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Niukluk River Salmon Counting Tower
Project Summary Report, 1995

by

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INTRODUCTION

The Niukluk River is a tributary of the Fish River, which empties into Golovin Bay on the north coast of Norton Sound. The Niukluk River enters the Fish River approximately ten miles above the village of White Mountain (Figure 1). The village of Council is located on the Niukluk River approximately twelve miles from its confluence with the Fish River. There is road access to the Niukluk River at the village of Council. The Niukluk River supports both subsistence and sport fisheries.

This was the first year of successful counting tower operation on the Niukluk River. Previous attempts to operate a counting tower project on the Niukluk River have been unsuccessful, (Charles Lean, Alaska Department of Fish & Game, personal communication). The project was initiated to obtain more timely and accurate escapement information required for the active management of salmon stocks throughout the season and as a means to calibrate the accuracy of aerial surveys on the other components of the Fish River system.

OBJECTIVES

1. Obtain daily and seasonal estimates of the timing and magnitude of the salmon escapement, by species, to the Niukluk River.
2. Estimate the age, sex, and length of the chum salmon escapement to the Niukluk and Fish Rivers by sampling subsistence chum salmon harvests and chum salmon carcasses.
3. Obtain daily and seasonal estimates of the timing and magnitude of the Dolly Varden escapement to the Niukluk River.
4. Collect age, sex and length information from sport fishery harvests of coho salmon.

METHODS

The Niukluk River tower camp is located approximately 2 miles upstream from the confluence of the Fish and Niukluk Rivers (Figure 1). The tower camp is just upstream of Tom Gray's camp, which is locally known as Mosquito Bar. A letter of understanding from the Council Native Corporation authorizes the tower and weir operation. Permits for the weir were issued by the Alaska Department of Fish & Game (ADF&G), Habitat Division and the Alaska Department of Natural Resources, Division of Land. The camp and tower site is leased for five years on an annual renewal basis from Tom Gray.

The three person crew began working on 19 June, 1995. The first three days were spent inventorying and purchasing equipment and supplies. Two boats and camp equipment were trucked to Council, with the assistance of additional personnel from Nome, on 22 June. The boats were launched, loaded and headed downstream. The project site at Mosquito Bar was located, the boats unloaded and a quick inventory of the site made. Two crew members remained on site to set up the tents, while the remaining personnel returned to Nome to purchase additional supplies and continue transporting the weir and tower material. The following day two more truck loads of material were delivered to Council. The third crew member remained and the ferrying of material from Council to Mosquito Bar continued. The delivery of material to Council and ferrying to the project site continued until 27 June.

Between trips to ferry equipment, the crew members familiarized themselves with the river at the project site to find the best location for the weir and flash panel. The half mile length of the river above Tom Gray's camp was measured for width, depth, and bottom smoothness. The river in this area is characterized by sweeping bends with high cut banks on the outside of the bend and gradually sloping gravel bars on the inside of the bends. Mosquito Bar is a silt and gravel bar that begins at the center point of a sweeping S curve, the camp is located on the high cut bank side of the bend just before the point of transition to the opposite bank. The deep water channel arcs through the bend on a course that comes closest to the cut bank approximately 100 yards upstream from the camp site. This point was chosen for the tower, flash panel and weir because it provides the best combination of tower height, flash panel visibility, river width to fit the available weir material, and accessibility to the camp site.

A flash panel placed on the river bottom provided a contrasting background where fish species could easily be identified. The panel was angled slightly downstream to deflect fish passage toward the cut bank so they would be easier to identify from the tower. A 90 foot length of vinyl canvas flash panel was assembled on the gravel bar using two 50 foot sections. A 100 foot length of 3/8 inch cable was threaded through the grommets on the upstream edge of the flash panel sections, cable clamps were placed between every fourth grommet to prevent sliding of the panel on the cable, and loops were placed in each end of the cable. A 30 foot length of 1/2 inch rope was attached to the cable loop at the shore end of the flash panel and a 100 foot length of 1/4 inch cable with an additional 30 foot length of 1/2 inch rope was attached to the cable loop at the opposite end of the flash panel. A fence post was pounded into the river bottom, next to the cut bank at the point chosen for the shore end of the flash panel. Another fence post was driven into the gravel bar on the opposite shore, this post was set so that the flash panel could be set at about a 20° downstream angle, and a come-a-long was attached to it so that the flash panel could be tightened after it was set in place. The rope and 1/4 inch cable were coiled in the bottom of the boat and the flash panel was folded and stacked in the boat so that it could be smoothly fed out. The shore end cable loop was placed over the cut bank fence post and pushed to the river bottom. The boat was driven upstream just fast enough to maintain position and turned to provide a slow cross stream movement, two crew members fed the flash panel and cable out of the boat until the opposite shore was reached, the rope on the

end of the ¼ inch cable was attached to the come-a-long, and the flash panel was tightened until it was straight. Sand bags, filled with gravel, were then placed intermittently on the upstream edge of the flash panel to hold it down and the tension on the come-a-long was reduced to lower the flash panel to the bottom in the deepest water. A fence post was then driven into the shore end loop of the ¼ inch cable to hold it in place, the come-a-long was removed, and the rope attached from the cable to the post which the come-a-long had been attached to.

An 18 foot high aluminum scaffold was assembled on the top of the cut bank about three feet from the edge of the bank for use as a tower from which fish were observed and enumerated as they passed over the flash panel. The scaffold consisted of three sections that contained internal stairways and a top section that formed an observation deck with waist high guard rails. The ground was cleared and leveled for two 8 foot 6 x 6 inch timbers that were placed as a footing for the scaffold and foot plates on the bottom section of scaffold were lag bolted to the timbers. Two 2 x 10 inch planks were placed lengthwise across the lowest cross bars on the scaffold and twenty sandbags filled with gravel were placed on the planks to act as stabilizing ballast. Cable guy wires, about 25 feet long, were attached to the top four corners of the tower and tightly attached to duckbill anchors embedded in the ground. Ropes were also run as guy wires from four points at the top of the bottom section of scaffolding to the bases of trees next to the tower. As installed, this tower provided an observation point approximately 25 feet above the surface of the water.

A weir was built from the shore opposite the tower to a point on the flash panel about 75 feet from the cut bank. The weir was made of a series of 1¼ inch steel pipes driven vertically into the stream bed. Steel brackets, designed to attach a second 1¼ inch pipe to the vertical pipes to form an upstream slanted angle, were locked to the vertical pipes using bolts. The slanted pipes were inserted into the brackets, driven into the streambed, and locked in place. Top and bottom stringers, made of 3 inch aluminum angle 12 feet 6 inches long, were strapped to the slanted pipes, just above the water level, using bailing wire and electrical wire ties. The stringers had holes 1 inch in diameter and 2 inches on center drilled in one side. Each stringer was notched at one end so that the next stringer could be placed on top of it with one hole in each lining up. Weir pickets made of electrical conduit ¾ inch in diameter and 10 feet long were inserted in each joint to lock the stringers together. After the pipe and stringer structure was completely assembled, approximately 10 pickets were installed next to each stringer joint to provide enough resistance to hold the stringers in place, the bottom stringers were pushed down the slanted pipes to within 2 feet of the bottom and the top stringers were pushed up and down to form as straight a line as possible a few inches above the water level in the deepest section of the weir. Finally, conduit pickets were inserted in the stringers to form a complete weir.

The weir placement followed a specific sequence of actions. First a straight line was established for the weir to follow. This line started on the shallow shoreline, angled downstream at about a 20° angle and crossed the flashpanel approximately 80 feet from

it's cut bank end. The first seven foot long vertical pipe was driven about 2 feet down into the gravel at the water's edge. The second vertical pipe was driven down at a point about eighteen inches less than one stringer length down the weir line. The brackets were attached, the seven foot long slanted pipes installed, and the top and bottom stringers wired to the slanted pipes so that about nine inches of stringer extended beyond the pipes. The third vertical pipe was driven at a point one stringer length down the weir line from the second vertical, the bracket and slanted pipe were installed, the second length of top stringer was locked to the first top stringer with one conduit picket, the second bottom stringer was then locked to the first bottom stringer, and the second stringers were wired to the third slanted pipe. This sequence was followed until the water became too deep for the bracket to be mounted so it was out of the water on a seven foot vertical pipe. At this point, 10 foot long pipes were used for the vertical and slanted pipes; because longer pipes were now used, a second line for the vertical pipes had to be established a few inches downstream from the first line so that the slanted pipes remained in the same plane throughout the length of the weir. The sequence was continued until the line crossed the flash panel, the last vertical pipe was driven below the downstream edge of the flash panel, and the bottom of the last slanted pipe was resting on the flash panel. Next, vertical pipes, brackets and slanted pipes were installed midway between each set of pipes to provide support at the center of each stringer piece. After this array of pipe and stringers was completed, the pickets were installed in the stringers to form a weir that adult salmon could not pass through.

Weir installation was difficult because of the water depth, current and temperature. After the portion of the weir in shallow water was installed, boats were used as work platforms. Heavy anchors were placed upstream and to the sides to hold the boats in position for driving pipe, although it was difficult to maintain enough stability to drive the pipes straight down. The slope of the streambed from shallow to deep water causes the plane of the pickets to form a parallelogram rather than a rectangle. The pickets were entirely out of the water at the shore end of the weir and only about two feet of picket remained out of the water at the deep end of the weir. Additional weir material was brought to the project site in mid July, and sections were added to the beach end in preparation for any rise in water levels. These extra sections extended far enough up the beach so that the weir would remain fish tight until the deep water end became submerged by high water. Because there were not enough pickets on site for the three sections of weir nearest the shore, wire mesh was prepared to be installed when needed.

A 12 volt lighting system was installed on the tower to illuminate the flash panel during dark periods. These lights were powered by an automotive battery that was recharged using a portable generator. By early August the dark time of night was long enough to discharge the battery before the end of one night of counting. These lights were replaced with three 120 volt lights mounted on a post driven into the top of the cut bank and directly powered by the generator. The lights operated continuously from dusk to dawn.

The ADF&G, Commercial Fisheries Management and Development Division provided operational funding for the Niukluk River counting tower for the period beginning 19

June and ending 31 July. Counting began at noon on 29 June 1995. The crew counted 18 half-hour counts in three six hour shifts each day except Thursdays and Fridays. The first shift ran from 0000 hours to 0530 hours, the second ran from 1200 hours to 1730 hours and the third shift ran from 1800 hours to 2330 hours. Thursdays were the day off. On Fridays the half-hour counts ran for 24 hours in three eight hour shifts. Starting 1 August and ending 15 September the ADF&G, Sport Fish Division provided funding. At that time, the crew size was reduced from three to two and the daily counting schedule was changed. The schedule changed to one that rotated among three possible daily shifts of half-hour counts; Shift I began at 0000 hours and ended at 0730 hours, Shift II began at 0800 hours and ended at 1530 hours, Shift III began at 1600 hours and ended at 2330 hours. The shifts rotated according to the following schedule where the shaded areas indicate times counted:

Counting schedule for the Niukluk River counting tower, 1 August to 19 August 1995

	Aug 1 1	Aug 2 2	Aug 3 3	Aug 4 4	Aug 5 5	Aug 6 6	Aug 7 7	Aug 8 8	Aug 9 9				Aug 19 19
Shift I	■		■		■		■		■				■
Shift II		■		■		■		■					
Shift III	■		■		■		■		■				

By 10 August, it became apparent that the coho salmon moved chiefly at night in pulses. The schedule was changed beginning 19 August, at 0800 hours, to increase sampling effort during times of greatest passage. The new Shift I began at 0500 hours and ended at 1230 hours, Shift II began at 1300 hours and ends at 2030 hours, and Shift III begins at 2100 hours and ends at 0430 the next day. For reporting purposes the day began at 0500 hours for this new schedule. The new schedule rotated shifts according to the following schedule where the shaded areas indicate times counted:

Counting schedule for the Niukluk River counting tower, 19 August to 13 September 1995

	Aug 19 1	Aug 20 2	Aug 21 3	Aug 22 4	Aug 23 5	Aug 24 6	Aug 25 7	Aug 26 8	Aug 27 9				Sep 13 26
Shift I				■			■						■
Shift II		■		■		■		■					
Shift III	■		■		■		■		■				

The counts for each half hour shift were doubled to produce the reported hourly counts for each species. Each day the reported hourly counts were added to produce a daily total. Every day, the daily and cumulative totals for each species were relayed to the Nome office by radio.

The expanded counts for this report were calculated using three methods, one for each of the shift schedules used. For the period beginning 29 June and ending 31 July, the 18

hour counts for Thursdays (the day off) were estimated by adding the counts of each hour of the day before (Wednesdays) to the counts of each hour of the day following (Fridays) and dividing the result by two, giving expanded hourly counts for 18 hours of the day off. Next an expansion factor was calculated to compensate for the 6 hours not normally counted. This factor was derived from the weekly 24 hour count by dividing the total count from 0600 hours to 1200 hours during the 24 hour count by the total 24 hour count. Then each 18 hour count for the remaining days was expanded to 24 hour counts by applying the expansion factor to the three days before and after each 24 hour count by multiplying each days 18 hour total by the 24 hour expansion factor, and adding that number to the 18 hour count for each day. This expansion was done for all species counted.

For the period beginning 1 August and ending at 0800 hours on 19 August the counts were expanded to 24 hour counts by calculating an estimate for each hour not counted. This estimate was computed by adding the count for each hour of the day before to the count for each hour of the day after and dividing by two. The change in counting schedule on 1 August created a block of time from 0800 to 1100 on 1 August that could not be expanded using this method; for this four hour segment the estimates or observed data for the same time period on 2 August were used.

For the period beginning at 0800 hours 19 August and ending 13 September the counts were expanded to 24 hour counts by calculating an estimate for each hour not counted. This estimate was computed by adding the count for each hour of the nearest day before to the count for each hour of the nearest day after and dividing by two. Because the counting season ended on 12 September at 0430, the expansion for the time period 0500 to 2000 on 11 September was made using the counts for the same hours on the previous day.

Every Thursday the crew went to White Mountain to pick up groceries, supplies and mail that were sent from Nome via air.

Beginning in early July, the crew began visiting subsistence camps and sampling chum salmon for age, length and sex data. The crew stopped at camps where fish were being caught or processed and asked for permission to sample chum salmon. If 40 or less chum salmon were available, then all were sampled. If more than 40 chum salmon were available, then 40 were sampled. By late July the subsistence effort transferred to pink salmon and few subsistence caught chum salmon were available for sampling. The crew tried seining near the weir without success. A bigger seine and crew is required. Chum salmon carcasses began to appear on the beaches of the lower Niukluk and were sampled beginning on 19 July. Chum carcasses began collecting on the weir and sampling of these began on 21 July and continued until 7 August. The data forms and scale cards were sent to the ADF&G Kotzebue office for processing.

Coho salmon sampling occurred during August and September. Crew members established contact with sport fishers and asked for permission to sample catches. Sport

fishers also stopped at the tower camp so that the crew could sample their catches. All coho salmon obtained by these methods were sampled. The data forms and scale cards were given to the ADF&G Sport Fish Division Area Biologist for processing.

RESULTS

Table 1 shows the expanded daily and cumulative totals for each species.

The reported total hourly counts were: 69,420 chum salmon, 18,430 pink salmon, 100 king salmon, 3,590 coho salmon, and 360 Dolly Varden. Tables 17-21 show the hourly counts of each species. The expanded counts were: 86,333 chum salmon, 17,089 pink salmon, 123 king salmon, 4,713 coho salmon, and -349 Dolly Varden. Tables 2-6 show the expanded hourly counts of each species. Figure 2 shows a graph of the daily cumulative expanded passage of all species counted. Figures 3-12 show graphs of the expanded daily totals and the cumulative daily totals for each species.

Chum and king salmon and Dolly Varden were observed on 29 June, the first day of counting. Pink salmon were first observed on 2 July and coho salmon were first observed on 26 July (Table 1). The daily peak count of 7,303 chum salmon occurred on 12 July, the daily peak count of 2,217 pink salmon occurred on 22 July, the daily peak count of 20 king salmon occurred on 5 July, the daily peak count of 365 coho salmon occurred on 22 August, the daily peak count of 50 Dolly Varden occurred on 29 June and there was also daily a downstream peak count of -187 Dolly Varden on 27 August (Table 1).

Most chum salmon returned during the four week period from 5 July through 1 August when 93% passed the tower (Table 1 and Figures 3 and 4). Most pink salmon returned during the three week period from 12 July through 1 August when 98% passed the tower (Table 1 and Figures 5 and 6). Most king salmon returned during the three week period from 5 July through 25 July when 94% passed the tower (Table 1 and Figures 7 and 8). Most coho salmon returned during the four week period from 12 August through 8 September when 86% passed the tower (Table 1 and Figures 9 and 10). During the period from 29 June to 17 August, low numbers of Dolly Varden passed the tower moving upstream. On 17 August the cumulative total of Dolly Varden reached 652 fish and the next day no Dolly Varden were observed. From 19 August to 7 September 1,058 Dolly Varden passed downstream. During the last four days of counting from 7 September through 12 September there was an upstream movement of 57 Dolly Varden (Table 1 and Figures 11 and 12).

All species counted exhibited a diurnal pattern of migration past the counting tower. Most chum salmon migration occurred during the hour from midnight to 0100, when 14.7% passed the tower (Table 4). During the four hour period from 2200 through 0100 hours, 48.7% of the chum salmon passed the tower (Table 4). During the twelve hour period from 1700 through 0400 hours, 91.7% of all chum salmon passed the tower (Table 4). There was a -0.1% downstream migration of chum salmon during the hour from 1200 to

0100 (Table 4). There was a strong downstream migration of pink salmon during the 24 hour count on 28 July, from 0500 through 1600 hours the count was -462 pink salmon, for the rest of the 24 hours the count was 876 pink salmon, and the net count for the 24 hours was 414 pink salmon (Table 5). Most pink salmon migration occurred during the hour from 2300 to 2400 hours, when 20.5% passed the tower (Table 7). During the four hour period from 2200 through 0100 hours, 71.9% of the pink salmon passed the tower (Table 7). During the ten hour period from 1800 through 0300 hours, 129.4% of all pink salmon passed the tower (Table 7). There was a -35.5% downstream migration of pink salmon during the eleven hour period from 0600 through 1500 hours (Table 7). Most king salmon migration occurred during the hour from midnight to 0100, when 25.3% passed the tower (Table 10). During the four hour period from 1800 through 2100 hours and the three hour period from midnight through 0200, 86.9% of the king salmon passed the tower; there was a net migration of 0 during the period from 2200 through 2300 hours (Table 10). There was a -16.6% downstream migration of king salmon during the nine hours from 0500 through 1100 hours and 1300 to 1400 and 2300 to midnight (Table 10). Most coho salmon migration occurred during the hour from midnight to 0100, when 17.5% passed the tower (Table 13). During the four hour period from 2300 through 0200 hours, 81.1% of the coho salmon passed the tower (Table 13). During the ten hour period from 1900 through 0400 hours, 87.3% of all coho salmon passed the tower (Table 13). There was a -0.8% downstream migration of coho salmon during the six hour period from 0600 through 1100 hours (Table 13). Most Dolly Varden migration upstream occurred during the hour from 2300 to midnight, when 295 fish passed the tower (Table 16). During the ten hour period from 1800 through 0300 hours, 901 fish passed the tower (Table 16). A total of 1,429 Dolly Varden migrated downstream during three time periods, 1,405 fish from 0600 through 1100 hours, 15 fish from 0400 to 0500 hours, and 9 fish from 1300 to 1400 hours (Table 16). Since 1982 Alaska has been consolidated into one time zone and as a result the time in the Nome area is approximately three and one half hours ahead of sun time during the summer months, this means that the sun reaches it's zenith at approximately 1530 hours according to the clock instead of at noon. All times recorded and mentioned in this report are Alaska Daylight Savings Time, but the real hours of peak passage are from 1600 - 2400 hours sun time.

