

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



AKSSF



PRINCIPLE INVESTIGATOR: DAVE RUTZ
ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF SPORT FISH

Background /History

Introduction of Pike/Location

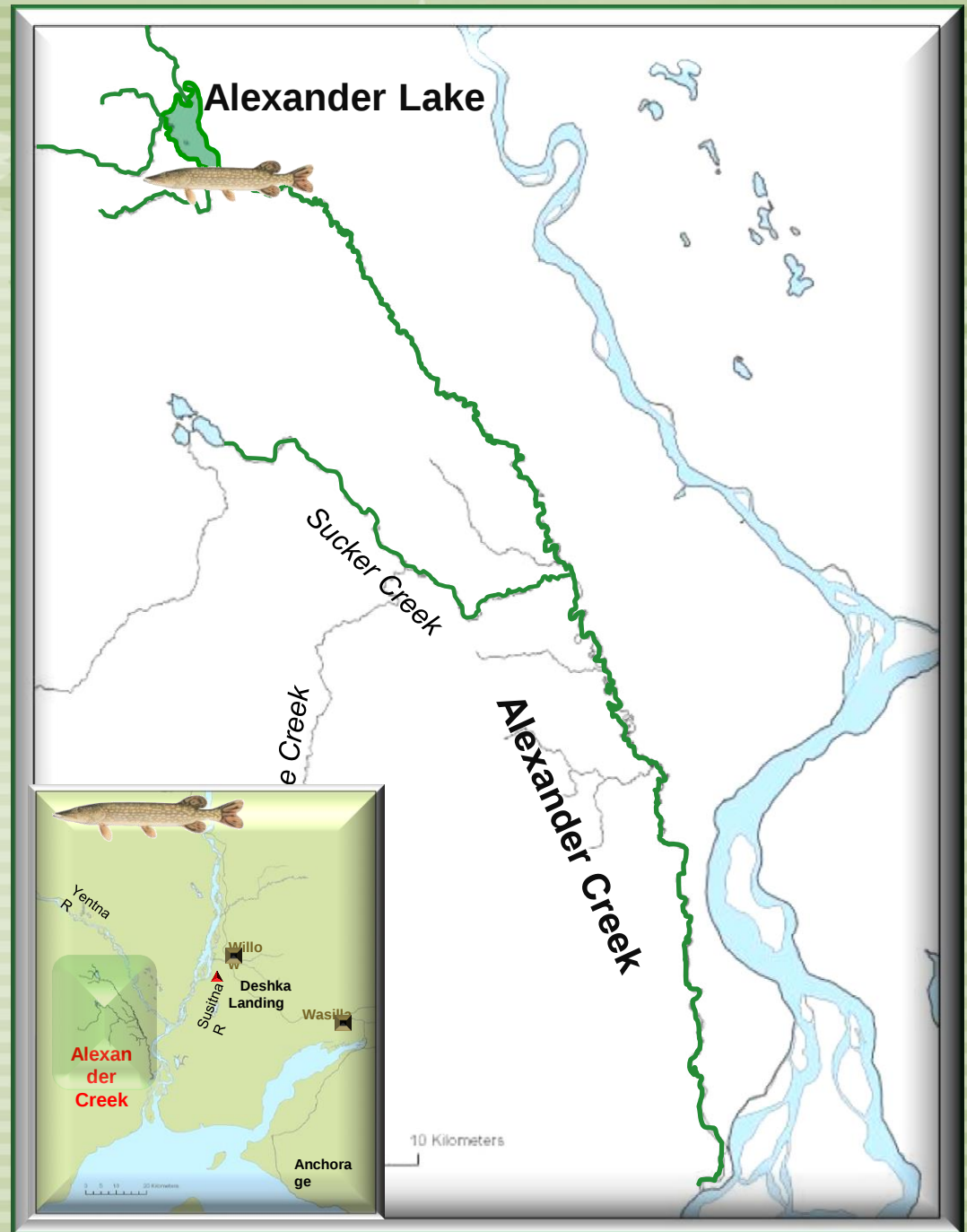
System Morphology

Pre-Pike Salmon Abundance

Pre-Pike Resident Fish
Abundance

Pre-Pike Chinook Spawning Area

Pre-Pike Economy



PRIMARY GOAL (3 YEAR PROJECT)

*Is To Suppress Alexander Creeks 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 spawning northern pike by 80%,



Document the spatial and temporal movement patterns of northern pike in the Alexander Creek drainage, and



