



Fish and Wildlife Commission Presentation Summary Sheet

Meeting date: March 21st, 2025

Agenda item: Mid-Columbia White Sturgeon

Presenters: Chad Jackson, Region 2 Fish Program Manager and Laura Heironimus, Sturgeon-Smelt-Lamprey Unit Lead, Columbia River Division

Background summary:

- See below background summary.

Staff recommendation(s):

- Recommend the Fish and Wildlife Commission (Commission) delegate rulemaking authority to the WDFW Director (Director) to prosecute white sturgeon recreational fisheries in the Middle Columbia River (MCR).
- Rational:
 - Recreational fisheries need to be listed in permanent rules (i.e., WAC)
 - Publish permanent fishing rules in annual Sport Fishing Rules Pamphlet
 - Recreational fisheries expected to occur annually
 - Adjustments to fishing rules may be needed periodically
 - Delegation would reduce the number of instances staff would need to come before the Commission requesting rulemaking

Policy issue(s) and expected outcome(s):

- No policy issue(s).
- Commission delegates rulemaking authority to the Director for white sturgeon recreational fisheries in the MCR.

Fiscal impact(s) of agency implementation:

- No fiscal impact(s).

Public involvement process used and what you learned:

- There was no public involvement process used or needed for this recommendation.
- A public involvement process will occur during rulemaking process.

Action(s) requested and/or proposed next step(s):

- Decision on delegation of rulemaking authority to Director for white sturgeon recreational fisheries in the MCR.

Draft motion language:

- I move to delegate rulemaking authority to the Director for white sturgeon recreational fisheries in the Middle Columbia River.
- Is there a “second”?
- If yes, then:
 - The motion maker discusses the basis for accepting the petition.
 - Other Commissioners may discuss their views on the motion.
 - Amendments, if any, to the original motion may be made.
 - A final motion (original or modified) is identified.
 - Commission votes to approve or deny the motion.

Post decision communications plan:

- Commission related news release.

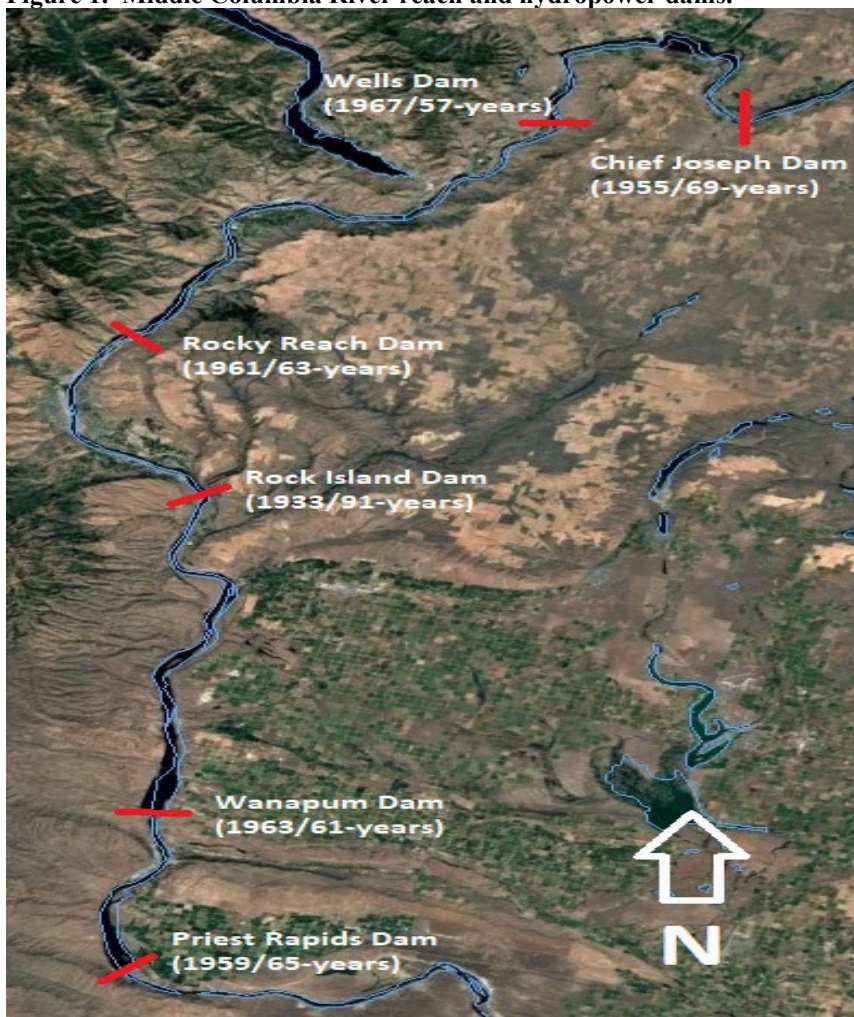
MIDDLE COLUMBIA RIVER WHITE STURGEON Population Rebuilding Efforts (2010-Present)

