Regional Operational Plan CF.4K.2015.04

Pauls Bay Sockeye Salmon Stock Assessment Operational Plan, 2015–2016

by

Natura Richardson

March 2015

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

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

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

REGIONAL OPERATIONAL PLAN CF.4K.2015.04

PAULS BAY SOCKEYE SALMON STOCK ASSESSMENT 2015–2016

by

Natura Richardson

Alaska Department of Fish and Game, Division of Commercial Fisheries, Kodiak

Alaska Department of Fish and Game
Division of Commercial Fisheries

March 2015

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SIGNATURE PAGE

Project Title:	Pauls Bay Sockeye Salmon Stock Assessment 2015–2016
Project Leader(s):	Natura Richardson, Fishery Biologist I
Division, Region, and Area:	Division of Commercial Fisheries, Region IV, Kodiak
Project Nomenclature:	
Period Covered:	May 2015–September 2016
Field Dates:	June–August
Plan Type:	Category II

Approval

Title	Name	Signature	Date
Project Leader	Natura Richardson	Natura Richardson	3/23/15
Biometrician	Dave Barnard	David R. Barnard	23 March 2015
Section Supervisor	Kevin Schaberg	KE Sch	3/20/15

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PURPOSE

From 1978 to 2004, the Alaska Department of Fish and Game (ADF&G) operated an adult salmon enumeration weir at the outlet of Pauls Lake located on the north side of Afognak Island. Since 2005, aerial surveys and occasional foot/boat surveys have been used to enumerate escapements into Pauls Lake. Aerial surveys for this system are ineffective and foot/boat surveys tend to underestimate escapement, yet reliable escapement counts are necessary to manage salmon populations. To provide reliable escapement counts of sockeye salmon entering Pauls Bay drainage, ADF&G reestablished a picket weir at the outlet of Pauls Lake in 2014, which will continue for 2015 and 2016. Age, sex, length, and genetic information will be gathered from sockeye salmon escaping into Pauls Lake. An automatic fish counter will be installed and operated at the Laura Creek fish pass exit to test the feasibility of accurately assessing escapement into the upper-Pauls Bay drainage. Fish pass maintenance, spawner distribution surveys, and fishery harvest monitoring will also be included in the scope of this project. This operational plan provides the instructions and procedures to properly operate the adult escapement weir and fish counter, perform spawner distribution surveys, and monitor fishery use while maintaining a safe and effective working environment during field camp operations.

Key words: Pauls Bay, sockeye salmon, escapement, Laura Lake, fish pass, automatic fish counter, weir

BACKGROUND

The primary goal of this project is to accurately count sockeye salmon entering into Pauls Bay drainage (PBD) located on the north side of Afognak Island (Figure 1). A sockeye salmon *Oncorhynchus nerka* run was established in PBD by the Alaska Department of Fisheries in the 1950s (Honnold and Edmundson 1993). This was accomplished through construction of fishways to bypass a series of barrier falls and transplanting eggs from Southeast Portage Creek and Karluk Lake as broodstock (Honnold and Edmundson 1993). By 1958, the sockeye salmon run was self-sustaining (Schrof et al. 2000) and has become an important subsistence resource to Kodiak residents. Pauls Bay commercial catches and effort have been increasing since 2002 and subsistence efforts have shown a marked increase within the last five years (ADF&G, unpublished data). Since the lake and river systems on Afognak Island are relatively small and easily accessible, they are at risk to overexploitation (Dinnocenzo and Caldentey 2008). Monitoring the sockeye salmon escapement back into the PBD is important for the long term sustainability of the run and allows for maximized harvest opportunities for commercial, sport, and subsistence users.

OBJECTIVES

The project objectives are

1. Enumerate adult sockeye salmon migrating into Pauls Lake,
2. Collect age, sex, and length (ASL) data and genetic samples from the sockeye salmon escapement into Pauls Lake,
3. Install, calibrate, and maintain an automatic fish counter at the upstream end of the Laura Creek fish pass,
4. Conduct weekly foot and/or boat surveys of Pauls Lake, Laura Lake and Creek, and Gretchen Lake and Creek for sockeye spawner distribution, and
5. Monitor and report commercial and subsistence fishery use.

METHODS

ADULT ENUMERATION

Weir Installation

The weir is constructed in 2 sections. The first section consists of 2 20′ aluminum I-beams (with 1″ holes drilled at 0.5″ increments) and numerous aluminum conduit pieces used as pickets (Figure 2). The second section consists of 2 5′ aluminum I-beams (with 1″ holes drilled at 0.5″ increments) and numerous aluminum conduit pieces used as pickets (Figure 2). The two sections are in a V-shape around a large exposed rock and spans approximately 25′ (Figure 3).

1. A large wooden beam (currently located near the stream bank) will be placed downstream of the weir and used as a catwalk. Place the beam between the flattened section of the large exposed rock (located in the middle of the stream) and the stream bank. The beam will be installed first and cabled to the bank as it will float during high water events.
2. The longest weir section will be installed upstream of the wooden beam between the large exposed rock and shore. Place one of the aluminum I-beam pieces (hereafter referred to as I-beam) at a slight downstream angle to the wooden beam and support with sandbags on the stream bottom.
3. Place the second I-beam piece, such that the rebar protruding from the large exposed rock slides through the end hole of the I-beam with the other end supported by the river bank. Sandbags will be used between and on top of the I-beam to secure the pieces once they are positioned properly.
4. 1″aluminum conduit pipes will be fitted into the holes of both the upper and lower I-beam. The I-beam may need adjusting so that the pieces of conduit slip into place easily. Tap pickets down to secure into place.
5. The shorter section of weir will be installed similarly on the opposite side of the rock.
6. Use an Aqua scope to inspect underwater for any holes surrounding the large exposed rock or weir bottom. Use sandbags to fill any holes.
7. A rope will be secured from bank to bank to prevent the weir from being pushed into the lake during high tides.
8. To assist in identification of jacks, draw a 400 mm line on a flash panel. Draw the line such that it will be perpendicular to the weir when the panels are in place on the river bottom.
9. Install flash panels in front of and against each counting section of the weir. Place panels on the river bottom and weigh down with large rocks or sandbags.
10. Inspect your work. Walk along the front of the weir backfilling the base with gravel where necessary to ensure the weir is fish tight.

Weir Operation

1. Monitor the weir throughout the day and pass fish as soon as they build up. Mornings, evenings and high tides are typically the best times for fish passage. The crew leader will organize a schedule.

