



## Summary of 2014 Northern Pike Suppression Results on Box Canyon Reservoir, Pend Oreille River, WA.

During the third year of mechanical suppression of northern pike (NP) in Box Canyon Reservoir crews deployed 861 nets and removed 3,976 northern pike. The Kalispel Natural Resources Department and Washington Department of Fish and Wildlife sampled 98 northern pike in the 2014 Spring Pike Index Netting (SPIN) Survey. This resulted in a catch per unit effort (CPUE) of 0.35 NP/ net-night (95% CI: 0.26 to 0.43), in sloughs and mainstem river between Riverbend and Pioneer Park Campground, which met the target of  $\leq 1.73$  NP/net-night for these sections of the reservoir. The CPUE north of Riverbend was 0.68 NP/ net-night and was higher than the target of  $\leq 0.50$  NP/net-night but fell within the 95% CI (0.34 to 1.01) which prevented initiation of Phase 2 of the mechanical suppression effort.

In the initial year (2012) of mechanical removal crews deployed 1,031 nets and removed 5,808 northern pike between March 19 and June 13. The 2012 SPIN survey took place between April 23 and April 26 with 60 nets deployed and 131 northern pike sampled. This resulted in a CPUE of 2.30 NP/net-night for all sloughs and the mainstem river south of Riverbend and CPUE of 0.80 NP/net-night for the mainstem river north of Riverbend.

The second year of mechanical suppression crews deployed 1,207 nets and removed 6,452 northern pike between March 5 and June 13 with a CPUE of 5.35 NP/ net-night. The 2013 SPIN Survey occurred from May 6 to May 9 and 410 northern pike were sampled. The resulting CPUE of 1.21 NP/ net-night (95% CI: 0.87-1.56), in sloughs and mainstem river between Riverbend and Pioneer Park Campground met the target for these sections of the reservoir while the CPUE north of Riverbend was higher than the target of  $\leq 0.50$  NP/net-night (1.44 NP/ net-night) and triggered Phase 2 of the mechanical suppression effort.

### Phase 1 - Mechanical Removal March 7-May 30:

- Netting took place in known spawning locations throughout the reservoir
- Two 2-3 man crews worked 5 days per week deploying 20-30 nets per day
- Collected biological information such as weight, length, sex and maturity on ~25% of net hauls
- Total nets deployed: 861 (39.4 Km/24.5 mi)
- Overall Phase 1 CPUE: 4.59 NP/ net-night

Phase 1 northern pike catch summary (Table 1):

- Total catch: 3,976 NP, 4.43 mT (9,757 lbs)
- Overall size range: 280 to 820 mm TL (11-32 inches), weight: 139-3,764 g (0.63 to 8.2 lbs.)

- Males averaged 516 mm TL (20 inches)
- Females averaged 543 mm TL (21 inches)
- Females made up an estimated 48% of the total catch for Phase 1, of which an estimated 69% were mature, ripe or spawned out (Table 2).
- Removed an estimated 1,169 mature pre-spawn females and 597 immature females
- 14% of NP catch was less than 450 mm TL (18 inches)

### **Spring Pike Index Netting May 5-May 9**

- Net placement sites were selected using a reservoir-wide spatially balanced random sampling design
- Five 3 person crews deployed up to 50 nets/day
- Collected biological information such as weight, length, sex and maturity, as well as growth structures for later analysis on all NP collected
- Total nets deployed: 197 (8.9 Km/5.5 mi)
- CPUE for the mainstem river north of Riverbend was 0.68 NP/net-night (target  $\leq 0.5$ ); CPUE for all sloughs and mainstem river south of Riverbend was 0.35 NP/net-night (target  $\leq 1.73$ )

#### SPIN catch summary (Table 1, Figure 1)

- Total catch: 98 NP, 0.085 mT (187 lbs)
- Overall size range: 369-678 mm TL (15-27 inches), 252-2,174 g (0.6-4.8 lbs.)
- Males averaged 501 mm TL (20 inches), 905 g (2.0 lb)
- Females averaged 477 mm TL (19 inches), 810 g (1.8 lbs)
- Females made up 39% of the NP sampled of which 35% were either mature, ripe or spawned out
- 39% of the NP total catch were less than 450 mm TL (18 inches)