A peak aerial survey of the entire Niukluk River counted 25,358 chum salmon on 21 July, 1995. The total tower count of chum salmon was 86,333 (Table 1). The peak aerial survey counted 29.2% of the total tower count of chum salmon. The peak aerial survey also counted 22,108 chum salmon above the counting tower on 21 July, when the cumulative tower count of chum salmon was 64,557 (Table 1). The peak aerial survey counted 34.2% of the cumulative tower count on 21 July.

A peak aerial survey count of 2,136 coho salmon was made on 24 August, 1995. The total tower count of coho salmon was 4,713 (Table 1). The peak aerial survey counted 45.3% of the total tower count of coho salmon. The peak aerial survey also counted 1,918 coho salmon above the counting tower on 24 August, when the cumulative tower count of coho salmon was 2,875 (Table 1). The peak aerial survey counted 66.7% of the cumulative tower count on 24 August.

Readable scales were collected from 770 chum salmon. Three year old chum salmon, age-0.2, from the 1992 brood year contributed 3 fish or 0.4% of the sample and had an average length of 527 mm. Four year old chum salmon, age-0.3, from the 1991 brood year contributed 396 fish or 51.4% of the sample and had an average length of 571 mm. Five year old chum salmon, age-0.4, from the 1990 brood year contributed 325 fish or 42.2% of the sample and had an average length of 580 mm. Six year old fish, age-0.5, from the 1989 brood year contributed 46 fish or 6.0% of the sample and had an average length of 586 mm. Female chum salmon were 41.7% of the sample and male chum salmon were 58.3% of the sample. The average length increased with age and males were longer than females, except for the three year old female sample of two fish which had an average length greater than the one male three year old in the sample (Table 22).

The sex and age composition of the chum salmon samples was applied to the total estimated chum salmon escapement, resulting in escapement estimates by age and sex (Table 23).

Climatological and stream observations are shown in Table 23.

DISCUSSION

A counting tower project ran on the Niukluk River in the early 1970s. That project was washed out by flooding and no useable data was collected (Charles Lean, ADF&G, personal communication).

The Niukluk River counting tower project ran as a cooperative venture with the Kawerak Corporation in 1994. Rains throughout the summer kept water levels high and an early August flood washed out the weir so that no useable data was collected. However, a lot was accomplished in 1994, the camp infrastructure of tent platforms was built and an appreciation of the difficulties associated with operating on the Niukluk River was gained. The weir described earlier in this report was designed to stay in place and operate under the conditions encountered during 1994 (Charles Lean, ADF&G, personal communication).

In 1995 the Niukluk River counting tower operated successfully for the first time. Steadily decreasing water levels for most of the season was the primary reason for this success (Table 23).

Transporting weir and tower material from Nome to the project site took several days. The crew was unfamiliar with the weir design. It took some time before a smooth routine for weir installation was established. Chest deep water for about 50 feet of the weir made installation difficult. Possible improvements to the weir installation method include using a very light weight pole to gauge the distance between vertical posts, using three

heavy anchors to hold the boat in position in all directions, and providing the crew with either neoprene chest waders or full suits to make working in the cold water tolerable. In the future, round posts, instead of fence posts, should be used wherever possible. Fence posts are difficult to remove and have hooks that make it difficult to adjust things like the flash panel cables.

Counting began at noon on 29 June. The enumeration of 180 chum salmon by midnight on 29 June indicates that the return began a few days earlier (Table 2). The number of missed chum salmon was probably less than 1,000 (<1% of the total chum salmon return). The enumeration of 2 king salmon on 29 June also indicates that the king salmon return may have begun earlier (Table 8). Because weir and tower materials are now on site and the methods for installing the equipment have been worked out, counting should begin a few days earlier in the future.

Difficulties encountered while counting from the tower included species identification problems at the far end of the flash panel during times of poor visibility, severe glare from sunlight in the evening, a blind spot on the flash panel next to the cut bank, spawning fish covered portions of the flash panel with gravel, and occasional wind turbulence that made species identification problematic along the length of the flash panel. Possible solutions are to add a section to the weir, to install a short weir next to the cut bank, and to install a second tower in the river at the deep end of the weir for use during periods of difficult visibility. A 2 inch water pump, with a rigid discharge pipe on the end of the discharge hose, was used to blow gravel off the flash panel. The crew looked for alternative counting locations in the vicinity of the tent camp and concluded that the current site is the best. A shallow water area upstream may provide a better site for viewing fish, but would require a very long weir, setting the tower in the water, and would be difficult to walk to.

In September communications problems developed. For several days at a time we lost radio contact. Unfavorable atmospheric conditions are the probable cause of this problem. Possible solutions are to explore the installation of a remote antenna for the Nome office or to purchase a remote telephone link for the field camp when such links become available and cost effective.

In the future, one counting schedule should be maintained throughout the entire season. The changing schedule created unnecessary complexity and made it much more difficult to expand the counts and present them in a coherent and consistent manner.

Sampling of salmon provides an important opportunity to contact the public. The crew visited most subsistence camps and explained the project while they were sampling chum salmon. Similarly the crew interacted with sport fishers while sampling coho salmon. These activities stimulated public awareness, education, understanding and support for the project.

ACKNOWLEDGEMENTS

The crew members for the entire season were Kate Persons and Walter Stockheim. Peter Rob was the third crewmember from 19 July to 1 August and again for three days at the end of the season. Earlier drafts of this report were reviewed by Larry Bucklis and Jeff Bromaghin.

Table 1. Expanded daily and cumulative migration of all species past the Niukluk River counting tower, Norton Sound, 1995.

Date	Daily chum salmon	Cumulative chum salmon	Daily pink salmon	Cumulative pink salmon	Daily king salmon	Cumulative king salmon	Daily coho salmon	Cumulative coho salmon	Daily Dolly Varden	Cumulative Dolly Varden
29-Jun	180	180	0	0	2	2	0	0	50	50
30-Jun	228	408	0	0	0	2	0	0	44	94
1-Jul	201	609	0	0	2	4	0	0	25	118
2-Jul	304	913	2	2	2	6	0	0	11	129
3-Jul	310	1,223	0	2	0	6	0	0	11	140
4-Jul	730	1,952	2	4	0	6	0	0	12	152
5-Jul	1,736	3,688	22	26	20	26	0	0	27	179
6-Jul	2,979	6,667	73	100	15	41	0	0	23	202
7-Jul	4,222	10,889	124	224	10	51	0	0	18	220
8-Jul	1,884	12,774	89	313	0	51	0	0	9	229
9-Jul	1,903	14,676	57	370	6	57	0	0	3	232
10-Jul	3,527	18,203	81	451	2	59	0	0	12	244
11-Jul	5,184	23,387	166	618	-1	58	0	0	4	248
12-Jul	7,303	30,690	499	1,117	9	67	0	0	6	254
13-Jul	5,764	36,454	431	1,548	9	76	0	0	10	264
14-Jul	4,224	40,678	362	1,910	8	84	0	0	14	278
15-Jul	4,262	44,940	600	2,510	3	86	0	0	10	288
16-Jul	5,927	50,867	1,272	3,782	5	92	0	0	22	310
17-Jul	1,247	52,115	267	4,049	0	92	0	0	10	320
18-Jul	1,029	53,143	194	4,243	0	92	0	0	4	324
19-Jul	1,907	55,051	207	4,450	-2	89	0	0	4	328
20-Jul	3,805	58,855	956	5,406	6	95	0	0	6	334
21-Jul	5,702	64,557	1,704	7,110	14	109	0	0	8	342
22-Jul	4,239	68,796	2,217	9,326	-2	107	0	0	4	346
23-Jul	1,883	70,679	1,078	10,404	2	109	0	0	8	354
24-Jul	1,987	72,667	1,810	12,214	9	119	0	0	8	362
25-Jul	1,583	74,250	1,246	13,460	2	121	0	0	3	364
26-Jul	2,032	76,282	1,173	14,634	0	121	5	5	8	372
27-Jul	1,431	77,712	794	15,427	0	121	17	22	9	381
28-Jul	830	78,542	414	15,841	0	121	30	52	10	391
29-Jul	1,492	80,035	899	16,740	2	123	18	70	18	408
30-Jul	355	80,390	154	16,894	0	123	16	87	13	421
31-Jul	878	81,269	309	17,203	0	123	21	107	3	423
1-Aug	728	81,997	146	17,349	0	123	14	121	14	437
2-Aug	573	82,570	55	17,404	0	123	20	141	8	445
3-Aug	545	83,115	-14	17,390	0	123	23	164	2	447
4-Aug	482	83,597	-16	17,374	0	123	20	184	3	450
5-Aug	280	83,877	-73	17,301	0	123	19	203	4	454
6-Aug	99	83,976	-116	17,185	0	123	33	236	6	460
7-Aug	63	84,039	-88	17,097	0	123	45	281	10	470
8-Aug	211	84,250	-28	17,069	0	123	46	327	30	500

- continued -

Table 1. (Page 2 of 2).

Date	Daily chum salmon	Cumulative chum salmon	Daily pink salmon	Cumulative pink salmon	Daily king salmon	Cumulative king salmon	Daily coho salmon	Cumulative coho salmon	Daily Dolly Varden	Cumulative Dolly Varden
9-Aug	277	84,527	-19	17,050	0	123	49	376	47	547
10-Aug	257	84,784	-22	17,028	0	123	51	427	39	586
11-Aug	246	85,030	-2	17,026	0	123	56	483	30	616
12-Aug	276	85,306	11	17,037	0	123	109	592	16	632
13-Aug	293	85,599	9	17,046	0	123	153	745	3	635
14-Aug	221	85,820	4	17,050	0	123	123	868	3	638
15-Aug	141	85,961	3	17,053	0	123	100	968	2	640
16-Aug	40	86,001	-1	17,052	0	123	103	1,071	4	644
17-Aug	-12	85,989	-2	17,050	0	123	104	1,175	8	652
18-Aug	8	85,997	2	17,052	0	123	141	1,316	0	652
19-Aug	45	86,042	7	17,059	0	123	175	1,491	-25	627
20-Aug	75	86,117	-3	17,056	0	123	252	1,743	-6	621
21-Aug	22	86,139	2	17,058	0	123	295	2,038	16	637
22-Aug	55	86,194	11	17,069	0	123	365	2,403	-26	611
23-Aug	28	86,222	2	17,071	0	123	255	2,658	-47	564
24-Aug	34	86,256	7	17,078	0	123	217	2,875	-53	511
25-Aug	7	86,263	1	17,079	0	123	138	3,013	-38	473
26-Aug	18	86,281	3	17,082	0	123	188	3,201	34	507
27-Aug	15	86,296	4	17,086	0	123	186	3,387	-187	320
28-Aug	1	86,297	1	17,087	0	123	98	3,485	-111	209
29-Aug	4	86,301	1	17,088	0	123	82	3,567	-52	157
30-Aug	2	86,303	1	17,089	0	123	146	3,713	-104	53
31-Aug	10	86,313	0	17,089	0	123	154	3,867	36	89
1-Sep	1	86,314	0	17,089	0	123	94	3,961	-20	69
2-Sep	0	86,314	0	17,089	0	123	94	4,055	-20	49
3-Sep	-1	86,313	0	17,089	0	123	102	4,157	-58	-9
4-Sep	5	86,318	0	17,089	0	123	71	4,228	-118	-127
5-Sep	1	86,319	0	17,089	0	123	71	4,299	-72	-199
6-Sep	6	86,325	0	17,089	0	123	28	4,327	-122	-321
7-Sep	2	86,327	0	17,089	0	123	141	4,468	-54	-375
8-Sep	2	86,329	0	17,089	0	123	86	4,554	-31	-406
9-Sep	2	86,331	0	17,089	0	123	59	4,613	29	-377
10-Sep	0	86,331	0	17,089	0	123	56	4,669	8	-369
11-Sep	0	86,331	0	17,089	0	123	58	4,727	18	-351
12-Sep	2	86,333	0	17,089	0	123	-14	4,713	2	-349

Table 2. Expanded daily hourly chum salmon migration past the Niukluk River counting tower, Norton Sound, 29 June to 31 July, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
29-Jun	Start of counting season							0	0	18	6	0	8	22	2	12	12	72	28	180	0.2%
30-Jun	6	14	66	32	38	12	-6	0	2	2	0	4	2	-2	28	4	8	2	16	228	0.3%
1-Jul	-4	40	4	16	12	-34	-5	-6	-4	-4	4	34	8	8	20	20	42	42	8	201	0.2%
2-Jul	6	2	20	10	10	58	-8	0	0	0	0	4	20	2	4	44	86	50	-4	304	0.4%
3-Jul	32	36	-52	-14	-12	0	-8	-6	4	-14	-2	0	0	8	90	216	30	14	-12	310	0.4%
4-Jul	-40	-8	-4	2	22	8	12	2	-4	-8	54	24	4	-16	96	92	82	64	348	730	0.8%
5-Jul	136	20	58	34	44	10	28	-60	-6	-4	-6	86	80	260	574	-2	124	66	294	1,736	2.0%
6-Jul	447	194	149	129	96	45	48	-30	2	36	-13	164	109	566	380	155	138	111	253	2,979	3.5%
7-Jul	758	368	240	224	148	80	68	0	10	76	-20	242	138	872	186	312	152	156	212	4,222	4.9%
8-Jul	858	226	304	100	64	10	30	-200	-68	-16	-42	-118	14	-34	60	26	-40	442	268	1,884	2.2%
9-Jul	62	68	142	172	102	26	31	-12	-24	4	106	62	2	102	80	-20	376	368	256	1,903	2.2%
10-Jul	472	302	210	184	66	64	57	-38	-12	-16	196	30	46	38	236	240	486	684	282	3,527	4.1%
11-Jul	1,272	470	472	562	314	42	22	-38	-20	28	-14	12	-28	-14	156	208	478	606	656	5,184	6.0%
12-Jul	1,904	1,022	970	738	440	202	31	-28	-32	54	-8	-58	-90	-48	30	216	412	492	1,056	7,303	8.5%
13-Jul	1,085	713	573	443	305	184	25	5	-35	47	72	-3	-30	-36	136	267	384	419	1,210	5,764	6.7%
14-Jul	266	404	176	148	170	166	18	38	-38	40	152	52	30	-24	242	318	356	346	1,364	4,224	4.9%
15-Jul	528	538	654	494	304	84	18	30	18	154	32	126	76	146	152	150	320	98	340	4,262	4.9%
16-Jul	708	594	420	288	88	88	25	66	386	100	224	254	238	466	250	380	276	316	760	5,927	6.9%
17-Jul	312	158	74	30	-10	26	5	14	-14	24	26	32	68	162	36	12	138	74	80	1,247	1.4%
18-Jul	186	92	80	-4	-14	-14	25	16	24	2	56	104	88	74	88	64	24	22	116	1,029	1.2%
19-Jul	-94	-160	-86	-92	-38	36	45	26	42	28	126	126	110	70	110	184	246	786	442	1,907	2.2%
20-Jul	461	476	175	34	68	72	91	28	49	40	167	92	60	122	101	270	622	564	313	3,805	4.4%
21-Jul	1,016	1,112	436	160	174	108	136	30	56	52	208	58	10	174	92	356	998	342	184	5,702	6.6%
22-Jul	542	202	308	78	142	142	101	-30	14	16	78	74	104	308	584	508	514	434	120	4,239	4.9%
23-Jul	100	118	42	24	-32	18	45	-26	-16	-24	30	20	18	256	168	140	278	412	312	1,883	2.2%
24-Jul	210	156	102	64	56	16	47	40	16	0	4	42	20	54	176	138	256	230	360	1,987	2.3%
25-Jul	324	204	188	146	22	56	15	0	22	-6	0	6	44	0	128	34	46	186	168	1,583	1.8%
26-Jul	210	258	234	58	66	38	20	32	22	34	10	26	62	52	88	26	108	292	396	2,032	2.4%
27-Jul	152	195	172	43	34	22	14	13	-1	8	26	6	41	28	78	44	78	165	313	1,431	1.7%
28-Jul	94	132	110	28	2	6	8	-6	-24	-18	42	-14	20	4	68	62	48	38	230	830	1.0%
29-Jul	244	294	80	34	16	26	14	-6	-10	8	6	-12	74	48	8	136	208	152	172	1,492	1.7%
30-Jul	70	14	74	22	6	-12	3	-30	-2	4	-18	8	48	-26	-8	0	28	74	100	355	0.4%
31-Jul	60	158	-6	60	-30	64	8	2	4	46	72	24	56	44	66	42	66	72	70	878	1.0%
subtotal	12,383	8,412	6,385	4,247	2,673	1,649	964	-174	361	711	1,574	1,507	1,450	3,686	4,505	4,654	7,380	8,191	10,711	81,269	

