

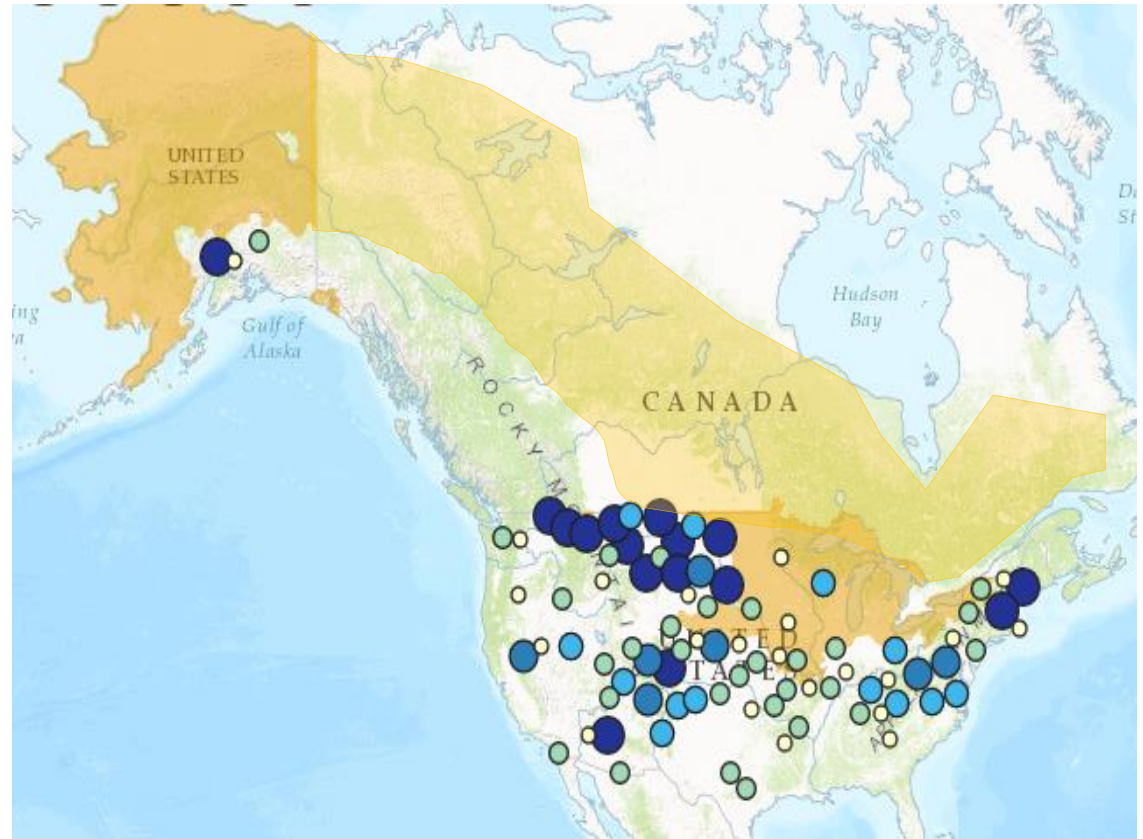
# Lake Roosevelt Northern Pike Research and Suppression



Washington Department of Fish and Wildlife: Chris Donley, Bill Baker and Charles Lee  
Confederated Tribes of the Colville Reservation: Bret Nine and Holly McLellan  
Spokane Tribe of Indians: Brent Nichols and Elliott Kittel

