

Pasagshak River Salmon Weir Operational Plan, 2013

by

Mark J. Witteveen

April 2013

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H_A
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	e
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, χ^2 , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient (multiple)	R
milliliter	mL	west	W	correlation coefficient (simple)	r
millimeter	mm	copyright	©	covariance	cov
		corporate suffixes:		degree (angular)	°
Weights and measures (English)		Company	Co.	degrees of freedom	df
cubic feet per second	ft ³ /s	Corporation	Corp.	expected value	E
foot	ft	Incorporated	Inc.	greater than	>
gallon	gal	Limited	Ltd.	greater than or equal to	≥
inch	in	District of Columbia	D.C.	harvest per unit effort	HPUE
mile	mi	et alii (and others)	et al.	less than	<
nautical mile	nmi	et cetera (and so forth)	etc.	less than or equal to	≤
ounce	oz	exempli gratia	e.g.	logarithm (natural)	ln
pound	lb	(for example)		logarithm (base 10)	log
quart	qt	Federal Information Code	FIC	logarithm (specify base)	log ₂ , etc.
yard	yd	id est (that is)	i.e.	minute (angular)	'
		latitude or longitude	lat. or long.	not significant	NS
Time and temperature		monetary symbols (U.S.)	\$, ¢	null hypothesis	H_0
day	d	months (tables and figures): first three letters	Jan, ..., Dec	percent	%
degrees Celsius	°C	registered trademark	®	probability	P
degrees Fahrenheit	°F	trademark	™	probability of a type I error (rejection of the null hypothesis when true)	α
degrees kelvin	K	United States (adjective)	U.S.	probability of a type II error (acceptance of the null hypothesis when false)	β
hour	h	United States of America (noun)	USA	second (angular)	"
minute	min	U.S.C.	United States Code	standard deviation	SD
second	s	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard error	SE
				variance	
Physics and chemistry				population sample	Var var
all atomic symbols					
alternating current	AC				
ampere	A				
calorie	cal				
direct current	DC				
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

REGIONAL INFORMATION REPORT 4K13-04

PASAGSHAK RIVER SALMON WEIR OPERATIONAL PLAN, 2013

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ABSTRACT

From 2011 to 2015, sockeye salmon *Oncorhynchus nerka* escapement through the Pasagshak River into Lake Rose Teed on the Kodiak road system will be estimated with a weir. The Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries will operate the aluminum picket and wood tripod salmon weir near the mouth of Lake Rose Teed. Age, sex, and length (ASL) information will be gathered from sockeye salmon captured at the weir. Subsistence fishing activity will be observed and ASL information will be gathered from subsistence catch. This information will assist ADF&G staff in determining appropriate escapement levels into Lake Rose Teed and to more effectively monitor the timing, health, and productivity of Lake Rose Teed sockeye salmon. This operational plan will provide seasonal employees a reference document in order to run the field camp effectively, operate the weir, and live safely at the remote site during the 2013 season.

Key words: Lake Rose Teed, Pasagshak River, sockeye salmon, *Oncorhynchus nerka*, weir, escapement, Kodiak Management Area, KMA, field camp operational plan.

INTRODUCTION

The Pasagshak River, located on the Kodiak road system (Figures 1 and 2), has recently supported the largest sockeye salmon *Oncorhynchus nerka* subsistence fishery for Kodiak Island residents (J. Shaker, Fish and Wildlife Technician III, ADF&G, Kodiak, unpublished data; Figures 3 and 4). During the past decade, subsistence harvest of Pasagshak River sockeye salmon has steadily increased while escapement estimates have diminished, especially during 2009 and 2010. Previous escapement enumeration methodology provides only postseason estimates via aerial and foot surveys of the spawning grounds, making inseason subsistence and sport fisheries management impossible and refinement of an escapement goal for this stock problematic. A conventional aluminum picket weir will be constructed near the outlet of the lake in 2013 (similar as it was in 2011 and 2012) and will provide timely and accurate escapement information, enabling inseason management adjustments and more precise evaluation of the escapement goal to maintain the sustainability of this important subsistence, commercial, and sport salmon run.

The Pasagshak River is located on the northeast side of Kodiak Island and is accessible by car from the city of Kodiak (Figure 1). Lake Rose Teed, which drains into the Pasagshak River, is a small, shallow lake (0.94 km²; 2.1 m average depth). Prior to the 1964 earthquake and subsequent tsunami, Lake Rose Teed had little salmon rearing habitat; however, the earthquake lowered the elevation of the lake, allowing nutrient rich marine water to enter the lake during high tide cycles and dramatically increasing the salmon rearing potential (Murray 1986). Pasagshak River State Recreational Site is the only designated park land outside of the immediate city area and still within the road system (Figure 2). The mouth of the Pasagshak River is also a prehistoric native settlement site.

Since 1968, Pasagshak River salmon escapement has been estimated post-season using both aerial and foot surveys of the spawning grounds. Although annual survey counts have been highly variable, sockeye salmon production has generally increased since that time (Figure 3). The current escapement goal for Pasagshak River sockeye salmon is a lower-bound SEG of 3,000 fish (Nemeth et al. 2010). Because surveys ideally take place on the spawning grounds, estimates of the escapement are not made until well after the fish escape the subsistence, sport, and commercial fisheries. Since escapement estimates cannot be made inseason, no management action to regulate harvests is possible and overharvest can occur but not be detected until any action is too late.

