

Northern Pikeminnow Dam Angling on the Columbia River

2018 Annual Report

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We appreciate the efforts of Scott Mengis as the Pikeminnow Dam Angling crew leader, along with Kyle Beckley, Tim Levandowsky and Steve Lines who served as our 2018 dam angler crew.

We also recognize Diana Murillo and Dennis Werlau for their work on Dam Angler data entry and document verification, and Dennis Werlau for producing the Dam Angling Weekly Field Activity Reports throughout the 2018 season.

ABSTRACT

We are reporting on the 2018 Northern Pikeminnow Dam Angling component of the Northern Pikeminnow Management Program (NPMP) as implemented by the Washington Department of Fish and Wildlife (WDFW). Angling took place within the boat restricted tailrace areas of The Dalles and John Day dams during 22 weeks from May 1st through October 3rd 2018. The objectives of this project were to (1) implement a recreational-type hook and line fishery harvesting Northern Pikeminnow from within the boat restricted zones (BRZs), where angling is unavailable to the public at The Dalles and John Day dams, (2) allocate Dam Angler effort between The Dalles and John Day dams based on Dam Angler CPUE in order to maximize harvest of Northern Pikeminnow, (3) collect, compile and report data on Dam Angler harvest, CPUE, gear/techniques and incidental catch for each project, (4) scan, record and report Passive Integrated Transponder (PIT) tag data from all Northern Pikeminnow, Smallmouth Bass, Walleye, and Channel Catfish caught by the Dam Angling crew and record with the presence of any external spaghetti tags, fin-clips, or signs of tag-loss from these fishes for use in coordination with other predation studies, (5) collect relevant biological data on all Northern Pikeminnow and other fishes caught by the 2018 Dam Angling crew.

A Dam Angling crew of four anglers harvested 4,874 Northern Pikeminnow during the 2018 season. Of those, 1,785 Northern Pikeminnow were harvested at The Dalles Dam and 3,089 were harvested at the John Day Dam. The crew fished a total of 1,900 hours during the 22 week fishery, averaging 222 fish per week and for a combined overall average catch per angler hour (CPUE) of 2.6 Northern Pikeminnow. At The Dalles Dam, the crew averaged 2.5 fish per angler hour, and cumulatively 32 Northern Pikeminnow per day. At the John Day Dam, the crew averaged 2.6 fish per angler hour with a cumulative crew total of 44 fish per day.

Based on the success of the WDFW Dam Angling crew in implementing the Dam Angling component of the NPMP from 2010-17, the 2018 Dam Angling crew continued to use back bouncing soft plastic lures with rod and reel as the primary angling method for harvesting Northern Pikeminnow from The Dalles and John Day dams. Incidental species most frequently caught and released by the Dam Angling crew in 2018 were Smallmouth Bass *Micropterus dolomieu* and Walleye *Sander vitreus*.

INTRODUCTION

Mortality of juvenile salmonids *Oncorhynchus spp.* migrating through the Columbia River system is a major concern of the Columbia Basin Fish and Wildlife Program, and predation is an important component of mortality (Northwest Power Planning Council 1987a). Northern Pikeminnow *Ptychocheilus oregonensis*, formerly known as northern squawfish (Nelson et al. 1998), are the primary piscine predator of juvenile salmonids in the Lower Columbia and Snake River Systems (Rieman et al. 1991). Rieman and Beamesderfer (1990) predicted that predation on juvenile salmonids could be reduced by up to 50% with a sustained exploitation rate of 10-20% on Northern Pikeminnow ≥ 275 mm FL (11 inches total length). The Northern Pikeminnow Management Program (NPMP) was created in 1990, with the goal of implementing fisheries to achieve the recommended 10-20% annual exploitation on Northern Pikeminnow ≥ 275 mm FL within the program area (Vigg and Burley 1989). The primary component of the NPMP is the Northern Pikeminnow Sport-Reward Fishery (NPSRF) implemented by the Washington Department of Fish and Wildlife (WDFW) (Burley et al. 1992). Beginning in 2010, WDFW was also contracted to conduct the Dam Angling component of the NPMP and 2018 marked the ninth consecutive year WDFW has implemented this component. The Dam Angling component of the NPMP utilized a four-person crew of experienced anglers using recreational-type hook and line angling techniques to harvest Northern Pikeminnow from within the boat-restricted zones (BRZ's) below The Dalles and John Day dams on the Columbia River in 2018.

The objectives of the 2018 Dam Angling component of the NPMP were to (1) implement a recreational-type hook and line fishery harvesting Northern Pikeminnow from within the boat restricted zones (BRZs), where angling is unavailable to the public at The Dalles and John Day dams, (2) allocate Dam Angler effort between The Dalles and John Day dams based on Dam Angler CPUE in order to maximize harvest of Northern Pikeminnow, (3) collect, compile and report data on angler harvest, CPUE, gear/techniques and incidental catch for each project, (4) scan, record and report Passive Integrated Transponder (PIT) tag data from all Northern Pikeminnow, Smallmouth Bass, Walleye and Channel Catfish caught by the Dam Angling crew and record the presence of any external spaghetti tags, fin-clips or signs of tag-loss from these fishes for use in coordination with other predation studies, and (5) collect relevant biological data on all Northern Pikeminnow and other fishes caught by the 2018 Dam Angling crew.

METHODS

Project Area

In 2018, as a continuing supplemental component to the NPMP, Northern Pikeminnow removal activities were conducted at The Dalles and John Day Dams on the Columbia River utilizing a Dam Angling crew (Figure 1). Dam Angling activities in 2018 were planned for a five month season scheduled to be from May through September. At both The Dalles, and John Day Dams, all angling activities were conducted within the tailrace BRZs where no public angling was permitted. At The Dalles Dam, the Dam Angling crew fished primarily along the turbine deck (Figure 2). At the John Day Dam, the crew fished exclusively along the turbine deck (Figure 3).

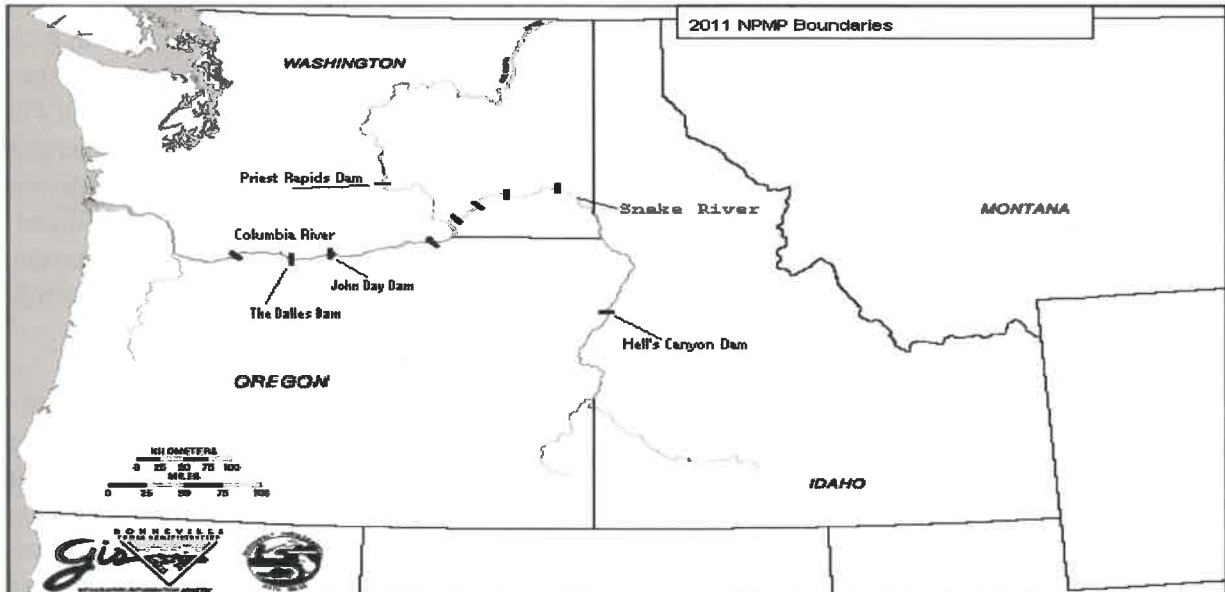


Figure 1. Northern Pikeminnow Management Program Boundaries, including 2018 Dam Angling sites



Figure 2. Angling Locations for the 2018 Dam Angling Crew at The Dalles Dam



Figure 3. Angling Locations for the 2018 Dam Angling Crew at the John Day Dam

The Dam Angling Season

In order to achieve the primary project objective of maximizing harvest of predatory Northern Pikeminnow in 2018, WDFW continued to use the Dam Angling Strategy (DAS) developed in 2011 where full scale angling activities were conducted when CPUE was ≥ 2.0 fish/angler hour, and reduced scale angling was conducted when CPUE fell below 2.0 fish/angler hour. The 2018 Dam Angler CPUE goal remained set at 2.0 fish/angler hour as established in our original 2011 DAS (Dunlap et al. 2012).