Table 3. Expanded daily hourly chum salmon migration past the Niukluk River counting tower, Norton Sound, 1 August to 18 August, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
1-Aug	106	78	48	36	-2	-8	50	2	-6	14	2	16	-9	7	32	26	16	50	38	28	34	76	66	28	728	0.8%
2-Aug	61	59	11	10	-21	-7	30	-17	-6	14	2	16	-20	10	18	-20	12	37	68	43	61	57	69	86	573	0.7%
3-Aug	16	40	-26	-16	-40	-6	10	-36	8	22	-1	12	-2	10	22	2	8	24	98	58	88	38	72	144	545	0.6%
4-Aug	23	35	-30	5	-38	-17	-12	-19	22	30	-4	8	16	10	26	24	15	43	65	40	60	26	58	96	482	0.6%
5-Aug	30	30	-34	26	-36	-28	-34	-2	9	10	0	3	13	-4	10	11	22	62	32	22	32	14	44	48	280	0.3%
6-Aug	14	8	-40	-3	-43	-28	-27	-8	-4	-10	4	-2	10	-18	-6	-2	14	39	26	21	24	30	43	57	99	0.1%
7-Aug	-2	-14	-46	-32	-50	-28	-20	-14	-3	-6	9	7	11	0	1	18	6	16	20	20	16	46	42	66	63	0.1%
8-Aug	9	-1	-22	-13	-29	-22	-16	-8	-2	-2	14	16	12	18	8	38	9	19	14	23	4	22	50	70	211	0.2%
9-Aug	20	12	2	6	-8	-16	-12	-2	-1	10	22	16	9	7	1	21	12	22	8	26	-8	-2	58	74	277	0.3%
10-Aug	12	5	-8	2	-8	-11	-5	1	0	22	30	16	6	-4	-6	4	19	23	25	26	18	9	33	48	257	0.3%
11-Aug	4	-2	-18	-2	-8	-6	2	4	3	10	19	11	13	-6	4	6	26	24	42	26	44	20	8	22	246	0.3%
12-Aug	8	6	-4	2	1	8	-1	-1	6	-2	8	6	20	-8	14	8	14	18	54	25	38	18	15	23	276	0.3%
13-Aug	12	14	10	6	10	22	-4	-6	4	1	-2	0	12	1	8	7	2	12	66	24	32	16	22	24	293	0.3%
14-Aug	11	8	8	-1	4	10	-1	-2	2	4	-12	-6	4	10	2	6	8	13	37	13	26	14	25	38	221	0.3%
15-Aug	10	2	6	-8	-2	-2	2	2	0	-1	-4	-6	-1	-2	-3	-2	14	14	8	2	20	12	28	52	141	0.2%
16-Aug	3	4	-1	-4	-4	-2	-5	2	-2	-6	4	-6	-6	-14	-8	-10	5	3	13	6	13	10	21	24	40	0.0%
17-Aug	-4	6	-8	0	-6	-2	-12	2	-2	-2	-1	-2	-1	-9	-7	-4	-4	-8	18	10	6	8	14	-4	-12	0.0%
18-Aug	2	-2	-7	0	-6	-5	-12	0	-2	2	-6	2	4	-4	-6	2	-2	-4	9	5	3	5	11	19	8	0.0%
Subtotal	335	288	-159	14	-286	-148	-67	-102	26	110	84	107	91	4	110	135	196	407	641	418	511	419	679	915	4,728	

0600-1100 Sub Total = 158

Table 4. Expanded daily hourly chum salmon migration past the Niukluk River counting tower, Norton Sound, 19 August to 12 September, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
19-Aug	8	-10	-6	0	-6	-8	-12	-2	-2	1	-1	1	3	-2	0	2	1	-4	14	9	7	2	8	42	45	0.052%	
20-Aug	-2	22	10	-2	14	-3	-6	-2	-2	1	-1	1	3	0	6	2	6	0	10	8	8	6	4	-8	75	0.087%	
21-Aug	-4	4	2	0	-4	-3	-6	-2	-2	1	-1	1	3	2	3	1	3	0	10	4	4	4	0	2	22	0.025%	
22-Aug	6	-2	4	10	6	2	0	-2	-2	0	4	0	2	2	3	1	3	0	10	4	4	0	-4	4	55	0.064%	
23-Aug	4	2	2	-4	0	0	-1	0	-1	0	1	0	1	4	0	0	0	0	10	0	0	4	2	4	28	0.032%	
24-Aug	0	4	-6	2	-2	0	-1	0	-1	0	1	0	1	2	2	1	3	0	8	3	4	2	6	8	34	0.039%	
25-Aug	-4	0	0	4	2	-2	-2	2	0	0	-2	0	0	2	0	0	2	0	5	1	3	-4	-8	8	7	0.008%	
26-Aug	0	2	0	2	2	-1	-1	0	0	1	0	-1	0	0	0	0	4	0	0	2	6	-2	0	4	18	0.021%	
27-Aug	4	2	4	-2	-4	-1	-1	0	0	1	0	-1	0	0	0	0	2	0	1	1	3	6	4	-4	15	0.017%	
28-Aug	-2	0	-4	0	-2	0	0	-2	0	2	2	-2	0	0	0	0	2	0	1	1	3	0	2	0	1	0.001%	
29-Aug	2	4	0	-4	2	0	1	-1	0	1	1	-1	1	0	0	0	0	0	2	0	0	0	0	-4	4	0.005%	
30-Aug	0	-4	0	0	0	0	1	-1	0	1	1	-1	1	0	0	0	0	0	2	0	0	0	2	0	2	0.002%	
31-Aug	0	0	0	0	2	0	2	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	-2	4	10	0.012%	
1-Sep	-2	0	0	0	0	0	1	0	0	-1	0	0	1	0	0	0	0	0	2	0	0	0	0	0	1	0.001%	
2-Sep	-2	-2	0	2	0	0	1	0	0	-1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0.000%
3-Sep	0	0	0	0	0	0	0	0	0	-2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	-1	-0.001%	
4-Sep	0	0	2	0	0	0	1	0	0	-1	0	0	1	0	0	0	0	0	0	0	0	0	2	0	5	0.006%	
5-Sep	0	0	0	0	0	0	1	0	0	-1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0.001%	
6-Sep	0	0	0	0	2	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	6	0.007%	
7-Sep	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0.002%	
8-Sep	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0.002%	
9-Sep	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.002%	
10-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
11-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
12-Sep	0	0	2	0	0	End of counting season																	2	0.002%			
Subtotal	8	22	12	8	12	-16	-18	-10	-10	3	5	-3	25	10	14	7	26	-4	79	33	42	18	16	60	336		
						0600-1100 Sub Total =																	-33				

Total	12,726	8,722	6,238	4,269	2,399	1,485				1,089				-58	375	835	1,716	1,729	1,853	4,406	4,956	5,207	7,817	8,886	11,686	86,333
	14.7%	10.1%	7.2%	4.9%	2.8%	1.7%			1.3%					-0.1%	0.4%	1.0%	2.0%	2.0%	2.1%	5.1%	5.7%	6.0%	9.1%	10.3%	13.5%	100%

Table 5. Expanded daily hourly pink salmon migration past the Niukluk River counting tower, Norton Sound, 29 June to 31 July, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total		
29-Jun	Start of counting season							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
3-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
5-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	6	8	6	0	0	0	0	2	
6-Jul	1	4	4	0	2	0	1	1	2	5	4	1	5	10	12	9	1	5	6	6	73	
7-Jul	2	8	8	0	4	0	2	2	4	10	8	2	10	14	16	12	2	10	10	10	124	
8-Jul	16	12	20	6	2	0	1	4	-2	4	2	-2	2	0	2	-4	0	12	14	14	89	
9-Jul	6	0	8	2	6	0	1	0	6	0	0	4	2	2	4	-2	10	4	4	4	57	
10-Jul	12	6	2	0	6	4	1	2	-2	0	4	0	0	6	0	2	6	22	10	10	81	
11-Jul	12	8	14	24	18	12	-6	0	-2	4	0	-2	-8	6	4	0	36	24	22	22	166	
12-Jul	52	46	20	56	50	22	-17	-2	0	6	2	0	0	-6	6	22	58	98	86	86	499	
13-Jul	41	50	28	38	29	18	-14	-4	0	4	2	4	-1	-5	7	20	47	62	105	105	431	
14-Jul	30	54	36	20	8	14	-12	-6	0	2	2	8	-2	-4	8	18	36	26	124	124	362	
15-Jul	88	20	118	66	8	-2	-20	10	0	8	0	-4	4	0	18	36	78	18	154	154	600	
16-Jul	116	174	74	32	14	6	-42	2	16	10	14	26	6	106	66	150	148	84	270	270	1,272	
17-Jul	60	28	18	20	2	-10	-9	4	6	-6	4	8	14	24	20	8	30	4	42	42	267	
18-Jul	44	42	36	-2	-6	2	-4	0	-6	-2	-4	4	-2	14	30	44	0	6	-2	-2	194	
19-Jul	-32	-34	-22	-22	-24	-8	-5	14	10	4	30	12	32	6	30	26	18	116	56	56	207	
20-Jul	129	96	58	23	21	9	-21	1	0	-6	21	7	24	28	33	95	204	123	111	111	956	
21-Jul	290	226	138	68	66	26	-38	-12	-10	-16	12	2	16	50	36	164	390	130	166	166	1,704	
22-Jul	312	114	274	70	122	52	-49	-106	-108	-92	-46	20	8	306	262	384	362	238	94	94	2,217	
23-Jul	148	92	28	-22	-36	-60	-24	-62	-28	-64	-14	-28	0	106	64	82	204	332	360	360	1,078	
24-Jul	266	174	156	56	124	38	-40	-14	-8	-40	-12	-20	0	6	128	70	260	236	430	430	1,810	
25-Jul	316	338	344	186	96	126	-1078	-24	-8	2	-6	8	32	46	194	82	112	234	246	246	1,246	
26-Jul	352	328	354	186	102	22	-1015	-48	-28	-26	-24	-24	48	0	86	42	118	254	446	446	1,173	
27-Jul	249	256	228	98	78	6	-686	-34	-28	-24	-15	-21	36	25	67	46	76	166	271	271	794	
28-Jul	146	184	102	10	54	-10	-358	-20	-28	-22	-6	-18	24	50	48	50	34	78	96	96	414	
29-Jul	214	386	148	80	30	20	-777	-12	-34	4	-18	-22	14	24	46	194	256	174	172	172	899	
30-Jul	60	66	102	52	-16	-44	-134	-44	-12	2	-28	-34	14	-20	38	16	-2	66	72	72	154	
31-Jul	106	134	24	76	36	22	-267	2	2	0	-20	6	24	20	26	0	4	42	72	72	309	
subtotal	3,036	2,812	2,320	1,123	796	265	-4,609	-346	-258	-233	-88	-63	302	820	1,259	1,572	2,488	2,564	3,443	3,443	17,203	

Table 6. Expanded daily hourly pink salmon migration past the Niukluk River counting tower, Norton Sound, 1 August to 18 August, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
1-Aug	96	56	30	34	-10	-20	6	-28	2	-20	-6	-2	2	-10	5	-13	-6	12	10	-20	-2	18	18	-6	146	0.854%
2-Aug	52	37	8	11	-24	-28	-6	-23	2	-20	-6	-2	2	-22	10	-6	-4	4	13	-5	10	23	22	7	55	0.322%
3-Aug	8	18	-14	-12	-38	-36	-18	-18	0	-13	-1	-2	7	-9	3	-5	-2	-4	16	10	22	28	26	20	-14	-0.082%
4-Aug	8	12	-2	-8	-27	-30	-20	-15	-2	-6	4	-2	12	4	-4	-4	3	-1	10	2	12	17	11	10	-16	-0.094%
5-Aug	8	6	10	-4	-16	-24	-22	-12	-8	-10	-13	-2	3	2	-5	2	8	2	4	-6	2	6	-4	0	-73	-0.427%
6-Aug	1	2	-2	-6	-11	-22	-19	-10	-14	-14	-30	-2	-6	0	-6	8	4	1	3	-5	3	5	1	3	-116	-0.679%
7-Aug	-6	-2	-14	-8	-6	-20	-16	-8	-6	-7	-15	-1	-4	2	-1	6	0	0	2	-4	4	4	6	6	-88	-0.515%
8-Aug	-4	-4	-7	-6	-5	-13	-10	-3	2	0	0	0	-2	4	4	4	0	1	0	-1	2	3	3	4	-28	-0.164%
9-Aug	-2	-6	0	-4	-4	-6	-4	2	0	0	-3	0	-1	0	2	1	0	2	-2	2	0	2	0	2	-19	-0.111%
10-Aug	0	-3	0	-3	-2	-4	-2	0	-2	0	-6	0	0	-4	0	-2	1	2	1	1	0	0	-1	2	-22	-0.129%
11-Aug	2	0	0	-2	0	-2	0	-2	-1	1	-3	-1	1	-1	1	-1	2	2	4	0	0	-2	-2	2	-2	-0.012%
12-Aug	2	-2	0	-1	0	-2	0	-2	0	2	0	-2	2	2	2	0	1	3	3	0	2	-1	2	0	11	0.064%
13-Aug	2	-4	0	0	0	-2	0	-2	0	0	-1	-1	1	1	1	0	0	4	2	0	4	0	6	-2	9	0.053%
14-Aug	1	-2	0	-1	0	-1	0	-1	0	-2	-2	0	0	0	0	0	0	3	2	0	2	0	4	1	4	0.023%
15-Aug	0	0	0	-2	0	0	0	0	-1	-2	-1	-1	0	0	0	0	0	2	2	0	0	0	2	4	3	0.018%
16-Aug	0	0	0	-2	0	0	0	0	-2	-2	0	-2	0	0	0	0	0	1	2	0	1	0	1	2	-1	-0.006%
17-Aug	0	0	0	-2	0	0	0	0	-1	-1	0	-2	0	0	0	0	0	0	2	0	2	0	0	0	-2	-0.012%
18-Aug	0	0	0	-1	0	0	0	0	0	0	0	-2	0	0	0	0	0	0	1	0	1	2	0	1	2	0.012%
Subtotal	168	108	9	-17	-143	-210	-111	-122	-31	-94	-83	-24	17	-31	12	-10	7	34	75	-26	65	105	95	56	-151	
										0600-1100 Sub Total = -465																

Table 7. Expanded daily hourly pink salmon migration past the Niukluk River counting tower, Norton Sound, 19 August to 12 September, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
19-Aug	0	0	0	0	0	0	0	0	1	0	0	-1	0	-1	-2	0	1	0	1	1	1	4	0	2	7	0.041%	
20-Aug	0	0	0	2	-2	0	1	0	1	0	0	-1	0	-2	-4	0	2	0	0	2	0	0	0	0	-2	-3	-0.018%
21-Aug	2	0	0	0	0	0	1	0	1	0	0	-1	0	-1	-2	0	1	0	0	1	0	0	0	0	2	0.012%	
22-Aug	0	2	2	0	0	0	2	0	2	0	0	0	0	-1	-2	0	1	0	0	1	0	0	4	0	11	0.064%	
23-Aug	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.012%
24-Aug	0	0	2	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	7	0.041%
25-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.006%
26-Aug	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3	0.018%
27-Aug	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0	4	0.023%	
28-Aug	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	-2	0	1	0.006%	
29-Aug	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.006%
30-Aug	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.006%
31-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
1-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
2-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
3-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
4-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
5-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
6-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
7-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
8-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
9-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
10-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
11-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
12-Sep	0	0	0	0	0	End of counting season																	0	0.000%			
Subtotal	2	2	4	4	-2	0	6	0	7	6	0	-3	0	-5	-10	0	5	0	7	5	1	4	4	0	37		

0600-1100 Sub Total = 16

Total	3,206	2,922	2,333	1,110	651	55			-5,058				-329	-294	-231	-98	-51	336	902	1,238	1,638	2,597	2,663	3,499	17,089	
	18.8%	17.1%	13.7%	6.5%	3.8%	0.3%			-29.6%				-1.9%	-1.7%	-1.4%	-0.6%	-0.3%	2.0%	5.3%	7.2%	9.6%	15.2%	15.6%	20.5%	100%	

Table 8. Expanded daily hourly king salmon migration past the Niukluk River counting tower, Norton Sound, 29 June to 31 July, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
29-Jun	Start of counting season							0	0	0	0	0	0	0	0	2	0	0	0	0	2	1.6%
30-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
1-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	1.6%
2-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	1.6%
3-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
4-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
5-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	8	6	0	0	0	20	16.3%
6-Jul	3	2	0	-1	0	0	0	1	-1	0	0	0	0	4	4	3	1	-1	0	0	15	12.2%
7-Jul	6	4	0	-2	0	0	0	2	-2	0	0	0	0	2	0	0	2	0	-2	0	10	8.2%
8-Jul	0	0	0	0	0	0	0	-2	0	0	2	0	2	-4	0	2	0	0	0	0	0	0.0%
9-Jul	0	0	0	0	-2	2	0	0	0	2	0	0	0	4	0	0	0	2	-2	0	6	4.9%
10-Jul	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1.6%
11-Jul	0	0	0	-2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	-1.1%
12-Jul	0	2	2	0	0	2	-5	4	0	0	2	0	-2	0	0	0	2	2	0	0	9	7.6%
13-Jul	0	3	2	0	2	-2	-4	3	0	0	1	0	0	0	0	0	3	1	0	0	9	7.1%
14-Jul	0	4	2	0	4	-6	-4	2	0	0	0	0	2	0	0	0	4	0	0	0	8	6.5%
15-Jul	0	0	0	2	0	2	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2.2%
16-Jul	4	0	4	2	0	-2	-3	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4.4%
17-Jul	2	-2	0	2	0	0	0	0	0	0	0	0	0	-2	0	0	0	0	0	0	0	0.0%
18-Jul	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-2	0	0	0.0%
19-Jul	0	0	0	0	0	0	0	0	0	0	0	0	2	-2	0	0	-2	0	0	0	-2	-1.9%
20-Jul	4	2	0	0	0	0	1	0	0	0	0	0	1	-1	0	0	-1	0	0	0	6	4.8%
21-Jul	8	4	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	14	11.4%
22-Jul	0	0	0	0	0	0	0	0	0	0	0	0	-2	0	0	0	0	0	0	0	-2	-1.9%
23-Jul	0	0	2	0	0	0	0	-2	0	0	0	2	0	0	0	0	0	0	0	0	2	1.9%
24-Jul	0	0	0	0	0	2	1	0	0	4	0	0	0	0	0	0	0	2	0	0	9	7.6%
25-Jul	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	1.6%
26-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
27-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
28-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
29-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	1.6%
30-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
31-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
subtotal	31	19	12	1	4	-2	-13	8	-3	6	7	2	5	9	14	13	9	2	-2	123		

Table 9. Expanded daily hourly king salmon migration past the Niukluk River counting tower, Norton Sound, 1 August to 18 August, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
1-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
2-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
3-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
4-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
5-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
6-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
7-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
8-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
9-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
10-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
11-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
12-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
13-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
14-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
15-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
16-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
17-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
18-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
											0600-1100 Sub Total =		0														