Subsistence harvest of this salmon stock has been generally increasing since subsistence records were initiated in 1986. From 2008 to 2011, the Pasagshak River was the largest subsistence salmon fishery in the Kodiak Management Area (KMA) (Figure 4; J. Shaker, Fish and Wildlife Technician III, ADF&G, Kodiak, unpublished data). During recent years, two other significant sockeye salmon runs near the City of Kodiak, Afognak and Buskin lakes, have experienced significant reductions in run size, restricted fishing opportunities and, during some years, total subsistence fishing closures (Baer et al. 2009; Dinnocenzo 2010; Dinnocenzo et al. 2010; Jackson et al. 2010). Such restrictions on those stocks can displace users to other systems (Magdanz et al. 2003), leading to concern that Pasagshak River sockeye salmon will incur increased harvest pressure while ADF&G is unable to monitor escapement inseason.

There is little directed commercial fishing effort on Pasagshak River sockeye salmon. Some Pasagshak River fish are likely harvested by commercial fishermen while fishing for nearby Saltery River sockeye salmon. While harvest levels are unknown, they are likely low as the fishery in front of the Saltery River is further inside Ugak Bay than Pasagshak River. Sport harvests are substantially smaller in magnitude than subsistence harvests, but appear to track the same trends and likely vary due to similar factors as the subsistence fishery (Figure 3).

Timely inseason estimates of Pasagshak River sockeye salmon escapement will be possible through installation of a weir near the outlet of Lake Rose Teed. The escapement data obtained by use of a weir, coupled with age, sex, and length (ASL) data, will provide dependable, timely estimates of stock productivity and sockeye salmon run size. Accurate run data coupled with ASL data could also be used to refine the current escapement goal.

In addition to the installation and annual operation of escapement monitoring techniques, important information on subsistence and sportfish effort at the Pasagshak River can be obtained through harvester interviews conducted by ADF&G technicians. ASL data obtained from subsistence harvests will augment ASL data obtained from weir traps, and provide valuable information on the harvest composition, size selectivity, and magnitude relative to escapement.

This operational plan is a reference and guiding document for the field staff, so that they understand what is expected of them to effectively accomplish the required tasks and duties of the project. Project activities at Pasagshak River weir will include installation and maintenance of a weir and the collection of biological samples (i.e., scales for age, sex, and length).

OBJECTIVES

1. Census passage of Pasagshak River system sockeye salmon escapement from June 15 to August 15.
2. Estimate the age, sex, and length (ASL) composition of sockeye salmon escapement into Lake Rose Teed.
3. Describe inseason harvest, timing, ASL, and effort of subsistence fisheries (and sport fisheries if samples are available) for Pasagshak River sockeye salmon.

TASKS

1. A tripod and aluminum picket weir will be constructed and installed at a suitable location approximately 0.5 miles from the outlet of Lake Rose Teed. Tripods and sand bags are stored

at the ranch near Lake Rose Teed while the aluminum pickets are stored at the Alaska Department of Fish and Game warehouse.

2. The project leader will train technicians in proper species identification of sockeye, pink *O. gorbuscha*, chum *O. keta*, and coho salmon *O. kisutch* and Dolly Varden *Salvelinus malma*, the species expected to be encountered at the weir. Technicians will monitor the weir daily between approximately 7:00 AM and 10:00 PM and enumerate salmon by species by visually enumerating them through a counting gate built into the weir and record the counts with tally counters. Escapement counts will be reported to the project leader on a daily basis.
3. A trap will be constructed as part of the weir and will enable weir technicians to sample 240 sockeye salmon per statistical week for ASL. The “preferred scale” (located on the left side of the fish, two rows above the lateral line on the diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin) will be removed with forceps and mounted on a gum card. The sex and length of the fish (fish length in millimeters from mid eye to tail fork) will be recorded to rugged digital assistants and the data will be downloaded to laptop computers daily. Ideally, 80 samples will be collected each Wednesday, Friday, and Monday. If it is obvious to the crew leader that following this strategy will result in failure to obtain the desired 240-sample size per week, scheduling adjustments will be made to meet sampling goals. The crew will be trained for proper sampling procedure and the samples will be periodically checked throughout the season for accuracy and completeness.
4. Scales will be read for age composition post season. These samples provide the foundation for escapement goal evaluation and measurement of sockeye salmon productivity within Lake Rose Teed and its tributaries.
5. Document traditional areas of subsistence harvest and level of effort at Pasagshak River. ADF&G technicians will opportunistically contact sockeye salmon subsistence fishermen on the fishing grounds in front of the Pasagshak River, and alternatively at the Pasagshak State Recreation Area boat landing. Following a set of brief introductory remarks by the technician, all subsistence users who agree to be interviewed will be asked a short series of questions to determine their traditional subsistence fishing location(s) (e.g., Pasagshak River, Buskin River or elsewhere), likely location of subsistence fishing in the near future, and level of effort at Pasagshak River. An effort will be made to conduct interviews in a weekly quantity proportional to subsistence effort. It is anticipated that approximately 150 such interviews will be conducted throughout the duration of the subsistence fishery, providing a representative sample of subsistence effort.
6. The sockeye salmon harvested by interview participants will be sampled for ASL data if the fish are available to sample. These data will be used to test whether age and sex compositions of subsistence sockeye salmon harvests are similar to age and sex compositions of sockeye salmon passing the weir so the entire run can accurately be reconstructed. The total Pasagshak River subsistence harvest will be estimated returns of completed permits received by the Westward Region Division of Commercial Fisheries office when those data are available. Annual return rates of completed permits are usually between 85 and 90% of participants. (J. Shaker, Fish and Wildlife Technician III, ADF&G, Kodiak, personal communication).
7. A daily log will be kept by the crewleader including notes about the weir, notable occurrences, and subsistence fishing effort.

8. Daily, the maximum observed number of subsistence boats fishing within Pasagshak Bay will be recorded in the daily log book.

SUPERVISION AND TRAINING

The project biologist, Mark Witteveen, will be responsible for project supervision, which will include: providing training, oversight, logistical, and technical support for the camp operation. The two crew members will be responsible for establishing work schedules, prioritizing daily work assignments, and supervising camp duties. They are also responsible for ensuring that accurate, complete, and well-organized data are collected, as well as ensuring safety.

