

Invasive Northern Pike Suppression on Alexander Creek (A Salmon Restoration Project)



AKSSF



MATCH



Chinook & Chum
Salmon Fry

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Background /History

Introduction of Pike/Location

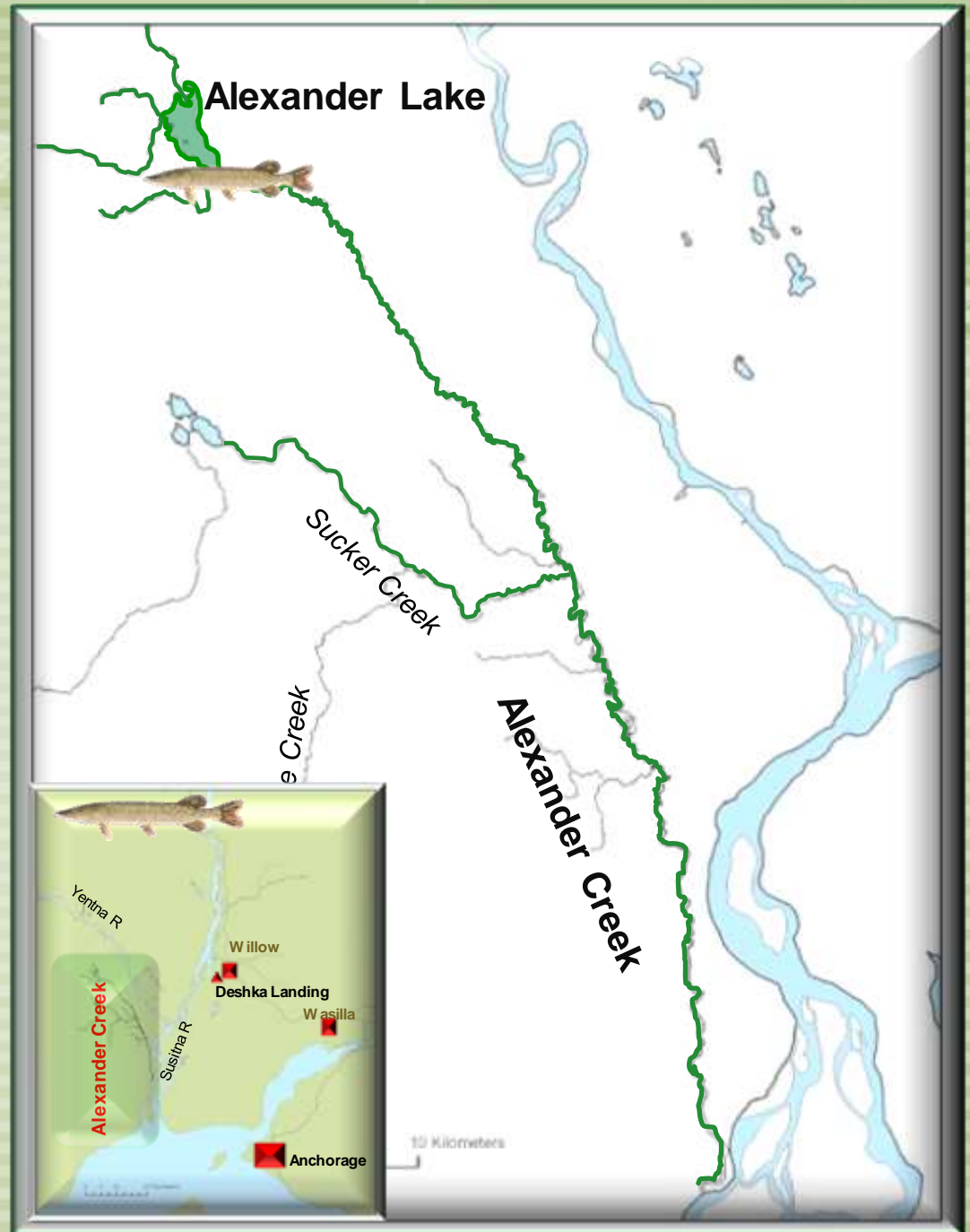
System Morphology

Pre-Pike Salmon Abundance &
Resident Fish Abundance

Alex Creek Salmon Contribute to
CI Subsistence & Commercial

Pre-Pike Chinook Spawning Area

Pre-Pike Economy





PRIMARY GOAL

Is To Suppress Alexander Creek's Invasive Northern Pike Population, Whereby;

Restoring Alexander Creeks Anadromous And Resident Fish Populations, And

Re-establishing Sport Fisheries In The Drainage To Near Former Levels

Specific Objectives



Initiate an annual, large-scale pike removal protocol in side channel sloughs of Alexander Creek to remove 80% of invasive pike, secondly



Document spatial and temporal movement patterns of northern pike to and from the Lake, and finally



As a tool to gauge current and long-term success of the northern pike suppression efforts, a crucial component of this project is to; monitor adult salmon returns & resident fish production & to assess juvenile salmon production & spatial behavior .