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



**Suppression Efforts/Pike
Removal (Gillnets)**



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

EVALUATION TECHNIQUES



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



**Juvenile Salmon
Monitoring (CPUE)
(Minnow Traps)**



**Spatial and Temporal Shifts In
Pike Diets (Stomach Content)**

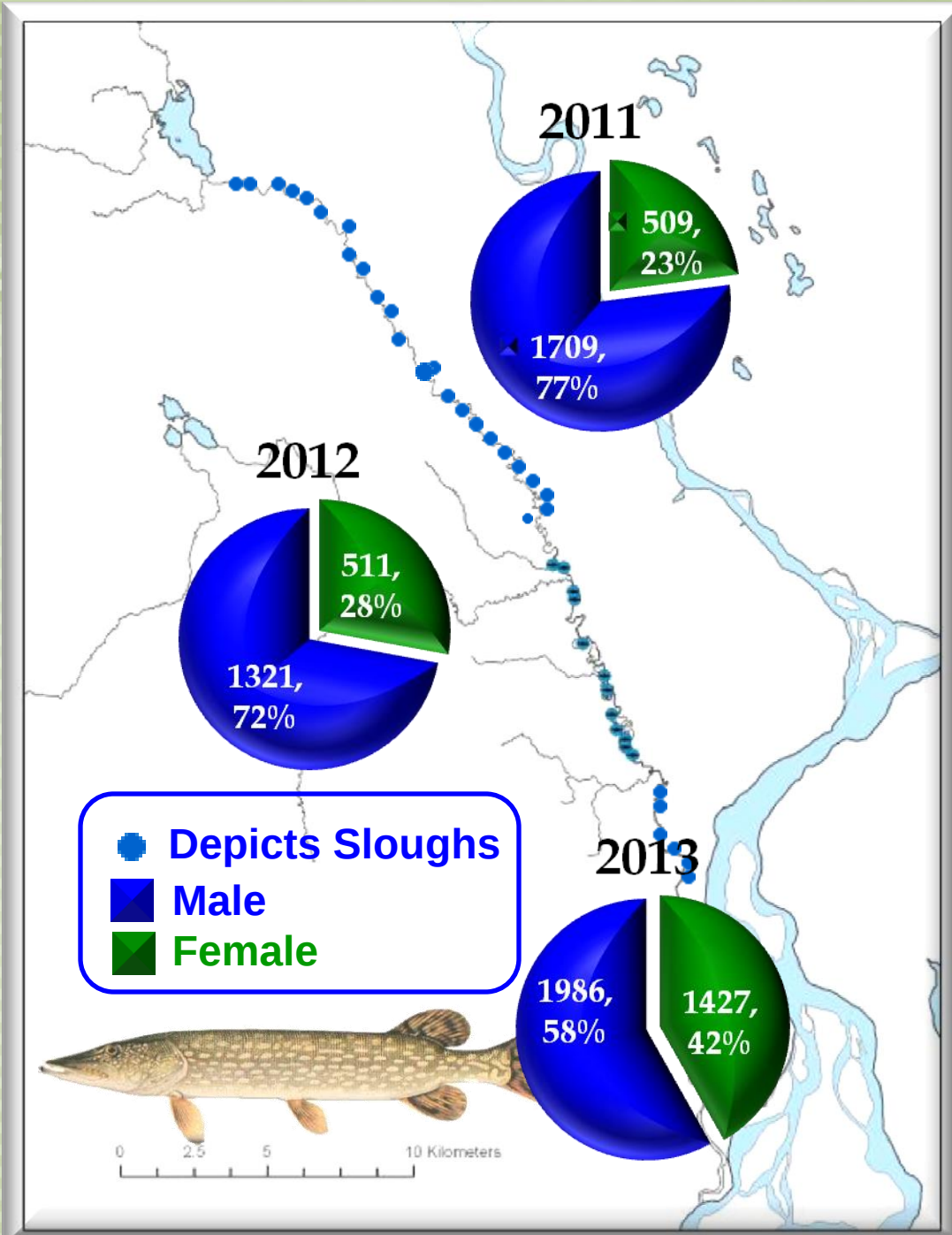
Project Methodology /Techniques



Pike Suppression Efforts

COMMENCED IN THE SPRING 2011-2013, WHERE 62 SIDE SLOUGHS CHANNELS WERE GILLNETTED 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 (Typical Side Slough Channels)