PROCEDURES

TASKS

1. Open camp and install weir.
Target date: June 15.
2. Enumerate salmon escapement through Pasagshak River weir.
Target dates: June 15–August 15.
3. Collect approximately 240 ASL samples from the sockeye salmon escapement per week if sufficient numbers are available.
Target dates: June 15–August 15.
4. Collect physical data daily: air and water temperature, and weather observations.
Target dates: June 15–August 15.
5. Communicate daily with Kodiak ADF&G personnel by cellular telephone.
6. Inventory and secure Pasagshak River weir camp and close down for the season.
Target Date: August 15.

PRIOR TO OPENING CAMP

The crew is required to read and follow this document, the escapement sampling operational plan (Moore 2013), and the following State Operational Plans: Safety Policy Standards, Building Safety, Field Camp Safety, Aircraft Passenger Safety, Emergency Survival Equipment Required in Aircraft, Vehicle Safety, Small Tool Handling, Firearm and Bear Safety. All crew members are required to have current certification in CPR and First Aid.

WEIR INSTALLATION

Pasagshak River weir will be approximately 150 feet long.

1. Align the first and last tripods on either side of the river perpendicular to the river flow.
2. String a taught line (use seine twine) across the river attached to the front of the two tripods. Move the remaining tripods in place with the back legs touching the adjacent tripod and the front leg barely touching the taught line. Square the tripods perpendicular to the upstream river flow. The last tripod may have to be further adjusted for correct tripod spacing.
3. Fine tune tripod spacing and leveling. Level each tripod by digging under the highest rear leg to level it out. Leveled tripods make it easier to install and level the boardwalk. Place a minimum of ten sandbags on each tripod platform.

4. Install the entire boardwalk shiplap on the posterior portion of the tripod arms; do not nail it down until it is all leveled. Start at one end of the weir laying a 2" x 12" x 12' board across the first set of tripod arms ensuring it rests on the next consecutive tripod arm. Continue laying out the boardwalk the length of the weir (Figure 5).
5. Level the boardwalk with spacers or leveling blocks nailed to the tripod arm and fine tune the straightness of the boardwalk. Toenail the boardwalk to tripod arms and toenail the boards that overlap one another together with 16d duplex nails. Make sure the end of each individual board rests on a tripod arm.
6. Install upper and lower stringers in an alternating pattern across all tripods. At both stream banks drive the upper and lower stringers partially into the stream bank for stability or sand bag them in place if the bank isn't steep enough.
7. Begin installing weir panels at one bank. Lay each panel flat against the stringers with the base of the panel up off the riverbed approximately 10 inches. Rake and dig a channel in the river bottom to set the panel into. Once a channel is dug, set the panel into the channel and make sure it is straight and level. Next, backfill the channel with stream gravel and rock to ensure it is fish tight. The first (and last) panel may require minute bank modifications and sandbags to fill gaps. Continue setting weir panels the length of the weir. Sand bags may need to be placed at the base of the panels to maintain a "fish tight" weir.
8. Don't forget to install two counting gate frames along with your weir panels. One of the gates is for counting and the other one is for the trap. The counting gate should be located in an area of the weir that is expected to have strong consistent flow at all tides and the area that is most likely to pass fish. The trap gate should be located in a similar location that is expected to be good for fish passage.
9. Install flash panels in front of and against the counting gate on the river bottom and weigh down with large rocks or sandbags.
10. Install a line of sandbags along the bottom in front of the panels to prevent scouring.
11. Use lag bolts to attach "Telespar" across the front of the panels, bolting into the front leg of the tripods. Use two rows of telespar across the deepest sections of water.
12. Install "keep off weir" sign, stream gauge, and counting seats (Figures 5 and 6).
13. Inspect your work. Walk along the front of the weir backfilling the base of panels where necessary to ensure the weir is fish tight.
14. Install the upstream fish trap at the other gate using six foot panels to form a "box" on the upstream side of the gate with entrance deflectors to restrict fish passage to a small area (Figure 7). Use wire or tie straps to affix the sides, front, and deflectors together. Use additional panels or vexar fill in the triangular opening between the trap and front of weir. Backfill gravel at the bottom of all panels to ensure the trap is fish tight.
15. Observe fish behavior behind the weir and make any adjustments or relocations to the trap and counting gate to try to maximize capture and/or passage of fish.

WEIR OPERATION

1. Monitor the weir throughout the day to pass fish. Mornings and evenings are expected to be the best times for fish passage, but passage may be highly dependent on tides. Crew members

will organize a schedule of counts relative to river conditions or rate of salmon passage. Counting schedules will likely change throughout the season due to the changes in the tidal cycle. If fish readily pass on a given count, the subsequent count should not be two hours later. If fish are reluctant to pass, the subsequent can be as long as three hours later. If water conditions such as strong upstream current or high debris load threaten the integrity of the weir, check it more often.

2. If you don't have experience identifying fish, your project leader or designee will train you to visually recognize the different salmon species and their swimming patterns. When fish have accumulated behind the weir, take time to visually study them and note differences as they pass through the weir.
3. Begin counting fish by opening a gate and enumerating with handheld tally counters, one for each species. Regulate the gate opening by using a wedge to lock the gate into position. If you open the gate too far, fish may pass through quickly and you will not be able to accurately count and identify them. Monitor escapement quality, including the numbers of net-marked, "jack" (salmon ≤ 400 mm mid-eye to tail fork) sockeye salmon, occurrence of fungus on fish, and number of fish with seal bites.
4. If a counting gate will not open, it is probably locked up by gravel or a rock wedged into the framework. Do not attempt to force the gate, or the entire framework may pull out of place along with the flash panel. Free up the gate by inspecting for wedged rock or gravel and removing it with your fingers or a fish pew.
5. When counting fish and conducting surveys, wear polarized glasses for greater visual recognition and eye protection from the sun's reflection off of the water.
6. Periodically check your tally counters to ensure they are working properly.
7. When finished counting make sure the counting gate is closed completely.