Prepared By:
Chad Jackson, Region 2 Fish Program Manager

Columbia River Reaches

Because the Columbia River spans such a large geographic area it is often separated into lower, middle, and upper reaches for reference. These reaches may be descriptive and/or jurisdictional depending upon the context (e.g., fishery management, species/stock conservation, hydropower, etc.). However, depending upon the context lower, middle, and upper reaches of the Columbia River may have different geographic boundaries. For example, salmon management upstream of Priest Rapids Dam is referred to as the Upper Columbia River whereas for white sturgeon management the upper reach begins at Grand Coulee Dam. For this briefing and presentation, the Middle Columbia River (MCR) reach refers to the area between Priest Rapids and Chief Joseph Dams (Figure 1).

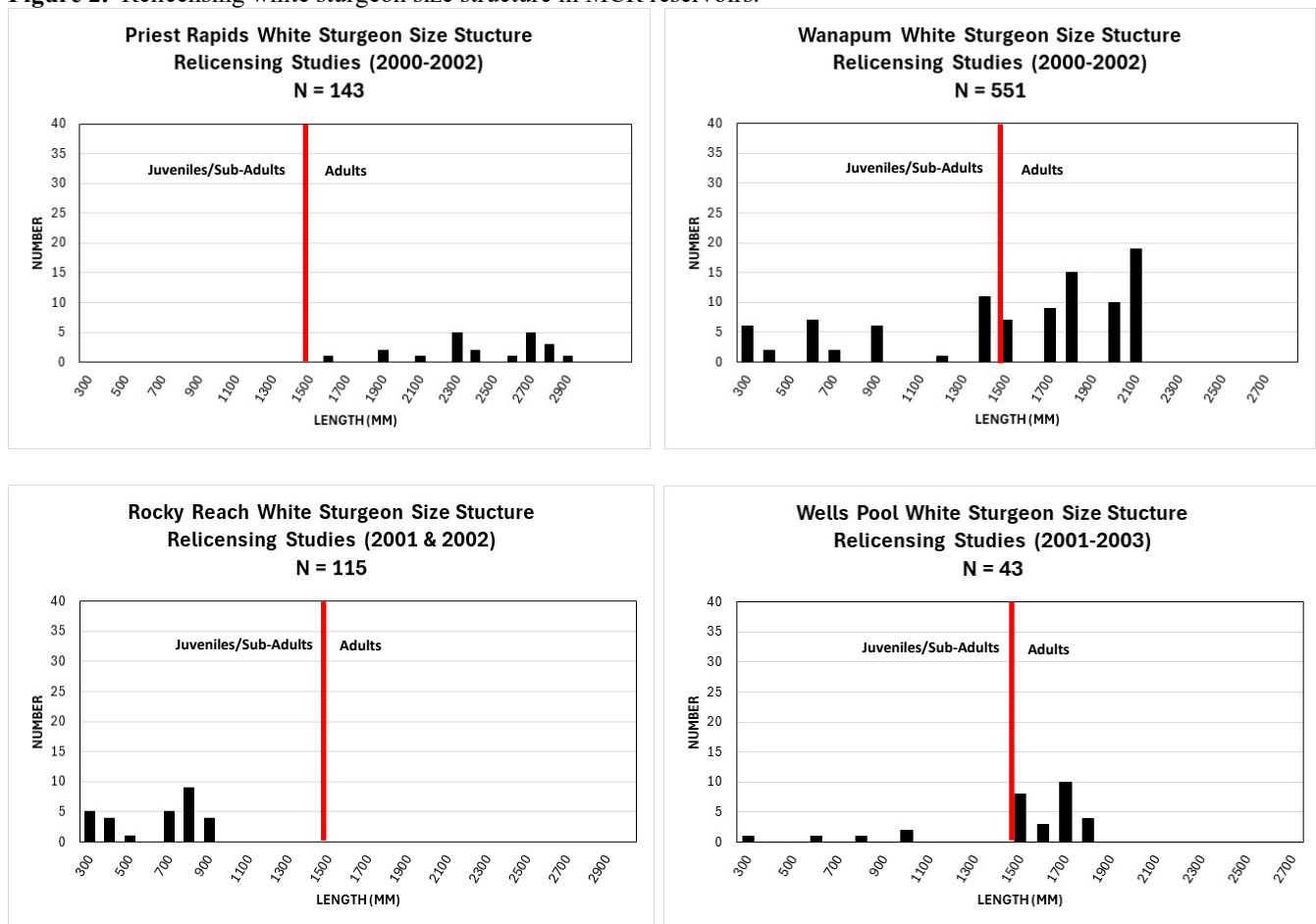
Figure 1. Middle Columbia River reach and hydropower dams.