2. When counting fish and conducting surveys, wear polarized glasses for greater visual recognition.
3. The project leader, supervisor, or designee will train personnel 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.
4. Count fish by lifting 1 or 2 pickets and enumerate them as they pass through with handheld tally denominators, 1 for each species. Monitor the quality of passing fish, including the number of net-marked and "jack" (< 400 mm) sockeye salmon.
5. Periodically check your handheld tally denominators to ensure they are working properly.
6. When finished counting make sure the picket is secured back into place and the weir is fish tight.
7. Adult numbers will be recorded at the end of each day on the *Pauls Bay Daily Escapement Reporting Form* (Figure 4).

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 pickets 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, allowing it to flow down river.
4. Frequently inspect the weir to ensure it is fish tight; look for scouring, pickets out of place, gaps (greater than a fingers width), sandbags that have been pushed by bears, and unsecured flash panels. Make repairs as needed. Use the Aqua scope to enhance visibility.
5. Make sure the framework of the weir is sound and secure. If the boardwalk is loose, or any section or part of the weir is broken or unsafe, repair it immediately.
6. If a weir wash out is possible, closely monitor fish build-up below the weir for fish pass estimation. Pull a couple pickets and count fish passing. If the water level continues to rise, pull more pickets. Pull pickets from the center of the weir or where the current is the greatest.
7. Keep bears away and off of the weir as much as possible to minimize damage. Try to maintain a perimeter around the camp that is a No-Bear-Zone. Only scare (haze) bears if the crew is comfortable doing so and it is not a dangerous situation.

AGE, SEX, AND LENGTH (ASL) SAMPLING

The standard procedures for collecting and recording salmon ASL data are outlined in Wattum (*in prep*). A minimum of 600 adult sockeye salmon ASL samples will be collected each year. Two hundred samples will be collected three times during escapement peaks, approximately mid June, late June and mid July, for a total of 600 samples. Using a beach seine, adults will be captured at the head of Pauls Lake, near the Laura Creek terminus into the lake. After samples have been collected, one axillary process will be removed from the right side of the fish to mark the fish as sampled to reduce sample duplication.

GENETIC SAMPLING

Genetic samples will be collected in tandem with ASL samples. The axillary process that is removed for marking sampled fish will be used for the genetic sample. The procedures for collecting and preserving finfish tissue for DNA analysis is outlined in Appendix A.

FISH COUNTER

The automatic adult fish counter will be installed in the Laura Creek fish pass as soon as possible after weir installation. The project biologist will be on site to instruct crew in the installation and maintenance of the fish counter. If problems arise with the fish counter, or counter numbers do not appear to align closely with weir counts, contact the project biologist immediately. The user manual (Appendix B) will be used for initial troubleshooting should operational problems occur. Crew will perform inspections twice a week to ensure the fish counter is operating correctly and to report counts on the *Laura Pass Fish Counter Form* (Figure 5).

FISHERY USE MONITORING

Daily observations of area use will be recorded on the *Pauls Bay Drainage Visitor Count Form* (Figure 6). The crew is to report visitor activity at least once daily and whenever substantial changes occur. Duties are to visually examine the bay and record the number of boats or float planes present as well as approximate location, persons, duration of visit, and type of fishery use. This does not require the crew to approach or contact area users; it is only a visual observation. If the crew observes any violations, they are to document the event and report to the project biologist.

SPAWNER SURVEYS

Spawner surveys of the Pauls Bay drainage will be conducted on a weekly basis beginning approximately July 1. The area is divided into 4 sections for which spawner counts will be assessed and recorded. The sections are upper Laura Lake, lower Laura Lake, Gretchen Creek, and Gretchen Lake (Figure 7). The Crew will perform foot surveys of Laura and Gretchen Creek and utilize a small inflatable watercraft with outboard to survey Laura and Gretchen Lake. Estimates of number of fish, visibility, location, and other informative observations will be recorded on the *Pauls Bay Drainage Spawning Survey Form* (Figure 8).

PHYSICAL DATA REPORTING

Air and water temperature, cloud cover, wind direction and velocity will be measured at noon daily throughout the season. This information will be recorded on the *Pauls Bay Daily Physical Observation Form* (Figure 9).

OTHER REQUIREMENTS

SAFETY

Safety is the highest priority of this project. On-site personnel will exercise extreme caution when considering safety issues. Prior to field deployment each crewmember will be certified in CPR and First Aid, and have read the following sections of the ADF&G SOP guidelines.

- Safety Policy Standards

- Field Camp Safety
- Aircraft Passenger Safety
- Small Tool Handling
- Firearm and Bear Safety

The ADF&G safety policies will be reviewed and followed by each field crewmember at the beginning of the season and referenced throughout the field season.

EMERGENCIES

In the event of an emergency, use the "Emergency Response Flow Chart" that will be issued at deployment. If an injury is life threatening, immediately call the Alaska State Troopers at **907-486-4121** if on land or US Coast Guard at **907-428-4200** if at sea. Then call the section supervisor (Nick Sagalkin) at 907-486-1873 and call the project biologist (Natura Richardson) at 907-486-1884 during business hours or personal cell phone after hours. 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:
  - **Main cabin: 58.397222° N lat and 152.3419444° W long**
  - **Laura Lake outlet (close to fish counter): 58.221501° N lat and 152.191575° W long**
  - **South Laura/Gretchen Creek outlet: 58.194154° N lat and 152.170820° W long**
- 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.

RESUPPLY

Resupply items (e.g., groceries, fuel, mail, etc.) will be sent via chartered float plane. All air charter flights will be set up by office staff. Appropriate information in regard to fight logistics and times will be relayed via satellite phone communications. When planning for the resupply flights it will be important to prepare back haul-items and maximize the use of the chartered aircraft. Items to send back to town should include empty fuel containers, mail, trash, timesheets and biological data as requested.

REPORTING

The crew leader will maintain a daily log of activities and events, including personnel issues or problems with the project. This log will be submitted to the Project Biologist at the end of the field season, and should be a detailed account of daily activities undertaken by themselves as well as the crew. Additionally, daily activities and any unusual events will be recorded by the crew and/or crew leader in the crew notes logbook. The crew leader will contact the project

biologist daily at 1330 hours by telephone (486-1884) unless otherwise needed or predetermined. Any crew member may collect and report data but it is the responsibility of the crew leader to ensure daily recording is complete and check data for accuracy. The crew leader is also responsible for completing a comprehensive data and equipment inventory at the end of the season.

Because the Pauls Bay project was out of operation for a long period, it is desirable for the field crews to photograph all aspects of the fieldwork. Photographs will be taken with a digital camera and downloaded on to the research field computer for storage.