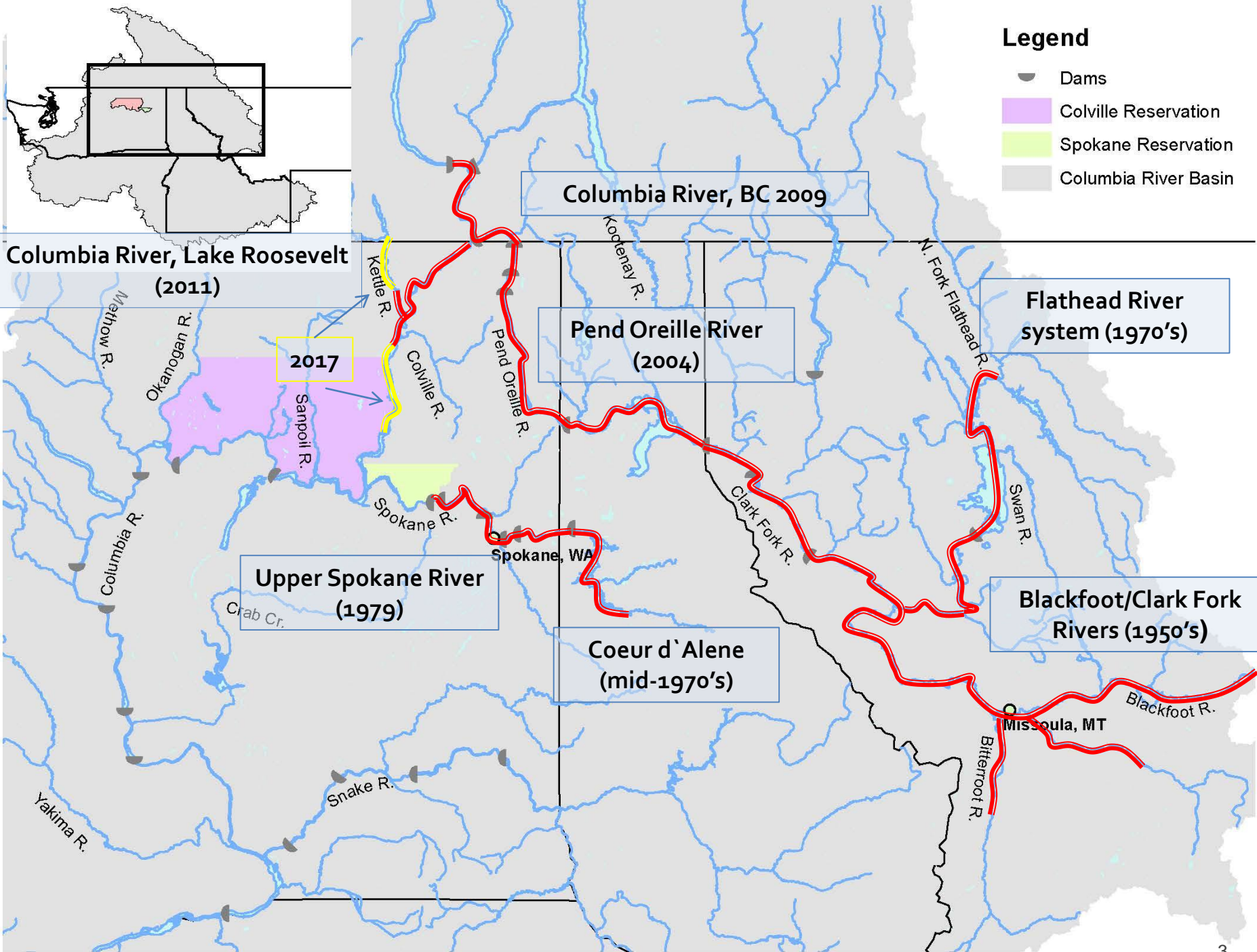
# Northern Pike *Esox lucius*

- Within North America Northern Pike are native to the mid-west and large parts of Canada and Alaska
- Numerous introductions over the past 50 years increased distribution throughout the country



Map modified from USGS website





- Legend**
-  Dams
  -  Colville Reservation
  -  Spokane Reservation
  -  Columbia River Basin

Columbia River, Lake Roosevelt  
(2011)

Columbia River, BC 2009

Flathead River system  
(1970's)

Pend Oreille River  
(2004)

Upper Spokane River  
(1979)

Coeur d'Alene  
(mid-1970's)

Blackfoot/Clark Fork Rivers  
(1950's)

2017

Missoula, MT



# Washington State Management

- Pike are a problem, not an opportunity
- In 2011 WDFW Fish Commission reclassified Pike to “Prohibited Species”
- Harvest: no minimum size, no daily limit, no possession limit
- Must be killed before transporting
- Releasing live Pike into other waters prohibited
- Other prohibited species: fathead minnow, bowfin, and snakeheads



# Why are Northern Pike so bad?

- Northern Pike have disrupted ecosystems in MT, AK, ID, WA, CO, UT, CA
- Caused the elimination of multiple native prairie minnow species in MT (Ostovar 2012).
- Prey heavily on WCT and Bull Trout in Upper Flathead, MT (Mulhfeld and Bennett 2008)
- Caused the elimination of native salmonids in Sustina drainage, AK (Ruzt 1999)
- **Prey on fish 75% body size**
  - NO FISH ARE SAFE, except adult *White Sturgeon*
  - Salmonids can grow big enough to escape Walleye and Smallmouth Bass



26 pound female Pike from Roosevelt, 6/7/17

# Northern Pike in Lake Roosevelt

- Managers are concerned:
  - Redband Trout/ other native spp.
  - Expansion into Salmon ESA listed waters
  - Expansion into Banks Lake (Columbia Basin)
- Managers Goals:
  - Minimize impacts to native and important game fish species
  - Suppress Northern Pike and monitor the program
  - Prevent the spread of Northern Pike to other waters



Multiple years classes



2016 Mature female



# Co-Managers Plan

- Established a Pike Technical Working Group
  - Lake Roosevelt partners
    - Collaborate on Northern Pike Research and Suppression Plan
  - Coordinates with regional partners: Kalispel Tribe/CDA Tribe/IDFG/USFS/NPS
  - Coordinates with Canadian partners: Ministry, BC Hydro, ONA Tribes, Watershed groups and consultants
- Tasks:
  - Seek and pool funding
  - Develop a Northern Pike Suppression and Monitoring Plan
  - Need to start suppression yesterday



N. Pike trying to eat a equal size Burbot

# Paying for a Program



- Colville Tribe
  - BPA \$225,000 (reallocated Accord funds; 2017 only)
  - Grant (\$25,000 for 3 yrs) and Chelan PUD (\$35,000 3 yrs)
  - CCT Internal Funds \$35,000 (3 yrs)
  
- Spokane Tribe
  - Secured BPA BOG funding for 3 yrs (\$71,000); New BOG \$123,017 (one year)
  - AFS Grant: \$6,000; UCUT \$12,000.; STI \$4,500; BIA \$ \$72,000
  
- WDFW
  - STI/BPA \$50,000, Chelan PUD \$15,000, WDFW Internal Funds \$10,000



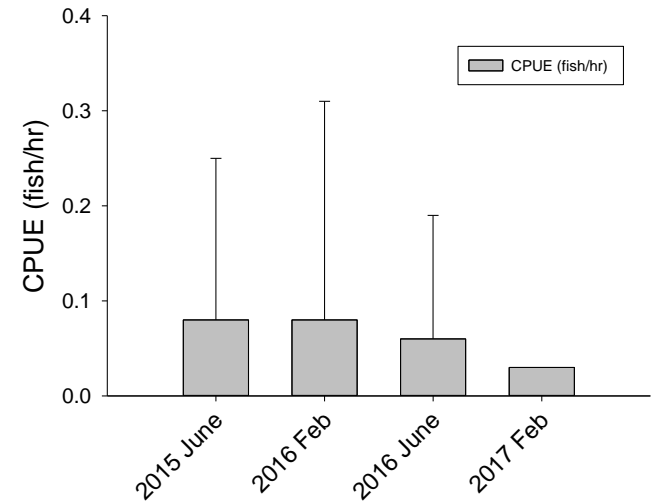
# Northern Pike Research and Suppression Work Plan

Tasks	Year Began	Agency	Who's Paying
<b>Research</b>			
Relative Abundance Survey	2015	WDFW/STI/CCT	BPA
Microchemistry Study	2015	CCT	BPA
Radio Telemetry Study	2017	WDFW	WDFW
Otolith Aging Study	2016	WDFW	WDFW
eDNA Study	2017	CCT/WDFW	CCT/PUD's
Harvest Trends in Creel	2011	STI/WDFW/CCT	BPA
<b>Suppression</b>			
Adult Gillnetting	2016/17	CCT/STI/WDFW	BPA/CCT/PUD's/BIA
Juvenile Electrofishing	2016	CCT/STI	CCT/PUD's/STI/BIA
Reward Program	2017	CCT	CCT/PUD's
Pilot Angling/Seining	2017	CCT	CCT/PUD's
Pilot Fyke Nets/Snorkel	2017	CCT/STI	CCT/PUD's/STI
<b>Public Outreach</b>	2016	WDFW/CCT/STI/NPS	All