Table 10. Expanded daily hourly king salmon migration past the Niukluk River counting tower, Norton Sound, 19 August to 12 September, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
19-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
20-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
21-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
22-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
23-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
24-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
25-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
26-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
27-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
28-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
29-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
30-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
31-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
1-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
2-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
3-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
4-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
5-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
6-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
7-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
8-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
9-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
10-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
11-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
12-Sep	0	0	0	0	0	End of counting season																		0	0.0%		
Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
						0600-1100 Sub Total =																		0			
Total	31	19	12	1	4	-2							8	-3	6	7	2	5	9	14	13	9	2	-2	123		
	25.3%	15.5%	9.8%	0.8%	3.3%	-1.6%							6.5%	-2.4%	4.9%	5.7%	1.6%	4.1%	7.3%	11.4%	10.6%	7.3%	1.6%	-1.6%	100%		

Table 11. Expanded daily hourly coho salmon migration past the Niukluk River counting tower, Norton Sound, 29 June to 31 July, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total		
29-Jun	Start of counting season							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
30-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
1-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
2-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
3-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
4-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
5-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
6-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
7-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
8-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
9-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
10-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
11-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
12-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
13-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
14-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
15-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
16-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
17-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
18-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
19-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
20-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
21-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
22-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
23-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
24-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
25-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
26-Jul	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	2	5	0.1%	
27-Jul	3	2	0	0	0	2	2	0	0	0	0	1	0	0	1	0	0	2	4	17	17	0.4%	
28-Jul	6	4	0	0	0	4	4	0	0	0	0	2	0	0	2	0	0	2	6	30	30	0.6%	
29-Jul	0	4	0	0	2	0	2	0	0	0	0	0	0	2	2	0	0	2	4	18	18	0.4%	
30-Jul	0	8	2	0	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	16	16	0.3%	
31-Jul	2	0	0	2	4	2	3	0	0	0	0	0	0	4	0	2	2	0	0	21	21	0.4%	
subtotal	11	18	2	2	6	8	14	0	0	0	0	3	0	8	5	2	4	8	16	107			

Table 12. Expanded daily hourly coho salmon migration past the Niukluk River counting tower, Norton Sound, 1 August to 18 August, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
1-Aug	2	0	0	0	0	4	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2	0	14	0.3%	
2-Aug	1	0	0	0	0	2	2	0	0	0	0	0	0	4	0	0	0	1	1	1	1	1	1	2	4	20	0.4%
3-Aug	0	0	0	0	0	0	2	0	0	0	0	1	0	2	0	0	0	2	2	2	2	0	2	8	23	0.5%	
4-Aug	0	3	1	0	1	0	0	1	0	0	0	2	0	0	0	0	-1	2	3	1	1	0	2	4	20	0.4%	
5-Aug	0	6	2	0	2	0	-2	2	0	0	0	2	0	0	1	0	-2	2	4	0	0	0	2	0	19	0.4%	
6-Aug	3	5	1	0	1	2	-1	2	0	0	0	2	0	0	2	0	0	1	2	1	0	3	5	4	33	0.7%	
7-Aug	6	4	0	0	0	4	0	2	-1	0	1	1	0	0	1	1	2	0	0	2	0	6	8	8	45	1.0%	
8-Aug	4	4	1	1	0	1	3	2	-2	0	2	0	0	0	0	2	1	1	0	2	0	4	8	12	46	1.0%	
9-Aug	2	4	2	2	0	-2	6	2	-1	0	1	0	0	1	1	1	0	2	0	2	0	2	8	16	49	1.0%	
10-Aug	4	8	3	1	2	0	2	1	0	0	0	0	0	2	2	0	0	2	-1	3	2	5	8	7	51	1.1%	
11-Aug	6	12	4	0	4	2	-2	0	0	0	0	-1	0	1	4	4	0	2	-2	4	4	8	8	-2	56	1.2%	
12-Aug	26	19	10	5	7	5	0	-3	0	0	0	-2	0	0	6	8	1	2	2	5	3	9	5	1	109	2.3%	
13-Aug	46	26	16	10	10	8	2	-6	-1	-2	-1	0	0	-2	7	6	2	2	6	6	2	10	2	4	153	3.2%	
14-Aug	34	22	16	7	6	6	0	-2	-2	-4	-2	2	0	-4	8	4	2	2	5	6	3	5	6	3	123	2.6%	
15-Aug	22	18	16	4	2	4	-2	2	-1	-3	1	1	0	-1	5	2	2	2	4	6	4	0	10	2	100	2.1%	
16-Aug	24	21	16	11	5	4	-5	-5	0	-2	4	0	0	2	2	0	1	1	6	3	2	2	10	1	103	2.2%	
17-Aug	26	24	16	18	8	4	-8	-12	0	-3	3	0	2	2	1	1	0	0	8	0	0	4	10	0	104	2.2%	
18-Aug	31	25	14	13	5	5	-5	-8	0	-4	2	0	4	2	0	2	5	-1	6	1	4	13	11	16	141	3.0%	
Subtotal	237	201	118	72	53	49	-6	-22	-8	-18	11	8	6	11	40	31	13	23	46	45	28	74	109	88	1,209		

0600-100 Sub Total = -35

Table 13. Expanded daily hourly coho salmon migration past the Niukluk River counting tower, Norton Sound, 19 August to 12 September, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total				
19-Aug	36	26	12	8	2	6	-2	-4	-2	-2	1	-1	3	8	3	0	5	-1	6	1	4	22	12	32	175	3.7%				
20-Aug	34	46	34	32	2	8	5	0	-2	-2	1	-1	3	14	6	-2	10	-2	4	2	8	30	20	2	252	5.3%				
21-Aug	54	34	26	12	4	8	5	0	-2	-2	1	-1	3	7	3	1	6	-2	3	4	7	8	18	98	295	6.3%				
22-Aug	54	88	34	14	26	10	12	4	-4	0	0	-2	2	7	3	1	6	-2	3	4	7	0	46	52	365	7.7%				
23-Aug	92	32	28	8	10	7	2	3	-1	0	-2	-1	1	0	0	4	2	-2	2	6	6	2	8	48	255	5.4%				
24-Aug	38	30	8	16	8	7	2	3	-1	0	-2	-1	1	0	0	1	3	-1	2	16	3	0	20	64	217	4.6%				
25-Aug	30	26	22	10	0	4	-8	2	2	0	-4	0	0	0	0	1	3	-1	2	16	3	4	2	24	138	2.9%				
26-Aug	22	48	22	20	14	5	-5	1	1	-1	-1	1	1	0	0	-2	4	0	2	26	0	6	2	22	188	4.0%				
27-Aug	38	22	28	8	16	5	-5	1	1	-1	-1	1	1	1	0	-1	3	5	1	15	-2	0	16	34	186	3.9%				
28-Aug	24	4	18	2	10	6	-2	0	0	-2	2	2	2	1	0	-1	3	5	1	15	-2	8	-16	18	98	2.1%				
29-Aug	12	8	10	14	2	1	-6	-3	-1	1	-1	5	2	2	0	0	2	10	0	4	-4	6	8	10	82	1.7%				
30-Aug	6	4	8	4	4	1	-6	-3	-1	1	-1	5	2	5	0	1	1	8	5	4	6	16	16	60	146	3.1%				
31-Aug	44	18	34	18	-6	-4	-10	-6	-2	4	-4	8	2	5	0	1	1	8	5	4	6	4	12	12	154	3.3%				
1-Sep	14	4	2	6	8	-6	-12	-2	-1	1	1	4	1	8	0	2	0	6	10	4	16	0	4	24	94	2.0%				
2-Sep	14	12	12	-4	0	-6	-12	-2	-1	1	1	4	1	5	1	3	1	2	4	4	8	0	0	46	94	2.0%				
3-Sep	22	6	14	2	6	-8	-14	2	0	-2	6	0	0	5	1	3	1	2	4	4	8	4	-2	38	102	2.2%				
4-Sep	20	0	12	2	-4	-5	-5	3	0	-1	3	0	0	2	2	4	2	-2	-2	4	0	8	0	28	71	1.5%				
5-Sep	14	10	-2	2	16	-5	-5	3	0	-1	3	0	0	3	1	3	3	0	-1	17	0	0	0	10	71	1.5%				
6-Sep	4	2	-4	6	-10	-2	4	4	0	0	0	0	0	3	1	3	3	0	-1	17	0	-6	0	4	28	0.6%				
7-Sep	-2	16	22	14	6	-2	1	5	-1	3	-1	0	0	4	0	2	4	2	0	30	0	2	4	32	141	3.0%				
8-Sep	4	6	-2	4	2	-2	1	5	-1	3	-1	0	0	2	1	1	7	2	4	18	-2	6	16	12	86	1.8%				
9-Sep	-8	8	2	2	-6	-2	-2	6	-2	6	-2	0	0	2	1	1	7	2	4	18	-2	4	4	16	59	1.3%				
10-Sep	4	0	-4	0	0	-2	-2	6	-2	6	-2	0	0	0	2	0	10	2	8	6	-4	6	18	4	56	1.2%				
11-Sep	10	4	6	2	0	-2	-2	6	-2	6	-2	0	0	0	2	0	10	2	8	6	-4	0	4	4	58	1.2%				
12-Sep	-2	-2	-2	-2	-6	End of counting season																					-14	-0.3%		
Subtotal	578	452	340	200	104	22	-66	34	-22	18	-5	23	25	84	27	26	97	43	74	245	62	130	212	694	3,397					
						0600-1100 Sub Total										-18														
Total	826	671	460	274	163	79			-39				31	95	67	57	113	66	128	295	92	208	329	798	4,713					
	17.5%	14.2%	9.8%	5.8%	3.5%	1.7%			-0.8%				0.7%	2.0%	1.4%	1.2%	2.4%	1.4%	2.7%	6.3%	2.0%	4.4%	7.0%	16.9%	100%					

Table 14. Expanded daily hourly Dolly Varden migration past the Niukluk River counting tower, Norton Sound, 29 June to 31 July, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600-1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
29-Jun							14	10	-2	2	2	10	0	10	2	2	0	0	0	50	-14.2%
30-Jun	2	8	0	10	0	2	12	0	0	2	0	0	0	0	0	0	-2	2	8	44	-12.6%
1-Jul	2	6	4	0	0	2	7	0	0	0	2	0	0	0	0	0	0	0	2	25	-7.1%
2-Jul	4	0	0	0	0	2	3	0	-2	0	0	0	0	0	0	0	0	0	4	11	-3.2%
3-Jul	-2	0	0	0	0	0	3	0	0	0	0	6	2	0	0	0	0	0	2	11	-3.2%
4-Jul	0	6	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	12	-3.4%
5-Jul	0	2	2	0	0	0	9	0	2	4	0	0	2	2	4	-2	0	2	0	27	-7.7%
6-Jul	0	1	3	0	0	0	8	0	1	2	0	0	2	1	2	-1	1	2	1	23	-6.4%
7-Jul	0	0	4	0	0	0	6	0	0	0	0	0	2	0	0	0	2	2	2	18	-5.2%
8-Jul	0	0	0	0	0	0	3	0	0	0	0	2	0	2	0	0	2	0	0	9	-2.6%
9-Jul	0	0	0	2	0	-2	1	0	0	0	0	0	0	0	0	0	0	2	0	3	-0.9%
10-Jul	0	0	0	0	0	0	4	0	0	0	0	0	2	2	2	2	0	0	0	12	-3.4%
11-Jul	0	0	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	-4	2	4	-1.1%
12-Jul	0	4	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	6	-1.7%
13-Jul	0	2	0	0	0	1	0	1	0	0	0	4	0	0	0	0	1	1	0	10	-2.9%
14-Jul	0	0	0	0	0	2	0	0	0	0	0	8	0	0	0	0	2	2	0	14	-4.0%
15-Jul	0	0	0	0	4	-2	0	4	0	0	0	0	0	0	0	0	2	0	2	10	-2.9%
16-Jul	6	2	2	0	0	2	0	0	4	0	2	0	0	0	0	0	2	0	2	22	-6.3%
17-Jul	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4	0	0	2	10	-2.9%
18-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	4	-1.1%
19-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	4	-1.1%
20-Jul	1	0	1	0	1	-1	0	0	0	0	0	0	0	0	0	1	0	3	0	6	-1.7%
21-Jul	2	0	2	0	2	-2	0	0	0	0	0	0	0	0	0	0	0	4	0	8	-2.3%
22-Jul	2	2	0	0	-2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	-1.1%
23-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0	2	0	8	-2.3%
24-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	8	-2.3%
25-Jul	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	3	-0.7%
26-Jul	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	4	0	2	8	-2.1%
27-Jul	0	1	0	0	0	0	2	1	0	0	0	0	0	1	0	0	3	0	1	9	-2.5%
28-Jul	0	2	0	0	0	0	2	2	0	0	0	0	0	2	0	0	2	0	0	10	-2.9%
29-Jul	0	2	0	0	0	0	4	0	0	0	0	0	0	0	2	0	0	4	6	18	-5.0%
30-Jul	2	2	0	0	0	2	3	0	0	0	0	0	0	2	0	2	0	0	0	13	-3.6%
31-Jul	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	-0.7%
Sub Total	23	40	22	12	5	6	85	20	7	12	6	30	10	28	16	14	21	26	40	423	

Table 15. Expanded daily hourly Dolly Varden migration past the Niukluk River counting tower, Norton Sound, 1 August to 18 August, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total		
1-Aug	0	2	0	0	0	6	2	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	14	-4.0%	
2-Aug	0	1	0	0	0	3	1	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	8	-2.3%	
3-Aug	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	-0.6%	
4-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	3	-0.9%	
5-Aug	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	4	-1.1%	
6-Aug	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3	6	-1.7%	
7-Aug	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	6	10	-2.9%
8-Aug	0	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0	0	2	1	1	0	0	0	0	20	30	-8.6%	
9-Aug	0	0	0	0	0	0	0	0	0	0	0	0	2	1	2	0	0	4	2	2	2	0	0	0	34	47	-13.5%	
10-Aug	0	1	1	0	0	0	-6	0	0	0	0	0	2	2	0	0	1	3	2	0	10	1	2	20	39	-11.2%		
11-Aug	0	2	2	0	0	0	-12	0	-1	-1	0	1	2	1	0	0	2	2	2	-2	20	2	4	6	30	-8.6%		
12-Aug	0	1	1	0	0	0	-5	0	-2	-2	0	2	2	0	0	0	1	1	1	-1	10	2	2	3	16	-4.6%		
13-Aug	0	0	0	0	0	0	2	0	-2	-1	-2	2	2	0	0	0	0	0	0	0	0	0	2	0	0	3	-0.9%	
14-Aug	0	1	0	0	0	0	0	0	-2	0	-4	2	2	0	0	0	-2	0	0	0	0	0	1	0	5	3	-0.9%	
15-Aug	0	2	0	0	0	0	-2	0	-1	-1	0	1	1	-2	-1	-1	-4	0	0	0	0	0	0	0	10	2	-0.6%	
16-Aug	0	1	0	0	1	-1	1	0	0	-2	4	0	0	-4	-2	-2	-1	2	0	1	0	-1	0	7	4	-1.1%		
17-Aug	0	0	0	0	2	-2	4	0	0	-2	1	0	0	-2	-2	-1	2	4	0	2	0	-2	0	4	8	-2.3%		
18-Aug	0	0	1	0	1	0	3	0	0	-2	-2	0	0	0	-2	0	1	2	0	1	0	-3	-1	1	0	0	0.0%	
Subtotal	0	11	5	0	4	6	-12	0	-4	-11	2	8	16	-4	5	-4	3	24	8	4	40	2	7	119	229			

0600-1100 Sub Total = -17

Table 16. Expanded daily hourly Dolly Varden migration past the Niukluk River counting tower, Norton Sound, 19 August to 12 September, 1995.

Shaded areas indicate hours not counted. Numbers in shaded areas indicate estimated passage.

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
19-Aug	0	0	2	0	0	2	2	0	-1	-2	-25	1	-1	0	0	1	1	2	0	1	0	-4	-2	-2	-25	7.2%	
20-Aug	2	2	4	0	2	2	2	-4	-1	-2	-25	1	-1	0	2	2	0	0	0	0	0	2	4	2	-6	1.7%	
21-Aug	0	4	0	0	2	2	2	-4	-1	-2	-25	1	-1	0	1	3	1	0	6	1	0	2	24	0	16	-4.6%	
22-Aug	2	0	0	0	0	2	2	-8	-2	-2	-48	2	-2	0	1	3	1	0	6	1	0	2	10	4	-26	7.4%	
23-Aug	0	0	0	2	0	0	-7	-54	1	-2	-25	1	-1	0	0	4	2	0	12	2	0	0	2	16	-47	13.5%	
24-Aug	0	4	0	0	2	0	-7	-54	1	-2	-25	1	-1	0	0	3	2	0	8	2	1	2	2	8	-53	15.2%	
25-Aug	-2	2	0	0	0	-2	-16	-100	4	-2	-2	0	0	0	0	3	2	0	8	2	1	24	0	40	-38	10.9%	
26-Aug	2	0	0	2	0	0	-25	-127	1	-1	-2	-1	5	0	0	2	2	0	4	2	2	8	60	100	34	-9.7%	
27-Aug	8	2	4	0	-12	0	-25	-127	1	-1	-2	-1	5	3	1	1	1	1	2	1	1	0	4	-54	-187	53.6%	
28-Aug	6	0	4	2	4	2	-34	-154	-2	0	-2	-2	10	3	1	1	1	1	2	1	1	34	4	6	-111	31.8%	
29-Aug	18	4	0	4	0	1	-17	-72	-1	0	-1	-1	5	6	2	0	0	2	0	0	0	0	-2	0	-52	14.9%	
30-Aug	6	-2	0	4	0	1	-17	-72	-1	0	-1	-1	5	3	1	0	0	1	0	0	1	0	-40	8	-104	29.8%	
31-Aug	2	2	4	0	0	0	0	10	0	0	0	0	0	3	1	0	0	1	0	0	1	2	2	8	36	-10.3%	
1-Sep	4	0	0	0	-20	-1	1	-3	-2	0	-1	0	0	0	0	0	0	0	0	0	2	4	-4	0	-20	5.7%	
2-Sep	2	-2	-4	0	0	-1	1	-3	-2	0	-1	0	0	-4	-3	1	-3	-1	0	0	0	0	0	0	0	-20	5.7%
3-Sep	0	0	0	2	0	-2	2	-16	-4	0	-2	0	0	-4	-3	1	-3	-1	0	0	0	4	-30	-2	-58	16.6%	
4-Sep	-2	-4	2	0	0	-1	1	-63	-1	0	-3	-1	0	-8	-6	2	-6	-2	0	0	-2	4	-30	2	-118	33.8%	
5-Sep	10	-2	0	2	0	-1	1	-63	-1	0	-3	-1	0	-5	-3	1	-2	-2	0	0	-1	4	-2	-4	-72	20.6%	
6-Sep	2	0	6	0	0	0	0	-110	2	0	-4	-2	0	-5	-3	1	-2	-2	0	0	-1	4	-10	2	-122	35.0%	
7-Sep	2	0	-2	0	-2	0	0	-55	2	2	-2	-1	0	-2	0	0	2	-2	0	0	0	6	2	-4	-54	15.5%	
8-Sep	-2	2	2	0	0	0	0	-55	2	2	-2	-1	0	-1	0	0	1	-1	0	0	0	2	16	4	-31	8.9%	
9-Sep	0	0	0	0	0	0	0	0	2	4	0	0	0	-1	0	0	1	-1	0	0	0	14	8	2	29	-8.3%	
10-Sep	-10	-6	0	0	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	10	8	0	8	-2.3%	
11-Sep	2	0	2	0	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	8	0	18	-5.2%	
12-Sep	2	0	0	0	0	End of counting season																			2	-0.6%	
Subtotal	54	6	24	18	-24	4	-134	-1,134	1	0	-201	-5	23	-12	-8	29	1	-4	48	13	6	124	34	136	-1,001		
						0600-1100 Sub Total =																				-1,473	
Total	77	57	51	30	-15	16			-1,405				59	-9	9	31	34	30	84	33	60	147	67	295	-349		
	-22.1%	-16.3%	-14.6%	-8.6%	4.3%	-4.6%			402.6%				-16.9%	2.6%	-2.6%	-8.9%	-9.7%	-8.6%	-24.1%	-9.5%	-17.2%	-42.1%	-19.2%	-84.5%			

Table 17. Reported hourly chum salmon observations at the Niukluk River counting tower, Norton Sound, 1995.