TIMESHEETS

The crew leader is responsible for scheduling daily tasks. Tasks will be scheduled to minimize overtime. Overtime is limited, unless otherwise pre-authorized. The crew leader will document, as part of the daily log, all tasks that are performed and the actual hours worked to complete those tasks.

Timesheets will be completed and sent on resupply flights to Kodiak before the 15th and the last day of each month. If timesheets must be sent in early, estimate work hours. Timesheets can be amended if the hours actually worked differ from the hours submitted on the original timesheet. Explicit directions for completing timesheets are located in Appendix C.

SCHEDULE AND DELIVERABLES

TASKS

1. Install and operate adult enumeration weir. Target date for installation June 1. Target dates for operation, June 1-August 10.
2. Install automatic fish counter in the Laura fish pass. Target date June 5.
3. Operate and maintain fish counter and fish passes. Target dates June 7-August 10.
4. Collect random ASL samples from 600 adult sockeye during peak escapement periods. Target dates June 25 and July 25
5. Conduct weekly spawning surveys of Laura Lake, Gretchen Creek, and Gretchen Lake. Target dates July 1-August 10.
6. Collect daily fishery activity: (number or boats, type of fishing, location, number of people, etc). Target dates June 1-August 10.
7. Collect daily physical data: (air and water temperature, wind direction and velocity, precipitation and cloud cover). Target dates June 1-August 10.

DELIVERABLES

1. Daily adult enumeration numbers will be recorded on the *Pauls Bay Daily Escapement Reporting Form* and reported to the Project Biologist daily.
2. Number of fish passing through the Laura Fish Pass will be recorded and stored on the automatic fish counter until downloaded at the Kodiak office.
3. Adult sockeye salmon ASL data will be collected and analyzed by the Kodiak office catch and escapement sampling staff.
4. Physical data will be recorded on the *Pauls Bay Daily Physical Observation Form*.
5. Fishery use will be recorded daily on the *Pauls Bay Drainage Visitor Count Form*.
6. Spawning surveys will be recorded on the *Pauls Bay Drainage Spawning Survey Form*.

RESPONSIBILITIES

Project Biologist: Natura Richardson – ADF&G Fishery Biologist I

Field Staff: Brian Korth – ADF&G Fish and Wildlife Technician III (FWT III)

Bill Kane – ADF&G Fish and Wildlife Technician II (FWT II)

The project biologist, Ms. Richardson, will oversee the project operations and coordinate tasks so that the project goals are achieved. She will provide logistical and technical assistance, and write reports as required for the AKSSF Pauls Bay Sockeye Salmon Stock Assessment project. The FWT III field crew leader will coordinate day to day work schedules, collect and record data, as well as maintain responsibility for the timeliness and accuracy of all data collected. They are responsible for daily verbal reporting, writing bi-weekly reports and writing a brief end of season report. The FWT II is responsible for data collection and recording and assisting the crew leader in all aspects of the project. All field crew will follow the ADF&G safety guidelines, and ensure daily operations are conducted in order to achieve overarching project goals.

REFERENCES CITED

Dinnocenzo, J., and I. O. Caldentey. 2008. Kodiak Management Area commercial salmon annual management report, 2007. Alaska Department of Fish and Game, Fishery Management Report No. 08-45, Anchorage.

Honnold,S. G and J. A. Edmundson. 1993. Limnological and fisheries assessment of sockeye salmon (oncorhynchus nerka) production in the Laura Lake system. Alaska Department of Fish and Game, Division of Fisheries Rehabilitation, Enhancement and Development, Regional Information Report 130, Kodiak.

Schrof S. T., S. G. Honnold, J. Hicks, and J. Wadle. 2000. A summary of salmon enhancement, rehabilitation, evaluation, and monitoring efforts conducted in the Kodiak Management Area through 1998. Alaska Department of Fish and Game, Regional Information Report No. 4K00-57, Anchorage.

Wattum, M. L. *In Prep*. Kodiak Management Area salmon catch and escapement sampling operational plan, 2015. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Operational Plan, Kodiak.

