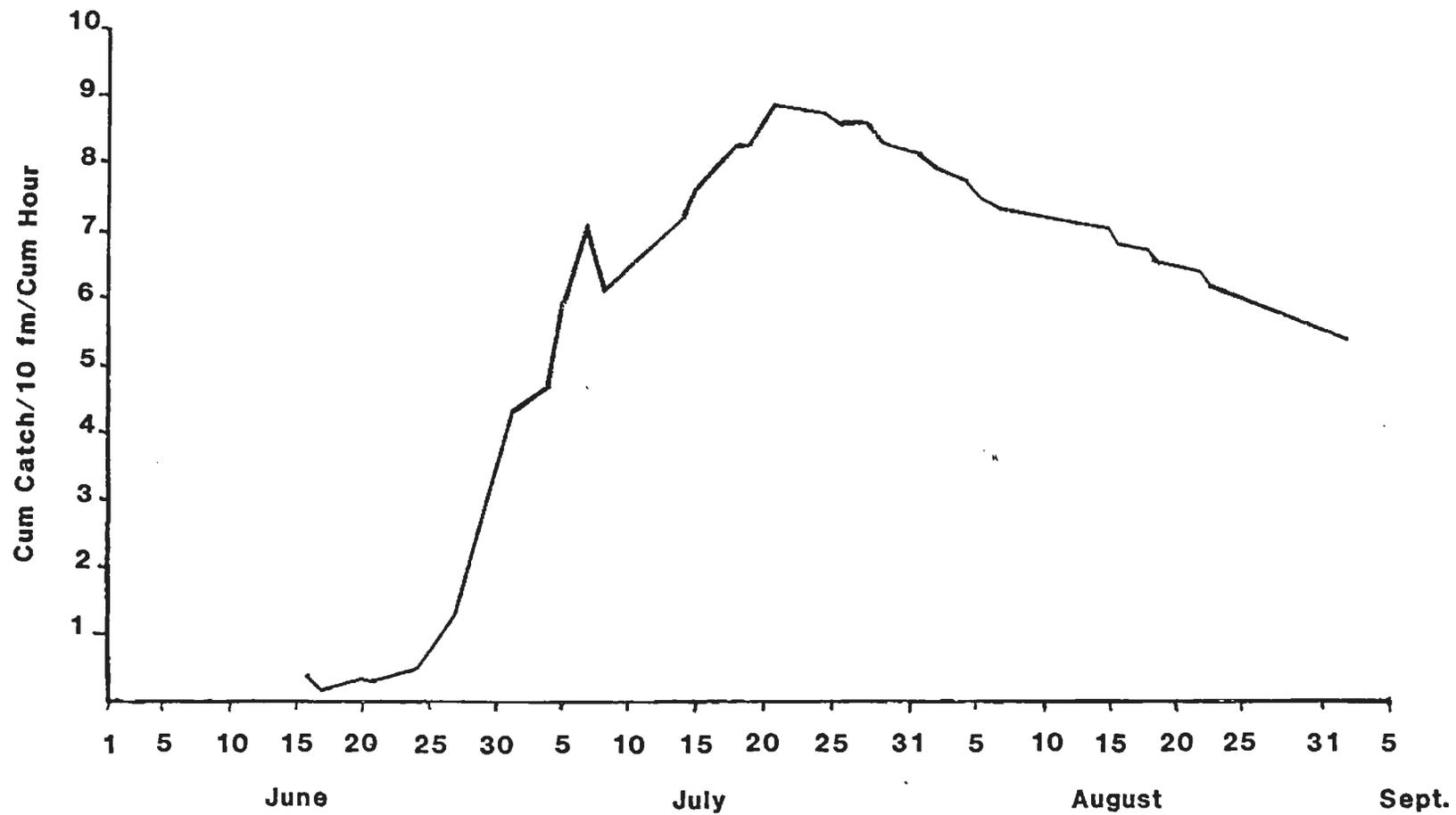


Figure 14. Unalakleet River Test Fishing Daily CPUE in 5 1/4 & 5 7/8" mesh , 1983.

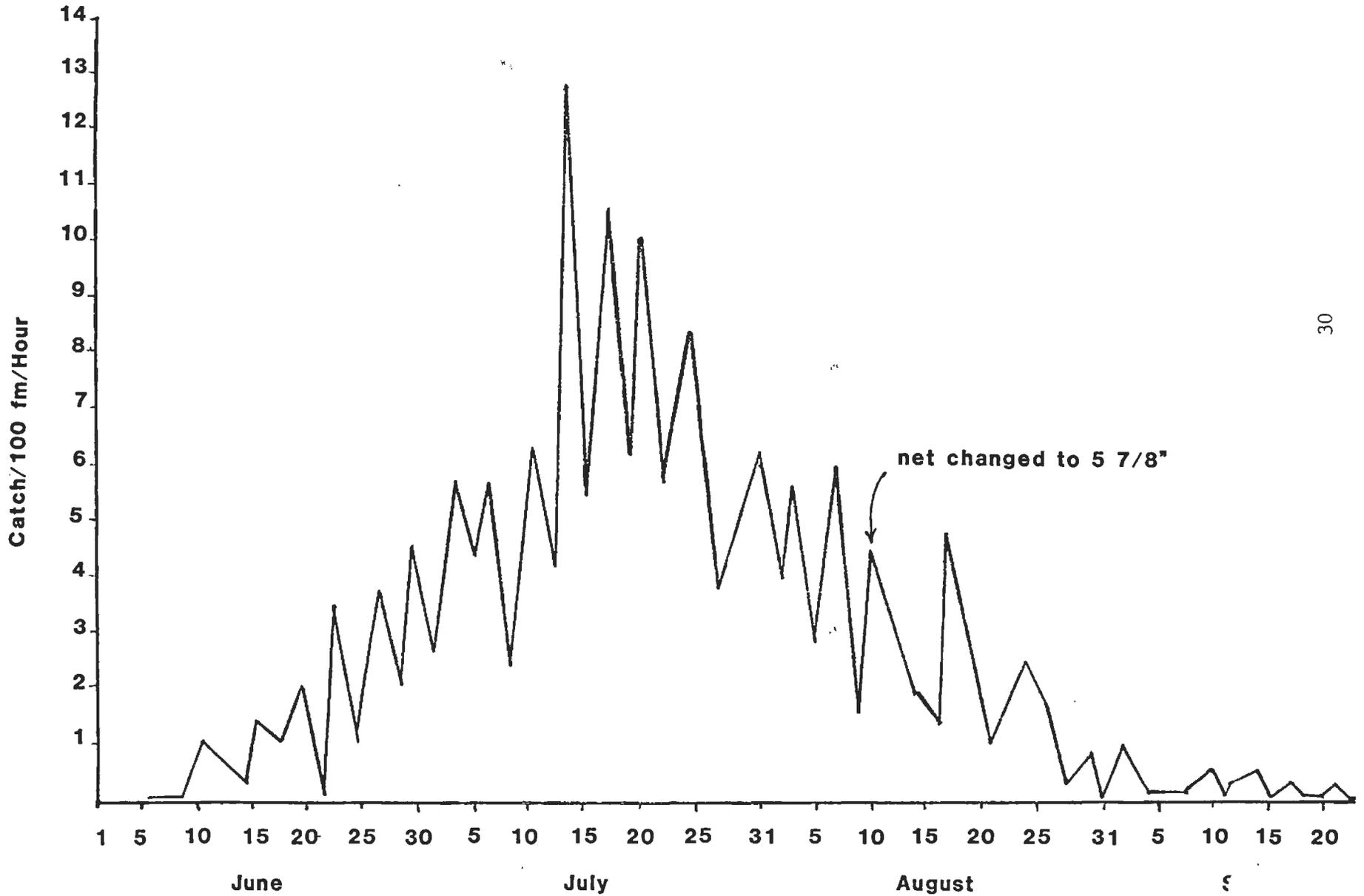


Figure 15. Unalakleet River Test Fishing Cumulative Chum CPUE in 5 1/4 & 5 7/8" mesh, 1983.