**Suppression /Pike
Removal (Gillnets)**



**Pike Movement/Migration
(Standard Radio Telemetry)**

EVALUATION TECHNIQUES



**Adult Salmon/Resident
Fish Assessment
(Aerial Surveys & SWHS)**



**Juvenile Salmon
Monitoring
(Minnow Traps)**



**Food Selectivity and
Availability In Pike Diets
(Stomach Content)**

Project Methodology /Techniques



Suppression Efforts

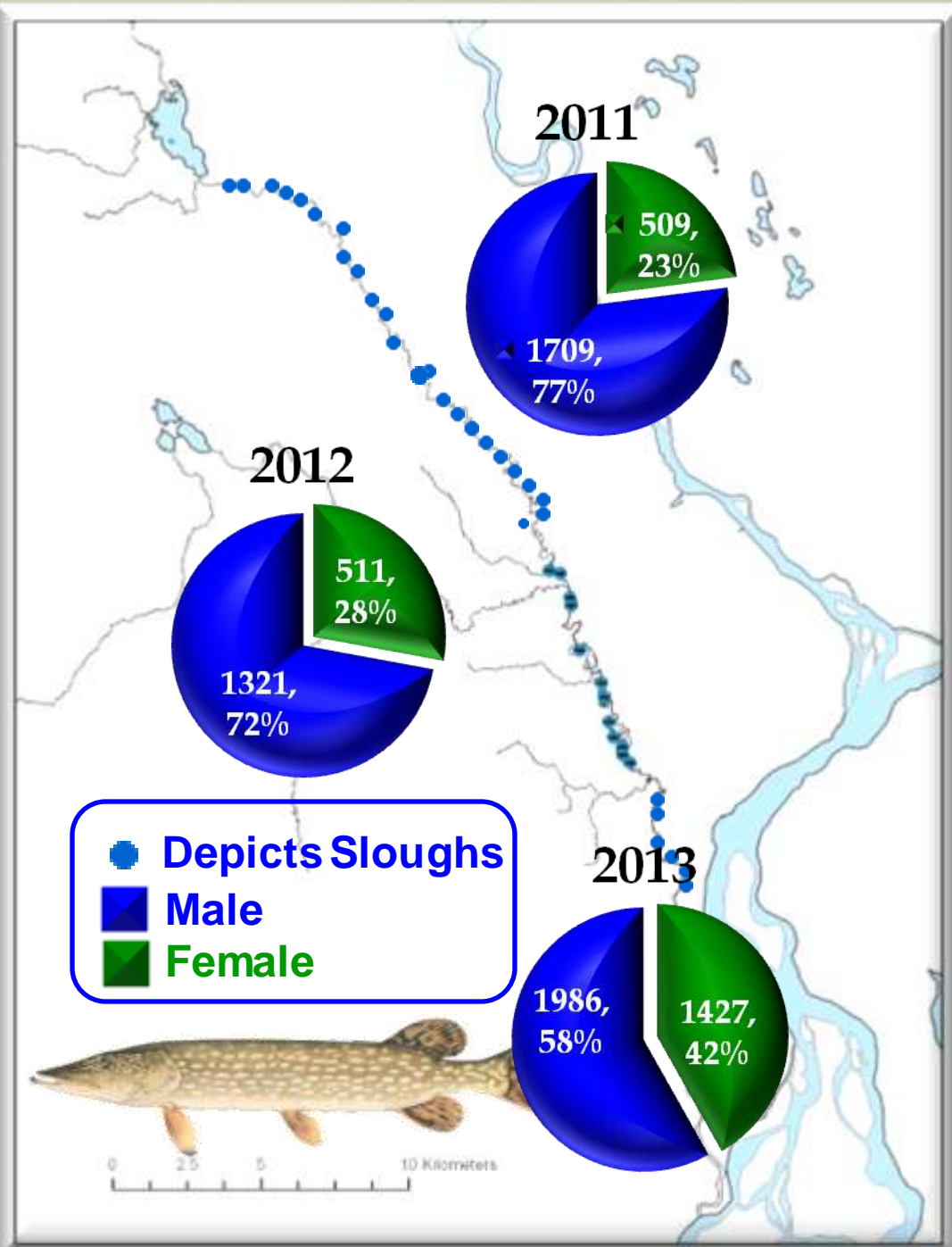
COMMENCED IN THE SPRING 2011-2013, WHERE 62 SIDE SLOUGH CHANNELS WERE GILL-NETTED IN A 40 MILE STRETCH OF ALEXANDER CREEK TO REMOVE AS MANY PIKE AS POSSIBLE