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
29-Jun	Start of counting season												0	0	18	6	0	8	22	2	12	12	72	28	180	0.259%
30-Jun	6	14	66	32	38	12	0	-6	0	0	2	-2	0	2	2	0	4	2	-2	28	4	8	2	16	228	0.328%
1-Jul	-4	40	4	16	12	-34							-6	-4	-4	4	34	8	8	20	20	42	42	8	206	0.297%
2-Jul	6	2	20	10	10	58							0	0	0	0	4	20	2	4	44	86	50	-4	312	0.449%
3-Jul	32	36	-52	-14	-12	0							-6	4	-14	-2	0	0	8	90	216	30	14	-12	318	0.458%
4-Jul	-40	-8	-4	2	22	8							2	-4	-8	54	24	4	-16	96	92	82	64	348	718	1.034%
5-Jul	136	20	58	34	44	10							-60	-6	-4	-6	86	80	260	574	-2	124	66	294	1,708	2.460%
6-Jul																									0	0.000%
7-Jul	758	368	240	224	148	80	38	40	10	-26	-20	26	0	10	76	-20	242	138	872	186	312	152	156	212	4,222	6.082%
8-Jul	858	226	304	100	64	10							-200	-68	-16	-42	-118	14	-34	60	26	-40	442	268	1,854	2.671%
9-Jul	62	68	142	172	102	26							-12	-24	4	106	62	2	102	80	-20	376	368	256	1,872	2.697%
10-Jul	472	302	210	184	66	64							-38	-12	-16	196	30	46	38	236	240	486	684	282	3,470	4.999%
11-Jul	1,272	470	472	562	314	42							-38	-20	28	-14	12	-28	-14	156	208	478	606	656	5,162	7.436%
12-Jul	1,904	1,022	970	738	440	202							-28	-32	54	-8	-58	-90	-48	30	216	412	492	1,056	7,272	10.475%
13-Jul																									0	0.000%
14-Jul	266	404	176	148	170	166	38	-8	22	-42	-4	12	38	-38	40	152	52	30	-24	242	318	356	346	1,364	4,224	6.085%
15-Jul	528	538	654	494	304	84							30	18	154	32	126	76	146	152	150	320	98	340	4,244	6.114%
16-Jul	708	594	420	288	88	88							66	386	100	224	254	238	466	250	380	276	316	760	5,902	8.502%
17-Jul	312	158	74	30	-10	26							14	-14	24	26	32	68	162	36	12	138	74	80	1,242	1.789%
18-Jul	186	92	80	-4	-14	-14							16	24	2	56	104	88	74	88	64	24	22	116	1,004	1.446%
19-Jul	-94	-160	-86	-92	-38	36							26	42	28	126	126	110	70	110	184	246	786	442	1,862	2.682%
20-Jul																									0	0.000%
21-Jul	1,016	1,112	436	160	174	108	50	-12	40	46	38	-26	30	56	52	208	58	10	174	92	356	998	342	184	5,702	8.214%
22-Jul	542	202	308	78	142	142							-30	14	16	78	74	104	308	584	508	514	434	120	4,138	5.961%
23-Jul	100	118	42	24	-32	18							-26	-16	-24	30	20	18	256	168	140	278	412	312	1,838	2.648%
24-Jul	210	156	102	64	56	16							40	16	0	4	42	20	54	176	138	256	230	360	1,940	2.795%
25-Jul	324	204	188	146	22	56							0	22	-6	0	6	44	0	128	34	46	186	168	1,568	2.259%
26-Jul	210	258	234	58	66	38							32	22	34	10	26	62	52	88	26	108	292	396	2,012	2.898%
27-Jul																									0	0.000%
28-Jul	94	132	110	28	2	6	-22	-28	20	30	-12	20	-6	-24	-18	42	-14	20	4	68	62	48	38	230	830	1.196%

- continued -

Table 17. (Page 2 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
29-Jul	244	294	80	34	16	26							-6	-10	8	6	-12	74	48	8	136	208	152	172	1,478	2.129%	
30-Jul	70	14	74	22	6	-12							-30	-2	4	-18	8	48	-26	-8	0	28	74	100	352	0.507%	
31-Jul	60	158	-6	60	-30	64							2	4	46	72	24	56	44	66	42	66	72	70	870	1.253%	
1-Aug	106	78	48	36	-2	-8	50	2									16	50	38	28	34	76	66	28	646	0.931%	
2-Aug									-6	14	2	16	-20	10	18	-20										14	0.020%
3-Aug	16	40	-26	-16	-40	-6	10	-36									8	24	98	58	88	38	72	144	472	0.680%	
4-Aug									22	30	-4	8	16	10	26	24										132	0.190%
5-Aug	30	30	-34	26	-36	-28	-34	-2									22	62	32	22	32	14	44	48	228	0.328%	
6-Aug									-4	-10	4	-2	10	-18	-6	-2										-28	-0.040%
7-Aug	-2	-14	-46	-32	-50	-28	-20	-14									6	16	20	20	16	46	42	66	26	0.037%	
8-Aug									-2	-2	14	16	12	18	8	38										102	0.147%
9-Aug	20	12	2	6	-8	-16	-12	-2									12	22	8	26	-8	-2	58	74	192	0.277%	
10-Aug									0	22	30	16	6	-4	-6	4										68	0.098%
11-Aug	4	-2	-18	-2	-8	-6	2	4									26	24	42	26	44	20	8	22	186	0.268%	
12-Aug									6	-2	8	6	20	-8	14	8										52	0.075%
13-Aug	12	14	10	6	10	22	-4	-6									2	12	66	24	32	16	22	24	262	0.377%	
14-Aug									2	4	-12	-6	4	10	2	6										10	0.014%
15-Aug	10	2	6	-8	-2	-2	2	2									14	14	8	2	20	12	28	52	160	0.230%	
16-Aug									-2	-6	4	-6	-6	-14	-8	-10										-48	-0.069%
17-Aug	-4	6	-8	0	-6	-2	-12	2									-4	-8	18	10	6	8	14	-4	16	0.023%	
18-Aug									-2	2	-6	2	4	-4	-6	2										-8	-0.012%
19-Aug	8	-10	-6	0	-6	-8	-12	-2															2	8	42	16	0.023%
20-Aug	-2	22	10	-2	14									0	6	2	6	0	10	8	8	6	4	-8	84	0.121%	
21-Aug	-4	4	2	0	-4																	4	0	2	4	4	0.006%
22-Aug	6	-2	4	10	6	2	0	-2	-2	0	4	0	2									0	-4	4	28	0.040%	
23-Aug	4	2	2	-4	0									4	0	0	0	0	10	0	0	4	2	4	28	0.040%	
24-Aug	0	4	-6	2	-2																	2	6	8	14	0.020%	
25-Aug	-4	0	0	4	2	-2	-2	2	0	0	-2	0	0									-4	-8	8	-6	-0.009%	
26-Aug	0	2	0	2	2									0	0	0	4	0	0	2	6	-2	0	4	20	0.029%	
27-Aug	4	2	4	-2	-4																	6	4	-4	10	0.014%	

- continued -

Table 17. (Page 3 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total						
28-Aug	-2	0	-4	0	-2	0	0	-2	0	2	2	-2	0											0	2	0	-6	-0.009%				
29-Aug	2	4	0	-4	2											0	0	0	0	0	2	0	0	0	0	0	0	-4	2	0.003%		
30-Aug	0	-4	0	0	0																					0	2	0	-2	-0.003%		
31-Aug	0	0	0	0	2	0	2	0	0	0	0	0	2											0	-2	4	8	0.012%				
1-Sep	-2	0	0	0	0											0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0.000%
2-Sep	-2	-2	0	2	0																					0	0	0	-2	-0.003%		
3-Sep	0	0	0	0	0	0	0	0	0	-2	0	0	0											0	0	0	-2	-0.003%				
4-Sep	0	0	2	0	0											0	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0.006%	
5-Sep	0	0	0	0	0																					0	0	0	0	0.000%		
6-Sep	0	0	0	0	2	0	2	0	0	0	0	0	2											0	0	0	6	0.009%				
7-Sep	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
8-Sep	0	0	0	0	0																					0	0	0	0	0.000%		
9-Sep	0	0	2	0	0	0	0	0	0	0	0	0	0											0	0	0	2	0.003%				
10-Sep	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
11-Sep	0	0	0	0	0																					0	0	0	0	0.000%		
12-Sep	0	0	2	0	0	End of counting season																				0	0	0	2	0.003%		
Total	10,438	7,022	5,262	3,622	2,040	1,244	76	-68	104	60	48	78	-138	350	628	1,374	1,360	1,486	3,360	4,036	4,196	6,404	7,302	9,136	69,420							

Table 18. Reported hourly pink salmon observations at the Niukluk River counting tower, Norton Sound, 1995

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total									
29-Jun	Start of counting season												0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
30-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%							
1-Jul	0	0	0	0	0	0	Shaded												0	0	0	0	0	0	0	0	0	0	0	0	0.000%				
2-Jul	0	0	0	0	0	0	Shaded												0	0	0	0	0	0	0	0	0	0	0	2	2	0.011%			
3-Jul	0	0	0	0	0	0	Shaded												0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%		
4-Jul	0	0	0	0	0	0	Shaded												0	0	0	0	0	0	0	0	0	0	0	2	2	0.011%			
5-Jul	0	0	0	0	0	0	Shaded												0	0	0	0	0	6	8	6	0	0	2	22	0.119%				
6-Jul	Shaded																								0	0.000%									
7-Jul	2	8	8	0	4	0	0	0	0	2	0	0	2	4	10	8	2	10	14	16	12	2	10	10	124	0.673%									
8-Jul	16	12	20	6	2	0	Shaded												4	-2	4	2	-2	2	0	2	-4	0	12	14	88	0.477%			
9-Jul	6	0	8	2	6	0	Shaded												0	6	0	0	4	2	2	4	-2	10	4	4	56	0.304%			
10-Jul	12	6	2	0	6	4	Shaded												2	-2	0	4	0	0	6	0	2	6	22	10	80	0.434%			
11-Jul	12	8	14	24	18	12	Shaded												0	-2	4	0	-2	-8	6	4	0	36	24	22	172	0.933%			
12-Jul	52	46	20	56	50	22	Shaded												-2	0	6	2	0	0	-6	6	22	58	98	86	516	2.800%			
13-Jul	Shaded																								0	0.000%									
14-Jul	30	54	36	20	8	14	6	2	-10	0	-2	-8	-6	0	2	2	8	-2	-4	8	18	36	26	124	362	1.964%									
15-Jul	88	20	118	66	8	-2	Shaded												10	0	8	0	-4	4	0	18	36	78	18	154	620	3.364%			
16-Jul	116	174	74	32	14	6	Shaded												2	16	10	14	26	6	106	66	150	148	84	270	1,314	7.130%			
17-Jul	60	28	18	20	2	-10	Shaded												4	6	-6	4	8	14	24	20	8	30	4	42	276	1.498%			
18-Jul	44	42	36	-2	-6	2	Shaded												0	-6	-2	-4	4	-2	14	30	44	0	6	-2	198	1.074%			
19-Jul	-32	-34	-22	-22	-24	-8	Shaded												14	10	4	30	12	32	6	30	26	18	116	56	212	1.150%			
20-Jul	Shaded																								0	0.000%									
21-Jul	290	226	138	68	66	26	-2	20	-6	8	-26	-32	-12	-10	-16	12	2	16	50	36	164	390	130	166	1,704	9.246%									
22-Jul	312	114	274	70	122	52	Shaded												-106	-108	-92	-46	20	8	306	262	384	362	238	94	2,266	12.295%			
23-Jul	148	92	28	-22	-36	-60	Shaded												-62	-28	-64	-14	-28	0	106	64	82	204	332	360	1,102	5.979%			
24-Jul	266	174	156	56	124	38	Shaded												-14	-8	-40	-12	-20	0	6	128	70	260	236	430	1,850	10.038%			
25-Jul	316	338	344	186	96	126	Shaded												-24	-8	2	-6	8	32	46	194	82	112	234	246	2,324	12.610%			
26-Jul	352	328	354	186	102	22	Shaded												-48	-28	-26	-24	-24	48	0	86	42	118	254	446	2,188	11.872%			
27-Jul	Shaded																								0	0.000%									
28-Jul	146	184	102	10	54	-10	-72	-108	-64	-46	-24	-44	-20	-28	-22	-6	-18	24	50	48	50	34	78	96	414	2.246%									

- continued -

Table 18. (Page 2 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
29-Jul	214	386	148	80	30	20							-12	-34	4	-18	-22	14	24	46	194	256	174	172	1,676	9.094%	
30-Jul	60	66	102	52	-16	-44							-44	-12	2	-28	-34	14	-20	38	16	-2	66	72	288	1.563%	
31-Jul	106	134	24	76	36	22							2	2	0	-20	6	24	20	26	0	4	42	72	576	3.125%	
1-Aug	96	56	30	34	-10	-20	6	-28									-6	12	10	-20	-2	18	18	-6	188	1.020%	
2-Aug									2	-20	-6	-2	2	-22	10	-6										-42	-0.228%
3-Aug	8	18	-14	-12	-38	-36	-18	-18									-2	-4	16	10	22	28	26	20	6	0.033%	
4-Aug									-2	-6	4	-2	12	4	-4	-4										2	0.011%
5-Aug	8	6	10	-4	-16	-24	-22	-12									8	2	4	-6	2	6	-4	0	-42	-0.228%	
6-Aug									-14	-30	-2	-6	0	-6	8	-20										-70	-0.380%
7-Aug	-6	-2	-14	-8	-6	-20	-16	-8									0	0	2	-4	4	4	6	6	-62	-0.336%	
8-Aug									2	0	0	0	-2	4	4	4										12	0.065%
9-Aug	-2	-6	0	-4	-4	-6	-4	2									0	2	-2	2	0	2	0	2	-18	-0.098%	
10-Aug									-2	0	-6	0	0	-4	0	-2										-14	-0.076%
11-Aug	2	0	0	-2	0	-2	0	-2									2	2	4	0	0	-2	-2	2	2	0.011%	
12-Aug									0	2	0	-2	2	2	2	0										6	0.033%
13-Aug	2	-4	0	0	0	-2	0	-2									0	4	2	0	4	0	6	-2	8	0.043%	
14-Aug									0	-2	-2	0	0	0	0	0										-4	-0.022%
15-Aug	0	0	0	-2	0	0	0	0									0	2	2	0	0	0	2	4	8	0.043%	
16-Aug									-2	-2	0	-2	0	0	0	0										-6	-0.033%
17-Aug	0	0	0	-2	0	0	0	0									0	0	2	0	2	0	0	0	2	0.011%	
18-Aug									0	0	0	-2	0	0	0	0										-2	-0.011%
19-Aug	0	0	0	0	0	0	0	0														4	0	2	6	0.033%	
20-Aug	0	0	0	2	-2									-2	-4	0	2	0	0	2	0	0	0	-2	-4	-0.022%	
21-Aug	2	0	0	0	0																	0	0	0	2	0.011%	
22-Aug	0	2	2	0	0	0	2	0	2	0	0	0	0									0	4	0	12	0.065%	
23-Aug	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
24-Aug	0	0	2	2	0																	0	0	0	4	0.022%	
25-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0									0	0	0	0	0.000%	
26-Aug	0	0	0	0	0									0	0	0	0	0	2	0	0	0	0	0	2	0.011%	
27-Aug	0	0	0	0	0																	0	2	0	2	0.011%	

- continued -

Table 18. (Page 3 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
28-Aug	0	0	0	0	0	0	0	0	0	2	0	0	0									0	-2	0	0	0.000%	
29-Aug	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
30-Aug	0	0	0	0	0																	0	0	0	0	0.000%	
31-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0									0	0	0	0	0.000%	
1-Sep	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
2-Sep	0	0	0	0	0																	0	0	0	0	0.000%	
3-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0									0	0	0	0	0.000%	
4-Sep	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
5-Sep	0	0	0	0	0																	0	0	0	0	0.000%	
6-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0									0	0	0	0	0.000%	
7-Sep	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	0	0.000%
8-Sep	0	0	0	0	0																	0	0	0	0	0.000%	
9-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0									0	0	0	0	0.000%	
10-Sep	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	0.000%	
11-Sep	0	0	0	0	0																	0	0	0	0	0.000%	
12-Sep	0	0	0	0	0	End of counting season																	0	0.000%			
Total	2,726	2,476	2,018	968	590	122	-120	-154	-94	-92	-64	-100	-296	-256	-196	-128	-50	258	804	1,124	1,434	2,220	2,264	2,976	18,430		

Table 19. Reported hourly king salmon observations at the Niukluk River counting tower, Norton Sound, 1995