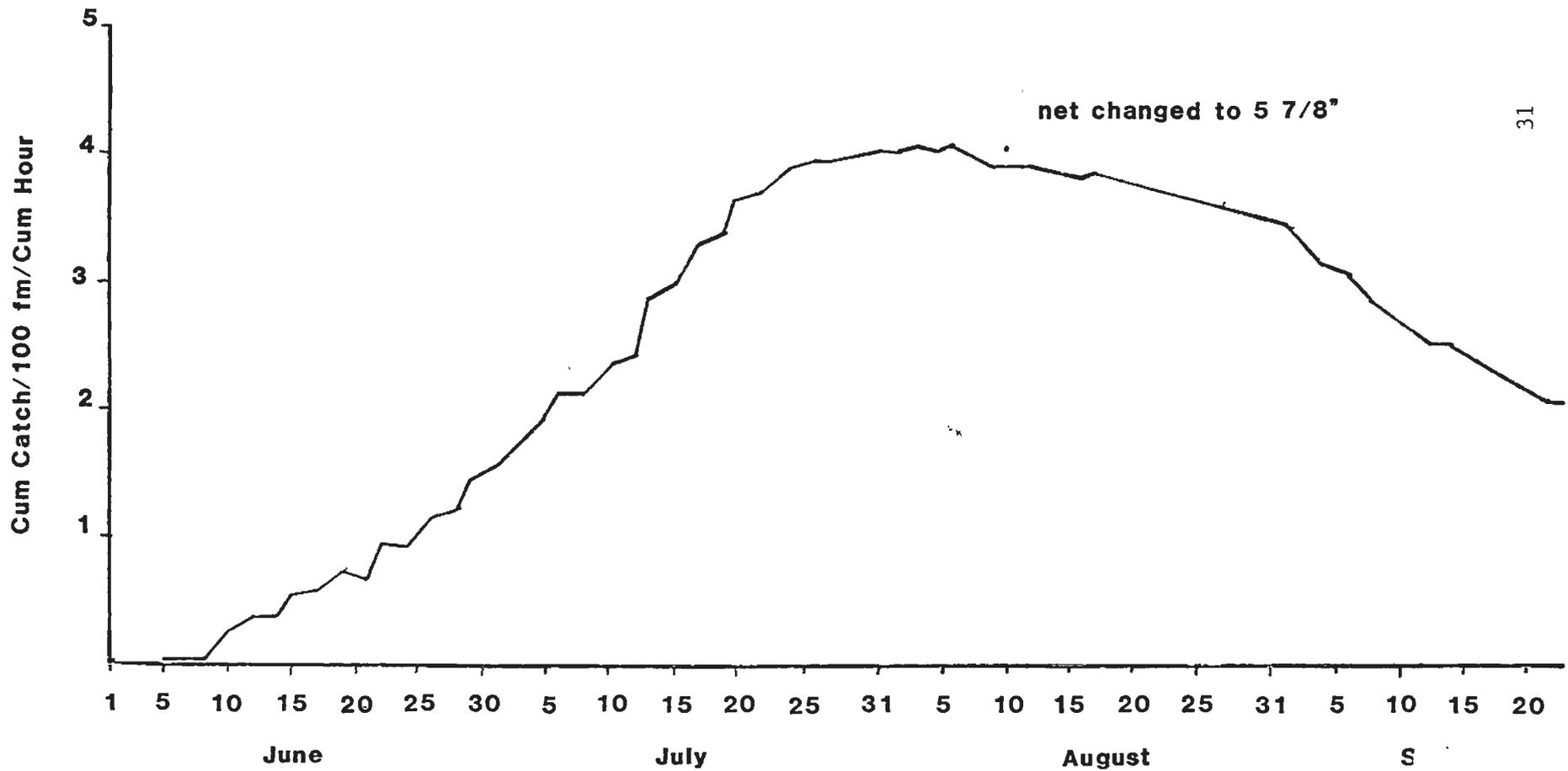


Figure 17. Unalakleet Area Temperatures, 1983

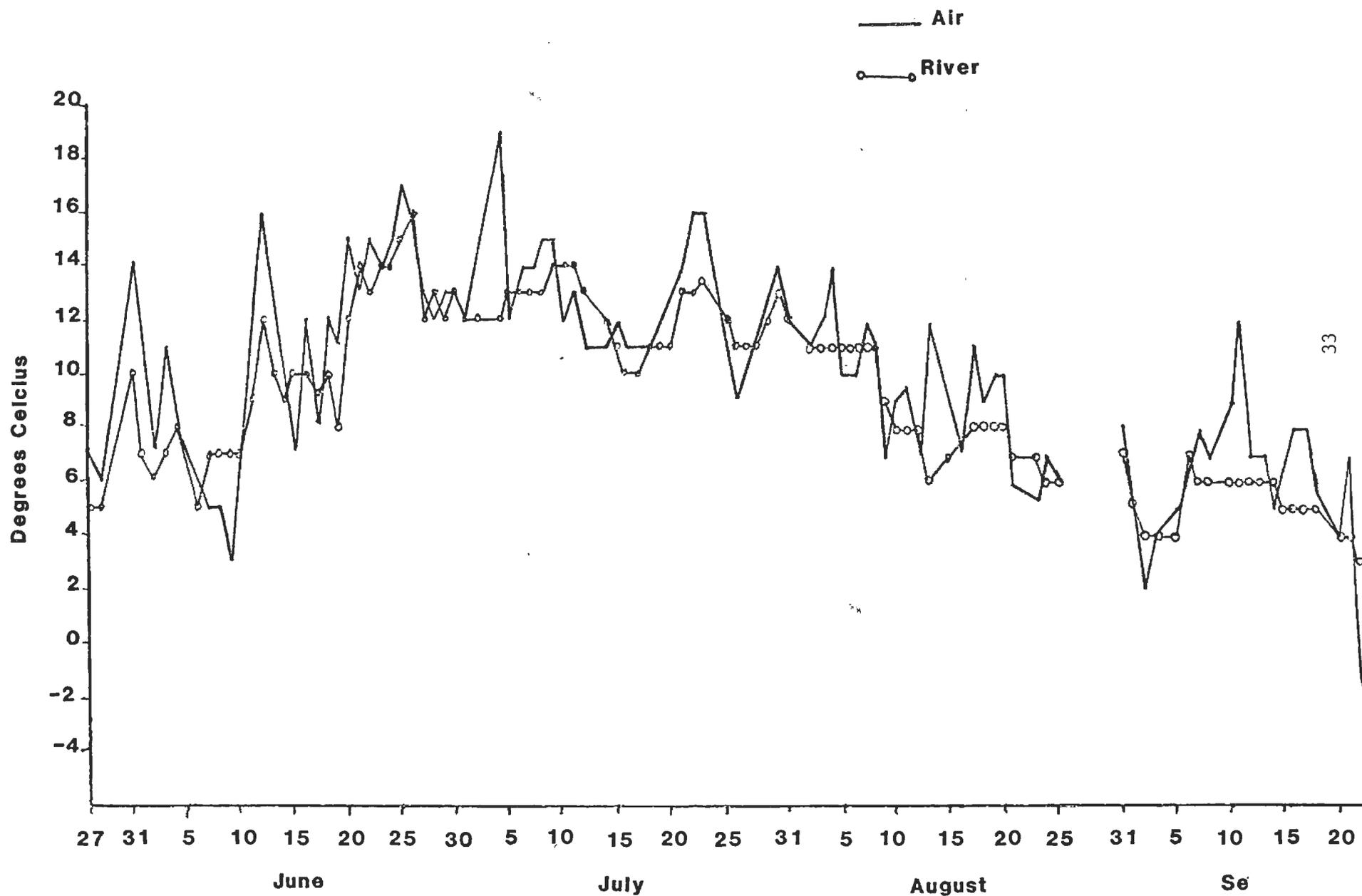


Figure 18. Unalakleet River Turbidity and Depth , 1983

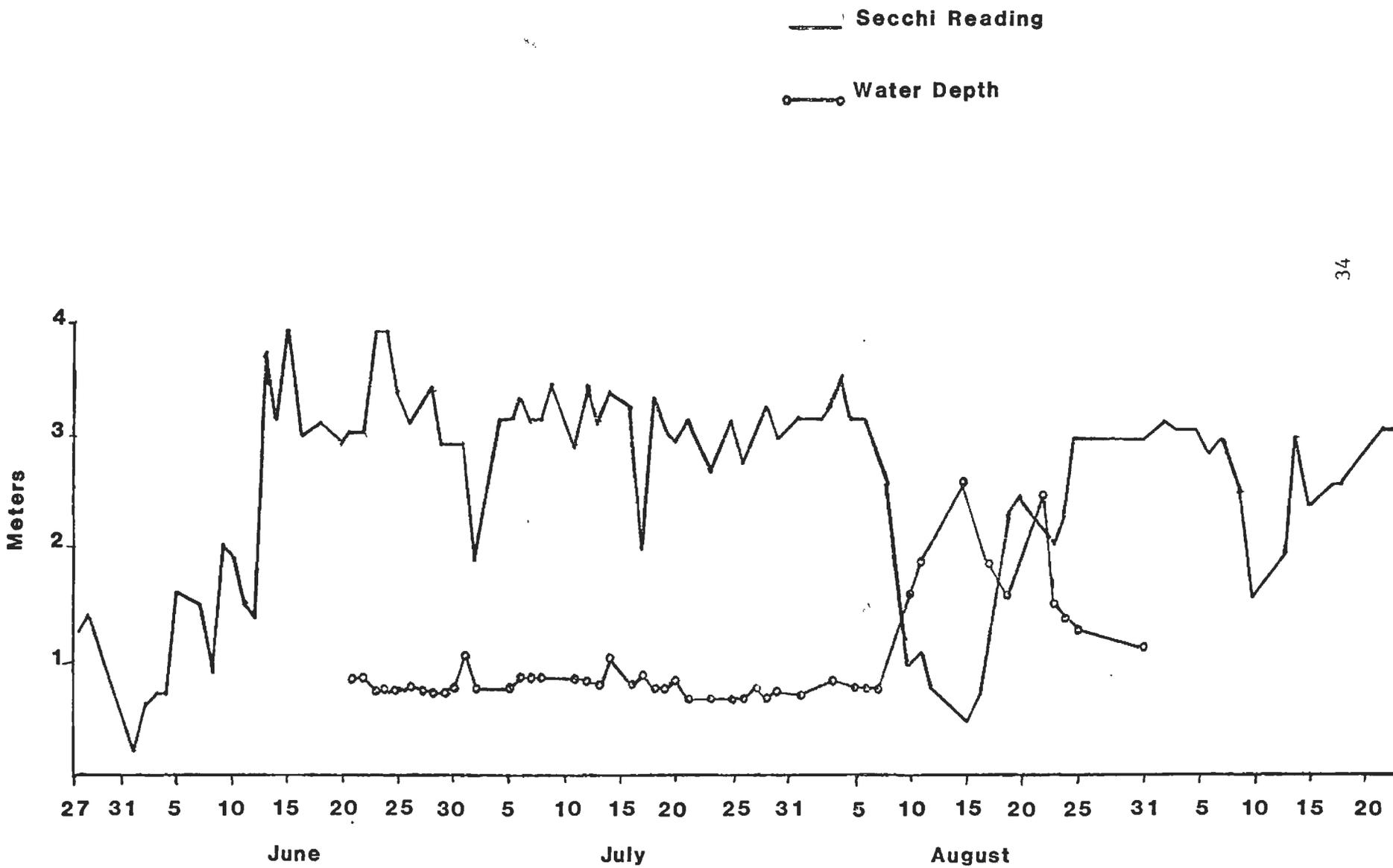


Figure 19. Unalakleet River Test Fishing Cumulative King CPUE in 8 1/4" mesh, 1981-83.

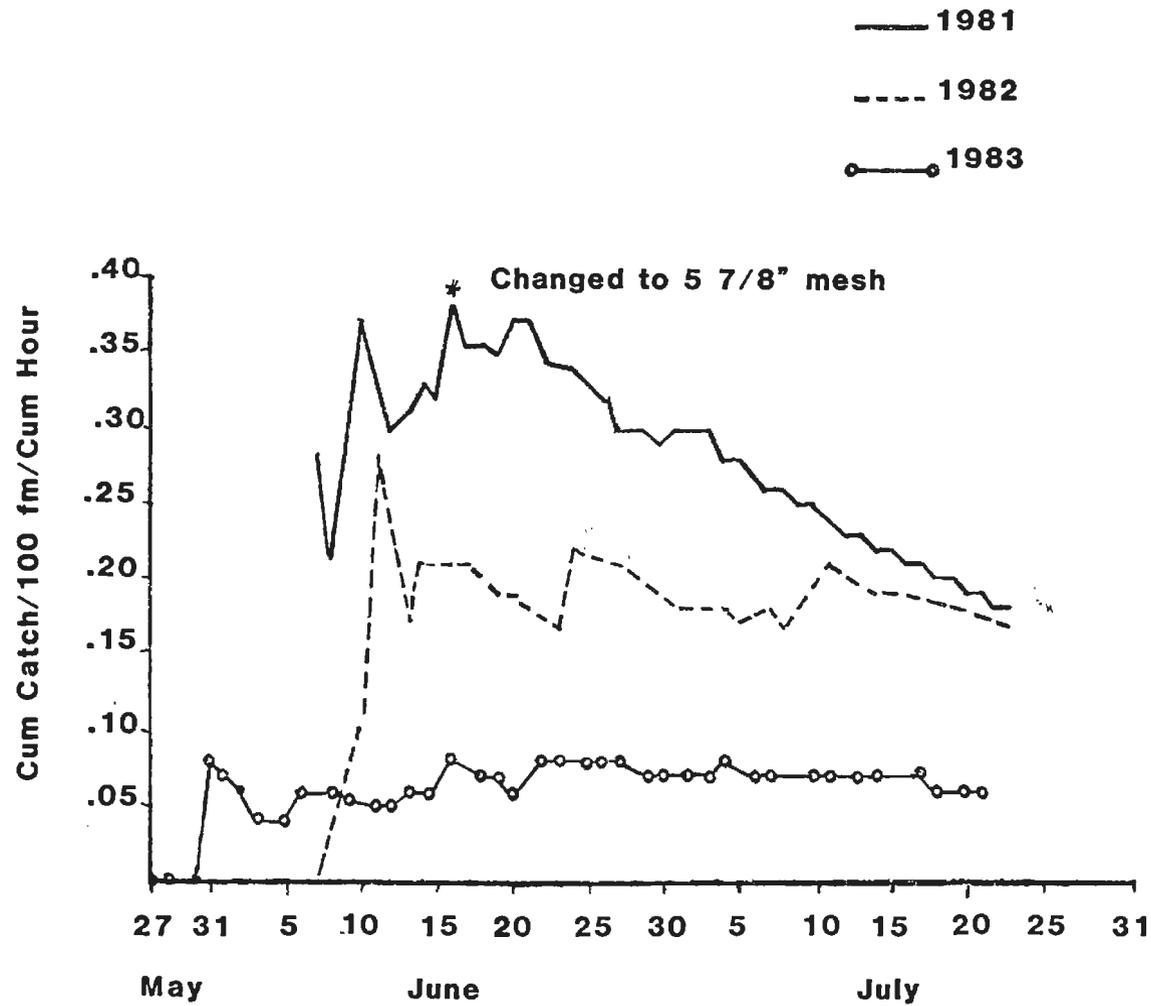


Figure 20. Unalakleet River Test Fishing Cumulative Chum CPUE in 5 7/8" mesh, 1981-83.