2011 4008 Pike captured & dispatched

2012 2947 Pike captured & dispatched

2013 3543 Pike captured & dispatched

TOTAL 10,498 Including Pilot **12,000**



Netting Efforts

Setting Gillnets



Spawning Habitat



Side Slough Channels



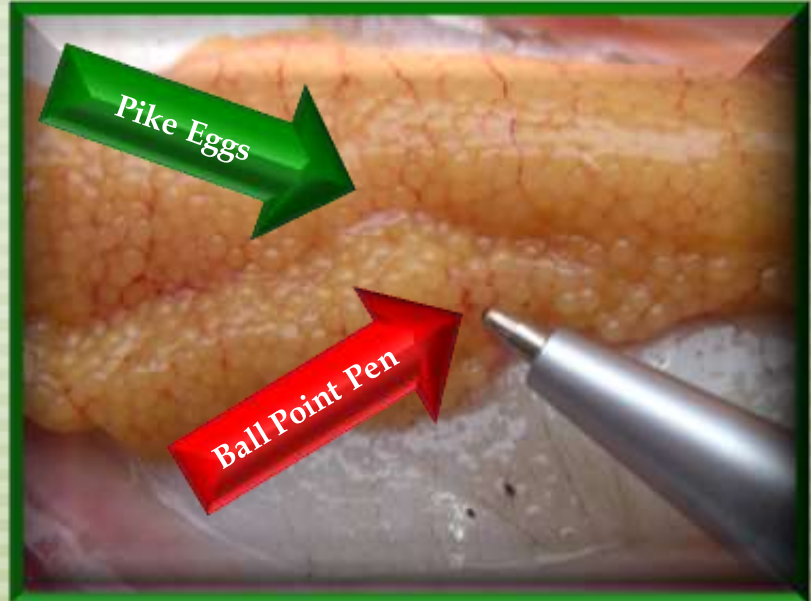
Biological Information



GILLNET BI-CATCH



Netting Efforts



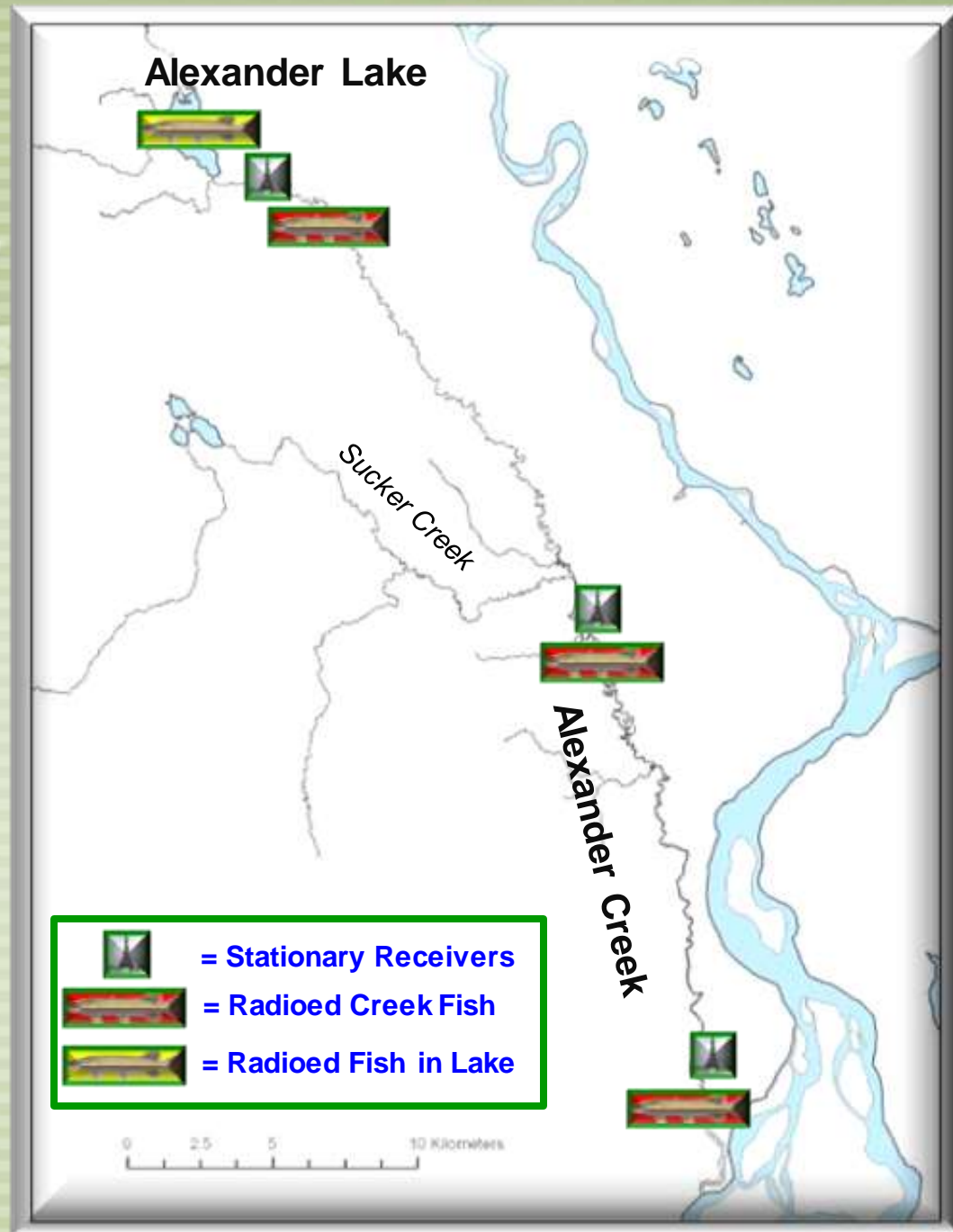
Telemetry

IN AN EFFORT TO DETECT SPATIAL AND TEMPORAL MOVEMENTS OF PIKE TO AND FROM THE LAKE , 150 PIKE WERE CAPTURED AND SURGICALLY IMPLANTED WITH RADIO TRANSMITTERS