Setting Gillnets



Spawning Habitat



Side Slough Channels



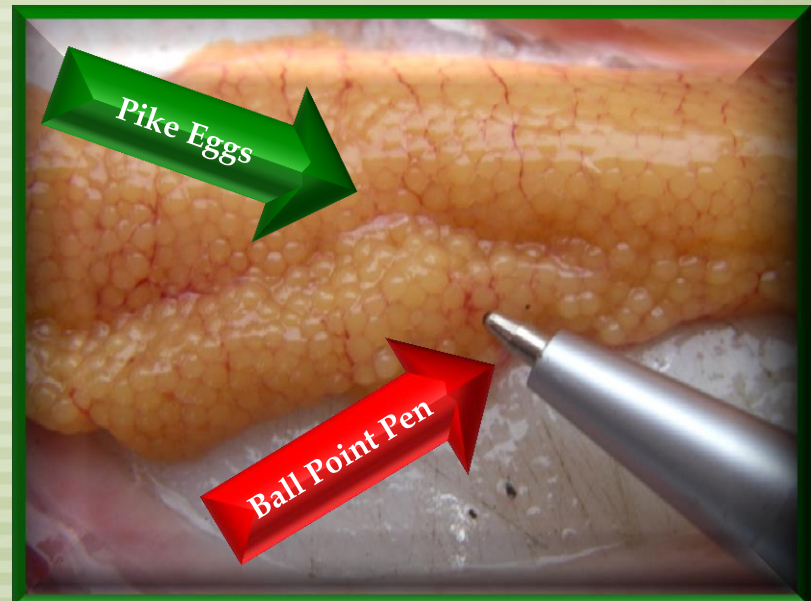
Collecting Biological Information



GILLNET BI-CATCH



Netting Efforts



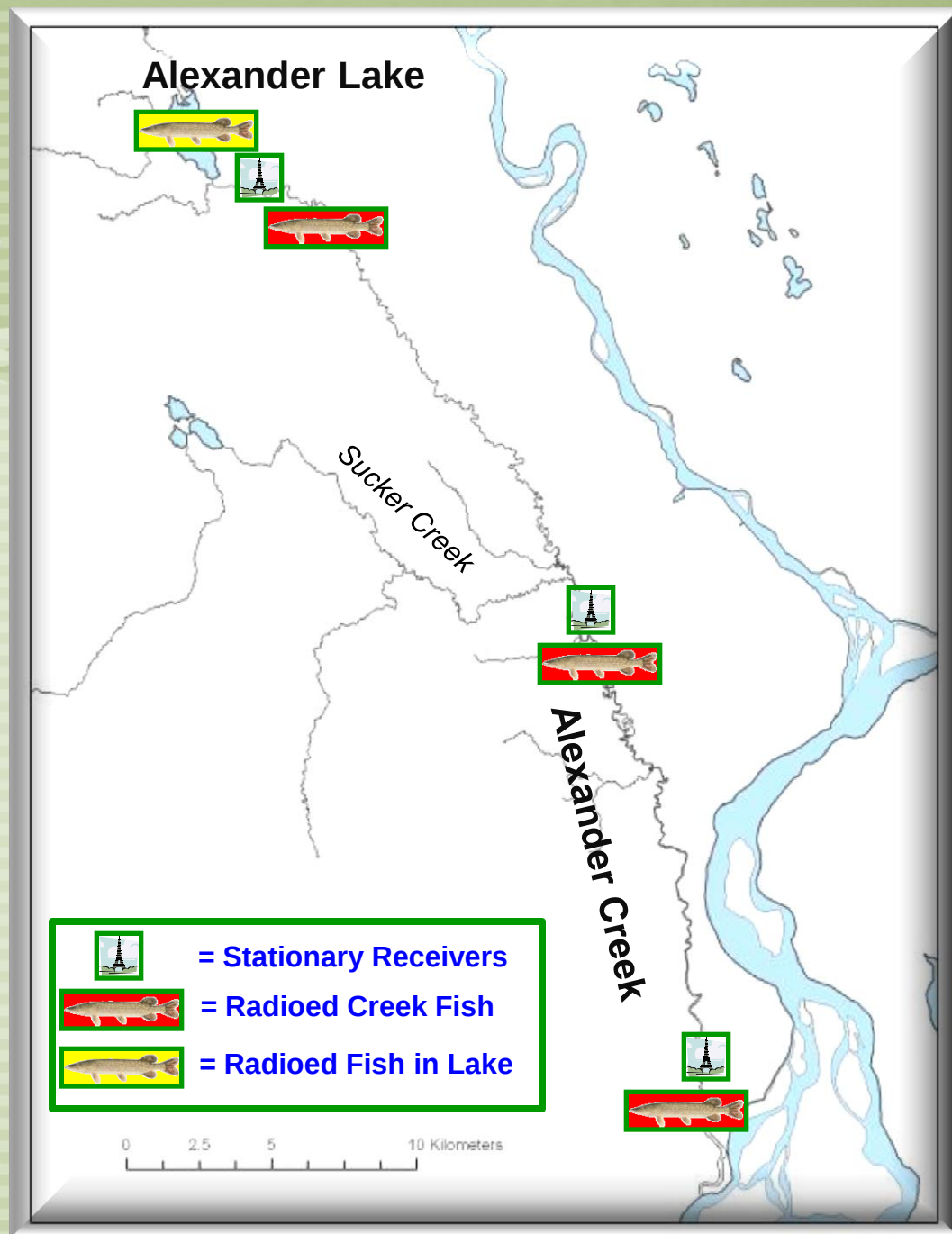
Telemetry