# Relative Abundance Surveys

Goal: Monitor changes in abundance over time and to identify congregations to assist with suppression netting

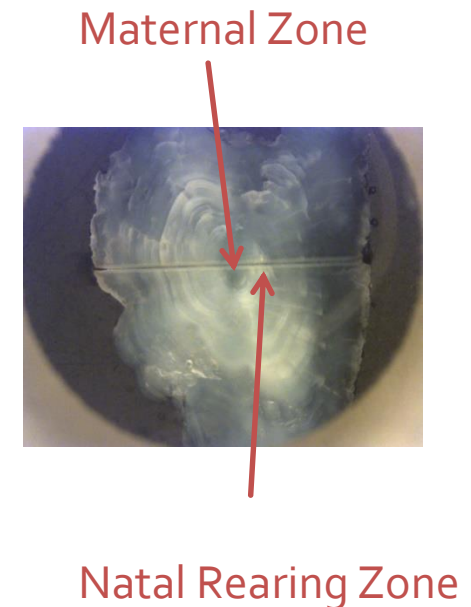
- Survey: February
  - GRTS sites; slope  $\leq 45^\circ$  ;  $\leq 50$  ft water
  - 1 week survey; 130 SPIN nets, 4 hr sets
  - Study area: Kettle Falls
- Challenges
  - Reservoir conditions different every year
  - Adjusting survey to occur when water temps reach  $4^\circ\text{C}$  instead of reservoir elevation



# Microchemistry Research

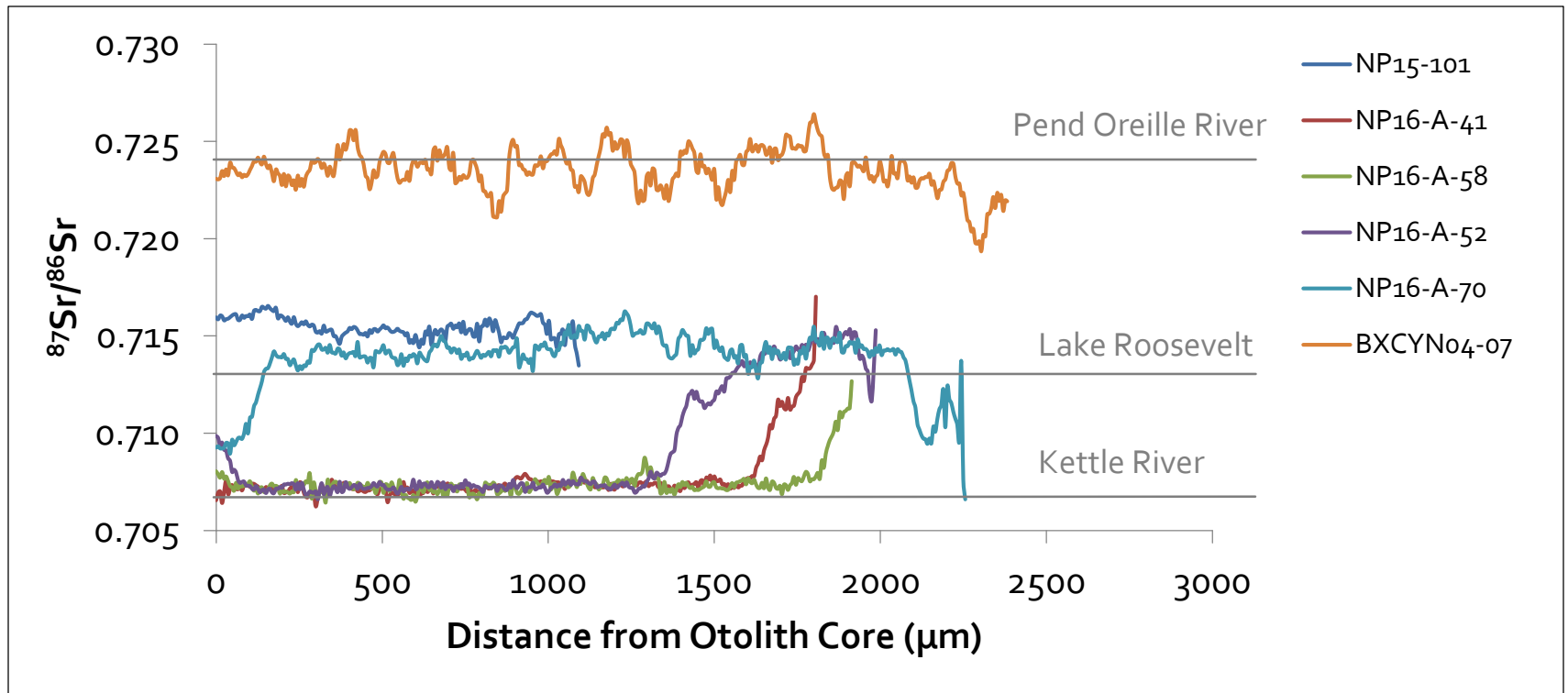
Goal: Determine general spawning locations, understand movement and spawning patterns. Data will be used to assist with suppression plans.