The Dam Angling Crew

The four member Dam Angling crew typically worked four ten hour days a week, (usually Tuesday - Friday) during the 2018 season (Figure 4). Angling start times in the morning varied from approximately 4:30 am to 6:00 am at The Dalles Dam and from 5:00 am to 6:00 am at the John Day Dam. Evening times ranged from 6:00 pm to 1:00 am. As part of the four person angling crew, a crew leader was present each day to ensure angler safety and supervision, to collect, record and compile data on Northern Pikeminnow harvest, other fish species caught, and so that NPMP project protocols and Corps of Engineers (USACE) rules were adhered to.



Figure 4. The Dam Angling Crew at John Day Dam

Angling Gear

Dam anglers used Berkley Air IM8 Graphite 10'6" (2-8 oz. extra heavy casting) rods equipped with either Daiwa TD Luna 253 or Shimano Calcutta 400 series reels. Each reel was spooled with a 20# test braided main line (Power Pro), tied to a size 7 barrel swivel and a 24"-30" monofilament leader of 15-20# Maxima (Figure 5). Cannonball sinkers were attached to the swivel using a 4-6" dropper line of 12# monofilament leader. Cannonball weights varied from 1-6 ounces depending on river flow. Terminal gear consisted primarily of assorted soft plastic lures rigged with two octopus style hooks (size 1 to 1/0 Gamakatsu hooks) spaced at 1 1/8" apart (Figure 6). Hook size varied in order to match the size of the soft plastic lure. Soft plastic lures used were in the 2-5" size range and included tubes, flukes, grubs and sassy shad.

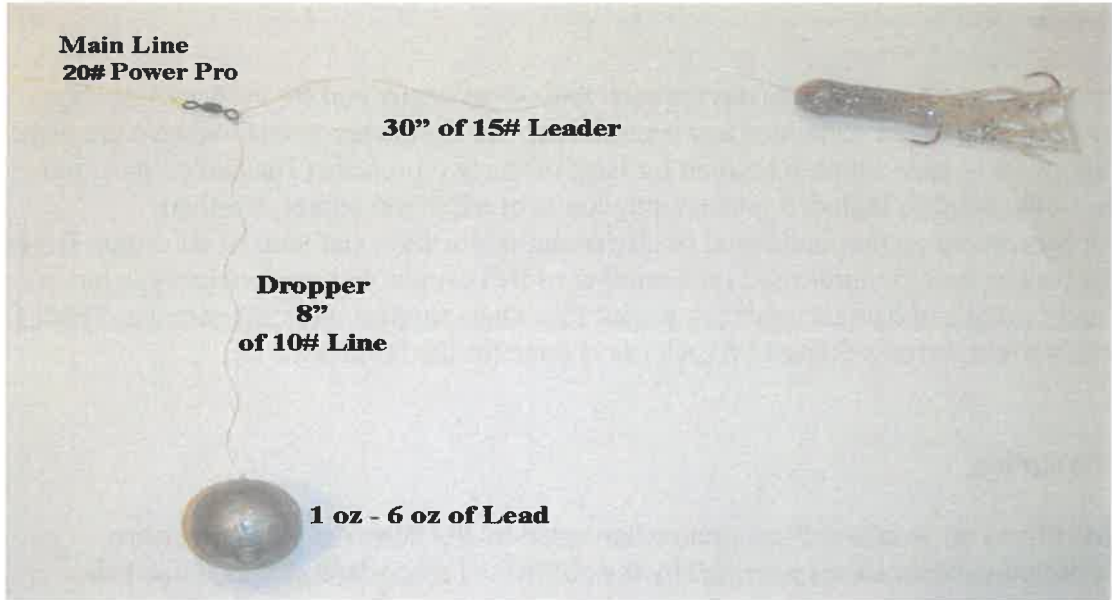


Figure 5. Example of Typical Rigging Used by 2018 NPMP Dam Anglers



Figure 6. Examples of Soft Plastic Tube Baits Used by 2018 NPMP Dam Anglers

Data Collection

Creel data were recorded onto data sheets for each individual angler and for each angling day. Angler data sheets were then combined and summarized into daily crew totals, which were then combined into weekly crew totals submitted for each of the two projects (The Dalles and John Day dams). Collected data included total angling hours of effort per angler, Northern Pikeminnow harvest per angler, incidental catch per angler, location and hour of all caught fishes by angler, as well as specific lures used (and number of fish caught with each color/type lure by angler. Weekly catch and harvest totals (by project) for Dam Anglers were submitted to PSMFC using a Weekly Field Activity Report (WFAR) as is done for the NPSRF.

Biological Sampling

Fork lengths (FL) of all Northern Pikeminnow harvested by the Dam Angling crew were recorded on biological data sheets provided by the NPSRF. Technicians also examined all Northern Pikeminnow for the presence of external tags (spaghetti, floy, etc.), fin-clip marks, and signs of tag-loss. Complete biological data were collected from all spaghetti tagged Northern Pikeminnow including FL, sex (determined by evisceration), and scale samples if specified. Spaghetti tagged Northern Pikeminnow carcasses were then labeled and preserved for later data verification and/or tag recovery. Spaghetti tags from harvested Northern Pikeminnow along with biological data were recorded on a NPSRF tag envelopes and all tag data were submitted to WDFW Tag Lead Biologist for processing. Processed tag recovery data were then provided to ODFW for NPMP exploitation estimates.

PIT Tag Detection

All Northern Pikeminnow collected by Dam Anglers during 2018 were scanned for Passive Integrated Transponder (PIT) tags. Northern Pikeminnow harvested by anglers participating in the NPSRF have been found to ingest juvenile salmonids which have been PIT tagged by other studies within the basin (Glaser et al. 2001). In addition, PIT tags have also been used by ODFW as a secondary mark in all Northern Pikeminnow fitted with spaghetti tags (beginning in 2003) as part of the NPMP's biological evaluation activities (Takata and Koloszar 2004). Dam Angling technicians were required to scan 100% of all harvested Northern Pikeminnow for PIT tags using Biomark portable transceivers (model #HPR.PLUS.04V1). Technicians also scanned all incidental catches of Walleye, Smallmouth Bass and Channel Catfish for PIT tags from ingested salmonids. Scanning began on the first day of angling and continued throughout the duration of Dam Angling activities. Technicians individually scanned all Northern Pikeminnow for PIT tag presence, and complete biological data were recorded from all Northern Pikeminnow with positive readings. All Northern Pikeminnow with PIT tags were labeled and preserved for later dissection and tag recovery. All PIT tag data were verified after recovery of PIT tags by WDFW Tag Lead Biologist, entered into the PIT Tag Information System (PTAGIS) and provided to ODFW.

Northern Pikeminnow Processing

During biological sampling, all Northern Pikeminnow were caudal clipped as an anti-fraud measure to eliminate the possibility of previously processed Northern Pikeminnow being submitted to the Sport-Reward Fishery for payment. Sampled Northern Pikeminnow were iced and transported to cold storage facilities from which they were ultimately delivered to rendering facilities for final disposal.

RESULTS AND DISCUSSION

Combined The Dalles / John Day Dam Findings

2018 Dam Angling Season

The 2018 Dam Angling Season took place from May 1st through October 3rd. River conditions were challenging and harvest was low during the first five weeks of the season (weeks 18-22) as reflected in Figure 7. Harvest did not really start to take off until runoff receded in week 23, and then remained good through week 31. Late season angling was also challenging, as Northern Pikeminnow in large numbers could not be consistently found. Total harvest for The Dalles and John Day dams combined was 4,874 Northern Pikeminnow in 1,900 angling hours, with a combined CPUE of 2.6 fish per angler hour. The Dam Angling crew exceeded the CPUE goal of 2.0 fish/angler hour (for the first time during the 2018 season) in week 23, and remained above it through week 31 during the 2018 season (Figure 8). Per our DAS protocol (Dunlap et al. 2012), weeks with CPUE under the 2.0 fish/angler hour goal were typically due to the Dam Angling crew deploying only a partial crew (< 50% effort) and “prospecting”, to locate and/or determine if catchable numbers of fish were present and/or available.