**A TOTAL OF 150 PIKE WERE CAPTURED AND
SURGICALLY IMPLANTED WITH RADIO
TRANSMITTERS**

125 in the Lake 25 in the Creek

**Stationary Towers downloaded
every two months**

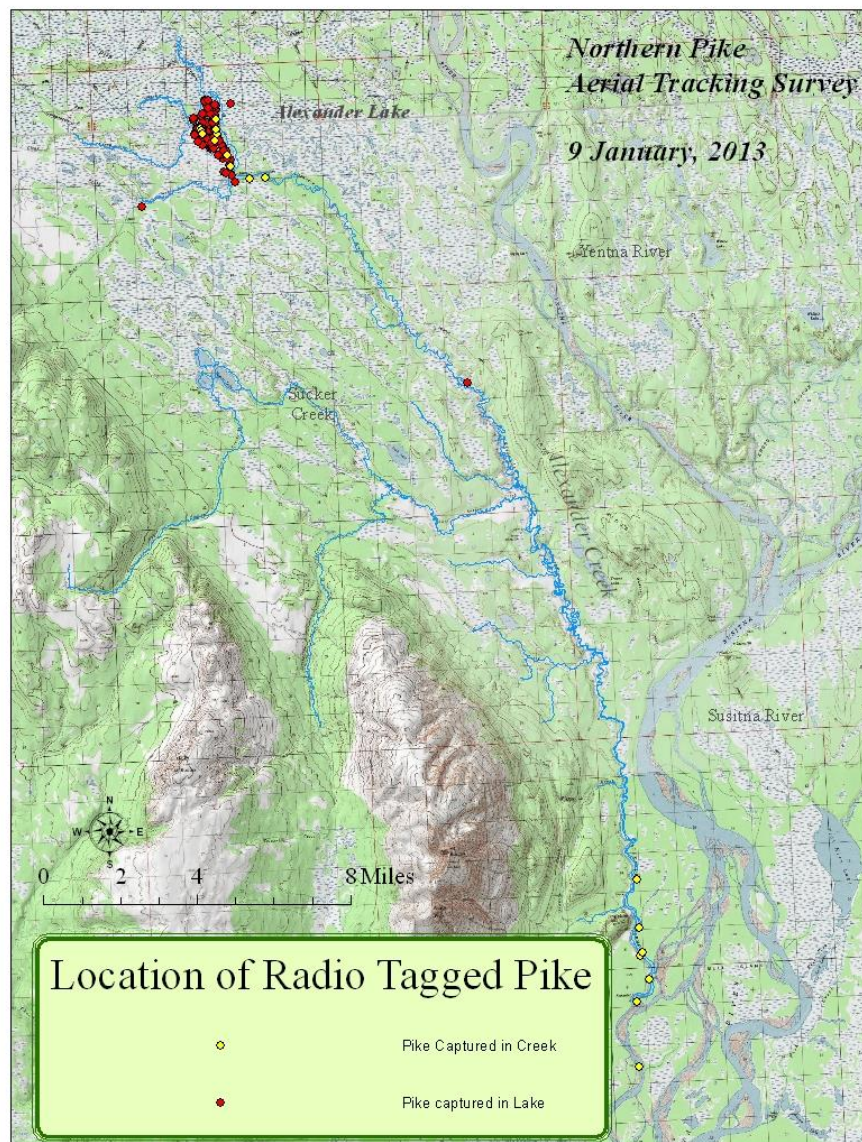
**Aerial Tracking Surveys are flown
monthly**