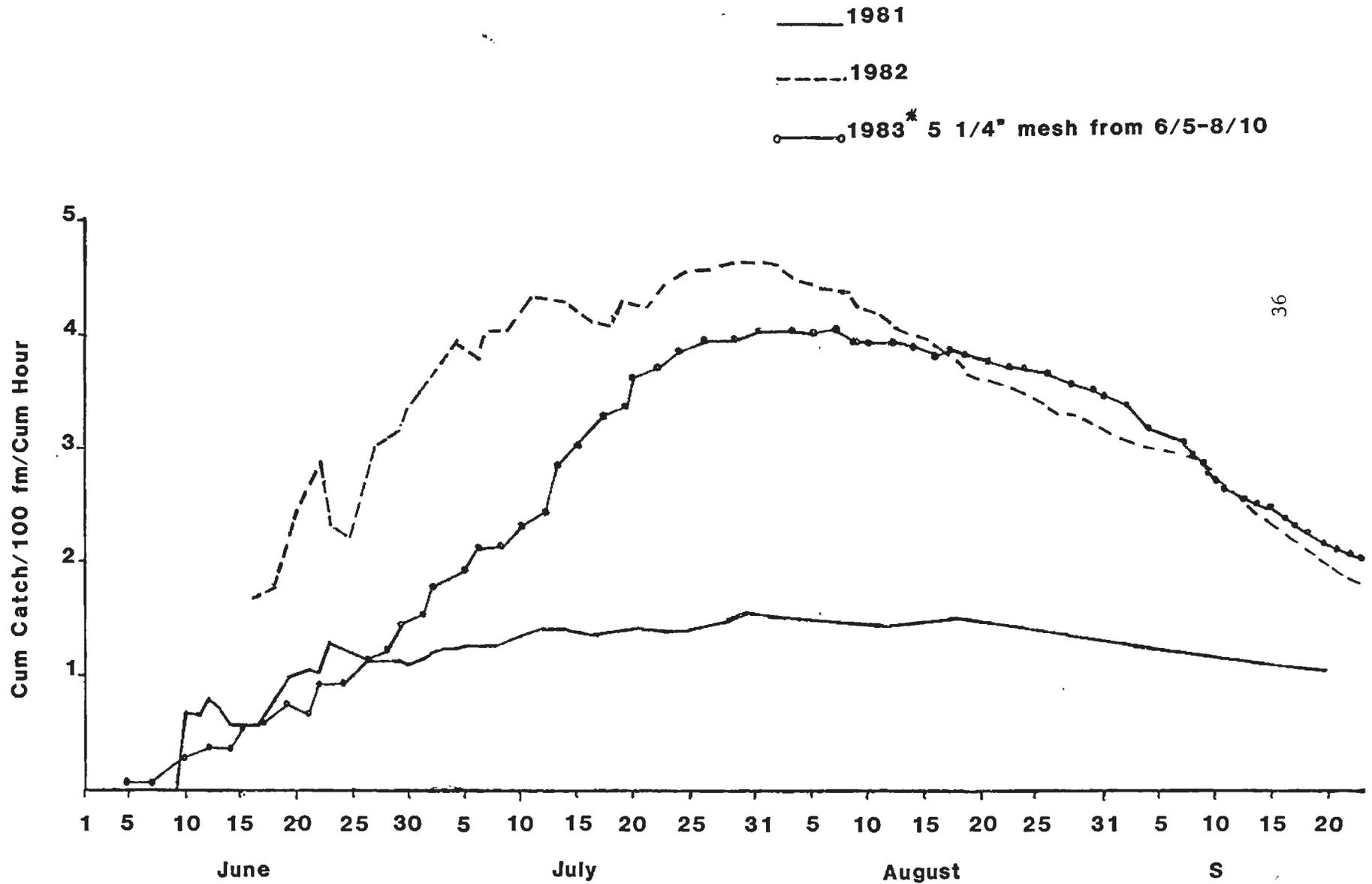


Figure 21. Unalakleet River Test Fishing Cumulative Pink CPUE in 4" mesh, 1981-83.

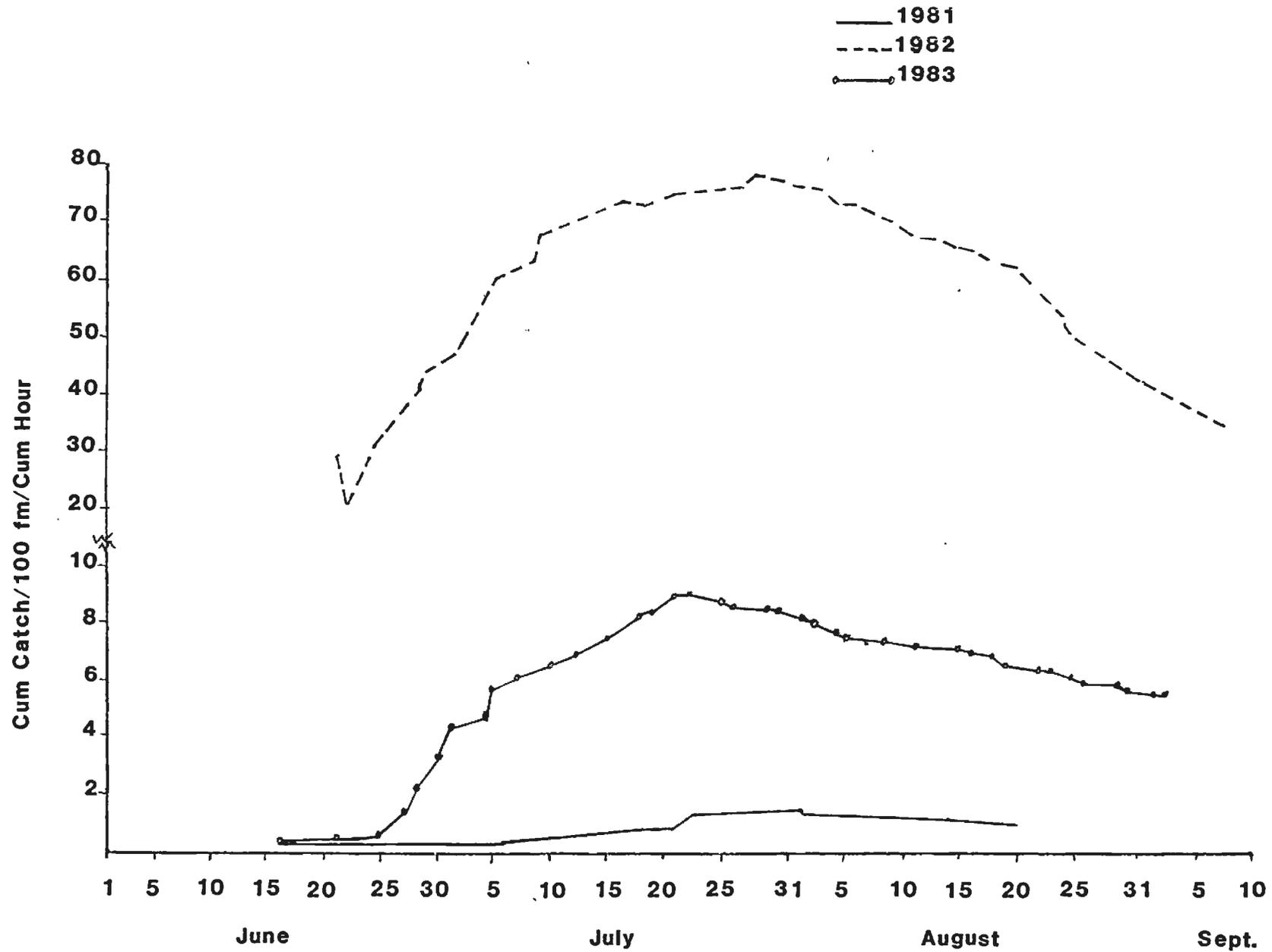


Figure 22. Unalakleet River Test Fishing Cumulative Coho CPUE in 5 7/8" mesh, 1981-83.

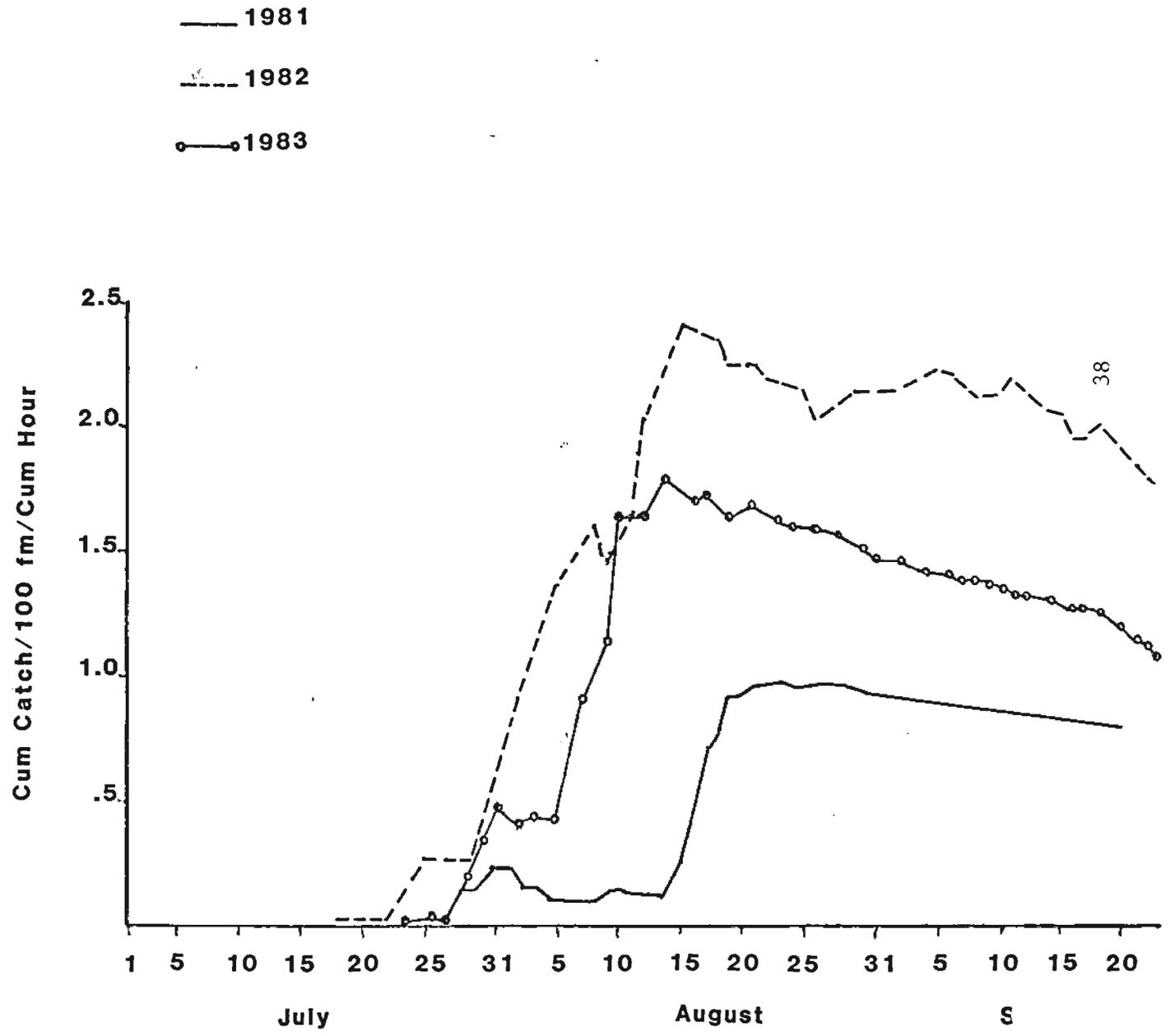


 Table 1. Unalakleet River Subsistence King Salmon Index, 1983.