FIGURES

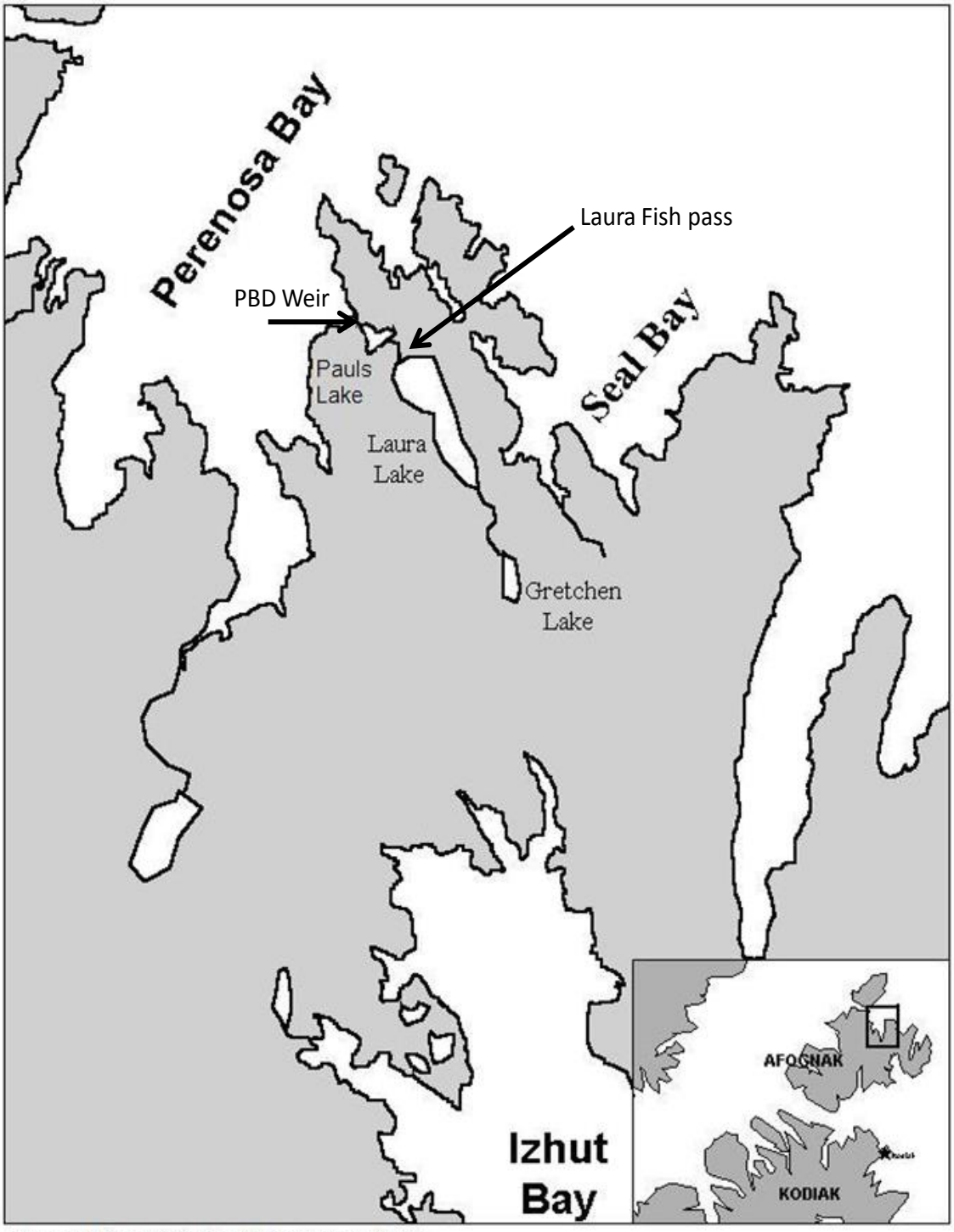


Figure 1.–Location of Pauls Bay drainage area.

Figure 2.–Sections of Pauls Bay Weir: The left figure is the long side and the right figure is the short side.

Figure 3.–Pauls Bay weir.

Pauls Bay Daily Escapement Reporting Form

	Sockeye Adults		Sockeye Jacks		Combined Sockeye		Other Species							
Date	Daily Counts	Cumulative	Daily Counts	Cumulative	Daily counts	Cumulative	King (d)*	King (c)*	Chum (d)	Chum (c)	Coho (d)	Coho (c)	Pink (d)	Pink (c)

* d=daily, c=cummulative

Notes: (bear activity, weather, holes in weir, etc)

Figure 4.–Pauls Bay Daily Escapement Reporting Form.

Laura Fish Pass Counter			
Date	Total	Adults	Jacks

Figure 5.–Laura Fish Pass Counter Form.

PAULS BAY DRAINAGE VISITOR COUNT				
Date	Boat(s)	Plane(s)	Fishery Use (commercial, subsistence, sport)	Comments (ie. name of vessel, location, activity, # fish, duration of visit)

Figure 6.–Pauls Bay Drainage Visitor Count Form.

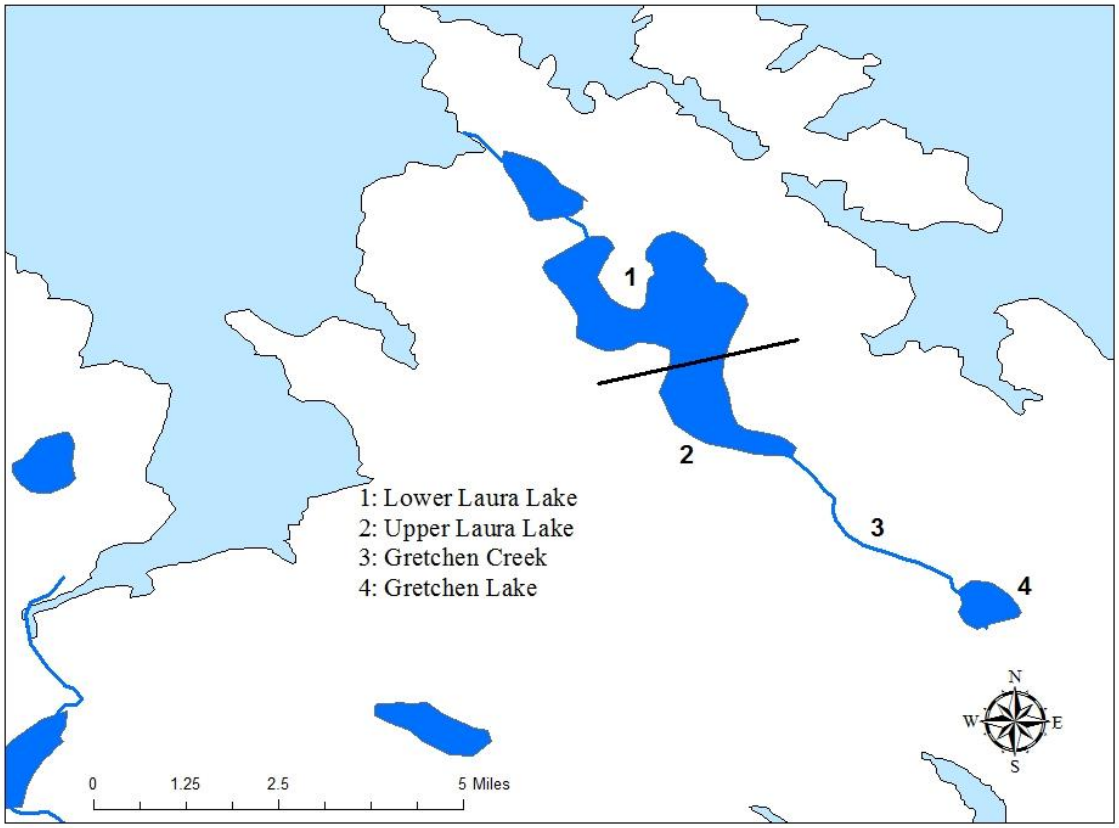


Figure 7.–Pauls Bay drainage spawning survey areas.

PAULS BAY DRAINAGE SPAWNING SURVEY

			# of Adult Sockeye			
Date	Personnel	Visibility	Upper Laura Lake	South Laura Lake	Gretchen Creek	Gretchen Lake

NOTES

Figure 8.–Pauls Bay Drainage Spawning Survey Form.

PAULS BAY DAILY PHYSCIAL OBSERVATION FORM

Date	Time	Air (°C)	Cloud cover %	Visibility (miles)	Wind direction	Velocity (mph)	Comments

Figure 9.–Pauls Bay Daily Physical Observation Form

APPENDIX A. GENETIC SAMPLING PROCEDURES

Appendix A1.–Procedure for collecting genetic tissue.

Non-lethal Sampling Finfish Tissue for DNA Analysis

ADF&G Gene Conservation Lab, Anchorage

I. General Information

We use axillary process samples from individual fish to determine the genetic characteristics and profile of a particular run or stock of fish. This is a non-lethal method of collecting tissue samples from adult fish for genetic analysis. The most important thing to remember in collecting samples is that only quality tissue samples give quality results. If sampling from carcasses: tissues need to be as "fresh" and as cold as possible and recently moribund; do not sample from fungal fins.