125 in the Lake 25 in the Creek

Stationary Towers downloaded every two months

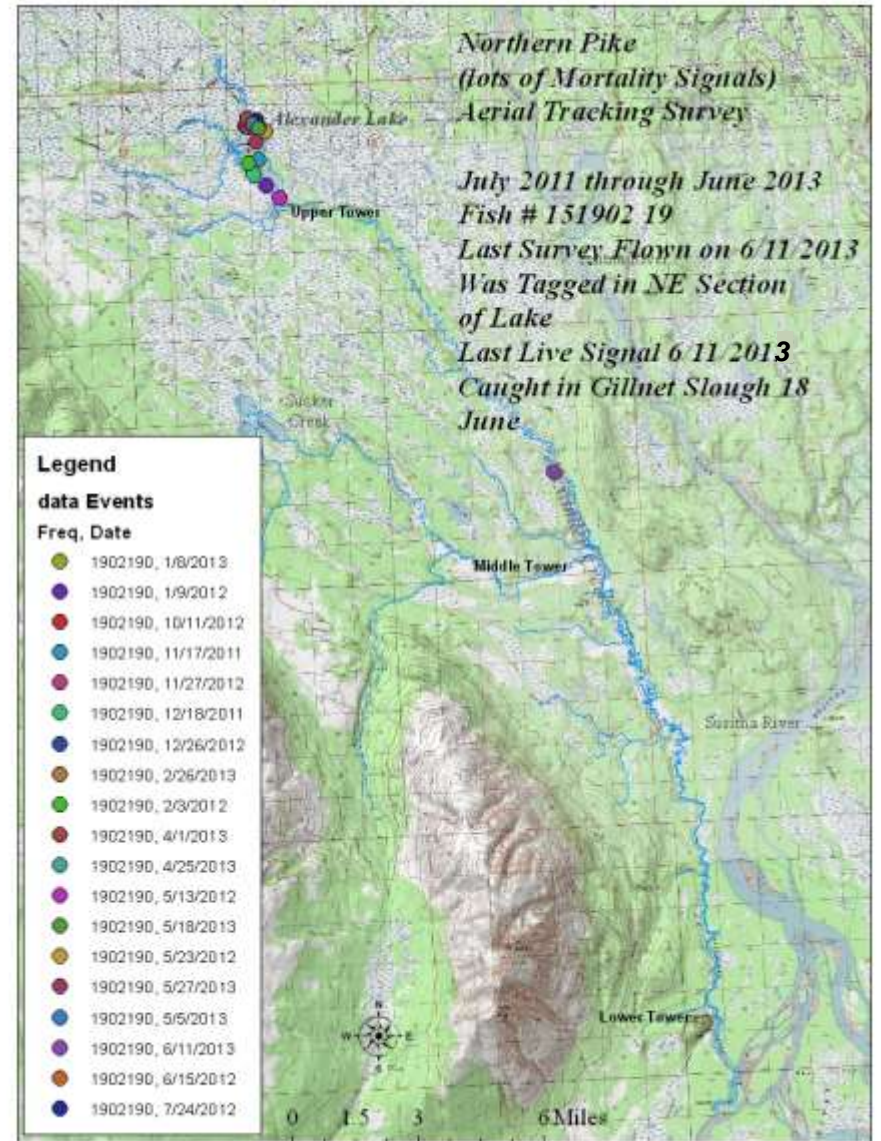
Aerial Tracking Surveys are flown monthly



Arc View GIS Maps Generated From Tracking Surveys

Movement of All Radio Tagged Fish for Survey Conducted (January 9, 2013)