- Otoliths from Lake Roosevelt
  - Analyzed: 40 adults and 24 juveniles
  - Will analyze: Juveniles from above and below key spawning areas (n=16)
- Reference otoliths (to be analyzed)
  - Box Canyon (n=5), Boundary Reservoir (n=5), Long Lake (n=5), Coeur d' Alene (n=5), Clark Fork River (n=15)





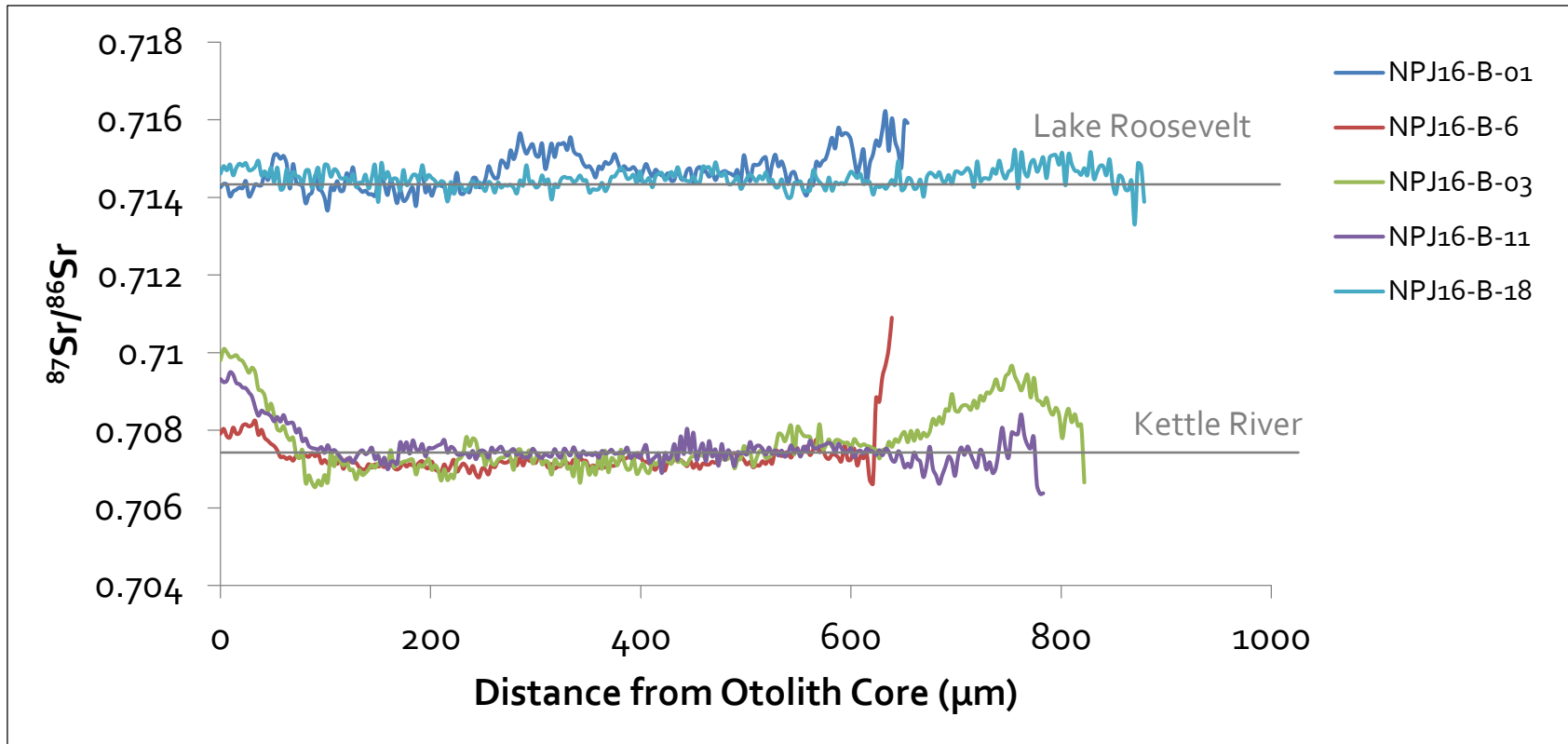
# Preliminary Results- Adults



- Pend Oreille River has a different  $^{87}\text{Sr}/^{86}\text{Sr}$  signature
- Large portion of adults tested from multiple sites originated in the Kettle River (2016 cohort)
- Most appear to enter Lake Roosevelt after age 1 or 2
- 1 with maternal signature of Colville River

Sample	TL (mm)	Capture Site
NP15-101	505	LR- Colville River (mouth)
NP16-A-41	667	LR- Evans
NP16-A-58	663	Marcus/Kettle River
NP16-A-52	677	Marcus/Kettle River
NP16-A-70	794	LR- Singer Bay
BXCYN04-07	-	PO- Box Canyon Reservoir

# Preliminary Results- Juveniles



- Juveniles captured at Northport and Evans from mainstem Columbia River
- Juveniles captured in Kettle River were born there

Sample	TL (mm)	Capture Site
NPJ16-B-01	120	LR-Northport
NPJ16-B-6	114	LR- Kettle River Bay
NPJ16-B-03	179	LR- Kettle River Bay
NPJ16-B-11	168	LR- Kettle River Bay
NPJ16-B-18	191	LR-Evans

# Radio Telemetry Research

Goal: Determine spawning locations and summer movement patterns to assist with suppression efforts

- 2017 marked 6 Pike in the spring
  - Lotek Model MCCFT2-3M (528 days)
- Tracking twice a week by boat and vehicle
- Future: Plan to deploy 5 additional tags this year and continue tracking in 2018





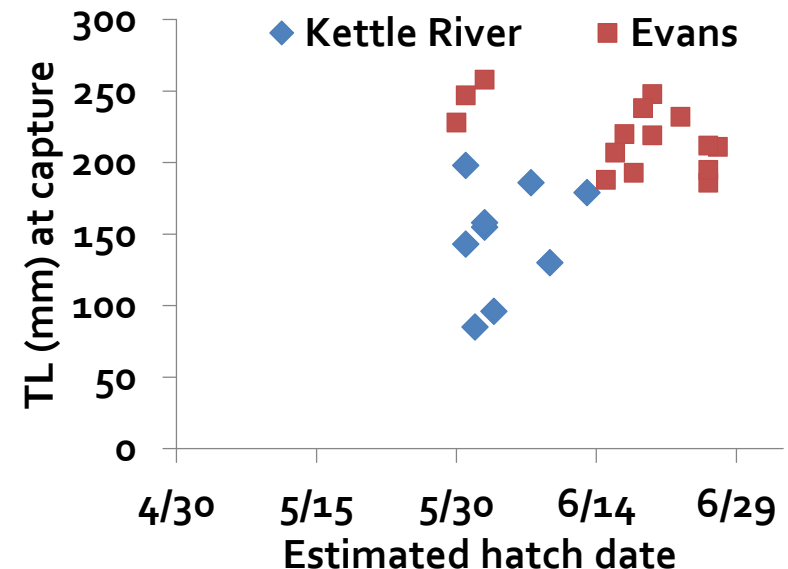
# Otolith Growth Study

Goal: Use otoliths daily growth rings to identify spawning time and correlate with reservoir elevation to assist with removal planning