Background

White sturgeon are found throughout the Columbia and Snake River Basins. However, pre-dam use (e.g., rearing, foraging, migratory, spawning, etc.) of the MCR by white sturgeon is unknown. Dam construction in the MCR between the 1930s to 1960s fragmented a portion of the Columbia River white sturgeon population into isolated groups or “management units” (Figure 1). White sturgeon management units had unknown abundances, age/size structures, and levels of natural recruitment. Migration between reservoirs was also believed to be disrupted with upstream and downstream movement by white sturgeon through dams being negligible. In the early-2000s, hydropower dam operators (county public utility districts; PUDs) conducted relicensing surveys on white sturgeon in the Priest Rapids, Wanapum, Rocky Reach, and Wells Reservoirs. Findings indicated low population abundances, presence of mostly adult/older aged fish, and minimal to no natural recruitment (Figure 2). The only exception was Rocky Reach Reservoir where sub-adult/younger aged white sturgeon were present.

Figure 2. Relicensing white sturgeon size structure in MCR reservoirs.



White Sturgeon Management Plans

Between the late-2000s to early-2010s, the Federal Energy Regulatory Commission (FERC) issued new hydropower licenses to MCR PUDs (Table 1). The new hydropower licenses required PUDs to develop and implement reservoir-specific White Sturgeon Management Plans (WSMP). The general framework for these WSMP is based off existing white sturgeon recovery efforts in the transboundary reach of the Upper Columbia River and Kootenai River. Implementation of WSMP is achieved through collaborative and consensus based technical committees comprised of license signatories (i.e., state, federal, tribal, and PUD representatives). WSMP incorporate adaptive management where new science and/or technologies are used to adjust the objectives to achieve the goal of rebuilding populations.

WSMP are nearly identical to one another with the shared objectives of: (1) increasing white sturgeon abundance through hatchery supplementation, (2) determining the effectiveness of hatchery supplementation through monitoring and evaluation, (3) determining carrying capacity of available reservoir habitat, and (4) determining the level of natural reproduction and adjusting hatchery supplementation accordingly. The end goal is to create and sustain abundant and stable-aged white sturgeon populations in MCR reservoirs by first rebuilding missing and/or low abundance juvenile/sub-adult age classes that over time will recruit to and increase adult abundances. Furthermore, as the adult component of populations becomes more abundant it will hopefully lead to much larger spawning events that will result in improved natural recruitment.

