Subtask 7.10
Phase 1 Final Draft Report
Adult Anadromous Fisheries Project
ADF&G / Su Hydro 1981

ALASKA DEPARTMENT OF FISH AND GAME

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1. SUMMARY

Salmon escapement monitoring was conducted at four stations on the Susitna River and one station on the Yentna River. These stations were operational from late June to mid September, 1981. Methods used included side scan sonar counters and fishwheels. Chinook salmon escapement surveys were effected in late July and early August on tributary streams. A radio telemetry tagging program monitored the migrational movements of adult chinook, chum and coho salmon between late June and early September. The Susitna River mainstem was surveyed for spawning activity by three crews from late July through September using primarily drift gill nets, electroshocking equipment and egg deposition pumps. Set netting was effected at river mile (RM) 150 in the Susitna River mainstem immediately below Devil Canyon (RM 151) from late July to mid September. Susitna River tributary streams and sloughs between the Talkeetna River confluence (RM 99) and Devil Canyon were surveyed on foot for spawning salmon from late July through September.

Fishwheel catch and sonar enumeration data indicate the chinook salmon migration was underway before the fishwheels and sonar counters were placed. Peak migration timing was determined at Sunshine (RM 80), Talkeetna (RM 103) and Curry (RM 120) stations. Commencement of migration was recorded at only Curry Station. A correlation may exist between river discharge and upstream migration. The 1981 Susitna River chinook salmon escapement was dominated by four year old fish. Length measurements segregated by age and sex indicate that chinook salmon at Talkeetna and Curry stations were significantly larger than those intercepted at Sunshine Station. Early smolting is a possible

cause based on a higher percentage of Talkeetna and Curry station fish having spent less than one winter in freshwater before smolting. Radio telemetry investigations indicate that the confluence of the Talkeetna, Chulitna and Susitna rivers (RM 99) is a probable chinook salmon milling area and also that some upper Susitna River chinook salmon stocks use lower Devil Canyon (RM 151) as a milling area.

1981 chinook salmon escapement in the Susitna River basin was generally above average based on comparative recent year surveys.

Sockeye, pink, chum and coho salmon escapements and timing were documented at each mainstem sampling station. The data indicate that the majority of 1981 Susitna River sockeye, pink, chum and coho salmon escapement originated in the Susitna River reach above (upstream of) the Yentna River confluence (RM 28). Escapement samples collected from fishwheel interceptions indicate average length differences in sockeye and pink salmon stocks between the Yentna River subdrainages and the Susitna River basin above the Yentna River confluence.

Scale samples collected at the mainstem sampling stations indicate Susitna River sockeye, chum and coho salmon stocks were comprised predominantly of age 5_2, 4_1 and 4_3 fish respectively.

Twelve Susitna River mainstem salmon spawning sites were located between RM 64.5 and RM 135.2. Chum salmon were found spawning at 10 of the sites and coho salmon were recorded spawning in the same area as chum salmon at two sites.

Sockeye, chum and coho salmon were gill netted in the Susitna River mainstem less than one mile below Devil Canyon (RM 151) indicating a milling area exists in the lower canyon.

Eight additional salmon spawning sloughs and streams were identified in the Susitna River reach between the Chulitna River (RM 99) and Devil Canyon (RM 151).

Radio telemetry tagging investigations on chum and coho salmon indicate that both species display milling behavior in the Susitna River mainstem above Talkeetna (RM 99). Coho salmon displayed the greatest milling movement; radio tagged coho salmon were found in the Susitna River several miles upstream of their spawning area. Necropsies of radio tagged coho and chum salmon indicate successful spawning occurred.

2. INTRODUCTION

This Phase I Final Draft Report of the Adult Anadromous Fisheries project presents the data collected on the five species of adult salmon in Susitna River by the Alaska Department of Fish and Game (ADF&G) during the 1981 Su Hydro Aquatic Studies. The five species found in the Susitna River are:

Chinook Salmon, *Oncorhynchus tshawytscha*
Sockeye Salmon, *Oncorhynchus nerka*
Pink Salmon, *Oncorhynchus gorbuscha*
Chum Salmon, *Oncorhynchus keta*
Coho Salmon, *Oncorhynchus kisutch*

These studies are part of the Fish Ecology (Subtask 7.10) Phase I studies for the Susitna Hydroelectric Project.

The primary objectives of the fish ecology studies for the Susitna Hydroelectric Project are to: (1) describe the fisheries resources of the Susitna River, (2) assess the impacts of development and operation of the Susitna Hydroelectric Project on these fisheries resources, and (3) propose the mitigation measures to minimize adverse impacts (Alaska Power Authority Susitna Hydroelectric Project, Environmental Studies Procedures Manual, Subtask 7.10, Fish Ecology Impact Assessment and mitigation planning; prepared by Terrestrial Environmental Specialists August 1981). The task of meeting the first of these study objectives is the responsibility of the ADF&G under a reimbursable services agreement (RSA) with the Alaska Power Authority and the second and third are the responsibility of Terrestrial Environmental Specialists (TES).

3. OBJECTIVES

The data contained in this Phase I Final Draft Report of the Adult Anadromous Fisheries project on the five species of adult salmon in the Susitna River was collected by the Alaska Department of Fish and Game to meet the specific objective and tasks outlined below:

<u>Objective 1.</u> Determine the seasonal distribution and relative abundance of adult anadromous fish populations produced within the study area.

Task 1.1 Enumerate and characterize the runs of the adult anadromous fish.

Task 1.2 Determine the timing and nature of migration, milling and spawning activities.

Task 1.3 Identify spawning locations within the study area (i.e., subreaches of the mainstem sloughs and side channels, tributary confluences, lakes and ponds, etc.) and estimate their comparative importance.

4. METHODS

4.1 Mainstem Escapement Sampling

Five escapement monitoring stations were established in early June 1981 at the locations identified in Figure E.4.1. Individual site description maps are provided in Figures EA-1 through EA-5. The operating dates and gear deployed at these sites were as listed in Table E.4.1. Yentna, Sunshine, Talkeetna and Curry stations were operated under the direction of Su Hydro, Adult Anadromous Investigations personnel. Susitna Station was operated by Alaska Department of Fish and Game, Commercial Fisheries Division personnel.

Table E.4.1. Anadromous adult salmon sampling locations, gear type and operational dates on mainstem Susitna and Yentna Rivers, Adult Anadromous Investigations, Su Hydro Studies, 1981.

SAMPLING SITE	LOCATION		PERIOD		GEAR DEPLOYED	
	RIVER	RIVER MILE	BEGIN	END	SONARS	FISHWHEELS
Susitna Station	Susitna	26	6/27	9/2	2	2
Yentna Station	Yentna	04	6/29	9/7	2	2
Sunshine Station	Susitna	80	6/23	9/15	2	4
Talkeetna Station	Susitna	103	6/22	9/15	2	4
Curry Station	Susitna	120	6/15	9/21	-	2

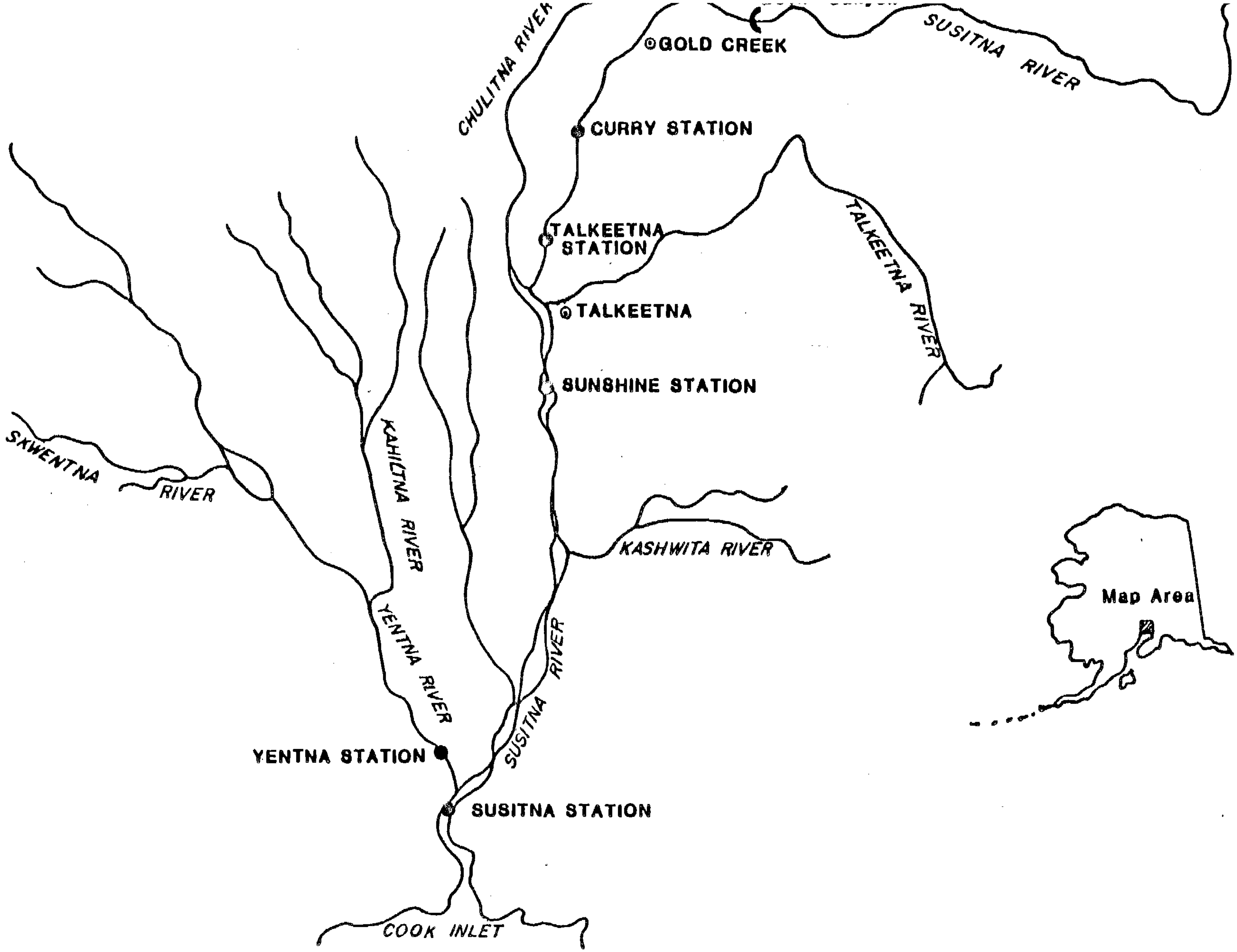


Figure E.4.1. Susitna Basin with field stations and major glacial streams defined, Adult Anadromous Investigations, Su Hydro Studies, 1981.

The side scan sonar (SSS) counters used at the escapement monitoring stations were deployed and monitored by trained personnel in accordance with the 1980 Side Scan Sonar Counter Installation and Operational Manual written by the Bendix Corporation (1980). A brief narrative of how a sonar works is provided in the following paragraph.

A sonar counter essentially coverts electrical energy into acoustical energy (sound waves) and counts underwater targets by measuring changes in acoustical echoes. Each SSS counter is composed of a transducer, aluminum substrate with reflector (target), an electronic-printer, a 12 volt battery, a solar charger and attendant cableware (Figures E.4.2 and E.4.3). The transducer is vertically mounted on the shore end of the substrate and emits repeating sound signals in a conical 2° and 4° alternating beam just above the substrate. The transducer also receives returning echoes from the target which is mounted vertically on the offshore end of the substrate. The entire substrate rests on the bottom, perpendicular to the shore. As upstream migrant fish pass over the substrate, they reflect transmitted sound waves back to the transducer and are then recorded as counts on the electronic counter-printer. The counter-printer tallies the counts and hourly provides a print-out of the number of fish passing over each of 12 lineal substrate sectors.

During the 1981 season, each SSS counter was monitored with an oscilloscope a minimum of four times daily for 30 minutes. Fish related echoes displayed on the oscilloscope were hand tallied. The ratio of oscilloscope counts attributed to fish and SSS counts were compared and used to adjust the counter for accuracy. A fishwheel was operated near each counter to provide species composition data for apportioning sonar counts.

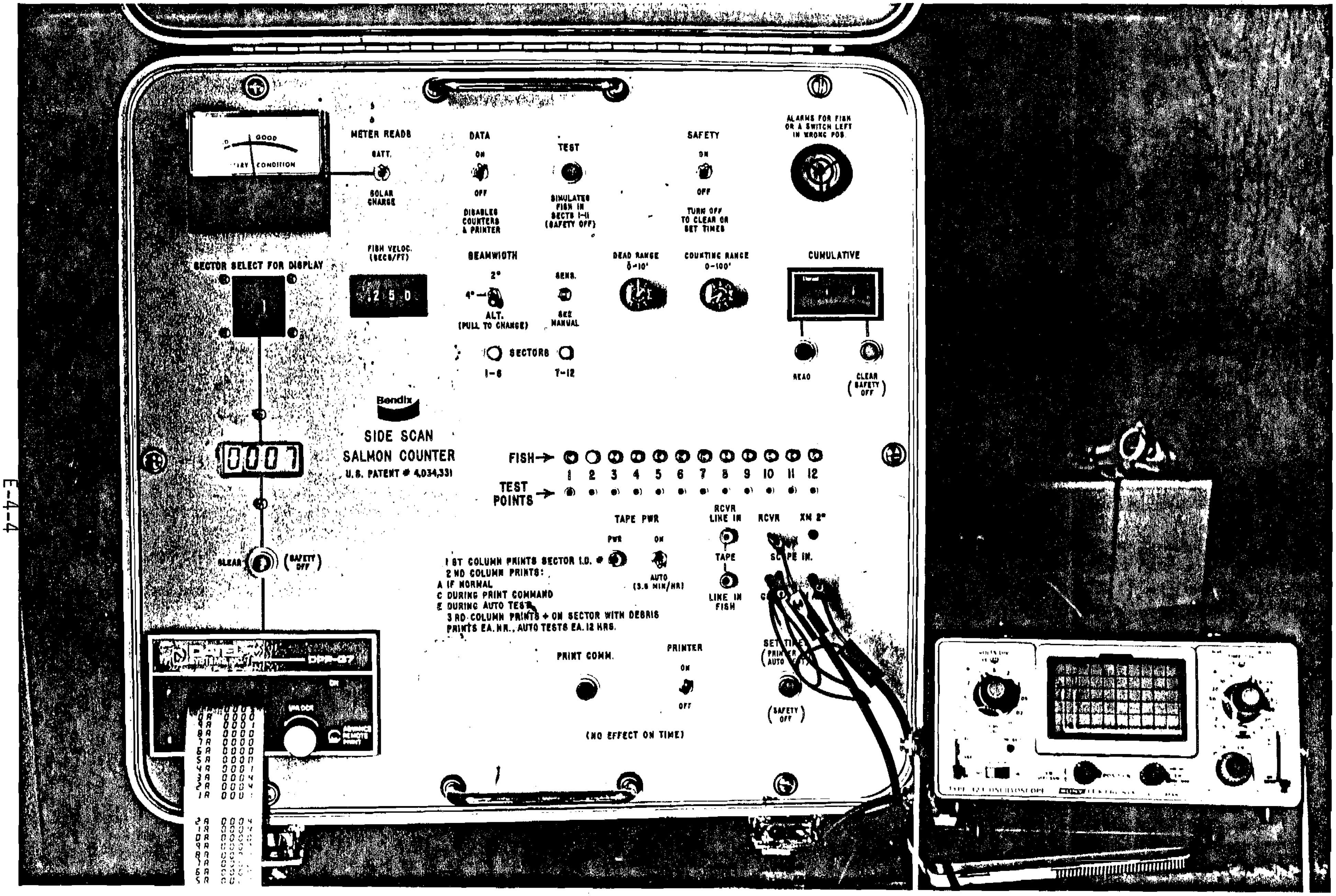


Figure E.4.2. 1980 Model Bendix Side Scan Salmon Sonar Counter with attendant oscilloscope monitoring fish passage, Adult Anadromous Investigations, Su Hydro Studies, 1981.

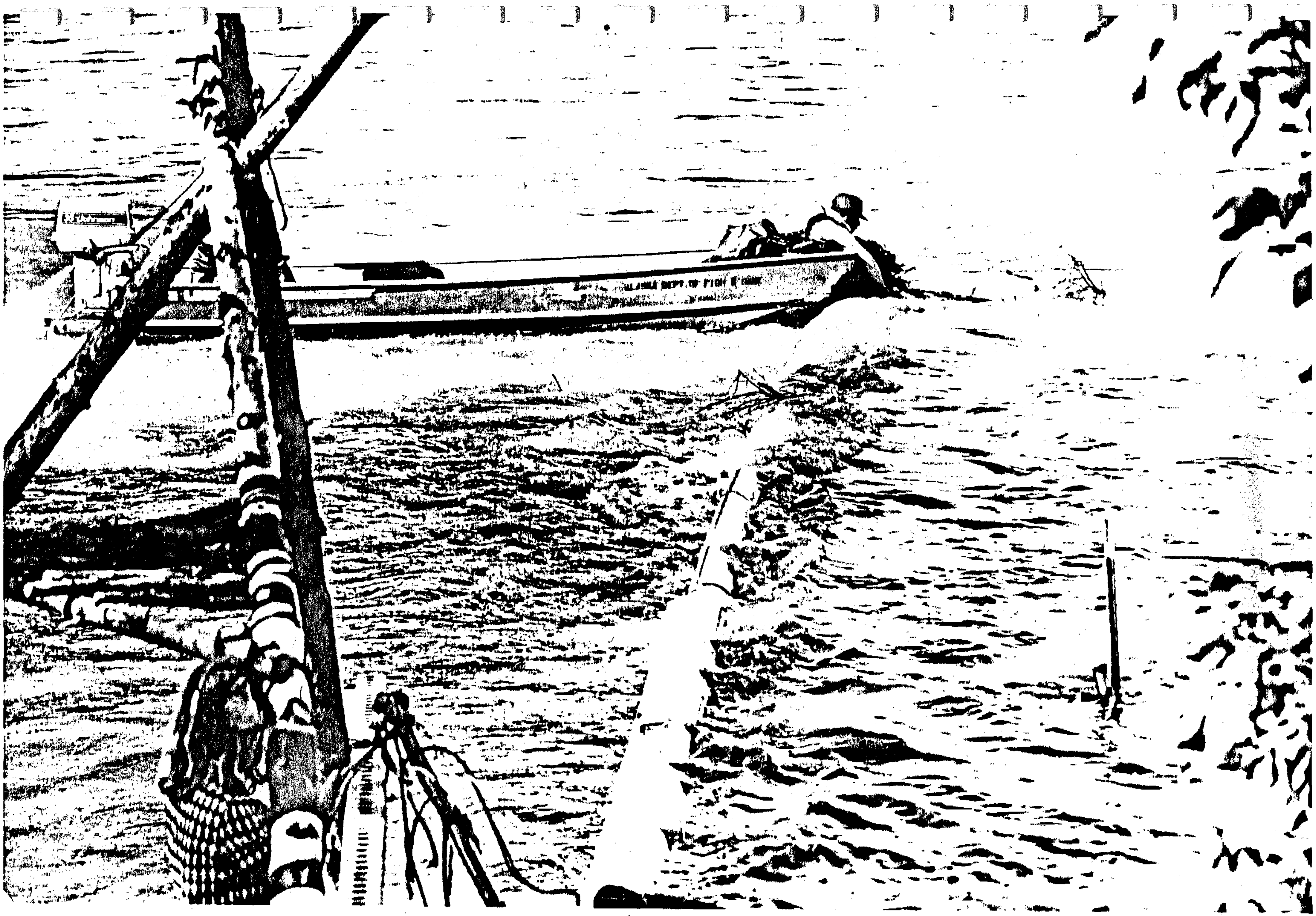


Figure E.4.3. Removing flood instated debris from a SSS substrate which has been raised to the surface to allow cleaning, Adult Anadromous Investigations, Su Hydro Studies, 1981.

The fishwheels used at each project location were of identical design with two baskets and two paddles (Figure E.4.4). Floatation was provided by styrofoam logs shielded by a plywood frame. The baskets had an average length, width and depth of 2.4, 1.7 and 0.6 meters (m) respectively and were constructed of native spruce poles. The basket frames were covered with 7.6 centimeter (cm) rubber coated fencing material which was replaced during the season on most baskets by similar size, creosote coated webbing. The paddles were also made from spruce poles of the same length and width as the baskets. The fishwheel axles were built from 20.3 cm squared spruce logs capped at each end with a steel collar that held a 3.8 cm steel shaft set into self adjusting bearing blocks. The bearing blocks were bolted to an adjustable wood frame that permitted the axle to be raised or lowered at 15.2 cm steps to a minimum and maximum height of 30.5 and 122 cm, respectively, above the top of the floats. A 122 cm long, 76.2 cm wide and 122 cm deep live box was attached to the inshore side of each fishwheel.

Each fishwheel was held in position by a cable bridle anchored to an onshore deadman and by an inshore mounted boom log lodged between the bank and the inshore float. An inshore weir was used on each wheel, except those at Sunshine Station to deflect inshore migrants into the fishing area of the baskets. Weir panels were constructed of alder and willow poles vertically spaced on 2.5 to 5.1 cm centers or when available from 7.6 cm mesh, fencing material.

Each weir was built to conform to the river bottom at the location of installation and extended from the shore perpendicular to the downstream end of the

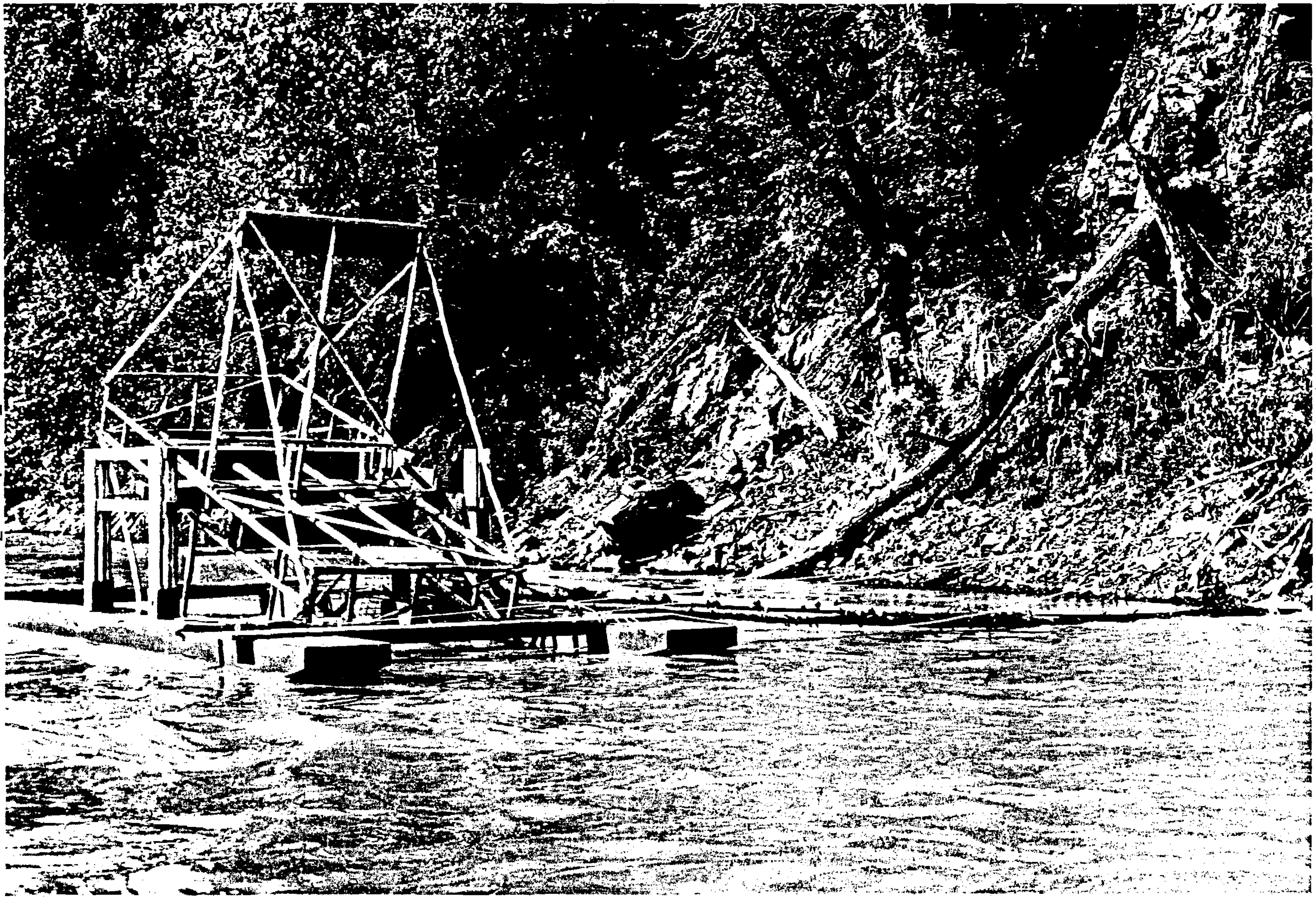


Figure E.4.4. Fishwheel operating off west bank Susitna River at Curry Station, Adult Anadromous Investigation, Su Hydro Studies, 1981.

livebox. Weirs were not used at Sunshine Station because of debris problems.

All fishwheels were adjusted daily to insure the baskets fished within 15.2 cm or less of the bottom. Depending on site characteristics, primarily river velocity, the wheels rotated at speeds ranging from 2.0 to 5.5 revolutions per minute (rpm). The preferred speed was 2.5 rpm based on design.

All fishwheels were scheduled to operate continuously, 24 hours per day. However, due to occasional flooding and excessive debris, maintenance and repair work, and at Sunshine Station because of periodically high catches which could not always be processed due to safety and personnel constraints, continuous operation was not always possible. Sampling checks were usually made four or more times daily at each fishwheel.

Age, length and sex samples were collected daily at each sampling station from all fishwheel caught chinook salmon and from 40 sockeye, 25 chum, and 25 coho salmon. Age samples were obtained by removing the "preferred" scale located two rows above the lateral line on a diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin. Sex was determined from morphologic characteristics. Fork Length (FL) measurements were taken from mid-eye to fork of the tail and recorded to the nearest millimeter (mm). Pink salmon, exclusively two year old fish, were sampled only for length and sex at a rate of 40 per day per station. Average processing time for collection of age, length and sex samples per fish usually ranged between 20 and 30 seconds. All fish were immediately released following sampling.

All fishwheel intercepted sockeye, pink, chum and coho salmon at Sunshine, Talkeetna and Curry stations were tagged. An exception was that on three non-consecutive days at Sunshine Station an insufficient number of tags were on location to tag the entire catch. Two types of tags were used (Table E.4.2.). At Sunshine and Talkeetna stations color coded Floy-4 spaghetti tags were deployed. Petersen disc tags, 2.5 cm in diameter, were used at Curry Station. The Petersen disc tags were inserted through the cartilage immediately ventral to the insertion of the dorsal fin. Buffer discs, 20.6 cm in diameter, were used to prevent the tagging pins from wearing through the Petersen disc and causing tag loss. Floy FT-4 spaghetti tags were inserted in same location as the Petersen disc tags and each was secured against the back of the fish by a tightly drawn overhand knot. Tagging time per individual fish ranged from 10 to 30 seconds. All fish were released immediately after tagging.

Table E.4.2. Tag type and color used at Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

TAGGING LOCATION	RIVER MILE (RM)	TAG	
		TYPE	COLOR
Sunshine Station	80	FT-4/spaghetti	Int. Orange
Talkeetna Station	103	FT-4/spaghetti	Yellow
Curry Station	120	Petersen Disc	Int. Orange

4.2 Survey Investigations

4.2.1 Chinook Salmon Escapement Surveys

Chinook salmon escapement surveys were initiated in the third week of July and terminated in the second week of August. Surveys were performed by helicopter, single engine fixed-wing aircraft and in one instance, by foot. Surveyors wore polaroid sunglasses to enhance their ability to observe and enumerate fish. Estimation counts were held to a minimum and the majority of the fish were individually enumerated with hand held tally counters.

4.2.2 Sockeye, Pink, Chum and Coho Salmon Surveys

4.2.2.1 Mainstem Surveys

From mid July to early October, a survey crew was assigned to each of three subreaches of the Susitna River mainstem between the estuary and Devil Canyon as outlined below:

Susitna Station Survey Crew	Estuary to Kashwitna River	(RM 0 to RM 61)
Sunshine Station Survey Crew	Kashwitna River to Chase	(RM 61 to RM 108)
Gold Creek Station Survey Crew	Chase to Devil Canyon	(RM 108 to RM 151)

The crews used a combination of drift gill nets, electroshockers, echo recorders and egg deposition pumps to sample the mainstem Susitna River for presence or absence of mainstem spawning activity. Drift gill nets were deployed over a wide range of sites. Site selection was based on a brief visual assessment of the following criteria which generally suggested suitability of a particular site as a spawning area and the feasibility of operating a drift net:

1. Substrate composition
2. Relative water velocity
3. Water turbidity
4. Water depth
5. Presence of debris
6. Presence of spawned out fish or fish surfacing.

Several times in the season high water conditions obscured many of the visual parameters used to identify potential spawning sites. When this occurred, aerial photographs taken earlier during low water flows were examined and, from the photos, likely spawning areas were identified and sampled.

Drift gill nets used in sampling the mainstem were 15.2 m long, 1.5 m deep, 13.3 cm stretch mesh nylon web, and were fished from 6.1 m flat bottom riverboats each equipped with a 75 horsepower jet outboard. A net was typically deployed by casting one end into the river from the bow of the boat as it moved slowly in reverse. The other end of the net was tied to the bow and the boat was then maneuvered in a manner that the net extended semi-perpendicular to the river current. Surface and subsurface debris along with fluctuating depths generally governed the distance fished. These same nets were used in areas that were either too shallow or too narrow to sample effectively by the drifting technique. In some cases, the net was used as a set net by anchoring one end to the boat bow and the other end to a portable anchor or natural deadman. In other instances, the net was deployed as a seine by manual means.

Salmon caught by drift netting, seining or by set netting were not assumed to be spawning at the catch location unless the criteria listed below were met:

1. Fish exhibits spawning maturation color and morphology and;

2. Fish expels eggs or milt when slight pressure is exerted on the abdomen and;

3. Fish is in vigorous condition, with an estimated 25 percent or more of the eggs or milt remaining in the body cavity and;

4. Additional fish are provided from the site that meet criteria 1 through 3 above.

Survey crews were equipped with a Lowrance Model LRG-1510B echo recorder to survey the Susitna River mainstem for salmon spawning activity. The plan was to locate fish by directing the transducer beam horizontally across the river bed. A horizontal mode was chosen because of the limitation of vertical scans due to restricted water depths in the mainstem. In conducting a horizontal side scan the recording unit was nearly always tuned to record at the 9.1 or the 18.2 m range to take advantage of refined dimension in resolution and detail on the graph printout. The sensitivity setting on the recorder was set at the 3/4 point or higher for additional detail. The transducer was attached to an adjustable aluminum gunnel bracket that allowed it to be lowered into the water column at various depths. Echo recordings were taken with the transducer in the horizontal mode at depth ranges from 61 cm from the surface to 30 cm from the bottom. Sites surveyed were generally semi-placid areas of the river due to the limited ability of the transducer bracket to withstand water force without bending or breaking.

The survey crews electroshocked areas of the mainstem Susitna River with a Model VVP-3C Coffelt electroshocker, using a 3500 watt Homelite generator as a power source (Figure E.4.5). Input to the electroshocking unit was 230 volts alternating current (A.C.) and output voltage was one of three types, A.C., direct current (D.C.), or pulsating D.C. One to three and one half amps of D.C. or pulsating D.C. was found to be effective capturing adult salmon. The output power was split with one lead going to a foot switch and the other to the electrodes; the anode (+) electrode being the dip net and the cathode (-) electrode the boat. Depression of a foot switch allowed the flow of current through the water. The activation period ranged from five to 10 seconds followed by a 20 to 40 second pause to avoid a possible herding effect on fish. Safety was accomplished through the use of rubber boots and gloves; in addition, a kill switch was attached to the generator and kept in a ready position by the boat operator at all times.

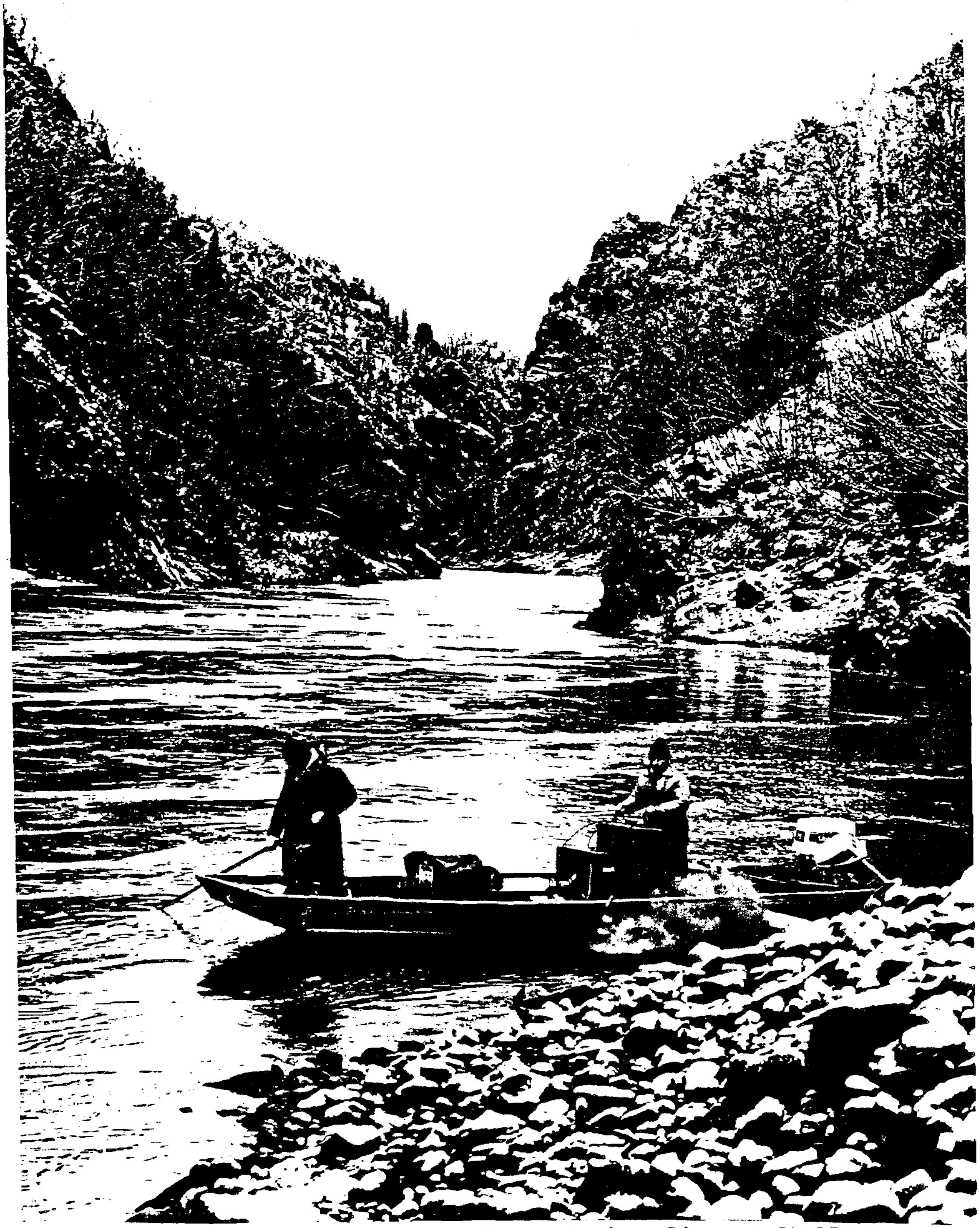


Figure E.4.5. Electrofishing on mainstem Susitna River at RM 150.6 at the entrance to Devil Canyon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Egg deposition sampling was conducted with a Homelite two cycle, single stage, backpack mounted water pump and two circular, standing screen baskets with cod end nets. Each basket sampled a 1,800 cm^2 area. The height of the basket was 45.7 cm. Sampling with this gear was limited to areas of not more than 45.7 cm deep and where electroshocking or gill netting produced fish which met the previously defined criteria for spawning or where visual surveys earlier in the season revealed suspect redds or spawning activity.

From late July to mid September, the Gold Creek survey crew fished four hours every five days, one - 15.2 m long, 1.5 m deep, 13.3 cm stretched mesh nylon gill net in eddies in the Susitna River mainstem between Devil Canyon and RM 149.4, 1/2 mile above Portage Creek. The gill net was staked at one end to the shore and held off shore at the other end in a slight downstream arc by a 35 pound Navy anchor. Species and spawning conditions were recorded on all gill net caught fish.

4.2.2.2 Slough and Tributary Stream Surveys

The Sunshine and Gold Creek survey crews conducted adult salmon enumeration counts on all spring fed sloughs and tributary streams between the Chulitna River and Devil Canyon on a weekly basis. In addition, the Sunshine survey crew made tag recovery counts at pre-selected times on several known spawning tributaries between Sunshine Station and the Chulitna River confluence (Table E.4.3.).

Table E.4.3. Survey schedule on selected salmon spawning streams between Sunshine Station and Chulitna River, Adult Anadromous Investigations, Su Hydro Studies, 1981.

SPAWNING AREA	LOCATION[1/] (RIVER MILE)	SURVEY PERIOD	SURVEY FREQUENCY
Birch Creek	88.4	8/1-8/30 9/7-8/21	weekly
Troublesome Creek	97.8	8/7-8/30 9/7-9/21	weekly
Byers Creek	97.8	8/7-8/21	weekly
Byers Lake	97.8	9/15-9/30	weekly
Question Creek	84.1	9/1-9/30	weekly
Answer Creek	84.1	9/7-9/30	weekly
Swan Creek	97.8	9/21-9/30	once
Horseshoe Creek	97.8	9/21-9/30	once
Clear Creek	97.1	8/21-8/27	once

1/ Confluence of these streams or their receiving waters with the Susitna River mainstem.

The spawning ground surveys were performed on foot by two crew members. One counted live fish and the other counted carcasses. Tag recovery counts were made at the same time by the crew member enumerating live fish. Tag type and color were recorded by species on each live fish bearing a tag. The second crew member removed tags from carcasses and recorded the tag type, number and color, and species.

4.3 Radio Telemetry Investigations

Radio tracking operations were effected on chinook, chum and coho salmon. A sample size of 16 chinook, 11 chum and 10 coho salmon was selected. The radio telemetry transmitters, receivers, and antennas were obtained from the Smith-Root Corporation, Vancouver, Washington. All transmitters used were Model P-40. The antennas used were a loop antenna Model LA-40 and a paddle antenna Model PA-40. The two type of receivers used were a manual receiver Model RF-40 and a scanning receiver Model SR-40. Each transmitter was individually identifiable and operated on a carrier frequency ranging from 40.650 to 40.740 MHZ. Transmitter life expectancy was 75 to 90 days.

Two transmitter sizes were used. The larger transmitters measured 9.7 cm long, 1.9 cm wide, supported a 16.5 cm long antenna and weighed 38.6 grams. The smaller transmitters weighed 23.6 grams, measured 7.6 cm long, 1.6 cm wide and had a 13.0 cm long antenna. Each transmitter was sealed in a rubber coated, waterproofed plastic case and was equipped with an external, insulated, water tight antenna. A small bar magnet was taped to each transmitter to break the electrical circuit and conserve battery life until used. The larger (38.6 grams) transmitters were used on chinook salmon exceeding 87.6 cm FL. The smaller (23.6 grams) transmitters were inserted in lesser sized chinook salmon and were used entirely in radio tracking chum and coho salmon.

Prior to field operations, the radio transmitters were immersed in water for 48 hours and tested for signal strength and frequency on both manual and scanning receivers. Malfunctional transmitters were returned to the manufacturer for repair. To enable anglers to return the transmitter and catch data to project personnel, adhesive waterproof labels were affixed to those transmitters which tested satisfactorily.

All chinook salmon selected for radio tagging were captured by fishwheels and processed similarly at the Talkeetna and Curry Stations. Those fish visually judged longer than 80.6 cm FL were transferred by a standard dip net from the fishwheel holding box to a wooden tank containing approximately 15 liters of fresh water. After a few minutes the fish usually calmed and was examined briefly for external injuries and spawning condition. Vigor was appraised prior to and during this inspection and any fish displaying little or no movement or loss of equilibrium was deemed "stressed". Fish containing fresh wounds or which were less than 76.2 cm and/or those fitting the definition of "stressed" were classified as unsuitable for tagging. Stressed fish were removed from the box and held in shallow, slow moving water by hand until they revived and forcefully swam away. Processing continued using this criteria until a fish suitable for tagging was encountered.

After a fish was examined and found to be suitable for tagging, preparations were made for implantation of the radio transmitter. Tricaine methanesulfonate (MS-222®), an anesthetic, was sprinkled sparingly into the holding tank in an amount that caused a slight decrease in opercular movement followed by loss of equilibrium within two to five minutes. Slightly more anesthetic was added if the fish remained active after the first application.

Once anesthetized, the sex of the fish was determined by external examination of morphological characteristics. Next, a FL measurement was taken and several scales were removed from the preferred zone for age determination. The fish was then suspended in a moistened canvas sling and weighed to the nearest 0.1 kg and returned to the anesthetic tank. As the fish was held firmly against one side of the tank a numbered Petersen disc with buffer pad was mounted on a presharpened needle and inserted about 2.5 cm beneath the second dorsal fin ray. A blank Petersen disc was then slipped on the protruding needle, and the disc snugged against the flesh by twisting the needle firmly against the blank disc. The measuring, weighing, scale collection and Petersen disc tagging process usually took 60 to 90 seconds.

Prior to insertion the radio tag was checked for a final time while submerged in a container of water and tested for signal strength and frequency of transmission. After testing, a #2, nickel finish, beak hook was tied to the free end of the antenna wire. The antenna, with attached hook, was placed hook first into a 1.95 cm diameter, 50.2 cm long plexiglass tube which served as an insertion instrument. A wider, 2.5 cm diameter, 32.4 cm long plexiglass tube was slid over the small tube until the transmitter was cradled in the larger tube. Glycerine, a water soluble lubricant, was liberally poured on the transmitter to ease insertion in the fish. As one person held the fish ventral side up with the head elevated at about a 45° angle, the other person inserted both tubes and the transmitter to the fish's esophagus. The smaller rod was slowly pushed inward until the transmitter disappeared from view into the stomach. The fish was immediately immersed for 20 to 30 seconds and lifted again at the same angle. The antenna hook was positioned slightly off center in the roof of the mouth to prevent rupturing a major artery. Pressure was applied until the barb protruded (Figure E.4.6.). Verification was then made to determine if the transmitter was correctly positioned. Next, water

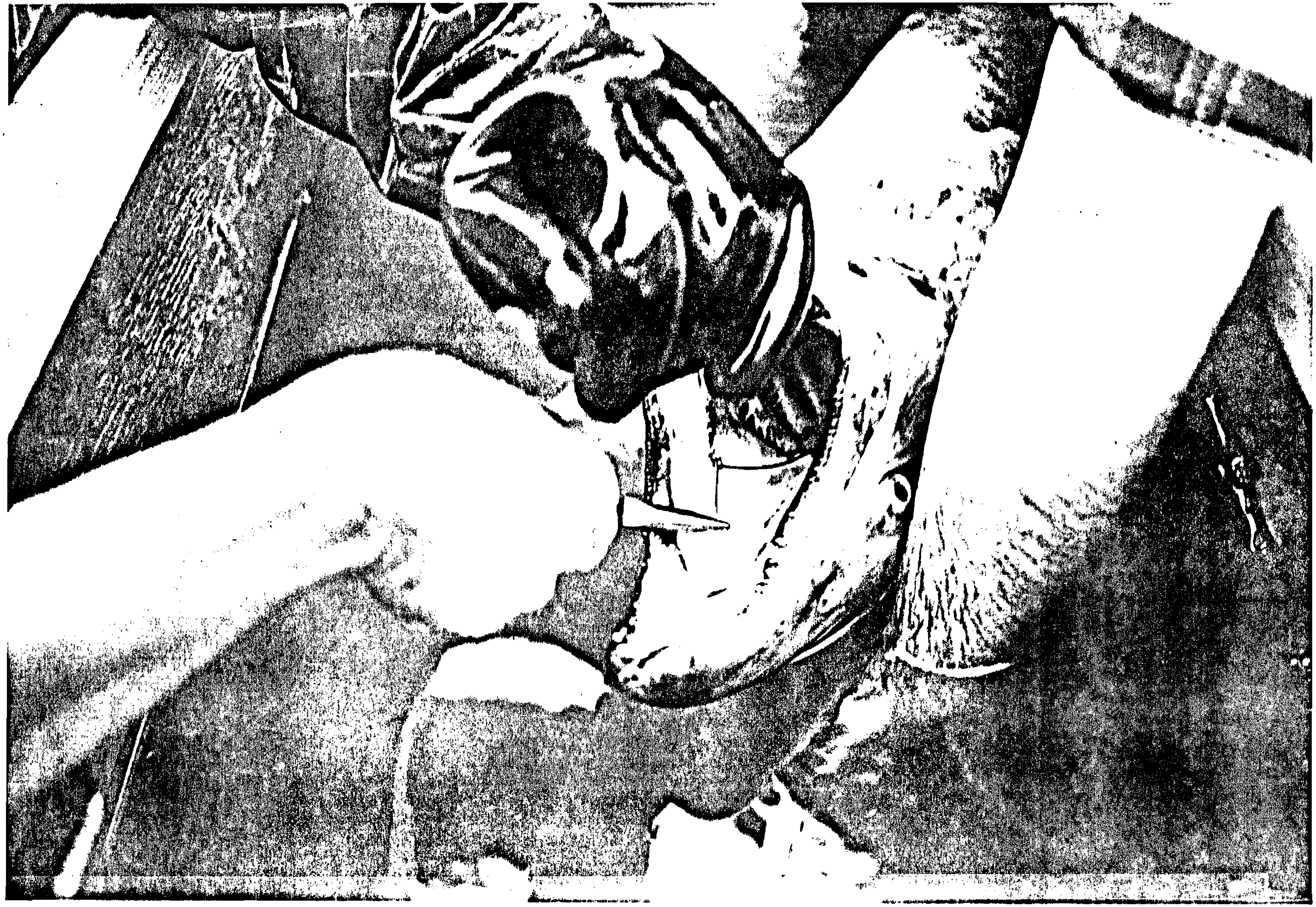


Figure E.4.6. Attaching radio transmitter antennae to adult salmon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

was removed from the tank and fresh water was added to allow the fish to recover from the anesthetic. Four to eight water changes were usually required for recovery depending on the amount of MS-222® used. Once the fish displayed increased muscular and opercular activity, it was removed from the tank and held by hand in the river until it forcefully swam away. Tag implantation and antenna anchoring usually took two to three minutes. Total elapsed time for the entire tagging process between introduction of MS-222R and first addition of fresh river water varied from eight to 12 minutes, depending on how long it took the fish to become sedated. Recovery times from the anesthetic ranged from seven to 30 minutes depending on the amount of MS-222® used.

Preliminary literature research revealed no information about internal radio transmitter implants in chum salmon. In late July, three adult chum salmon were experimentally radio tagged with dummy transmitters to ascertain whether the method used on chinook salmon would be suitable. The chum salmon were taken from Sunshine Station fishwheels. The first experimentally implanted transmitter was positioned in the posterior of the stomach [Figure E.4.7 (A)]. Immediately after tagging, the fish was pithed and necropsied. The stomach was found to be very thin walled and had ruptured. The tear was 5.3 cm long and extended from the posterior end of the transmitter toward the fish's mouth. The second and third chum salmon experimental implants were made in progressively anterior positions, posterior of the esophagial sphincter muscle. Despite the anterior transmitter location the thin walled stomachs

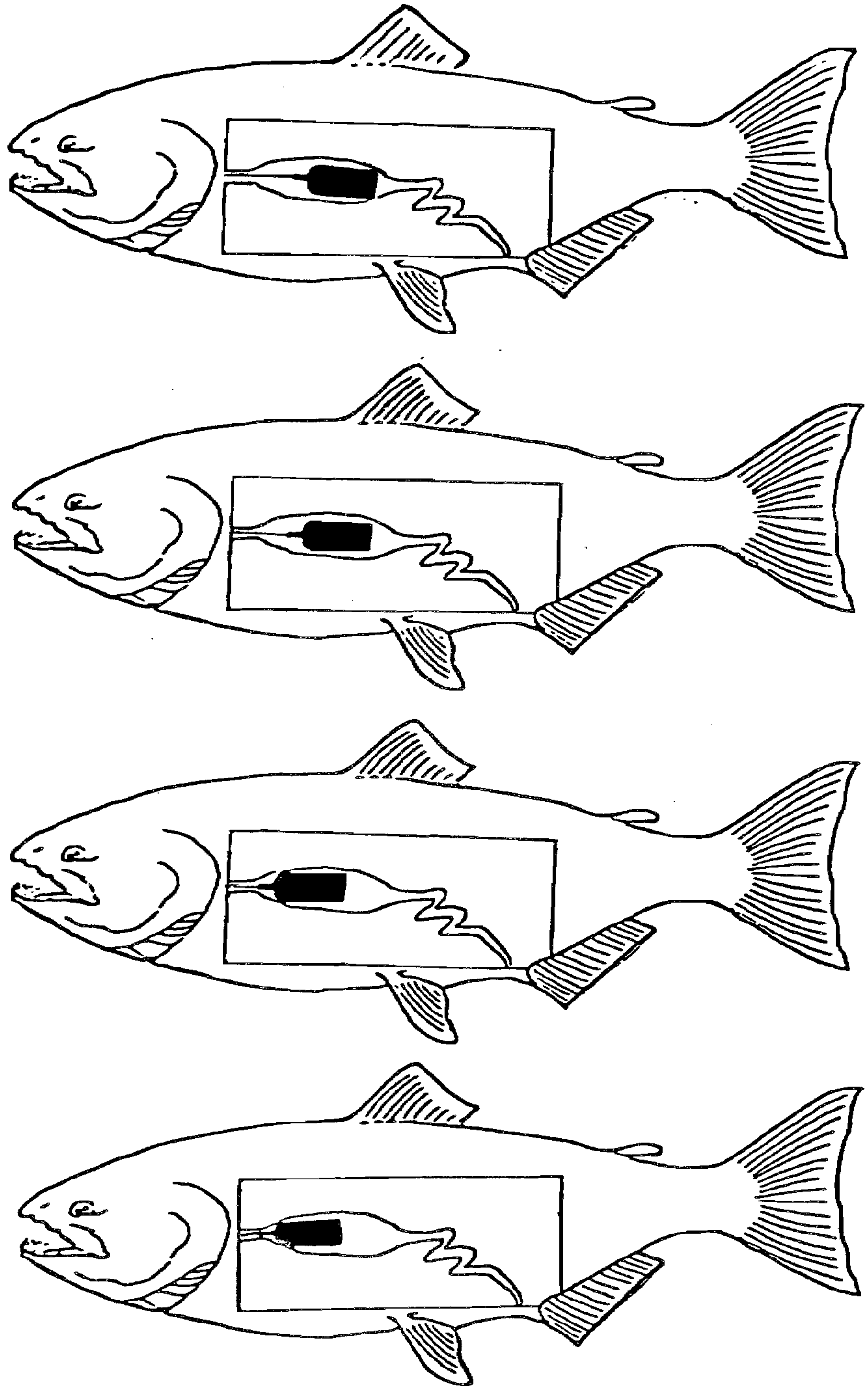


Figure E.4.7. (A) Posterior placement of radio transmitter in stomach. (B) and (C) Progressively anterior placement of radio transmitter in stomach. (Antenna to transmitter connection not visible in rear of mouth). (D) Pre-anterior placement of radio transmitter in stomach. (Antenna to transmitter connection visible in rear of mouth). Adult Anadromous Investigations, Su Hydro Studies, 1981.

ruptured [Figure E.4.7 (B-C)]. The antenna also extended too far forward in the fish's mouth, causing it to sag and become entangled in the lower jaw and gills.

From these results the decision was made to implant the transmitter in the anterior portion of the stomach cavity in chum salmon [Figure E.4.7 (D)]. This location was determined to be the point at which the anterior (antenna) end of the transmitter just disappeared from sight behind the esophagial sphincter. When so positioned, the rubber coated reinforcement at the antenna/transmitter connection point was barely visible in the rear of the fish's mouth.

The problem of antenna placement was remedied by lacing the antenna through the fish's kype. To accomplish this the hook method was rejected and an extension was added to the antenna. A 15 cm piece of heat-to- shrink material, a wire insulating material made of plastic, was fastened to the anterior two cm of the antenna. Following transmitter implantation a hollow Floy tagging needle was used to pierce the kype from inside the mouth. Care was taken to avoid puncturing the major artery that lies at the center of the roof of the mouth. The heat-to-shrink material was slid into the hollow needle and the needle pulled through the kype, lacing the elongated antenna through the tissue. This allowed maximum extension of the antenna without damage to gills and simultaneously suspended the antenna so that signal transmission was enhanced. The antenna extension was secured to the dorsal surface of the kype by crimping one-half of a precut size 10/12 electrical butt splice on the heat-to-shrink material. A plastic buffer pad was placed between the flesh and the butt splice to prevent tissue damage. Any excess heat-to- shrink material above the butt splice was then removed.

Radio transmitter implantation methodology for coho salmon was initially identical to that described for chum salmon, however transmitter and antenna modifications were required to prevent transmitter regurgitation by adult coho salmon. The first two tagged coho salmon were released with extremely anterior implanted transmitters with the heat-to-shrink material antenna modification. The third coho salmon which was radio tagged following the same procedure used on the first two fish, regurgitated the transmitter before recovering from the anesthetic.

To prevent future transmitter regurgitation by coho salmon, a wire modification was adopted. A 30 cm long piece of 16 gauge baling wire was wrapped twice around the anterior tip of the transmitter and extended forward, parallel to the antenna. Several wraps of waterproof plastic tape secured the wire to the transmitter. The tip of the antenna was extended and taped to the wire to enhance signal transmission and prevent possible abrasion to the fish.

Regurgitation of radio transmitters has been evidenced in at least one other study. Two of 23 adult coho salmon evidently regurgitated radio transmitters (identical to those used in this study, but without antenna modifications) downstream of their release sites in the White River, Puget Sound, Washington (personal communication, Don Chapman). The transmitters in the White River coho study were lubricated and esophogically implanted with the antenna trailing through the operculur rather than being anchored to the kype as they were in the Susitna River study.

The technique adopted to implant radio tags in coho salmon was almost identical to that used for chum salmon, however prior to pushing the sharpened wire through the kype, an outward facing loop was made, so that it rested against the inside of the kype. A buffer was then snugged against the dorsal side of the kype and one half of an electrical connection was crimped over the wire and against the buffer. The wire loop and buffer-crimp combination prevented the transmitter from moving forward and being regurgitated by the fish.

When chinook, chum and coho salmon were being implanted with radio tags the fishwheel, at the tagging site, was shutdown and kept deactivated for 20 minutes following release to prevent possible recapture. Each radio tagged fish was monitored with a loop or paddle antenna for 10 to 20 minutes after being tagged. (Figure E.4.8).

Fish tracking was conducted by boat along the mainstem Susitna River from RM 99.0 to as far upstream as RM 142.0. The boat used was a 6.6 m Wooldridge riverboat powered by a 460 cm^3 four cylinder inboard engine with a two-stage Hamilton jet. Tracking occurred at one to four day intervals depending on stream flow conditions and fish distribution.

Fish tracking was conducted using both manual and scanning receivers. Both receivers were encased in a waterproof wood box. A loop antenna and an outdoor speaker were connected to the scanning receiver to detect and signal

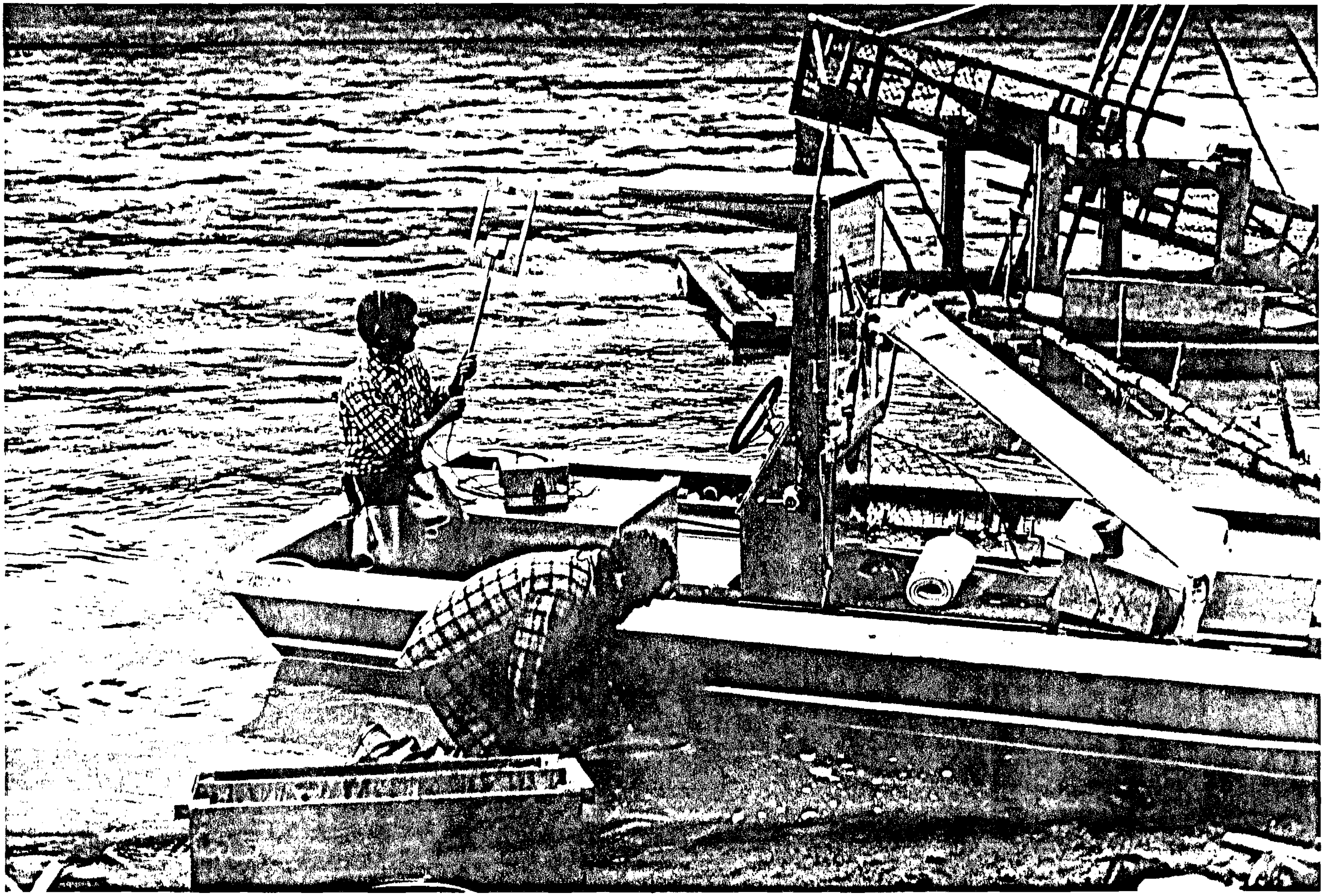


Figure E.4.8. Preparing to release radio tagged chum salmon while tracking another chum salmon in the Susitna River at east bank Curry Station fishwheel, Adult Anadromous Investigations, Su Hydro Studies, 1981.

the occurrence of a radio tagged fish while monitoring from the boat. A smaller paddle antenna was connected to the manual receiver to pinpoint a tagged fish's location to within six meters. While the scanning receiver automatically searched all transmitter frequencies in use, the individual operating the manual tracker scanned specific transmitter frequencies when a tagged fish was detected. A triangulation procedure was implemented by rotating the loop antenna slowly from various river locations. The position of the fish was determined and its location plotted on black and white aerial photographs (scale 1:40,000) of the river. Its position was then logged to the nearest 0.1 river mile.

Monitoring a tagged fish was conducted by air at one to four day intervals from a Cessna 185 aircraft. A loop antenna was fastened to each wing strut with hose clamps. The antennas were fixed parallel to the fuselage with the handle facing forward. The broad face of the loop faced the fuselage and the narrow surface of the loop was perpendicular to the ground. One antenna was connected to a manual receiver and the other to a scanning receiver inside the airplane. Each antenna cord was reinforced with duct tape where it passed through the doorway. A speaker was connected to the scanning receiver and headphones to the manual receiver. The manual receiver was monitored by one person while the other monitored the scanning receiver and plotted the position of the aircraft. Locations of tagged fish were identified by signal strength to $\pm$ 0.1 mile and marked on vinyl encased, black and white aerial photographs (scale 1:40,000).

4.4 Data Analysis

Population estimates presented in the report were calculated using the following formulas (Ricker, 1975):

$$\hat{N} = mc/r$$

Where: m = Number of fish marked (adjusted for tag loss).

c = Total of fish examined for marks during sampling census

r = Total number of marked fish observed during sampling census

$\hat{N}$ = Population estimate

The 95% confidence limits around N were determined by using the formula (Dixon and Massey, 1969):

$$r/c + 1.96\sqrt{\frac{r/c\ (1-r/c)}{c}} < r/c < r/c - 1.96\sqrt{\frac{r/c\ (1-r/c)}{c}} = .95$$

$$r/c_{\text{upper}}\ (1/m) < 1/\hat{N} < r/c_{\text{lower}}\ (1/m)$$

Tag loss was calculated using data derived from repeated spawning ground surveys of placid sloughs where survey conditions permitted unrestricted (visual) observation of tag loss through inspection of spawning areas for shed tags and accurate enumeration of fish with tags in place. In calculating tag loss, the number of tagged fish examined (t) were summed with the number of loose tags (l) respective to tag type. The resulting summation (l + t) was then divided into the number of fish with tags (t) in place to provide a percentage on tag retention (R). The above is mathematically stated in the formula: $\frac{t}{l+t} = R \times 100\%$.

The percentage was then multiplied by the number of fish by species tagged at the particular tagging location being examined, for an appropriation adjustment to the number of fish released.

Age determination was made by scale examination using a portable microfiche reader and the age class described using Gilbert-Rich notation. By the notation, age 4^2 fish are those fish returning in their fourth year of life that migrated from freshwater to the marine environment in their second year of life having spent one winter rearing in fresh water.

5. RESULTS AND DISCUSSION

5.1. Chinook Salmon Investigations

5.1.1 Mainstem Escapement Sampling

Presented in Table E.5.1 is a summary of the number of chinook salmon counted by SSS counters at each station on the Susitna and Yentna rivers.

Table E.5.1. Apportioned sonar counts of chinook salmon by sampling station, Adult Anadromous Investigations, Su Hydro, 1981.

Sampling Location	Sonar Operating Period	Chinook Salmon Counted
Susitna Station	27 June - 2 September	1,752
Yentna Station	29 June - 7 September	427
Sunshine Station	23 June - 15 September	2,415
Talkeetna Station	22 June - 15 September	1,154

Daily SSS counts for each station are provided in Appendix EA. These counts are not total escapement estimates for the periods sampled because of two unknowns: (1) the proportion of the fish migrating beyond the range of the counters and (2) the selectivity of the fishwheels which were used to apportion the counts. The counts reported in Table E.5.1 are, therefore, an index of the number of chinook salmon which passed each of the sampling stations during the period when the sonars were in place.

The sonar counters and fishwheels at Susitna Station (RM 26.7) were operational on 27 June. Based on previous investigations, the majority of the chinook salmon escapement had already migrated past Susitna Station by this date (ADF&G, 1972) and therefore it is considered that Susitna Station was not operated early enough in the season to accurately define the beginning or the mid point of the migration. Between 27 June and 21 September a total of 1,752 chinook salmon passed over the sonar counters (Table E.5.1). A plot of the daily sonar counts and mean hourly fishwheel catches is provided in Figures E.5.1 and E.5.2 respectively. Fishwheel catches indicate the migration ended by 9 July.

Yentna Station, located at RM 04 on the Yentna River approximately six miles above Susitna Station, also was not operated early enough in the season to fully define the migration timing of chinook salmon past this site. Daily sonar counts of chinook salmon are graphically presented in Figure E.5.1. A total of 427 chinook salmon were counted over the sonar counters between 29 June and 7 September. Mean hourly fishwheel catches are presented in Figure E.5.2 and indicate the migration was over by 9 July.

Sunshine Station (RM 80) was operational on 23 June. The sonar counters enumerated 2,415 chinook salmon between 23 June and 15 September. Based on sonar counts and fishwheel catch data, the chinook salmon migration can be determined to have occurred on or before 23 June (Figures E.5.1 and E.5.3). The migration essentially ended on 10 July.

Table E.5.2. Analysis of chinook salmon age data by percent from escapement samples collected at Susitna, Yentna, Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

COLLECTION SITE	n	AGE CLASS [1/]									BROOD YEAR				
		3_1	3_2	4_1	4_2	5_1	5_2	6_1	6_2	7_2	1974	1975	1976	1977	1978
Susitna Station	33	3.3	36.1	0.0	39.4	0.0	12.1	0.0	9.1	0.0	0.0	9.1	12.1	39.4	39.4
Yentna Station	37	0.0	18.9	0.0	40.5	0.0	13.5	0.0	27.1	0.0	0.0	27.1	13.5	40.5	18.9
Sunshine Station	414	2.0	25.6	1.4	30.5	1.2	21.8	0.3	16.6	0.5	0.5	16.9	23.0	31.9	27.6
Talkeetna Station	70	3.1	12.6	2.6	27.1	0.0	21.4	5.6	24.4	2.9	2.9	30.0	21.4	29.7	15.7
Curry Station	227	3.7	14.8	4.5	29.8	2.1	25.7	1.4	18.0	0.0	0.0	19.4	27.8	34.3	18.5

[1/] Gilbert-Rich Notation

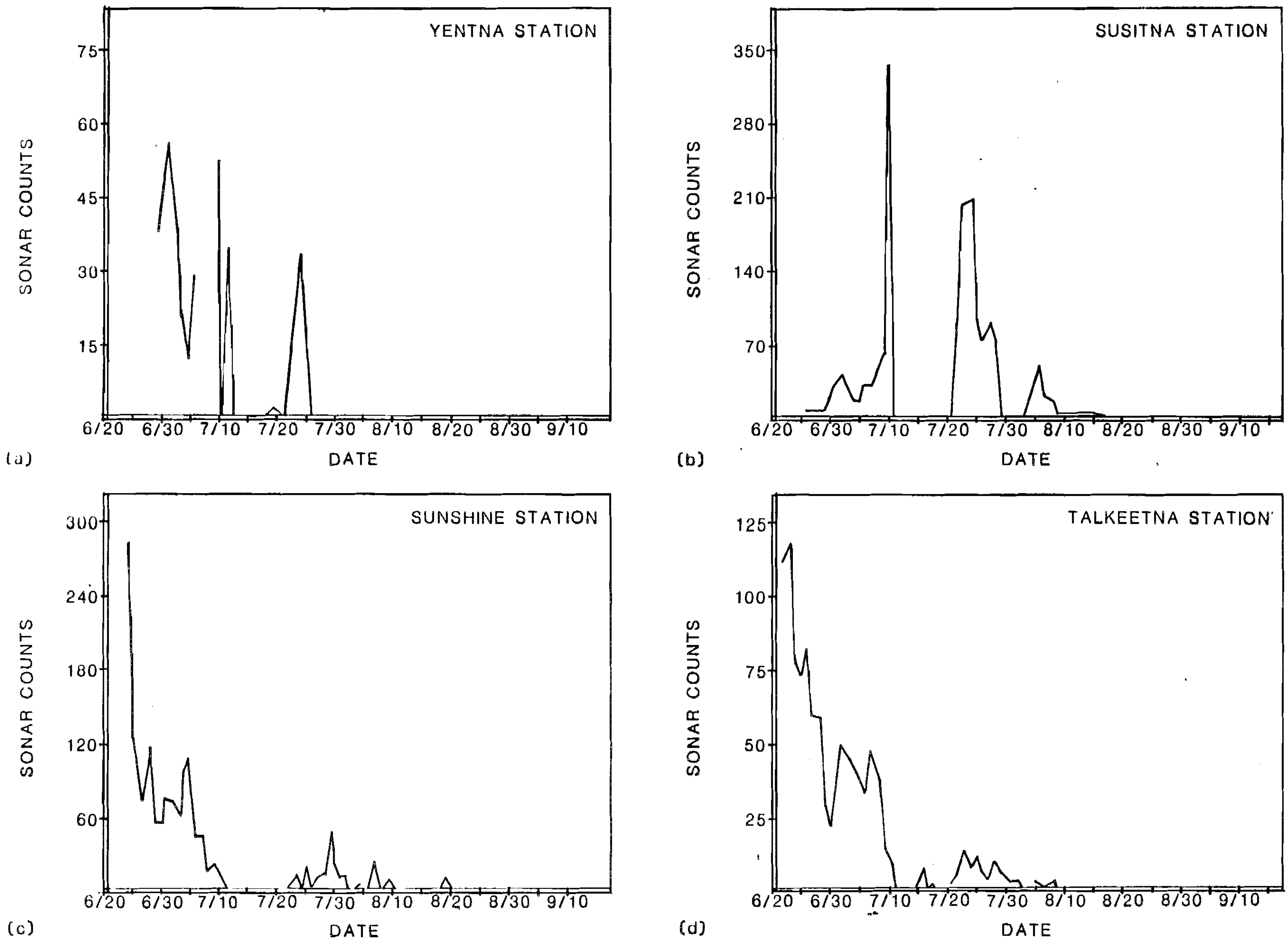
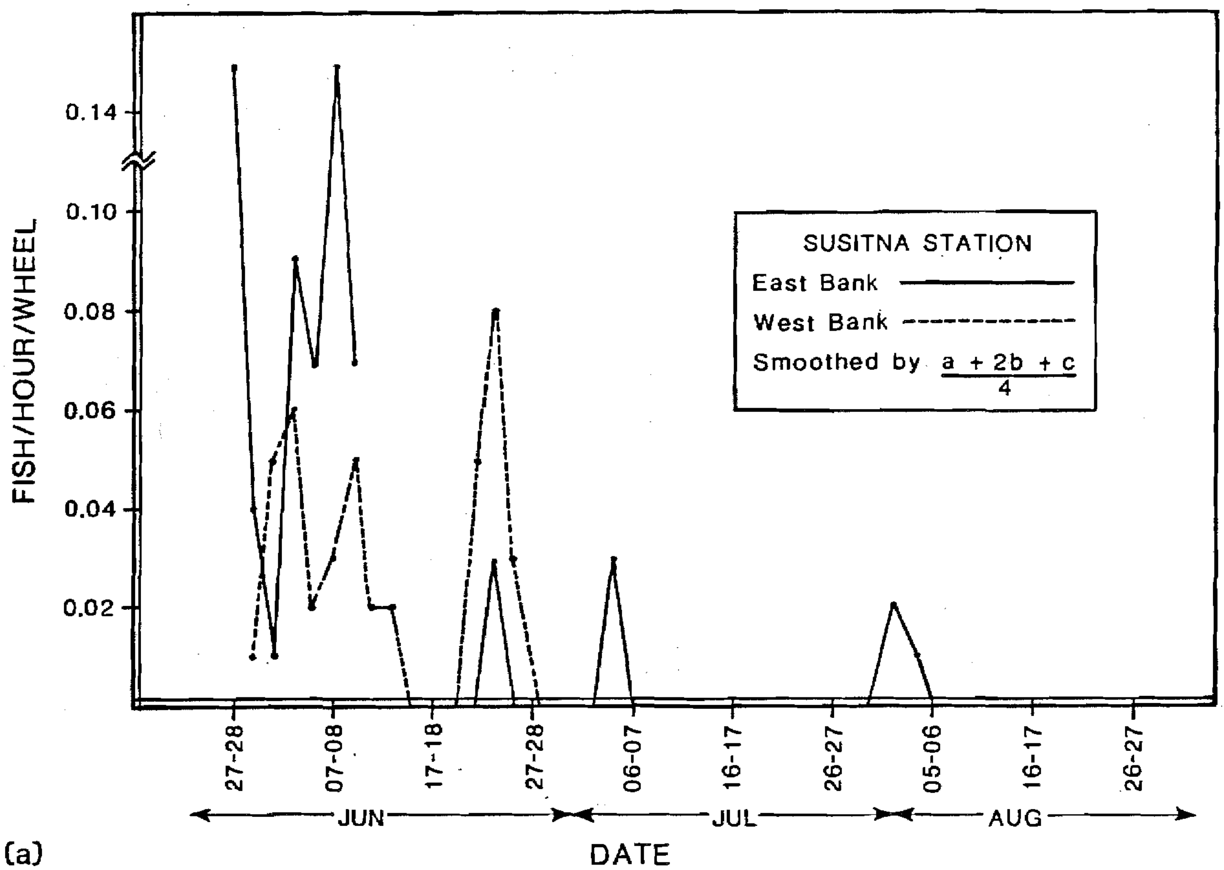
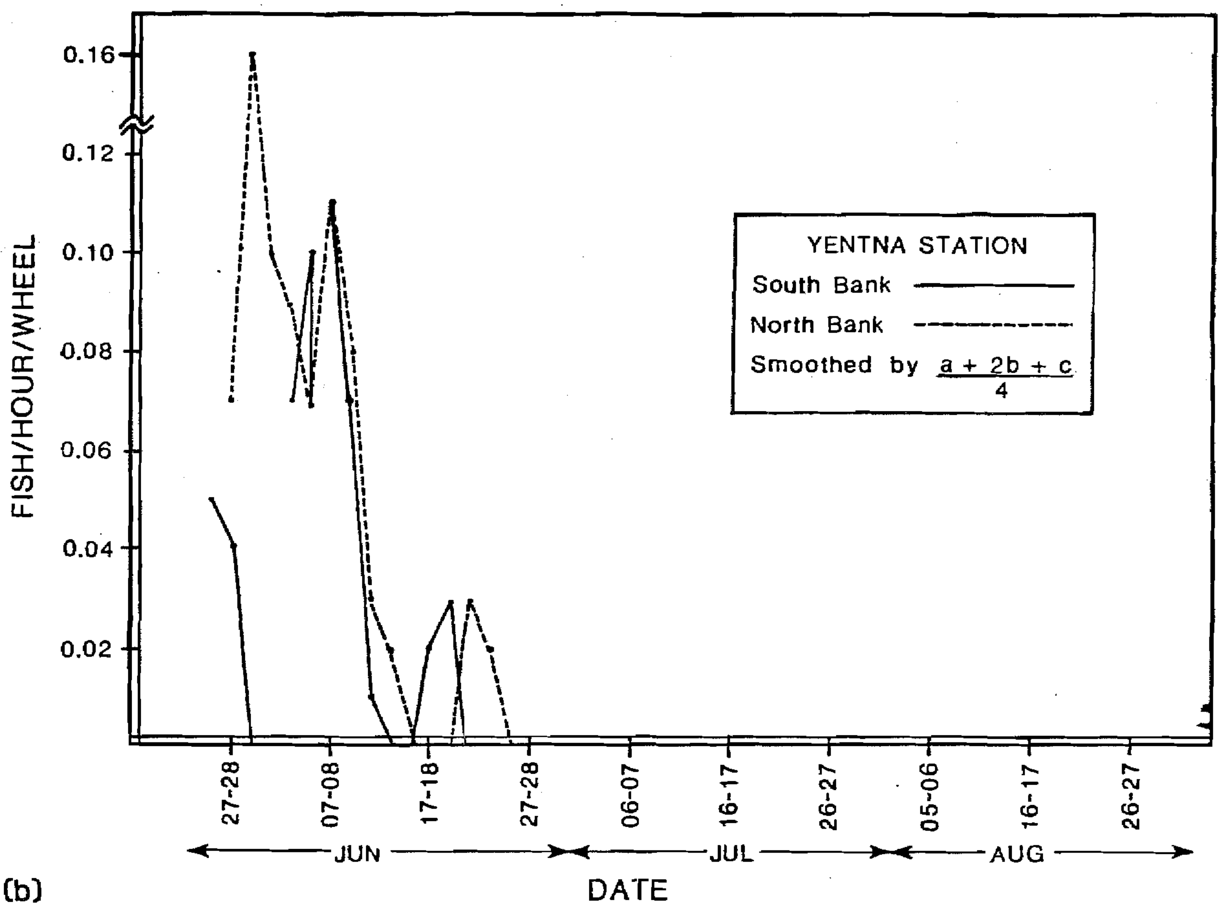


Figure E.5.1. Daily sonar counts of chinook salmon at Yentna, Susitna, Sunshine and Talkeetna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.



(a)



(b)

Figure E.5.2. (a-b) Mean hourly fishwheel catch by two day periods of chinook salmon at Susitna and Yentna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

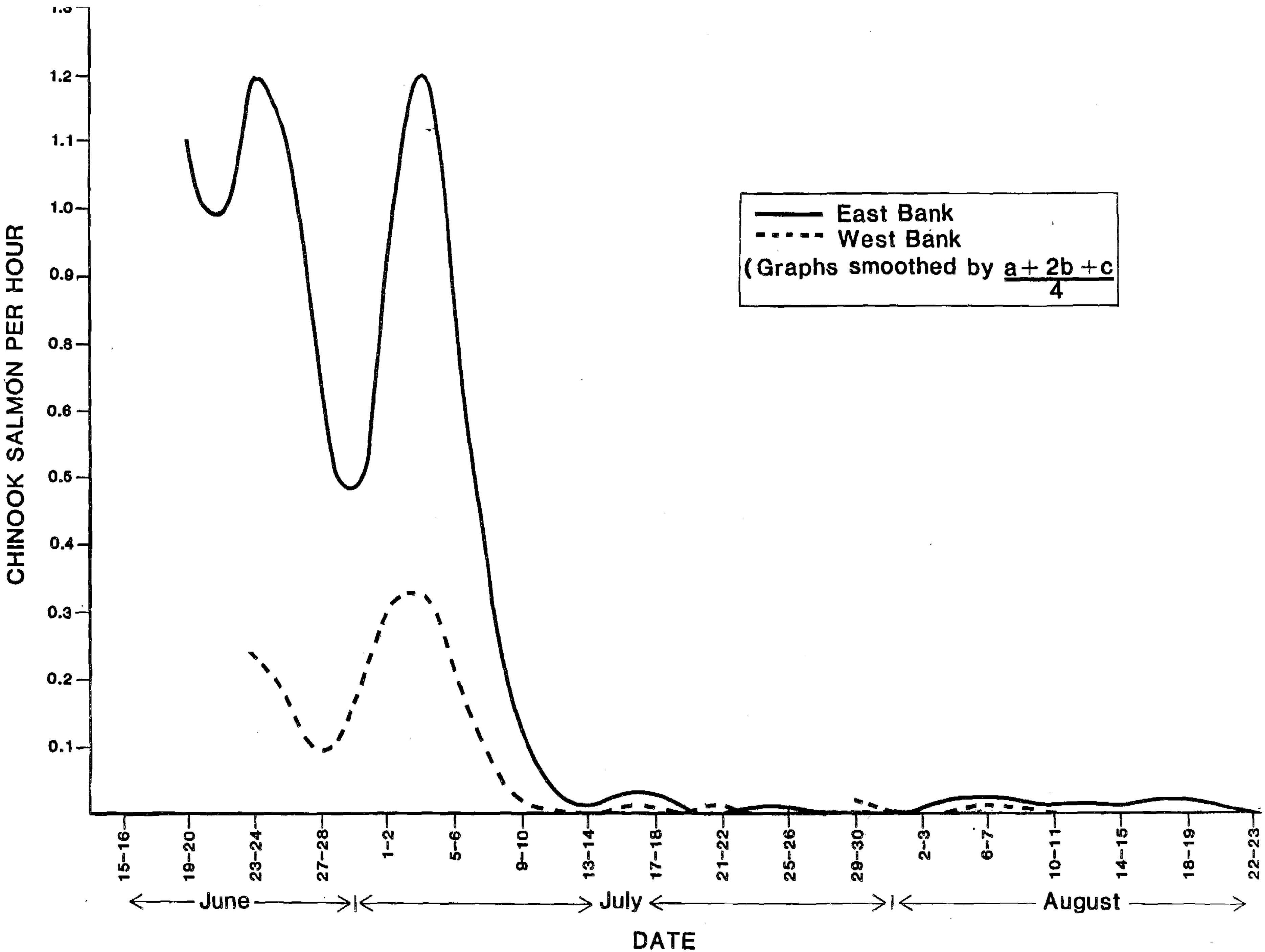


Figure E.5.3. Mean hourly fishwheel catch by two day periods of chinook salmon at Sunshine Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

A total of 1,154 chinook salmon were enumerated over the sonar counters at Talkeetna Station (RM 103) between 22 June and 15 September. The sonar and fishwheel rate curves (Figures E.5.1 and E.5.4) indicate that an undetermined proportion of the escapement had already migrated past Talkeetna Station before the site was operational. The peak of the migration as evaluated from the sonar and fishwheel data occurred on or before 22 June and the migration essentially ended on 7 July.

At Curry Station (RM 120), the chinook salmon migration was intercepted in sufficient time to clearly define timing (Figure E.5.5). Migrating chinook salmon reached Curry on 16 June. The migration peaked on 23 June and was principally over by 4 July.

Delayed surges occurred in fishwheel catches of chinook salmon at Sunshine, Talkeetna and Curry stations. A comparison of catch rates and provisional USGS discharge data indicate a resumption of upstream migration following periods of high water (Figures E.5.2 - E.5.6). The sonar counts plotted for Sunshine and Talkeetna support this assumption (Figure E.5.1). Low catch rates exhibited by the Sunshine and Talkeetna fishwheels during this period are possibly attributable to low wheel efficiency at those flow rates.

Fishwheel catch rates during peak migration periods indicate a preference by chinook salmon for one bank over the other if wheel efficiency and placement are not considered (Figures E.5.2 - E.5.5). Migrating adults may have preferred the east bank during peak migration periods at the Sunshine and Talkeetna sites while the west bank was preferred at Curry. However, the sonar counter at Sunshine and Talkeetna Stations do not indicate a strong

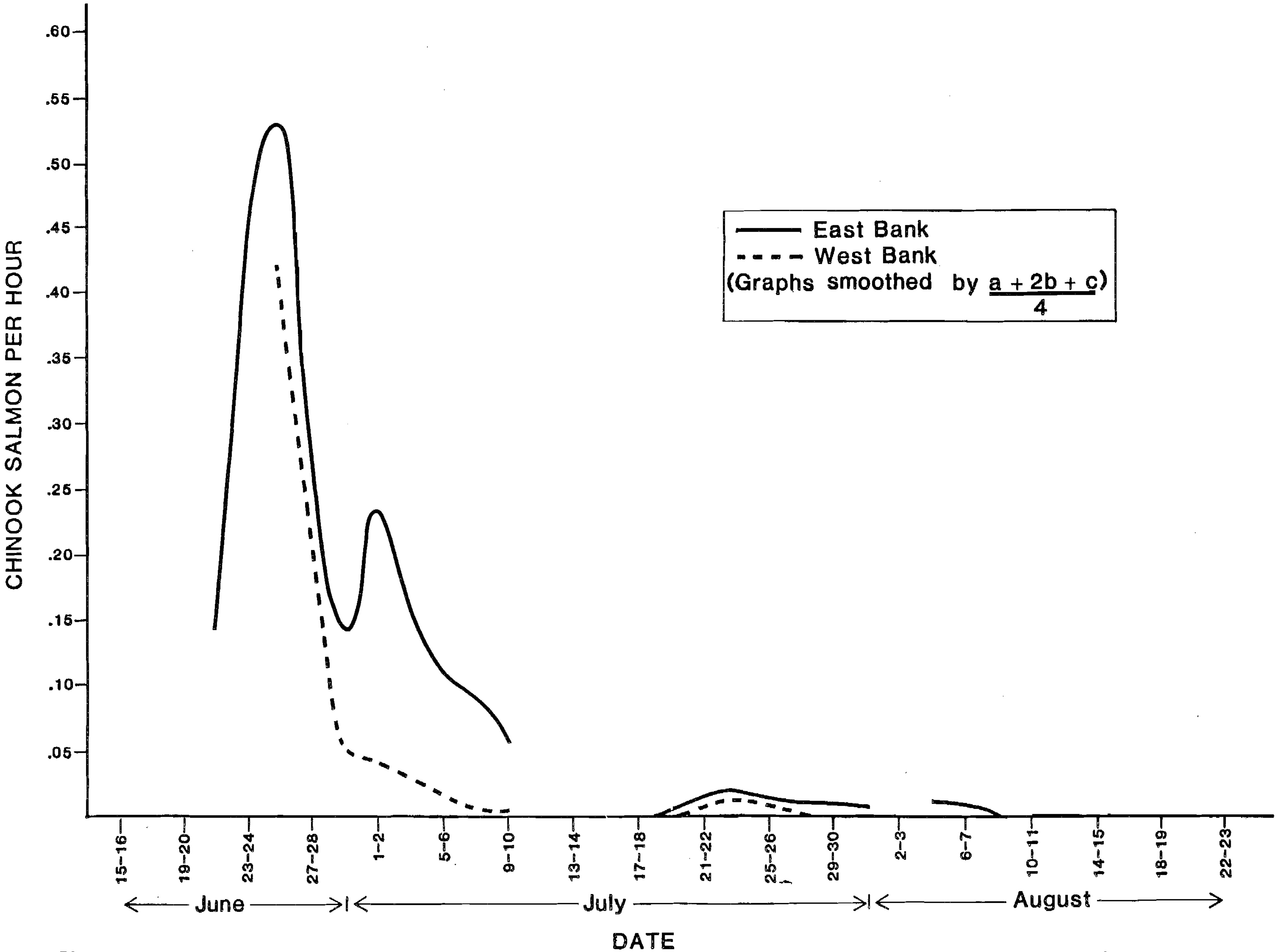


Figure E.5.4. Mean hourly fishwheel catch by two day periods of chinook salmon at Talkeetna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

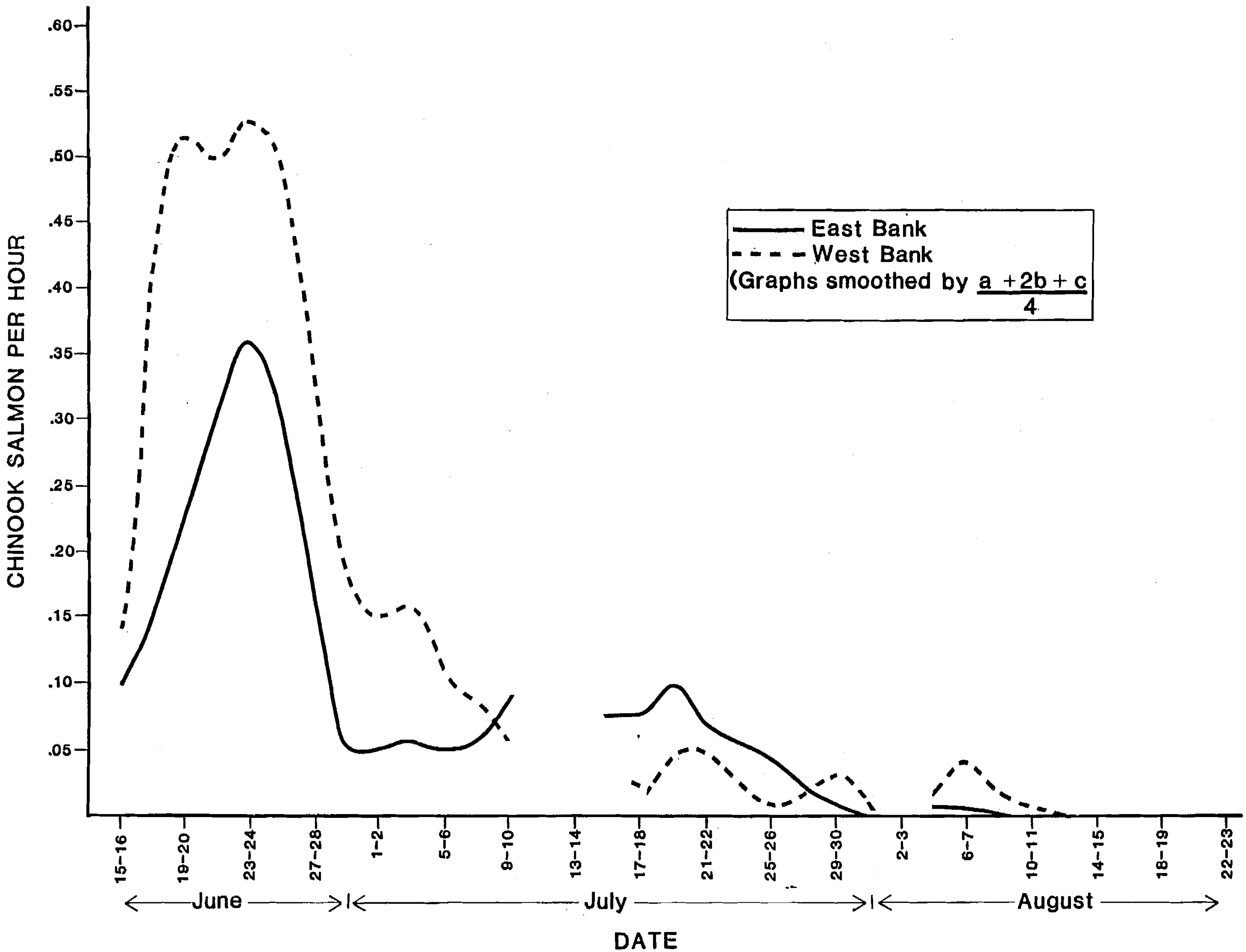


Figure E.5.5. Mean hourly fishwheel catch by two day periods of chinook salmon at Curry Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

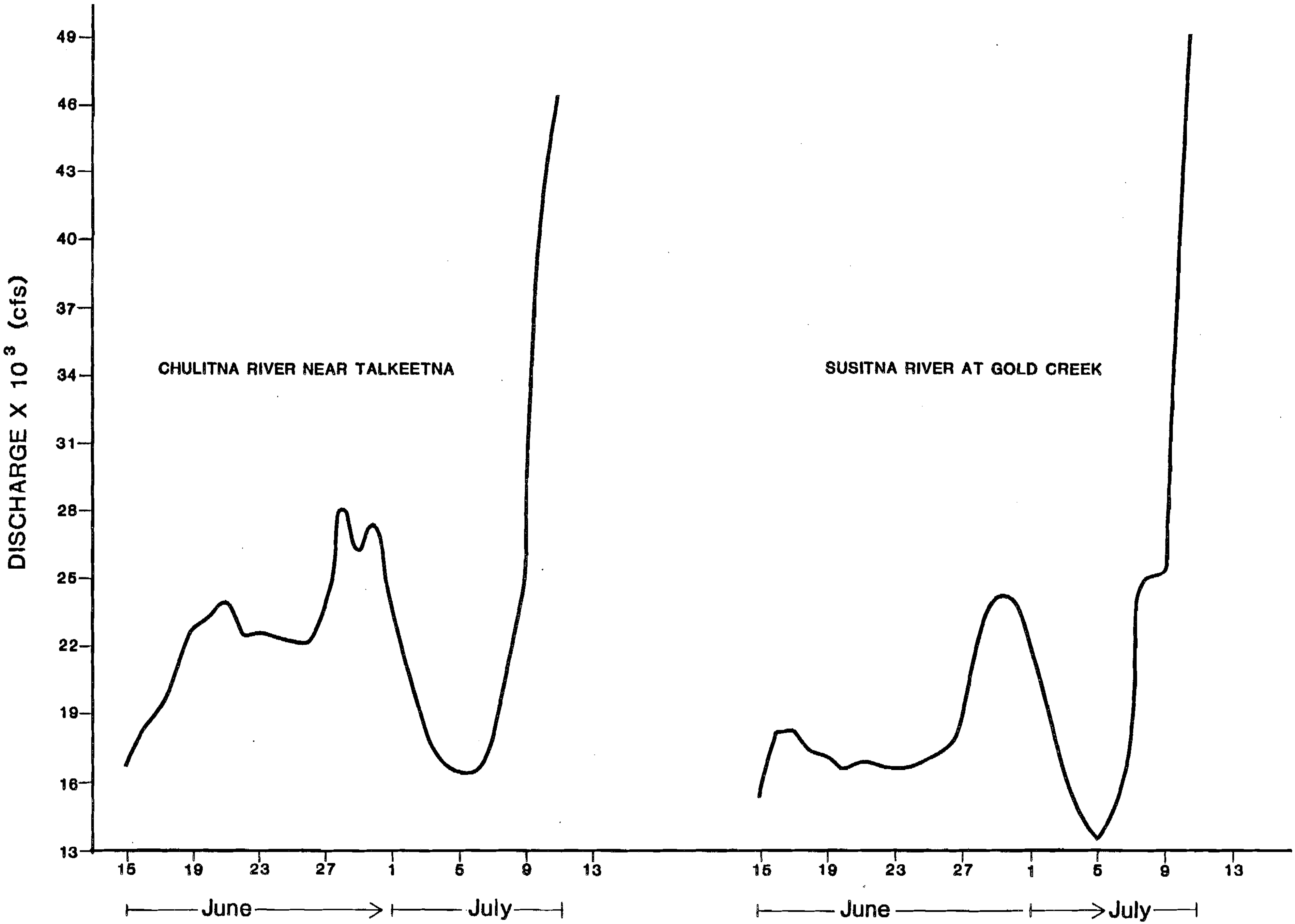


Figure E.5.6. Provisional discharge data from 15 June through 11 July, Adult Anadromous Investigations, Su Hydro Studies, 1981.

preference by chinook salmon for utilizing one bank or the other (Appendix EA). Any short term preference exhibited may be in response to changes in discharge, among other factors, which could be determined conclusively through subsequent research efforts.

The age class frequencies of chinook salmon sampled at each station are presented in Table E.5.2. Because the migration had essentially passed by the time Susitna and Yentna stations were in operation, the samples collected at these sites are not representative of the entire escapement. The data does indicate that the majority of the Susitna Station fish were three and four year old fish. Each accounted for 39.4 percent of the sample. Next abundant at Susitna Station were five and six year old fish representing 12.1 percent and 9.1 percent of the sample respectively. Analysis of the freshwater ages of these fish indicate that all (100%) migrated to the ocean in their second year of life after one winter rearing in freshwater.

At Yentna Station four year old chinook salmon were most abundant (40.5%), followed by six (27.1%), three (18.9%), and five (13.5%) year old fish (Table E.5.2). Ninety-seven percent of these fish had smolted in their second year of life after spending one winter as fry in freshwater. The balance (3%) spent less than one winter rearing in freshwater before outmigrating to the ocean.

Escapement samples collected at Sunshine Station indicate that four year old fish were dominant (31.9%), followed by three (27.6%), five (23.0%), and six (16.9%) year old fish (Table E.5.2). Seven year old fish comprised only 0.5

percent of the sample. Approximately five percent of the chinook salmon sampled at Sunshine Station had spent less than one winter in freshwater before migrating to sea. The rest of the fish (95%) had completed a full winter of growth before migrating.

Four and six year old chinook salmon were equally abundant at Talkeetna Station and comprised approximately 60 percent of the sample (Table E.5.2). The next most abundant were five year old fish (21.4%) followed by three (15.7%) and seven (2.9%) year old fish. Approximately 11 percent of the chinook salmon sampled at Talkeetna Station had spent less than one winter in freshwater before migrating to the ocean while about 89 percent of the fish had completed one winter in freshwater before migrating.

Curry Station samples showed a dominance of four year old fish (34.3%), followed by five (27.8%), six (19.4%) and three (18.5%) year old fish (Table E.5.2). Comparing the freshwater ages, 11.7 percent had spent less than one winter in freshwater before smolting and 88.3 percent had completed one winter.

The age samples collected at Sunshine, Talkeetna and Curry stations can be considered characteristic of the escapement. Sunshine Station had a significantly higher percentage of younger fish, mainly three years old, passing that site than at Talkeetna Station of Curry Station (Figure E.5.7). With the exception of Talkeetna Station, four year old fish were highest in abundance at all sampling sites. At Talkeetna Station, six year old fish were equally as abundant as four year old fish. Seven year old fish were relatively

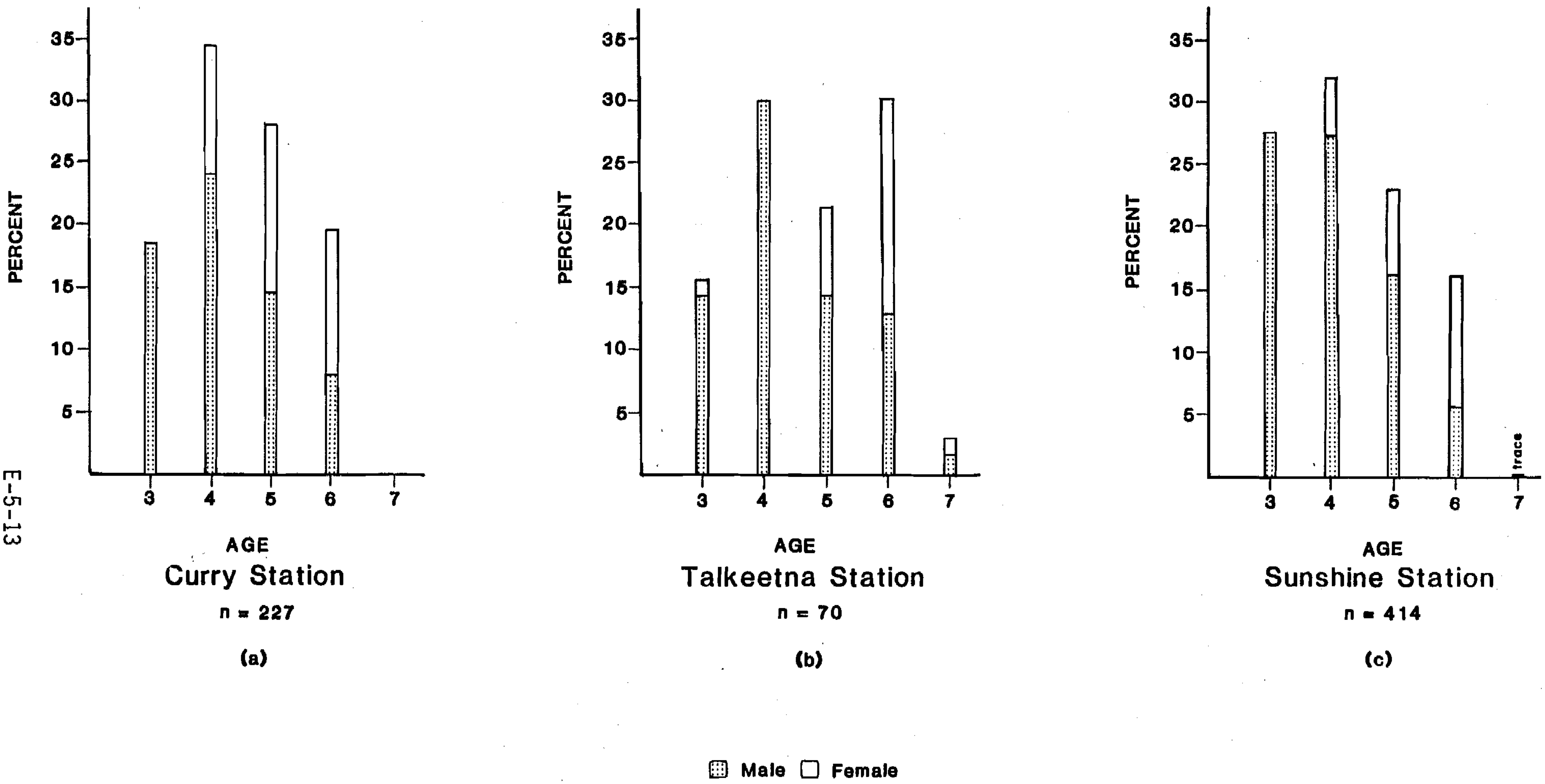


Figure E.5.7. (a-c) Age composition of fishwheel intercepted chinook salmon at Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

scarce, representing only 0.5 percent and 2.9 percent of the Sunshine Station and Talkeetna Station fish respectively. No seven year old fish were found in the Curry Station sample.

An almost equal percentage, 11.3 percent and 11.7 percent respectively, of the adult chinook salmon sampled at Talkeetna Station and Curry Station had spent less than one winter as fry in freshwater before migrating to sea (Table E.5.2). The balance, had outmigrated to the ocean after completing one winter of rearing in freshwater. In comparison, five percent of the Sunshine Station fish had smolted before their first winter and 95 percent after one winter.

Fork length data segregated by age and sex indicate the fish at Talkeetna and Curry stations were significantly larger than those intercepted at Sunshine Station (Table E.5.3 and Figures E.5.8 and E.5.9). The freshwater age data indicate that a higher percentage of the adult fish sampled at both Talkeetna Station and Curry Station smolted at an earlier age than the fish sampled at Sunshine Station. A possible explanation for Talkeetna and Curry Station fish being larger in each age class is that they averaged more feeding time in the marine environment than similar age class fish sampled at Sunshine Station.

At all sampling sites, male chinook salmon were present in each age class and were more abundant than females in the age three, four, and five year old classes (Table E.5.4). Females were more abundant than males in the six year age class and equally numerous as males in the seven year old class. The data from Sunshine, Talkeetna and Curry stations are similar except that there were

Table E.5.3. Analysis of chinook salmon lengths, in millimeters, by age from escapement samples colledted at Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

COLLECTION SITE	AGE	n		RANGE LIMITS		95% CONF. LIMITS 3/		MEAN		MEDIAN	
		m 1/	f 2/	m	f	m	f	m	f	m	f
Sunshine Station	3	114	0	279-439	-	346, 360	-	353	-	344	-
	4	112	20	318-712	470-690	536, 564	535, 595	550	565	560	567
	5	68	27	510-900	552-890	697, 749	-	723	785	724	813
	6	28	43	750-1300	721-1050	876, 981	853, 894	928	874	923	865
	7	1	1	1090	1020	-	-	-	-	-	-
Talkeetna Station	3	10	1	326-424	424	-	-	379	-	382	-
	4	21	0	509-787	-	-	-	602	-	585	-
	5	10	5	668-940	770-833	-	-	788	806	756	810
	6	9	12	752-1160	720-940	-	-	945	867	930	873
	7	1	1	1120	960	-	-	-	-	-	-
Curry Station	3	42	0	295-440	-	362, 380	-	371	-	368	-
	4	54	24	415 691	480-750	568, 598	551, 602	583	576	582	580
	5	34	29	610-942	570-980	766, 817	-	791	816	800	835
	6	18	26	795-1050	807-992	-	869, 912	951	891	955	890

1/ Male
2/ Female
3/ Confidence Limits on Mean

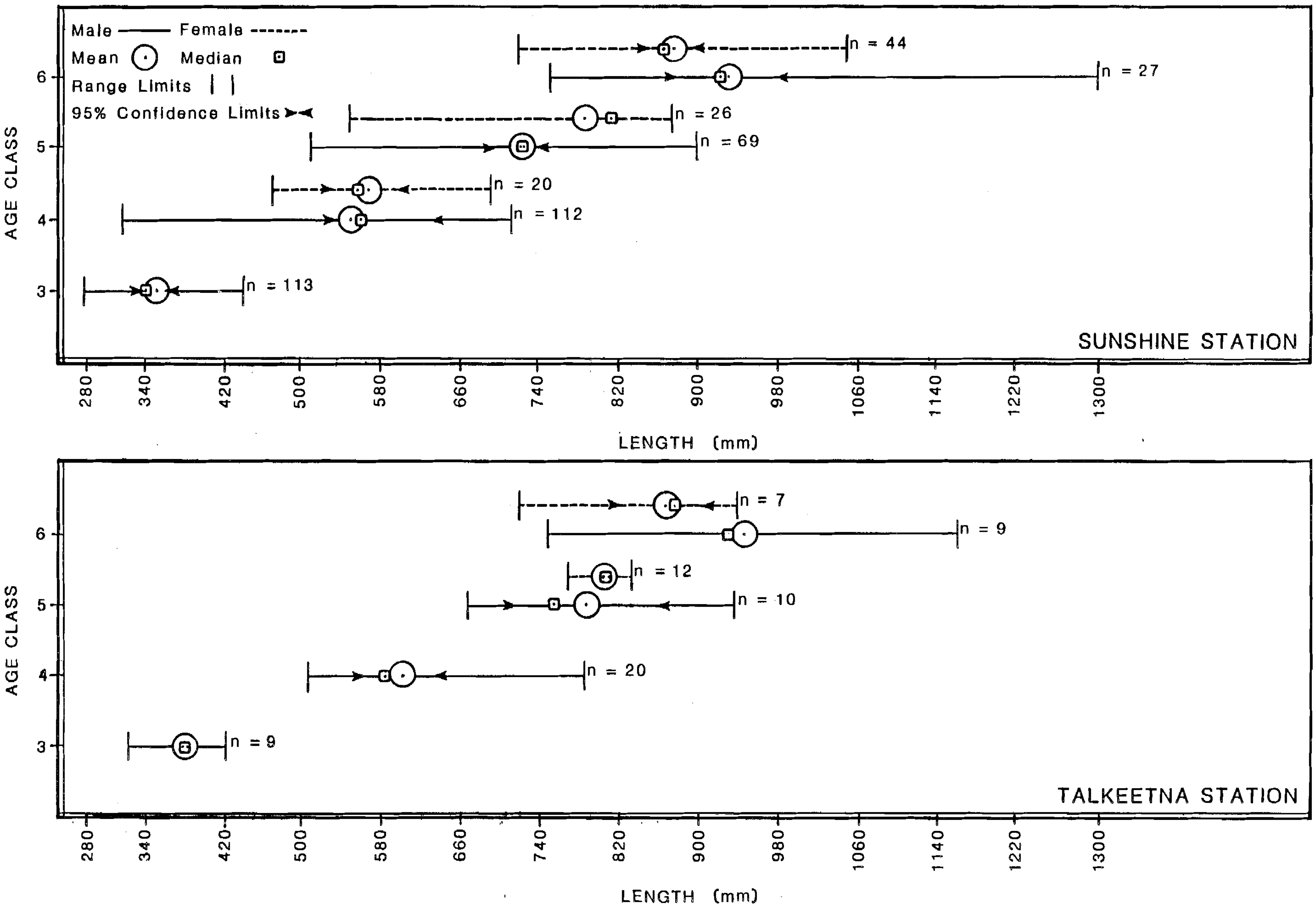
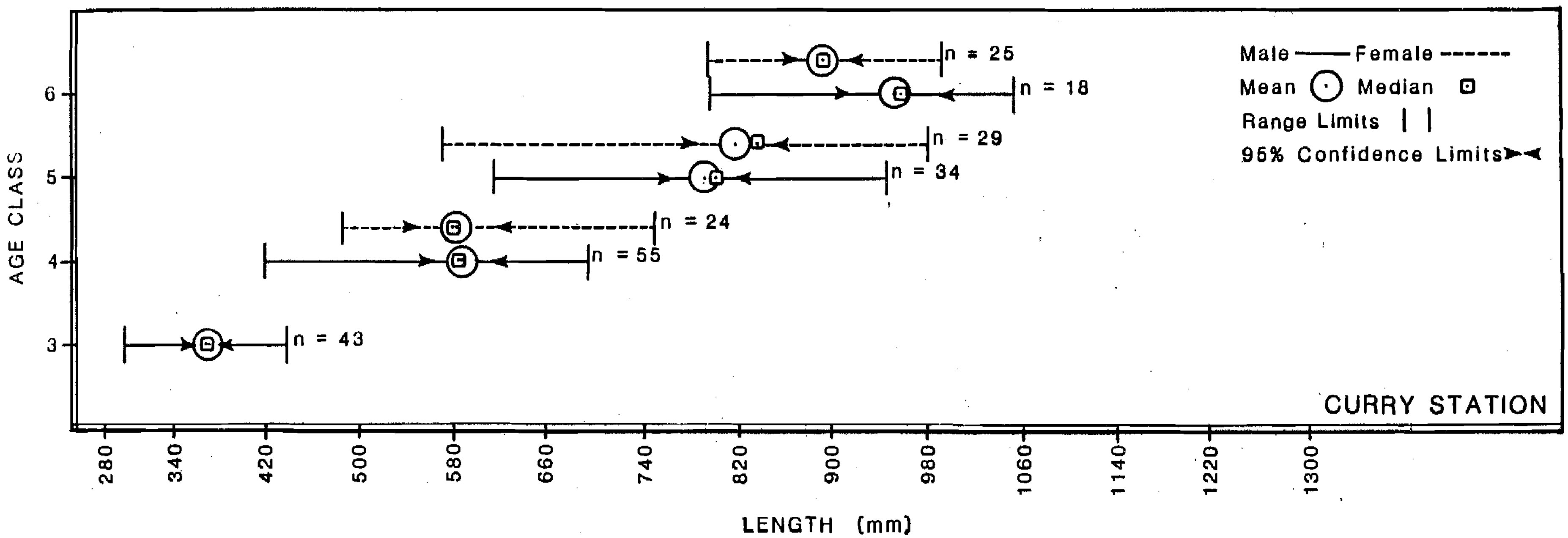


Figure E.5.8. Chinook salmon lengths by age class from Sunshine and Talkeetna Station fishwheel catches, Adult Anadromous Investigations, Su Hydro Studies, 1981.



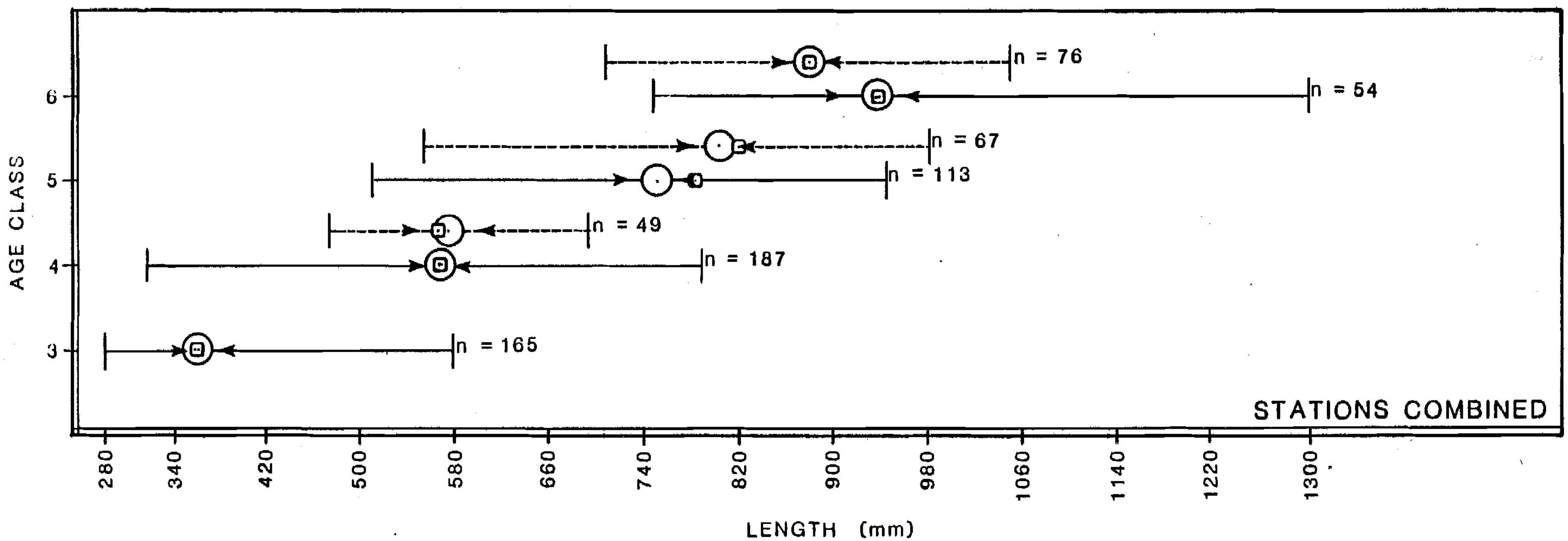


Figure E.5.9. Chinook salmon lengths by age class from Curry Station fishwheel catches and combined fishwheel catches from Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Table E.5.4. Sex ratio of male and female chinook salmon by age from escapement samples collected at Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

COLLECTION SITE	AGE	SAMPLE SIZE	NUMBER MALES	NUMBER FEMALES	SEX RATIO (M/F)
Sunshine Station	3	114	114	0	-
	4	132	112	20	5.6:1
	5	95	68	27	2.5:1
	6	71	28	43	0.7:1
	7	2	1	1	1.0:1
Talkeetna Station	3	11	10	1	10.0:1
	4	21	21	0	-
	5	15	10	5	2.0:1
	6	21	9	12	0.8:1
	7	2	1	1	1.0:1
Curry Station	3	42	42	0	-
	4	78	54	24	2.3:1
	5	63	34	29	1.2:1
	6	44	18	26	0.7:1

no four year old females sampled at Talkeetna Station, and 15.2 percent and 30.8 percent respectively of the Sunshine and Curry stations four year old fish were females.

Figures E.5.10 through E.5.12 present a graphic illustration of the frequency of male and female chinook salmon by fork length sampled at Sunshine, Talkeetna and Curry stations. These graphs indicate that males were more frequent in the shorter length ranges and correspondingly, females were more abundant in the longer length ranges.

The number of chinook salmon length measurements as obtained from fishwheels at Susitna and Yentna stations was too small to permit significant data reduction.

5.1.2 Radio Telemetry Investigations

Sixteen adult chinook salmon were tagged from 22 June through 19 July with radio transmitters and their movements monitored during June, July and August of 1981 (Table E.5.5). Four fish were tagged at Talkeetna Station (RM 103) and 12 fish were tagged at Curry Station (RM 120) (Figure E.5.13).

The confluence of the Talkeetna, Chulitna and Susitna rivers, defined here as the Three Rivers Area (TRA), is a probable milling area for adult chinook salmon. All four radio tagged fish at the Talkeetna site moved downstream and remained at or downstream of the TRA for several days to weeks before either migrating back upstream in the Susitna River or entering the Talkeetna River

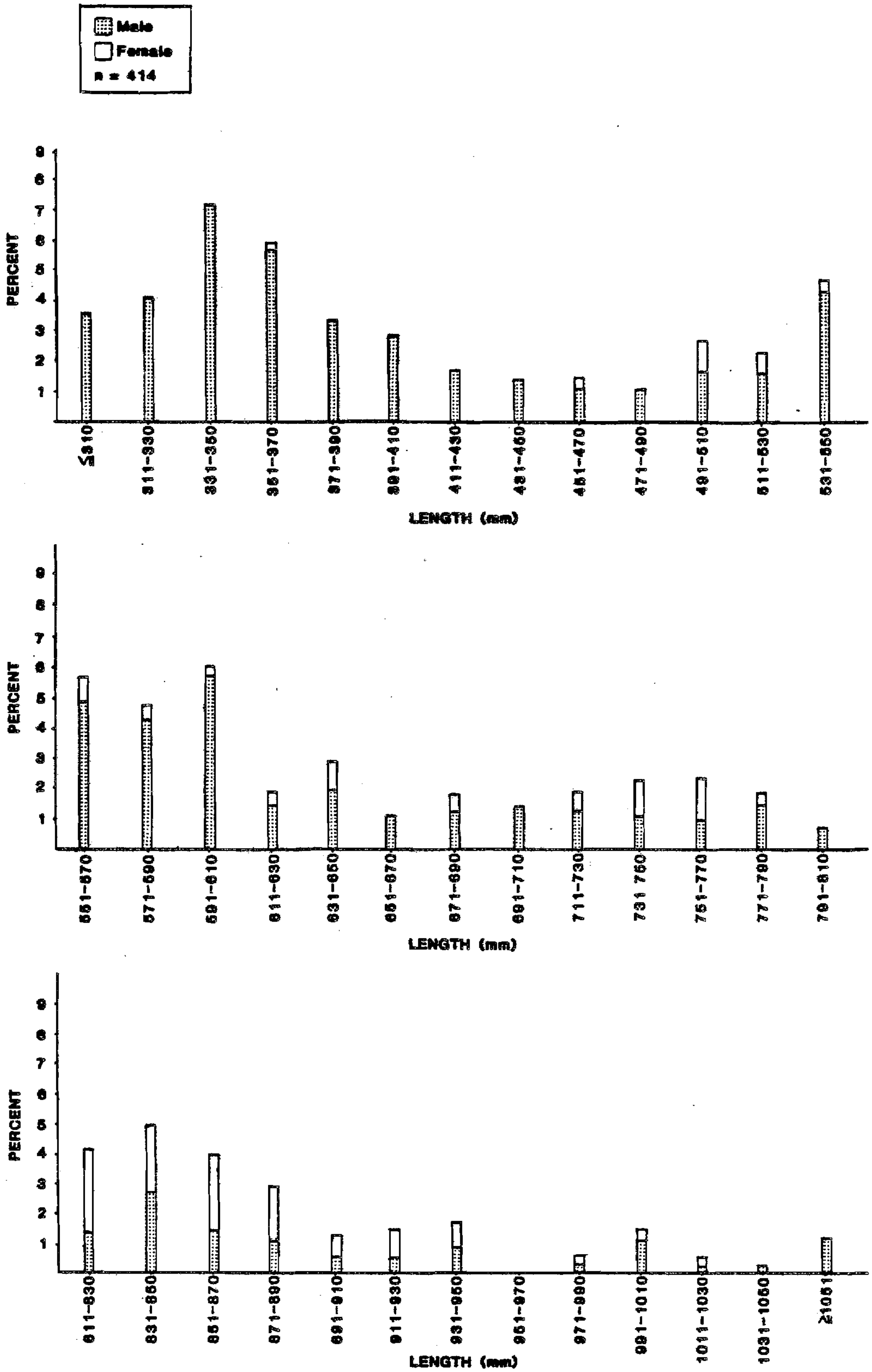


Figure E.5.10. Length frequencies of Susitna River chinook salmon sampled from fishwheel catches at Sunshine Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

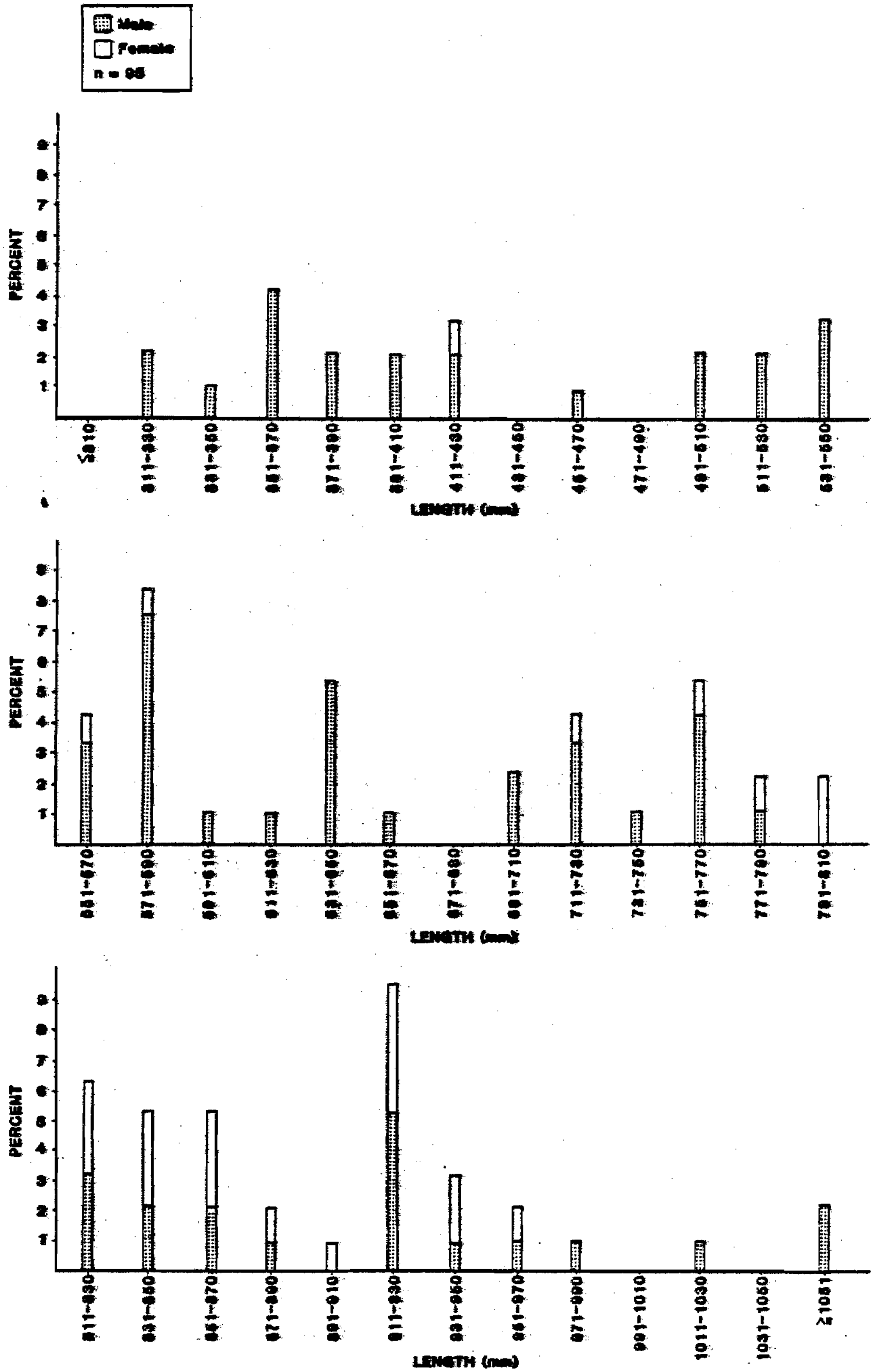


Figure E.5.11. Length frequencies of Susitna River chinook salmon sampled from fishwheel catches at Talkeetna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

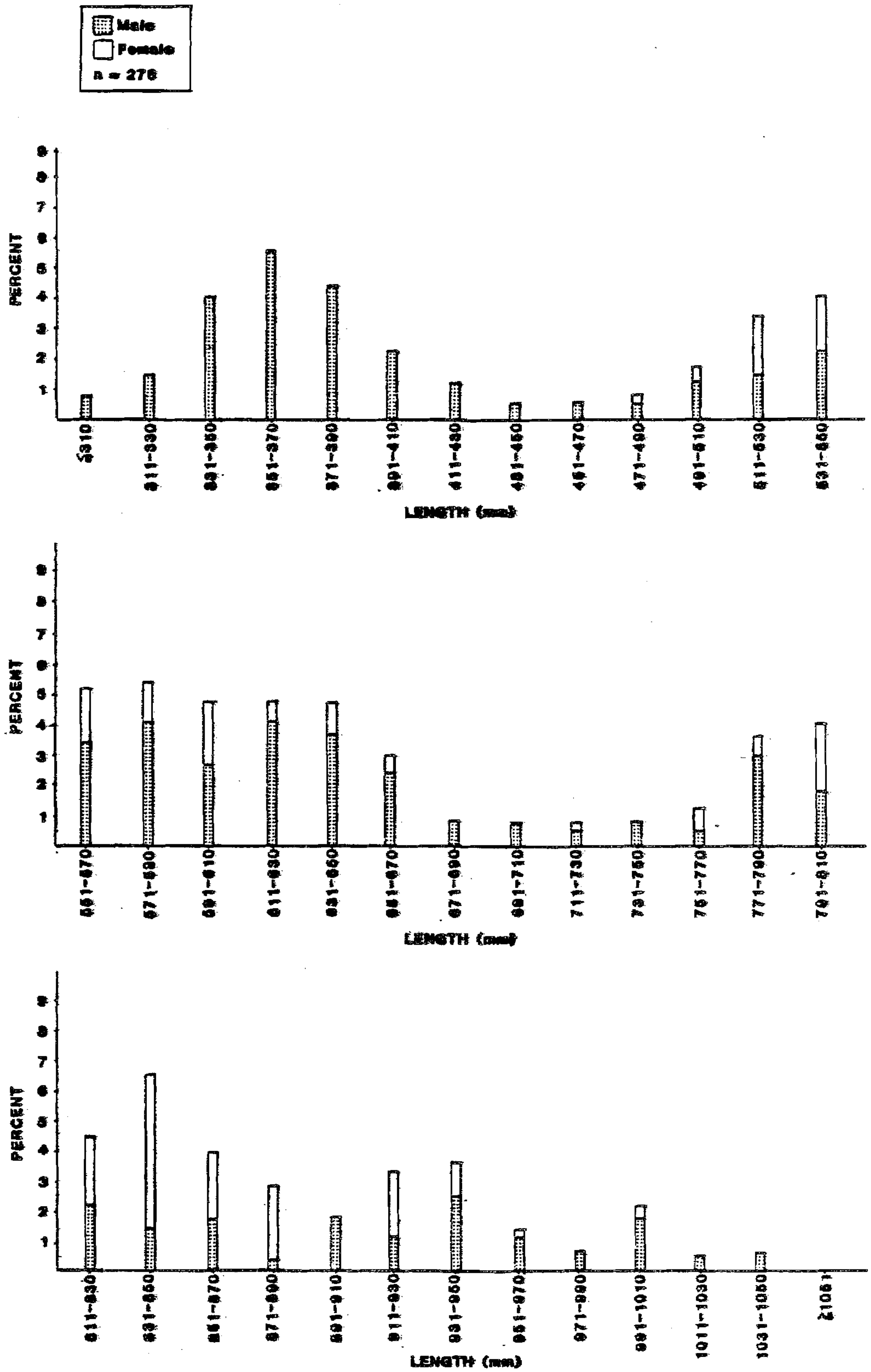


Figure E.5.12. Length frequencies of Susitna River chinook salmon sampled from fishwheel catches at Curry Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Table E.5.5. Chinook salmon radio tagging data, Adult Anadromous Investigations, Su Hydro Studies, 1981.