Sample preservative: Ethanol (ETOH) preserves tissues for later DNA extraction without having to store frozen tissues. Avoid extended contact with skin.

II. Sample procedure:

1. Tissue type: Axillary process; clip one axillary process from each fish.
2. Prior to sampling, fill the tubes half way with ETOH from the squirt bottle. Fill only the tubes that you will use for a particular sampling period.
3. To avoid any excess water or fish slime in the vial, wipe the axillary process dry prior to sampling. Using the dog toe nail clipper or scissors, clip off axillary process (1/2 -1" max) to fit into the cryovial.
4. Place axillary process into ETOH. The ethanol/tissue ratio should be slightly less than 3:1 to thoroughly soak the tissue in the buffer.
5. Top off tubes with ETOH and screw cap on securely. Invert tube twice to mix ETOH and tissue. After each sample, wipe the dog toe nail clippers or scissor blade so not to cross contaminate samples.
6. Data to record: Record each vial number to paired data information.

Discard remaining ethanol from the 500ml bottle before returning samples. Tissue samples must remain in 2ml ethanol after sampling. HAZ-MAT paperwork will be required for return shipment. Store vials containing tissues at cool or room temperature, away from heat in the white sample boxes provided. In the field: keep samples out of direct sun, rain and store capped vials in a dry, cool location. Freezing not required.

III. Supplies included with sampling kit:

1. Clippers – used for cutting the axillary process.
2. Cryovial – a small (2.0ml) plastic vial, pre-labeled.
3. Caps – to prevent evaporation of ETOH.
4. Cryovial box – neon box for holding cryovials while sampling.
5. Ethanol (ETOH) - in bulk Nalgene bottle.
6. Squirt bottle – to fill or "top off" each cryovial with ETOH. Squirt bottle not for ethanol storage.
7. Printout of sampling instructions.
8. Laminated "return address" label.

-continued-

Shipping: HAZMAT paperwork is required for return shipment of these samples and is included in the kit.

Return shipping code: Use sampling date

Ship samples to:

ADF&G – Genetics
333 Raspberry Road
Anchorage, Alaska 99518

Lab staff: 907-267-2247
Judy Berger: 907-267-2175
Chris Habicht: 907-267-2169

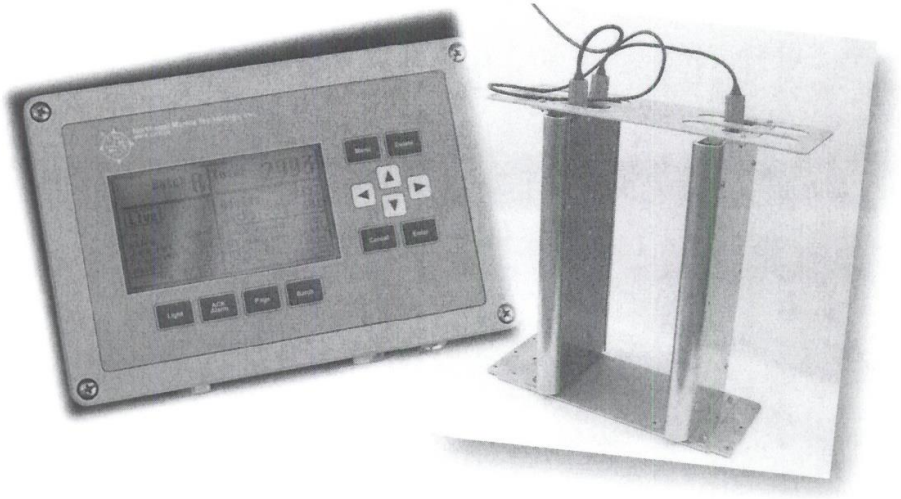
What to do with the samples after they are done and refreshed:

1. If you are doing paired sampling, label all the vials at the beginning of the season, you may not have time to do it later.
2. Double check the sample information with the log book to ensure accuracy.
3. Make sure all the bottles have internal labels and external port and series numbers (e.g. Chignik 20=CG20).
4. Put into air approved boxes that sampling supplies arrived in.

APPENDIX B. ADULT FISH COUNTER MANUAL

Northwest Marine Technology, Inc.

Adult Fish Counter



Northwest Marine Technology, Inc.
Anacortes, Washington, USA
www.nmt.us

Software Version 1.2
Manual Version 1.0

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Introduction

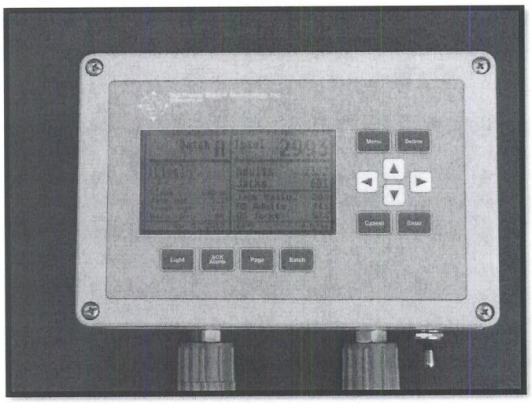
The Adult Fish Counter is designed to be installed in fishways and ladders to provide real time counts of fish migrating upstream or entering a hatchery.

The system includes a control box that can be installed indoors or outdoors and a sensor unit that is installed underwater within a fish channel. The system accounts for fish passing upstream or downstream through the sensors.

This first model of the Adult Fish Counter was developed for salmonids, and tallies adults and jacks separately, based on height. It graphs and displays the number of fish passing on an hourly, daily, and 30-day basis, and tracks water temperature. It can be programmed to sound an audible alarm or to send a "Target Reached" signal to an existing alarm system or another available indicator to let the operator know when a target number of fish have passed the sensor.

Description

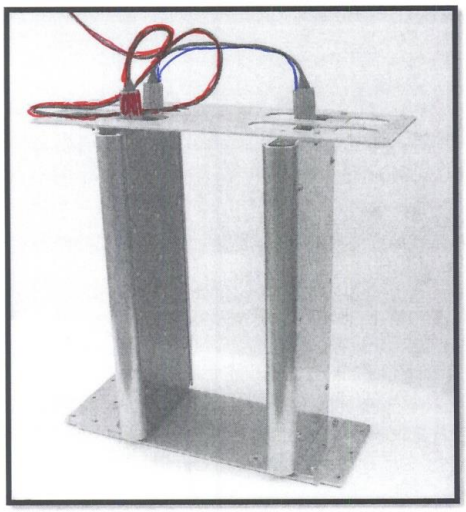
The system includes a main control unit and an underwater sensor unit. All interaction is conducted through the main control unit. The main control unit is housed in a NEMA 4X enclosure, and includes a display readable in both daylight and dark conditions and weather-proof buttons. A stainless steel hood is provided to further protect from sun and weather.