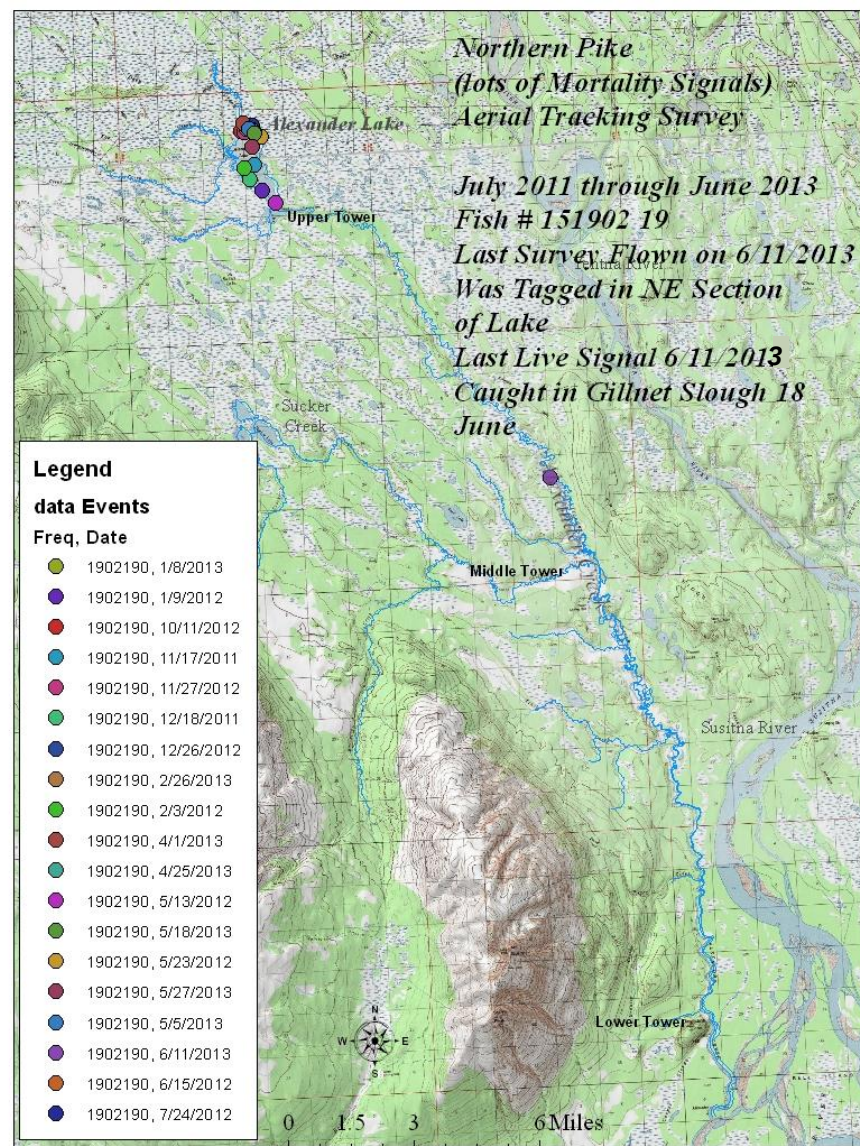
Typical Operating Room, Utilizing Standard Surgical Procedures For Implanting Radio Transmitters in Pike