TAGGING DATE	TAGGING LOCATION	RADIO TRANSMITTER FREQUENCY (MHz) PULSE/SECOND	PETERSEN DISC NUMBER	AGE 1/	LENGTH 2/ (cm)	WEIGHT (kg)	SEX (M/F)	COLORATION 3/ (Dorsal/Ventral)
6/22	120.7	40.730-1	A 300		80.0	10.9	M	silver/pink
6/22	120.7	40.640-1	A 301		91.4	13.2	M	silver/pink
6/24	102.8	40.610-3	A 302		94.0	13.4	F	silver/pink
6/24	102.8	40.600-1	A 303		91.4	11.6	M	pink/red
6/26	120.7	40.600-2	A 304		80.0	9.1	F	gray/pink
6/26	120.7	40.670-3	A 305		78.7	7.7	M	gray-pink/pink
6/26	119.5	40.620-3	A 306		91.4	13.5	F	pink/pink
6/28	120.7	40.630-1	A 307		94.0	13.2	F	gray/pink-red
7/1	102.8	40.610-2	A 310		97.8	14.7	M	pink/pink-red
7/1	102.8	40.660-3	A 311	6_2	76.2	8.2	F	gray/gray-pink
7/2	121.7	40.630-3	A 312	5_2	86.4	10.0	F	gray/pink
7/2	119.5	40.610-1	A 314	6_2	100.3	17.0	M	gray/
7/3	110.5	40.620-1	A 316		80.6	8.8	F	gray/pink
7/3	120.7	40.640-3	A 315		91.4	13.2	F	gray/gray-pink
7/18	120.7	40.600-3	A 318		87.6	10.1	F	pink/pink
7/19	120.7	40.620-2	A 317	6_2	88.9	12.2	F	gray/pink

1/ Gilbert-Rich notation
2/ Mid eye to fork of tail
3/ Underlined color predominates

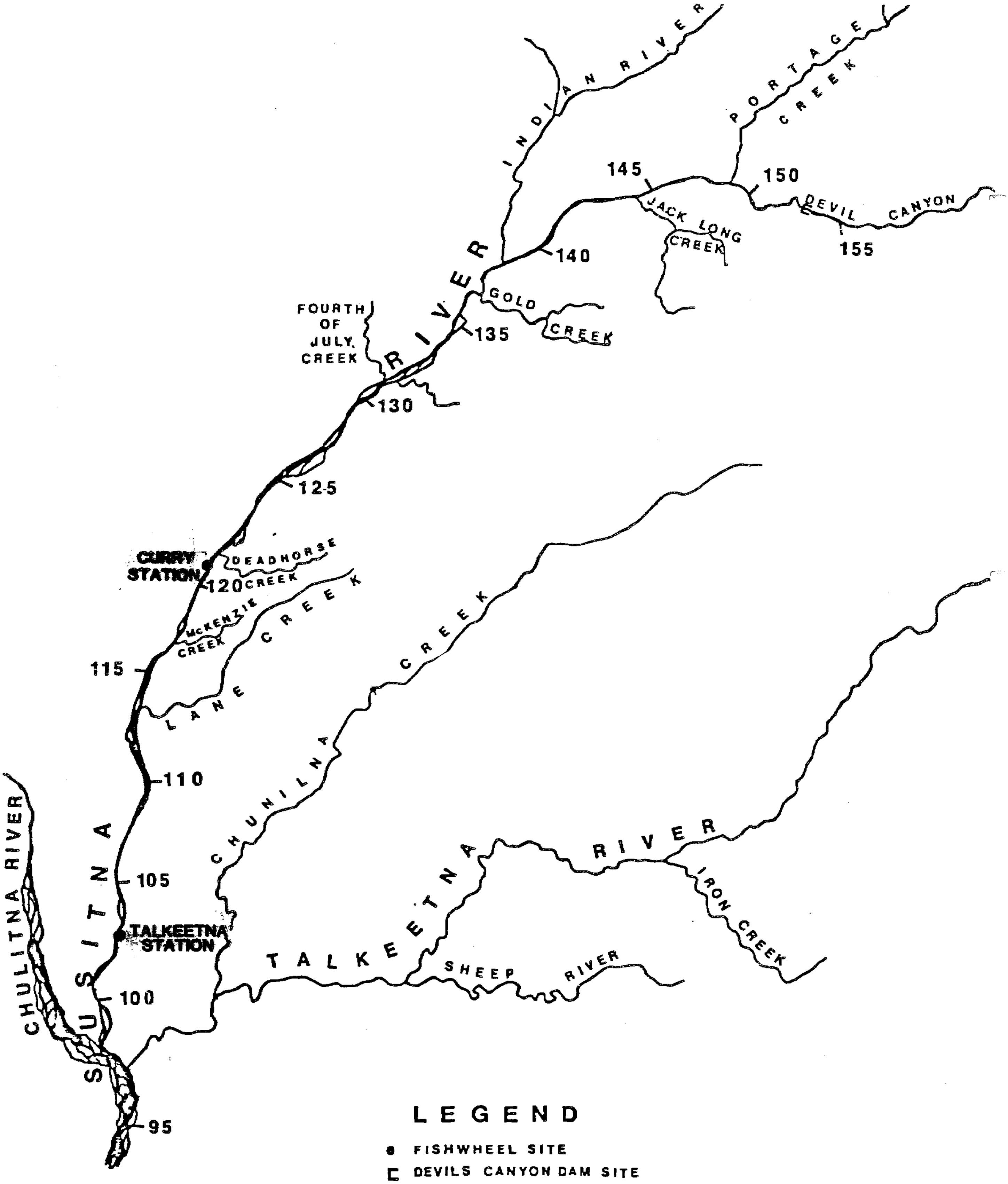


Figure E.5.13. Susitna River mainstem from Talkeetna to Devil Canyon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

(Figure E.5.14). For example, fish bearing radio tag number 660-3, which was tagged on 1 July, moved downstream to the TRA within 24 hours, entered the Talkeetna River two or three days later and was detected on 30 July in Prairie Creek (RM 50.1), a Talkeetna River tributary. Another fish bearing radio tag number 600-1, displayed two downstream-upstream surges in the TRA prior to ascending and remaining in the Susitna River at RM 123.5. The other two fish tagged at Talkeetna Station bearing transmitter numbers 610-2 and 610-3 moved downstream and remained in the TRA for up to two weeks before migrating back upstream in the Susitna River and entering Indian River (RM 138.6) and Lane Creek (RM 113.6) respectively.

Fish radio tagged at Curry Station (RM 120) generally displayed little or no downstream movement following transmitter implantation (Figure E.5.14). Eight of the 12 fish tagged at Curry Station moved upstream within 48 hours. Radio tagged fish bearing transmitter number 620-2 moved about one mile downstream to RM 119 after being tagged and remained there for at least 48 hours before moving back upstream. Fish bearing radio tag number 620-1 moved downstream and held position in or near Chase Creek (RM 106.9). Fish bearing radio tag number 670-3 apparently died from stress associated with handling and transmitter implantation. The transmitter in radio tagged fish number 640-1 apparently malfunctioned shortly after the fish was tagged.

The nine chinook salmon which moved upriver after being radio tagged at Curry Station (RM 120) exhibited two types of movements: 'direct' and 'indirect'. 'Direct' movement with chinook salmon is defined as movement to, but not upstream of, tributaries that fish entered. Movements of radio tagged fish ıble E.5.17. Fifteen fastest recorded movements of radio tagged adult, coho salmon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

TRANSMITTER FREQUENCY (mHz) PULSE/SECOND	RATE OF UPSTREAM MOVEMENT (MPH)1/	HOURS ELAPSED BETWEEN SUCCESSIVE FISH POSITIONS	DISTANCE MOVED (MI.)	LOCATION OF MOVEMENT RM to RM
650-2	1.00	0.7	0.7	102.8-103.5
660-2	0.88	2.5	2.2	112.5-114.7
730-3	0.67	4.5	3.0	102.9-105.9
720-2	0.67	2.1	1.4	109.1-110-5
730-3	0.60	20.3	12.2	109.6-121.8
650-2	0.56	28.2	15.8	103.5-119.3
660-2	0.43	23.3	9.9	118.5-128.4
720-3	0.39	21.8	8.6	119.5-128.1
680-1	0.29	20.2	5.9	103.8-109.7
730-3	0.27	68.6	18.7	121.8-138.6-I 1.92/
650-1	2.33	56.3	13.1	3.3 T3/-106.9
680-1	0.23	9.1	2.1	101.7-103.8
660-2	0.18	69.0	12.7	128.4-141.1
650-2	0.18	43.5	7.6	123.4-131.0
650-2	0.17	24.4	4.1	119.3-123.4

1/ Upstream fish movement speed denoted as equal to or greater than ( ) when five or more hours lapsed between observations

2/ Indian River Mile

3/ Talkeetna River Mile

which passed upstream of, and later descended and entered, a tributary are termed 'indirect'

Six radio tagged chinook salmon exhibited 'direct' upstream movement in the Susitna River and entered one of two tributaries, Indian River (RM 138.6) and Portage Creek (RM 148.9), within five to 12 days after being tagged (Figure E.5.14). Two of these fish held at two locations in the Susitna River for several days before entering a tributary stream. Fish bearing radio tag number 600-2 remained at RM 123.5 for approximately four days prior to moving upstream and entering Portage Creek, and fish bearing transmitter number 640-3 remained in the Susitna River near the mouth of the Indian River (RM 138.6) for 11 days before ascending that stream.

Three chinook salmon radio tagged at Curry Station (RM 120) displayed 'indirect' upstream movement within the Susitna River (Figure E.5.14). Fish bearing radio tag number 620-3 was detected within lower Devil Canyon at RM 150.7 and 149.5 on consecutive day overflights before ascending Portage Creek (RM 148.9) 12 days after being radio tagged. Fish bearing transmitter number 610-1 was detected at RM 151.0 in lower Devil Canyon prior to entering Portage Creek eight days after being radio tagged. Fish bearing radio tag number 630-1 migrated upstream to the mouth of Portage Creek (RM 148.9), nine days after being tagged. On the tenth day, this fish moved downstream ten miles and entered Indian River (RM 138.6).

Radio tagged chinook salmon displayed a variety of upstream movement rates within the Susitna River. For example, fish bearing transmitter number 730-1 was detected at the mouth of Portage Creek (RM 148.9) less than five days

(105.75 hours) after being radio tagged at RM 120.7. This represents an overall upstream migration rate of 0.26 mile per hour (mph) or 6.4 miles per day. The fastest short-term upstream migration rate was exhibited by fish bearing radio tag number 610-2 when it moved 1.15 miles upriver in 55 minutes. This is equivalent to an upstream migration rate 1.26 mph. Fish bearing radio tag number 600-1 moved 3.7 miles upriver within four hours and five minutes resulting in an upstream migration rate of 0.91 mph. Radio tagged chinook salmon in the Klamath River, California displayed similar migration rates (personal communication, Jon Heifetz).

Chinook salmon which moved upstream after being radio tagged at Talkeetna and Curry stations generally entered one tributary. However, two of these 11 fish entered two tributaries. Portage Creek (RM 148.9) supported six radio tagged fish, Indian River (RM 138.6) attracted five radio tagged fish, and Jack Long Creek (RM 144.5) and Lane Creek (RM 113.6) each contained one radio tagged chinook salmon. Fish bearing transmitter number 620-3 remained in Portage Creek (RM 148.9) for several days and then migrated downstream and entered Jack Long Creek (RM 144.5). Fish bearing transmitter number 610-2 entered and exited Indian River (RM 138.6) twice prior to entering and remaining in Portage Creek (RM 148.9) for several days.

Two fish were detected milling in lower Devil Canyon. One individual, bearing radio tag number 620-3, was noted at RM 151.7 on 5 July and RM 150.5 on 6 July. Fish bearing radio tag number 610-1 was noted at RM 151.0 on 6 July and RM 150.0 on 7 July. No tagged fish were detected upstream of RM 151.7.

Individual movements of radio tagged chinook salmon are further described in Appendix EL.

5.1.3 Escapement Surveys

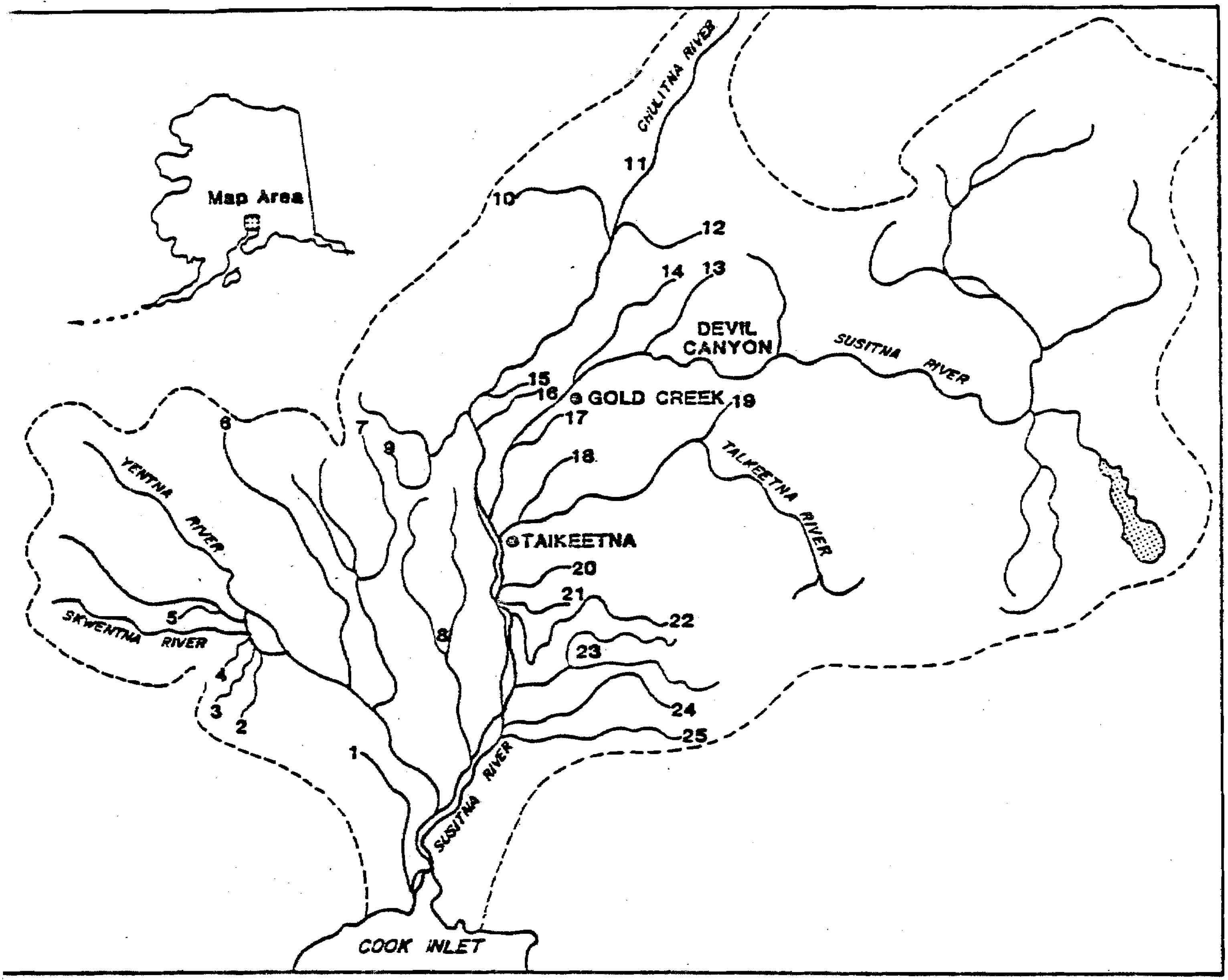
Consistent poor weather conditions basin wide, beginning in early July and extending through mid August, caused high, turbid water conditions. These conditions precluded surveys from being conducted or allowed only partial counts in many instances. Generally, 1981 chinook surveys were restricted to small drainages with fluctuating discharges which tended to clear rapidly between rainy periods. Some larger systems such as the Deshka River, Alexander Creek and Chunilna (Clear) Creek, which historically have had the highest escapements were not countable due to consistently high, turbid water conditions.

The 1981 chinook salmon escapement counts, survey dates, methods and visibility conditions are presented in Table E.5.6. Figure E.5.15 shows the locations of the streams surveyed. Without repetitious spawning ground counts and knowledge of the average life expectancy of chinook salmon in each stream surveyed, the escapement counts cannot be considered an absolute measure of total escapement. They are, rather, an index of abundance. Neilson and Geen (1981) found that a single census at the spawning peak measured only 52 percent of the total escapement. Their study also included precocious fish (Age 3_1 and 3_2) sometimes referred to as jack salmon. Precocious chinook salmon are difficult to observe because of their relatively small size (less than 400 mm) and light coloration, consequently the counts presented in Table

Table E.5.6. 1981 Chinook salmon escapement surveys, Adult Anadromous Investigations, Su Hydro Studies, 1981.

STREAM SURVEYED	SURVEY DATE	METHOD	CONDITIONS	CHINOOK SALMON COUNTED LIVE	DEAD	TOTAL
Alexander Creek[1/] (Sucker Creek to Lake)	7/29	Helio	Poor	578	10	588
Wolverine Creek (Alexander Creek drainage)	7/24	Helio	Good	243	Ø	243
Sucker Creek (Alexander Creek drainage)	7/29	Helio	Good	260	8	268
Willow Creek	7/29	Helio	Good	'	'	991
Deception Creek (Willow Creek drainage)	7/29	Helio	Good	'LESS THAN'		366
Montana Creek	7/30	Helio	Good	' 10% '		814
Kashwitna River (North Fork)	7/31	Helio	Good	'MORTALITY'		557
Little Willow Creek	7/31	Helio	Good	'AT TIME '		459
Sheep Creek	7/31	Helio	Good	'OF SURVEY'		1013
Goose Creek	7/30	Helio	Good	'	'	262
Prairie Creek	7/30	Fixed Wing	Poor	'	'	1800-2000
Lane Creek	7/27	Helio	Fair	22	Ø	22
Lane Creek	7/28	Foot	Good	40	Ø	40
Indian River	7/27	Helio	Good	421	1	422
Portage Creek	7/27	Helio	Good	659	Ø	659
Lake Creek[1/] (Camp Creek to Lake)	7/30	Helio	Poor	169	Ø	169
Camp Creek (Lake Creek drainage)	7/24	Helio	Fair	436	Ø	436
Sunflower Creek (Lake Creek drainage)	7/24	Helio	Good	260	Ø	260
Red Creek	7/29	Helio	Good	749	Ø	749
Talkeetna River	7/29-30	Helio	Good	2091	38	2129
Quartz Creek	7/29	Helio	Good	8	Ø	8
Canyon Creek	7/29	Helio	Good	84	Ø	84

1/ Partial count.



1. ALEXANDER CREEK	10. CHULITNA WEST FORK	19. PRAIRIE CREEK
2. TALACHULITNA	11. CHULITNA MIDDLE FORK	20. MONTANA CREEK
3. QUARTZ CREEK	12. HONOLULU CREEK	21. GOOSE CREEK
4. CANYON CREEK	13. PORTAGE CREEK	22. SHEEP CREEK
5. RED CREEK	14. INDIAN CREEK	23. KASHWITNA RIVER NORTH FORK
6. LAKE CREEK	15. BYERS CREEK	24. LITTLE WILLOW CREEK
7. PETERS CREEK	16. TROUBLESOME CREEK	25. WILLOW CREEK
8. DESHKA RIVER	17. LANE CREEK	
9. BUNCO CREEK	18. CLEAR CREEK	

Figure E.5.15. Susitna Basin with chinook salmon survey streams defined, Adult Anadromous Investigations, Su Hydro Studies, 1981.

E.5.6 should be considered as only an escapement index of fish four years and older. Based on fishwheel interception of age 3_1, and 3_2 fish at Sunshine, Talkeetna and Curry stations, precocious chinook salmon comprised between 16 and 28 percent of the population depending on sampling location (Table E.5.2).

Chinook salmon escapement counts for Susitna River basin streams from 1976 to 1981 are presented in Table E.5.7. Compared to the counts made by ADF&G Sport Fisheries Division in previous years, 1981 east side Susitna River tributary stream escapements of chinook salmon were above average while the west side tributary streams in 1981 had average escapements. Comparative surveys on Indian River and Portage Creek, two important chinook salmon spawning tributaries between Talkeetna and Devil Canyon, indicate the 1981 escapement was above average.

5.2 Sockeye, Pink, Chum and Coho Salmon Investigations

5.2.1 Escapement Sampling

Table E.5.8 summarizes the salmon escapement estimates by species at each of the mainstem Susitna River and Yentna River stations (Figure E.5.16) as determined from SSS counters and Petersen tag and recapture operations. Fishwheel catches are summarized in Table E.5.9. Daily sonar counts and fishwheel catches by sampling station are provided in Tables EB-1 through EB-8 and ED-1 through EC-10, respectively. The following subsections outline by species the specific results of escapement sampling at the above defined stations.

Table E.5.7. Chinook salmon escapement surveys of Susitna River Basin streams from 1976 to 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

STREAM	YEAR 1976	1977	1978	1979	1980	1981
Alexander Creek	5,412	13,385	5,854	6,215	a/	a/
Deshka River	21,693	39,642	24,639	27,385	a/	a/
Willow Creek	1,660	1,065	1,661	1,086	a/	1,357
Little Willow Creek	833	598	436	324 c/	a/	459
Kashwitna River (North Fork)	203	336	362	457	a/	557
Sheep Creek	455	630	1,209	778	a/	1,013
Goose Creek	160	133	283	-	a/	262
Montana Creek	1,445	1,443	881	1,094 c/	a/	814
Lane Creek	b/	b/	b/	-	b/	40
Indian River	537	393	114	285	a/	422
Portage Creek	702	374	140	190	a/	659
Prairie Creek	6,513	5,790	5,154	a/	a/	1,900 c/
Chunilna (Clear) Creek	1,237	769	997	864 c/	a/	a/
Chulitna River (East Fork)	112	168	59	a/	a/	a/
Chulitna River (NF)	1,870	1,782	900	a/	a/	a/
Chulitna River	124	229	62	a/	a/	
Honolulu Creek	24	36	13	37	a/	a/
Byers Creek	53	69	a/	28	a/	a/
Troublesome Creek	92	95	a/	a/	a/	a/
Bunco Creek	112	136	a/	58	a/	a/
Peters Creek	2,280	4,102	1,335	a/	a/	a/
Lake Creek	3,735	7,391	8,931	4,196	a/	a/
Talachulitna River	1,319	1,856	1,375	1,648	a/	2,129
Canyon Creek	44	135	b/	b/	b/	84
Quartz Creek	b/	8	b/	b/	b/	8
Red Creek	b/	1,511	385	b/	b/	749

1/ 1976-1980 counts - Kubik, S.W.
a/ No total count due to high turbid water
b/ Not counted
c/ Poor counting conditions

Table E.5.8. Apportioned sonar counts and Petersen population (tag/recapture) estimates by species and sampling location, Adult Anadromous Investigations, Su Hydro Studies, 1981.

SAMPLING LOCATION	RIVER MILE	ESCAPEMENT ESTIMATES							
		SOCKEYE		PINK		CHUM		COHO	
		Sonar	Petersen	Sonar	Petersen	Sonar	Petersen	Sonar	Petersen
Susitna Station	26	340,232	-	113,349	-	46,461	-	33,470	-
Yentna Station	04	139,401	-	36,053	-	19,765	-	17,017	-
Sunshine Station	80	89,906	133,489	72,945	49,501	59,630	262,851	22,793	19,841
Talkeetna Station	103	3,464	4,809	2,529	2,335	10,036	20,835	3,522	3,306
Curry Station	120	-	2,804	-	1,041	-	13,068	-	1,146

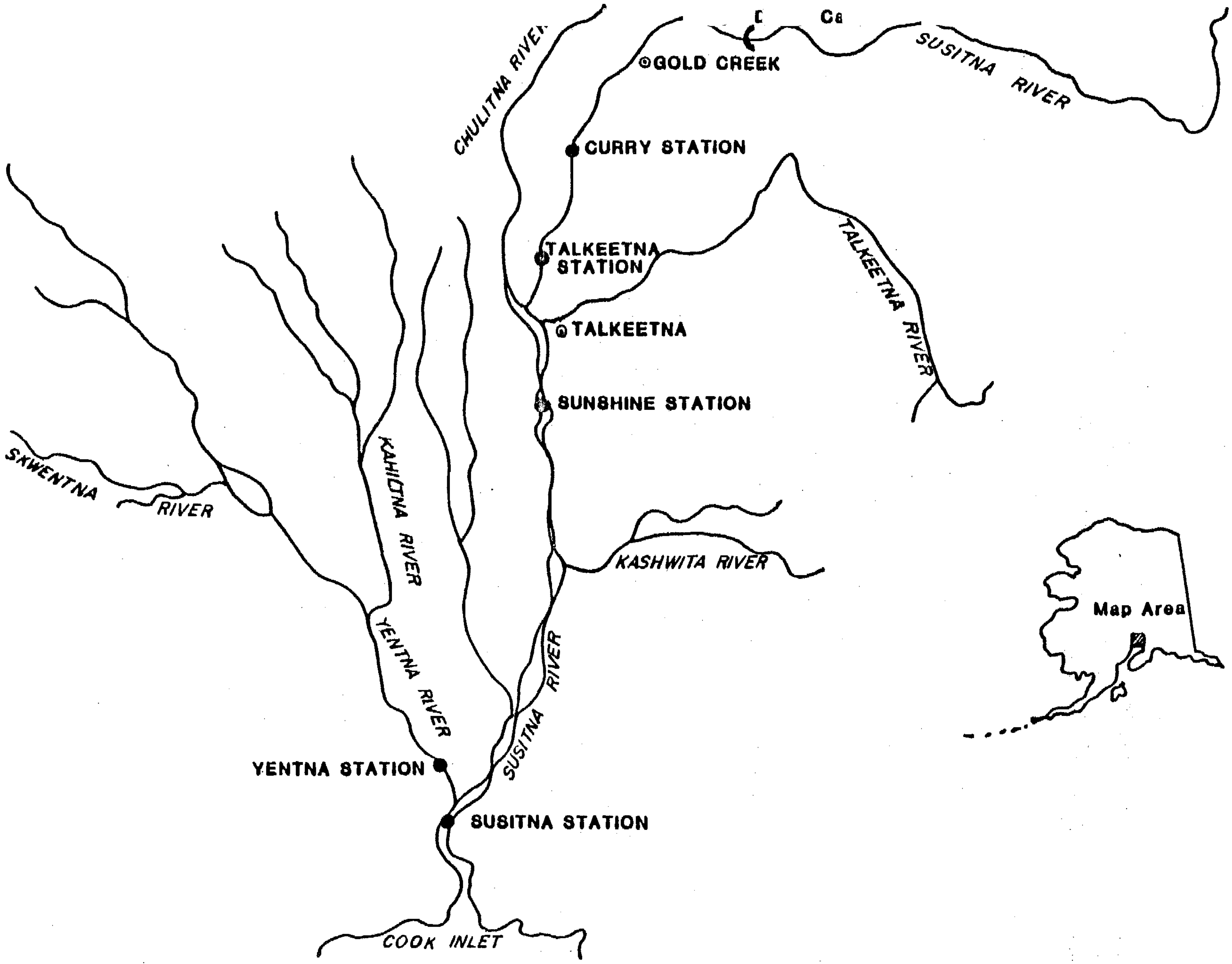


Figure E.5.16. Susitna Basin with field stations and major glacial streams defined, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Table E.5.9. Summary of fishwheel catches by species and sampling locations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

SAMPLING LOCATION	RIVER MILE	CATCH			
		SOCKEYE	PINK	CHUM	COHO
Susitna Station	26	4,087	691	250	329
Yentna Station	04	7,000	2,729	1,415	1,122
Sunshine Station	80	9,528	7,099	9,168	2,928
Talkeetna Station	103	398	379	1,285	533
Curry Station	120	470	229	1,276	182

5.2.1.1 Sockeye Salmon

At Susitna Station 340,232 sockeye were counted (Table E.5.8). Fifty-one percent of those counted migrated across the east bank SSS counter and 49 percent over the west bank counter. The migration principally extended from 29 June to 24 August with the mid-point occurring on 17 July (Figure E.5.17). Seventy-five percent of the sockeye escapement passed in a 13 day period from 11 July to 23 July. Fishwheels operating at Susitna Station intercepted a total of 4,087 sockeye salmon. Fishwheel catch per hour plotted against time (Figure ED-1) indicates the peak of migration occurred between 10 July and 19 July with the majority of the sockeye salmon migrating along the west bank.

A total of 139,401 sockeye salmon were logged by the SSS counters at Yentna Station (Table E.5.8). Ninety-two percent migrated over the south bank and eight percent over the north bank counters. The beginning, mid-point and end of migration occurred on 1 July, 16 July and 3 August respectively (Figure E.5.17). Seventy-five percent of the fish passed in a 12 day period between 12 July and 23 July. A total of 7,000 sockeye were caught in fishwheels at Yentna Station. Fishwheel catches indicate that the peak of migration occurred between 13 July and 15 July with the majority of fishwheel interceptions (70.0%) on the south bank (Figure ED-1).

A total of 89,906 sockeye salmon passed over the SSS counters at Sunshine Station. Sixty eight and nine-tenths percent were counted on the east bank sonar and 31.1 percent on the west bank counter. The migration began principally on 16 July, reached a mid-point on 23 July and was over on 20 August (Figure E.5.17). Seventy-five percent of the sockeye migrated over the

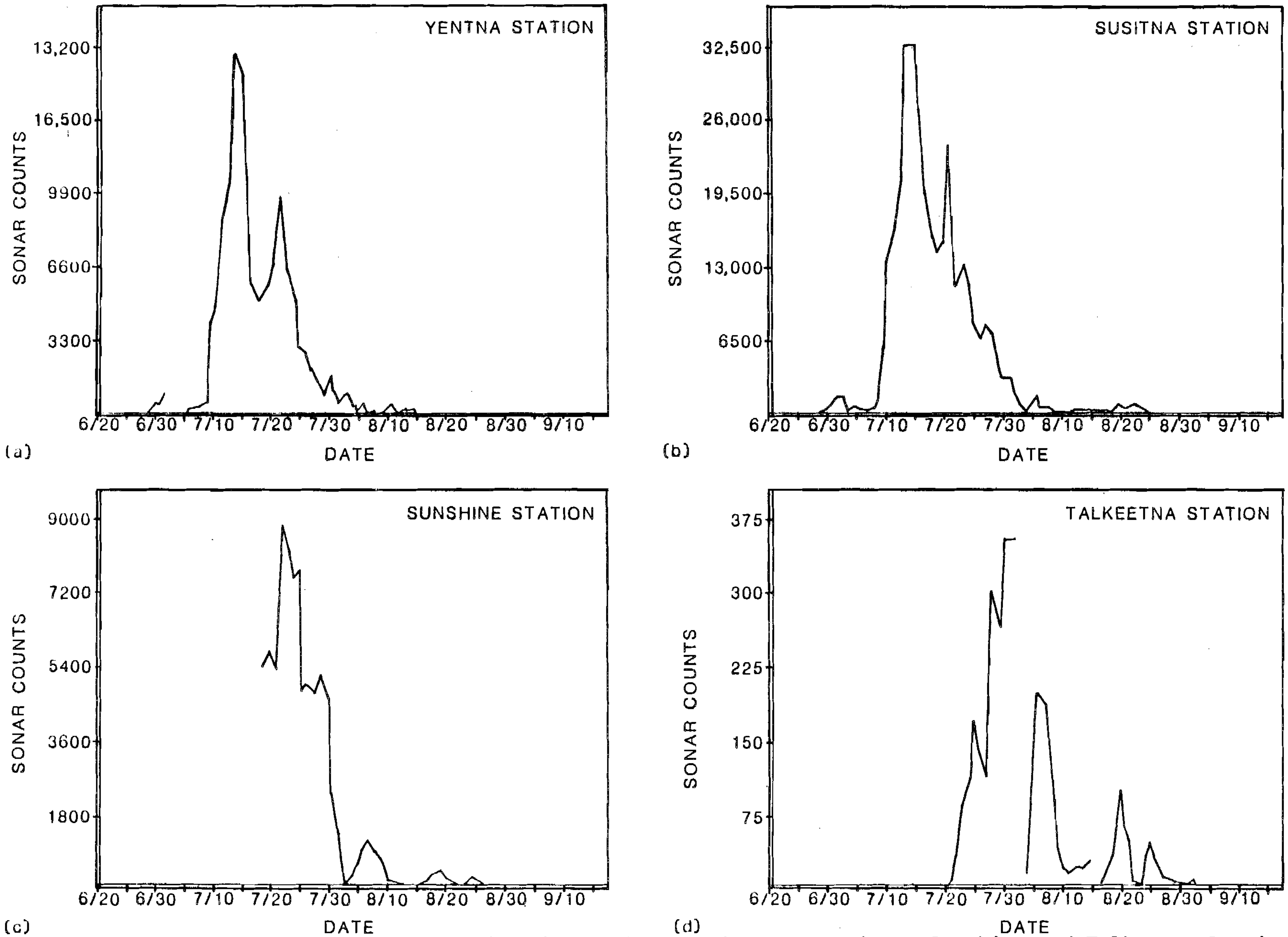


Figure E.5.17. Daily sonar counts of sockeye salmon at Yentna, Susitna, Sunshine and Talkeetna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

counters in an 11 day period between 19 July and 28 July. A total of 9,528 sockeye salmon were intercepted by fishwheels at Sunshine Station. Based on fishwheel catch records (Table ED-2) the peak migration occurred between 18 July and 23 July. The highest catches (83.2%) were made on the east side of the river.

A Talkeetna Station 3,464 sockeye salmon were counted. The majority of the fish (54 percent) were enumerated on the west bank SSS counter. The migration began on 23 July and was complete by 8 August. The mid-point occurred on 31 July (Figure E.5.17). Seventy-five percent of the fish were counted between 23 July and 6 August. Talkeetna Station fishwheels intercepted 393 sockeye salmon. From a plot of the mean hourly fishwheel catch (Figure ED-2) it appears that the peak of migration occurred between 27 July and 1 August with sockeye showing no apparent bank preference.

Curry Station fishwheels intercepted a total of 470 sockeye salmon with the majority (87.2%) being caught on the east side of the river. A plot of fishwheel catch per hour indicates that migration began, reached a mid-point and ended on 18 July, 5 August and 29 September respectively (Figure ED-3).

Accuracy of population numbers generated by SSS is dependent upon site location and species enumerated. Sonar counters do not enumerate every fish that migrates upstream. They accurately count those which pass over the counting plane or substrate of the counter but not those which migrate outside or offshore of the sonar substrate. Water depth, velocity, channel configuration and location or absence of obstructions are variables which influence where salmon migrate in the river at a particular time and location. Previous investigations indicate that sockeye and pink salmon usually migrate near shore within 60 feet or less of the bank (Tarbox, et. al., 1980). This appears to be generally less true of other salmon species. However, at Sunshine Station chum salmon were found to migrate closer inshore than sockeye salmon at either Susitna, Yentna, or Sunshine stations (Figures E.5.18 and E.5.19).

Sonar sector count data indicates that salmon, of all species, tend to display greater bank preference the further they progress up the Susitna River (Figures EE-1 to EE-8). To illustrate this, 42.6 percent of the counts on the east bank and 18.7 percent on the west bank at Susitna Station were registered in offshore sectors 6 to 12. At Talkeetna Station, 4.9 percent and 2.2 percent were recorded in the same sectors on the east and west bank respectively, an indication that SSS counters become more effective counting all salmon species in the upper reaches of the Susitna River. This increased efficiency is probably associated with higher water velocities and greater streambed gradient and channel consolidation in the upper Susitna River.

Sockeye salmon population estimates derived from fishwheel tagging operations at Sunshine, Talkeetna and Curry stations indicate that 133,489, 4,809 and 2,804 sockeye salmon were present at each site respectively. The 95 percent confidence limits on these estimates along with the components used to calculate them are presented in Table E.5.10 and Appendix EJ.

20 foot substrate : One sector = 1.5 feet
40 foot substrate : One sector = 3.0 feet
60 foot substrate : One sector = 4.5 feet

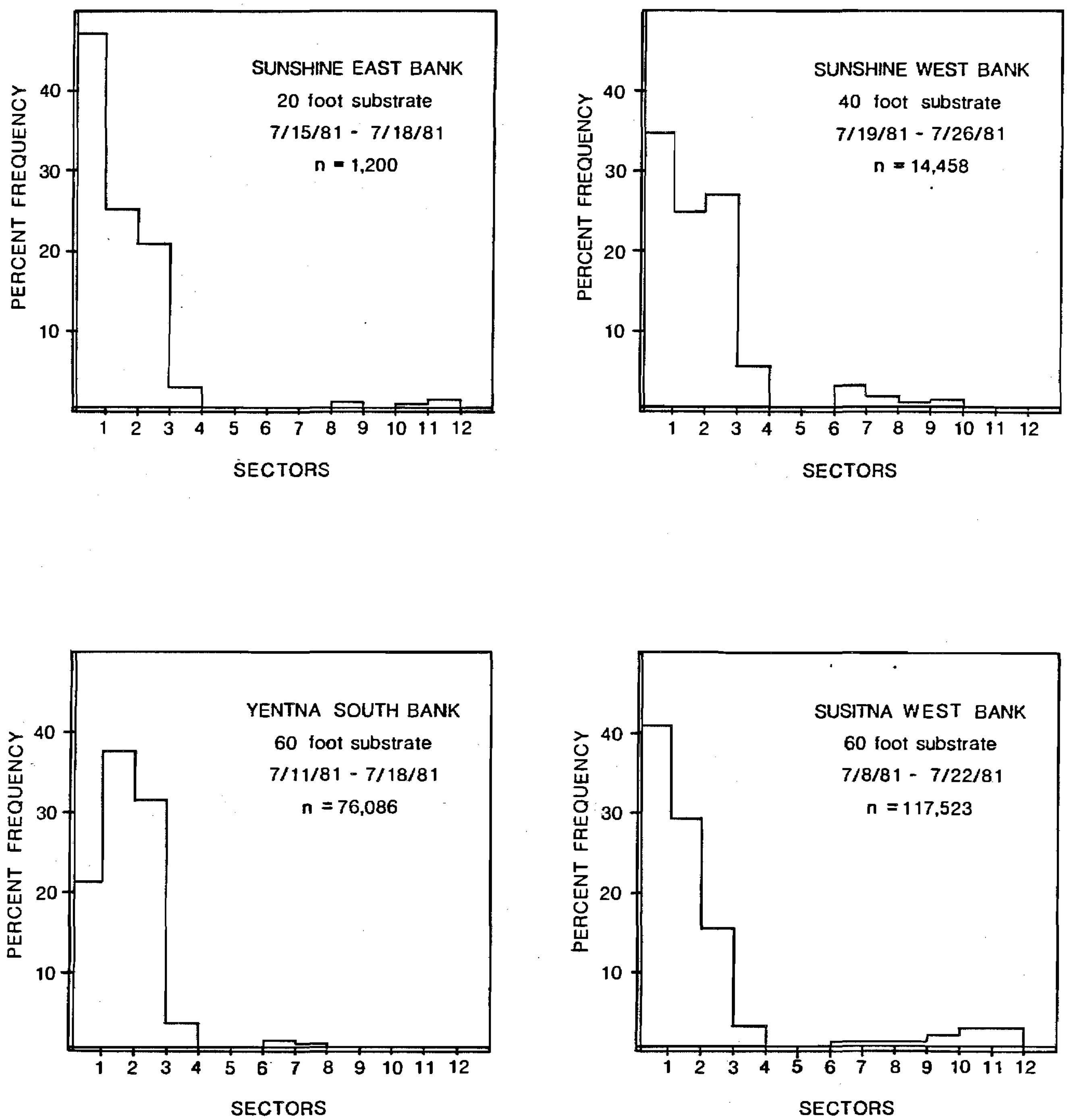


Figure E.5.18. Sector distribution of sockeye salmon passing over side scan sonar substrates where daily sockeye apportioned sonar counts were equal to or greater than ninety percent of total sonar counts, Adult Anadromous Investigations, Su Hydro Studies, 1981.

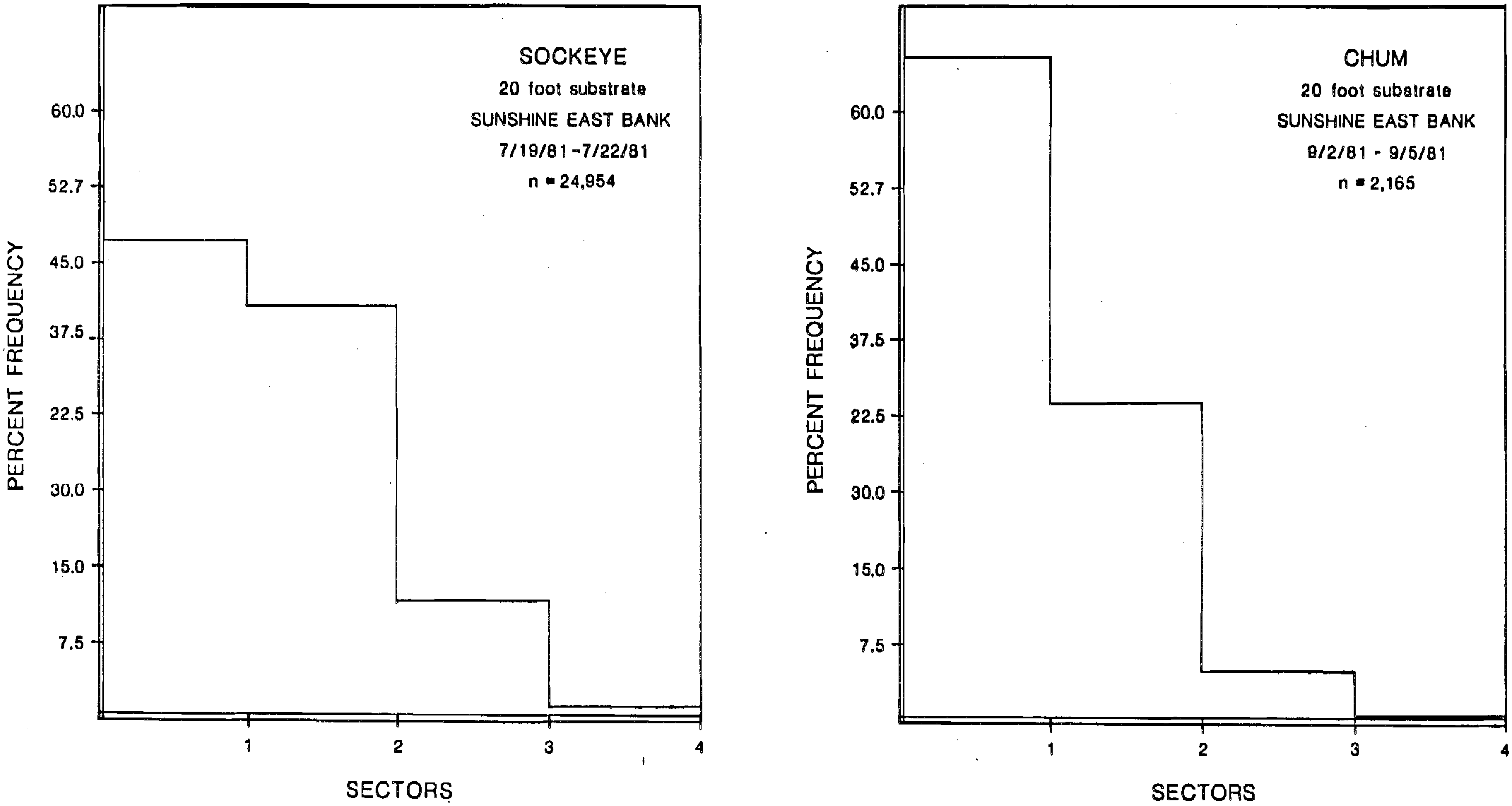


Figure E.5.19. Sector distribution of sockeye and chum salmon, passing over side scan sonar substrates, where daily sockeye and chum apportioned sonar counts were equal to or greater than ninety percent of total sonar counts, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Table E.5.10. Petersen population estimates and corresponding 95% confidence intervals of sockeye, pink, chum, and coho salmon migrating to Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

LOCATION OF POPULATION ESTIMATE	PARAMETER[1/]	SPECIES SOCKEYE	PINK	CHUM	COHO
Sunshine Station	m	8,179	5,900	7,660	2,240
	c	4,831	6,175	9,265	2,845
	r	296	736	270	347
	$\hat{N}$	133,489	49,501	262,851	19,841
	95% C.I.	120,219-150,051	46,357-53,101	235,207-297,859	18,061-22,011
Talkeetna Station	m	322	258	1,142	454
	c	4,167	724	5,944	852
	r	279	80	333	117
	$\hat{N}$	4,809	2,335	20,835	3,306
	95% C.I.	4,320-5,424	1,935-2,943	18,413-22,829	2,830-3,975
Curry Station	m	356	181	1,079	131
	c	3,040	69	4,033	105
	r	386	12	333	12
	$\hat{N}$	2,804	1,041	13,068	1,146
	95% C.I.	2,565-3,092	687-2,143	11,849-14,566	748-2,452

1/ m = Number of fish marked (adjusted for tag loss)
c = Total fish examined for marks during sampling census
r = Total number of marked fish observed during sampling census

$\hat{N}$ = Population estimate
C.I. = Confidence interval around N

These population estimates, as with others which will be presented in this report, should not be considered to be the actual number of fish, in this case sockeye salmon, that spawned upstream of the tagging location. The sockeye estimates represent only the number that were present at the particular tagging station. Other Susitna River investigations have revealed that all adult salmon species mill to some degree in the mainstem and that it is not uncommon to find adult salmon in the mainstem well upstream of their spawning destination (Barrett, 1974 and Friese, 1975).

A further factor in considering the population estimates is tag loss and tag induced mortalities. Both are capable of introducing positive bias to the estimates (Everhart, et. al, 1975). Tag induced mortalities were not considered significant due to minimal amount of time (10-20 seconds) required to tag a fish, and the general vigorous condition of the fish caught in the fishwheels. Tag loss was taken into consideration by adjusting the total number of fish tagged by species according to percent occurrence of loose tags found during foot surveys of clearwater spawning sloughs. This provided an independent tag loss factor for Sunshine Station and Talkeetna Station which was 7.5 percent and 3.4 percent respectively (Table E.5.11). The difference in tag loss factor between the two stations can be attributed to the difference in tagging quality. At Sunshine Station the total number of fish tagged was 24,159 compared to 2,176 at Talkeetna Station. The maximum number of fish tagged in as single day at Sunshine Station was approximately 1,700 fish versus 250 fish at Talkeetna Station. The tag loss factor of Curry Station tagged fish was presumed to be insignificant (less than one percent) based on survey crews not finding any shed Petersen disc tags during spawning ground surveys and the general difficulty encountered in removing these tags from carcasses.

Table E.5.11. Evaluation of tag loss based on spawning ground surveys of sloughs between Sunshine Station and Devil Canyon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Tag Type	Tagging Station	No. Tagged Fish Examined	No. Tags Shed	Total No. Tags	Percentage Retention
Orange/Floy FT-4	Sunshine	335	27	362	92.5
Yellow/Floy FT-4	Talkeetna	397	14	411	96.6

There is some discrepancy between populations estimates from sonar counts of fish, versus estimates from the tag and recapture project (Table E.5.8). Both estimates have deficiencies that must be recognized. It should not be assumed that all fish pass over the SSS substrate. As previously discussed, the sector distribution of salmon will vary with site and species, with an undetermined number of salmon passing beyond the SSS counting substrate. A major source of error present in SSS counts is related to the methods of apportionment and the bias inherent in those methods. Although all fishwheels used to apportion the SSS counts were in close proximity to the counters it must be recognized that fishwheels can be species selective. The apportioned sonar counts would then reflect the selected catchability of the fishwheel. In addition, SSS counters are adjusted for fish velocity and sensitivity, thereby introducing an unknown variance component into the counts. Methods of calculating confidence intervals around the population estimates are not available for SSS counts because, at this time, it is not feasible to duplicate a counting sample at one site at the same time, which does not allow for a sampling estimate for the variance. It should be realized that SSS counts are not absolute population numbers and at this time should be considered an index of species abundance at a specific location. Tag and recapture methods of estimating the population and the Petersen estimate in particular make six assumptions which are listed in Begon (1979). It is realized that failure to meet these assumptions will bias the population estimate and consequently the confidence intervals. The following assumptions were made in estimating population size: fishwheel capture of salmon was random with respect to the population; there was no mortality as a result of the tagging process; there was no differential mortality between tagged and untagged salmon; tagged salmon mixed randomly within the population; and recovery of tagged salmon was not influenced by the tag. The net result of tag loss, if not accounted for, will result in an overestimation of the population and conversely if tagged salmon are more readily visible than untagged salmon the resulting bias will cause the population estimate to be low. In summary, it should be recognized that both methods of enumerating salmon have potential drawbacks but at this point they represent the state of the art in estimating population sizes in glacial river systems. The discrepancies, where they exist, between Petersen population estimates and SSS counts reflect the limitations inherent in both techniques.

From the sonar data the migrational timing of sockeye salmon between the mainstem sampling stations indicates that those passing Susitna Station bound to the Yentna River made the six mile trip in one day or less, and of the fish migrating past Susitna Station to Sunshine Station and destined to Talkeetna

Station had an average travel time of 8 days and 13 days respectively (Figure E.5.20). This is an average travel rate of 6.8 miles/day between Susitna Station and Sunshine Station and 4.6 miles/day between Sunshine Station and Talkeetna Station. These migrational rates are considered valid if there is no fundamental variation in timing between Susitna River sockeye salmon stocks.

An insufficient number of tagged sockeye salmon recaptures were made at Talkeetna Station to determine the average travel time rate between Sunshine Station and Talkeetna Station. The data indicates that the minimum travel time between these stations was three days or a travel speed of 7.7 miles/day (Figure E.5.21). Tag recaptures of sockeye salmon at Curry Station indicates a minimum travel time of five days from Sunshine Station to Curry Station and one day from Talkeetna Station to Curry Station (Figure E.5.22). The average migration time between Talkeetna Station and Curry Station based on the tag recapture data was approximately five days or a travel speed of approximately 3.5 miles/day.

Our investigations reveal that sockeye salmon generally reduced their travel speed the farther they migrate upstream. A possible explanation for this observation is that sockeye salmon display greater milling behavior as they approach their natal stream therein reducing their net travel speed. This behavior was indicated by a significant number of sockeye salmon recaptures at Talkeetna Station that were intercepted more than 26 days earlier at Sunshine Station located 23 miles downstream from Talkeetna Station (Figure E.5.21).

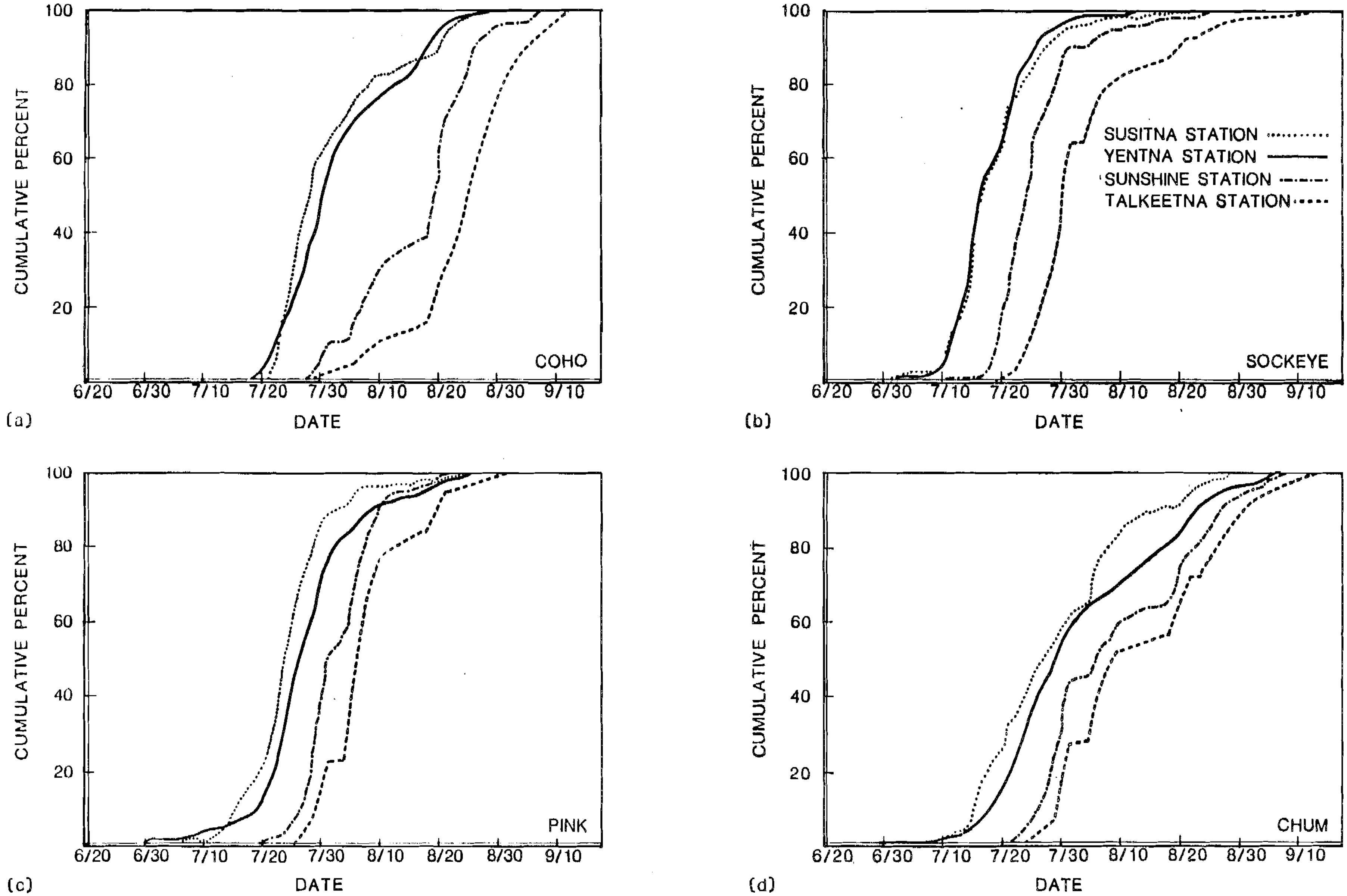


Figure E.5.20. Cumulative percent of sonar counts by species at Susitna, Yentna, Sunshine, and Talkeetna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

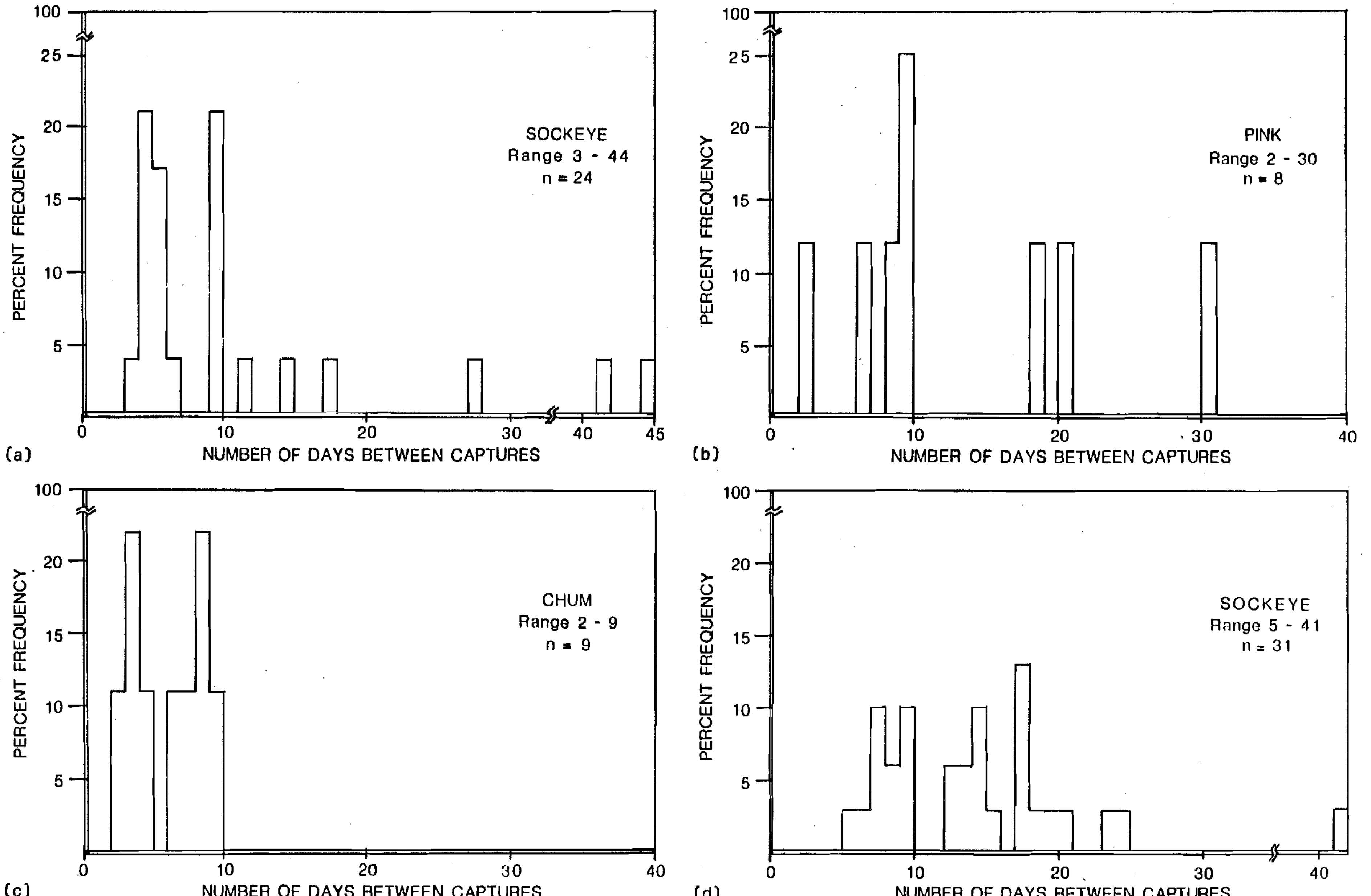


Figure E.5.21. (a-c) Migrational rates of sockeye, pink, and chum salmon between Sunshine Station and Talkeetna Station based on fishwheel recaptures. (d) Migrational rates of sockeye between Sunshine and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

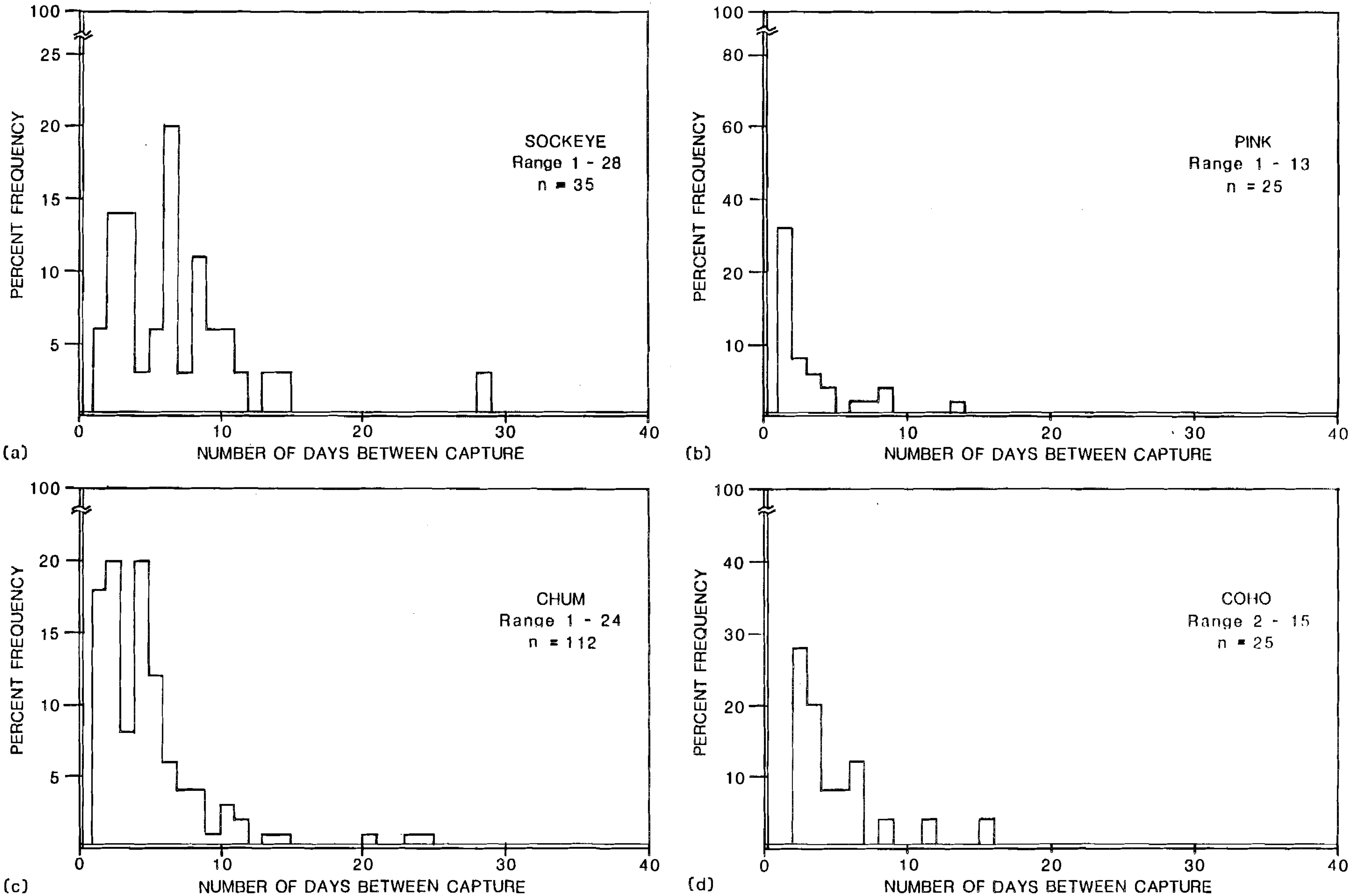


Figure E.5.22. Migrational rates of sockeye, pink, chum, and coho salmon between Talkeetna and Curry Stations based on fishwheel recaptures, Adult Anadromous Investigations, Su Hydro Studies, 1981.

The sonar counts and fishwheel catches at Susitna Station, Yentna Station, and Sunshine Station indicate a strong preference by sockeye salmon to favor one bank of the river depending on the location. Sockeye salmon were more abundant on the west side of the Susitna River at Susitna Station and were more numerous on the east bank at Sunshine Station. Yentna Station recorded higher sonar counts and fishwheel catches on the south side of the river bank. At Talkeetna Station, sockeye salmon utilized both sides of the river without any notable preference. The fishwheel catches at Curry Station indicate that sockeye are significantly more abundant on the east side of the river than on the west side (Figure ED-3).

The migrational preference displayed by sockeye salmon for a particular side of the river appears to be closely tied to site characteristics when proximity or distance to a spawning area is not a factor. Agents influencing bank preference in a specific reach of the river may be velocity, water depth and channel configuration and presence or absence of navigational obstructions.

Evaluation of hourly passage rates indicate distinct behavior patterns of sockeye salmon migrants at Susitna Station, Yentna Station and Sunshine Station (Figure E.5.23). Higher than average passage rates occurred between 1900 hours and 0100 hours at Susitna Station and lower than average passage between 0700 hours and 1100 hours. At Yentna Station sockeye salmon exhibited greater upstream movement between 2300 hours and 0500 hours and displayed lower than average upstream movement between 1100 hours and 1500 hours. Sockeye salmon at Sunshine Station moved less between 0700 hours and 1100 hours than at any other time and displayed a higher than average preference for movement between the hours of 1900 and 0100.

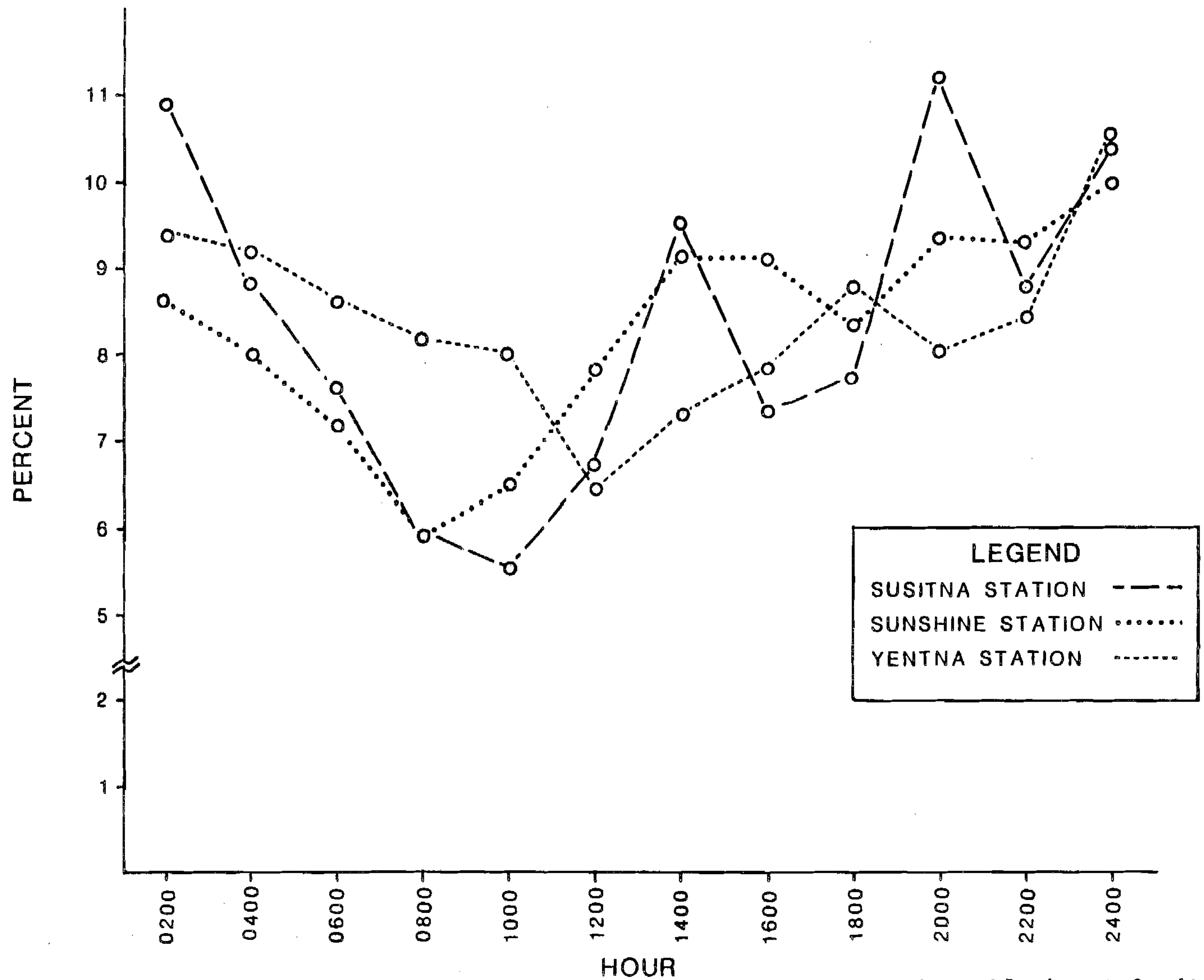


Figure E.5.23. Percent daily sonar counts of sockeye salmon by two hour blocks at Susitna Station, Yentna Station, and Sunshine Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Sockeye salmon age composition samples, collected in fishwheels, revealed that the majority of the sockeye salmon at each of the sampling stations were age 5_2 (Table E.5.12). The next abundant were age 4_2 sockeye followed by age 6_2 sockeye. Five year old sockeye, 1976 brood year, comprised approximately 86 percent of the return at Susitna and Yentna stations, 73 and 72 percent respectively at Sunshine and Talkeetna stations, and 70 percent of the sockeye at Curry Station. Four year old sockeye, 1977 brood year, made up 8.5 percent of the escapement return both at Susitna Station and Yentna Station and represented 22.2 percent, 24.6 percent and 28.5 percent of the sockeye at Sunshine, Talkeetna and Curry stations respectively. Approximately four percent of the escapement return at each of the sampling stations were six year old sockeye, 1975 brood year, with the exception of Curry Station which had a 1.5 percent return of six year old sockeye salmon.

The apparent difference in age composition of sockeye salmon collected at the lower sampling sites (Susitna and Yentna stations) as compared with the upper sampling locations (Sunshine, Talkeetna and Curry stations) may be due to differential freshwater survival or stock differences which could be determined conclusively through subsequent research efforts.

Table E.5.13 provides a summary of the sockeye salmon length data collected at each of the sampling stations. Graphic representation of this information is provided in Figures EF-1 through EF-5 and Figures EF-21 through EF-23. Five year old male sockeye salmon averaged 590 mm, 605 mm, 604 mm, 571 mm, and 584 mm at Susitna, Yentna, Sunshine, Talkeetna and Curry stations respectively. The average length of five year old female sockeye salmon in the

Table E.5.12. Analysis of sockeye salmon age data by percent from escapement samples collected at Susitna, Yentna, Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

COLLECTION SITE	n	AGE CLASS 1/										BROOD YEAR			
		3_1	3_2	4_1	4_2	4_3	5_1	5_2	5_3	6_2	6_3	1975	1976	1977	1978
Susitna Station	1709	0.0	0.6	0.0	8.4	0.0	0.0	83.9	2.7	0.1	4.3	4.4	86.6	8.4	0.6
Yentna Station	1193	0.1	0.7	0.7	7.5	0.4	1.9	80.8	3.5	2.4	2.0	4.4	86.2	8.6	0.8
Sunshine Station	976	0.0	1.1	0.6	21.0	0.6	0.0	70.2	2.6	0.2	3.7	3.9	72.8	22.2	1.1
Talkeetna Station	110	0.0	0.0	1.8	22.8	0.0	0.0	70.2	1.8	1.8	1.8	3.6	71.8	24.6	0.0
Curry Station	270	0.0	0.7	1.1	27.4	0.0	0.0	65.9	3.4	0.0	1.5	1.5	69.3	28.5	0.7

1/ Gilbert-Rich Notation

Table E.5.13. Analysis of sockeye salmon lengths in millimeters, by age from fishwheel catches at Susitna, Yentna, Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

COLLECTION SITE	AGE	n m[1/]	n f[2/]	SEX RATIO	RANGE LIMITS m	RANGE LIMITS f	MEAN m	MEAN f	95% CONF. LIMITS[3/] m	95% CONF. LIMITS[3/] f	MEDIAN m	MEDIAN f
Susitna Station	3	9	2	4.5:1	238-495	230-540	354	385	-	-	351	385
	4	89	55	1.6:1	328-600	415-614	468	562	458-479	419-704	459	494
	5	689	792	0.9:1	430-645	436-675	590	568	575-606	555-581	587	564
	6	31	42	0.7:1	452-626	507-600	576	564	564-588	557-570	575	565
Yentna Station	3	4	5	0.8:1	322-465	310-325	363	315	-	-	333	313
	4	60	43	1.4:1	333-603	340-597	477	485	462-491	469-501	464	490
	5	554	475	1.2:1	442-684	419-632	605	577	584-626	554-599	598	571
	6	30	22	1.4:1	565-682	437-601	609	567	600-618	549-584	606	576
Sunshine Station	3	11	0	-	270-470	-	342	-	-	-	331	-
	4	150	67	2.2:1	321-615	416-596	486	512	475-496	503-520	464	508
	5	308	402	0.8:1	431-699	454-624	604	553	567-640	551-556	593	555
	6	26	12	2.2:1	502-635	515-587	577	554	566-588	540-567	576	554
Talkeetna Station	4	11	16	0.7:1	400-580	436-590	507	517	464-549	494-540	515	520
	5	30	49	0.6:1	395-635	415-615	571	551	552-590	541-562	585	560
	6	0	4	-	-	540-580	-	563	-	-	-	566
Curry Station	3	1	1	1:1	-	-	340	320	-	-	340	320
	4	53	24	2.2:1	335-615	455-605	496	532	478-514	513-550	480	534
	5	68	119	0.6:1	490-640	445-610	584	560	577-590	556-565	590	563
	6	1	3	0.3:1	-	480-568	570	536	-	-	570	560

1/ Male
2/ Female
3/ Confidence of Limits on Mean

station order as defined above was 568 mm, 577 mm, 553 mm, 551 mm and 560 mm. The combined sockeye salmon lengths of all ages ranged from 230 mm to 675 mm at Susitna Station, 310 mm to 684 mm at Yentna Station, 395 mm to 635 mm at Talkeetna Statin and 335 mm to 640 mm at Curry Station. Male sockeye salmon were larger than females in all age classes (Table E.5.13) but were more numerous than female sockeye at only Talkeetna Station (1.2 to 1.0). At Sunshine Station sex ratios indicate that male and female sockeye were equally abundant (1.0 to 1.0). Males were less abundant than females at Susitna Station (0.9 to 1.0), Talkeetna Station (0.6 to 1.0) and Curry Station (0.8 to 1.0).

5.2.1.2 Pink Salmon

Side Scan Sonar counters at Susitna Station enumerated 113,349 pink salmon; 88 percent on the east side and 12 percent on the west side of the Susitna River. The pink salmon migration essentially began, reached a mid-point and terminated on 10 July, 25 July and 21 August respectively (Figure E.5.24). Seventy-five percent of the pink salmon migration passed Susitna Station in 15 days between 15 July and 29 July. The fishwheels at Susitna Station caught a total of 691 pink salmon. Of the 691 pinks caught, 57.5 percent were intercepted by the west bank fishwheel and 42.5 percent intercepted by the east bank fishwheel. Figure ED-4 indicates the peak of migration occurred between 21 July and 3 August.

At Yentna Station, 36,053 pink salmon were enumerated by sonar counters. The south bank sonar counter recorded 82 percent of the counts while 18 percent were registered by the north bank sonar counter. The beginning, mid-point and

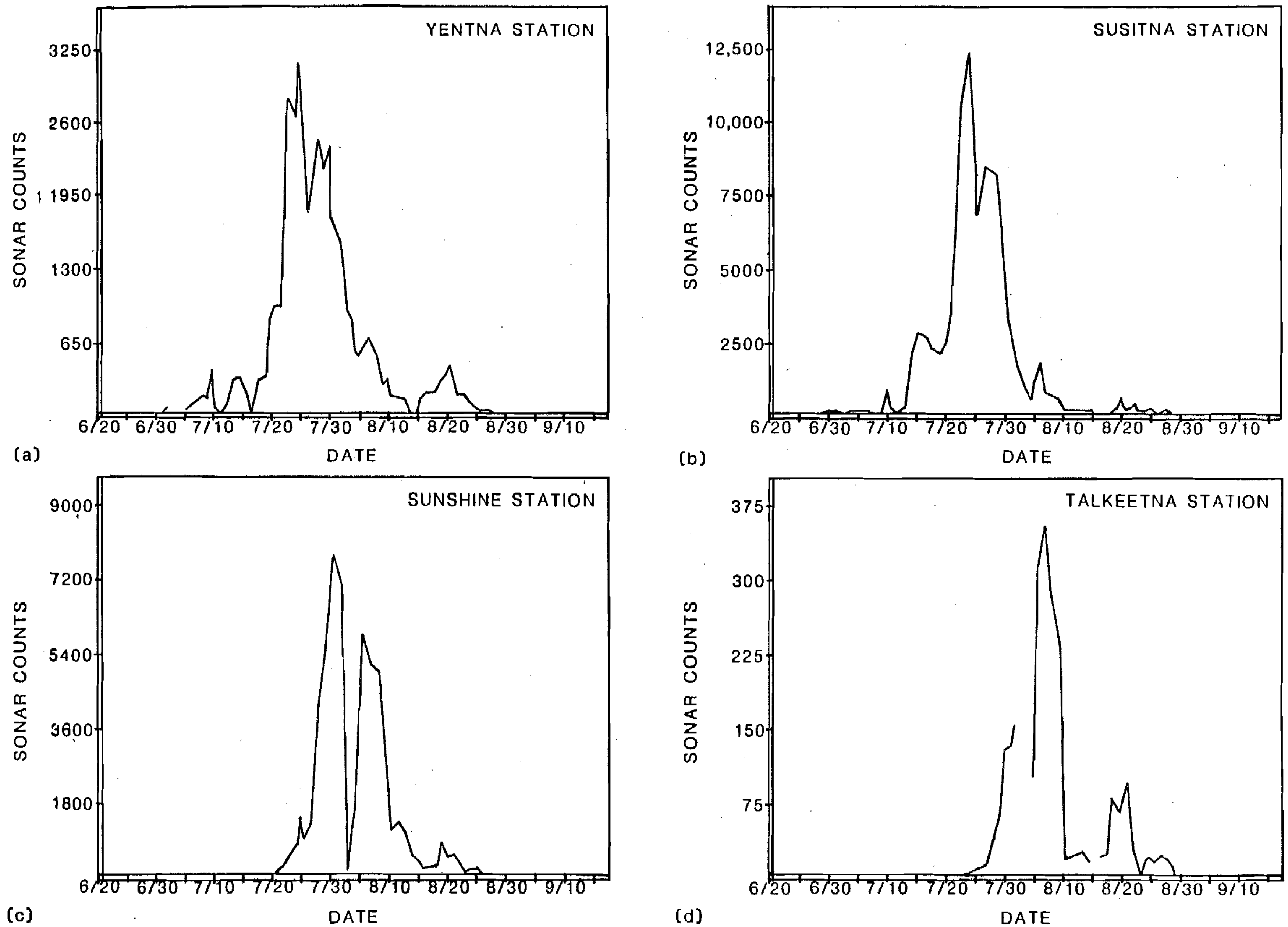


Figure E.5.24. Daily sonar counts of pink salmon at Yentna, Susitna, Sunshine and Talkeetna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

end of the migration approximately occurred on 14 July, 27 July and 20 August respectively (Figure E.5.24). Seventy-five percent of the pink salmon were counted in 13 days between 21 July and 2 August. The two fishwheels located at Yentna Station intercepted 2,729 pink salmon. Sixty-three and seven tenths percent of the pink salmon were intercepted by the south bank fishwheel and 36.8 percent were caught by the north bank fishwheel. A graphic representation of the fishwheel catch per hour indicates that the peak of migration occurred in the 17 day period between 21 July and 6 August (Figure ED-4).

At Sunshine Station SSS counters enumerated 72,945 pink salmon. Eighty-four and five-tenths percent of the counts were registered on the east side of the river and 15.5 percent on the west side of the river. The migration essentially began on 23 July, peaked on 1 August and terminated on 20 August (Figure E.5.24). Seventy-five percent of the fish were counted in 13 days from 28 July to 9 August. Four fishwheels were operated at Sunshine Station; two on the west bank and two on the east bank of the Susitna River. A combined total of 7,099 pink salmon were caught with the east bank fishwheels intercepting 91.3 percent and the west bank fishwheels catching the remaining 8.7 percent. Figure ED-5, a plot of fishwheel catch per hour, shows the peak of migration occurred between 29 July and 9 August.

Side scan sonar counters at Talkeetna Station enumerated 2,529 pink salmon. Fifty-seven and three-tenths percent of the counts were recorded by the west bank sonar and 42.7 percent by the east bank sonar. The migration principally began on 27 July, reached a mid-point on 6 August and terminated on 20 August (Figure E.5.24). Seventy-five percent of the escapement was intercepted between 29 July and 9 August.

The four fishwheels operating at Talkeetna Station intercepted a total of 379 pink salmon. Fifty-nine point four percent were caught by the east bank fishwheels and 40.6 percent were caught by the west bank fishwheels. Figure ED-5 graphically illustrates that peak fishwheel catches of pink salmon occurred between 1 August and 10 August.

The pink salmon migration at Curry station started on 31 July, reached a midpoint on 8 August and terminated 19 August approximately (Figure ED-6). Seventy-five percent of the escapement passed the site between 4 August and 19 August. The majority of the pink salmon fishwheel catch (69.9 percent) at Curry Station was made on the east side of the river.

Population estimates derived from tag and recapture data indicate that 53,101 pink salmon were present at Sunshine Station, 2,335 present at Talkeetna Station and 1,146 present at Curry Station. The 95 percent confidence limits along with the parameters used to calculate these estimates are presented in Table E.5.10 and Appendix EJ.

The migrational rate based on plots of sonar and fishwheel catch data indicate that pink salmon took an average of three days to reach Yentna Station from Susitna Station, a distance of approximately six miles (Figures E.5.20 and ED-5). This represents an average travel speed of about 2.0 miles per day. These travel rates are valid only if there is no fundamental variation in migrational timing between Susitna River pink salmon stocks.

Pink salmon averaged about nine days of travel time between Susitna Station and Sunshine Station (Figure E.5.20). This represents an average travel rate of 6.0 miles/day. Travel time between Susitna Station and Talkeetna Station was approximately 12 days or a travel speed of 6.4 miles/day.

Tag and recapture data on pink salmon indicate that travel time between Sunshine Station and Talkeetna Station ranged from two to 30 days (Figure E.5.21). Pink salmon averaged three days of travel time or six miles/day between Talkeetna Station and Curry Station with a range of one to 13 days (Figure E.5.22).

Table E.5.14 provides a summary of the pink salmon length data collected at each of the mainstem sampling stations. Graphic representation of this data is provided in Figures EF-6 through EF-10 and Figure EF-24. The average length of male pink salmon was 444 mm at Susitna Station, 478 mm at Yentna Station, 445 mm at Sunshine Station and 432 mm at Curry Station. In comparison females averaged 433 mm, 471 mm, 449 mm, 434 mm, and 432 mm in the same order by station. The data indicates that pink salmon stocks in the Yentna River subdrainage were larger than the pink salmon stocks utilizing the Susitna River upstream of the Yentna River confluence (Figure EF-24).

Table E.5.14 also summarizes the sex composition of pink salmon sampled from fishwheel catches at each of the stations. Male pink salmon were more abundant than females at all sampling stations except at Talkeetna Station where females were 20 percent more numerous (1:1.2) than males.

Table E.5.14. Analysis of pink salmon lengths, in millimeters, from fishwheel catches at Susitna, Yentna, Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

COLLECTION SITE	AGE	n		SEX RATIO	RANGE LIMITS		MEAN		95% CONF. LIMITS 3/		MEDIAN	
		m 1/	f 2/		m	f	m	f	m	f	m	f
Susitna Station	2	73	177	0.4:1	333-566	318-491	444	433	437-452	430-436	443	435
Yentna Station	2	494	619	0.8:1	315-580	245-567	478	471	449-506	441-501	452	441
Sunshine Station	2	604	727	0.8:1	336-565	345-505	445	449	443-448	434-464	445	440
Talkeetna Station	2	111	89	1.2:1	380-505	303-480	434	434	428-439	428-439	430	430
Curry Station	2	77	101	0.8:1	355-560	360-485	432	432	425-439	427-436	430	430

1/ Male
2/ Female
3/ Confidence Limits on Mean

5.2.1.3 Chum Salmon

A total of 46,461 chum salmon were enumerated at Susitna Station with SSS counters. The majority (91.1%) of the fish were enumerated on the east side of the river and the balance (8.9%) on the west side. The migration arrived at Susitna Station, on 10 July, reached a mid-point on 27 July and ended on 25 August (Figure E.5.25). Seventy-five percent of the escapement was counted between 15 July and 6 August. A total of 250 chum salmon were caught in the fishwheels operated at Susitna Station. The peak migration, as indicated by a plot of the mean hourly fishwheel catch (Figure ED-7), occurred between 3 August and 7 August with the majority of fishwheel interceptions occurring along the east bank.

The Yentna Station SSS counters enumerated 19,765 chum salmon. Sixty-four and four-tenths percent of the counts were recorded by the south bank sonar and 35.6 percent by the north bank sonar. The chum salmon migration essentially began at Yentna Station on 13 July, reached a mid-point on 29 July and terminated on 24 August (Figure E.5.25). Seventy-five percent of the fish were counted in a 29 day period between 18 July and 15 August. Fishwheels operated at Yentna Station caught a total of 1,415 chum salmon. Chum salmon passage at Yentna Station reached a peak between 20 July and 23 July as indicated by fishwheel catch data (Figure ED-7). The north and south bank fishwheels, respectively, caught 66.3 percent and 33.7 percent of the chum salmon.

Side scan sonar counters at Sunshine Station counted 59,630 chum salmon. The east bank counter recorded 77.9 percent of counts and the remainder, 22.1

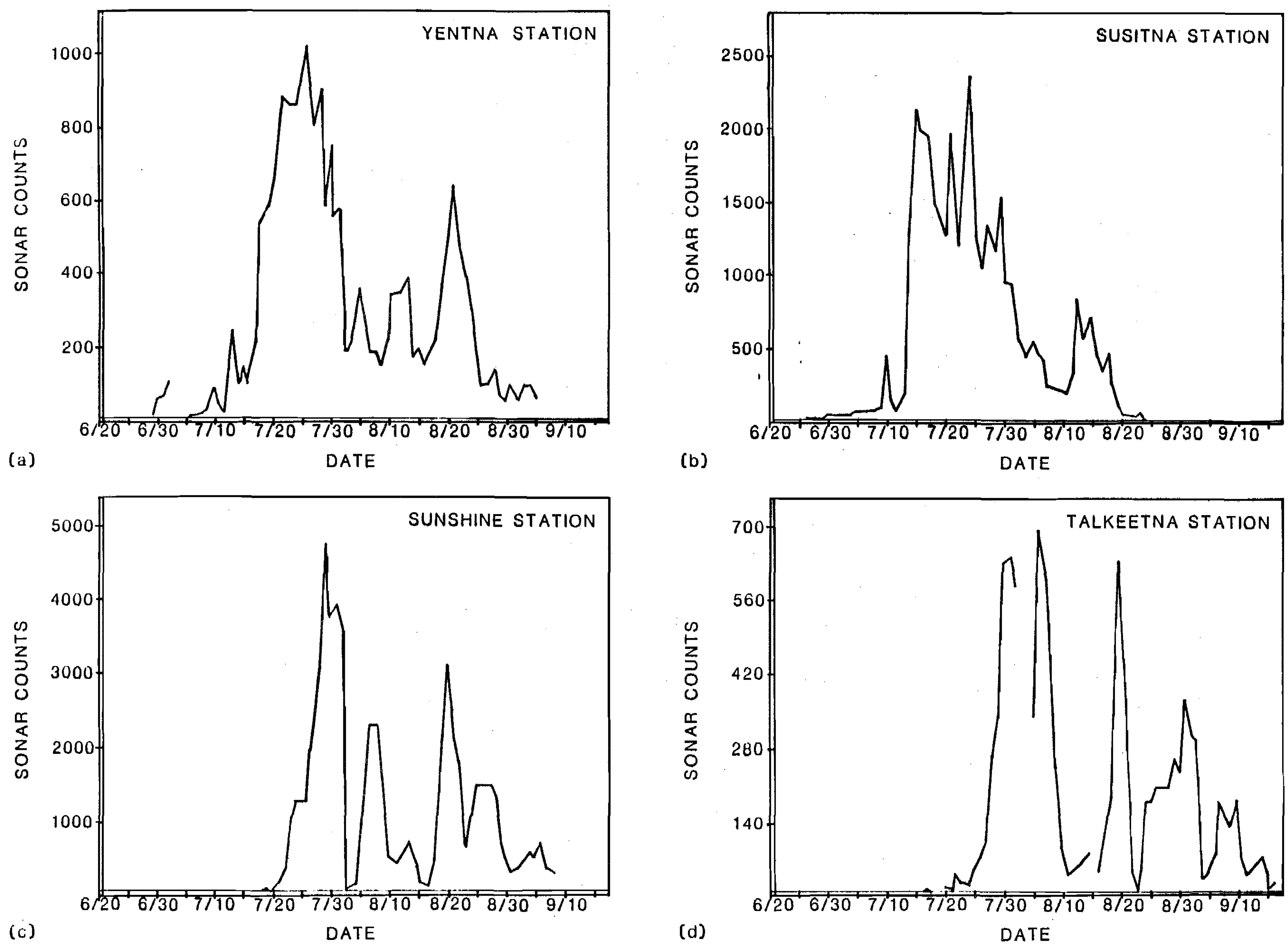


Figure E.5.25. Daily sonar counts of chum salmon at Yentna, Susitna, Sunshine and Talkeetna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

percent, were registered on the west bank counter. The chum salmon migration began on 22 July, reached a mid-point on 6 August and terminated on 6 September, approximately (Figure E.5.25). Seventy-five percent of the fish were counted in a 29 day period between 27 July and 24 August. A total of 9,168 chum salmon were caught in the four fishwheels at Sunshine Station. The peak of chum salmon migration at Sunshine Station, as indicated by daily fishwheel catches, occurred between 17 August and 19 August (Figure ED-8). The east bank fishwheels intercepted more chum salmon than the west bank wheels by a ratio of 9.1:1.

A total of 10,036 chum salmon were counted at Talkeetna Station. The west bank SSS counted 59.6 percent of the chum salmon and 40.4 percent were enumerated by the east bank SSS. The migration approximately began on 28 July, reached a mid-point on 8 August and ended on 29 August (Figure E.5.25). Seventy-five percent of the escapement was counted in a 32 day period between 30 July and 30 August. A total of 1,285 chum salmon were intercepted by the fishwheels at Talkeetna Station. Seventy-five percent were caught between 4 August and 7 September with 48.7 percent and 51.3 percent of the total catch intercepted in the east and west bank fishwheels respectively (Figure ED-8).

Fishwheel catches at Curry Station indicate that the migration essentially began on 29 July, reached a mid-point on 16 August and terminated on 2 September (Figure ED-9). The majority (89.6%) of the catch was made on the east side of the river.

Tag and recapture data indicates that 262,851 chum salmon were present at Sunshine Station, 20,385 at Talkeetna Station and 13,068 at Curry Station.

The 95 percent confidence limits and variables used to calculate the estimates are presented in Table E.5.10 and Appendix EJ.

Chum salmon averaged four days of travel time between Susitna Station and Yentna Station for a travel speed of 1.5 miles/day. The average travel time between Susitna Station and Sunshine Station was 10 days which computes to a travel speed of 5.4 miles/day. The migration period between Susitna Station and Talkeetna Station averaged 14 days or 5.5 miles/day. The migration timing and travel rates presented above are considered valid if there is no fundamental variation in timing between Susitna River chum salmon stocks.

Chum salmon tagged at Sunshine Station took between two and nine days to reach Talkeetna Station (Figure E.5.21). Between Talkeetna Station and Curry Station the number of travel days ranged from one to 24 days with an average travel time of approximately 4.5 days and a mean travel speed of 3.8 miles/day (Figure E.5.22).

Evaluation of the hourly passage rate of chum salmon at Sunshine Station suggests a distinct behavior pattern with a high percentage of the fish passing the counters between 2100 hours and 0100 hours and between 0300 hours and 0500 hours (Figure E.5.26). The lowest hourly passage rate occurred between 0700 hours and 1100 hours. East bank SSS sector counts at Sunshine Station indicate that chum salmon displayed a strong migrational preference for near-shore travel. More than 60 percent of the chum salmon were counted in the first sonar sector and 30 percent in the second sector (Figure E.5.19). Comparison data is not available for the other stations due to the absence of discrete periods when chum salmon comprised 90 percent or more of the counts.

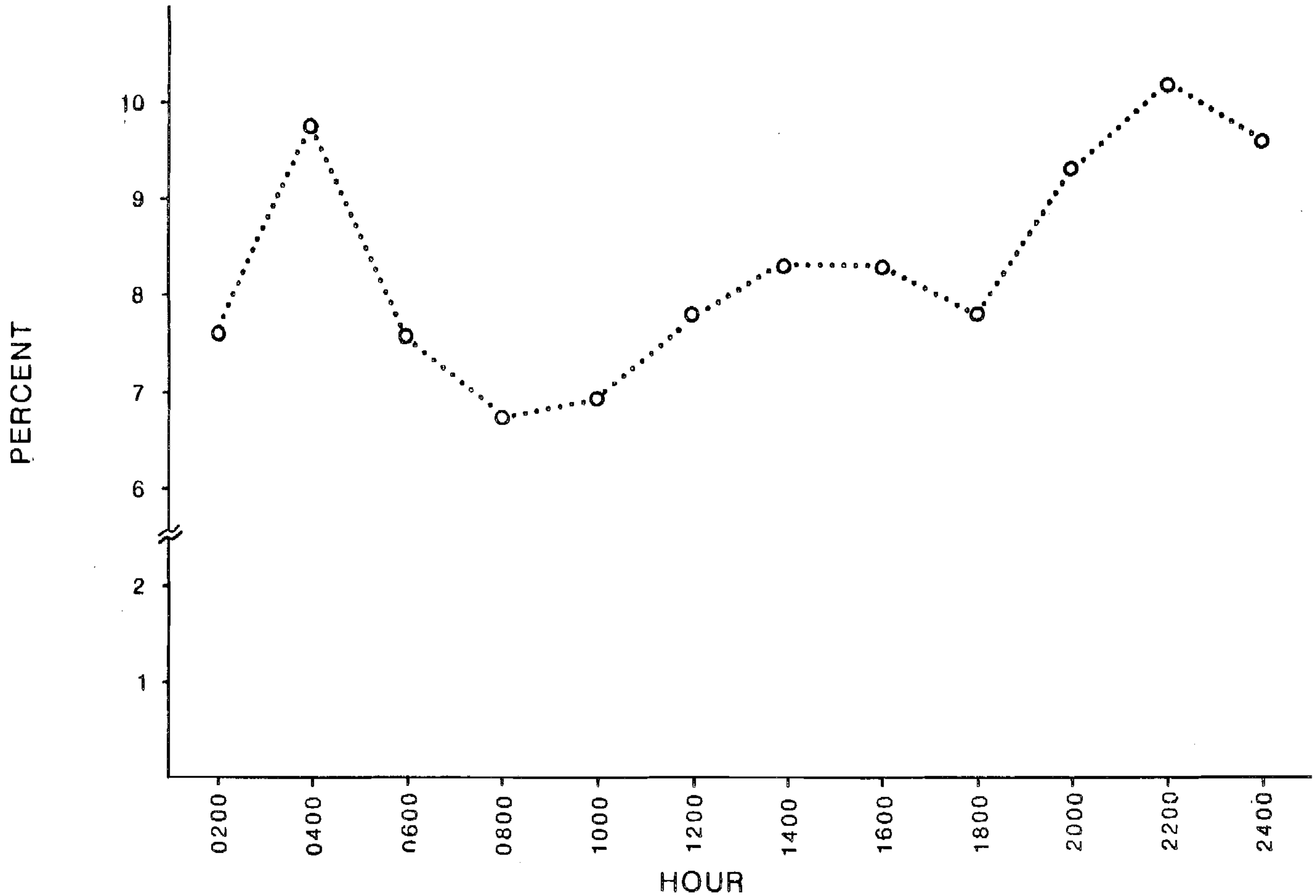


Figure E.5.26. Percent daily sonar counts of chum salmon by two hour blocks at Sunshine Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Table E.5.15 outlines the age structure of the chum salmon sampled at each of the stations. Age 4_1 chum salmon from the 1977 brood year dominated the catch at each site comprising an average of 86 percent of the fish. Next abundant were age 5_1 fish followed by age 3_1 fish which made up 10 percent and four percent of the age samples respectively. The most notable difference in age class structure was among the chum salmon sampled at Curry Station which were 14.1 percent and 1.9 percent age 5_1 and 3_1 fish respectively. This is a considerable variation from the above cited averages for the combined stations.

Presented in Table E.5.16 is a summary of chum salmon length data collected at each sampling location. These data are also graphically displayed in Figures EF-11 through EF-15 and Figures EF-25 through EF-27. Chum salmon of all age classes at Susitna Station ranged in size from 445 mm to 658 mm, at Yentna Station from 436 mm to 697 mm, at Sunshine Station from 455 mm to 718 mm, at Talkeetna Station from 480 mm to 720 mm and at Curry Station from 440 mm to 680 mm. Four year old male chum salmon had an average length of 593 mm, 601 mm, 624 mm, 586 mm, and 593 mm at Susitna, Yentna, Sunshine, Talkeetna and Curry stations respectively. Female chum salmon of the same age in the same station order as defined above had an average length of 581 mm, 585 mm, 588 mm, 578 mm, and 614 mm respectively.

Table E.5.16 also provides a comparison of sex ratios between age classes by sampling location. Combined age class sex ratios indicate that male chum salmon were less abundant than females at Susitna Station (1:1.6) and Sunshine

Table E.5.15. Analysis of chum salmon age data by percent from escapement samples collected at Susitna, Yentna, Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

COLLECTION SITE	SAMPLE SIZE	AGE CLASS 1/			BROOD YEAR		
		3_1	4_1	5_1	1976	1977	1978
Susitna Station	158	3.2	88.6	8.2	8.2	88.6	3.2
Yentna Station	754	6.6	84.1	9.3	9.3	84.1	6.6
Sunshine Station	1088	4.1	88.7	7.2	7.2	88.7	4.1
Talkeetna Station	438	4.1	85.2	10.7	10.7	85.2	4.1
Curry Station	632	1.9	84.0	14.1	14.1	84.0	1.9

1/ Gilbert-Rich Notation

Table E.5.16. Analysis of chum salmon lengths, in millimeters, by age from fishwheel catches at Susitna, Yentna, Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

COLLECTION SITE	AGE	n m[1]	n f[2]	SEX RATIO	RANGE LIMITS m	RANGE LIMITS f	MEAN m	MEAN f	95% CONF. LIMITS[3] m	95% CONF. LIMITS[3] f	MEDIAN m	MEDIAN f
Susitna Station	3	3	2	1.5:1	501-566	500-518	537	509	-	-	544	509
	4	51	89	0.6:1	502-645	445-658	593	581	584-602	574-588	595	584
	5	8	5	1.6:1	538-620	584-632	585	610	-	-	580	607
Yentna Station	3	22	28	0.1:1	474-590	436-612	537	523	523-551	509-538	542	526
	4	322	312	1.0:1	465-694	460-697	601	585	597-605	581-589	602	586
	5	42	28	1.5:1	564-693	526-688	629	616	620-638	602-629	625	614
Sunshine Station	3	16	29	0.6:1	510-585	495-600	554	538	544-565	527-548	560	535
	4	435	530	0.8:1	485-704	455-690	624	588	590-657	585-591	600	590
	5	40	38	1.0:1	541-718	565-708	628	614	616-640	603-625	625	612
Talkeetna Station	3	12	6	2:1	480-615	490-592	534	531	-	-	535	535
	4	212	161	1.3:1	515-650	480-689	586	578	581-590	572-583	585	575
	5	27	20	1.4:1	540-720	560-650	620	611	604-635	600-623	620	612
Curry Station	3	6	6	1:1	505-570	540-590	534	562	-	-	530	559
	4	281	250	1.1:1	440-680	470-678	593	614	589-597	571-656	595	592
	5	44	45	1.0:1	539-650	510-662	612	603	606-619	595-611	614	605

1/ Male
2/ Female
3/ Confidence Limits on Mean

Station (1:1.2) and equally numerous as males at Yentna Station (1:1). Male chum salmon were dominant at Talkeetna Station (1:0.7) and Curry Station (1:0.9).

5.2.1.4 Coho Salmon

A total of 33,470 coho salmon were enumerated across the SSS counters at Susitna Station. Seventy percent were registered by the east bank SSS and the balance by the west bank SSS. The migration began, reached a mid-point and ended on 20 July, 28 July and the 25 August respectively (Figure E.5.27). Approximately 75 percent of the fish passed in 25 days between 23 July and 16 August. The fishwheels at Susitna Station caught a total of 329 coho salmon. Coho salmon showed a strong bank preference with 76.3 percent moving up the west bank and 23.7 percent migrating along the east bank. A plot of fishwheel catch per hour indicates the peak of migration occurred between 25 July and 30 July (Figure ED-10).

The Yentna Station SSS counters enumerated a total of 17,017 coho salmon. The south bank counter registered 83.6 percent of the count and the north bank counter registered 16.4 percent of the count. The migration principally began on 22 July, reached a mid-point on 31 July and ended on 20 August (Figure E.5.27). Seventy five percent of the fish passed between 23 July and 16 August. A total of 1,122 coho were intercepted by Yentna Station fishwheels with 75.7 percent and 24.3 percent of the catch caught along the south and north bank respectively. The peak of migration, as shown by a plot of fishwheel catch per hour, occurred between 23 July and 6 August (Figure ED-10).

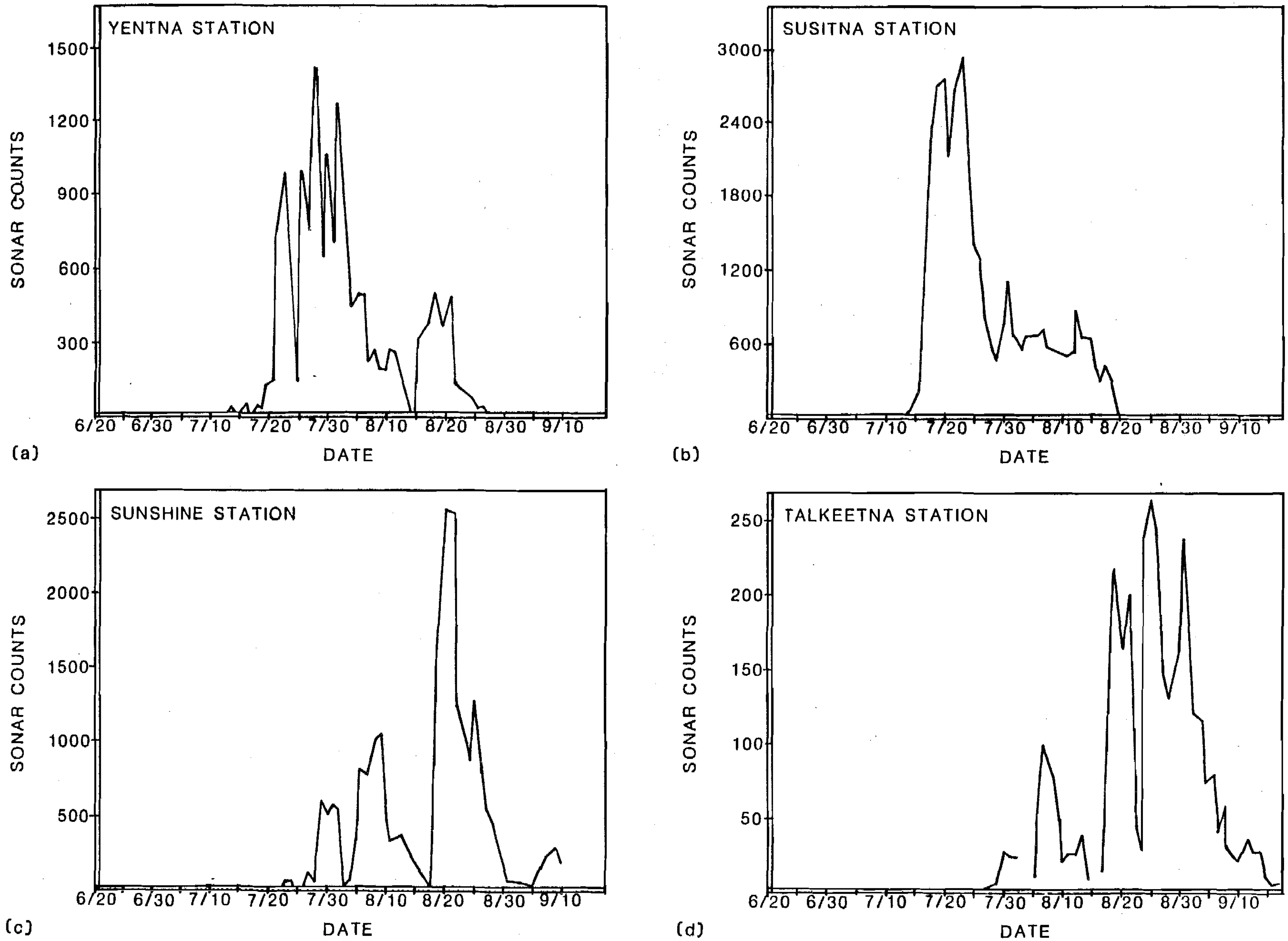


Figure E.5.27. Daily sonar counts of coho salmon at Yentna, Susitna, Sunshine and Talkeetna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Side Scan Sonar counters at Sunshine Station counted a total of 22,793 coho salmon. Sixty-six and six-tenths percent of the fish passed over the west bank sonar and the remaining 33.4 percent over the east bank sonar. The migration principally began at Sunshine Station on 29 July, reached a mid-point on 18 August and terminated on 5 September, approximately (Figure E.5.27). Seventy-five percent of the migration was counted in the 21 days between 4 August and 24 August. Sunshine Station fishwheels intercepted 2,928 coho salmon. There was no apparent preference between river banks with 51.6 percent and 48.4 percent of the coho salmon migrating along the east and west bank respectively. A plot of the fishwheel catch per hour graphically illustrates that coho salmon passage peaked between 18 August and 25 August (Figure ED-11).

The SSS counters at Talkeetna Station recorded a total of 3,522 coho salmon. The west bank sonar enumerated 62 percent of the fish and the east bank sonar, 38 percent. The migration approximately began, reached a mid-point, and ended on 30 July, 24 August and 11 September respectively (Figure E.5.27). Seventy-five percent of the coho salmon were counted in the 22 days between 11 August and 1 September. The four fishwheels operated at Talkeetna Station intercepted a total of 533 coho salmon with 59.5 percent being caught in the two west bank fishwheels. Fishwheel catch per hour plots indicate that the peak of migration occurred between 19 August and 30 August (Figure ED-11).

Curry Station fishwheel catches indicate that the coho salmon migration began, reached a mid-point and ended on 5 August, 22 August and 4 September respectively (Figure ED-12). The majority (64.8%) of the fish at Curry Station were intercepted on the east side of the river.

Population estimates derived from tagging and recapture operations indicate that 19,841 coho salmon were present at Sunshine Station, 3,306 present at Talkeetna Station and 1,041 present at Curry Station. The parameters used to calculate the estimates along with the 95 percent confidence limits are presented in Table E.5.10 and Appendix EJ.

The average migrational travel time of coho salmon between Susitna Station and Yentna Station was two days which is an upstream travel speed of 3.0 miles/day (Figure E.5.20). An average of fourteen days were required to reach Sunshine Station from Susitna Station. The total travel time from Susitna Station beyond Sunshine Station to Talkeetna Station was approximately 24 days. This represents a travel speed of 3.9 and 3.2 miles/day respectively. These migration rates are based on the assumption that there is no fundamental variation in timing between Susitna River coho salmon stocks.

Tag recaptures of marked coho salmon from Talkeetna Station at Curry Station indicate that coho salmon migrated between these stations in two to 15 days (Figure E.5.22). The average travel time was 4.5 days or a travel speed of 3.8 miles/day.

Table E.5.17 summarizes the coho salmon age composition by sampling location. The data indicates that the majority of the fish were age 4_3 from the 1977 brood year followed by age 3_2 from the 1978 brood year. Less than 10 percent of the coho escapement was comprised of other age classes.

Table E.5.17. Analysis of coho salmon age data by percent from escapement samples collected at Susitna, Yentna, Sunshine, Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

COLLECTION SITE	n	AGE CLASS 1/								BROOD YEAR		
		3_1	3_2	3_3	4_2	4_3	4_4	5_2	5_4	1976	1977	1978
Susitna Station	224	0.0	22.0	0.4	0.9	68.8	1.3	0.0	6.6	6.6	71.0	22.4
Yentna Station	323	0.0	16.1	0.0	0.0	82.9	0.0	0.0	1.0	1.0	82.9	16.1
Sunshine Station	424	0.0	31.8	0.0	0.0	65.1	0.0	0.0	3.1	3.1	65.1	31.8
Talkeetna Station	164	0.0	11.6	0.6	0.0	84.8	0.0	1.2	1.8	3.0	84.8	12.2
Curry Station	77	1.3	27.3	0.0	0.0	68.8	0.0	0.0	2.6	2.6	68.8	28.6

1/ Gilbert-Rich Notation

A summary of coho salmon lengths collected by sampling station is presented in Table E.5.18. This data is also graphically displayed in Figures EF-16 through EF-20 and Figures EF-28 through EF-30. Lengths ranged from 216 mm to 645 mm at Susitna Station, 365 mm to 635 mm at Yentna Station, 325 mm to 680 mm at Sunshine Station, 330 mm to 650 mm at Talkeetna Station and 370 mm to 605 mm at Curry Station. The average lengths of four year old male coho salmon were 519 mm, 541 mm, 541 mm, 534 mm, and 519 mm at Susitna, Yentna, Sunshine, Talkeetna and Curry stations respectively. Four year old female coho salmon in the station order as defined above averaged 530 mm, 540 mm, 542 mm, 538 mm and 541 mm.

The male female ratios of coho salmon for all age classes combined was 1.2:1 at Susitna Station, 1.1:1 at Yentna Station, 0.8:1 at Sunshine Station, 0.7:1 at Talkeetna Station and 0.5:1 at Curry Station (Table 5.5.18).

5.2.2 Survey Investigations

5.2.2.1 Mainstem Surveys

Presented in Table EG-1 is a list of the locations and catch results for approximately 310 sites sampled with gill nets and electroshocking gear on Susitna River mainstem. Twelve mainstem spawning locations were identified (Table E.5.19). Chum salmon were found spawning at 10 of 12 sites. Coho salmon were found spawning alone at one site and both coho and chum salmon were recorded sharing spawning sites in two mainstem areas. One of the 12 spawning areas was located at RM 100.5. This site was determined on the basis

Table E.5.18. Analysis of coho salmon lengths, in millimeters, by age from fishwheel catches at Susitna, Yentna, Sunshine, Talkeetna, and Curry Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

COLLECTION SITE	AGE	n		SEX RATIO	RANGE LIMITS		MEAN		95% CONF. LIMITS[3]		MEDIAN	
		m[1]	f[2]		m	f	m	f	m	f	m	f
Susitna Station	3	26	24	1.0:1	256-592	406-577	477	493	445-509	471-515	482	504
	4	66	93	6.7:1	216-645	413-614	519	530	499-539	520-540	543	546
	5	8	7	1.1:1	515-605	433-637	568	517	-	-	570	511
Yentna Station	3	26	25	1.0:1	424-566	371-598	508	495	492-525	469-520	513	499
	4	128	140	0.9:1	365-635	399-615	541	540	532-551	533-548	544	546
	5	1	3	0.3:1	-	574-588	553	580	-	-	553	578
Sunshine Station	3	81	54	1.5:1	325-585	410-585	477	497	465-490	486-509	477	500
	4	143	133	1.1:1	395-680	445-628	541	542	531-550	535-549	555	545
	5	8	5	1.6:1	380-635	510-623	541	554	-	-	552	545
Talkeetna Station	3	10	10	1:1	330-600	455-565	484	510	432-536	480-540	488	492
	4	87	52	1.7:1	420-650	420-605	534	538	522-546	528-548	540	540
	5	1	4	0.2:1	-	510-585	595	539	-	-	595	530
Curry Station	3	12	10	1.2:1	400-580	415-575	484	492	453-515	455-530	490	498
	4	37	16	2.3:1	420-600	370-605	519	541	502-536	513-569	510	542
	5	2	0	-	590-594	-	592	-	-	-	592	-

1/ Male
2/ Female
3/ Confidence Limits on Mean

Table E.5.19. Mainstem Susitna River salmon spawning locations with survey results, Adult Anadromous Investigations, Su Hydro Studies, 1981.

LOCATION		SURVEY							EGG DEPOSITION SAMPLING					REMARKS
					NO. CAUGHT/OBSERVED						EGG			
RIVER MILE	LEGAL	DATE	METHOD	DISTANCE	SOCKEYE	PINK	CHUM	COHO	DATE	NO. PLOTS	LIVE	DEAD	TOTAL	
68.3	22N05W13 AAB	9/21	Visual	0.5	0	0	6	0	10/7	2	1	1	2	Active spawning occurring 9/21
76.6	23N04W07 BBD	9/21	Electroshock	1.0	0	0	1	2						
		9/27	Visual	0.5	0	0	16	0						Active spawning noted 9/27
83.3	24N05W15 BCC	9/5	Visual	0.5	0	0	17	0	10/8	6	4	0	4	Active spawning observed 9/5
92.2	25N05W13 BCC	10/9	Visual	0.3	0	0	11	0						Spawning observed and Redds 10/9
96.8	26N05W25 BAA	9/2	Visual	0.3	0	0	1	0	10/8	5	0	44	44	All eggs fungus covered
97.0	26N05W26 ADB	9/17	Visual	0.1	0	0	20	0						Spawning activity occurring 9/17
100.5	26N05W02 CDD	9/24	Visual	0.1	0	0	0	0	10/3	3	8	0	8	Redds observed on 9/24 and 10/3
117.6	29N13W28 BBC	9/23	Drift Net	0.01	0	0	0	6	10/7	16	1	2	3	Drift gill net employed as seine 9/23
129.2	30N03W09 B	9/8	Drift Net	0.1	0	0	2	1	10/1	18	0	0	0	Numerous Redds observed 10/1
130.5	30N03W10 B	9/8	Drift Net	0.1	0	0	3	0	10/1	10	0	0	0	Redds not visable 10/1
131.1	30N03W3 DA	9/7	Drift Net	0.2	0	0	3	0	10/1	6	0	0	0	Redds not visable 10/1
135.2	31N02W19 ADA	9/6	Drift Net	0.1	0	0	6	0	10/1	2	16	11	27	Redds not visable 10/1

Table E.5.20 Results of set gill netting on mainstem Susitna River between Devil Canyon and Portage Creek, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	LOCATION		NETTING TIME (MILITARY)			CATCH (SALMON)				REMARKS
	SITE NO.	RIVER MILE	BEGIN	END	TOTAL HOURS	SOCKEYE	CHUM	COHO	TOTAL	
7/29	3	150.1	1330	1630	3.0	0	0	0	0	River at flood condition; net fished poor.
7/29	2	150.2	1400	1640	2.7	0	0	0	0	River at flood stage; net fished poor.
8/5	3	150.1	1500	1900	4.0	0	0	0	0	High water conditions; net fished fair.
8/26	2	150.2	945	1400	4.25	2	2	1	5	Net fished excellent; all fish were in excellent pre-spawning condition; the coho salmon had been tagged on 8/17/81 at Talkeetna Station.
8/26	1	150.4	930	1345	4.25	0	0	0	0	Net fished excellent.
9/2	1	150.4	1100	1300	2.0	0	0	1	1	Net fished excellent. Coho was fresh and in excellent spawning condition.
9/2	2	150.2	1115	1315	2.0	0	0	0	0	Net fished excellent.
9/10	1	150.4	1500	1700	2.0	0	0	0	0	Net fished excellent.
9/10	3	150.1	1520	1720	2.0	0	0	0	0	Net fished fair due to low water.
9/19	1	150.4	1100	1500	4.0	0	0	0	0	Net fished excellent.

of visual sightings of redds on 24 September and egg deposition sampling on 30 October. Salmon eggs were found in subsurface gravels at the same site, but it was not possible to confirm which species spawned there. Maps of each of the 12 spawning areas are presented in Figures EH-1 through EH-12. These spawning areas are located between RM 68.3 and RM 135.2.

Echo recorders did not prove effective in identifying mainstem spawning areas. They were tested in mainstem sloughs and although adult fish were located through vertical scanning, interpretation of recording printouts on the mainstem Susitna River was difficult because debris echoes had a similar appearance to fish and turbulence produced false recordings. Further compounding the problem was the inability to operate echo recorders against the force of the river current. The gunnel mounted transducer brackets commonly bent and become inoperative particularly in areas where water velocity was greater than three feet per second.

Drift gill nets were effective in locating five of the 12 mainstem spawning sites previously referenced. They were not however, considered an efficient means of sampling due to variable water depths encountered. Many areas were several meters deeper than the 1.5 m depth limit of the nets. In shallower areas, debris caused nets to be torn and resulted in several hours of mending for each hour fished.

Electroshocking gear was not available to survey crews operating above RM 61 until 21 September. Although only one mainstem spawning site was found with this gear type, it worked efficiently in all areas of the river where used and was considered superior to drift gill nets and depth recorders. It is probable that additional spawning areas would have been located had electroshocking gear been used earlier in the season, particularly in late August and early September.

Results of set netting in the area immediately below Devil Canyon between RM 150.1 and 150.4 (Figure E.5.28) are presented in Table E.5.20. The data confirms that sockeye, chum and coho salmon use the Susitna River mainstem above Portage Creek for migration purposes. A catch comprised of sockeye, chum and coho salmon was made on 26 August at RM 150.2 and a single coho salmon was captured on 2 September at RM 150.4. All gill netted fish were in pre-spawning condition. The single coho salmon caught on 26 August had been tagged earlier at Talkeetna Station on 7 August. Set netting conducted between 29 July and 5 August and also from 2 September to 19 September did not produce fish. No set netting was performed between 6 August and 25 August due to high water conditions.

5.2.2.2 Escapement Surveys

Escapement surveys were conducted on 32 sloughs and 15 tributary streams in the Susitna River reach between the Chulitna River and Devil Canyon (Figure E.5.29). Eight new sloughs and streams were located which supported salmon spawning. These sloughs are referenced as Moose (RM 123.5), A^1 (RM 124.6), 9B (RM 124.2) and 21A (RM 145.5). The new streams are Gash Creek (RM 111.6), Lower McKenzie Creek (RM 116.2), 5th July Creek (RM 123.7) and Jack Long Creek (RM 144.5). The location of these streams and sloughs relative to the Susitna River mainstem are defined in Figure E.5.29.

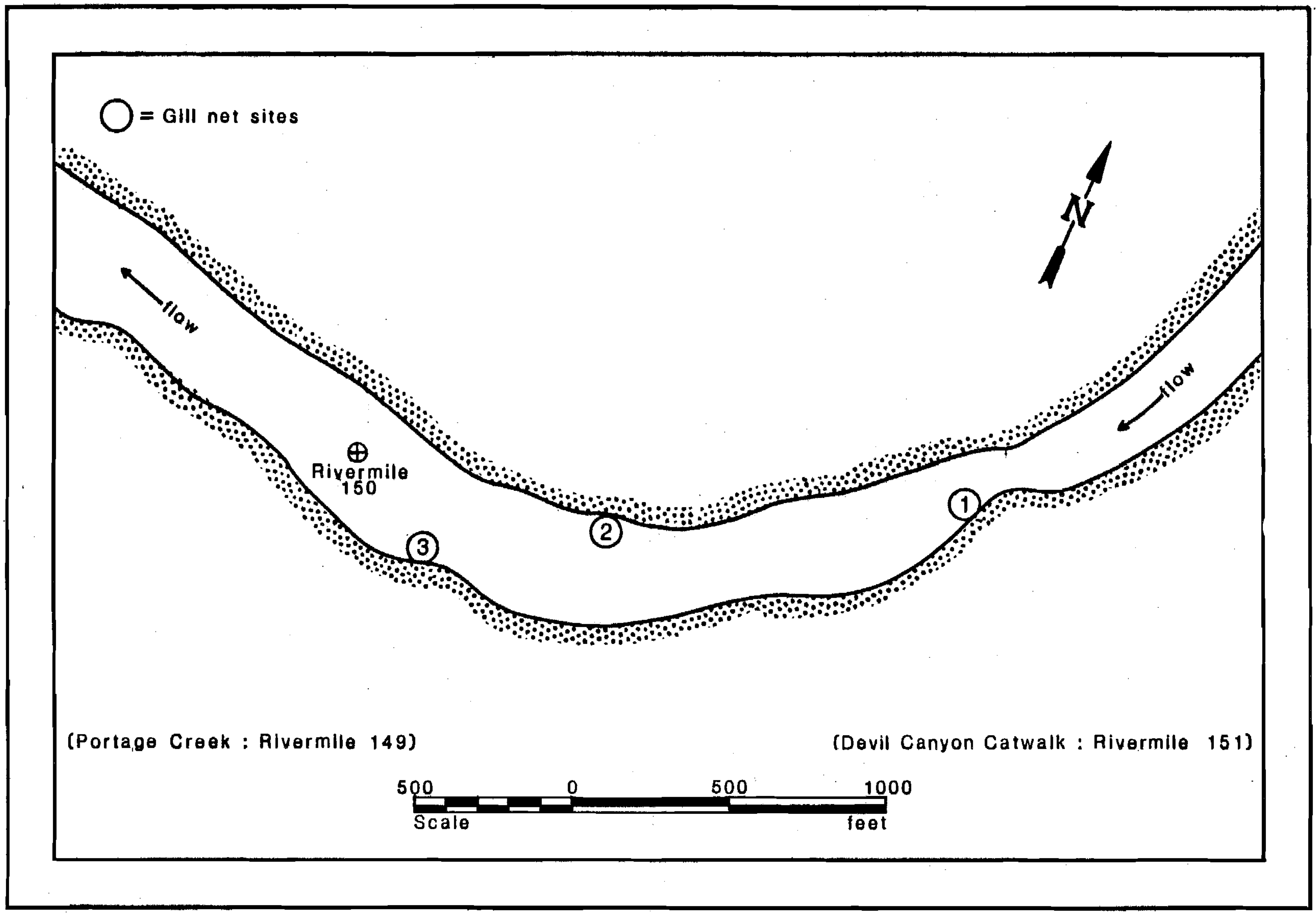


Figure E.5.28. Set gill net fishing locations on mainstem Susitna River between Portage Creek and Devil Canyon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

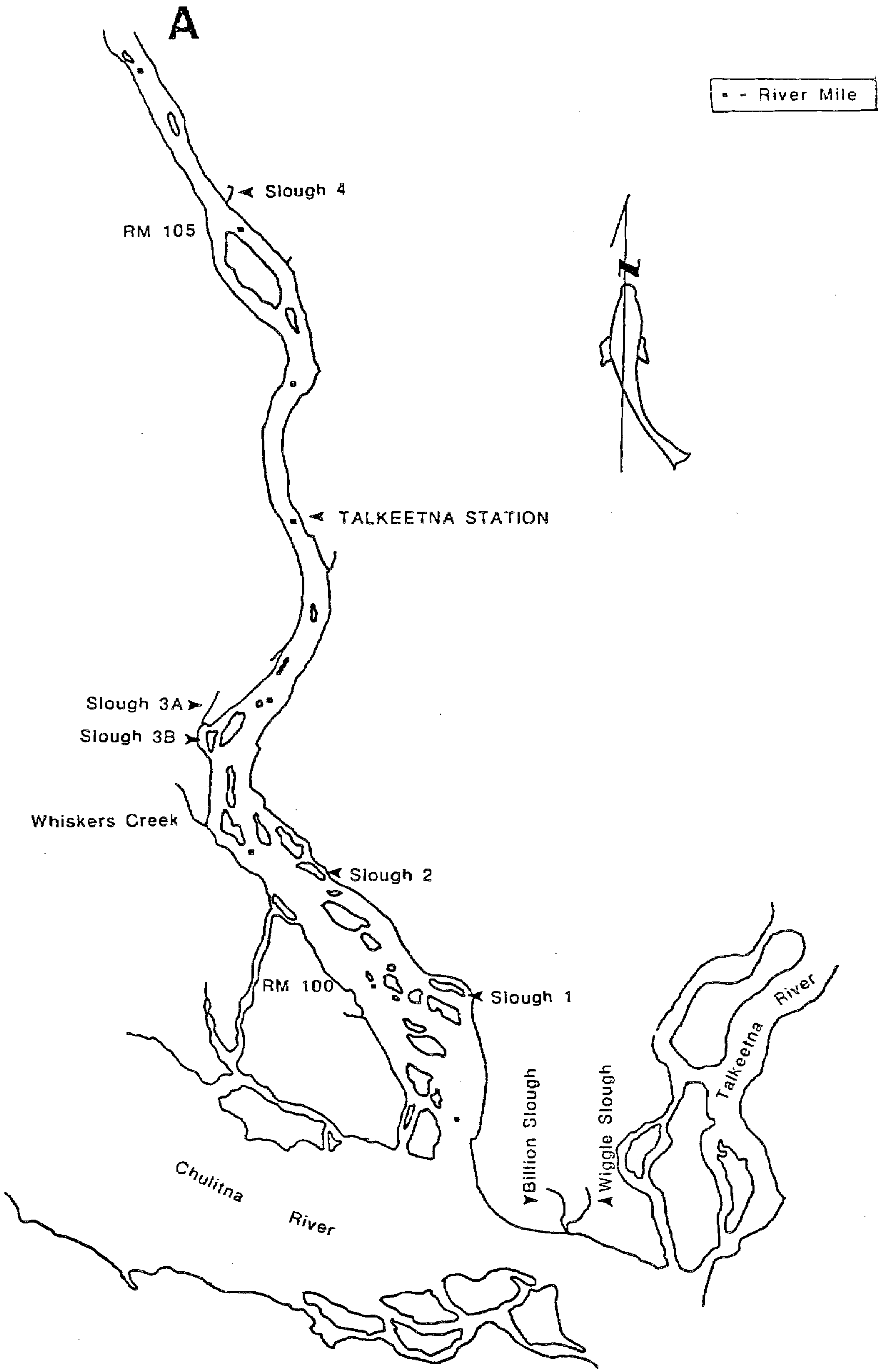


Figure E.5.29. Slough locations and primary tributaries of the Susitna River from the confluence of the Chulitna and Talkeetna Rivers to Devil Canyon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

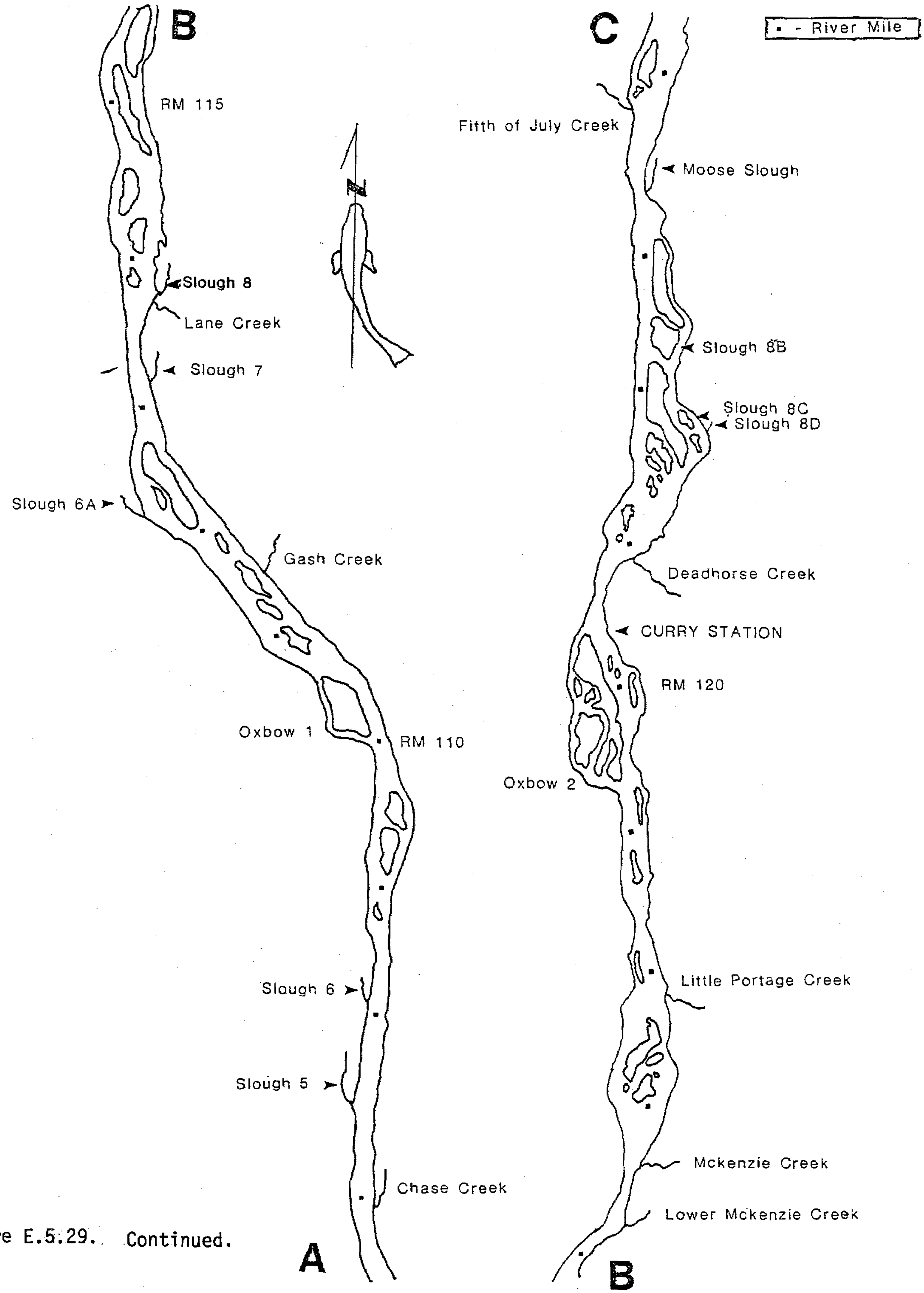


Figure E.5.29. Continued.

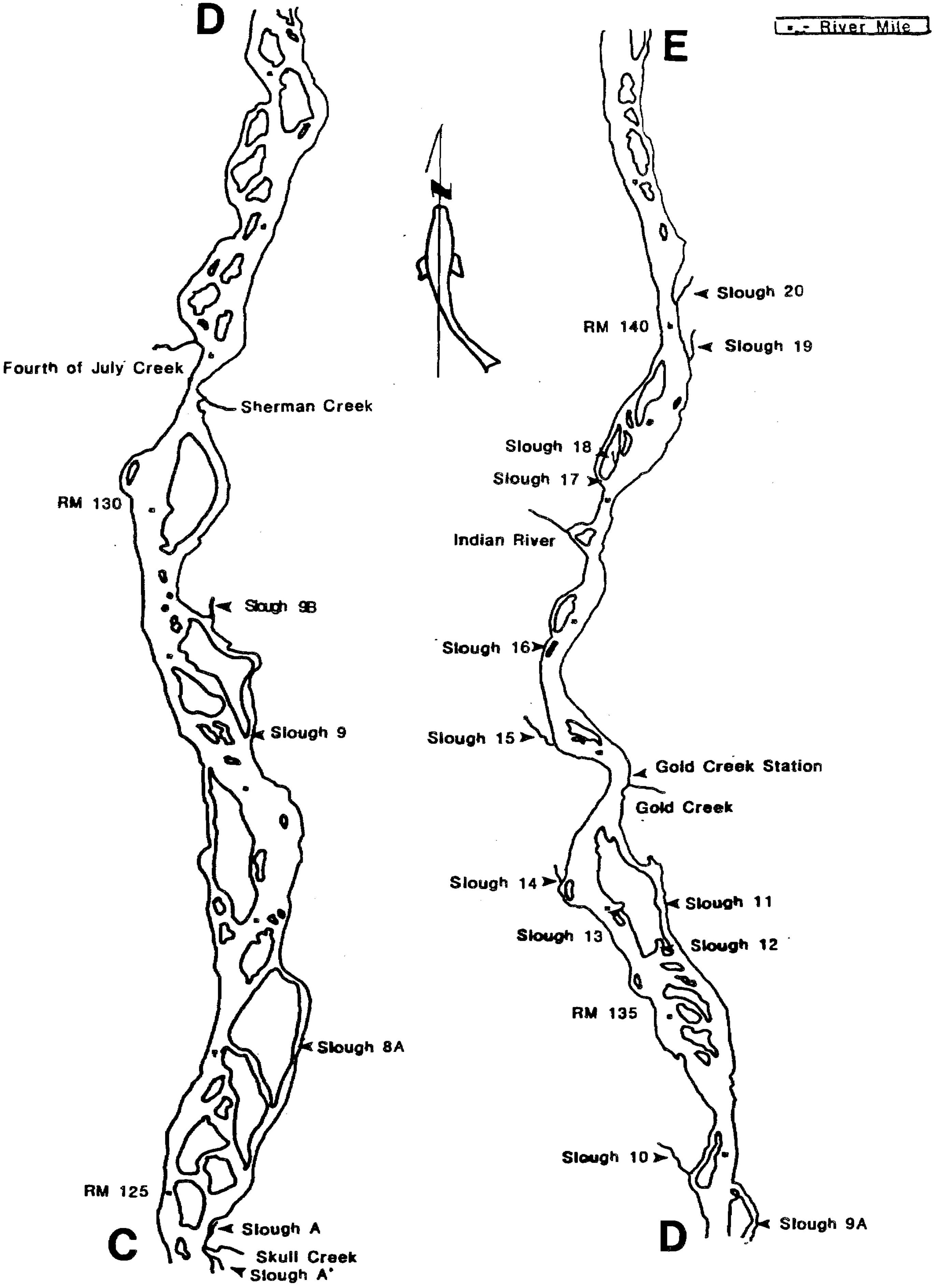


Figure E.5.29. Continued.