Movement of Individual Fish Over Time Throughout Studies Duration



Juvenile Salmon Monitoring Protocol

*Identify Spatial & Temporal Shifts in Juvenile
Salmon Abundance*

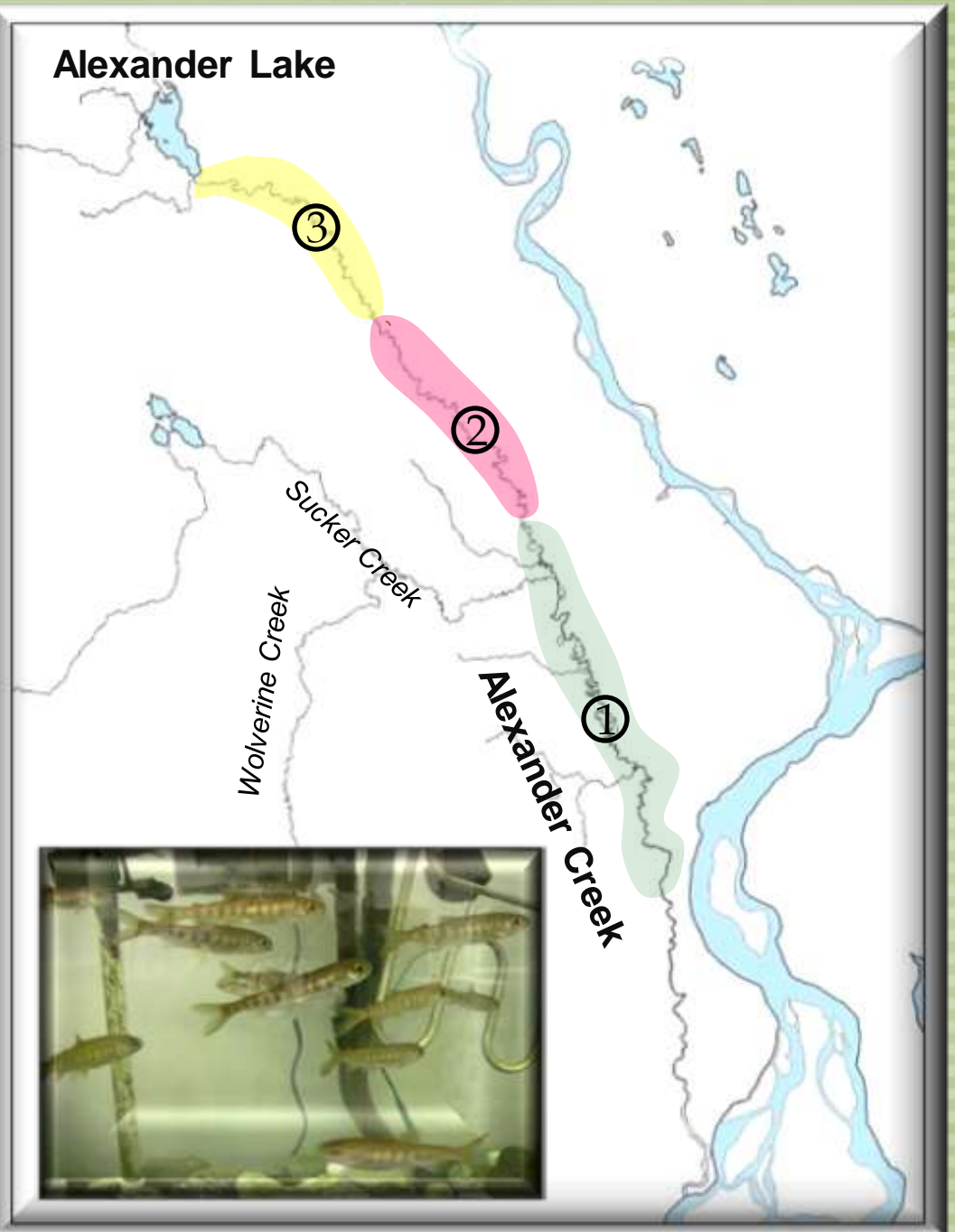
- * **Two Sampling events**
- * **Stream divided into 3 Study Areas**
- * **Equal sampling effort between areas**

**A total of 180 minnow traps were set
for each of the two sampling events**

- * **1/2 in mainstem**
- * **1/2 in side-slough channels**

**All traps were baited/w salmon roe &
soaked for a 24Hr period**

**All species captured were documented
& enumerated**



Document Increase/ Decrease in CPUE of Salmonids Between Years and Study Sections



ADULT SALMON MONITORING EFFORTS (DOCUMENT INCREASED PRODUCTION)