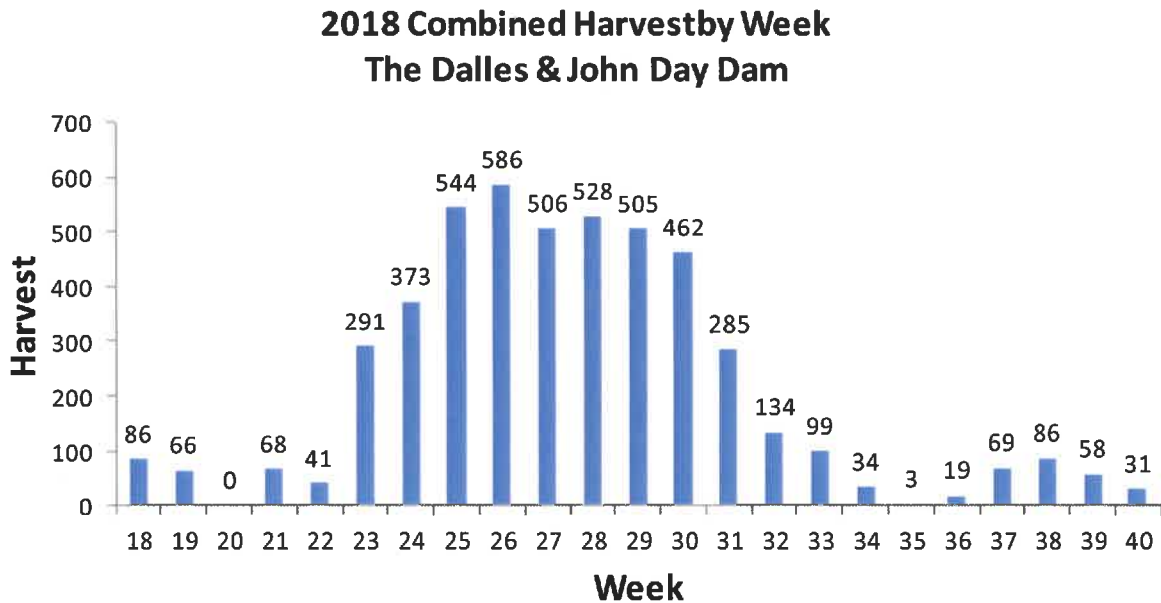


Figure 7. 2018 Weekly Harvest of The Dalles (TD) and John Day (JD) Dams Combined

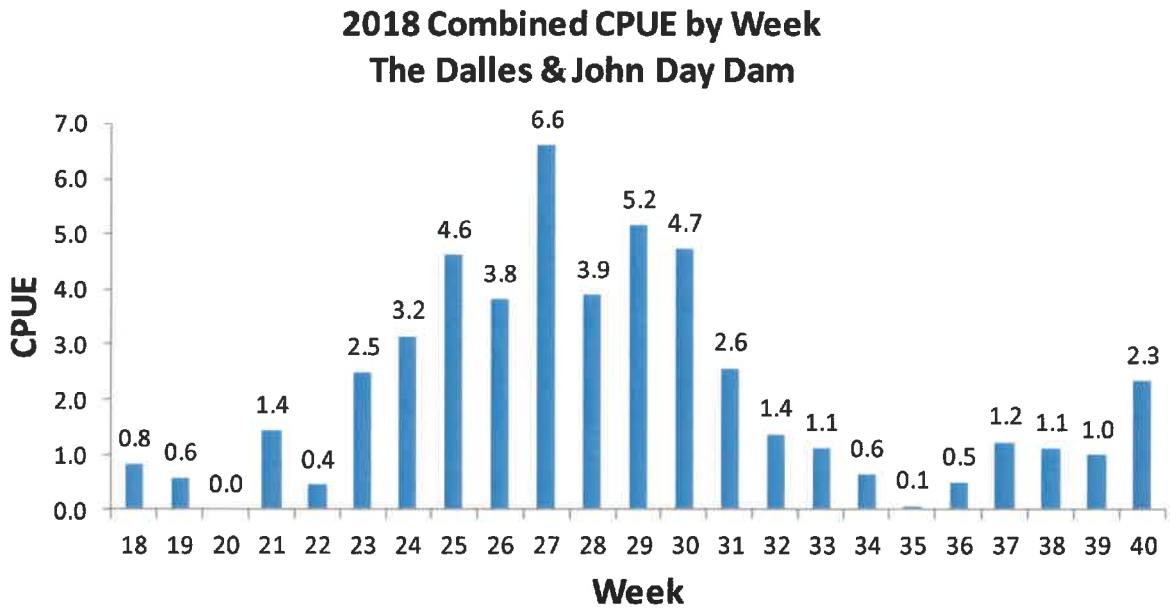


Figure 8. 2018 Weekly CPUE (fish/angler hour) of The Dalles (TD) and John Day (JD) Dams Combined

Angling Gear and Technique

The 2018 Dam Angling crew primarily targeted fishing areas and fishing times at each dam that had been productive in the past (Dunlap et al. 2018). Our top producing lure in 2018 was the 3.75” Gitzit tube in Smoke/Black Copper Glitter color soft plastic lure back bounced off the turbine decks, which accounted for 2,069 harvested Northern Pikeminnow. A list of the top 5 most productive soft plastic lures used by the Dam Angling crew in 2018 is presented in Table 1.

Table 1. Top 5 Northern Pikeminnow Lures used by 2018 WDFW Dam Angling Crew

Northern Pikeminnow Lures			
Brand/style	Size	Color	# N. Pikeminnow Caught
Canyon/ tube bait	3.75”	Smoke/Black Copper Glitter	2,069
Gitzit/ tube bait	3.50”	Pearl/Black Smoke Purple	1,107
Gitzit/ tube bait	3.50”	Smoke Sparkle	476
Gitzit/ tube bait	3.50”	Smoke/Clear Pink Belly	196
Canyon/ tube bait	2.50”	Smoke/Black Copper Glitter	184

Angling Times

Time of day continued to make a difference in harvest success during the 2018 season. Dam Angler catch data from previous seasons had indicated that morning hours prior to noon were consistently the most productive times for harvesting Northern Pikeminnow (Dunlap et al. 2018). Results for the 2018 season indicated that 66% of the Dam Angler harvest of Northern Pikeminnow occurred prior to noon (Table 2). Evening hours also continued to show some productivity at The Dalles Dam in 2018 (Table 3).

Table 2. Combined 2018 WDFW Dam Angler Hourly Harvest Totals for The Dalles (TD) and John Day (JD) dams

Hourly Northern Pikeminnow Harvest (combined TD and JD totals)

Time of day	Harvest	% of Harvest
4:30 a.m. – 6:00 a.m.	441	9%
6:00 a.m. – 7:00 a.m.	470	10%
7:00 a.m. – 8:00 a.m.	475	10%
8:00 a.m. – 9:00 a.m.	482	10%
9:00 a.m. – 10:00 a.m.	404	8%
10:00 a.m. – 11:00 a.m.	433	9%
11:00 a.m. – 12:00 p.m.	505	10%
12:00 p.m. – 1:00 p.m.	346	7%
1:00 p.m. – 6:00 p.m.	100	1%
6:00 p.m. – 7:00 p.m.	57	1%
7:00 p.m. – 8:00 p.m.	148	3%
8:00 p.m. – 9:00 p.m.	181	4%
9:00 p.m. – 10:00 p.m.	220	5%
10:00 p.m. – 11:00 p.m.	235	5%
11:00 p.m. – 12:00 a.m.	225	5%
12:00 a.m. – 1:00 a.m.	112	2%
1:00 a.m. – 4:00 a.m.	40	1%

Table 3. 2018 WDFW Dam Angler Hourly Northern Pikeminnow Harvest Comparison (TD vs JD)

Time of day	The Dalles Dam		John Day Dam	
	Harvest	% of Harvest	Harvest	% of Harvest
4:30 a.m. – 6:00 a.m.	161	9%	280	9%
6:00 a.m. – 7:00 a.m.	138	8%	332	11%
7:00 a.m. – 8:00 a.m.	139	8%	336	11%
8:00 a.m. – 9:00 a.m.	143	8%	339	11%
9:00 a.m. – 10:00 a.m.	112	6%	292	9%
10:00 a.m. – 11:00 a.m.	120	7%	313	10%
11:00 a.m. – 12:00 p.m.	112	6%	393	13%
12:00 p.m. – 1:00 p.m.	98	5%	248	8%
1:00 p.m. – 6:00 p.m.	9	1%	91	3%
6:00 p.m. – 7:00 p.m.	0	0%	57	2%
7:00 p.m. – 8:00 p.m.	47	3%	101	3%
8:00 p.m. – 9:00 p.m.	88	5%	93	3%
9:00 p.m. – 10:00 p.m.	148	8%	72	2%
10:00 p.m. – 11:00 p.m.	180	10%	55	2%
11:00 p.m. – 12:00 a.m.	186	10%	39	1%
12:00 a.m. – 1:00 a.m.	87	5%	25	1%
1:00 a.m. – 4:00 a.m.	17	1%	23	1%
Total	1,785	100%	3,089	100%

Incidental Catch

The Dam Angling crew incidentally caught the fish species listed in Table 4 while targeting Northern Pikeminnow at The Dalles and John Day dams in 2018. All incidentally caught fish species were released in 2018. Incidental species most often caught were Walleye *Sander vitreus* and Smallmouth Bass *Micropterus dolomieu*. The Dam Angling crew continued to observe large numbers of juvenile lamprey *Entosphenus* spp. and/or *Lampetra* spp. regurgitated by Northern Pikeminnow caught at The Dalles Dam and John Day Dam during May and June.