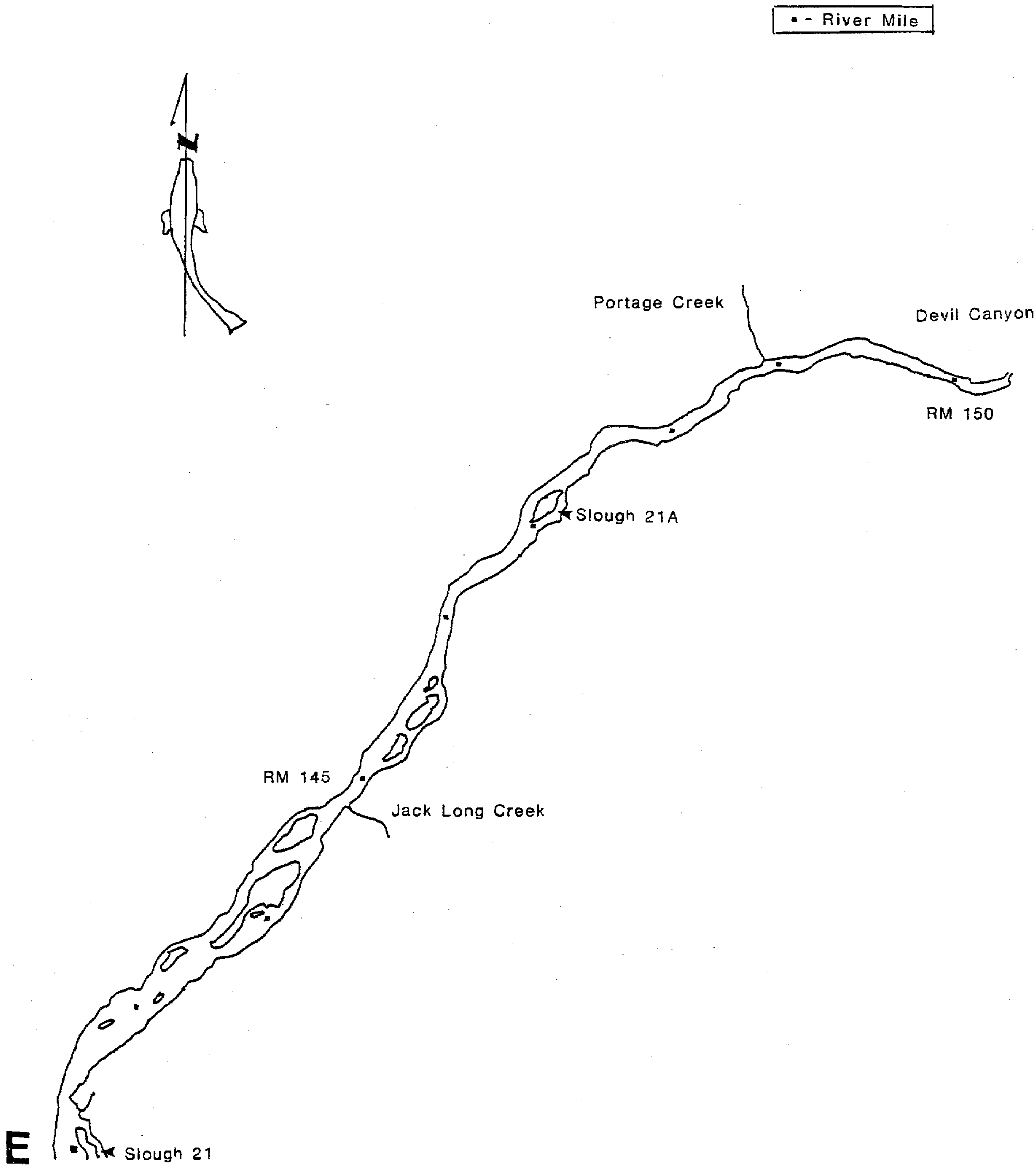


Figure E.5.29. Continued.

Adult sockeye salmon were observed in Sloughs 3B, 3A, 6A, 8A, 9, 9A, 9B, 11, 17, 19, 20 and 21 and in Lower McKenzie Creek (Tables EJ-1 through EJ-2). Peak spawning occurred during the last week of August and the first three weeks of September (Figures E.5.30 through E.5.32). Sockeye salmon were most numerous in Slough 8A, 9B and 11 where peak spawning ground counts were 177, 81, and 893 sockeye salmon respectively.

Pink salmon were found in Sloughs 3A, 8 and A, and in Whiskers Creek, Chase Creek, Lane Creek, Fourth July Creek, 5th July Creek, Skull Creek, Sherman Creek, Indian River and Jack Long Creek (Tables EJ-1 and EJ-2). The highest peak spawning count within an index area was in Lane Creek where 291 fish were recorded. Peak spawning occurred in a 10 day period from 19 August to 28 August (Figure E.5.33). The stream survey counts are index counts and do not reflect total number of spawning fish present in the stream surveyed.

Chum salmon were present in Sloughs 1, 2, 6A, 8, 8B, Moose, A[1], A, 8A, 9, 9B, 9A, 11, 13, 15, 17, 19, 20, 21, and 21A (Table EJ-1). They were also found within the survey reaches of Whiskers Creek, Chase Creek, Lane Creek, Lower McKenzie Creek, Skull Creek, Sherman Creek, Fourth July Creek and Indian River (Table EJ-2). The peak of spawning activity in the sloughs occurred during the last two weeks of August and the first two weeks of September (Figures E.5.30 through E.5.32). The highest counts were recorded in Sloughs 8, 8A, 9, 11 and 21 where 302, 620, 260, 411 and 274 chum salmon, respectively, were found spawning (Figure E.5.34). Based on the stream survey data the peak spawning period in streams was approximately one week earlier than that

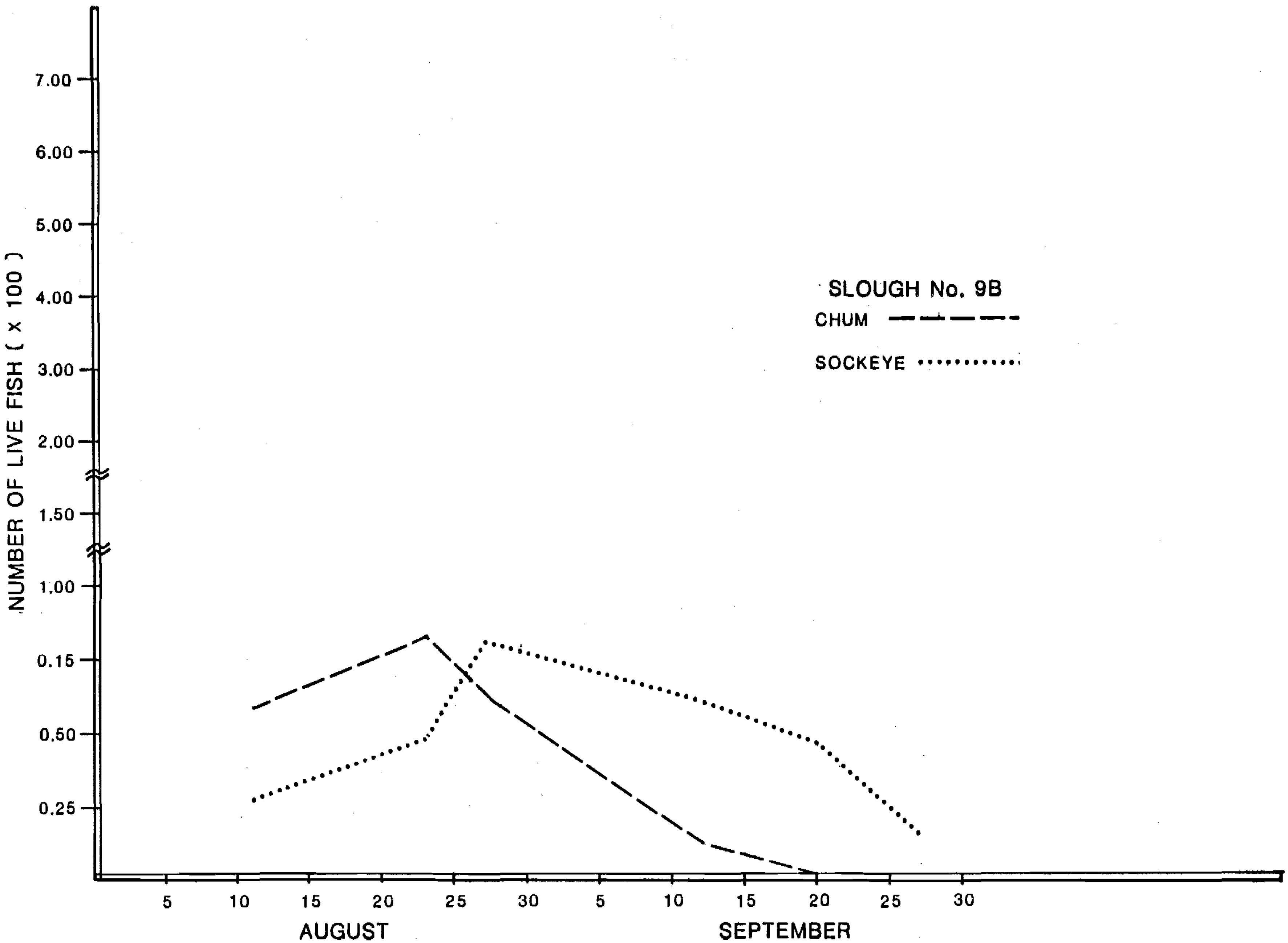


Figure E.5.30. Chum and sockeye salmon live counts by date in Slough 9B, Adult Anadromous Investigations, Su Hydro Studies, 1981.

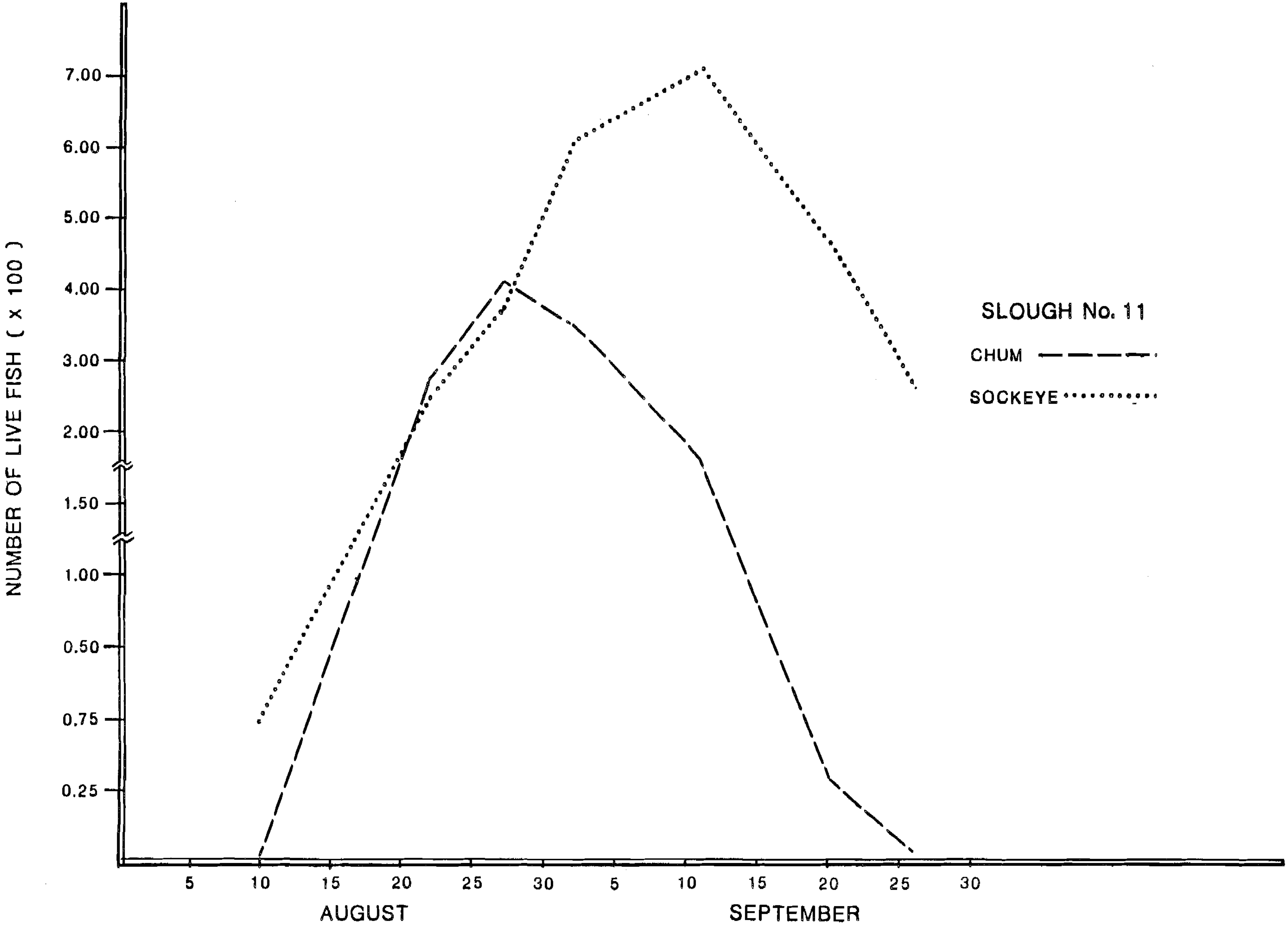


Figure E.5.31. Chum and sockeye salmon live counts by date in Slough 11, Adult Anadromous Investigations, Su Hydro Studies, 1981.

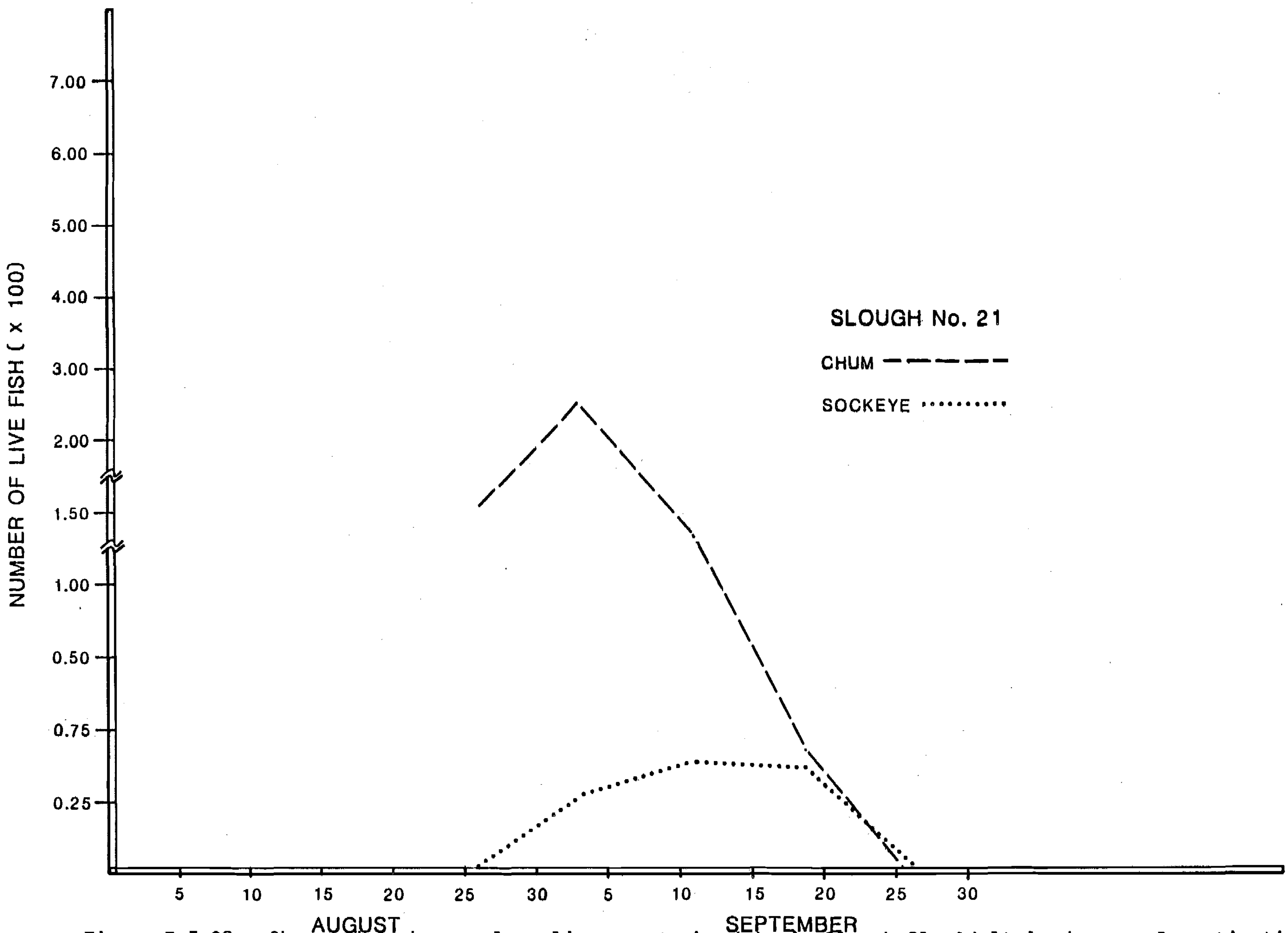


Figure E.5.32. Chum and sockeye salmon live counts by date in Slough 21, Adult Anadromous Investigations, Su Hydro Studies, 1981.

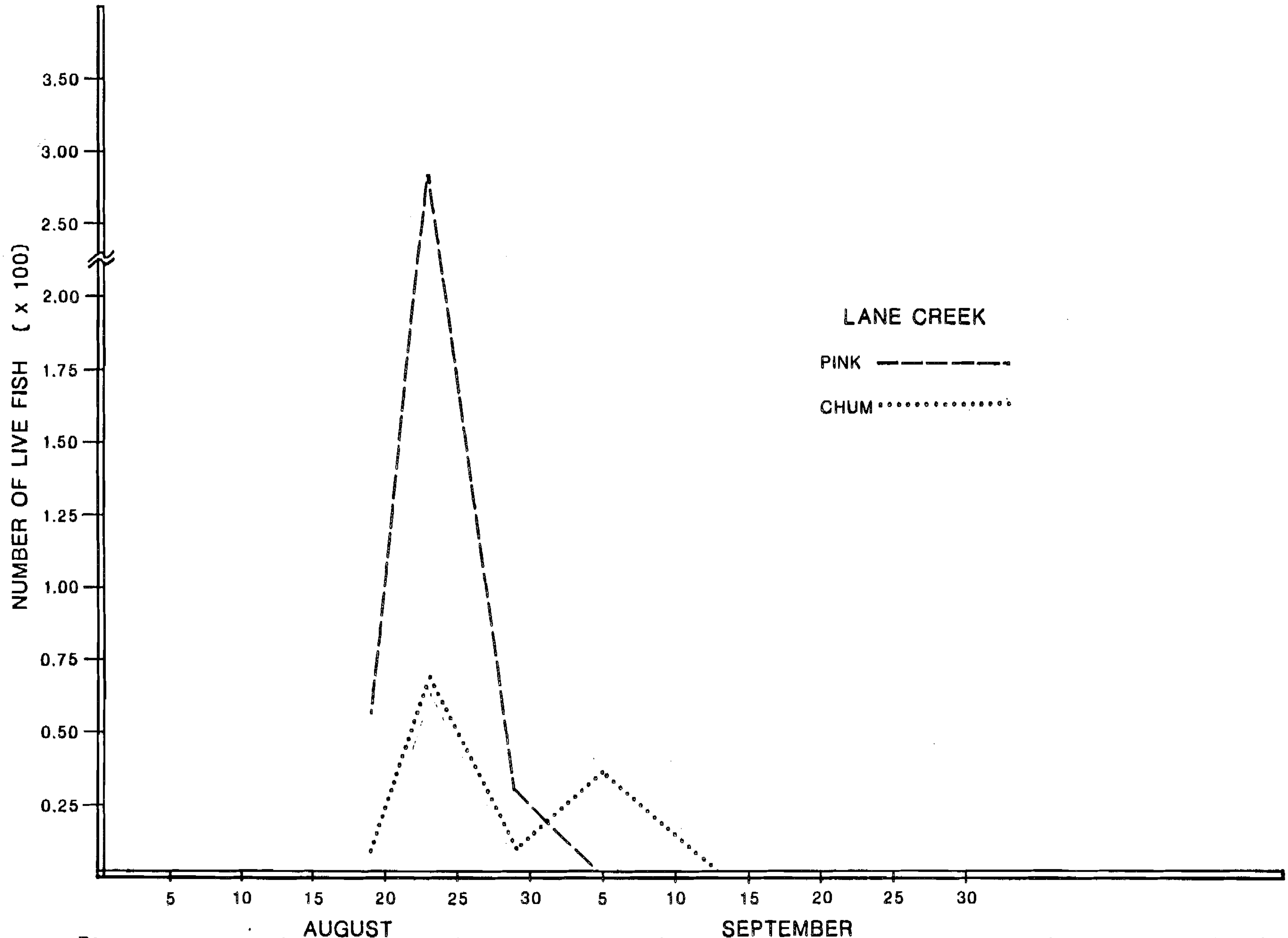


Figure E.5.33. Pink and chum salmon live counts by date in Lane Creek, Adult Anadromous Investigations, Su Hydro Studies, 1981.

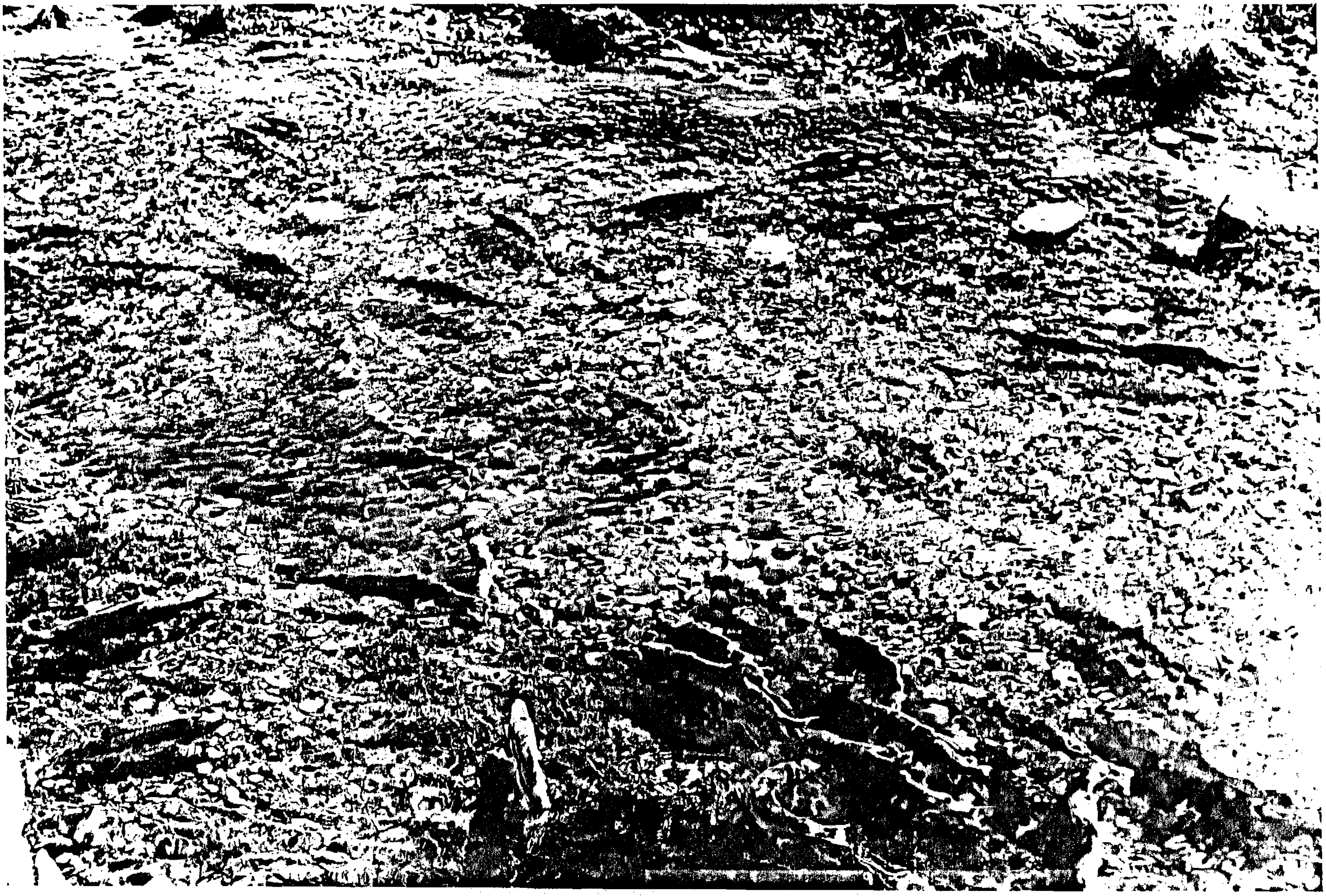


Figure E.5.34. Chum and sockeye salmon spawning in Slough 11, Adult Anadromous Investigations, Su Hydro Studies, 1981.

observed in slough spawning areas. The highest peak count in an index area was registered on Lane Creek where 76 chum salmon were counted on 23 August (Figure E.5.33).

Coho salmon were not found in any of the sloughs surveyed but were observed in Whiskers Creek, Chase Creek, Lane Creek, Gash Creek, Lower McKenzie Creek, Fourth July Creek, Indian River and Portage Creek (Tables EJ-1 and EJ-2). The highest densities of coho salmon, based on peak index counts, were in Whiskers Creek, Chase Creek, Gash Creek and Indian River where 70, 80, 141, and 85 coho salmon respectively were recorded spawning in a single survey. The survey data indicates that the spawning peak probably occurred in the second and third week of September.

5.2.3 Radio Telemetry Investigations

5.2.3.1 Chum Salmon

Eleven chum salmon were radio tagged between 30 July and 12 August and their movements monitored during 30 and 31 July and August, 1981 (Table E.5.21). Ten of the 11 fish were tagged between 6 and 12 August. Seven fish were tagged at Curry Station and four were tagged at Talkeetna Station (Figure E.5.35). Five were females and six were males (Table E.5.21).

Eight of the radio tagged chum salmon moved upstream from their respective tagging locations. Two others moved downstream and one remained within ±0.2 river miles of its tagging location (Figure E.5.36).

Table E.5.21. Chum salmon radio tagging data, Adult Anadromous Investigations, Su Hydro Studies, 1981.

TAGGING		RADIO TRANSMITTER				
DATE	LOCATION	FREQUENCY (MHz) PULSE/SECOND	PETERSEN DISC NUMBER	LENGTH[1/] (CM)	WEIGHT (KG)	SEX (M/F)
7/30	102.9	40.700-3	A-325	63.5	3.9	F
8/6	102.9	40.710-2	A-326	62.2	4.1	F
8/6	102.9	40.730-2	A-327	63.5	4.2	M
8/6	120.7	40.680-2	A-328	62.2	3.6	M
8/7	120.7	40.720.1	A-329	58.4	3.7	M
8/7	119.5	40.650-3	A-330	63.5	3.9	M
8/9	119.5	40.680-3	A-331	61.6	3.6	M
8/10	102.9	40.660-1	A-332	63.5	4.5	M
8/11	119.5	40.740-1	A-333	62.9	3.7	F
8/12	119.5	40.700-1	A-334	61.0	4.0	F
8/12	119.5	40.670-2	A-335	61.0	4.2	F
				$\bar{x}$ = 62.1	$\bar{x}$ = 3.9	

1/ Mid eye to fork of tail

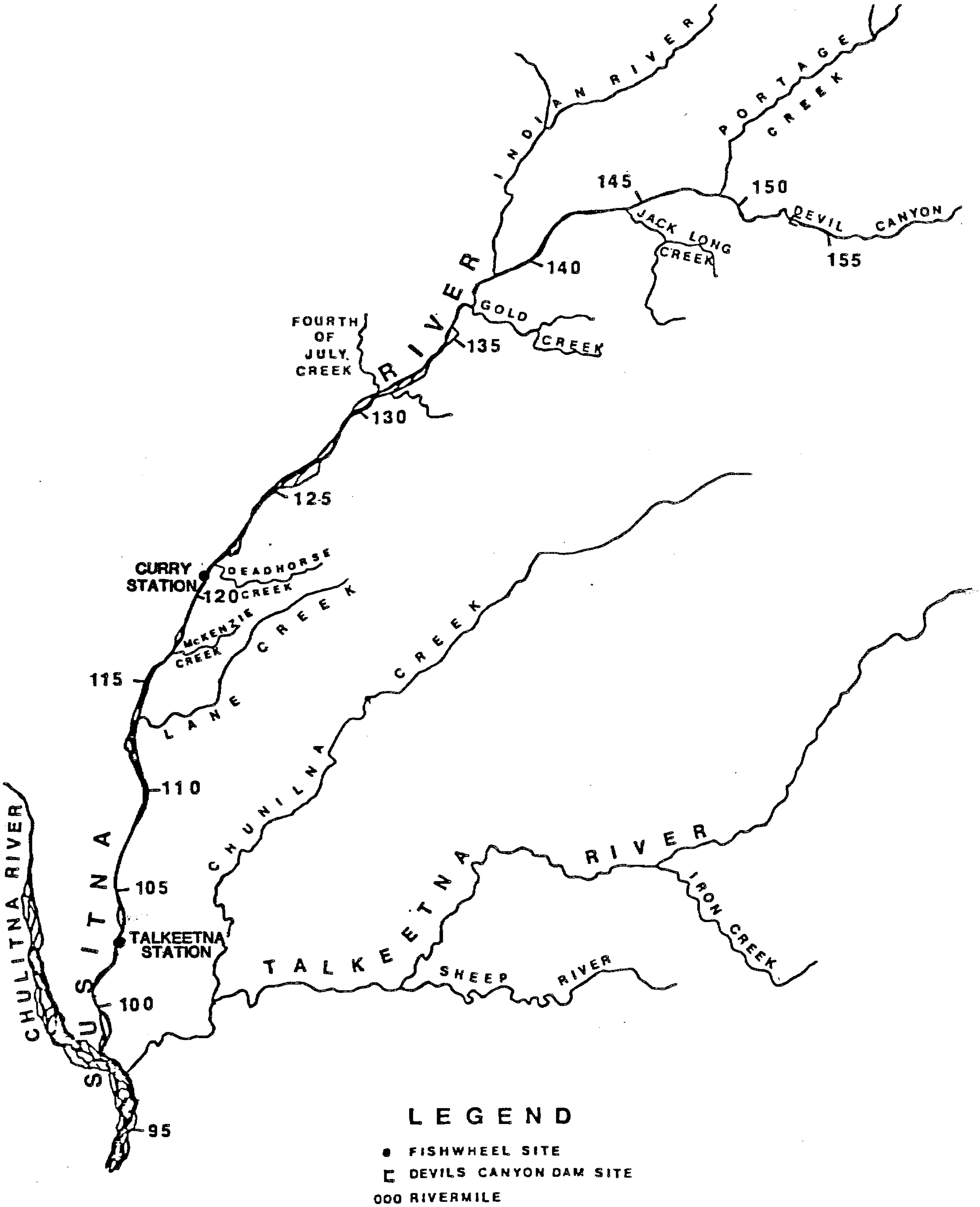


Figure E.5.35. Susitna River mainstem from Talkeetna to Devil Canyon, Anadromous Investigations, Su Hydro Studies, 1981.

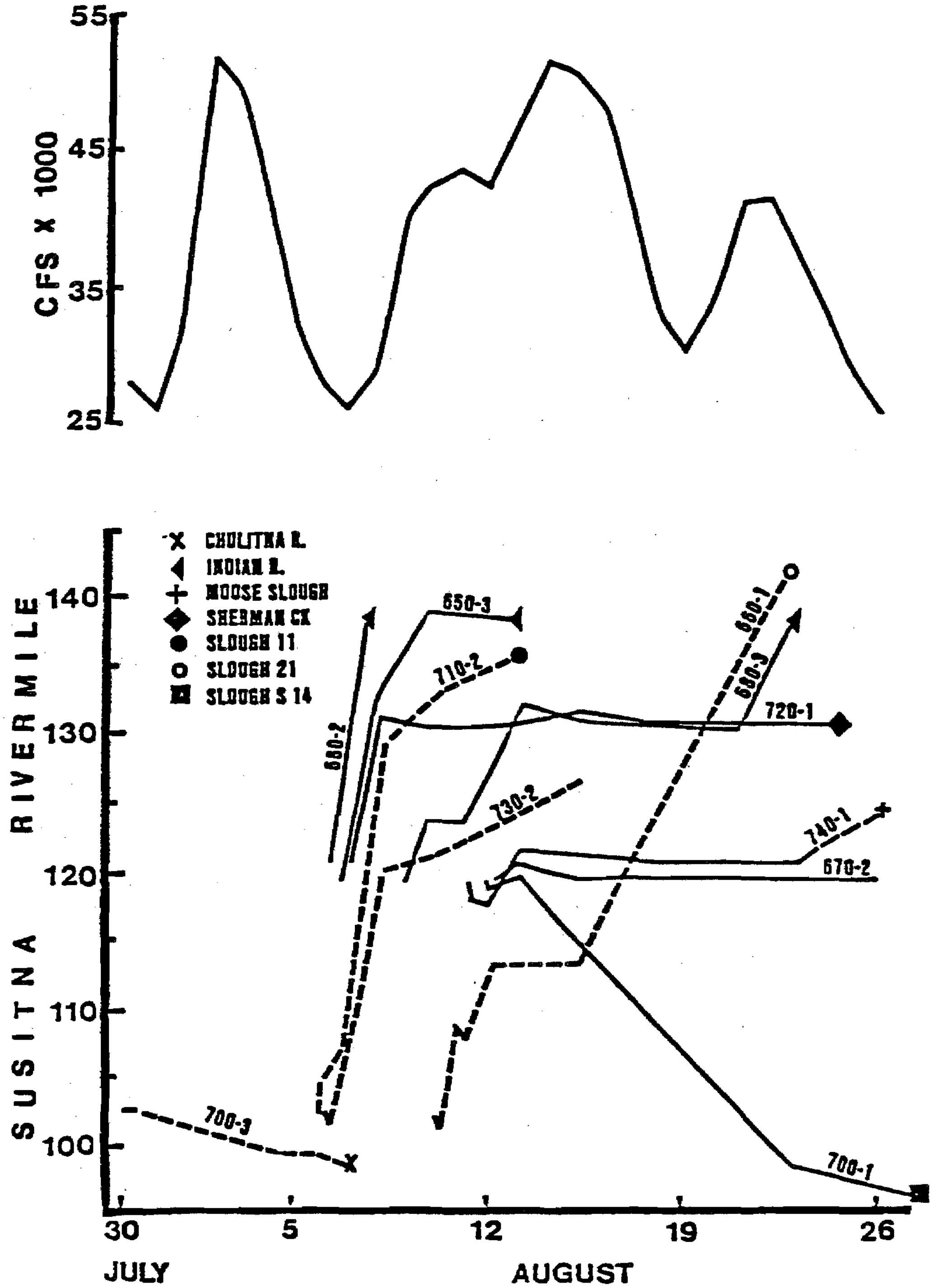


Figure E.5.36. Movements of radio tagged chum salmon in the Susitna River (to first occupied tributary) and discharge during July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Radio tagged chum salmon that moved upstream after tagging exhibited two types of movement. Upstream movement, with cessations of less than 72 hours was termed "direct movement". Upstream movement with cessations in excess of 72 hours, was termed, "indirect movement".

Direct movement was exhibited by chum salmon bearing transmitters numbered 650-3, 680-2 and 710-2 (Figure E.5.36). Indirect movement was displayed by fish bearing transmitters numbered 660-1, 680-3 and 720-1. Fish bearing transmitters numbered 680-3 and 720-1 remained in the Susitna River within 0.3 miles of the mouth of Fourth July Creek (RM 131.0) for three and 11 days respectively, and fish carrying transmitter number 660-1 remained at the mouth of Lane Creek (RM 113.6) for at least six days.

The five remaining radio tagged chum salmon exhibited other movements (Figure E.5.36). Two individuals bearing transmitters numbered 700-1 and 700-3 moved downriver, the first individual entered a slough at RM 96.9 whereas the other chum salmon ascended the Chulitna River. Fish bearing transmitter number 670-2 remained within 0.2 miles of its tagging location at RM 119.5. A chum salmon carrying transmitter number 730-2 was last detected at RM 127.0.

A female chum salmon regurgitated transmitter number 740-1 at RM 121.1 several days after being tagged on 11 August at Curry Station (RM 120). This fish was observed later spawning without its radio transmitter in Slough 11 (RM 135.3) on 29 August.

Determination of chum salmon upstream, migration rates was influenced by the time separating consecutive tracking efforts. Eighteen percent of the detections, e.g. location of fish's positions in the river, were made within a period of 24 hours while 43 percent were made between 24 and 48 hours. Because of these relatively long intervals and because exact arrival times at upstream locations are unknown, the movement rates, with few exceptions, are expressed as "greater than or equal to" ($\geq$) speeds.

The fastest documented rate of chum salmon migration was 1.0 miles per hour (mph). Fish bearing transmitter number 710-2 moved 1.9 miles upstream within 1.9 hours after release (Table E.5.22). Perhaps more typical of sustained rapid movement is the subsequent movement of this fish when it traveled 22.2 miles within 32.5 hours for a rate $\geq$ 0.68 mph or 16.4 miles/day. In contrast, fish bearing transmitter number 650-3 moved 5.1 miles within 39 hours for a rate $\geq$ 0.13 mph or 3.1 miles/day.

Rates of movement of two radio tagged chum salmon which migrated "directly" upstream suggest that radio tag implantation did not interfere with their upstream migration as their rates of movement were similar to that exhibited by chum salmon tagged with Floy tags at Talkeetna Station (RM 103). Two chum salmon radio tagged at Talkeetna Station on 6 August reached Curry Station (RM 120) within two days. Fish bearing transmitter number 730-2 was detected 0.3 miles upriver of Curry Station 48 hours after being radio tagged at Talkeetna Station. Another chum salmon, bearing transmitter number 710-2, was located 9.2 miles upriver of Curry Station, 51 hours following transmitter implantation at Talkeetna Station. One hundred six chum salmon tagged with Floy tags at Talkeetna Station were recaptured by fishwheels at Curry Station 16.5 river miles upriver. Twenty of the 106 fish were recaptured after one

Table E.5.22. Fifteen fastest recorded movements of radio tagged adult, chum salmon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

TRANSMITTER FREQUENCY (mHz) PULSE/SECOND	RATE OF UPSTREAM MOVEMENT (MPH) 1/	HOURS ELAPSED BETWEEN SUCCESSIVE FISH POSITIONS	DISTANCE MOVED (MI.)	LOCATION OF MOVEMENT RM to RM
710-2	1.0	1.9	1.9	102.9-104.8
710-2	0.68	32.5	22.2	107.0-129.2
680-2	0.50	42.5	21.3	102.6-I 3.3 2/
650-3	0.43	33.6	14.3	119.5-133.8
660-1	0.41	19.6	8.0	101.0-109.0
730-2	0.38	47.9	18.1	102.2-120.3
660-1	0.36	15.1	5.4	108.3-113.6
720-1	0.31	34.3	10.7	120.7-131.4
700-3	0.24	54.2	13.3	99.9-Ch 12.0 3/
680-3	0.24	17.3	4.2	119.5-123.7
680-3	0.18	48.0	8.2	123.7-132.2
680-3	0.17	47.6	8.2	130.9-I 0.5 2/
660-1	0.16	61.3	9.7	113.6-123.3
740-1	0.16	25.1	3.9	117.8-121.7
660-1	0.15	122.0	18.7	123.3-142.0

1/ Upstream fish movement speed denoted as equal to or greater than ( ) when five or more hours lapsed between observations

2/ Indian River Mile

3/ Chulitna River Mile

day of release, 42 after two days, 53 after three days, 74 after four days and 86 after five days. The number of recaptures progressively decreased each day until 106 recaptures were recorded.

The influence of flow on the movements of radio tagged chum salmon in the Susitna River is not apparent due to the small number of chum salmon tagged, and the variable flow conditions encountered by these fish (Figure E.5.36).

The primary destinations of radio tagged chum salmon were Susitna River sloughs, clear water tributaries and the confluence zones of tributary streams (Figure E.5.36). The four fish bearing transmitter numbers 660-1, 710-2, 740-1 and 700-1 entered Susitna River sloughs 21 (RM 142.0), 11 (Rm 135.3), Moose (RM 123.5) and an unnamed slough (RM 96.9) respectively. The three fish bearing transmitter numbers 650-3, 680-2 and 680-3 entered the Indian River (RM 138.6). One fish bearing transmitter number 720-1 entered Sherman Creek (RM 130.8) before returning to the mainstem Susitna River where it held within 0.3 miles of the Fourth July Creek confluence zone (RM 131.0). One fish bearing transmitter number 670-2 stayed in the mainstem Susitna River at RM 119.6. One fish bearing transmitter number 700-3 swam down the Susitna River and entered the Chulitna River (RM 98.6). Fish bearing transmitter 730-2 was last detected at RM 127.0 in the Susitna River.

Radio tagged chum salmon entered spawning areas between 8 August and 23 August. Fish bearing transmitter number 710-2 entered Slough 11 (RM 135.5) about 13 August and was observed building a redd on 21 August. It had completed spawning by 2 September when it was captured and necropsied. Fish bearing transmitter number 740-1 entered Moose Slough (RM 123.5) between

13 August and 18 August. On 29 August it was observed over a redd and netted. A brief external examination revealed that most eggs were still present in the body cavity although the transmitter was absent. The transmitter had been found earlier at RM 121.1, the site of apparent regurgitation. On 4 September the carcass of this fish was found in Moose Slough (RM 123.5). A necropsy indicated the fish had spawned, as evidenced by the lack of eggs in the coelom.

Individual movements of radio tagged chum salmon are further described in Appendix EK.

5.2.3.2 <u>Coho Salmon</u>

Ten coho salmon were radio tagged from 31 August through 4 September. Four were tagged at Curry Station and six at Talkeetna Station (Table E.5.23). Eight bore wire reinforced radio transmitters whereas two carried non-reinforced transmitters (660-2 and 680-1).

The radio tagged coho salmon from Talkeetna Station and one from Curry Station moved downriver upon release. Three of the four fish entered tributaries downstream of RM 102.8 of the Susitna River (Figure E.5.37). Fish supporting transmitter number 700-2 entered the Chulitna River (RM 98.6) and moved upstream to RM 31.9. Another individual bearing transmitter number 710-1 entered the Talkeetna River and ascended Chunilna Creek (RM 5.9). Fish carrying transmitter number 710-3 moved downstream in the Susitna River to RM 88.0 and ascended Birch Creek (RM 88.0) to Fish Lake and spawned in an inlet stream. The fourth fish, supporting transmitter number 720-2, was apparently

Table E.5.23. Coho salmon radio tagging data. Adult Anadromous Investigations, Su Hydro Studies, 1981.

TAGGING DATE	TAGGING LOCATION	RADIO TRANSMITTER FREQUENCY (MHz) PULSE/SECOND	PETERSEN DISC NUMBER	LENGTH[1] (CM)	WEIGHT (KG)	SEX (M/F)	COLORATION[2]
8/30	120.7	40.660-2	A-336	62.2	4.1	F	Pink-red
8/31	120.7	40.680-1	A-337	61.6	2.6	M	Silver-pink
8/31	102.9	40.730-3	A-339	59.1	3.5	M	Silver-pink
9/1	102.9	40-650-2	A-340	57.2	2.9	F	Silver-pink
9/2	120.7	40.720-2	A-341	59.1	2.8	M	Silver-pink
9/3	102.9	40.700-2	A-342	59.7	3.7	M	Silver-pink
9/3	120.7	40.650-1	A-343	58.4	3.3	F	Silver-pink
9/4	102.8	40.710-3	A-344	59.1	3.4	F	Pink-red
9/4	119.5	40.720-3	A-345	59.1	3.2	F	Silver-pink
9/4	102.9	40-710-1	A-346	57.8	-	F	Pink-red
				$\bar{x}$ = 59.3	$\bar{x}$ = 3.3		

1/ Mid eye to fork of tail
2/ Underlined color predominates

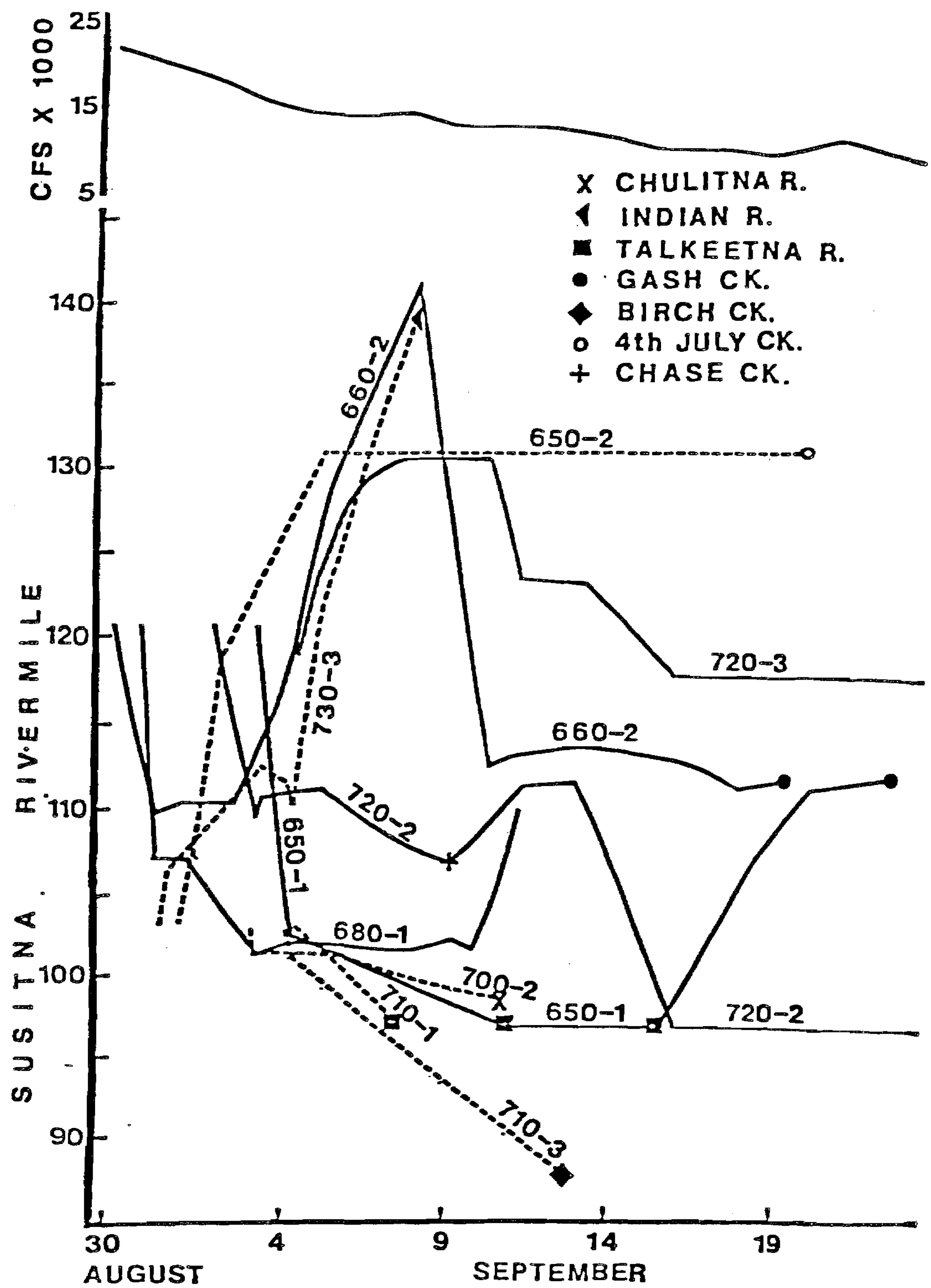


Figure E.5.37. Movements of radio tagged coho salmon in the Susitna River (to first occupied tributary) and discharge during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

adversely influenced by transmitter implantation as evidenced by observations of the fish while it occupied Chase Creek (RM 106.9).

Length of stay of the above three radio tagged coho salmon in the Susitna River upstream of RM 100.1 was variable; fish bearing transmitter number 700-2 moved downstream to Whiskers Creek (RM 101.2) and remained there for several days prior to moving further downstream and ascending the Chulitna River (RM 98.6). The other two fish supporting transmitter numbers 710-1 and 710-3 moved downriver after tagging.

Two coho salmon tagged at Talkeetna Station bearing transmitter numbers 650-2 and 730-3 exhibited upstream movement after tagging. The fish with transmitter number 650-2 entered Indian River (RM 138.6) eight days after tagging and the fish with transmitter number 730-3 remained at the mouth of Fourth July Creek (RM 131.0) for several weeks before moving up the creek. Both fish were implanted with transmitters having modified antennas.

Four coho salmon tagged at Curry Station exhibited multi-directional movements in the Susitna River (Figure E.5.37). Two fish carrying transmitter numbers 650-1 and 660-2, entered and spawned in Gash Creek (RM 111.6). Fish bearing transmitter number 650-1 moved downstream and remained in the Talkeetna River (RM 97.0) prior to moving up the Susitna River and entering Gash Creek (RM 111.6) whereas fish bearing transmitter number 660-2 moved upriver to RM 141.1 then descended to and entered Gash Creek (RM 111.6). Another coho salmon supporting transmitter number 680-1 moved downriver to RM 101.5 and held there for several days before migrating upstream to RM 109.8 where transmitter reception was lost. The other fish bearing transmitter number 720-3, moved upriver to RM 131.0, before descending to and remaining at RM 117.8, near the mouth of Little Portage Creek through early October. This fish apparently did not spawn.

Movements of coho salmon apparently were not influenced by flow conditions within the Susitna River (Figure E.5.37).

Adult, radio tagged coho salmon moved upstream at various rates, although the relatively long periods of time separating some successive fish positions probably under-estimated the upstream migration rates (Table E.5.24). The fastest upstream migration rates, 0.67 to 1.00 mph, generally occurred at intervals of less than five hours. However some coho salmon moved upstream to 0.23 to 0.60 mph during longer intervals of 20 to 60.8 hours. Consequently, all upstream migration rates are expressed as equal to or exceeding ($\geq$), except for those successive fish positions separated by less than five hours.

Behavior of adult radio tagged coho salmon near the mouths of Susitna River tributaries was variable (Figure E.5.37). Some individuals, such as fish bearing transmitter numbers 650-1 and 650-2, occupied positions in the mainstem Susitna River at or within 0.1 mile of the mouth of Gash Creek (RM 111.6) for several days prior to entering that tributary. Other coho salmon such as those carrying transmitter numbers 650-2 and 720-3, remained in the Susitna River within 0.1 mile of the mouth of Fourth July Creek (RM 131.0) and Little Portage Creek (RM 117.8), respectively, for two or more weeks. Fish bearing transmitter number 650-2 entered Fourth July Creek after holding at

Table E.5.24. Fifteen fastest recorded movements of radio tagged adult, coho salmon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

TRANSMITTER FREQUENCY (mHz) PULSE/SECOND	RATE OF UPSTREAM MOVEMENT (MPH)1/	HOURS ELAPSED BETWEEN SUCCESSIVE FISH POSITIONS	DISTANCE MOVED (MI.)	LOCATION OF MOVEMENT RM to RM
650-2	1.00	0.7	0.7	102.8-103.5
660-2	0.88	2.5	2.2	112.5-114.7
730-3	0.67	4.5	3.0	102.9-105.9
720-2	0.67	2.1	1.4	109.1-110-5
730-3	0.60	20.3	12.2	109.6-121.8
650-2	0.56	28.2	15.8	103.5-119.3
660-2	0.43	23.3	9.9	118.5-128.4
720-3	0.39	21.8	8.6	119.5-128.1
680-1	0.29	20.2	5.9	103.8-109.7
730-3	0.27	68.6	18.7	121.8-138.6-I 1.9 2/
650-1	2.33	56.3	13.1	3.3 T 3/-106.9
680-1	0.23	9.1	2.1	101.7-103.8
660-2	0.18	69.0	12.7	128.4-141.1
650-2	0.18	43.5	7.6	123.4-131.0
650-2	0.17	24.4	4.1	119.3-123.4

1/ Upstream fish movement speed denoted as equal to or greater than ( ) when five or more hours lapsed between observations

2/ Indian River Mile

3/ Talkeetna River Mile

its mouth for about two weeks whereas fish bearing transmitter number 720-2 remained near Little Portage Creek (RM 117.8) for about three weeks and apparently did not ascend that stream.

Three radio tagged female coho salmon spawned in streams connected to lakes as evidenced by their spawned out condition upon necropsy. However, actual spawning activity was not observed. Two spawned out individuals supporting transmitter numbers 650-1 and 660-2 were detected in Gash Creek (RM 111.6); one carried a wire modified transmitter whereas the other supported the heat-to-shrink material modified transmitter. The other fish bearing transmitter number 710-3 spawned in Cabin Creek, a tributary of Fish Lake (RM 4.7 Birch Creek) and bore a wire modified transmitter.

The above three individuals spawned within one week after entering Susitna River tributaries in September. A female fish bearing transmitter number 710-3 was found spawned out and dead less than one week after entering Cabin Creek (RM 4.7 Birch Creek) in September. Two fish bearing transmitter numbers 660-2 and 650-1, were found in a spawned-out condition within seven days after entering Gash Creek (RM 111.6) on about 21 and 22 September.

A female coho salmon bearing transmitter number 650-2 displayed a similar pattern of tributary occupancy in Fourth July Creek (RM 131.0). This individual entered the stream on 20 September after remaining in the Susitna River near the mouth of this stream for about two weeks. On 23 September it was detected in the Susitna River at RM 130.0. The spawning status of this fish was not determined.

Individual movements of radio tagged coho salmon are further described in Appendix EK.

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APPENDICES EA - EL

APPENDIX EA
SUSITNA RIVER AND YENTNA RIVER
SAMPLING STATIONS

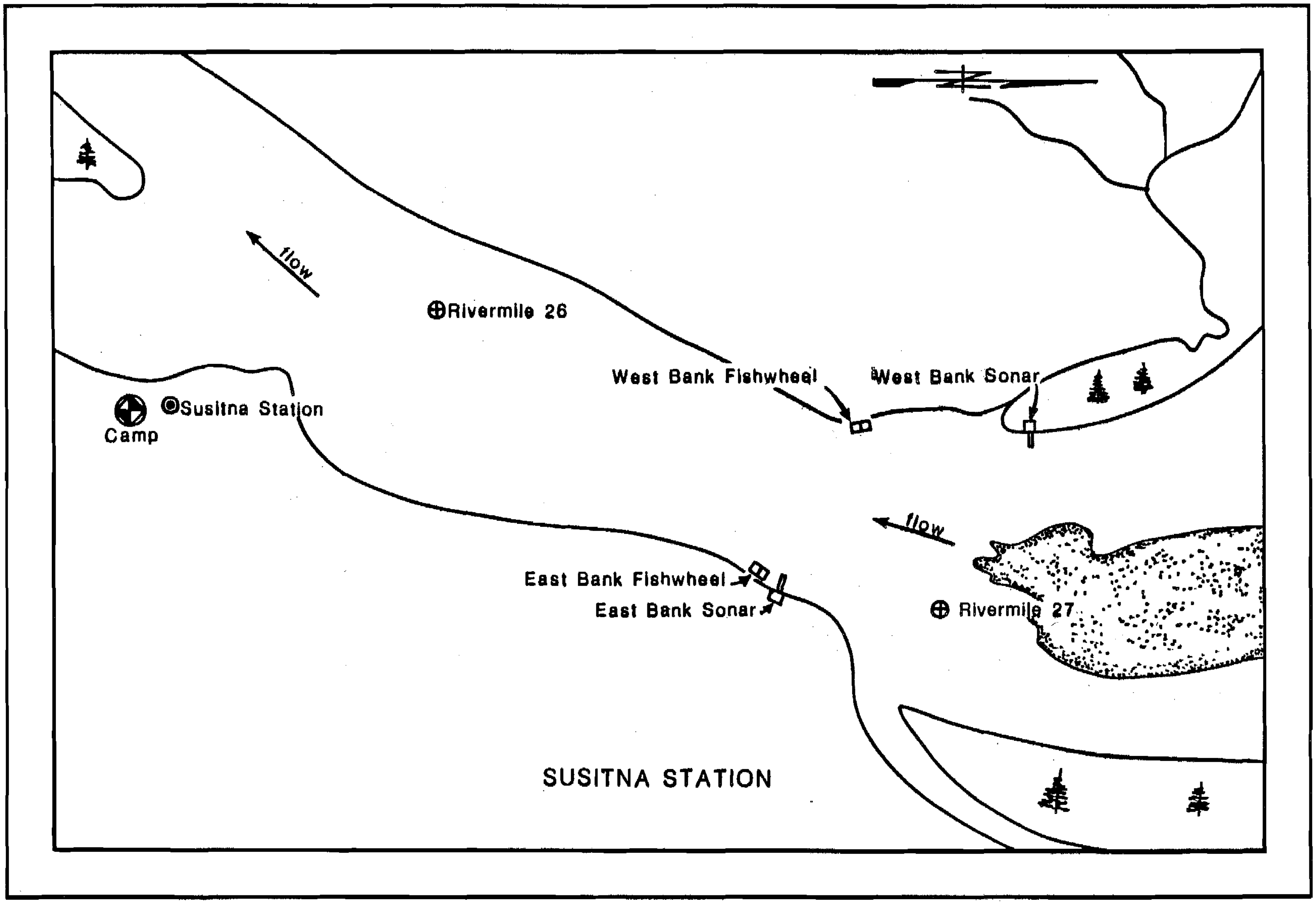


Figure EA-1. Susitna Station with sonar and fishwheel locations shown, Adult Anadromous Investigations, Su Hydro Studies, 1981.

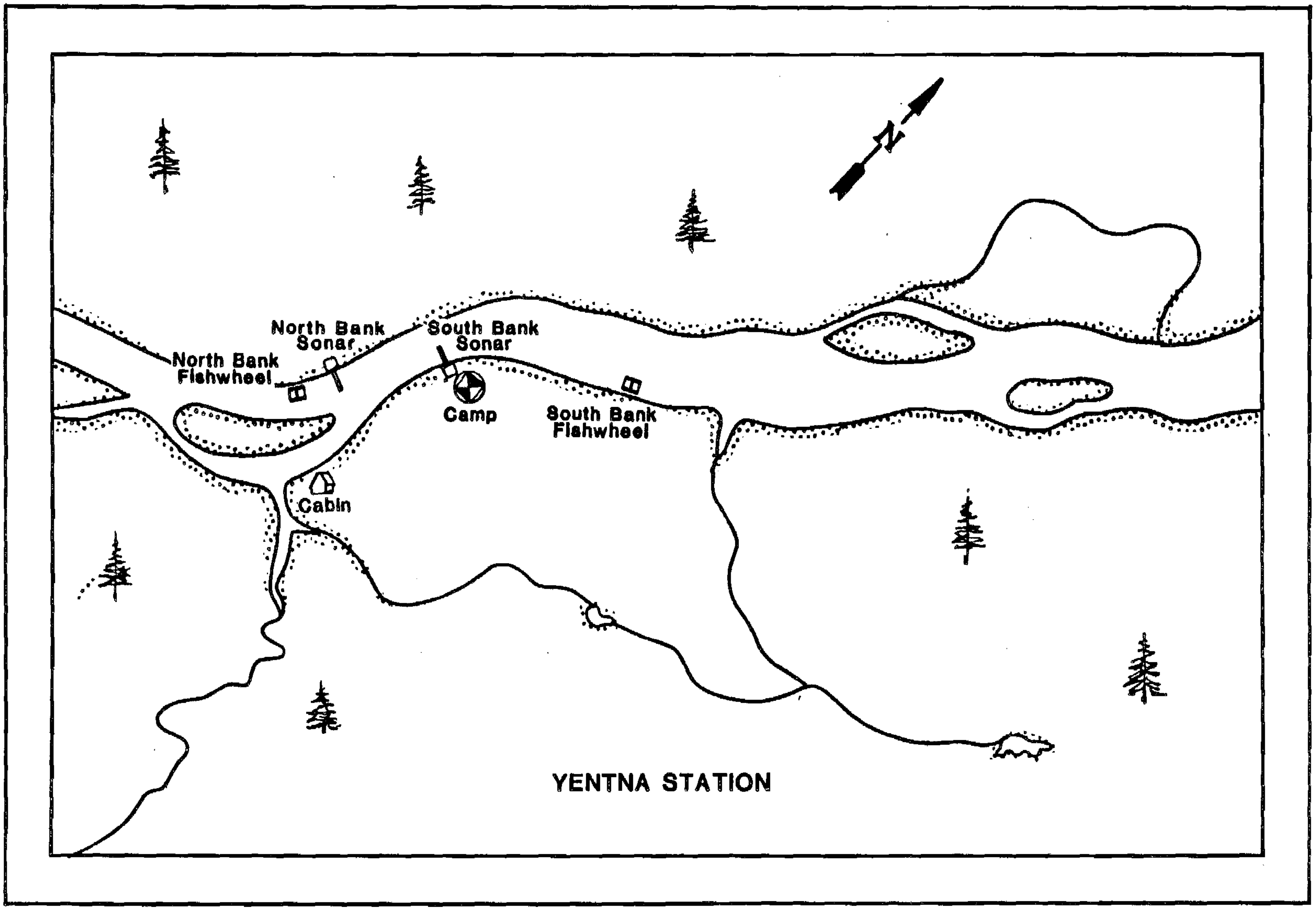


Figure EA-2. Yentna Station with sonar and fishwheel locations shown, Adult Anadromous Investigations, Su Hydro Studies, 1981.

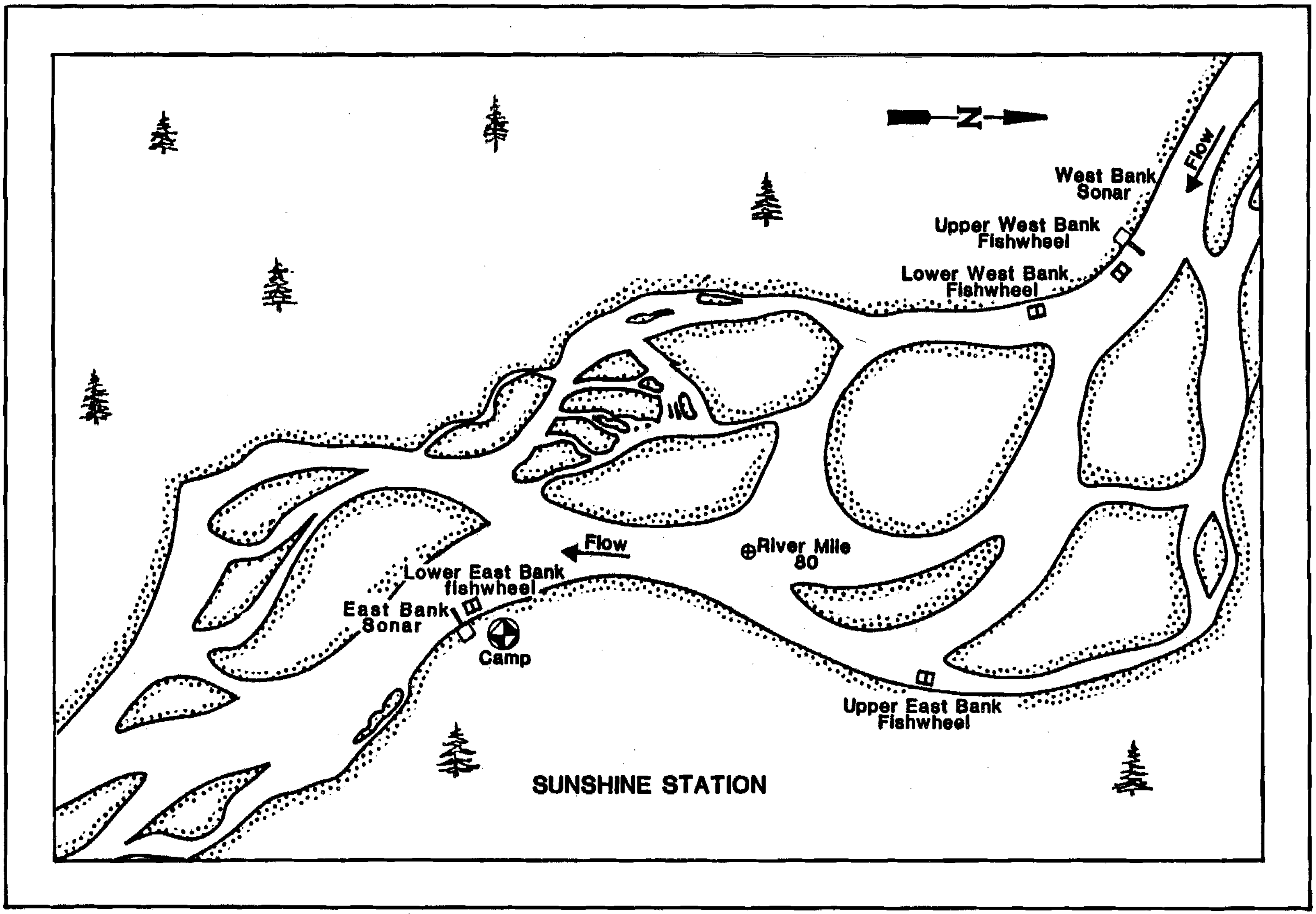


Figure EA-3. Sunshine Station with sonar and fishwheel locations shown, Adult Anadromous Investigations, Su Hydro Studies, 1981.

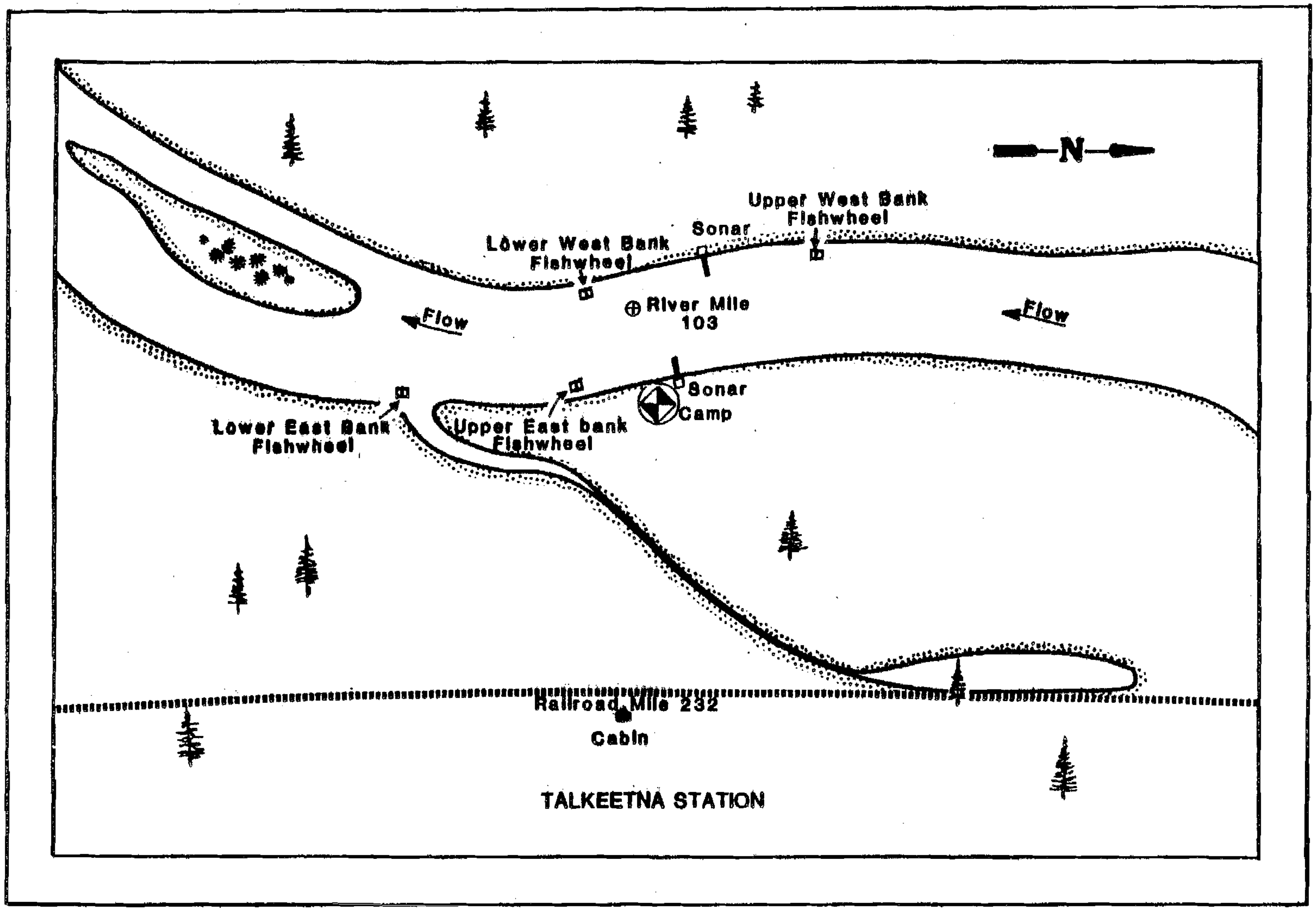


Figure EA-4. Talkeetna Station with sonar and fishwheel locations shown, Adult Anadromous Investigations, Su Hydro Studies, 1981.

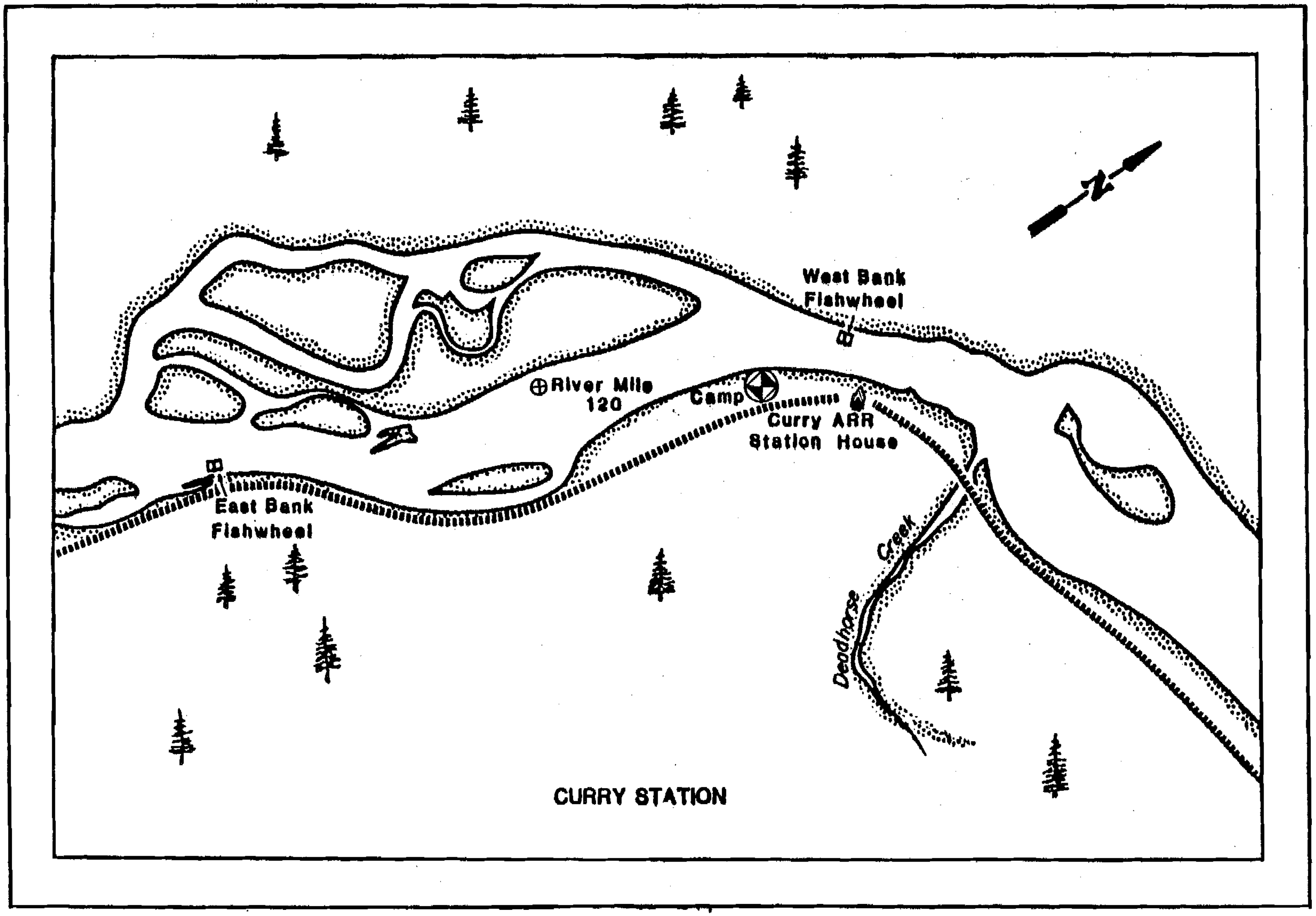


Figure EA-5. Curry Station with fishwheel locations shown, Adult Anadromous Investigations, Su Hydro Studies, 1981.

APPENDIX EB
DAILY SIDE-SCAN SONAR COUNTS

Table EB-1. Susitna Station west bank daily and cumulative sonar counts by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June														
27	60	60	0	0	60	60	0	0	0	0	0	0		
28	63	123	0	0	63	123	0	0	0	0	0	0		
29	370	493	3	3	367	490	0	0	0	0	0	0		
30	429	922	3	6	426	916	0	0	0	0	0	0		
July														
1	451	1463	4	10	537	1453	0	0	0	0	0	0		
2	1929	3392	20	30	1860	3313	49	49	0	0	0	0		
3	1109	4501	11	41	1070	4383	28	77	0	0	0	0		
4	550	5051	3	44	478	4861	66	143	0	0	3	3		
5	448	5499	2	46	390	5251	54	197	0	0	2	5		
6	377	5876	2	48	328	5579	45	242	0	0	2	7		
7	279	6155	2	50	242	5821	33	275	0	0	2	9		
8	231	6386	2	52	226	6047	1	276	1	1	1	10		
9	1358	7744	9	61	1334	7381	6	282	3	4	6	16		
10	5262	13006	36	97	5166	12547	24	306	12	16	24	40		
11	11930	14936	0	97	11848	24395	82	388	0	16	0	40		
12	15650	30586	0	97	15650	40045	0	388	0	16	0	40		
13	19747	50333	0	97	19747	59792	0	388	0	16	0	40		
14	22043	72376	0	97	22043	81835	0	388	0	16	0	40		
15	16970	89346	0	97	16055	98690	0	388	115	131	0	40		
16	10718	100064	0	97	10676	109366	42	430	0	131	0	40		
17	3830	103894	0	97	3804	113170	0	430	26	157	0	40		
18	4607	108501	0	97	4392	117562	143	573	72	229	0	40		
19	3632	112133	0	97	3439	121001	110	683	0	229	83	123		
20	5691	117824	0	97	5054	126055	487	1170	19	248	131	254		
21	8304	126128	0	97	7711	133766	382	1552	40	288	171	425		
22	7182	133310	0	97	6808	140574	224	1776	75	363	75	500		
23	7049	140359	50	147	5960	146534	601	2377	50	413	388	888		
24	4707	145066	33	180	3210	149744	706	3083	325	738	433	1321		
25	3262	148328	0	180	1954	151698	835	3918	26	764	447	1768		

Table EB-1. Continued

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
July														
26	1927	150255	0	180	1066	152764	690	4608	0	764	171	1939		
27	2124	152379	0	180	1115	153879	690	5298	51	815	268	2207		
28	3163	155542	0	180	936	154815	1420	6718	35	850	772	2979		
29	2698	158240	0	180	682	155497	1584	8302	45	895	387	3366		
30	2431	160671	0	180	974	156471	1184	9486	0	895	273	3639		
31	2480	163151	0	180	1127	157598	902	10388	113	1008	338	3977		
August														
1	1610	164761	0	180	844	158442	399	10787	26	1034	341	4318		
2	801	165562	0	180	419	158861	199	10986	13	1047	170	4488		
3	481	166043	0	180	283	159144	66	11052	26	1073	106	4594		
4	476	166519	0	180	280	159424	65	11117	26	1099	105	4699		
5	802	167321	0	180	471	159895	110	11227	44	1143	177	4876		
6	574	167895	0	180	337	160232	79	11306	32	1175	126	5002		
7	920	168815	0	180	541	160773	126	11432	51	1226	202	5204		
8	1271	170086	0	180	367	161140	168	11600	232	1458	424	5628		
9	307	170393	0	180	89	161229	41	11641	56	1514	102	5730		
10	146	170539	0	180	42	161271	19	11660	27	1541	49	5779		
11	288	170827	0	180	83	161354	38	11698	53	1594	96	5875		
12	412	171239	0	180	119	161423	54	11752	75	1669	138	6013		
13	633	171872	0	180	183	161656	84	11836	115	1784	211	6224		
14	533	172405	0	180	160	161816	73	11909	101	1885	184	6408		
15	553	172958	0	180	160	161976	73	11982	101	1986	184	6592		
16	553	173511	0	180	160	162136	73	12055	101	2087	184	6776		
17	473	173984	0	180	137	162273	62	12117	86	2173	158	6934		
18	473	174457	0	180	137	162410	62	12179	86	2259	158	7092		
19	2234	176691	0	180	646	163056	295	12474	407	2666	745	7837		
20	1784	178475	0	180	516	163572	236	12710	325	2991	595	8432		
21	1555	180030	0	180	450	164022	205	12915	284	3275	518	8950		
22	846	180876	0	180	245	164267	112	13027	154	3429	282	9232		
23	798	181674	0	180	231	164498	105	13132	146	3575	266	9498		

Table EB-1. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August														
24	921	182595	0	180	266	164764	122	13254	168	3743	307	9805		
25	701	183296	0	180	202	164966	93	13347	128	3871	234	10039		
26	399	183695	0	180	33	164999	0	13347	78	3949	12	10051	256	256
27	235	183930	0	180	22	165021	0	13347	48	3997	7	10058	158	414
28	234	184164	0	180	21	165042	0	13347	48	4045	7	10065	158	572
29	196	184360	0	180	17	165059	0	13347	40	4085	6	10071	133	705
30	87	184447	0	180	8	165067	0	13347	18	4103	3	10074	58	763
31	101	184548	0	180	9	165076	0	13347	21	4124	3	10077	68	831
September														
1	59	184607	0	180	5	165081	0	13347	12	4136	2	10079	40	871
2	70	184677	0	180	6	165087	0	13347	14	4150	3	10082	47	918

Table EB-2. Susitna Station east bank daily and cumulative sonar counts by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June														
27	116	116	12	12	46	46	39	39	18	18	1	1		
28	101	217	10	22	41	87	34	73	15	33	1	2		
29	76	293	8	30	31	118	25	98	12	45	0	2		
30	124	417	13	43	50	168	41	139	19	64	1	3		
July														
1	246	663	25	68	100	268	82	221	37	101	2	5		
2	211	874	22	90	86	354	70	291	32	133	1	6		
3	173	1047	18	108	70	424	58	349	26	159	1	7		
4	180	1227	19	127	73	497	60	409	27	186	1	8		
5	193	1420	20	147	79	576	64	473	29	215	1	9		
6	292	1712	30	177	119	695	97	570	44	259	2	11		
7	288	2000	30	207	116	811	96	666	44	303	2	13		
8	402	2402	41	248	164	975	134	800	61	364	2	15		
9	538	2940	55	303	219	1194	179	979	82	446	3	18		
10	2913	5853	300	603	1183	2377	971	1950	441	887	18	36		
11	2014	7867	0	603	1520	3897	307	2257	187	1074	0	36		
12	788	8655	0	603	595	4492	120	2377	73	1147	0	36		
13	2136	10791	0	603	1613	6105	325	2702	198	1345	0	36		
14	13519	24310	0	603	10207	16312	2059	4761	1253	2598	0	36		
15	22080	46390	0	603	16670	32982	3363	8124	2047	4645	0	36		
16	21731	68121	0	603	16407	49389	3310	11434	2014	6659	0	36		
17	20738	88859	0	603	15658	65047	3158	14592	1922	8581	0	36		
18	14904	103763	0	603	11252	76299	2270	16862	1382	9963	0	36		
19	14186	117949	0	603	10710	87009	2161	19023	1315	11278	0	36		
20	13288	131237	0	603	10032	97041	2024	21047	1232	12510	0	36		
21	21019	152256	0	603	15870	112911	3201	24248	1948	14458	0	36		
22	13051	165301	91	694	4411	117322	6226	30474	1109	15567	1214	1250		
23	21019	186326	147	841	7104	124426	10026	40500	1787	17354	1955	3205		
24	24137	210463	169	1010	8158	132584	11513	52013	2052	19406	2245	5450		
25	17310	227773	87	1097	6526	139110	7218	59231	1194	20600	2285	7735		

Table EB-2. Continued.

DATE	TOTAL COUNT DAILY	TOTAL COUNT CUM.	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.
July														
26	14840	242613	74	1171	5595	144705	6188	65419	1024	21624	1959	9694		
27	18303	260916	92-	1263	6900	151605	7632	73051	1263	22887	2416	12110		
28	16141	277057	80	1343	6085	157690	6731	79782	1114	24001	2131	14241		
29	11155	288212	0	1343	3718	161408	4306	84088	1468	25469	1663	15904		
30	7307	295519	0	1343	2435	163843	2821	86909	962	26431	1089	16993		
31	6290	301809	0	1343	2096	165939	2428	89337	828	27259	938	17931		
August														
1	3183	304992	0	1343	1061	167000	1228	90565	419	27678	475	18406		
2	2447	307439	0	1343	816	167816	944	91509	322	28000	365	18771		
3	2787	310226	18	1361	557	168373	645	92154	1080	29080	348	19119		
4	5514	315740	35	1396	1103	169476	1274	93428	2137	31217	689	19808		
5	7184	322924	45	1441	1434	170910	1662	95090	2785	34002	899	20707		
6	3952	326876	25	1466	790	171700	914	96004	1531	35533	494	21201		
7	2771	329647	17	1483	554	172254	641	96645	1074	36607	346	21547		
8	1815	331462	11	1494	363	172617	420	97065	703	37310	227	21774		
9	1275	332737	8	1502	255	172872	295	97360	494	37804	159	21933		
10	1028	333765	6	1508	206	173078	238	97598	398	38202	129	22062		
11	1278	335043	8	1516	256	173334	295	97893	495	38697	160	22222		
12	986	336029	6	1522	197	173531	228	98121	382	39079	124	22346		
13	754	336783	5	1527	151	173682	174	98295	292	39371	94	22440		
14	431	337314	3	1530	85	173767	100	98395	167	39538	54	22494		
15	369	337583	2	1532	74	173841	85	98480	143	39681	47	22541		
16	340	337923	2	1534	68	173909	78	98558	132	39813	43	22584		
17	312	338235	2	1536	62	173971	72	98630	121	39934	39	22623		
18	705	338940	4	1540	141	174112	163	98793	273	40207	89	22712		
19	1108	340048	7	1547	222	174334	256	99049	429	40636	139	22851		
20	697	340745	4	1551	139	174473	161	99210	270	40906	88	22939		
21	1099	341844	7	1558	220	174693	254	99464	426	41332	137	23706		
22	647	342491	4	1562	129	174822	150	99614	251	41583	81	23157		
23	569	343060	4	1566	114	174936	132	99746	220	41803	71	23228		

Table EB-2. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August														
24	604	343664	4	1570	120	175056	140	99886	234	42037	76	23304		
25	365	344029	2	1572	73	175129	84	99970	141	42178	47	23351		
26	363	344392	0	1572	4	175133	8	99978	32	42210	8	23359	311	311
27	423	344815	0	1572	5	175138	9	99987	37	42247	9	23368	363	674
28	242	345051	0	1572	3	175141	5	99992	21	42268	6	23374	207	881
29	153	345210	0	1572	2	175143	3	99995	13	42281	4	23378	131	1012
30	99	345309	0	1572	1	175144	2	99997	9	42290	2	23380	85	1097
31	34	345343	0	1572	0	175144	1	99998	3	42293	3	23383	29	1126
September														
1	106	345449	0	1572	1	175145	2	100000	9	42302	3	23386	91	1217
2	101	345550	0	1572	1	175146	2	100002	9	42311	2	23388	87	1304

Table EB-3. Yentna Station south bank daily and cumulative sonar counts by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June														
30	295	295	39	39	206	206	22	22	17	17	0	0	11	11
July														
1	377	672	50	89	263	469	28	50	22	39	0	0	14	25
2	427	1099	57	146	298	767	32	82	24	63	0	0	16	41
3	483	1582	38	184	350	1117	51	133	12	75	0	0	32	73
4	259	1841	20	204	187	1304	27	160	8	83	0	0	17	90
5	162	2003	13	217	117	1421	17	177	4	87	0	0	11	101
6	201	2204	13	230	122	1543	55	232	0	87	4	4	7	108
7	173	2377	11	241	104	1647	48	280	0	87	4	8	6	114
8	164	2541	11	252	99	1746	45	325	0	87	4	12	5	119
9	318	2859	3	255	282	2028	26	351	6	93	1	13	0	119
10	4641	7500	51	306	4117	6145	381	732	83	176	9	22	0	119
11	4882	12382	0	306	4818	10963	49	781	15	191	0	22	0	119
12	8843	21225	35	341	8808	19771	0	781	0	191	0	22	0	119
13	10604	31829	0	341	10307	30078	85	866	212	403	0	22	0	119
14	15885	47714	0	341	15535	45613	254	1120	64	467	32	54	0	119
15	15291	63005	0	341	14970	60583	199	1319	107	574	15	69	0	119
16	9243	72248	0	341	9012	69595	120	1439	56	630	55	124	0	119
17	5576	77824	0	341	5403	74998	0	1439	173	803	0	124	0	119
18	5762	85386	0	341	4869	79867	346	1785	507	1310	40	164	0	119
19	6190	89776	0	341	5231	85098	371	2156	545	1855	43	207	0	119
20	7259	97035	0	341	5815	90913	791	2947	530	2385	123	330	0	119
21	8620	105655	0	341	6905	97818	939	3886	629	3014	147	477	0	119
22	11768	117423	35	376	9285	107103	918	4804	824	3838	706	1183	0	119
23	10477	127900	0	376	6045	113148	2787	7591	692	4530	953	2136	0	119
24	8400	136300	0	376	4503	117651	2621	10212	722	5252	554	2690	0	119
25	6647	142947	0	376	2712	120363	3038	13250	758	6010	139	2829	0	119
26	4767	147714	0	376	1626	121989	1916	15166	491	6501	734	3563	0	119
27	3407	151121	0	376	1162	123151	1369	16535	351	6852	525	4088	0	119

Table EB-3. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
July														
28	4885	156006	0	376	752	123903	2194	18729	664	7516	1275	5363	0	119
29	3579	159585	0	376	716	124619	1918	20647	397	7913	548	5911	0	119
30	4119	163704	0	376	783	125402	2018	22665	437	8350	873	6784	8	127
31	2416	166120	0	376	435	125837	1201	23866	208	8558	555	7339	17	144
August														
1	3476	169596	0	376	434	126271	1342	25208	435	8993	1265	8604	0	144
2	2342	171938	0	376	691	126962	717	25925	96	9089	838	9442	0	144
3	961	172899	0	376	284	127246	294	26219	39	9128	344	9786	0	144
4	945	173844	0	376	151	127397	256	26475	151	9279	387	10173	0	144
5	1086	174930	0	376	174	127571	294	26769	174	9453	444	10617	0	144
6	869	175799	0	376	77	127648	470	27239	131	9584	191	10808	0	144
7	723	176522	0	376	45	127693	264	27503	150	9734	264	11072	0	144
8	455	176977	0	376	28	127721	166	27669	95	9829	166	11238	0	144
9	400	177377	0	376	82	127803	67	27736	107	9936	144	11382	0	144
10	523	177900	0	376	107	127910	87	27823	141	10077	188	11570	0	144
11	501	178401	0	376	103	128013	83	27906	135	10212	180	11750	0	144
12	412	178813	0	376	128	128141	52	27958	180	10392	52	11802	0	144
13 1/	172	178985	0	376	53	128194	22	27980	75	10467	22	11824	0	144
14 1/	260	179245	0	376	81	128275	32	28012	114	10581	33	11857	0	144
15 1/	505	179750	0	376	15	128290	130	28142	72	10653	288	12145	0	144
16	814	180564	0	376	24	128314	209	28351	116	10769	465	12610	0	144
17	745	181309	0	376	22	128336	191	28542	107	10876	425	13035	0	144
18	675	181984	0	376	22	128358	203	28745	135	11011	270	13305	45	189
19	652	182636	0	376	21	128379	196	28941	130	11141	261	13566	44	233
20	944	183580	0	376	31	128410	283	29224	189	11330	378	13944	63	296
21	545	184125	0	376	39	128449	118	29342	237	11567	79	14023	72	368
22	413	184538	0	376	30	128479	90	29432	179	11746	60	14083	54	422
23	358	184896	0	376	26	128505	78	29510	155	11901	52	14135	47	469
24	356	185252	0	376	10	128515	52	29562	57	11958	31	14166	206	675
25	342	185594	0	376	10	128525	50	29612	54	12012	30	14196	198	873

1/ Low counts due to counter malfunction in sector 1 caused by extreme high water.

Table EB-3. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August														
26	435	186029	0	376	13	128538	63	29675	69	12081	38	14234	252	1125
27	256	186285	0	376	20	128558	0	29675	98	12179	0	14234	138	1263
28	204	186489	0	376	16	128574	0	29675	78	12257	0	14234	110	1373
29	122	186611	0	376	9	128583	0	29675	47	12304	0	14234	66	1439
30	109	186720	0	376	0	128583	0	29675	109	12413	0	14234	0	1439
31	53	186773	0	376	0	128583	0	29675	53	12466	0	14234	0	1439
September														
1	86	186859	0	376	0	128583	0	29675	86	12552	0	14234	0	1439
2	106	186965	0	376	0	128583	0	29675	106	12658	0	14234	0	1439
3	74	187039	0	376	0	128583	0	29675	74	12732	0	14234	0	1439
4 2/	91	187130												
5 2/	86	187216												
6 2/	115	187331												
7 2/	122	187453												

2/ No apportionment due to inoperative fishwheel.

Table EB-4. Yentna Station north bank daily and cumulative sonar counts by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June														
29	199	199	0	0	135	135	14	14	21	21	0	0	29	29
30	307	506	0	0	208	343	22	36	33	54	0	0	44	73
July														
1	392	898	0	0	266	609	28	64	42	96	0	0	56	129
2	719	1617	0	0	488	1097	51	115	77	173	0	0	103	232
3-5 1/	-	1617	-	0	-	1097	-	115	-	173	-	0	-	232
6	182	1799	16	16	98	1195	62	177	2	175	2	2	2	234
7	245	2044	21	37	131	1326	84	261	3	178	3	5	3	237
8	339	2383	6	43	165	1491	154	415	13	191	0	5	1	238
9	266	2649	5	48	129	1620	121	536	10	201	0	5	1	239
10	137	2786	2	50	67	1687	62	598	5	206	0	5	1	240
11	151	2937	0	50	112	1799	14	612	25	231	0	5	0	240
12	61	2998	0	50	45	1844	6	618	10	241	0	5	0	240
13	174	3172	0	50	129	1973	17	635	28	269	0	5	0	240
14	451	3623	0	50	374	2347	44	679	33	302	0	5	0	240
15	470	4093	0	50	390	2737	46	725	34	336	0	5	0	240
16	377	4470	0	50	312	3049	37	762	28	364	0	5	0	240
17	438	4908	0	50	371	3420	21	783	42	406	4	9	0	240
18	277	5185	0	50	235	3655	13	796	27	433	2	11	0	240
19	233	5418	1	51	192	3847	13	809	22	455	5	16	0	240
20	245	5663	0	51	171	4018	37	846	36	491	1	17	0	240
21	248	5911	0	51	176	4194	31	877	37	528	4	21	0	240
22	398	6309	0	51	299	4493	20	897	64	592	15	36	0	240
23	539	6848	0	51	298	4791	29	926	169	761	43	79	0	240
24	668	7516	0	51	446	5237	74	1000	128	889	20	99	0	240
25	782	8298	0	51	522	5759	87	1087	150	1039	23	122	0	240
26 2/	2516	10814	0	51	1205	6964	475	1562	579	1618	257	379	0	240
27	1913	12727	0	51	916	7880	362	1924	440	2058	195	574	0	240
28	1251	13978	0	51	601	8481	266	2190	234	2292	150	724	0	240

1/ Sonar shut down due to high water necessitating site adjustment.

2/ Sonar to be moved to a new site.

Table EB-4. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
29	908	14886	0	51	436	8917	193	2383	170	2462	109	833	0	240
30	1700	16586	0	51	816	9733	362	2745	318	2780	204	1037	0	240
31	1418	18004	0	51	437	10170	491	3236	327	3107	163	1200	0	240
August														
1	615	18619	0	51	189	10359	213	3449	142	3249	71	1271	0	240
2	395	19014	0	51	122	10481	137	3586	91	3340	45	1316	0	240
3	575	19589	0	51	32	10513	250	3836	186	3526	107	1423	0	240
4	648	20237	0	51	36	10549	282	4118	209	3735	121	1544	0	240
5	516	20753	0	51	52	10601	285	4403	114	3849	65	1609	0	240
6	307	21060	0	51	10	10611	193	4596	63	3912	41	1650	0	240
7	308	21368	0	51	9	10620	246	4842	28	3940	25	1675	0	240
8	231	21599	0	51	14	10634	125	4967	63	4003	29	1704	0	240
9	379	21978	0	51	24	10658	205	5172	103	4106	47	1751	0	240
10	417	22395	0	51	24	10682	113	5285	190	4296	90	1841	0	240
11	459	22854	0	51	26	10708	124	5409	210	4506	99	1940	0	240
12	459	23313	0	51	26	10734	124	5533	210	4716	99	2039	0	240
13 3/	145	23458	0	51	19	10753	15	5548	87	4803	24	2063	0	240
14 3/	138	23596	0	51	18	10771	14	5562	83	4886	23	2086	0	240
15 3/	127	23723	0	51	17	10788	13	5575	76	4962	21	2107	0	240
16	163	23886	0	51	3	10791	35	5610	72	5034	44	2151	9	249
17	309	24195	0	51	6	10797	65	5675	137	5171	83	2234	18	267
18	517	24712	0	51	10	10807	110	5795	228	5399	139	2373	30	297
19	595	25307	0	51	0	10807	123	5908	349	5748	82	2455	41	338
20	769	26076	0	51	0	10807	159	6067	451	6199	106	2561	53	391
21	377	26453	0	51	0	10807	78	6145	221	6420	52	2613	26	417
22	451	26904	0	51	5	10812	77	6222	209	6629	55	2668	105	522
23	274	27178	0	51	3	10815	47	6269	127	6756	33	2701	64	586
24	248	27426	0	51	3	10818	42	6311	115	6871	30	2731	58	644
25	245	27671	0	51	0	10818	29	6340	52	6923	18	2749	146	790
26	162	27833	0	51	0	10818	19	6359	35	6958	12	2761	96	886
27	168	28001	0	51	0	10818	20	6379	36	6994	12	2773	100	986

3/ Counts are low due to malfunction in sector one caused by extreme high water.

Table EB-4. Continued.

DATE	TOTAL COUNT DAILY	TOTAL COUNT CUM.	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.
28	28	28029	0	51	0	10818	0	6379	0	6994	0	2773	28	1014
29	27	28056	0	51	0	10818	0	6379	0	6994	0	2773	27	1041
30	22	28078	0	51	0	10818	0	6379	0	6994	0	2773	22	1063
31	12	28090	0	51	0	10818	0	6379	3	6997	0	2773	9	1072
September														
1	58	28148	0	51	0	10818	0	6379	14	7011	0	2773	44	1116
2	50	28198	0	51	0	10818	0	6379	12	7023	0	2773	38	1154
3	26	28224	0	51	0	10818	0	6379	4	7027	4	2777	18	1172
4	19	28243	0	51	0	10818	0	6379	3	7030	3	2780	13	1185
5	20	28263	0	51	0	10818	0	6379	3	7033	3	2783	14	1199
6	49	28312	0	51	0	10818	0	6379	0	7033	0	2783	49	1248
7	29	28341	0	51	0	10818	0	6379	0	7033	0	2783	29	1277

Table EB-5. Sunshine Station west bank daily and cumulative sonar counts by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June														
25	91	91	91	91	0	0	0	0	0	0	0	0	0	0
26	58	149	58	149	0	0	0	0	0	0	0	0	0	0
27	31	180	31	180	0	0	0	0	0	0	0	0	0	0
28	51	231	51	231	0	0	0	0	0	0	0	0	0	0
29	40	271	40	271	0	0	0	0	0	0	0	0	0	0
30	14	285	13	284	0	0	0	0	0	0	0	0	1	1
July														
1	56	341	50	334	0	0	0	0	0	0	0	0	6	7
2	51	392	46	380	0	0	0	0	0	0	0	0	5	12
3	58	450	35	415	23	23	0	0	0	0	0	0	0	12
4	44	544	56	471	38	61	0	0	0	0	0	0	0	12
5	122	666	73	544	49	110	0	0	0	0	0	0	0	12
6	68	734	31	575	37	147	0	0	0	0	0	0	0	12
7	67	801	31	606	36	183	0	0	0	0	0	0	0	12
8	39	840	18	624	21	204	0	0	0	0	0	0	0	12
9	13	853	5	629	7	211	0	0	0	0	0	0	1	13
10	31	884	8	637	17	228	0	0	3	3	0	0	3	16
11	2	886	1	638	1	229	0	0	0	3	0	0	0	16
12	11	897	3	641	6	235	0	0	1	4	0	0	1	17
13-18 1/	-	897	-	641	-	235	-	0	-	4	-	0	-	17
19	184	1081	0	641	178	413	0	0	6	10	0	0	0	17
20	233	1314	0	641	226	639	0	0	7	17	0	0	0	17
21	130	1444	0	641	126	765	0	0	4	21	0	0	0	17
22	2177	3621	0	641	2085	2850	46	46	46	67	0	0	0	17
23	3456	7077	0	641	3311	6161	73	119	72	139	0	0	0	17
24	3624	10701	0	641	3472	9633	76	195	76	215	0	0	0	17
25	3240	13941	0	641	2984	12617	165	360	91	306	0	0	0	17
26	1414	15355	0	641	1302	13919	72	432	40	346	0	0	0	17
27	2302	17657	9	650	1787	15706	315	747	175	521	16	16	0	17
28	3419	21076	14	664	2653	18359	468	1215	260	781	24	40	0	17

1/ Sonar shut down for adjustment.

Table EB-5. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
July														
29	4659	25735	28	692	2767	21126	690	1905	773	1554	401	441	0	17
30	3116	28851	19	711	1851	22977	461	2366	517	2071	268	709	0	17
31	2445	31296	10	721	743	23720	812	3178	523	2594	357	1066	0	17
August														
1	2533	33829	10	731	770	24490	841	4019	542	3136	370	1436	0	17
2	88	33917	0	731	27	24517	29	4048	19	3155	13	1449	0	17
3	329	34246	1	732	101	24618	109	4157	70	3225	48	1497	0	17
4	1753	35999	0	732	240	24858	707	4864	466	3691	340	1837	0	17
5	3324	39323	0	732	519	25377	1150	6014	1047	4738	608	2445	0	17
6	3715	43038	0	732	580	25957	1285	7299	1170	5908	680	3125	0	17
7	3711	46749	0	732	445	26402	1677	8976	832	6740	757	3882	0	17
8	2195	48944	0	732	309	26711	683	9659	389	7129	814	4696	0	17
9	1594	50538	0	732	220	26931	717	10376	338	7467	319	5015	0	17
10	644	61182	0	732	89	27020	290	10666	136	7603	129	5144	0	17
11	807	51989	0	732	112	27132	363	11029	171	7774	161	5305	0	17
12	607	52596	0	732	55	27187	83	11112	359	8133	110	5415	0	17
13	286	52882	0	732	26	27213	39	11151	169	8302	52	5467	0	17
14	360	53242	0	732	32	27245	49	11200	213	8515	66	5533	0	17
15	140	53382	0	732	11	27256	0	11200	83	8598	46	5579	0	17
16	33	53415	0	732	2	27258	0	11200	20	8618	11	5590	0	17
17	480	53895	0	732	38	27296	0	11200	285	8903	157	5747	0	17
18	1871	55766	0	732	82	27378	15	11215	625	9528	1149	6896	0	17
19	3272	59038	0	732	144	27522	26	11241	1093	10621	2009	8905	0	17
20	2368	61406	0	732	104	27626	19	11260	791	11412	1454	10359	0	17
21	1106	62512	0	732	67	27693	0	11260	142	11554	897	11256	0	17
22	757	63269	0	732	46	27739	0	11260	97	11651	614	11870	0	17
23	746	64015	0	732	50	27789	0	11260	159	11810	537	12470	0	17
24	1265	65280	0	732	85	27874	0	11260	270	12080	910	13317	0	17
25	730	66010	0	732	31	27905	8	11268	241	12321	442	13759	8	25
26	459	66469	0	732	20	27925	5	11273	151	12472	278	14037	5	30

Table EB-5. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August														
27	422	66891	0	732	18	27943	5	11278	139	12611	255	14292	5	35
28	276	67167	0	732	0	27943	0	11278	107	12718	169	14461	0	35
29	95	67262	0	732	0	27943	0	11278	37	12755	58	14519	0	35
30	48	67310	0	732	0	27943	0	11278	19	12774	29	14548	0	35
31	27	67337	0	732	1	27944	0	11278	21	12795	5	14553	0	35
September														
1	75	67412	0	732	2	27946	0	11278	60	12855	13	14566	0	35
2	98	67510	0	732	3	27949	0	11278	78	12933	17	14583	0	35
3	178	67688	0	732	5	27954	0	11278	142	13075	31	14614	0	35
4	169	67857	0	732	0	27954	0	11278	29	13104	140	14754	0	35
5	225	68082	0	732	0	27954	0	11278	38	13142	187	14941	0	35
6	187	68269	0	732	0	27954	0	11278	32	13174	155	15096	0	35
7	94	68363	0	732	0	27954	0	11278	16	13190	78	15174	0	35
8 2/	51	68414												
9 2/	46	68460												
10 2/	66	68526												
11 2/	50	68576												
12 2/	59	68635												
13 2/	48	68683												
14 2/	55	68738												
15 2/	79	68817												

2/ No apportionment due to inoperative fishwheels.

Table EB-6. Sunshine Station east bank daily and cumulative sonar counts by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June														
23	695	695	687	687	8	8	0	0	0	0	0	0	0	0
24	283	978	280	967	3	11	0	0	0	0	0	0	0	0
25	193	1171	191	1158	2	13	0	0	0	0	0	0	0	0
26	62	1233	62	1220	0	13	0	0	0	0	0	0	0	0
27	42	1275	42	1262	0	13	0	0	0	0	0	0	0	0
28	68	1343	68	1330	0	13	0	0	0	0	0	0	0	0
29	15	1358	11	1341	4	17	0	0	0	0	0	0	0	0
30	59	1417	42	1383	17	34	0	0	0	0	0	0	0	0
July														
1	36	1453	26	1409	10	44	0	0	0	0	0	0	0	0
2	42	1495	28	1437	12	56	1	1	1	1	0	0	0	0
3	43	1538	29	1466	12	68	1	2	1	2	0	0	0	0
4	60	1598	41	1507	17	85	1	3	1	3	0	0	0	0
5	134	1732	36	1543	81	166	4	7	12	15	1	1	0	0
6	61	1793	16	1559	37	203	2	9	5	20	1	2	0	0
7	60	1853	16	1575	36	239	2	11	5	25	1	3	0	0
8	11	1864	2	1577	6	245	1	12	2	27	0	3	0	0
9	79	1943	16	1593	38	283	9	21	16	43	0	3	0	0
10	51	1994	10	1603	25	308	6	27	10	53	0	3	0	0
11 1/	-	1994	-	1603	-	308	-	27	-	53	-	3	-	0
12 1/	-	1994	-	1603	-	308	-	27	-	53	-	3	-	0
13	5	1999	0	1603	4	312	0	27	1	54	0	3	0	0
14	42	2041	1	1604	40	352	0	27	1	55	0	3	0	0
15	117	2158	1	1605	115	467	0	27	1	56	0	3	0	0
16	204	2362	2	1607	200	667	0	27	2	58	0	3	0	0
17	262	2624	0	1607	262	929	0	27	0	58	0	3	0	0
18	2739	5363	0	1607	2687	3616	41	68	11	69	0	3	0	0
19	5886	11249	0	1607	5827	9443	59	127	0	69	0	3	0	0
20	5982	17231	0	1607	5904	15347	60	187	18	87	0	3	0	0
21	5716	22947	0	1607	5584	20931	86	273	46	133	0	3	0	0

1/ Sonar shut down due to debris problems.

Table EB-6. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
July														
22	7370	30317	0	1607	6905	27836	155	428	310	443	0	3	0	0
23	6372	36689	13	1620	4849	32685	427	855	1070	1513	13	16	0	0
24	5933	42622	0	1620	3951	36636	760	1615	1198	2711	24	40	0	0
25	7353	49975	22	1642	4603	41239	1500	3115	1228	3939	0	40	0	0
26	5783	55758	0	1642	3412	44651	1157	4272	1214	5153	0	40	0	0
27	5906	61664	0	1642	3012	47663	1004	5276	1801	6954	89	129	0	0
28	8566	70230	0	1642	2047	49710	3649	8925	2844	9798	26	155	0	0
29	11449	81679	0	1642	2359	52069	4877	13802	3984	13782	229	384	0	0
30	12480	94159	0	1642	2683	54752	6352	20154	3220	17002	225	609	0	0
31	12231	106390	0	1642	1578	56330	7057	27211	3376	20378	220	829	0	0
August														
1	9931	116321	0	1642	586	56916	6207	33418	2959	23337	179	1008	0	0
2	309	116630	0	1642	37	56953	256	33674	16	23353	0	1008	0	0
3	1778	118408	0	1642	213	57166	1476	35150	89	23442	0	1008	0	0
4	3605	122013	0	1642	433	57599	2992	38142	180	23622	0	1008	0	0
5	5874	127887	0	1642	493	58092	4676	42818	511	24133	194	1202	0	0
6	5894	133781	24	1666	572	58664	4090	46908	1102	25235	106	1308	0	0
7	5464	139245	0	1666	464	59128	3328	50236	1421	26656	251	1559	0	0
8	4116	143361	8	1674	473	59601	2581	52817	811	27467	243	1802	0	0
9	2031	145392	0	1674	187	59788	1503	54320	203	27670	138	1940	0	0
10	1484	146876	0	1674	104	59892	905	55225	267	27937	208	2148	0	0
11	1617	148493	0	1674	113	60005	986	56211	291	28228	227	2375	0	0
12	1720	150213	0	1674	120	60125	1049	57260	310	28538	241	2616	0	0
13	1143	151356	0	1674	171	60295	549	57809	251	28789	172	2788	0	0
14	742	152098	0	1674	111	60406	356	58165	163	28952	112	2900	0	0
15	420	152518	0	1674	64	60470	201	58366	92	29044	63	2963	0	0
16	327	152845	0	1674	56	60527	111	58477	95	29139	65	3028	0	0
17	896	153741	0	1674	152	60679	305	58782	260	29399	179	3207	0	0
18	3128	158869	9	1683	279	60958	782	59564	1514	30913	544	3751	0	0
19	3332	160201	0	1683	260	61218	560	60124	1946	32859	566	4317	0	0

Table EB-6. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August														
20	2705	162906	0	1683	184	61402	628	60752	1298	34157	595	4912	0	0
21	1306	164212	0	1683	117	61519	209	60961	653	34810	327	5239	0	0
22	1184	165396	0	1683	107	61626	189	61150	592	35402	296	5535	0	0
23	1523	166919	0	1683	91	61717	137	61287	960	36362	320	5855	15	15
24	1848	168767	0	1683	111	61828	166	61453	1164	37526	388	6243	19	34
25	1774	170541	0	1683	25	61853	80	61533	1293	38819	371	6614	5	39
26	1790	172331	0	1683	29	61882	68	61601	1375	40194	290	6904	28	67
27	1542	173873	0	1683	11	61893	56	61657	1254	41448	166	7070	55	122
28	644	174517	0	1683	7	61900	0	61657	515	41963	116	7186	6	128
29	468	174985	0	1683	5	61905	0	61657	374	42337	84	7270	5	133
30	304	175289	0	1683	3	61908	3	61660	271	42608	27	7297	0	133
31	356	175645	0	1683	4	61912	3	61663	317	42925	32	7329	0	133
September														
1	425	176070	0	1683	5	61917	4	61667	378	43303	38	1367	0	133
2	480	176550	0	1683	10	61927	0	61667	451	43754	14	7381	5	138
3	581	177131	0	1683	12	61939	0	61667	546	44300	17	7398	6	144
4	644	177775	0	1683	13	61952	0	61667	605	44905	20	7418	6	150
5	460	178235	0	1683	0	61952	0	61667	359	45264	37	7455	64	214
6	425	178660	0	1683	0	61952	0	61667	332	45596	34	7489	59	273
7	239	178899	0	1683	0	61952	0	61667	186	45782	19	7508	34	307
8	291	179190	0	1683	0	61952	0	61667	172	45954	20	7528	99	406
9	232	179422	0	1683	0	61952	0	61667	137	46091	16	7544	79	485
10	125	179547	0	1683	0	61952	0	61667	74	46165	9	7553	42	527
11	178	179725	0	1683	0	61952	0	61667	64	46229	14	7567	100	627
12	217	179942	0	1683	0	61952	0	61667	78	46307	17	7584	122	749
13	196	180138	0	1683	0	61952	0	61667	71	46378	16	7600	109	858
14	166	180304	0	1683	0	61952	0	61667	32	46410	10	7610	124	982
15	157	180461	0	1683	0	61952	0	61667	30	46440	9	7619	118	1100

Table EB-7. Talkeetna Station west bank daily and cumulative sonar counts by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June														
20	25	25	25	25	0	0	0	0	0	0	0	0	0	0
21	31	56	31	56	0	0	0	0	0	0	0	0	0	0
22	55	111	55	111	0	0	0	0	0	0	0	0	0	0
23	48	159	48	159	0	0	0	0	0	0	0	0	0	0
24	27	186	27	186	0	0	0	0	0	0	0	0	0	0
25	27	213	27	213	0	0	0	0	0	0	0	0	0	0
26	38	251	38	251	0	0	0	0	0	0	0	0	0	0
27	31	282	31	282	0	0	0	0	0	0	0	0	0	0
28	20	302	20	302	0	0	0	0	0	0	0	0	0	0
29	12	314	12	314	0	0	0	0	0	0	0	0	0	0
30	12	326	12	326	0	0	0	0	0	0	0	0	0	0
July														
1	4	330	4	330	0	0	0	0	0	0	0	0	0	0
2	29	359	29	359	0	0	0	0	0	0	0	0	0	0
3	30	389	30	389	0	0	0	0	0	0	0	0	0	0
4	28	417	28	417	0	0	0	0	0	0	0	0	0	0
5	24	441	24	441	0	0	0	0	0	0	0	0	0	0
6	16	457	16	457	0	0	0	0	0	0	0	0	0	0
7	28	485	28	485	0	0	0	0	0	0	0	0	0	0
8	8	493	8	493	0	0	0	0	0	0	0	0	0	0
9	4	497	4	497	0	0	0	0	0	0	0	0	0	0
10	2	499	2	499	0	0	0	0	0	0	0	0	0	0
11 1/	-													
12 1/	-													
13	4	503	4	503	0	0	0	0	0	0	0	0	0	0
14	8	511	8	511	0	0	0	0	0	0	0	0	0	0
15	0		0	511	0	0	0	0	0	0	0	0	0	0
16	0		0	511	0	0	0	0	0	0	0	0	0	0
17	0		0	511	0	0	0	0	0	0	0	0	0	0
18	4	515	1	512	2	2	0	0	1	1	0	0	0	0

1/ Counter inoperable due to flood conditions.

Table EB-7. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
July														
19	11	528	2	514	6	8	0	0	2	3	0	0	1	1
20	14	540	2	516	8	16	0	0	3	6	0	0	1	2
21	15	555	3	519	8	24	0	0	3	9	0	0	1	3
22	32	587	5	524	17	41	0	0	7	16	0	0	3	6
23	46	633	8	532	25	66	0	0	9	25	0	0	4	10
24	63	696	2	534	52	118	0	0	9	34	0	0	0	10
25	93	789	3	537	77	195	0	0	13	47	0	0	0	10
26	109	898	4	541	90	285	0	0	15	62	0	0	0	10
27	165	1063	3	544	81	366	8	8	70	132	3	3	0	10
28	268	1331	5	549	131	497	13	21	114	246	5	8	0	10
29	305	1636	6	555	149	646	14	35	130	376	6	14	0	10
30	531	2167	4	559	179	825	45	80	289	665	14	28	0	10
31	469	2636	5	562	159	984	39	119	256	921	12	40	0	10
August														
1	474	3110	3	565	160	1144	40	159	258	1179	13	53	0	10
2	13	3123	0	565	7	1151	0	159	6	1185	0	53	0	10
3	35	3158	0	565	17	1168	0	159	18	1203	0	53	0	10
4	78	3236	0	565	39	1207	0	159	39	1242	0	53	0	10
5	331	3567	3	568	32	1239	125	284	143	1385	28	81	0	10
6	213	3780	2	570	21	1260	80	364	92	1477	18	99	0	10
7	415	4195	3	573	40	1300	157	521	180	1657	35	134	0	10
8	361	4556	0	573	16	1316	190	711	126	1783	29	163	0	10
9	184	4740	0	573	8	1324	97	808	64	1847	15	178	0	10
10	92	4832	0	573	16	1340	18	826	34	1881	24	202	0	10
11	101	4933	0	573	17	1357	20	846	38	1919	26	228	0	10
12	136	5069	0	573	23	1380	27	873	51	1970	35	263	0	10
13	111	5180	0	573	28	1408	14	887	69	2039	0	263	0	10
14	37	5217	0	573	9	1417	5	892	23	2062	0	263	0	10
15	41	5258	0	573	10	1427	5	897	26	2088	0	263	0	10
16	29	5287	0	573	3	1430	4	901	18	2106	3	266	1	11

Table EB-7. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August														
17	142	5429	0	573	16	1446	18	919	88	2194	18	284	2	13
18	291	5720	0	573	32	1478	37	956	180	2374	37	321	5	18
19	241	5961	0	573	6	1484	44	1000	149	2523	39	360	3	21
20	231	6192	0	573	6	1490	43	1043	142	2665	37	397	3	24
21	84	6276	0	573	2	1492	15	1058	52	2717	14	411	1	25
22	66	6342	0	573	6	1498	2	1060	32	2749	26	437	0	25
23	152	6494	0	573	14	1512	4	1064	75	2824	59	496	0	25
24	210	6740	0	573	19	1531	6	1070	103	2927	82	578	0	25
25	94	6798	0	573	6	1533	2	1072	54	2981	31	609	5	30
26	165	6963	0	573	4	1537	4	1076	94	3075	54	663	9	39
27	188	7151	0	573	4	1541	4	1080	108	3183	61	724	11	50
28	181	7332	0	573	3	1544	0	1080	92	3275	86	810	0	50
29	145	7477	0	573	2	1546	0	1080	74	3349	69	879	0	50
30	145	7622	0	573	2	1548	0	1080	74	3423	69	948	0	50
31	121	7743	0	573	6	1554	0	1080	70	3493	44	992	1	51
September														
1	138	7881	0	573	7	1561	0	1080	79	3572	50	1042	2	53
2	104	7985	0	573	6	1567	0	1080	60	3632	37	1079	1	54
3	125	8110	0	573	0	1567	0	1080	70	3702	37	1116	18	72
4	97	8207	0	573	0	1567	0	1080	54	3756	29	1145	14	86
5	152	8359	0	573	0	1567	0	1080	85	3841	45	1190	22	108
6	119	8478	0	573	0	1567	0	1080	58	3899	15	1205	46	154
7	110	8588	0	573	0	1567	0	1080	54	3953	14	1219	42	196
8	111	8699	0	573	0	1567	0	1080	55	4008	14	1233	42	238
9	83	8782	0	573	10	1577	0	1080	5	4013	29	1262	39	277
10	69	8851	0	573	8	1585	0	1080	4	4017	24	1286	33	310
11	68	8919	0	573	8	1593	0	1080	4	4021	24	1310	32	342
12	40	8959	0	573	0	1593	0	1080	10	4031	10	1320	20	362
13	31	8990	0	573	0	1593	0	1080	8	4039	8	1328	15	377
14	27	9017	0	573	0	1593	0	1080	7	4046	7	1335	13	390

Table EB-7. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
September														
15	18	9035	0	573	0	1593	0	1080	4	4050	5	1340	9	399

Table EB-8. Talkeetna Station east bank daily and cumulative sonar counts by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June														
22 1/	57	57	57	57	0	0	0	0	0	0	0	0	0	0
23 1/	71	128	71	128	0	0	0	0	0	0	0	0	0	0
24 1/	50	178	50	178	0	0	0	0	0	0	0	0	0	0
25 1/	45	223	45	223	0	0	0	0	0	0	0	0	0	0
26	46	269	46	269	0	0	0	0	0	0	0	0	0	0
27	28	297	28	297	0	0	0	0	0	0	0	0	0	0
28	39	336	39	336	0	0	0	0	0	0	0	0	0	0
29	17	353	17	353	0	0	0	0	0	0	0	0	0	0
30	10	363	10	363	0	0	0	0	0	0	0	0	0	0
July														
1	31	394	31	394	0	0	0	0	0	0	0	0	0	0
2	21	415	21	415	0	0	0	0	0	0	0	0	0	0
3	14	430	15	430	0	0	0	0	0	0	0	0	0	0
4	14	444	14	444	0	0	0	0	0	0	0	0	0	0
5	21	465	13	457	4	4	0	0	0	0	0	0	4	4
6	33	498	19	476	7	11	0	0	0	0	0	0	7	11
7	32	530	19	495	7	18	0	0	0	0	0	0	6	17
8	29	559	29	524	0	18	0	0	0	0	0	0	0	17
9	11	570	11	535	0	18	0	0	0	0	0	0	0	17
10	7	577	7	542	0	18	0	0	0	0	0	0	0	17
11-15 2/	-	577	-	542	0	18	-	0	-	0	-	0	-	17
16	8	585	8	550	0	18	0	0	0	0	0	0	0	17
17	11	596	0	550	4	22	0	0	7	7	0	0	0	17
18	2	598	0	550	1	23	0	0	1	8	0	0	0	17
19 3/	-	598	-	550	-	23	-	0	-	8	-	0	-	17
20	5	603	0	550	2	25	0	0	3	11	0	0	0	17
21	7	610	0	550	2	27	0	0	5	16	0	0	0	17
22	45	655	0	550	15	42	0	0	30	46	0	0	0	17
23	87	742	6	556	60	102	4	4	15	61	0	0	2	19
24	96	838	7	563	66	168	4	8	17	78	0	0	2	21

1/ Catch percentage classified as chinooks for June 22-25, fishwheels operational June 26.
2/ Counter inoperable due to flooding.
3/ Counter being repaired.

Table EB- 8. Continued.

DATE	TOTAL COUNT DAILY	TOTAL COUNT CUM.	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.
July														
25	137	975	9	572	94	262	6	14	25	103	0	0	3	24
26	116	1091	2	574	57	319	10	24	47	150	0	0	0	24
27	74	1165	1	575	36	355	7	31	30	180	0	0	0	24
28	346	1511	6	581	170	525	30	61	140	320	0	0	0	24
29	403	1914	0	581	115	640	57	118	222	542	9	9	0	24
30	608	2522	0	581	173	813	86	204	336	878	13	22	0	24
31	673	3195	0	581	191	1004	96	300	371	1249	15	37	0	24
August														
1	553	3748	0	581	98	1102	114	414	330	1579	11	48	0	24
2 4/	-	3748	-	581	-	1102	-	414	-	1579	-	48	-	24
3 4/	-	3748	-	581	-	1102	-	414	-	1579	-	48	-	24
4	498	4246	0	581	88	1190	103	517	297	1876	10	58	0	24
5	924	5170	0	581	164	1354	190	707	551	2427	19	77	0	24
6	959	6129	0	581	106	1460	272	979	504	2931	77	154	0	24
7	448	6577	0	581	50	1510	127	1106	235	3166	36	190	0	24
8	264	6841	0	581	29	1539	75	1181	139	3305	21	211	0	24
9	46	6887	0	581	14	1553	4	1185	23	3328	5	216	0	24
10	10	6897	0	581	3	1556	1	1186	5	3333	1	217	0	24
11	16	6913	0	581	5	1561	2	1188	8	3341	1	218	0	24
12	11	6924	0	581	0	1561	3	1191	5	3346	3	221	0	24
13	23	6947	0	581	0	1561	6	1197	10	3356	7	228	0	24
14 4/	-	6947	-	581	-	1561	-	1197	-	3356	-	228	-	24
15 4/	-	6947	-	581	-	1561	-	1197	-	3356	-	228	-	24
16	48	6995	0	581	0	1561	14	1211	20	3376	14	242	0	24
17	170	7165	0	581	16	1577	9	1220	104	3480	41	283	0	24
18	732	7897	0	581	69	1646	39	1259	446	3926	178	461	0	24
19	523	8420	0	581	49	1695	28	1287	319	4245	127	588	0	24
20	481	8901	0	581	33	1728	55	1342	208	4453	164	752	21	45
21	102	9003	0	581	7	1735	12	1354	44	4497	35	787	4	49
22	2	9005	0	581	0	1735	0	1354	1	4498	1	788	0	49

4/ Sonar counter inoperable due to flooding.

Table EB-8. Continued.

DATE	TOTAL COUNT		CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS	
	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August														
23	404	9409	0	581	27	1762	15	1369	168	4666	183	971	11	60
24	406	9815	0	581	27	1789	15	1384	169	4835	184	1155	11	71
25	465	10280	0	581	32	1821	17	1401	194	5029	210	1365	12	83
26	318	10598	0	581	8	1829	19	1420	187	5216	98	1463	6	89
27	231	10829	0	581	6	1835	14	1434	136	5352	71	1534	4	93
28	248	11077	0	581	6	1841	15	1449	146	5498	76	1610	5	98
29	300	11377	0	581	5	1846	0	1449	117	5615	170	1780	8	106
30	211	11588	0	581	4	1850	0	1449	83	5698	119	1899	5	111
31	128	11716	0	581	2	1852	0	1449	50	5748	73	1972	3	114
September														
1	109	11825	0	581	3	1855	0	1449	42	5790	64	2036	0	114
2	62	11887	0	581	2	1857	0	1449	24	5814	36	2072	0	114
3	72	11959	0	581	2	1859	0	1449	28	5842	42	2114	0	114
4	58	12017	0	581	3	1862	0	1449	31	5873	11	2125	13	127
5	70	12087	0	581	5	1867	0	1449	37	5910	13	2138	15	142
6	67	12154	0	581	4	1871	0	1449	36	5946	13	2151	14	156
7	44	12198	0	581	0	1871	0	1449	11	5957	8	2159	25	181
8	57	12255	0	581	0	1871	0	1449	14	5971	10	2169	33	214
9	30	12285	0	581	0	1871	0	1449	7	5978	5	2174	18	232
10	32	12317	0	581	0	1871	0	1449	3	5981	3	2177	26	258
11	31	12348	0	581	0	1871	0	1449	3	5984	3	2180	25	283
12	24	12372	0	581	0	1871	0	1449	2	5986	2	2182	20	303
13	22	12394	0	581	0	1871	0	1449	0	5986	0	2182	22	325
14	17	12411	0	581	0	1871	0	1449	0	5986	0	2182	17	342
15	11	12422	0	581	0	1871	0	1449	0	5986	0	2182	11	353

APPENDIX EC
DAILY FISHWHEEL CATCH DATA

Table EC-1. Susitna Station east bank fishwheel daily and cumulative catch log by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	NUMBER OF FISHWHEELS	NUMBER OF FISHWHEEL HOURS 1/	CHINOOK		SOCKEYE		PINK		CHUM		COHO		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June														
28	1	24.0	5	5	13	13	1	1	0	0	0	0	19	19
29	1	24.0	1	6	2	15	0	1	0	0	0	0	4	22
30	1	24.0	0	6	2	17	0	1	1	1	0	0	3	25
July														
1	1	24.0	0	6	0	17	0	1	0	1	0	0	0	25
2	1	24.0	0	6	3	20	0	1	2	3	0	0	5	30
3	1	20.0	1	7	5	25	0	1	0	3	0	0	6	36
4	1	24.0	4	11	4	29	2	3	0	3	0	0	10	46
5	1	15.0	0	11	1	30	1	4	0	3	1	1	3	49
6	1	24.0	2	13	5	35	2	6	1	4	0	1	10	59
7	1	24.0	4	17	10	45	4	10	0	4	0	1	18	77
8	1	24.0	4	21	18	63	9	19	5	9	0	1	36	113
9	1	24.0	2	23	16	79	7	26	4	13	0	1	29	142
10	1	24.0	1	24	84	163	25	51	13	26	0	1	123	265
2/ 11	1	0	-	24	-	163	-	51	-	26	-	1	-	265
2/ 12	1	0	-	24	-	163	-	51	-	26	-	1	-	265
2/ 13	1	0	-	24	-	163	-	51	-	26	-	1	-	265
2/ 14	1	0	-	24	-	163	-	51	-	26	-	1	-	265
2/ 15	1	0	-	24	-	163	-	51	-	26	-	1	-	265
2/ 16	1	0	-	24	-	163	-	51	-	26	-	1	-	265
17	1	14.5	0	24	10	173	3	54	1	27	0	1	14	279
18	1	19.2	0	24	28	201	2	56	3	30	0	1	33	312
19	1	24.0	0	24	25	226	9	65	6	36	0	1	40	352
20	1	29.5	0	24	11	237	4	69	3	39	0	1	18	370
21	1	21.0	0	24	3	240	6	75	0	39	0	1	9	379
3/ 22	1	0	-	24	-	240	-	75	-	39	-	1	-	379
23	1	15.3	1	25	8	248	24	99	0	39	5	6	38	417
24	1	7.5	0	25	26	274	30	129	5	44	8	14	69	486
25	1	24.5	0	25	34	308	20	149	8	52	7	21	69	555
26	1	24.5	0	25	15	323	13	162	2	54	12	33	42	597
27	1	22.8	0	25	7	330	15	177	1	55	1	34	24	621
28	1	24.8	0	25	23	353	37	214	3	58	7	41	70	691
29	1	24.0	0	25	7	360	18	232	5	63	7	48	37	728

2/ A sampling day may exceed 24 hours, when time interval between fishwheel checks lapses into the following day.
1/ Fishwheel inoperable due to high water. 3/ Catch lost due to hole in livebox.