All Radio Tagged Fish for Survey Conducted on January 9, 2013



Movement and Fate of Fish Number 151902-19 Throughout Study



Juvenile Salmon Monitoring Protocol

*Identify Spatial & Temporal Shifts in Juvenile
Salmon production*

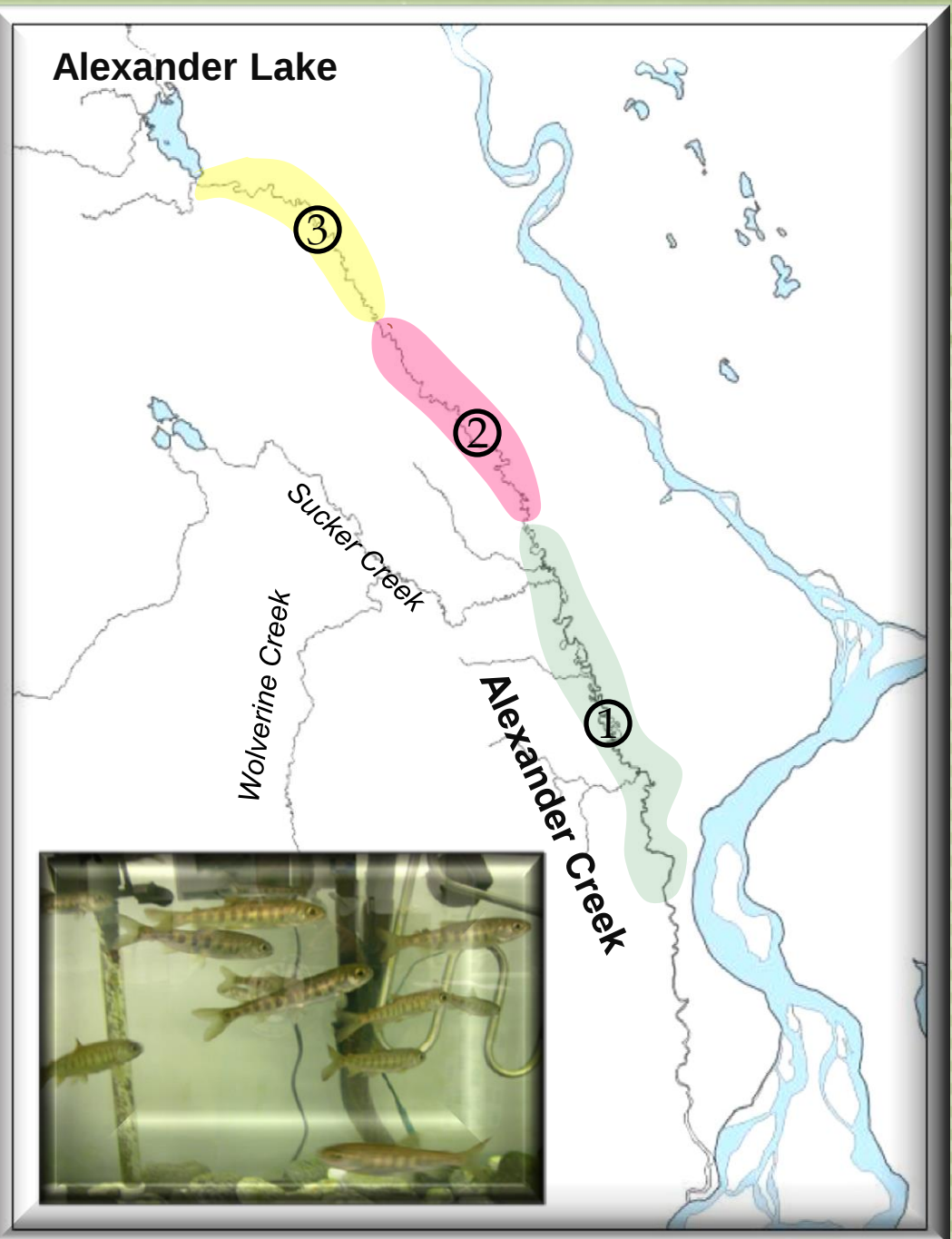
- * **Two Sampling events**
- * **Stream divided into 3 Study Areas**
- * **Equal sampling effort between areas**