WEIR MAINTENANCE

1. The weir must be cleaned and inspected daily. Debris build up on the weir may cause poor water flow, leading to scouring at the base of weir panels and weir washout during periods of high water.
2. Cleaning the weir includes getting into the river to remove sticks, logs, leaves, grass, gravel, fish carcasses, and garbage.
3. Throw all debris (except garbage) over the weir.
4. Inspect the weir to ensure it is fish tight, look for scoured holes, panels out of place, gaps between panels (greater than a finger's width), sandbags that have been pushed off of tripods by bears, and make sure flash panels are in place and secure. Make repairs if needed.
5. Make sure the framework of the weir is sound and secure. If you find any of the boardwalks loose or any section or parts of the weir broken by bears or unsafe, repair them immediately.
6. If the water level increases to the point where the bottom of the sandbags on the tripod platform are in the water, weir panels and the trap will need to be pulled to avoid a weir wash out. If a weir wash out is possible, closely monitor fish build-up below the weir for fish pass estimation. If pulling the weir is needed pull the trap and the gates (keeping the weir clean also lowers the water level). If the visibility allows, count fish passing through the gates. If

the water level continues to rise, pull panels from the center of the weir or where the current is the greatest.

7. Keep bears and ungulates away and off of the weir as much as possible to minimize damage.
8. Do not allow members of the public to walk on to the weir.

WEIR REMOVAL

1. Remove counting seats, stream gauge, and “keep off weir” signs.
2. Cut and remove all seine twine or cable ties attaching the weir panels to the upper stringers.
3. Remove all weir panels, counting gates, and flash panels.
4. Remove all upper and lower stringers.
5. Remove most (leave two or three depending on water flow) sandbags from tripods.
6. Remove all duplex nails securing the boardwalk and then move all sections of the boardwalk.
7. Remove all remaining sandbags and tripods.
8. Remove all sandbags from the river.

ESCAPEMENT SAMPLING

Throughout the season, sample sockeye salmon passing through the trap at Pasagshak River weir for ASL data. If fish are available, sample 240 sockeye salmon weekly during the season for ASL. The exact number of samples collected will be dependent on the run strength. Refer to Moore (2013) for procedures on how to sample adult salmon properly. Ask the project supervisor if you have any questions. The trap may require adjustment or relocation to effectively capture fish. Observe fish behavior behind the weir and where they tend to hold to determine which adjustments to make. An effective trap may require some experimentation.

SUBSISTENCE FISHERY SAMPLING

Quantify the amount of subsistence gillnet fishing effort that takes place in the ocean daily. At a minimum of three times per week, attempt to contact fishermen as they finish fishing for the day and document their fishing location, effort, and harvest levels. Request access to subsistence-caught fish to gather ASL data. Sample up to 80 fish per day or at least 240 fish per week as available. Fill out a *Subsistence Fishery Interview Form* (Figure 8).

OTHER REQUIREMENTS

DAILY CONTACT SCHEDULE

Field camp crews are required to contact ADF&G Kodiak Research office personnel daily. Unless otherwise agreed upon, Pasagshak River weir personnel will contact Research Staff (Primarily Mark Witteveen) at 907-942-2233 by cell phone or landline at 907-486-1814 between 0800 and 0830 hours (8:00–8:45 AM) Monday through Friday. If contact cannot be made, Kodiak ADF&G office personnel will contact the camp as soon as possible.

DAILY FORMS

Any crew member who counts fish through the weir will immediately fill in the counts on the *Daily Weir Counting Form* (Figure 9). A crew member will fill out a *Daily Physical Observation Form* (Figure 10), a *Weekly Weir Camp Reporting Form* (Figure 11), and maintain a camp log (“rite in the rain” booklet) every day. The *Weekly Weir Camp Reporting Form* includes daily escapement data that occurred during the past week and total cumulative counts that are continued from previous weeks.

A daily log of each day’s activities and observations will be kept by the crewleader. Observations of subsistence effort will be kept in the daily log.

TIME SHEETS

Each crew member will fill out a timesheet by the 15th and the last day of each month. Each crew member is responsible for keeping an accurate record of their work hours. Time sheets need to be sent into town when the camp is re-supplied. Field crew must plan ahead to ensure that timesheets are completed prior to re-supply. If unusual circumstances arise that require overtime, the crew leader must notify the project leader immediately.

SEASON SUMMARY REPORT

The crew leader is responsible for writing a brief end of season summary report. The report will summarize weekly activities, sampling, problems with the weir, an inventory of tools and supplies, and suggested improvements or needs for the next field season. Keep a daily log of project activities in the camp log for reference.

ADDITIONAL GUIDELINES AND PROCEDURES

CAMP POLICIES

- Alcoholic beverages are not to be stored or consumed in areas open to public view. If alcohol is consumed at a camp the employee must be 21 years of age or older and off work without any duty scheduled for the remainder of the day and under no circumstances shall he or she engage in the operation of any State equipment, nor shall he or she return to duty status under the influence of alcohol. The abuse of alcoholic beverages will be grounds for immediate dismissal.
- All employees will be required to act in a professional manner at all times and be especially courteous to the public.
- Injuries must be reported to the project supervisor immediately.
- Loss or damage of equipment must be reported to the project supervisor within 24 hours.