Table 4. 2018 WDFW Dam Angler Incidental Catch by Project

Incidental Catch		
Species	The Dalles Dam	John Day Dam
Smallmouth Bass	54	858
Walleye	12	197
Sculpin	13	12
American Shad	48	89
Channel Catfish	0	13
White Sturgeon	1	20
Pearmouth	0	8
Yellow Perch	0	2
Sucker	0	4

Tag Recovery

All Northern Pikeminnow harvested by Dam Anglers in 2018 were visually examined for the presence of external spaghetti tags and 100% were individually scanned with PIT tag readers for the presence of PIT tags. Two Northern Pikeminnow retaining both the external ODFW spaghetti tags and ODFW secondary mark PIT tags were recovered by the Dam Angling crew in 2018 (Figure 9), equal to 2017 (Dunlap et al. 2018). In addition, there were a total of 9 Northern Pikeminnow recovered that had lost spaghetti tags, but retained PIT tags (tag-loss) implanted by ODFW as a secondary tag mark as part of ODFW's biological evaluation of the NPMP (Carpenter et al. 2019). This was 4 less tag-loss Northern Pikeminnow recovered than in 2017 (Dunlap et al. 2018). The 2018 Dam Angling crew also recovered 5 PIT tags from juvenile salmonids (all hatchery Chinook) ingested by Northern Pikeminnow at The Dalles and John Day dams (Figure 10). This was one less than the number of ingested recoveries from Northern Pikeminnow in 2017 (Dunlap et al. 2018). The overall occurrence rate for ingested PIT tagged fishes recovered from Northern Pikeminnow caught by Dam Anglers in 2018 was 1:975 Northern Pikeminnow, compared to 1:875 for the Dam Angling crew in 2017 (Dunlap et al. 2018) and 1:6,934 for the 2018 NPSRF (Hone et al. 2019).

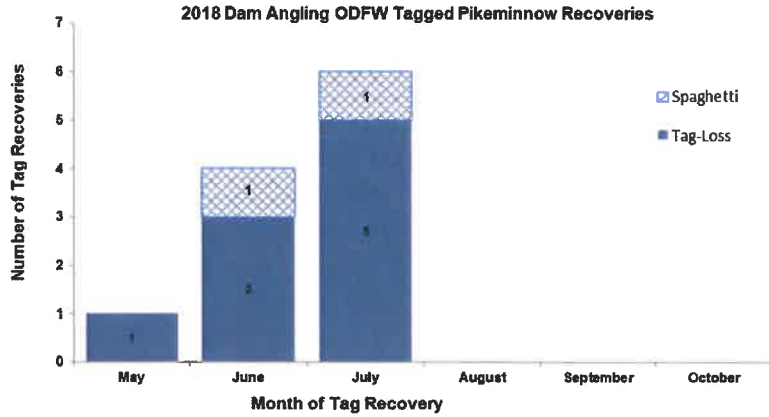


Figure 9. Recoveries of Spaghetti Tag and Tag-Loss Recoveries From the 2018 Dam Angling

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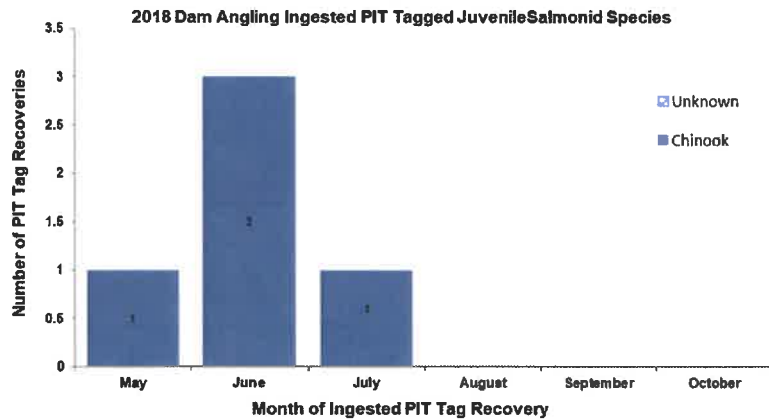


Figure 10. Recoveries of Ingested Salmonid PIT Tags From the 2018 Dam Angling

Figure 10. Recoveries of Ingested Salmonid PIT Tags From the 2017 Dam Angling

The Dalles Dam

Harvest

The Dam Angling crew harvested 1,785 Northern Pikeminnow in 20 weeks of Dam Angling at The Dalles Dam in 2018. Weekly harvest for the Dam Angling crew averaged 89 fish per week and ranged from peak harvest of 465 Northern Pikeminnow in week 26 (July 25 – July 1) to 0

fish in week 35 (no effort was spent during weeks 20 and 36) (Figure 11). River outflows during the first 5 weeks of 2018 (Figure 12) were more challenging than in 2017 and as a result, harvest was down during that time (Dunlap et al. 2018). Overall harvest at The Dalles Dam did end up slightly higher than in 2017 (Dunlap et al. 2018) and peak harvest for Dam Angling occurred the same week (26) as the 2018 NPSRF (Hone et al. 2019).

The 1,785 Northern Pikeminnow harvested at The Dalles Dam in 2018 included no spaghetti tagged and four tag-loss Northern Pikeminnow which were from ODFW’s biological evaluation of the NPMP. The 2018 Dam Angling crew also recovered two Northern Pikeminnow that had ingested juvenile salmonids containing PIT tags.

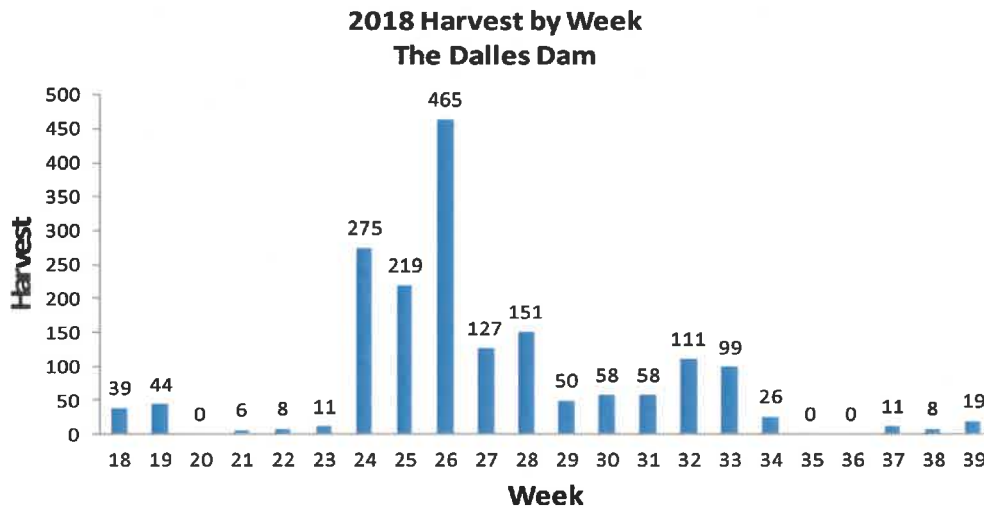


Figure 11. 2018 Weekly Dam Angler Harvest of Northern Pikeminnow at The Dalles Dam