Chinook Salmon

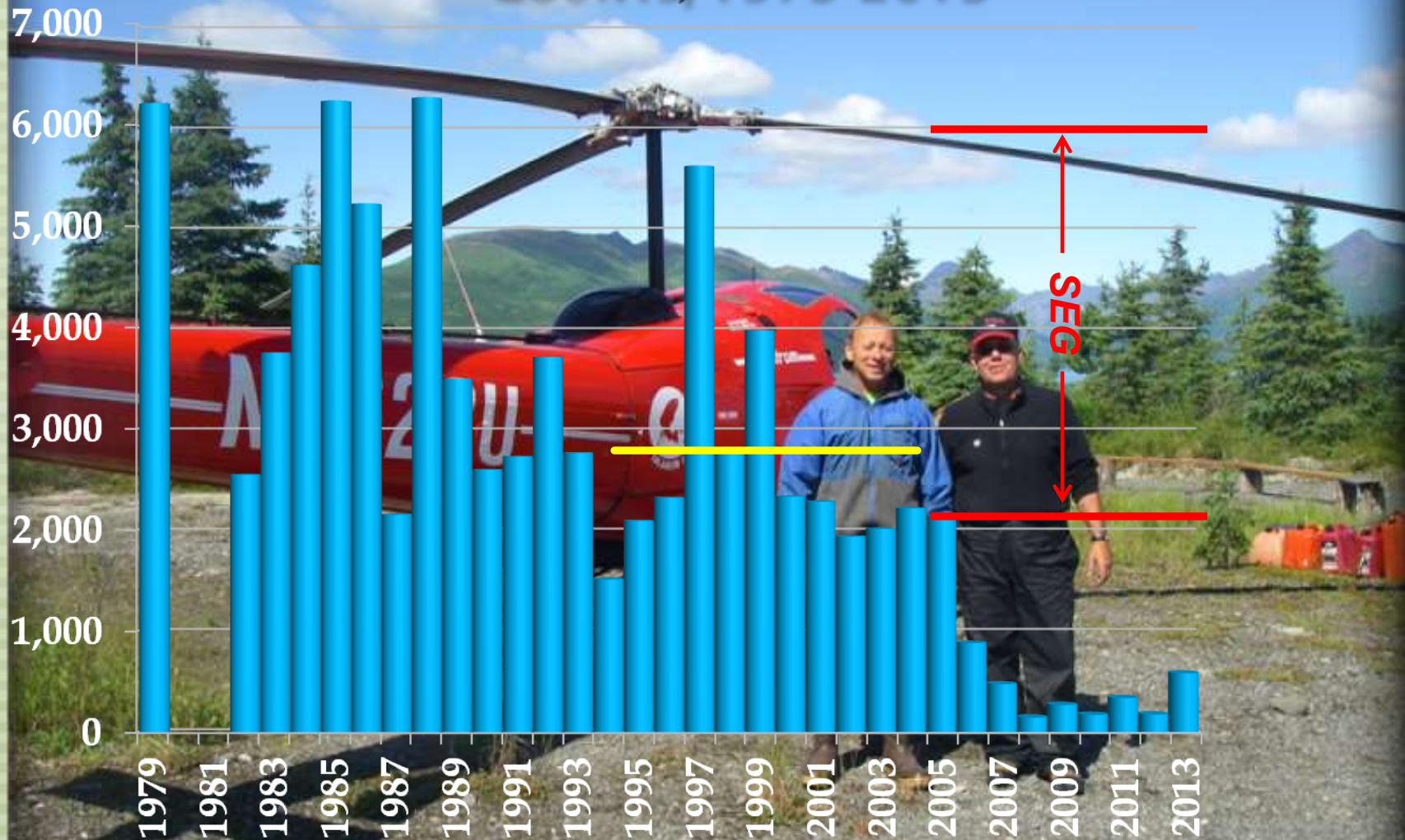
- Aerial Surveys
- Spawning Numbers
- Recolonization Of Spawning Areas

