



Alaska Department of Fish & Game's Anadromous Waters Catalog

ALASKA eDNA WORKSHOP

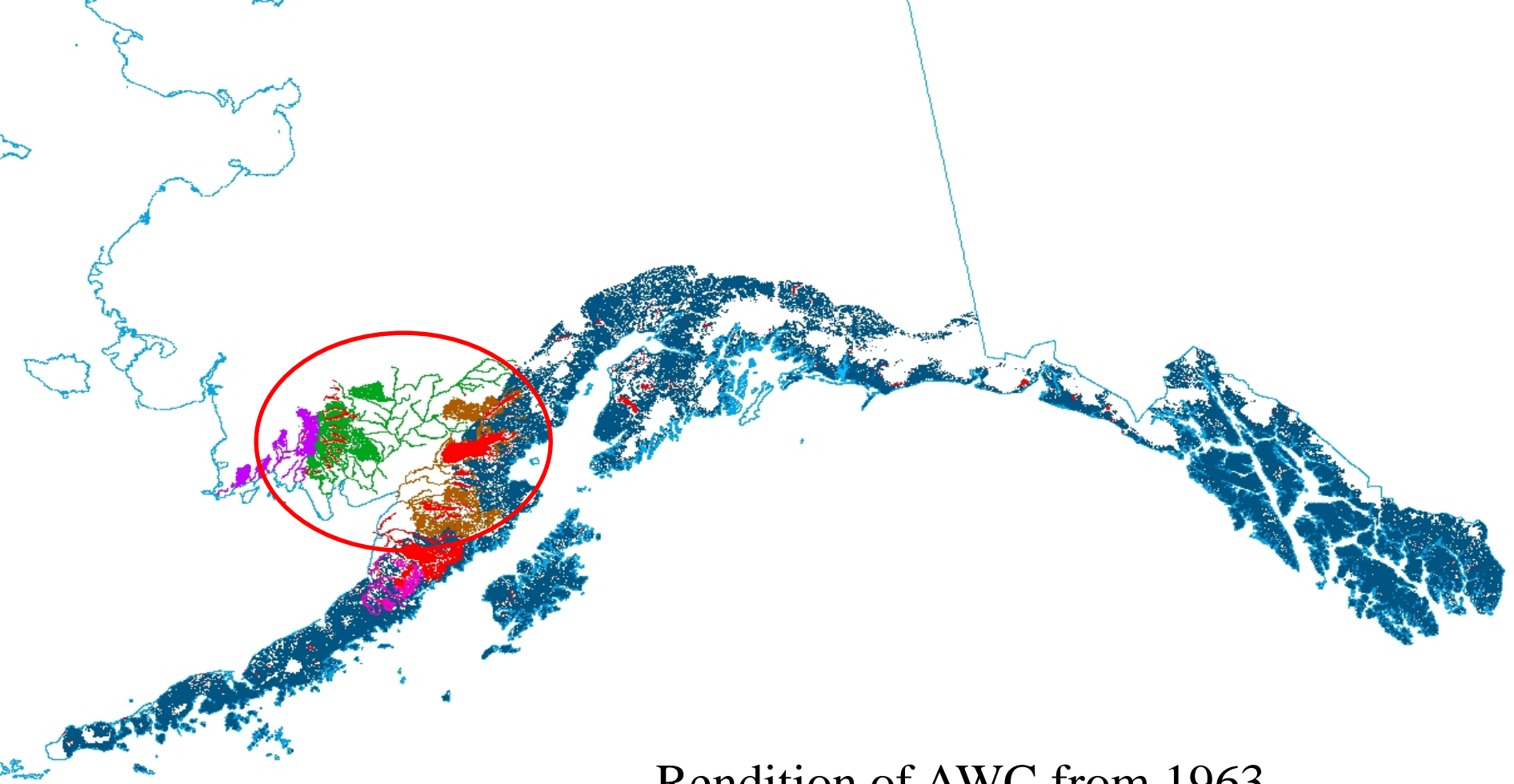
April 1, 2019

J. Johnson

Alaska Department of Fish and Game

Division of Sport Fish

Anchorage, Alaska



Rendition of AWC from 1963

Alaska's Anadromous Streams





Why do we do this?

It is the law

AS 16.05.871



State of Alaska
Department of Fish and Game
Division of Sport Fish

Nomination Form
Anadromous Waters Catalog

Region South eastern USGS Quad(s) Juneau b-6

AWC Number of Water Body 114-23-10089

Name of Water body Glen's Ditch ☐ USGS Name ☒ Local Name

☒ Addition ☐ Deletion ☐ Correction ☐ Backup Information

For Office Use

Nomination # 150175

Revision Year: 2016

Revision to: Atlas Both ☒ Catalog X

Revision Code: A-3, B-1

James J. Hachowick 8/31/2015
Fisheries Scientist Date

Michelle H. 8/31/15
Habitat Operations Manager Date

CH 8 Jun 15
AWC Project Biologist Date

TJ 9/25/15
GIS Analyst Date

Species	Date(s) Observed	Spawning	Rearing	Present	Anadromous
chum fry	4-23-15		yes		<input checked="" type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>

IMPORTANT: Provide all supporting documentation that this water body is important for the spawning, rearing or migration of anadromous fish, including: number of fish and life stages observed; sampling methods, sampling duration and area sampled; copies of field notes; etc. Attach a copy of a map showing location of mouth and observed upper extent of each species, as well as other information such as: specific stream reaches observed as spawning or rearing habitat; locations, types, and heights of any barriers; etc.