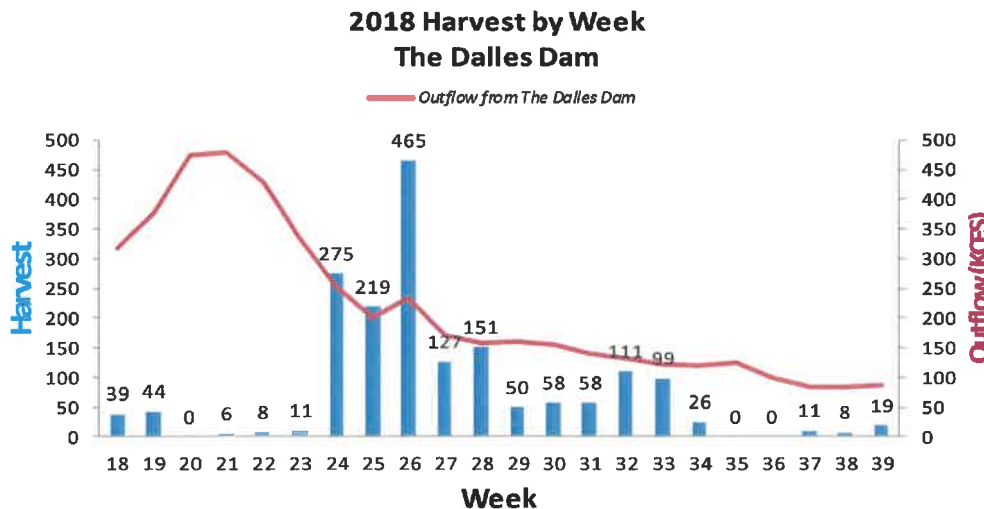


Figure 12. 2018 Weekly Northern Pikeminnow Harvest Compared to Outflow

As was the case in past Dam Angling seasons, certain areas and/or turbines at The Dalles Dam were better producers in 2018. The angling areas between Turbine #7 (T7) and Turbine #14 (T4)

The Dalles Dam NPM Harvest % by Turbine

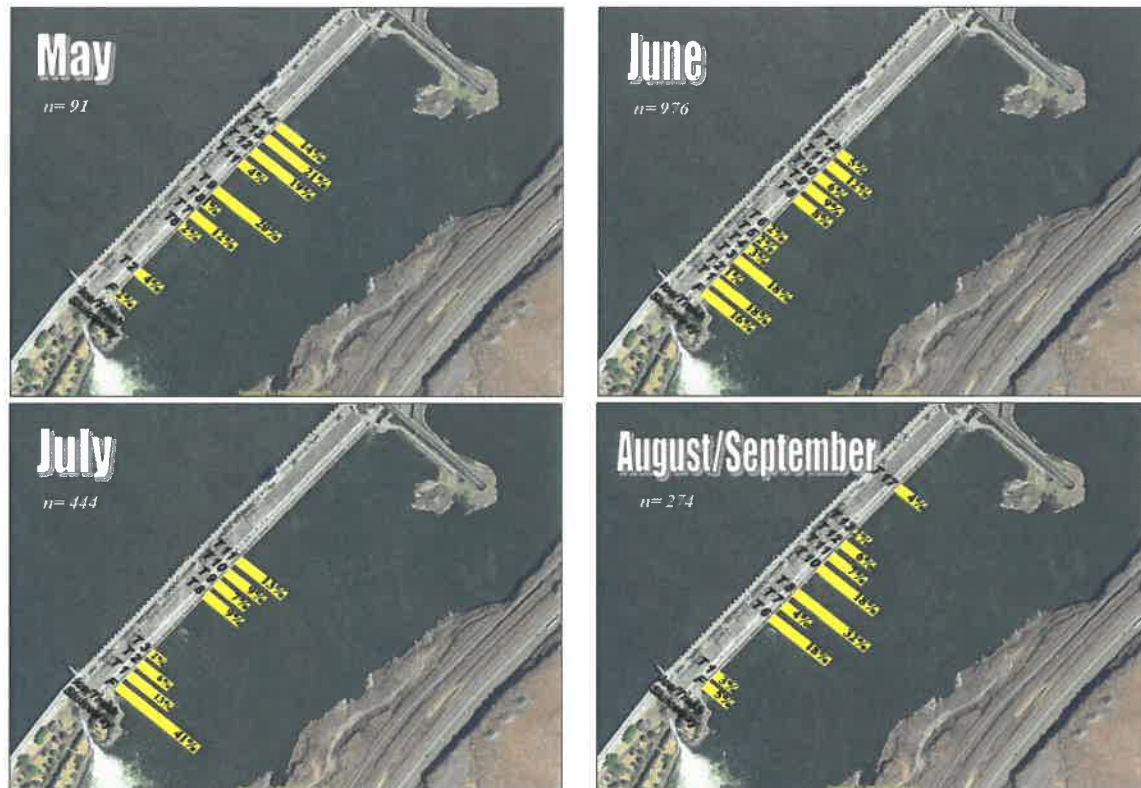


Figure 14. 2018 Monthly Harvest Percent (*rounded) by Area at The Dalles Dam (T=turbine#, F = fishway)

When we look at Northern Pikeminnow harvest at The Dalles Dam over the course of the 2018 Dam Angling season, our harvest data showed some variation in best harvest areas during the May-September Dam Angling season (Figure 14). In general, 2018 data shows the highest concentrations of Northern Pikeminnow were harvested near the ice/trash sluiceway in June and July, then more scattered harvest during the rest of the season.

Incidental Catch

While the Dam Angling crew did not target fish species other than Northern Pikeminnow in their angling activities during 2018, they did catch 54 Smallmouth Bass and 12 Walleye at The Dalles Dam in 2018 (Figure 15). The 12 Walleye caught in 2018 is much less than the 66 Walleye caught in 2017 and 55 Walleye caught in 2016 (Figure 15). Part of the reason that the Walleye catch was down was because USACE asked the Dam Angling crew not to fish the area between the Fishway and the Ice Trash Sluice Way due to safety concerns. Four of the 12 Walleye caught by Dam Anglers in 2018 were caught from the Fishway (Figure 16) and historically over 50% of all non-native predators (Smallmouth Bass and Walleye) are caught by the Dam Angling crew in the closed area between the Fishway and the Ice Trash Sluice Way (Dunlap et al. 2018). All Smallmouth Bass and Walleye were scanned for PIT tags and released, but no PIT tags from ingested salmonids were recovered from these fish at The Dalles Dam in 2018.