Other Salmon & Resident Fish

- Department's SWHS
- Angler Effort
- Harvest and Catch Trend Information

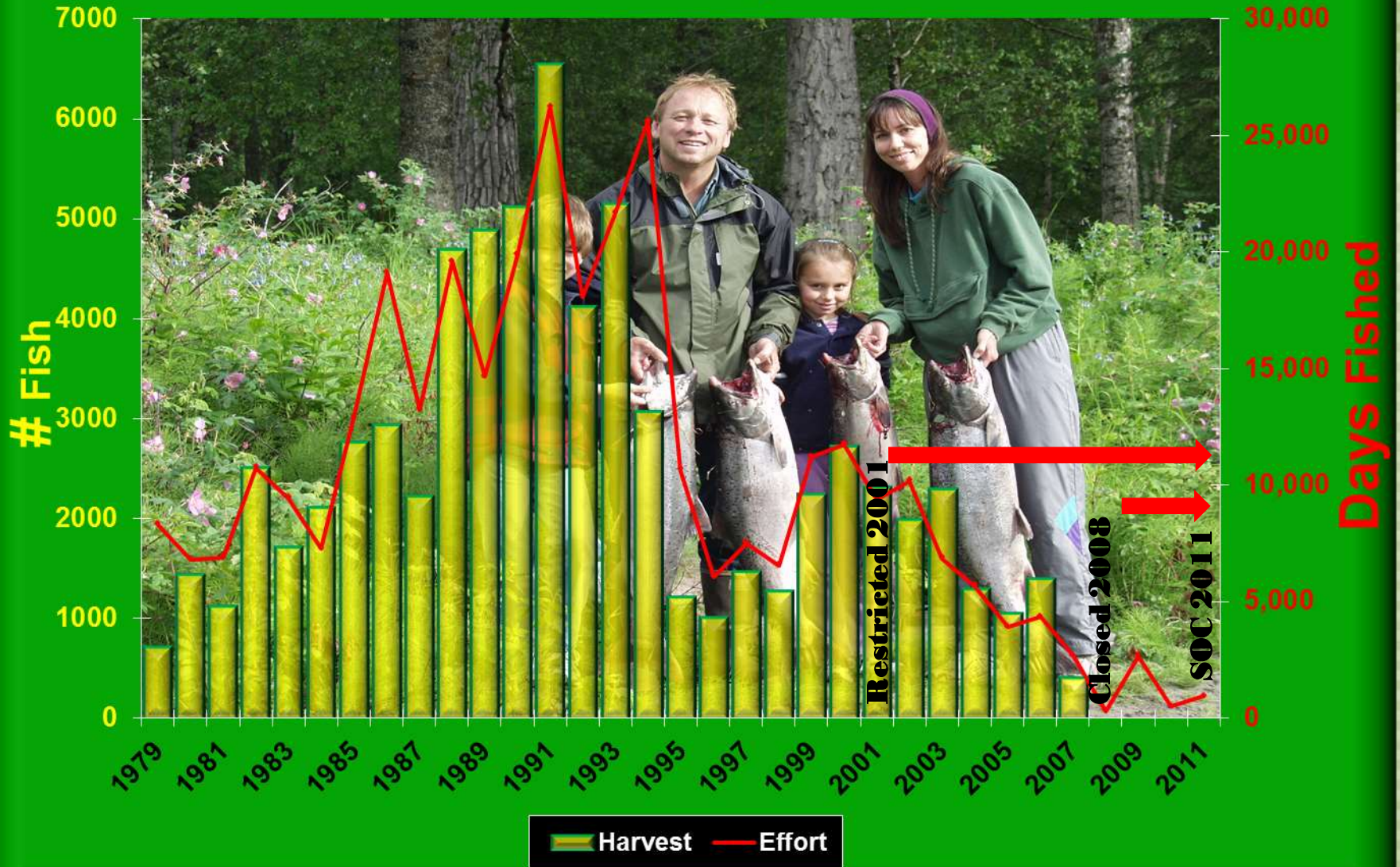
Aerial Surveys

ALEXANDER CREEK KING SALMON ESCAPEMENT INDEX COUNTS, 1979-2013



**** Current Escapement goal range is 2,100 – 6,000 fish, depicted by the red lines old EG depicted by yellow line (2,700).**

King Salmon Harvest and Effort on Alexander Creek, 1979-2012



Sport Harvest of Coho Salmon From Alexander Creek, 1977- 2012



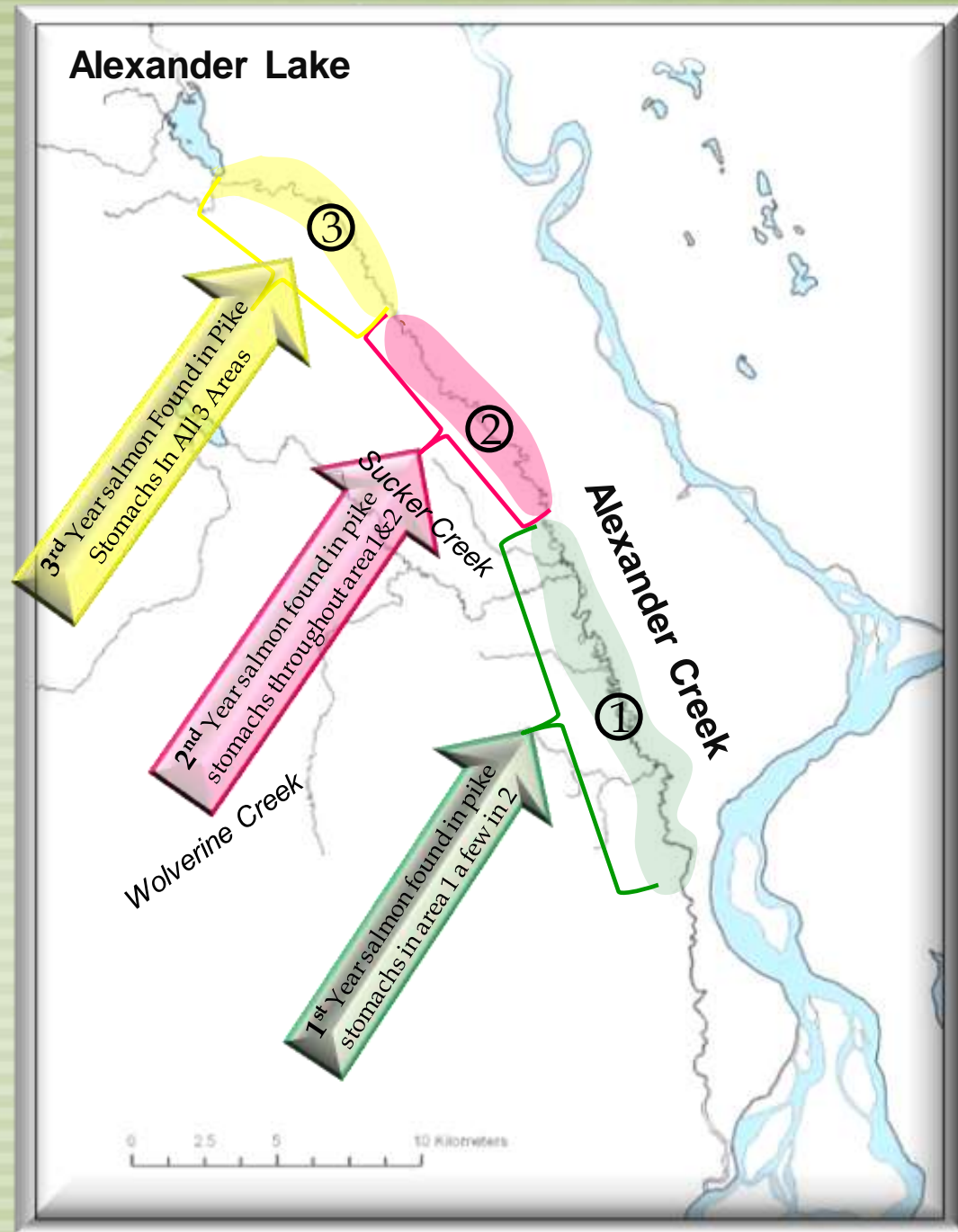
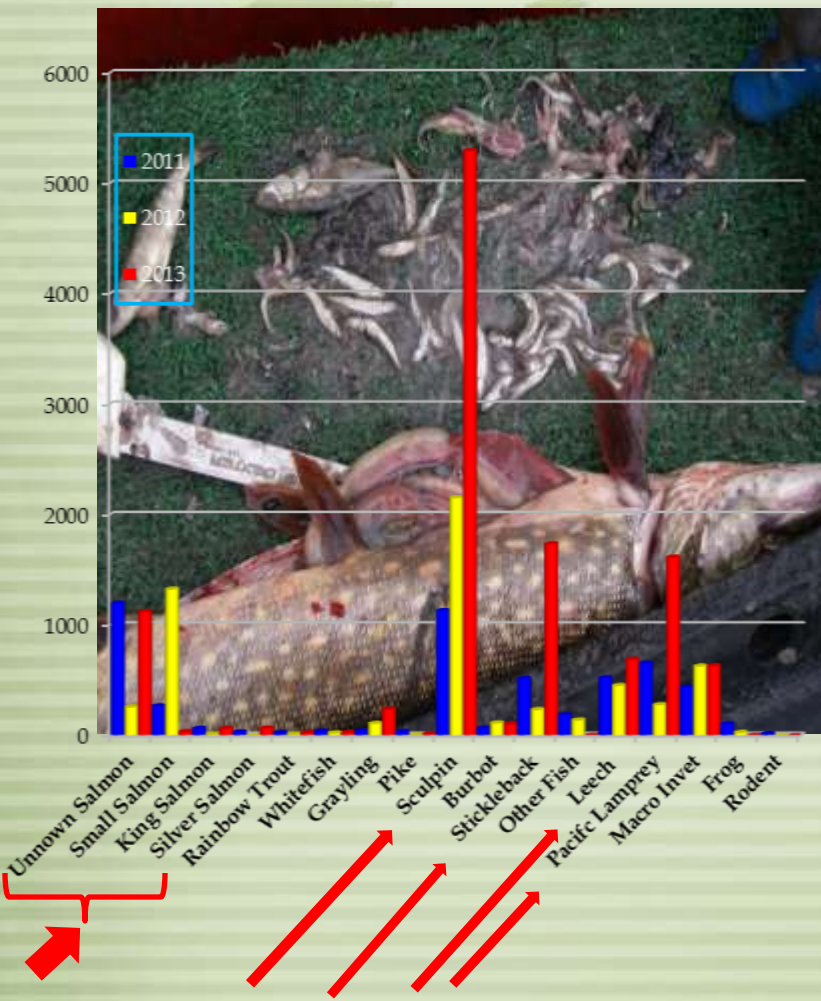
Stomach Content Portion of the Study Coincided With Suppression Efforts