FOOD AND SUPPLIES

Field crews will purchase all essential items prior to leaving Kodiak. One crew member can return to the City of Kodiak at a time to purchase food and supplies. Please attempt to keep trips to a minimum, on the order of once per week. Communicate with the project leader as to when a trip to town is scheduled. The camp may also be resupplied by staff headed out to the Pasagshak River, so maintain a list of needed items so you can pass it along to the Project Supervisor before

other personnel travel to the weir site. Alcoholic beverages, personal grooming supplies, newspapers, magazines, and tobacco must be purchased with personal funds.

VISITORS/PUBLIC INTERACTION

The weir site will get many visitors. Visitors come by the weir site to watch fish passing through the weir and ask about fish passage. Keep the weir site clean and be courteous and helpful to visitors, but also inform them of the boundaries. **THE GENERAL PUBLIC IS NOT ALLOWED TO ACCESS THE WEIR.** Make sure the “keep off weir” sign is posted in a visible location. Also, make sure the public is aware that there is a “No fishing” sanctuary 100 yards above and 100 yards below the weir. Ensure that those signs remain in place. Remember, your primary role is to operate and maintain the weir and accomplish the associated responsibilities of the project. Under no circumstance should any employee accept gratuities or payment.

GARBAGE

Maintain a clean camp to avoid attracting bears. Do not allow garbage to accumulate or leave it outside of the cabin.

FIRST AID AND FIRE SAFETY

All crew members will take a mandatory CPR and First Aid training course prior to going in the field. The project leader will ensure a fully stocked first aid kit and fully charged, operable fire extinguishers are in camp, and that all personnel know where they are located and how to use them. Make sure smoke and carbon monoxide alarms are installed and operational.

DRINKING WATER

Stream and lake water may be contaminated with bacteria or harmful parasites. Haul water from the State Park pump for drinking and cooking water. If clean water is not available, boil your drinking water for at least 10 minutes.

ALL-TERRAIN VEHICLES

The Pasagshak River weir camp will be furnished with an All-Terrain Vehicle (ATV; 4 wheeler). The ATV has been provided to transport materials and personnel from the cabin to the weir site. It is not intended for personal use or recreational purposes. The ATV may be accessed and operated only by trained personnel and will be secured when not in use. Be safety conscious at all times; do not speed or drive recklessly.

Unauthorized use of the ATV will result in a notation on your evaluation or your dismissal from employment.

- A safety helmet must always be worn when riding the ATV.

MAINTENANCE

Facility maintenance is an important aspect of camp life; the cabin and weir must be kept structurally sound and safe. Discuss maintenance projects with the project leader. Provide a list of materials needed to accomplish the projects and repairs to your project leader. Repairs and maintenance should be scheduled on days when fish passage is slow to keep this work within normal work periods.

The ATV must be kept in good operating condition and will require regular maintenance. At the end of each season, equipment should be winterized and tagged with a description of the equipment's condition on the tag.

COMPLIANCE WITH ADF&G REGULATIONS

All employees are responsible for complying with local subsistence, sport fishing, and hunting regulations. Copies of State and Federal regulations will be available to all field camp personnel and kept in camp. Any violation will be recorded on your evaluation and may be cause for immediate dismissal.

VIOLATIONS

If a fishing violation is observed, all information pertaining to the violation should be recorded immediately and retained by the employee. The project leader must be notified. If you have a camera, record as much as possible.

The use of the five Ws can aid in obtaining sufficient information pertaining to a violation.

1. What is the violation?
2. When did the violation take place?
3. Where did the violation occur?
4. Who is in violation and who are the witnesses?
5. Why was the violation committed?

If the violator refuses to cooperate with an employee without enforcement authority, no action should be taken, other than to relay all information and evidence collected to the project leader.

EMERGENCIES

In the event of a medical emergency, administer first aid to stabilize the situation. If an injury is life threatening immediately call 911 or notify the US Coast Guard at **800-478-5555** on the telephone. The US Coast Guard can also be reached on SSB radio frequency 4.125 MHz or on VHF channel 16.

When contacting the U.S. Coast Guard, have the following information ready to pass along:

- Location of your field camp or specific location of the emergency (57°28'24.64"N, 152°27'47.12"W),
- Name and phone number of supervisor,
- General nature of medical emergency,
- Number of patients,
- Specific information regarding the patient (name, age, primary complaint, and vital signs),
- Your assessment and treatment,
- Wind and weather conditions, and
- Other information pertinent to a possible medical evacuation.