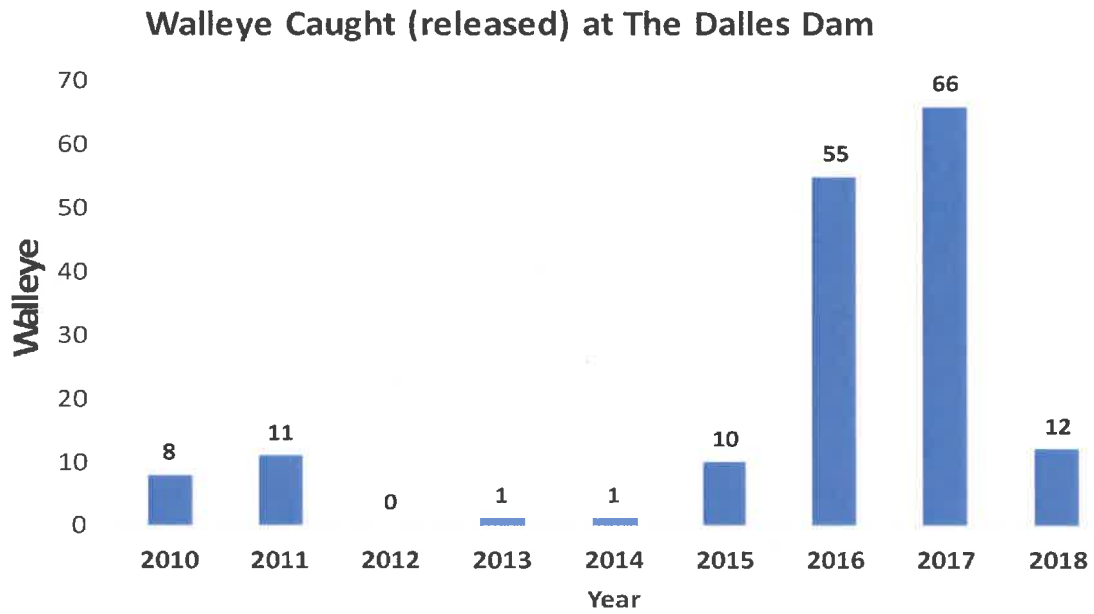


Figure 15. 2018 Annual Dam Angler Catch of Walleye at The Dalles Dam

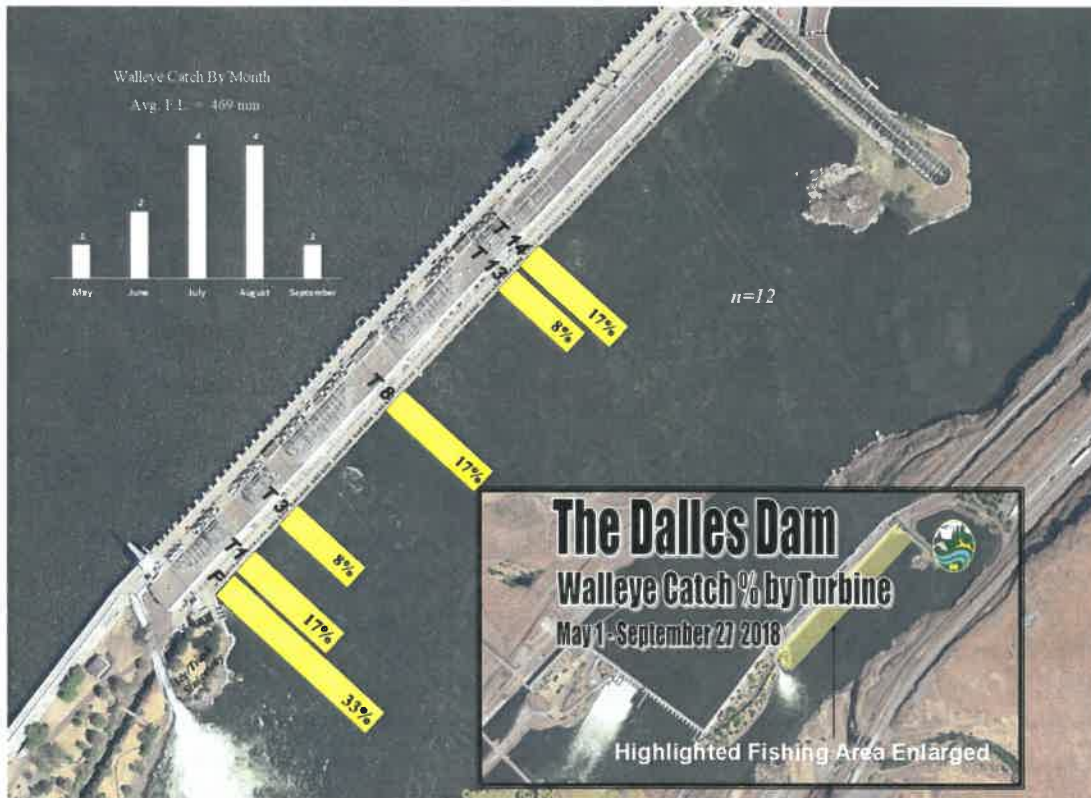


Figure 16. 2018 Incidental Catch of Walleye (*rounded) by Dam Angling Crew at The Dalles Dam

Effort

Total angler hours of effort at The Dalles Dam decreased to 700.8 hours in 2018 from 778.5 hours in the 2017 Dam Angling season (Dunlap et al. 2018). The Dam Angling crew fished 62 days at The Dalles Dam over 20 weeks and spent 37% of total Dam Angling effort at The Dalles Dam in 2018.

CPUE

The Dam Angling crew harvested 1,785 Northern Pikeminnow in 700.8 angler hours at The Dalles Dam in 2018 for an overall average CPUE of 2.5 fish/angler hour, up from 2.3 in 2017 (Dunlap et al. 2018). Peak weekly CPUE at The Dalles Dam occurred during week 29 (Figure 17). Challenging river conditions early and late in the 2018 season resulted in overall CPUE at The Dalles Dam exceeding the 2.0 fish/angler hour goal for only 10 of the 20 weeks fished (no effort was spent in weeks 20 & 36).

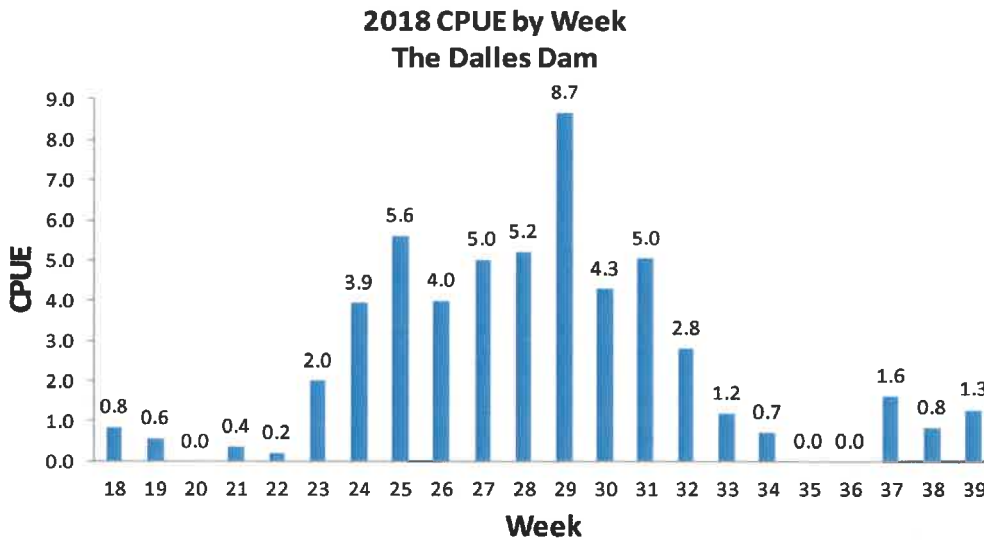


Figure 17. 2018 Weekly Dam Angler CPUE at The Dalles Dam

Fork Length Data

Fork lengths were recorded from 1,785 (100%) Northern Pikeminnow harvested by the Dam Angling crew at The Dalles Dam during the 2018 Season. The length frequency distribution of Northern Pikeminnow harvested at The Dalles Dam in 2018 is presented in Figure 18. Mean fork length for Northern Pikeminnow caught by the Dam Angling crew at The Dalles Dam in 2018 was 355 mm (SD=52.1), up from 332 mm in 2017 (Dunlap et al. 2018). By comparison, the mean fork length for the 2018 NPSRF was 272.6 (Hone et al. 2019).

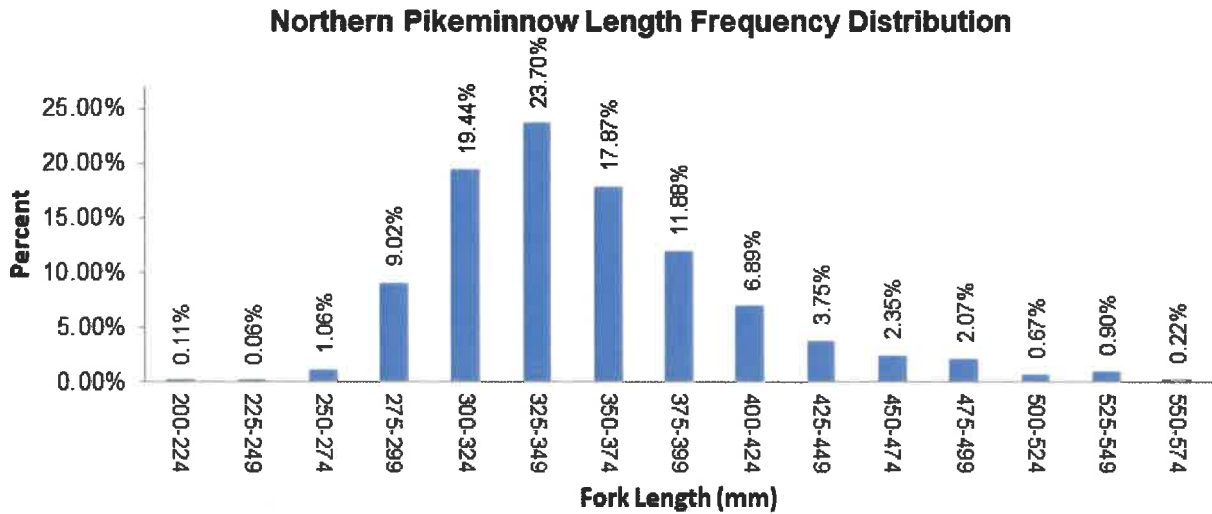


Figure 18. Northern Pikeminnow Length Frequency Distribution at The Dalles Dam in 2018

John Day Dam

Harvest

The Dam Angling crew harvested 3,089 Northern Pikeminnow over 22 weeks at the John Day Dam in 2018. Weekly harvest averaged 140 fish per week and ranged from zero fish in weeks 33 to a peak of 455 in week 32 (July 16 – July 22) (Figure 19). Peak weekly harvest at the John Day Dam occurred in week 29 which was one week earlier than in 2017 (Dunlap et al. 2018) and 4 weeks later than the week 26 peak for the 2018 Sport Reward Fishery (Hone et al. 2019). The 3,089 harvested Northern Pikeminnow included two spaghetti tagged and 5 tag-loss Northern Pikeminnow which were part of ODFW’s biological evaluation of the NPMP (Carpenter et al. 2019). We also recovered three PIT tags from juvenile salmonids ingested by a Northern Pikeminnow at the John Day Dam in 2018.

Average outflows at the John Day Dam during the best harvest weeks of 2018 (weeks 27-30) was 175 kcfs (Figure 20).