Shaded areas indicate expanded numbers

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total						
29-Jun	Start of counting season												0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2.0%				
30-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%					
1-Jul	0	0	0	0	0	0	Shaded area						0	0	0	0	0	2	0	0	0	0	0	0	0	2	2.0%					
2-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2.0%
3-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
4-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
5-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	6	8	6	0	0	0	0	20	20.0%
6-Jul	Shaded area																								0	0.0%						
7-Jul	6	4	0	-2	0	0	2	0	0	0	-2	0	2	-2	0	0	0	0	2	0	0	0	2	-2	0	10	10.0%					
8-Jul	0	0	0	0	0	0	Shaded area						-2	0	0	2	0	2	-4	0	2	0	0	0	0	0	0.0%					
9-Jul	0	0	0	0	-2	2							0	0	2	0	0	0	0	0	0	0	4	0	0	0	0	2	-2	6	6.0%	
10-Jul	2	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2.0%
11-Jul	0	0	0	-2	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-2	-2.0%
12-Jul	0	2	2	0	0	2							0	0	0	0	0	0	4	0	0	2	0	-2	0	0	0	2	2	0	14	14.0%
13-Jul	Shaded area																								0	0.0%						
14-Jul	0	4	2	0	4	-6	-4	0	0	0	0	0	2	0	0	0	0	2	0	0	0	4	0	0	8	8.0%						
15-Jul	0	0	0	2	0	2	Shaded area						0	0	0	0	0	0	0	0	0	0	0	0	0	4	4.0%					
16-Jul	4	0	4	2	0	-2							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8.0%
17-Jul	2	-2	0	2	0	0							0	0	0	0	0	0	0	0	0	0	0	-2	0	0	0	0	0	0	0	0.0%
18-Jul	2	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-2	0	0	0.0%
19-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	2	-2	0	0	-2	0	0	0	-2	-2.0%
20-Jul	Shaded area																								0	0.0%						
21-Jul	8	4	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	14	14.0%					
22-Jul	0	0	0	0	0	0	Shaded area						0	0	0	0	0	-2	0	0	0	0	0	0	0	-2	-2.0%					
23-Jul	0	0	2	0	0	0							-2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2.0%
24-Jul	0	0	0	0	0	2							0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	8	8.0%
25-Jul	0	0	0	0	0	0							0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2.0%
26-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
27-Jul	Shaded area																								0	0.0%						
28-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%					

- continued -

Table 19. (Page 2 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
29-Jul	0	0	0	0	0	0							0	0	0	0	0	0	2	0	0	0	0	0	2	2.0%	
30-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
31-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
1-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0.0%
2-Aug									0	0	0	0	0	0	0	0										0	0.0%
3-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0.0%
4-Aug									0	0	0	0	0	0	0	0										0	0.0%
5-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0.0%
6-Aug									0	0	0	0	0	0	0	0										0	0.0%
7-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0.0%
8-Aug									0	0	0	0	0	0	0	0										0	0.0%
9-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0.0%
10-Aug									0	0	0	0	0	0	0	0										0	0.0%
11-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0.0%
12-Aug									0	0	0	0	0	0	0	0										0	0.0%
13-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0.0%
14-Aug									0	0	0	0	0	0	0	0										0	0.0%
15-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0.0%
16-Aug									0	0	0	0	0	0	0	0										0	0.0%
17-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0.0%
18-Aug									0	0	0	0	0	0	0	0										0	0.0%
19-Aug	0	0	0	0	0	0	0	0															0	0	0	0	0.0%
20-Aug	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0	0.0%
21-Aug	0	0	0	0	0																		0	0	0	0	0.0%
22-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0										0	0	0	0	0.0%
23-Aug	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0	0.0%
24-Aug	0	0	0	0	0																		0	0	0	0	0.0%
25-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0										0	0	0	0	0.0%
26-Aug	0	0	0	0	0										0	0	0	0	0	0	0	0	0	0	0	0	0.0%
27-Aug	0	0	0	0	0																		0	0	0	0	0.0%

- continued -

Table 19. (Page 3 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total							
28-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	Shaded area										0	0	0	0	0	0	0	0	0	0.0%
29-Aug	0	0	0	0	0	Shaded area								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
30-Aug	0	0	0	0	0	Shaded area								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
31-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	Shaded area										0	0	0	0	0	0	0	0	0	0.0%
1-Sep	0	0	0	0	0	Shaded area								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
2-Sep	0	0	0	0	0	Shaded area								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
3-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	Shaded area										0	0	0	0	0	0	0	0	0	0.0%
4-Sep	0	0	0	0	0	Shaded area								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
5-Sep	0	0	0	0	0	Shaded area								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
6-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	Shaded area										0	0	0	0	0	0	0	0	0	0.0%
7-Sep	0	0	0	0	0	Shaded area								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
8-Sep	0	0	0	0	0	Shaded area								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
9-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	Shaded area										0	0	0	0	0	0	0	0	0	0.0%
10-Sep	0	0	0	0	0	Shaded area								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
11-Sep	0	0	0	0	0	Shaded area								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
12-Sep	0	0	0	0	0	End of counting season																			0	0.0%							
Total	24	12	10	2	2	0	-2	0	0	0	0	0	4	-2	6	6	2	4	6	10	10	6	2	-2	100								

Table 20. Reported hourly coho salmon observations at the Niukluk River counting tower, Norton Sound, 1995.

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total									
29-Jun	Start of counting season												0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
30-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%							
1-Jul	0	0	0	0	0	0	Shaded area						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%							
2-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
3-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
4-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
5-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
6-Jul	Shaded area																							0	0.0%										
7-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%								
8-Jul	0	0	0	0	0	0	Shaded area						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%							
9-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
10-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
11-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
12-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
13-Jul	Shaded area																							0	0.0%										
14-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%								
15-Jul	0	0	0	0	0	0	Shaded area						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%							
16-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
17-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
18-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
19-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
20-Jul	Shaded area																							0	0.0%										
21-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%								
22-Jul	0	0	0	0	0	0	Shaded area						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%								
23-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
24-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
25-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%		
26-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0.1%		
27-Jul	Shaded area																							0	0.0%										
28-Jul	6	4	0	0	0	4	2	0	2	0	0	0	0	0	0	0	2	0	0	2	0	0	2	6	30	0.8%									

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Table 20. (Page 2 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
29-Jul	0	4	0	0	2	0							0	0	0	0	0	0	2	2	0	0	2	4	16	0.4%	
30-Jul	0	8	2	0	0	0							0	0	0	0	0	0	2	0	0	2	0	0	14	0.4%	
31-Jul	2	0	0	2	4	2							0	0	0	0	0	0	4	0	2	2	0	0	18	0.5%	
1-Aug	2	0	0	0	0	4	2	0									0	0	0	0	0	2	2	0	12	0.3%	
2-Aug									0	0	0	0	0	4	0	0									4	0.1%	
3-Aug	0	0	0	0	0	0	2	0									0	2	2	2	2	0	2	8	20	0.6%	
4-Aug									0	0	0	2	0	0	0	0									2	0.1%	
5-Aug	0	6	2	0	2	0	-2	2									-2	2	4	0	0	0	2	0	16	0.4%	
6-Aug									0	0	0	2	0	0	2	0									4	0.1%	
7-Aug	6	4	0	0	0	4	0	2									2	0	0	2	0	6	8	8	42	1.2%	
8-Aug									-2	0	2	0	0	0	0	2									2	0.1%	
9-Aug	2	4	2	2	0	-2	6	2									0	2	0	2	0	2	8	16	46	1.3%	
10-Aug									0	0	0	0	0	2	2	0									4	0.1%	
11-Aug	6	12	4	0	4	2	-2	0									0	2	-2	4	4	8	8	-2	48	1.3%	
12-Aug									0	0	0	-2	0	0	6	8									12	0.3%	
13-Aug	46	26	16	10	10	8	2	-6									2	2	6	6	2	10	2	4	146	4.1%	
14-Aug									-2	-4	-2	2	0	-4	8	4									2	0.1%	
15-Aug	22	18	16	4	2	4	-2	2									2	2	4	6	4	0	10	2	96	2.7%	
16-Aug									0	-2	4	0	0	2	2	0									6	0.2%	
17-Aug	26	24	16	18	8	4	-8	-12									0	0	8	0	0	4	10	0	98	2.7%	
18-Aug									0	-4	2	0	4	2	0	2									6	0.2%	
19-Aug	36	26	12	8	2	6	-2	-4															22	12	32	150	4.2%
20-Aug	34	46	34	32	2									14	6	-2	10	-2	4	2	8	30	20	2	240	6.7%	
21-Aug	54	34	26	12	4																	8	18	98	254	7.1%	
22-Aug	54	88	34	14	26	10	12	4	-4	0	0	-2	2									0	46	52	336	9.4%	
23-Aug	92	32	28	8	10								0	0	4	2	-2	2	6	6		2	8	48	246	6.9%	
24-Aug	38	30	8	16	8																	0	20	64	184	5.1%	
25-Aug	30	26	22	10	0	4	-8	2	2	0	-4	0	0									4	2	24	114	3.2%	
26-Aug	22	48	22	20	14									0	0	-2	4	0	2	26	0	6	2	22	186	5.2%	
27-Aug	38	22	28	8	16																	0	16	34	162	4.5%	

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Table 20. (Page 3 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
28-Aug	24	4	18	2	10	6	-2	0	0	-2	2	2	2									8	-16	18	76	2.1%
29-Aug	12	8	10	14	2									2	0	0	2	10	0	4	-4	6	8	10	84	2.3%
30-Aug	6	4	8	4	4																	16	16	60	118	3.3%
31-Aug	44	18	34	18	-6	-4	-10	-6	-2	4	-4	8	2									4	12	12	124	3.5%
1-Sep	14	4	2	6	8									8	0	2	0	6	10	4	16	0	4	24	108	3.0%
2-Sep	14	12	12	-4	0																	0	0	46	80	2.2%
3-Sep	22	6	14	2	6	-8	-14	2	0	-2	6	0	0									4	-2	38	74	2.1%
4-Sep	20	0	12	2	-4									2	2	4	2	-2	-2	4	0	8	0	28	76	2.1%
5-Sep	14	10	-2	2	16																	0	0	10	50	1.4%
6-Sep	4	2	-4	6	-10	-2	4	4	0	0	0	0	0									-6	0	4	2	0.1%
7-Sep	-2	16	22	14	6									4	0	2	4	2	0	30	0	2	4	32	136	3.8%
8-Sep	4	6	-2	4	2																	6	16	12	48	1.3%
9-Sep	-8	8	2	2	-6	-2	-2	6	-2	6	-2	0	0									4	4	16	26	0.7%
10-Sep	4	0	-4	0	0									0	2	0	10	2	8	6	-4	6	18	4	52	1.4%
11-Sep	10	4	6	2	0																	0	4	4	30	0.8%
12-Sep	-2	-2	-2	-2	-6	End of counting season																	-14	-0.4%		
Total	696	562	398	236	136	40	-22	-2	-8	-4	4	12	10	36	30	24	40	26	54	108	36	166	270	742	3,590	
	19.4%	15.7%	11.1%	6.6%	3.8%	1.1%	-0.6%	-0.1%	-0.2%	-0.1%	0.1%	0.3%	0.3%	1.0%	0.8%	0.7%	1.1%	0.7%	1.5%	3.0%	1.0%	4.6%	7.5%	20.7%		

Table 21. Reported hourly Dolly Varden observations at the Niukluk River counting tower, Norton Sound, 1995.

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total		
29-Jun	Start of counting season												10	-2	2	2	10	0	10	2	2	0	0	0	0	36	10.0%	
30-Jun	2	8	0	10	0	2	2	2	0	2	2	4	0	0	2	0	0	0	0	0	0	-2	2	8	44	12.2%		
1-Jul	2	6	4	0	0	2							0	0	0	2	0	0	0	0	0	0	0	0	2	18	5.0%	
2-Jul	4	0	0	0	0	2							0	-2	0	0	0	0	0	0	0	0	0	0	0	4	8	2.2%
3-Jul	-2	0	0	0	0	0							0	0	0	0	6	2	0	0	0	0	0	0	0	2	8	2.2%
4-Jul	0	6	2	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	2.2%
5-Jul	0	2	2	0	0	0							0	2	4	0	0	0	2	2	4	-2	0	2	0	18	5.0%	
6-Jul																								0	0.0%			
7-Jul	0	0	4	0	0	0	4	2	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	2	2	18	5.0%	
8-Jul	0	0	0	0	0	0							0	0	0	0	2	0	2	0	0	0	2	0	0	6	1.7%	
9-Jul	0	0	0	2	0	-2							0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0.6%
10-Jul	0	0	0	0	0	0							0	0	0	0	0	0	2	2	2	2	2	0	0	0	8	2.2%
11-Jul	0	0	2	0	0	0							0	0	2	0	0	0	0	0	2	0	0	-4	2	4	1.1%	
12-Jul	0	4	0	0	0	0							2	0	0	0	0	0	0	0	0	0	0	0	0	0	6	1.7%
13-Jul																								0	0.0%			
14-Jul	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	2	2	0	14	3.9%		
15-Jul	0	0	0	0	4	-2							4	0	0	0	0	0	0	0	0	0	2	0	2	10	2.8%	
16-Jul	6	2	2	0	0	2							0	4	0	2	0	0	0	0	0	0	2	0	2	22	6.1%	
17-Jul	2	0	0	0	0	0							0	2	0	0	0	0	0	0	0	4	0	0	2	10	2.8%	
18-Jul	0	0	0	0	0	0							0	0	0	0	0	0	2	2	0	0	0	0	0	4	1.1%	
19-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	2	0	2	0	4	1.1%	
20-Jul																								0	0.0%			
21-Jul	2	0	2	0	2	-2	-2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4	0	8	2.2%		
22-Jul	2	2	0	0	-2	0							0	0	0	0	0	0	0	0	0	0	0	0	2	4	1.1%	
23-Jul	0	0	0	0	0	0							0	0	0	0	0	0	2	0	4	0	2	0	8	2.2%		
24-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	2	0	0	2	2	2	8	2.2%	
25-Jul	0	0	0	0	0	0							0	2	0	0	0	0	0	0	0	0	0	0	0	2	0.6%	
26-Jul	0	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	4	0	2	6	1.7%	
27-Jul																								0	0.0%			
28-Jul	0	2	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	0	2	0	0	10	2.8%		

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Table 21. (Page 2 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total	
29-Jul	0	2	0	0	0	0							0	0	0	0	0	0	0	2	0	0	4	6	14	3.9%	
30-Jul	2	2	0	0	0	2							0	0	0	0	0	0	2	0	2	0	0	0	10	2.8%	
31-Jul	2	0	0	0	0	0							0	0	0	0	0	0	0	0	0	0	0	0	2	0.6%	
1-Aug	0	2	0	0	0	6	2	0									2	0	0	0	0	0	0	0	12	3.3%	
2-Aug									0	0	2	0	0	0	0	0										2	0.6%
3-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0.0%
4-Aug									0	0	0	0	0	0	2	0										2	0.6%
5-Aug	0	0	0	0	0	0	0	0									0	2	0	0	0	0	0	0	0	2	0.6%
6-Aug									2	0	0	0	0	0	0	0										2	0.6%
7-Aug	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	6	1.7%	
8-Aug									0	0	0	0	2	0	4	0										6	1.7%
9-Aug	0	0	0	0	0	0	0	0									0	4	2	2	0	0	0	0	34	42	11.7%
10-Aug									0	0	0	0	2	2	0	0										4	1.1%
11-Aug	0	2	2	0	0	0	-12	0									2	2	2	-2	20	2	4	6	28	7.8%	
12-Aug									-2	-2	0	2	2	0	0	0										0	0.0%
13-Aug	0	0	0	0	0	0	2	0									0	0	0	0	0	2	0	0	4	1.1%	
14-Aug									-2	0	-4	2	2	0	0	0										-2	-0.6%
15-Aug	0	2	0	0	0	0	-2	0									-4	0	0	0	0	0	0	0	10	6	1.7%
16-Aug									0	-2	4	0	0	-4	-2	-2										-6	-1.7%
17-Aug	0	0	0	0	2	-2	4	0									2	4	0	2	0	-2	0	4	14	3.9%	
18-Aug									0	-2	-2	0	0	0	-2	0										-6	-1.7%
19-Aug	0	0	2	0	0	2	2	0															-4	-2	-2	-2	-0.6%
20-Aug	2	2	4	0	2									0	2	2	0	0	0	0	0	2	4	2	22	6.1%	
21-Aug	0	4	0	0	2																	2	24	0	32	8.9%	
22-Aug	2	0	0	0	0	2	2	-8	-2	-2	-48	2	-2									2	10	4	-38	-10.6%	
23-Aug	0	0	0	2	0									0	0	4	2	0	12	2	0	0	2	16	40	11.1%	
24-Aug	0	4	0	0	2																	2	2	8	18	5.0%	
25-Aug	-2	2	0	0	0	-2	-16	-100	4	-2	-2	0	0									24	0	40	-54	-15.0%	
26-Aug	2	0	0	2	0									0	0	2	2	0	4	2	2	8	60	100	184	51.1%	
27-Aug	8	2	4	0	-12																	0	4	-54	-48	-13.3%	

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Table 21. (Page 3 of 3).

Shaded areas indicate hours not counted

Date	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Total	% of Total
28-Aug	6	0	4	2	4	2	-34	-154	-2	0	-2	-2	10									34	4	6	-122	-33.9%
29-Aug	18	4	0	4	0									6	2	0	0	2	0	0	0	0	-2	0	34	9.4%
30-Aug	6	-2	0	4	0																	0	-40	8	-24	-6.7%
31-Aug	2	2	4	0	0	0	0	10	0	0	0	0	0									2	2	8	30	8.3%
1-Sep	4	0	0	0	-20									0	0	0	0	0	0	0	2	4	-4	0	-14	-3.9%
2-Sep	2	-2	-4	0	0																	0	0	0	-4	-1.1%
3-Sep	0	0	0	2	0	-2	2	-16	-4	0	-2	0	0									4	-30	-2	-48	-13.3%
4-Sep	-2	-4	2	0	0									-8	-6	2	-6	-2	0	0	-2	4	-30	2	-50	-13.9%
5-Sep	10	-2	0	2	0																	4	-2	-4	8	2.2%
6-Sep	2	0	6	0	0	0	0	-110	2	0	-4	-2	0									4	-10	2	-110	-30.6%
7-Sep	2	0	-2	0	-2									-2	0	0	2	-2	0	0	0	6	2	-4	0	0.0%
8-Sep	-2	2	2	0	0																	2	16	4	24	6.7%
9-Sep	0	0	0	0	0	0	0	0	2	4	0	0	0									14	8	2	30	8.3%
10-Sep	-10	-6	0	0	0									0	0	0	0	0	0	0	0	10	8	0	2	0.6%
11-Sep	2	0	2	0	0																	0	8	0	12	3.3%
12-Sep	2	0	0	0	0	End of counting season																	2	0.6%		
Total	76	48	44	30	-18	12	-46	-374	-2	-2	-54	6	34	0	10	14	28	18	46	20	36	142	58	234	360	
	21.1%	13.3%	12.2%	8.3%	-5.0%	3.3%	-12.8%	-103.9%	-0.6%	-0.6%	-15.0%	1.7%	9.4%	0.0%	2.8%	3.9%	7.8%	5.0%	12.8%	5.6%	10.0%	39.4%	16.1%	65.0%		

Table 22. Age, sex, length composition of chum salmon samples, Niukluk River counting tower, Norton Sound, 1995.