Date	Number of Fishermen	Number of Chinook	Average
June 8	4	3	0.8
9	4	1	0.2
10	4	7	1.8
11	4	2	0.5
12	4	2	0.5
13	4	0	0.0
14	4	1	0.2
15	4	23	5.8
16	4	37	9.2
17	4	25	6.2
18	4	29	7.2
19	4	29	7.2
20	4	17	4.2
21	4	11	2.8
22	4	21	5.2
23	4	24	6.0
24	4	25	6.2
25	3	6	2.0
26	3	14	4.7
27	3	15	5.0
28	4	14	3.5
29	4	10	2.5
30	4	6	1.5
	---	---	
Totals	4	322	

TABLE 2. Unalakleet River Final Sonar Counts, 1983

Date	South	North	Daily Total	Proportion of Total	Cumulative	Cumul. Prop. of Total
6/4	7	23	30	.0001	30	.0001
6/5	44	187	231	.0007	261	.0008
6/6	12	162	174	.0005	435	.0013
6/7	8	283	291	.0009	726	.0022
6/8	--	--	--	.0000	726	.0022
6/9	3	221	224	.0007	950	.0029
6/10	26	245	271	.0008	1221	.0037
6/11	56	254	310	.0010	1531	.0047
6/12	44	736	780	.0024	2311	.0071
6/13	64	1188	1252	.0039	3563	.0110
6/14	59	1752	1811	.0056	5374	.0166
6/15	97	844	941	.0029	6315	.0195
6/16	165	729	894	.0028	7209	.0223
6/17	151	1604	1755	.0054	8964	.0277
6/18	111	1524	1635	.0051	10599	.0328
6/19	175	2000	2175	.0067	12774	.0395
6/20	171	2020	2191	.0068	14965	.0463
6/21	220	1613	1833	.0057	16798	.0520
6/22	199	2065	2264	.0070	19062	.0590
6/23	362	2034	2396	.0074	21458	.0664
6/24	876	3403	4279	.0133	25737	.0797
6/25	1244	2023	3267	.0101	29004	.0898
6/26	738	1601	2339	.0073	31343	.0971
6/27	573	3265	3838	.0119	35181	.1090
6/28	547	1868	2415	.0075	37596	.1165
6/29	528	4028	4556	.0141	42152	.1306
6/30	430	--	430	.0013	42582	.1319
7/1	240	--	240	.0007	42822	.1326
7/2	201	975	1176	.0036	43998	.1362
7/3	309	8842	9151	.0284	53149	.1646
7/4	475	6385	6860	.0213	60009	.1859
7/5	565	3342	3907	.0121	63916	.1980
7/6	1377	2094	3471	.0108	67387	.2088
7/7	1416	3173	4589	.0142	71976	.2230
7/8	1472	1420	2892	.0090	74868	.2320
7/9	2071	1452	3523	.0110	78391	.2430
7/10	3318	2434	5752	.0178	84143	.2608
7/11	2673	2866	5539	.0172	89682	.2780
7/12	1665	1747	3412	.0106	93094	.2886
7/13	2017	1951	3968	.0123	97062	.3009
7/14	2991	2664	5655	.0175	102717	.3184
7/15	2646	2548	5194	.0161	107911	.3345
7/16	2488	2886	5374	.0167	113285	.3512
7/17	1585	4063	5648	.0175	118933	.3687
7/18	3559	9326	12885	.0400	131818	.4087
7/19	2948	2398	5346	.0166	137164	.4253
7/20	1640	3330	4970	.0154	142134	.4407
7/21	2416	6420	8836	.0274	150970	.4681
7/22	3298	--	3298	.0102	154268	.4783
7/23	5007	--	5007	.0155	159275	.4938

TABLE 2. Unalakleet River Final Sonar Counts, 1983.
(Continued)

Date	South	North	Daily Total	Proportion of Total	Cumulative	Cum. Prop. of Total
7/24	4005	7804	11809	.0366	171084	.5304
7/25	2453	3392	5845	.0181	176929	.5485
7/26	2166	12094	14260	.0442	191189	.5927
7/27	1914	4472	6386	.0198	197575	.6125
7/28	1603	3463	5066	.0157	202641	.6282
7/29	1251	1914	3165	.0098	205806	.6380
7/30	1710	2495	4205	.0130	210011	.6510
7/31	2542	1887	4429	.0137	214440	.6647
8/1	4479	2271	6750	.0209	221190	.6856
8/2	1103	1806	2909	.0091	224099	.6947
8/3	1719	942	2661	.0083	226760	.7030
8/4	1519	2557	4076	.0126	230836	.7156
8/5	1259	1113	2372	.0074	233208	.7230
8/6	940	2189	3129	.0097	236337	.7327
8/7	1467	4354	5821	.0180	242158	.7507
8/8	2318	1584	3902	.0121	246060	.7628
8/9	2098	1505	3603	.0112	249663	.7740
8/10	2629	1517	4146	.0129	253809	.7869
8/11	3753	1091	4844	.0150	258653	.8019
8/12	1489	523	2012	.0062	260665	.8081
8/13	744	353	1097	.0034	261762	.8386
8/14	981	--	981	.0030	262743	.8145
8/15	2324	--	2324	.0072	265067	.8217
8/16	2638	--	2638	.0082	267705	.8299
8/17	2073	731	2804	.0087	270509	.8115
8/18	2244	675	2919	.0091	273428	.8477
8/19	3240	696	3936	.0122	277364	.8599
8/20	2363	503	2866	.0089	280230	.8688
8/21	6789	1111	7900	.0245	288130	.8933
8/22	6489	563	7052	.0219	295182	.9152
8/23	5077	298	5375	.0167	300557	.9319
8/24	2616	298	2914	.0090	303471	.9409
8/25	3933	412	4345	.0135	307816	.9544
8/26	1393	554	1947	.0060	309763	.9604
8/27	1203	463	1666	.0052	311429	.9656
8/28	1197	542	1739	.0054	313168	.9710
8/29	1244	221	1465	.0045	314633	.9755
8/30	1011	199	1210	.0038	315843	.9793
8/31	718	214	932	.0029	316775	.9822
9/1	1324	318	1642	.0052	318417	.9874
9/2	1362	307	1669	.0052	320086	.9926
9/3	1146	314	1460	.0045	321546	.9971
9/4	652	296	948	.0029	322494	1.0000
	148465	174029	322494	1.0000		

TABLE 3A. Unalakleet River Species Apportionment by Test Period, King Salmon, 1983.

Dates	3-Day App. Count	Proportion of Season Total	Cumulative Count	Cumulative Proportion
6/4-6/8	76	.0272	76	.0272
6/9-6/12N	28	.0100	104	.0372
6/12N-6/15	461	.1652	565	.2024
6/16-6/19N	419	.1502	984	.3526
6/19N-6/22	170	.0609	1154	.4135
6/23-6/26N	722	.2588	1876	.6723
6/26N-6/29	264	.0946	2140	.7669
6/30-7/3N	103	.0639	2243	.8038
7/3N-7/6	188	.0674	2431	.8712
7/7-7/10N	0	.0000	2431	.8712
7/10N-7/13	0	.0000	2431	.8712
7/14-7/17N	267	.0957	2698	.9969
7/17N-7/20	0	.0000	2698	.9669
7/21-7/24N	92	.0331	2790	1.0000
7/24N-7/27	0	.0000	2790	1.0000
7/28-7/31N	0	.0000	2790	1.0000
7/31N-8/3	0	.0000	2790	1.0000
	----- 2790	----- 1.0000		

TABLE 3B. Unalakleet River Species Apportionment by Test Period, Coho Salmon, 1983.

Dates	3-Day Count	Proportion of Season Total	Cumulative Count	Cumulative Proportion
7/14-7/17N	0	.0000	0	.0000
7/17N-7/20	0	.0000	0	.0000
7/21-7/24N	0	.0000	0	.0000
7/24N-7/27	583	.0343	583	.0343
7/28-7/31N	338	.0199	921	.0542
7/31N-8/3	436	.0256	1357	.0798
8/4-8/7N	550	.0323	1907	.1121
8/7N-8/10	2650	.1558	4557	.2679
8/11-8/14N	1174	.0690	5731	.3369
8/14N-8/17	793	.0466	6524	.3835
8/18-8/21N	1435	.0843	7959	.4678
8/21N-8/24	5074	.2983	13033	.7661
8/25-8/28N	1280	.0752	14313	.8413
8/28N-8/31	435	.0256	14748	.8669
9/1-9/4	2265	.1331	17013	1.0000
	-----	-----		
	17013	1.0000		

TABLE 3C. Unalakleet River Species Apportionment by Test Period, Pink Salmon, 1983.

Dates	3-Day Count	Proportion of Season Total	Cumulative Count	Cumulative Proportion
6/4-6/8	0	.0000	0	.0000
6/9-6/12N	0	.0000	0	.0000
6/12N-6/15	0	.0000	0	.0000
6/16-6/19N	97	.0012	97	.0012
6/19N-6/22	332	.0036	429	.0048
6/23-6/26N	1245	.0136	1674	.0184
6/26N-6/29	6624	.0721	8298	.0905
6/30-7/3N	3699	.0403	11997	.1308
7/3N-7/6	10762	.1171	22759	.2479
7/7-7/10N	7704	.0838	30463	.3317
7/10N-7/13	8529	.0928	38992	.4245
7/14-7/17N	9771	.1063	48763	.5308
7/17N-7/20	13845	.1507	62608	.6815
7/21-7/24N	11361	.1236	73969	.8051
7/24N-7/27	6544	.0712	80513	.8763
7/28-7/31N	3545	.0386	84058	.9149
7/31N-8/3	1628	.0177	85686	.9326
8/4-8/7N	1224	.0133	86910	.9459
8/7N-8/10	1777	.0193	88687	.9652
8/11-8/14N	802	.0087	89489	.9739
8/14N-8/17	561	.0061	90050	.9800
8/18-8/21N	533	.0058	90583	.9858
8/21N-8/24	830	.0091	91413	.9949
8/25-8/28N	468	.0051	91881	1.0000
8/28N-8/31	0	.0000	91881	1.0000
9/1-9/4	0	.0000	91881	1.0000
	----- 91881	----- 1.0000		

TABLE 3D. Unalakleet River Species Apportionment by Test Period, Chum Salmon, 1983.

Dates	3-Day Count	Proportion of Season Total	Cumulative Count	Cumulative Proportion
6/4-6/8	0	.0000	0	.0000
6/9-6/12N	100	.0017	100	.0017
6/12N-6/15	268	.0046	368	.0063
6/16-6/19N	838	.0144	1206	.0207
6/19N-6/22	1180	.0202	2386	.0409
6/23-6/26N	2744	.0471	5130	.0880
6/26N-6/29	1569	.0270	6699	.1150
6/30-7/3N	796	.0137	7495	.1287
7/3N-7/6	2972	.0510	10467	.1797
7/7-7/10N	2068	.0355	12535	.2152
7/10N-7/13	2622	.0450	15157	.2602
7/14-7/17N	4133	.0710	19290	.3312
7/17N-7/20	5596	.0960	24886	.4272
7/21-7/24N	4978	.0854	29864	.5216
7/24N-7/27	8974	.1540	38838	.6666
7/28-7/31N	2241	.0385	41079	.7051
7/31N-8/3	2079	.0357	43158	.7408
8/4-8/7N	3009	.0516	46167	.7924
8/7N-8/10	2432	.0417	48559	.8341
8/11-8/14N	937	.0161	49536	.8502
8/14N-8/17	454	.0078	49990	.8580
8/18-8/21N	2584	.0443	52574	.9023
8/21N-8/24	2739	.0470	55313	.9493
8/25-8/28N	1783	.0306	57096	.9799
8/28N-8/31	765	.0131	57861	.9930
9/1-9/4	412	.0070	58273	1.0000
	----- 58273	----- 1.0000		

TABLE 4. Unalakleet River Test Net Proportions by Sample Period, 1983. (% Selective CPUE)

Dates	Chinook	Coho	Pink	Chum	Misc.
6/4-6/8	10.5		0.0	0.0	89.5
6/9-6/12N	2.4		0.0	8.3	89.3
6/12N-6/15	10.5		0.0	6.1	83.4
6/16-6/19N	7.8		1.8	15.6	74.8
6/19N-6/22	2.3		4.5	16.0	77.2
6/23-6/26N	6.5		11.2	24.7	57.6
6/26N-6/29	2.2		55.3	13.1	29.4
6/30-7/3N	1.6		57.6	12.4	28.4
7/3N-7/6	1.0		57.2	15.8	26.0
7/7-7/10N	0.0		55.5	14.9	29.6
7/10N-7/13	0.0		54.0	16.6	29.4
7/14-7/17N	1.4	0.0	51.3	21.7	25.6
7/17N-7/20	0.0	0.0	53.2	21.5	25.3
7/21-7/24N	0.4	0.0	49.3	21.6	28.7
7/24N-7/27	0.0	1.8	20.2	27.7	50.3
7/28-7/31N	0.0	2.3	24.2	15.3	58.2
7/31N-8/3	0.0	3.0	11.2	14.3	71.5
8/4-8/7N		4.4	9.8	24.1	61.7
8/7N-8/10		18.2	12.2	16.7	52.9
8/11-8/14N		13.9	9.5	11.1	65.5
8/14N-8/17		9.6	6.8	5.5	78.1
8/18-8/21N		10.5	3.9	18.9	66.7
8/21N-8/24		26.3	4.3	14.2	55.2
8/25-8/28N		14.5	5.3	20.2	60.0
8/28N-8/31		9.7	0.0	17.1	73.2
9/1-9/4		39.6	0.0	7.2	53.2