Table 1. MCR hydropower dams, year relicensed, and owner/operator.

| Hydropower Dam | Relicensing Year | Owner/Operator |
|-----------------------|------------------------------------|--|
| Priest Rapids | 2008 | Grant County Public Utility District |
| Wanapum | 2008 | Grant County Public Utility District |
| Rock Island | <i>Currently under relicensing</i> | Chelan County Public Utility District |
| Rocky Reach | 2009 | Chelan County Public Utility District |
| Wells | 2012 | Douglas County Public Utility District |

Conservation Aquaculture

To achieve Objective #1 of WSMP, the PUDs implemented conservation aquaculture programs beginning in 2010 with the first releases of hatchery fish occurring in 2011. Conservation aquaculture programs started off as direct gamete/conventional broodstock programs because experienced fish culturists and hatchery infrastructure already existed within the region and allowed for quick implementation. Sexually mature white sturgeon were collected primarily from John Day Reservoir and transported, held, and spawned at Yakama Nation’s Marion Drain Sturgeon Hatchery (Marion Drain). Fertilized eggs were reared at and released as yearlings from Marion Drain and other local hatcheries. Stocking targets identified in WSMP were: (1) 1,500 in Priest Rapids Reservoir, (2) 5,000 in Wanapum Reservoir, (3) 6,500 in Rocky Reach Reservoir, and (4) 5,000 in Wells Reservoir. From 2011 to 2024, a total of 114,083 hatchery white sturgeon have been released into MCR reservoirs (Table 2).

In the mid-2010s, a new hatchery strategy emerged using wild-caught white sturgeon larvae. White sturgeon broadcast spawn in mainstem rivers during normal high flows in spring. Deposited eggs hatch and transition to free-feeding larvae within 2-2.5 weeks. Free-feeding larvae drift in high flows, sometimes for considerable distances, and settle into different habitat types to maximize survival/recruitment. Sturgeon biologists working on Lake Roosevelt developed a method for capturing free-drifting larvae and transporting them to a local hatchery for rearing and release beginning in 2011. Annually, thousands of larvae are capable of being collected in Lake Roosevelt. By the late-2010s, two of three PUD conservation aquaculture programs transitioned from a direct gamete strategy to using wild-caught white sturgeon larvae

There are advantages and disadvantages to both hatchery strategies. The primary advantage of a direct gamete program is it is an established/conventional method used for several other fish species and allows for a quick/immediate implementation. Additionally, experienced fish culturists and hatchery infrastructure existed within the region to quickly implement conservation aquaculture programs. Disadvantages of a direct gamete program include low spawner representation in hatchery releases as compared to the entire spawning population and broodstock size selectivity bias. White sturgeon spawners up to a maximum size (typically ≤ 8 feet) can only be effectively held and spawned in hatcheries. Advantages of wild-caught larvae include high genetic diversity (i.e., total number of alleles) and significantly greater representation of the entire spawning population. This strategy also

eliminates the need to hold and spawn large adult white sturgeon in the hatchery. The disadvantages of wild-caught larvae are minimal areas where larvae can be effectively captured and the need for specialized sampling gear.

Table 2. Summary of hatchery releases of white sturgeon in MCR reservoirs.

| YEAR | HATCHERY RELEASES BY MCR RESERVOIR | | | |
|---------------|------------------------------------|---------------|---------------|---------------|
| | PRIEST RAPIDS | WANAPUM | ROCKY REACH | WELLS |
| 2011 | 2,101 | 7,015 | 6,376 | -- |
| 2012 | 0 | 0 | 137 | -- |
| 2013 | 1,717 | 2,264 | 7,975 | -- |
| 2014 | 1,500 | 5,092 | 4,962 | 5,044 |
| 2015 | 1,495 | 5,007 | 6,487 | 5,009 |
| 2016 | 1,253 | 2,005 | 2,273 | 5,289 |
| 2017 | 1,249 | 1,999 | 2,185 | 5,131 |
| 2018 | 1,241 | 1,983 | 2,257 | 337 |
| 2019 | 890 | 1,767 | 437 | 99 |
| 2020 | 261 | 411 | 625 | 570 |
| 2021 | 549 | 936 | 1,746 | 338 |
| 2022 | 1,259 | 2,010 | 1,345 | 332 |
| 2023 | 1,247 | 1,996 | 2,032 | 328 |
| 2024 | 1,253 | 1,974 | 1,965 | 330 |
| TOTALS | 16,015 | 34,459 | 40,802 | 22,807 |