Sample dates: 7/5 - 8/10/95

Valid chum salmon samples 770

Brood Year and Age Group

	1992 (0.2)		1991 (0.3)		1990 (0.4)		1989 (0.5)		Totals	
	# of fish	Average length (mm)	# of fish	Average length (mm)						
Female chum	2	533	167	556	137	562	15	564	321	559
% of Total	0.3%		21.7%		17.8%		1.9%		41.7%	
Male chum	1	515	229	582	188	593	31	597	449	587
% of Total	0.1%		29.7%		24.4%		4.0%		58.3%	
Totals	3	527	396	571	325	580	46	586	770	575
	0.4%		51.4%		42.2%		6.0%			

Table 23. Chum salmon escapement age and sex composition, Niukluk River counting tower, Norton Sound, 1995.

Stratum Dates: 7/5 - 8/10/95
 Sampling Dates: 7/5 - 8/10/95
 Sample Size: 770 chum salmon
 Escapement: 86,333 chum salmon

		Brood Year and Age Group				
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	Total
Female chum	% of Sample	0.3%	21.7%	17.8%	1.9%	41.7%
	# in Escapement	224	18,724	15,361	1,682	35,991
Male chum	% of Sample	0.1%	29.7%	24.4%	4.0%	58.3%
	# in Escapement	112	25,676	21,079	3,476	50,342
Totals	% of Sample	0.4%	51.4%	42.2%	6.0%	
	# in Escapement	336	44,400	36,439	5,158	86,333

Table 24. Niukluk River counting tower climatological and stream observations, Norton Sound 1995.

Date	Time	Air Temp °C	Water Temp °C	% Cloud Cover	Water Gauge	Water Visibility	Remarks
22-Jun	2115	13	12	95%		Good	
23-Jun	1245	9	8	100%	32.75	Good	Rain in afternoon
24-Jun	1930	11	10	100%	31.00	Fair	Cloudy water
25-Jun	1840	9	9	100%	32.00	Fair	Drizzle, some debris
26-Jun	1245	9	8	100%	31.00	Fair	Rain
27-Jun	1300	10	8	65%	30.25	Good	
28-Jun	1200	12	9	5%	29.00	Good	
29-Jun	1500	18	12	60%	30.50	Good	
30-Jun	1230	15	12	100%	30.25	Good	Rain
1-Jul	1200	12	10	100%	31.00	Fair	
2-Jul	1200	9	10	100%	31.00	Fair	Rain & drizzle
3-Jul	1200	9	9	100%	28.25	Good	
4-Jul	1200	9	8	100%	27.00	Good	Rain & drizzle
5-Jul	1200	12	10	100%	26.75	Good	
6-Jul	2115	21	13	20%	25.75	Good	
7-Jul	1530	13	11	100%	25.75	Good	Rain & wind
8-Jul	1200	9	10	100%	27.50	Good	Rain & wind
9-Jul	1200	11	9	100%	31.00	Good	
10-Jul	1200	14	9	90%	27.25	Good	
11-Jul	1500	19	12	20%	25.00	Good	
12-Jul	1200	12	12	0%	24.50	Good	
13-Jul	1200	12	14	5%	24.25	Good	
14-Jul	1930	18	16	5%	24.00	Good	
15-Jul	1200	13	13	95%	23.00	Good	
16-Jul	2245	14	15	75%	22.50	Good	
17-Jul	1200	11	13	100%	22.00	Good	Showers
18-Jul	1200	9	11	100%	21.75	Good	Drizzle
19-Jul	1200	11	11	100%	21.25	Good	Sprinkles
20-Jul	1200	11	11	75%	20.75	Good	
21-Jul	1200	13	12	60%	20.25	Good	
22-Jul	1200	16	13	90%	20.50	Good	
23-Jul	1200	13	12	100%	20.75	Good	Rain
24-Jul	1200	17	13	95%	22.00	Good	
25-Jul	1200	18	13	20%	21.50	Good	
26-Jul	1200	17	13	0%	20.00	Good	
27-Jul	1200	16	13	40%	19.25	Good	
28-Jul	1200	17	13	95%	18.75	Good	
29-Jul	1500	23	15	30%	18.50	Good	
30-Jul	1200	16	13	60%	18.75	Good	
31-Jul	1800	19	16	10%	18.25	Good	
1-Aug	1500	17	15	50%	18.00	Good	

- continued -

Table 24. (Page 2 Of 2).

Date	Time	Air Temp °C	Water Temp °C	% Cloud Cover	Water Gauge	Water Visibility	Remarks
2-Aug	1200	13	13	100%	17.75	Good	
3-Aug	1200	11	12	15%	17.75	Good	Rain at night & windy
4-Aug	1200	13	12	35%	17.50	Good	Windy
5-Aug	1200	11	12	100%	17.00	Good	
6-Aug	1200	9	11	100%	17.75	Good	Rain all night
7-Aug	1200	12	11	50%	18.50	Good	
8-Aug	1200	10	11	90%	17.25	Good	
9-Aug	1200	12	11	100%	18.00	Good	Rain
10-Aug	1200	9	11	95%	21.00	Good	
11-Aug	1200	13	11	40%	20.00	Good	
12-Aug	1200	14	11	95%	18.50	Good	
13-Aug	1200	12	11	65%	18.50	Good	
14-Aug	1200	12	11	45%	17.50	Good	
15-Aug	1200	13	11	0%	17.25	Good	
16-Aug	1200	10	11	100%	17.00	Good	
17-Aug	1200	12	11	100%	16.75	Good	
18-Aug	1200	12	10	50%	16.50	Good	
19-Aug	1200	13	11	50%	16.50	Good	
20-Aug	1200	13	11	100%	16.25	Good	
21-Aug	1200	13	11	100%	16.25	Good	Light rain
22-Aug	1200	13	11	95%	17.75	Good	Light rain
23-Aug	1200	13	11	90%	17.50	Good	
24-Aug	1200	14	11	0%	16.75	Good	
25-Aug	1200	14	11	25%	16.50	Good	
26-Aug	1200	13	11	50%	16.00	Good	
27-Aug	1200	15	11	20%	16.00	Good	
28-Aug	1200	15	11	0%	15.75	Good	
29-Aug	1200	14	11	95%	15.50	Good	
30-Aug	1200	10	11	100%	16.75	Good	Rain
31-Aug	1200	11	11	70%	20.00	Good	Rain
1-Sep	1200	9	10	50%	21.00	Good	
2-Sep	1200	8	9	75%	19.75	Good	
3-Sep	1200	5	7	90%	20.00	Good	
4-Sep	1200	5	6	20%	20.25	Good	
5-Sep	1200	4	6	30%	19.50	Good	
6-Sep	1200	8	7	0%	19.25	Good	
7-Sep	1200	11	8	95%	19.00	Good	
8-Sep	1200	11	8	100%	18.75	Good	
9-Sep	1200	12	8	100%	18.75	Good	
10-Sep	1200	13	8	50%	19.50	Good	
11-Sep	1200	9	8	25%	18.75	Good	

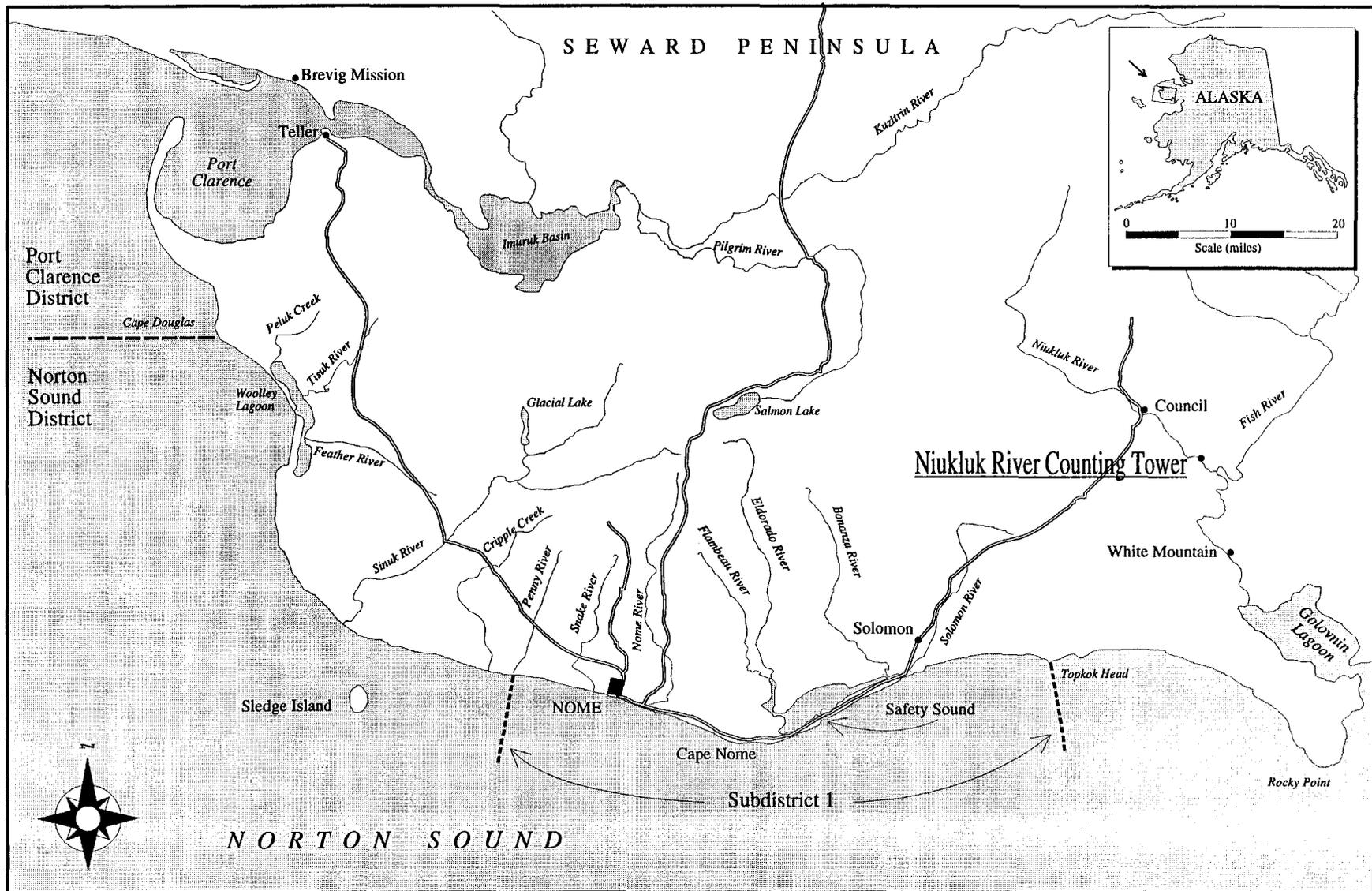


Figure 1. Area Location map of the Niukluk River counting tower project site , Norton Sound , 1995

Figure 2. Niukluk River tower cumulative salmon passage, Norton Sound 1995.

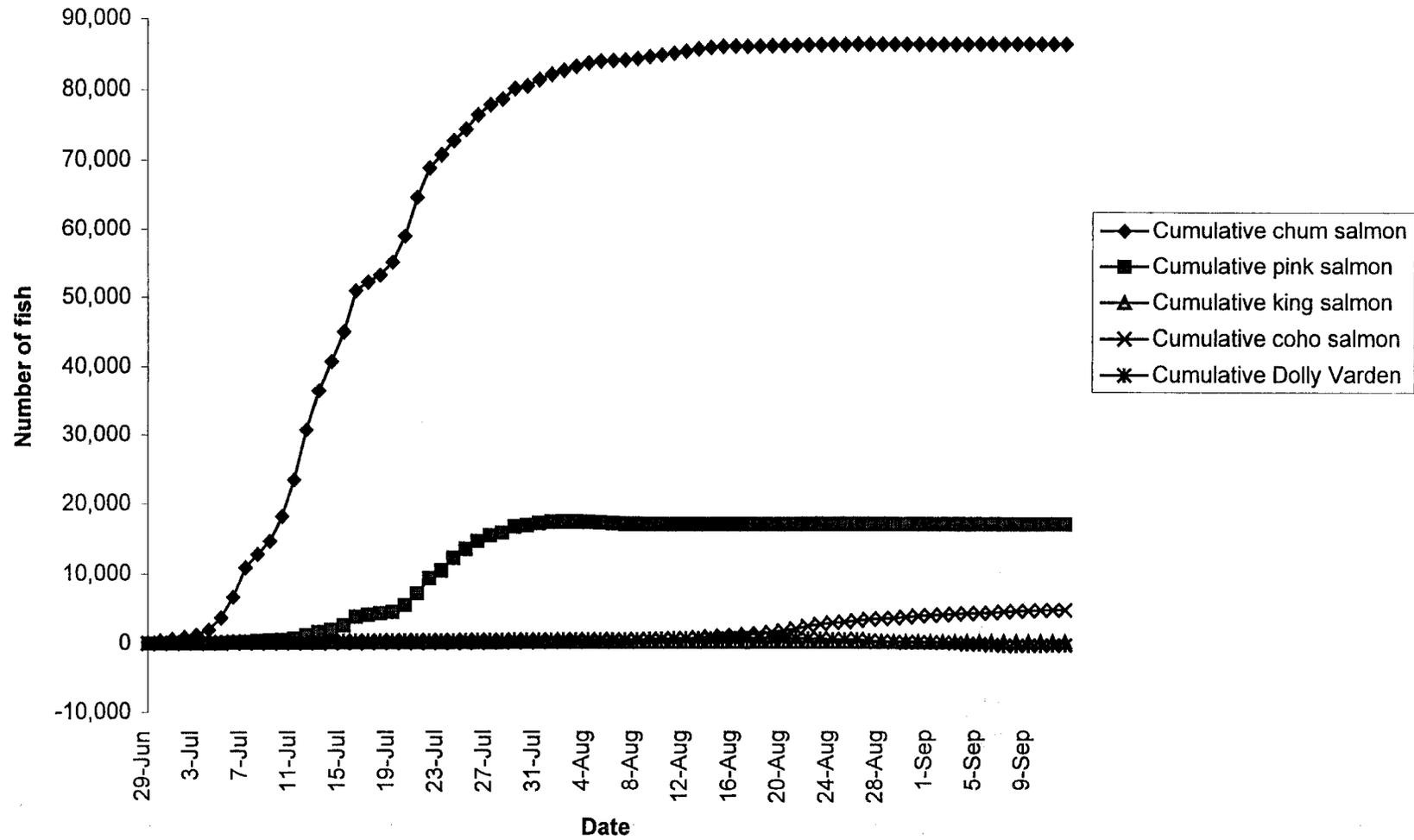


Figure 3. Daily chum salmon migration past the Niukluk River counting tower, Norton Sound, 1995.

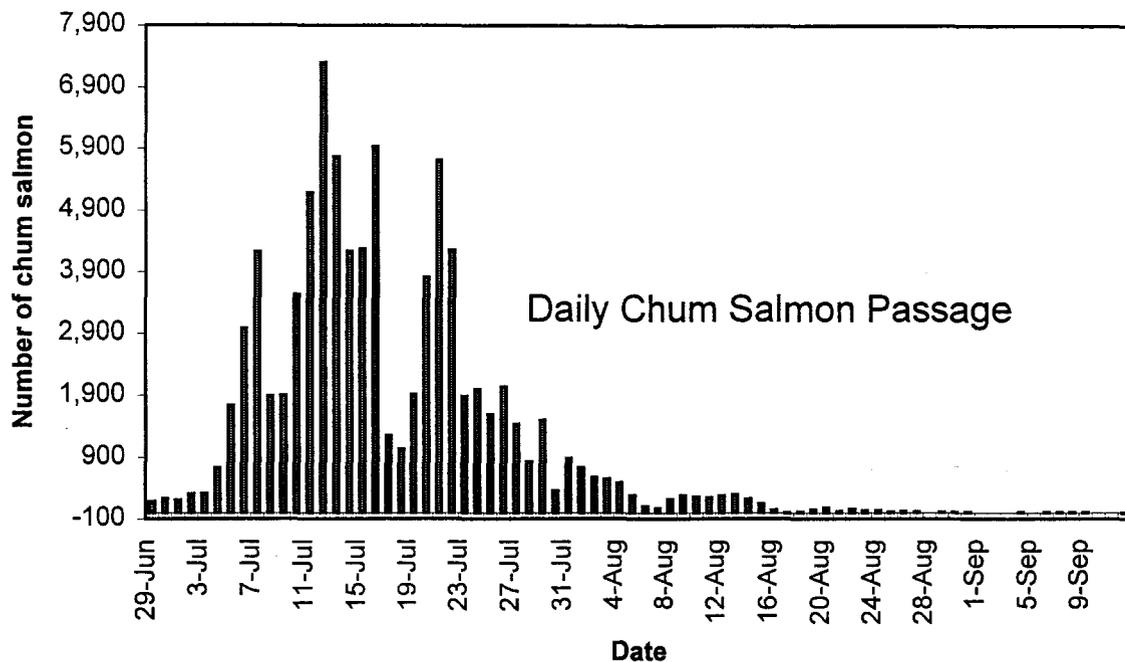


Figure 4. Cumulative chum salmon migration past the Niukluk River counting tower, Norton Sound, 1995.