This portion of the study was conducted to compare stomach content of pike between years and study areas to identify temporal & spatial shifts in diet particularly juvenile salmon

- ✓ 6,551 pike stomachs were examined for content
- ✓ 1,137 stomachs were empty
- ✓ 5,414 of the Stomach contained food items



Commonality of Prey Items Found in Northern Pike Stomachs



(RECAP) PRELIMINARY RESULTS

Given we are dealing with multigenerational species in a complex system, It's a bit early to tout success, however, preliminary results are very encouraging

Suppression Efforts

- 12,000 northern pike were captured and dispatched
- Numbers of pike in creek down
- Numbers of resident & anadromous species up

Telemetry

- **Aerial Tracking Surveys indicated little movement of radioed pike out of the Lake & All fish that left the lake were captured in gillnets by crew.**

Juvenile Sampling

- 1st year no juv salmon found above Sucker Ck.
- 2nd year juv salmon up to 4 miles above Sucker
- 3rd year juv salmon in area 1 & throughout area 2.

Adult Salmon & Resident Fish

- In 2013, 588 Chinook salmon were counted, highest # in nearly a decade
- There was re-colonization of spawning areas up & downstream of Sucker
- The 2012 SWHS est indicate numbers of resident and anadromous fish up
- Affirmation from local residents, that in 2013 salmon returns were the best in a decade & resident fish numbers were reported to be up as well

Stomach Content

- 1st Year, few juv salmon in stomachs upstream of Sucker Ck.
- 2nd Year juv salmon found in pike stomachs in area 1 & 2
- 3rd Year juvenile salmon found in pike stomachs in all 3 areas



This presentation was prepared by David Rutz under award #NA11NMF44671 from the National Oceanic and Atmospheric Administration, U.S. Department of Commerce, administered by the Alaska Department of Fish and Game. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the National Oceanic and Atmospheric Administration, the U.S. Department of Commerce, or the Alaska Department of Fish and Game.

Prey Items/Stomach Content





2013



Document Significant Immigration or Emigration Between Lake and Creek