Comments

On 4-23-15 we caught 5 chum salmon fry in a dip net around one pm. We saw big school of chum fry these fry were caught and observed at: N58°24.318 W135°42.763. We had minnow trap, but did not get them in in trap. We did catch one coho in a minnow trap.

Add local name # Glen's Ditch
add Chum salmon REARING to Creek

Name of Observer (please print): 4th and 5th Grade, Gustavus School

Signature: _____ Date: 5-14-15

Agency: 4th-5th grade Gustavus School

Address: PO Box 120, Gustavus, AK, 99826

ALASKA DEPT. OF
FISH & GAME

This certifies that in my best professional judgment and belief the above information is evidence that this waterbody should be included in or deleted from the Anadromous Waters Catalog.

Signature of Area Biologist: Chad Soiser Date: 5/20/15 Revision 11/13

Name of Area Biologist (please print): Chad Soiser

Cooley Bruno
Cooley Bruno
Lily Hode
Lily
George
Yarrow

Nataley Patrick
Nataley Patrick

Myler Zink
Kvier Zink

Penelope Jarvis
PENELOPE JARVIS
Serena

Norah Hazen
Norah Hazen
Jessie Soder
Dominick Johnson

Kona Atkins
KONA
Atkins
Daniel Bohike
Daniel Bohike

WHY NOT USE eDNA to revise AWC?

After all

Real Science

May be -

- less expensive – more site visits/day


- safer – no e-fishing or bait (that may attract critters), no stress on fish

- easier – no ARP requirements, less training

May require -

- less gear – no e-fisher or traps

- less effort – no stream walking or heavy stuff to carry, single point data collection

- 
- 1) eDNA does not distinguish between anadromous and non-anadromous individuals,
 - 2) eDNA methods may lead to false positives,
 - 3) eDNA methods may lead to false negatives,
 - 4) eDNA does not provide life stage information,
 - 5) eDNA cannot be used to determine abundance,
 - 6) eDNA cannot distinguish vitality



1) eDNA does not distinguish between
anadromous and non-anadromous individuals

At least four anadromous fish species found in
AK occur as resident & anadromous –
Sockeye/kokanee, steelhead/rainbow trout,
Dolly Varden, cutthroat trout, whitefish sp.



2) eDNA methods may lead to false positives

Indication of the presence of fish species where none exist –

HOW ?

- Sample contamination
- Failure to adhere to protocol
- Contamination between sites
- Natural processes



3) eDNA methods may lead to false negatives

HOW ?

- Failure to adhere to protocol
- Not enough undegraded eDNA in sample



4) eDNA does not provide life stage information

AWC documents fish species occurrences by
life stage

5) eDNA cannot be used to determine abundance

- Department requires that nominated revisions to the AWC are based on observations of at least two fish of the same species and life stage at the point in a water body
- Sequence read abundance and species abundance are too weakly linked
- Or establish “upper point” of fish occurrence



6) eDNA cannot distinguish vitality

Analysis of eDNA cannot tell whether DNA collected came from living or dead fish.

Environmental DNA can persist in the environment for extended periods of time after death of the animal and is more concentrated in aquatic sediments than surface water

A vertical strip on the left side of the slide shows a topographic map of a river area, with contour lines and a yellow line indicating a river or road.

Possible applications of eDNA sampling results for AWC nominations

Supplement fish-in-hand sampling data submitted w/nomination

Identify potential sampling areas where eDNA results indicates possible presence of one or more anadromous fish species not previously sampled or otherwise documented by other means

Department will accept eDNA information to document and display observations in Alaska Freshwater Inventory (AFFI) since data is not used to establish regulatory protection of water bodies



QUESTIONS?


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through July 31st



AS 16.05.871 requires ADF&G to “specify” or list, “the various rivers, lakes, and streams or parts of them that are important for the spawning, rearing, or migration of anadromous fish.” It also requires anyone wanting to construct a hydraulic project, or use, divert, obstruct, pollute, or change the natural flow or bed of a specified water body, or operate a vehicle in these specified water bodies to contact ADF&G for written approval before beginning the construction, activity, or use.

AS 16.05.881 establishes that any person or organization beginning a construction or use without the commissioner’s written approval is guilty of a misdemeanor.

AS 16.05.891 authorizes ADF&G employees to issue oral approvals to a riparian landowner for removing obstructions or repairing existing structures without reviewing prepared operating plans in the event of an emergency arising from weather or stream flow conditions.

AS 16.05.896 establishes the penalty for causing material damage to spawning beds or preventing or interfering with migration of anadromous fish as a misdemeanor.

AS 16.05.901 specifies that anyone violating **AS 16.05.871 – .896** is guilty of a Class A misdemeanor.

AS 16.05.841 requires construction and maintenance of a fishway and a device for efficient passage of downstream migrants for any dam or other obstruction built across a stream frequented by salmon or other fish, the submission of plans and specifications for review and approval by ADF&G and that the structure be kept open, unobstructed, and supplied with enough water to maintain the free and efficient passage of fish through it.

If a fishway is determined by the commissioner to be impractical, **AS 16.05.851** allows for the owner/applicant to compensate for the loss resulting from the dam or obstruction by paying a lump sum acceptable to the commissioner to the fish and game fund; convey a site and construct a new hatchery and all related facilities; or fund the expansion, maintenance, and operation of an existing hatchery.

AS 16.05.861 sets penalties or fines for violating **AS 16.05.841** and **16.05.851** and any regulations adopted under them. Owners of dams or obstructions who fail to comply with **AS 16.05.841** or **16.05.851** within a reasonable time designated in a notice from the commissioner are guilty of a misdemeanor and subject to a fine of up to \$1,000. The statute further notes that each day the owner fails to comply is a separate offense and that the dam or obstruction is a public nuisance and subject to abatement.