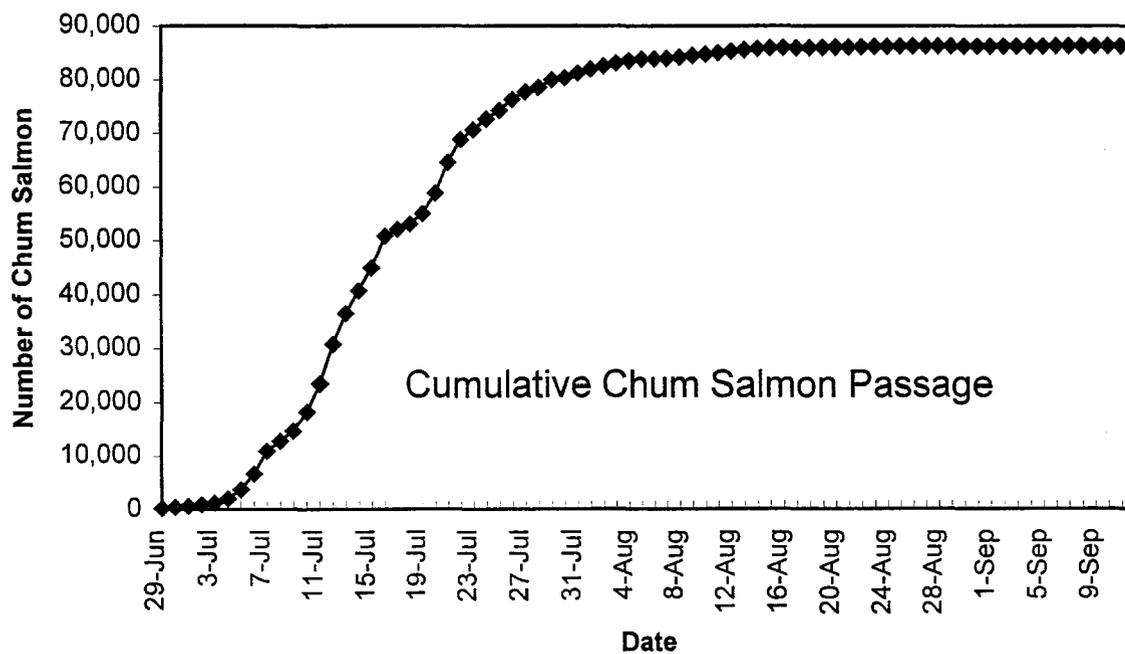


Figure 5. Daily pink salmon migration past the Niukluk River counting tower, Norton Sound, 1995.

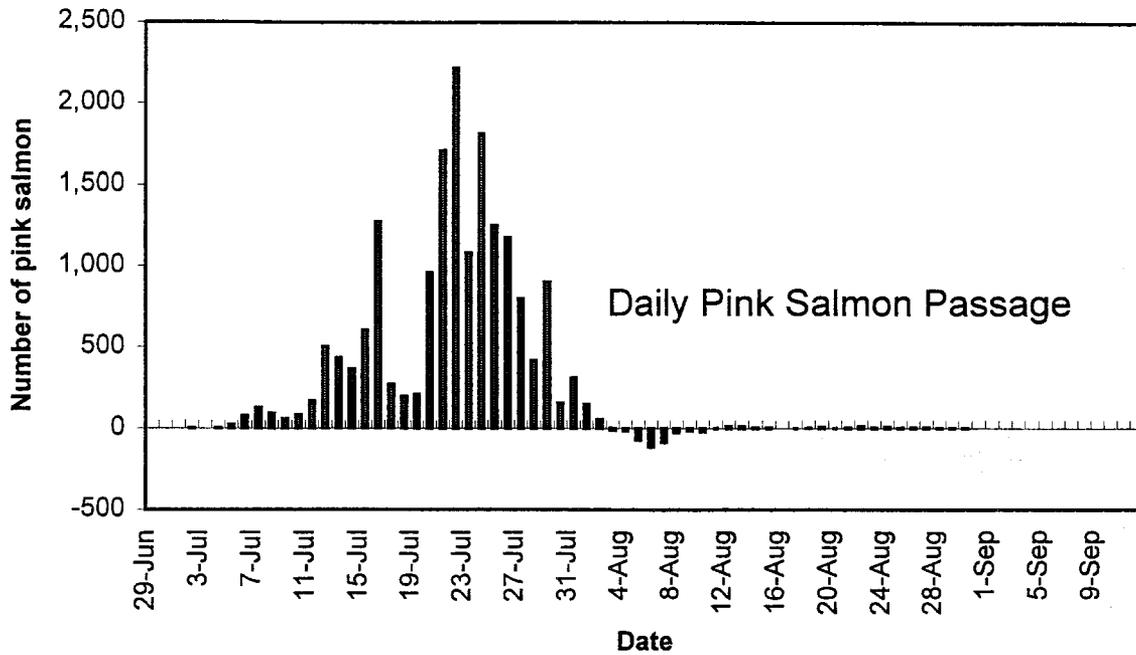


Figure 6. Cumulative pink salmon migration past the Niukluk River counting tower, Norton Sound, 1995.

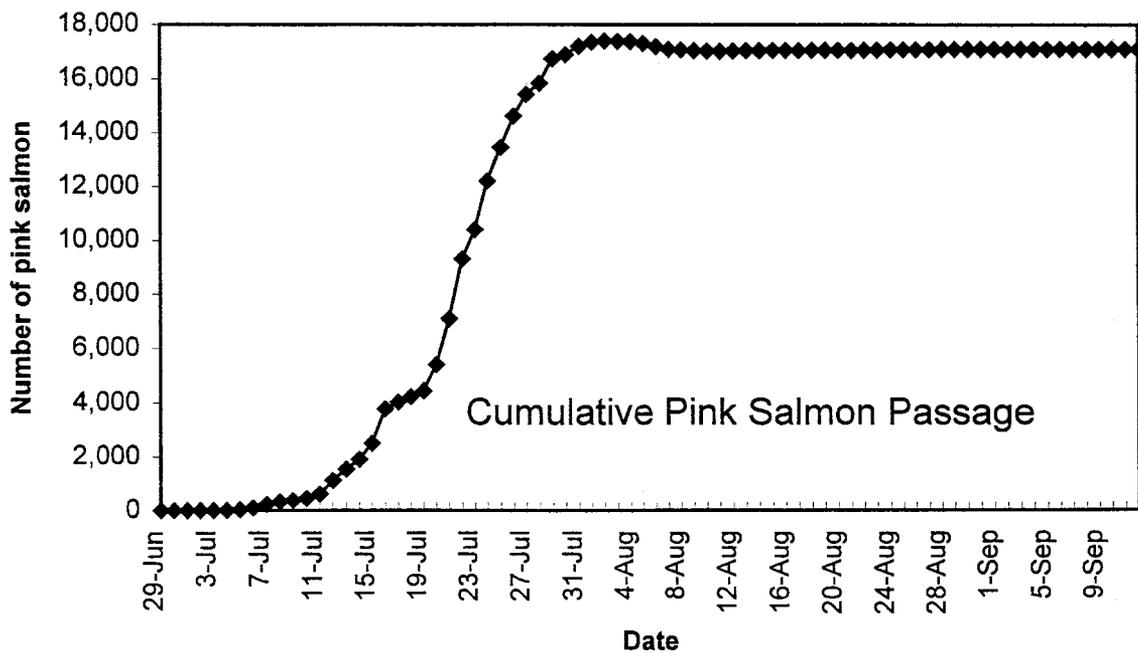


Figure 7. Daily king salmon migration past the Niukluk River counting tower, Norton Sound, 1995.

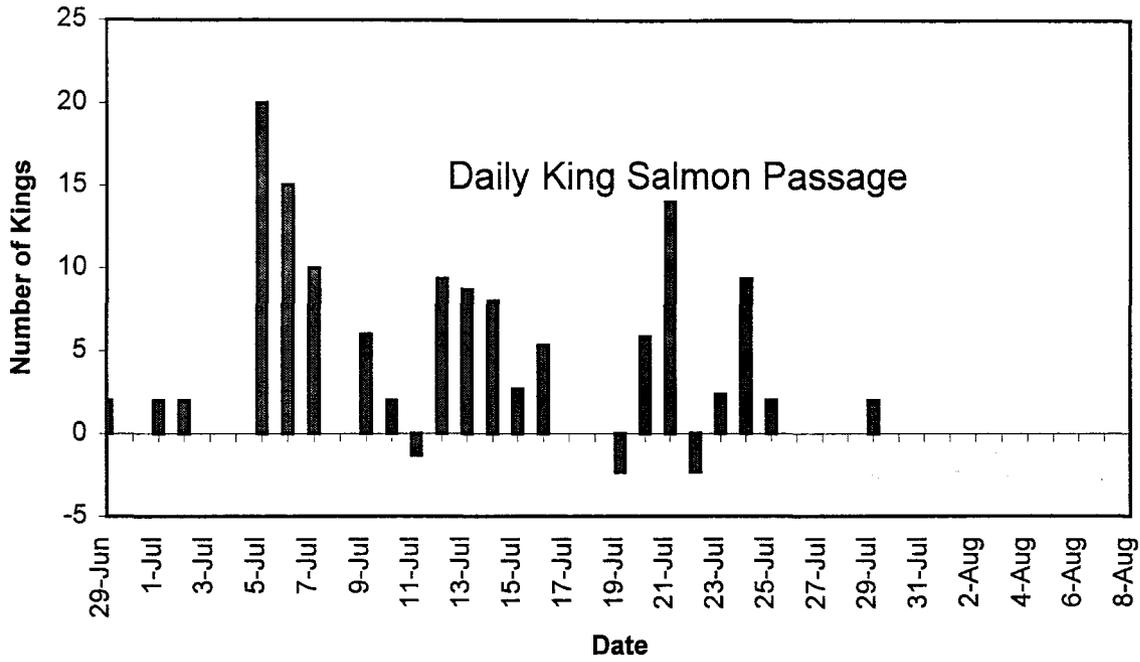


Figure 8. Cumulative king salmon migration past the Niukluk River counting tower, Norton Sound, 1995.

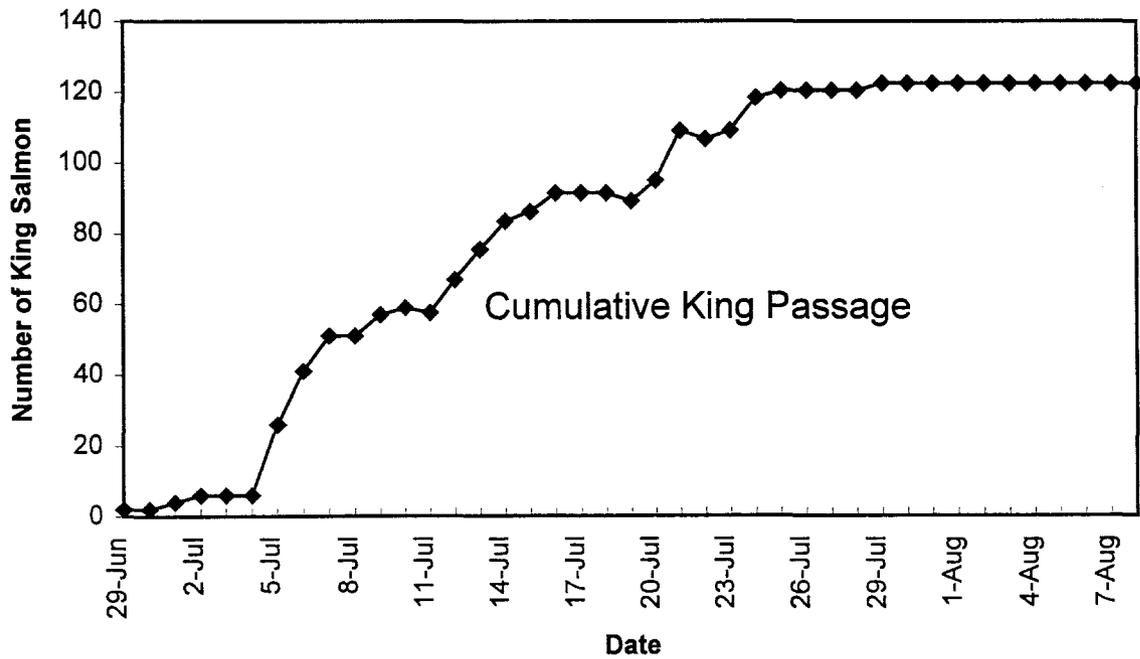


Figure 9. Daily coho salmon migration past the Niukluk River Counting Tower, Norton Sound, 1995.

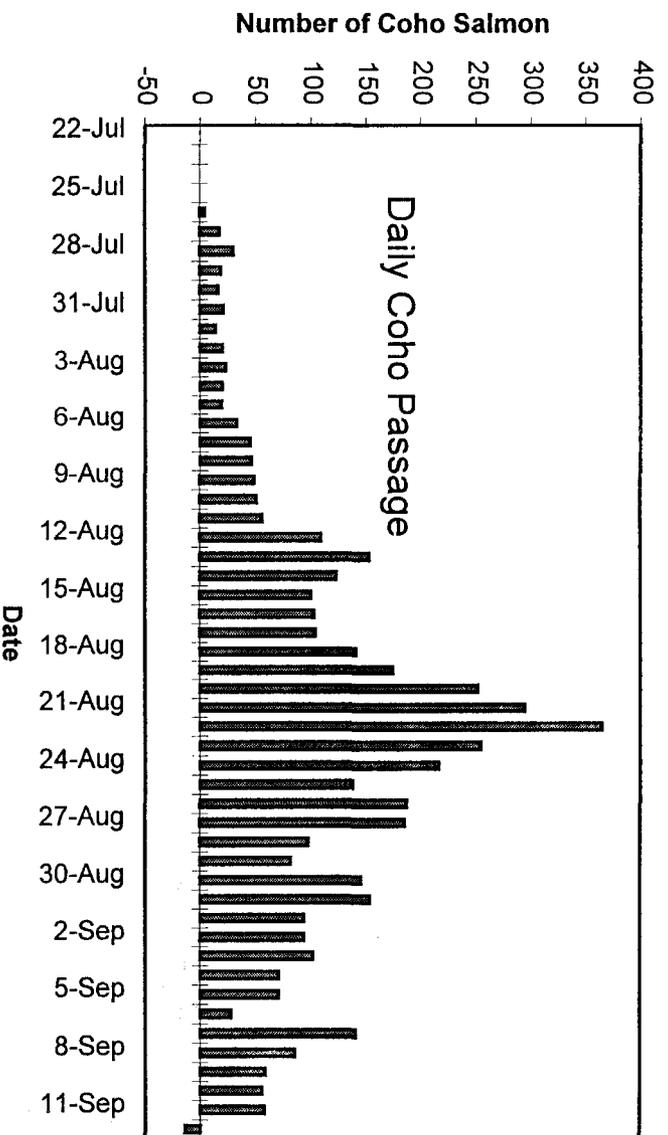


Figure 10. Cumulative coho salmon migration past the Niukluk River counting tower, Norton Sound, 1995.

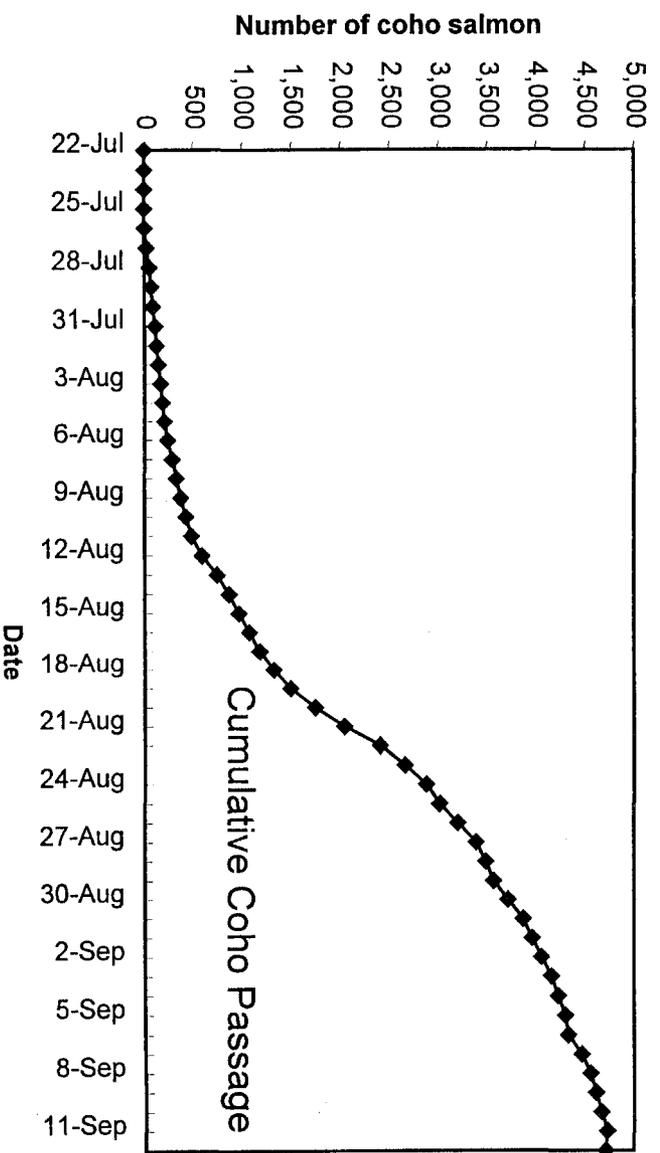


Figure 11. Daily Dolly Varden migration past the Niukluk River counting tower, Norton Sound, 1995.

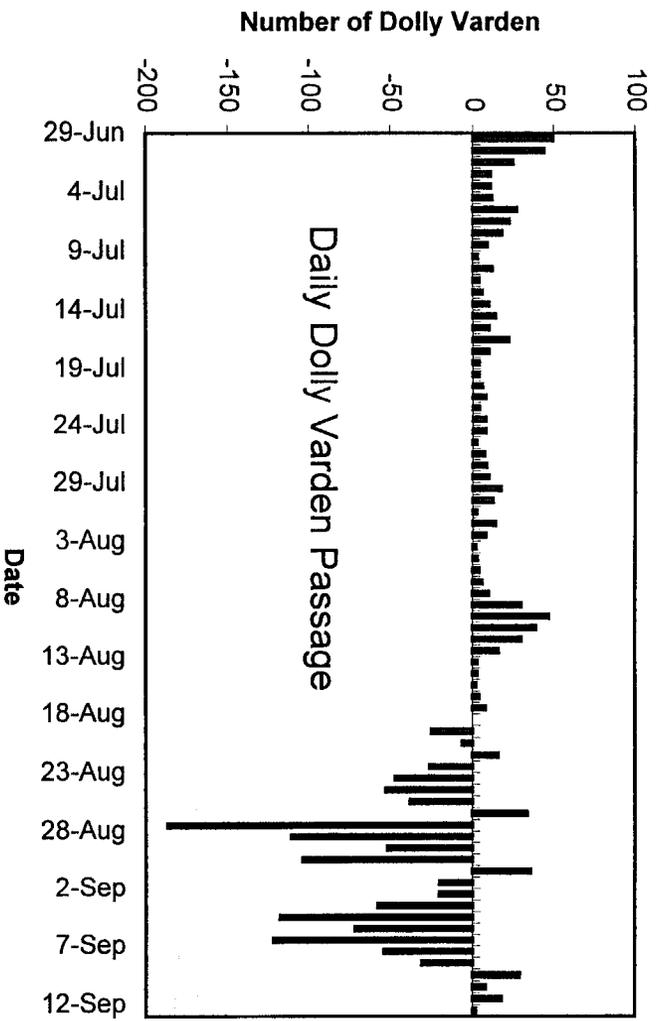


Figure 12. Cumulative Dolly Varden migration past the Niukluk River counting tower, Norton Sound, 1995.