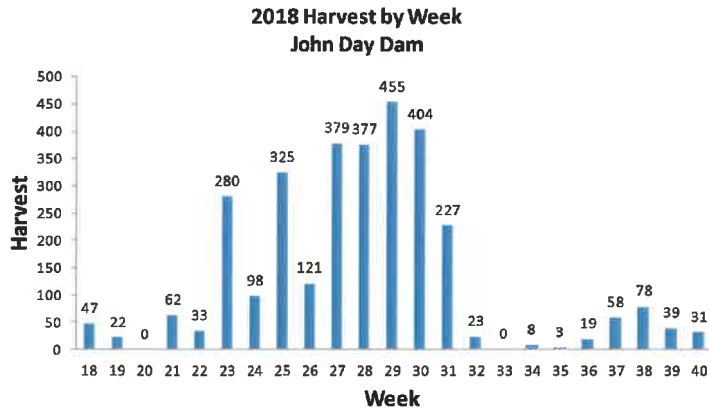


Figure 19. 2018 Weekly Dam Angler Harvest of Northern Pikeminnow at the John Day Dam

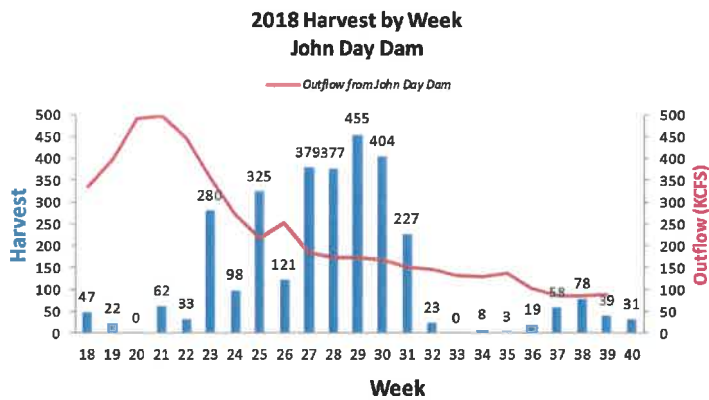


Figure 20. 2018 Weekly Dam Angler Harvest of Northern Pikeminnow at the John Day Dam vs Outflow

Certain turbines at the John Day Dam created water flow conditions that were more favorable for harvesting Northern Pikeminnow than others (Dunlap et al. 2018). Turbine #8 (T8) was the single best producing area at the John Day Dam in 2018 accounting for 28% of the total Northern Pikeminnow harvest (Figure 21). Harvest of Northern Pikeminnow peaked during July and was best at T8 (Figure 22).



Figure 21. 2018 Overall Percent of Northern Pikeminnow Harvest by Area (T=turbine#)

John Day Dam NPM Harvest % by Turbine

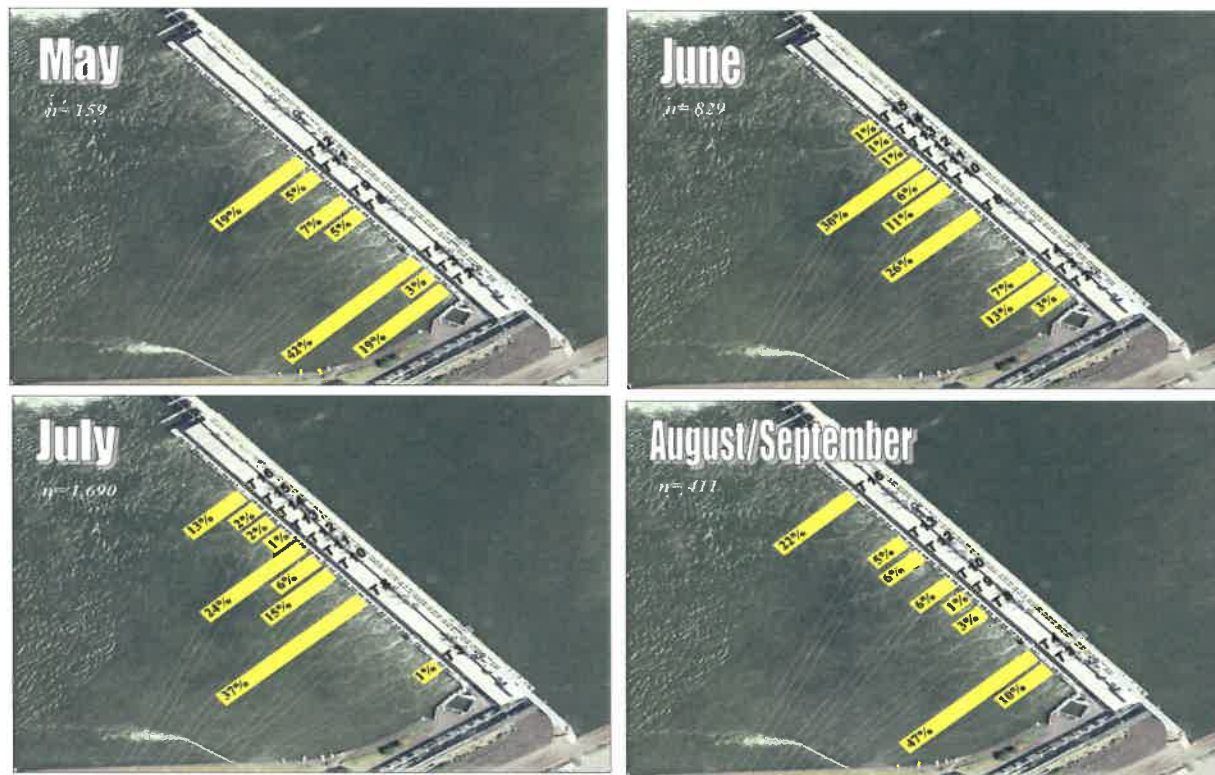


Figure 22. 2018 Monthly Percent (*rounded) of Northern Pikeminnow Harvest by Area (T=turbine#)

Incidental Catch

The Dam Angling crew did not target fish species other than Northern Pikeminnow in their angling activities, but they did catch, scan and release 197 Walleye at the John Day Dam in 2018. (Figure 23). Of the 197 Walleye caught by Dam Anglers at John Day, there was one positive PIT tag recovery from an ingested juvenile salmonid. Through PTAGIS queries, we were able to determine that this PIT tags was from a Hatchery Fall Chinook. The Dam Angling crew also caught and released 858 Smallmouth Bass (smb) at the John Day Dam in 2018.

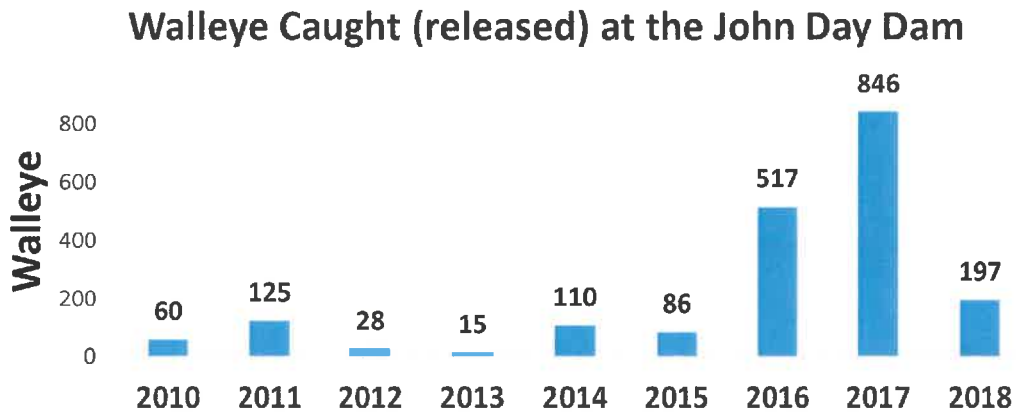


Figure 23. 2018 Annual Dam Angler Catch of Walleye at the John Day Dam

Effort

Total effort at the John Day Dam was 1,199.25 angler hours in 2018, up from 1,042.50 hours in 2017 (Dunlap et al. 2018). The crew averaged a combined 54.5 angler hours of effort per week and 16 angler hours of effort per day at the John Day Dam in 2018. The Dam Angling crew spent 63% of total Dam Angling effort (75 days over 22 weeks) at the John Day Dam in 2018.

CPUE

The Dam Angling crew harvested 3,089 Northern Pikeminnow in 1,199.25 angler hours at the John Day Dam in 2018 for an overall average CPUE of 2.6 fish/angler hour, down from 3.3 in 2017 (Dunlap et al. 2018). Peak weekly CPUE at the John Day Dam occurred during week 27 (Figure 24), 2 weeks earlier than at The Dalles Dam. The Dam Angling crew met or exceeded the overall CPUE goal of 2.0 fish/angler hour at the John Day Dam for 11 of the 22 weeks fished.