Table EC-1. Continued.

DATE	NUMBER OF FISHWHEELS	NUMBER OF FISHWHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
July														
30	1	24.3	0	25	11	371	12	244	2	65	7	55	32	760
31	1	24.2	0	25	9	380	4	248	5	70	1	56	19	779
August														
1	1	27.7	0	25	7	387	9	257	4	74	2	58	22	801
2	1	21.0	0	25	3	390	2	259	1	75	0	58	6	807
3	4/	0.0	-	25	-	390	-	259	-	75	-	58	-	807
4	1	16.5	1	26	1	391	3	262	1	76	0	58	6	813
5	1	23.5	0	26	8	399	13	275	0	76	2	60	23	836
6	1	22.3	0	26	9	408	8	283	16	92	2	62	35	871
7	1	29.0	0	26	2	410	2	285	13	105	3	65	20	891
8	1	11.5	0	26	1	411	2	287	2	107	3	68	8	899
9	1	24.7	0	26	1	412	0	287	4	111	0	68	5	904
10	1	26.3	0	26	2	414	0	287	1	112	1	69	4	908
11	1	21.0	0	26	0	414	0	287	0	112	0	69	0	908
12	1	24.0	0	26	1	415	0	287	2	114	0	69	3	911
13	1	24.0	0	26	0	415	0	287	1	115	0	69	1	912
14	1	24.0	0	26	0	415	0	287	0	115	0	69	0	912
15	1	24.0	0	26	0	415	0	287	0	115	0	69	0	912
16	1	24.0	0	26	0	415	0	287	0	115	0	69	0	912
17	1	24.0	0	26	1	416	0	287	0	115	0	69	1	913
18	1	24.0	0	26	1	417	0	287	1	116	0	69	2	915
19	1	24.0	0	26	0	417	0	287	0	116	1	70	1	916
20	1	27.0	0	26	0	417	0	287	2	118	0	70	2	918
21	1	22.0	0	26	0	417	0	287	0	118	0	70	0	918
22	1	24.0	0	26	0	417	0	287	0	118	0	70	0	918
23	1	23.0	0	26	2	419	1	288	8	126	1	71	12	930
24	1	24.0	0	26	1	420	3	291	5	131	2	73	11	941
25	1	24.0	0	26	0	420	1	292	6	137	3	76	10	951
26	1	24.0	0	26	0	420	1	293	2	139	0	76	3	954
27	1	24.0	0	26	1	421	0	293	0	139	0	76	1	955
28	1	24.0	0	26	0	421	0	293	2	141	0	76	2	957
29	1	24.0	0	26	0	421	0	293	1	142	1	77	2	959
30	1	24.0	0	26	0	421	1	294	0	142	0	77	1	960
31	1	24.0	0	26	0	421	0	294	0	142	0	77	0	960

4/ Fishwheel inoperable due to high water.

Table EC-1. Continued.

DATE	NUMBER OF FISHWHEELS	NUMBER OF FISHWHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
September														
1	1	24.0	0	26	0	421	0	294	4	146	1	78	5	965
2	1	24.0	1	27	0	421	0	294	4	150	0	78	5	970

Table EC-2. Susitna Station west bank fishwheel daily and cumulative catch log by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	NUMBER OF FISHWHEELS	NUMBER OF FISHWHEEL HOURS 1/	CHINOOK		SOCKEYE		PINK		CHUM		COHO		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June														
29	1	24.0	0	0	34	34	0	0	0	0	0	0	34	34
30	1	24.0	0	0	62	96	0	0	0	0	0	0	62	96
July														
1	1	24.0	1	1	40	136	0	0	0	0	0	0	41	137
2	1	24.0	1	2	83	219	1	1	0	0	0	0	85	222
3	1	24.0	3	5	107	326	1	2	0	0	0	0	111	333
4	1	24.0	0	5	70	396	1	3	0	0	1	1	72	405
5	1	21.0	0	5	26	422	3	6	0	0	0	1	29	434
6	1	24.0	1	6	12	434	8	14	0	0	0	1	21	455
7	1	18.0	0	6	19	453	5	19	0	0	0	1	24	479
8	1	20.0	1	7	38	491	1	20	0	0	0	1	40	519
9	1	24.0	0	7	33	524	1	21	1	1	0	1	35	554
10	1	22.0	2	9	326	850	0	21	1	2	1	2	330	884
11	1	7.5	0	9	363	1213	2	23	0	2	0	2	365	1249
12	1	16.0	0	9	74	1287	0	23	0	2	0	2	74	1323
13	1	19.0	1	10	103	1390	0	23	0	2	0	2	104	1427
14	1	21.0	0	10	237	1627	0	23	1	3	0	2	238	1665
15	1	13.6	0	10	166	1793	1	24	0	3	0	2	167	1832
16	1	11.7	0	10	250	2043	0	24	0	3	0	2	250	2082
17	1	15.7	0	10	190	2233	0	24	1	4	0	2	191	2273
18	1	10.0	0	10	128	2361	4	28	2	6	2	4	136	2409
19	1	8.6	0	10	89	2450	8	36	0	6	1	5	98	2507
20	1	17.5	0	10	197	2647	3	39	0	6	0	5	200	2707
21	1	5.7	0	10	182	2829	5	44	1	7	5	10	193	2900
22	1	4.8	0	10	91	2920	3	47	1	8	1	11	96	2296
23	1	5.5	1	11	109	3029	11	58	1	9	7	18	129	3125
24	1	3.3	0	11	59	3088	13	71	1	10	8	26	81	3206
25	1	14.0	1	12	220	3308	94	165	3	13	50	76	368	3574
26	1	3.3	0	12	37	3345	24	189	0	13	6	82	67	3641
27	1	3.3	0	12	21	3366	13	202	1	14	5	87	40	3681
28	1	4.3	0	12	29	3395	44	246	1	15	24	111	98	3779
29	1	4.3	0	12	16	3411	37	283	1	16	9	120	63	3842
30	1	4.5	0	12	29	3440	35	318	16	32	8	128	88	3930
31	1	4.0	0	12	20	3460	16	334	18	50	6	134	60	3990

1/ Sampling day may exceed 24 hours, when time interval between fishwheel checks lapses into the following day.

Table EC-2. Continued.

DATE	NUMBER OF FISHWHEELS	NUMBER OF FISHWHEEL HOURS 1/	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
August														
1	1	18.7	0	12	41	3501	14	348	3	53	21	155	79	4069
2	1	2.7	0	12	9	3510	5	353	0	53	3	158	17	4086
3	1	22.0	0	12	6	3516	2	355	0	53	0	158	8	4094
4	1	24.7	0	12	20	3536	1	356	0	53	1	159	22	4116
5	1	23.5	0	12	35	3571	11	367	1	54	9	168	56	4172
6	1	23.5	0	12	22	3593	12	379	0	54	12	180	46	4218
7	1	29.0	0	12	27	3620	8	387	11	65	22	202	68	4286
8	1	18.0	0	12	12	3632	3	390	5	70	14	216	34	4320
9	1	23.0	0	12	12	3644	2	392	4	74	9	225	27	4347
10	1	26.3	0	12	7	3651	1	393	0	74	10	235	18	4365
11	1	21.0	0	12	1	3652	0	393	0	74	2	237	3	4368
12	1	24.0	0	12	3	3655	0	393	1	75	2	239	6	4374
13	1	24.0	0	12	0	3655	3	396	0	75	1	240	4	4378
14	1	24.0	0	12	0	3655	0	396	0	75	0	240	0	4378
15	1	24.0	0	12	2	3657	0	396	0	75	0	240	2	4380
16	1	24.0	0	12	0	3657	0	396	0	75	0	240	0	4380
17	1	24.0	0	12	3	3660	0	396	0	75	3	243	6	4386
18	1	24.0	0	12	0	3660	0	396	1	76	2	245	3	4389
19	1	24.0	0	12	0	3660	0	396	0	76	0	245	0	4389
20	1	27.0	0	12	1	3661	0	396	5	81	3	248	9	4398
21	1	22.0	0	12	0	3661	0	396	1	82	1	249	2	4400
22	1	24.0	0	12	1	3662	0	396	0	82	0	249	1	4401
23	1	24.0	0	12	0	3662	1	397	2	84	0	249	3	4404
24	1	24.0	0	12	0	3662	0	397	3	87	0	249	3	4407
25	1	24.0	0	12	0	3662	0	397	7	94	2	251	9	4416
26	1	24.0	0	12	1	3663	0	397	3	97	0	251	4	4420
27	1	24.0	0	12	1	3664	0	397	0	97	0	251	1	4421
28	1	24.0	0	12	0	3664	0	397	3	100	0	251	3	4424
29	1	24.0	0	12	1	3665	0	397	0	100	0	251	1	4425
30	1	24.0	0	12	0	3665	0	397	0	100	0	251	0	4425
31	1	24.0	0	12	1	3666	0	397	0	100	0	251	0	4226
September														
1	1	24.0	0	12	0	3666	0	397	0	100	0	251	0	4226
2	1	24.0	0	12	0	3666	0	397	0	100	0	251	0	4226

Table EC-3. Yentna Station south bank fishwheel daily and cumulative catch log by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
June																
28	1	24	1	1	3	3	2	2	1	1	0	0	1	1	8	8
29	1	24	3	4	20	23	7	9	3	4	0	0	2	3	35	43
30	1	24	5	9	23	46	3	12	3	7	0	0	1	4	35	78
July																
1	1	12.5	2	11	14	60	1	13	0	7	0	0	1	5	18	96
2	1	6	0	11	0	60	0	13	0	7	0	0	0	5	0	96
3	1	24	3	14	26	86	0	13	0	7	0	0	3	8	32	128
4	1	24	2	16	21	107	2	15	1	8	0	0	1	9	27	155
5	1	23	1	17	8	115	6	21	1	9	0	0	1	10	17	172
6	1	24	1	18	8	123	3	24	0	9	0	0	1	11	13	185
7	1	24	5	23	13	136	9	33	0	9	0	0	1	12	28	213
8	1	24	0	23	34	170	13	46	0	9	2	2	1	13	50	263
9	1	24	4	27	50	220	19	65	3	12	1	3	0	13	77	340
10	1	22.5	1	28	348	568	18	83	5	17	0	3	0	13	372	712
11	1	16.2	0	28	307	875	3	86	1	18	0	3	0	13	311	1023
12	1	15.4	1	29	280	1155	0	86	0	18	0	3	0	13	281	1304
13	1	14.6	0	29	341	1496	3	89	7	25	0	3	1	14	352	1656
14	1	14.5	0	29	548	2044	9	98	2	27	1	4	0	14	560	2216
15	1	13.8	0	29	756	2800	10	108	5	32	1	5	0	14	772	2988
16	1	16	0	29	158	2958	2	110	1	33	1	6	0	14	162	3150
17	1	21.5	0	29	252	3210	0	110	8	41	0	6	0	14	260	3410
18	1	14	0	29	111	3321	5	115	6	47	0	6	0	14	122	3532
19	1	14.2	0	29	130	3451	12	127	19	66	2	8	0	14	163	3695
20	1	13	0	29	79	3530	11	138	11	77	2	10	0	14	103	3798
21	1	14.5	0	29	163	3693	22	160	11	88	3	13	0	14	199	3997
22	1	14.2	1	30	224	3917	22	182	20	108	17	30	0	14	284	4281
23	1	15	0	30	202	4119	93	275	23	131	32	62	0	14	350	4631
24	1	13.8	0	30	163	4282	95	370	26	157	20	82	0	14	304	4935
25	1	15	0	30	100	4382	112	482	28	185	5	87	0	14	245	5180
26	1	13.5	0	30	44	4426	38	520	10	195	16	103	0	14	108	5288
27	1	17	0	30	29	4455	48	568	12	207	17	120	0	14	106	5394
28	1	20.5	0	30	42	4497	122	690	37	244	71	191	0	14	272	5666

Table EC-3. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
July																
29	1	13	0	30	76	4573	203	893	42	286	58	249	0	14	379	6045
30	1	12.8	0	30	101	4674	259	1152	56	342	112	361	1	15	529	6574
31	1	10	0	30	55	4729	151	1303	26	368	70	431	2	17	304	6878
August																
1	1	11.7	0	30	35	4764	108	1411	35	403	102	533	0	17	280	7158
2	1	15.7	0	30	30	4794	49	1460	6	409	42	575	0	17	127	7285
3	1	23.5	0	30	21	4815	4	1464	1	410	20	595	0	17	46	7331
4	1	24	0	30	14	4829	22	1486	11	421	27	622	0	17	24	7405
5	1	24	0	30	15	4844	27	1513	18	439	47	669	0	17	107	7512
6	1	24	0	30	14	4858	86	1599	24	463	35	704	0	17	159	7671
7	1	24	0	30	8	4866	39	1638	15	478	43	747	0	17	105	7776
8	1	24	0	30	3	4869	26	1664	22	500	22	769	0	17	73	7849
9	1	24	0	30	9	4878	5	1669	10	510	12	781	0	17	36	7885
10	1	24	0	30	5	4883	6	1675	4	514	7	788	0	17	22	7907
11	1	24	0	30	2	4885	2	1677	7	521	9	797	0	17	20	7927
12	1	24	0	30	4	4889	1	1678	4	525	1	798	0	17	10	7937
13	1	7.8	0	30	0	4889	0	1678	2	527	0	798	0	17	2	7939
14	1	3	0	30	1	4890	1	1679	1	528	1	799	0	17	4	7943
15	1	24	0	30	0	4890	1	1680	2	530	6	805	0	17	9	7952
16	1	24	0	30	1	4891	2	1682	0	530	9	814	0	17	12	7964
17	1	20	0	30	0	4891	6	1688	3	533	5	819	0	17	14	7978
18	1	14	0	30	1	4892	2	1690	1	534	9	828	0	17	13	7991
19	1	10.3	0	30	0	4892	4	1694	3	537	2	830	2	19	11	8002
20	1	24	0	30	0	4892	3	1697	2	539	1	831	0	19	6	8008
21	1	22.5	0	30	3	4895	3	1700	2	541	0	831	0	19	8	8016
22	1	24	0	30	2	4897	6	1706	26	567	6	837	2	21	42	8058
23	1	24	0	30	1	4898	9	1715	8	575	6	843	9	30	33	8091
24	1	24	0	30	2	4900	9	1724	5	580	2	845	7	37	25	8116
25	1	24	0	30	0	4900	1	1725	4	584	3	848	10	47	18	8134
26	1	24	0	30	0	4900	0	1725	2	586	1	849	24	71	27	8161
27	1	24	0	30	1	4901	0	1725	2	588	0	849	6	77	9	8170
28	1	24	0	30	0	4901	0	1725	2	590	0	849	2	79	4	8174

Table EC-3. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
August																
29	1	24	0	30	0	4901	0	1725	1	591	0	849	0	79	1	8175
30	1	24	0	30	0	4901	0	1725	0	591	0	849	0	79	0	8175
31	1	24	0	30	0	4901	0	1725	0	591	0	849	0	79	0	8175
September																
1	1	24	0	30	0	4901	0	1725	0	591	0	849	0	79	0	8175
2	1	24	0	30	0	4901	0	1725	0	591	0	849	0	79	0	8175
3	1	10	0	30	0	4901	0	1725	1	592	0	849	0	79	1	8176

Table EC-4. Yentna Station north bank fishwheel daily and cumulative catch log by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June																
26	1	24	1	1	0	0	0	0	0	0	0	0	0	0	1	1
27	1	24	2	3	0	0	0	0	0	0	0	0	0	0	2	3
28	1	24	0	3	1	1	0	0	0	0	0	0	0	0	1	4
29	1	23	0	3	5	6	1	1	2	2	0	0	2	2	10	14
30	1	24	0	3	14	20	1	2	1	3	0	0	3	5	19	33
July																
1 1/	0	0	-	3	-	20	-	2	-	3	-	0	-	5	-	33
2 1/	0	0	-	3	-	20	-	2	-	3	-	0	-	5	-	33
3	1	5	0	3	0	20	0	2	0	3	0	0	0	5	0	33
4	1	24	2	5	21	41	2	4	1	4	0	0	1	6	27	60
5	1	24	1	6	17	58	15	19	0	4	0	0	0	6	33	93
6	1	24	3	9	23	81	9	28	1	5	0	0	1	7	37	130
7	1	24	4	13	10	91	8	36	0	5	1	1	0	7	23	153
8	1	24	0	13	41	132	27	63	1	6	0	1	1	8	70	223
9	1	18	2	15	11	143	9	72	2	8	0	1	0	8	24	247
10	1	22	1	16	37	180	47	119	4	12	0	1	0	8	89	336
11	1	21.5	0	16	2	182	1	120	4	16	0	1	0	8	7	343
12	1	24	0	16	15	197	4	124	4	20	0	1	0	8	23	366
13	1	22.5	0	16	37	234	2	126	4	24	0	1	0	8	43	409
14	1	24	0	16	39	273	5	131	5	29	0	1	0	8	49	458
15	1	24	0	16	41	314	7	138	3	32	0	1	0	8	51	509
16	1	15.8	0	16	22	336	0	138	1	33	0	1	0	8	23	532
17	1	9.5	0	16	26	362	1	139	1	34	0	1	0	8	28	560
18	1	21.5	0	16	167	529	10	149	21	55	2	3	0	8	200	760
19	1	13.8	1	17	295	824	20	169	34	89	7	10	0	8	357	1117
20	1	14	0	17	245	1069	54	223	52	141	1	11	0	8	352	1469
21	1	13	0	17	190	1259	33	256	40	181	4	15	0	8	267	1736
22	1	13.8	0	17	313	1572	21	277	67	248	15	30	0	8	416	2152
23	1	15.8	0	17	187	1759	18	295	106	354	27	57	0	8	338	2490
24	1	10.4	0	17	85	1844	14	309	32	386	4	61	0	8	135	2625
25	1	14.8	0	17	54	1898	9	318	8	394	2	63	0	8	73	2698
26	1	11.8	0	17	59	1957	25	343	17	411	9	72	0	8	110	2808

1/ Fishwheel inoperable due to debris damage.

Table EC-4. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
July																
27	1	17.2	0	17	35	1992	12	355	28	439	11	83	0	8	86	2894
28	1	22.2	0	17	23	2015	11	366	7	446	8	91	0	8	49	2943
29	1	24	0	17	9	2024	4	370	5	451	1	92	0	8	19	2962
30	1	16.5	0	17	4	2028	1	371	2	453	0	92	0	8	7	2969
31	1	24	0	17	4	2032	3	374	1	454	1	93	0	8	9	2978
August																
1	1	15.5	0	17	2	2034	0	374	0	454	0	93	0	8	2	2980
2	1	15.6	0	17	2	2036	6	380	5	459	2	95	0	8	15	2995
3	1	23.5	0	17	3	2039	4	384	9	468	10	105	0	8	26	3021
4	1	24	0	17	6	2045	66	450	43	511	20	125	0	8	135	3156
5	1	24	0	17	20	2065	110	560	44	555	25	150	0	8	199	3355
6	1	24	0	17	7	2072	136	696	44	599	29	179	0	8	216	3571
7	1	24	0	17	5	2077	140	836	16	615	14	193	0	8	175	3746
8	1	24	0	17	7	2084	79	915	31	646	17	210	0	8	134	3880
9	1	24	0	17	5	2089	25	940	21	667	7	217	0	8	58	3938
10	1	24	0	17	3	2092	10	950	11	678	4	221	0	8	28	3966
11	1	16.5	0	17	0	2092	5	955	16	694	8	229	0	8	29	3995
12	1	24	0	17	1	2093	4	959	5	699		232	0	8	13	4008
13	1	24	0	17	2	2095	1	960	7	706	2	234	0	8	12	4020
14	1	23	0	17	0	2095	0	960	0	706	1	235	0	8	1	4021
15	1	24	0	17	2	2097	2	962	11	717	2	237	0	8	17	4038
16	1	24	0	17	1	2098	2	964	8	725	2	239	0	8	13	4051
17	1	22	0	17	0	2098	2	966	9	734	8	247	1	9	20	4071
18	1	24	0	17	0	2098	7	973	6	740	4	251	3	12	20	4091
19	1	9.2	0	17	0	2098	3	976	2	742	3	254	1	13	9	4100
20	1	24	0	17	0	2098	5	981	13	755	2	256	3	16	23	4123
21	1	24	0	17	0	2098	4	985	19	774	3	259	0	16	26	4149
22	1	24	0	17	0	2098	4	989	14	788	1	260	4	20	23	4172
23	1	24	0	17	1	2099	5	994	13	801	5	265	7	27	31	4203
24	1	24	0	17	0	2099	5	999	11	812	4	269	10	37	30	4233
25	1	20.5	0	17	0	2099	3	1002	2	814	2	271	3	40	10	4243
26	1	24	0	17	0	2099	2	1004	7	821	0	271	13	53	22	4265

Table EC-4. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August																
27	1	24	0	17	0	2099	0	1004	0	821	1	272	9	62	10	4275
28	1	24	0	17	0	2099	0	1004	0	821	0	272	2	64	2	4277
29	1	14	0	17	0	2099	0	1004	0	821	0	272	0	64	0	4277
30	1	24	0	17	0	2099	0	1004	0	821	0	272	0	64	0	4277
31	1	24	0	17	0	2099	0	1004	1	822	0	272	0	64	1	4278
September																
1	1	24	0	17	0	2099	0	1004	0	822	0	272	1	65	1	4279
2	1	24	0	17	0	2099	0	1004	0	822	0	272	2	67	2	4281
3	1	24	0	17	0	2099	0	1004	0	822	0	272	1	68	1	4282
4	1	24	0	17	0	2099	0	1004	1	823	1	273	3	71	5	4287
5	1	24	0	17	0	2099	0	1004	0	823	0	273	0	71	0	4287
6	1	24	0	17	0	2099	0	1004	0	823	0	273	0	71	0	4287
7	1	9.5	0	17	0	2099	0	1004	0	823	0	273	2	73	2	4289

Table EC-5. Sunshine Station east bank fishwheel daily, cumulative catch log by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
June																
19	1	12	19	19	0	0	0	0	0	0	0	0	0	0	19	19
20	1	1	1	20	0	0	0	0	0	0	0	0	0	0	1	20
21	1	6	1	21	0	0	0	0	0	0	0	0	0	0	1	21
22	1	23	16	37	0	0	0	0	0	0	0	0	0	0	16	37
23	1	23.5	28	65	1	1	0	0	0	0	0	0	0	0	29	66
24	1	22.5	35	100	0	1	0	0	0	0	0	0	0	0	35	101
25	1	23	37	137	0	1	0	0	0	0	0	0	0	0	37	138
26	1	23	18	155	0	1	0	0	0	0	0	0	0	0	18	156
27	2	27	21	176	0	1	0	0	0	0	0	0	0	0	21	177
28	2	46.5	14	190	0	1	0	0	0	0	0	0	0	0	14	191
29	2	47.5	10	200	3	4	0	0	0	0	0	0	0	0	13	204
30	2	47.5	6	206	2	6	0	0	0	0	0	0	0	0	8	212
July																
1	2	47	19	225	7	13	0	0	0	0	0	0	1	1	27	239
2	2	45.5	51	276	10	23	0	0	0	0	0	0	1	2	62	301
3	2	46	52	328	17	40	1	1	0	0	0	0	0	2	70	371
4	2	48	87	415	43	83	2	3	2	2	0	0	0	2	134	505
5	2	48	38	453	38	121	1	4	6	8	0	0	0	2	83	588
6	2	47.5	32	485	72	193	3	7	5	13	0	0	3	5	115	703
7	2	48	20	505	55	248	4	11	10	23	0	0	1	6	90	793
8	2	47	9	514	20	268	0	11	6	29	0	0	0	6	35	828
9	2	47.5	8	522	10	278	1	12	2	31	0	0	0	6	21	849
10	2	28.5	2	524	7	285	3	15	1	32	0	0	0	6	13	862
11	1	12	0	524	0	285	0	15	0	32	0	0	0	6	0	862
12	1	24	0	524	0	285	0	15	0	32	0	0	0	6	0	862
13	1	24	0	524	0	285	0	15	0	32	0	0	0	6	0	862
14	1	24	0	524	0	285	0	15	1	33	0	0	0	6	1	863
15	1	24	1	525	46	331	0	15	1	34	0	0	0	6	48	911
16	1	24	1	526	171	502	0	15	0	34	0	0	0	6	172	1083
17	2	28.5	1	527	441	943	4	19	0	34	0	0	0	6	446	1529
18	2	41.5	1	528	662	1605	11	30	1	35	0	0	0	6	675	2204
19	2	43	0	528	669	2274	3	33	1	36	0	0	0	6	673	2877

Table EC-5. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
July																
20	2	35	0	528	606	2880	5	38	2	38	0	0	0	6	613	3490
21	2	43.5	0	528	638	3518	8	46	4	42	0	0	0	6	650	4140
22	2	44	0	528	794	4312	22	68	31	73	0	0	0	6	847	4987
23	2	48	1	529	671	4983	64	132	133	206	1	1	0	6	870	5857
24	2	48	0	529	406	5389	49	181	104	310	1	2	0	6	560	6417
25	2	48	1	530	463	5852	102	283	108	418	0	2	0	6	674	7091
26	2	48	0	530	416	6268	109	392	116	534	1	3	0	6	642	7733
27	2	29.5	0	530	169	6467	86	478	97	631	4	7	0	6	356	8089
28	2	46	0	530	373	6810	465	943	618	1249	3	10	0	6	1459	9548
29	2	28.5	0	530	114	6924	189	1132	210	1459	6	16	0	6	519	10067
30	2	48	0	530	180	7104	317	1449	286	1745	20	36	1	7	804	10871
31	2	47.5	0	530	117	7221	467	1916	359	2104	10	46	0	7	953	11824
August																
1	2	48	0	530	84	7305	597	2513	361	2465	24	70	0	7	1066	12890
2	2	33.83	0	530	0	7305	11	2524	0	2465	0	70	0	7	11	12901
3	2	35.5	0	530	10	7315	109	2633	7	2472	1	71	0	7	127	13028
4	2	46.5	0	530	26	7341	357	2990	150	2622	4	75	0	7	537	13565
5	2	41	1	531	49	7390	381	3371	94	2716	24	99	0	7	549	14114
6	2	47.5	1	532	56	7446	538	3909	288	3004	27	126	0	7	910	15024
7	2	47.5	0	532	50	7496	471	4380	255	3259	44	170	0	7	820	15844
8	2	47.5	1	533	93	7589	493	4873	197	3456	75	245	0	7	859	16703
9	2	48	0	533	32	7621	271	5144	31	3487	23	268	0	7	357	17060
10	2	48	0	533	1	7622	60	5204	9	3496	6	274	0	7	76	17136
11	2	48	0	533	9	7631	118	5322	39	3535	27	301	0	7	193	17329
12	2	48	1	534	9	7640	132	5454	66	3601	32	333	1	8	241	17570
13	2	48	0	534	10	7650	77	5531	19	3620	13	346	0	8	119	17689
14	2	48	0	534	6	7656	63	5594	18	3638	8	354	0	8	95	17784
15	2	48	0	534	9	7665	38	3632	23	3661	11	365	0	8	81	17865
16	2	48	0	534	13	7678	32	5664	27	3688	13	378	0	8	85	17950
17	2	48	1	535	39	7717	179	5843	259	3947	72	450	0	8	550	18500
18	2	45.5	1	536	45	7762	195	5038	554	4501	104	554	0	8	899	19399
19	2	45.5	0	536	61	7823	172	6210	581	5082	166	720	0	8	980	20379

Table EC-5. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August																
20	2	41.75	0	536	25	7848	97	6307	139	5221	129	849	0	8	390	20769
21	2	48	0	536	17	7865	34	6341	109	5330	47	896	0	8	207	20976
22	2	48	0	536	12	7877	25	6366	102	5432	47	943	0	8	186	21162
23	2	48	0	536	17	7894	25	6391	151	5583	39	982	1	9	233	21395
24	2	45	0	536	15	7909	40	6431	451	6034	160	1142	2	11	668	22063
25	2	48	0	536	5	7914	15	6446	319	6353	99	1241	5	16	443	22506
26	2	48	0	536	6	7920	19	6465	396	6749	86	1327	6	22	513	23019
27	2	48	0	536	3	7923	13	6478	402	7151	51	1378	16	38	485	23504
28	2	48	0	536	2	7925	1	6479	128	7279	32	1410	1	39	164	23668
29	2	48	0	536	1	7926	0	6479	82	7361	15	1425	1	40	99	23767
30	2	48	0	536	0	7926	0	6479	36	7397	6	1431	0	40	42	23809
31	2	48	0	536	0	7926	0	6479	67	7464	4	1435	1	41	72	23881
September																
1	2	48	0	536	1	7927	1	6480	95	7559	12	1447	0	41	109	23990
2	2	48	0	536	1	7928	0	6480	38	7597	2	1449	0	41	41	24031
3	2	48	0	536	0	7928	0	6480	91	7688	7	1456	0	41	98	24129
4	2	44	0	536	1	7929	0	6480	145	7833	3	1459	2	43	151	24280
5	2	48	0	536	0	7929	0	6480	92	7925	6	1465	5	48	103	24383
6	2	48	0	536	0	7929	0	6480	141	8066	8	1473	13	61	162	24545
7	2	48	0	536	0	7929	0	6480	65	8131	5	1478	4	65	74	24619
8	2	48	0	536	0	7929	0	6480	60	8191	6	1484	8	73	74	24693
9	2	47	0	536	0	7929	0	6480	33	8224	4	1488	4	77	41	24734
10	2	48	0	536	0	7929	0	6480	22	8246	2	1490	26	103	50	24784
11	2	48	0	536	0	7929	0	6480	20	8266	9	1499	24	127	53	24837
12	2	48	0	536	0	7929	0	6480	32	8298	3	1502	34	161	69	24906
13	2	48	0	536	0	7929	0	6480	16	8314	5	1507	38	199	59	24965
14	2	37	0	536	0	7929	0	6480	6	8320	3	1510	28	227	37	25002
15	1	24	0	536	0	7929	0	6480	8	8328	2	1512	27	254	37	25039
16	1	9	0	536	0	7929	0	6480	1	8329	0	1512	8	262	9	25048

Table EC-6. Sunshine Station west bank fishwheel daily and cumulative catch logs by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June																
24	1	3.5	1	1	0	0	0	0	0	0	0	0	0	0	1	1
25	1	23.5	3	4	0	0	0	0	0	0	0	0	0	0	3	4
26	1	23.5	4	8	0	0	0	0	0	0	0	0	0	0	4	8
27	1	24	2	10	0	0	0	0	0	0	0	0	0	0	2	10
28	1	12.5	1	11	0	0	0	0	0	0	0	0	0	0	1	11
29	1	13	1	12	0	0	0	0	0	0	0	0	0	0	1	12
30	1	22	2	14	0	0	0	0	0	0	0	0	0	0	2	14
July																
1	1	22	9	23	0	0	0	0	0	0	0	0	2	2	11	25
2	1	23	8	31	0	0	0	0	0	0	0	0	0	2	8	33
3	1	23.5	9	40	0	0	0	0	0	0	0	0	0	2	9	42
4	2	15	5	45	4	4	0	0	0	0	0	0	0	2	9	51
5	2	39	12	57	14	18	0	0	0	0	0	0	0	2	26	77
6	2	47.5	6	63	9	27	0	0	0	0	0	0	0	2	15	92
7	2	41.3	3	66	5	32	0	0	0	0	0	0	0	2	8	100
8	2	45.5	3	69	5	37	0	0	0	0	0	0	0	2	8	108
9	2	47.5	0	69	1	38	0	0	0	0	0	0	1	3	2	110
10	2	48	0	69	1	39	0	0	0	0	0	0	0	3	1	111
11	2	45.5	0	69	1	40	0	0	1	1	0	0	0	3	2	113
12	2	36	0	69	0	40	0	0	0	1	0	0	0	3	0	113
13	2	48	0	69	0	40	0	0	0	1	0	0	0	3	0	113
14	2	48	0	69	1	41	0	0	0	1	0	0	0	3	1	114
15	2	48	2	71	6	47	0	0	0	1	0	0	0	3	8	122
16	2	39	0	71	5	52	0	0	0	1	0	0	0	3	5	127
17	1	24	0	71	1	53	0	0	0	1	0	0	1	4	2	129
18	1	24	0	71	6	59	0	0	0	1	0	0	0	4	6	135
19	1	24	0	71	11	70	1	1	0	1	0	0	0	4	12	147
20	1	11.3	0	71	7	77	0	1	0	1	0	0	0	4	7	154
21	1	20	0	71	55	132	0	1	0	1	0	0	0	4	55	209
22	2	35	1	72	111	243	1	2	1	2	0	0	0	4	114	323
23	2	33.5	0	72	71	314	0	2	0	2	0	0	0	4	71	394
24	2	40	0	72	67	381	2	4	1	3	0	0	0	4	70	464

Table EC-6. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
July																
25	2	26	0	72	47	428	1	5	1	4	0	0	0	4	49	513
26	2	48	0	72	200	628	10	15	7	11	0	0	0	4	217	730
27	2	42	0	72	123	751	14	29	1	12	1	1	0	4	139	869
28	2	44	1	73	189	940	29	58	19	31	0	1	0	4	238	1107
29	2	22	0	73	62	1002	5	63	11	42	0	1	0	4	78	1185
30	2	45	1	74	130	1132	34	97	30	72	25	26	0	4	220	1405
31	2	48	1	75	91	1223	33	130	31	103	21	47	0	4	177	1582
August																
1	2	40.33	0	75	74	1297	74	204	42	145	34	81	0	4	224	1806
2	1	20.75	0	75	2	1299	1	205	0	145	0	81	0	4	3	1809
3 1/	0	0	-	75	-	1299	-	205	-	145	-	81	-	4	-	1809
4 1/	0	0	-	75	-	1299	-	205	-	145	-	81	-	4	-	1809
5	2	23	0	75	14	1313	21	226	21	166	16	97	0	4	72	1881
6	2	47.5	0	75	54	1367	110	336	96	262	70	167	0	4	330	2211
7	2	48	1	76	58	1425	161	497	95	357	87	254	1	5	403	2614
8	2	46	0	76	36	1461	67	564	51	408	98	352	0	5	252	2866
9	2	46	0	76	14	1475	26	590	15	423	29	381	0	5	84	2950
10	2	32	0	76	2	1477	12	602	2	425	5	386	0	5	21	2971
11	2	21.25	0	76	1	1478	3	605	5	430	7	393	0	5	16	2987
12	1	11	0	76	2	1480	3	608	7	437	4	397	0	5	16	3003
13	1	13	0	76	0	1480	0	608	4	441	0	397	0	5	4	3007
14	1	24	0	76	0	1480	0	608	2	443	0	397	0	5	2	3009
15	2	30	0	76	2	1482	0	608	1	444	3	400	0	5	6	3015
16	2	48	0	76	1	1483	0	608	5	449	8	408	0	5	14	3029
17	2	43	0	76	6	1489	0	608	44	493	27	435	0	5	77	3106
18	2	45	0	76	9	1498	1	609	46	539	80	515	0	5	136	3246
19	2	43	0	76	15	1513	0	609	20	559	55	570	0	5	90	3332
20	2	42.5	0	76	29	1542	3	612	57	616	207	777	0	5	296	3628
21	2	48	0	76	13	1555	0	612	15	631	156	933	1	6	185	3813
22	2	42	0	76	7	1562	0	612	18	649	96	1029	0	6	121	3934
23	2	48	0	76	7	1569	3	615	48	697	104	1133	0	6	162	4096
24	2	48	0	76	18	1587	0	615	30	727	120	1253	0	6	168	4264

1/ Fishwheels inoperable due to flood.

Table EC-6. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
August																
25	2	43	0	76	5	1592	2	617	26	753	62	1315	1	7	96	4360
26	2	48	0	76	4	1596	1	618	12	765	33	1348	0	7	50	4410
27	2	48	0	76	2	1598	0	618	31	796	29	1377	1	8	63	4473
28	2	48	0	76	0	1598	0	618	5	801	7	1384	0	8	12	4485
29	2	48	0	76	0	1598	1	619	6	807	9	1393	0	8	16	4501
30	2	42	0	76	0	1598	0	619	1	808	5	1398	0	8	6	4507
31	2	44	0	76	0	1598	0	619	7	815	2	1400	0	8	9	4516
September																
1	2	48	0	76	0	1598	0	619	4	819	1	1401	0	8	5	4521
2	2	48	0	76	1	1599	0	619	16	835	5	1406	0	8	22	4543
3	2	28	0	76	0	1599	0	619	2	837	0	1406	0	8	2	4545
4	1	24	0	76	0	1599	0	619	0	837	0	1406	0	8	0	4545
5	1	24	0	76	0	1599	0	619	1	838	7	1413	0	8	8	4553
6	1	24	0	76	0	1599	0	619	1	839	1	1414	0	8	2	4555
7	1	24	0	76	0	1599	0	619	0	839	2	1416	1	9	3	4558
8	1	12	0	76	0	1599	0	619	0	839	0	1416	0	9	0	4558

Table EC-7. Talkeetna Station east bank fishwheel daily and cumulative catch log by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
June																
22	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	1	23.5	7	7	0	0	0	0	0	0	0	0	0	0	7	7
24	1	22	12	19	0	0	0	0	0	0	0	0	0	0	12	19
25	1	23	16	35	0	0	0	0	0	0	0	0	0	0	16	35
26	1	17.5	15	50	0	0	0	0	0	0	0	0	0	0	15	50
27 1/	0	0	-	50	-	0	-	0	-	0	-	0	-	0	-	50
28	1	24	3	53	0	0	0	0	0	0	0	0	0	0	3	53
29	1	24	1	54	0	0	0	0	0	0	0	0	0	0	1	54
30	1	22	0	54	0	0	0	0	0	0	0	0	0	0	0	54
July																
1	1	16.5	9	63	0	0	0	0	0	0	0	0	0	0	9	63
2	1	23	6	69	0	0	0	0	0	0	0	0	0	0	6	69
3	2	23	3	72	0	0	0	0	0	0	0	0	0	0	3	72
4	2	38	0	72	0	0	0	0	0	0	0	0	0	0	0	72
5	2	47	7	79	0	0	0	0	0	0	0	0	0	0	7	79
6	2	48	5	84	0	0	0	0	0	0	0	0	0	0	5	84
7	2	48	4	88	0	0	0	0	0	0	0	0	0	0	4	88
8	2	48	6	94	0	0	0	0	0	0	0	0	0	0	6	94
9	2	48	2	96	0	0	0	0	0	0	0	0	0	0	2	96
10-16 2/	0	0	-	96	-	0	-	0	-	0	-	0	-	0	-	96
17	1	9	0	96	0	0	0	0	0	0	0	0	0	0	0	96
18	1	24	0	96	0	0	0	0	0	0	0	0	0	0	0	96
19	1	24	0	96	0	0	0	0	0	0	0	0	0	0	0	96
20	2	33	0	96	0	0	0	0	0	0	0	0	0	0	0	96
21	2	48	1	97	2	2	0	0	2	2	0	0	1	1	6	102
22	2	48	0	97	3	5	0	0	1	3	0	0	0	1	4	106
23	2	48	3	100	8	13	0	0	2	5	0	0	1	2	14	120
24	2	48	0	100	11	24	0	0	0	5	0	0	0	2	11	131
25	2	48	1	101	6	30	0	0	2	7	0	0	0	2	9	140
26	2	48	0	101	7	37	0	0	2	9	0	0	0	2	9	149
27	2	47	0	101	10	47	1	1	11	20	0	0	0	2	22	171
28	2	47	1	102	31	78	3	4	25	45	1	1	0	2	61	232

1/ Fishwheel shut down for modification.
2/ Fishwheels inoperable due to flood.

Table EC-7. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
July																
29	2	48	1	103	12	90	1	5	10	55	1	2	0	2	25	257
30	2	48	0	103	6	96	1	6	21	76	3	5	0	2	31	288
31	2	48	1	104	16	112	8	14	29	105	1	6	0	2	55	343
August																
1	2	48	0	104	32	144	5	19	37	142	1	7	0	2	75	418
2 3/	0	0	-	104	-	144	-	19	-	142	-	7	-	2	-	418
3	1	.5	0	104	0	144	0	19	0	142	0	7	0	2	0	418
4	1	24	0	104	1	145	0	19	1	143	0	7	0	2	2	420
5	2	36.5	2	106	5	150	10	29	15	158	3	10	0	2	35	455
6	2	48	0	106	10	160	29	58	28	186	9	19	0	2	76	531
7	2	48	0	106	8	168	51	109	60	246	8	27	0	2	127	658
8	2	48	0	106	7	175	76	185	51	297	15	42	0	2	149	807
9	2	47.5	0	106	0	175	4	189	2	299	0	42	0	2	6	813
10	2	48	0	106	1	176	0	189	1	300	0	42	0	2	2	815
11	2	48	0	106	2	178	2	191	3	303	1	43	0	2	8	823
12	2	48	0	106	3	181	5	196	9	312	8	51	0	2	25	848
13	2	48	0	106	2	183	0	196	5	317	0	51	0	2	7	855
14	2	47.5	0	106	0	183	1	197	1	318	0	51	0	2	2	857
15	2	42.75	0	106	0	183	0	197	0	318	0	51	0	2	0	857
16	1	11.75	0	106	0	183	0	197	2	320	0	51	0	2	2	859
17	2	36.25	0	106	4	187	1	198	3	323	1	52	0	2	9	868
18	2	44	0	106	3	190	8	206	34	357	7	59	1	3	53	921
19	2	48	0	106	0	190	11	217	37	394	4	63	0	3	52	973
20	2	48	0	106	1	191	4	221	13	407	9	72	1	4	28	1001
21	2	48	0	106	1	192	0	221	0	407	0	72	0	4	1	1002
22	2	48	0	106	0	192	0	221	1	408	0	72	0	4	1	1003
23	2	48	0	106	5	197	2	223	10	418	12	84	0	4	29	1032
24	2	48	0	106	1	198	0	223	22	440	14	98	0	4	37	1069
25	2	48	0	106	0	198	1	224	18	458	15	113	2	6	36	1105
26	2	48	0	106	1	199	0	224	14	472	7	120	3	9	25	1130
27	2	48	0	106	1	200	1	225	22	494	8	128	0	9	32	1162
28	2	48	0	106	0	200	0	225	6	500	9	137	0	9	15	1177

3/ Fishwheels inoperable due to flood.

Table EC-7. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
August																
29	2	48	0	106	1	201	0	225	13	513	13	150	0	9	27	1204
30	2	48	0	106	0	201	0	225	12	525	7	157	0	9	19	1223
31	2	48	0	106	3	204	0	225	12	537	14	171	1	10	30	1253
September																
1	2	48	0	106	2	206	0	225	23	560	10	181	0	10	35	1288
2	2	42	0	106	0	206	0	225	19	579	10	191	0	10	29	1317
3	2	48	0	106	0	206	0	225	7	586	3	194	0	10	10	1327
4	2	48	0	106	0	206	0	225	2	588	4	198	2	12	8	1335
5	2	48	0	106	0	206	0	225	6	594	1	199	2	14	9	1344
6	2	48	0	106	0	206	0	225	11	605	1	200	3	17	15	1359
7	2	48	0	106	0	206	0	225	7	612	6	206	8	25	21	1380
8	2	48	0	106	0	206	0	225	9	621	1	207	10	35	20	1400
9	2	42	0	106	2	208	0	225	1	622	0	207	1	36	4	1404
10	2	48	0	106	0	208	0	225	1	623	0	207	3	39	4	1408
11	2	48	0	106	0	208	0	225	0	623	6	213	4	43	10	1418
12	2	48	0	106	0	208	0	225	1	624	1	214	2	45	4	1422
13	2	48	0	106	0	208	0	225	2	626	2	216	2	47	6	1428
14	2	48	0	106	0	208	0	225	0	626	0	216	2	49	2	1430
15	2	48	0	106	0	208	0	225	0	626	0	216	0	49	0	1430

Table EC-8. Talkeetna west bank fishwheel daily and cumulative catch log by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June																
26	1	15.8	9	9	0	0	0	0	0	0	0	0	0	0	9	9
27	1	23.5	4	13	0	0	0	0	0	0	0	0	0	0	4	13
28	1	23	1	14	0	0	0	0	0	0	0	0	0	0	1	14
29	1	24	1	15	0	0	0	0	0	0	0	0	0	0	1	15
30	1	22.5	0	15	0	0	0	0	0	0	0	0	0	0	0	15
July																
1	2	28	1	16	0	0	0	0	0	0	0	0	0	0	1	16
2	2	38.5	3	19	0	0	0	0	0	0	0	0	0	0	3	19
3	2	42	1	20	0	0	0	0	0	0	0	0	0	0	1	20
4	2	47.5	0	20	0	0	0	0	0	0	0	0	0	0	0	20
5	2	48	3	23	0	0	0	0	0	0	0	0	0	0	3	23
6	2	48	0	23	0	0	0	0	0	0	0	0	0	0	0	23
7	2	48	0	23	1	1	0	0	0	0	0	0	1	1	2	25
8	2	48	0	23	0	1	0	0	0	0	0	0	0	1	0	25
9	2	46	1	24	0	1	0	0	0	0	0	0	0	1	1	26
10	1	5.5	0	24	0	1	0	0	0	0	0	0	0	1	0	26
11-17[1/]	0	0	-	24	-	1	-	0	-	0	-	0	-	1	0	26
18	1	8.5	0	24	0	1	0	0	0	0	0	0	0	1	0	26
19	1	24	0	24	0	1	0	0	0	0	0	0	0	1	0	26
20	1	24	0	24	0	1	0	0	1	1	0	0	0	1	1	27
21	2	29.5	0	24	1	2	0	0	0	1	0	0	0	1	1	28
22	2	38	0	24	0	2	0	0	1	2	0	0	0	1	1	29
23	2	48	0	24	11	13	0	0	3	5	0	0	0	1	14	43
24	2	48	3	27	12	25	0	0	3	8	0	0	0	1	18	61
25	2	48	0	27	8	33	2	2	2	10	0	0	1	2	13	74
26	2	46	0	27	6	39	0	2	3	13	0	0	0	2	9	83
27	2	48	0	27	3	42	3	5	5	18	0	0	0	2	11	94
28	2	47.5	1	28	19	61	2	7	15	33	0	0	0	2	37	131
29	2	47	0	28	10	71	5	12	14	47	1	1	0	2	30	161
30	2	46	0	28	15	86	3	15	24	71	1	2	0	2	43	204
31	2	48	0	28	14	100	12	27	36	107	1	3	0	2	63	267

Fishwheels inoperable due to flooding.

Table EC-8. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August																
1	2	41	0	28	15	115	21	48	42	149	0	3	0	2	78	345
2 2/	0	0	-	28	-	115	-	48	-	149	-	3	-	2	-	345
3 2/	0	0	-	28	-	115	-	48	-	149	-	3	-	2	-	345
4	1	10.5	0	28	0	115	0	48	2	151	0	3	0	2	2	347
5	2	31	0	28	10	125	9	57	44	195	3	6	0	2	66	413
6	2	48	0	28	6	131	14	71	28	223	5	11	0	2	53	466
7	2	48	0	28	8	139	26	97	49	272	4	15	0	2	87	553
8	2	48	0	28	13	152	27	124	41	313	9	24	0	2	90	643
9	2	46	0	28	3	155	1	125	1	314	0	24	0	2	5	648
10	2	47	0	28	0	155	0	125	3	317	1	25	0	2	4	652
11	2	32	0	28	0	155	0	125	1	318	0	25	0	2	1	653
12	2	36.5	0	28	0	155	2	127	3	321	2	27	0	2	7	660
13	1	23	0	28	1	156	0	127	0	321	0	27	0	2	1	661
14 2/	0	0	-	28	-	156	-	127	-	321	-	27	-	2	-	661
15 2/	0	0	-	28	-	156	-	127	-	321	-	27	-	2	-	661
16	1	6	0	28	0	156	0	127	0	321	0	27	0	2	0	661
17	2	35	0	28	1	157	0	127	0	321	0	27	0	2	1	662
18	2	42	0	28	2	159	3	130	15	336	4	31	0	2	24	686
19	2	48	0	28	4	163	2	132	30	366	14	45	0	2	50	736
20	2	48	0	28	2	165	3	135	12	378	9	54	1	3	27	763
21	2	48	0	28	1	166	2	137	7	385	6	60	1	4	17	780
22	2	48	0	28	0	166	0	137	0	385	0	60	0	4	0	780
23	2	48	0	28	0	166	0	137	16	401	20	80	1	5	37	817
24	2	47	0	28	8	174	6	143	37	438	48	128	1	6	100	917
25	2	47	0	28	5	179	1	144	27	465	19	147	3	9	55	972
26	2	48	0	28	1	180	1	145	21	486	11	158	2	11	36	1008
27	2	48	0	28	3	183	5	150	29	515	18	176	0	11	55	1063
28	2	48	0	28	1	184	4	154	46	561	21	197	1	12	73	1136
29	2	48	0	28	0	184	0	154	34	595	23	220	2	14	59	1195
30	2	48	0	28	2	186	0	154	7	602	16	236	0	14	25	1220
31	2	48	0	28	0	186	0	154	4	606	26	262	1	15	31	1251

2/ Fishwheels inoperable due to flooding.

Table EC-8. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
September																
1	2	48	0	28	1	187	0	154	11	617	27	289	0	15	39	1290
2	2	48	0	28	1	188	0	154	15	632	14	303	0	15	30	1320
3	2	42	0	28	0	188	0	154	2	634	2	305	0	15	4	1324
4	2	48	0	28	1	189	0	154	4	638	4	309	3	18	12	1336
5	2	48	0	28	1	190	0	154	4	642	0	309	0	18	5	1341
6	2	48	0	28	0	190	0	154	9	651	2	311	4	22	15	1356
7	2	48	0	28	0	190	0	154	1	652	2	313	5	27	8	1364
8	2	48	0	28	0	190	0	154	4	656	1	314	4	31	9	1373
9	2	48	0	28	0	190	0	154	2	658	2	316	8	39	12	1385
10	2	48	0	28	0	190	0	154	0	658	0	316	6	45	6	1391
11	2	48	0	28	0	190	0	154	1	659	1	317	2	47	4	1395
12	2	48	0	28	0	190	0	154	0	659	0	317	2	49	2	1397
13	2	44	0	28	0	190	0	154	0	659	0	317	7	56	7	1404
14	2	48	0	28	0	190	0	154	0	659	0	317	5	61	5	1409
15	2	36	0	28	0	190	0	154	0	659	0	317	2	63	2	1411

Table EC-9. Curry Station east bank fishwheel daily and cumulative catch log by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June																
15	1	24	3	3	0	0	0	0	0	0	0	0	0	0	3	3
16	1	18	1	4	0	0	0	0	0	0	0	0	0	0	1	4
17	1	24	1	5	0	0	0	0	0	0	0	0	0	0	1	5
18	1	17	1	6	0	0	0	0	0	0	0	0	0	0	1	6
19	1	12	4	10	0	0	0	0	0	0	0	0	0	0	4	10
20	1	24	5	15	0	0	0	0	0	0	0	0	0	0	5	15
21	1	24	6	21	0	0	0	0	0	0	0	0	0	0	6	21
22	1	24	7	28	0	0	0	0	0	0	0	0	0	0	7	28
23	1	24	14	42	0	0	0	0	0	0	0	0	0	0	14	42
24	1	24	5	47	0	0	0	0	0	0	0	0	0	0	5	47
25	1	24	10	57	0	0	0	0	0	0	0	0	1	1	11	58
26	1	22	8	65	0	0	0	0	0	0	0	0	0	1	8	66
27	1	24	3	68	0	0	0	0	0	0	0	0	0	1	3	69
28	1	23	3	71	0	0	0	0	0	0	0	0	0	1	3	72
29	1	22	1	72	0	0	0	0	0	0	0	0	0	1	1	73
30	1	6	0	72	0	0	0	0	0	0	0	0	0	1	0	73
July																
1	1	6	0	72	0	0	0	0	0	0	0	0	0	1	0	73
2	1	24	1	73	0	0	0	0	0	0	0	0	0	1	1	74
3	1	18	4	77	0	0	0	0	0	0	0	0	0	1	4	78
4	1	23	0	77	0	0	0	0	0	0	0	0	0	1	0	78
5	1	17	0	77	0	0	0	0	0	0	0	0	0	1	0	78
6	1	24	0	77	0	0	0	0	0	0	0	0	0	1	0	78
7	1	24	1	78	0	0	0	0	0	0	0	0	0	1	1	79
8	1	21	2	80	0	0	0	0	0	0	0	0	0	1	2	81
9	1	24	2	82	0	0	0	0	0	0	0	0	0	1	2	83
10	1	10	1	83	0	0	0	0	0	0	0	0	0	1	1	84
11-15 1/	0	0	-	83	-	0	-	0	-	0	-	0	-	1	-	84
16	1	24	1	84	0	0	0	0	0	0	0	0	0	1	1	85
17	1	24	5	89	3	3	0	0	0	0	0	0	0	1	8	93
18	1	24	2	91	3	6	1	1	0	0	0	0	0	1	6	99
19	1	22	2	93	0	6	0	1	0	0	0	0	0	1	2	101

1/ Fishwheel inoperable due to flood.

Table EC-9. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
July																
20	1	24	2	95	2	8	0	1	0	0	0	0	0	1	4	105
21	1	23	1	96	2	10	1	2	1	1	0	0	0	1	5	110
22	1	24	2	98	9	19	1	3	0	1	0	0	0	1	12	122
23	1	24	1	99	3	22	0	3	0	1	0	0	0	1	4	126
24	1	24	2	101	4	26	1	4	2	3	0	0	0	1	9	135
25	1	23	1	102	7	33	0	4	0	3	0	0	0	1	8	143
26	1	24	1	103	13	46	0	4	5	8	0	0	1	2	20	163
27	1	24	0	103	14	60	1	5	5	13	0	0	0	2	20	183
28	1	24	1	104	19	79	1	6	5	18	0	0	1	3	27	210
29	1	24	0	104	27	106	2	8	22	40	0	0	1	4	52	262
30	1	24	0	104	16	122	2	10	8	48	0	0	0	4	26	288
31	1	23	0	104	33	155	8	18	37	85	0	0	0	4	78	366
August																
1	1	24	1	105	32	187	2	20	13	98	0	0	0	4	48	414
2	1	21	0	105	2	189	0	20	0	98	0	0	0	4	2	416
3 2/	0	0	-	105	-	189	-	20	-	98	-	0	-	4	-	416
4	1	12	1	106	12	201	1	21	18	116	1	1	0	4	33	449
5	1	24	0	106	41	242	8	29	45	161	6	7	0	4	100	549
6	1	24	0	106	18	260	32	61	77	238	3	10	0	4	130	679
7	1	23	0	106	17	278	11	72	60	298	5	15	0	4	94	773
8	1	23.5	0	106	10	288	17	89	48	346	3	18	1	5	79	852
9	1	23	0	106	14	302	6	95	14	360	1	19	0	5	35	887
10	1	23	0	106	3	305	4	99	16	376	4	23	0	5	27	914
11	1	23.5	0	106	18	323	4	103	26	402	1	24	0	5	49	963
12	1	23.5	0	106	2	325	7	110	30	432	1	25	0	5	40	1003
13	1	24	0	106	9	334	8	118	44	476	3	28	0	5	64	1067
14	1	24	0	106	2	336	2	120	19	495	0	28	0	5	23	1090
15	1	24	0	106	3	339	2	122	15	510	2	30	0	5	22	1112
16	1	24	0	106	6	345	4	126	40	550	4	34	0	5	54	1166
17	1	24	0	106	3	348	3	129	31	581	4	38	1	6	42	1208
18	1	24	0	106	14	362	7	131	66	647	6	44	0	6	88	1296
19	1	24	0	106	23	385	12	143	77	724	11	55	1	7	124	1420

2/ Fishwheel inoperable due to flood.

Table EC-9. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
August																
20	1	24	1	107	7	392	4	147	40	764	5	60	0	7	57	1477
21	1	21	0	107	2	394	3	150	37	801	4	64	1	8	47	1524
22	1	24	0	107	4	398	3	153	72	873	11	75	1	9	91	1615
23	1	24	0	107	3	401	2	155	44	917	6	81	0	9	55	1670
24	1	24	0	107	1	402	1	156	23	940	4	85	0	9	29	1699
25	1	23	0	107	2	404	1	157	39	979	3	88	0	9	45	1744
26	1	24	0	107	2	406	2	159	31	1010	3	91	0	9	38	1782
27	1	24	0	107	1	407	0	159	19	1029	2	93	0	9	22	1804
28	1	24	0	107	0	407	0	159	33	1062	1	94	0	9	34	1838
29	1	24	0	107	0	407	1	160	9	1071	6	100	0	9	16	1854
30	1	24	0	107	0	407	0	160	4	1075	2	102	0	9	6	1860
31	1	24	0	107	0	407	0	160	6	1081	2	104	0	9	8	1868
September																
1	1	24	0	107	0	407	0	160	5	1086	1	105	1	10	7	1875
2	1	24	0	107	0	407	0	160	10	1096	3	108	1	11	14	1889
3	1	16	0	107	1	408	0	160	4	1100	2	110	1	12	8	1897
4	1	24	0	107	0	408	0	160	7	1107	3	113	0	12	10	1907
5	1	24	0	107	0	408	0	160	3	1110	0	113	1	13	4	1911
6	1	23.5	0	107	0	408	0	160	5	1115	0	113	0	13	5	1916
7	1	23.5	0	107	0	408	0	160	3	1118	0	113	2	15	5	1921
8	1	24	0	107	1	409	0	160	4	1122	1	114	2	17	8	1929
9	1	24	0	107	0	409	0	160	4	1126	1	115	2	19	7	1936
10	1	24	0	107	0	409	0	160	5	1131	1	116	2	21	8	1944
11	1	24	0	107	0	409	0	160	4	1135	1	117	0	21	5	1949
12	1	24	0	107	1	410	0	160	5	1140	1	118	1	22	8	1957
13	1	20	0	107	0	410	0	160	2	1142	0	118	1	23	3	1960
14	1	24	0	107	0	410	0	160	1	1143	0	118	2	25	3	1963
15	1	24	0	107	0	410	0	160	0	1143	0	118	4	29	4	1967
16	1	24	0	107	0	410	0	160	0	1143	0	118	1	30	1	1968
17	1	24	0	107	0	410	0	160	0	1143	0	118	3	33	3	1971
18	1	24	0	107	0	410	0	160	0	1143	0	118	0	33	0	1971
19	1	20	0	107	0	410	0	160	0	1143	0	118	0	33	0	1971

Table EC-9. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK DAILY	CHINOOK CUM.	SOCKEYE DAILY	SOCKEYE CUM.	PINK DAILY	PINK CUM.	CHUM DAILY	CHUM CUM.	COHO DAILY	COHO CUM.	MISCELLANEOUS DAILY	MISCELLANEOUS CUM.	TOTAL CATCH ALL SPECIES DAILY	TOTAL CATCH ALL SPECIES CUM.
September																
20	1	24	0	107	0	410	0	160	0	1143	0	118	0	33	0	1971
21	1	14.5	0	107	0	410	0	160	0	1143	0	118	0	33	0	1971

Table EC-10. Curry Station west bank fishwheel daily and cumulative catch log by species, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
June																
15	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	1	24	6	6	0	0	0	0	0	0	0	0	1	1	7	7
17	1	22	6	12	0	0	0	0	0	0	0	0	0	1	6	13
18	1	12	8	20	0	0	0	0	0	0	0	0	0	1	8	21
19	1	24	19	39	0	0	0	0	0	0	0	0	2	3	21	42
20	1	24	11	50	0	0	0	0	0	0	0	0	0	3	11	53
21	1	24	8	58	0	0	0	0	0	0	0	0	0	3	8	61
22	1	22	8	66	0	0	0	0	0	0	0	0	0	3	8	69
23	1	24	17	83	0	0	0	0	0	0	0	0	0	3	17	86
24	1	21	12	95	0	0	0	0	0	0	0	0	0	3	12	98
25	1	24	13	108	0	0	0	0	0	0	0	0	0	3	13	111
26	1	22	9	117	0	0	0	0	0	0	0	0	0	3	9	120
27	1	24	12	129	0	0	0	0	0	0	0	0	0	3	12	132
28	1	23	6	135	0	0	0	0	0	0	0	0	0	3	6	138
29	1	24	4	139	0	0	0	0	0	0	0	0	0	3	4	142
30	1	24	0	139	0	0	0	0	0	0	0	0	0	3	0	142
July																
1	1	24	2	141	0	0	0	0	0	0	0	0	0	3	2	144
2	1	24	4	145	0	0	0	0	0	0	0	0	0	3	4	148
3	1	24	6	151	0	0	0	0	0	0	0	0	0	3	6	154
4	1	22	5	156	0	0	0	0	0	0	0	0	0	3	5	159
5	1	16	1	157	0	0	0	0	0	0	0	0	0	3	1	160
6	1	24	0	157	0	0	0	0	0	0	0	0	0	3	0	160
7	1	24	0	157	0	0	0	0	0	0	0	0	0	3	0	160
8	1	24	6	163	0	0	0	0	0	0	0	0	0	3	6	166
9	1	24	1	164	0	0	0	0	0	0	0	0	0	3	1	167
10	1	6	0	164	0	0	0	0	0	0	0	0	0	3	0	167
11-17 1/	0	0	-	164	-	0	-	0	-	0	-	0	-	3	-	167
18	1	24	0	164	0	0	0	0	0	0	0	0	0	3	0	167
19	1	14	1	165	0	0	0	0	0	0	0	0	0	3	1	168
20	1	24	1	166	0	0	0	0	1	1	0	0	0	3	2	170
21	1	24	2	168	0	0	0	0	1	2	0	0	0	3	3	173

1/ Fishwheel inoperable due to flood.

Table EC-10. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
July																
22	1	24	1	169	0	0	0	0	1	3	0	0	0	3	2	175
23	1	24	0	169	4	4	0	0	0	3	0	0	0	3	4	179
24	1	24	1	170	6	10	0	0	1	4	0	0	0	3	8	181
25	1	23	0	170	3	13	0	0	2	6	0	0	0	3	5	192
26	1	24	0	170	1	14	0	0	0	6	0	0	0	3	1	193
27	1	24	1	171	2	16	0	0	1	7	0	0	0	3	4	197
28	1	19	0	171	5	21	1	1	0	7	0	0	0	3	6	203
29	1	24	1	172	1	22	1	2	6	13	0	0	0	3	9	212
30	1	20	1	173	1	23	0	2	3	16	0	0	0	3	5	217
31	1	24	0	173	5	28	5	7	10	26	0	0	0	3	20	237
August																
1 2/	1	21.5	0	173	2	30	4	11	1	27	0	0	0	3	7	244
2 2/	0	0	-	173	-	30	-	11	-	27	-	0	-	3	-	244
3	0	0	-	173	-	30	-	11	-	27	-	0	-	3	-	244
4	1	3.5	0	173	0	30	0	11	1	28	0	0	0	3	1	245
5	1	24	0	173	3	33	11	22	10	38	1	1	0	3	25	270
6	1	21	1	174	3	36	7	29	10	48	0	1	0	3	21	291
7	1	23	1	175	5	41	13	42	6	54	1	2	0	3	26	317
8	1	23.5	2	177	4	45	18	60	7	61	3	5	1	4	35	352
9	1	24	0	177	2	47	1	61	0	61	2	7	0	4	5	357
10	1	23	0	177	1	48	2	63	2	63	1	8	0	4	6	363
11	1	24	0	177	1	49	3	66	3	66	0	8	0	4	7	370
12	1	24	0	177	0	49	0	66	4	70	0	8	1	5	5	375
13	1	24	0	177	0	49	2	68	0	70	1	9	1	6	4	379
14	1	6	0	177	0	49	1	69	0	70	0	9	0	6	1	380
15 2/	0	0	-	177	-	49	-	69	-	70	-	9	-	6	-	380
16 2/	0	0	-	177	-	49	-	69	-	70	-	9	-	6	-	380
17 2/	0	0	-	177	-	49	-	69	-	70	-	9	-	6	-	380
18	1	3	0	177	1	50	0	69	2	72	1	10	0	6	4	384
19	1	24	0	177	0	50	0	69	1	73	1	11	0	6	2	386
20	1	22	0	177	0	50	0	69	1	74	0	11	0	6	1	387
21	1	24	0	177	0	50	0	69	0	74	0	11	0	6	0	387

2/ Fishwheels inoperable due to flood.

Table EC-10. Continued.

DATE	NO. OF WHEELS	WHEEL HOURS	CHINOOK		SOCKEYE		PINK		CHUM		COHO		MISCELLANEOUS		TOTAL CATCH ALL SPECIES	
			DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.	DAILY	CUM.
August																
22	1	24	0	177	0	50	0	69	6	80	0	11	0	6	6	393
23	1	24	0	177	1	51	0	69	2	82	4	15	0	6	7	400
24	1	24	0	177	0	51	0	69	4	86	2	17	0	6	6	406
25	1	24	0	177	2	53	0	69	3	89	2	19	0	6	7	413
26	1	24	0	177	0	53	0	69	6	95	1	20	0	6	7	420
27	1	24	0	177	0	53	0	69	3	98	2	22	0	6	5	425
28	1	24	0	177	0	53	0	69	3	101	9	31	0	6	12	437
29	1	24	0	177	1	54	0	69	2	103	10	41	1	7	14	451
30	1	24	0	177	0	54	0	69	2	105	4	45	0	7	6	457
31	1	24	0	177	0	54	0	69	0	105	4	49	1	8	5	462
September																
1	1	24	0	177	3	57	0	69	6	111	3	52	0	8	12	474
2	1	24	0	177	2	59	0	69	8	119	2	54	0	8	12	486
3	1	23	0	177	0	59	0	69	1	120	2	56	1	9	4	490
4	1	18	0	177	0	59	0	69	1	121	2	58	0	9	3	493
5	1	24	0	177	0	59	0	69	2	123	2	60	2	11	6	499
6	1	24	0	177	0	59	0	69	3	126	1	61	0	11	4	503
7	1	24	0	177	0	59	0	69	2	128	1	62	1	12	4	507
8	1	20	0	177	0	59	0	69	0	128	0	62	1	13	1	508
9	1	24	0	177	0	59	0	69	1	129	0	62	1	14	2	510
10	1	20	0	177	1	60	0	69	1	130	0	62	0	14	2	512
11	1	20	0	177	0	60	0	69	0	130	0	62	3	17	3	515
12	1	24	0	177	0	60	0	69	2	132	1	63	0	17	3	518
13	1	24	0	177	0	60	0	69	0	132	0	63	1	18	1	519
14	1	24	0	177	0	60	0	69	0	132	0	63	0	18	0	519
15	1	24	0	177	0	60	0	69	1	133	0	63	0	18	1	520
16	1	24	0	177	0	60	0	69	0	133	0	63	0	18	0	520
17	1	24	0	177	0	60	0	69	0	133	0	63	0	18	0	520
18	1	22	0	177	0	60	0	69	0	133	0	63	0	18	0	520
19	1	24	0	177	0	60	0	69	0	133	1	64	0	18	1	521
20	1	24	0	177	0	60	0	69	0	133	0	64	0	18	0	521
21	1	19	0	177	0	60	0	69	0	133	0	64	0	18	0	521

APPENDIX ED

MEAN HOURLY FISHWHEEL CATCH

RATE CURVES

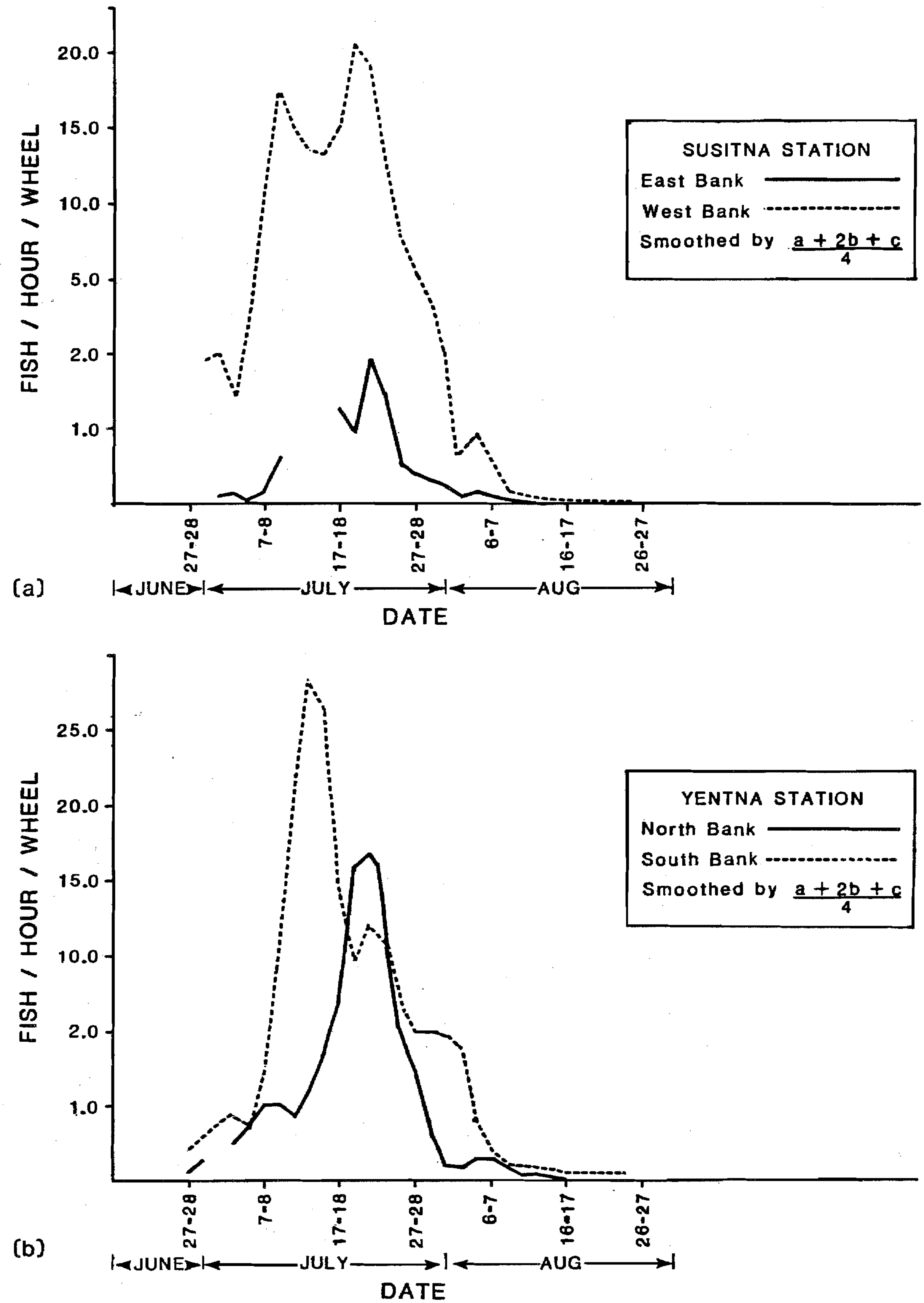


Figure ED-1. Mean hourly fishwheel catch by two day periods of sockeye salmon at Susitna and Yentna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

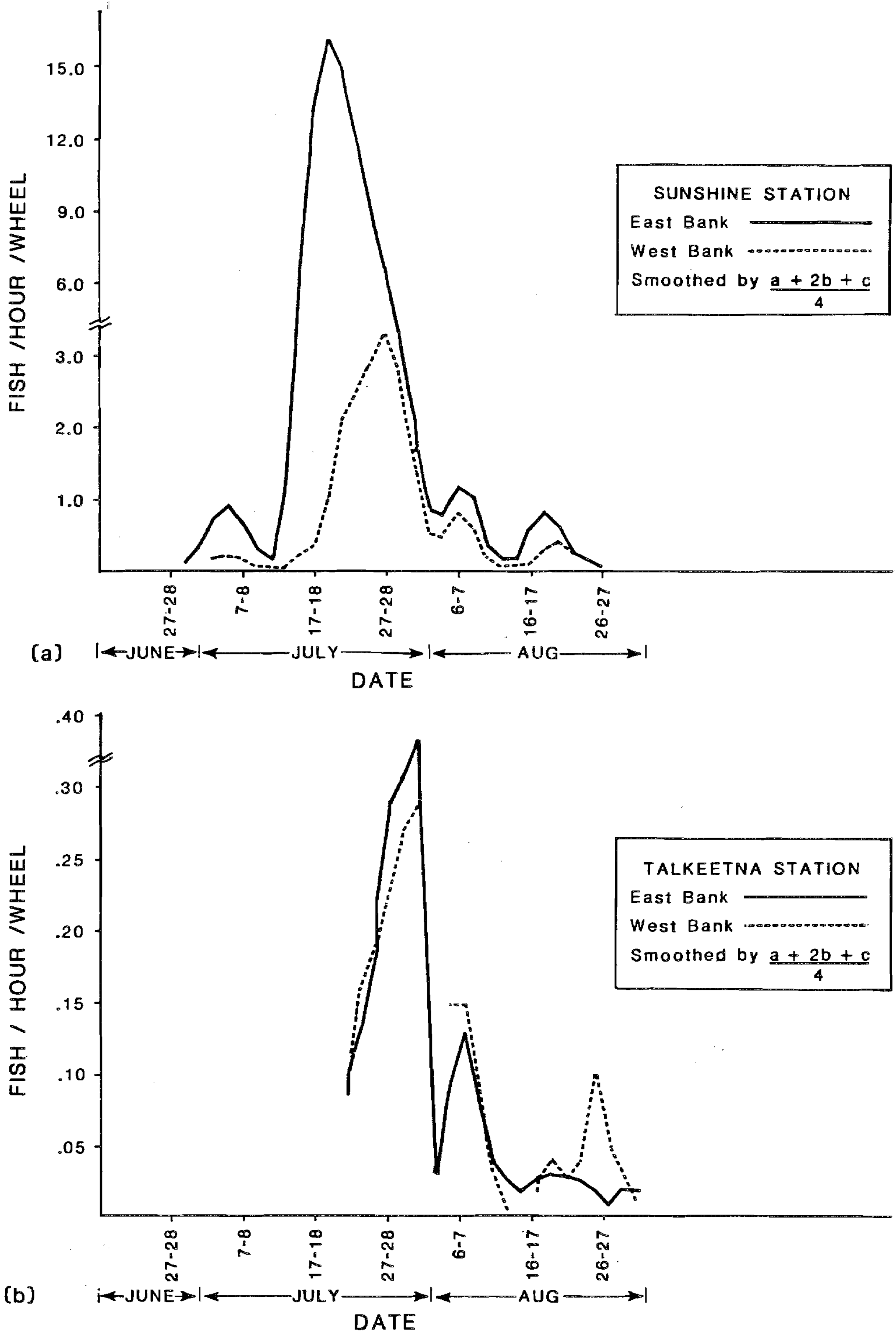


Figure ED-2. Mean hourly fishwheel catch by two day periods of sockeye salmon at Sunshine and Talkeetna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

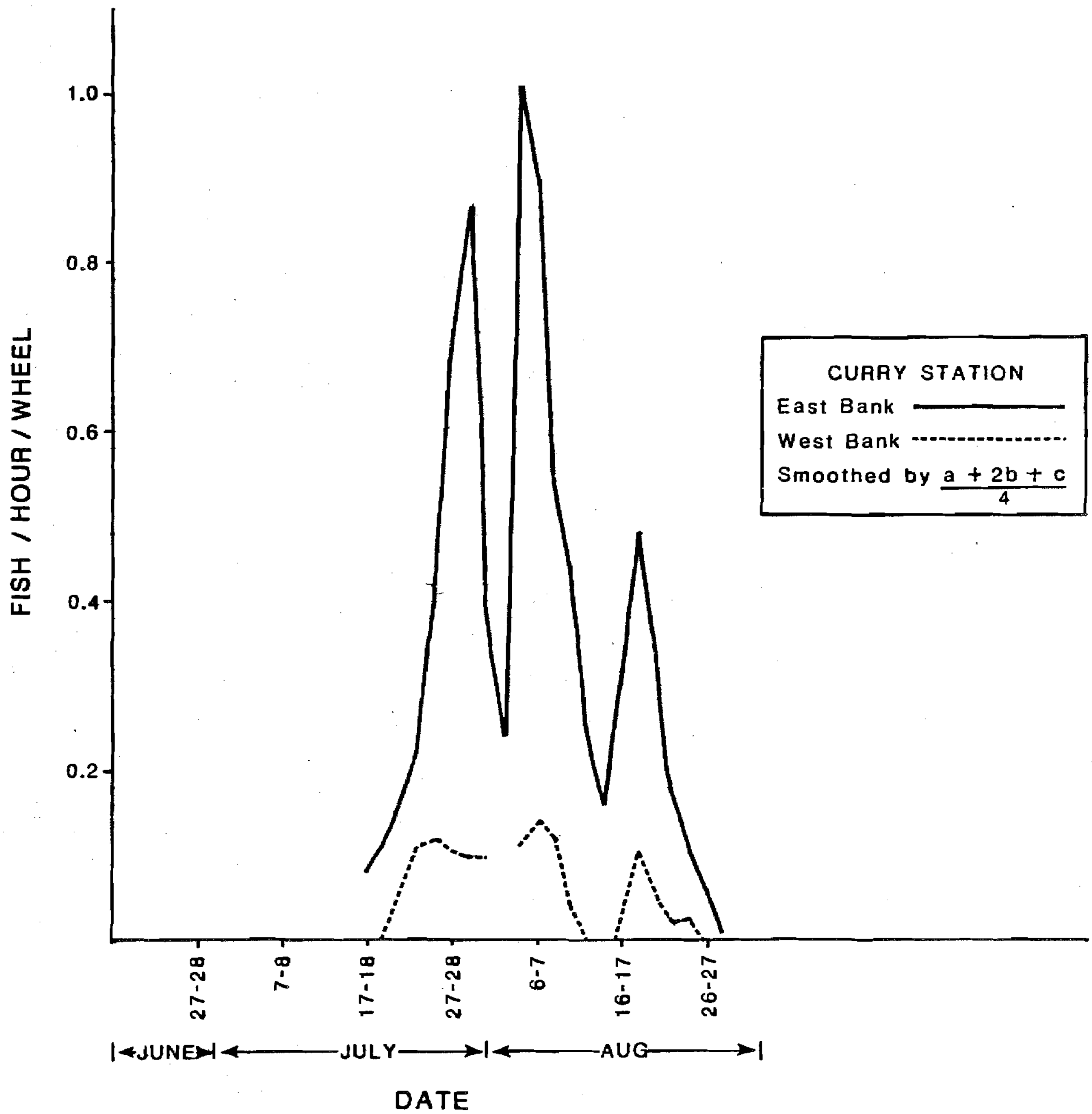


Figure ED-3. Mean hourly fishwheel catch by two day periods of sockeye salmon at Curry Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

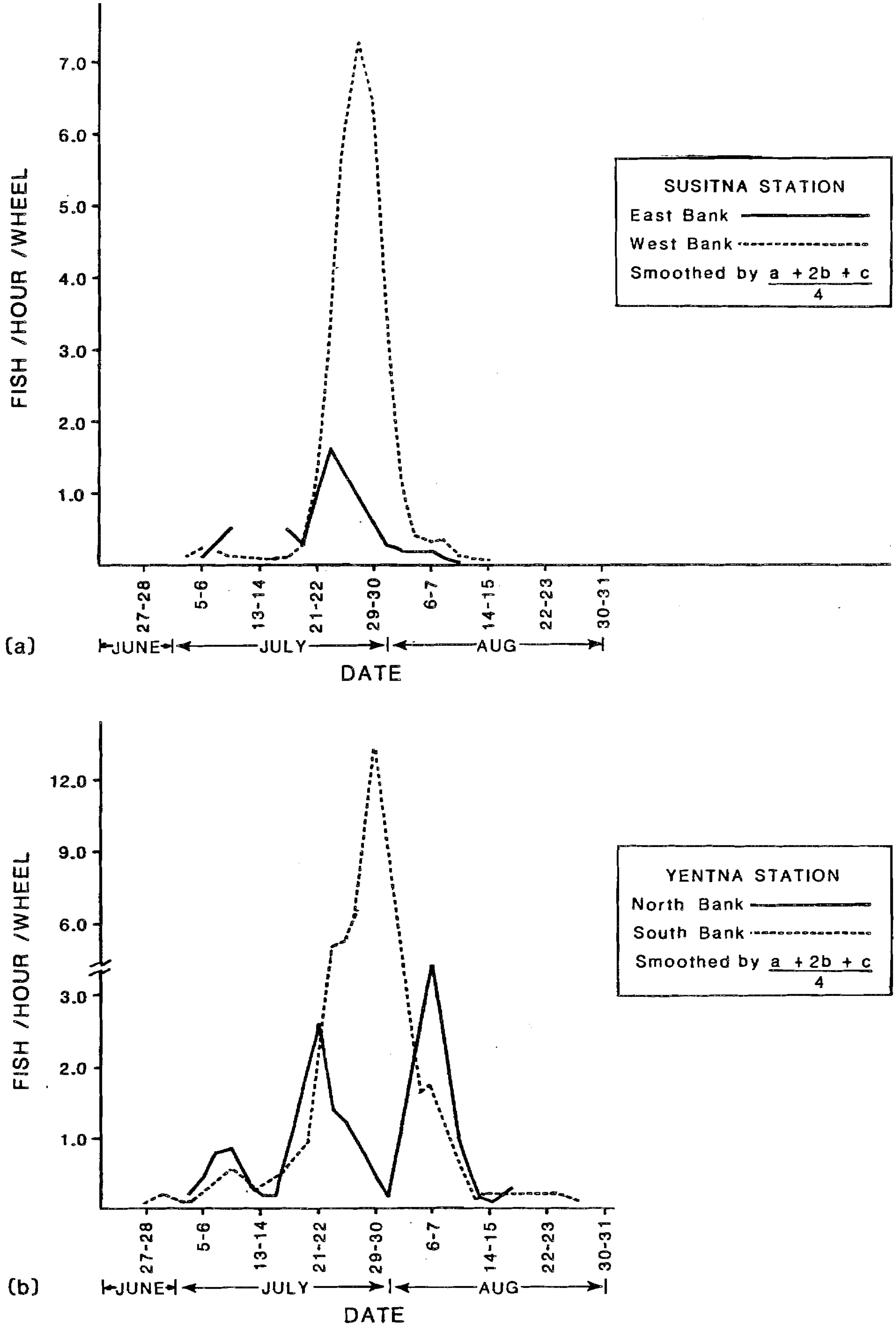


Figure ED-4 (a-b). Mean hourly fishwheel catch by two day periods of pink salmon at Susitna and Yentna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

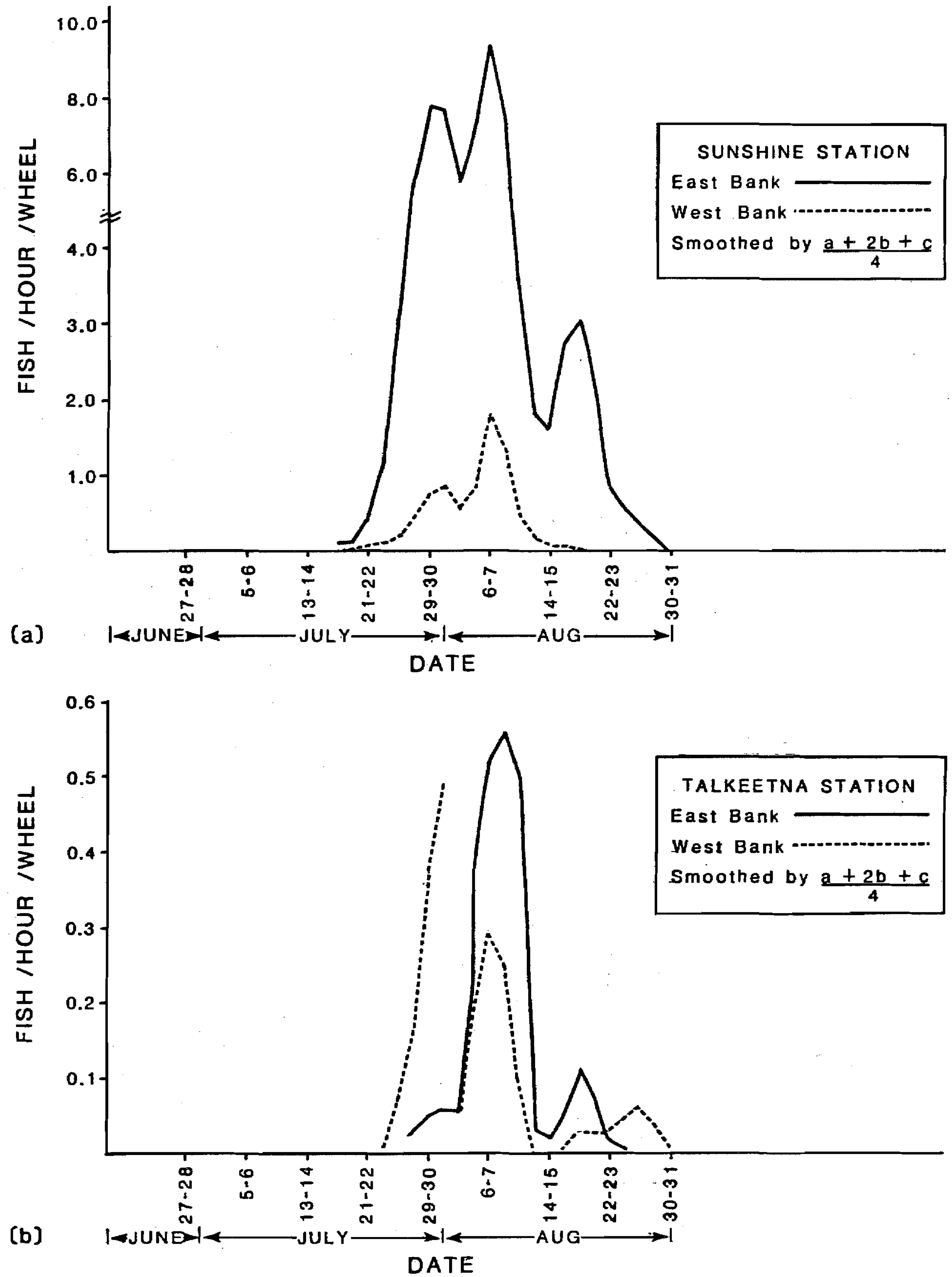


Figure ED-5 (a-b). Mean hourly fishwheel catch by two day periods of pink salmon at Sunshine and Talkeetna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

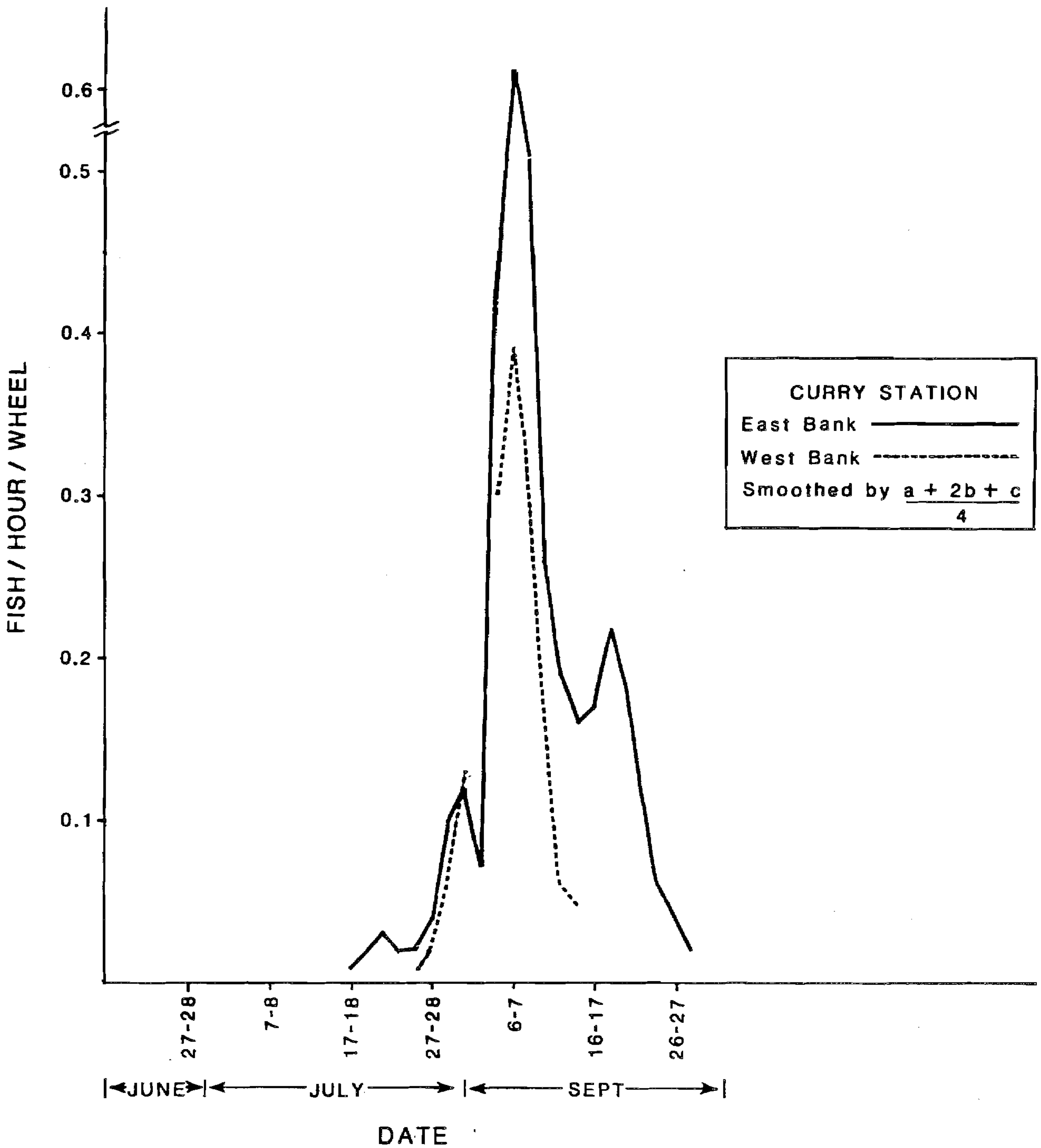
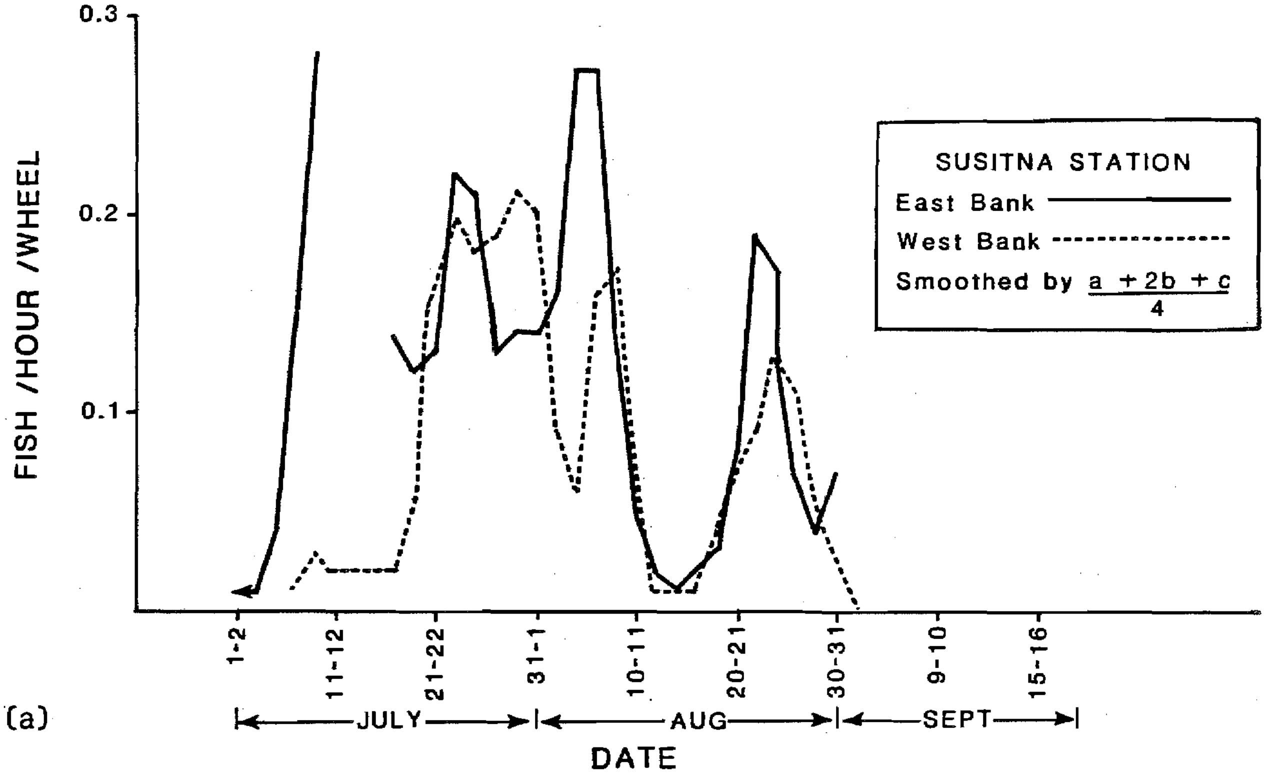
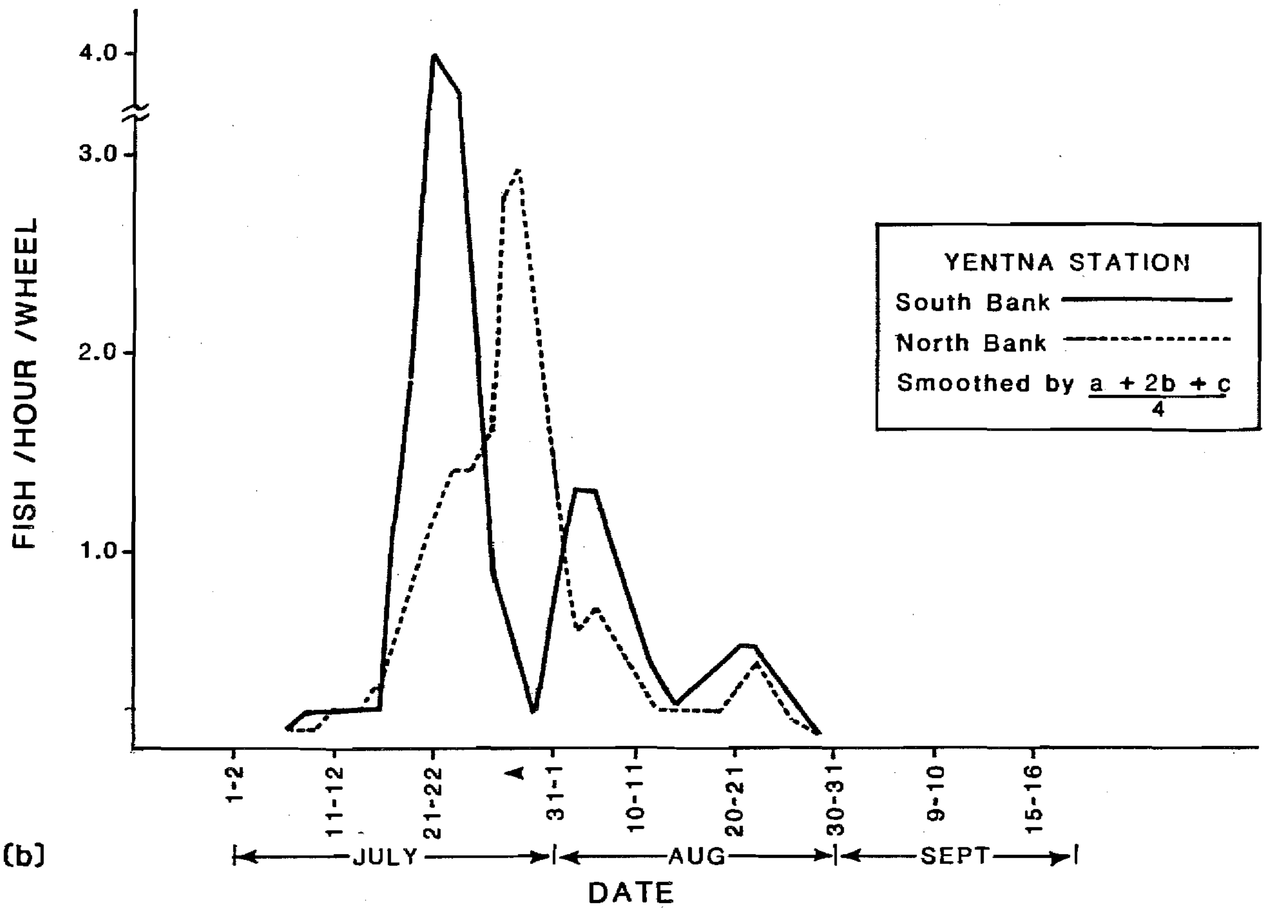


Figure ED-6. Mean hourly fishwheel catch by two day periods of pink salmon at Curry Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

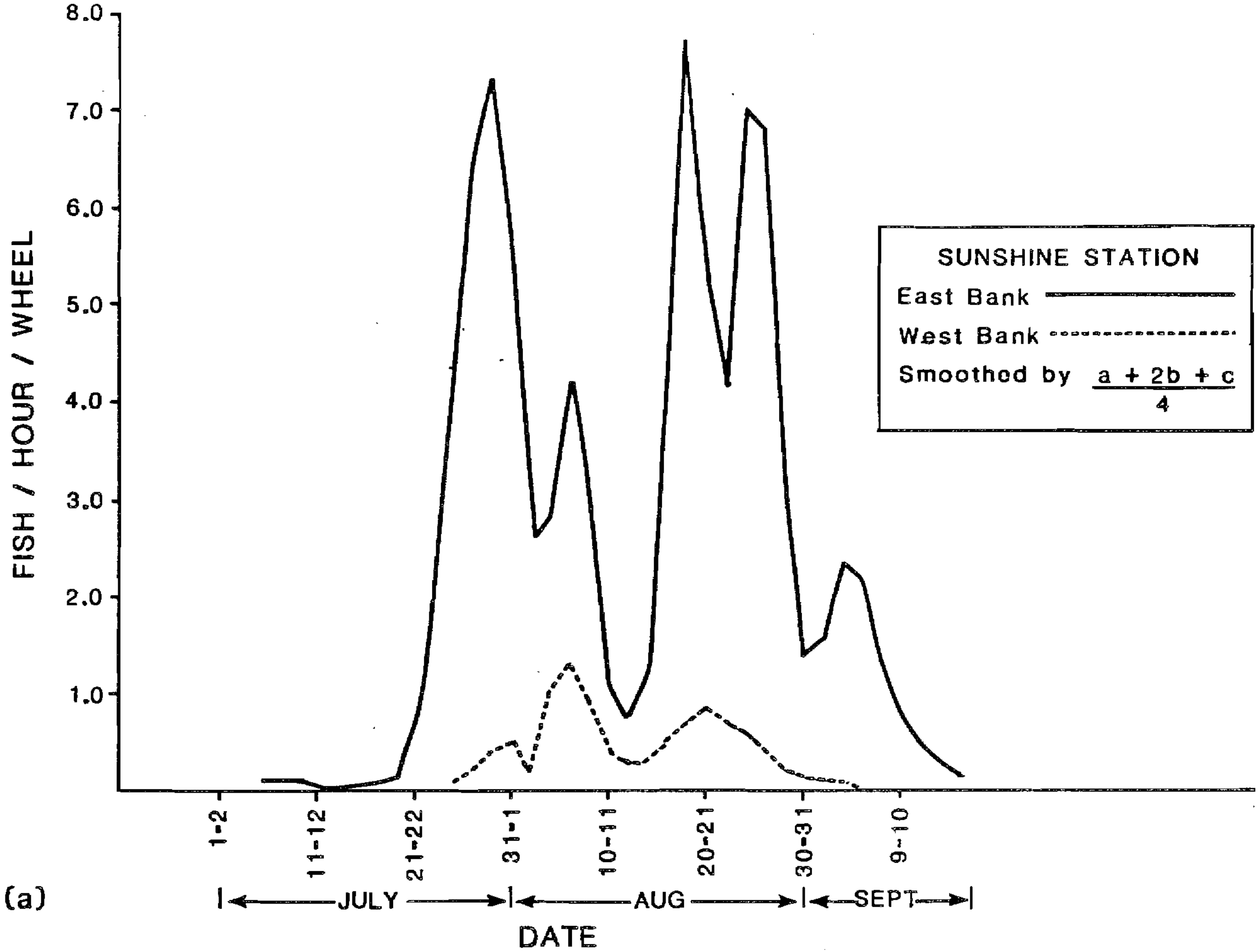


(a)



(b)

Figure ED-7 (a-b). Mean hourly fishwheel catch by two day periods of chum salmon at Susitna and Yentna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.



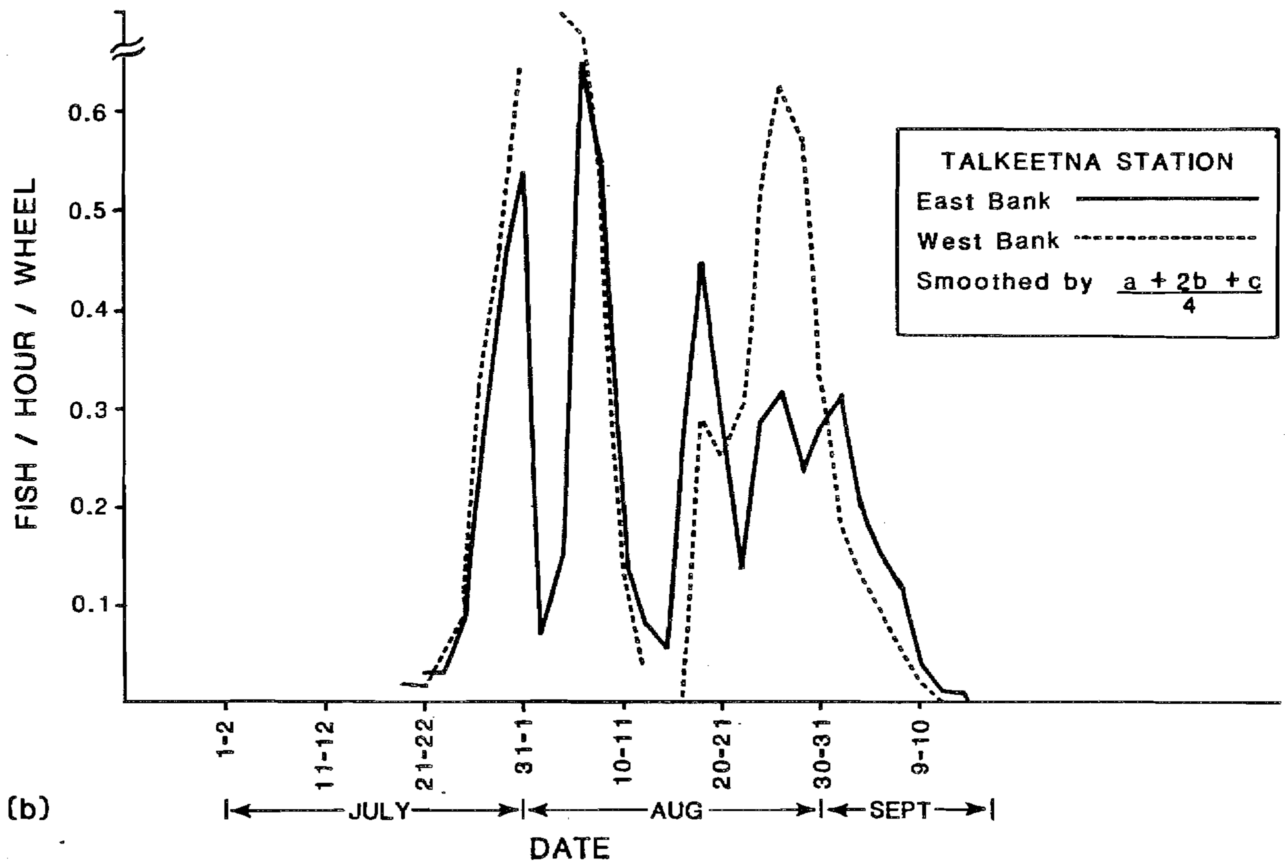


Figure ED-8 (a-b). Mean hourly fishwheel catch by two day periods of chum salmon at Sunshine and Talkeetna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

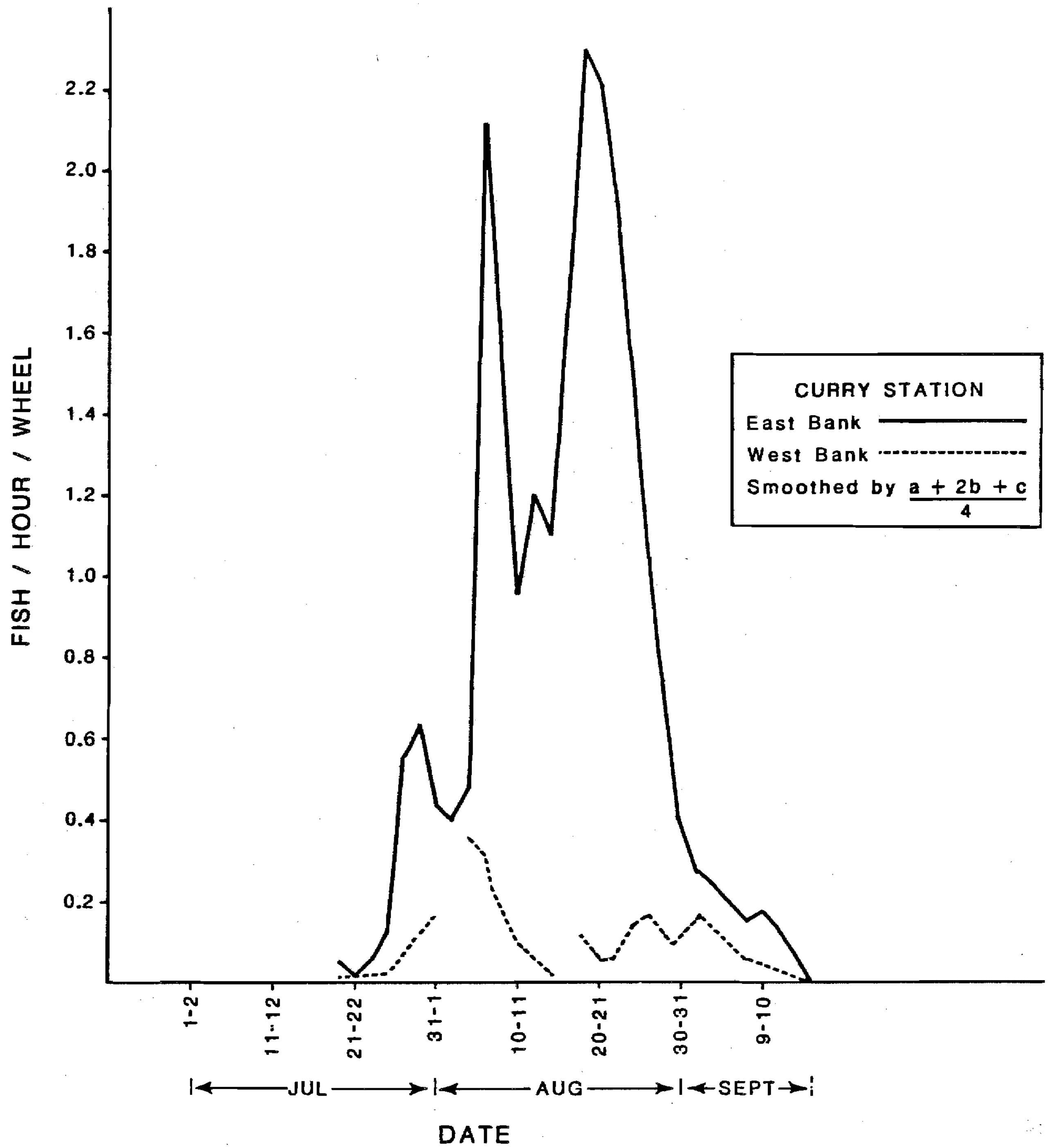


Figure ED-9. Mean hourly fishwheel catch by two day periods of chum salmon at Curry Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

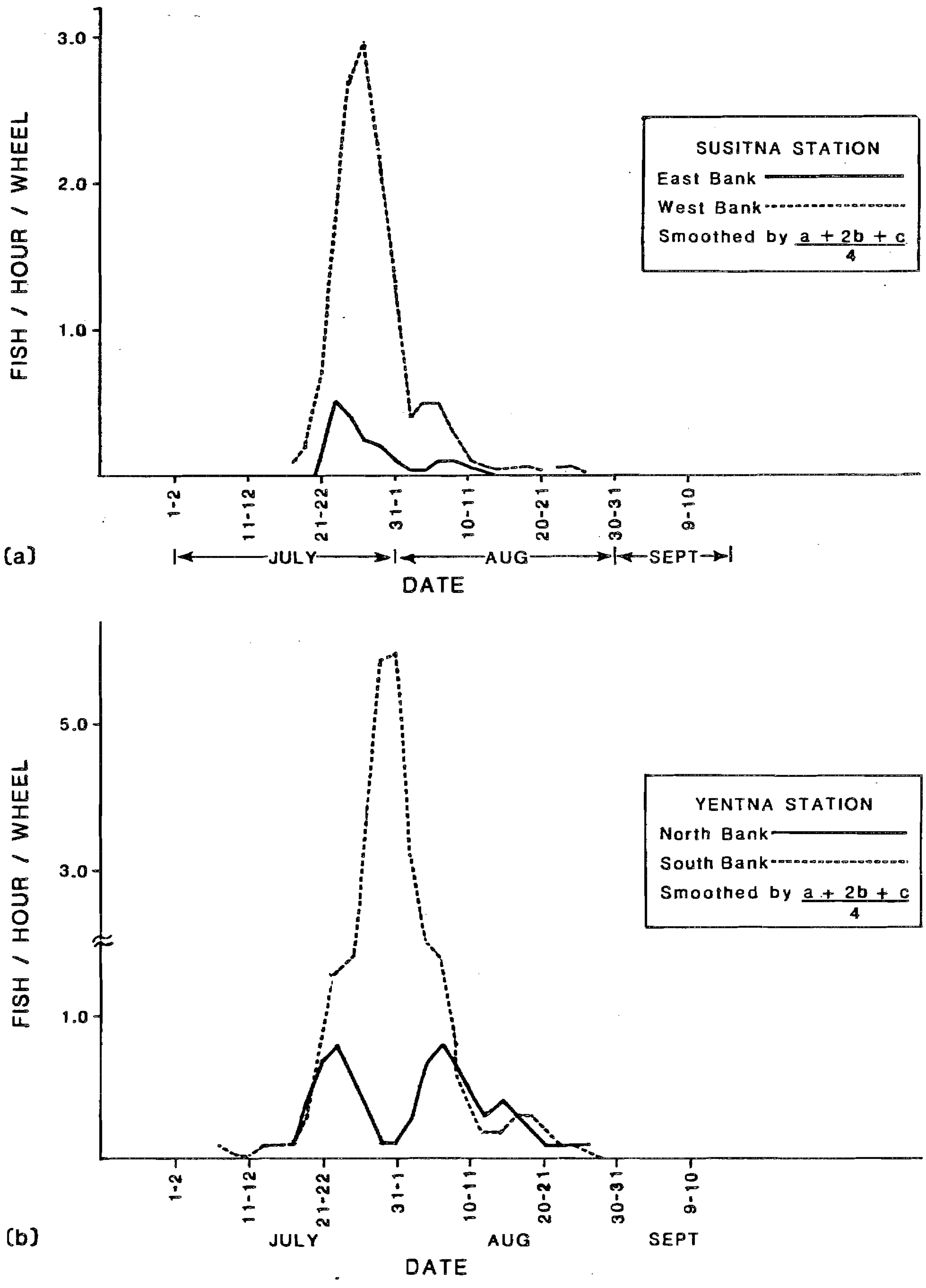
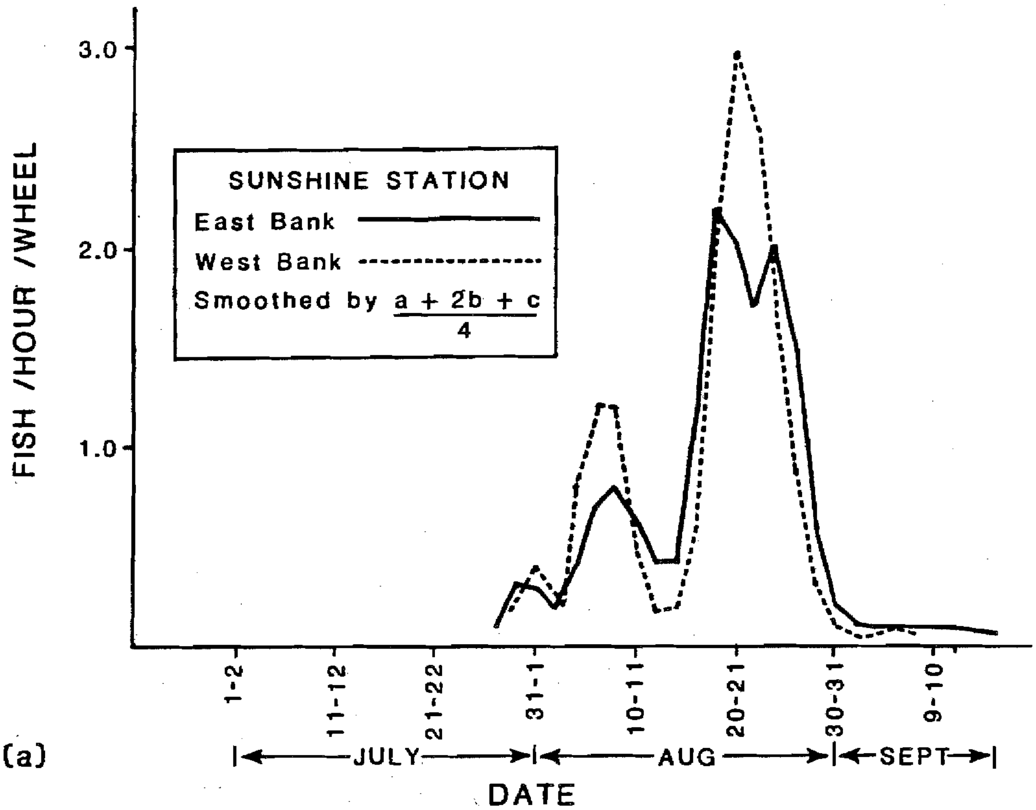
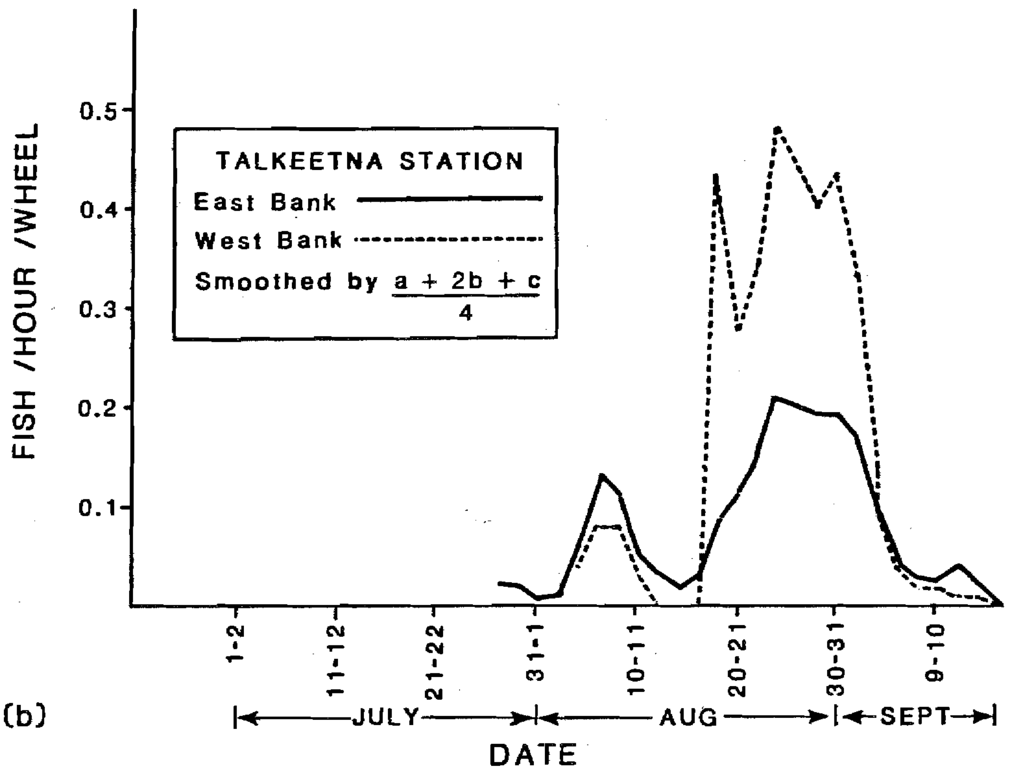


Figure ED-10 (a-b). Mean hourly fishwheel catch by two day periods of coho salmon at Susitna and Yentna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.



(a)



(b)

Figure ED-11 (a-b). Mean hourly fishwheel catch by two day periods of coho salmon at Sunshine and Talkeetna Stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

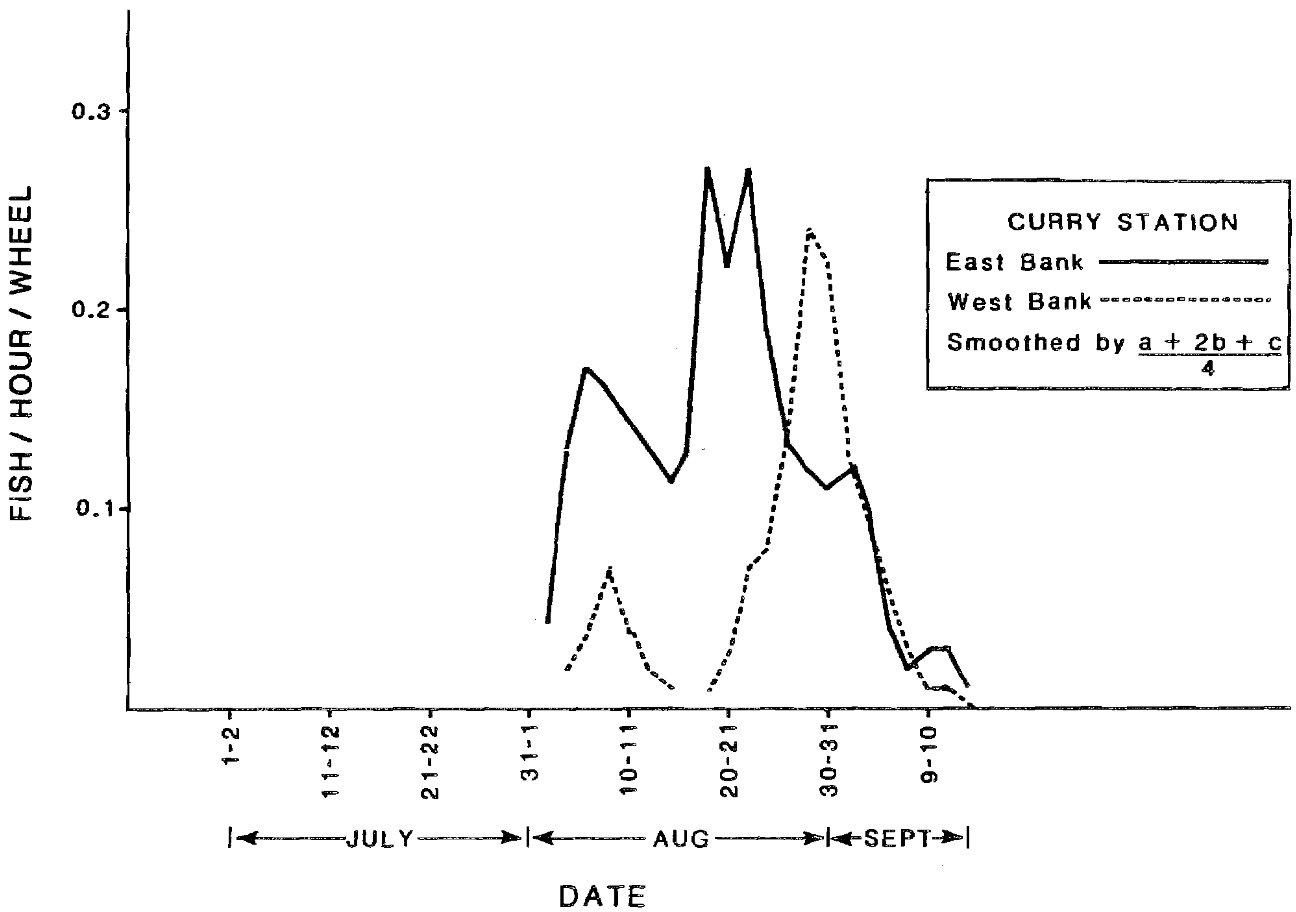


Figure ED-12. Mean hourly fishwheel catch by two day periods of coho salmon at Curry Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

APPENDIX EE
SECTOR DISTRIBUTION OF
SIDE SCAN SONAR COUNTS

Table EE-1. Sector distribution of sonar count, adjusted for debris, east bank, Susitna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

	SECTOR												
DATE	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
1/ June													
27	20	13	5	3	0	4	5	9	12	12	7	16	116
28	18	3	8	7	4	4	6	7	5	11	19	9	101
29	21	12	25	0	0	0	1	1	0	4	6	6	76
30	59	8	10	5	1	0	0	2	9	13	6	11	124
July													
1	84	14	26	11	0	1	0	9	8	40	40	13	246
2	108	6	5	1	0	0	4	3	11	10	21	42	211
3	83	12	3	0	0	0	2	1	1	4	25	42	173
4	76	10	0	0	0	0	0	1	2	9	29	53	180
5	74	14	2	0	0	0	0	2	4	19	34	44	193
6	85	13	1	0	0	0	0	1	8	53	63	68	292
7	127	21	6	1	0	0	2	5	5	38	57	25	288
8	88	25	17	3	3	1	8	17	23	67	80	70	402
9	62	11	28	6	0	2	31	38	48	92	109	111	538
10	283	85	156	97	36	23	178	290	302	453	493	517	2913
11	1618	119	109	16	0	0	0	0	0	0	22	21	1907
12	496	108	51	32	4	0	12	9	4	16	22	36	790
13	749	638	506	126	6	0	0	0	5	34	39	33	2,136
14	3301	3633	3520	1686	407	74	37	36	50	326	348	101	13,519
15	4558	5345	5768	4145	1831	433	214	133	74	253	582	736	24,072
16	6663	5221	4425	2901	871	168	187	112	61	213	438	469	21,731
17	5906	3626	3897	3457	1021	179	199	131	105	479	665	1073	20,738
18	2415	3023	3211	2049	669	118	151	150	130	287	929	1772	14,904
19	4412	3264	2668	1028	434	92	250	147	69	170	513	1139	14,186
20	2060	1941	2350	1005	421	259	824	578	349	501	905	1290	12,483
21	1391	2311	3148	2251	1168	593	1924	1532	981	1464	1528	2384	20,675
22	1306	1954	1938	1004	498	246	1081	752	547	1222	1113	1390	13,051
23	906	1454	1764	1216	881	488	2465	2446	1942	2157	2266	3034	21,019
24	2031	2185	2285	1733	1034	430	2186	2019	1854	2306	2584	3490	24,137
25	1354	1261	1464	1284	775	423	1624	1521	1415	1626	1773	2790	17,310
26	1821	1201	1752	1529	678	215	1298	1143	963	1098	1155	1987	14,840
27	2735	1620	2269	1777	803	389	1599	1323	995	1173	1114	2506	18,303
28	2171	1013	1433	1228	898	500	1819	1512	1135	1338	1290	1804	16,141
29	1573	344	539	672	397	237	1411	1254	814	1046	1113	1755	11,155
30	646	363	466	462	356	258	791	771	622	590	825	1157	7,307
31	343	184	362	358	254	209	777	703	583	686	729	1111	6,290

1/ 60 foot substrate deployed

Table EE-1. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
August													
1	254	129	147	147	87	78	358	394	282	357	365	585	3,183
2	1009	249	283	162	55	91	125	82	56	97	109	129	2,447
3	984	504	504	242	770	14	31	71	56	96	90	135	2,787
4	590	822	1041	718	268	122	334	276	149	289	372	533	5,514
5	416	475	836	877	483	263	728	649	489	475	611	882	7,184
6	151	230	281	280	200	177	465	400	334	372	409	653	3,952
7	197	118	130	107	99	94	297	267	245	337	342	548	2,771
8	196	88	112	60	50	38	140	178	109	293	278	273	1,815
9	107	139	146	74	36	18	136	73	97	119	135	195	1,275
10	182	159	173	80	30	7	65	62	47	45	63	115	1,028
11	307	198	151	78	39	3	66	76	39	48	131	142	1,278
12	180	142	154	78	35	7	80	45	32	49	67	117	986
13	399	81	58	51	14	2	33	22	14	8	34	38	754
14	119	101	96	40	16	7	18	12	12	7	30	48	506
15	85	81	61	29	13	3	9	2	18	9	18	41	369
16	101	76	34	33	19	0	6	2	8	0	0	61	340
17	34	32	66	33	9	11	21	21	25	16	40	73	381
18	80	31	59	39	33	21	89	71	41	28	64	149	705
19	106	76	36	26	20	20	125	54	139	166	155	185	1,108
20	107	45	70	26	22	8	52	62	84	77	151	188	892
21	162	105	40	30	19	16	46	64	52	145	220	200	1,099
22	72	47	41	13	9	4	40	57	62	43	146	113	647
23	176	73	18	9	8	0	33	34	27	67	88	72	605
24	100	59	27	10	10	2	25	33	27	42	113	156	604
25	96	34	19	3	0	10	3	4	13	54	65	64	365
26	134	62	13	7	7	1	9	7	5	14	57	47	363
27	130	60	38	8	0	1	4	2	9	32	53	86	423
28	93	27	15	5	2	0	6	2	5	13	24	50	242
29	56	12	13	4	1	0	1	1	9	12	9	35	153
30	43	7	1	0	0	0	0	0	3	3	25	17	99
31	45	6	17	0	0	0	0	0	0	1	0	2	71
September													
1	59	24	11	2	0	0	0	6	1	0	1	4	108
2	45	35	17	0	1	0	0	0	0	1	1	1	101
3	20	47	17	1	1	0	0	0	0	0	3	18	107
TOTAL	56,478	45,429	48,942	33,375	15,108	6,364	22,431	19,687	15,625	21,125	25,202	37,041	346,807
PERCENT	16.3	13.1	14.1	9.6	4.3	1.8	6.5	5.7	4.6	6.1	7.2	10.7	

Table EE-2. Sector distribution of sonar counts, adjusted for debris, west bank, Susitna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
June													
1/ 27	20	20	8	0	0	0	0	0	1	7	2	8	66
28	22	21	0	2	0	0	2	0	0	2	11	3	63
29	94	21	50	24	7	2	6	14	10	14	73	55	370
30	71	36	55	23	22	6	12	11	26	31	47	89	429
July													
1	134	69	72	41	24	17	10	29	28	45	55	60	584
2	250	219	216	78	38	15	38	472	104	147	206	146	1929
3	276	181	178	39	7	1	20	40	79	80	85	125	1109
4	201	100	54	12	1	0	17	14	10	51	38	52	550
5	293	106	15	1	1	0	0	0	0	5	21	6	448
2/ 6	-	231	40	7	0	0	3	14	11	25	15	31	377
2/ 7	-	136	44	0	2	0	2	3	7	27	28	24	279
8	101	26	18	0	0	0	0	5	11	12	39	19	231
9	128	53	33	24	12	1	41	68	120	247	305	326	1358
10	603	607	423	167	60	25	207	271	486	699	821	893	5262
11	3900	910	280	112	12	20	37	106	254	161	183	39	6014
12	223	140	21	661	55	0	315	51	6	73	103	131	1779
13	7286	6549	3030	609	51	302	216	240	61	434	576	548	19,902
14	6014	6446	5692	1111	73	23	228	291	202	443	694	826	22,043
15	5671	4908	4199	609	32	114	126	108	105	321	409	368	16,970
16	5356	3615	1581	122	3	0	0	0	4	5	9	23	10,718
17	2277	1023	513	17	0	0	0	0	0	0	0	0	3,830
18	2860	1221	516	10	0	0	0	0	0	0	0	0	4,607
19	2214	937	465	14	1	0	0	0	0	0	1	0	3,632
20	3271	1660	649	71	5	1	0	0	0	7	16	11	5,691
21	4158	3688	386	28	0	0	0	0	0	0	0	44	8,304
22	4153	2707	275	12	0	0	2	0	1	1	2	29	7,182
23	4776	1832	218	7	6	4	55	419	4	15	29	44	7,409
24	3231	1070	115	15	0	55	1	2	1	33	72	112	4,707
25	2307	645	70	3	5	22	0	0	0	27	68	115	3,262
26	1390	379	44	2	0	0	41	0	3	6	28	34	1,927
27	1455	382	54	3	0	38	22	0	1	83	47	39	2,124
28	1809	579	116	12	6	85	9	5	19	173	180	171	3,164
29	884	212	42	5	1	1	10	9	82	289	564	589	2,698

1/ 60 foot substrate deployed
2/ Sector 1 all debris blocks

Table EE-2. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
July													
30	702	139	26	7	1	0	9	8	47	240	555	697	2431
31	690	129	26	2	0	0	10	7	53	249	545	769	2480
August													
1	274	65	20	5	0	1	8	38	46	165	413	575	1610
2	363	54	7	1	1	1	56	0	0	187	37	94	801
3	284	58	107	0	0	0	27	5	0	0	0	0	481
4	233	36	2	0	1	1	61	37	0	22	32	50	475
5	357	57	13	2	0	0	0	13	3	71	147	139	802
6	213	43	5	0	1	0	1	2	4	58	135	112	574
7	196	81	18	5	1	0	1	7	54	120	218	219	920
8	212	46	10	2	1	0	149	305	262	53	82	149	1271
9	229	43	2	1	0	0	15	0	0	5	7	5	307
10	136	10	0	0	0	0	0	0	0	0	0	0	146
11	212	58	4	0	0	0	3	0	1	3	5	2	288
12	285	88	15	0	0	0	0	0	0	4	14	6	412
13	522	71	5	4	0	0	5	5	5	3	10	3	633
3/ 14	-	-	-	-	-	-	-	-	-	-	-	-	-
3/ 15	-	-	-	-	-	-	-	-	-	-	-	-	-
3/ 16	-	-	-	-	-	-	-	-	-	-	-	-	-
4/ 17	116	36	20	2	0	0	57	43	43	156	-	-	473
4/ 18	71	69	36	2	0	0	25	42	26	152	-	-	473
19	236	159	136	16	0	0	26	121	130	171	413	827	2235
20	214	156	146	50	10	3	22	69	147	198	394	375	1784
21	139	130	180	72	24	9	34	30	80	207	257	393	1555
22	168	86	120	34	2	0	14	12	40	129	90	139	834
23	144	246	106	6	3	0	5	6	36	65	95	86	798
5/ 24	-	216	239	56	0	0	10	20	10	97	133	140	921
25	195	199	111	47	7	0	7	14	6	40	34	41	701
26	143	99	71	16	3	0	29	0	3	9	1	5	379
27	107	104	15	0	0	0	9	0	0	0	0	0	235
28	120	97	15	1	0	1	0	0	0	0	0	0	234
29	123	55	17	0	0	0	1	0	0	0	0	0	196
30	53	31	3	0	0	0	0	0	0	0	0	0	87
31	42	59	0	0	0	0	0	0	0	0	0	0	101

3/ No data, electronics pulled due to high water
4/ Sectors 11 and 12 are all debris blocks
5/ Sector 1 all debris blocks

Table EE-2. Continued.