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FIGURES

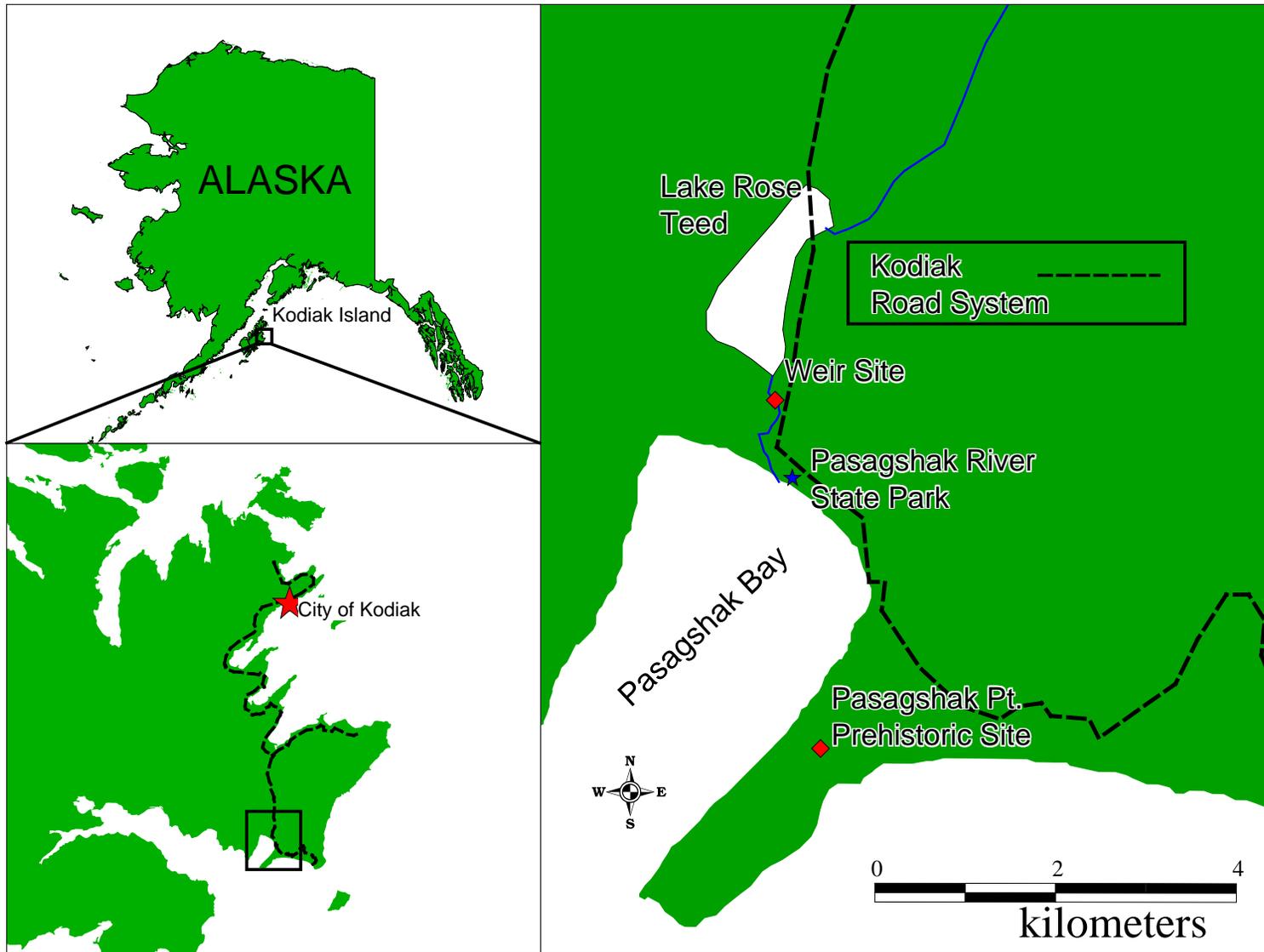
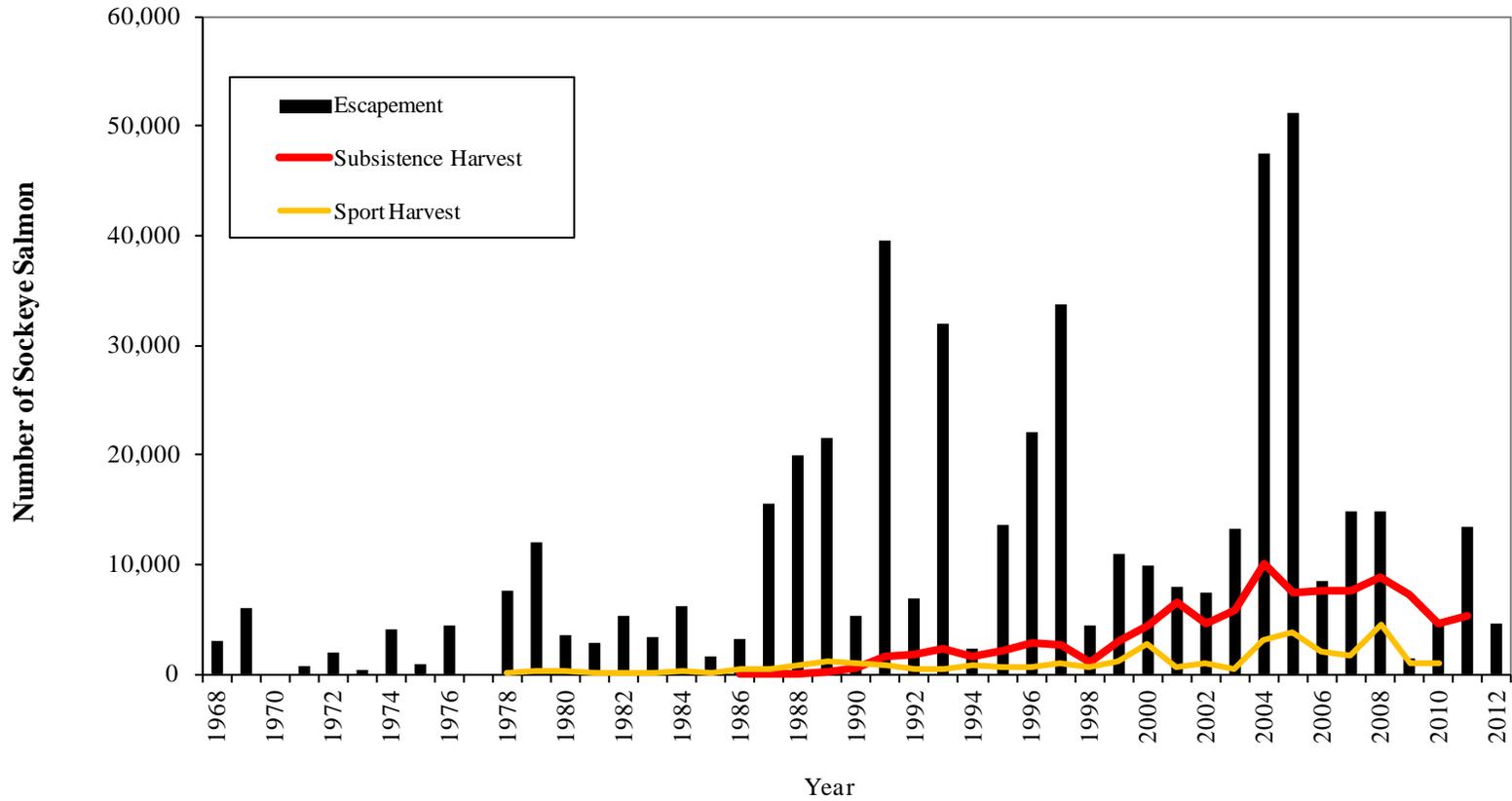


Figure 1.–Map depicting the location of Pasagshak River Weir, 2013.