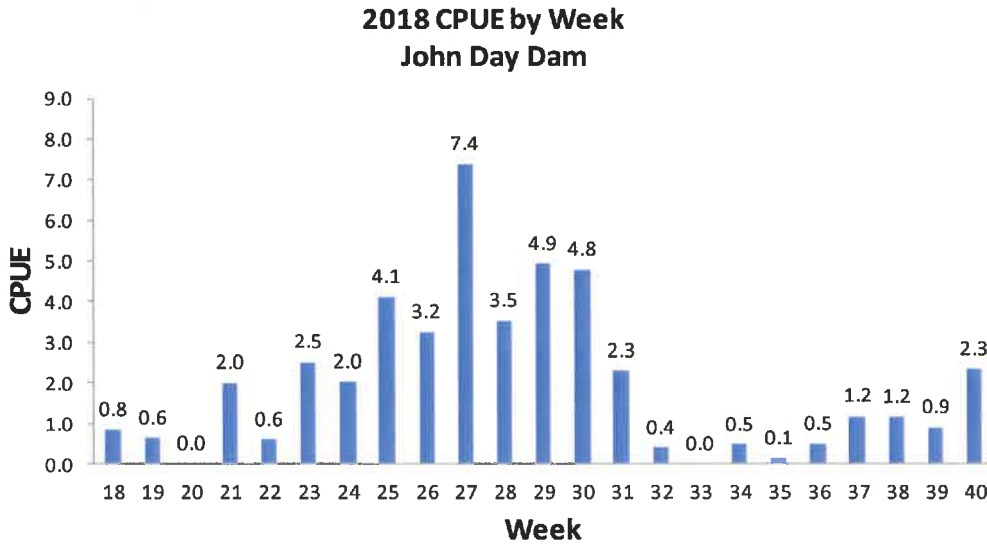


Figure 24. 2018 Weekly Dam Angling CPUE at John Day Dam

Fork Length Data

Fork lengths were recorded from 3,089 Northern Pikeminnow (100% of harvest) at the John Day Dam during the 2018 Dam Angling Season. The length frequency distribution of harvested Northern Pikeminnow from the John Day Dam in 2018 is presented in Figure 25. Mean fork length for Northern Pikeminnow from the John Day Dam in 2018 was 373 mm (SD=59.6) compared to 362 mm in 2017 (Dunlap et al. 2018). By comparison, the mean fork length for the 2018 NPSRF was 272.6 mm (Hone et al. 2019).

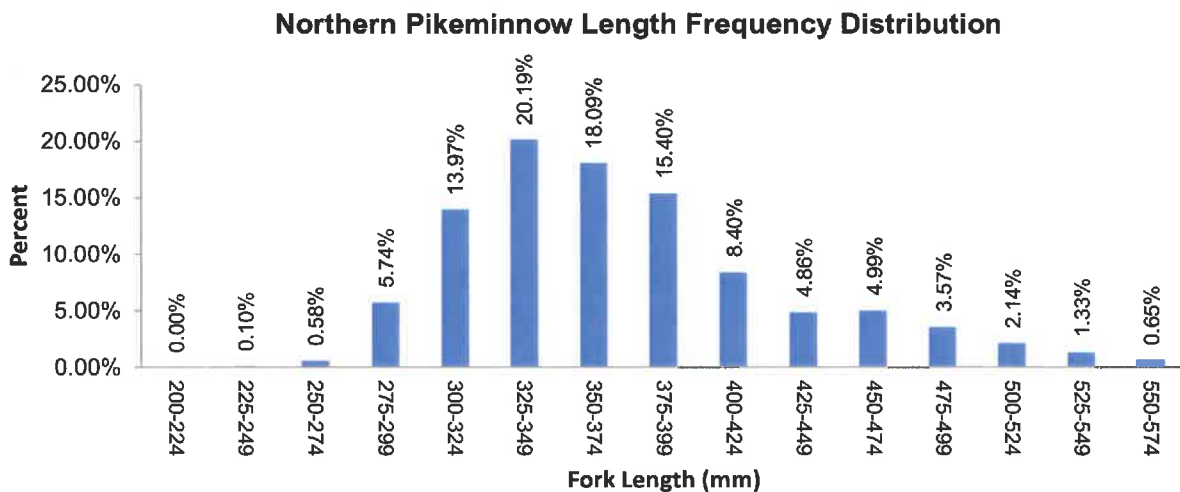


Figure 25. Northern Pikeminnow Length Frequency Distribution at the John Day Dam in 2018

SUMMARY

The 2018 Dam Angling crew harvested 4,874 Northern Pikeminnow at The Dalles and John Day Dams, with 1,785 coming from The Dalles Dam and 3,089 from the John Day Dam. Overall harvest was lower than 2017 although up at The Dalles Dam in 2018 (Dunlap et al. 2018). Dam Angling was conducted over the course of 23 weeks between May 1st and October 3th 2018 although no Dam Angling effort took place during week 20.

During the 2018 season, the Dam Angling crew spent more than half their time fishing at the John Day Dam (63%) and exceeded the 2.0 CPUE goal for 11 weeks of the 22 week Dam Angling season. Angling hours prior to 1:00 pm were the most productive times and the top producing lure for 2018 was the 3.75” Gitzit tube in Smoke/Black Copper Glitter color.

Fork length data for Northern Pikeminnow harvested by the 2018 Dam Angling crew continued to show that Northern Pikeminnow harvested by Dam Anglers at both The Dalles and John Day dams were considerably larger than the mean fork length of Northern Pikeminnow harvested in the NPSRF (355 mm at The Dalles Dam and 373 mm at the John Day Dam compared to 272.6 mm in the 2018 NPSRF (Hone et al. 2019). The 2018 Dam Angling crew recovered two spaghetti tagged Northern Pikeminnow, nine tag-loss Northern Pikeminnow, and five PIT tags from fishes ingested by Northern Pikeminnow. The overall occurrence rate for ingested PIT tags from Northern Pikeminnow caught by the 2018 Dam Angling crew was 1:975. There was also one PIT tag recovered from a juvenile salmonid that had been ingested by a Walleye incidentally caught by the Dam Angling crew at the John Day Dam.

While targeting only Northern Pikeminnow, the 2018 Dam Angling crew incidentally caught a total of 912 Smallmouth Bass, 209 Walleye, 137 American Shad, 25 Sculpin, and 13 Channel Catfish between the two projects.

RECOMMENDATIONS FOR 2018

- 1.) Maintain the Dam Angling component of the NPMP in order to remove predatory Northern Pikeminnow from the Boat Restricted Zones in the tailrace areas of The Dalles and John Day dams where participants in the Northern Pikeminnow Sport-Reward Fishery are not allowed.
- 2.) Plan for 2019 Dam Angling activities to conduct the standard May-September Dam Angling season.
- 3.) Continue to utilize the DAS protocol developed in 2011 (using CPUE) to allocate Dam Angler effort and maximize harvest of Northern Pikeminnow.
- 4.) Continue to improve data collection in the areas of scanning other incidentally caught predator fishes for PIT tags, and in scanning and enumerating juvenile lamprey regurgitated by Northern Pikeminnow caught by Dam Anglers in 2019.
- 5.) Continue using HPR PIT tag scanners for scanning all incidentally caught fishes.
- 6.) Continue to investigate and further develop Northern Pikeminnow angling techniques in 2019 that will improve Dam Angler CPUE and/or allow exploitation of Northern Pikeminnow in areas not currently fishable.
- 7.) Investigate the feasibility of recording data and retaining carcasses of non-native predator fishes as done with other Columbia River research projects.
- 8.) Continue to explore the logistics of using split crews to optimize efficiencies when water conditions warrant or when there are high CPUE levels at both projects at the same time.

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APPENDIX A
Top 5 lures used by 2018 Dam Angler

WDFW Pikeminnow Dam Angling

2018 Season Top 5 Tubes



Type- Canyon Plastic 3 3/4" Original Gitzit Tube

Color- *Smoke/Black & Copper Glitter*

#1



Type- Gitzit Incorporated 3.5" Injected Molded Tube

Color- *Pearl/Black Smoke Purple Sparkle*

#2



Type- Gitzit Incorporated 3.5" The Original Fat Gitzit

Color- *Smoke Sparkle*

#3



Type- Gitzit Incorporated 2" Hard Time Minnow

Color- *Smoke Back, Clear Center With Pink Belly*

#4



Type- Canyon Plastic 2 1/2" Mini Gitzit Tube

Color- *Smoke/Black & Copper Glitter*

#5