	SECTOR												
DATE	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
September													
1	59	0	0	0	0	0	0	0	0	0	0	0	59
2	37	21	12	0	0	0	0	0	0	0	0	0	70
3	63	11	21	2	0	0	0	0	0	0	0	0	97
TOTAL	72,366	43,481	20,980	4,180	479	748	2,004	2,956	2,682	5,877	8,344	9,784	173,881
PERCENT	41.6	25.0	12.0	2.4	.3	.5	1.2	1.7	1.5	3.4	4.8	5.6	

Table EE-3. Sector distribution of sonar counts, adjusted for debris, south bank, Yentna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
1/June													
30	58	31	50	12	0	0	2	34	38	43	15	12	295
July													
1	108	76	50	7	0	0	17	25	15	19	35	25	377
2	152	53	11	0	0	0	19	10	27	67	37	51	427
3	146	91	12	0	0	0	5	12	47	62	49	59	483
4	92	47	6	2	0	0	1	5	0	25	41	40	259
5	82	30	2	0	0	0	0	3	1	5	23	16	162
6	119	10	0	0	0	0	0	1	1	10	29	31	201
7	90	12	2	0	0	0	0	0	4	38	4	23	173
8	59	31	5	0	0	0	6	4	5	13	12	29	164
9	125	47	9	3	0	0	11	14	20	21	25	43	318
10	2083	1602	480	44	8	0	83	44	41	51	78	127	4641
11	1663	2333	858	15	0	0	0	0	0	0	13	0	4882
12	1714	3911	2780	233	15	0	46	22	14	49	15	44	8843
13	1376	3555	3813	517	88	9	209	216	228	224	150	219	10,604
14	1854	5317	6280	944	193	17	306	198	203	169	223	181	15,885
15	1395	5046	6666	1043	169	23	346	217	120	128	63	75	15,291
16	3559	3953	1639	85	1	0	4	0	0	0	0	2	9,243
17	2526	2282	745	22	0	0	0	0	0	1	0	0	5,576
18	2276	2304	1128	31	2	0	0	1	2	2	2	14	5,762
19	1627	2249	2072	144	16	0	11	13	24	10	10	14	6,190
20	1467	2857	2338	283	41	4	75	49	35	27	19	64	7,259
21	1475	3234	3178	495	53	5	65	32	27	11	12	33	8,620
22	2276	4105	4246	685	70	16	83	53	55	56	57	66	11,768
23	2638	3400	3235	570	87	10	78	101	115	86	75	82	10,477
24	1988	2659	2429	554	69	6	115	97	170	107	74	132	8,400
25	2103	1970	1701	300	46	5	73	77	102	138	50	82	6,647
26	1346	1758	1316	197	6	0	16	16	27	22	27	36	4,767
27	1195	1109	709	113	10	1	43	57	40	42	19	69	3,407
28	1962	1341	746	199	25	2	106	72	135	63	59	175	4,885
29	1244	884	532	126	21	3	110	141	153	109	87	169	3,579
30	1399	974	512	140	19	5	135	134	186	167	130	318	4,119
31	545	454	501	79	17	4	85	83	197	173	120	157	2,416

1/ 60 foot substrate deployed

Table EE-3. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
August													
1	954	739	496	100	18	1	147	157	246	233	148	237	3,476
2	700	863	443	67	6	0	45	64	38	38	31	47	2,342
3	434	359	126	10	3	0	5	1	0	3	12	8	961
4	267	358	166	29	0	0	12	17	15	22	18	41	945
5	300	265	159	44	4	0	19	46	39	67	66	77	1,086
6	216	172	165	21	2	2	32	43	59	74	38	45	869
7	212	138	135	18	2	0	33	17	49	48	27	44	723
8	157	131	64	22	3	0	16	11	11	2	17	21	455
9	184	140	50	8	0	0	0	0	4	4	1	9	400
10	181	172	132	27	4	0	4	0	1	0	0	2	523
11	157	172	129	33	0	0	8	0	0	0	1	1	501
12	201	106	78	15	0	0	3	0	0	3	0	6	412
2/ 13	-	103	17	2	0	0	0	0	3	20	4	23	172
2/ 14	-	173	53	3	0	0	10	0	0	6	10	15	260
15	164	146	75	14	0	17	17	7	16	10	15	24	505
16	240	198	108	21	2	0	14	24	54	41	69	43	814
17	336	155	43	18	1	0	14	22	24	30	28	74	745
18	199	162	41	13	3	2	17	31	27	14	61	105	675
19	177	87	19	8	1	0	27	34	27	67	110	95	652
20	255	118	65	14	7	0	36	48	47	72	101	181	944
21	200	87	33	17	2	0	23	12	19	56	54	42	545
22	210	81	31	7	5	0	11	19	6	13	8	22	413
23	189	64	18	9	2	1	11	9	4	11	23	17	358
24	167	70	21	2	1	0	9	10	10	21	27	18	356
25	137	65	14	5	1	1	12	14	17	36	24	16	342
26	194	89	22	7	4	1	8	8	16	20	28	38	435
27	148	39	7	3	0	0	4	6	5	18	14	12	256
28	135	47	7	1	0	0	1	1	0	3	0	9	204
29	104	11	1	0	0	0	0	5	0	0	0	1	122
30	81	21	6	0	0	0	0	0	0	0	1	0	109
31	43	9	1	0	0	0	0	0	0	0	0	0	53
September													
1	69	13	3	0	0	0	1	0	0	0	0	0	86
2	73	18	15	0	0	0	0	0	0	0	0	0	106

2/ Sector one invalid due to malfunction caused by extreme high water.

Table EE-3. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
September													
3	39	29	6	0	0	0	0	0	0	0	0	0	74
4	65	21	5	0	0	0	0	0	0	0	0	0	91
5	63	19	3	1	0	0	0	0	0	0	0	0	86
6	98	10	6	0	0	0	1	0	0	0	0	0	115
7	98	18	3	0	0	0	0	1	0	0	1	1	122
TOTAL	48,189	63,193	50,817	7,382	1,027	135	2,590	2,338	2,770	2,870	2,490	3,652	187,453
PERCENT	25.7	33.7	27.1	3.9	.6	.1	1.4	1.3	1.5	1.5	1.3	1.9	

Table EE-4. Sector distribution of sonar counts, adjusted for debris, north bank, Yentna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

	SECTOR												
DATE	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
June													
1/ 29	27	11	1	0	0	0	5	13	23	26	38	55	199
30	38	11	3	0	0	0	5	25	25	40	35	122	304
July													
1	67	36	14	2	5	4	8	8	24	69	96	79	392
2	73	30	14	2	0	0	6	3	57	194	150	190	719
2/ 3	-	-	-	-	-	-	-	-	-	-	-	-	-
2/ 4	-	-	-	-	-	-	-	-	-	-	-	-	-
2/ 5	-	-	-	-	-	-	-	-	-	-	-	-	-
2/ 6	38	31	0	0	0	0	0	0	0	0	0	113	182
7	90	11	2	0	0	0	0	0	0	8	12	122	245
8	55	9	0	0	0	0	1	2	14	112	82	64	239
9	28	3	2	0	0	0	0	0	0	59	41	130	263
10	123	5	3	0	0	0	0	0	0	1	3	2	137
11	130	6	13	0	0	0	0	0	1	0	1	0	151
12	58	2	0	1	0	0	0	0	0	0	0	0	61
13	165	1	2	0	0	0	0	0	0	5	0	1	174
14	429	10	3	0	0	0	0	0	4	3	2	0	451
15	452	0	2	1	0	0	0	0	3	7	4	1	470
16	373	1	1	0	0	0	0	0	0	0	2	0	377
17	402	36	0	0	0	0	0	0	0	0	0	0	438
18	272	3	0	0	0	0	0	0	0	1	0	1	277
19	219	2	1	0	0	0	0	0	1	6	1	3	233
20	185	1	0	0	0	0	0	0	1	13	27	18	245
21	212	1	0	0	0	0	0	0	1	16	13	5	248
22	279	1	0	0	0	0	0	0	2	35	34	47	398
23	393	2	1	0	1	0	2	0	5	42	44	49	539
24	451	7	0	0	0	0	1	0	9	72	46	82	668
25	581	35	11	5	0	0	2	5	3	44	48	48	782
3/ 26	2196	180	63	13	1	0	2	2	7	19	23	10	2516
27	1678	115	59	3	0	0	3	0	7	16	20	12	1913

1/ 60 foot substrate deployed
2/ Sonar count off from 7/3 through 2000 hours on 7/16
3/ New location

Table EE-4. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
July													
28	996	98	85	8	0	0	2	1	3	25	15	18	1251
29	642	104	57	6	1	0	2	4	12	32	30	18	908
30	1302	115	79	6	0	0	3	2	17	81	60	35	1700
31	1157	87	58	3	0	0	2	3	19	46	31	12	1418
August													
1	433	56	54	3	0	0	0	3	5	10	19	23	615
2	316	30	28	2	0	0	1	3	1	7	2	5	395
3	498	51	14	0	0	0	0	0	1	7	3	1	575
4	588	31	16	0	0	0	0	1	2	4	1	5	648
5	433	13	12	0	0	0	1	2	5	28	10	14	518
6	258	18	11	0	0	0	0	0	5	5	1	9	307
7	232	35	7	3	0	0	1	1	3	7	5	14	308
8	176	21	9	0	0	0	0	0	0	3	18	4	231
9	326	41	11	0	0	0	0	0	0	0	1	0	379
10	383	26	8	0	0	0	0	0	0	0	0	0	417
11	393	48	16	1	0	1	0	0	0	0	0	0	459
12	415	33	11	0	0	0	0	0	0	0	0	0	459
4/ 13	-	128	17	0	0	0	0	0	0	0	0	0	145
4/ 14	-	105	30	0	0	0	0	0	0	0	3	0	138
15	115	5	6	0	0	0	0	1	0	0	0	0	127
16	119	25	8	0	0	0	0	5	0	0	6	0	163
17	267	24	13	0	0	0	1	1	1	2	0	0	309
18	177	116	69	16	0	1	9	10	17	28	33	41	517
19	186	127	53	5	4	4	9	6	3	73	58	67	595
20	400	103	46	7	3	1	2	3	10	58	69	67	769
21	137	29	24	16	0	0	13	3	5	11	45	94	377
22	309	51	4	3	2	0	6	7	6	22	22	19	451
23	199	33	9	3	1	0	4	7	7	4	7	0	274
24	169	33	12	0	0	0	1	1	0	5	14	13	248
25	172	10	7	1	0	8	0	0	1	5	6	35	245
26	104	10	2	0	0	19	0	0	0	4	7	16	162
27	113	27	0	1	0	0	0	0	0	0	3	24	168
28	15	7	0	0	0	0	0	0	0	1	0	5	28
29	19	3	0	0	0	0	0	0	3	2	0	0	27
30	21	1	0	0	0	0	0	0	0	0	0	0	22

4/ Sector 1 invalid due to malfunction caused by extreme high water

Table EE-4. Continued.

	SECTOR												
DATE	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
August													
31	8	2	0	0	0	0	0	0	0	2	0	0	12
September													
1	40	18	0	0	0	0	0	0	0	0	0	0	58
2	37	8	5	0	0	0	0	0	0	0	0	0	50
3	22	4	0	0	0	0	0	0	0	0	0	0	26
4	19	0	0	0	0	0	0	0	0	0	0	0	19
5	13	6	1	0	0	0	0	0	0	0	0	0	20
6	27	8	0	0	0	0	0	0	1	1	1	11	49
7	13	4	1	0	0	0	0	0	0	2	4	5	29
TOTAL	20,263	2,244	978	111	18	38	92	122	314	1,272	1,176	1,709	28,337
PERCENT	71.5	7.9	3.5	.4	.1	.1	.3	.4	1.1	4.5	4.2	6.0	

Table EE-5. Sector distribution of sonar counts, adjusted for debris, east bank, Sunshine Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
June													
1/ 23	400	84	64	76	32	4	11	6	0	0	0	18	695
24	133	78	52	9	0	0	0	0	0	0	0	11	283
25	91	51	33	5	0	0	0	0	0	8	0	5	193
26	13	26	18	5	0	0	0	0	0	0	0	0	62
27	1	25	11	2	2	0	0	1	0	0	0	0	42
28	44	9	7	2	0	0	3	0	3	0	0	0	68
29	11	1	0	0	0	0	3	0	0	0	0	0	15
30	41	0	0	0	10	0	0	5	3	0	0	0	59
July													
1	11	3	8	0	2	6	1	0	0	5	0	0	36
2	15	17	9	0	0	0	0	0	0	1	0	0	42
3	29	3	10	1	0	0	0	0	0	0	0	0	43
4	29	18	13	0	0	0	0	0	0	0	0	0	60
5	68	47	18	1	0	0	0	0	0	0	0	0	134
6	31	20	7	1	0	0	2	0	0	0	0	0	61
7	24	12	5	2	0	1	1	3	2	1	2	7	60
8	8	0	1	2	0	0	0	0	0	0	0	0	11
9	15	0	3	19	17	12	0	0	0	0	2	11	79
10	37	0	0	0	0	0	0	0	0	0	0	14	51
2/ 11	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-
13	0	0	0	0	0	0	0	0	0	5	0	0	5
14	19	4	9	6	0	0	0	0	0	0	1	3	42
15	98	19	0	0	0	0	0	0	0	0	0	0	117
16	122	37	9	1	0	0	0	2	12	3	4	14	204
17	111	87	57	2	0	0	0	0	0	5	0	0	262
3/ 18	232	161	184	31	4	0	2	1	0	0	0	2	617
4/ 18	908	945	247	22									2122
19	2655	2395	784	52									5886

1/ 20 foot substrate deployed
2/ No data electronics pulled due to high water
3/ 12 sectors through 1300 hour
4/ Substrate divided into 4 counting sectors at 1400 hour

Table EE-5. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
July													
20	2968	2368	576	70									5982
21	2912	2132	603	69									5716
22	3054	3286	916	114									7370
23	2754	2627	823	168									6372
24	2829	2329	598	177									5933
25	3781	2785	589	198									7353
26	3146	2133	390	114									5783
27	2669	2391	644	202									5906
28	3694	3395	1103	374									8566
29	5502	4322	1422	203									11449
30	6131	4814	1362	173									12480
31	5984	4654	1309	284									12231
August													
1	6285	2691	823	132									9931
2	298	11	0	0									309
3	1653	105	16	4									1778
4	3216	332	57	0									3605
5	5129	629	138	3									5899
6	4634	971	286	3									5894
7	3101	1780	575	8									5464
8	2387	1285	428	16									4116
9	1103	714	201	13									2031
10	1027	342	103	12									1484
11	1247	257	109	4									1617
12	1411	209	92	8									1720
13	967	128	45	3									1143
14	653	63	24	2									742
15	383	30	7	0									420
16	298	24	5	0									327
17	734	157	4	1									896
18	2607	480	41	0									3128
19	2849	457	25	1									3332
20	2414	279	12	0									2705
21	1202	100	4	0									1306
22	1060	120	4	0									1184
23	1278	224	21	0									1523
24	1414	401	33	0									1848

Taboe EE-5. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
August													
25	1163	562	49	0									1774
26	1199	548	40	3									1790
27	1017	496	28	1									1542
28	492	144	8	0									644
29	272	173	22	1									468
30	151	128	25	0									304
31	161	179	16	0									356
September													
1	203	189	32	1									425
2	253	190	34	3									480
3	356	204	20	1									581
4	429	188	27	0									644
5	368	76	16	0									460
6	267	129	26	3									425
7	160	68	7	4									239
8	183	91	16	1									291
9	163	51	17	1									232
10	84	33	8	0									125
11	114	38	25	1									178
12	150	58	6	3									217
13	116	60	16	4									196
14	92	51	19	4									166
15	110	38	6	3									157
TOTAL	103,840	56,059	14,882	2,464									177,245
PERCENT	58.6	31.6	8.4	1.4									

Table EE-6. Sector distribution of sonar counts, adjusted for debris, west bank, Sunshine Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

	SECTOR												
DATE	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
1/ June													
25	4	0	8	0	0	0	0	0	0	0	0	79	91
26	16	1	0	0	0	0	0	0	9	8	5	19	58
27	3	2	1	1	0	0	2	2	0	0	0	20	31
28	29	4	0	0	0	0	0	2	2	3	5	6	51
29	2	0	0	0	0	0	0	0	0	0	15	23	40
30	8	0	0	0	0	0	0	0	0	2	4	0	14
July													
1	7	3	2	0	0	0	0	0	3	20	3	18	56
2	18	5	1	0	0	1	1	0	0	3	12	10	51
3	22	6	0	0	0	0	0	1	2	6	18	3	58
4	37	8	9	1	1	0	1	12	5	9	3	8	94
5	20	9	1	0	0	0	1	21	10	13	19	28	122
6	11	6	1	2	0	0	2	6	12	13	10	5	68
7	14	3	1	1	0	0	0	1	7	16	7	17	67
8	20	2	0	0	0	0	0	0	0	7	5	5	39
9	4	0	0	0	0	0	0	0	0	1	1	7	13
10	11	0	0	0	0	0	0	0	5	1	0	14	31
11	0	2	0	0	0	0	0	0	0	0	0	0	2
12	11	0	0	0	0	0	0	0	0	0	0	0	11
2/ 13	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-	-
3/ 19	72	16	24	0	0	0	0	0	0	72	0	0	184
20	146	32	49	4	0	0	1	0	0	0	1	0	233
21	82	18	10	3	0	0	3	10	0	2	1	1	130
22	785	541	509	112	4	1	97	56	37	19	8	8	2177
23	1379	832	901	185	19	7	95	56	42	22	8	10	3456
24	1324	844	939	220	30	2	109	53	38	39	16	10	3624
25	1044	845	993	162	26	1	76	35	26	21	5	6	3240

1/ 60 foot substrate deployed.

2/ No data, electronics pulled due to high water

3/ 40 foot substrate deployed

Table EE-6. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
July													
26	227	445	460	104	10	2	49	39	39	24	7	8	1414
27	261	481	731	728	77	8	131	188	160	40	23	28	2302
28	507	746	1034	450	125	28	109	99	151	113	37	20	3419
29	858	1009	1496	433	118	41	137	209	157	99	58	48	4659
30	586	795	640	333	152	59	105	169	145	84	25	23	3116
31	367	535	482	273	145	59	128	129	158	83	39	47	2445
August													
1	1525	350	213	135	55	29	61	46	51	30	18	20	2533
2	88	0	0	0	0	0	0	0	0	0	0	0	88
3	221	43	36	16	2	1	6	3	1	0	0	0	329
4	600	236	364	162	62	21	107	69	47	44	20	21	1753
5	444	530	706	352	172	64	333	245	182	150	81	65	3324
6	609	609	707	381	247	141	351	241	187	122	51	69	3715
7	810	768	661	300	205	129	276	212	159	94	49	48	3711
8	506	477	514	207	98	41	115	36	69	54	27	51	2195
9	502	441	367	95	26	4	24	15	14	17	5	4	1594
10	248	187	133	34	18	1	12	5	0	0	0	6	644
11	344	204	113	66	31	8	19	12	3	6	1	0	807
12	227	172	98	35	8	10	18	15	8	8	3	5	607
13	106	78	70	10	3	0	1	5	0	7	1	5	286
14	272	44	24	9	2	1	3	1	3	1	0	0	360
15	108	26	5	1	0	0	0	0	0	0	0	0	140
16	29	1	1	0	0	0	0	0	0	0	0	2	33
17	162	56	60	30	27	7	37	28	25	13	26	9	480
18	419	365	317	138	48	18	140	107	107	75	47	90	1871
19	899	861	558	260	86	35	136	107	111	85	47	87	3272
20	692	503	356	217	78	17	104	102	115	82	39	63	2368
21	357	179	178	116	46	9	85	32	42	27	7	28	1106
22	243	131	146	71	23	5	43	30	23	17	10	15	757
23	196	140	111	68	26	9	64	34	29	25	16	28	746
24	522	161	142	97	36	17	64	51	58	35	38	44	1265
25	276	117	90	53	13	10	39	37	14	22	17	42	730
26	192	68	54	16	11	6	16	19	7	20	15	35	459
27	181	70	45	24	15	1	10	15	16	9	13	23	422
28	105	48	30	11	5	0	8	8	7	34	9	11	276
29	21	20	27	5	1	0	4	10	0	2	2	3	95

Table EE-6. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
August													
30	26	11	8	1	1	0	1	0	0	0	0	0	48
31	15	6	4	1	0	0	1	0	0	0	0	0	27
September													
1	46	19	4	5	0	0	0	0	0	0	0	1	75
2	42	21	20	3	0	0	0	0	1	0	11	0	98
3	91	33	31	13	0	0	3	3	0	1	1	2	178
4	95	26	15	7	4	1	11	2	2	1	1	4	169
5	115	28	25	14	1	0	14	2	7	5	7	7	225
6	86	39	13	10	2	1	6	0	2	11	2	15	187
7	45	32	4	3	0	0	4	1	3	1	0	1	94
8	21	16	7	0	0	0	2	3	0	0	2	0	51
9	10	12	15	1	1	0	1	1	0	0	3	2	46
10	14	23	11	1	1	0	0	3	3	1	6	3	66
11	14	20	4	4	1	0	1	2	1	1	2	0	50
12	10	27	14	1	2	0	2	2	0	1	0	0	59
13	15	17	7	2	0	0	0	4	0	0	0	3	48
14	18	11	5	4	0	0	5	3	7	1	0	1	55
15	17	28	14	8	1	0	2	3	4	1	1	0	79
TOTAL	19,202	14,393	14,591	5,544	2,064	794	3,169	2,457	2,207	1,671	806	1,022	67,920
PERCENT	28.3	21.2	21.5	8.2	3.0	1.2	4.6	3.6	3.2	2.5	1.2	1.5	

Table EE-7. Sector distribution of sonar counts, adjusted for debris, east bank, Talkeetna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
June													
1/ 20	2	1	1	0	0	0	7	0	0	0	0	14	25
21	9	5	4	0	0	0	4	0	4	2	1	2	31
22	27	9	9	3	0	0	1	2	3	0	0	1	55
23	13	8	5	2	0	0	3	2	1	2	5	7	48
24	4	4	1	0	0	0	2	0	2	4	4	6	27
25	10	3	1	0	0	0	0	1	1	5	4	2	27
26	12	7	3	0	0	0	1	0	0	5	5	5	38
27	9	10	7	0	0	0	1	0	0	0	2	2	31
28	3	5	3	0	0	0	0	0	0	3	3	3	20
29	7	1	1	0	0	0	0	0	0	0	1	2	12
30	7	1	0	0	0	0	0	0	0	1	0	3	12
July													
1	3	1	0	0	0	0	0	0	0	0	0	0	4
2	12	4	3	0	0	0	0	1	0	1	0	8	29
3	9	0	0	0	0	0	1	0	7	4	1	8	30
4	5	0	1	1	0	0	3	2	0	7	8	1	28
5	0	3	0	0	0	0	1	0	1	8	10	1	24
6	3	1	1	0	0	0	1	0	1	2	1	6	16
7	11	2	0	0	0	0	0	0	3	3	6	3	28
8	1	0	0	0	0	0	1	2	0	0	0	4	8
9	4	0	0	0	0	0	0	0	0	0	0	0	4
10	2	0	0	0	0	0	0	0	0	0	0	0	2
2/ 11	-	-	-	-	-	-	-	-	-	-	-	-	-
2/ 12	-	-	-	-	-	-	-	-	-	-	-	-	-
13	1	1	0	0	0	0	0	0	0	1	1	0	4
14	8	0	0	0	0	0	0	0	0	0	0	0	8
15	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0
18	3	0	0	0	0	0	0	0	0	1	0	0	4
19	7	0	1	0	0	0	0	0	0	1	2	0	11
20	6	0	2	1	0	0	0	0	0	1	1	3	14
21	7	6	1	0	0	0	0	0	0	1	0	0	15
22	22	4	0	0	0	0	0	0	0	0	3	3	32

1/ 60 foot substrate deployed

2/ No data, electronics pulled due to high water.

Table EE-7. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
July													
23	24	15	3	0	0	0	1	1	0	1	0	1	46
24	37	24	1	0	0	1	0	0	0	0	0	0	63
25	27	55	6	2	0	0	0	1	0	0	2	0	93
26	47	54	5	3	0	0	0	0	0	0	0	0	109
27	82	75	6	0	0	2	0	0	0	0	0	0	165
28	86	162	13	6	0	0	0	0	0	1	0	0	268
29	72	194	34	1	0	0	0	0	0	3	1	0	305
30	146	346	35	4	0	0	0	0	0	0	0	0	531
31	139	298	29	3	0	0	0	0	0	0	0	0	469
August													
1	228	214	30	2	0	0	0	0	0	0	0	0	474
2	11	1	1	0	0	0	0	0	0	0	0	0	13
3	18	5	1	1	0	0	1	0	1	2	2	4	35
4	17	19	4	5	0	0	1	2	3	3	11	13	78
5	110	153	32	6	1	0	14	4	2	0	1	8	331
6	49	130	22	7	0	0	0	0	0	0	0	5	213
7	168	224	17	6	0	0	0	0	0	0	0	0	415
8	112	216	26	2	0	0	3	0	2	0	0	0	361
9	48	117	14	4	1	0	0	0	0	0	0	0	184
10	60	24	5	1	0	0	2	0	0	0	0	0	92
11	70	15	10	1	2	0	3	0	0	0	0	0	101
12	76	37	10	4	2	0	0	2	1	3	1	0	136
13	72	20	9	1	2	1	1	3	1	1	0	0	111
14	20	7	6	3	1	0	0	0	0	0	0	0	37
15	29	8	3	0	0	0	0	0	1	0	0	0	41
16	20	8	0	1	0	0	0	0	0	0	0	0	29
17	51	48	34	8	0	0	1	0	0	0	0	0	142
18	182	83	19	4	0	0	3	0	0	0	0	0	291
19	136	91	12	2	0	0	0	0	0	0	0	0	241
20	166	56	8	1	0	0	0	0	0	0	0	0	231
21	48	33	3	0	0	0	0	0	0	0	0	0	84
22	29	26	11	0	0	0	0	0	0	0	0	0	66
23	104	45	3	0	0	0	0	0	0	0	0	0	152
24	158	47	5	0	0	0	0	0	0	0	0	0	210
25	58	31	4	1	0	0	0	0	0	0	0	0	94
26	47	72	26	11	0	0	8	1	0	0	0	0	165
27	37	78	35	18	7	0	11	2	0	0	0	0	188

Table EE-7. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
August													
28	53	66	31	11	4	1	2	1	1	0	1	10	181
29	31	63	35	6	1	0	5	1	0	2	0	1	145
30	50	67	16	5	2	0	1	1	0	1	2	0	145
31	42	42	23	8	0	0	3	0	0	3	0	0	121
September													
1	62	48	22	4	0	0	0	1	1	0	0	0	138
2	43	39	19	2	0	0	1	0	0	0	0	0	104
3	63	43	9	6	0	1	0	0	1	0	0	2	125
4	62	21	13	1	0	0	0	0	0	0	0	0	97
5	79	50	20	1	0	0	2	0	0	0	0	0	152
6	64	40	10	4	0	0	1	0	0	0	0	0	119
7	72	32	3	1	0	0	0	0	1	0	1	0	110
8	64	33	13	1	0	0	0	0	0	0	0	0	111
9	58	20	2	3	0	0	0	0	0	0	0	0	83
10	30	31	8	0	0	0	0	0	0	0	0	0	69
11	44	18	5	0	1	0	0	0	0	0	0	0	68
12	25	11	2	2	0	0	0	0	0	0	0	0	40
13	10	16	3	0	0	0	0	0	0	0	1	1	31
14	17	6	2	0	0	0	0	0	0	0	0	2	27
15	7	7	3	0	0	0	0	0	0	0	1	0	18
TOTAL	3,867	3,760	765	170	24	5	91	30	38	72	82	131	9,035
PERCENT	42.8	41.6	8.5	1.9	.3	.1	1.0	.3	.4	.8	.9	1.4	

Table EE-8. Sector distribution of sonar counts, adjusted for debris, west bank, Talkeetna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

	SECTOR												
DATE	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
June													
1/ 22	0	0	40	0	0	0	3	0	0	7	0	7	57
23	26	31	9	3	0	0	0	1	0	0	1	0	71
24	16	13	13	1	0	0	1	1	2	3	0	0	50
25	10	16	8	1	0	0	4	0	6	0	0	0	45
26	15	13	15	1	0	0	0	0	0	1	1	0	46
27	8	10	6	0	0	0	1	1	0	1	0	1	28
28	9	7	12	0	0	0	0	0	0	3	4	4	38
29	14	3	0	0	0	0	0	0	0	0	0	0	17
30	0	5	0	0	0	0	0	1	0	0	0	4	10
July													
1	11	14	3	0	0	0	0	0	0	2	1	0	31
2	7	3	1	1	0	1	1	1	0	4	2	0	21
3	3	1	6	0	0	0	1	3	0	0	1	0	15
4	5	0	2	1	0	0	1	0	0	0	0	5	14
5	8	1	4	0	1	1	0	0	0	1	5	0	21
6	7	5	2	0	0	0	0	1	2	9	7	0	33
7	8	6	3	0	0	0	0	0	0	5	10	0	32
8	15	8	0	0	0	0	0	1	0	0	3	2	29
9	3	6	2	0	0	0	0	0	0	0	0	0	11
10	0	7	0	0	0	0	0	0	0	0	0	0	7
2/ 11	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-
3/ 16	8	0	0	0	0	0	0	0	0	0	0	0	8
17	7	0	4	0	0	0	0	0	0	0	0	0	11
18	2	0	0	0	0	0	0	0	0	0	0	0	2
4/ 19	-	-	-	-	-	-	-	-	-	-	-	-	-

1/ 60 foot substrate deployed
2/ No data, electronics pulled due to high water
3/ 40 foot substrate deployed
4/ No data, counter being repaired

Table EE-8. Continued.

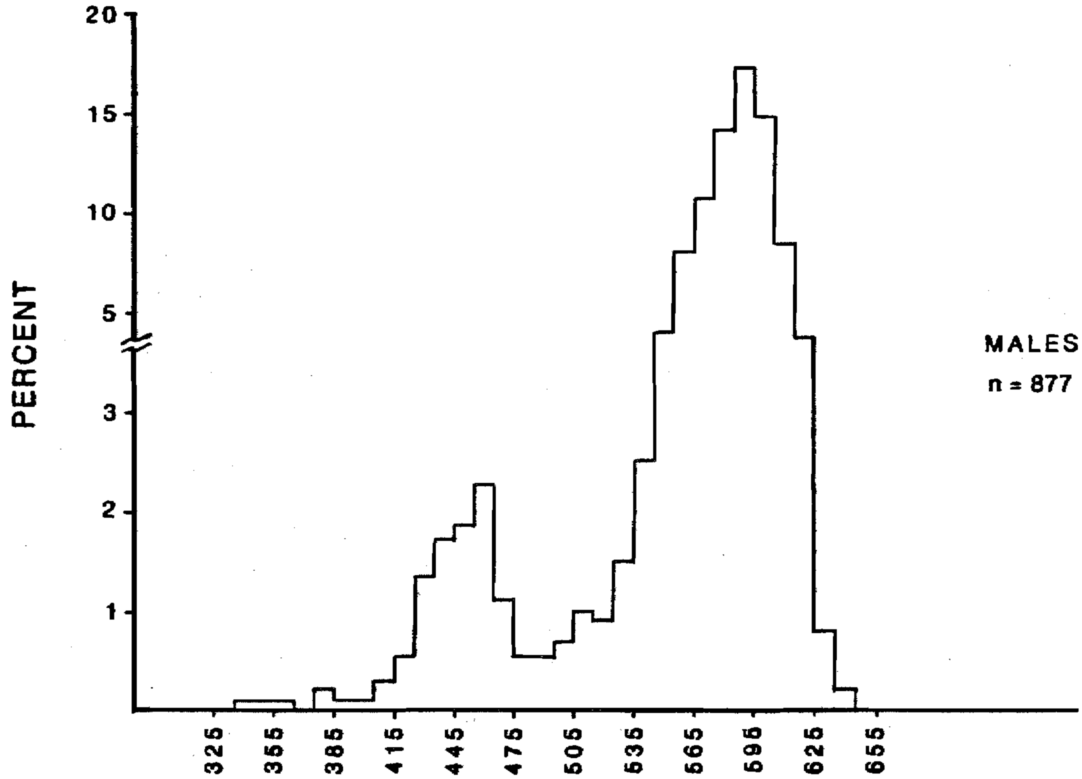
DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
July													
20	0	5	0	0	0	0	0	0	0	0	0	0	5
21	3	4	0	0	0	0	0	0	0	0	0	0	7
22	31	14	0	0	0	0	0	0	0	0	0	0	45
23	62	25	0	0	0	0	0	0	0	0	0	0	87
24	61	33	2	0	0	0	0	0	0	0	0	0	96
25	89	45	2	0	0	0	0	0	0	0	0	1	137
26	58	51	7	0	0	0	0	0	0	0	0	0	116
27	26	40	8	0	0	0	0	0	0	0	0	0	74
28	170	141	35	0	0	0	0	0	0	0	0	0	346
29	227	145	31	0	0	0	0	0	0	0	0	0	403
30	331	240	34	2	1	0	0	0	0	0	0	0	608
31	332	291	48	2	0	0	0	0	0	0	0	0	673
August													
1	324	199	29	1	0	0	0	0	0	0	0	0	553
2	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	298	101	66	33	0	0	0	0	0	0	0	0	498
5	278	306	229	66	21	12	7	2	3	0	0	0	924
6	195	324	303	103	18	7	7	2	0	0	0	0	959
7	58	176	154	41	14	4	1	0	0	0	0	0	448
8	83	94	56	17	8	2	1	3	0	0	0	0	254
9	19	12	11	4	0	0	0	0	0	0	0	0	46
10	6	2	1	0	0	0	1	0	0	0	0	0	10
11	0	3	1	0	0	4	0	0	0	0	0	0	16
12	4	6	1	0	0	0	0	0	0	0	0	0	11
13	10	6	5	0	0	1	1	0	0	0	0	0	23
14	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-
16	32	13	3	0	0	0	0	0	0	0	0	0	48
17	35	52	58	19	4	2	0	0	0	0	0	0	170
18	193	227	192	73	29	10	7	1	0	0	0	0	732
19	61	176	180	65	28	3	7	3	0	0	0	0	523

5/ No data, electronics pulled due to high water
6/ 20 foot substrate deployed
7/ No data, electronics pulled due to high water

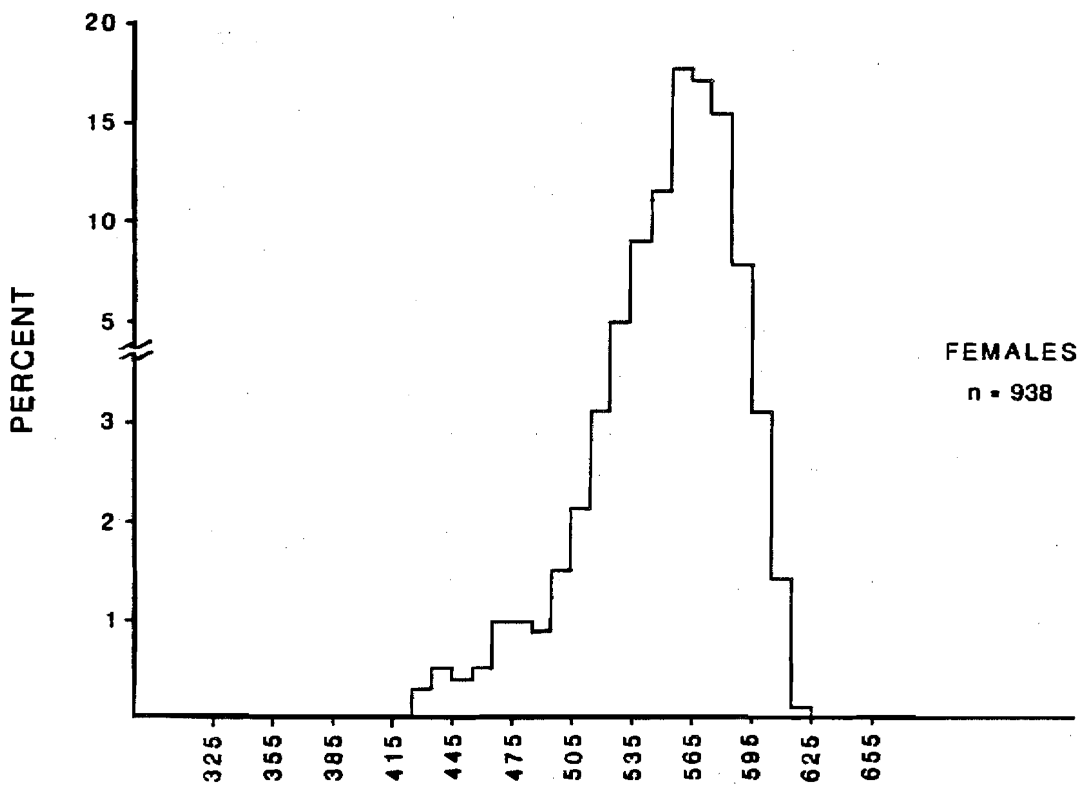
Table EE-8. Continued.

DATE	SECTOR 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
August													
20	120	169	144	26	12	6	2	2	0	0	0	0	481
21	28	41	18	10	2	2	0	1	0	0	0	0	102
22	0	0	1	0	1	0	0	0	0	0	0	0	2
23	177	174	46	7	0	0	0	0	0	0	0	0	404
24	79	200	89	20	8	7	0	1	2	0	0	0	406
25	103	164	141	23	27	5	2	0	0	0	0	0	465
26	54	110	86	33	23	5	5	2	0	0	0	0	318
27	37	88	80	15	6	4	1	0	0	0	0	0	231
28	53	76	90	14	10	3	2	0	0	0	0	0	248
29	51	136	90	12	8	1	1	1	0	0	0	0	300
30	50	90	47	15	7	2	0	0	0	0	0	0	211
31	17	59	40	9	2	1	0	0	0	0	0	0	128
September													
1	17	46	31	8	5	1	0	1	0	0	0	0	109
2	17	23	12	7	3	0	0	0	0	0	0	0	62
3	8	33	22	2	2	2	2	0	1	0	0	0	72
4	4	29	17	4	0	4	0	0	0	0	0	0	58
5	7	25	21	10	1	4	2	0	0	0	0	0	70
6	11	12	24	9	7	3	1	0	0	0	0	0	67
7	2	16	10	10	0	3	1	1	0	0	1	0	44
8	1	12	21	11	7	5	0	0	0	0	0	0	57
9	3	9	9	5	3	1	0	0	0	0	0	0	30
10	3	13	8	2	3	3	0	0	0	0	0	0	32
11	8	6	12	2	3	0	0	0	0	0	0	0	31
12	1	8	9	3	1	1	1	0	0	0	0	0	24
13	4	7	4	4	1	1	1	0	0	0	0	0	22
14	6	2	4	2	0	3	0	0	0	0	0	0	17
15	4	1	0	2	1	1	2	0	0	0	0	0	11
TOTAL	2,145	3,047	2,336	686	265	113	55	20	6	0	1	0	8,674
PERCENT	24.7	35.1	27.0	7.9	3.1	1.3	.6	.2	.1	0	0	0	

APPENDIX EF
LENGTH FREQUENCIES OF
SOCKEYE, PINK, CHUM, AND COHO SALMON



(a)



(b)

Figure EF-1 (a-b). Length frequencies of sockeye salmon sampled from fishwheel catches at Susitna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

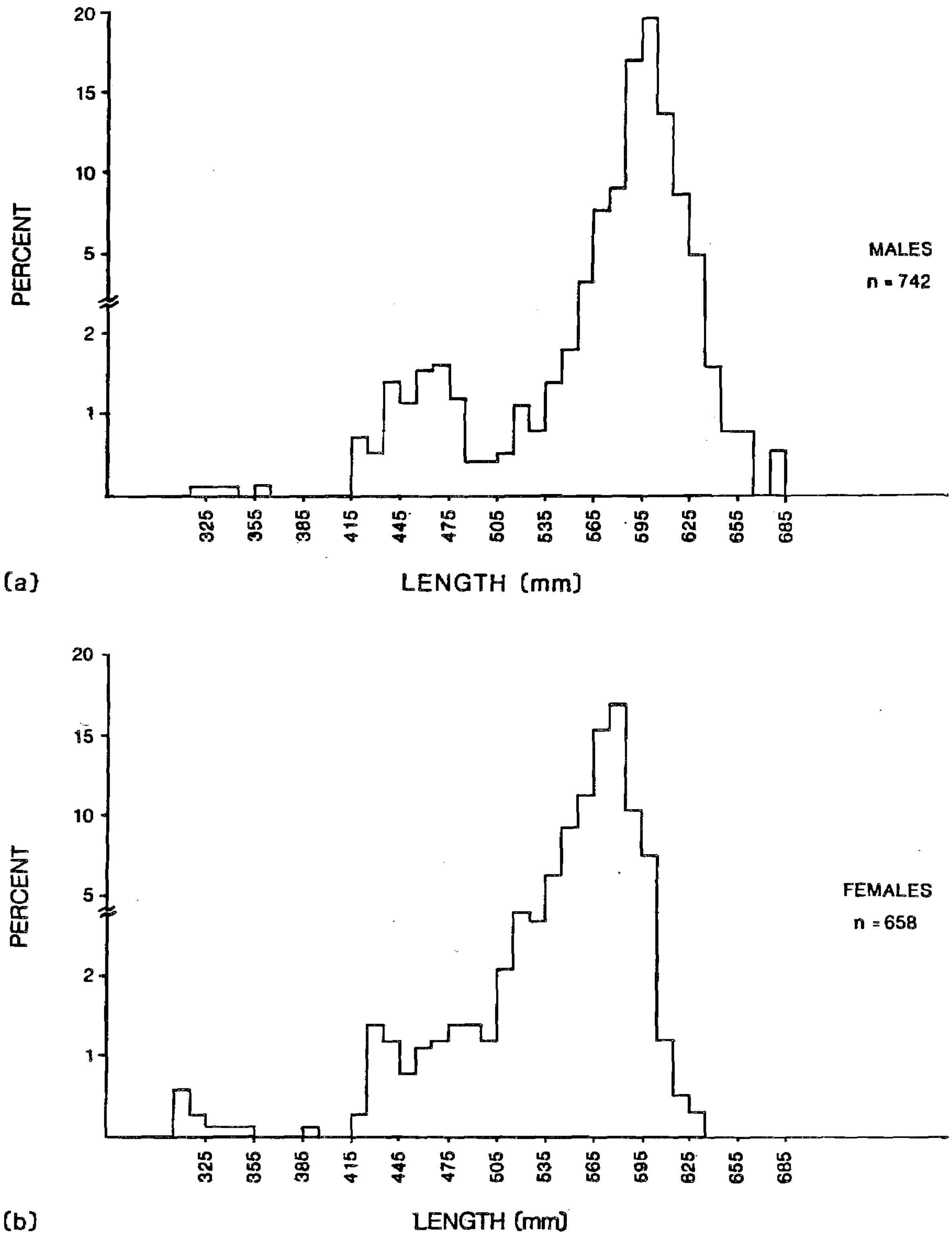


Figure EF-2 (a-b). Length frequencies of sockeye salmon sampled from fishwheel catches at Yentna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

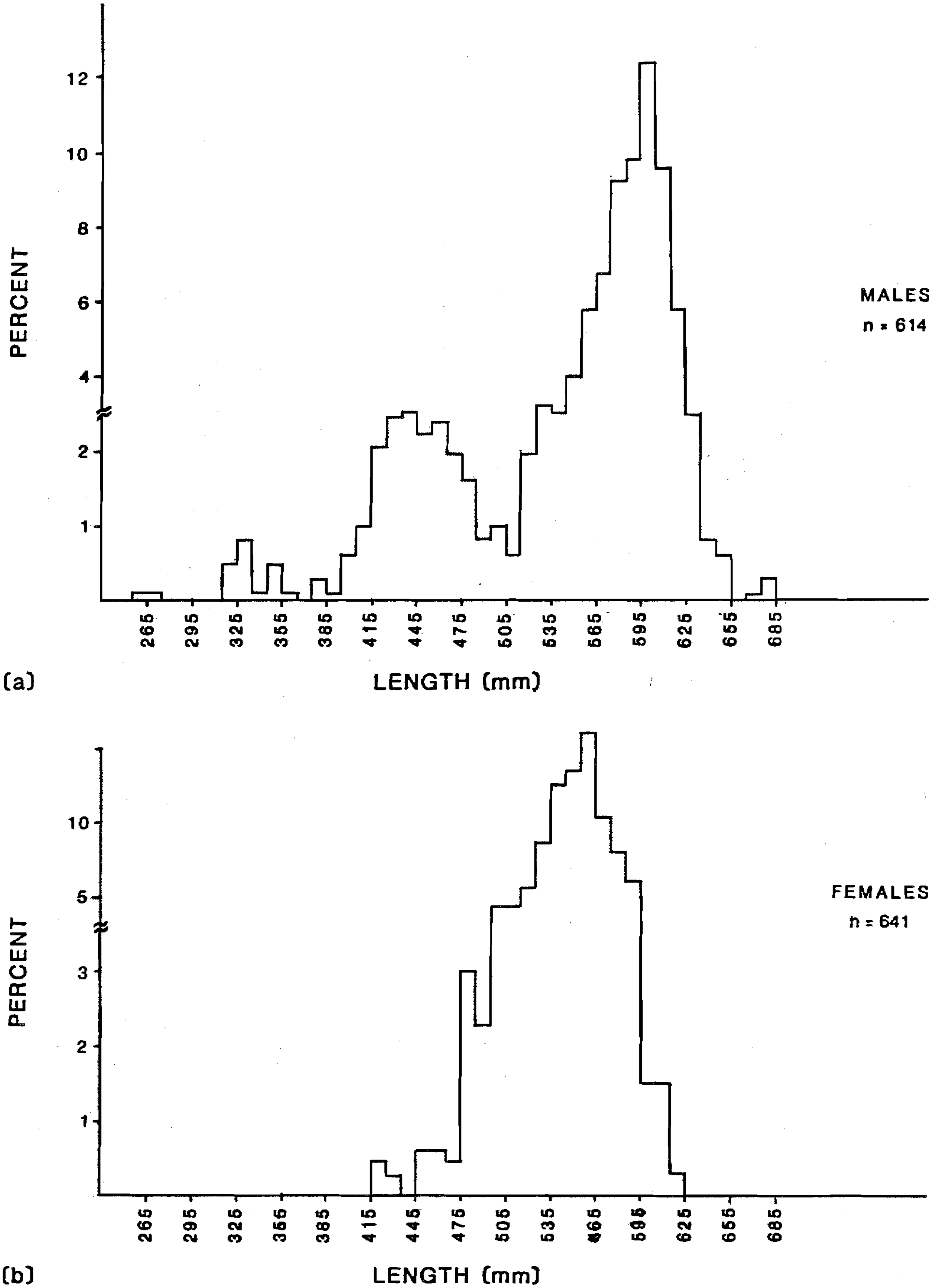
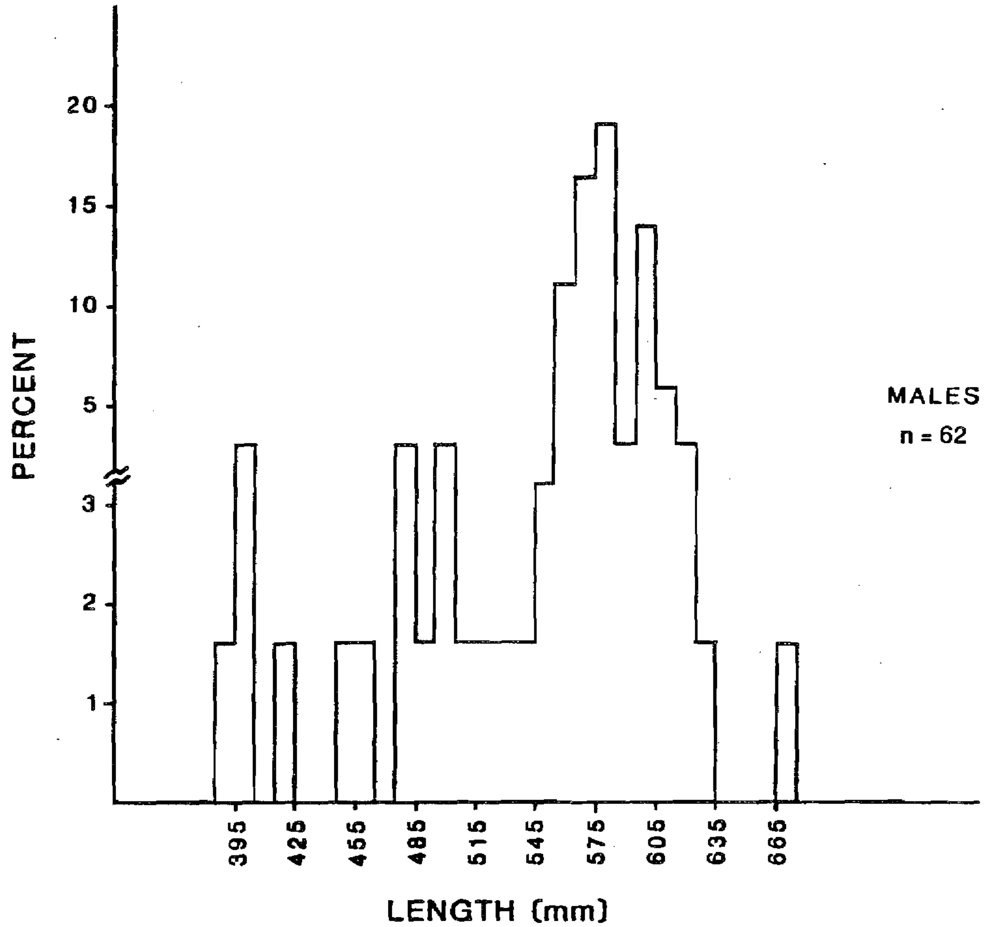


Figure EF-3 (a-b). Length frequencies of sockeye salmon sampled from fishwheel catches at Sunshine Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.



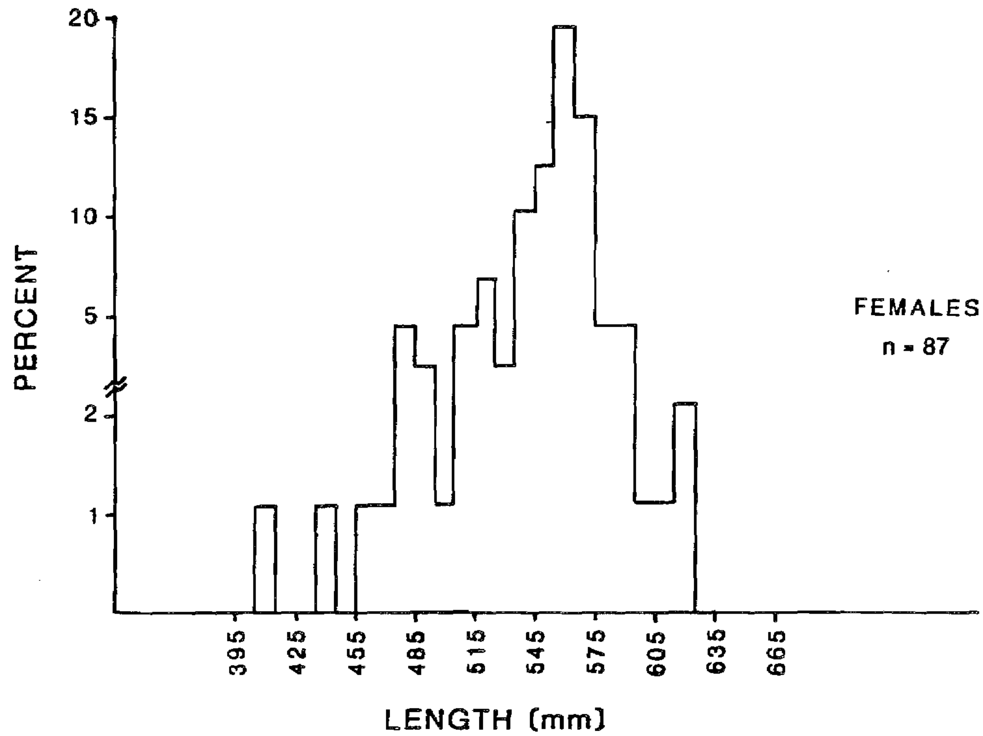


Figure EF-4 (a-b). Length frequencies of sockeye salmon sampled from fishwheel catches at Talkeetna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

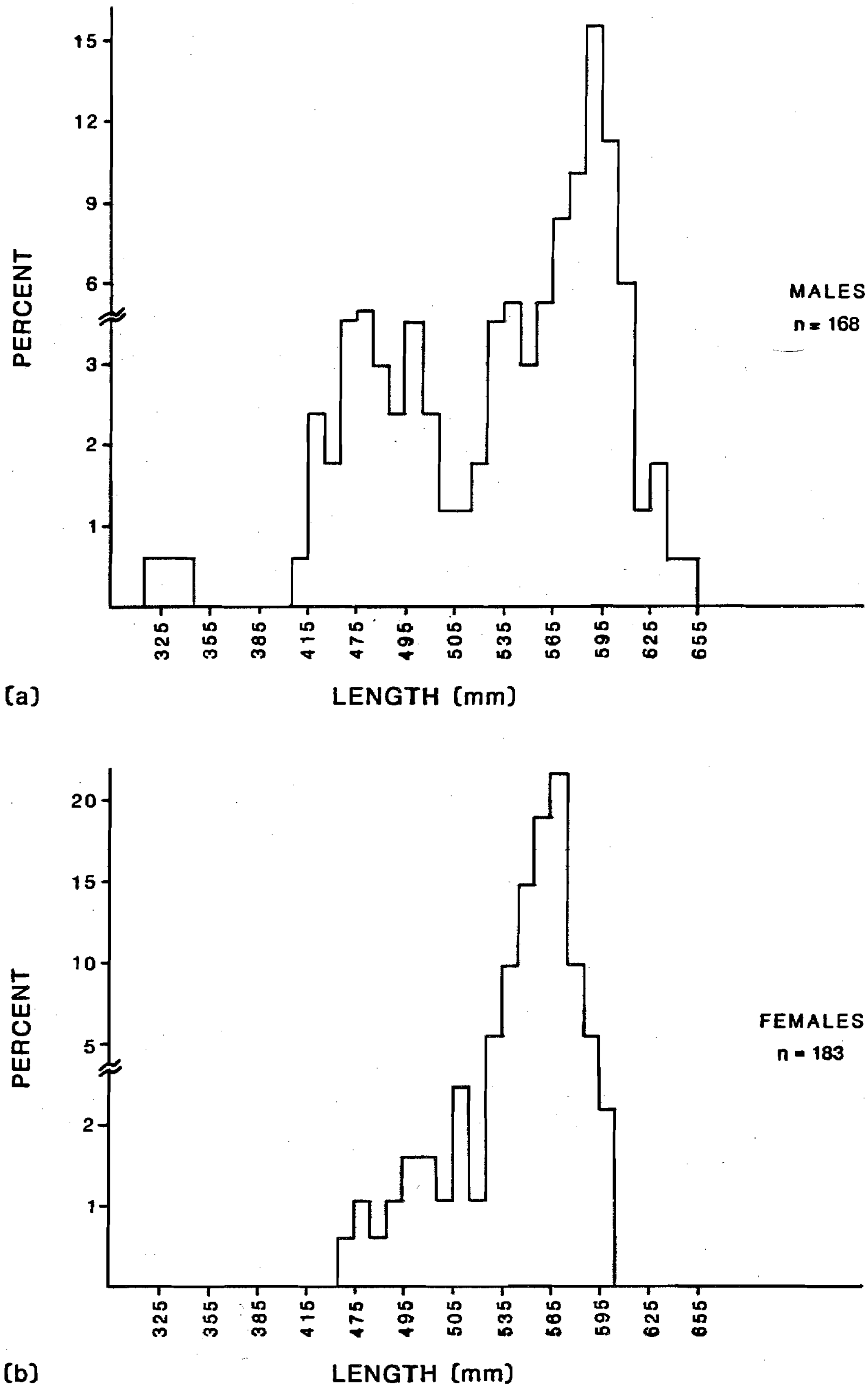


Figure EF-5 (a-b). Length frequencies of sockeye salmon sampled from fishwheel catches at Curry Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

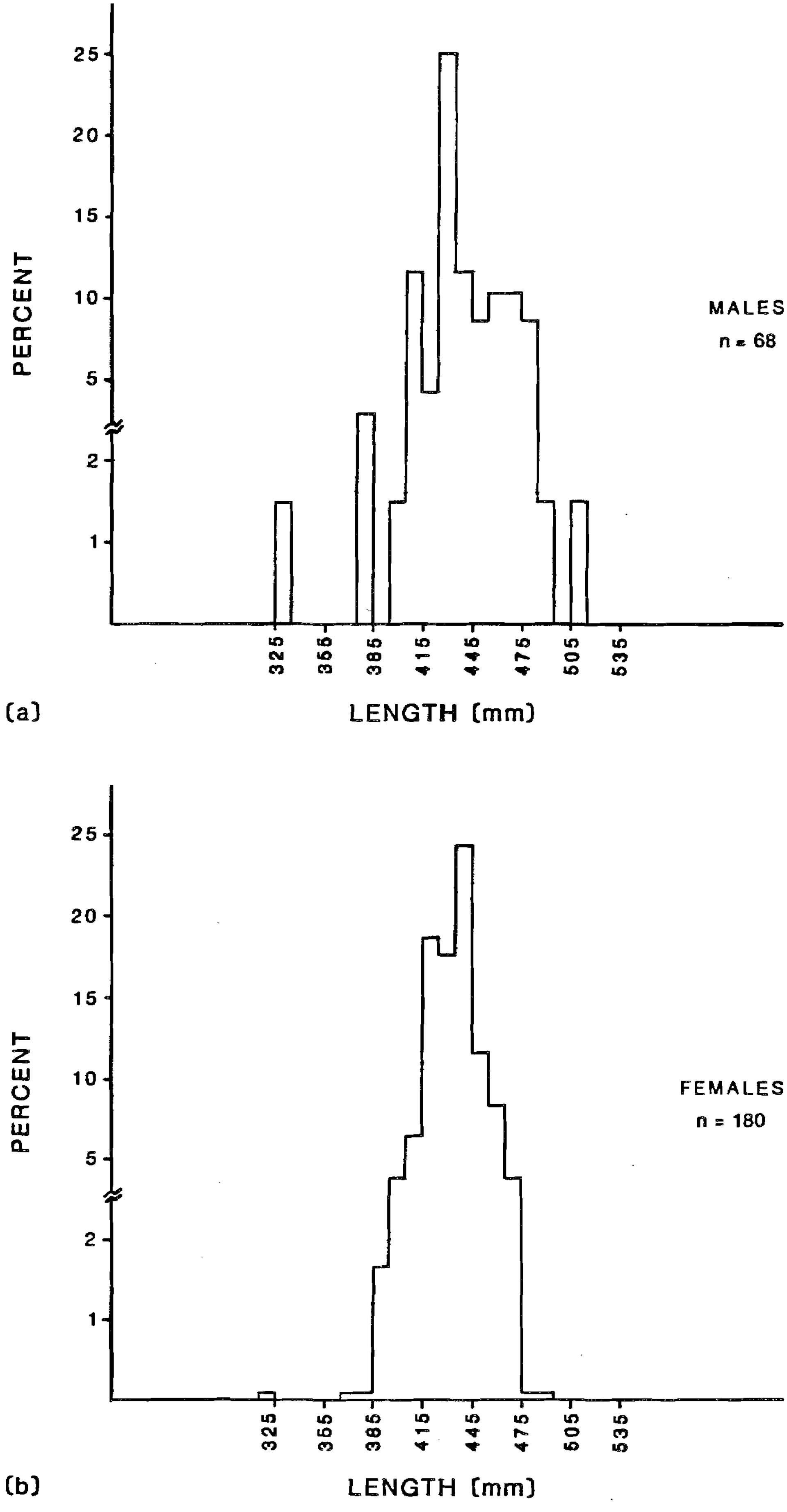


Figure EF-6 (a-b). Length frequencies of pink salmon sampled from fishwheel catches at Susitna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

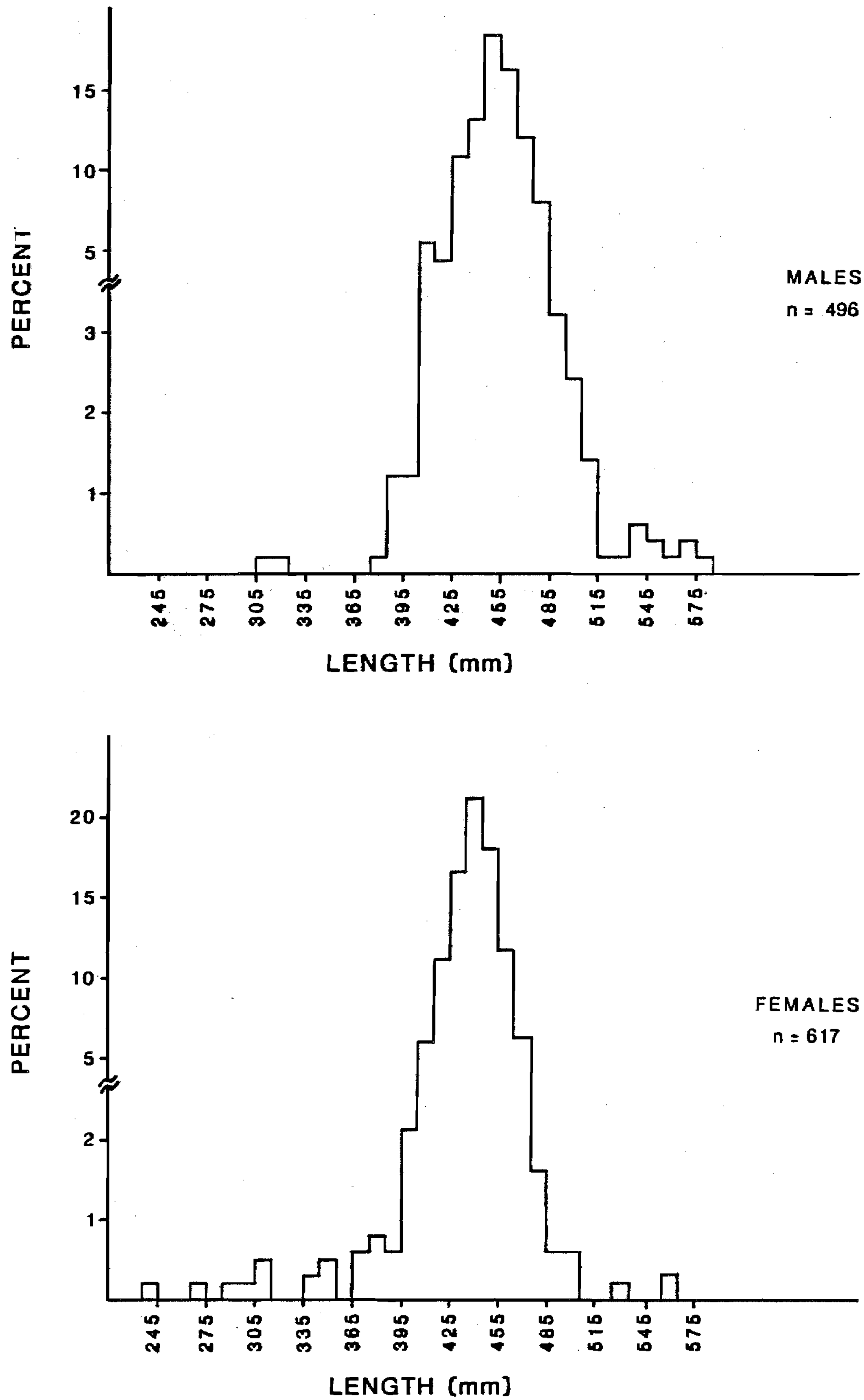


Figure EF-7 (a-b). Length frequencies of pink salmon sampled from fishwheel catches at Yentna Station, Adult Andromous Investigations, Su Hydro Studies, 1981.

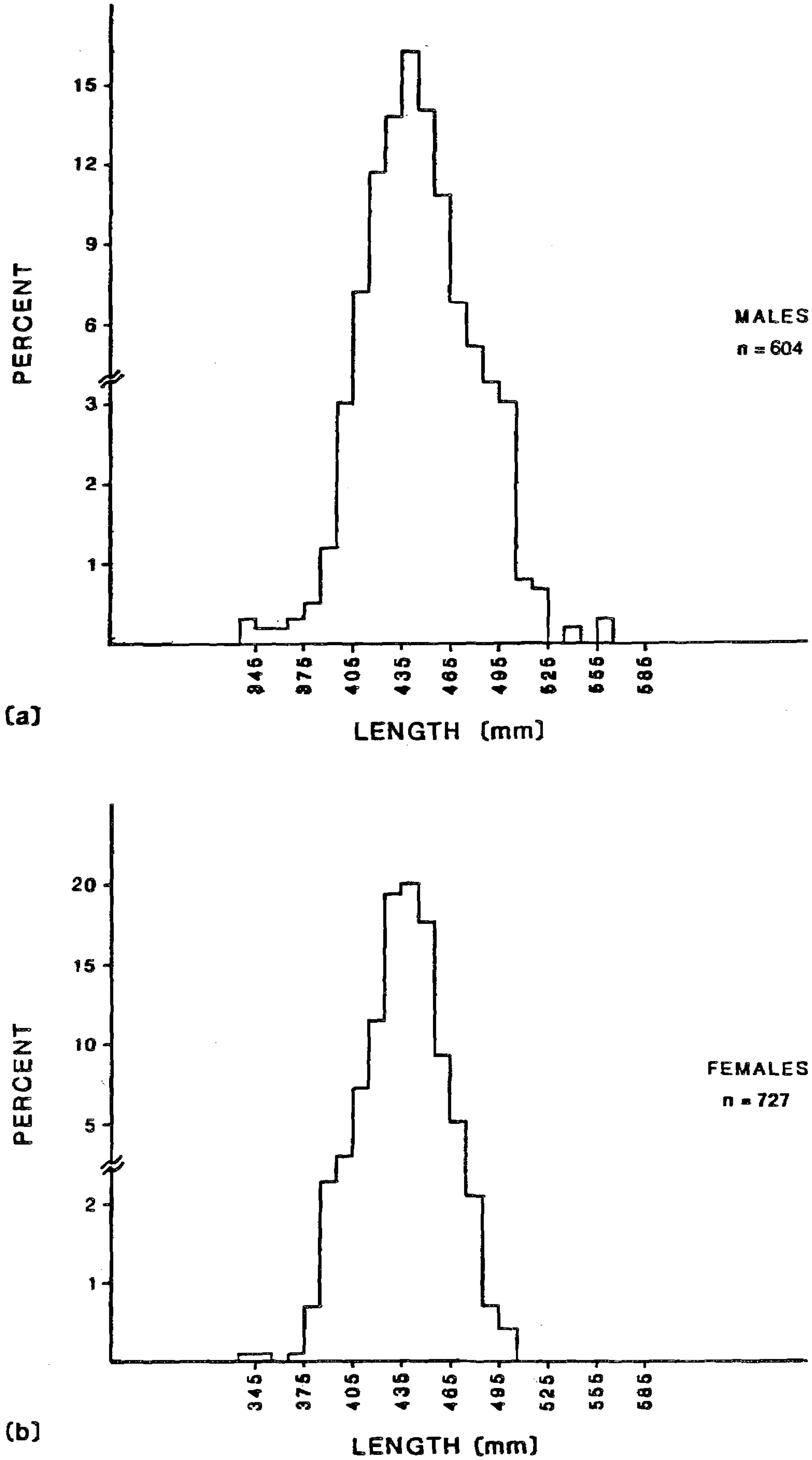


Figure EF-8 (a-b). Length frequencies of pink salmon sampled from fishwheel catches at Sunshine Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

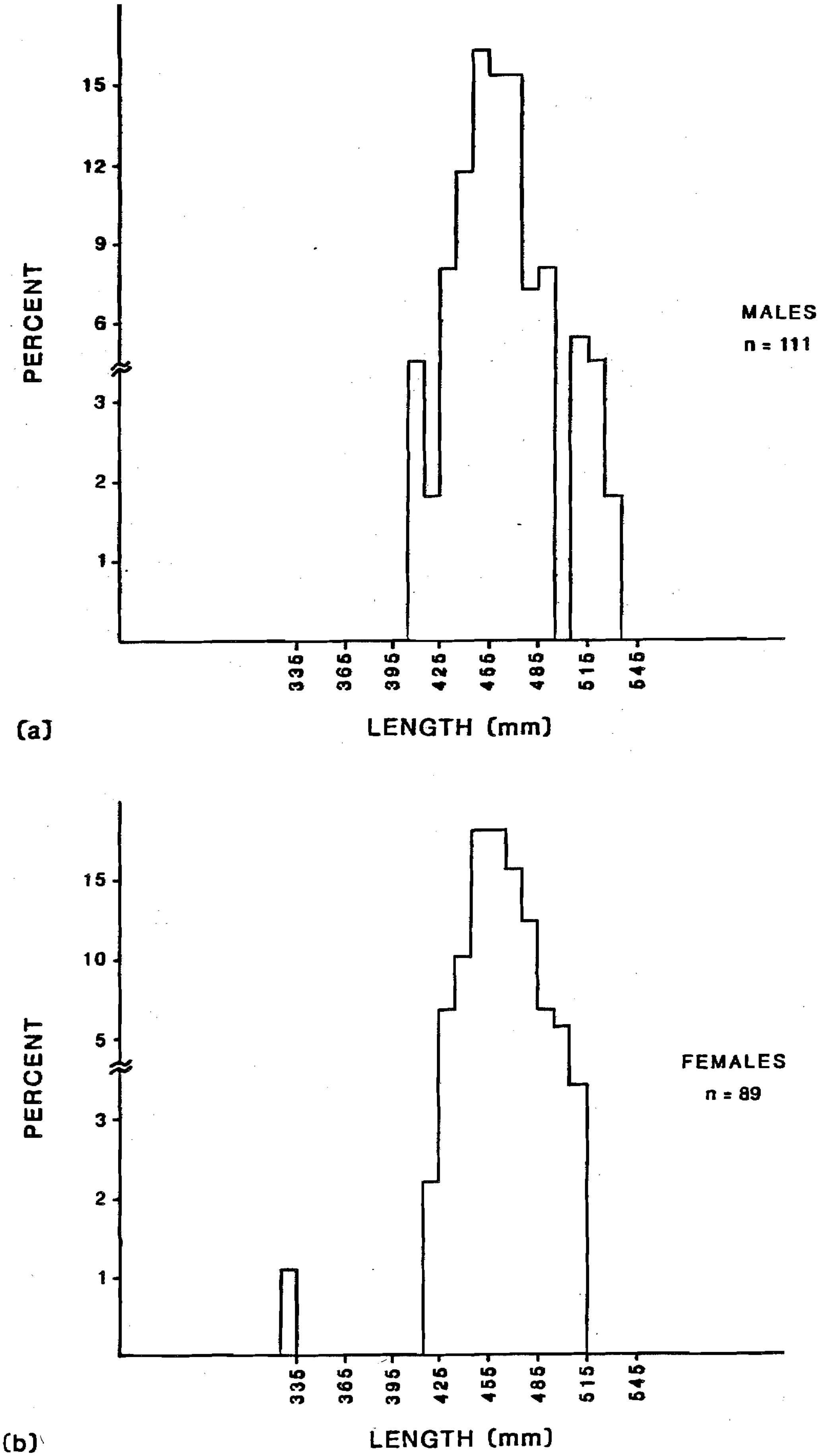
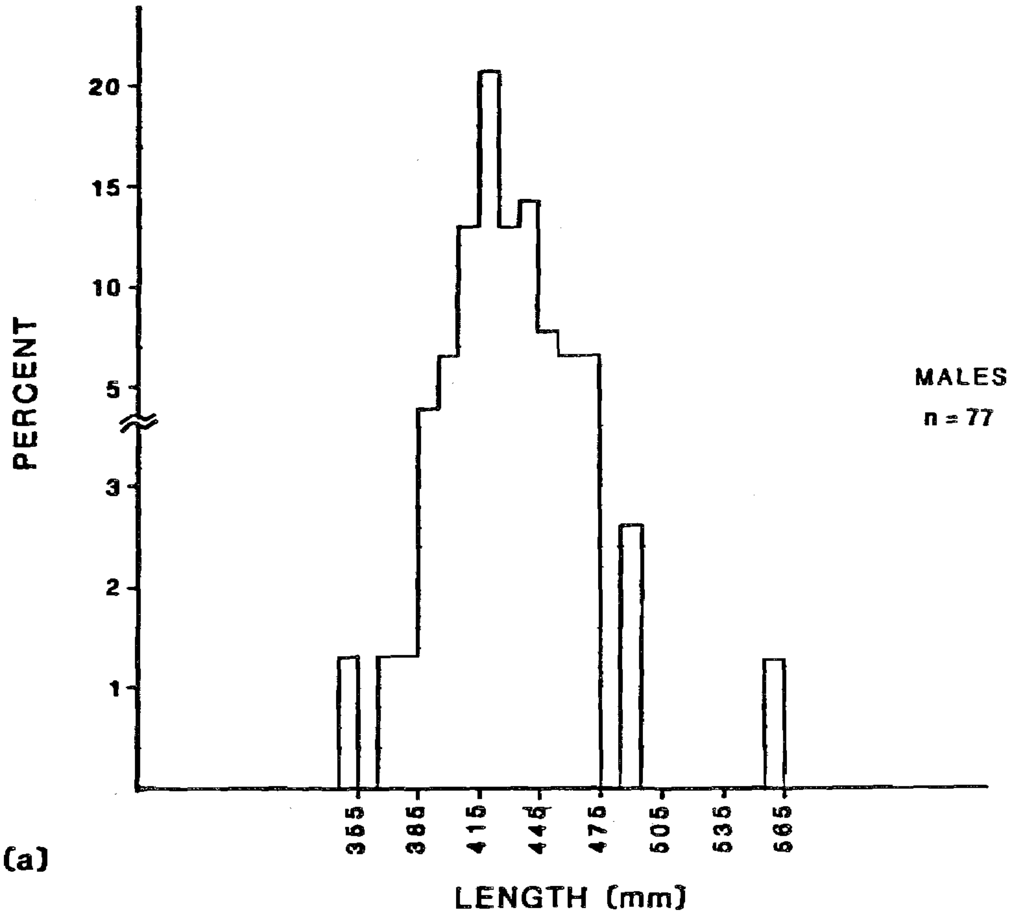
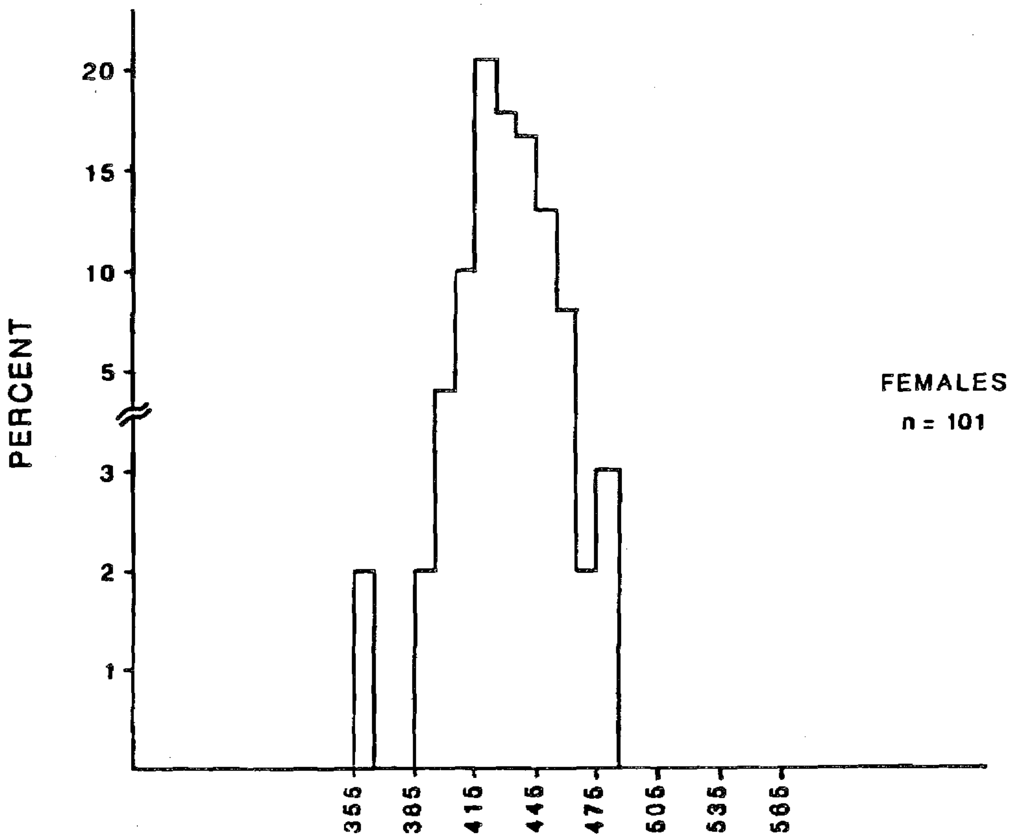


Figure EF-9 (a-b). Length frequencies of pink salmon sampled from fishwheel catches at Talkeetna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

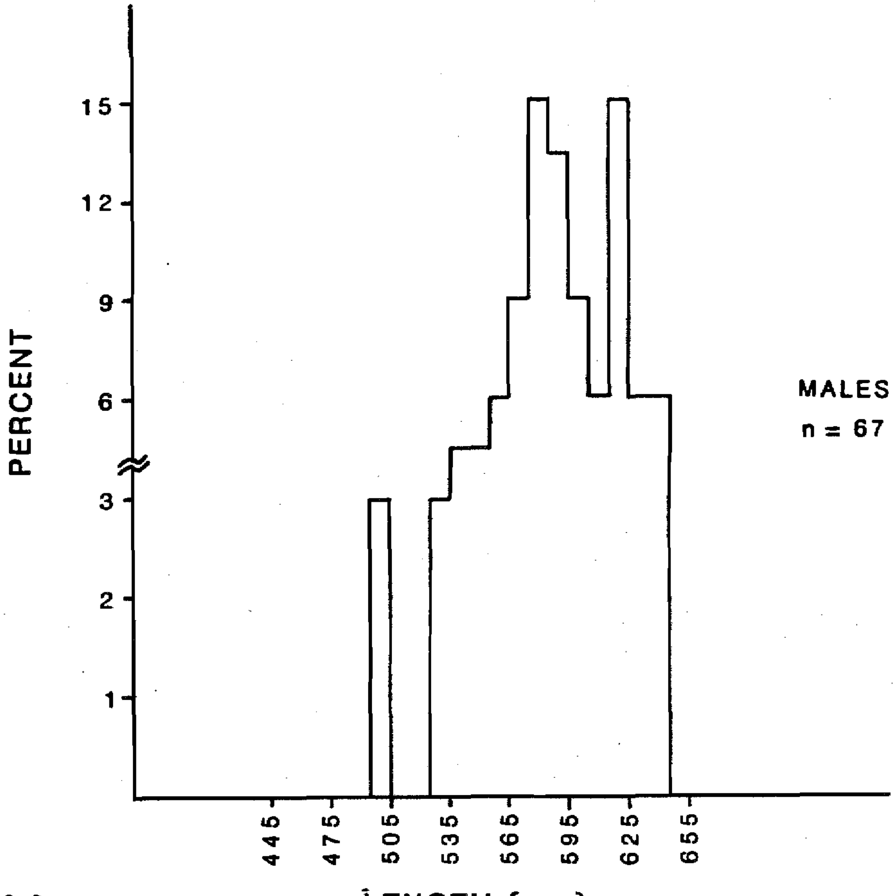


(a)

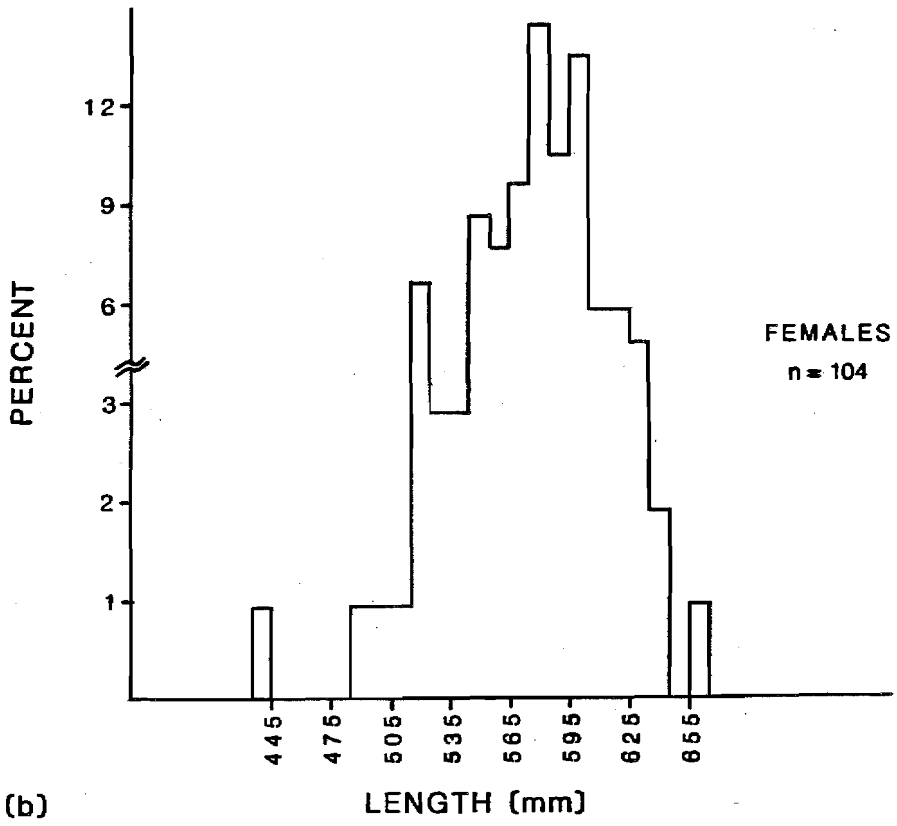


(b)

Figure EF-10 (a-b). Length frequencies of pink salmon sampled from fishwheel catches at Curry Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.



(a)



(b)

Figure EF-11 (a-b). Length frequencies of chum salmon sampled from fishwheel catches at Susitna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

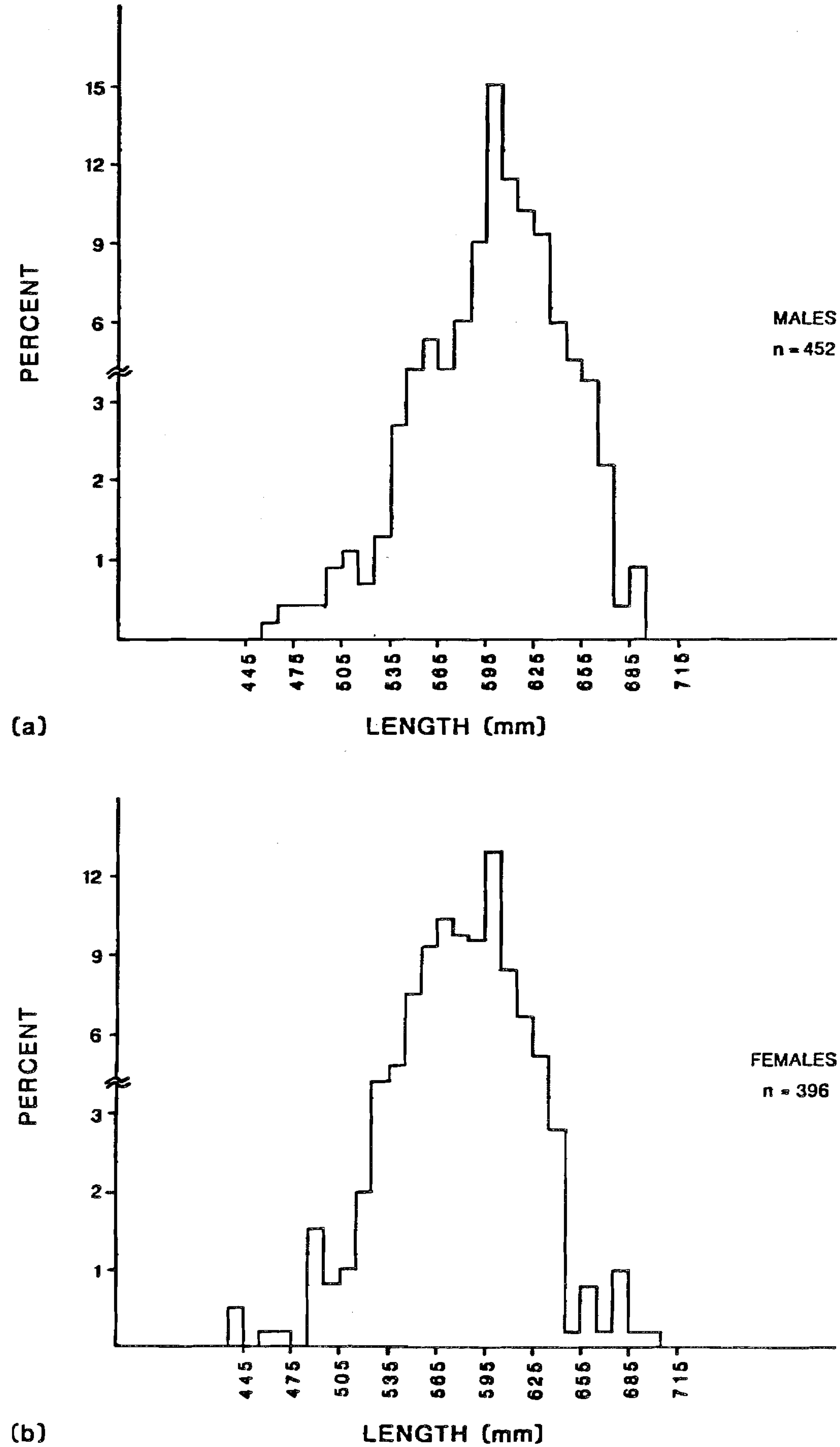
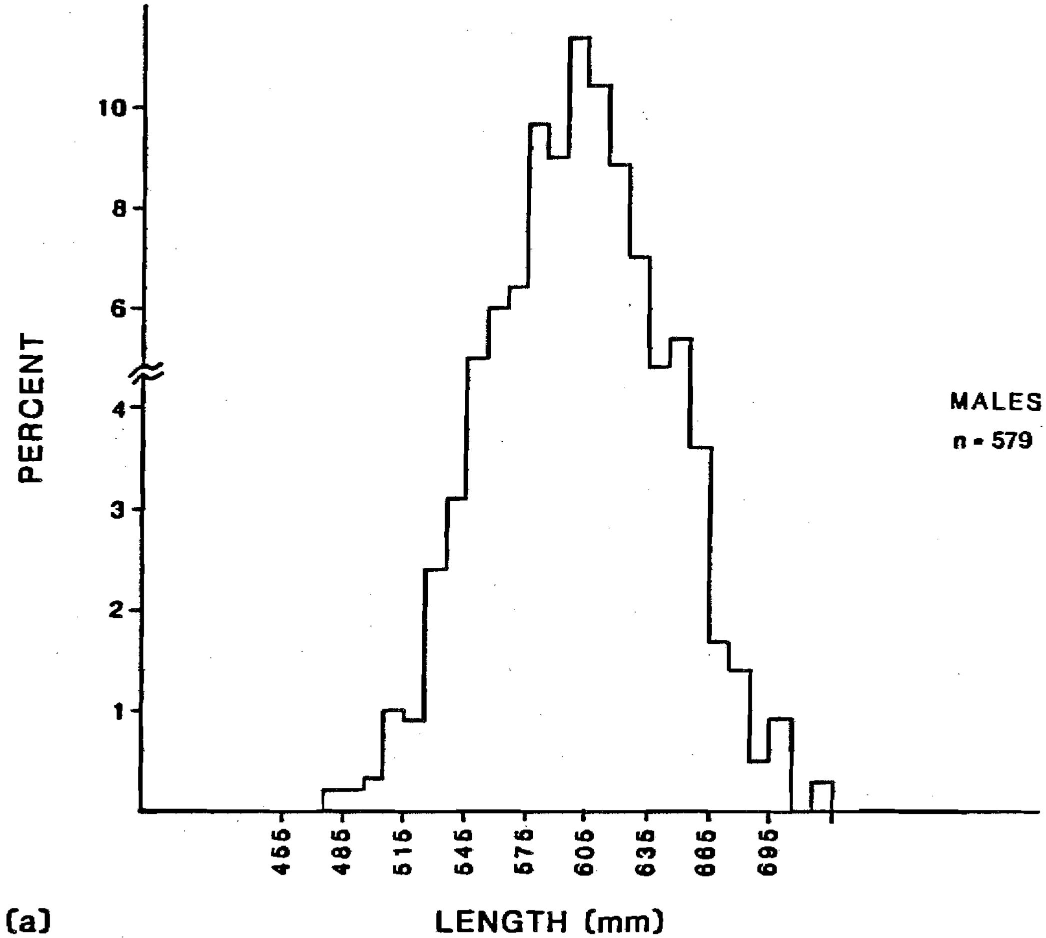
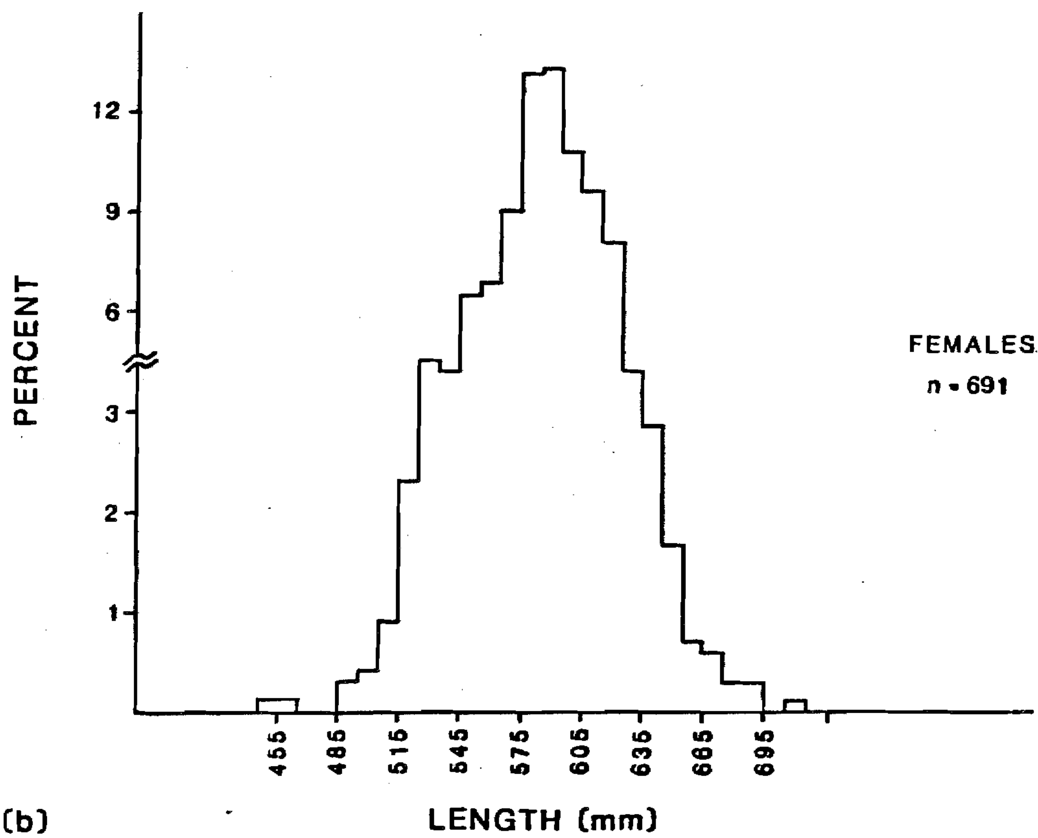
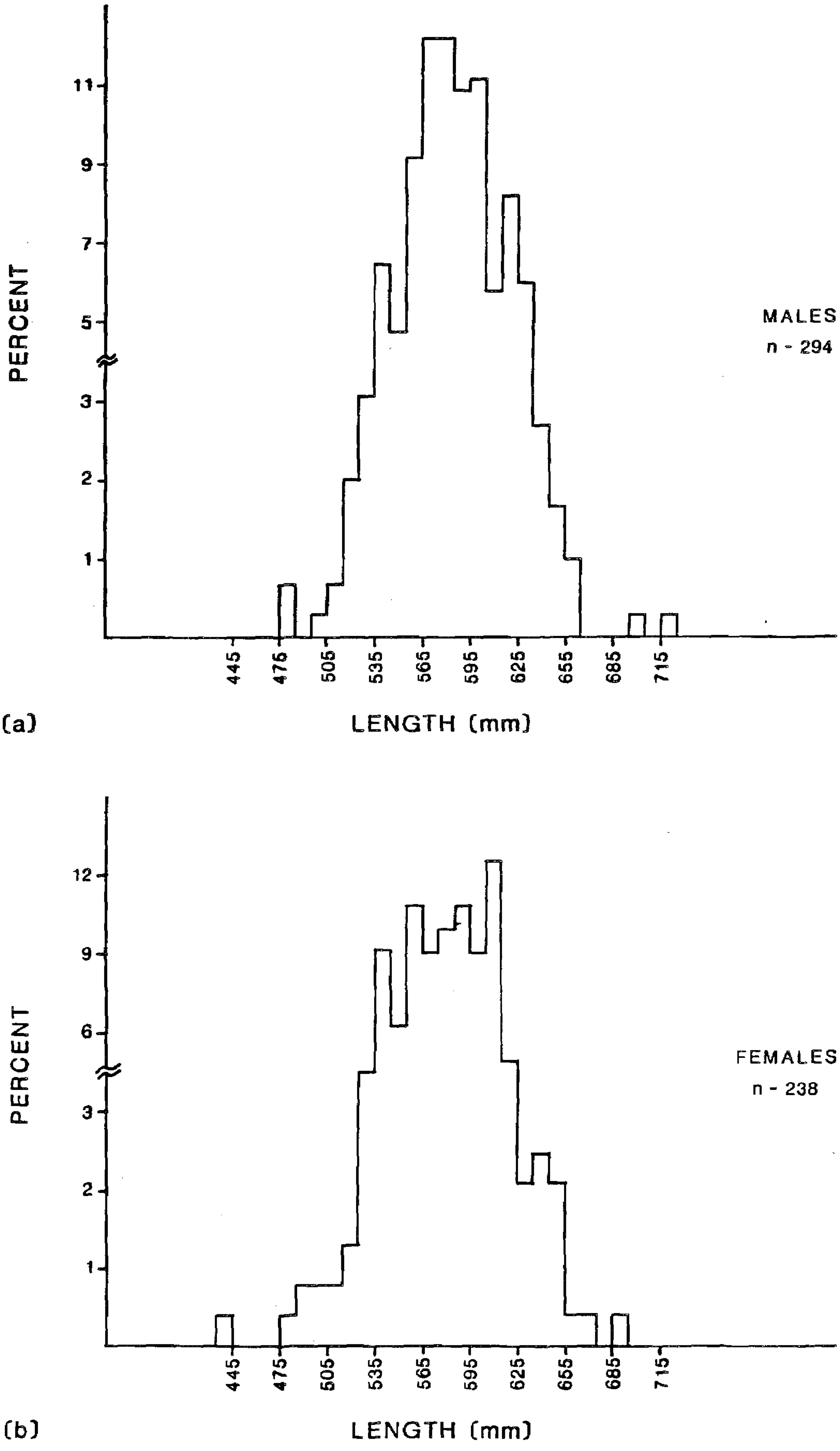


Figure EF-12 (a-b). Length frequencies of chum salmon sampled from fishwheel catches at Yentna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.



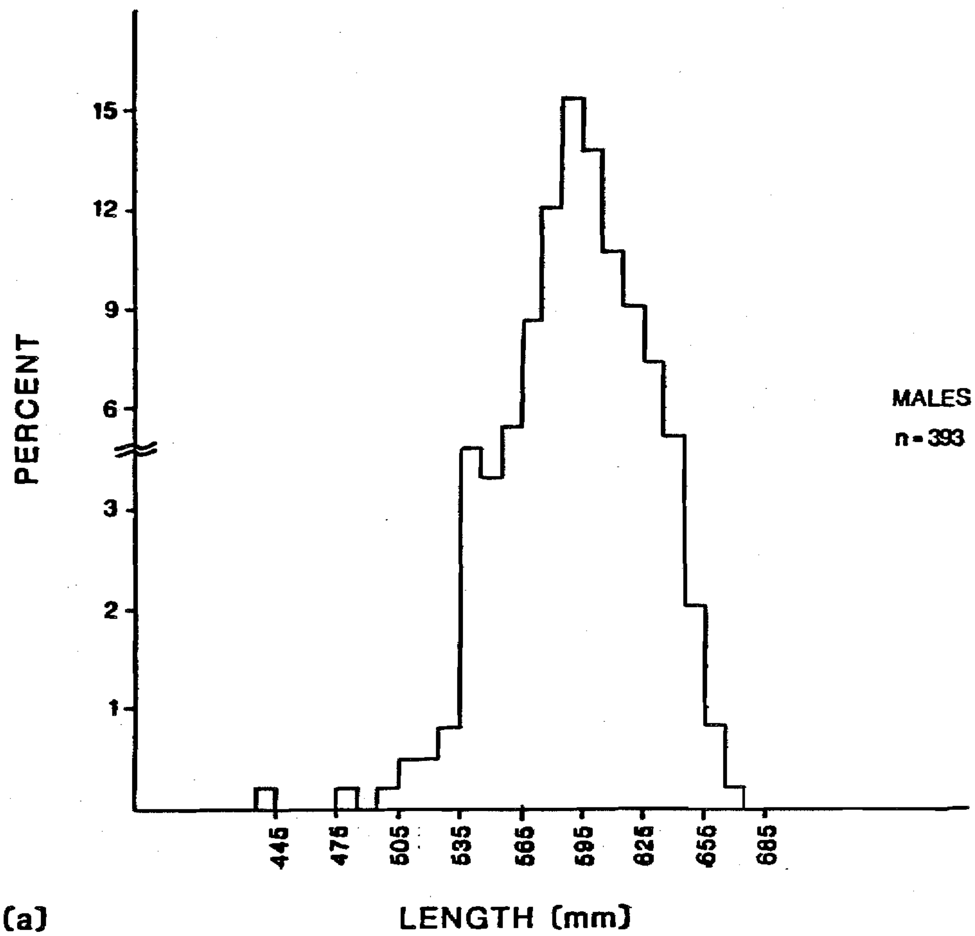


ɟure EF-13 (a-b). Length frequencies of chum salmon sampled from fishwheel catches at Sunshine Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

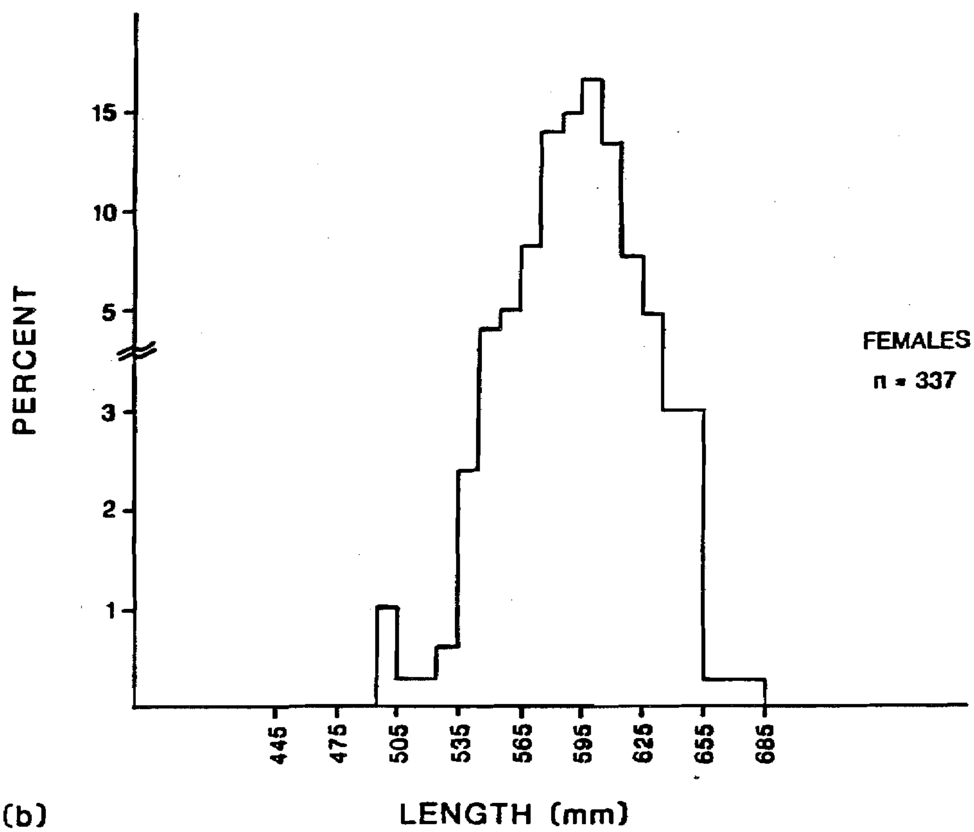


(a) (b)

Figure EF-14 (a-b). Length frequencies of chum salmon sampled from fishwheel catches at Talkeetna Station, Adult Anadromous Investigations Su Hydro Studies, 1981.

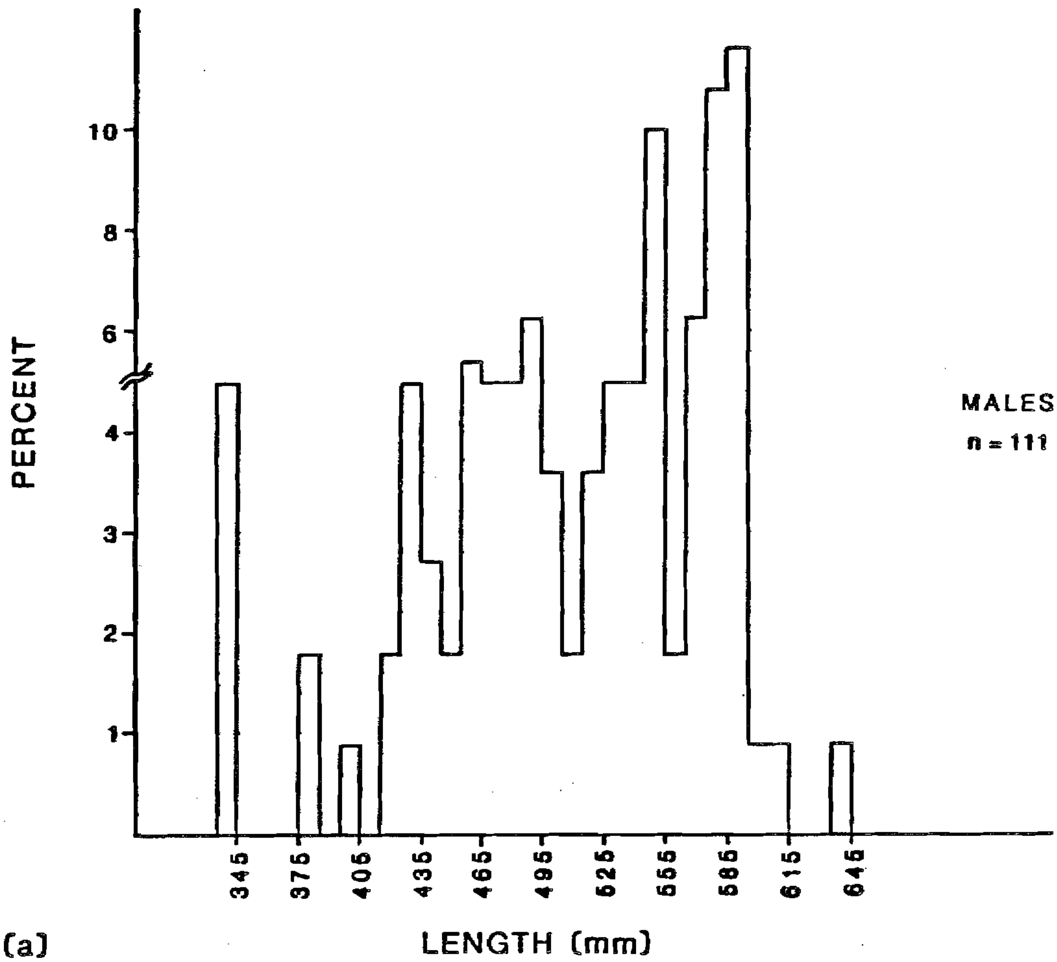


(a)



(b)

Figure EF-15 (a-b). Length frequencies of chum salmon sampled from fishwheel catches at Curry Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.



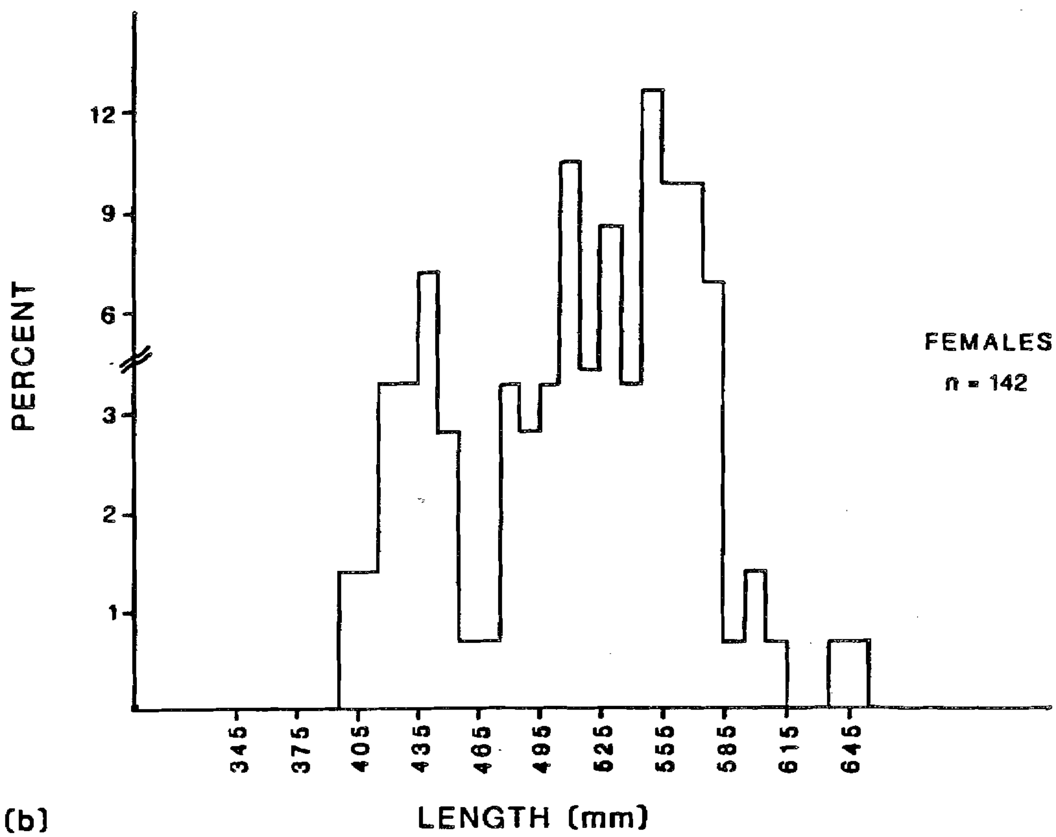


Figure EF-16 (a-b). Length frequencies of coho salmon sampled from fishwheel catches at Susitna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

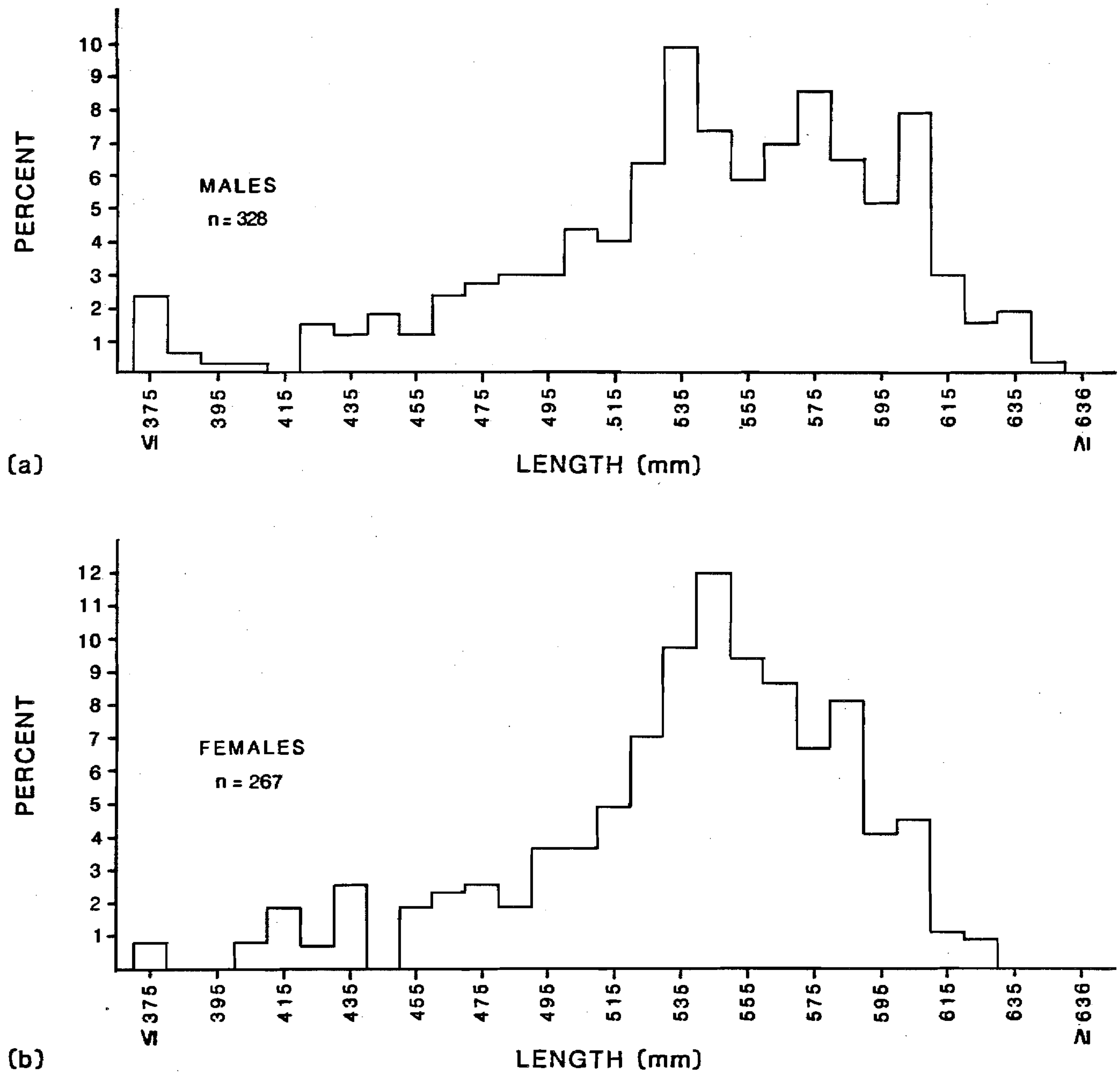


Figure EF-17 (a-b). Length frequencies of coho salmon sampled from fishwheel catches at Yentna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

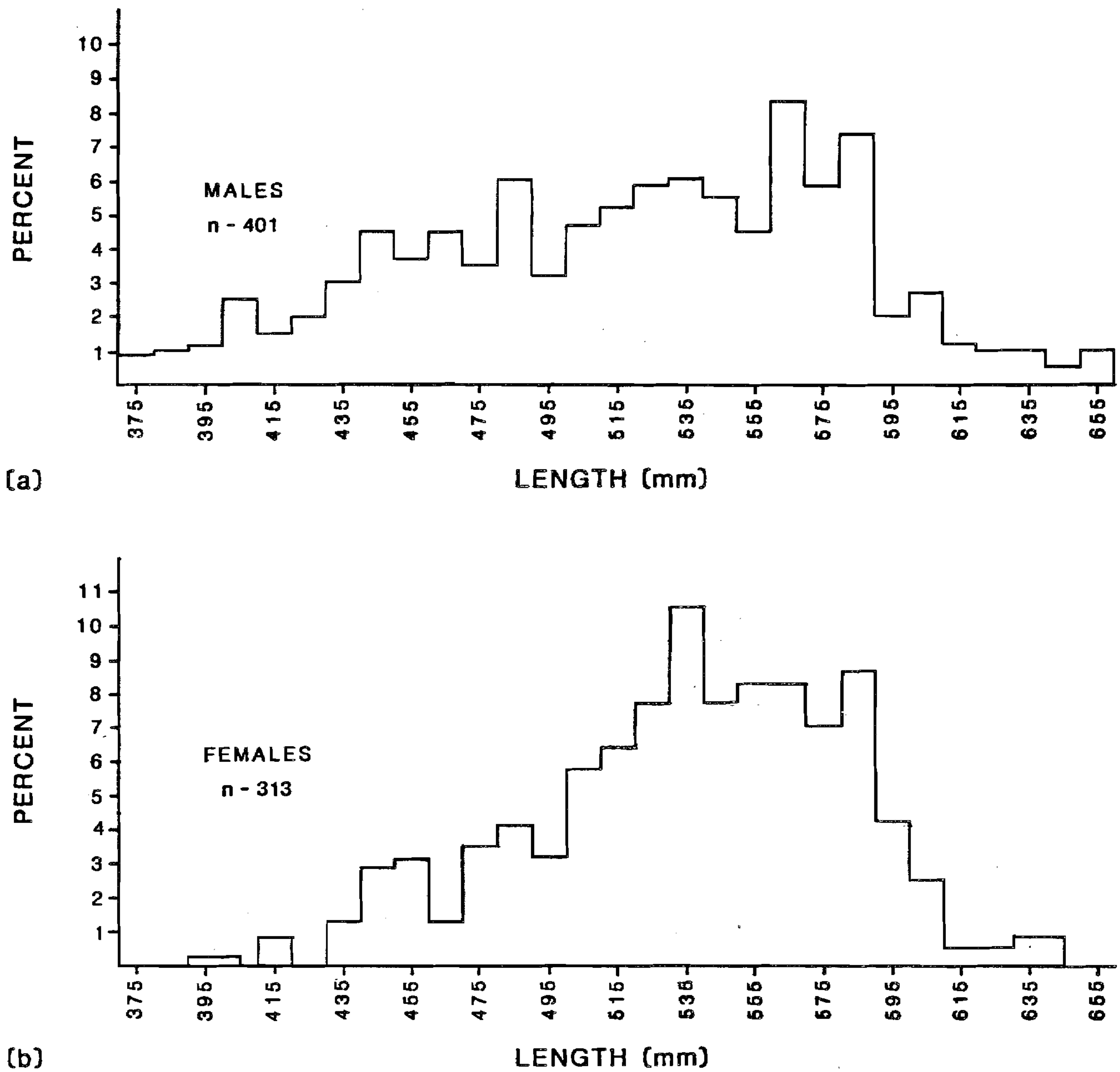


Figure EF-18 (a-b). Length frequencies of coho salmon sampled from fishwheel catches at Sunshine Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

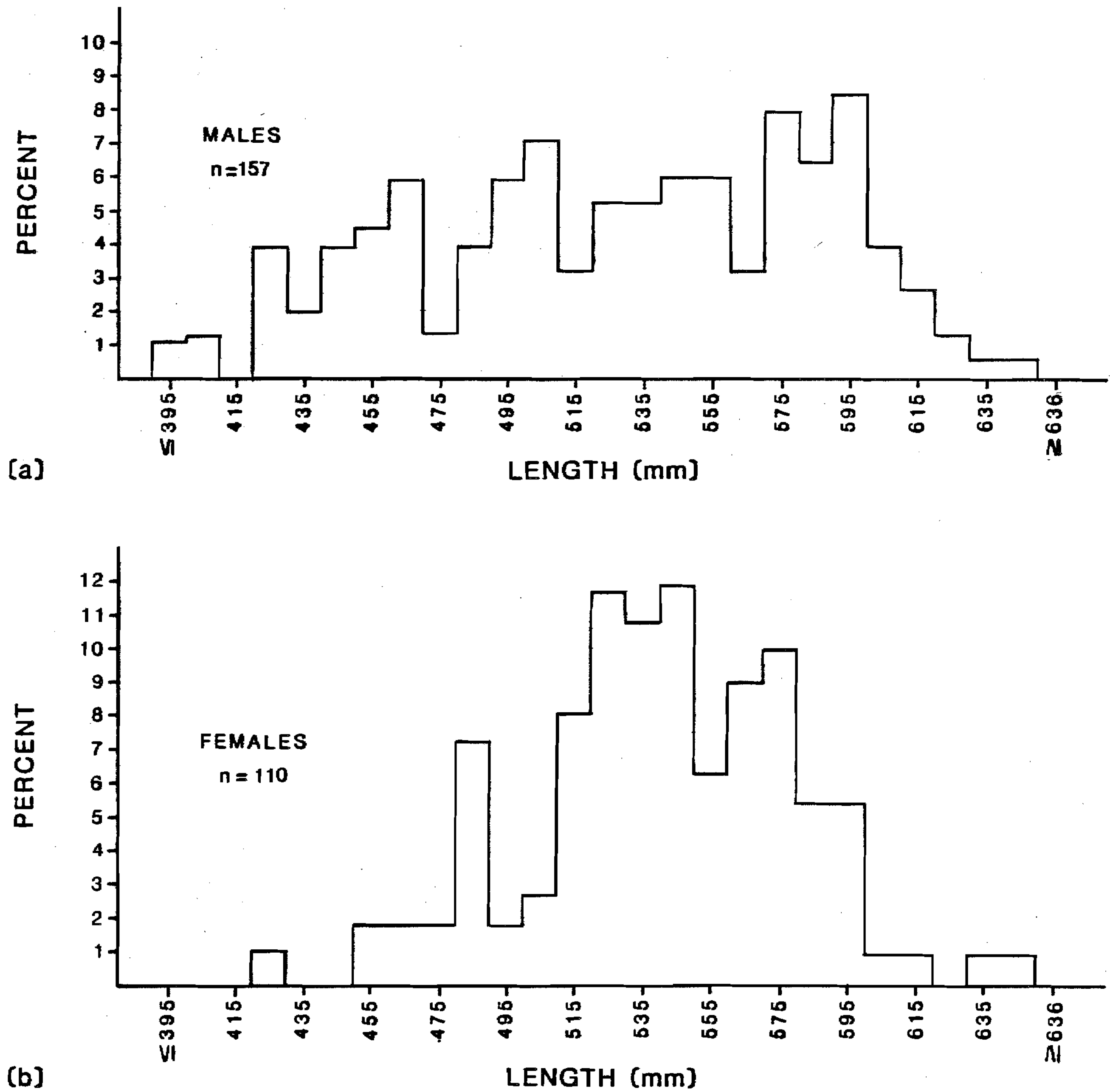
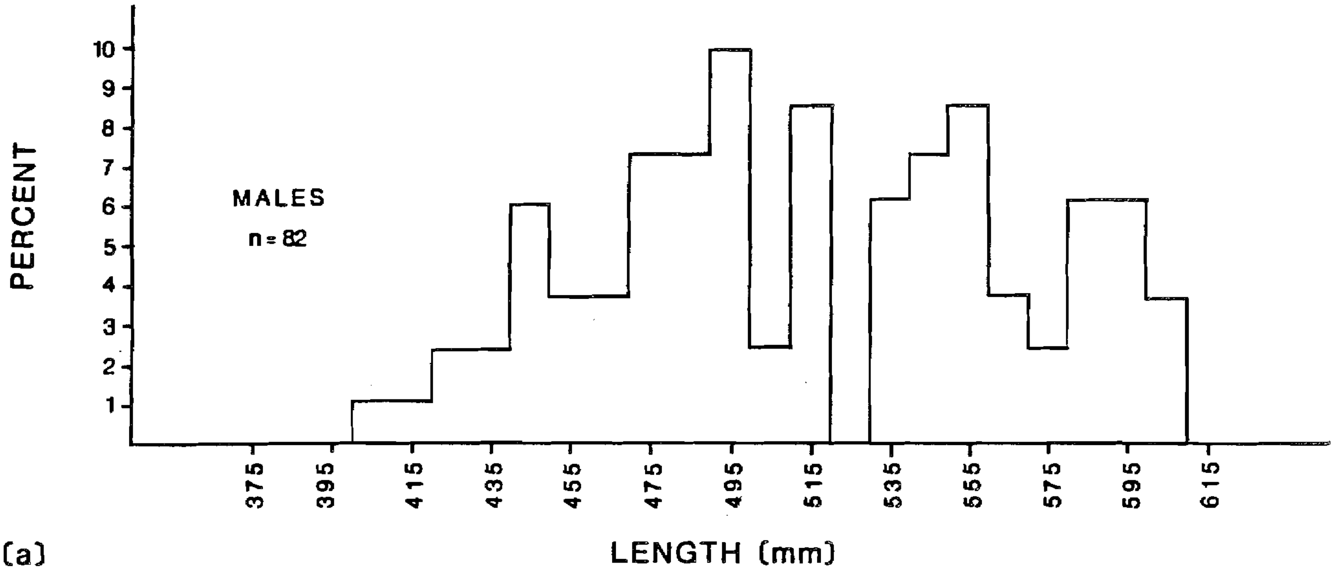
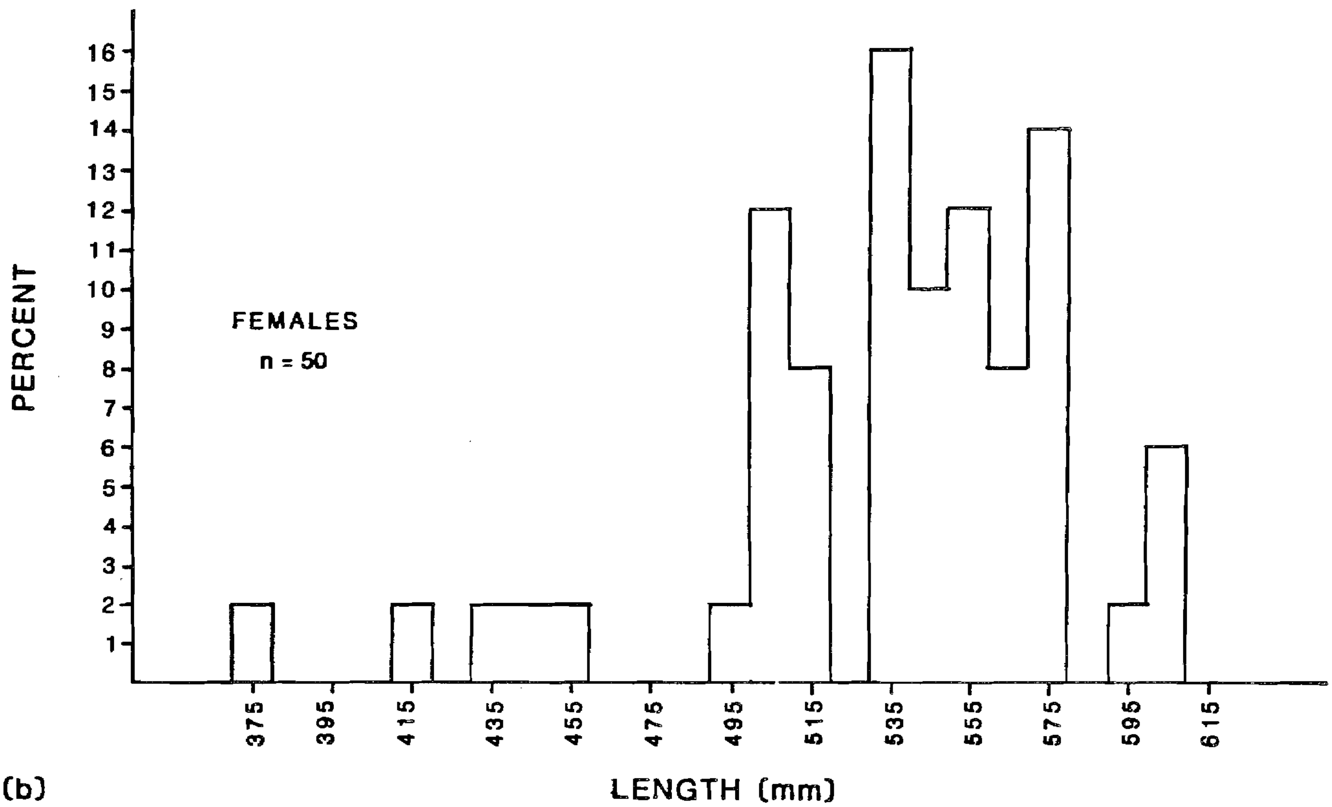


Figure EF-19 (a-b). Length frequencies of coho salmon sampled from fishwheel catches at Talkeetna Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.



(a)



(b)

Figure EF-20 (a-b). Length frequencies of coho salmon sampled from fishwheel catches at Curry Station, Adult Anadromous Investigations, Su Hydro Studies, 1981.