Figure 2.—Aerial view of Pasagshak River State Recreation Area.



Note: In 2011-2012, escapement was estimate via weir; prior to that escapement was estimated via aerial survey.

Figure 3.—Historical estimated sockeye salmon escapement and sport and subsistence harvest at Pasagshak River.

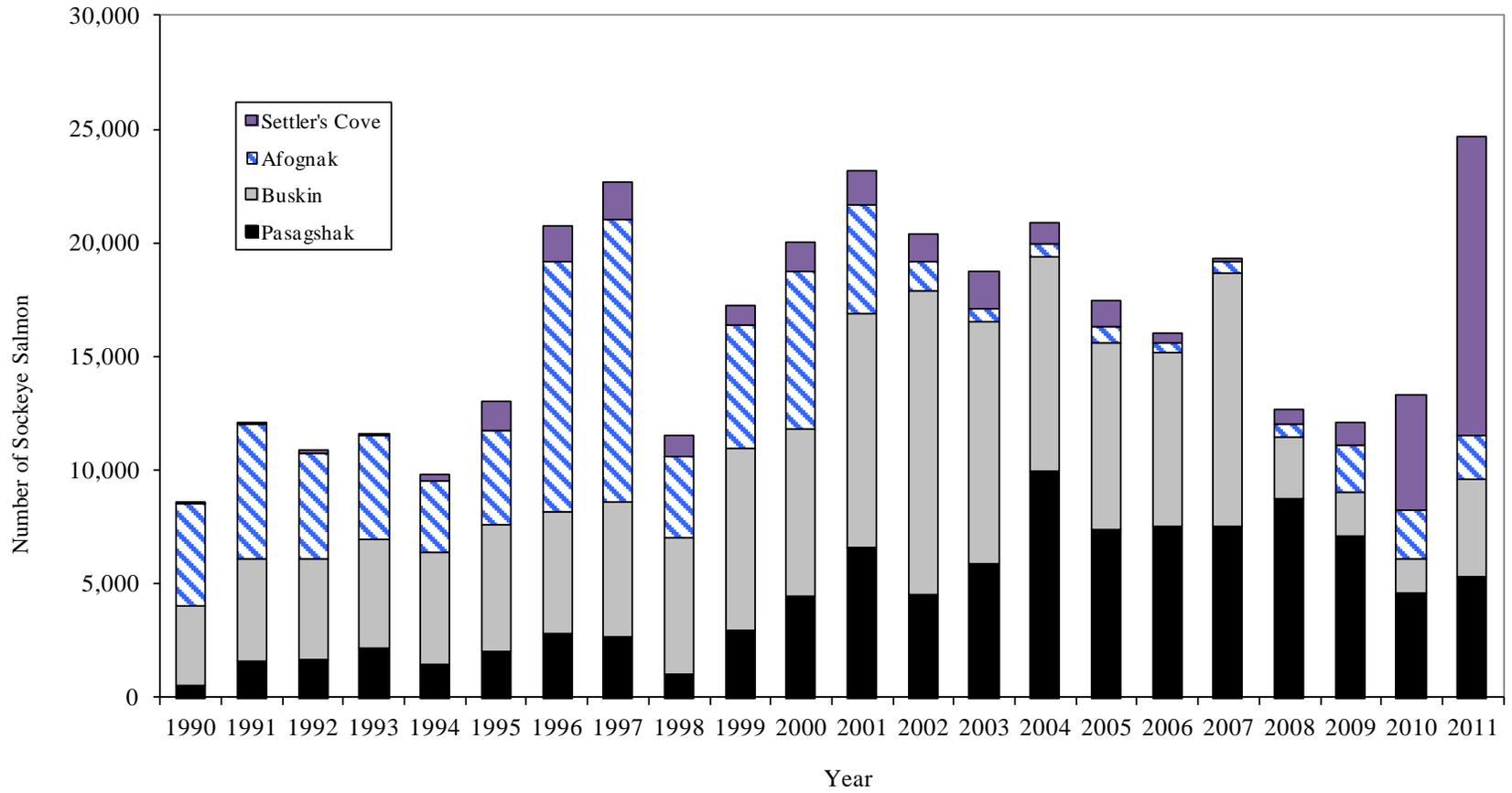


Figure 4.—Historical sockeye salmon subsistence harvest estimates for three important subsistence systems near the City of Kodiak (2012 data was not available at the time of the publication).



Figure 5.—Pasagshak weir construction showing tripod counting gate, and sign placement.