-continued-

The underwater sensor unit consists of two electronics panels in an aluminum mounting structure. These panels face each other and monitor fish passing between them using light beams. The light beams are arranged in two vertical rows, one upstream and one downstream. With this arrangement, when a fish passes between the panels, the sensor unit can determine whether or not the fish went all the way through the sensor and which direction it traveled. It therefore keeps accurate count of total fish passed, properly accounting for fish going back the opposite direction, and it is not fooled by fish sticking a nose or tail into the system and then reversing directions.

= main connector
place in downstream orientation to keep in default settings



Because the system relies on fish swimming through the device, it does not measure length. It does, however, measure greatest vertical height for both the upstream sensor and the downstream sensor, which is used to distinguish jacks from adults in the salmon application. There is a setting in the software called "Jack Height". If the images from both upstream and downstream sensors indicate a fish taller than the jack height, it is an adult. Similarly, there is a setting called "Trash Height" which is used the same way to ignore signals where both sensors don't measure something at least that tall.

-continued-

Installation

The Adult Fish Counter is intended to be installed in a fish passageway which encourages the fish through the sensor in single file and one at a time. It can handle some amount of overlap, but for the most accurate count, there needs to be some visible space between fish.

The best way to accomplish this is to install the unit in a submerged fishway dam which forces the fish to swim through a hole in the dam and therefore between the sensors. The water current through the sensor should be high enough to require the fish to swim through with a burst of effort. This will discourage fish loitering in and around the sensor. Minimizing the space between the plates increases the water flow when mounted on a solid dam wall, and also helps to reduce overlap between fish.

Also, there should be enough space within the passage upstream and downstream of the sensor so that large numbers of fish cannot accrue near the sensor and clog the sensor passage. Finally, there should be no shade or otherwise desirable environments near the sensor on either the upstream or downstream side. The best location is near the center of a long passageway that fish travel through but do not collect within.

The system needs to know which way through the sensor is upstream. In general, it does not matter which way the system is mounted, as long as the software is set correctly. In particular, however, there are some benefits of a certain configuration. One of the sensor plate units has two connectors and the other has only one. There is a short cable that connects the two plates together, and it can only be installed one way. The remaining connector connects to the main unit via a long cable. This connector is the "Main Connector". When placed into operation, this connector is either on the upstream side or the downstream side, so that is the setting that must be set correctly.

The data used for the on board demo was collected with the Main Connector in the downstream orientation, so this is the default setting. If the system is installed with the main connector downstream, there is no setting to change and the demo will show normal data and show positive counts. This is therefore the desired configuration. However, if the sensor is being installed in a waterway which flows to towards the west, placing the main connector downstream places the light sensitive plate on the North side of the river. In bright sun conditions, the system could have some trouble compensating for too much direct ambient light, although this has not been observed. In this case, it could be beneficial to mount the system with the connector upstream and change the software setting.

If the counter is on during the filling of the fishway, it is likely that the bubbles and turbulence associated with watering up the fishway will have caused erroneous counts of downstream fish, usually jacks. It is advisable to reset batches after the water flow has settled, or leave the system off until that time.

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Operation

When the system is powered up, it first displays a self-test screen and then immediately starts scanning the sensors and counting fish into all batches with no operator interaction.

Batches

There are three batches, Batch A, B, and C. Fish are always counted into all batches simultaneously. The user can display and reset the batches individually and use them any way they wish. To change the displayed batch, press the "Batch" button.

Pages

The unit provides five primary pages of information. The operator can toggle through these pages using the "Page" button.

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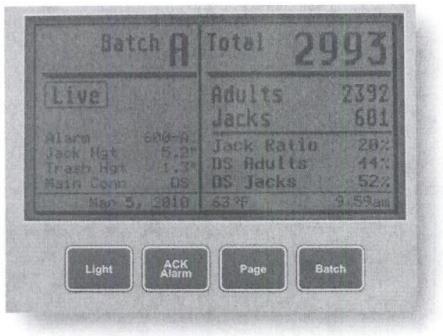
Main Page



When the system starts, it displays the main page. This page shows the data for one of the three batches. The user can toggle through these three batches using the "Batch" button. This changes only which batch data is shown, since any new fish counted is added to all the batches all the time.

The system also displays the Jack Ratio (percentage of total fish which are jacks), and the percentage of downstream jacks and adults. These final numbers are the ratios of downstream to upstream adults and jacks.

One critical item to notice on this screen is the "Live" indicator. This indicator shows that the sensors are operational and are being monitored. When the system is in Demo mode, this indicator will indicate "Demo". When the sensors are not operational or not connected, this indicator will read "Off Line". If it doesn't say "Live" it's not counting fish.

Also shown on this screen are some important settings. The alarm setting shows which batch the alarm is set for and the target number. It can be set in the alarm section of the menu. When the alarm sounds, it can be silenced by pushing the "ACK Alarm" button.

The settings for jack height and trash height are shown here for immediate reference. They can be set in the corresponding sections in the menu.

Finally, the main connector configuration, upstream or downstream, is shown here for quick reference. It is critical that this setting is correct. See the"Installation" section for more information.

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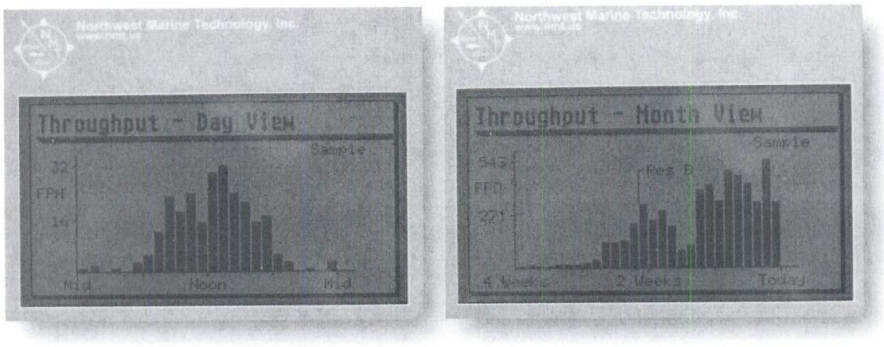
Throughput Pages



There are two throughput pages. The first one is the Day View. The day view shows throughput in fish/hour over a 24 hour period. When the page is first selected, the current days' throughput is shown. The user can use the left arrow button to look back at previous data, one day at a time.