TABLE 4. Unalaklet River Test Net Proportions, 1983
 (% Selective CPUE). (Continued)

Comparative Apportionment		
Species	Apportionment	Percent of Total Counts
Chinook	2,790	0.9
Coho	17,013	5.3
Pink	91,881	28.5
Chum	58,273	18.1
Subtotal	169,957	52.8
Misc. Species	152,537	47.2
Total	322,494	100.0

Substrate Comparison		
Bank	Counts	Percent
South	148,465	46.0
North	174,029	54.0
Total	322,494	100.0

TABLE 5A. Unalakleet River Test Net Data, King Salmon in
8 1/4" Mesh, 1983

Date	Hours	Catch	CPUE	Cum. Hours	Cum. Catch	Cum. CPUE
May 27	21.5	0	.00	21.5	0	.00
28	48.2	0	.00	69.7	0	.00
30	24.0	0	.00	93.7	0	.00
31	24.6	2	.41	118.3	2	.08
June 1	23.7	0	.00	142.0	2	.07
2	25.6	0	.00	167.6	2	.06
3	58.5	0	.00	226.1	2	.04
5	16.0	0	.00	242.1	2	.04
6	12.0	1	.42	254.1	3	.06
8	12.5	0	.00	266.6	3	.06
9	12.2	0	.00	278.8	3	.05
11	11.7	0	.00	290.5	3	.05
12	12.6	0	.00	303.1	3	.05
13	11.7	1	.43	314.8	4	.06
15	11.8	0	.00	326.6	4	.06
16	11.6	1	.43	338.2	5	.08
18	24.0	0	.00	362.2	5	.07
19	12.1	0	.00	374.3	5	.07
20	11.6	0	.00	385.9	5	.06
22	11.8	1	.42	397.7	6	.08
23	11.9	1	.42	419.6	7	.08
25	24.0	0	.00	433.6	7	.08
26	11.9	0	.00	445.5	7	.08
27	11.9	0	.00	457.4	7	.08
29	12.0	0	.00	469.4	7	.07
30	12.0	0	.00	481.4	7	.07
July 2	23.8	0	.00	505.2	7	.07
3	11.8	0	.00	517.0	7	.07
4	11.8	1	.42	528.8	8	.08
6	12.2	0	.00	541.0	8	.07
7	11.6	0	.00	552.6	8	.07
10	12.6	0	.00	565.2	8	.07
11	11.9	0	.00	577.1	8	.07
13	11.6	0	.00	588.7	8	.07
14	11.9	2	.84	600.6	10	.07
17	12.2	0	.00	612.8	10	.07
18	11.2	0	.00	624.0	10	.06
20	11.9	0	.00	635.9	10	.06
21	11.2	0	.00	647.1	10	.06
	647.1	10				

TABLE 5B. Unalakleet River Test Net Data, Coho Salmon in
5 7/8" Mesh, 1983.

Date	Hours	Catch	CPUE	Hours	Cum. Catch	Cum. CPUE
July 24	11.5	0	.00	11.5	0	.00
26	12.0	0	.00	23.5	0	.00
27	11.7	4	.00	35.2	0	.00
29	11.7	0	1.37	46.9	4	.34
31	11.6	3	1.03	58.5	7	.48
August 2	12.2	0	.00	70.6	7	.40
3	12.2	2	.66	82.8	9	.43
5	11.8	1	.34	94.6	10	.42
7	12.8	14	4.37	107.4	24	.89
9	25.7	14	2.18	133.1	38	1.14
10	12.5	21	6.72	145.6	59	1.62
12	1.3	0	.00	146.9	59	1.61
14	10.7	12	4.49	157.6	71	1.80
16	12.2	2	.66	169.8	73	1.72
17	12.3	6	1.96	182.1	79	1.74
19	11.8	1	.34	193.9	80	1.65
21	11.2	6	2.14	205.1	86	1.68
23	12.0	3	1.00	217.1	89	1.64
24	11.5	2	.70	228.6	91	1.59
26	11.5	5	1.74	240.1	96	1.60
28	11.9	0	.00	252.0	96	1.52
30	11.9	4	1.34	263.9	100	1.52
31	11.7	1	.34	275.6	101	1.47
Sept. 2	12.3	5	.33	287.9	106	1.47
4	47.9	15	1.25	335.8	121	1.44
6	23.8	11	1.85	359.6	132	1.47
7	23.7	5	.84	383.3	137	1.43
8	23.8	6	1.01	407.1	143	1.41
9	24.2	10	1.65	431.3	153	1.42
10	24.2	3	.50	455.5	156	1.37
11	24.2	2	.33	479.7	158	1.32
12	24.1	8	1.33	503.8	166	1.32
14	22.7	14	2.47	526.5	180	1.37
15	24.2	9	1.49	550.7	189	1.37
16	21.0	3	.57	571.7	192	1.34
17	23.9	2	.33	595.6	194	1.30
18	23.0	2	.35	618.6	196	1.27
20	48.9	4	.33	667.5	200	1.20
21	24.0	3	.50	691.5	203	1.17
22	24.2	0	.00	715.7	203	1.13
23	23.4	1	.17	739.1	204	1.10
	739.1	204				

Mesh size = 5 1/4" from 7/24 to 8/10

TABLE 5C. Unalakleet River Test Net Data, Pink Salmon in
4" Mesh, 1983.

Date	Hours	Catch	CPUE	Cum. Hours	Cum. Catch	Cum. CPUE		
June	16	12.2	1	.33	12.2	1	.33	
	17	11.8	0	.00	24.0	1	.17	
	20	12.0	2	.67	36.0	3	.33	
	21	11.8	0	.00	47.8	3	.25	
	23	11.9	2	.67	59.7	5	.34	
	24	11.9	3	1.02	71.6	8	.45	
	27	11.6	19	6.55	83.2	27	1.30	
	28	12.0	22	7.33	95.2	49	2.06	
	30	12.0	40	13.33	107.2	89	3.32	
July	1	11.5	36	12.52	118.7	125	4.21	
	4	12.2	30	9.83	130.9	155	4.74	
	5	11.4	47	16.49	142.3	202	5.68	
	7	11.8	30	10.16	154.1	232	6.02	
	8	12.0	24	8.00	166.1	256	6.16	
	11	12.2	42	13.77	178.3	298	6.69	
	12	12.0	29	9.67	190.3	327	6.87	
	14	11.6	37	12.76	201.9	364	7.21	
	15	11.8	40	13.56	213.7	404	7.56	
	18	12.1	60	19.76	225.8	464	8.22	
	19	11.9	30	7.40	237.7	494	8.31	
	21	12.5	61	19.52	250.2	555	8.87	
	22	11.8	25	8.47	262.7	580	8.83	
	25	12.2	16	5.25	274.9	596	8.67	
	26	11.6	15	5.17	286.5	611	8.53	
	28	12.2	28	9.18	298.7	639	8.56	
	29	11.7	11	3.76	310.4	650	8.38	
	August	1	12.0	7	2.33	322.4	657	8.15
		2	11.9	9	3.03	334.5	666	7.96
4		12.0	3	1.00	346.5	669	7.72	
5		11.8	5	1.70	358.3	674	7.52	
8		11.4	7	2.45	369.7	681	7.34	
11		12.3	7	3.37	382.0	688	7.20	
15		11.8	2	.68	393.8	690	7.01	
16		11.3	5	1.77	405.1	695	6.86	
18		9.8	3	1.22	414.9	698	6.73	
19		11.9	1	.34	426.8	699	6.55	
22		11.2	0	.00	438.0	699	6.38	
23		11.5	0	.00	449.5	699	6.22	
25		12.0	2	.66	461.5	701	6.06	
26		11.2	1	.36	472.7	702	5.94	
29		11.6	0	.00	484.3	702	5.80	
30	11.5	0	.00	495.8	702	5.66		
Sept.	1	11.5	0	.00	507.9	702	5.53	
	2	11.2	0	.00	519.1	702	5.41	
		507.9	702					

TABLE 5D. Unalakleet River Test Net Data, Chum Salmon in
5 7/8" Mesh, 1983.

Date	Hours	Catch	CPUE	Cum. Hours	Cum. Catch	Cum. CPUE	
June	5	7.3	0	.00	7.3	0	.00
	7	12.6	0	.00	19.9	0	.00
	8	12.7	0	.00	32.6	0	.00
	10	11.4	3	1.05	44.0	3	.27
	12	11.3	2	.71	55.3	5	.36
	14	11.9	1	.34	67.2	6	.36
	15	11.6	4	1.38	78.8	10	.51
	17	11.6	3	1.03	90.4	13	.56
	19	11.8	6	2.03	102.2	19	.74
	21	11.8	0	.00	114.0	19	.67
	22	11.7	10	3.42	125.7	29	.92
	24	11.6	3	1.03	137.3	32	.93
	26	11.9	11	3.70	149.2	43	1.15
	28	11.8	6	2.03	161.0	49	1.22
	29	11.5	13	4.52	172.5	62	1.44
July	1	11.9	8	2.69	184.4	70	1.52
	3	11.9	17	5.71	196.3	87	1.77
	5	11.9	13	4.37	208.2	100	1.92
	6	12.0	17	5.67	220.2	117	2.13
	8	12.1	7	2.31	232.3	124	2.14
	10	11.4	18	6.32	243.7	142	2.33
	12	11.5	12	4.17	255.2	154	2.41
	13	11.6	37	12.76	266.8	191	2.86
	15	11.7	16	5.47	278.5	207	2.97
	17	11.8	31	10.51	290.3	238	3.28
	19	11.8	18	6.10	302.1	256	3.39
	20	11.5	29	10.09	313.6	285	3.64
	22	12.2	17	5.57	325.8	302	3.71
	24	11.5	24	8.35	337.3	326	3.87
	26	12.0	19	6.33	349.3	345	3.95
	27	11.7	11	3.76	361.0	356	3.94
	29	11.7	14	4.79	372.7	370	3.97
	31	11.6	18	6.21	384.3	388	4.04
August	2	12.1	9	2.98	396.4	397	4.01
	3	12.2	17	5.57	408.6	414	4.05
	5	11.8	8	2.71	420.4	422	4.02
	7	12.8	19	5.94	433.2	441	4.07
	9	25.7	10	1.56	458.9	451	3.93
	10	12.5	14	4.48	471.4	464	3.94
	12	1.3	1	3.08	472.7	465	3.93
	14	10.7	5	1.87	483.4	470	3.89
	16	12.2	4	1.31	495.6	474	3.83
	17	12.3	15	4.88	507.9	489	3.85
	19	11.8	8	2.71	519.7	497	3.83
	21	11.2	3	1.07	530.9	500	3.78
	23	12.0	6	2.00	542.9	506	3.73
	24	11.5	7	2.43	554.4	513	3.70

TABLE 5D. Unalakleet River Test Net Data, Chum Salmon in
5 7/8" Mesh, 1983. (Continued)

Date	Hours	Catch	CPUE	Cum. Hours	Cum. Catch	Cum. CPUE
August 26	11.5	5	1.74	565.7	518	3.66
28	11.9	1	.34	577.6	519	3.59
30	11.9	4	1.34	589.5	523	3.55
31	11.7	0	.00	601.2	523	3.48
Sept. 2	12.3	3	.98	613.5	526	3.43
4	47.9	2	.17	661.4	528	3.19
6	23.8	1	.17	685.2	529	3.09
7	23.7	0	.00	708.9	529	2.98
8	23.8	1	.17	732.7	530	2.89
9	24.2	2	.33	756.9	532	2.81
10	24.2	3	.50	781.1	535	2.74
11	24.2	0	.00	805.3	535	2.66
12	24.1	2	.33	829.4	537	2.59
14	22.7	3	.53	852.1	540	2.53
15	24.2	0	.00	876.3	540	2.46
16	21.0	1	.19	897.3	541	2.41
17	23.9	2	.33	921.2	543	2.36
18	23.0	0	.00	944.2	543	2.30
20	48.9	0	.00	993.1	543	2.19
21	24.0	2	.33	1017.1	545	2.14
22	24.2	0	.00	1041.3	545	2.09
23	23.4	0	.00	1064.7	545	2.05
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	1064.7	545				

TABLE 6A. Unalakleet River Sonar Site Drift Sets,
5 1/4" Mesh, 1983.