- Successful spawning appears to occur in mid May – mid June (2016 fish)
- Later than other regional waters

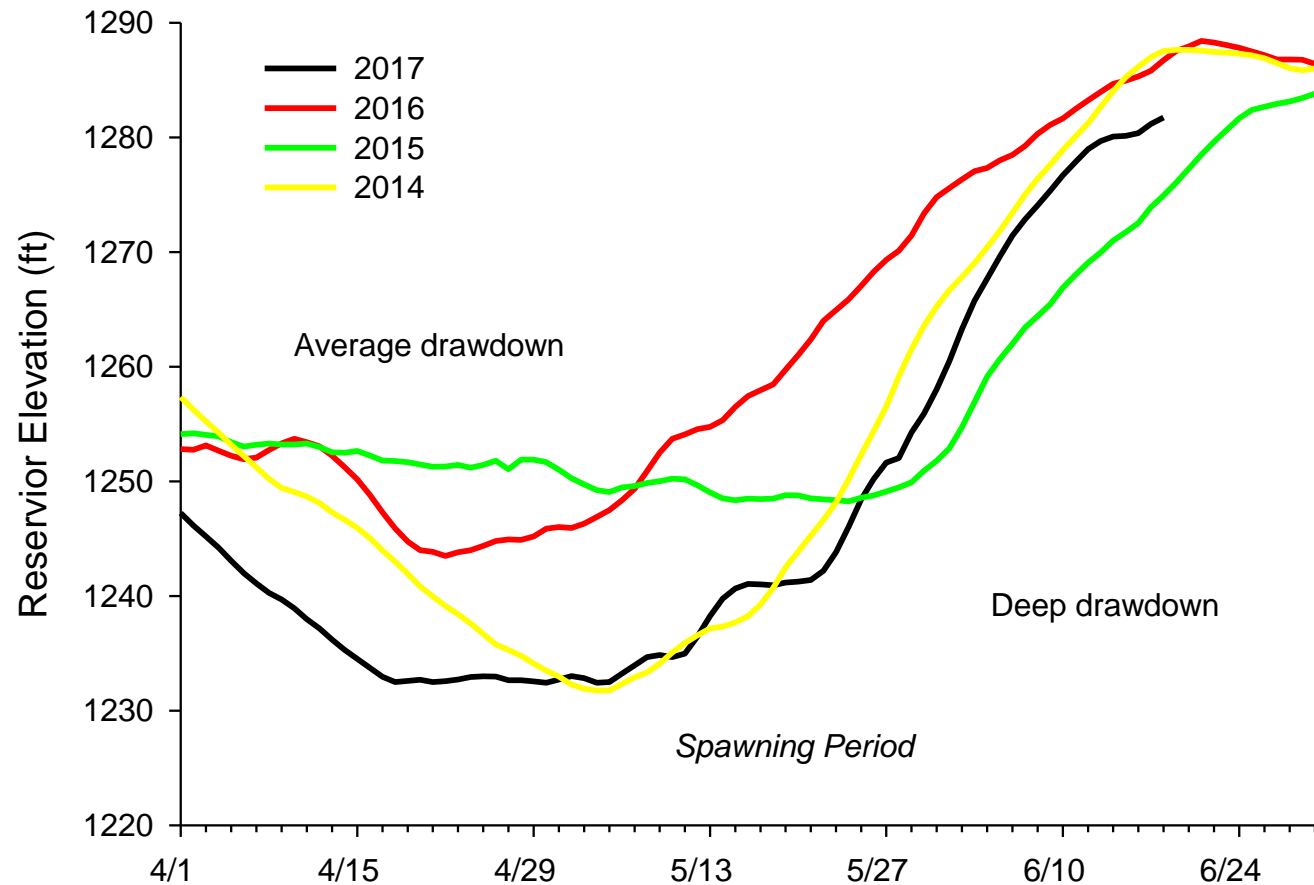


Mouth of Colville River during draw down



# Recruitment Questions

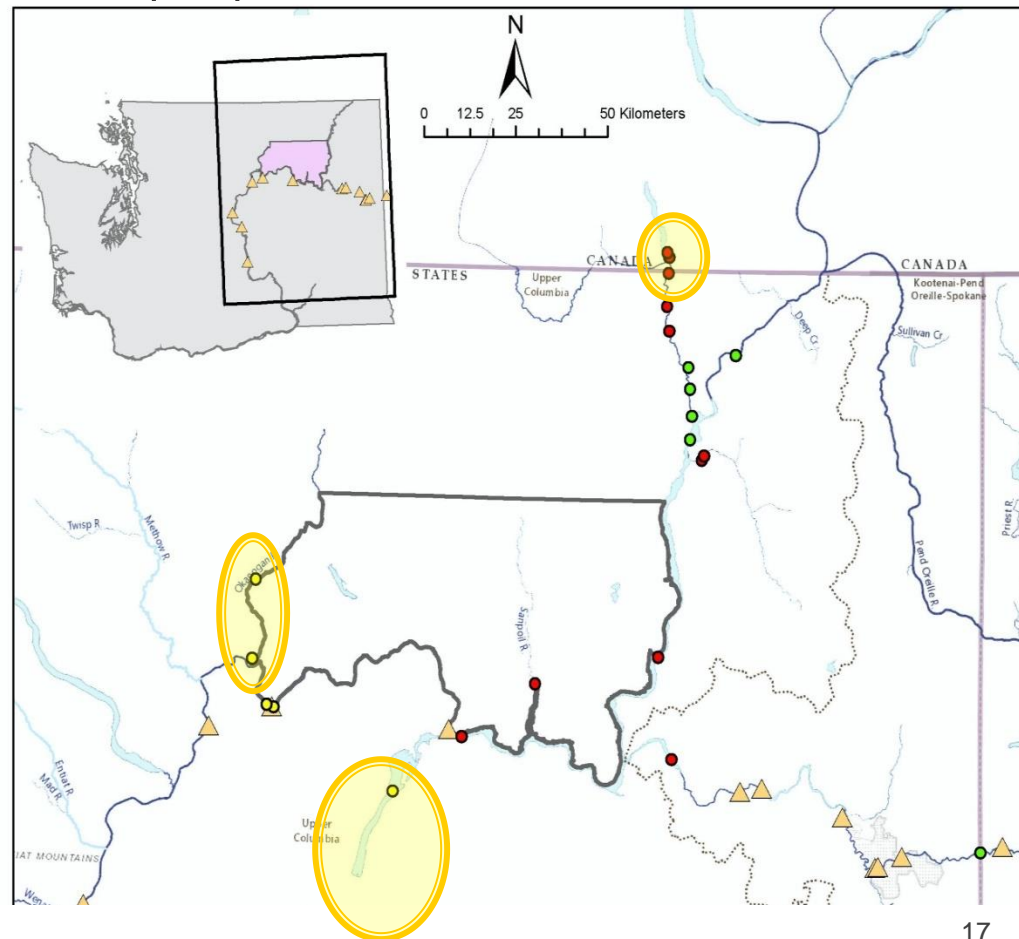
- Does reservoir elevation or refill timing affect year class strength?
- Continued research needed