The second throughput page is the Month View. The month view shows throughput in fish/day over a 28 day period. When the page is first selected, data from the most recent 28 days is shown. The user can use the left arrow button to look back at previous data, 1 week at a time.

The water temperature is also shown on these graphs, although not in these pictures.

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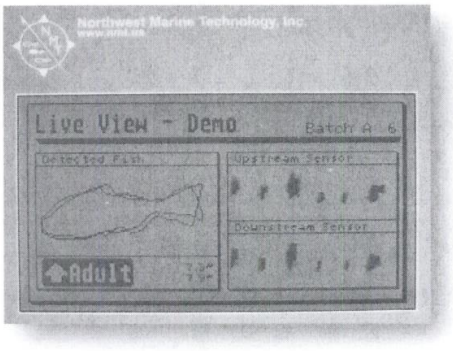
Live View Page



The user can watch the system work or troubleshoot issues by looking at the Live View page. This page shows two scrolling images which represent what each of the upstream and downstream sensors "see" over time. As a fish swims through the sensor unit, the silhouette of the fish is shown in these scrolling images. The system determines the direction of the fish and displays the fish outlines (as seen by the upstream and downstream sensors) in the image.

Since there is no length information for the fish, the fish is scaled for visual display by the scale factor in the menu. This setting is not important; it is just for visual appearance.

The direction of the fish as shown in the image is determined by whether the fish traveled upstream or downstream, it does not relate to which direction the fish's nose was pointing as it traversed the sensor. This also has no significance for the operation of the counter.

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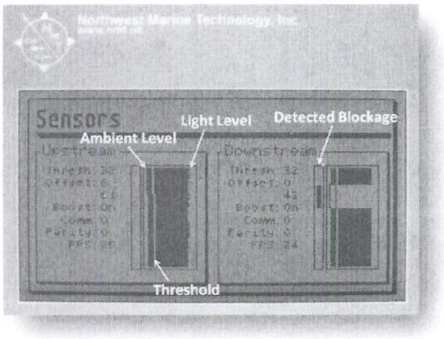
Sensors Page



The sensors page is used for setup and troubleshooting. It shows the signal level for each of the 128 sensors, 64 in the upstream section and 64 in downstream section. It also shows which sensors are currently below the threshold, or blocked, and where the threshold is set. You can put your hand in the way and see the signal levels drop below the threshold and see each of the individual sensors which are blocked detect the blockage. This can be seen in this image as a portion of the downstream sensor is blocked.

The signal level shows some effects of the ambient light level also. The right edge of each signal bar shown represents the signal level, while the left edge of each bar represents the ambient light level. The system automatically compensates for ambient light at each sensor, so the left edge of each bar will normally be right at zero anyway. But in some cases it may not. In most cases that's ok, because the threshold is actually relative to whatever the ambient light is for each sensor. And you can see that effect in this screen by shining a light into the sensors, or watching this screen as the sun comes out from behind a cloud. As long as the signal level stays above the threshold, everything will work just fine. If the left edges of the bars are near the right side of the display, the system is having trouble compensating for the ambient light and therefore the sensor may need to be shaded a bit.

This page also shows the current settings for threshold and boost. These are controlled by first going through the menu and enabling sensor settings. That operation brings you back to this page and allows changing of these settings. The upstream and downstream sensors are independent with respect to these settings.

As described previously, the threshold setting is set relative to the ambient light level. It can therefore be set very low and work reliably. The lower it is set, the less likely the system will detect bubbles. Earlier versions of software default to 20, but it should really be reduced to about 4 or 8 to start with.

The boost setting doubles the light output for each sensor during each scan. This decreases the chance of the system detecting bubbles, but comes at the cost of more electrical current consumption. The

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default is off, but it should probably be turned on for most applications. If the sensor is fully submerged and suffers no bubbles or vortices, it is probably not necessary to turn the boost on.

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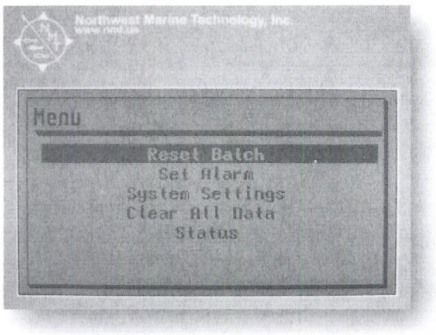
Menu

Menu Password: MENU-ENTER-MENU

Pressing the "Menu" button will cause the controller to ask for the password. Then the sequence, "Menu", "Enter", "Menu" will allow access to the menu. Any other button sequence will return.



Use the up and down buttons to select the menu item and press "Enter." The following items are available in the main menu:

Reset Batch – Opens the "Reset Batch" screen. This screen allows the resetting of any of the three batches or the resetting of all batches at once. Use the right and left arrow buttons to choose which batch to reset and then press enter to reset.

Set Alarm – Opens the "Set Alarm" screen. This screen allows the setting of the alarm. Use the right and left arrow buttons to control the cursor below the alarm target value. Use the up and down buttons to adjust the digit above the cursor. Use the "Batch" button to change to which batch the alarm will respond. Setting the alarm to zero will disable the alarm function.

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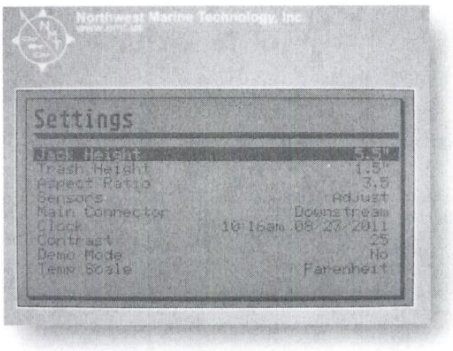
System Settings – Opens the "System Settings" screen.



Use the up and down buttons to navigate up and down the list. Use the "Right" or "Enter" button to adjust the value, and use "Left" or "Cancel" to go back. When adjusting the value, use the up arrow and down arrow buttons to change it. This screen provides access to the following settings:

Jack Height – This setting determines the threshold between adults and jacks. If both the upstream and the downstream sensors measure the fish taller than this value, it is counted as an adult; otherwise it is counted as a jack.

Trash Height – This setting determines the threshold between trash and fish. If both the upstream and downstream sensors measure the object larger than this, it is counted as a fish, otherwise it is ignored.

Aspect Ratio – This is the ratio of fish length to fish height. This value is used only for visual display of detected fish on the Live View screen. It has no bearing on the operation or accuracy of the counter.