Date	Time	Result
July 19	1405-1413	1 burbot
July 23	1040-1055	1 pink carcass
July 27	1520-1530	1 coho
August 3	1444-1501	4 coho
August 22	1930-1937	0
August 23	937-943	1 coho, 1 pink carcass
August 26	1117-1127	1 coho, 3 chum
August 31	1018-1034	3 chum

TABLE 6B. Unalakleet River Sonar Site Beach Seines, 1983.

Date	Time	Distance	Result
July 20	1445	120 meters	4 pink, 1 chum, 13 Dolly Varden, 1 whitefish
July 25	1500	120 meters	6 pink, 1 chum, 1 Dolly Varden, 4 whitefish, 1 grayling
July 28	1700	120 meters	4 coho, 2 pink, 2 chum, 1 Dolly Varden
August 1	2010	300 meters	4 pink, 3 chum, 8 Dolly Varden
August 4*	1015	130 meters	5 coho, 3 pink, 3 chum, 65 Dolly Varden, 3 whitefish, 3 grayling
August 24*	1110	130 meters	18 coho, 2 Dolly Varden, 2 grayling
August 29	1715	120 meters	11 coho, 1 pink, 69 chum, 1 Dolly Varden, 2 grayling

* Seine done at mile 12, Unalakleet River.

TABLE 7. AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND KING SALMON, UNALAKLEET RIVER
CATCH SAMPLE, SPORT CATCH AND SPAWNING SURVEYS, 1983.

	COMBINED			3-2			4-2			4-3		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	31	64.6	670.2	5	10.4	501.0	8	16.7	568.8	1	2.1	590.0
Female	17	35.4	854.0	0	0	--	1	2.1	545.0	0	0	--
Total	48	100.0	735.3	5	10.4	501.0	9	18.8	566.1	1	2.1	590.0

	5-2			6-2			7-2			7-3		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	11	22.9	738.2	6	12.5	835.0	0	0	--	0	0	--
Female	2	4.2	792.5	12	25.0	874.2	1	2.1	1065.0	1	2.1	835.0
Total	13	27.1	746.5	18	37.5	861.1	1	2.1	1065.0	1	2.1	835.0

TABLE 8A. AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND KING SALMON, UNALAKLEET RIVER, TEST NET SAMPLE, 1983.

	COMBINED			4-2			5-2			5-3			6-2			7-2		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
8 1/4"																		
Male	3	33.3	810.7	0	0	--	1	11.1	580.0	0	0	--	2	22.2	926.0	0	0	--
Female	6	66.7	829.5	0	0	--	1	11.1	760.0	0	0	--	4	44.4	831.0	1	11.1	893.0
Total	9	100.0	823.2	0	0	--	2	22.2	670.0	0	0	--	6	66.7	862.7	1	11.1	893.0
55																		
5 1/4"																		
Male	19	100.0	629.8	12	63.2	539.2	4	21.1	699.0	0	0	--	3	15.8	899.7	0	0	--
Female	0	0	--	0	0	--	0	0	--	0	0	--	0	0	--	0	0	--
Total	19	100.0	629.8	12	63.2	539.2	4	21.1	699.0	0	0	--	3	15.8	899.7	0	0	--
4" or Smaller																		
Male	6	66.7	593.0	1	11.1	466.0	2	22.2	632.5	3	33.3	609.0	0	0	--	0	0	--
Female	3	33.3	897.0	0	0	--	0	0	--	0	0	--	3	33.3	897.0	0	0	--
Total	9	100.0	694.3	1	11.1	466.0	2	22.2	632.5	3	33.3	609.0	3	33.3	897.0	0	0	--
TOTAL																		
Male	28	75.7	641.3	13	35.1	533.6	7	18.9	663.0	3	8.1	609.0	5	13.5	910.2	0	0	--
Female	9	24.3	852.0	0	0	--	1	2.7	760.0	0	0	--	7	18.9	859.3	1	2.7	893.0
Total	37	100.0	692.5	13	35.1	533.6	8	21.6	675.1	3	8.1	609.0	12	32.4	880.5	1	2.7	893.0

TABLE 8B. AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND COHO SALMON, UNALAKLEET RIVER
 TEST NET SAMPLE, 5 1/4" AND 5 7/8" GEAR, 1983.

	COMBINED			3-2			4-3			4-4			5-4		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	9	90.0	548.9	0	0	--	9	90.0	548.9	0	0	--			
Female	1	10.0	552.0	0	0	--	1	10.0	552.0	0	0	--			
Total	10	100.0	549.2	0	0	--	10	100.0	549.2	0	0	--			
7/25-7/31															
Male	15	93.8	564.5				15	93.8	564.5						
Female	1	6.2	575.0				1	6.2	575.0						
Total	16	100.0	565.1				16	100.0	565.1						
8/1-8/7															
Male	24	54.5	566.8				23	52.3	576.8	1	2.3	335.0			
Female	20	45.5	563.1				20	45.5	563.1	0	0	--			
Total	44	100.0	565.1				43	97.7	570.4	1	2.3	335.0			
8/8-8/14															
Male	7	50.0	579.7				7	50.0	579.7				0	0	--
Female	7	50.0	559.6				6	42.9	558.7				1	7.1	565.0
Total	14	100.0	569.6				13	92.9	570.4				1	7.1	565.0
8/15-8/21															
Male	5	45.5	549.2				5	45.5	549.2						
Female	6	54.5	555.2				6	54.5	555.2						
Total	11	100.0	552.5				11	100.0	552.5						
8/22-8/28															

TABLE 8B. AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND COHO SALMON, UNALAKLEET RIVER
 TEST NET SAMPLE, 5 1/4" and 5 7/8" GEAR, 1983. (CONTINUED)

	COMBINED			3-2			4-3			4-4			5-4		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	10	45.5	565.4	0	0	--	10	45.5	565.4	0	0	--	0	0	--
Female	12	54.5	572.0	0	0	--	12	54.5	572.0	0	0	--	0	0	--
Total	22	100.0	569.0	0	0	--	22	100.0	569.0	0	0	--	0	0	--
8/29-9/4															
Male	9	29.0	572.3				9	29.0	572.3						
Female	22	71.0	570.4				22	71.0	570.4						
Total	31	100.0	570.9				31	100.0	570.9						
9/5-9/11															
Male	15	53.6	588.7				15	53.6	588.7						
Female	13	46.4	585.5				13	46.4	585.5						
Total	28	100.0	587.2				28	100.0	587.2						
9/12-9/18															
Male	4	50.0	593.5	1	12.5	632.0	2	25.0	573.5				1	12.5	595.0
Female	4	50.0	551.0	0	0	--	4	50.0	551.0				0	0	--
Total	8	100.0	572.2	1	12.5	632.0	6	75.0	558.5				1	12.5	595.0
9/19-9/25															

TOTALS															
Male	98	53.3	569.6	1	0.5	632.0	95	51.6	571.2	1	0.5	335.0	1	0.5	595.0
Female	86	46.7	568.2	0	0	--	85	46.2	568.2	0	0	--	1	0.5	565.0
Total	184	100.0	568.9	1	0.5	632.0	180	97.8	569.8	1	0.5	335.0	2	1.1	580.0

4" OR SMALLER GEAR															
Male	72	75.8	572.7				71	74.7	574.1				1	1.1	475.0
Female	23	24.2	557.0				22	23.2	559.2				1	1.1	508.0
Total	95	100.0	568.9				93	97.9	570.6				2	2.1	491.5

TABLE 8C. AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND CHUM SALMON, UNALAKLEET RIVER TEST NET, 5 1/4" and 5 7/8" GEAR, 1983.

	COMBINED			3-1			4-1			5-1			6-1		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	0	0	--	0	0	--	0	0	--	0	0	--	0	0	--
Female	5	100.0	582.8	0	0	--	0	0	--	5	100.0	582.8	0	0	--
Total	5	100.0	582.8	0	0	--	0	0	--	5	100.0	582.8	0	0	--
6/10-6/12															
Male	8	57.1	610.8	0	0	--	2	14.3	578.0	6	42.9	621.7	0	0	--
Female	6	42.9	581.0	0	0	--	0	0	--	6	42.9	581.0	0	0	--
Total	14	100.0	598.1	0	0	--	2	14.3	578.0	12	85.7	601.4	0	0	--
6/13-6/19															
Male	8	33.3	610.2				2	8.3	632.5	6	25.0	602.8			
Female	16	66.7	589.0				1	4.2	552.0	15	62.5	591.5			
Total	24	100.0	596.1				3	12.5	605.7	21	87.5	594.7			
6/20-6/26															
Male	19	42.2	591.1				7	15.6	606.7	12	26.7	582.0			
Female	26	57.8	584.3				10	22.2	573.1	16	35.6	591.2			
Total	45	100.0	587.1				17	37.8	586.9	28	62.2	587.3			
6/27-7/3															
Male	17	36.2	614.6				8	17.0	608.1	9	19.1	620.4			
Female	30	63.8	575.0				17	36.2	564.6	13	27.7	588.5			
Total	47	100.0	589.3				25	53.2	578.5	22	46.8	601.5			
7/4-7/10															

TABLE 8C. AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND CHUM SALMON, UNALAKLEET RIVER TEST NET, 5 1/4" and 5 7/8" GEAR, 1983 (CONTINUED).

	COMBINED			3-1			4-1			5-1			6-1		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	32	31.4	589.8				16	15.7	579.1	16	15.7	600.5			
Female	70	68.6	571.8				43	42.2	566.6	27	26.5	580.1			
Total	102	100.0	577.5				59	57.8	570.0	43	42.2	587.7			
7/11-7/17															
Male	33	38.4	595.1				23	26.7	583.3	10	11.6	622.2			
Female	53	61.6	569.0				34	39.5	562.4	19	22.1	580.7			
Total	86	100.0	579.0				57	66.3	570.9	29	33.7	595.0			
7/18-7/24															
Male	19	30.6	601.3	0	0	--	12	19.4	587.2	7	11.3	625.4	0	0	--
Female	43	69.4	576.0	1	1.6	520.0	31	50.0	568.2	10	16.1	602.1	1	1.6	612.0
Total	62	100.0	583.7	1	1.6	520.0	43	69.4	573.5	17	27.4	611.7	1	1.6	612.0
7/25-7/31															
Male	11	21.2	590.4	1	1.9	535.0	8	15.4	579.9	2	3.8	660.0			
Female	41	78.8	559.2	3	5.8	538.0	34	65.4	561.2	4	7.7	558.2			
Total	52	100.0	565.8	4	7.7	537.2	42	80.8	564.8	6	11.5	592.2			
8/1-8/7															
Male	7	26.9	600.3	0	0	--	5	19.2	594.6	2	7.7	614.5			
Female	19	73.1	568.2	1	3.8	540.0	15	57.7	569.9	3	11.5	569.0			
Total	26	100.0	576.8	1	3.8	540.0	20	76.9	576.1	5	19.2	587.2			
8/8-8/14															
Male	14	46.7	594.8	1	3.3	521.0	12	40.0	596.3	1	3.3	650.0			
Female	16	53.3	568.3	1	3.3	546.0	10	33.3	569.7	5	16.7	570.0			
Total	30	100.0	580.6	2	6.7	533.5	22	73.3	584.2	6	20.0	583.3			
8/15-8/21															
Male	6	27.3	602.2	0	0	--	5	22.7	591.8	1	4.5	654.0			
Female	16	72.7	566.8	1	4.5	513.0	12	54.5	564.6	3	13.6	593.7			
Total	22	100.0	576.5	1	4.5	513.0	17	77.3	572.6	4	18.2	608.8			
8/22-8/2															

TABLE 8C. AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND CHUM SALMON, UNALAKLEET RIVER TEST NET, 5 1/4" and 5 7/8" GEAR, 1983 (CONTINUED).