# eDNA Study

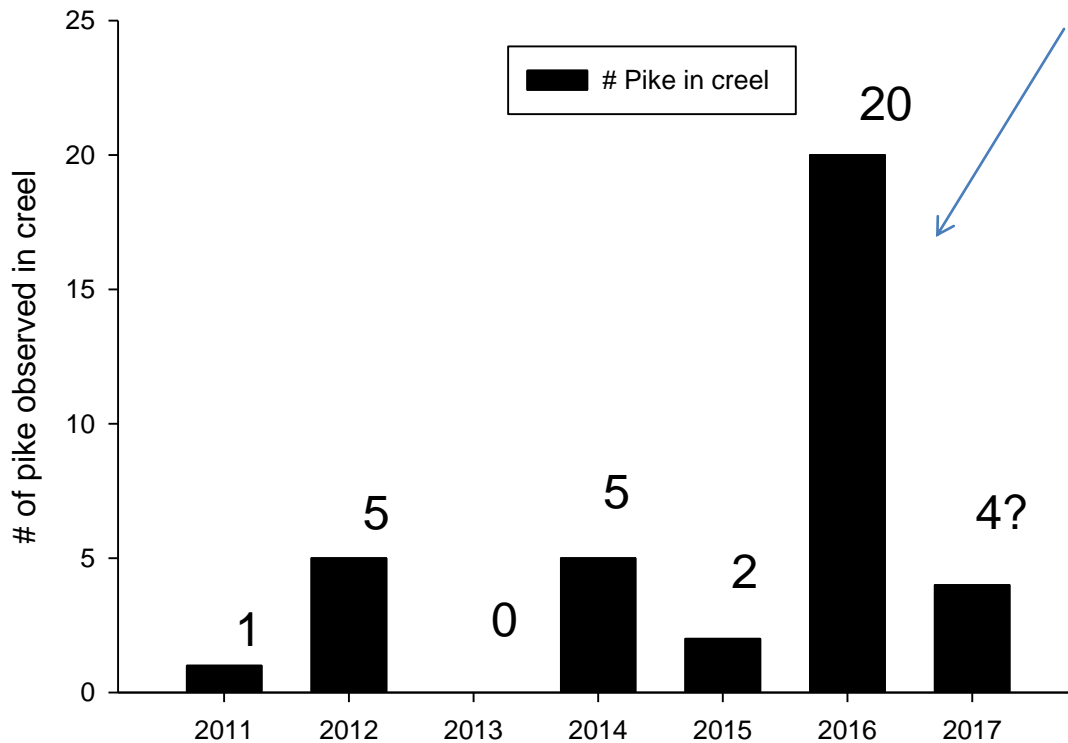
Goal: Detect the early presence of Northern Pike in areas of concern which will enable relevant agencies to respond rapidly

- Monitor eDNA in the water during low flows, September
- Provide information to regional managers
- Information will assist with quick response plans
- Areas of concern: Christina Lake, Okanogan River, Banks Lake
- Sub-contract with Rocky Mountain Research Station





# Harvest Trends in the Creel



- 2016 expanded catch estimate 297 Pike Captured (SE 49.79)
- Only observed in Upper Reservoir creel



# Suppression: Adult Netting

- Began Feb.2017
  - Overnight sets during cool months (40 nets/wk/Agency)
  - Shallow <30 ft; release all live bycatch
  - If bycatch limits met, move out of area for week (or use short sets)
  - Keeping track of catch in mesh size to develop Roosevelt specific Pike nets
  - Field crews coordinate every evening to discuss catch and bycatch