Sensors – Selecting "Adjust" on this item allows the thresholds and boosts on the Sensors page to be adjusted.

Main Connector – This setting must match the physical installation of the sensor. Fish are counted as positive if traveling from downstream to upstream and negative if traveling the opposite direction. If installed wrong, counts will be negative and ratios will not be valid. See the installation instructions. The choices are "Upstream" or "Downstream", and refer to the relative location of the main connector as installed. The default value is downstream and the demo data in the unit matches a downstream installation.

Clock – Allows setting the onboard real-time clock. Use the up, down, right, and left arrow buttons to navigate through and change the settings.

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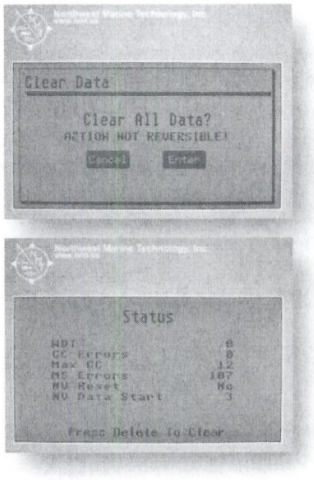
Contrast – Use the up and down arrow buttons to adjust the contrast. Contrast is also adjustable while viewing the Live Image screen by using the up and down arrow buttons, and during startup by holding down any other button while powering up, and then using the up and down arrow buttons.

Demo Mode – Starts and stops the demonstration program. This program reads stored data and runs exactly as normal. It therefore adds to the current batch and throughput data. It must not be used at any time during actual data collection.

Temp Scale – Allows choice of Celsius or Fahrenheit temperature scales.

Clear All Data – Allows the clearing of all batch and throughput data. Resetting the batch does not clear the data. The data remains in order to show throughput, which is associated with calendar dates, not batches. The downside of this is that large amounts of data can result in the system taking longer to start up, perhaps several seconds after a year's worth of data. Clearing the data one time every 1 or 2 years is recommended.



Status – This screen shows various technical data only of interest to the manufacturer.

Maintenance

Use only soap and water and a soft cloth on the sensor faces. Glass cleaners and other harsh chemicals can cause the polycarbonate cover to haze and become partially opaque. Also, use no abrasives.

Do not store in direct sunlight or heat for long periods of time. Do not expose the cable ends and locking sleeves to long periods of direct sunlight, although the cables themselves are uv-resistant. High temperatures such as a closed car in hot weather could ruin the underwater units.

The underwater connectors should be clean and lubricated with silicone or other dielectric grease prior to connection. They are best stored connected or bagged, if stored in a dirty environment.

APPENDIX C. TIMESHEET INSTRUCTIONS

TIMESHEET INSTRUCTIONS

All ADF&G employees must fill out a timesheet biweekly and these timesheets must be turned in to the Administrative staff in Kodiak in a timely manner. Please follow these instructions when filling out your timesheets to avoid payroll problems. When a flight comes out to drop off groceries, or for any other reason, near the end of a pay period, camp personnel need to send in their timesheets. Fill in the timesheet up to the day you send them in and attempt to project your remaining hours worked.

Fill out each of the following on the top of the timesheet:

Pay period: pay periods start on the 1st or 16th of each month and end on the 15th or end of the month (example: June 1-15 or June 16-30).

EIN: your employee identification number

Name: full name

Division: Commercial Fish

In the actual timesheet table fill in the following items:

Day: Monday, Tuesday, etc.

Date: 6/16, 6/17, etc.

Hours worked box: start and stop time in military time.

Code 1: fill in the number of hours worked for that day (see example in Appendix G2).

Work hours and Code 1 Totals should both equal the sum of daily hours worked. If your timesheet is sent in before the end of the pay period, project your time for the remaining days so you can total your columns.

Charge to Table located on the bottom left-hand side of the timesheet should be left blank unless otherwise instructed by your project supervisor.

Comments Table located on the bottom right-hand side of the timesheet should be left blank unless otherwise instructed by your project supervisor.

Employee's signature and date: Be sure to sign and date your timesheet.

Crew leaders are responsible for reviewing each crew member's timesheet before sending them to town to ensure that they are properly filled out.

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TIMESHEET SAMPLE

ALASKA DEPARTMENT OF FISH AND GAME Time and Attendance Report

Pay period ending: 5/15/14 EIN: 123321 Name: John Johnson Division Comm Fish

Record times in military format. Example: 6:00 p.m. = 18:00. If you work past midnight, stop at 23:59 and resume at 00:01 the next day.

Day	Date	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Leave Taken		Sea Duty	Standby	Hazard	Code 1	Code 2	Code 3	Code 4	Holiday / Leave	Work Hrs Total
Thu	5/1	8:00	12:00	13:00	16:30												7.5					7.5
Fri	5/2	8:00	12:00	13:00	16:30												7.5					7.5
Sat	5/3	8:00	12:30	14:00	18:00												8.5					8.5
Sun	5/4	8:00	12:00	13:00	16:30	17:00	19:00										9.5					9.5
Mon	5/5	8:00	12:00	13:00	16:30												7.5					7.5
Tues	5/6	8:00	12:00	16:00	19:00												7.0					7.0
Wed	5/7	8:00	12:00	13:00	16:30												7.5					7.5
Thr	5/8																					
Fri	5/9	8:00	12:00	13:00	16:30												7.5					7.5
Sat	5/10	8:00	12:00	13:00	16:30												7.5					7.5
Sun	5/11	8:00	12:00	13:00	16:30												7.5					7.5
Mon	5/12	8:00	12:00	13:00	16:30												7.5					7.5
Tues	5/13																					
Wed	5/14																					
Th	5/15	8:00	12:00	13:00	16:30	17:00	19:30										9.0					9.0
TOTALS																	94					94

	Charge to:		
	Notation	CC/LC	%
1			
2			
3			
4			
		Total	

Comments

Comments

We certify that the information provided above is true and correct.

John Johnson Date: 5/15/14
Employee's Signature

Date:
Supervisor's Signature

Date:
Approving Officer Signature

Leave Use Codes

H=Holiday	X=Comp Ann
S=Sick	Y=Comp Pers
A=Annual	C=Court
P=Personal	L=LWOP

Premium Pay Codes (PPC)

110 - Sea Duty	250 - Straight Time
206 - Hazard	251 - Overtime
211 - Standby	

Holiday, Leave, Overtime and Premium Pay Overrides

Codes	Hours	CC/LC
Leave & Holiday		

Ver 1.0.4
Revised 2/20/09