	COMBINED			3-1			4-1			5-1			6-1		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	2	18.2	565.0				2	18.2	565.0	0	0	--			
Female	9	81.8	554.1				8	72.7	557.1	1	9.1	530.0			
Total	11	100.0	556.1				10	90.9	558.7	1	9.1	530.0			
8/29-9/4															
Male	0	0	--				0	0	--						
Female	7	100.0	579.4				6	85.7	573.5	1	14.3	615.0			
Total	7	100.0	579.4				6	85.7	573.5	1	14.3	615.0			
9/5-9/11															
Male	1	10.0	572.0	0	0	--	1	10.0	572.0	0	0	--			
Female	9	90.0	566.1	1	10.0	546.0	7	70.0	561.0	1	10.0	622.0			
Total	10	100.0	566.7	1	10.0	546.0	8	80.0	562.4	1	10.0	622.0			
9/12-9/18															
TOTALS															
Male	177	32.6	597.3	2	0.4	528.0	103	19.0	589.2	72	13.3	610.8	0	0	--
Female	366	67.4	571.7	8	1.5	534.9	228	42.0	565.4	129	23.8	584.8	1	0.2	612.0
Total	543	100.0	580.0	10	1.8	533.5	331	61.0	572.8	201	37.0	594.1	1	0.2	612.0
TOTAL 8 1/4" GEAR															
Male	20	87.0	653.7				9	39.1	651.9	11	47.8	655.1			
Female	3	13.0	544.0				2	8.7	555.0	1	4.3	522.0			
Total	23	100.0	639.4				11	47.8	634.3	12	52.2	644.0			
TOTAL 4" GEAR AND VARIABLE MESH SMALLER THAN 4"															
Male	60	58.3	614.6				32	31.1	604.0	28	27.2	626.8			
Female	43	41.7	563.0				27	26.2	550.3	16	15.5	584.3			
Total	103	100.0	598.5				59	57.3	579.4	44	42.7	611.4			

 TABLE 9A. AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND KING SALMON, UNALAKLEET
 COMMERCIAL CATCH SAMPLE, 1983.

SEXED SAMPLES	COMBINED			3-2			4-2			5-2			6-2		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	103	64.0	809.8	1	0.6	517.0	4	2.5	536.5	44	27.3	773.4	54	33.5	865.1
Female	58	36.0	862.6	0	0	--	0	0	--	9	5.6	834.0	49	30.4	867.8
Total	161	100.0	828.8	1	0.6	517.0	4	2.5	536.5	53	32.9	783.7	103	64.0	866.4
Unsexed	293	100.0	816.6	1	0.3	505.0	11	3.8	601.8	95	32.4	770.8	186	63.5	854.4
Total	454	100.0	820.9	2	0.4	511.0	15	3.3	584.4	148	32.6	775.4	289	63.7	858.7

TABLE 9B AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND SOCKEYE SALMON, UNALAKLEET
 TEST NET SAMPLE, 1983. 5 7/8", 5 1/4", 4" AND VARIABLE MESH NETS.

SEX	COMBINED			4-2			5-2			5-3		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	4	66.7	570.8	0	0	--	3	50.0	588.7	1	16.7	517.0
Female	2	33.3	533.5	1	16.7	518.0	1	16.7	549.0	0	0	--
Total	6	100.0	558.4	1	16.7	518.0	4	66.7	578.8	1	16.7	517.0

 TABLE 9C. AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND COHO SALMON, UNALAKLEET
 COMMERCIAL CATCH SAMPLE, 1983.

	COMBINED			3-2			4-3			5-4		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	83	51.9	563.0	4	2.5	545.0	78	48.8	563.7	1	0.6	580.0
Female	77	48.1	567.6	4	2.5	566.2	72	45.0	568.5	1	0.6	510.0
Total	160	100.0	565.2	8	5.0	555.6	150	93.8	566.0	2	1.3	545.0

 TABLE 9D. AGE, SEX AND SIZE COMPOSITION OF NORTON SOUND CHUM SALMON, UNALAKLEET
 COMMERCIAL CATCH SAMPLE, 1983.

	COMBINED			3-1			4-1			5-1			6-1		
	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH	NO.	%	LENGTH
Male	159	48.0	598	3	0.9	563	84	25.6	602	70	21.3	593	2	0.6	620
Female	171	52.0	591	0	0	--	105	32.0	570	66	20.1	625	0	0	--
Total	328	100.0	594	3	0.9	563	189	57.6	584	136	41.5	609	2	0.6	620

APPENDIX TABLE 1A. Unalakleet River Test Net King Salmon Catches
1981-1983, 8 1/4" Mesh.

Date	1981			1982			1983		
	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE
May 27							21.0	0	.00
28							48.2	0	.00
29									
30							24.0	0	.00
31							24.6	2	.41
June 1							23.7	0	.00
2							25.6	0	.00
3							58.5	0	.00
4									
5							16.0	0	.00
6							12.0	1	.42
7	24	2	.28	24	0	.00			
8	24	1	.14				12.5	0	.00
9	24	3	.42				12.2	0	.00
10	24	2	.28	24	1	.21			
11	24	4	.55	24	3	.62	11.7	0	.00
12	24	1	.14	24	0	.00	12.6	0	.00
13	24	3	.42	24	0	.00	11.7	1	.43
14	24	3	.42	24	2	.42			
15	24	2	.28	24	1	.21	11.8	0	.00
16	24	7	.96				11.6	1	.43
17	24	1	.14	24	1	.21			
18	24	2	.28				24.0	0	.00
19	24	2	.28	24	0	.00	12.1	0	.00
20	24	5	.69	24	1	.21	11.6	0	.00
21	24	2	.28	12	0	.00			
22	24	1	.14				11.8	1	.42
23	24	1	.14	12	0	.00	11.9	1	.42
24	24	3	.42	11.9	3	1.26			
25	24	1	.14				24.0	0	.00
26	24	0	.00				11.9	0	.00
27	24	0	.00	12.6	0	.00	11.9	0	.00
28	24	2	.28	11.5	0	.00			
29	24	2	.28				12.0	0	.00
30	24	1	.14	12.0	0	.00	12.0	0	.00

APPENDIX TABLE 1A. Unalakleet River Test Net King Salmon Catches,
1981-1983, 8 1/4" Mesh. (Continued)

Date	1981			1982			1983		
	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE
July 1	24	4	.55	13.5	0	.00			
2	24	2	.28				23.8	0	.00
3	24	1	.14				11.8	0	.00
4	24	0	.00	11.0	0	.00	11.8	1	.42
5	24	0	.00	12.0	0	.00			
6	24	1	.14				12.2	0	.00
7	24	0	.00	13.0	1	.39	11.6	0	.00
8	24	1	.14	14.0	0	.00			
9	24	1	.14						
10	24	0	.00				12.6	0	.00
11	24	0	.00	12.0	3	1.25	11.9	0	.00
12	24	0	.00	11.8	0	.00			
13	24	1	.14				11.6	0	.00
14	24	0	.00	12.2	0	.00	11.9	2	.84
15	24	0	.00	12.2	0	.00			
16	24	0	.00*						
17	24	0	.00				12.2	0	.00
18	24	0	.00				11.2	0	.00
19	24	0	.00	11.9	0	.00			
20	24	0	.00	12.0	0	.00	11.9	0	.00
21	24	0	.00				11.2	0	.00
22	24	0	.00	11.5	0	.00			
23	24	0	.00	5.2	0	.00			

* Mesh changed to 5 7/8"

Appendix Table 1B. Unalakleet River Test Net King Salmon Catches, 1982-1983, 5" Gear.

		1982 (5 7/8" mesh, 20fm)			1983 (5 1/4" mesh, 25fm)			
		Hrs.	Catch	CPUE	Hrs.	Catch	CPUE	
June	5				7.3	0	0	
	6							
	7				12.6	1	.32	
	8							
	9				12.7	1	.31	
	10				11.4	0	0	
	11							
	12				11.3	2	.71	
	13							
	14				11.9	2	.67	
	15				11.6	1	.34	
	16		24	1	.21			
	17					11.6	2	.69
	18		24	5	1.04			
	19					11.8	0	0
	20		12	4	1.67			
	21					11.8	1	.34
	22		12	2	.83	11.7	1	.34
	23		12	2	.83			
	24					11.6	0	0
	25		11.9	1	.42			
	26					11.9	2	.67
	27		12.1	2	.84			
	28					11.8	1	.34
	29		12.2	1	.41	11.5	2	.70
	30		13.5	2	.74			
	July	1				11.9	1	.34
		2				12.0	2	.83
		3				11.9	1	.34
		4		13.5	0	0		
5						11.9	0	0
6			12.0	0	0	12.0	0	0
7			5.5	0	0			
8						12.1	0	0
9			9.0	0	0			
10						11.4	0	0
11			6.5	0	0			
12						11.5	0	0
13			12.2	1	.41	11.6	1	.34
14			9.0	0	0			
						11.7	0	0

APPENDIX TABLE 1C. Unalakleet River Test Net Coho Salmon Catches, 1981-1983, 5 7/8" Mesh.

Date	1981			1982			1983		
	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE
July 18				12.0	0	.00			
19				12.0	0	.00			
20									
21				11.8	0	.00			
22				24.5	0	.00			
23									
24							11.5	0	.00
25				12.6	4	1.58			
26				2.5	0	.00	12.0	0	.00
27							11.7	0	.00
28	24	1	.42						
29	24	1	.42	4.6	0	.00	11.7	4	1.37
30	24	2	.83						
31	24	2	.83				11.6	3	1.03
Aug. 1	24	1	.42	3.0	9	15.00			
2	24	0	.00	4.4	3	3.41	12.2	0	.00
3	24	1	.42				12.2	2	.66
4	24	0	.00	13.2	8	3.04			
5	24	0	.00	7.3	6	6.49	11.8	1	.34
6	24	0	.00						
7	24	1	.42				12.8	14	4.37
8	24	0	.00	12.6	9	3.57			
9	24	3	1.25	12.9	0	.00	25.7	14	2.18
10	24	1	.42				12.5	21	6.72
11	24	0	.00	12.2	8	3.28			
12	24	1	.42	12.5	17	6.80	1.3	0	.00
13	24	1	.42						
14	24	5	.63				10.7	12	4.49
15	24	17	2.12	12.3	18	7.32			
16	24	36	4.50	12.2	5	2.05	12.2	2	.66
17	24	27	3.37				12.3	6	1.96
18	24	21	2.62	12.0	5	2.08			
19	24	20	2.50	12.2	1	.41	11.8	1	.34
20	24	10	1.25						
21	24	17	2.12				11.2	6	2.14
22	24	10	1.25	12.2	6	2.46			
23	24	13	1.62	11.8	2	.84	12.0	3	1.00
24	24	2	.25				11.5	2	.70
25	24	5	.62	12.1	3	1.24			

APPENDIX TABLE 1C. Unalakleet River Test Net Coho Catches,
1981-1983, 5 7/8" Mesh. (Continued)

Date	1981			1982			1983		
	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE
Aug. 26	24	13	1.62	12.0	0	.00	11.5	5	1.74
27	24	5	.62						
28	24	4	.50				11.9	0	.00
29	24	1	.12	12.5	11	4.40			
30	24	0	.00	11.3	5	2.21	11.9	4	1.34
31	24	3	.38				11.7	1	.34
Sept. 1	24	2	.25	12.2	6	2.46			
2	24	1	.12	11.5	2	.87	12.3	5	.33
3	24	2	.25						
4	24	1	.12				47.9	15	1.25
5	24	2	.83	11.6	8	3.01			
6	24	2	.83	9.8	3	1.53	23.8	6	1.01
7	24	1	.42				23.7	5	.84
8	24	2	.83	11.8	0	.00	23.8	6	1.01
9	24	2	.83				24.2	10	1.65
10	24	3	1.25	28.5	13	2.28	24.2	3	.50
11	24	1	.42	23.5	14	2.98	24.2	2	.33
12	24	1	.42	25.6	8	1.56	24.1	8	1.33
13	24	2	.83	25.6	5	.98			
14	24	0	.00	21.3	6	1.41	22.7	14	2.47
15	24	0	.00	26.7	7	1.31	24.2	9	1.49
16	24	1	.42	22.2	5	1.13	21.0	3	.57
17	24	0	.00	24.8	10	2.02	23.9	2	.33
18	24	0	.00	22.1	15	3.39	23.0	2	.35
19	24	0	.00	30.2	4	.67			
20	24	1	.42	19.1	0	.00	48.9	4	.33
21				26.2	0	.76	24.0	3	.50
22				27.6	6	1.09	24.2	0	.00
23				20.2	2	.50	23.4	1	.17
24				23.8	1	.21			

* Mesh size = 5 1/4" from July 24 to August 10.