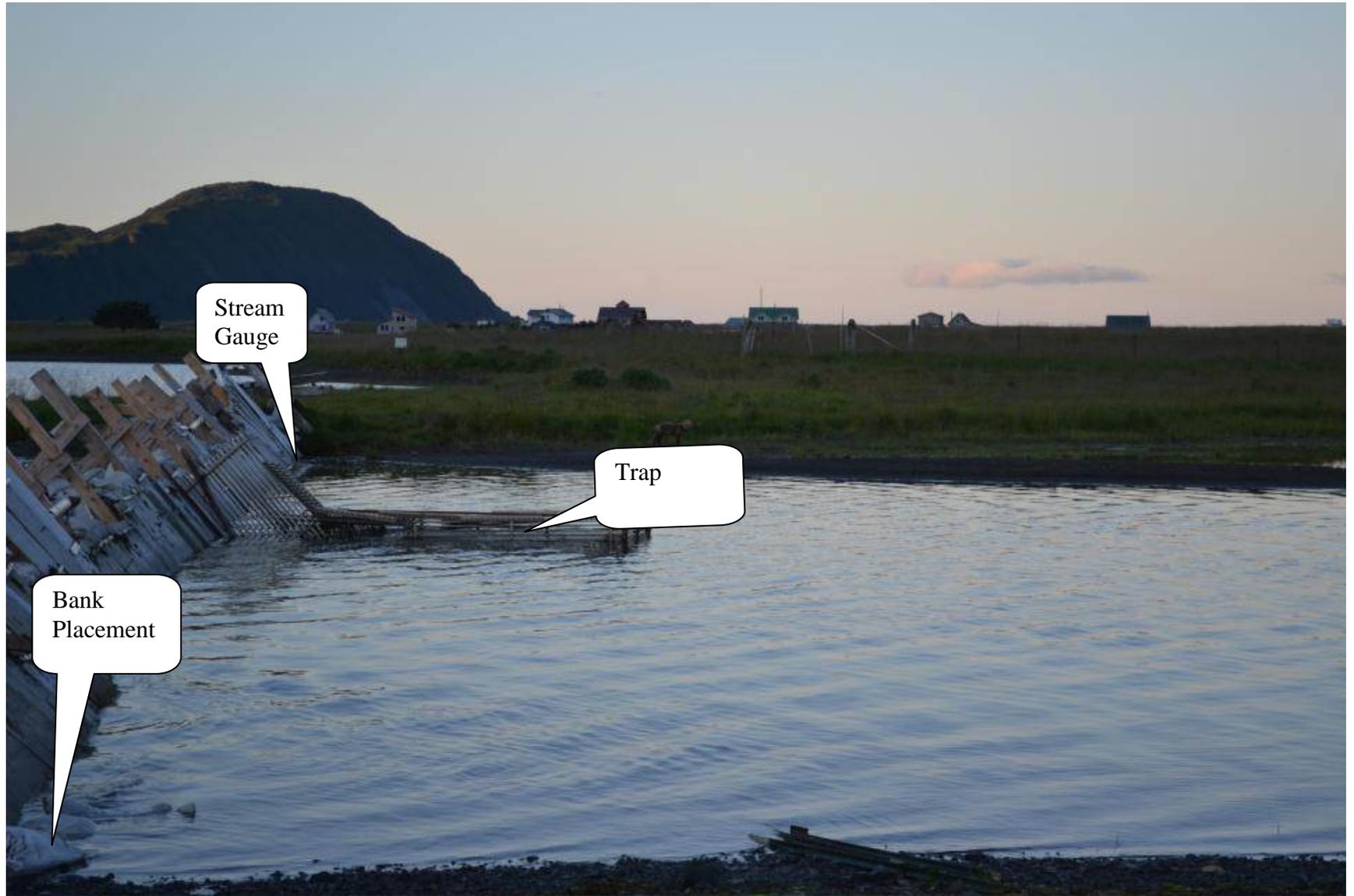


Figure 6.–Pasagshak weir showing bank, stream gauge, and trap placement.



Figure 7.—An example of an upstream live trap.

Daily Pasagshak Subsistence Fishery Data Sheet

Date: _____ Personnel: _____

Wx: _____

Peak Estimate of Effort
(Units of gear/boats)

Fishermen Interviews

Fisherman Name (Optional)	Number of Nets	Mesh Mesh Size	Hours Fished	Number of Sockeye Number of Sockeye Salmon Caught	# Collected # Collected For ASL	Card Card #	Fish Fish #
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Fisherman Name (Optional)	Number of Nets	Mesh Mesh Size	Hours Fished	Number of Sockeye Number of Sockeye Salmon Caught	# Collected # Collected For ASL	Card Card #	Fish Fish #
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Fisherman Name (Optional)	Number of Nets	Mesh Mesh Size	Hours Fished	Number of Sockeye Number of Sockeye Salmon Caught	# Collected # Collected For ASL	Card Card #	Fish Fish #
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Fisherman Name (Optional)	Number of Nets	Mesh Mesh Size	Hours Fished	Number of Sockeye Number of Sockeye Salmon Caught	# Collected # Collected For ASL	Card Card #	Fish Fish #
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Figure 8.—Subsistence fishery interview form.

Pasagshak River Weir: 2013

Date:

Personnel:

Count Time		Sockeye					Dolly Varden		Other
Count Begin	Count End	Adult	Jack	Pink	Chum	Coho	Up	Down	(# Net Marked)
Daily Cumulative									

Figure 9.-Daily weir counting form.

Daily Physical Observation Form

Pasagshak River Weir, 2013

Date	Time	Temperature(°C)		Cloud Cover		Visibility (Miles)	Wind	
		Air	Water	Percent	Ceiling		Direction	Speed

Figure 10.–Daily physical observation form.

Weekly Weir Camp Reporting Form

Pasagshak River Weir

Report Number

Personnel

Date	Escapement									Number of Sockeye Sampled	Subsistence		
	Sockeye			Pinks		Chum		Coho			Harvest Effort	# Interviews	# Sockeye Sampled
	Adults	Jacks	Cum.	Daily	Cumulative	Daily	Cum.	Daily	Cum.				
Tuesday													
Wednesday													
Thursday													
Friday													
Saturday													
Sunday													
Monday													
Total													

Figure 11.—Weekly weir camp reporting form.