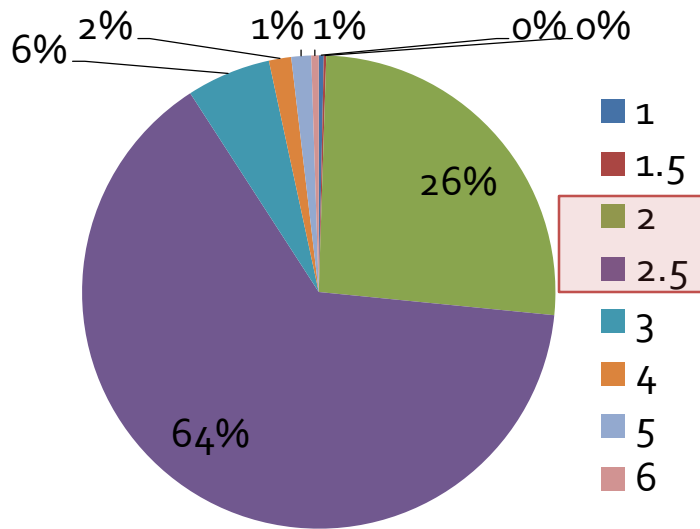


Sculpin and Hatchery RBT in stomach

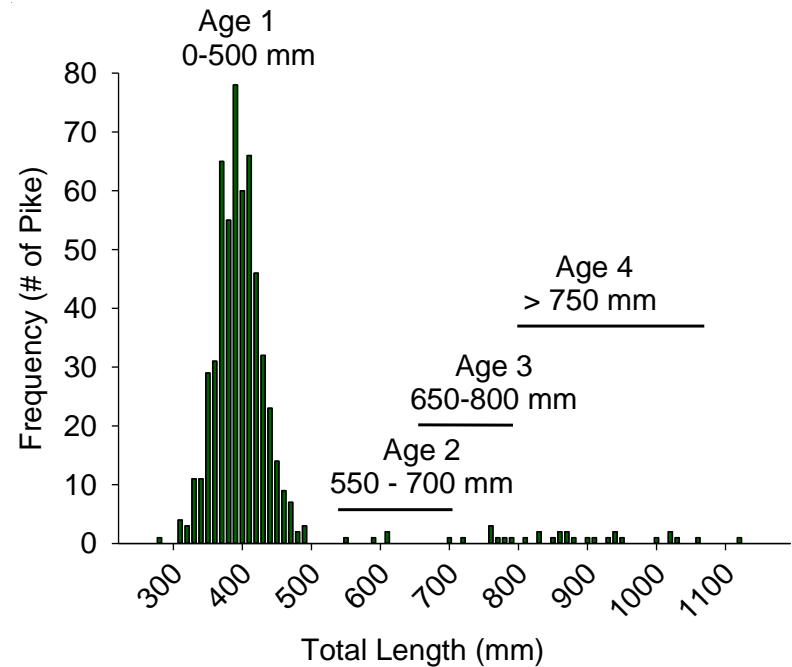


# 2017 Suppression Summary

- 2017: **525** overnight net (5,399 hrs) sets have removed **1,083 Pike**
  - 90% Pike captured in 2.0 and 2.5 stretch mesh
  - Majority of the fish are age 1 ; largest fish 44 in. and 26 pounds