**A total of 180 minnow traps were set
between the 3 Study areas 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**



ADULT SALMON RECOVERY/RESTORATION MONITORING EFFORTS

**Chinook
Salmon**

- **Aerial Surveys**

**Other Salmon
& Resident
Fish**

- **Department's
SWHS**

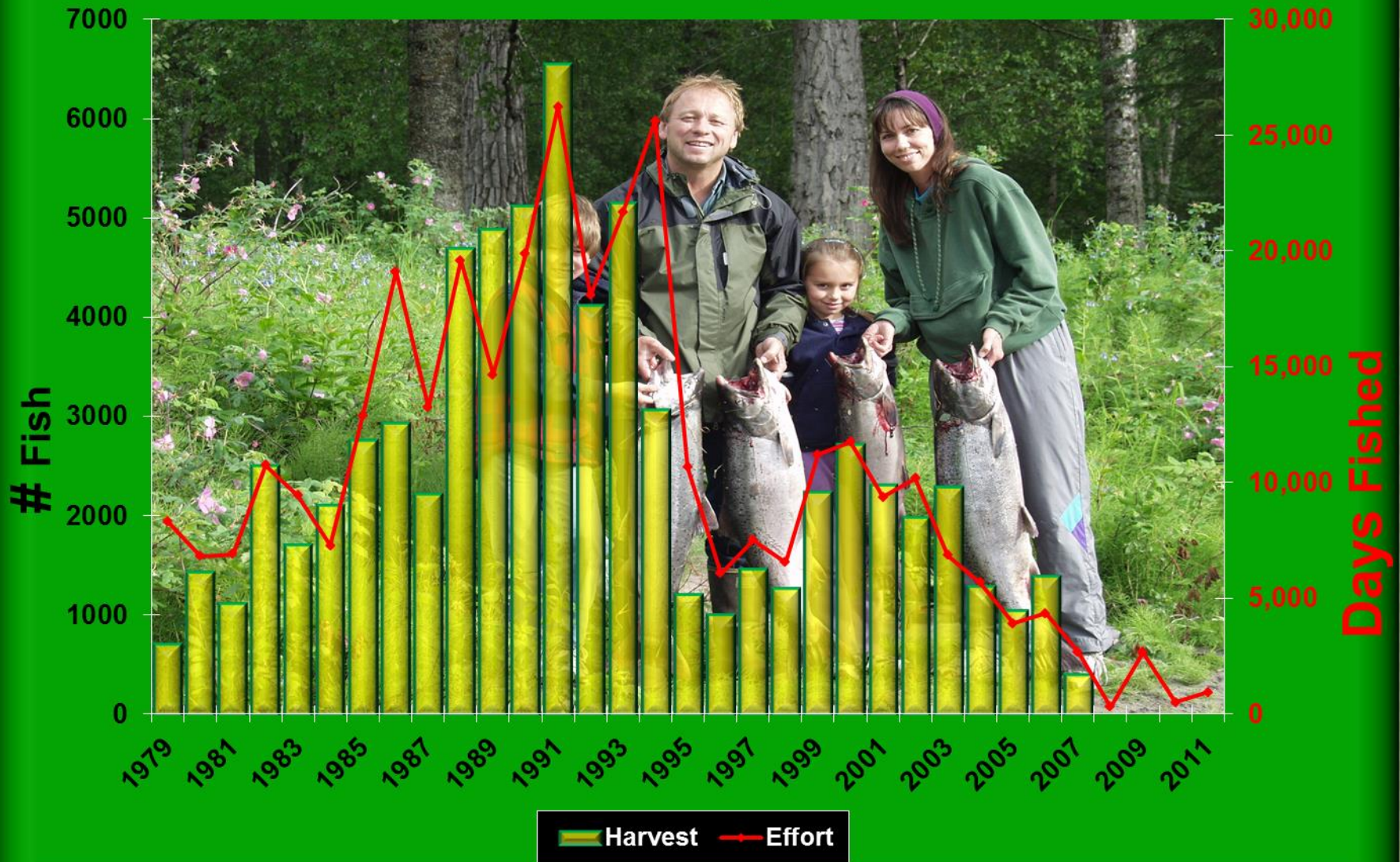
Aerial Surveys

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, 1979-2011



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



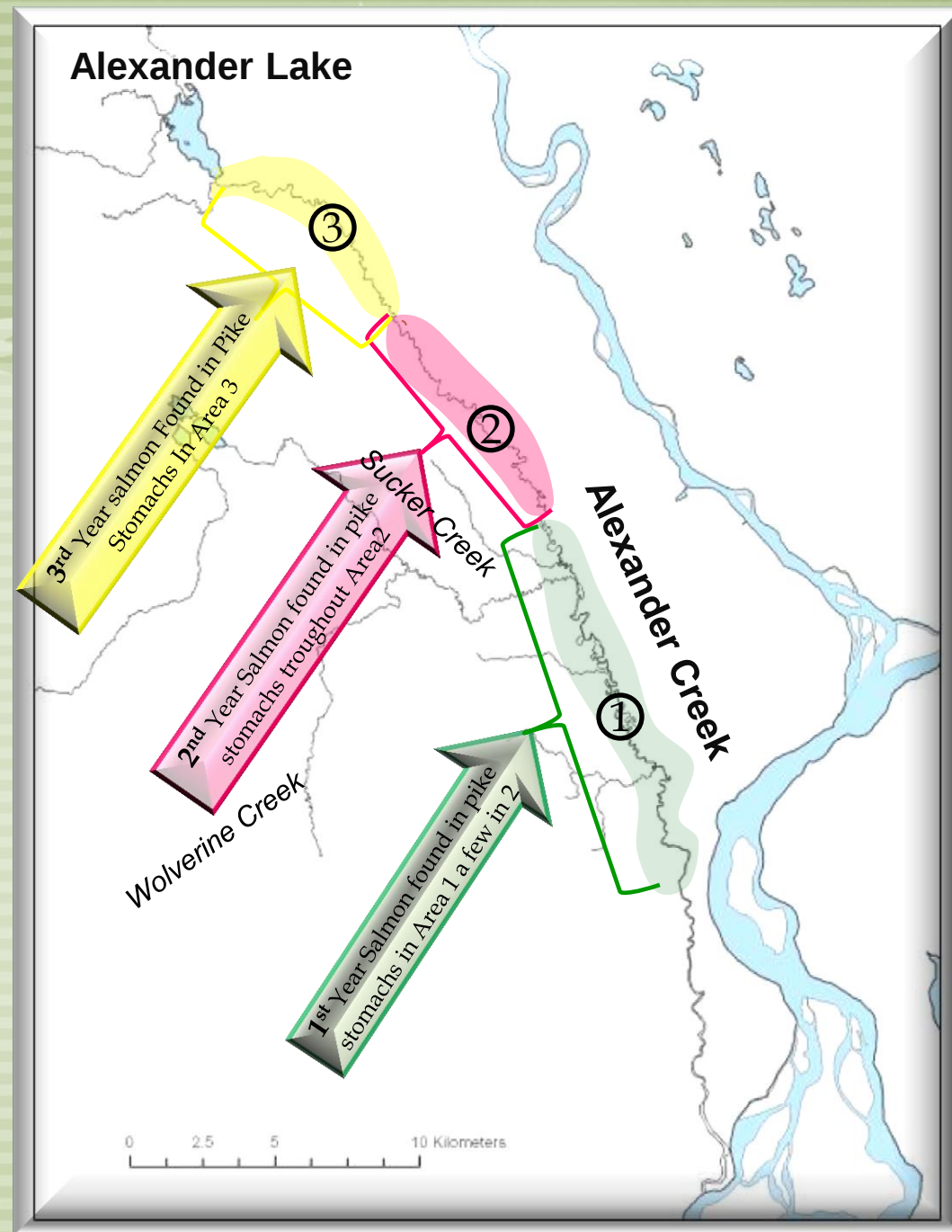
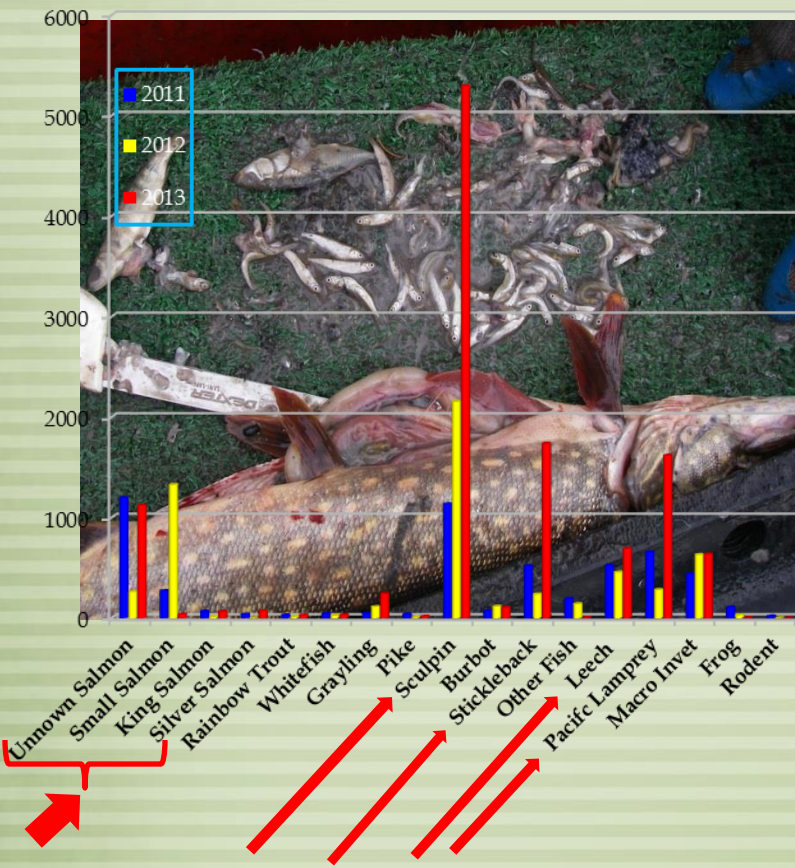
Stomach Content Portion of the Study Coincided With Suppression Efforts

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 of 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



Prey Items/Stomach Content



PRELIMINARY RESULTS

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 between the lake and the creek, downloads from stationary towers reaffirmed this. Most fish radio tagged in Creek overwintered in lake All fish that left the lake were captured in gillnets by crew.

Juvenile Sampling

- 1st year no juv salmon found above Sucker Cr.
- 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
- Re-colonization of spawning areas Up & downstream of Sucker Cr
- SWHS 2012 est indicate numbers of resident and anadromous Fish Up
- Aerial Survey data along with affirmation from local residents 2013 best salmon runs in decade & Resident Fish numbers up as well

Stomach Content

- 1st Year Few juv salmon in stomachs upstream of Sucker Cr
- 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.



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