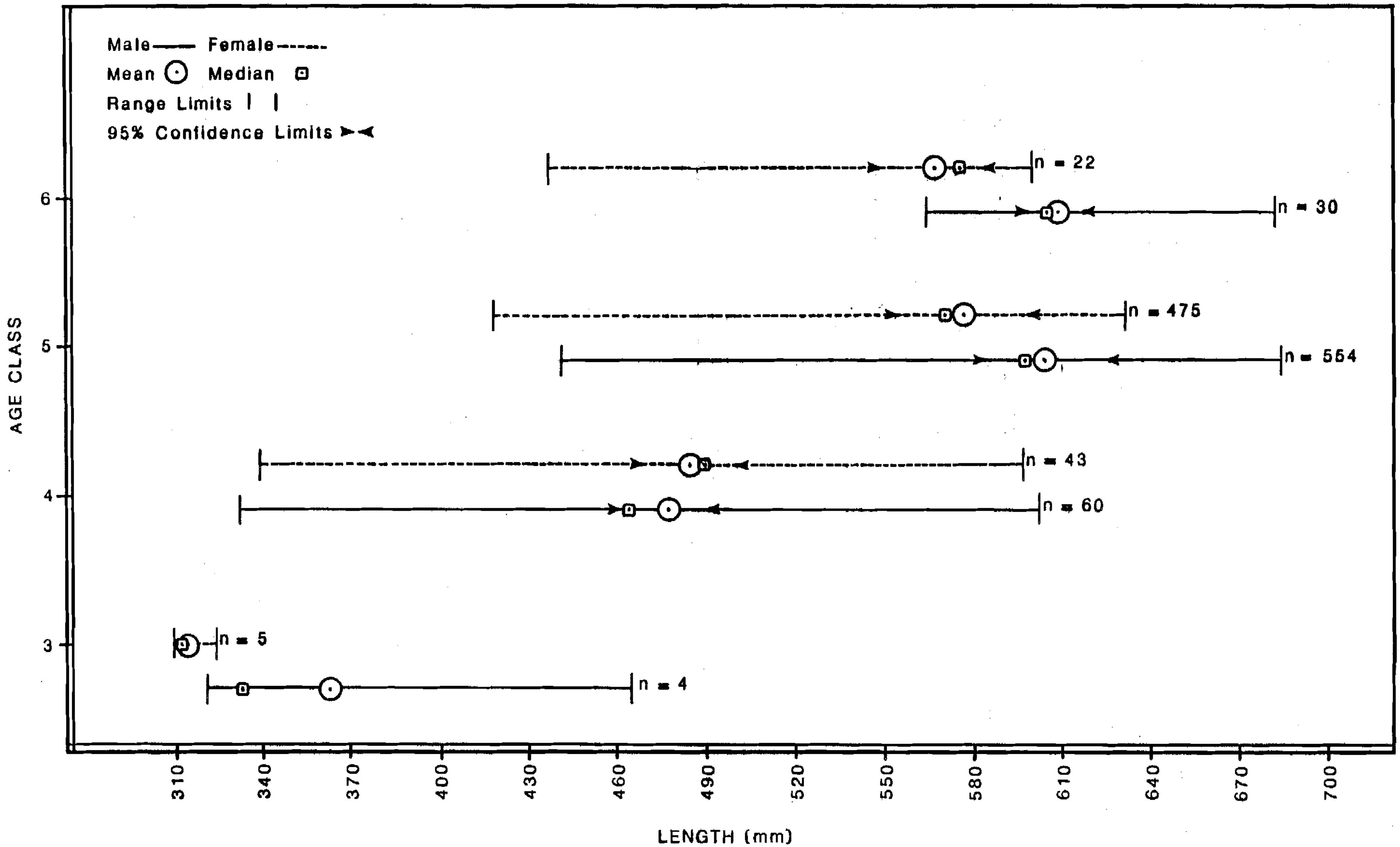


Figure EF-21 Sockeye salmon lengths by age class from Yentna Station fishwheel catches, Adult Anadromous Investigations, Su Hydro Studies, 1981.

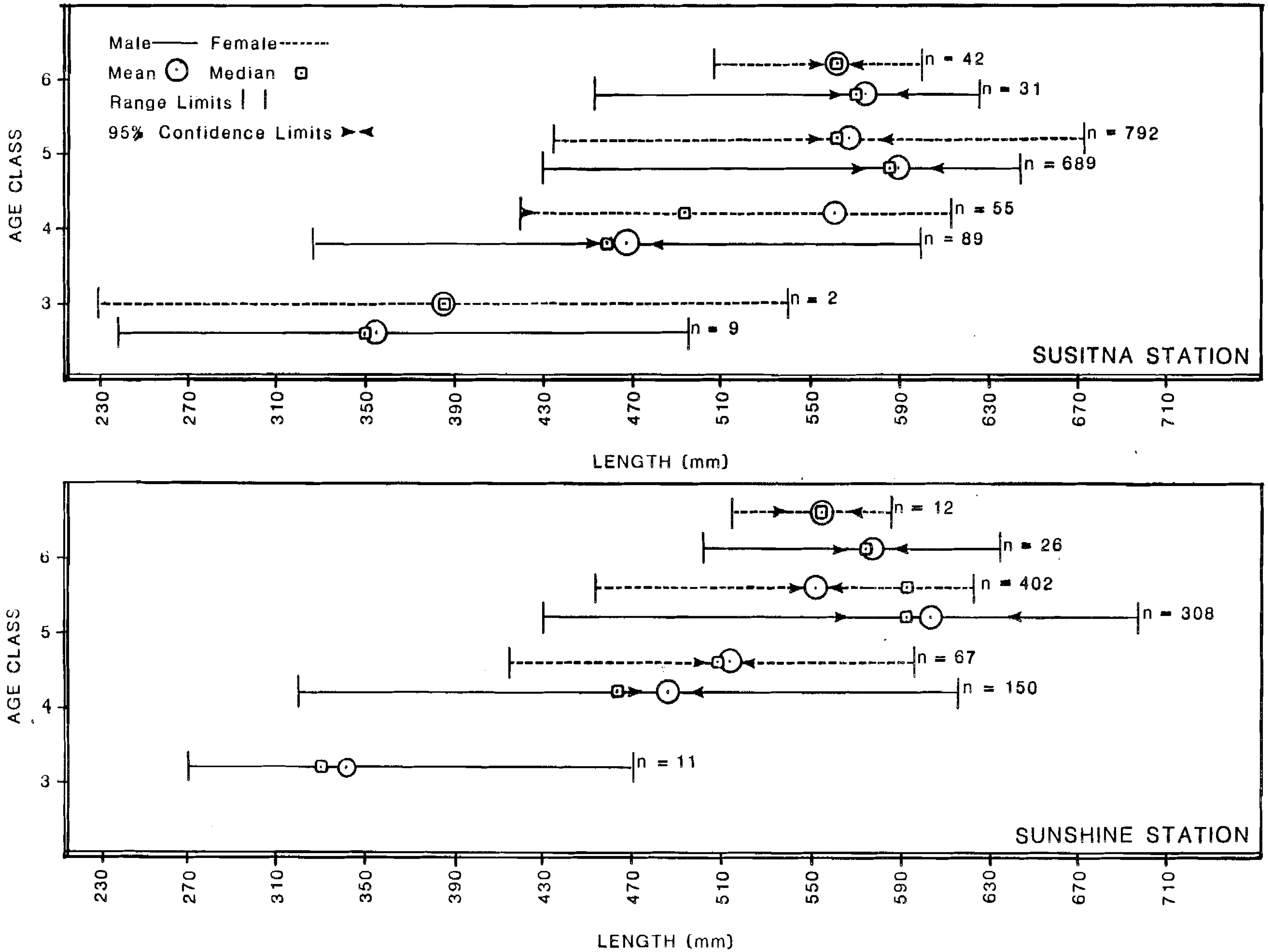


Figure EF-22 Sockeye salmon lengths by age class from Susitna and Sunshine Station fishwheel catches, Adult Anadromous Investigations, Su Hydro Studies, 1981.

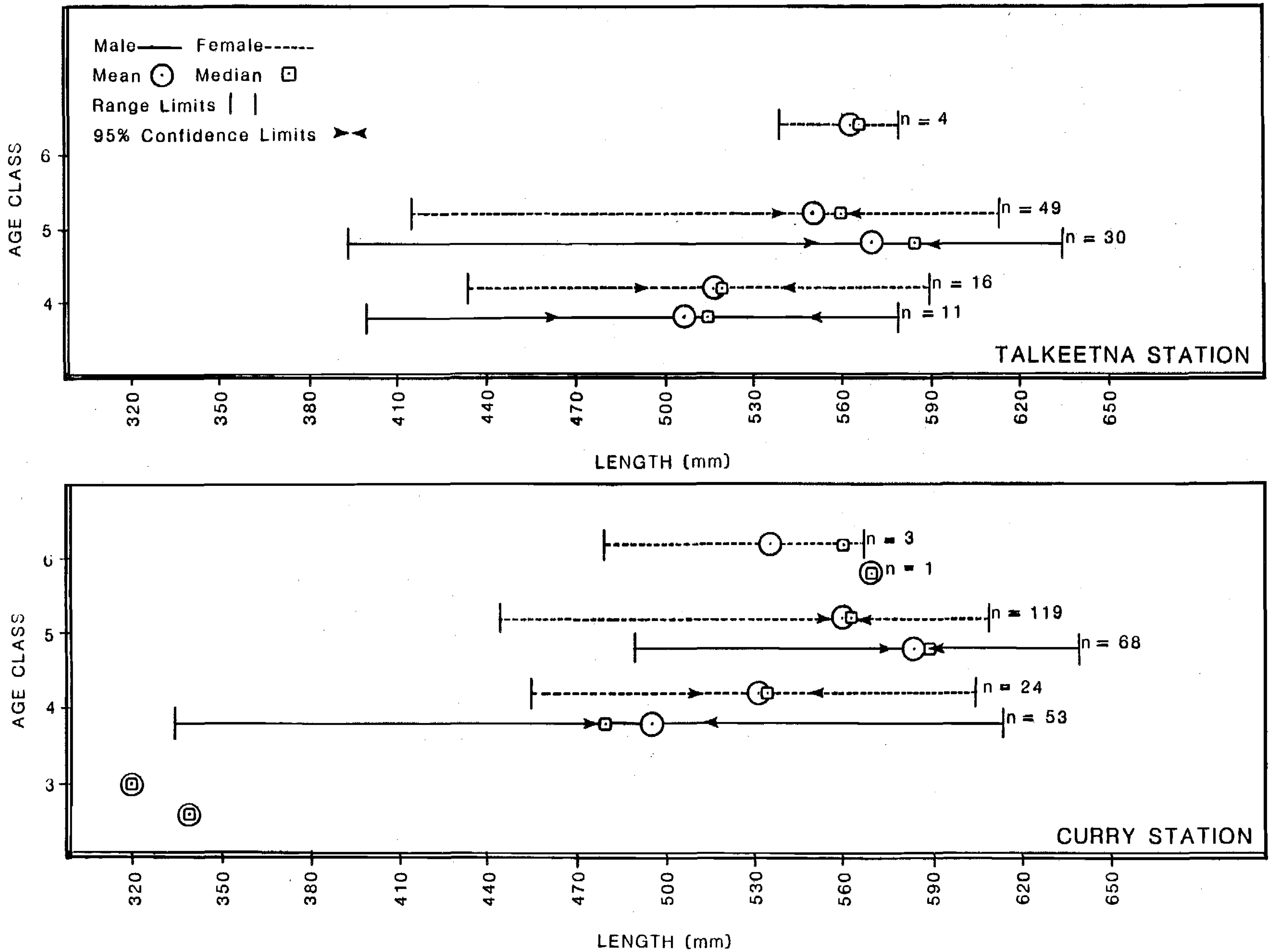


Figure EF-23 Sockeye salmon lengths by age class from Talkeetna and Curry Station fishwheel catches, Adult Anadromous Investigations, Su Hydro Studies, 1981.

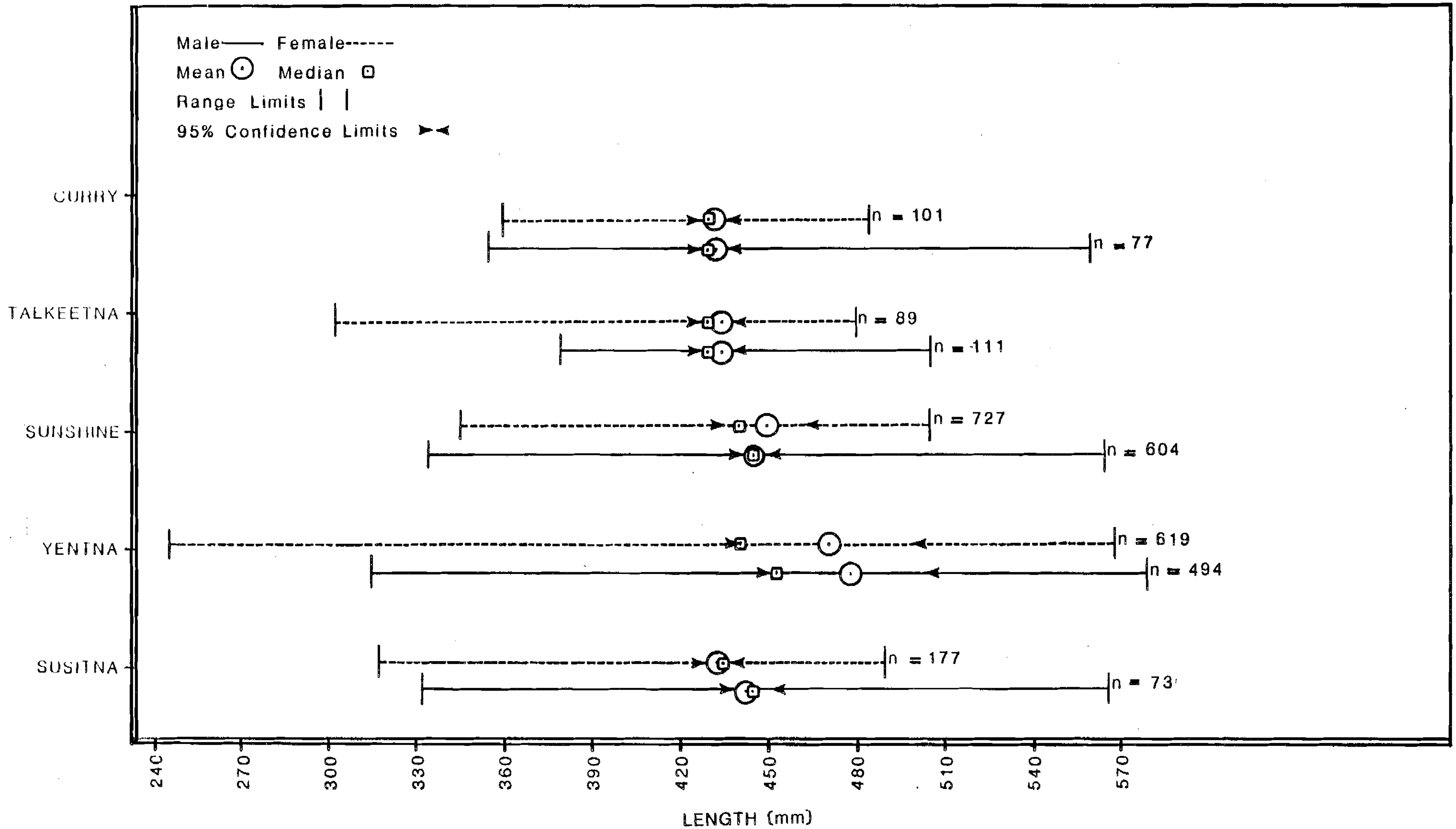


Figure EF-24 Pink salmon lengths by age class from Susitna, Yentna, Sunshine, Talkeetna and Curry Station fishwheel catches, Adult Anadromous Investigations, Su Hydro Studies, 1981.

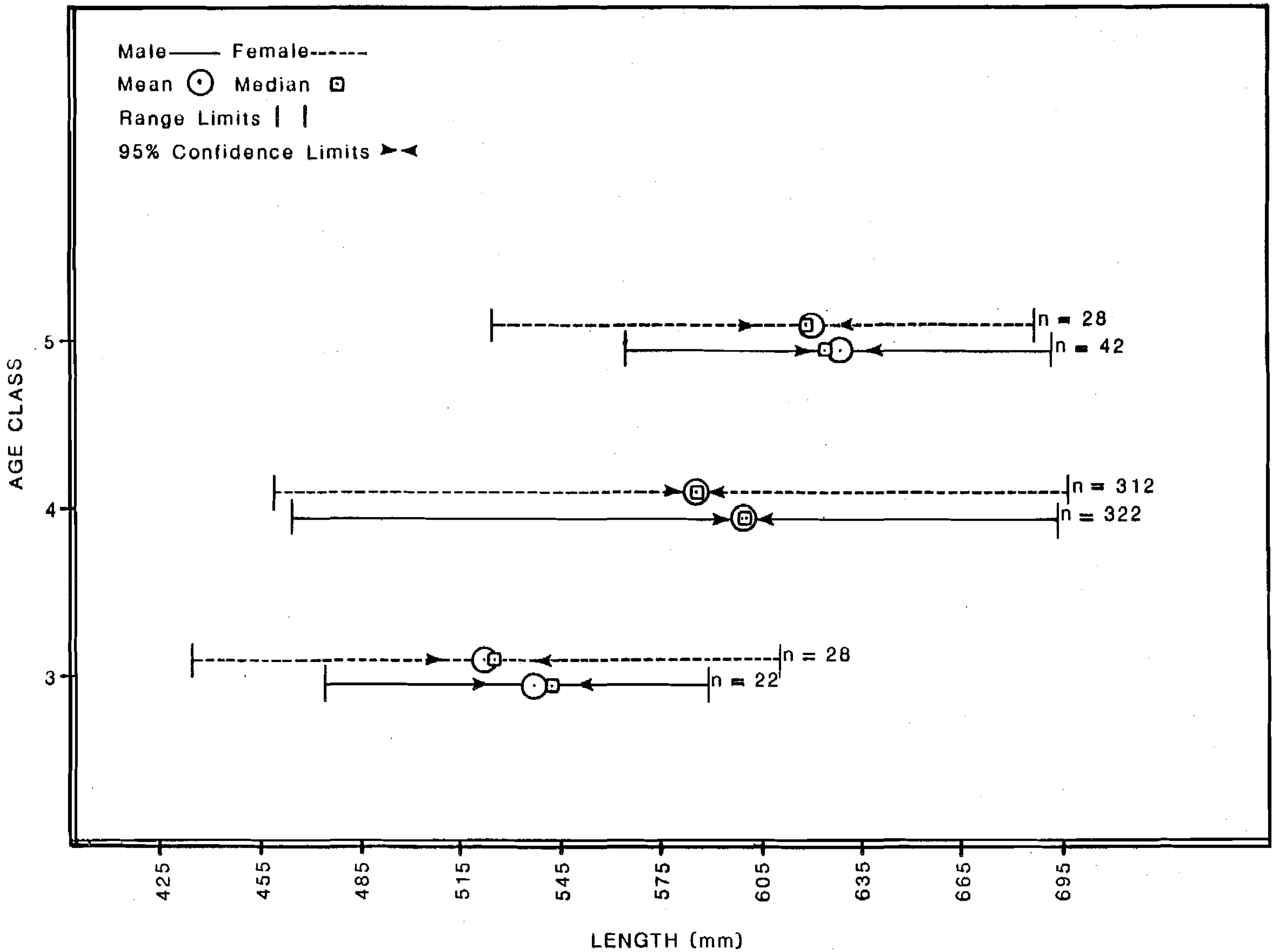


Figure EF-25 Chum salmon lengths by age class from Yentna Station fishwheel catches, Adult Anadromous Investigations, Su Hydro Studies, 1981.

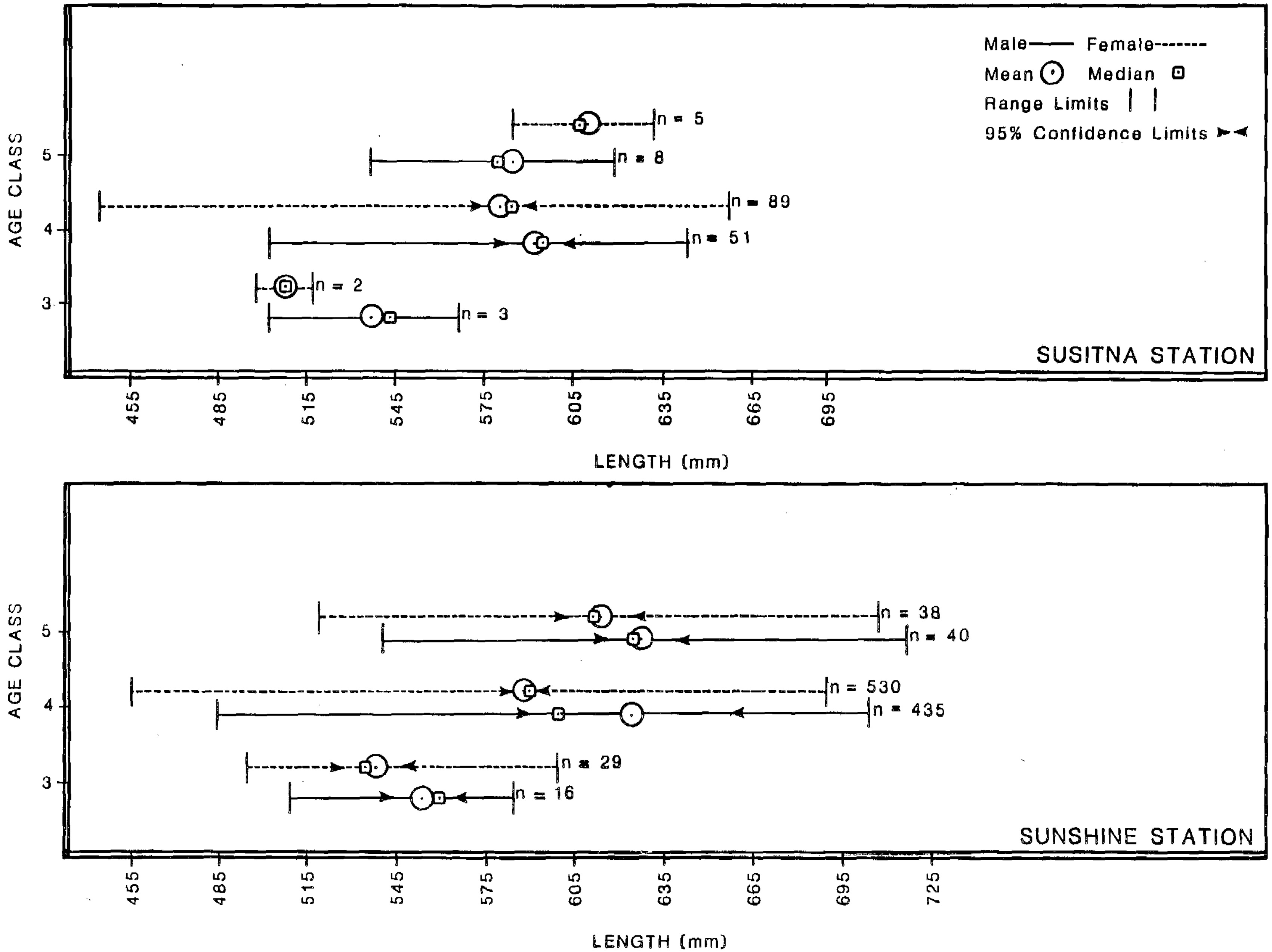


Figure EF-26 Chum salmon lengths by age class from Susitna and Sunshine Station fishwheel catches, Adult Anadromous Investigations, Su Hydro Studies, 1981.

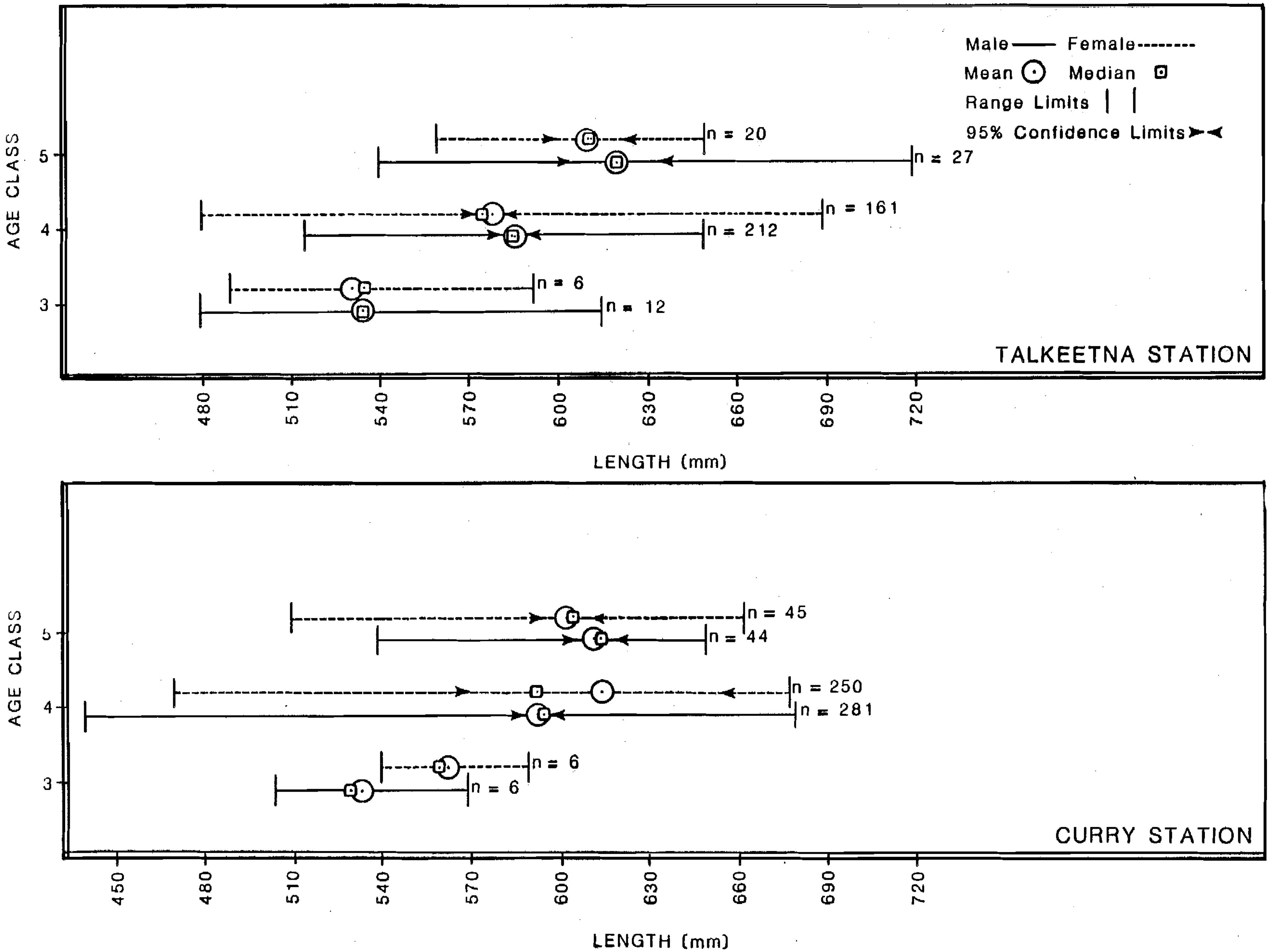


Figure EF-27 Chum salmon lengths by age class from Talkeetna and Curry Station fishwheel catches. Adult Anadromous Investigations, Su Hydro Studies, 1981.

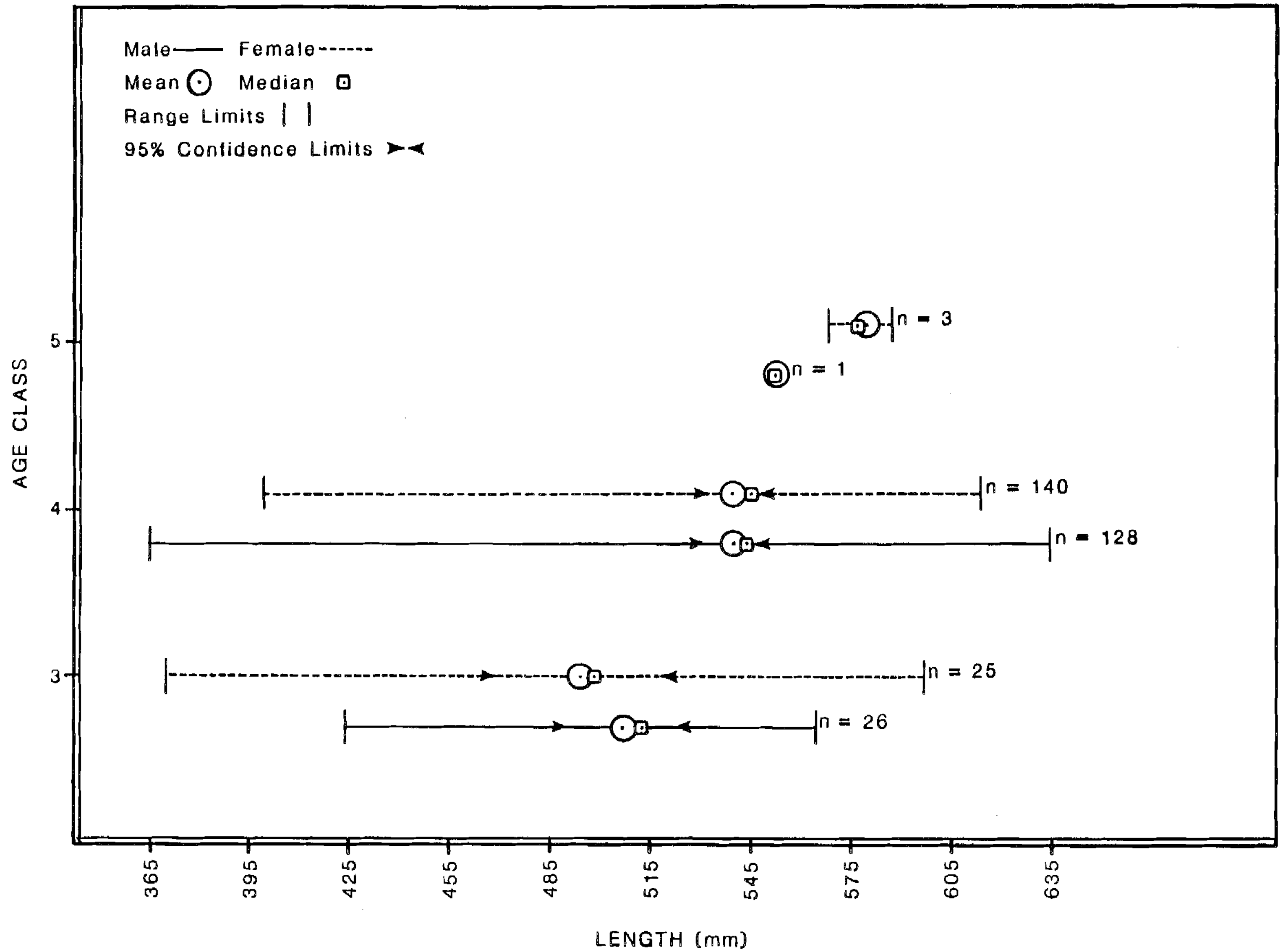


Figure EF-28 Coho salmon lengths by age class from Yentna Station fishwheel catches, Adult Anadromous Investigations, Su Hydro Studies, 1981.

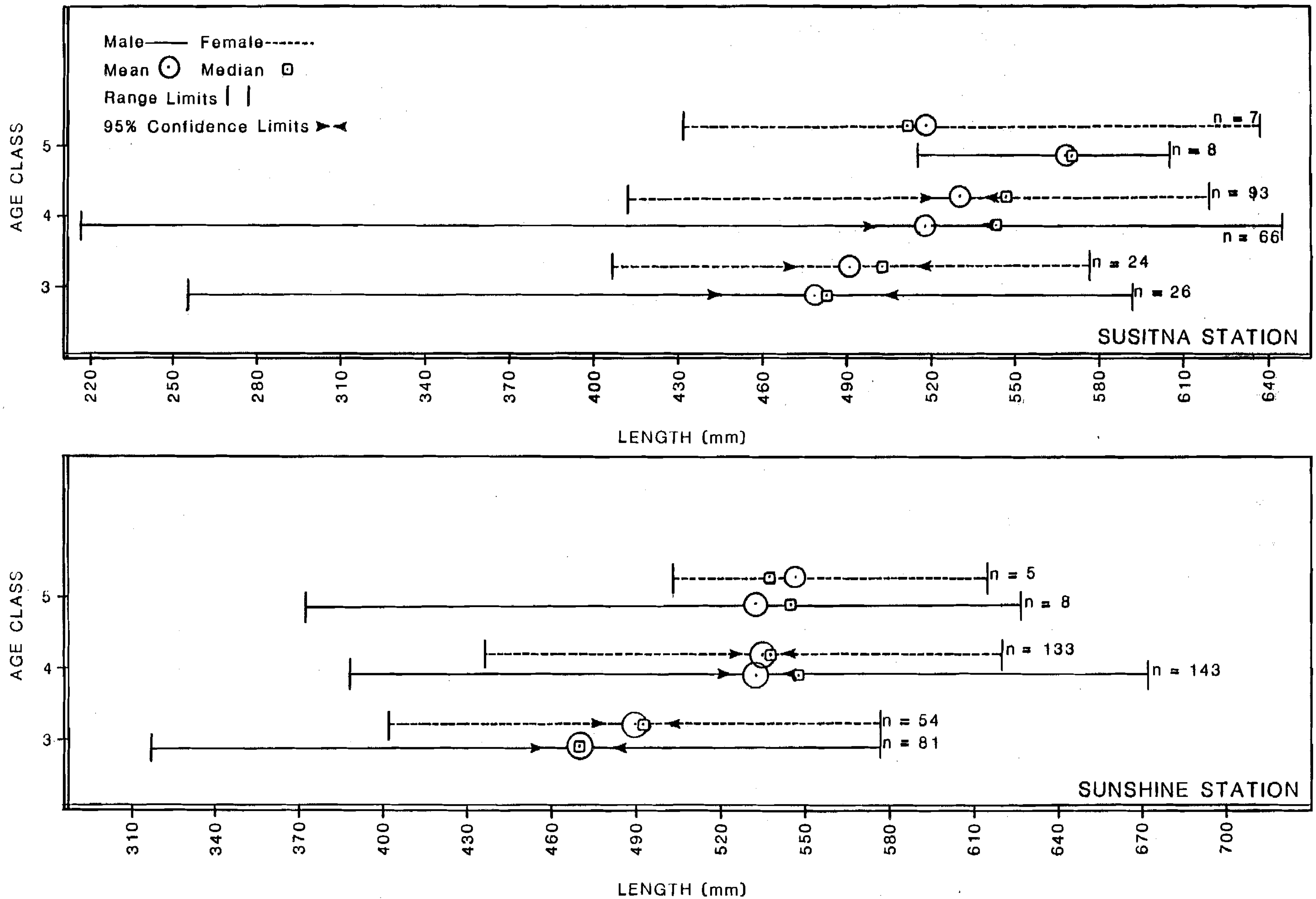
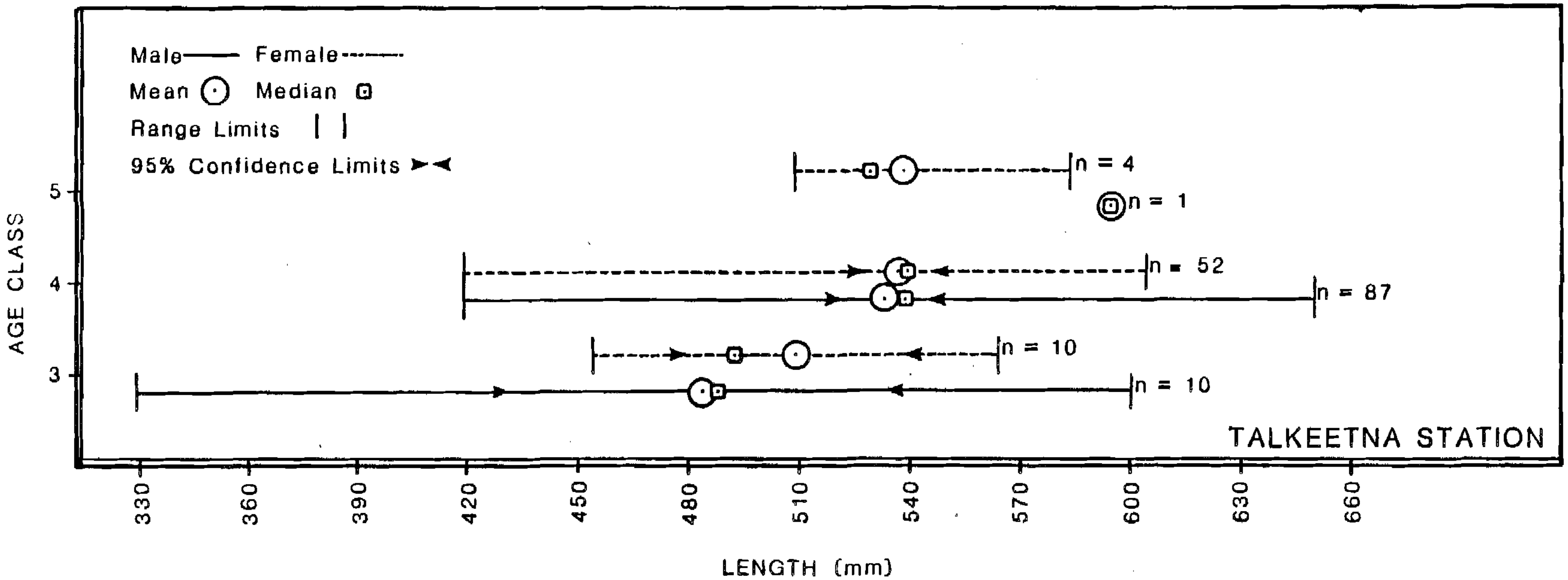


Figure EF-29 Coho salmon lengths by age class from Susitna and Sunshine fishwheel catches, Adult Anadromous Investigations, Su Hydro Studies, 1981.



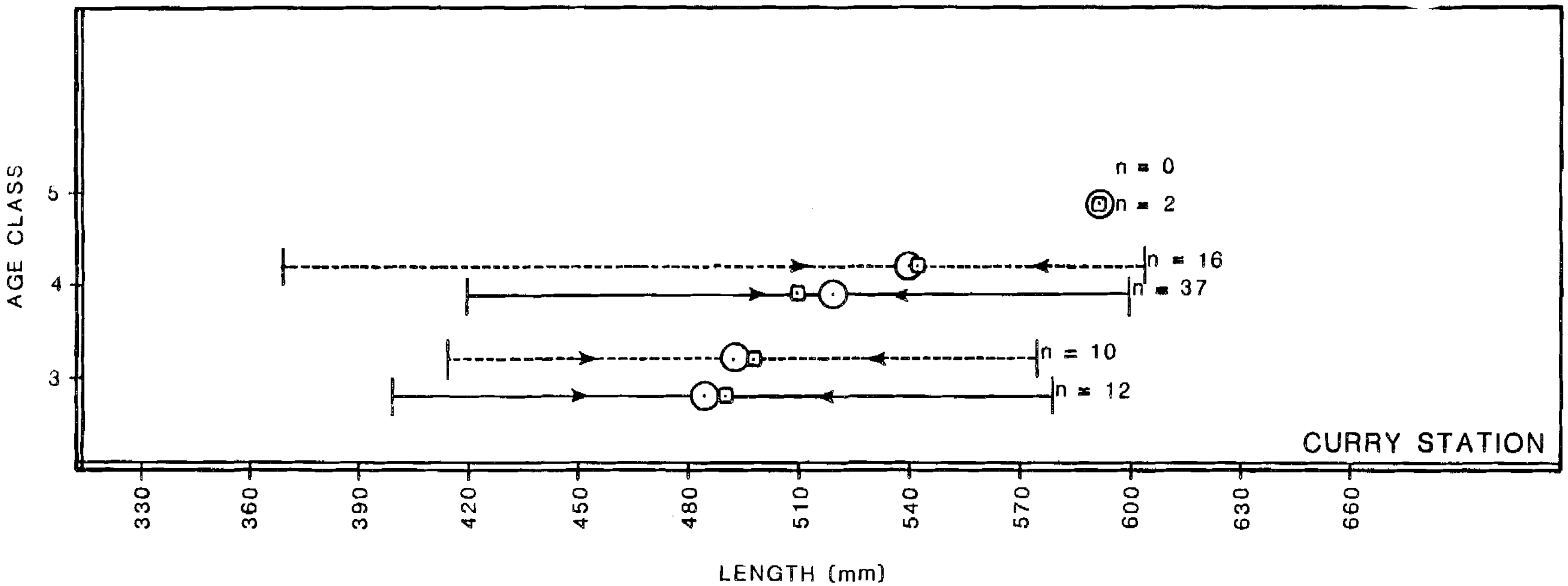


Figure EF-30 Coho salmon lengths by age class from Talkeetna and Curry Station fishwheel catches, Adult Anadromous Investigations, Su Hydro Studies, 1981.

APPENDIX EG
MAINSTEM SUSITNA RIVER VARIABLE GEAR CATCH

Table EG-1. Summary of mainstem Susitna River sampling using gill nets and electroshocking, Adult Anadromous Investigations, Su Hydro Studies, 1981.

RIVER MILE	LEGAL	DATE	METHOD 1/	DISTANCE 2/	ADULT SALMON CATCH			
					SOCKEYE	PINK	CHUM	COHO
6.5	15N07W29BBC	8/29	E/S	2 miles	0	0	0	0
7.3	15N07W20CBD	8/29	E/S	500	0	0	0	0
7.3	15N07W20CBD	9/16	E/S	300	0	0	0	0
7.8	15N07W22ABD	8/29	E/S	400	0	0	0	0
7.8	15N07W22ABD	8/29	E/S	400	0	0	0	0
12.5	15N07W02ADD	9/16	D/N	0	0	0	0	1
12.5	15N07W02ADD	9/16	D/N	0	0	0	0	4
16.8	16N07W14CCC	8/16	D/N	0	0	0	0	0
23.5	17N07W28BBA	8/15	D/N	0	0	0	0	1
26.5	17N07W14DCB	8/28	E/S	750	0	0	0	0
26.5	17N07W14DCB	8/28	E/S	600	0	0	0	1
27.7	17N07W13DCC	8/15	D/N	0	0	0	0	0
27.7	17N07W13DCC	8/15	D/N	0	0	0	0	2
27.7	17N07W13DCC	8/15	D/N	0	0	0	0	3
27.7	17N07W13DCC	8/28	E/S	450	0	0	0	0
30.4	17N06W04ADB	9/02	E/S	100	0	0	0	0
30.4	17N06W04ADB	9/02	E/S	75	0	0	0	0
30.4	17N06W04ADB	9/02	E/S	75	0	0	0	0
30.4	17N06W04ADB	9/02	E/S	100	0	0	0	0
30.4	17N06W04ADB	9/18	E/S	175	0	0	0	0
30.4	17N06W04ADB	9/18	E/S	275	0	0	0	0
30.4	17N06W04ADB	9/18	D/N	0	0	0	0	0
31.2	18N07W36DBD	8/31	E/S	100	0	0	0	0
31.8	17N06W05ACC	9/02	E/S	150	0	0	0	0
31.8	17N06W04ACC	9/18	D/N	0	0	0	0	0
32.2	17N06W04ACD	9/18	E/S	600	0	0	0	0
32.4	17N06W04ADB	9/18	E/S	400	0	0	0	0
35.5	18N07W13DBA	8/14	D/N	0	0	0	0	0
35.5	18N07W13DBA	8/30	E/S	400	0	0	0	0
35.5	18N07W13DBA	8/31	E/S	500	0	0	0	1
35.9	18N07W13BBA	8/30	E/S	150	0	0	0	20
35.9	18N07W13BBA	8/30	E/S	250	0	0	0	0
35.9	18N07W13BBA	8/30	E/S	20	0	0	0	6
35.9	18N07W13BBA	8/30	E/S	40	0	0	0	6

1/ Methods Noted: E/S = Electroshocker; D/N = Drift Gill Net; S/N = Set Gill Net

2/ Distance recorded in yards unless otherwise indicated

Table EG-1. Continued.

RIVER MILE	LEGAL	DATE	METHOD 1/	DISTANCE 2/	ADULT SALMON CATCH			
					SOCKEYE	PINK	CHUM	COHO
35.9	18N07W13BBA	8/31	E/S	50	0	0	0	1
35.9	18N07W13BBA	8/31	E/S	40	0	0	0	1
37.3	18N06W09DCB	8/10	D/N	100	0	0	0	0
37.3	18N06W09DCB	8/10	D/N	100	0	0	0	0
37.3	18N06W09DCB	8/10	D/N	300	0	0	0	1
37.3	18N06W09DCB	8/10	D/N	75	0	0	0	1
37.3	18N06W09DCB	8/21	D/N	100	0	0	0	0
37.3	18N06W09DCB	8/21	D/N	100	0	0	0	0
37.3	18N06W09DCB	8/21	D/N	100	0	0	0	0
37.3	18N06W09DCB	9/02	E/S	300	0	0	0	0
37.3	18N06W09DCB	9/02	E/S	200	0	0	0	0
37.3	18N06W09DCB	9/13	E/S	250	0	0	0	0
37.3	18N06W09DCB	9/19	E/S	75	0	0	0	0
37.3	18N06W09DCB	9/19	E/S	150	0	0	0	0
37.4	18N06W09DCA	9/13	E/S	100	0	0	0	0
38.4	18N06W11BCA	9/19	E/S	100	0	0	0	0
38.5	18N06W03DCB	8/10	D/N	100	0	0	0	0
39.0	18N06W11AAB	8/20	D/N	0	0	0	0	2
39.2	18N06W02DCB	8/20	D/N	100	0	0	0	0
39.2	18N06W02DCD	8/20	D/N	175	0	0	0	0
39.2	18N06W02DCD	8/20	D/N	275	0	0	0	0
39.2	18N06W02DCD	8/20	D/N	250	0	0	0	0
39.2	18N06W02DCD	8/20	D/N	300	0	0	0	0
39.2	18N06W02DCD	9/13	E/S	300	0	0	0	0
39.2	18N06W02DCD	9/19	E/S	300	0	0	0	0
39.9	18N06W02AAC	9/02	E/S	400	0	0	0	0
39.9	18N06W02AAC	9/02	E/S	150	0	0	0	0
39.9	18N06W02AAC	9/02	E/S	400	0	0	1	0
41.3	19N06W35AAC	8/20	D/N	100	0	0	0	0
41.3	19N06W35AAC	9/02	E/S	250	0	0	0	0
43.5	19N05W19CAB	8/10	D/N	100	0	0	0	1
43.5	19N05W19CAB	8/10	D/N	100	0	0	0	0
43.5	19N05W19CAB	8/10	D/N	100	0	0	0	0
43.5	19N05W19CAB	8/20	D/N	75	0	0	0	0

1/ Methods Noted: E/S = Electroshocker; D/N = Drift Gill Net; S/N = Set Gill Net
2/ Distance recorded in yards unless otherwise indicated

Table EG-1. Continued.

RIVER MILE	LEGAL	DATE	METHOD 1/	DISTANCE 2/	ADULT SALMON CATCH			
					SOCKEYE	PINK	CHUM	COHO
43.5	19N05W19CAB	8/20	D/N	75	0	0	0	0
43.5	19N05W19CAB	8/20	D/N	100	0	0	0	0
43.5	19N05W19CAB	9/03	E/S	250	0	0	0	0
43.5	19N05W19CAB	9/13	E/S	100	0	0	0	0
43.5	19N05W19CAB	9/13	E/S	300	0	0	0	0
43.5	19N05W19CAB	9/19	E/S	200	0	0	0	0
43.5	19N05W19CAB	9/19	E/S	300	0	0	0	0
43.9	19N05W19DAB	9/13	E/S	200	0	0	0	0
45.9	19N05W17DAD	9/13	E/S	150	0	0	0	0
46.1	19N05W16BAC	8/10	D/N	300	0	0	0	1
46.1	10N05W16BAC	9/12	E/S	250	0	0	0	0
47.6	19N05W03BCC	8/10	D/N	75	1	0	0	0
47.6	19N05W03BCC	8/10	D/N	75	0	0	0	0
47.6	19N05W03BCC	8/20	D/N	125	0	0	0	0
47.6	19N05W03BCC	8/20	D/N	200	0	0	0	0
47.6	19N05W03BCD	9/18	D/N	0	0	0	0	0
47.6	19N05W31DCA	9/19	D/N	0	0	0	0	0
47.7	20N05W31DDA	8/12	D/N	400	0	0	0	0
47.7	20N05W31DDA	8/12	D/N	400	0	0	0	0
48.2	19N05W03BCA	8/10	D/N	150	0	0	0	0
48.2	19N05W03BCA	8/10	D/N	200	0	0	0	0
48.2	19N05W31BAA	8/19	D/N	150	0	0	0	0
48.2	19N05W31BAA	8/19	D/N	300	0	0	0	0
48.2	19N05W03BCA	8/20	D/N	100	0	0	0	0
48.2	19N05W03BCA	8/20	D/N	150	0	0	0	0
48.2	19N05W03BCA	9/12	E/S	75	0	0	0	0
48.2	19N05W03BCA	9/12	E/S	175	0	0	0	0
48.2	19N05W03BCA	9/12	E/S	100	0	0	0	0
48.2	19N05W31BBD	9/15	E/S	2.5 miles	0	0	0	0
49.1	20N05W34CBC	9/12	E/S	100	0	0	0	0
49.4	20N05W33ABD	9/12	E/S	300	0	0	0	0
49.5	20N05W29BAB	9/19	E/S	3.0 miles	0	0	0	0
49.6	20N05W29AAC	8/12	D/N	200	0	0	0	0
49.6	20N05W29AAC	8/12	D/N	200	0	0	0	0

1/ Methods Noted: E/S = Electroshocker; D/N = Drift Gill Net; S/N = Set Gill Net
2/ Distance recorded in yards unless otherwise indicated

Table EG-1. Continued.

RIVER MILE	LEGAL	DATE	METHOD 1/	DISTANCE 2/	ADULT SALMON CATCH			
					SOCKEYE	PINK	CHUM	COHO
49.6	20N05W29AAC	8/12	D/N	200	0	0	0	0
49.6	20N05W29AAC	8/20	D/N	250	0	0	0	0
49.6	20N05W29AAC	8/20	D/N	250	0	0	0	0
49.6	20N05W29AAC	8/20	D/N	250	0	0	0	0
49.7	20N05W29BAB	9/15	E/S	400	0	0	0	0
50.1	20N05W28DDB	8/12	D/N	300	0	0	0	0
50.1	20N05W28DDB	9/12	E/S	100	0	0	0	0
50.5	20N05W27ACC	8/12	D/N	100	0	0	1	0
50.5	20N05W27AAC	8/12	D/N	200	0	0	0	1
50.5	20N05W27ACC	8/12	D/N	250	0	0	0	0
50.5	20N05W27CAC	8/12	D/N	150	0	0	0	0
50.5	20N05W27ACC	8/21	D/N	400	0	0	0	1
50.5	20N05W27ACC	8/21	D/N	350	0	0	0	0
50.5	20N05W27ACC	8/21	D/N	150	0	0	0	0
50.5	20N05W19AAB	9/19	E/S	4 miles	0	0	0	0
50.5	20N05W19AAB	9/19	E/S	4 miles	0	0	0	0
50.7	20N05W20ADC	9/15	E/S	1.5 miles	0	0	0	0
50.7	20N05W20ADC	9/19	E/S	1.5 miles	0	0	0	0
51.5	20N05W18ADD	9/15	E/S	300	0	0	0	0
52.3	20N05W22ABA	8/11	D/N	150	0	0	0	0
52.3	20N05W22ABA	8/11	D/N	200	0	0	0	0
52.3	20N05W22ABA	8/21	D/N	100	0	0	0	0
52.3	20N05W22ABA	8/21	D/N	100	0	0	0	0
52.3	20N05W22ABA	8/21	D/N	200	0	0	0	0
52.3	20N05W22ABA	8/21	D/N	150	0	0	0	0
52.3	20N05W22ABA	9/12	E/S	150	0	0	0	0
52.3	20N05W22ABA	9/12	E/S	150	0	0	0	0
52.3	20N05W22ABA	9/12	E/S	350	0	0	0	0
52.3	20N05W22ABA	9/12	E/S	200	0	0	0	0
52.8	20N05W08DDB	9/15	E/S	350	0	0	0	0
53.5	20N05W04CCA	9/15	E/S	350	0	0	0	0
54.9	20N05W04ADB	8/11	D/N	250	0	0	0	0
54.9	20N05W04ADB	8/11	D/N	250	0	0	0	0
55.7	20N05W34CDA	8/11	D/N	150	0	0	0	0

1/ Methods Noted: E/S = Electroshocker; D/N = Drift Gill Net; S/N = Set Gill Net
2/ Distance recorded in yards unless otherwise indicated

Table EG-1. Continued.

RIVER MILE	LEGAL	DATE	METHOD 1/	DISTANCE 2/	ADULT SALMON CATCH SOCKEYE	PINK	CHUM	COHO
55.7	21N05W34CDA	8/19	D/N	0	0	0	0	0
55.7	21N05W34CDA	9/11	E/S	100	0	0	0	0
55.7	21N05W34CDA	9/11	E/S	100	0	0	0	0
55.7	21N05W34CDA	9/11	E/S	100	0	0	0	0
56.1	21N05W34BCD	8/19	D/N	100	0	0	0	0
56.1	21N05W34BCD	8/19	D/N	100	0	0	0	0
56.1	21N05W34BCD	8/19	D/N	150	0	0	0	0
56.4	21N05W34ABD	9/14	E/S	300	0	0	0	0
59.9	21N05W14DBC	8/11	D/N	150	0	0	0	0
59.9	21N05W14DBC	8/11	D/N	150	0	0	0	0
59.9	21N05W14DBC	8/19	D/N	150	0	0	0	0
59.9	21N05W14DBC	8/19	D/N	150	0	0	0	0
59.9	21N05W14DBC	8/19	D/N	200	0	0	0	0
60.2	21N05W14CBA	8/01	S/N	12 min.	0	0	0	0
60.4	21N05W14DBB	8/01	D/N	1000	0	0	0	0
60.5	21N05W14ACC	8/11	D/N	100	0	0	0	0
60.5	21N05W14ACC	8/11	D/N	100	0	0	0	0
60.5	21N05W14ACC	8/11	D/N	150	0	0	0	0
60.5	21N05W14ACC	8/11	D/N	150	0	0	0	0
60.5	21N05W14ACC	8/19	D/N	250	0	0	0	0
60.5	21N05W14ACC	8/19	D/N	250	0	0	0	0
60.5	21N05W14ACC	8/19	D/N	250	0	0	0	0
60.5	21N05W14ACC	8/19	D/N	0	0	0	0	0
60.5	21N05W14ACC	9/11	E/S	100	0	0	0	0
60.5	21N05W14ACC	9/11	E/S	150	0	0	0	0
60.6	21N05W14AAB	8/01	D/N	200	0	0	0	0
61.1	21N05W13AAC	9/21	E/S	.5 miles	0	1	0	0
61.6	21N05W12CDB	8/10	D/N	1200	0	0	0	0
62.0	21N05W12CAB	8/10	D/N	600	0	0	0	0
62.4	21N05W12AAA	9/03	S/N	15 min.	0	0	0	0
62.5	21N05W12BAB	8/10	D/N	300	0	0	0	0
62.5	21N05W12BAB	9/03	D/N	200	0	0	0	0
62.5	21N05W12BAB	9/03	D/N	300	0	0	0	0
62.5	21N05W12BAB	8/21	D/N	200	0	0	0	0

1/ Methods Noted: E/S = Electroshocker; D/N = Drift Gill Net; S/N = Set Gill Net
2/ Distance recorded in yards unless otherwise indicated

Table EG-1. Continued.

RIVER MILE	LEGAL	DATE	METHOD 1/	DISTANCE 2/	ADULT SALMON CATCH SOCKEYE	PINK	CHUM	COHO
62.5	21N05W01CDA	9/21	E/S	600	0	0	0	0
62.7	21N05W01DCB	9/03	S/N	38 min.	0	0	0	0
64.2	22N05W35CDA	8/10	D/N	300	0	0	0	0
64.4	22N05W36ADD	9/03	D/N	200	0	0	0	0
64.4	22N05W36ADD	9/21	D/N	300	0	0	1	0
64.5	22N04W31CBD	9/03	S/N	10 min.	0	0	0	0
65.5	22N05W26CBB	9/21	E/S	.25 miles	0	0	0	0
68.3	22N05W13AAB	9/03	S/N	1 min.	0	0	2	0
69.2	22N05W02DDA	8/10	D/N	200	0	0	0	0
70.6	22N05W02BBB	8/10	D/N	500	0	0	0	0
70.6	22N05W01DDB	8/23	S/N	17 min.	0	0	0	0
70.8	22N05W01DCA	8/23	D/N	200	0	0	0	0
71.6	22N05W01DBB	8/23	D/N	1600	0	0	0	0
71.7	23N04W30CCC	7/31	S/N	14 min.	0	0	0	0
73.0	23N05W26AAD	8/10	S/N	2 min.	0	0	0	3
73.0	23N05W26AAD	8/20	S/N	2 min.	0	0	0	1
73.0	23N05W06ADB	8/20	D/N	1300	0	0	0	0
73.0	23N05W25DAA	8/23	D/N	1500	0	0	3	0
73.4	23N04W30BBC	7/31	D/N	250	0	0	3	0
73.4	23N04W30BBC	8/10	D/N	400	0	0	0	0
73.4	23N04W30BBC	8/23	D/N	300	0	0	3	0
73.4	23N04W30BBC	9/02	D/N	200	0	0	3	0
73.4	23N04W30BBC	9/13	S/N	40 min.	0	0	0	0
74.8	23N04W18CBC	8/23	S/N	20 min.	0	0	1	0
75.0	23N05W13DBD	8/20	D/N	1300	0	0	0	0
75.0	23N04W18CBC	8/23	D/N	1300	0	0	0	0
75.0	23N04W18CBC	9/02	S/N	3 min.	0	0	4	0
75.0	23N05W13ADB	9/21	E/S	.5 miles	0	0	0	0
75.0	23N05W13DBD	9/21	E/S	.75 miles	0	0	0	0
75.4	23N05W13ADC	8/06	S/N	20 min.	0	0	0	0
75.4	23N05W13ADB	8/06	D/N	200	0	0	0	0
75.4	23N05W13ADB	8/20	D/N	300	0	0	0	0
75.4	23N05W13ADB	9/04	S/N	5 min.	0	0	0	0
76.2	23N04W07CDC	8/20	S/N	34 min.	0	0	0	0

1/ Methods Noted: E/S = Electroshocker; D/N = Drift Gill Net; S/N = Set Gill Net
2/ Distance recorded in yards unless otherwise indicated

Table EG-1. Continued.

RIVER MILE	LEGAL	DATE	METHOD 1/	DISTANCE 2/	ADULT SALMON CATCH: SOCKEYE	PINK	CHUM	COHO
76.2	23N04W07CDC	8/20	D/N	200	0	0	0	0
76.2	23N04W07CDC	9/02	S/N	13 min.	0	0	2	0
76.5	23N04W07BDC	9/21	E/S	250	0	0	0	0
76.6	23N04W07BBD	8/20	D/N	500	0	0	0	0
76.8	23N04W07ACC	7/31	D/N	1000	0	0	0	0
76.8	23N04W07ACC	8/10	D/N	300	0	0	0	0
76.8	23N04W07BBD	9/21	E/S	300	0	0	1	0
76.8	23N04W07BBD	9/21	E/S	400	0	0	1	1
76.8	23N04W07BBD	9/21	E/S	.25 miles	0	0	0	0
77.2	23N04W06DCA	9/04	S/N	25 min.	0	0	0	0
77.2	23N04W06CCC	9/21	E/S	.5 miles	0	0	1	1
77.2	23N04W06CCC	9/27	E/S	500	0	0	0	1
77.2	23N04W06CCC	9/27	E/S	50	0	0	0	0
77.4	23N04W06DBA	8/20	D/N	1600	0	0	0	0
78.1	23N04W06BBC	8/20	D/N	2000	0	0	0	0
78.1	23N05W01BAC	8/20	D/N	500	0	0	0	0
78.4	24N05W02AAD	8/01	S/N	17 min.	0	0	0	2
78.4	24N05W02AAD	8/06	S/N	20 min.	0	0	0	0
78.4	24N05W02AAD	8/20	S/N	4 min.	0	0	0	1
78.4	24N05W02AAB	8/01	S/N	49 min.	0	0	0	0
78.4	24N05W02AAB	8/06	S/N	16 min.	0	0	0	0
78.4	24N05W02ABB	8/20	S/N	17 min.	0	0	0	0
78.9	24N05W01BAC	9/28	E/S	300	0	0	0	0
79.2	24N05W35ADC	8/24	D/N	200	0	0	0	0
79.5	24N05W36BCD	8/13	D/N	1000	0	0	0	0
79.5	24N05W36BCD	8/24	D/N	700	0	0	0	0
79.5	24N05W36BCD	8/24	D/N	500	0	0	0	0
79.8	24N05W36BBD	8/13	D/N	500	0	0	0	0
79.9	24N05W26DCB	8/14	D/N	200	0	0	0	0
80.2	24N05W26ACA	8/19	D/N	300	0	0	0	0
80.2	24N05W26ACA	8/24	D/N	200	0	0	0	0
80.5	24N05W26ACB	8/24	S/N	30 min.	0	0	0	0
80.9	24N05W25BBD	8/14	D/N	700	0	0	0	0
81.0	24N05W25BBD	9/22	E/S	500	0	0	1	0

1/ Methods Noted: E/S = Electroshocker; D/N = Drift Gill Net; S/N = Set Gill Net

2/ Distance recorded in yards unless otherwise indicated

Table EG-1. Continued.

RIVER MILE	LEGAL	DATE	METHOD 1/	DISTANCE 2/	ADULT SALMON CATCH			
					SOCKEYE	PINK	CHUM	COHO
81.2	24N05W24BBB	8/24	S/N	7 min.	0	0	0	0
81.2	24N05W24CCC	8/24	D/N	200	0	0	1	1
81.2	24N05W24CCC	9/23	D/N	200	0	0	0	0
81.3	24N05W25BAB	9/05	D/N	300	0	0	0	0
81.4	24N05W23DAD	8/14	D/N	500	0	0	0	0
81.6	24N05W24CDD	8/13	D/N	300	0	0	0	0
81.6	24N05W25CCA	8/24	D/N	500	0	0	0	0
81.6	24N05W23DBB	9/22	E/S	.5 miles	0	0	0	0
81.6	24N05W24CDD	9/22	E/S	250	0	0	0	0
81.7	24N05W23DBB	8/24	D/N	1600	0	0	0	1
82.3	24N05W22BDA	8/14	D/N	500	0	0	0	0
82.3	24N05W22BDA	8/24	D/N	1300	0	0	0	1
82.3	24N05W22BDA	9/12	D/N	200	0	0	0	0
82.3	24N05W22BDA	9/20	D/N	700	0	0	0	0
82.6	24N05W22BAA	9/12	D/N	500	0	0	0	0
82.7	24N05W22BAC	9/12	D/N	200	0	0	0	0
82.7	24N05W22BAC	9/20	D/N	500	0	0	0	0
83.3	24N05W15BCC	8/24	S/N	4 min.	0	0	1	0
83.3	24N05W15BCC	9/05	S/N	5 min.	0	0	1	0
83.5	24N05W15CAB	8/30	D/N	500	0	0	0	0
83.5	24N05W15BCA	9/12	S/N	27 min.	0	0	0	0
84.5	24N05W14BBB	9/27	E/S	300	0	0	0	0
85.9	24N05W12BBB	9/27	E/S	100	0	0	0	0
86.0	24N05W12CCA	9/23	D/N	500	0	0	0	0
86.4	24N05W01DAA	8/14	S/N	15 min.	0	0	1	0
86.4	24N05W01DCD	8/14	S/N	12 min.	0	0	0	0
87.7	25N05W36CBA	9/27	E/S	150	0	0	0	0
88.2	25N05W36ADB	9/27	E/S	250	0	0	0	0
88.4	25N05W36BAB	9/27	E/S	100	0	0	0	0
88.4	25N05W36BAB	9/27	E/S	50	0	0	0	0
89.0	25N05W25CDA	9/27	E/S	150	0	0	1	0
89.3	25N05W26ADC	9/27	E/S	200	0	0	0	0
89.4	25N05W26ADB	9/27	E/S	300	0	0	0	0
90.5	25N05W15DCD	9/27	E/S	550	0	0	0	0

1/ Methods Noted: E/S = Electroshocker; D/N = Drift Gill Net; S/N = Set Gill Net
2/ Distance recorded in yards unless otherwise indicated

Table EG-1. Continued.

RIVER MILE	LEGAL	DATE	METHOD 1/	DISTANCE 2/	ADULT SALMON CATCH SOCKEYE	PINK	CHUM	COHO
92.0	25N05W13BCC	9/22	E/S	.5 miles	0	0	0	0
92.2	25N05W13BCC	9/23	D/N	500	0	0	0	0
95.0	25N05W36BDC	8/22	D/N	1300	0	0	0	0
95.3	26N05W36ADC	8/22	D/N	1000	0	0	1	0
95.3	26N05W36ADC	8/30	D/N	500	0	0	0	0
95.8	26N05W36CAB	8/22	D/N	1300	0	0	0	0
96.8	26N05W25BAA	9/02	S/N	13 min.	0	0	1	0
97.1	26N05W25BDC	8/30	D/N	1600	0	0	0	0
99.5	26N05W11DCD	8/30	D/N	2000	0	0	0	0
100.2	26N05W11CAD	8/30	D/N	1000	0	0	0	0
100.5	26N05W02CDD	8/22	D/N	150	0	0	0	0
100.6	26N05W02CCC	8/22	D/N	300	0	0	0	0
100.6	26N05W02CCC	9/24	S/N	9 min.	0	0	0	0
100.8	26N05W02BCB	8/22	D/N	200	0	0	0	0
101.0	26N05W02BBD	8/22	D/N	300	0	0	0	0
102.0	27N05W35ACD	8/30	S/N	10 min.	0	0	0	0
104.4	27N05W24CDC	8/22	D/N	1600	0	0	0	0
104.5	27N05W24CDC	8/29	D/N	1600	0	0	0	0
105.0	27N05W24BCA	8/22	D/N	200	0	0	0	0
105.2	27N05W24BBD	8/22	D/N	700	0	0	0	0
110.0	28N05W30CBB	9/23	E/S	350	0	0	0	0
116.3	29N04W32BDC	9/23	E/S	100	0	0	0	5
117.7	29N04W21ABB	9/23	E/S	300	0	0	0	0
120.9	29N04W10BAC	9/22	D/N	150	0	0	0	0
120.9	29N04W10BAC	9/23	E/S	150	0	0	0	0
121.0	29N04W10BDB	9/23	E/S	200	0	0	0	0
123.0	30N04W35	9/22	D/N	250	0	0	0	0
127.2	30N03W20ABD	9/09	D/N	100	0	0	0	0
128.2	30N03W16BCA	9/22	D/N	200	0	0	0	0
129.2	30N03W20B	9/08	D/N	300	0	0	4	3
130.5	30N03W10B	9/08	D/N	150	0	0	3	0
131.0	30N03W02AA	9/08	D/N	.5 miles	0	0	0	0
131.1	30N03W03DA	9/07	D/N	1 mile	0	0	3	0
132.0	31N02W02ABA	9/24	E/S	300	0	0	0	0

1/ Methods Noted: E/S = Electroshocker; D/N = Drift Gill Net; S/N = Set Gill Net

2/ Distance recorded in yards unless otherwise indicated

Table EG-1. Continued.

RIVER MILE	LEGAL	DATE	METHOD 1/	DISTANCE 2/	ADULT SALMON CATCH SOCKEYE	PINK	CHUM	COHO
132.4	31N02W02AA	9/07	D/N	.8 miles	0	0	0	0
134.8	31N02W19DCC	9/06	D/N	200	0	0	0	0
135.2	31N02W19ADA	9/06	D/N	200	0	0	6	0
135.8	31N02W20BAA	9/06	D/N	150	0	0	0	0
138.6	31N02W09CDA	9/24	E/S	100	0	0	0	0
138.6	31N02W09CDA	9/24	E/S	150	0	0	0	0
144.5	32N01W32ACA	9/24	E/S	200	0	0	0	0
146.9	32N01W27DBD	9/24	E/S	250	0	0	0	0
148.9	32N01W25CDA	9/24	E/S	150	0	0	0	0
148.9	32N01W25CDA	9/24	E/S	300	0	0	0	0
150.6	32N01W31CBA	9/24	E/S	.5 miles	0	0	0	0

1/ Methods Noted: E/S = Electroshocker; D/N = Drift Gill Net; S/N = Set Gill Net
2/ Distance recorded in yards unless otherwise indicated

APPENDIX EH
MAINSTEM SUSITNA RIVER
SPAWNING SITE MAPS

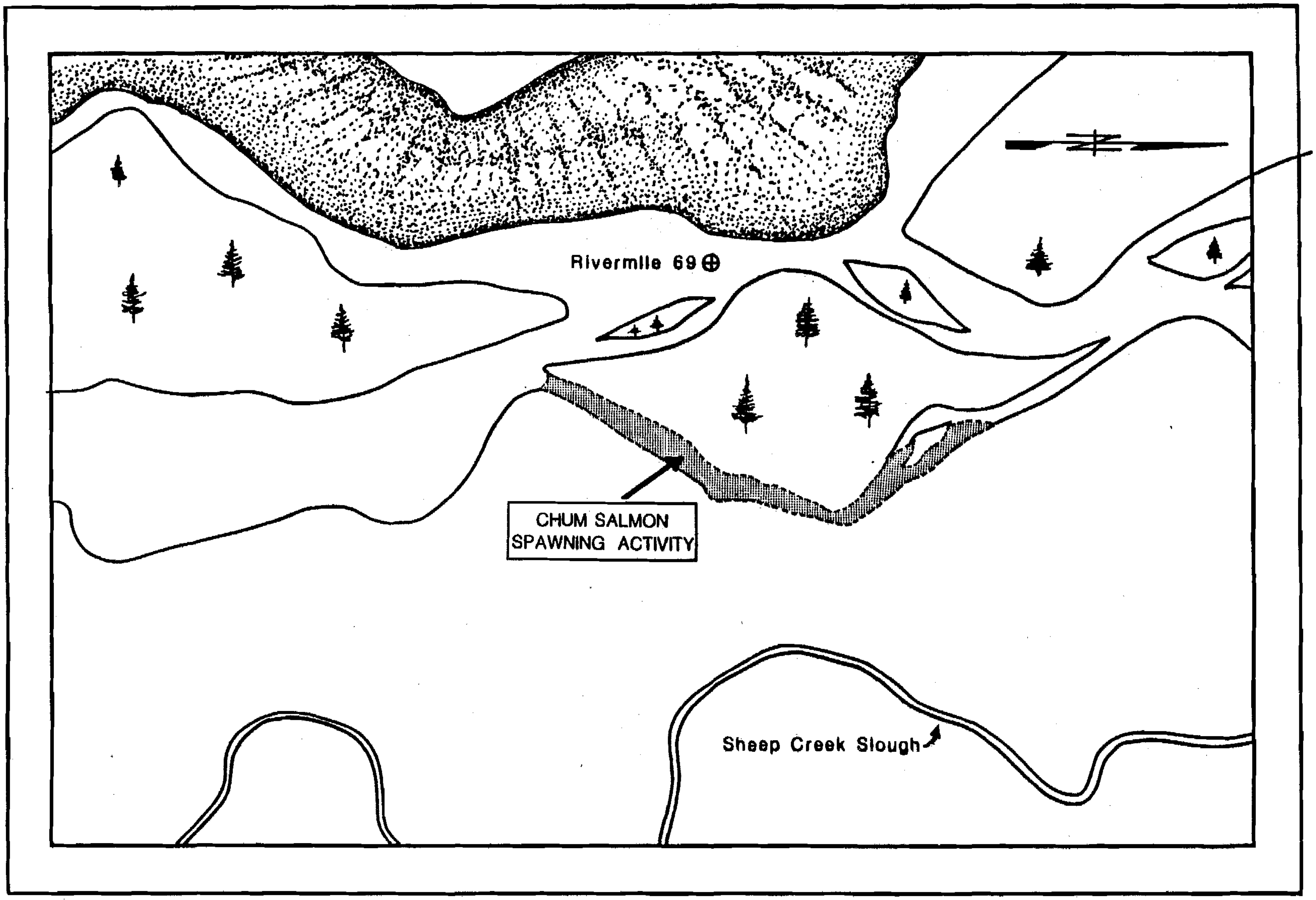


Figure EH-1. Mainstem Susitna River chum salmon spawning area at RM 68.3 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

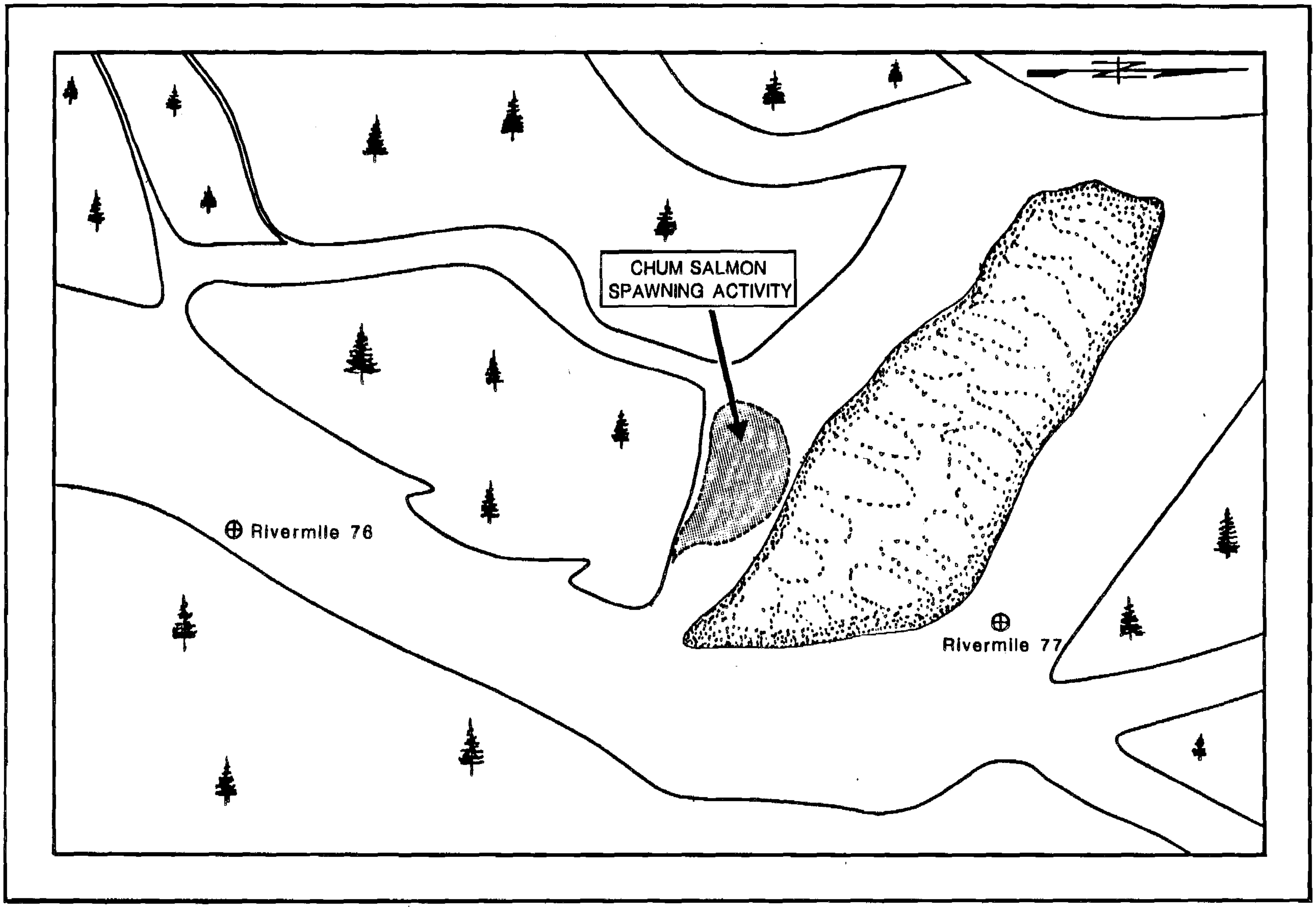


Figure EH-2. Mainstem Susitna River chum salmon spawning area at RM 76.6 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

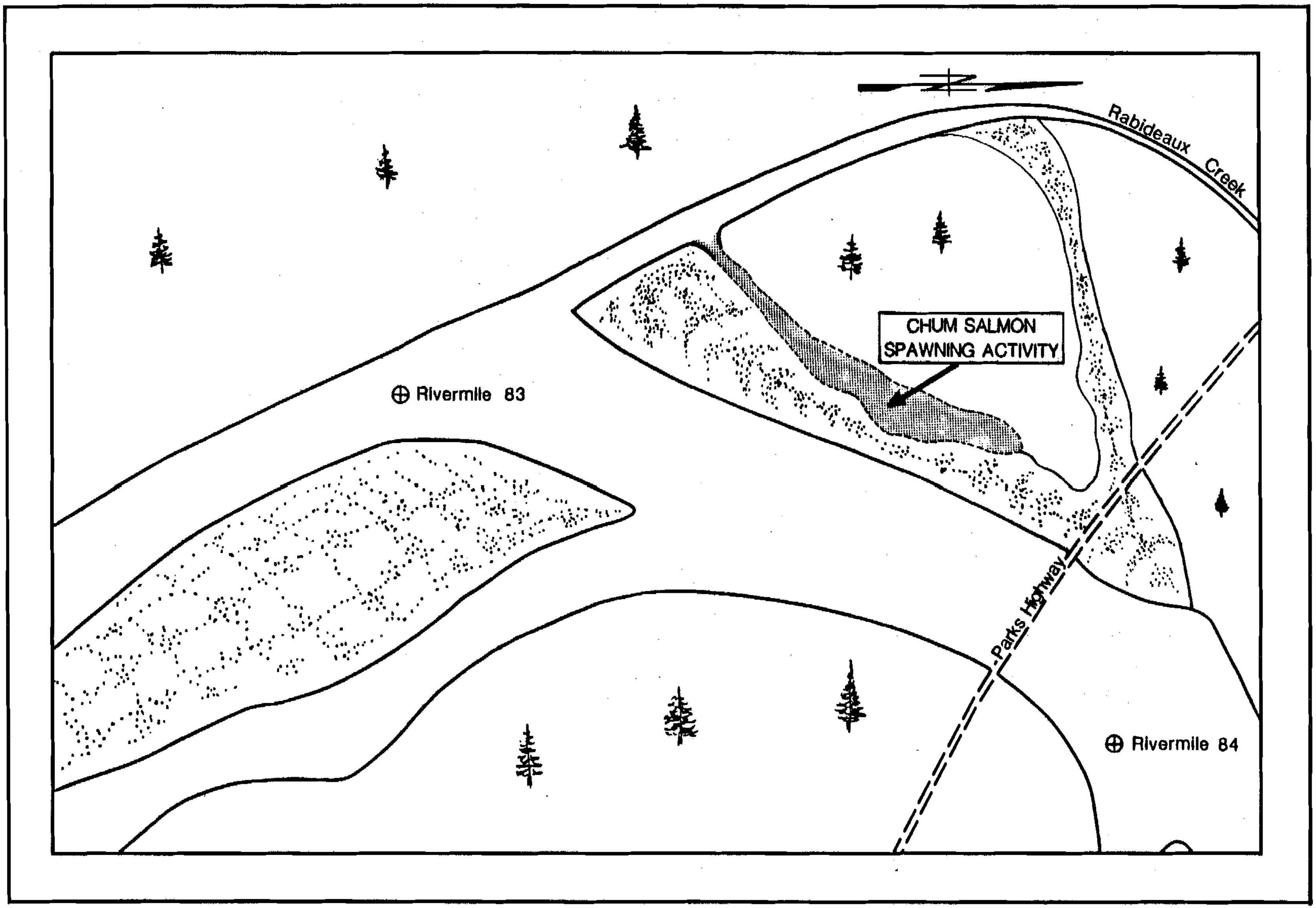


Figure EH-3. Mainstem Susitna River chum salmon spawning area at RM 83.3 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

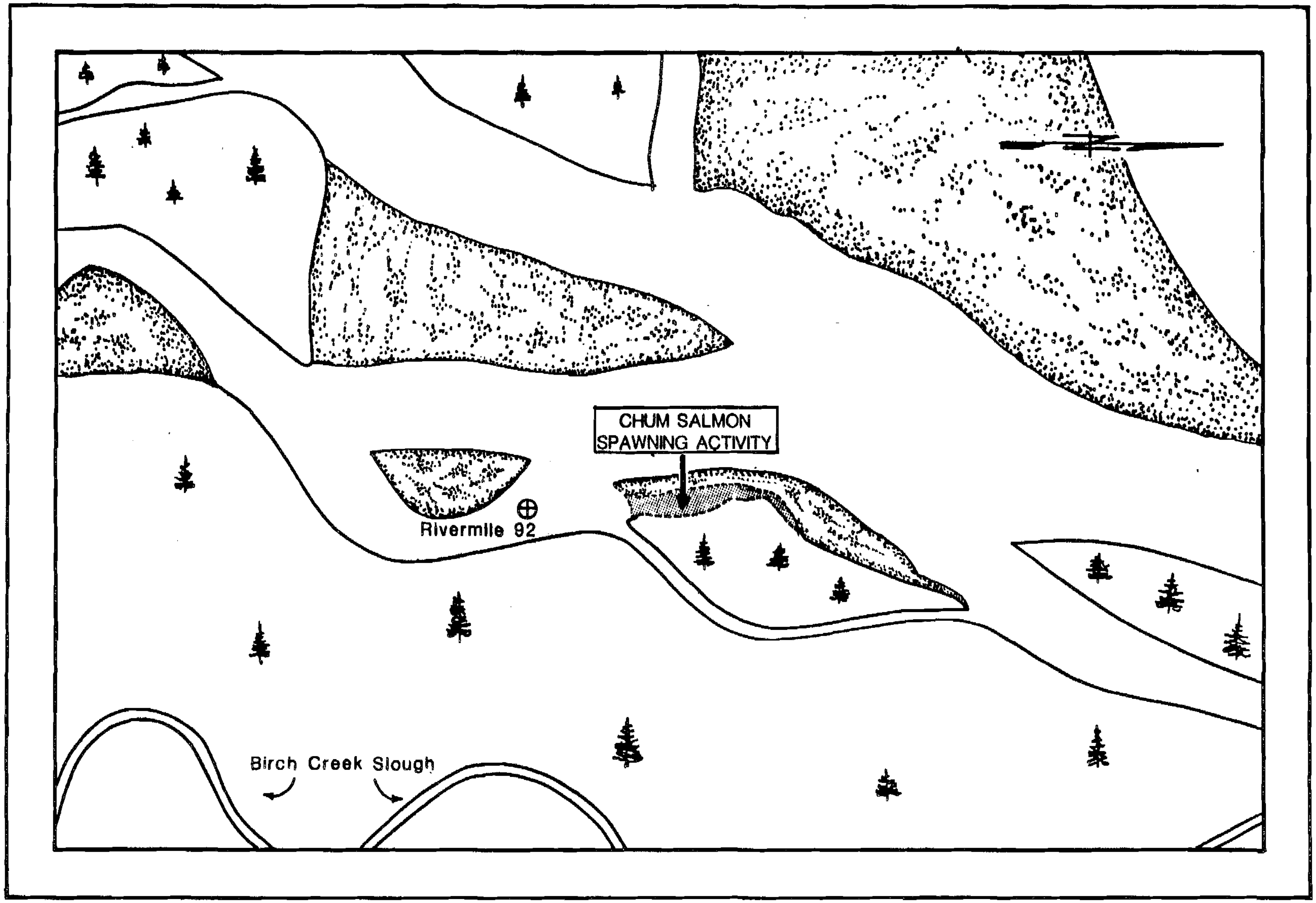


Figure EH-4. Mainstem Susitna River chum salmon spawning area at RM 92.2 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

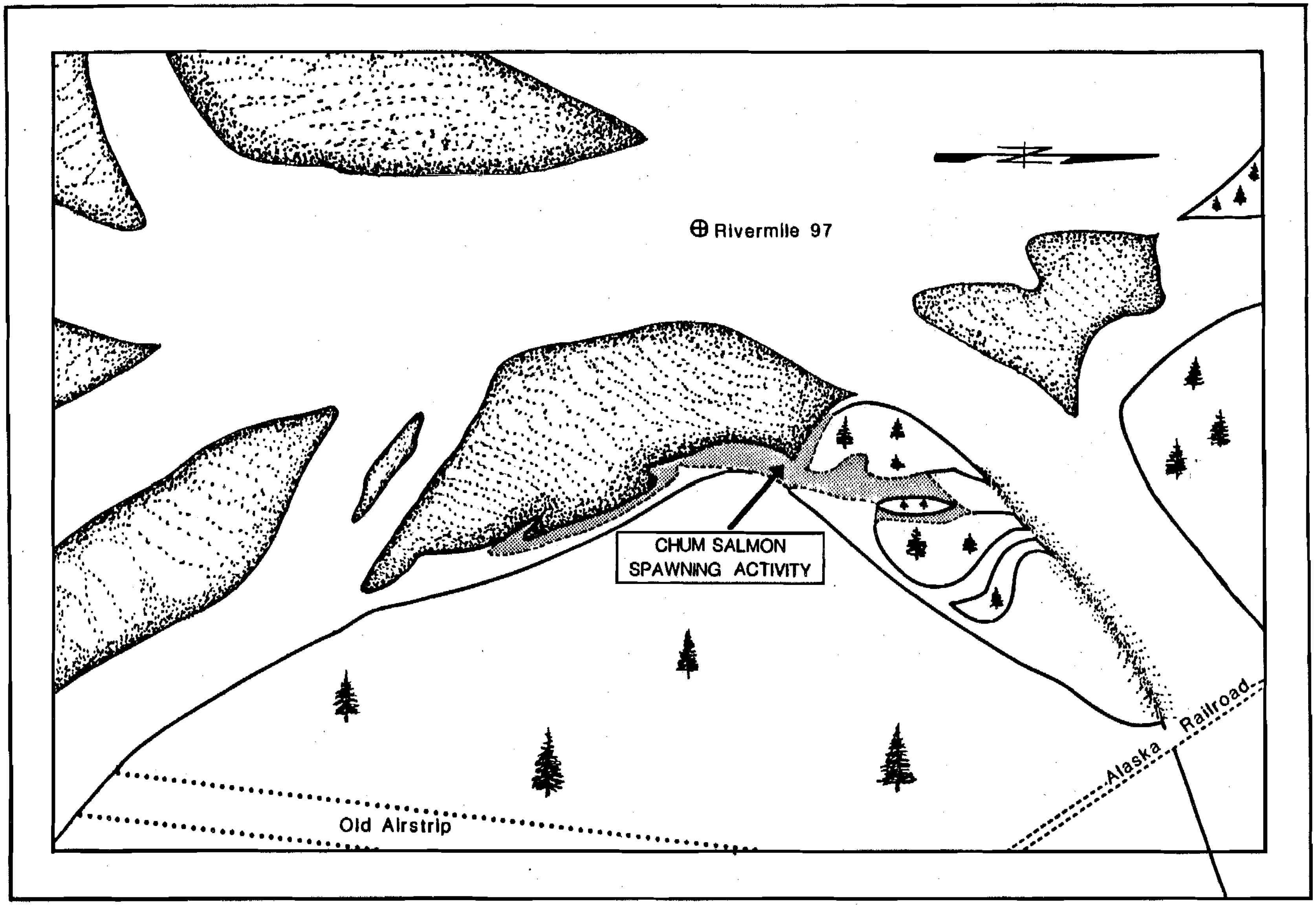


Figure EH-5. Mainstem Susitna River chum salmon spawning area at RM 96.8 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

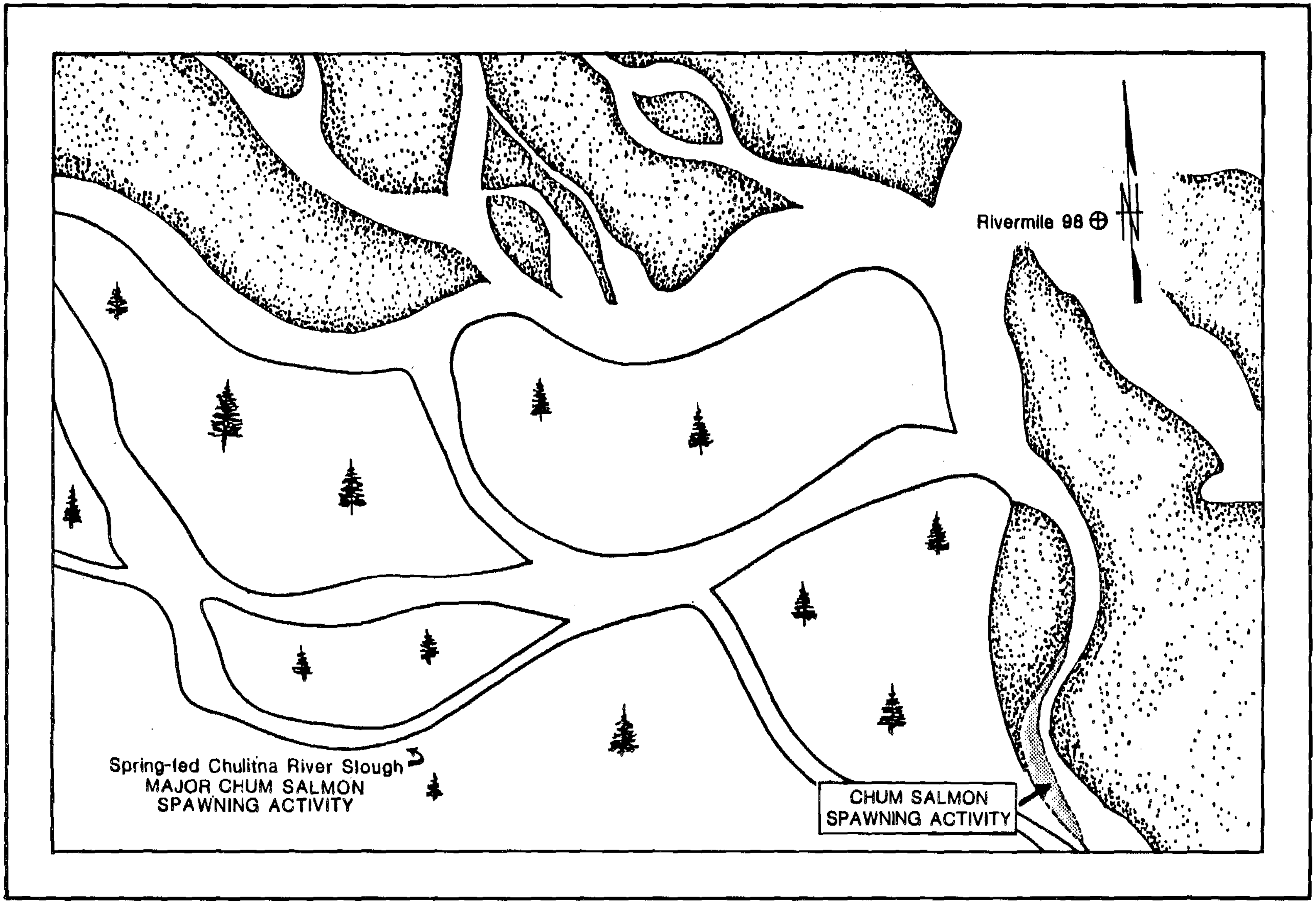


Figure EH-6. Mainstem Susitna River chum salmon spawning area at RM 97.0 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

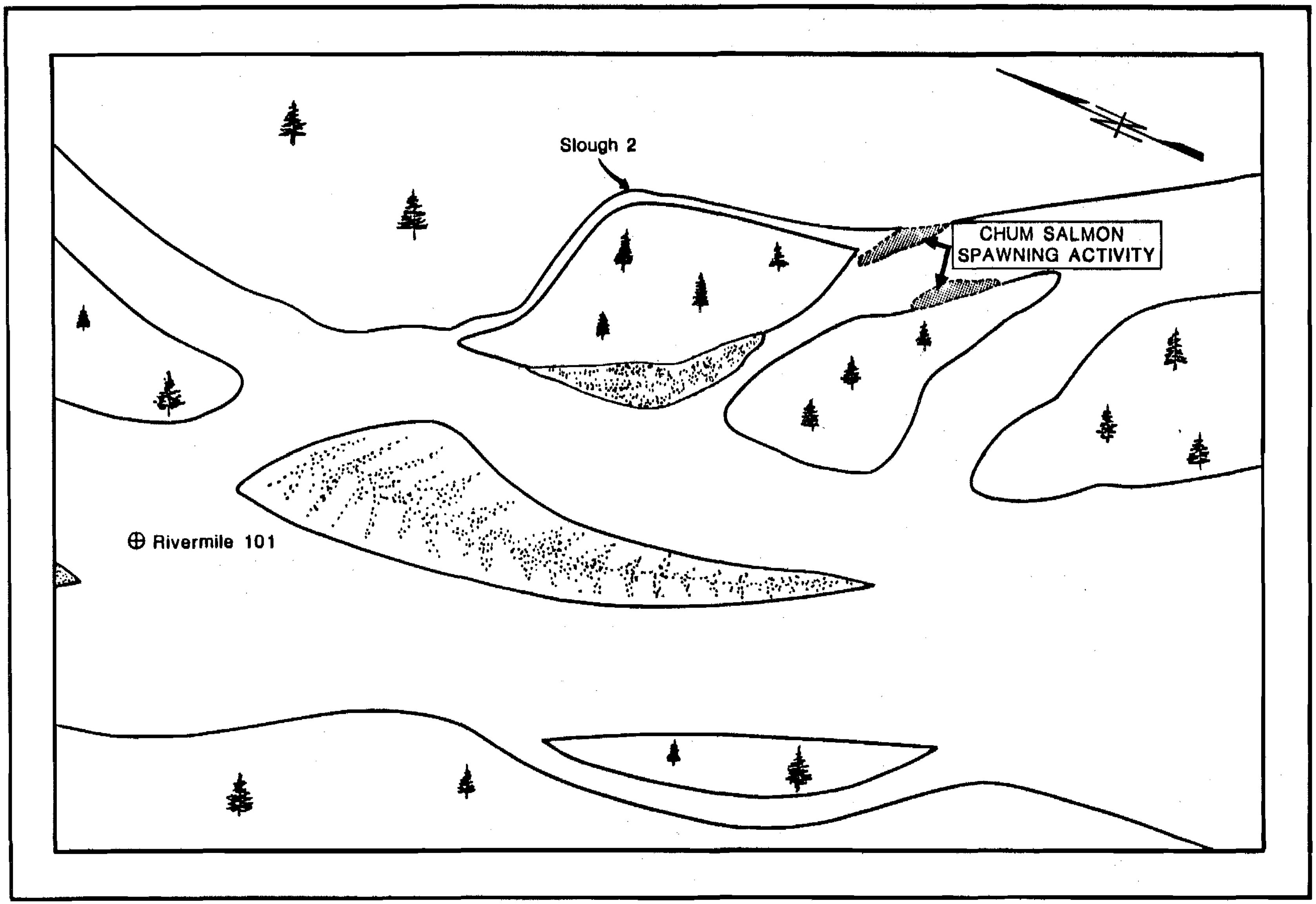


Figure EH-7. Mainstem Susitna River chum salmon spawning area at RM 100.5 approximately, Adult Anadromous Su Hydro Studies, 1981.

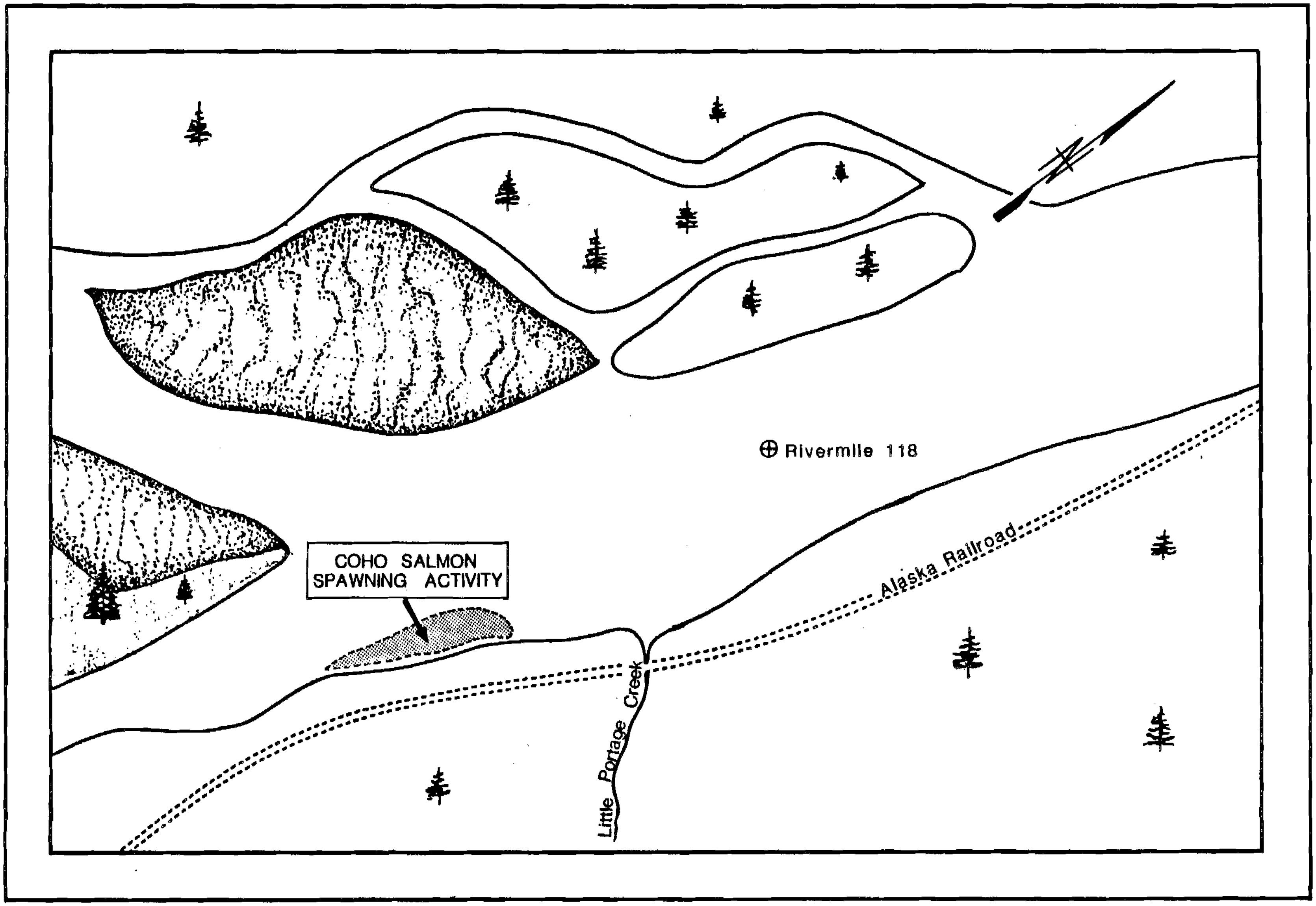


Figure EH-8. Mainstem Susitna River coho salmon spawning area at RM 117.6 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

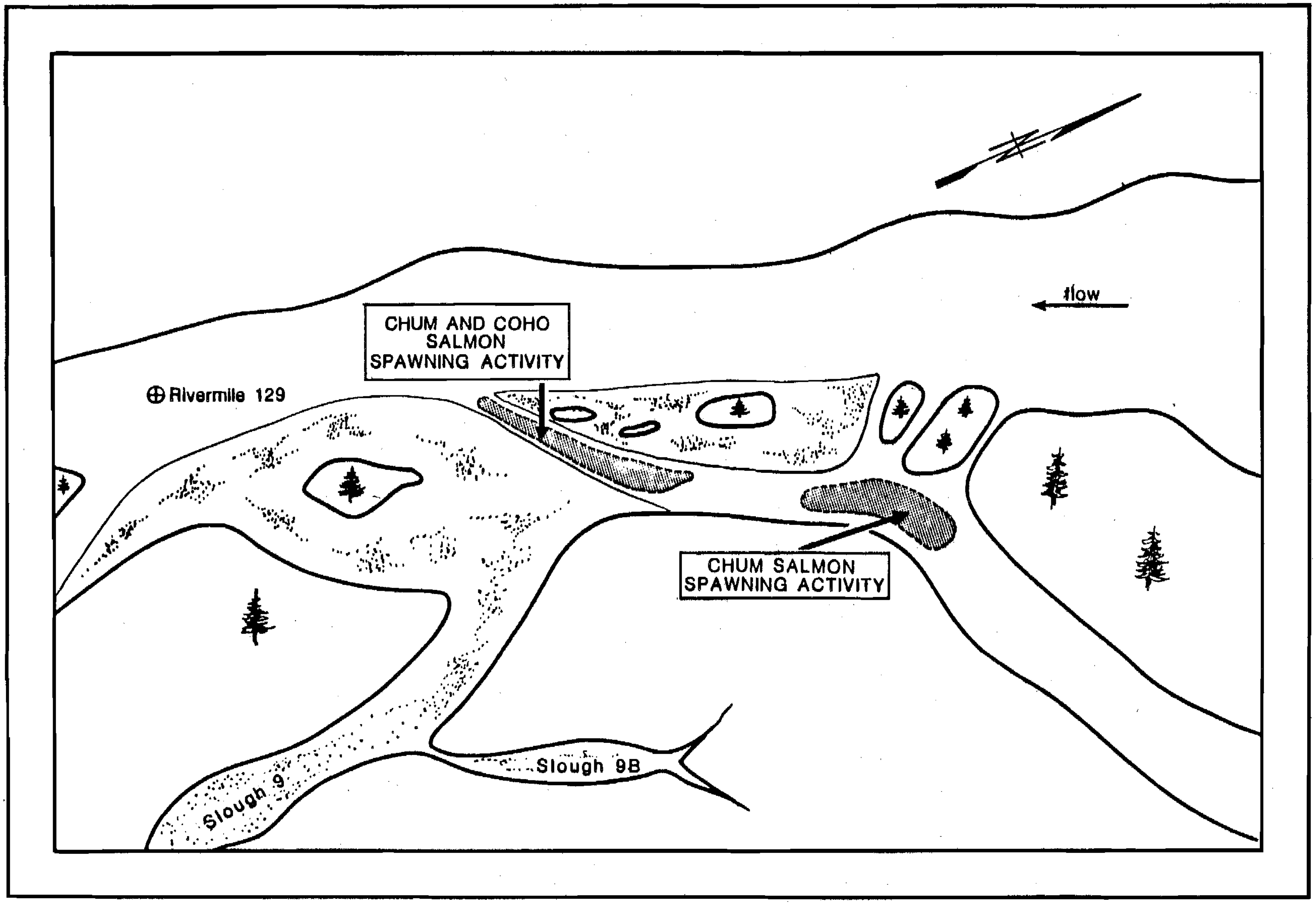


Figure EH-9. Mainstem Susitna River chum and coho salmon spawning area at RM 129.2 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

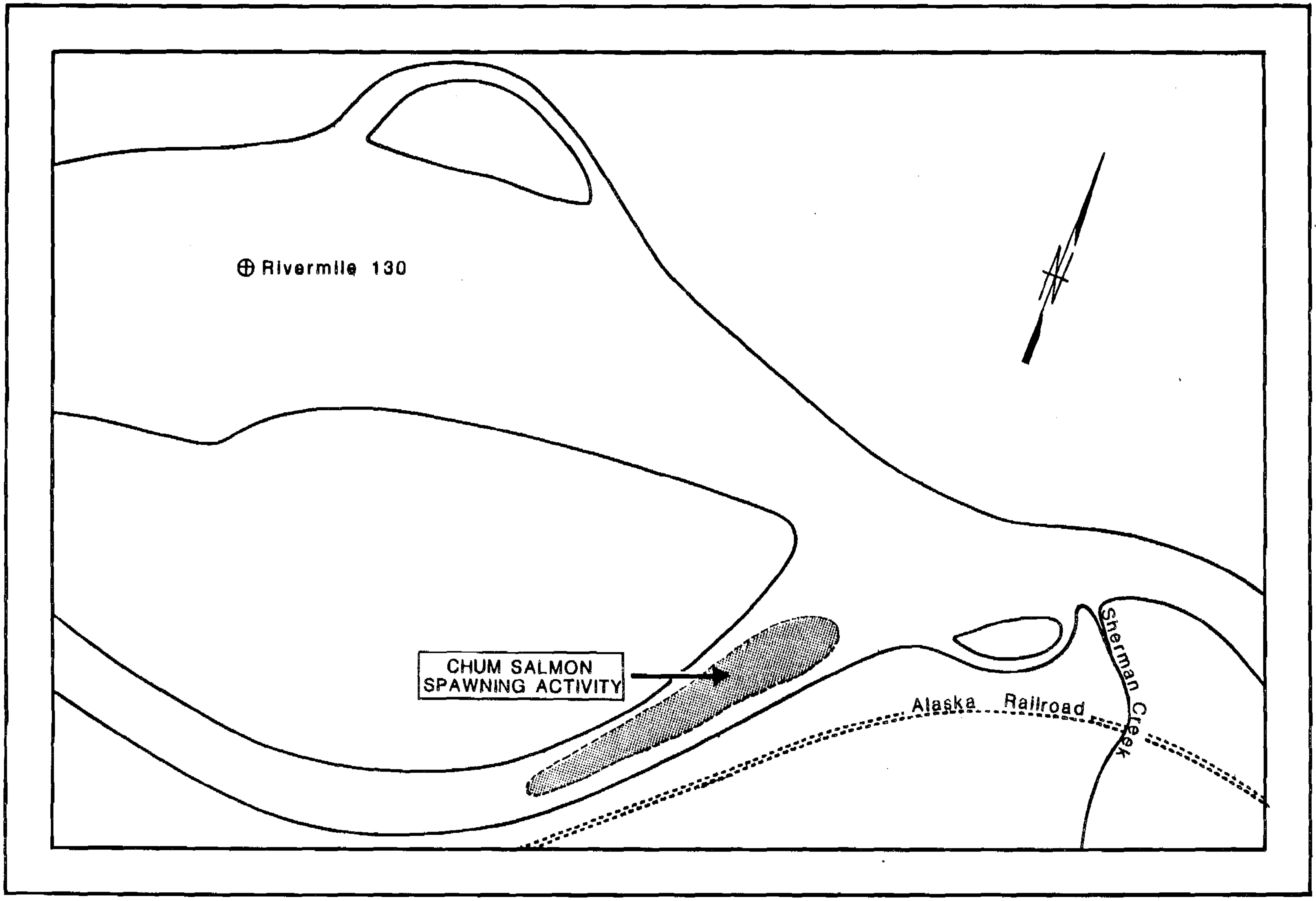


Figure EH-10. Mainstem Susitna River chum salmon spawning area at RM 130.5 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

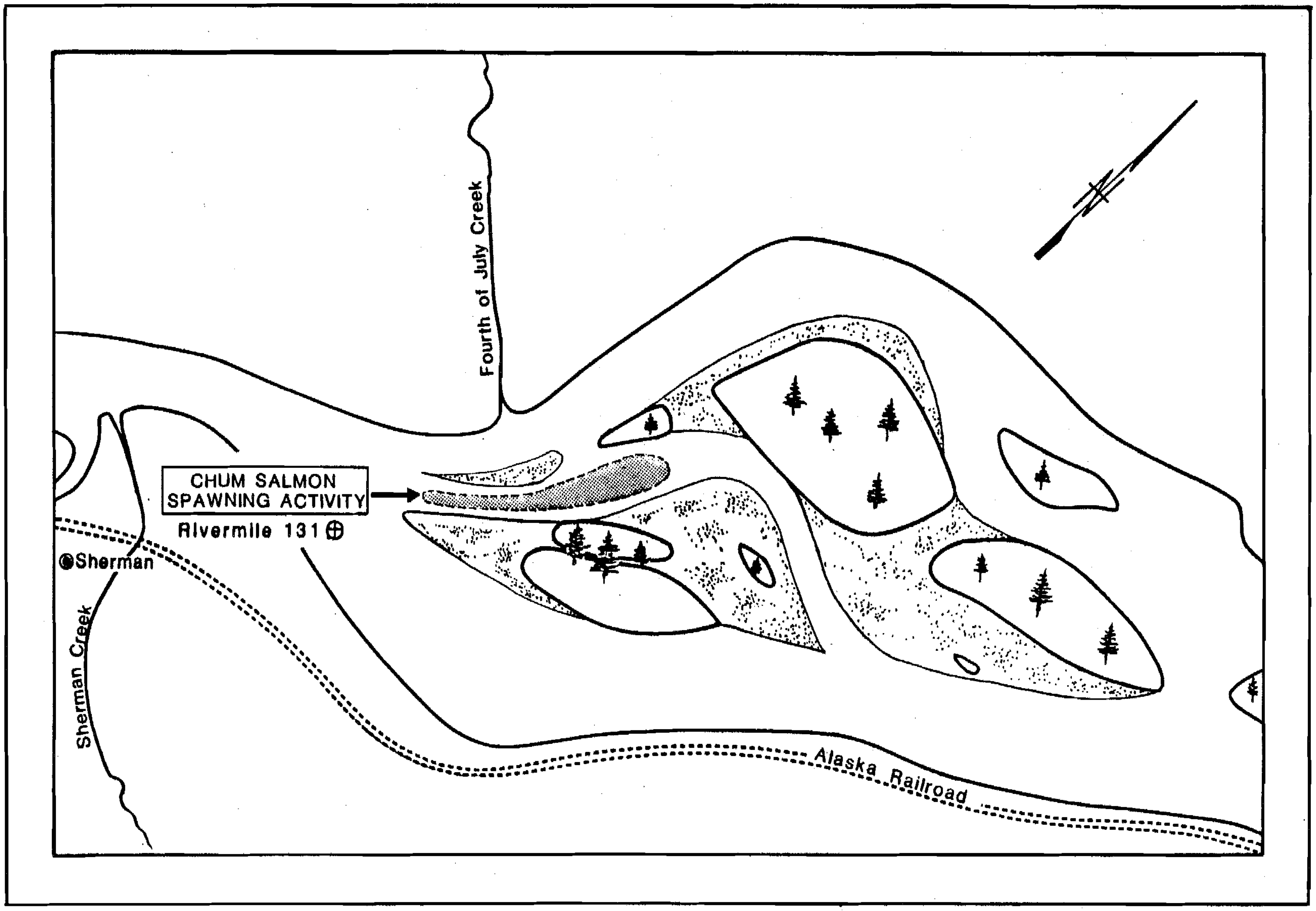


Figure EH-11. Mainstem Susitna River chum salmon spawning area at RM 131.1 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

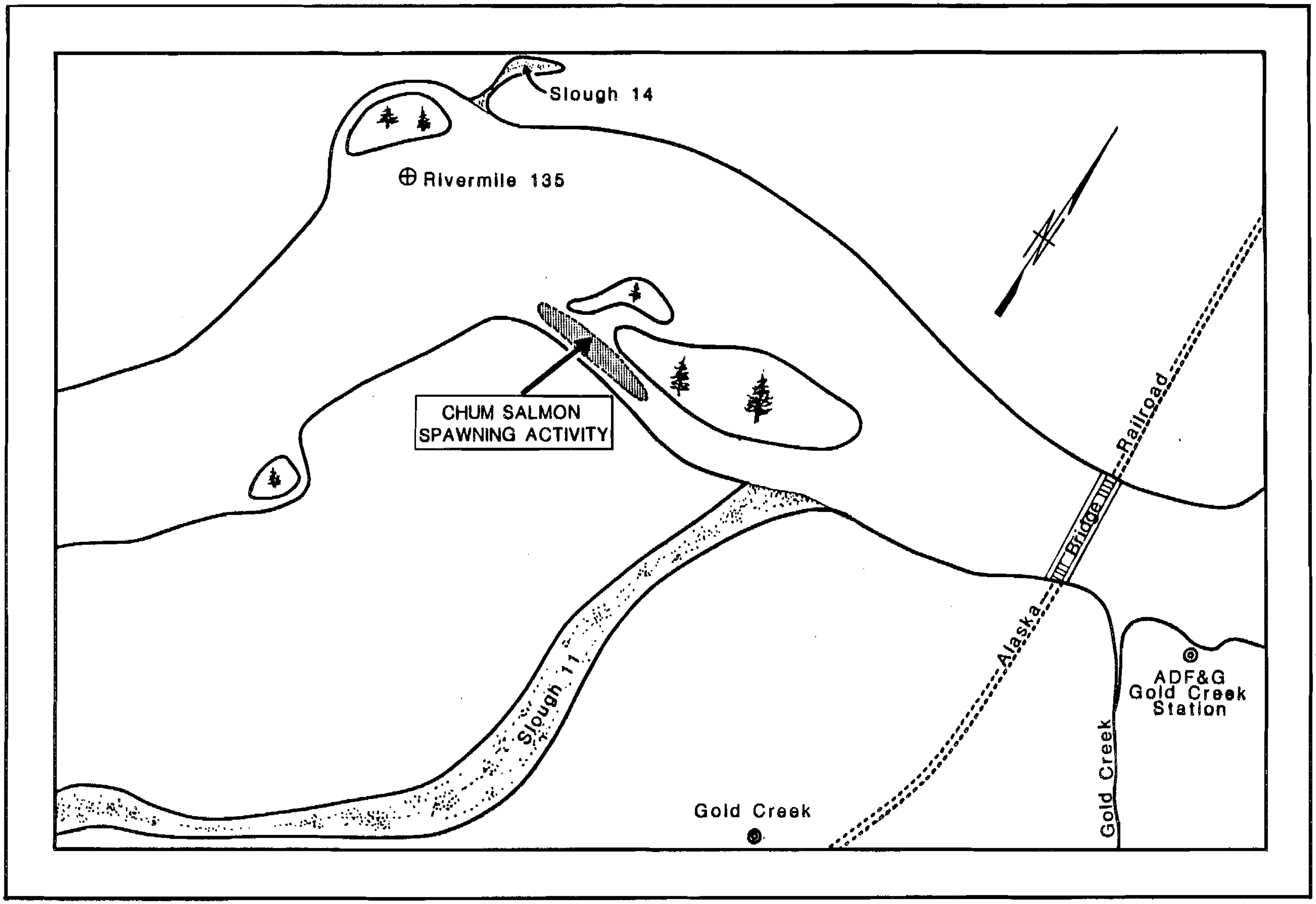


Figure EH-12. Mainstem Susitna River chum salmon spawning area at RM 135.2 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

APPENDIX EI
MAPS OF NEWLY INTRODUCED CREEKS AND SLOUGHS

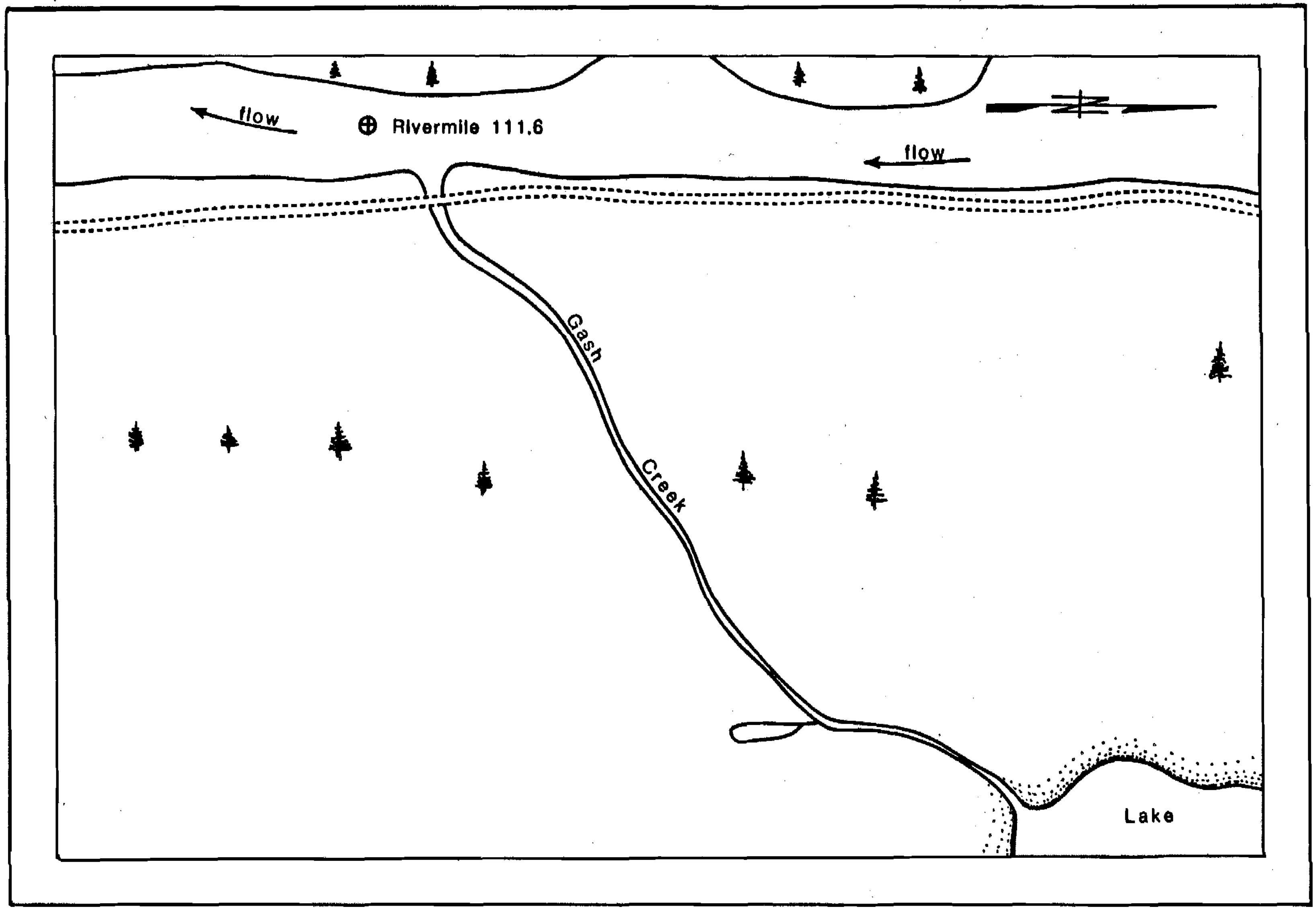


Figure EI-1. Gash Creek located at RM 111.6 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

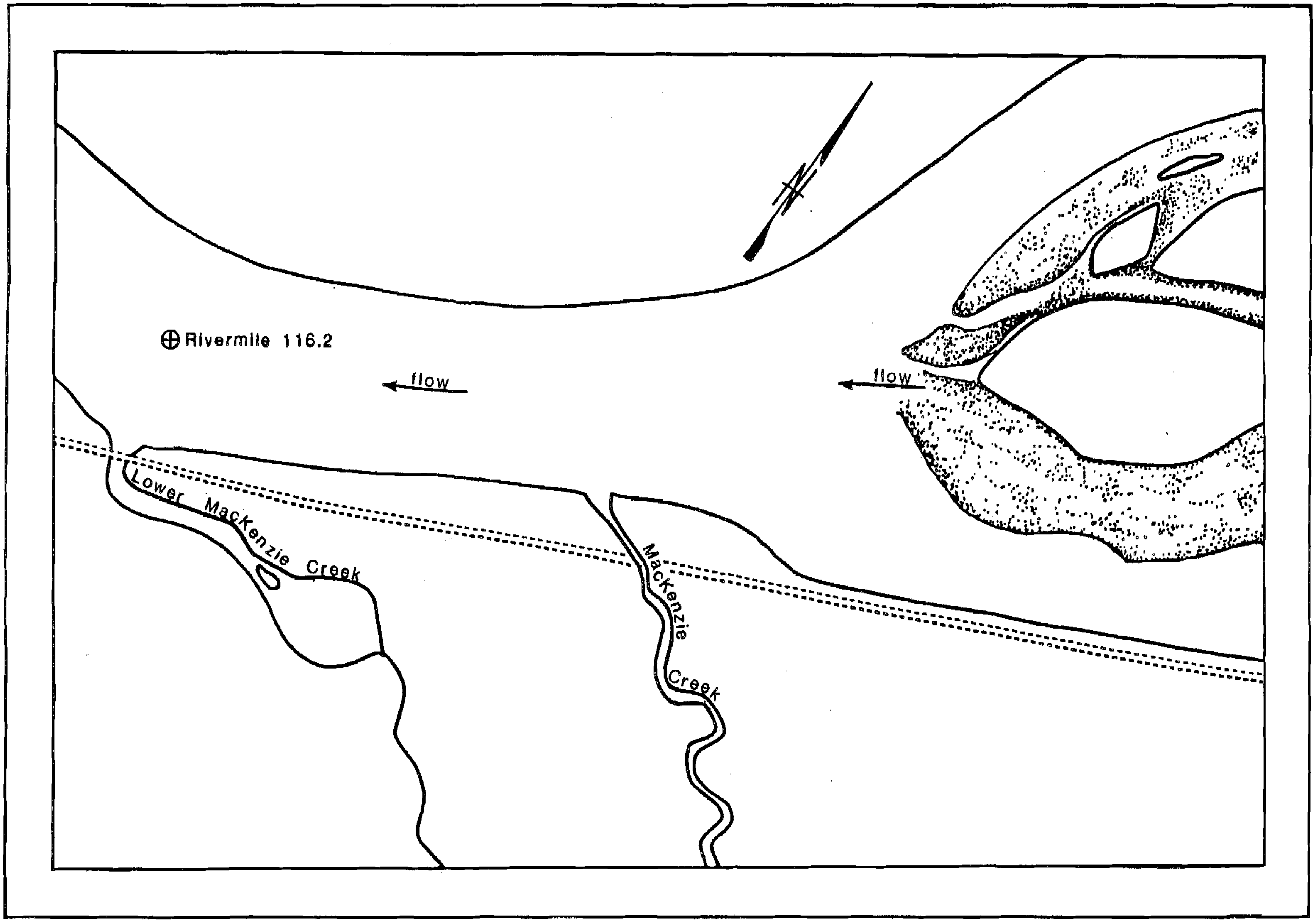


Figure EI-2. Lower McKenzie Creek located at RM 116.2 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

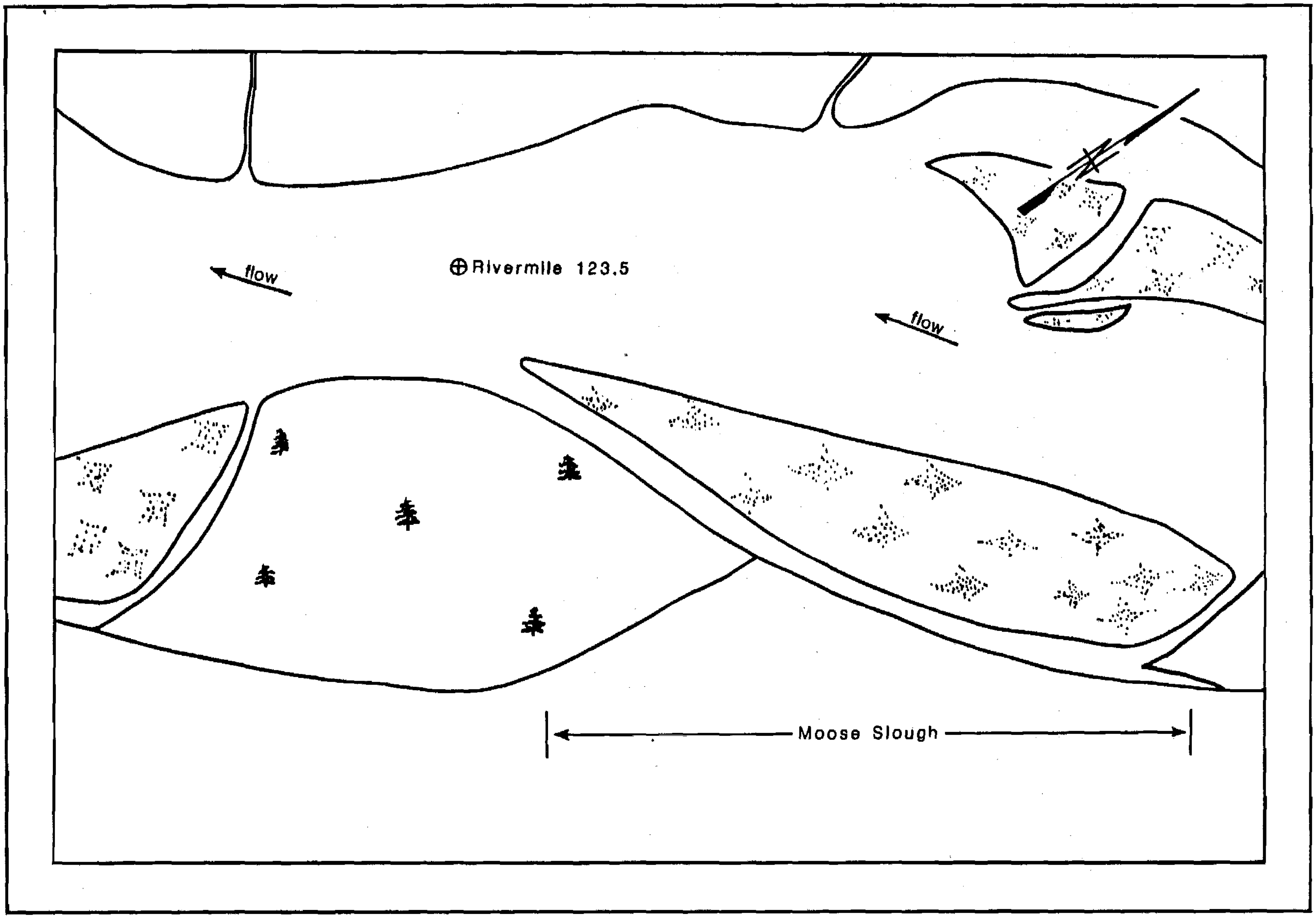


Figure EI-3. Moose Slough located at RM 123.5 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

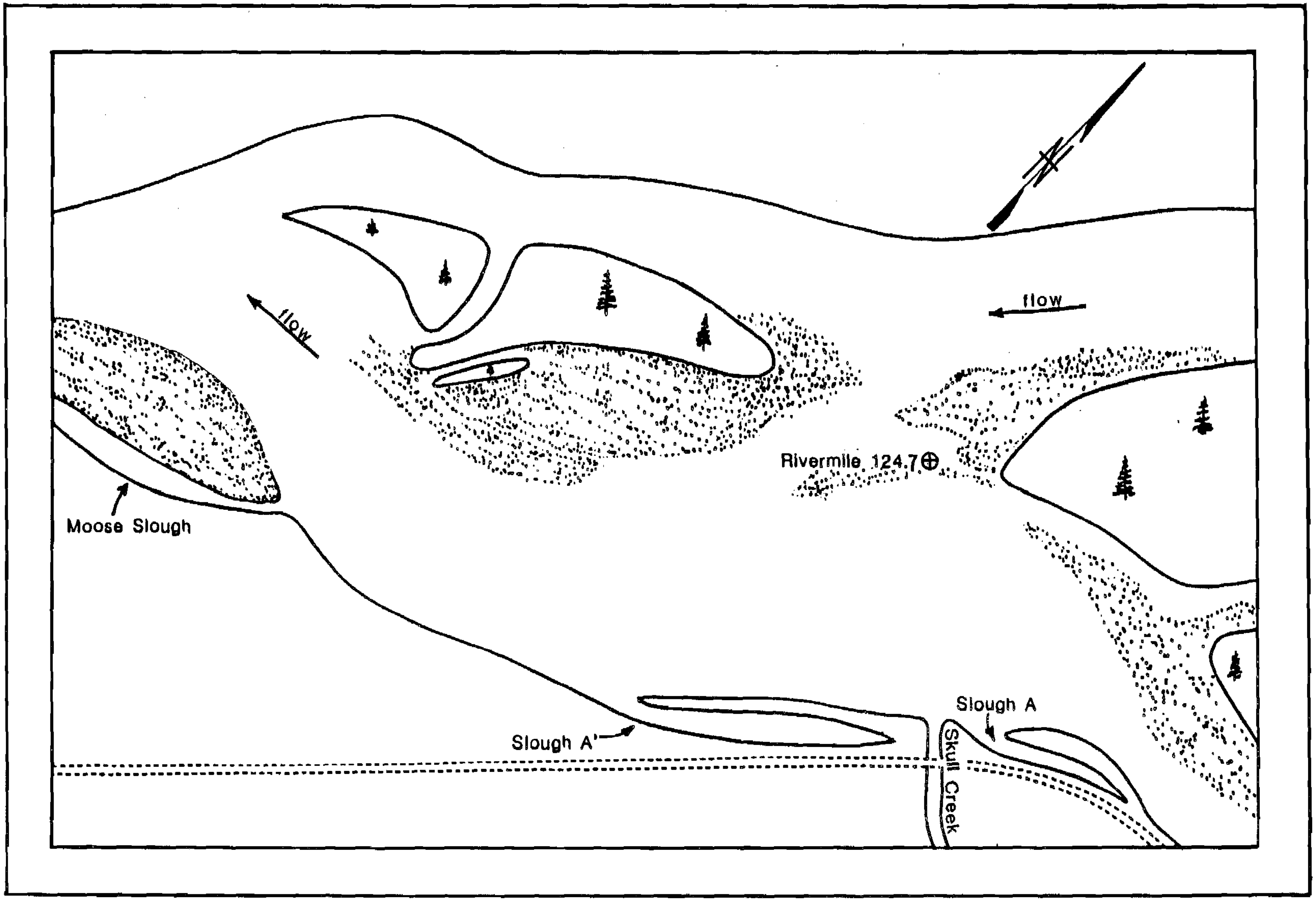


Figure EI-4. Slough A' located at RM 124.6 and Skull Creek located at RM 124.7 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

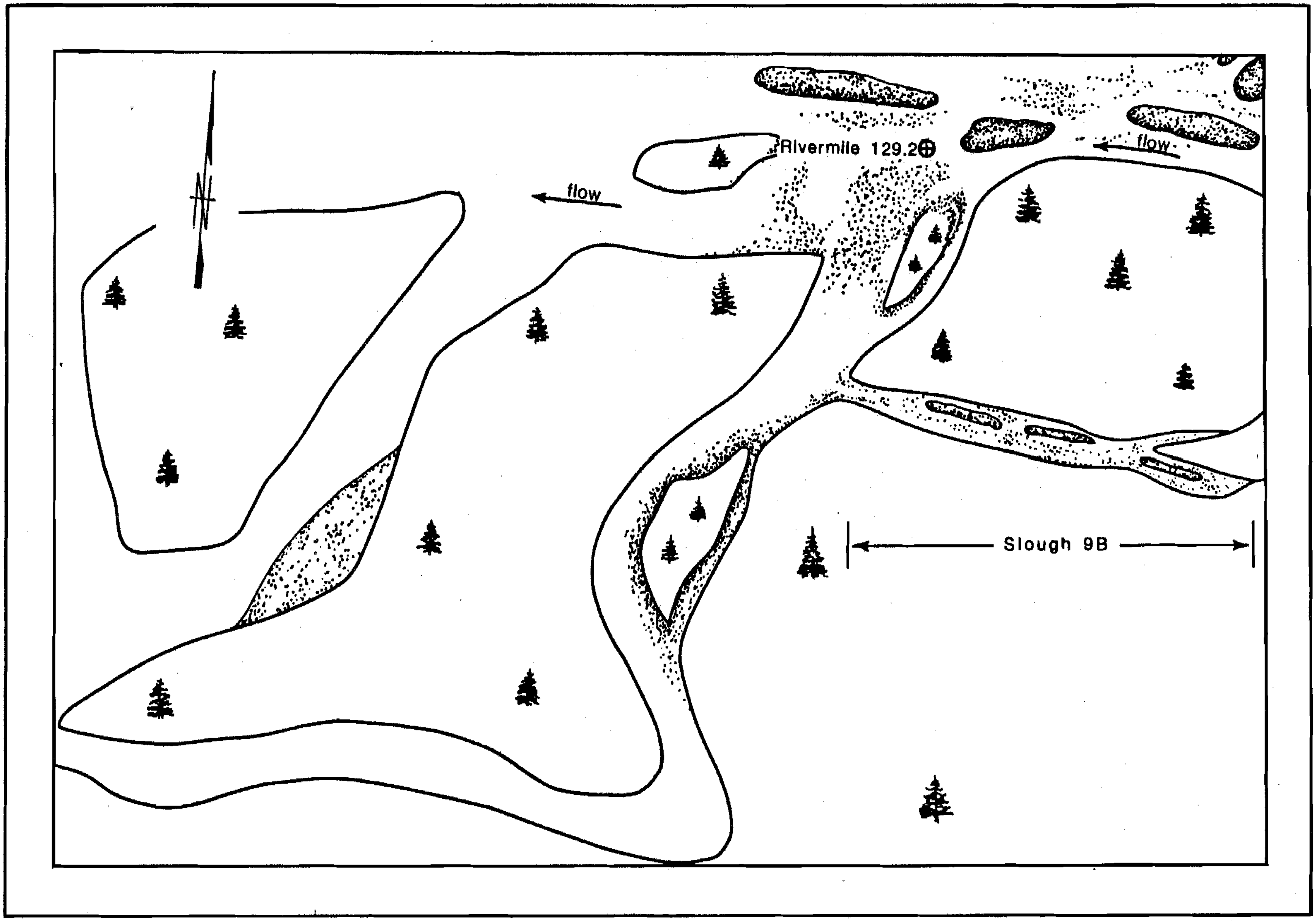


Figure EI-5. Slough 9B located at RM 129.2 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

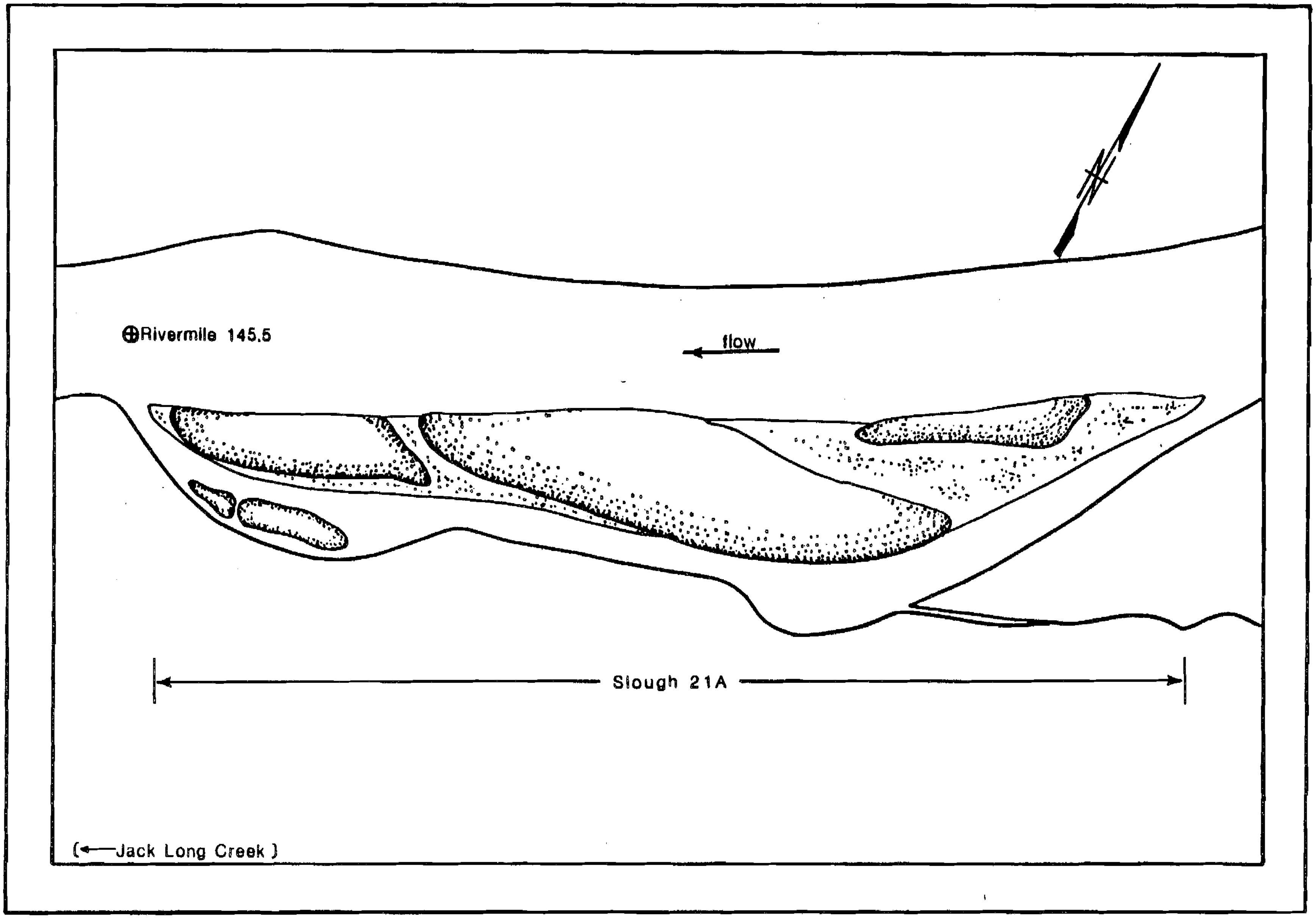


Figure EI-6. Slough 21A located at RM 145.5 approximately, Adult Anadromous Investigations, Su Hydro Studies, 1981.