### **Mechanical Suppression Bycatch Summary:**

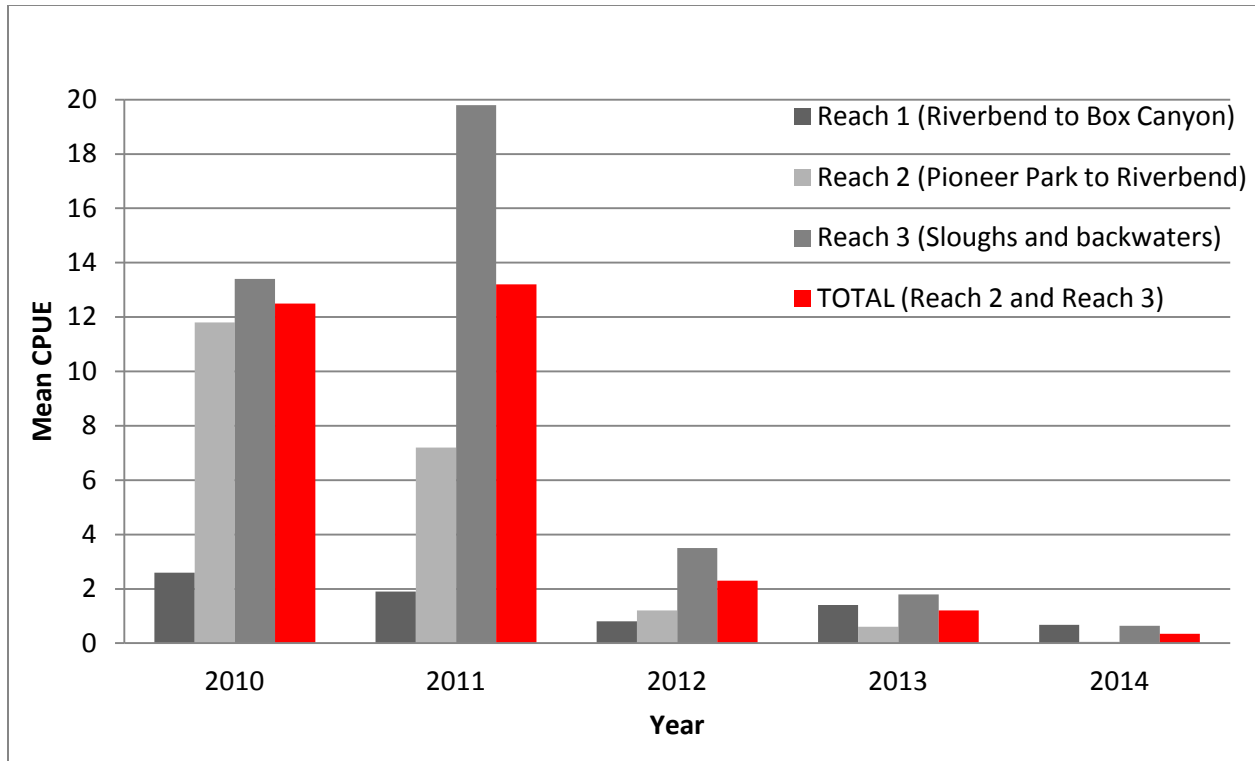
- 18 fish species, 8,891 individuals, >90% survival (Table 3)

**Table 1.** Summary of the 2014 mechanical removal effort and SPIN survey of northern pike in Box Canyon Reservoir.

	<b>Suppression Phase I</b>	<b>SPIN Survey</b>
Sampling Dates:	March 7 to April 30	May 5 to May 9
Days per Week:	5	4
Nets/Day:	20 -30	50
Total Nets:	861	197
<b>NP Catch-Per-Unit-Effort (CPUE):</b>		
Weekly Mean CPUE Range:	0.56 to 9.82	N/A
Overall CPUE:	4.59	North: 0.68 Slough and South: 0.35
Percent Positive Catch:	86%	28%
Most northern pike in one net:	43	5
<b>NP Catch Statistics:</b>		
Total Number:	3,976	98
Total Weight:	4.43mT (9,757 pounds)	0.085mT (188 pounds)
Total Length Range:	280 to 820 mm	349 to 678 mm
Weight Range:	139 to 3,764 g	252 to 2,174 g
Mean TL Males:	516 mm	501 mm
Mean TL Females:	543 mm	477 mm
Sex Ratio (% female):	48%	39%
Juvenile Catch (<450 mm):	14%	39%

**Table 2.** Estimated maturity rates of all northern pike removed during mechanical suppression efforts in 2014.

<b>Sex</b>	<b>Immature</b>	<b>Mature</b>	<b>Ripe</b>	<b>Spawned out</b>
<b>Female</b>	31%	61%	2%	6%
<b>Male</b>	9%	64%	25%	2%



**Figure 1.** Spring Pike Index Netting Survey results for 2010-2014. Note that northern pike suppression was initiated in 2012 prior to the SPIN Survey that year.

**Table 3.** Fish bycatch summaries for the 2014 mechanical removal efforts. Observed survival rates were >90 % for Phase 1.

<b>Common Name</b>	<b>Species Name</b>	<b>Phase 1 Total</b>
<b>Salmonidae</b>		
Rainbow Trout	<i>Oncorhynchus mykiss</i>	22
Lake Whitefish	<i>Coregonus clupeaformis</i>	24
Eastern Brook Trout	<i>Salvelinus fontinalis</i>	17
Brown Trout	<i>Salmo trutta</i>	81
Westslope Cutthroat Trout	<i>Oncorhynchus clarkii lewisi</i>	11
<b>Esocidae</b>		
Grass Pickerel	<i>Esox americanus vermiculatus</i>	5
<b>Cyprinidae</b>		
Peamouth	<i>Mylocheilus caurinus</i>	452
Northern Pikeminnow	<i>Ptychocheilus oregonensis</i>	64
Tench	<i>Tinca tinca</i>	2099
<b>Catostomidae</b>		
Longnose Sucker	<i>Catostomus catostomus</i>	9
Largescale Sucker	<i>Catostomus macrocheilus</i>	37
<b>Ictaluridae</b>		
Brown Bullhead	<i>Ameiurus nebulosus</i>	303
<b>Centrarchidae</b>		
Pumpkinseed	<i>Lepomis gibbosus</i>	739
Smallmouth Bass	<i>Micropterus dolomieu</i>	25
Largemouth Bass	<i>Micropterus salmoides</i>	302
Black Crappie	<i>Pomoxis nigromaculatus</i>	540
<b>Percidae</b>		
Yellow Perch	<i>Perca flavescens</i>	4233
Walleye	<i>Stizostedion vitreum</i>	18