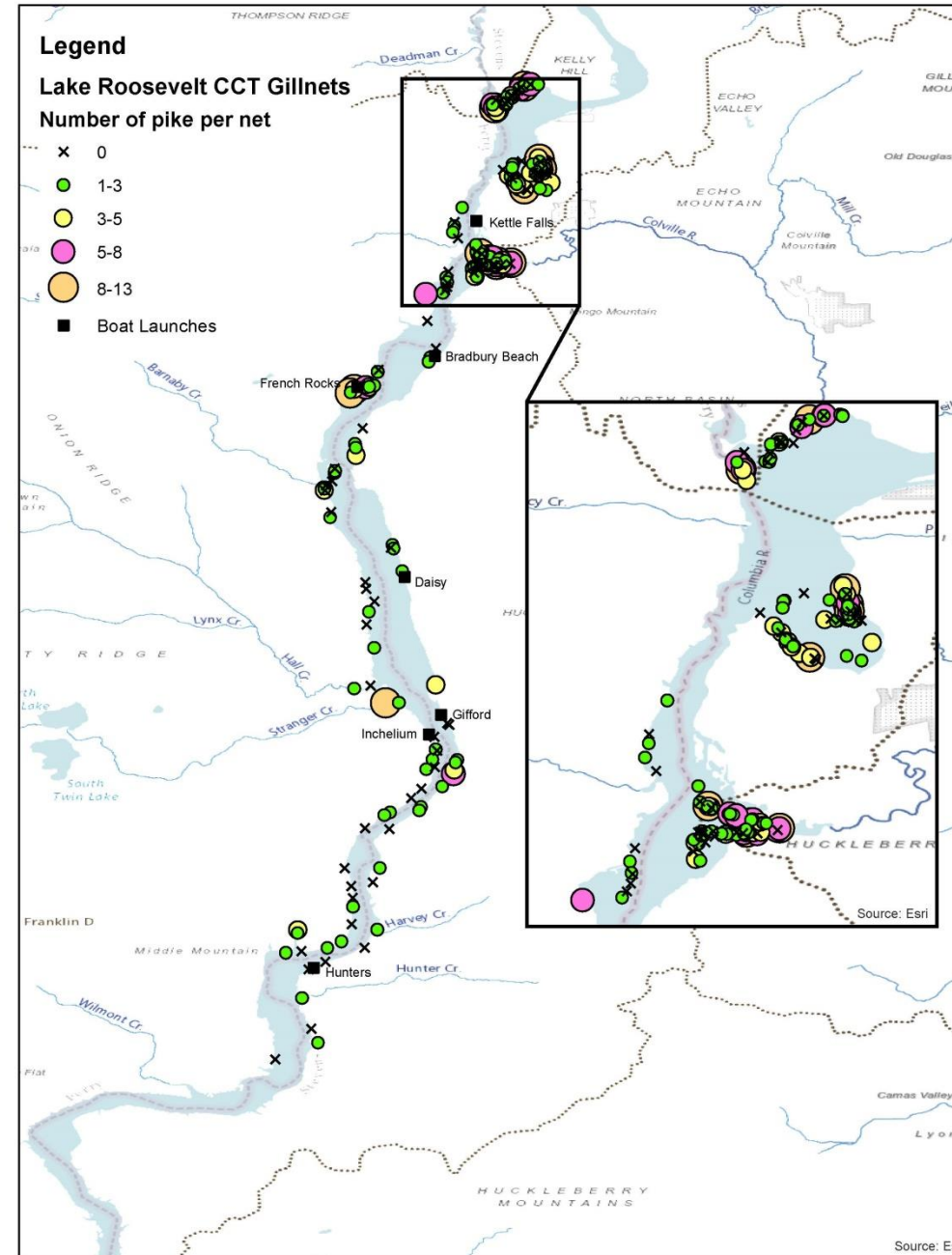


Percent of Pike captured per mesh size



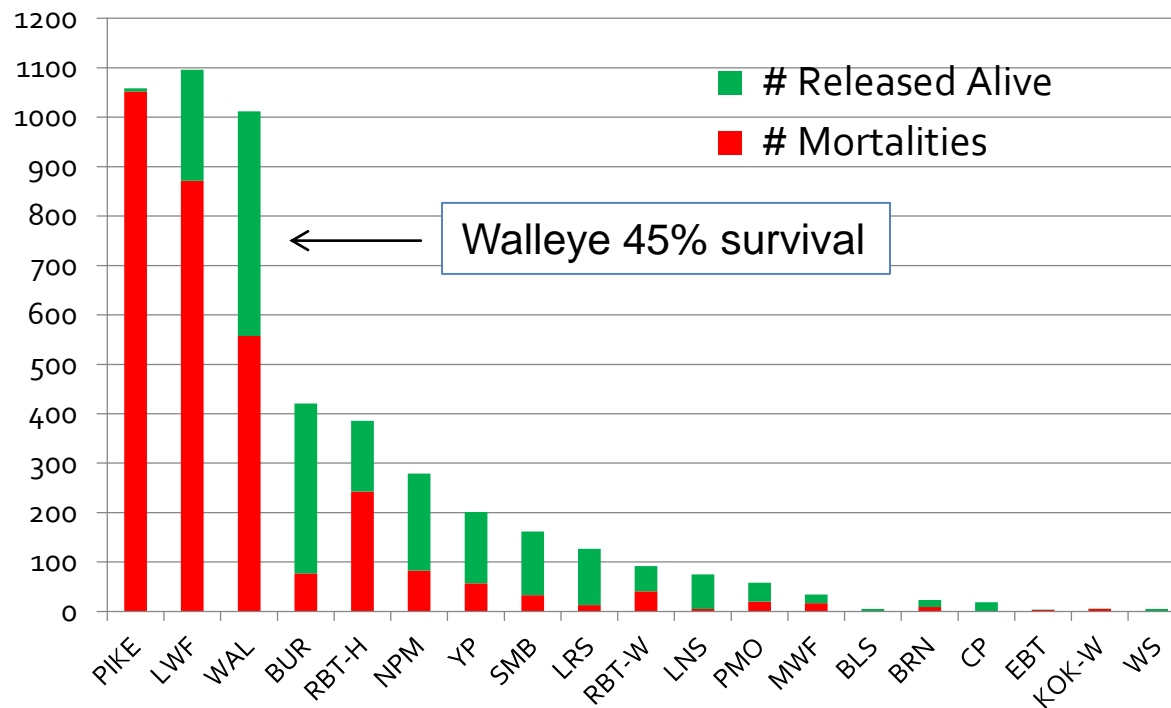
# 2017 Suppression

- The majority of Pike have been captured near the Kettle River mouth, Singers Bay, and the Colville River.
- Mean CPUE: 2.4 Pike/net
- This is the first year we have captured Pike near Hunters
- Plan to continue netting downstream
- Concurrent netting occurring in the Sanpoil River and Spokane Rivers, no Pike yet



# Suppression Total Catch for 2017

- Captured 5,447 fish and 1,083 Pike (as of June 29, 2017)
- Acceptable bycatch mortalities
  - Kill Lake Whitefish on purpose; Walleye had 45% survival; Hatchery Rainbow 37% survival; all other fish > 50% survival





# Fall Juvenile Electrofishing

Goal: Use non-lethal boat electrofishing to capture juvenile N. Pike in the fall

- In 2016, boat electrofishing in very shallow water (< 12 in) was successful at capturing juveniles
- Tend to congregate
- Removed **905 juveniles in 17 days** of effort (STI and CCT crews)
- 2017 Plan
  - Conduct 30 days of electrofishing (no BPA funds allowed)



# Pilot Work

Goal: Test other live collection techniques to determine if one is effective at removing Northern Pike with minimal bycatch

- Seining: Plan to test suspected juvenile rearing habitat
- Angling: Plan to test commercial style trolling (10 rods)
- Fyke Netting: Plan to test in juvenile areas
- Snorkel Surveys: Kettle River difficult to sample, no boat access. Need to identify Pike areas then implement suppression plans.



# Public Outreach

- Posted Northern Pike Signs at all Lake Roosevelt boat launches
- Presented Pike Plans to two Walleye Clubs
- Provided information to local newspapers, radio talk shows
- Social Media Outreach
  - Facebook, Instagram



## STOP THE SPREAD OF INVASIVE NORTHERN PIKE



Northern Pike (*Esox lucius*) are a Prohibited Species in Washington State. Anglers are encouraged to kill **ALL** Northern Pike caught. Harvested Northern Pike must be dead before anglers leave the water where they are caught.

**No minimum size or possession limit.**

Northern Pike are now present in Lake Roosevelt. This fish species is known to have negative impacts on native fish populations and popular sport fisheries. In addition, further spread of Northern Pike into downstream portions of the Columbia River poses a severe threat to Salmon and Steelhead recovery efforts.

**It is illegal to transport or release live fish without a WDFW permit.**

Penalty includes up to \$5,000 in Fines and A Year in Prison (RCW 77.15.250) and a person found guilty can also be ordered to pay all costs of capturing, controlling or killing those fish or their progeny (in excess of \$100,000).

If you see someone transporting or releasing live fish, please call the Washington State Patrol. They will contact the nearest WDFW officer.

Spokane County WSP Dispatch: 509-456-4101  
Stevens County WSP Dispatch: 509-684-7431





# Northern Pike Reward Program



Goal: Incentive for anglers to be a part of the solution

- Began May 1, 2017
- Pike drop off freezers/\$10 per Pike
- 216 heads turned in (\$2,106 payout)
- Continue program through 2018

**WANTED**

Northern Pike Heads  
**\$10 Reward**



**Attention Anglers:  
Help protect Lake  
Roosevelt from Invasive  
Northern Pike!**

# Future plans and needs

- Implement similar program in 2018
- Secure Funding for 2018 and beyond
- Co-managers (STI, CCT, WDFW) will work together on a Northern Pike Research and Suppression Project proposal for the NPCC and BPA
- Technical Group/Managers
  - Clarify RA and suppression targets
  - Need to review the data
  - Continue to refine research questions
  - Implement successful techniques





# Questions and Comments

Many thanks to our funding agencies and dedicated staff:

- Colville Tribe staff: Shay Wolvert, Bryan Jones, Charles Joseph, William Laramie, Robert Thomas, Jeffrey Joseph, Daniel Monaghan, Branditt West, Jeffrey Condon, Michael Peoples
- Spokane Tribe staff: Alix Blake, Chas Lawson, Donny Carter, Wyatt Thurman, Vaughan Lodge
- WDFW: Leslie King, Mitch Combs, Tyler Parsons, Marc Divens
- National Park Service: Meghan Lyons