APPENDIX EJ

ESCAPEMENT SURVEYS OF STREAMS AND SLOUGHS

AND

TAGGED/UNTAGGED RATIOS FROM SPAWNING GROUND

SURVEYS AND FISHWHEEL CATCHES

Table EJ-1. Escapement surveys conducted on Susitna River sloughs between Chulitna River and Devil Canyon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

SLOUGH NO./NAME	RIVER MILE	DATE	SURVEY CONDITIONS	PERCENT SURVEYED	ADULT SALMON COUNTS								
					SOCKEYE			PINK			CHUM		
					LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Slough 1	99.6	8/21	Poor	50	0	0	0	0	0	0	0	0	0
		8/29	Poor	100	0	0	0	0	0	0	0	0	0
		9/6	Good	100	0	0	0	0	0	0	2	4	6
		9/16	Excellent	100	0	0	0	0	0	0	0	1	1
		9/24	Excellent	100	0	0	0	0	0	0	0	1	1
		10/2	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 2	100.4	8/2	Poor	50	0	0	0	0	0	0	0	0	0
		8/21	Poor	100	0	0	0	0	0	0	0	0	0
		8/29	Excellent	100	0	0	0	0	0	0	2	1	3
		9/6	Excellent	100	0	0	0	0	0	0	25	2	27
		9/16	Excellent	100	0	0	0	0	0	0	6	0	6
		9/24	Excellent	100	0	0	0	0	0	0	1	4	5
		10/2	Excellent	100	0	0	0	0	0	0	0	3	3
Slough 3B	101.4	8/5	Fair	100	0	0	0	0	0	0	0	0	0
		8/11	Fair	100	0	0	0	0	0	0	0	0	0
		8/21	Poor	100	0	0	0	0	0	0	0	0	0
		8/29	Poor	100	0	0	0	0	0	0	0	0	0
		9/6	Excellent	100	1	0	1	0	0	0	0	0	0
		9/17	Excellent	100	1	0	1	0	0	0	0	0	0
		9/24	Excellent	100	0	0	0	0	0	0	0	0	0
		10/2	Good	100	0	0	0	0	0	0	0	0	0
Slough 3A	101.9	8/4	Excellent	100	4	0	4	0	0	0	0	0	0
		8/11	Fair	100	7	0	7	0	0	0	0	0	0
		8/21	Excellent	100	3	0	3	1	0	1	0	0	0
		8/29	Fair	100	0	0	0	0	0	0	0	0	0
		9/6	Fair	100	1	0	1	0	0	0	0	0	0
		9/17	Fair	100	0	0	0	0	0	0	0	0	0
		9/24	Good	100	0	0	0	0	0	0	0	0	0
		10/2	Fair	100	0	0	0	0	0	0	0	0	0

Table EJ-1. Continued.

SLOUGH NO./NAME	RIVER MILE	DATE	SURVEY CONDITIONS	PERCENT SURVEYED	ADULT SALMON COUNTS								
					SOCKEYE			PINK			CHUM		
					LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Slough 4	105.2	8/4	Poor	100	0	0	0	0	0	0	0	0	0
		8/11	Poor	100	0	0	0	0	0	0	0	0	0
		8/22	Poor	100	0	0	0	0	0	0	0	0	0
		8/29	Poor	100	0	0	0	0	0	0	0	0	0
		9/6	Poor	100	0	0	0	0	0	0	0	0	0
		9/16	Poor	100	0	0	0	0	0	0	0	0	0
		9/24	Poor	100	0	0	0	0	0	0	0	0	0
		10/2	Poor	100	0	0	0	0	0	0	0	0	0
Slough 4	105.2	8/4	Poor	100	0	0	0	0	0	0	0	0	0
		8/11	Poor	100	0	0	0	0	0	0	0	0	0
		8/22	Poor	100	0	0	0	0	0	0	0	0	0
		8/29	Poor	100	0	0	0	0	0	0	0	0	0
		9/6	Poor	100	0	0	0	0	0	0	0	0	0
		9/16	Poor	100	0	0	0	0	0	0	0	0	0
		9/24	Poor	100	0	0	0	0	0	0	0	0	0
		10/2	Poor	100	0	0	0	0	0	0	0	0	0
Slough 5	107.2	8/7	Good	100	0	0	0	0	0	0	0	0	0
		8/19	Fair	100	0	0	0	0	0	0	0	0	0
		8/25	Good	100	0	0	0	0	0	0	0	0	0
		8/28	Poor	100	0	0	0	0	0	0	0	0	0
		9/22	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 6	108.2	8/7	Excellent	100	0	0	0	0	0	0	0	0	0
		8/19	Fair	100	0	0	0	0	0	0	0	0	0
		8/23	Fair	100	0	0	0	0	0	0	0	0	0
		8/28	Poor	100	0	0	0	0	0	0	0	0	0
		9/22	Excellent	100	0	0	0	0	0	0	0	0	0

Table EJ-1. Continued.

SLOUGH NO./NAME	RIVER MILE	DATE	SURVEY CONDITIONS	PERCENT SURVEYED	SOCKEYE			PINK			CHUM		
					LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Slough 6A	112.3	8/19	Good	100	1	0	1	0	0	0	11	0	11
		8/23	Fair	100	0	0	0	0	0	0	9	2	11
		8/29	Fair	100	1	0	1	0	0	0	1	2	3
		9/22	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 7	113.2	8/7	Excellent	100	0	0	0	0	0	0	0	0	0
		8/19	Poor	100	0	0	0	0	0	0	0	0	0
		8/29	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 8	113.7	8/7	Poor	100	0	0	0	0	0	0	0	0	0
		8/9	Poor	100	0	0	0	0	0	0	0	0	0
		8/29	Excellent	100	0	0	0	13	12	25	219	49	268
		9/5	Excellent	100	0	0	0	0	0	0	197	105	302
		9/13	Excellent	100	0	0	0	0	0	0	46	105	151
		9/21	Excellent	100	0	0	0	0	0	0	0	96	96
		9/28	Excellent	100	0	0	0	0	0	0	0	16	16
Slough 8D	121.8	8/1	Fair	100	0	0	0	0	0	0	0	0	0
		8/7	Excellent	100	0	0	0	0	0	0	0	0	0
		8/20	Excellent	100	0	0	0	0	0	0	0	0	0
		8/27	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 8C	121.9	8/1	Good	100	0	0	0	0	0	0	0	0	0
		8/7	Poor	100	0	0	0	0	0	0	0	0	0
		8/20	Poor	100	0	0	0	0	0	0	0	0	0
		8/27	Excellent	100	0	0	0	0	0	0	0	0	0

(The SOCKEYE, PINK and CHUM column groups fall under the shared heading ADULT SALMON COUNTS.)

Table EJ-1. Continued.

SLOUGH NO./NAME	RIVER MILE	DATE	SURVEY CONDITIONS	PERCENT SURVEYED	ADULT SALMON COUNTS: SOCKEYE			PINK			CHUM		
					LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Slough 8B	122.2	8/1	Fair	100	0	0	0	0	0	0	1	0	1
		8/7	Poor	100	0	0	0	0	0	0	0	0	0
		8/20	Poor	100	0	0	0	0	0	0	0	0	0
		8/27	Poor	100	0	0	0	0	0	0	0	0	0
Moose Slough	123.5	8/27	Excellent	100	0	0	0	0	0	0	136	3	139
		9/4	Excellent	100	0	0	0	0	0	0	91	76	167
		9/12	Excellent	100	0	0	0	0	0	0	20	133	153
		9/21	Excellent	100	0	0	0	0	0	0	14	78	92
		9/27	Excellent	100	0	0	0	0	0	0	1	3	4
Slough A[1]	124.6	8/27	Excellent	100	0	0	0	0	0	0	26	13	39
		9/4	Excellent	100	0	0	0	0	0	0	122	18	140
		9/12	Excellent	100	0	0	0	0	0	0	35	57	92
		9/21	Excellent	100	0	0	0	0	0	0	0	34	34
Slough A	124.7	8/7	Excellent	100	0	0	0	0	0	0	20	0	20
		8/11	Poor	100	0	0	0	0	0	0	0	0	0
		8/19	Excellent	100	0	0	0	2	0	2	24	2	26
		8/27	Excellent	100	0	0	0	0	0	0	26	8	34
		9/4	Excellent	100	0	0	0	0	0	0	13	10	23
		9/12	Excellent	100	0	0	0	0	0	0	0	23	23
		9/24	Excellent	100	0	0	0	0	0	0	0	4	4
Slough 8A	125.1	8/7	Excellent	20	0	0	0	0	0	0	16	0	16
		8/20	Poor	100	0	0	0	0	0	0	0	0	0
		8/27	Poor	100	0	0	0	0	0	0	0	0	0
		9/4	Excellent	100	170	7	177	0	0	0	330	290	620
		9/12	Excellent	100	87	18	105	0	0	0	53	258	311
		9/21	Excellent	100	23	15	38	0	0	0	2	5	7
		9/27	Excellent	100	6	3	9	0	0	0	0	0	0

Table EJ-1. Continued.

SLOUGH NO./NAME	RIVER MILE	DATE	SURVEY CONDITIONS	PERCENT SURVEYED	ADULT SALMON COUNTS: SOCKEYE LIVE	SOCKEYE DEAD	SOCKEYE TOTAL	PINK LIVE	PINK DEAD	PINK TOTAL	CHUM LIVE	CHUM DEAD	CHUM TOTAL
Slough 9	128.3	8/7	Poor	10	0	0	0	0	0	0	0	0	0
		8/11	Fair	100	0	0	0	0	0	0	5	0	5
		8/20	Poor	100	0	0	0	0	0	0	0	0	0
		8/23	Excellent	50	0	0	0	0	0	0	0	0	0
		9/4	Excellent	100	10	0	10	0	0	0	212	48	260
		9/12	Excellent	100	6	0	6	0	0	0	38	33	71
		9/20	Excellent	100	2	8	10	0	0	0	1	15	16
		9/27	Excellent	100	0	0	0	0	0	0	0	2	2
Slough 9B	129.2	8/11	Excellent	100	27	0	27	0	0	0	58	0	58
		8/23	Excellent	100	47	0	47	0	0	0	83	7	90
		8/27	Excellent	100	81	0	81	0	0	0	67	4	71
		9/4	Excellent	100	71	0	71	0	0	0	41	8	49
		9/12	Excellent	100	62	0	62	0	0	0	18	8	26
		9/20	Excellent	100	48	6	54	0	0	0	2	5	7
		9/27	Excellent	100	15	20	35	0	0	0	0	0	0
Slough 9A	133.3	7/31	Poor	100	0	0	0	0	0	0	0	0	0
		8/20	Poor	100	0	0	0	0	0	0	0	0	0
		8/27	Excellent	20	2	0	2	0	0	0	67	4	71
		9/4	Excellent	20	1	0	1	0	0	0	26	36	68
		9/12	Excellent	20	2	0	2	0	0	0	0	4	4
		9/12	Poor	80	0	0	0	0	0	0	55	5	60
		9/20	Excellent	100	0	0	0	0	0	0	136	46	182
		9/27	Excellent	100	0	0	0	0	0	0	35	59	94
Slough 10	133.8	7/31	Excellent	100	0	0	0	0	0	0	0	0	0
		8/10	Fair	100	0	0	0	0	0	0	0	0	0
		8/20	Excellent	100	0	0	0	0	0	0	0	0	0
		8/27	Excellent	100	0	0	0	0	0	0	0	0	0
		9/20	Excellent	100	0	0	0	0	0	0	0	0	0

Table EJ-1. Continued.

SLOUGH NO./NAME	RIVER MILE	DATE	SURVEY CONDITIONS	PERCENT SURVEYED	ADULT SALMON COUNTS								
					SOCKEYE			PINK			CHUM		
					LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Slough 11	135.3	7/31	Excellent	100	0	0	0	0	0	0	0	0	0
		8/6	Fair	100	100	0	100	0	0	0	0	0	0
		8/10	Excellent	100	50	0	50	0	0	0	0	0	0
		8/20	Poor	100	0	0	0	0	0	0	1	0	1
		8/22	Excellent	100	258	1	259	0	0	0	276	6	282
		8/27	Excellent	100	373	5	378	0	0	0	403	8	411
		9/1	Excellent	100	610	25	635	0	0	0	358	26	384
		9/11	Excellent	100	710	183	893	0	0	0	181	162	343
		9/20	Excellent	100	468	338	806	0	0	0	32	274	306
		9/26	Excellent	100	270	333	603	0	0	0	5	27	32
Slough 12	135.4	7/31	Poor	25	0	0	0	0	0	0	0	0	0
		8/6	Poor	100	0	0	0	0	0	0	0	0	0
		8/20	Poor	100	0	0	0	0	0	0	0	0	0
		8/27	Excellent	100	0	0	0	0	0	0	0	0	0
		9/4	Poor	100	0	0	0	0	0	0	0	0	0
		9/20	Excellent	100	0	0	0	0	0	0	0	0	0
		9/26	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 13	135.7	7/31	Poor	15	0	0	0	0	0	0	0	0	0
		8/6	Poor	100	0	0	0	0	0	0	0	0	0
		8/20	Poor	100	0	0	0	0	0	0	0	0	0
		8/27	Excellent	100	0	0	0	0	0	0	0	0	0
		9/4	Fair	100	0	0	0	0	0	0	4	0	4
		9/11	Excellent	100	0	0	0	0	0	0	2	1	3
		9/20	Excellent	100	0	0	0	0	0	0	0	0	0
		9/26	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 14	135.9	7/31	Fair	100	0	0	0	0	0	0	0	0	0
		8/6	Excellent	100	0	0	0	0	0	0	0	0	0
		8/20	Excellent	100	0	0	0	0	0	0	0	0	0
		8/27	Excellent	100	0	0	0	0	0	0	0	0	0
		9/4	Excellent	100	0	0	0	0	0	0	0	0	0

Table EJ-1. Continued.

SLOUGH NO./NAME	RIVER MILE	DATE	SURVEY CONDITIONS	PERCENT SURVEYED	ADULT SALMON COUNTS								
					SOCKEYE			PINK			CHUM		
					LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Slough 14 Cont'd.	135.9	9/19	Excellent	100	0	0	0	0	0	0	0	0	0
		9/26	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 15	137.2	7/31	Good	100	0	0	0	0	0	0	0	0	0
		8/6	Poor	100	0	0	0	0	0	0	0	0	0
		8/10	Fair	100	0	0	0	0	0	0	0	0	0
		8/21	Poor	100	0	0	0	0	0	0	0	0	0
		8/26	Excellent	100	0	0	0	0	0	0	1	0	1
		9/3	Excellent	100	0	0	0	0	0	0	0	0	0
		9/19	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 16	137.3	8/6	Poor	100	0	0	0	0	0	0	0	0	0
		8/10	Poor	100	0	0	0	0	0	0	0	0	0
		8/21	Poor	100	0	0	0	0	0	0	0	0	0
		8/26	Poor	100	0	0	0	0	0	0	0	0	0
		9/3	Fair	100	0	0	0	0	0	0	0	3	3
		9/19	Excellent	100	0	0	0	0	0	0	0	0	0
		9/26	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 17	138.9	8/6	Excellent	100	0	0	0	0	0	0	9	0	9
		8/10	Poor	100	0	0	0	0	0	0	3	0	3
		8/21	Excellent	75	1	0	1	0	0	0	32	1	33
		8/26	Excellent	100	0	0	0	0	0	0	36	2	38
		9/3	Excellent	100	5	0	5	0	0	0	30	7	37
		9/11	Excellent	100	6	0	6	0	0	0	17	13	30
		9/19	Excellent	100	3	0	3	0	0	0	4	0	4
		9/26	Excellent	100	0	0	0	0	0	0	0	0	0

Table EJ-1. Continued.

SLOUGH NO./NAME	RIVER MILE	DATE	SURVEY CONDITIONS	PERCENT SURVEYED	ADULT SALMON COUNTS								
					SOCKEYE			PINK			CHUM		
					LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Slough 18	139.1	8/6	Fair	100	0	0	0	0	0	0	0	0	0
		8/10	Poor	100	0	0	0	0	0	0	0	0	0
		8/21	Poor	100	0	0	0	0	0	0	0	0	0
		8/26	Excellent	100	0	0	0	0	0	0	0	0	0
		9/3	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 19	139.7	8/6	Excellent	100	0	0	0	0	0	0	0	0	0
		8/10	Fair	100	0	0	0	0	0	0	0	0	0
		8/21	Excellent	100	13	0	13	0	0	0	3	0	3
		8/26	Excellent	100	20	0	20	0	0	0	0	0	0
		9/3	Excellent	100	23	0	23	0	0	0	0	1	1
		9/11	Excellent	100	12	6	18	0	0	0	0	0	0
		9/19	Excellent	100	8	0	8	0	0	0	0	0	0
		9/26	Excellent	100	4	2	6	0	0	0	0	0	0
Slough 20	140.1	8/6	Poor	100	0	0	0	0	0	0	0	0	0
		8/10	Poor	100	0	0	0	0	0	0	0	0	0
		8/21	Poor	100	0	0	0	0	0	0	0	0	0
		8/26	Excellent	100	2	0	2	0	0	0	10	1	11
		9/3	Excellent	100	0	0	0	0	0	0	12	2	14
		9/11	Excellent	100	0	0	0	0	0	0	0	0	0
		9/19	Excellent	100	0	0	0	0	0	0	0	0	0
Slough 21	141.0	8/6	Poor	100	0	0	0	0	0	0	0	0	0
		8/10	Poor	100	0	0	0	0	0	0	0	0	0
		8/21	Poor	100	0	0	0	0	0	0	0	0	0
		8/26	Excellent	50	1	0	1	0	0	0	156	13	169
		9/3	Excellent	75	26	0	26	0	0	0	270	4	274
		9/11	Excellent	100	38	0	38	0	0	0	134	2	136
		9/19	Excellent	100	32	1	33	0	0	0	43	24	67
		9/26	Excellent	100	3	0	3	0	0	0	0	0	0

Table EJ-1. Continued.

SLOUGH NO./NAME	RIVER MILE	DATE	SURVEY CONDITIONS	PERCENT SURVEYED	ADULT SALMON COUNTS								
					SOCKEYE			PINK			CHUM		
					LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Slough 21A	145.5	8/26	Poor	100	0	0	0	0	0	0	5	0	5
		9/2	Excellent	100	0	0	0	0	0	0	8	0	8
		9/11	Excellent	100	0	0	0	0	0	0	5	0	5

Table EJ-2. Escapement survey counts of Susitna River tributary streams between Chulitna River and Devil Canyon, Adult Anadromous Investigations, Su Hydro Studies, 1981.

					ADULT SALMON COUNTED											
					SOCKEYE			PINK			CHUM			COHO		
STREAM	RIVER MILE	DATE	RIVER CONDITIONS	SURVEY DISTANCE (MILES)	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Whiskers Creek	101.4	8/5	Poor	.50	0	0	0	0	0	0	0	0	0	0	0	0
		8/11	Poor	.25	0	0	0	0	0	0	0	0	0	8	0	8
		8/21	Fair	.50	0	0	0	0	0	0	0	0	0	43	0	43
		8/29	Good	.50	0	0	0	0	0	0	0	0	0	49	1	50
		9/6	Good	.50	0	0	0	0	0	0	0	0	0	70	0	70
		9/17	Fair	.50	0	0	0	0	1	1	0	1	1	9	0	9
		9/24	Good	.50	0	0	0	0	1	1	0	0	0	16	2	18
		10/2	Good	.50	0	0	0	0	0	0	0	0	0	6	5	11
Chase Creek	106.9	8/4	Good	.75	0	0	0	5	0	5	0	0	0	0	0	0
		8/11	Good	.75	0	0	0	38	0	38	1	0	1	23	0	23
		8/17	Fair	.75	0	0	0	0	0	0	0	0	0	0	0	0
		8/23	Excellent	.75	0	0	0	0	0	0	0	0	0	13	0	13
		8/29	Good	.75	0	0	0	0	0	0	0	0	0	49	0	49
		9/7	Excellent	.75	0	0	0	0	0	0	0	1	1	79	1	80
		9/14	Good	.75	0	0	0	0	0	0	0	1	1	60	2	62
		9/24	Good	.75	0	0	0	0	0	0	0	0	0	22	12	34
		10/2	Good	.75	0	0	0	0	0	0	0	0	0	5	16	21
4th of July Creek	131.0	7/31	Poor	.25	0	0	0	0	0	0	1	0	1	0	0	0
		8/7	Fair	.25	0	0	0	18	0	18	88	2	90	1	0	1
		8/10	Good	.25	0	0	0	4	0	4	30	1	31	0	0	0
		8/20	Good	.25	0	0	0	27	2	29	46	20	66	0	0	0
		9/1	Excellent	1.5	0	0	0	2	3	5	0	0	0	0	0	0
		9/25	Excellent	.30	0	0	0	0	0	0	0	1	1	1	0	1
Gold Creek	136.7	8/25	Fair	.75	0	0	0	0	0	0	0	0	0	0	0	0

Table EJ-2. Continued.

					ADULT SALMON COUNTED											
					SOCKEYE			PINK			CHUM			COHO		
STREAM	RIVER MILE	DATE	RIVER CONDITIONS	SURVEY DISTANCE (MILES)	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Lower McKenzie Creek	116.2	8/23	Excellent	.5	1	0	1	0	0	0	11	3	14	56	0	56
		8/29	Excellent	.5	0	0	0	0	0	0	11	1	12	0	0	0
		9/5	Excellent	.5	0	0	0	0	0	0	0	2	2	0	0	0
		9/13	Excellent	.5	0	0	0	0	0	0	0	1	1	6	0	6
		9/21	Excellent	.5	0	0	0	0	0	0	0	0	0	2	0	2
		9/28	Excellent	.5	0	0	0	0	0	0	0	1	1	2	0	2
McKenzie Creek	116.7	8/11	Excellent	.5	0	0	0	0	0	0	0	0	0	0	0	0
		8/23	Excellent	.5	0	0	0	0	0	0	0	0	0	0	0	0
Deadhorse	120.9	8/11	Excellent	.5	0	0	0	0	0	0	0	0	0	0	0	0
		9/25	Excellent	.5	0	0	0	0	0	0	0	0	0	0	0	0
5th of July Creek	123.7	8/11	Excellent	.5	0	0	0	2	0	2	0	0	0	0	0	0
Skull Creek	124.7	8/20	Excellent	.5	0	0	0	8	0	8	0	0	0	0	0	0
		8/11	Excellent	.5	0	0	0	0	0	0	10	0	10	0	0	0
		9/19	Excellent	.5	0	0	0	6	0	6	0	0	0	0	0	0
Sherman Creek	130.8	7/31	Poor	.25	0	0	0	0	0	0	0	0	0	0	0	0
		8/7	Good	.25	0	0	0	0	0	0	2	0	2	0	0	0
		8/10	Good	.25	0	0	0	5	0	5	9	0	9	0	0	0
		8/11	Excellent	.25	0	0	0	2	0	2	6	0	6	0	0	0
		8/20	Excellent	.25	0	0	0	6	0	6	2	0	2	0	0	0
		9/25	Excellent	.25	0	0	0	0	0	0	0	0	0	0	0	0

Table EJ-2. Continued.

					ADULT SALMON COUNTED											
					SOCKEYE			PINK			CHUM			COHO		
STREAM	RIVER MILE	DATE	RIVER CONDITIONS	SURVEY DISTANCE (MILES)	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL	LIVE	DEAD	TOTAL
Indian River	138.6	8/6	Excellent	.25	0	0	0	0	0	0	22	0	22	0	0	0
		8/10	Poor	.25	0	0	0	0	0	0	4	0	4	0	0	0
		8/21	Fair	.25	0	0	0	2	0	2	33	1	34	0	0	0
		9/3	Excellent	.25	0	0	0	0	0	0	36	4	40	0	0	0
		9/11	Fair	.25	0	0	0	0	0	0	10	6	16	10	6	16
		9/15	Good	15.0	0	0	0	0	0	0	0	0	0	85	0	85
		9/19	Fair	.25	0	0	0	0	0	0	0	3	3	10	0	10
		9/26	Good	.25	0	0	0	0	0	0	0	0	0	0	0	0
Jack Long Creek	144.5	8/21	Poor	.25	0	0	0	0	0	0	0	0	0	0	0	0
		8/26	Excellent	.75	0	0	0	1	0	1	0	0	0	0	0	0
		9/24	Excellent	.50	0	0	0	0	0	0	0	0	0	0	0	0
Portage Creek	148.9	8/21	Poor	.25	0	0	0	0	0	0	0	0	0	0	0	0
		9/15	Fair	12.0	0	0	0	0	0	0	0	0	0	22	0	22
		9/24	Good	.25	0	0	0	0	0	0	0	0	0	0	0	0
Gash Creek	111.6	9/23	Excellent	.75	0	0	0	0	0	0	0	0	0	141	0	141
		9/28	Excellent	.75	0	0	0	0	0	0	0	0	0	105	12	117
Lane Creek	113.6	8/19	Fair	.5	0	0	0	53	0	53	8	1	9	0	0	0
		8/23	Excellent	1.0	0	0	0	286	5	291	72	4	76	0	0	0
		8/29	Excellent	.5	0	0	0	26	17	43	9	8	17	0	0	0
		9/5	Excellent	.5	0	0	0	0	0	0	37	7	44	0	0	0
		9/13	Excellent	.5	0	0	0	0	6	6	2	22	24	0	0	0
		9/21	Excellent	.5	0	0	0	0	1	1	1	0	1	3	0	3
		9/28	Excellent	.5	0	0	0	0	0	0	0	0	0	1	0	1

Table EJ-3. Sockeye salmon spawning ground surveys conducted on Susitna River sloughs and resultant tagged to untagged ratios. Adult Anadromous Investigations, Su Hydro Studies, 1981.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Unnamed Slough	96.9	9/9	Good	0	1	1	0.0								
		9/17	Good	1	1	2	2.0								
Slough 3B	101.4	9/6	Excellent	0	1	1	0.0								
		9/17	Excellent	0	1	1	0.0								
Slough 3A	101.9	8/4	Excellent	0	4	4	0.0								
		8/11	Fair	0	7	7	0.0								
		8/21	Excellent	0	3	3	0.0								
		9/6	Fair	0	1	1	0.0								
Slough 6A	112.3	8/19	Good	0	1	1	0.0	0	1	1	0.0				
		8/29	Fair	0	1	1	0.0	0	1	1	0.0				
Slough 8A	125.1	9/4	Excellent	4	166	170	42.5	12	158	170	14.2	29	141	170	5.9
		9/12	Excellent	3	84	87	29.0	6	81	87	14.5	10	77	87	8.7
		9/21	Excellent	2	21	23	11.5	2	21	23	11.5	1	22	23	23.0
		9/27	Excellent	0	6	6	0.0	0	6	6	0.0	0	6	6	0.0
Slough 9	128.3	9/4	Excellent	1	9	10	10.0	1	9	10	10.0	3	7	10	3.3
		9/12	Excellent	0	6	6	0.0	0	6	6	0.0	2	4	6	3.0
		9/20	Excellent	0	2	2	0.0	0	2	2	0.0	0	2	2	0.0
Slough 9B	129.2	8/11	Excellent	0	27	27	0.0	0	27	27	0.0	0	27	27	0.0
		8/23	Excellent	2	45	47	23.5	4	43	47	11.8	7	40	47	6.7
		8/27	Excellent	3	78	81	27.0	0	81	81	0.0	8	73	81	10.1
		9/4	Excellent	2	69	71	35.5	1	70	71	71.0	12	59	71	5.9
		9/12	Excellent	2	60	62	31.0	2	60	62	31.0	11	51	62	5.6
		9/20	Excellent	2	46	48	24.0	1	47	48	48.0	5	43	48	9.6
		9/27	Excellent	0	15	15	0.0	1	14	15	15.0	3	12	15	5.0

Table EJ-3. Continued.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Slough 9A	133.3	8/27	Excellent	0	2	2	0.0	1	1	2	2.0	0	2	2	0.0
		9/4	Excellent	0	1	1	0.0	0	1	1	0.0	0	1	1	0.0
		9/12	Excellent	0	2	2	0.0	1	1	2	2.0	0	2	2	0.0
Slough 11	135.3	8/6	Fair	6	94	100	16.7	0	100	100	0.0	15	85	100	6.7
		8/10	Excellent	3	47	50	16.7	4	46	50	12.5	9	41	50	5.6
		8/22	Excellent	16	242	258	16.1	17	241	258	15.2	41	217	258	6.3
		8/27	Excellent	26	347	373	14.3	32	341	373	11.7	64	309	373	5.8
		9/1	Excellent	39	571	610	15.6	49	561	610	12.4	72	538	610	8.4
		9/11	Excellent	36	674	710	19.7	44	666	710	16.1	80	630	710	8.9
		9/20	Excellent	35	433	468	13.4	22	446	468	21.3	55	413	468	8.5
		9/26	Excellent	16	254	270	16.9	14	256	270	19.3	25	245	270	10.8
Slough 17	138.9	8/21	Excellent	0	1	1	0.0	0	1	1	0.0	0	1	1	0.0
		9/3	Excellent	0	5	5	0.0	0	5	5	0.0	2	3	5	2.5
		9/11	Excellent	0	6	6	0.0	0	6	6	0.0	2	4	6	3.0
		9/19	Excellent	0	3	3	0.0	0	3	3	0.0	1	2	3	3.0
Slough 19	139.7	8/21	Excellent	0	13	13	0.0	1	12	13	13.0	2	11	13	6.5
		8/26	Excellent	10	10	20	0.0	0	20	20	0.0	1	19	20	20.0
		9/3	Excellent	0	23	23	0.0	0	23	23	0.0	1	22	23	23.0
		9/11	Excellent	0	12	12	0.0	0	12	12	0.0	1	12	13	12.0
		9/19	Excellent	0	8	8	0.0	0	8	8	0.0	0	8	8	0.0
		9/26	Excellent	0	4	4	0.0	1	3	4	4.0	0	4	4	0.0
Slough 21		8/26	Excellent	0	1	1	0.0	0	1	1	0.0	1	0	1	1.0
		9/3	Excellent	4	22	26	6.5	4	22	26	6.5	6	20	26	4.3
		9/11	Excellent	2	36	38	19.0	5	33	38	7.6	5	33	38	7.6
		9/19	Excellent	2	30	32	16.0	4	28	32	8.0	3	29	32	10.7
		9/26	Excellent	0	3	3	0.0	1	2	3	3.0	0	3	3	0.0

Table EJ-4. Pink salmon spawning ground surveys conducted on Susitna River sloughs and resultant tagged to untagged ratios, Adult Anadromous Investigations, Su Hydro Studies, 1981.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Slough 3A	101.4	8/21	Excellent	0	1	1	0.0								
Slough 8	113.7	8/29	Excellent	2	11	13	6.5	2	11	13	6.5				
Slough A	124.7	8/19	Excellent	1	1	2	2.0	0	2	2	0.0	0	2	2	0.0

Table EJ-5. Chum salmon spawning ground surveys conducted on Susitna River sloughs and resultant tagged to untagged ratios, Adult Anadromous Investigations, Su Hydro Studies, 1981.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Unnamed Slough	96.8	9/2	Fair	1	13	14	14.0								
Unnamed Slough	96.9	9/9	Good	9	279	288	32.0								
		9/17	Good	13	184	197	15.2								
		9/30	Excellent	2	59	61	30.5								
Unnamed Slough	97.0	9/17	Excellent	0	20	20	0.0								
		9/30	Excellent	2	27	29	14.5								
Slough 1	99.6	9/6	Good	0	2	2	0.0								
Slough 2	100.4	8/29	Excellent	0	2	2	0.0								
		9/6	Excellent	0	25	25	0.0								
		9/16	Excellent	1	5	6	6.0								
		9/24	Excellent	0	1	1	0.0								
Slough 6A	112.3	8/19	Good	0	11	11	0.0	1	10	11	11.0				
		8/23	Excellent	0	9	9	0.0	0	9	9	0.0				
		8/29	Fair	0	1	1	0.0	0	1	0	0.0				
Slough 8	113.7	8/29	Excellent	10	209	219	21.9	14	205	219	15.6				
		9/5	Excellent	12	185	197	16.4	15	182	197	13.1				
		9/13	Excellent	3	43	46	15.3	1	45	46	46.0				

Table EJ-5. Continued.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Moose Slough	123.5	8/27	Excellent	2	134	136	68.0	0	136	136	0.0	19	117	136	7.2
		9/12	Excellent	0	20	20	0.0	2	18	20	10.0	0	20	20	0.0
		9/21	Excellent	0	14	14	0.0	0	14	14	0.0	1	13	14	14.0
		9/27	Excellent	0	1	1	0.0	0	1	1	0.0	0	1	1	0.0
Slough A[1]	124.6	8/27	Excellent	0	26	26	0.0	1	25	26	26.0	2	24	26	13.0
		9/4	Excellent	8	114	122	18.0	3	119	122	40.7	4	118	122	30.5
		9/12	Excellent	2	33	35	17.5	0	35	35	0.0	4	31	35	8.8
Slough A	124.7	8/7	Excellent	2	18	20	10.0	0	20	20	0.0	1	19	20	20.0
		8/19	Excellent	0	24	24	0.0	1	23	24	24.0	2	22	24	12.0
		8/27	Excellent	0	26	26	0.0	0	26	26	0.0	7	19	26	3.7
		9/4	Excellent	1	12	13	13.0	2	11	13	6.5	0	13	13	0.0
Slough 8A	125.1	8/7	Excellent	0	16	16	0.0	0	16	16	0.0	0	16	16	0.0
		9/4	Excellent	6	324	330	55.0	5	325	330	66.0	27	303	330	12.2
		9/12	Excellent	1	52	53	53.0	0	53	53	0.0	4	49	53	13.3
		9/21	Excellent	0	6	6	0.0	0	6	6	0.0	2	4	6	3.0
Slough 9	128.3	8/11	Fair	0	5	5	0.0	0	5	5	0.0	0	5	5	0.0
		9/4	Excellent	3	209	212	70.7	10	202	212	21.2	29	183	212	7.3
		9/12	Excellent	0	38	38	0.0	1	37	38	38.0	2	36	38	19.0
		9/20	Excellent	0	1	1	0.0	0	1	0	0.0	0	1	1	0.0

Table EJ-5, Continued.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Slough 9B	129.2	8/11	Excellent	2	56	58	29.0	2	56	58	29.0	2	56	58	29.0
		8/23	Excellent	2	81	83	41.5	2	81	83	41.5	7	76	83	11.9
		8/27	Excellent	0	67	67	0.0	6	61	67	11.2	8	59	67	8.4
		9/4	Excellent	0	41	41	0.0	3	38	41	13.7	4	37	41	10.3
		9/12	Excellent	0	18	18	0.0	0	18	18	0.0	0	18	18	0.0
		9/20	Excellent	0	2	2	0.0	0	2	2	0.0	0	2	2	0.0
Slough 9A	133.3	8/27	Excellent	0	77	77	0.0	2	75	77	38.5	9	68	77	8.6
		9/4	Excellent	0	26	26	0.0	0	26	26	0.0	0	26	26	0.0
		9/20	Excellent	4	132	136	34.0	5	131	136	27.2	0	136	136	0.0
		9/27	Excellent	0	35	35	0.0	3	32	35	11.7	2	33	35	17.5
Slough 11	135.3	8/22	Excellent	5	271	276	55.2	7	269	276	39.4	23	253	276	12.0
		8/27	Excellent	3	400	403	134.3	10	393	403	40.3	33	370	403	12.2
		9/1	Excellent	5	353	358	71.6	12	346	358	29.8	30	328	358	12.0
		9/11	Excellent	3	178	181	60.3	6	175	181	30.1	14	167	181	12.9
		9/20	Excellent	1	31	32	32.0	3	29	32	10.7	0	32	32	0.0
		9/26	Excellent	1	4	5	5.0	0	5	5	0.0	0	5	5	0.0
Slough 13	135.7	9/4	Fair	0	4	4	0.0	0	4	4	0.0	0	4	4	0.0
Slough 15	137.2	8/26	Excellent	0	1	1	0.0	0	1	1	0.0	0	1	1	0.0

Table EJ-5. Continued.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Slough 17	138.9	8/6	Excellent	0	9	9	0.0	0	9	9	0.0	0	9	9	0.0
		8/21	Excellent	0	32	32	0.0	3	29	32	10.7	1	31	32	32.0
		8/26	Excellent	0	36	36	0.0	0	36	36	0.0	1	35	36	36.0
		9/3	Excellent	1	29	30	30.0	2	28	30	15.0	1	29	30	30.0
		9/11	Excellent	1	16	17	17.0	2	15	17	8.5	1	16	17	17.0
		9/19	Excellent	0	4	4	0.0	0	4	4	0.0	2	2	4	2.0
Slough 19	139.7	8/21	Excellent	0	3	3	0.0	0	3	3	0.0	2	1	3	1.5
Slough 21	140.0	8/26	Excellent	2	154	156	78.0	9	147	156	17.3	20	136	156	7.8
		9/3	Excellent	1	269	270	270.0	7	263	270	38.6	26	244	270	10.4
		9/11	Excellent	0	134	134	0.0	3	131	134	44.7	11	123	134	12.2
		9/19	Excellent	0	43	43	0.0	4	39	43	10.8	2	41	43	21.5
Slough 21A	145.5	9/2	Excellent	0	8	8	0.0	1	7	8	8.0	2	6	8	4.0
		9/11	Excellent	0	5	5	0.0	1	4	5	5.0	1	4	5	5.0

Table EJ-6. Sockeye salmon spawning ground surveys of selected tributaries and resultant tagged to untagged ratios, Adult Anadromous Investigations, Su Hydro Studies, 1981.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER MILE[1/]	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Answer Creek	84.1	8/31	Good	0	2	2	0.0								
Birch Creek (Lower)	88.4	8/5	Good	2	29	31	15.5								
		8/19	Fair	4	5	9	4.5								
		8/25	Good	3	3	6	2.0								
		9/8	Good	0	6	6	0.0								
Birch Creek (upper)	88.4	8/25	Good	0	1	1	0.0								
Fish Creek	97.1	8/22	Good	0	1	1	0.0								
Byers Creek	97.8	8/7	Good	0	15	15	0.0								
		8/26	Excellent	0	19	19	0.0								
		9/7	Good	0	53	53	0.0								
		9/4	Good	0	2	2	0.0								
Byers Lake	97.8	9/14	Good	2	92	94	47.0								
		9/29	Good	0	7	7	0.0								
Swan Creek	97.8	9/28	Good	2	44	46	22.0								
Lower McKenzie Creek	116.2	8/23	Fxcellent	0	1	1	0.0	0	1	1	0.0				

1/ Confluence of these streams or their receiving waters with the Susitna River Mainstem.

Table EJ-7. Pink salmon spawning ground surveys of selected tributaries and resultant tagged to untagged ratios, Adult Anadromous Investigations, Su Hydro Studies, 1981.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER 1/ MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Answer Creek	84.1	8/31	Good	0	1	1	0.0								
Birch Creek (lower)	88.4	8/5	Good	69	720	789	11.4								
		8/19	Good	220	752	972	4.4								
		8/25	Good	105	728	833	7.9								
Birch Creek (upper)	88.4	8/8	Good	12	190	202	16.8								
		8/19	Fair	129	727	856	6.6								
		8/25	Good	67	738	805	12.0								
Fish Creek	97.1	8/22	Good	61	547	608	10.2								
Troublesome Creek	97.8	8/26	Good	0	3	3	0.0								
Byers Creek	97.8	8/26	Excellent	0	2	2	0.0								
Chase Creek	106.9	8/4	Excellent	0	5	5	0.0	1	4	5	5.0				
		8/11	Good	4	34	38	9.5	2	36	38	19.0				
Lane Creek	113.6	8/19	Fair	4	49	53	13.3	10	43	53	5.3				
		8/23	Excellent	26	265	291	11.2	31	260	291	9.4				
		8/29	Excellent	2	24	26	13.0	1	25	26	26.0				

1/ Confluence of these streams or their receiving waters with the Susitna River Mainstem.

Table EJ-8. Chum salmon spawning ground surveys of selected tributaries and resultant tagged to untagged ratios, Adult Anadromous Investigations, Su Hydro Studies, 1981.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER[1/] MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Birch Creek (lower)	88.4	8/19	Fair	3	2	5	1.7								
		8/25	Good	0	1	1	0.0								
		9/8	Good	0	1	1	0.0								
Birch Creek (upper)	88.4	8/8	Good	0	1	1	0.0								
		8/19	Fair	0	4	4	0.0								
		8/25	Good	1	7	8	8.0								
		9/8	Good	1	0	1	1.0								
Fish Creek	97.1	8/22	Good	7	210	217	31.0								
Troublesome Creek	97.8	8/8	Fair	0	5	5	0.0								
		8/18	Fair	0	2	2	0.0								
		8/26	Good	4	164	168	42.0								
		9/7	Good	7	222	229	32.7								
		9/15	Good	2	53	55	27.5								
		9/22	Good	0	4	4	0.0								
Byers Creek	97.8	8/7	Good	0	9	9	0.0								
		8/18	Fair	0	1	1	0.0								
		8/26	Excellent	2	346	348	174.0								
		9/7	Good	4	296	300	75.0								
		9/14	Good	1	31	32	32.0								
Chase Creek	106.9	8/11	Good	0	1	1	0.0	0	1	1	0.0				

1/ Confluence of these streams or their receiving waters with the Susitna River Mainstem.

Table EJ-8. Continued.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER[1/] MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Lane Creek	113.6	8/19	Fair	0	8	8	0.0	2	6	8	4.0				
		8/23	Excellent	13	59	72	5.5	17	55	72	4.2				
		8/29	Excellent	1	8	9	9.0	0	9	9	0.0				
		9/5	Excellent	3	34	37	12.3	1	36	37	37.0				
		9/13	Excellent	0	2	2	0.0	0	2	2	0.0				
		9/21	Excellent	0	1	1	0.0	0	1	1	0.0				
Lower McKenzie Creek	116.2	8/23	Excellent	2	9	11	5.5	3	8	11	3.7				
		8/29	Excellent	1	10	11	11.0	2	9	11	5.5				
Skull Creek	124.7	8/11	Excellent	1	9	10	10.0	0	10	10	0.0	1	9	10	10.0
Sherman Creek	130.8	8/10	Good	2	7	9	4.5	2	7	9	4.5	0	9	9	0.0
		8/11	Excellent	0	6	6	0.0	0	6	6	0.0	1	5	6	6.0
		8/20	Good	0	2	2	0.0	0	2	2	0.0	1	1	2	2.0
4th of July Creek	131.0	8/7	Fair	4	84	88	22.0	1	87	88	88.0	4	84	88	22.0
		8/10	Good	3	27	30	10.0	8	22	30	3.8	2	28	30	15.0
		8/20	Good	2	44	46	23.0	3	43	46	15.3	2	44	46	23.0
Indian River	138.6	8/6	Fair	0	22	22	0.0	0	22	22	0.0	1	21	22	22.0
		8/21	Fair	0	33	33	0.0	3	30	33	11.0	1	32	33	33.0
		8/25	Good	2	69	71	35.5	6	65	71	11.8	7	64	71	10.1
		9/3	Excellent	1	35	36	36.0	3	33	36	12.0	1	35	36	36.0
		9/11	Good	1	9	10	10.0	1	9	10	10.0	2	8	10	5.0

1/ Confluence of these streams or their receiving waters with the Susitna River Mainstem.

Table EJ-9. Coho salmon spawning ground surveys of selected tributaries and resultant tagged to untagged ratios, Adult Anadromous Investigations, Su Hydro Studies, 1981.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER[1/] MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Answer Creek	84.1	9/9	Good	3	15	18	6.0								
		9/18	Excellent	8	34	42	5.3								
		9/25	Fair	3	14	17	5.7								
Question Creek	84.1	9/9	Good	1	11	12	12.0								
		9/18	Good	19	188	207	10.9								
		9/25	Fair	21	209	230	11.0								
Birch Creek (lower)	88.4	8/19	Fair	0	2	2	0.0								
		8/25	Good	44	81	125	2.8								
		9/8	Good	5	14	19	3.8								
		9/18	Fair	9	24	33	3.7								
		9/26	Fair	11	37	48	4.4								
Birch Creek (upper)	88.4	9/18	Good	12	41	53	4.4								
		9/19	Fair	19	102	121	6.4								
		9/26	Fair	6	34	40	6.7								
Unnamed Stream above Fish Lake	88.4	9/25	Good	2	22	24	12.0								
Trappers Creek	91.5	9/25	Fair	0	3	3	0.0								
Cache Creek	95.4	9/19	Excellent	19	124	143	7.5								
		9/28	Good	6	18	24	4.0								

1/ Confluence of these streams or their receiving waters with the Susitna River Mainstem.

Table EJ-9. Continued.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER[1/] MILE	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Fish Creek	97.1	8/22	Good	0	11	11	0.0								
Troublesome Creek	97.8	9/7	Good	2	12	14	7.0								
		9/15	Good	1	1	2	2.0								
		9/22	Good	2	8	10	5.0								
Horseshoe Creek	97.8	9/22	Good	0	1	1	0.0								
Byers Creek	97.8	8/26	Excellent	2	32	34	17.0								
		9/14	Good	2	20	22	11.0								
		9/22	Fair	0	7	7	0.0								
Whiskers Creek	101.9	8/2	Good	4	16	20	4.8								
		8/21	Fair	9	34	43	16.3								
		8/29	Good	3	46	49	10.0								
		9/6	Good	7	63	70	5.3								
		9/24	Good	3	13	16	5.0								
Chase Creek	106.9	8/11	Good	4	19	23	5.6	1	22	23	23.0				
		8/23	Fair	2	11	13	6.5	1	12	13	13.0				
		8/29	Good	6	43	49	8.2	11	38	49	4.5				
		9/7	Excellent	11	68	79	7.2	11	68	79	7.2				
		9/14	Good	8	52	60	7.5	24	36	60	2.5				
		9/24	Good	1	21	22	22.0	1	21	22	22.0				
		10/2	Good	0	5	5	0.0	2	3	5	2.5				

1/ Confluence of these streams or their receiving waters with the Susitna River Mainstem.

Table EJ-9. Continued.

LOCATION				SUNSHINE TAGS				TALKEETNA TAGS				CURRY TAGS			
SPAWNING AREA SURVEYED	RIVER MILE [1/]	DATE	SURVEY CONDITIONS	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)	TAGGED(r)	UNTAGGED	TOTAL(c)	RATIO(c/r)
Gash Creek	111.6	9/23	Excellent	14	127	141	10.1	15	126	141	9.4				
		9/28	Excellent	4	101	105	26.3	12	93	105	8.8				
Lane Creek	113.6	9/21	Excellent	0	3	3	0.0	1	2	3	3.0				
				1	0	1	1.0	0	1	1	0.0				
Lower	116.2	8/23	Excellent	3	53	56	18.7	6	50	56	9.3				
McKenzie		9/13	Excellent	1	5	6	6.0	0	6	6	0.0				
Creek		9/21	Excellent	1	1	2	2.0	0	2	2	0.0				
4th of July	131.0	8/7	Fair	0	1	1	0.0	0	1	1	0.0	0	1	1	0.0
Creek		9/25	Excellent	0	1	1	0.0	0	1	1	0.0	0	1	1	0.0
Indian River	138.6	8/25	Good	0	1	1	0.0	0	1	1	0.0	1	0	1	1.0
		9/11	Fair	8	34	42	5.3	1	41	42	42.0	5	37	42	8.4
		9/15	Good	3	47	50	15.7	3	47	50	15.7	4	46	50	11.5
		9/19	Excellent	1	9	10	10.0	0	10	10	0.0	2	8	10	5.0

1/ Confluence of these streams or their receiving waters with the Susitna River Mainstem.

Table EJ-10. Untagged to tagged ratios, by species, of fishwheel caught salmon at Talkeetna and Curry Stations, Adult Anadromous Investigations, Su Hydro, 1981.

SALMON SPECIES	FISHWHEEL CATCH								
	TALKEETNA STATION			CURRY STATION			CURRY STATION		
	Total Catch (c)	No. bearing Sunshine tags (r)	Ratio (c/r)	Total Catch (c)	No. bearing Sunshine tags (r)	Ratio (c/r)	Total Catch (c)	No. bearing Talkeetna tags (r)	Ratio (c/r)
Sockeye	398	29	13.5	470	39	11.8	470	49	9.4
Pink	379	18	20.6	229	10	22.7	229	26	8.7
Chum	1,285	53	24.0	1,276	40	31.9	1,276	127	10.0
Coho	533	39	13.5	182	17	10.7	182	28	6.5

APPENDIX EK

CHUM AND COHO SALMON RADIO TELEMETRY TRACKING REPORTS

Chum Salmon, Radio Transmitter #650-3

This male chum salmon was radio tagged at river mile (RM) 119.5 on 7 August (Figure EK-1). Within 33.5 hours of tagging the chum salmon moved 14.3 miles upstream, at a rate greater than or equal to ($\geq$) 0.43 miles per hour (mph). During the next 39 hours the fish moved an additional 5.1 miles upstream to a position 0.3 miles above the Indian River confluence (RM 138.6). Sometime during the following three days the fish entered the Indian River (RM 138.6) where it was found 1.3 miles above the confluence on 13 August. It remained in the Indian River between RM 2.1 and 0.6 for the remainder of the season, fifteen tracking flights.

Chum Salmon, Radio Transmitter #660-1

On 10 August this male chum salmon was radio tagged at RM 102.9 (Figure EK-2). Within several hours this fish moved 1.9 miles downriver. Nineteen and six tenths (19.6) hours later, however, it had moved 8 miles upstream. This upstream movement was $\geq$ 0.41 mph. During the next eight hours the fish moved downstream about 0.8 mile. Within fifteen hours it had resumed upstream migration and was detected 5.4 miles upstream, at the mouth of Lane Creek (RM 113.6). The salmon remained there for at least three days and then began moving upstream. Sixty one hours later, on 18 August, it was found at RM 123.3; this upstream movement was $\geq$ 0.16 mph. Within five days it had proceeded 18.7 miles upstream to the head of Slough 21 (RM 142.0), movement to this location occurred at a rate $\geq$ 0.15 mph. Aerial surveys on 26 and 28 August indicated the fish was moving down Slough 21. On 30 August

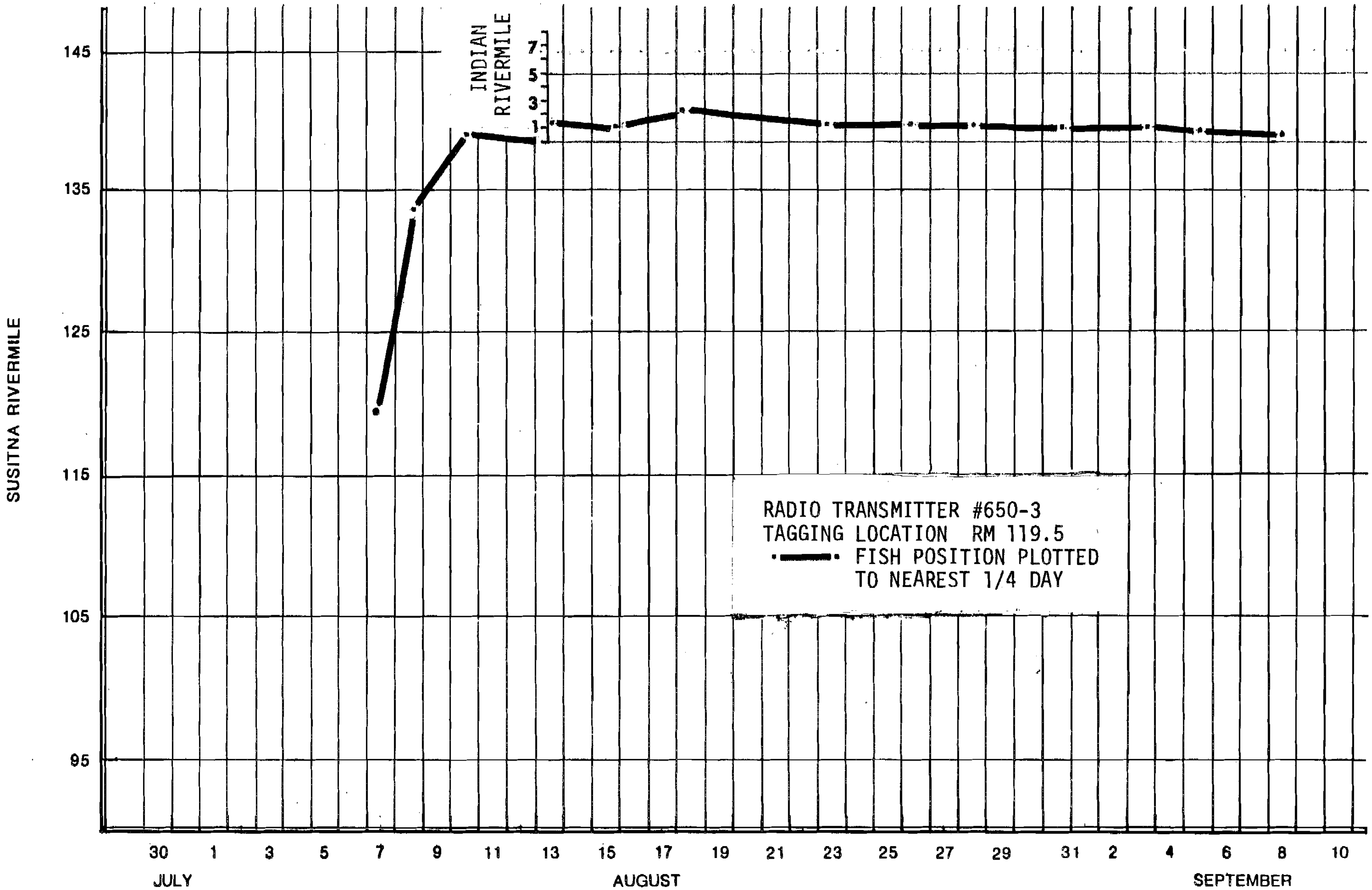


Figure EK-1. Movement of radio tagged chum salmon transmitter number 650-3 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

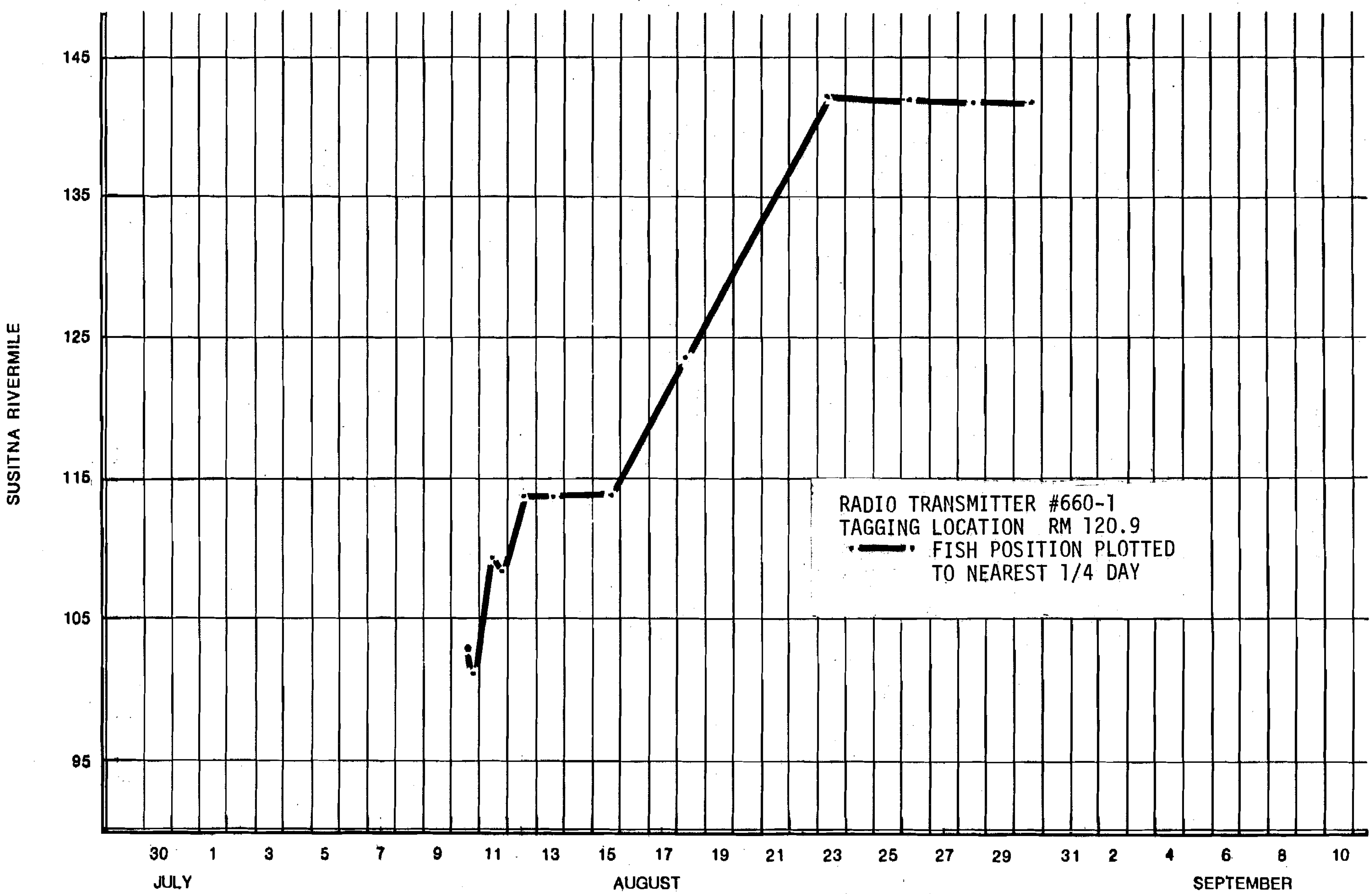


Figure EK-2. Movement of radio tagged chum salmon transmitter number 660-1 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Slough 21 was surveyed by foot. The functional radio transmitter was found about 20 feet from the water amongst the remains of the fish carcass. This fish was apparently captured by a predator.

Chum Salmon, Radio Transmitter #670-2

This female chum salmon was radio tagged on 12 August at RM 119.5 (Figure EK-3). It displayed very little movement following release. Within 2.4 hours it moved 0.2 miles upstream. Almost 21 hours later it was found 0.8 miles upstream at RM 120.5. Two days later it had dropped to RM 119.8, a position only 0.3 miles upstream from its release site. During the remainder of the season and a total of 27 more tracking fixes the fish stayed between RM 119.9 and 119.6. During this time it periodically moved between the east and west banks. Several attempts to recover the fish failed.

Chum Salmon, Radio Transmitter #680-2

On 6 August this male chum salmon was radio tagged at RM 120.7 (Figure EK-4). Immediately upon release this chum salmon moved downriver; within 45 minutes it was 0.1 mile downstream. Less than 2 days later (42.5 hours), however, it had migrated 21.3 miles upstream to a position 3.3 miles up the Indian River (RM 138.6). Movement rate to this location was $\geq$ 0.50 mph. For the next ten days the fish was found between Indian River mile 3.3 and 2.4. On 23 August it had moved downstream to Indian RM 1.7. For the remainder of the season it was found between RM 1.8 and 1.1 of the Indian River.

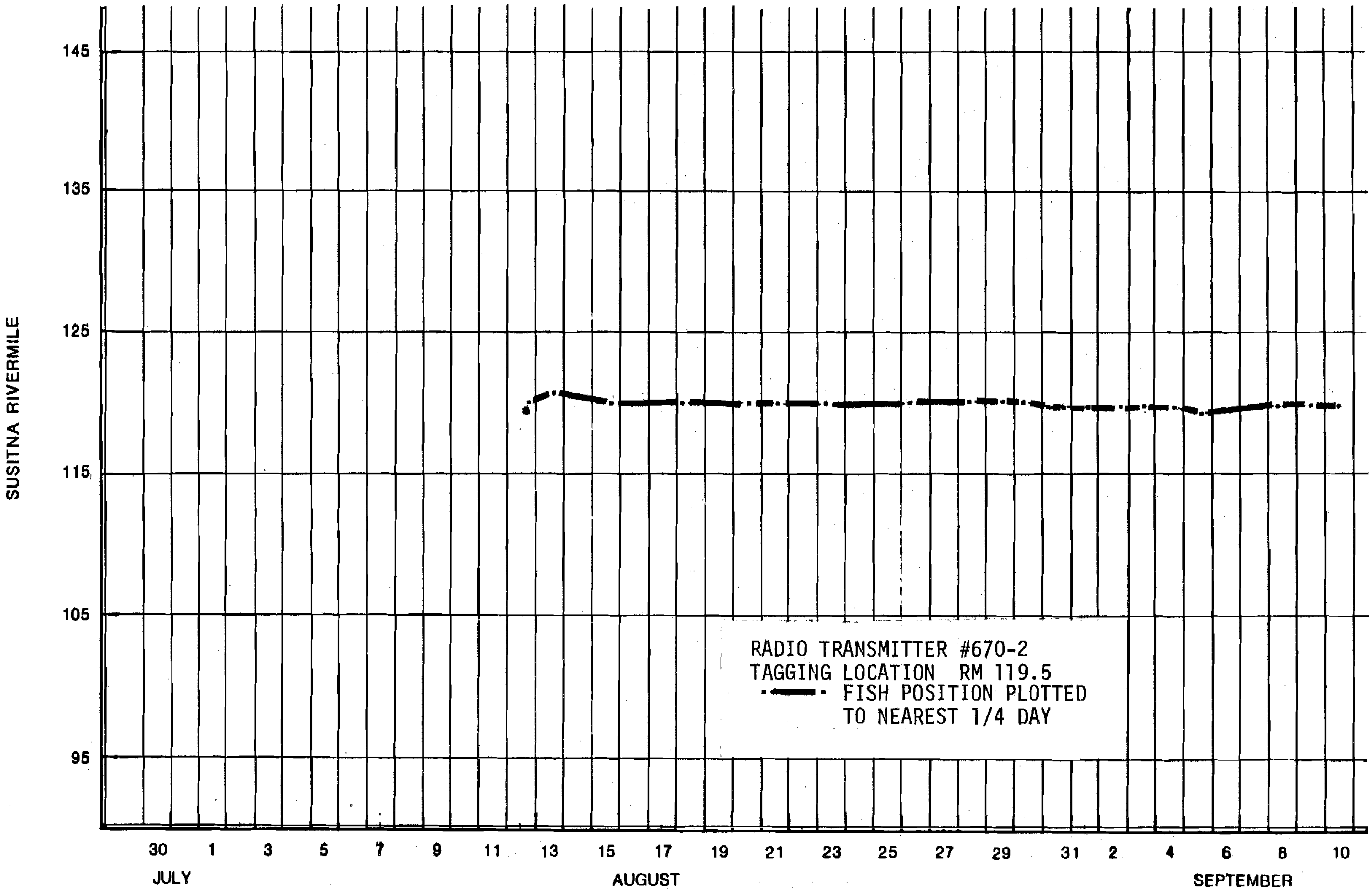


Figure EK-3. Movement of radio tagged chum salmon transmitter number 670-2 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

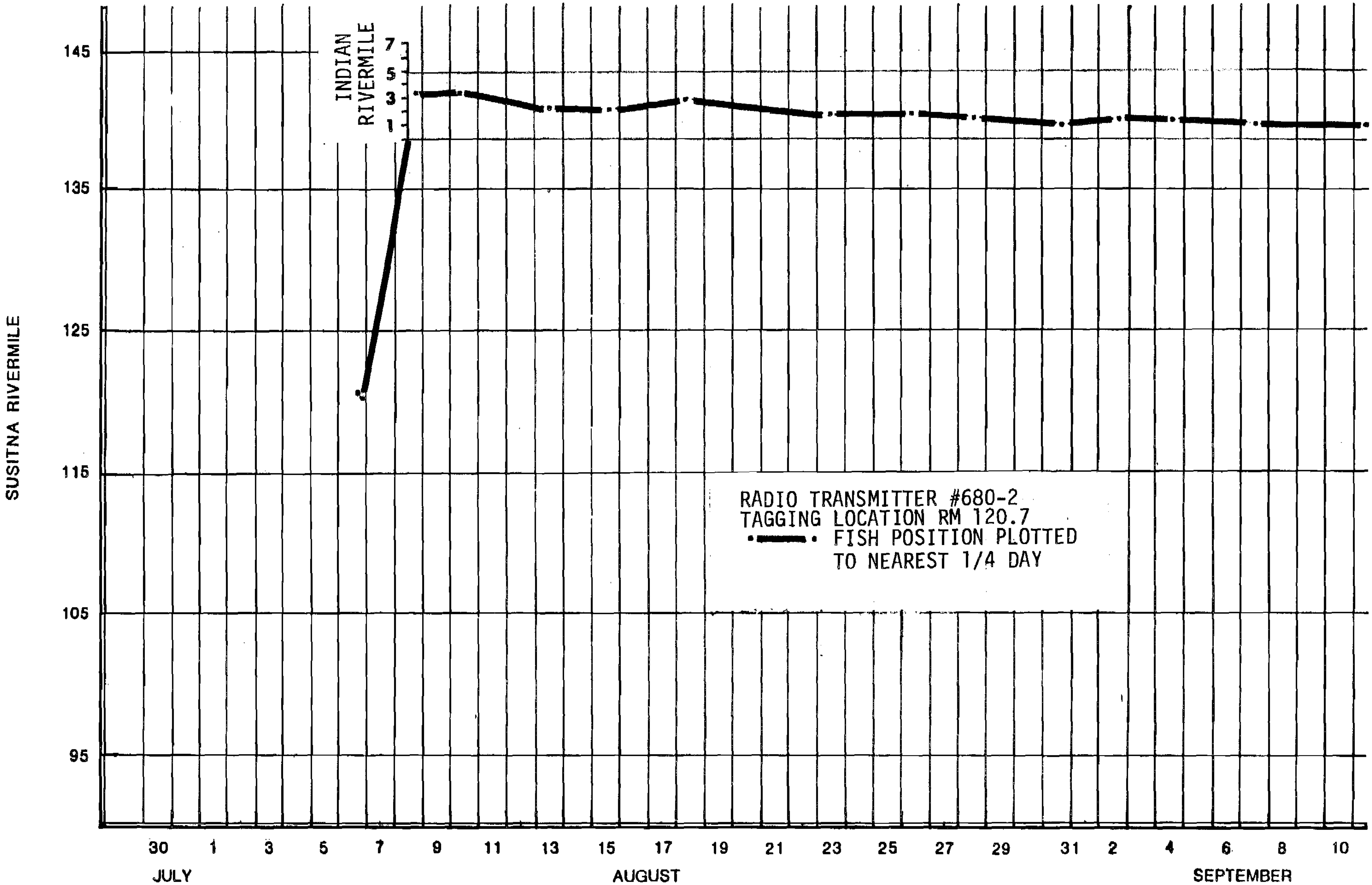


Figure EK-4. Movement of radio tagged chum salmon transmitter number 680-2 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Chum Salmon, Radio Transmitter #680-3

On 9 August this male chum salmon was radio tagged at RM 119.5 (Figure EK-5). Within 17.3 hours following transmitter insertion, the fish moved 4.2 miles upstream to RM 123.7 for a movement rate $\geq$ 0.24 mph. For at least the next 30 hours it held position at RM 123.7. On 13 August it was found approximately 1.3 miles upriver of Fourth July Creek (RM 131.0) at RM 132.3 along the west shore of the Susitna River. Movement to this location was $\geq$ 0.18 mph. It then moved downstream to within 0.05 miles of the mouth of Fourth July Creek (RM 131.0) and remained there about six days. Sometime after 1100 hours on 21 August the fish began moving upstream. On 23 August it was located in the Indian River about one half mile above the confluence with the Susitna River (RM 138.6). Movement rate to this location was $\geq$ 0.172 mph. The fish stayed in the Indian River approximately one week and was consistently detected within the lower one-half mile of this stream. It re-entered the Susitna River after 1233 hours on 28 August and was found at RM 132.5 on 30 August. During the remainder of the season the fish did not move from this position.

Chum Salmon, Radio Transmitter #700-1

This female chum salmon was radio tagged on 12 August at RM 119.5 (Figure EK-6). Within 3 hours of release this fish moved 0.2 miles below the release site. Twenty-one and one half (21.5) hours later it had moved 0.5 miles upstream. During the next eight days and four tracking attempts it was undetected. On 23 August it was discovered at

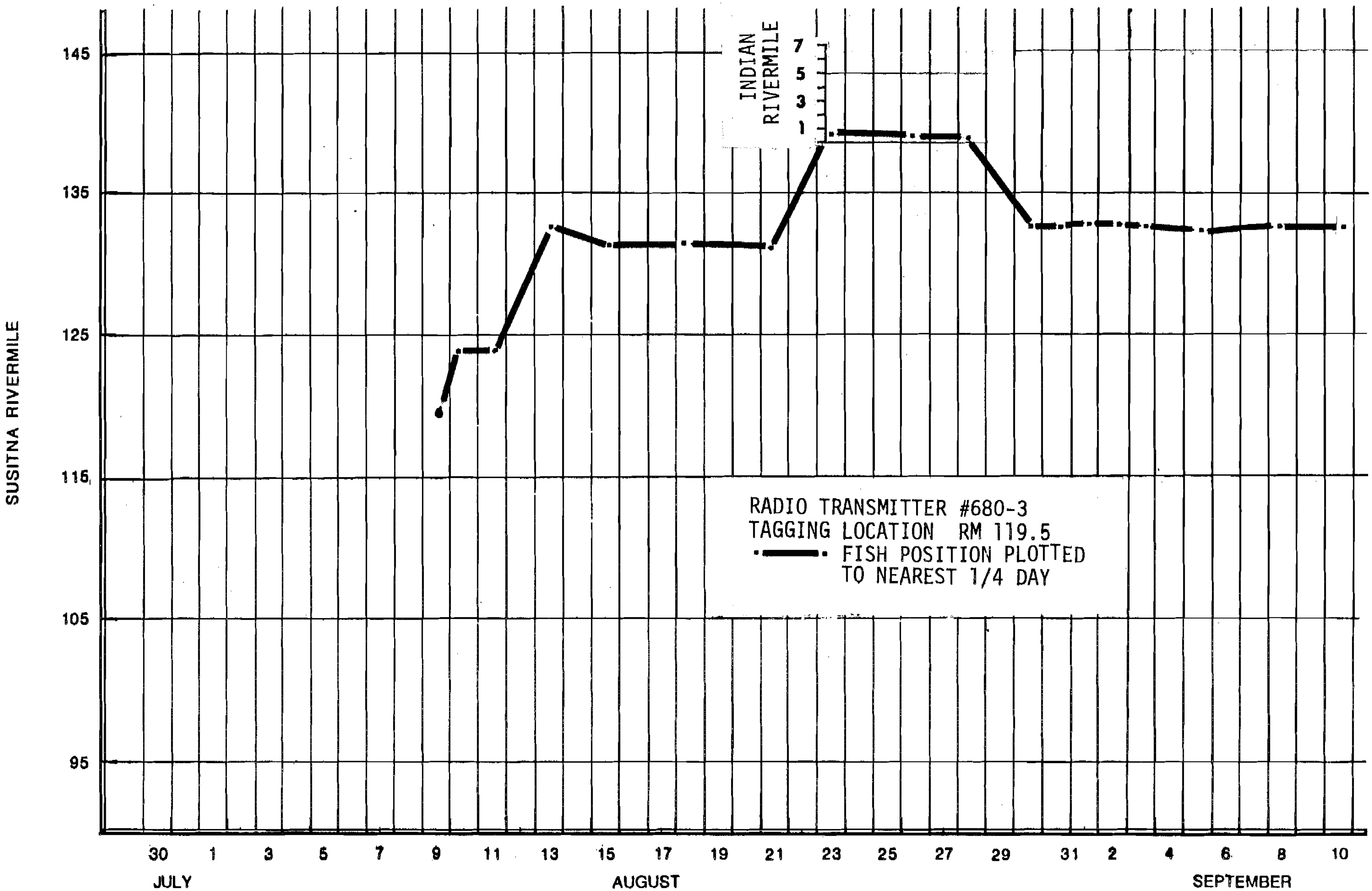


Figure EK-5. Movement of radio tagged chum salmon transmitter number 680-3 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

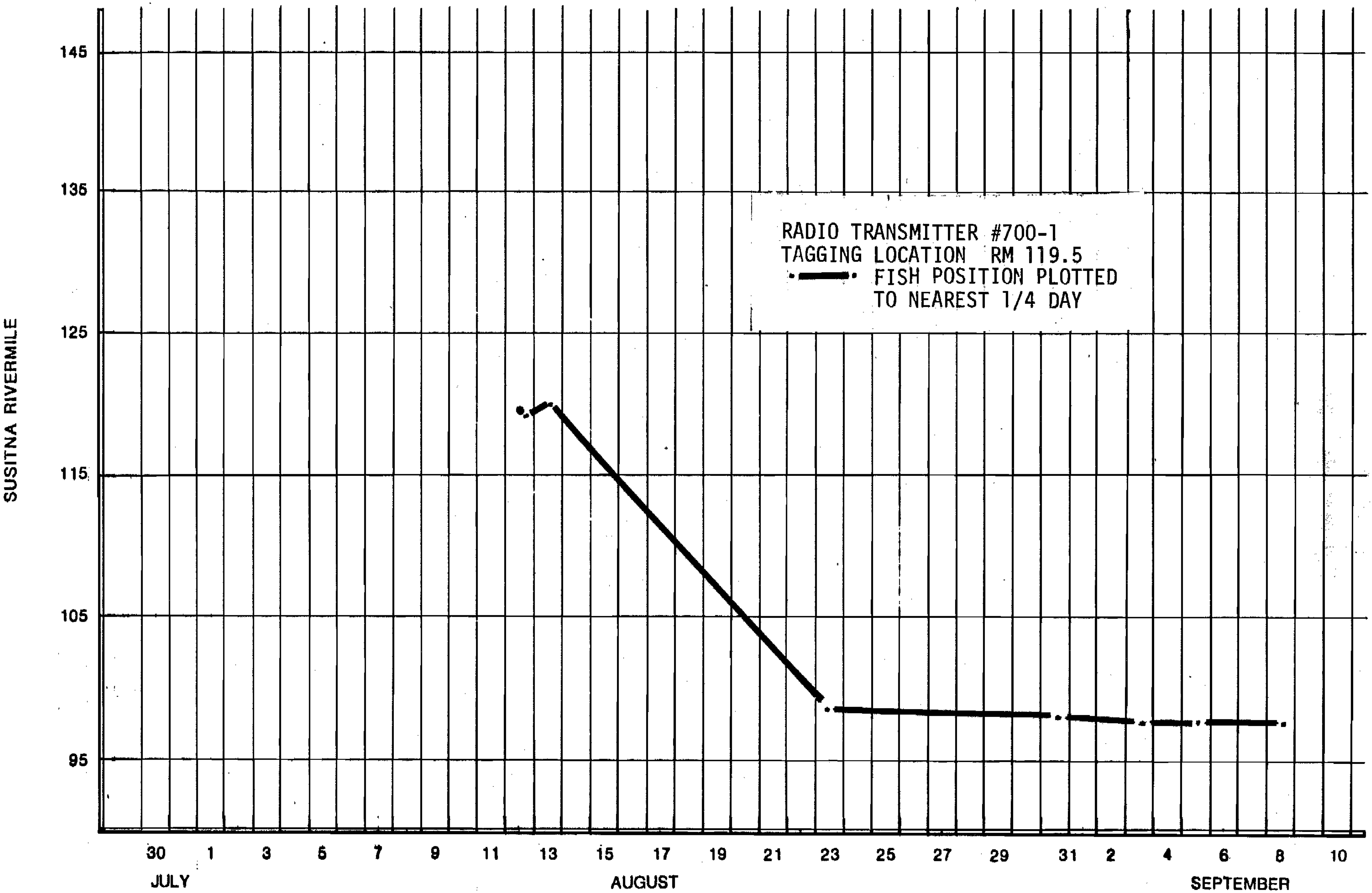


Figure EK-6. Movement of radio tagged chum salmon transmitter number 700-1 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

RM 98.6 in the Three Rivers Area (TRA) near the Chulitna-Susitna River confluence, about 20 miles downriver from its last known position. By 31 August the fish had moved into Slough S-14 (RM 96.9) on the west side of the Chulitna-Susitna confluence area. On 8 September the transmitter was recovered from the carcass along the bank of Slough S-14, located at RM 96.9. Spawning condition could not be determined due to the advanced state of carcass decomposition.

Chum Salmon, Radio Transmitter #700-3

On 3 July this female chum salmon was radio tagged at RM 102.9 (Figure EK-7). After tagging this fish moved downstream and remained in the Susitna River at RM 99.5, just above its confluence with the Chulitna River, until 6 August, a period of about one week. It then moved into the Chulitna River and was found on 8 August, 12 miles upriver of the TRA. Movement during this time was $\geq$ 0.24 mph. Ten days later the fish was found at RM 16.1 of the Chulitna River. During the remainder of the season this fish could not be found, probably due to transmitter failure; erratic transmitter signals were detected during the 6 and 7 August aerial tracking flights.

Chum Salmon, Radio Transmitter #710-2

Radio tagging of this female chum salmon occurred on 6 August at RM 102.9 (Figure EK-8). This fish displayed the most rapid upstream movement for radio tagged chum salmon. Immediately upon release from tagging it proceeded upstream. One and nine tenths (1.9) hours later it was 1.9

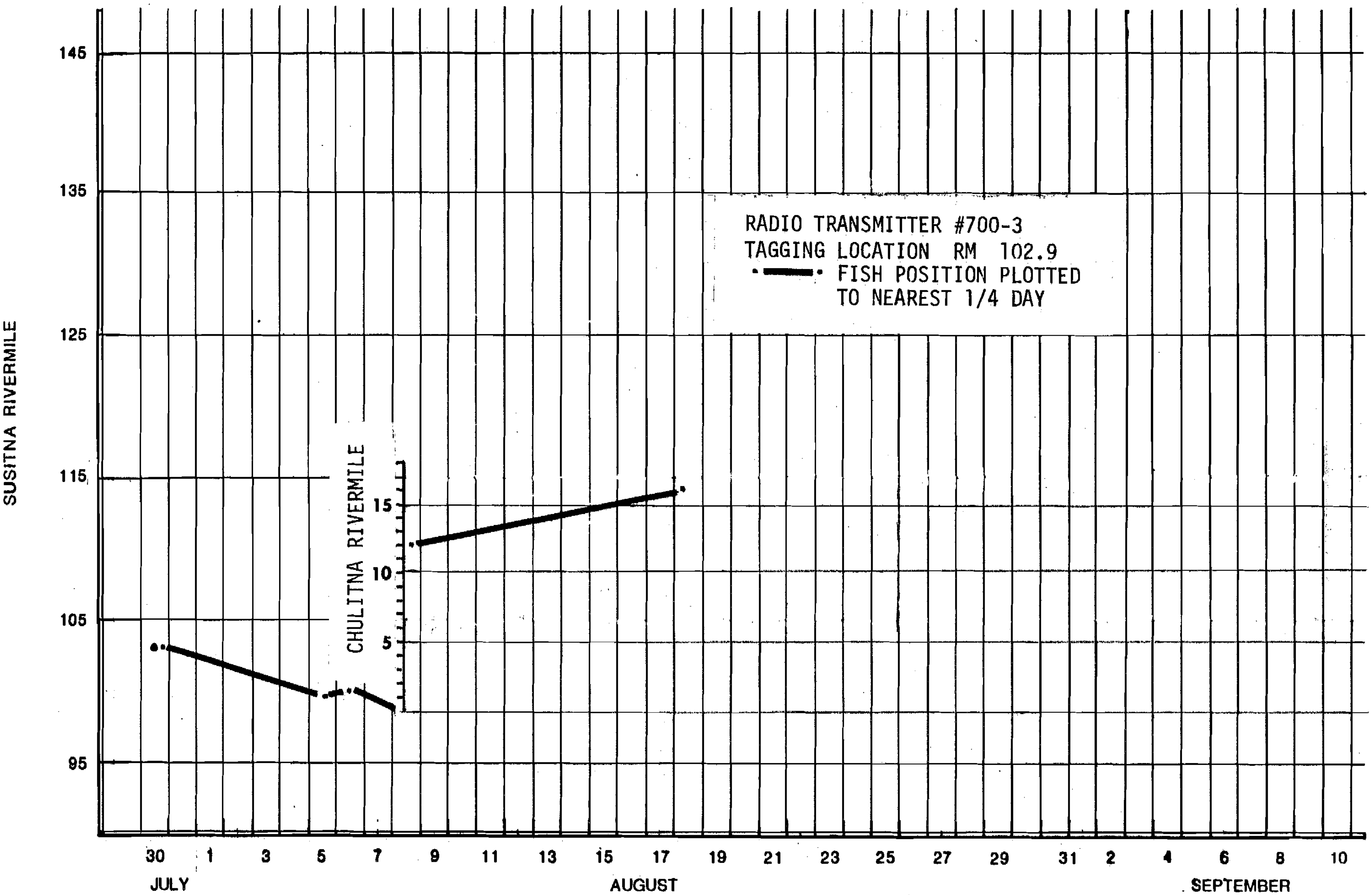


Figure EK-7. Movement of radio tagged chum salmon transmitter number 700-3 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

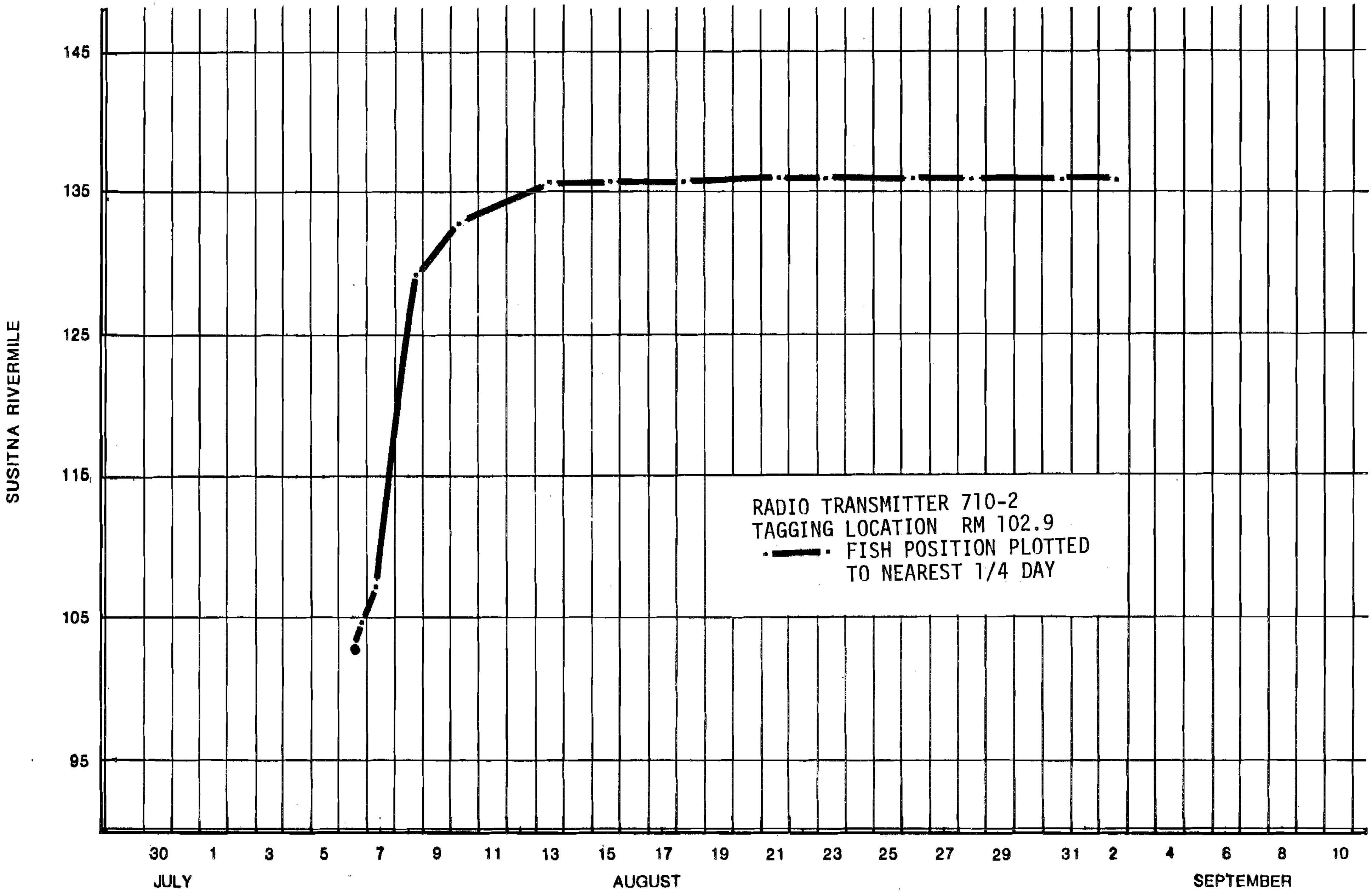


Figure EK-8. Movement of radio tagged chum salmon transmitter number 710-2 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

miles above the tagging site, a rate of 1.0 mph. Sixteen (16) hours later it was detected 2.2 miles above its previous position, a rate $\geq$ 0.14 mph. Thirty-two and one half (32.5) hours later, however, it was found 22.5 miles further upstream, a movement rate $\geq$ 0.68 mph. Between 10 August and 13 August the fish entered Slough 11 at RM 135.3. On 21 August it was detected by telemetry 0.4 mile up the slough at RM 135.7, excavating a redd. On 2 September the live fish was netted and necropsied. It had spawned, as indicated by the 22 eggs remaining in the coelum but the radio transmitter was not in the fish, as it was on 21 August. The operational transmitter was located 5 meters from the redd, in the water.

Chum Salmon, Radio Transmitter #720-1

This male chum salmon was radio tagged on 7 August at RM 120.7 (Figure EK-9). After release this fish proceeded upstream to RM 131.4, where it was found 32.3 hours later, a upstream movement rate $\geq$ 0.32 mph. Between 1727 hours on 8 August and 0812 hours on 10 August it moved downstream to RM 130.7, an area just below the Fourth of July Creek confluence (RM 131.0). For the remainder of the season the fish stayed within 0.2 mile of RM 130.7. Between 10 August and 21 August it occupied positions along the west side of the mainstem Susitna River from RM 130.6 to 130.7. On 23 August it moved to the east side of the river near the confluence with Sherman Creek (RM 130.8). On 24 August it was observed in Sherman Creek, approximately 55 yards upstream of the confluence with the Susitna River (RM 130.8). Between 26 August and 30 August it returned to the west shore of the Susitna River at 130.8. On 3 September the transmitter signal became weak. The transmitter was detected at RM 130.9 $\pm$ 0.1 mile for the remainder of the

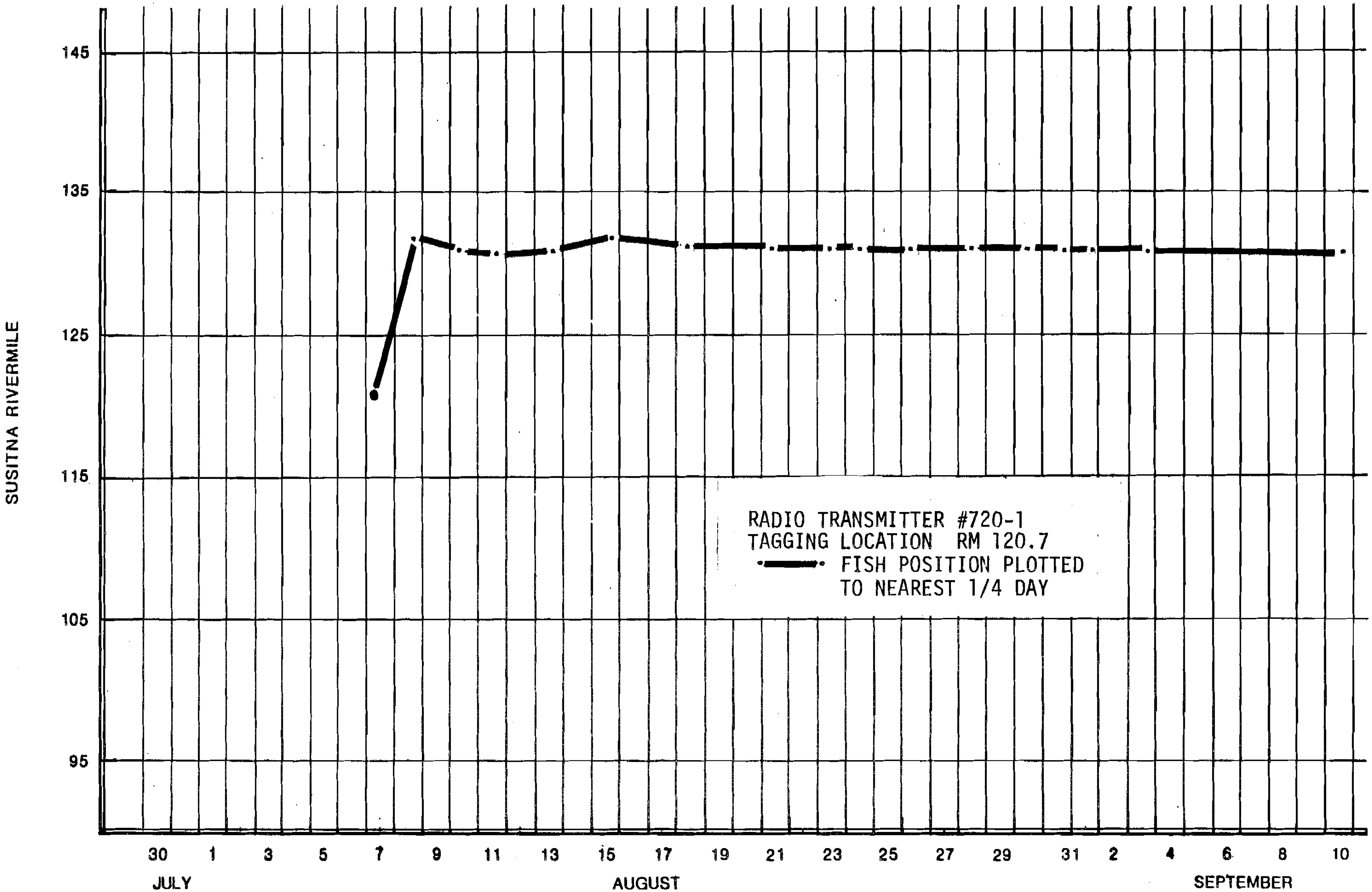


Figure EK-9. Movement of radio tagged chum salmon transmitter number 720-1 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

summer. On 18 September the transmitter was recovered at RM 130.9; it was found about 15 yards inland from the west shoreline. A few pieces of fish carcass were scattered near the tag indicating a probable predator kill. Spawning condition could not be determined.

Chum Salmon, Radio Transmitter #730-2

Radio tagging of this male chum salmon occurred at RM 102.9 on 6 August (Figure EK-10). Upon release this fish moved 0.7 miles downstream within 10 minutes. Forty-seven and nine-tenths (47.9) hours later on 8 August, however, it was detected 18 miles upstream at RM 120.3, a movement rate $\geq$ 0.38 mph. During the next 7 days it progressed 6.7 miles upstream to RM 120.7, where it last detected on 15 August. On 18 August and thereafter the signal could not be detected. Extensive efforts during the remainder of the season to locate this fish were unsuccessful.

Chum Salmon, Radio Transmitter #740-1

This female chum salmon was radio tagged at RM 119.5 on 11 August (Figure EK-11). Within 1.3 hours of release this fish moved 1.4 miles downriver. Less than a day later it had moved an additional 0.3 miles downriver. On 13 August, however, it had begun moving upstream and was found at RM 121.7, 2.2 miles above the release site. On 15 August it was detected at RM 121.1 and was consistently encountered there through the field season. However, on 29 August this fish was briefly examined in Moose Slough at Susitna RM 123.5; the fish was without the transmitter

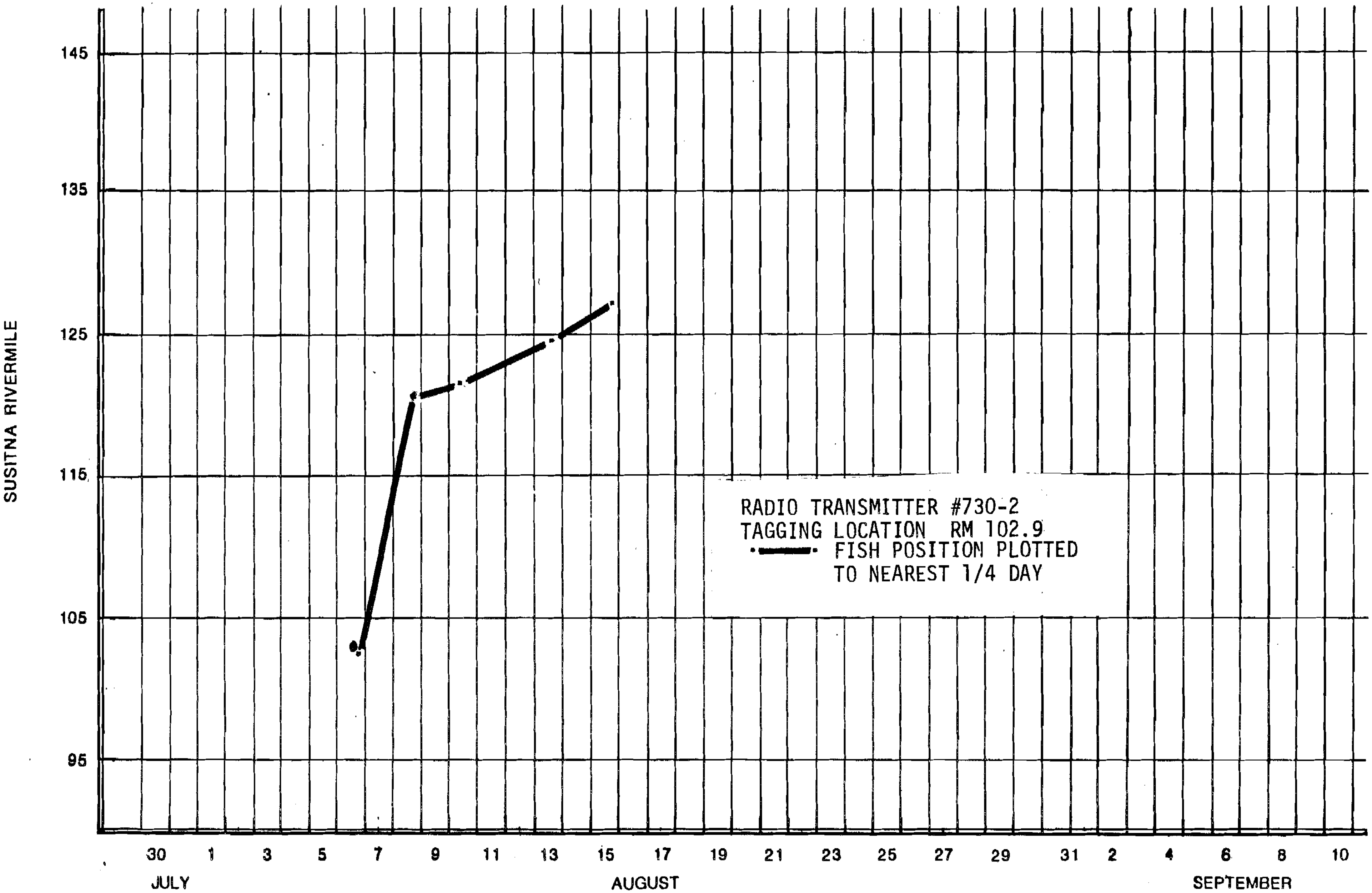


Figure EK-10. Movement of radio tagged chum salmon transmitter number 730-2 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

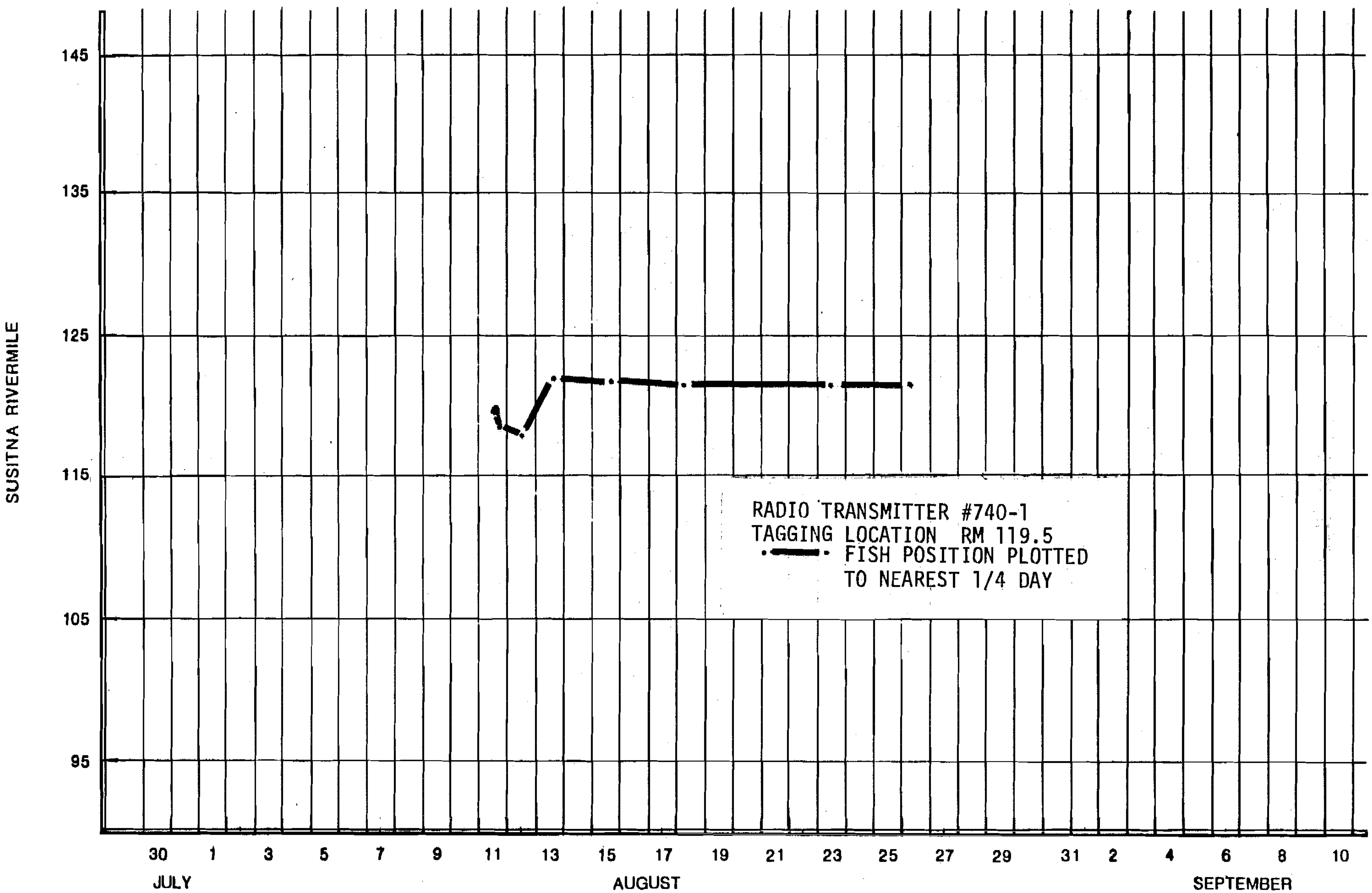


Figure EK-11. Movement of radio tagged chum salmon transmitter number 740-1 in the Susitna River drainage during August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

and identified by it's Peterson disc tag number (A-333). It had regurgitated the radio transmitter, which was located at RM 121.1. On 4 September the fish was found dead in Moose Slough. It was necropsied and determined to be spawned-out. The transmitter continued to emit weak signals at RM 121.1 for the remainder of the season. Numerous attempts to retrieve the tag failed.

Complete radio-tagged chum salmon movement data are shown on Table EK-1.

Coho Salmon, Radio Transmitter #650-1

Fish 650-1 was tagged on 3 September at RM 120.7 (Figure EK-12). This coho salmon progressively moved downriver and eventually entered the Talkeetna River between 4 and 11 September. Six hours after being released it was detected at RM 116.1. The following day, 4 September at 1450h, it was located at RM 107.0; about 6 hours later it was detected downriver at RM 102.5. An overflight on 11 September detected the fish in the Talkeetna River (RM 97.0) at RM 2.7. Subsequent overflights on the 13 and 16 September detected the individual at RM 2.7 and 3.2, respectively.

Sometime between 16 and 18 September this coho salmon departed the Talkeetna River (RM 97.0) and moved upstream the Susitna River. The individual apparently remained in the Talkeetna River at or near RM 2.7 on 17 September, as it was not detected by boat while tracking round trip along the lower 0.75 mile of the Talkeetna River (RM 97.0) and the Susitna River from RM 96.8 to 120.8. However, the next day, 18 September,

Table EK-1. Movement and timing data recorded during radio telemetry operations of adult chum salmon during July, August and September, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Tag Number										
	Date	8-7-81	8-8-81	8-10-81	8-13-81	8-15-81	8-18-81	8-23-81	8-26-81	8-28-81
	Location(R.M.)/Time	119.5/0753	133.8/1728	138.9/0831	I 1.3/1434	I 1.1/1927	I 2.1/0844	I 1.2/1025	I 1.2/1029	I 1.1/1232
	Distance moved(mi)	(Tagged and released)	14.3	5.1	-0.3,+1.3=1.6	-0.2	1.0	-0.9	0	-0.1
	Time Elapsed(hr)		33.6	39.0	78.0	53.5	61.3	121.7	72.0	50.0
	Rate of movement(mph)		.426	.130	.020	-.004	.016	-.007	0	-.002
650-3	8-31-81	9-3-81	9-5-81	9-8-91	9-11-81	9-13-81	9-16-81	9-20-81	9-23-81	9-30-81
	I 1.0/1855	I 1.0/1941	I 0.9/1504	I 0.8/1149	I 0.5/1617	I 0.5/1525	I 0.8/1034	I 0.6/1406	I 0.6/0836	I 0.6/1137
	-0.1	0	-0.1	-0.1	-0.3	0	+0.3	-0.2	0	0
	78.4	72.8	43.4	68.7	76.3	47.1	67.5	99.5	69.5	171.0
	-.001	0	-.002	-.001	-.004	0	.004	-.002	0	0
660-1	8-10-81	8-10-81	8-11-81	8-11-81	8-12-81	8-13-81	8-15-81	8-18-81	8-23-81	8-26-81
	102.9/1700	101.0/2045	109.0/1240	108.2/2100	113.6/1207	113.6/1422	113.6/1918	123.3/0837	142.0/1041	141.9/1044
	(Tagged and Released)	-1.9	8.0	-0.8	5.4	0	0	9.7	18.7	-0.1
		3.7	19.6	8.3	15.1	26.3	53.0	61.3	122.0	72.0
		-.513	.408	-.096	.358	0	0	.158	.153	-.001
	8-28-81	8-30-81								
	141.7/1309	141.7/1830	Recovered							
	-0.2	0	fish on							
	50.4	53.3	8-30-81							
	-.004	0								
670-2	8-12-81	8-12-81	8-13-81	8-15-81	8-18-81	8-20-81	8-21-81	8-23-81	8-26-81	8-28-81
	119.5/1513	119.7/1735	120.5/1425	119.8/1921	119.8/0834	119.8/1600	119.8/1700	119.8/1016	119.9/1020	119.9/1224
Cont'd next page	(Tagged and released)	0.2	0.8	-0.7	0	0	0	0	0.1	0
		2.4	20.9	52.9	61.2	55.4	25	41.3	72.1	50.1
		.083	.038	-.001	0	0	0	0	.001	0
	8-29-81	8-30-81	8-31-81	8-31-81	9-1-81	9-2-81	9-3-81	9-3-81	9-4-81	9-5-81
	119.9/1800	119.9/1030	119.6/1030	119.6/1845	119.6/1630	119.6/1900	119.6/1648	119.6/1928	119.6/1730	119.3/1458
	0	0	-0.3	0	0	0	0	0	0	-0.3
	29.7	16.5	24	8.2	21.7	26.5	21.8	2.7	22.0	21.5
	0	0	-.012	0	0	0	0	0	0	-.014

\- = downstream movement
\+ = upstream movement
Time recorded using 24 hour clock
Miles shown are Susitna River locations unless otherwise noted.
Elapsed time has been rounded to nearest one tenth (0.1) hour.

I = Indian River mileage

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Table EK-1. Continued.

Tag Number										
	Date	9-8-81	9-9-81	9-10-81	9-11-81	9-13-81	9-16-81	9-17-81	9-18-81	9-20-81
	Location(R.M.)/Time	119.6/1136	119.6/1345	119.6/1120	119.6/1607	119.6/1512	119.6/1020	119.6/1635	119.6/1715	119.6/1345
	Distance moved(mi)	+0.3	0	0	0	0	0	0	0	0
	Time Elapsed(hr)	68.6	26.1	21.5	28.8	47.1	67.1	30.6	24.7	44.5
	Rate of movement(mph)	.004	0	0	0	0	0	0	0	0
	9-23-81	9-30-81								
670-2	119.6/0822	119.6/1121								
	0	0								
(cont)	66.6	171.0								
	0	0								
	8-6-81	8-6-81	8-8-81	8-10-81	8-13-81	8-15-81	8-18-81	8-23-81	8-26-81	8-28-81
680-2	120.7/2215	120.6/2300	I 3.3/1731	I 3.3/0817	I 2.0/1434	I 2.0/1928	I 2.4/0845	I 1.7/1026	I 1.8/1029	I 1.6/1234
	(Tagged and	-0.1	18.0, 3.3=21.3	0	-1.3	0	0.4	-0.7	0.1	-0.2
	released)	0.7	42.5	38.7	86.3	52.9	61.6	121.6	72.1	50.1
		-.143	.501	0	-.015	0	.006	-.006	.001	-.004
	8-31-81	9-2-81	9-5-81	9-8-81	9-11-81	9-13-81	9-16-81	9-20-81	9-23-81	9-30-81
	I 1.4/1856	I 1.6/1942	I 1.6/1505	I 1.5/1150	I 1.0/1618	I 1.1/1526 hr	I 1.2/1033	I 1.1/1407	I 1.2/0836	I 1.2/1137
	-0.2	0.2	0	-0.1	-0.5	0.1	0.1	-0.1	0.1	0
	78.4	72.8	43.4	68.7	76.5	47.1	67.1	99.6	66.5	170.9
	-.003	.003	0	-.001	-.006	.002	.001	-.001	.001	0
	8-9-81	8-10-81	8-11-81	8-13-81	8-15-81	8-18-81	8-21-81	8-23-81	8-26-81	8-28-81
680-3	119.5/1452	123.7/0810	123.7/1500	132.2/1500	131.0/1920	131.0/0838	130.9/1100	I 0.5/1024	I 0.4/1028	I 0.3/1233
	(Tagged and	4.2	0	8.5	-1.2	0	-0.1	7.7, 0.5 = 8.2	-0.1	-0.1
	released)	17.3	30.8	48.0	52.4	61.2	74.4	47.6	72.0	50.1
		.243	0	.177	-.023	0	-.001	.172	-.001	-.002
	8-30-81	8-31-81	9-1-81	9-2-81	9-3-81	9-5-81	9-8-81	9-10-81	9-10-81	9-11-81
Cont'd	132.5/1500	132.5/1851	132.6/1830	132.6/1830	132.5/1939	132.3/1501	132.5/1142	132.5/1325	132.5/1755	132.5/1614
next	-0.3, -6.1=-6.4	0	0.1	0	-0.1	-0.2	+0.2	0	0	0
page	50.4	28.8	23.6	24.0	25.1	43.5	68.7	49.7	4.5	22.3
	-.127	0	.004	0	-.004	-.005	.003	0	0	0

- = downstream movement I = Indian River mileage
+ = upstream movement
Time recorded using 24 hour clock
Miles shown are Susitna River locations unless otherwise noted.
Elapsed time has been rounded to nearest one tenth (0.1) hour.

Table EK-1. Continued.

Tag Number										
	Date		9-13-81	9-16-81	9-20-81	9-23-81	9-30-81			
	Location(R.M.)/Time	680-3	132.5/1522	132.5/1027	132.5/1402	132.5/0834	132.5/1130			
	Distance moved(mi)		0	0	0	0	0			
	Time Elapsed(hr)	Continued	47.1	67.1	99.6	66.5	170.9			
	Rate of movement(mph)		0	0	0	0	0			
700-1	8-12-81	8-12-81	8-13-81	8-23-81	8-31-81	9-3-81	9-5-81	9-8-81		
	119.5/1430	119.3/1740	119.8/1515	98.6/1133	98.0/1920	97.6/1914	97.6/1435	97.6/1724	Recovered	
	(Tagged and	-0.2	0.5	-21.2	-0.6	-0.4	0	0	tag on	
	released)	3.2	21.6	236.3	119.8	71.9	43.3	74.8	9-8-81	
		-.062	.023	.090	-.003	-.006	0	0		
700-3	7-30-81	7-30-81	8-5-81	8-6-81	8-8-81	8-18-81				
	102.9/1250	102.9/2004	99.5/1341	99.9/1150	Ch 12.0//1802	Ch 16.1/0945	No Signal			
	(Tagged and	0	-3.4	0.4	-1.3,+12.0=13.3	4.1	detected			
	released)	7.2	120.8	22.1	54.2	231.7	after			
		0	.028	.018	.245	.018	8-18-81			
710-2	8-6-81	8-6-81	8-7-81	8-8-81	8-10-81	8-13-81	8-15-81	8-18-81	8-21-81	8-23-81
	102.9/1448	104.8/1645	107.0/0854	129.2/1726	132.5/0813	135.7/1431	135.7/1928	135.7/0842	135.8/1427	135.8/1024
	(Tagged and	1.9	2.2	22.2	3.3	3.2	0	0	0.1	0
	released)	1.9	16.2	32.5	38.8	78.3	52.9	61.3	77.7	43.9
		1.0	.136	.683	.085	.041	0	0	.001	0
	8-26-81	8-28-81	8-31-81	9-2-81						
	135.8/1026	135.8/1231	135.8/1853	135.8/1645	Recovered					
	0	0	0	0	tag on					
	72.0	50.1	78.4	45.9	9-2-81					
	0	0	0	0						
720-1	8-7-81	8-8-81	8-10-81	8-11-81	8-13-81	8-15-81	8-18-81	8-21-81	8-23-81	8-24-81
Cont'd.	120.7/0707	131.4/1727	130.7/0812	130.6/1530	130.8/1430	131.8/1927	131.0/0838	130.9/1100	130.8/1020	130.8/1230 hr
next	(Tagged and	10.7	-0.7	-0.1	0.2	1.0	-0.8	-0.1	-0.1	S 55 yd
page	released)	34.3	38.7	31.3	71.0	52.9	61.2	74.4	47.3	26.2
		.312	-.018	-.003	.003	.019	-.013	-.001	-.002	0

- = downstream movement
+ = upstream movement
Time recorded using 24 hour clock
Miles shown are Susitna River locations unless otherwise noted.
Elapsed time has been rounded to nearest one tenth (0.1) hour.

Ch = Chulitna River mileage
S = Sherman Creek mileage

Table EK-1. Continued.

Tag Number										
	Date	8-26-81	8-28-81	8-30-81	8-31-81	9-1-81	9-3-81	9-10-81	9-11-81	9-13-81
	Location(R.M.)/Time	130.8/1025	130.8/1226	130.9/1530	130.8/1850	130.9/1800	130.8/1937	130.8/1820	130.8/1612	130.8/1521
	Distance moved(mi)	0	0	+0.1	-0.1	+0.1	-0.1	0	0	0
	Time Elapsed(hr)	45.9	50.0	51.0	27.6	23.2	49.6	166.7	21.9	47.1
	Rate of movement(mph)	0	0	.002	-.004	.004	-.002	0	0	0
720-1 (cont)	9-16-81	9-18-81								
	130.8/1027	130.8/1530	Recovered							
	0	0	fish on							
	67.1	52.5	9-18-81							
	0	0								
730-2	8-6-81	8-6-81	8-8-81	8-10-81	8-13-81	8-15-81				
	102.9/1718	102.2/1728	120.3/1722	121.2/0907	124.5/1427	127.0/2010	No Signal			
	(Tagged and	-0.7	18.1	0.9	3.3	2.5	detected			
	released)	.2	47.9	39.7	77.3	53.7	after			
		-3.5	.378	.023	.043	.047	8-15-81			
740-1	8-11-81	8-11-81	8-12-81	8-13-81	8-15-81	8-18-81	8-23-81	8-26-81	8-28-81	8-29-81
	119.5/1922	118.1/2040	117.8/1320	121.7/1426	121.5/2015	121.0/0742	121.1/1138	121.1/1021	121.1/1225	123.5/1630
	(Tagged and	-1.4	-0.3	3.9	-0.2	-0.5	0.1	0	0	Fish netted.
	released)	1.3	16.6	25.1	29.6	59.4	123.9	70.7	50.1	Tag not in
		-1.76	-.018	.155	.007	-.008	.0008	0	0	fish.
	9-4-81									
	Recovered fish									
	at R.M. 123.5.									
	Tag at									
	R.M. 121.1									

- = downstream movement
+ = upstream movement
Time recorded using 24 hour clock
Miles shown are Susitna River locations unless otherwise noted.
Elapsed time has been rounded to nearest one tenth (0.1) hour.

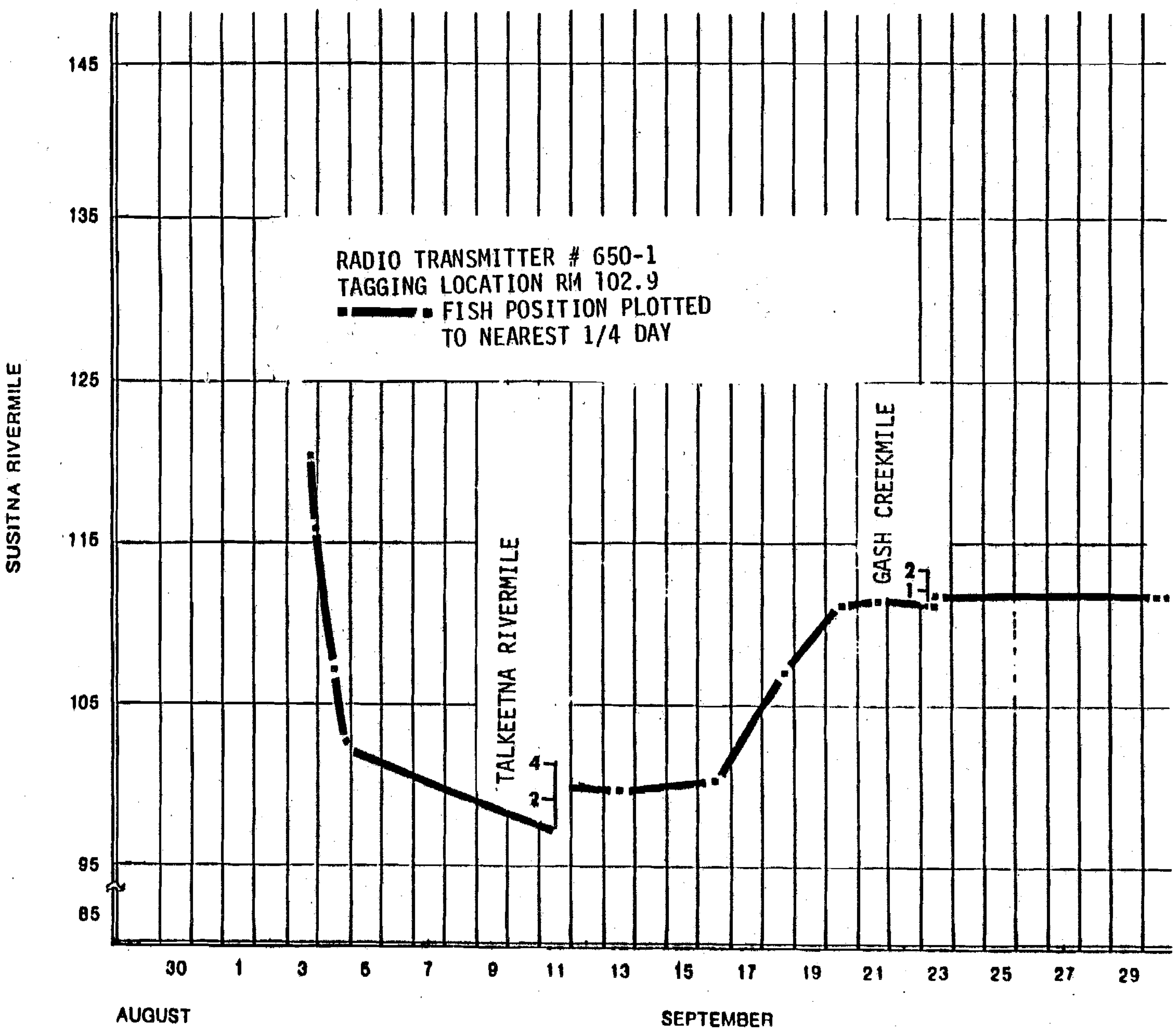

Figure EK-12. Movement of radio tagged coho salmon transmitter number 650-1 in the Susitna River drainage during September, 1981. Adult Anadromous Investigations, Su Hydro Studies, 1981.

it was monitored in the Susitna River adjacent to the mouth of Chase Creek, (RM 106.9) and by 21 September was located in the east channel of the Susitna River at RM 111.5, immediately downstream of Gash Creek, (RM 111.6).

The fish was first detected in Gash Creek (RM 111.6) at RM 0.375 by overflight on 23 September; later the same day, the fish was located by telemetry, during a stream survey, in a pond immediately above a beaver dam at RM 0.375 with about 18 other adult coho salmon. Numerous attempts to capture the individual with a net and assess it's spawning condition were not successful. An overflight on 30 September did not locate the fish. However, later that same day the spawned out, live female was captured in a riffle-run stream reach upriver of the pond at RM 0.375. The transmitter was missing.

A necropsy was performed. It had spawned, as evidenced by the 18 eggs retained in the coelum.

The kype was torn where the transmitter wire modification had been removed by someone. The Peterson disc tag remained intact and no other external injuries or abnormalities were noted. It is not known if spawning took place prior to and/or after the removal of the transmitter.