APPENDIX TABLE 1D. Unalakleet River Test Net Pink Salmon Catches, 1981-1983, 4" Mesh.

Date	1981			1982			1983		
	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE
June 16	24	0	.00				12.2	1	.33
17	24	0	.00				11.8	0	.00
18	24	1	.14						
19	24	0	.00						
20	24	0	.00				12.0	2	.67
21	24	1	.14	12.0	87	29.00	11.8	0	.00
22	24	0	.00	12.0	40	16.67			
23	24	2	.28				11.9	2	.67
24	24	1	.14	12.0	147	49.00	11.9	3	1.02
25	24	2	.28	11.5	126	43.82			
26	24	5	.69						
27	24	3	.41				11.6	19	6.55
28	24	2	.28	12.5	222	71.04	12.0	22	7.33
29	24	3	.41	7.0	116	66.28			
30	24	2	.28				12.0	40	13.33
July 1	24	2	.28	9.0	134	59.56	11.5	36	12.52
2	24	5	.69	10.5	184	70.10			
3	24	6	.82						
4	24	12	1.65				12.2	30	9.83
5	24	4	.55	9.5	387	162.94	11.4	47	16.49
6	24	4	.55	3.0	75	100.00			
7	24	8	1.10				11.8	30	10.16
8	24	19	2.61	2.2	86	156.36	12.0	24	8.00
9	24	8	1.10	3.0	144	192.00			
10	24	11	1.51						
11	24	15	2.06				12.2	42	13.77
12	24	17	2.34	2.1	112	213.33	12.0	29	9.67
13	24	10	1.38	3.5	110	125.71			
14	24	7	.96				11.6	37	12.76
15	24	8	1.10	2.0	52	104.00	11.8	40	13.56
16	24	10	1.38	1.5	61	162.67			
17	24	20	2.75						
18	24	20	2.75	1.5	35	93.33	12.1	60	19.76
19	24	23	9.58				11.9	30	7.40
20	24	15	6.27	1.6	59	147.50			
21	24	51	21.25	1.6	61	152.50	12.5	61	19.52
22	24	55	22.97				11.8	25	8.47
23	24	28	11.67	2.4	43	71.67			
24	24	17	7.08						
25	24	22	9.17	1.1	43	156.36	12.2	16	5.25
26	24	14	5.83				11.6	15	5.17
27	24	12	5.00	.6	21	350.00			
28	24	5	2.08	2.4	100	166.67	12.2	28	9.18
29	24	9	3.75				11.7	11	3.76
30	24	8	3.33	1.4	9	25.71			
31	24	10	4.17						

APPENDIX TABLE 1D. Unalakleet River Test Net Pink Salmon Catches, 1981-1983, 4" Mesh. (Continued)

Date	1981			1982			1983		
	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE
August 1	24	4	1.67	3.5	6	6.86	12.0	7	2.33
2	24	4	1.67				11.9	9	3.03
3	24	6	2.50	1.8	18	40.00			
4	24	4	1.67	4.7	34	28.94	12.0	3	1.00
5	24	2	.83				11.8	5	1.70
6	24	10	4.17	1.2	0	.00			
7	24	12	5.00						
8	24	1	.42	4.5	2	1.78	11.4	7	2.45
9	24	1	.42						
10	24	2	.83	2.8	0	.00			
11	24	2	.83	3.7	0	.00	12.3	7	3.37
12	24	3	1.25						
13	24	0	.00	1.6	0	.00			
14	24	0	.00						
15	24	1	.42	3.9	3	3.08	11.8	2	.68
16	24	0	.00				11.3	5	1.77
17	24	0	.00	1.6	0	.00			
18	24	0	.00	5.5	0	.00	9.8	3	1.22
19	24	0	.00				11.9	1	.34
20	24	0	.00	1.3	0	.00			
21									
22				12.2	0	.00	11.2	0	.00
23							11.5	0	.00
24				12.0	0	.00			
25				11.9	0	.00	12.0	2	.66
26							11.2	1	.36
27				12.6	0	.00			
28									
29				11.6	0	.00	11.6	0	.00
30							11.5	0	.00
31				10.6	1	.38			
Sept. 1				12.2	0	.00	11.5	0	.00
2							11.2	0	.00
3				12.1	0	.00			
4									
5				12.2	0	.00			
6									
7				12.6	1	.32			

Note: 1981 mesh sizes = 8 1/4" from June 16 to July 17
5 7/8" from July 17 to August 20

APPENDIX TABLE 1E. Unalakleet River Test Net Chum Salmon Catches
1981-1983, 5 7/8" Mesh.

Date	1981			1982			1983		
	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE
June 5							7.3	0	.00
6									
7							12.6	0	.00
8							12.7	0	.00
9	24	0	.00						
10	24	10	1.38				11.4	3	1.05
11	24	4	.55						
12	24	10	1.38				11.3	2	.71
13	24	2	.28						
14	24	0	.00				11.9	1	.34
15	24	3	.41				11.6	4	1.38
16	24	5	.69	24	8	1.67			
17	24	3	.41				11.6	3	1.03
18	24	21	2.89	24	9	1.88			
19	24	18	2.47				11.8	6	2.03
20	24	14	1.93	12	12	4.16			
21	24	7	.96				11.8	0	.00
22	24	6	.82	12	8	3.34	11.7	10	3.42
23	24	41	5.64	12	2	.84			
24	24	2	.28				11.6	3	1.03
25	24	4	.55	11.9	3	1.23			
26	24	5	.69				11.9	11	3.70
27	24	4	.55	12.1	23	9.51			
28	24	9	1.24				11.8	6	2.03
29	24	9	1.24	12.2	11	4.51	11.5	13	4.52
30	24	4	.55	13.5	13	4.81			
July 1	24	14	1.93				11.9	8	2.69
2	16	16	2.20	12.0	17	7.09			
3	24	16	2.20				11.9	17	5.71
4	24	13	1.79	13.5	20	7.41			
5	24	11	1.51				11.9	13	4.37
6	24	11	1.51	12.0	4	1.67	12.0	17	5.67
7	24	9	1.24	5.5	12	10.91			
8	24	18	2.48				12.1	7	2.31
9	24	13	1.79	9.0	9	5.00			
10	24	19	2.61				11.4	18	6.32
11	24	22	3.02	6.5	16	12.31			
12	24	14	1.92				11.5	12	4.17
13	24	10	1.38	12.2	8	3.30	11.6	37	12.76
14	24	10	1.38	9.0	8	4.44			
15	24	6	.82				11.7	16	5.47
16	24	3	.41	11.8	3	1.27			
17	24	6	.82				11.8	31	10.51

APPENDIX TABLE 1E. Unalakleet River Test Net Chum Salmon Catches, 1981-1983, 5 7/8" Mesh. (Continued)

Date	1981			1982			1983		
	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE
July 18	24	16	2.20	12.0	8	3.33			
19	24	12	5.00	12.0	19	7.91	11.8	18	6.10
20	24	20	8.33				11.5	29	10.09
21	24	16	6.67	11.8	8	3.39			
22	24	4	1.67	24.5	28	5.71	12.2	17	5.57
23	24	7	2.92						
24	24	12	5.00				11.5	24	8.35
25	24	11	4.58	12.6	23	9.10			
26	24	20	8.33	2.5	3	5.00	12.0	19	6.33
27	24	21	8.75				11.7	11	3.76
28	24	14	5.83						
29	24	37	15.42	4.6	8	8.70	11.7	14	4.79
30	24	22	9.17						
31	24	12	5.00				11.6	18	6.21
Aug. 1	24	3	1.25	3.0	3	5.00			
2	24	0	.00	4.4	1	1.14	12.1	9	2.98
3	24	4	1.67				12.2	17	5.57
4	24	7	2.92	13.2	5	1.90			
5	24	11	4.58	7.3	5	3.42	11.8	8	2.71
6	24	8	3.33						
7	24	11	4.58				12.8	19	5.94
8	24	11	4.58	12.6	6	2.38			
9	24	9	3.75	12.9	2	.78	25.7	10	1.56
10	24	6	2.50				12.5	14	4.48
11	24	9	3.75	12.2	4	1.64			
12	24	7	2.92	12.5	3	1.20	1.3	1	3.08
13	24	1	.42						
14	24	25	3.10				10.7	5	1.87
15	24	30	3.83	12.3	2	.82			
16	24	14	1.87	12.2	2	.82	12.2	4	1.31
17	24	9	1.18				12.3	15	4.88
18	24	14	1.87	12.0	0	.00			
19	24	8	1.10	12.2	1	.41	11.8	8	2.71
20	24	6	.82						
21	24	7	.96				11.2	3	1.07
22	24	1	.14	12.2	1	.41			
23	24	1	.14	11.8	4	1.70	12.0	6	2.00
24	24	2	.28				11.5	7	2.43
25	24	2	.28	12.1	1	.41			
26	24	2	.28	12.2	0	.00	11.5	5	1.74
27	24	7	.96						
28	24	2	.28				11.9	1	.34
29	24	1	.14	12.5	3	1.20			
30	24	0	.00	11.3	0	.00	11.9	4	1.34
31	24	2	.28				11.7	0	.00

APPENDIX TABLE 1E. Unalakleet River Test Net Chum Salmon Catches, 1981-1983, 5 7/8" Mesh. (Continued)

Date	1981			1982			1983		
	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE	Hrs.	Catch	CPUE
Sept. 1	24	2	.28	12.2	0	.00			
2	24	0	.00	11.5	0	.00	12.3	3	.98
3	24	0	.00						
4	24	0	.00				47.9	2	.17
5	24	1	.42	11.6	0	.00			
6	24	1	.42	9.8	0	.00	23.8	1	.17
7	24	2	.84				23.7	0	.00
8	24	2	.84	11.8	3	1.27	23.8	1	.17
9	24	0	.00				24.2	2	.33
10	24	0	.00	28.5	0	.00	24.2	3	.50
11	24	0	.00	23.5	0	.00	24.2	0	.00
12	24	0	.00	25.6	0	.00	24.1	2	.33
13	24	0	.00	25.6	0	.00			
14	24	0	.00	21.3	0	.00	22.7	3	.53
15	24	0	.00	26.7	0	.00	24.2	0	.00
16	24	0	.00	22.2	0	.00	21.0	1	.19
17	24	0	.00	24.8	2	.40	23.9	2	.33
18	24	0	.00	22.1	0	.00	23.0	0	.00
19	24	0	.00	30.2	0	.00			
20	24	0	.00	19.1	0	.00	48.9	0	.00
21				26.2	1	.19	24.0	2	.33
22				27.6	1	.18	24.2	0	.00
23				20.2	0	.00	23.4	0	.00
24				23.8	0	.00			

Note: 1981 Sizes - 8 1/4" from June 9 to July 17
 5 7/8" from July 18 to September 20
 1983 Sizes - 5 1/4" from June 5 to August 10
 5 7/8" from August 11 to September 23