Coho Salmon, Radio Transmitter #650-2

This individual was tagged at RM 102.9 on 1 September (Figure EK-13). Ten minutes after release this fish entered (and was immediately removed from) a fishwheel on the opposite bank at RM 102.8; forty minutes later

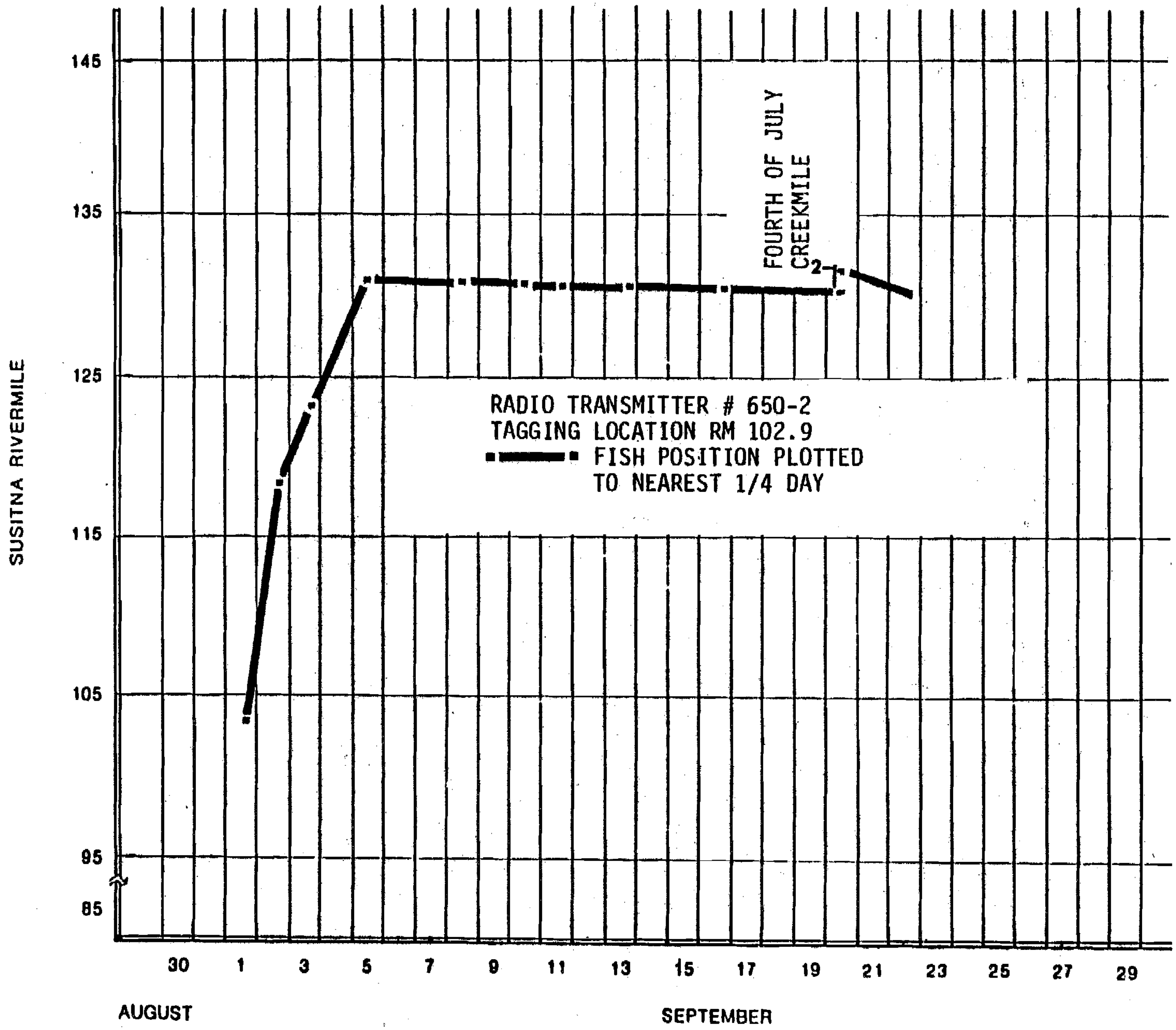

Figure EK-13. Movement of radio tagged coho salmon transmitter number 650-2 in the Susitna River drainage during September, 1981. Adult Anadromous Investigations, Su Hydro Studies, 1981.

it was located upstream at RM 103.5. It was detected the following day in Oxbow II at RM 119.3; this movement is equivalent to an upstream migration rate $\geq$ 0.56 mph or 13.4 mi/day. It reached RM 131.0 on or before 5 September and remained within 0.1 mile of the mouth of Fourth of July Creek (RM 131.0) through at least 16 September.

Indirect evidence suggests this fish moved upstream Fourth July Creek (RM 131.0) sometime during 17 or 18 September. It was consistently detected by boat and airplane at RM 131.0 from 5 through 16 September. However, on 18 September it was not encountered at or downstream of RM 131.0 or along the lower 0.5 mile of Fourth July Creek (RM 131.0). Two days later (20 September) it was detected by overflight at RM 1.25 Fourth July Creek (RM 131.0). The individual probably would have been detected on 18 September upriver of mile 0.5 of Fourth July Creek (RM 131.0) had the ground telemetry survey extended further upstream. Sometime between 20 and 23 September the fish departed this stream; it was last located in the Susitna River at RM 130.2, downstream of the mouth of Fourth July Creek, (RM 131.0), on 23 September.

Coho Salmon, Radio Transmitter #660-2

This coho salmon was radio tagged at RM 120.7 on 30 August (Figure EK-14). Upon release the individual swam 0.1 mile upstream and remained there for at least 45 minutes. However, the following day (36 hours later) the fish was detected 11.0 miles downstream at RM 109.8; this movement is equivalent to a downstream migration rate of about 0.35 mph. The individual moved upstream to Oxbow I, RM 110.4, where it was monitored during 1 and 2 September.

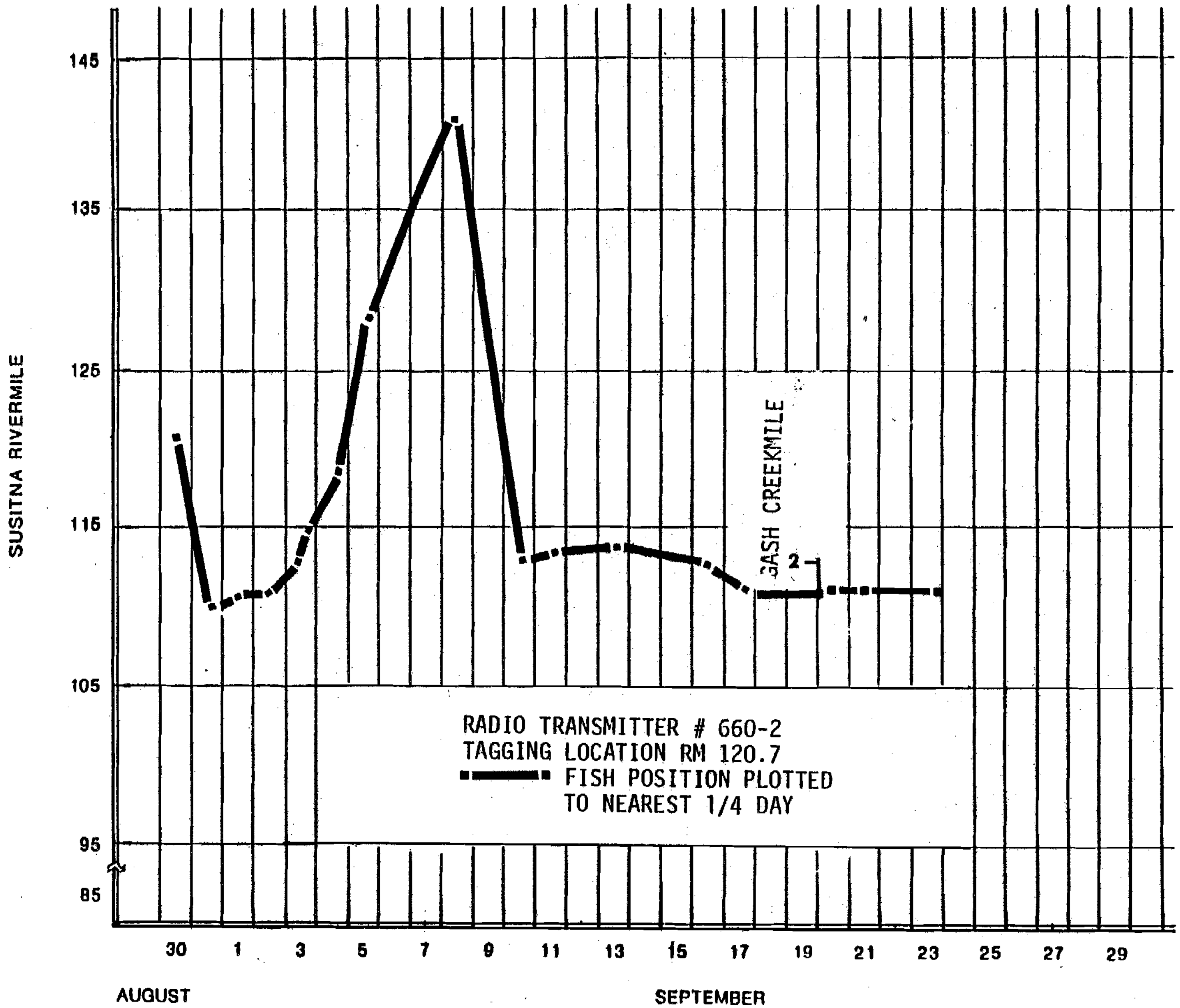

Figure EK-14. Movement of radio tagged coho salmon transmitter number 660-2 in the Susitna River drainage during August and September, 1981. Adult Anadromous Investigations, Su Hydro, 1981.

This individual began moving upstream sometime during 2 or 3 September and was located at RM 141.1 on 8 September. This movement corresponds to an overall upstream migration rate of 0.22 mph but the fish demonstrated considerably faster upstream movement. For example, during 3 September it moved upstream 2.2 miles in 2.5 hours, a rate $\geq$ 0.88 mph.

Sometime between 9 and 10 September the fish began moving downriver and entered Gash Creek, (RM 111.6), about 10 days later. On 10 September the individual was located in Slough 6A at RM 112.5; this movement is comparable to a downstream migration rate $\geq$ 0.53 mph. The fish exited Slough 6A, as it was detected the following day at RM 113.3, and then progressively moved downriver and remained within 0.1 to 0.3 mile of the mouth of Gash Creek during 17 and 18 September. It was detected at RM 0.1 Gash Creek (RM 111.6) on 20 September.

The fish was located by telemetry on 21 September at RM 0.2 Gash Creek (RM 111.6), netted and inspected. The transmitter was intact and the fish had apparently spawned. The anterior one third of the coelomic cavity appeared gravid and firm whereas the remainder of the coelom was flacid and apparently devoid of eggs. The fish was returned to the stream alive, immediately swam 5 meters downriver and occupied an undercut bank.

A 23 September overflight did not encounter the individual along Gash Creek (RM 111.6); later the same day the live fish was detected visually within 15 meters of it's release site, netted and inspected. The fish was without the transmitter; neither telemetry or a search 25 meters up and downriver from the capture site detected the transmitter. It was apparently removed from the fish sometime after 21 September.

A necropsy revealed only 25 eggs in the coelom. The stomach was intact and displayed no apparent damage from the transmitter.

Coho Salmon, Radio Transmitter #680-1

Coho salmon number 680-1 was radio tagged at RM 120.7 on 31 August (Figure EK-15). Forty five minutes after being released it had moved upstream 0.1 mile but within 8.1 hours it was detected 13.6 miles downriver at RM 107.2. This movement is equivalent to a downstream migration rate $\geq$ 1.69 mph. The fish continued moving downriver to RM 101.9, where it was monitored on 3 September. The coho salmon was consistently encountered in the Susitna River from RM 101.6 to 102.1 through 1045h 10 September as determined by telemetry on 3, 4, 5, 8, 9 and 10 September.

The individual began moving upstream sometime between 1045h and 1950h on 10 September and was last detected at RM 109.7 on 11 September (1600h). This upstream movement represents an upstream migration rate $\geq$ 0.28 mph or 6.7 mi/day. Extensive tracking efforts during the remainder of the season failed to locate this fish.

Coho Salmon, Radio Transmitter #700-2

Fish 700-2 was tagged at RM 102.9 on 3 September (Figure EK-16). This fish moved downstream to the mouth of Whiskers Slough, (RM 101.2), within four hours of release, and remained there thru 5 September. It

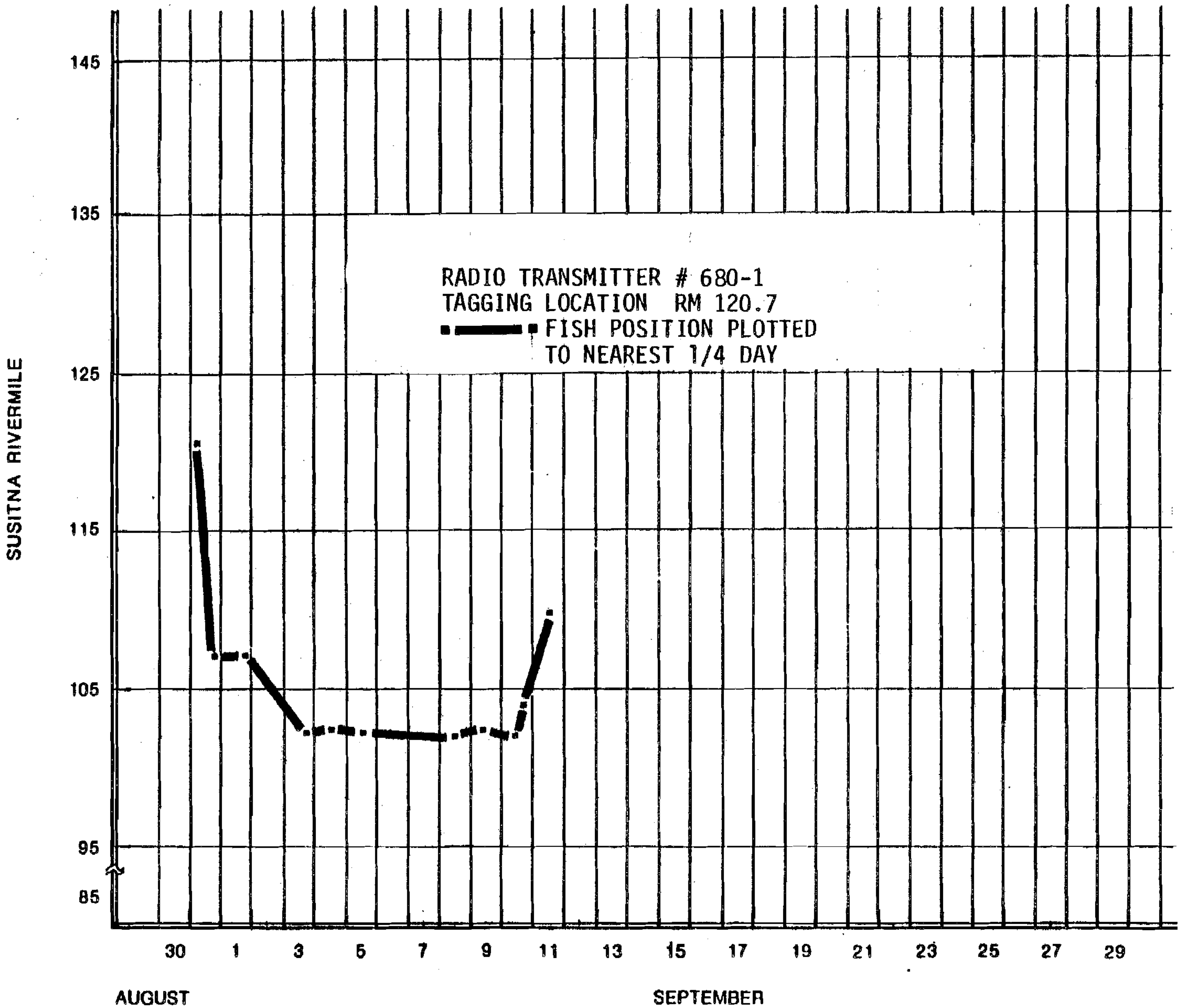

Figure EK-15. Movement of radio tagged coho salmon transmitter number 680-1 in the Susitna River drainage during August and September, 1981. Adult Anadromous Investigations, Su Hydro Studies, 1981.

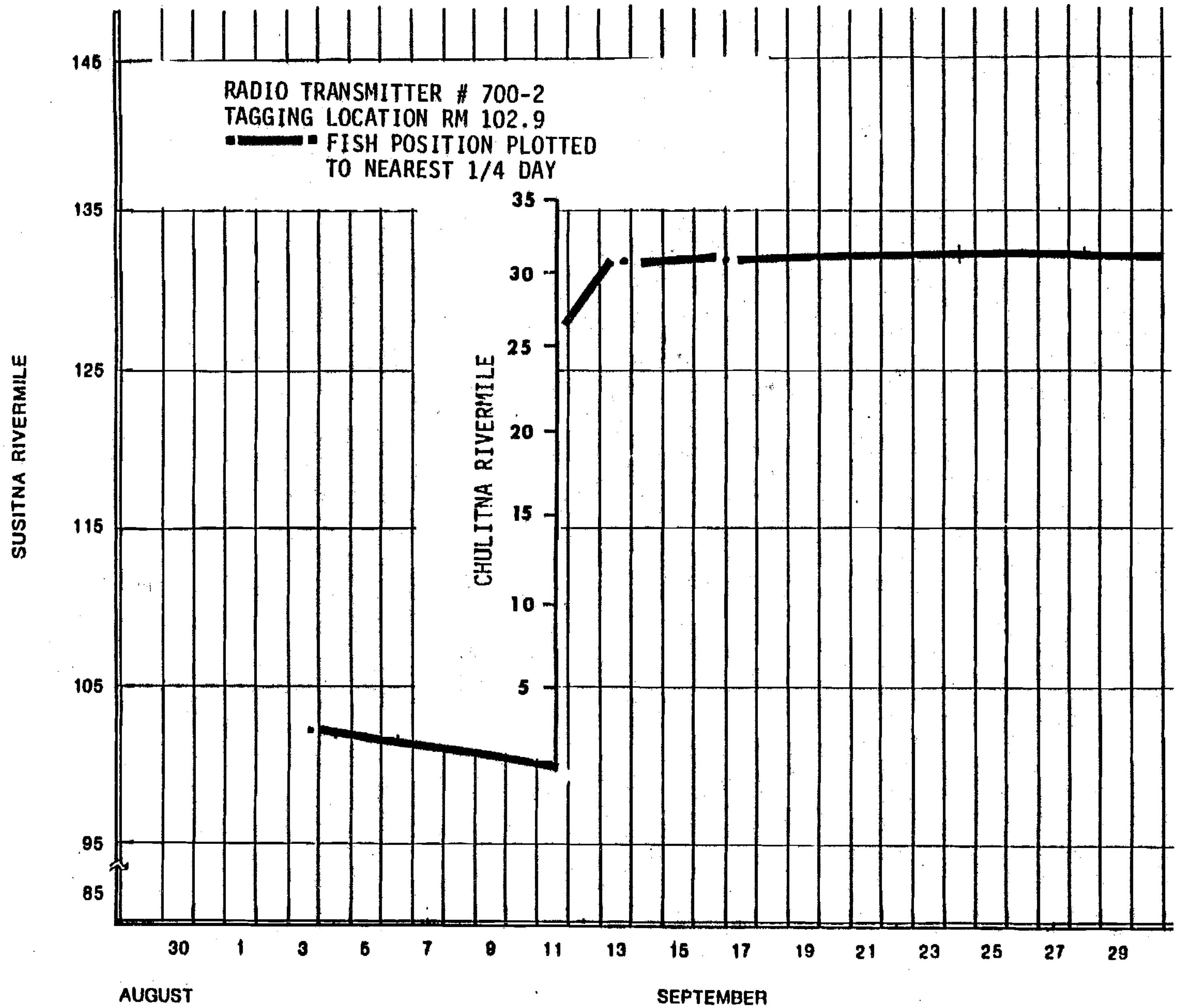

Figure EK-16. Movement of radio tagged coho salmon transmitter number 700-2 in the Susitna River drainage during September, 1981. Adult Anadromous Investigations, Su Hydro Studies, 1981.

was next detected at RM 25.9 Chulitna River (RM 98.6) on 11 September. Overflights detected this individual at or within 0.3 miles of RM 32.1 Chulitna River (RM 98.6) on the 13, 16 and 30 September.

Coho Salmon, Radio Transmitter #710-1

This fish was radio tagged at RM 102.9 on 4 September and remained undetected until 8 September, when it was located in the Talkeetna River (RM 97.0) at the mouth of Chunilna Creek, (RM 5.9) (Figure EK-17). Flights on 11 and 13 September detected the individual at RM 9.0 Chunilna Creek. It was not located thereafter.

Coho Salmon, Radio Transmitter #710-3

This female coho salmon was radio tagged at RM 102.8 on 4 September (Figure EK-18). Within 7.1 hours after being released this fish was detected 1.7 miles downriver at RM 101.1. It was next detected 9 days later by airplane in Fish Lake, about 4.7 miles upriver of the mouth of Birch Creek, (RM 88.0). The individual ascended a northwest side inlet (Cabin Creek) to Fish Lake, sometime between 13 and 16 September and remained at or near RM 0.1 of this stream thru 19 September. A 19 September ground telemetry survey detected the spawned-out, dead coho salmon at RM 0.1 Cabin Creek. The caudal fin of the female fish was worm. About 25 eggs remained inside the fish. The stomach was ruptured along its entire length, probably from the radio transmitter; no other apparent tissue or organ damage associated with the radio transmitter was noted.

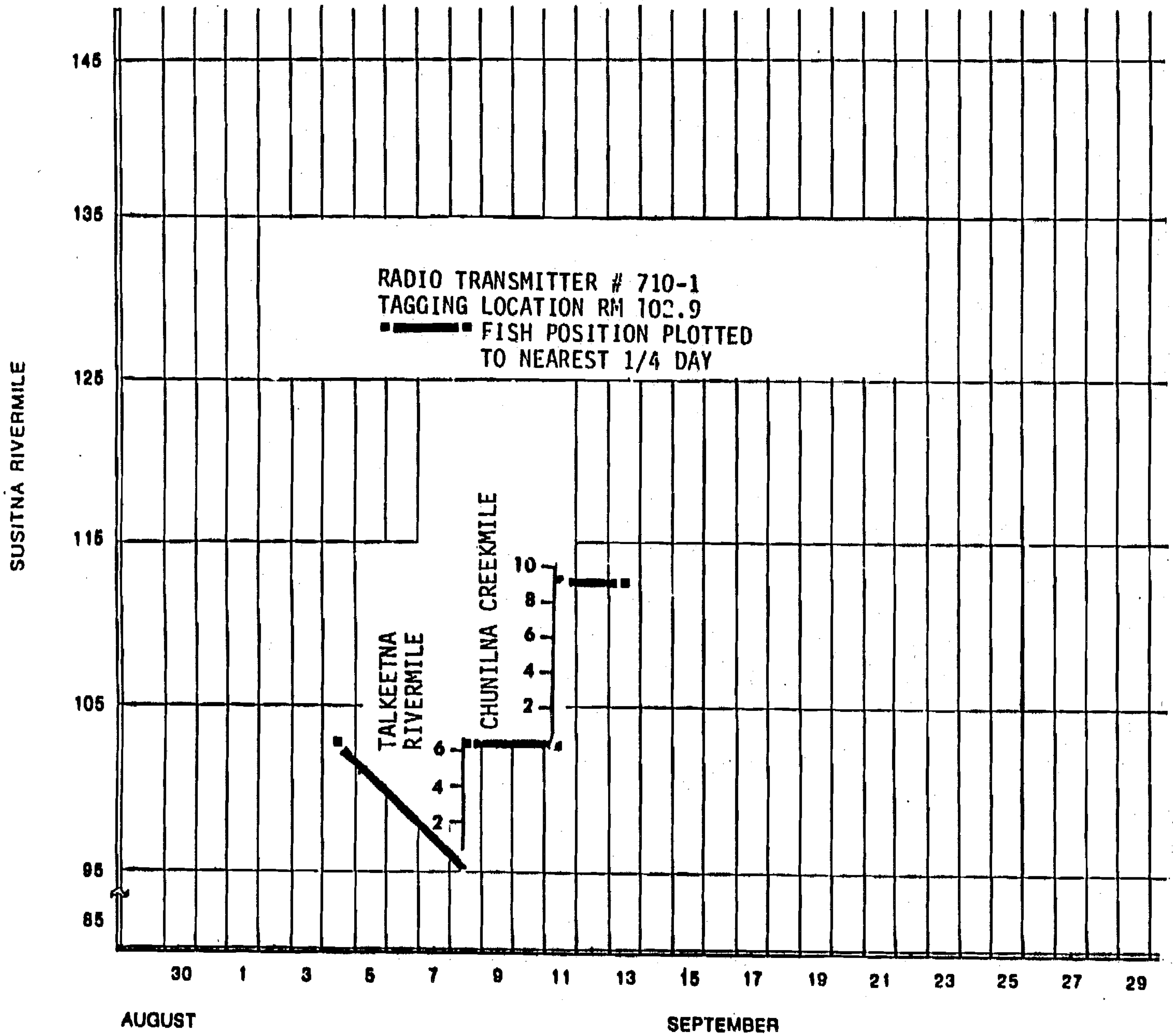

Figure EK-17. Movement of radio tagged coho salmon transmitter number 710-1 in the Susitna River drainage during September, 1981. Adult Anadromous Investigations, Su Hydro Studies, 1981.

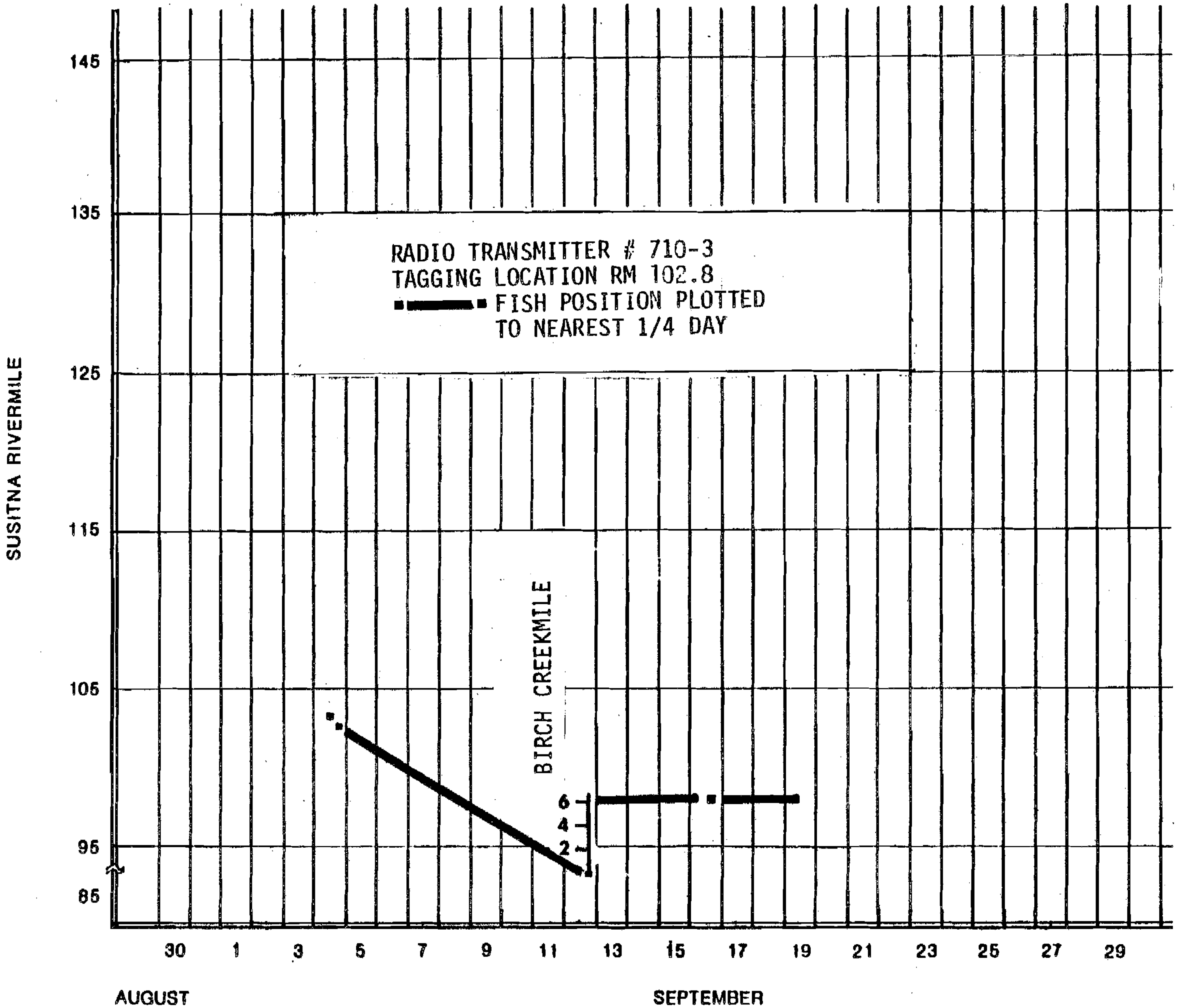

Figure EK-18. Movement of radio tagged coho salmon transmitter number 710-3 in the Susitna River drainage during September, 1981. Adult Anadromous Investigations, Su Hydro Studies, 1981.

Coho Salmon, Radio Transmitter #720-2

This male coho salmon was radio tagged at RM 120.7 on 2 September (Figure EK-19). Within 32 hours after release the fish was detected 11.6 miles downriver at RM 109.1. About two hours later the same day, 3 September, it was located 1.4 mile upriver at RM 110.5. During 4 and 5 September it was encountered at RM 111.2. However, on 8 September it moved downstream to RM 107.7 and was observed in Chase Creek (RM 106.9) at RM 0.3 with two other adult coho salmon. The individual supported itself on the substrate by it's pectoral and pelvic fins; it appeared lethargic and did not actively swim away when touched by hand. The swimming performance of this fish was apparently adversely influenced by insertion of the radio transmitter.

The fish departed Chase Creek (RM 106.9) sometime before 1100h the following day as it was located in the Susitna River at RM 109.0. It moved upriver and by 13 September was located at RM 111.3. However, 3 days later it was detected at RM 96.8 of the Susitna River, downstream of the Talkeetna River (RM 97.0), and was consistenly encountered there thru 7 October. Attempts to retrieve the carcass were unsuccessful.

Coho Salmon, Radio Transmitter #720-3

Coho salmon 720-3 was radio tagged at RM 119.5 on 4 September (Figure EK-20). Within 21 hours after release this individual migrated 8.6 miles upriver, which represents an upstream migration rate $\geq$ 0.41 mph. By 8 September it was detected by airplane at RM 131.0, the upstream migration extent of this individual. Two days later it was detected

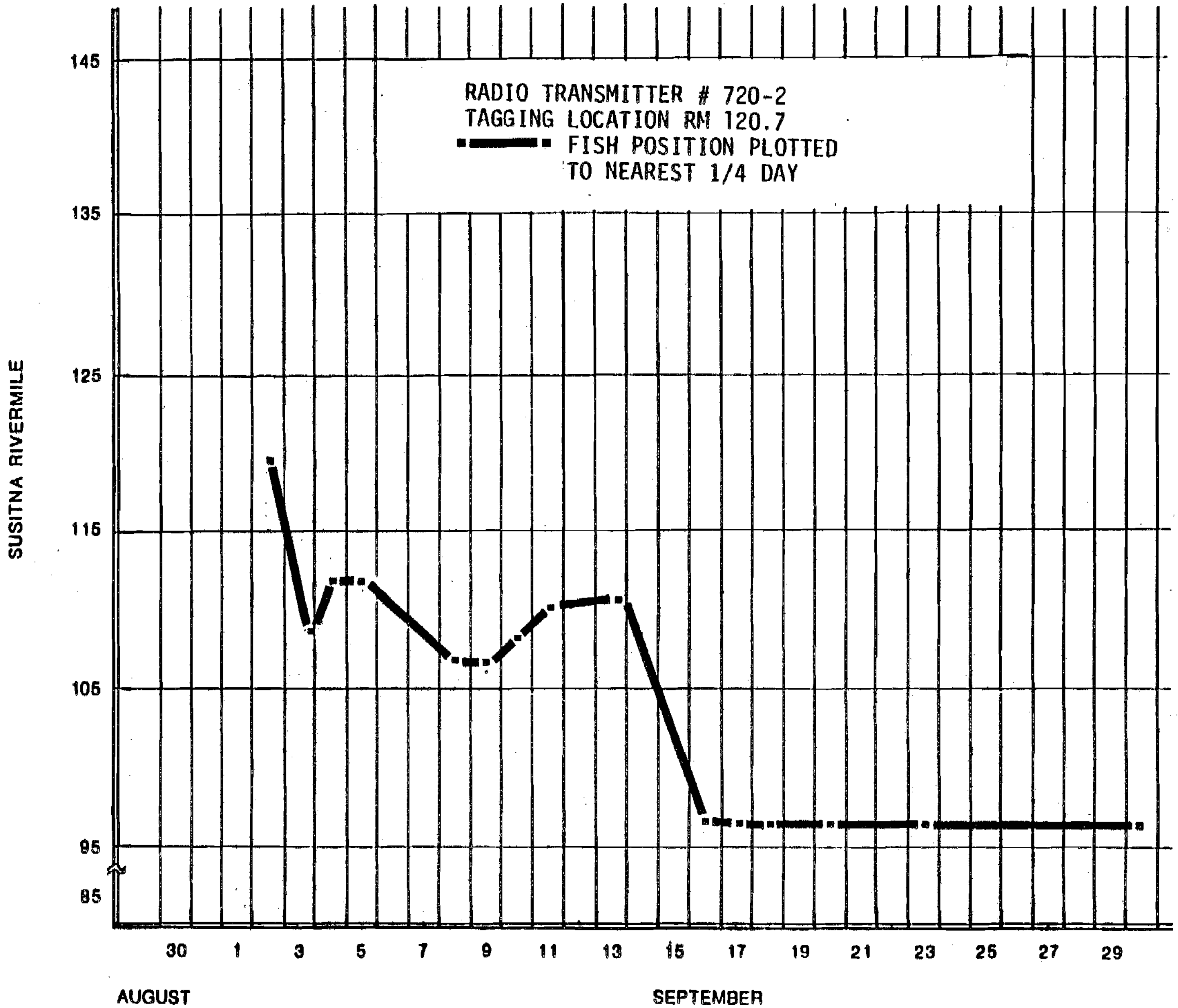

Figure EK-19. Movement of radio tagged coho salmon transmitter number 720-2 in the Susitna River drainage during September, 1981. Adult Anadromous Investigations, Su Hydro Studies, 1981.

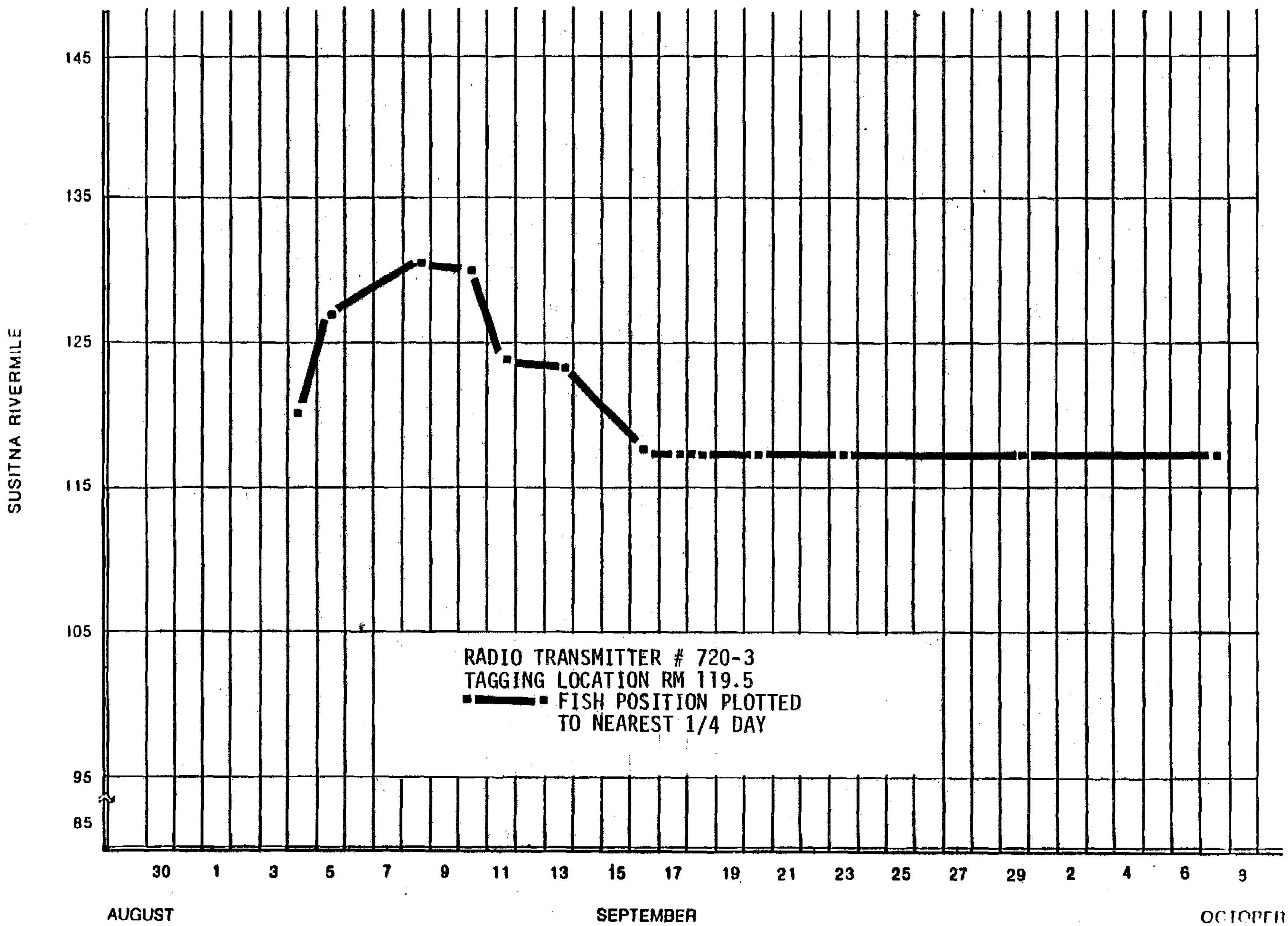

Figure EK-20. Movement of radio tagged coho salmon transmitter number 720-3 in the Susitna River drainage during September and October, 1981. Adult Anadromous Investigations, Su Hydro Studies, 1981.

downstream at RM 130.4; it continued moving downstream until 17 September when it was detected at RM 117.8, near Little Portage Creek at the same milepost.

This fish was consitently encountered in the mainstem Susitna River near the mouth of Little Portage Creek at RM 117.8 from 17 September thru 30 September. It was gillnetted on 17 September along the east bank of the mainstem Susitna River at RM 117.9; the fish had not attained spawning condition, as evidenced by it's silver-pink coloration and non-fluid character of the gonads. It was detected at or within 0.2 mile of RM 117.9 on 20, 23 and 30 September.

The individual was captured alive at RM 117.8 in the outlet of Little Portage Creek (RM 117.8) on 7 October and necropsied. The necropsy revealed that the fish had not spawned due to the fullness of the gonads, although the kype was eroded.

Coho Salmon, Radio Transmitter #730-3

Fish 730-3 was radio tagged at RM 102.9 on 31 August (Figure EK-21). Four and one half hours after being released it was detected 3.0 miles upstream, which is comparable to a 0.67 mph upstream migration rate. It was next detected at RM 111.7 on 4 September, although 3.6 hours later it was monitored at 2.1 miles downstream. Within 20.3 hours the fish had moved upstream 12.2 miles; this is equivalent to an upstream migration rate of 0.601 mph. The fish apparently continued migrating upstream, as evidenced by it being detected at RM 1.9 of Indian River (RM 138.6) on 8 September.

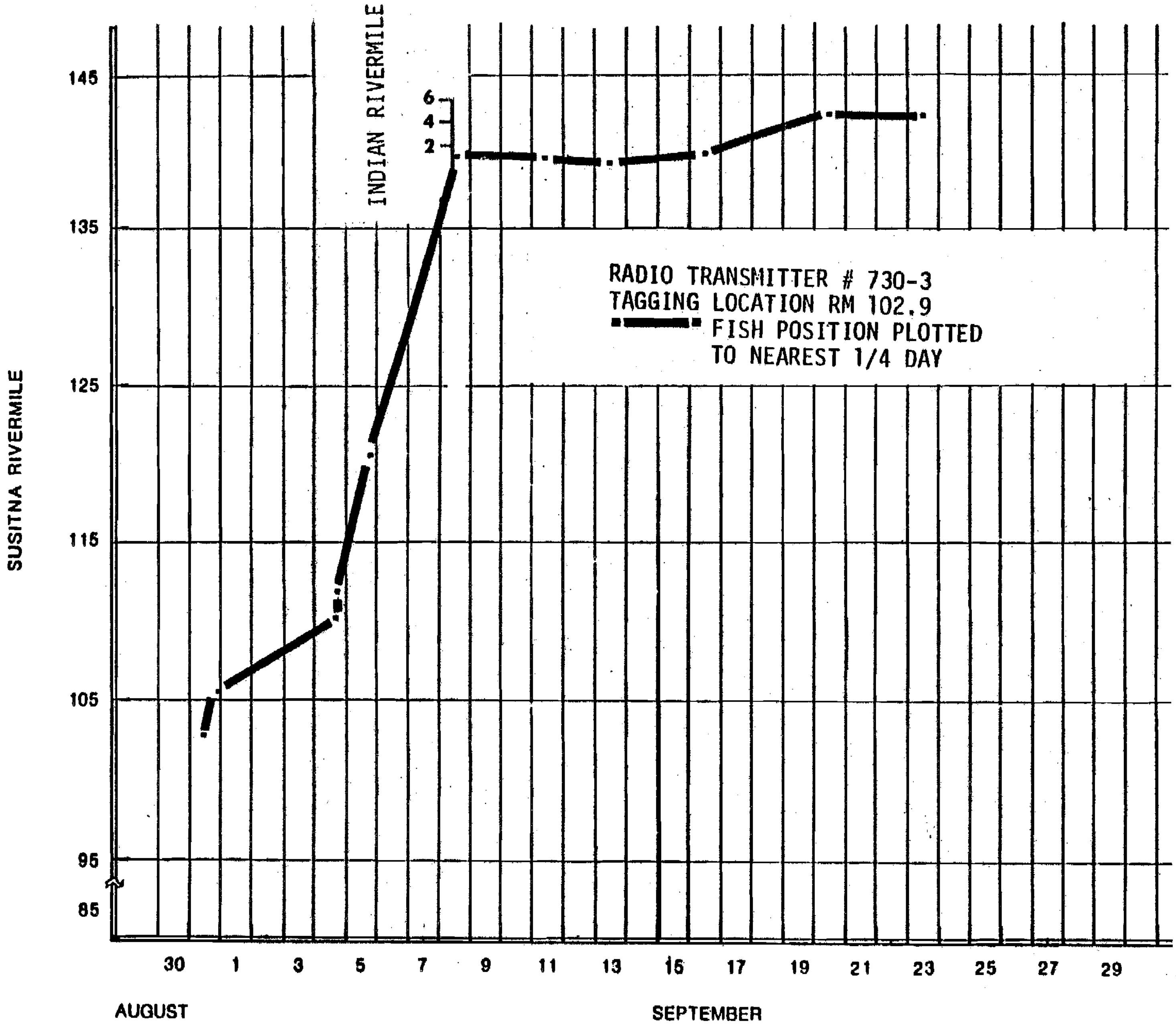

Figure EK-21. Movement of radio tagged coho salmon transmitter number 730-3 in the Susitna River drainage during September, 1981. Adult Anadromous Investigations, Su Hydro Studies, 1981.

Overflights consistently monitored this individual from RM 1.5 to 1.8 of the Indian River (RM 138.6) on 11, 13 and 16 September. By 20 September it moved upstream to RM 5.8 of the Indian River (RM 138.6) and was last detected there on 23 September. The spawning status of this fish was not determined.

Complete radio tagged coho salmon movement data are shown on Table EK-2.

Table EK-2. Movement and timing data recorded during radio telemetry operations of adult coho salmon during September and October, 1981. Adult Anadromous Investigations, Su Hydro Studies, 1981.

Tag Number										
	Date	9-3-81	9-3-81	9-4-81	9-4-81	9-11-81	9-13-81	9-16-81	9-18-81	9-20-81
	Location(R.M.)/Time	120.7/1612	116.1/1926	107.0/1450	102.5/2040	T 2.7/1540	T 2.7/1405	T 3.2/0945	106.9/1800	111.3/1340
	Distance moved(mi)	(Tagged and	-4.6	-9.1	-4.5	-5.5,+2.7=8.2	0	0.5	-3.2,+9.9=13.1	4.4
	Time Elapsed(hr)	released)	5.7	19.4	5.8	163	46.4	67.7	56.3	43.7
	Rate of movement(mph)		-.807	-.469	-.776	.050	0	.007	.233	.101
	9-21-81	9-23-81	9-23-81	9-30-81	9-30-81					
650-1	111.5/1500	G 0.375/0810	G 0.375/1315	G 0.375/1120	G 0.375/1712	Recovered				
	0.2	0.1+0.375=.475	0	0	0	fish on				
	25.7	41.2	5.1	166.1	5.8	9-30-81				
	.008	.012	0	0	0					
	9-1-81	9-1-81	9-1-81	9-2-81	9-3-81	9-5-81	9-8-81	9-10-81	9-10-81	9-11-81
	102.9/1410	102.8/1420	103.5/1500	119.3/1910	123.4/1932	131.0/1500	131.0/1141	131.0/1300	131.0/1800	131.0/1613
650-2	(Tagged and	-0.1	0.7	15.8	4.1	7.6	0	0	0	0
	released)	0.2	0.7	28.2	24.4	43.5	68.7	41.3	5.0	22.2
		-.500	1.000	.560	.168	.175	0	0	0	0
	9-13-81	9-16-81	9-20-81	9-23-81						
	131.0/1521	131.0/1025	Fr 1.25/1400	130.2/0830						
	0	0	1.25	-1.25,-0.8=2.3						
	47.3	67.1	99.6	66.5						
	0	0	.013	-.035						
660-2	8-30-81	8-30-81	8-31-81	9-1-81	9-2-81	9-3-81	9-3-81	9-3-81	9-4-81	9-5-81
	120.7/1028	120.8/1113	109.8/1841	110.4/1555	110.4/2000	112.5/1430	114.7/1700	114.9/1926	118.5/1530	128.4/1458
	(Tagged and	0.1	-11.0	0.6	0	2.1	2.2	0.2	3.6	9.9
	released)	0.7	31.5	21.2	28.1	18.5	2.5	2.4	22.5	23.3
		.143	-.349	.027	0	.113	.880	.083	.160	.425
	9-8-81	9-10-81	9-11-81	9-13-81	9-16-81	9-17-81	9-17-81	9-18-81	9-18-81	9-20-81
Cont'd.	141.1/1157	112.5/1925	113.3/1605	113.7/1511	112.8/1014	112.1/1555	111.5/1835	111.3/1100	111.3/1750	0.3,G 0.1=0.4/ 1341hr
next	12.7	-28.6	0.8	0.4	-0.9	-0.7	-0.6	-0.2	0	0.4
page	69.0	54.5	20.7	47.1	67	29.7	2.7	16.4	6.8	48.3
	.184	-.525	.039	.008	-.013	-.024	-.222	-.012	0	.008

\- = downstream movement
\+ = upstream movement
Time recorded using 24 hour clock
Miles shown are Susitna River locations unless otherwise noted.
Elapsed time has been rounded to nearest one tenth (0.1) hour.

T = Talkeetna River mileage
G = Gash Creek mileage
Fr = Fourth of July Creek mileage

Table EK-2. Continued.

Tag Number										
	Date	660-2	9-21-81	9-23-81						
	Location(R.M.)/Time		G 0.2/1530	G 0.2/1245	Recovered					
	Distance moved(mi)		0.1	0	fish on					
	Time Elapsed(hr)	Continued	25.8	45.3	9-23-81					
	Rate of movement(mph)		.004	0						
680-1	8-31-81	8-31-81	8-31-81	9-1-81	9-3-81	9-3-81	9-4-81	9-5-81	9-8-81	9-9-81
	120.7/0925	120.8/1030	107.2/1838	107.1/1515	101.9/1740	101.6/1919	102.1/1200	101.9/1436	101.6/1123	102.2/1130
	(Tagged and	0.1	-13.6	-0.1	-5.2	-0.3	0.5	-0.2	-0.3	0.6
	released)	1.1	8.1	20.7	50.3	1.6	16.7	26.6	68.8	24.1
		.090	-1.679	-.005	-.103	-.880	.030	-.008	-.004	0.25
	9-10-81	9-10-81	9-11-81							
	101.7/1045	103.8/1950	109.7/1600	NO SIGNAL	DETECTED AFTER	1600 HR. ON	9-11-81			
	-0.5	2.1	5.9							
	23.3	9.1	20.2							
	-.022	.231	.292							
700-2	9-3-81	9-3-81	9-3-81	9-3-81	9-4-81	9-5-81	9-11-81 1715	9-13-81	9-16-81	9-30-81
	102.9/1340	102.75/1352	101.2/1742	101.2/1915	101.2/1130	101.3/1435	-2.7,Ch26.9/hr	Ch 32.1/1620	Ch 31.9/1120	Ch 31.9/1155
	(Tagged and	-.15	-1.55	0	0	0.1	28.6	6.2	-0.2	0
	released)	0.2	3.8	1.5	16.3	27.3	146.5	47.1	67.0	336.6
		-.750	-.408	0	0	.004	.195	.132	-.003	0
710-1	9-4-81	9-8-81	9-11-81	9-13-81						
	102.9/2021	T 5.9/1230	Cr 9.0/1540	Cr 9.0/1415						
	(Tagged and	-5.9,+5.9=11.8	9.0	0	NO SIGNAL	DETECTED AFTER	9-13-81			
	released)	88.1	75.2	46.6						
		+ and - .134	.120	0						
710-3	9-4-81	9-4-81	9-13-81	9-16-81	9-19-81					
	102.8/1335	101.1/2042	F /1635	Cb 0.1/0955	Cb 0.1/1100	Recovered				
	(Tagged and	-1.7	-14.8,+4.6=19.4	0.1	0	fish on				
	released)	7.1	211.9	65.3	73.1	9-19-81				
		-.239	.092	.001	0					

\- = downstream movement
\+ = upstream movement
Time recorded using 24 hour clock
Miles shown are Susitna River locations unless otherwise noted.
Elapsed time has been rounded to nearest one tenth (0.1) hour.

G = Gash Creek mileage
Ch = Chulitna River mileage
T = Talkeetna River mileage
Cr = Chunilna (Clear) Creek mileage
F = Fish Lake (Birch Creek Lake)
Cb = Cabin Creek (tributary of Fish Lake)

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Table EK-2. Continued.

Tag Number										
	Date	9-2-81	9-3-81	9-3-81	9-4-81	9-5-81	9-8-81	9-9-81	9-10-81	9-11-81
	Location(R.M.)/Time	120.7/1032	109.1/1717	110.5/1921	111.2/1455	111.2/1455	107.7/1125	Cs 0.1/1230	109.0/111.5	111.0/1601
	Distance moved(mi)	(Tagged and	-11.6	1.4	0.7	0	-3.5	-0.8,+0.1=-0.9	-0.1,+2.1=2.2	2.0
	Time Elapsed(hr)	released)	30.7	2.1	19.5	23.9	68.6	25.1	22.7	28.8
	Rate of movement(mph)		-.378	.667	.036	0	-.051	.036	.097	.069
720-2	9-13-81	9-16-81	9-17-81	9-18-81	9-20-81	9-21-81	9-23-81	9-30-81		
	111.3/1509	96.6/1145	96.8/1430	96.8/0930	96.7/1330	96.7/1730	96.7/0924	96.7/1115		
	0.3	-14.7	0.2	0	-0.1	0	0	0		
	47.1	68.1	26.7	19.0	54.0	28.0	39.6	169.8		
	.006	-.216	.007	0	-.002	0	0	0		
720-3	9-4-81	9-5-81	9-8-81	9-10-81	9-10-81	9-11-81	9-13-81	9-16-81	9-17-81	9-18-81
	119.5/1707	128.1/1457	131.0/1141	130.4/1305	130.4/1820	123.6/1609	123.4/1515	118.2/1019	117.9/1800	117.9/1200
	(Tagged and	8.6	2.9	-0.6	0	-6.8	-0.2	-5.2	-0.3	0
	released)	21.8	68.7	55.1	5.3	21.8	47.1	67.1	31.7	18.0
		.394	.042	-.012	0	-.312	-.004	-.077	-.008	0
	9-18-81	9-20-81	9-23-81	9-23-81	9-30-81	10-7-81				
	117.9/1720	118.2/1349	117.6/0820	117.6/1600	117.6/1121	117.8/1300	Recovered			
	0	0.3	-0.6	0	0	0.2	fish on			
	5.3	44.8	66.5	7.7	163.3	169.6	10-7-81			
	0	.007	-.009	0	0	.001				
730-3	8-31-81	8-31-81	9-4-81	9-4-81	9-5-81	9-8-81	9-11-81	9-13-81	9-16-81	9-20-81
	102.9/1405	105.9/1837	111.7/1510	109.6/1845	121.8/1505	I 1.9/1151	I 1.5/1619	I 1.5/1532	I 1.8/1036	I 5.8/1409
	(Tagged and	3.0	5.8	-2.1	12.2	16.8+1.9=18.7	-0.4	0	0.3	4.0
	released)	4.5	92.6	3.6	20.3	68.6	76.4	47.3	67.0	99.5
		.667	.063	-.583	.601	.273	-.005	0	.004	.040
	9-23-81									
	I 5.8/0839									
	0									
	66.5									
	0									

- = downstream movement
+ = upstream movement
Time recorded using 24 hour clock
Miles shown are Susitna River locations unless otherwise noted.
Elapsed time has been rounded to nearest one tenth (0.1) hour.

Cs = Case Creek mileage
I = Indian River mileage

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Table EK-2. Continued.

Tag Number										
	Date	9-2-81	9-3-81	9-3-81	9-4-81	9-5-81	9-8-81	9-9-81	9-10-81	9-11-81
	Location(R.M.)/Time	120.7/1032	109.1/1717	110.5/1921	111.2/1455	111.2/1455	107.7/1125	Cs 0.1/1230	109.0/111.5	111.0/1601
	Distance moved(mi)	(Tagged and	-11.6	1.4	0.7	0	-3.5	-0.8,+0.1=0.9	-0.1,+2.1=2.2	2.0
	Time Elapsed(hr)	released)	30.7	2.1	19.5	23.9	68.6	25.1	22.7	28.8
	Rate of movement(mph)		-.378	.667	.036	0	-.051	.036	.097	.069
720-2	9-13-81	9-16-81	9-17-81	9-18-81	9-20-81	9-21-81	9-23-81	9-30-81		
	111.3/1509	96.6/1145	96.8/1430	96.8/0930	96.7/1330	96.7/1730	96.7/0924	96.7/1115		
	0.3	-14.7	0.2	0	-0.1	0	0	0		
	47.1	68.1	26.7	19.0	54.0	28.0	39.6	169.8		
	.006	-.216	.007	0	-.002	0	0	0		
720-3	9-4-81	9-5-81	9-8-81	9-10-81	9-10-81	9-11-81	9-13-81	9-16-81	9-17-81	9-18-81
	119.5/1707	128.1/1457	131.0/1141	130.4/1305	130.4/1820	123.6/1609	123.4/1515	118.2/1019	117.9/1800	117.9/1200
	(Tagged and	8.6	2.9	-0.6	0	-6.8	-0.2	-5.2	-0.3	0
	released)	21.8	68.7	55.1	5.3	21.8	47.1	67.1	31.7	18.0
		.394	.042	-.012	0	-.312	-.004	-.077	-.008	0
	9-18-81	9-20-81	9-23-81	9-23-81	9-30-81	10-7-81				
	117.9/1720	118.2/1349	117.6/0820	117.6/1600	117.6/1121	117.8/1300	Recovered			
	0	0.3	-0.6	0	0	0.2	fish on			
	5.3	44.8	66.5	7.7	163.3	169.6	10-7-81			
	0	.007	-.009	0	0	.001				
730-3	8-31-81	8-31-81	9-4-81	9-4-81	9-5-81	9-8-81	9-11-81	9-13-81	9-16-81	9-20-81
	102.9/1405	105.9/1837	111.7/1510	109.6/1845	121.8/1505	I 1.9/1151	I 1.5/1619	I 1.5/1532	I 1.8/1036	I 5.8/1409
	(Tagged and	3.0	5.8	-2.1	12.2	16.8+1.9=18.7	-0.4	0	0.3	4.0
	released)	4.5	92.6	3.6	20.3	68.6	76.4	47.3	67.0	99.5
		.667	.063	-.583	.601	.273	-.005	0	.004	.040
	9-23-81									
	I 5.8/0839									
	0									
	66.5									
	0									

- = downstream movement
+ = upstream movement
Time recorded using 24 hour clock
Miles shown are Susitna River locations unless otherwise noted.
Elapsed time has been rounded to nearest one tenth (0.1) hour.

Cs = Case Creek mileage
I = Indian River mileage

APPENDIX EL

CHINOOK SALMON RADIO TELEMETRY

TRACKING REPORTS

Chinook Salmon, Radio Transmitter #600-1

Chinook salmon bearing radio tag #600-1 was tagged on 24 June at RM 102.8. This male fish immediately moved down river and remained within RM 98.0 and 99.0 of the Susitna River from 24 June through 2 July (Figure EL-1). On 5 July it was located at RM 113.0, and by 12 July it had moved downstream and remained in the TRA for an additional five days. The upstream rate of movement to RM 113.0 was equivalent to 0.19 miles/hour or 4.6 miles/day.

Sometime between 1645 hours (h) on 16 July and 1215 h on 17 July, the fish began migrating upstream. On 16 July at 1645 h, it was in the Chulitna River one mile upstream of its confluence with the Susitna River and by 17 July at 1215 h had reached RM 104.5 of the Susitna River. By 21 July it was detected at RM 123.6.

The overall upstream rate of movement of this fish can be expressed as 0.20 mi/hour or 4.8 mi/day. However, it did display a significantly faster upstream movement. For example, at 1214 h on 17 July the fish was detected at RM 104.5 and four hours and five minutes later was encountered at RM 108.2. This translates into an upstream migration rate for this period of 0.91 mi/hour or 21.8 mi/day. A more realistic example of movement may be from observations made on 17 and 18 July, when the fish was encountered at RM 108.2 and 113.3, respectively. The fish moved this 5.1 mile distance in 15.4 hours, for our upstream migration rate of 0.33 mi/hour or 7.9 mi/day.

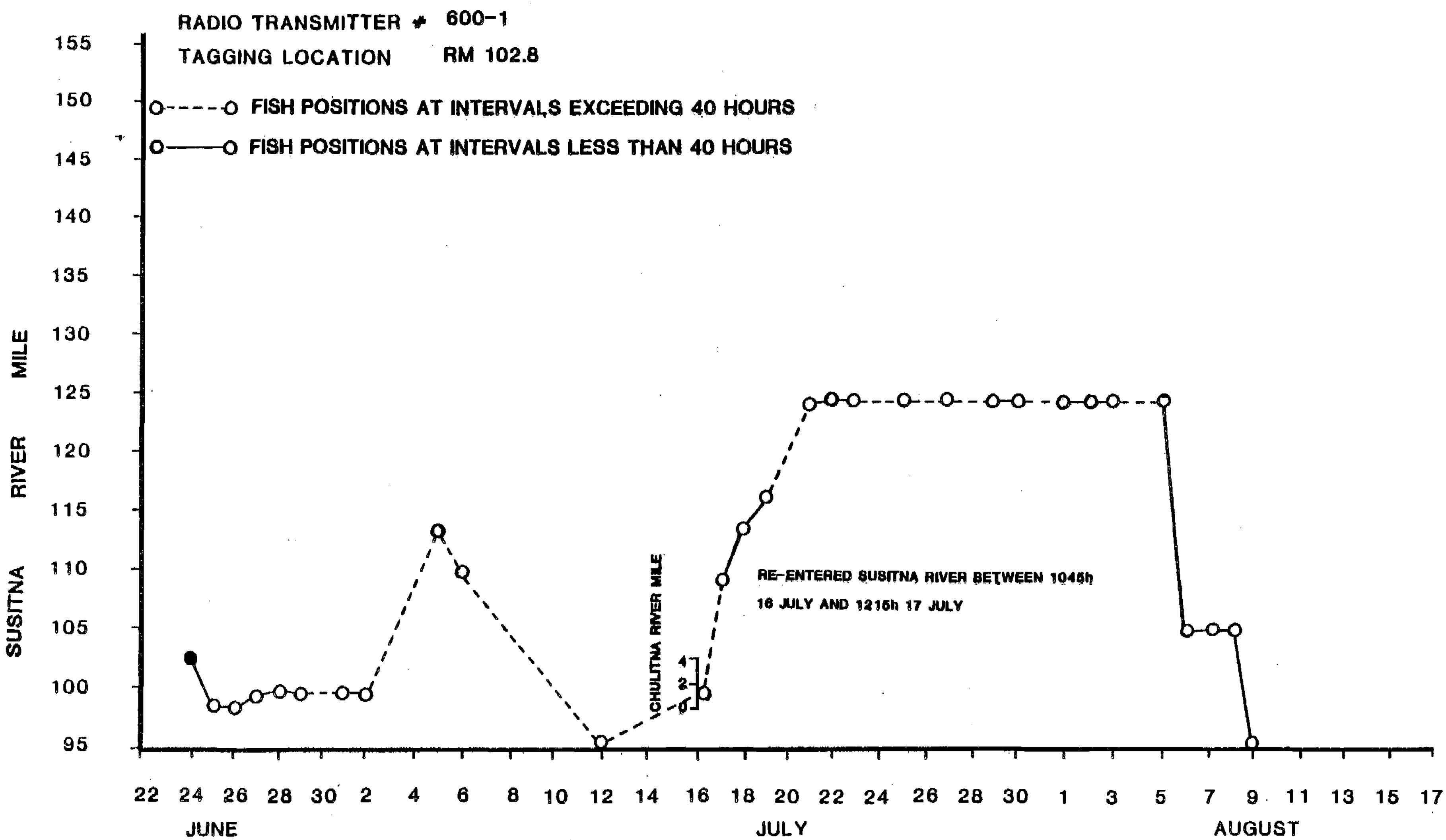

Figure EL-1. Movement of radio tagged chinook salmon transmitter number 600-1 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

From 21 July through 5 August the fish remained in the Susitna River in the immediate vicinity of the mouth of a small stream (Fourth of July Creek) located at RM 123.7. It is presumed that this fish spawned in the Susitna River.

On 6 August it had drifted downstream and was encountered at RM 104.5, where it remained through 8 August before descending further downstream. On 9 and 10 August the fish was detected at RM 94.6 and 86.0, respectively.

Chinook Salmon, Radio Transmitter #600-2

Fish bearing radio tag #600-2 was tagged at RM 120.7 on 26 June. It then moved upstream and remained in a pool located at RM 123.5 from 27 June to 1 July (Figure EL-2). During the following seven days this fish swam upstream and by 8 July was located at RM 2.0 of Portage Creek (RM 148.9). Overall this represents an upstream migration rate of about 4.2 miles/day.

This fish entered Portage Creek between observations on 7 and 8 July. During its first nine days of residency in Portage Creek (8-16 July) it was consistently encountered downstream of RM 2.75. However, on 18 July (0820 h) it was detected at RM 8.70, which represents an upstream migration rate of 0.15 mi/hour or 3.7 mi/day. Attempts to determine the reproductive status of this fish during 26 and 27 July were unsuccessful. The radio transmitter remained functional through August.

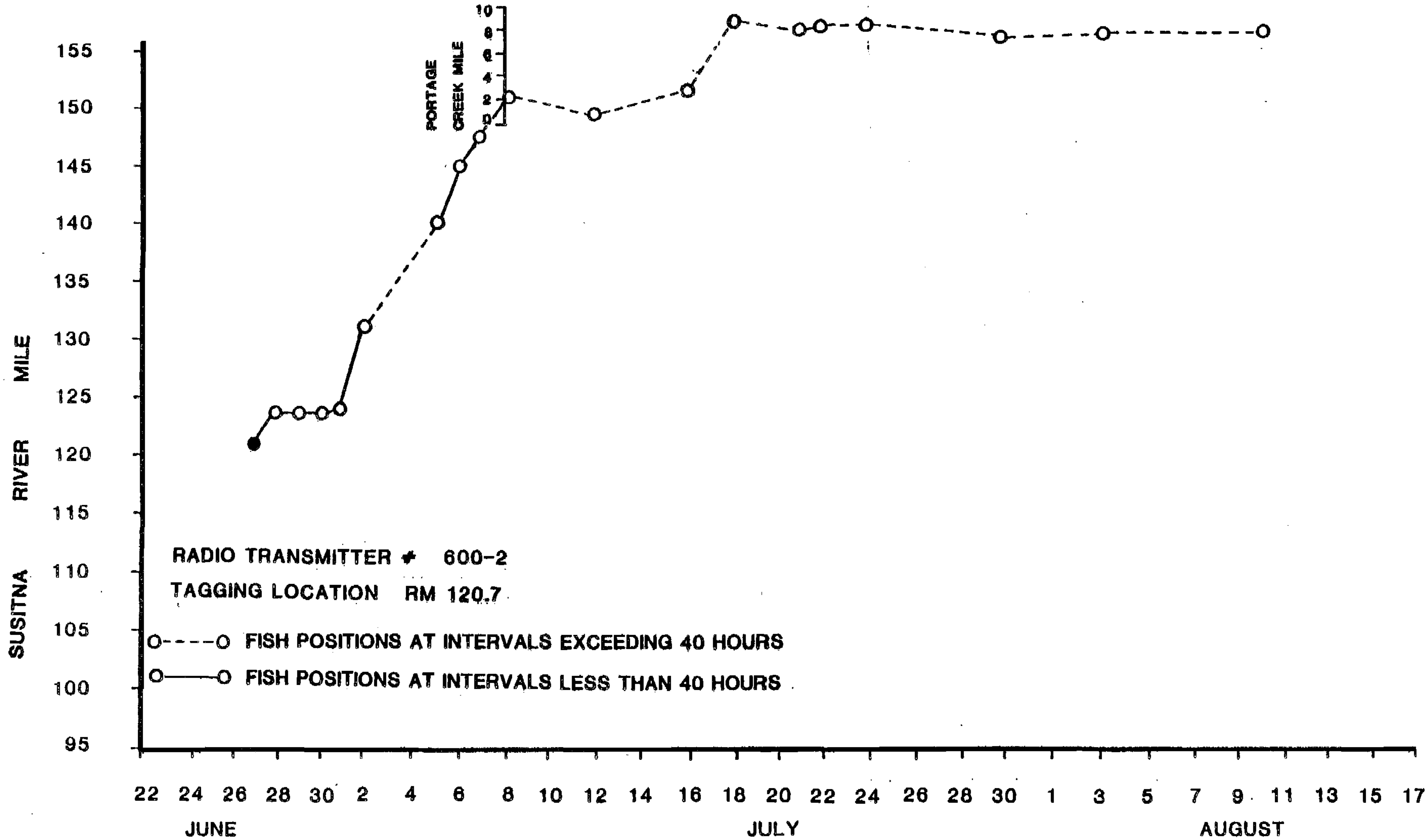

Figure EL-2. Movement of radio tagged chinook salmon transmitter number 600-2 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Chinook Salmon, Radio Transmitter #600-3

Chinook salmon bearing radio tag #600-3 was tagged at RM 120.7 on 8 July (Figure EL-3). Eight days (175 hours) later it was detected at the mouth of the Indian River (RM 138.6). This fish, therefore had an overall upstream migration rate of about 0.10 mi/hour or 2.4 mi/day. The fish did display faster upstream movement, however. Between 1200 h on 15 July and 1730 h on 16 July the fish migrated upstream 8.6 miles, a rate of 0.29 mi/hour or 7.0 mi/day.

From 18 July through August the fish was detected within the Indian River from about mile 4.7 to 6.1. This fish is assumed to have spawned within this area.

Chinook Salmon, Radio Transmitter #610-1

Chinook salmon bearing radio tag #610-1 was tagged on 2 July at RM 119.2 (Figure EL-4). On 3 July at 1330 h, about 22 hours following transmitter implantation the fish was about 0.6 miles downstream from the tagging site. On 5 July, 43.5 hours later at 0900 h, it was located at RM 145.3, therefore displaying an upstream migration rate of 0.60 mi/hour or 14.4 mi/day. It was monitored the next day within lower Devil Canyon, at about RM 151.0. From 7 July to 12 July, the fish occupied several sites in the Susitna River upstream of Portage Creek (RM 149.3, 150.0 and 150.2), respectively, during this period.

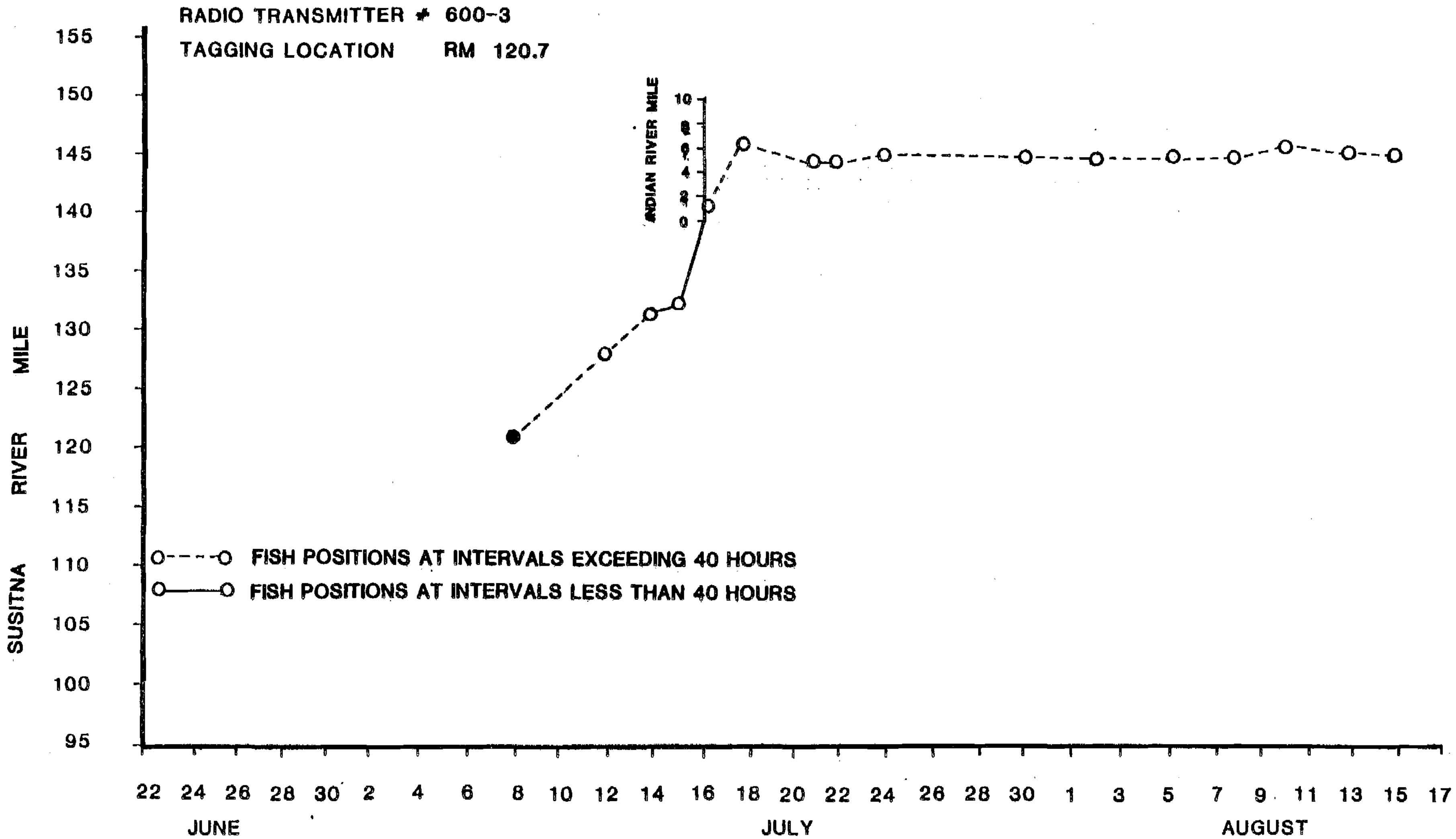

Figure EL-3. Movement of radio tagged chinook salmon transmitter number 600-3 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

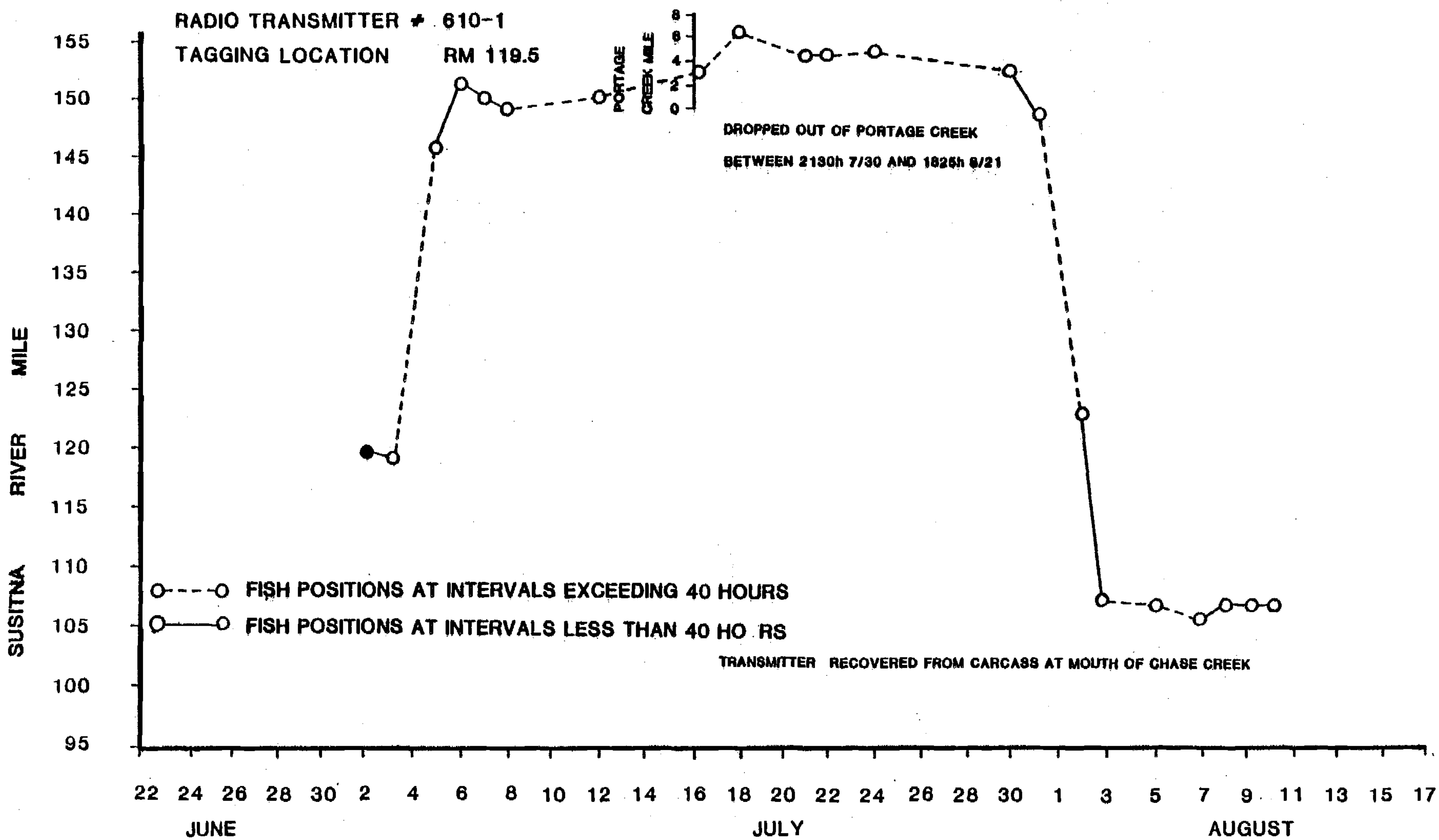

Figure EL-4. Movement of radio tagged chinook salmon transmitter number 610-1 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

The fish entered Portage Creek (RM 148.9) sometime between 12 and 16 July through 30 July to 2 August. During this time the fish was detected between mile 2.7 and 6.3. The fish presumably spawned in Portage Creek.

Between 30 July and 2 August, the fish moved downstream out of Portage Creek and was detected at RM 123.5 on 2 August. The following day it was located at RM 107.1, and remained near or within Chase Creek (RM 105.3), where it was found and necropsied on 3 August. The caudal and pelvic fins of this specimen were severely eroded and no organs, including gonads, remained due to the advanced state of decomposition.

Chinook Salmon, Radio Transmitter #610-2

Fish bearing radio tag #610-2 was tagged at RM 102.8 on 1 July, and displayed a variety of movements (Figure EL-5). It dropped downstream and remained in the TRA for about five days after being tagged. By 8 July it had moved upstream to RM 123.4, where it remained thru 18 July.

This individual departed its holding area at RM 123.5 on 18 or 19 July and was detected at mile 2.0 of the Indian River on 21 July. During this time the fish displayed some significant upstream movements. For example, on 19 July the fish moved 1.15 miles in 55 minutes, which is a rate of movement of 1.26 mi/hour.

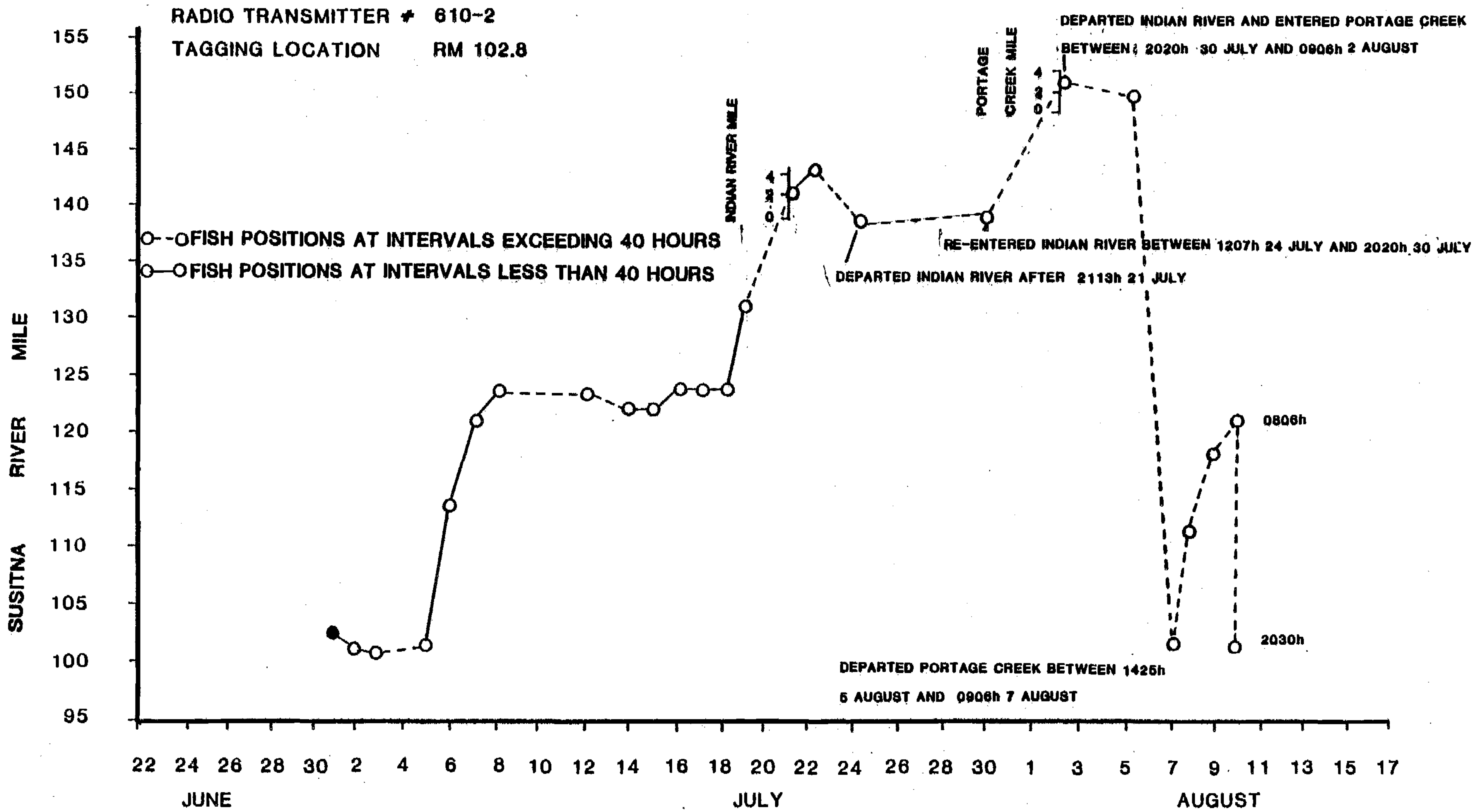

Figure EL-5. Movement of radio tagged chinook salmon transmitter number 610-2 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

It departed and re-entered the Indian River (RM 138.6) between 22 July and 2 August. It was found in the Indian River during 21 and 22 July and apparently departed this stream shortly thereafter, as evidenced by its detection at RM 138.4 of the Susitna River on 24 July. Six days later, on 30 July, it was found in the Indian River as mile 0.5.

Between 2020 h on 30 July and 1920 h on 2 August, the fish dropped out of Indian River and moved upriver and then into Portage Creek (RM 148.9). It remained in Portage Creek at or near mile 2.7 thru 5 August. Two days later it was detected at RM 101.0 of the Susitna River. This represents a downstream movement of 49.8 miles in about 43 hours.

On 10 August the fish was a RM 119.8 at 0806 h; later the same day at 2030 h it was found further downstream at RM 101.0.

Attempts to capture this fish and assess its reproductive status were not successful.

Chinook Salmon, Radio Transmitter #610-3

Fish bearing radio tag #610-3 was tagged on 24 June at RM 120.8. It then moved downstream and remained in the TRA for about two weeks (Figure EL-6). Sometime between 12 and 16 July the fish moved upstream to the mouth of Lane Creek (RM 113.6). It was detected by periodic overflights of Lane Creek as far upstream as mile 1.2 from 16 to 27 July. It was observed on 26 July at mile 1.0 but no spawning behavior was witnessed, although turbulent water made observations difficult and could have

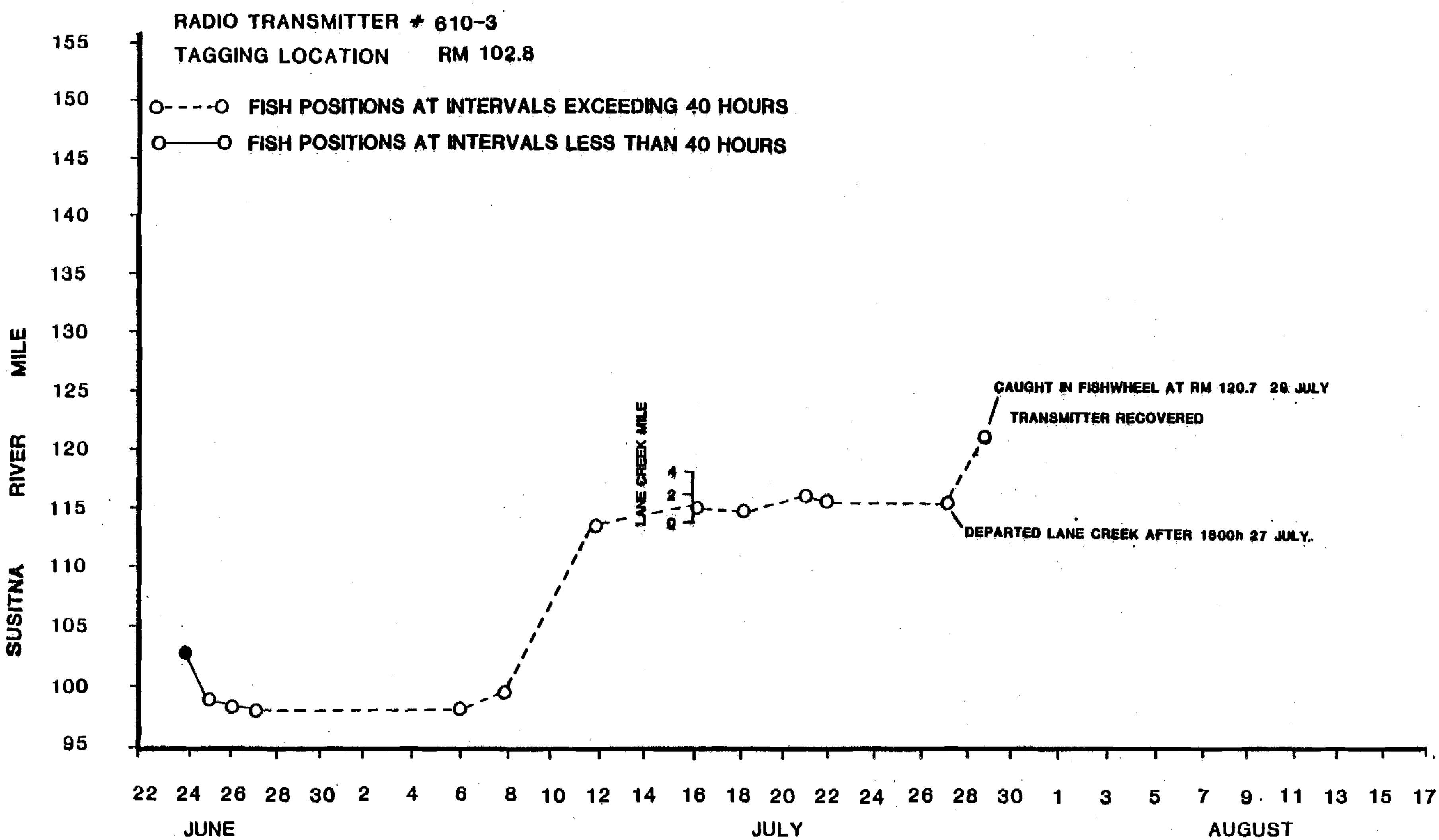

Figure EL-6. Movement of radio tagged chinook salmon transmitter number 610-3 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

masked this behavior. Attempts to capture the fish by net and determine its reproductive status were unsuccessful.

Surprisingly, on 27 July this fish was recaptured at a Curry Station fishwheel located at RM 120.7. The fish was necropsied. The lower caudal fin displayed wear and the posterior third of the peritonial cavity was devoid of eggs, indicating probable spawning activity. Where and when actual spawning took place is not known.

Chinook Salmon, Radio Transmitter #620-1

Fish bearing radio tag #620-1, a female chinook salmon, was tagged on 3 July. It then descended and remained downstream of its tagging location at RM 119.5 (Figure EL-7). On July 7 it moved downstream to RM 106.0 and remained there through 12 July. During the next several days it was detected in Chase Creek (RM 105.3), 0.2 miles upstream of its mouth located at RM 106.9. It was observed within Chase Creek about 0.05 miles upstream of its mouth on 17 and 18 July. On 19 July it dropped out of this stream and held in the Susitna River within 0.2 miles of the mouth of Chase Creek. Repeated attempts in July and August to recover the fish (carcass) and/or transmitter were unsuccessful.

The implantation of a "large" radio transmitter in this fish undoubtedly influenced it's behavior. No other fish radio tagged at Curry Station

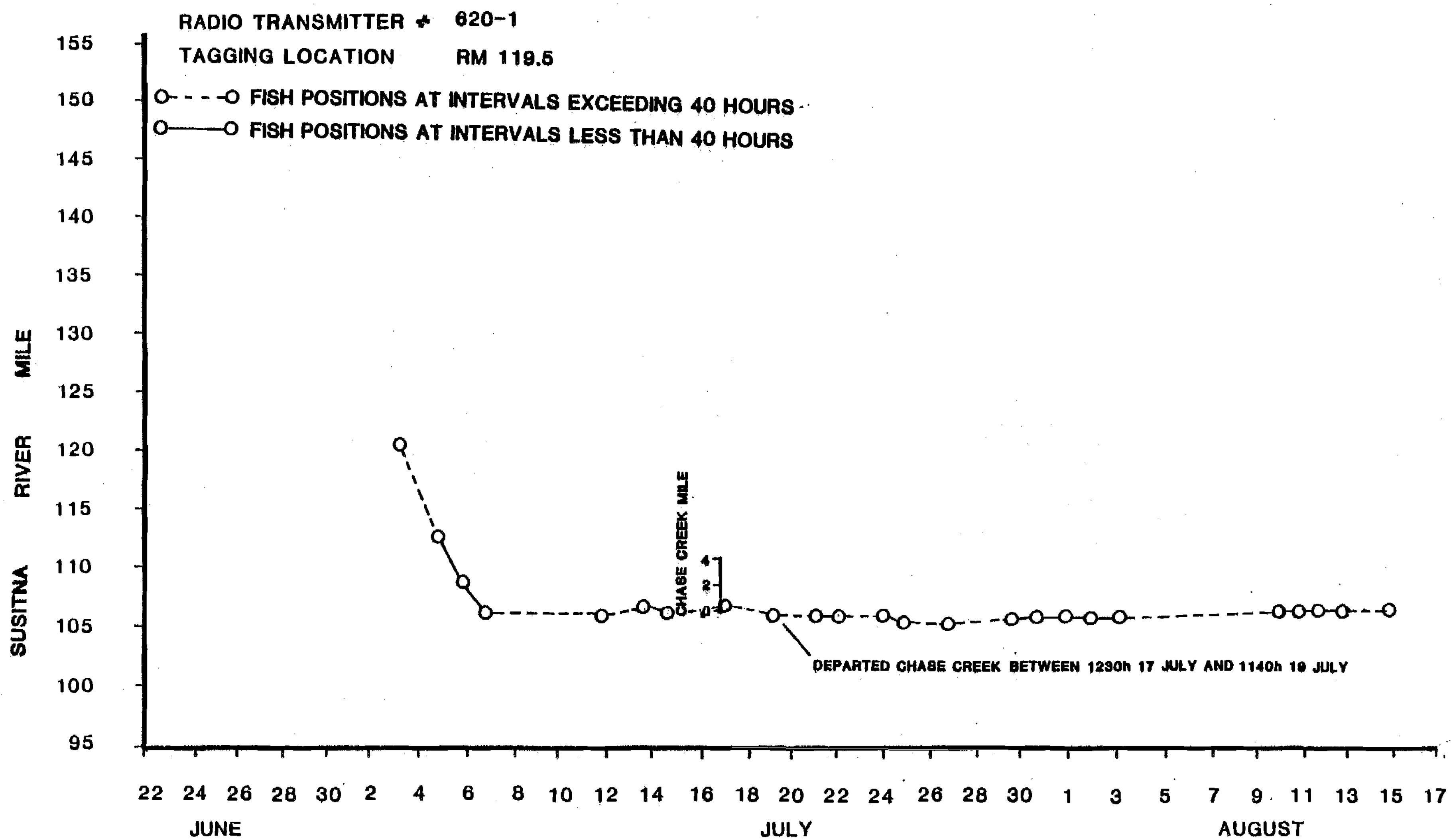

Figure EL-7. Movement of radio tagged chinook salmon transmitter number 620-1 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

displayed long-term downstream movement, with the exception of fish bearing radio tag #670-3, which was probably adversely influenced by handling and tagging.

Chinook Salmon, Radio Transmitter #620-2

Chinook salmon bearing radio tag #620-2 was tagged on 19 July at RM 120.7. It then moved about 1.2 miles downstream of its tagging location and held for about two days (Figure EL-8). Within about four days (86 hours) it migrated upstream to RM 130.8, near the mouth of Sherman Creek. This upstream movement represented a migration rate of about 0.13 mi/hour or 3.2 mi/day. This individual remained near the mouth of Sherman Creek about three days (25 to 27 July). Three days later on 30 July, it was detected at mile 2.9 of the Indian River (RM 138.9) and remained there through 10 August when last contact was made,

Chinook Salmon, Radio Transmitter #620-3

Chinook salmon bearing radio tag #620-3 was tagged at RM 119.5 and dropped about four miles downstream on the same day of tagging (Figure EL-9). The next day (27 June) it was noted at RM 123.5. Seven days later (5 July) it was located at RM 150.7 in lower Devil Canyon. The overall upstream migration rate of this fish was 0.18 mi/hour or 4.3 mi/day. The migration rate was faster at times, as evidenced by its movement 8.0 miles upstream in approximately 30 hours between 27 and 28 June, a migration rate of 0.27 mi/hour and 6.4 mi/day.

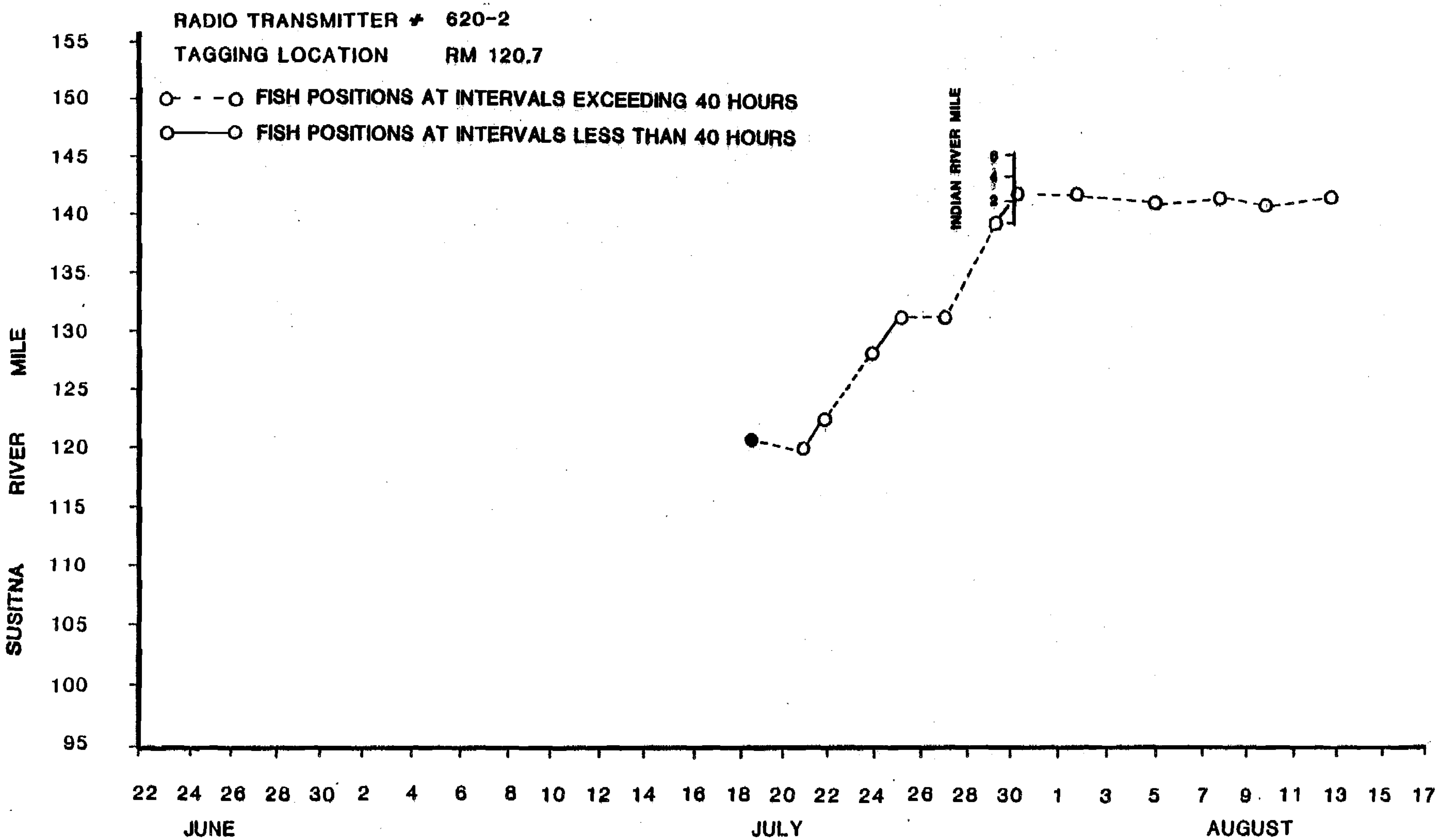

Figure EL-8. Movement of radio tagged chinook salmon transmitter number 620-2 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

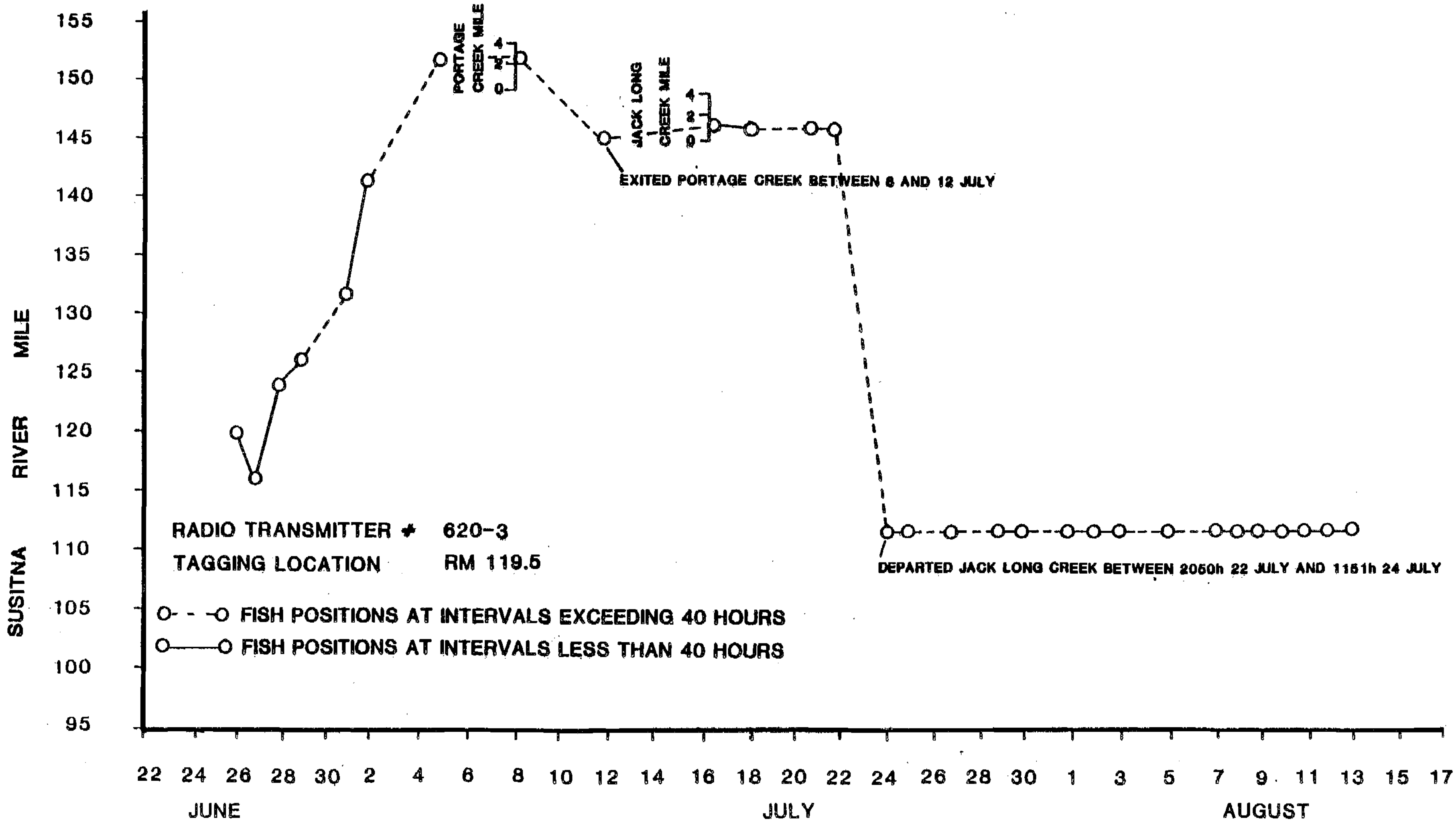

Figure EL-9. Movement of radio tagged chinook salmon transmitter number 620-3 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

The extent of upstream migration of this individual was apparently to RM 150.7, where it was located on 5 July. However, the fish may have passed this location sometime during 3 or 4 July. It was located at RM 149.5 and 148.9 on 6 and 7 July, respectively.

Sometime between 7 and 8 July, the fish entered Portage Creek (RM 148.7). By 12 July it had moved out of this drainage and was at RM 144.7. Upstream migration extent of this fish within Portage Creek was about to mile 2.5

The fish then entered Jack Long Creek (RM 141.9) between 12 and 16 July and remained there through 23 or 24 July. The extent of upstream migration within this stream was about 1.25 mi.

It departed Jack Long Creek on 23 or 24 July and was detected from 24 July through 18 August at RM 111.0. Attempts to retrieve the fish/carcass and transmitter were unsuccessful, and the reproductive status of this fish was not determined.

Chinook Salmon, Radio Transmitter #630-1

Fish bearing radio tag #630-1 was a female chinook salmon which was tagged at RM 120.7 on 28 June (Figure EL-10). Following transmitter implantation, it remained at or slightly downstream of its tagging site

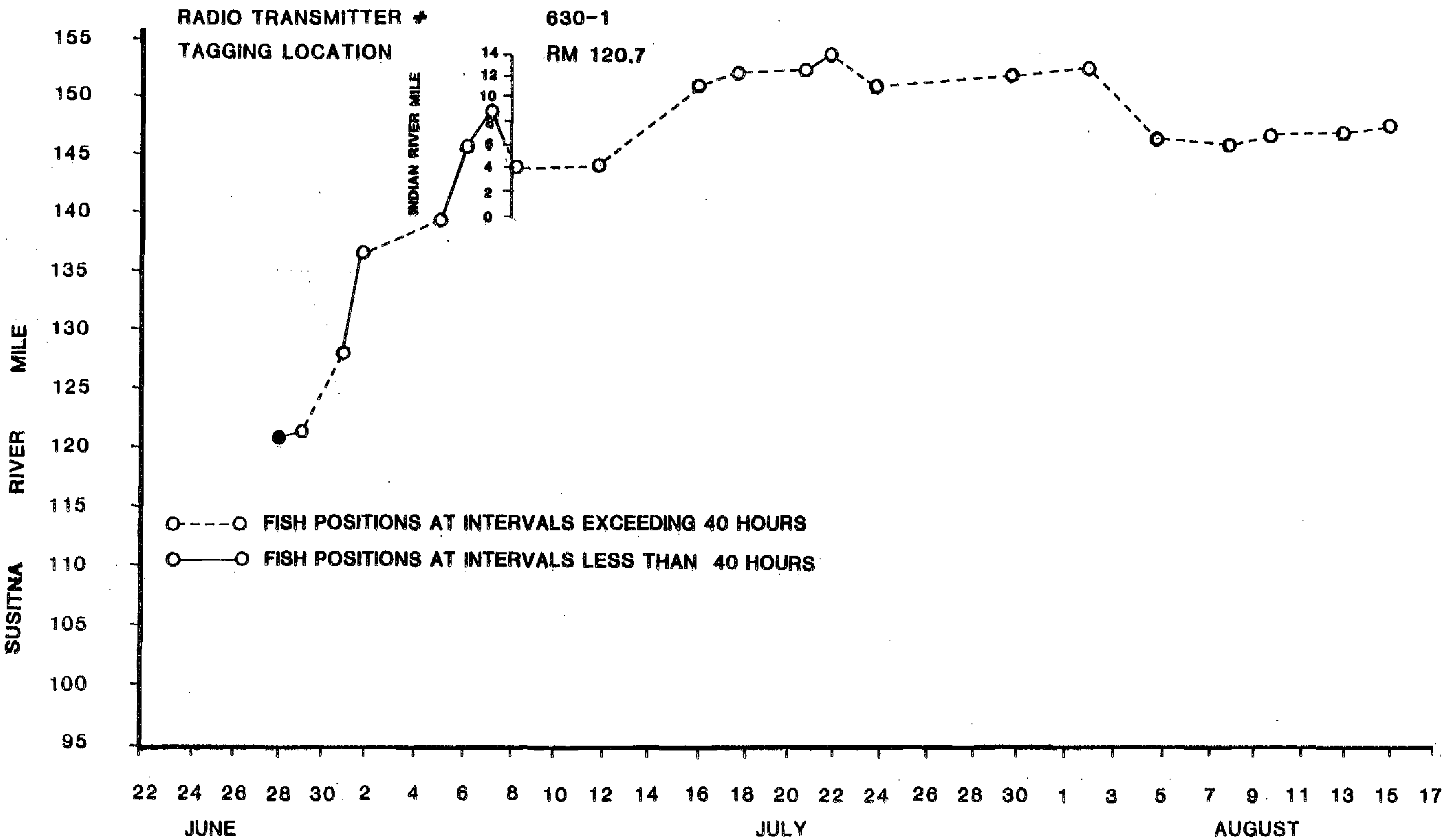

Figure EL-10. Movement of radio tagged chinook salmon transmitter number 630-1 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

for approximately 24 hours. Thereafter, it migrated upstream to the mouth of Portage Creek (RM 148.9), representing an approximate overall upstream migration rate of about 4.0 mi/day. However, this individual displayed considerably faster upstream movement on one occasion. For example, between 5 and 6 July it migrated upstream 6.5 miles in about 24 hours.

Sometime between 1430 h on 7 July and 0800 h of 8 July the fish began moving downstream, where it was located at mile 4.0 of the Indian River (RM 138.9) on the latter date and time. The fish held position near mile 4.0 of this stream through 12 July, then migrated upstream and remained within mile 10.5 to 13.0 from 16 July to 2 August. It was consistently detected downstream at mile 7.0 to 7.2 thereafter. The fish presumedly spawned in the Indian River.

Chinook Salmon, Radio Transmitter #630-3

Chinook salmon bearing radio tag #630-3 was tagged on 2 July at RM 120.7 (Figure EL-11). Five days (121.7 hours) later the fish was found at the mouth of Portage Creek (RM 148.9); where it moved to at a rate of about an 0.23 mi/hour or 5.6 mi/day.

This fish alternately entered, exited and re-entered Portage Creek during the first half of July. It was detected at or downstream of mile 2.0 of Portage Creek by overflights on 8 and 12 July, and about 100

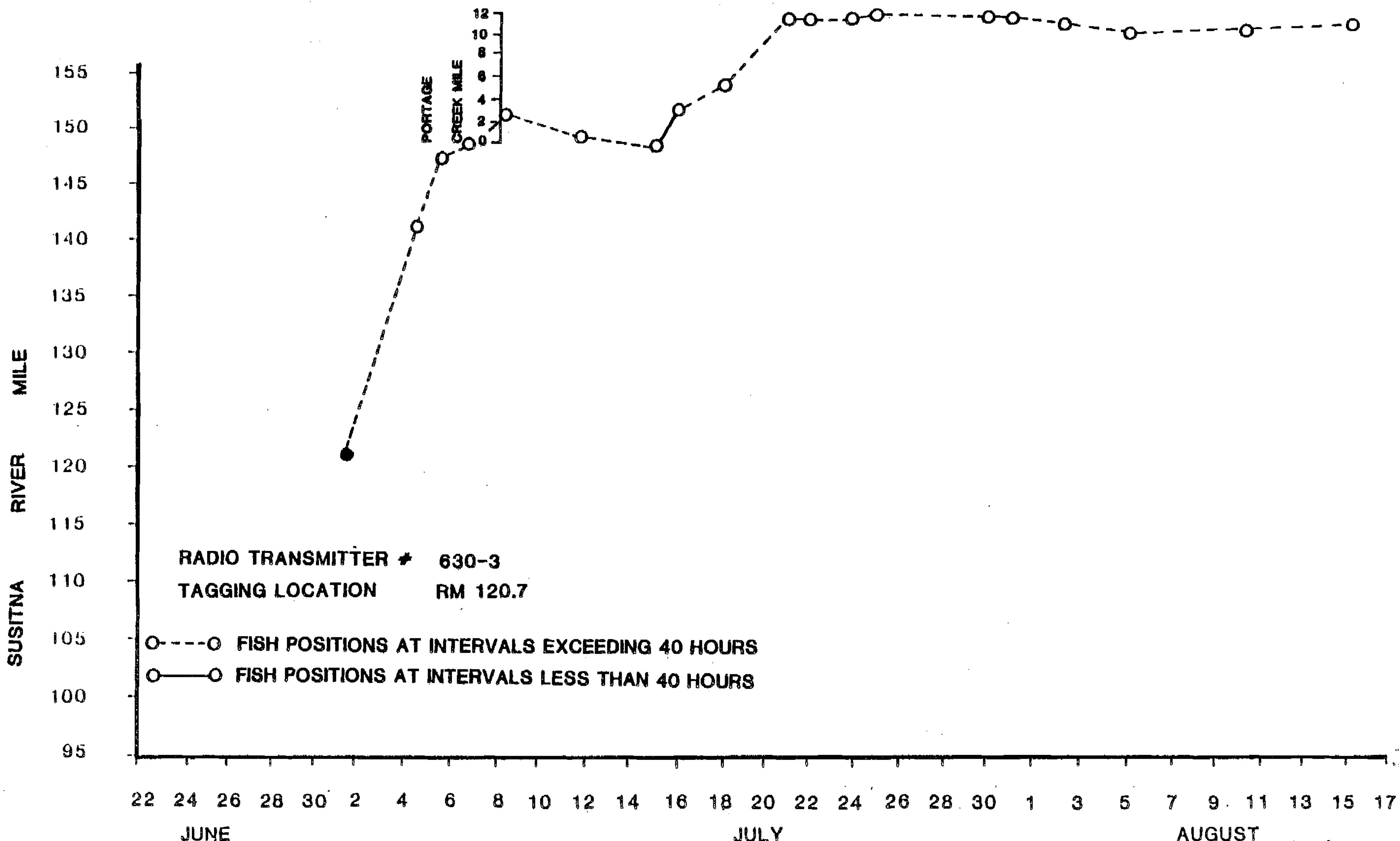

Figure EL-11. Movement of radio tagged chinook salmon transmitter number 630-3 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

yards downstream of the mouth of Portage Creek in the Susitna River on 15 July. By 16 July it was detected at mile 2.75 of Portage Creek and by 21 July, was encountered at mile 11.6. Thereafter, it was located at or upstream of mile 10.8

Chinook Salmon, Radio Transmitter #640-3

Fish bearing radio tag #640-3, a female chinook salmon, rapidly migrated upstream to the mouth of the Indian River (RM 138.6) after tagging. It entered Indian River about 12 days later and was last detected at mile 7.0 (Figure EL-12).

Two days (41 hours) after being tagged at RM 119.5 on 3 July, this fish was positioned at the mouth of the Indian River at RM 138.6. This represents an upstream migration rate of about 0.51 mi/hour or 12 mi/day. This individual was consistently detected at or within 0.2 mi of the mouth of the Indian River from 5 July to 15 July and was located on 16 July at mile 0.5

Movement of this fish within the Indian River is poorly understood. It was detected at mile 4.4 on 18 July, could not be located during overflights on 21 and 22 July and was encountered at mile 7.0, in the mouth of a small, incised stream on 24 July. The transmitter signal was extremely weak that day, and the fish was not located thereafter. Whether or not the fish spawned is unknown.

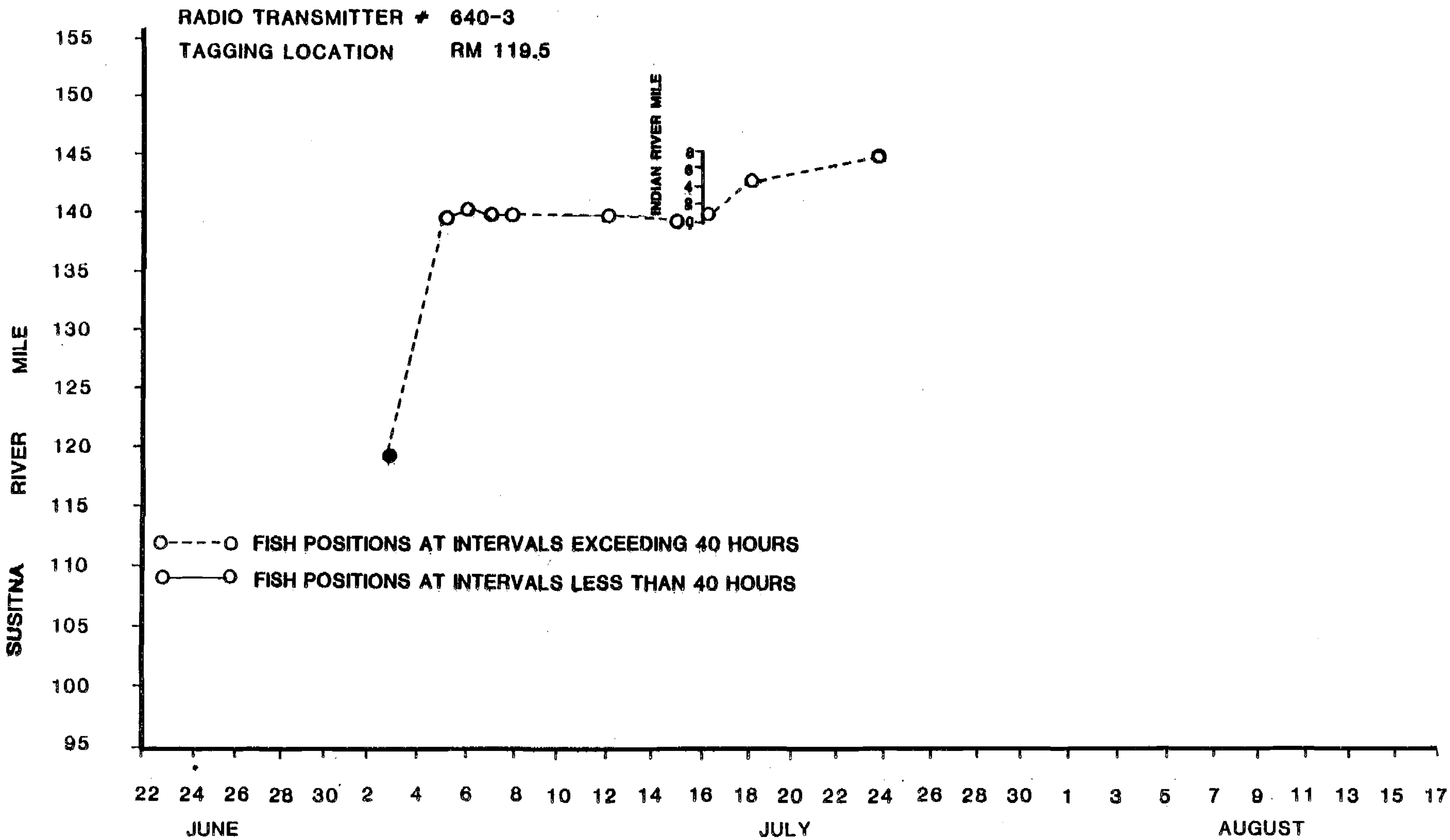

Figure EL-12. Movement of radio tagged chinook salmon transmitter number 640-3 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Chinook Salmon, Radio Transmitter #660-3

Chinook salmon #660-3 was tagged on 1 July at RM 102.8. This male chinook salmon moved downstream into the TRA for at least two and possibly four days after being tagged (Figure EL-13). On 5 July it was encountered at river mile 3.0 of the Talkeetna River. Periodic aerial monitoring during July indicated the fish moved progressively upstream within the same drainage. It was noted at river mile 35.6 on 22 July and 4.0 miles upstream Prairie Creek (RM 50.1) on 30 July. The overall upstream migration rate within the Talkeetna River from 5 to 22 July was 0.08 mi/hour or 1.8 mi/day. This individual presumedly spawned in Prairie Creek.

Chinook Salmon, Radio Transmitter #670-3

The behavior of the female chinook salmon (tag #670-3) tagged on 26 June at RM 120.7 was undoubtedly affected by handling due to equipment malfunctions that occurred during transmitter implantation (Figure EL-14). First, a "large" chinook salmon transmitter was found to be too large to fit within the stomach of the fish. The smaller transmitter was inserted easily. Five days after tagging this individual was detected downstream at RM 99.6 and the fish/carcass and/or transmitter remained there through August. It is believed the fish died from the trauma of transmitter implantation and numerous attempts to retrieve the fish/carcass were unsuccessful.

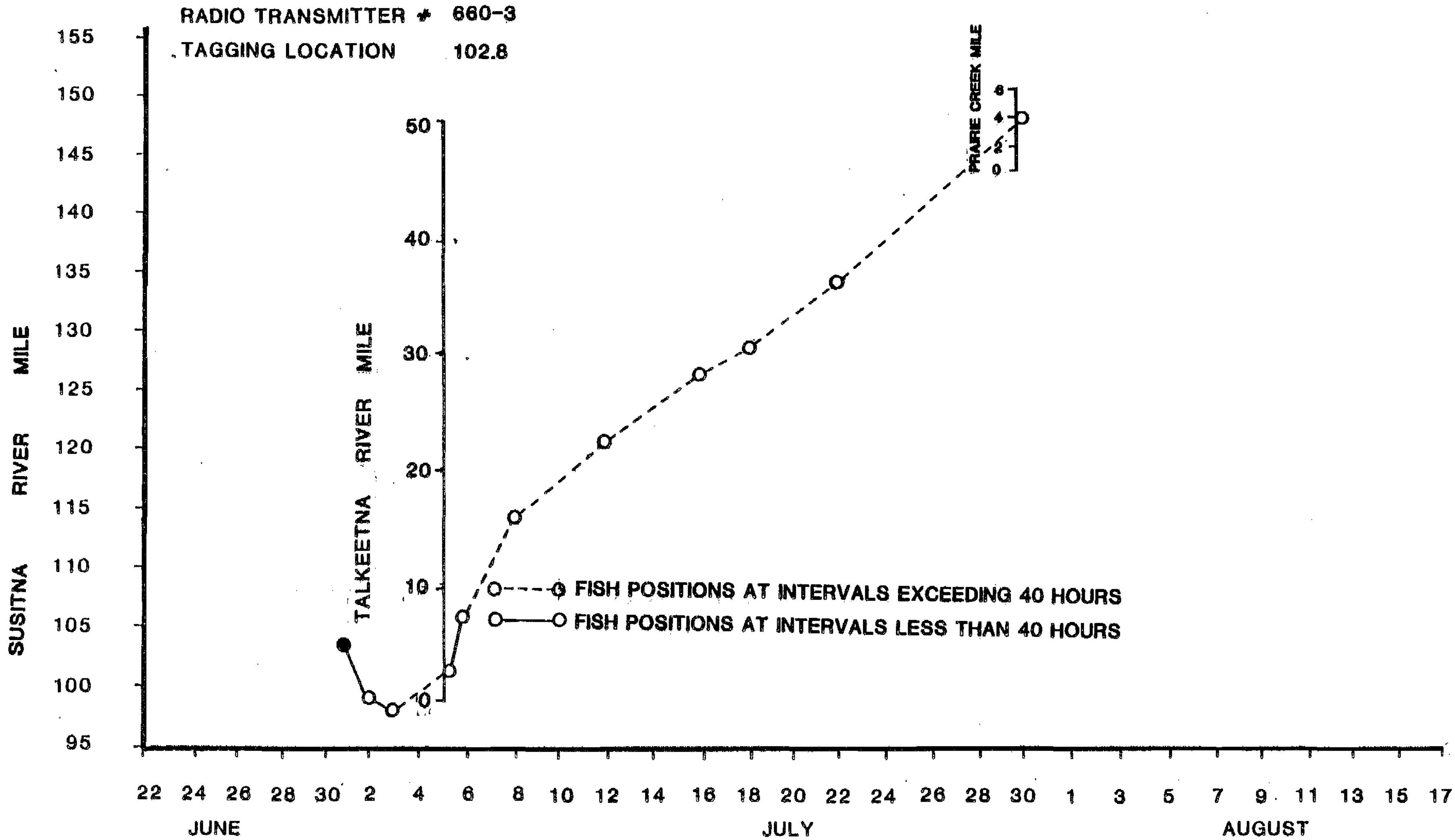

Figure EL-13. Movement of radio tagged chinook salmon transmitter number 660-3 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

EL-25

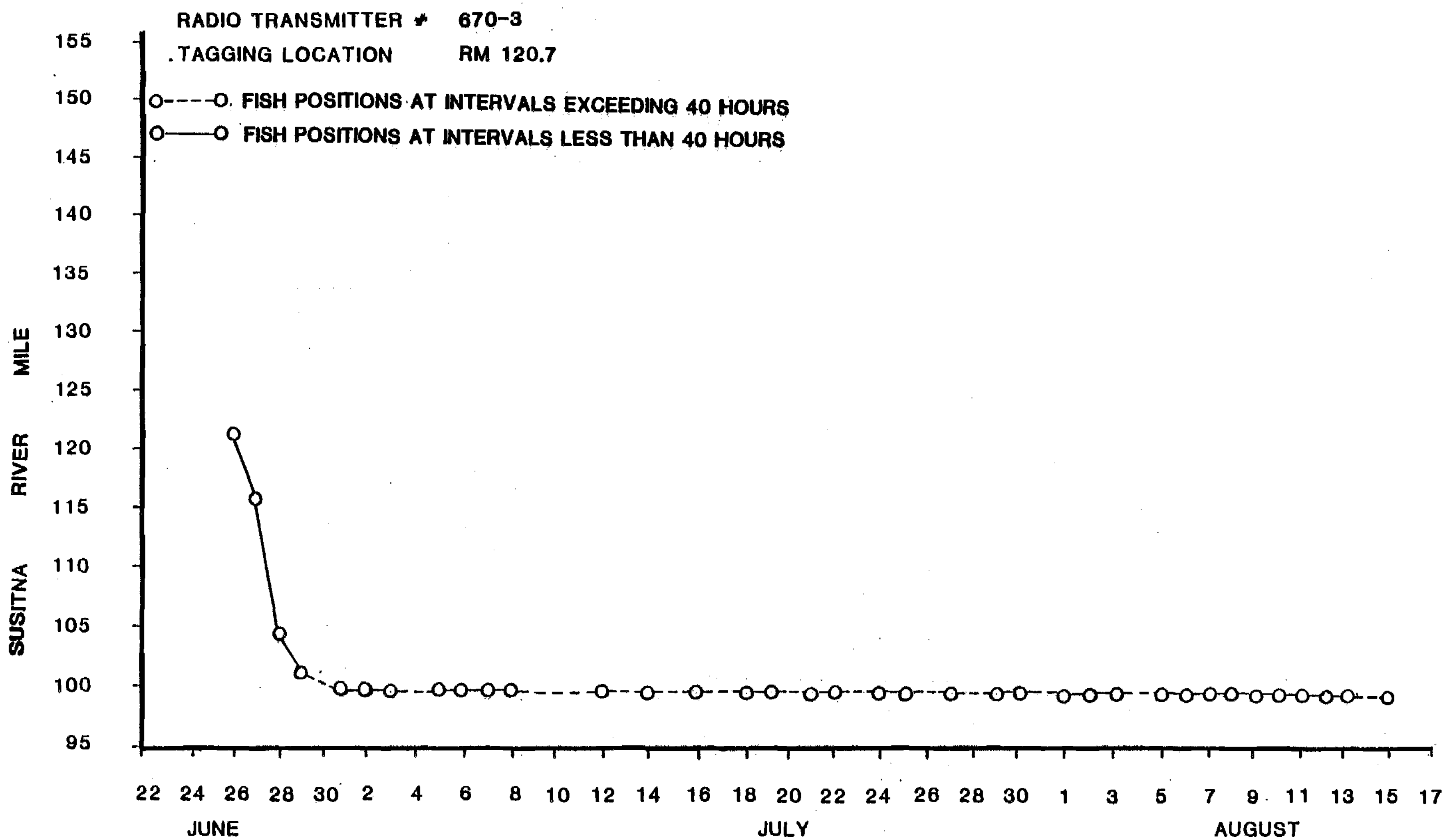

Figure EL-14. Movement of radio tagged chinook salmon transmitter number 670-3 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.

Chinook Salmon, Radio Transmitter #730-1

Fish bearing radio tag #730-1 was tagged on 22 June at RM 120.7. Approximately five days (105.75 hours) after being tagged, this individual moved 28.2 miles to the mouth of Portage Creek (RM 148.9), (Figure EL-15). This is an overall upstream migration rate of 0.26 mi/hour and 6.4 mi/day. A maximum upstream migration rate of 0.39 mi/hour or 9.4 mi/day occurred when the fish swam 6.2 miles in slightly less than 16 hours between 26 and 27 June.

The fish reached the mouth of Portage Creek sometime during 26 or 27 June, and remained there for two to three additional days before migrating up that drainage. From about 29 June through 2 July, it apparently held in the lower 2.0 miles of Portage Creek. However, on 5 July it was detected at mile 9.0. It remained in that general area through about 12 July, then moved downstream and held near mile 3.0 thereafter. The transmitter ceased functioning on or shortly before 5 August. The fish presumedly spawned while in Portage Creek.

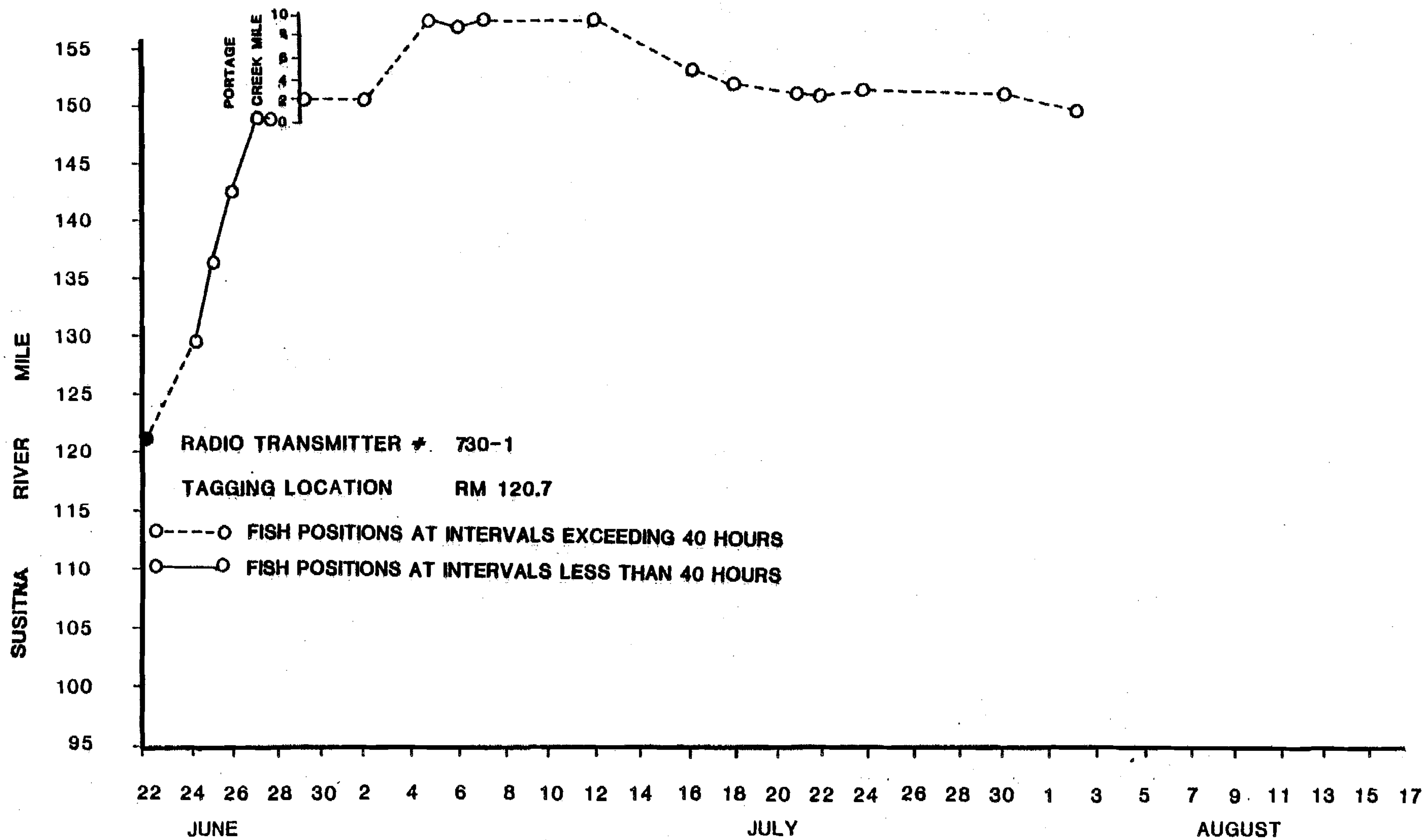

Figure EL-15. Movement of radio tagged chinook salmon transmitter number 730-1 in the Susitna River drainage during June, July and August, 1981, Adult Anadromous Investigations, Su Hydro Studies, 1981.