Stocking Rates

During the late-2010s, concerns arose amongst technical committee members that white sturgeon stocking rates identified in WSMP might be too high. These concerns were based off new information from white sturgeon recovery efforts in the Upper Columbia River indicating that post-release survival rates of hatchery fish were significantly higher than originally estimated. Implications of underestimating post-release survival rates include abundances of juveniles/sub-adults higher than the habitat can support, potential negative density dependent effects (e.g., reduced growth, poor condition, delayed recruitment to older age classes, etc.), and overrepresentation (genetically) of select hatchery releases within the population. In Lake Roosevelt and MCR reservoirs, early hatchery releases were large and consisted of direct gamete fish representing relatively few spawners as compared to the overall spawning population. These early hatchery releases will also be the first to reach sexual maturity and have the potential to negatively influence the genetic makeup of future spawning and recruitment events. To address these concerns in the MCR, technical committees developed reservoir-specific adult abundance targets and then identified stocking rates to achieve those adult targets. Adult abundance targets were estimated by multiplying an adult density value (i.e., adults/kilometer or hectare) taken from the Bonneville Pool and then applied to the calculated areas of MCR reservoirs. A white sturgeon population growth model was used to identify reservoir-specific stocking rates. New stocking rates identified for MCR reservoirs are: (1) 1,235 in Priest Rapids Reservoir, (2) 2,015 in Wanapum Reservoir, (3) 2,000 in Rocky Reach Reservoir, and (4) 325 in Wells Reservoir (Table 2). Conservation aquaculture programs also started rearing and releasing larger (≥ 200 grams/fish) yearling white sturgeon because they have significantly higher post-release survival. This was factored into the modelling and is the main reason why stocking rates decreased. Releases of a larger sized fish also meant fewer white sturgeon needed to be reared in hatcheries and programs could be smaller in scale. While changes to stocking rates are believed to be an improvement, concerns remain over the early stocking events and how to equalize (genetically) all hatchery release groups.

Monitoring and Evaluation

To achieve Objectives #3 and #4 of WSMP, the PUDs initiated reservoir-specific monitoring and evaluation (M&E) programs to evaluate the effectiveness of rebuilding efforts. M&E programs are nearly identical to one another in terms of data collection and analyses, however, sampling intervals amongst the different programs vary (Table 3). These programs track growth, survival, abundance, condition, reservoir movement, emigration/immigration, and habitat use amongst all hatchery release groups. Additionally, population estimates and levels of natural reproduction/recruitment are also determined. Current results indicate that hatchery supplementation efforts are rebuilding missing and/or low abundance juvenile/sub-adult age classes in MCR reservoirs. Hatchery releases between 2011-2014 are also nearing sexual maturity (Figure 3).

Table 3. Summary of M&E program schedules taken from WSMP for MCR PUDs (G=Grant PUD, C=Chelan PUD, and D=Douglas PUD).

| LICENSE YEAR | JUVENILE INDEXING | ADULT INDEXING | TRACK TAGGED STURGEON | ASSESS NATURAL PRODUCTION ² |
|-----------------|-------------------|----------------|-----------------------|--|
| 1 | | | | D |
| 2 | | G | G | G |
| 3 | GD | D | G | D |
| 4 | GCD | GCD | G | G |
| 5 | GCD | CD | GC | |
| 6 | GC | C | GC | D |
| 7 | GD | GD | GC | G |
| 8 | C | C | G | |
| 9 | D | D | G | |
| 10 | G | G | G | GD |
| 11 | C | C | | |
| 12 | D | D | | |
| 13 | G | G | G | G |
| 14 | C | C | C | |
| 15 | | | | |
| 16 | G | G | G | G |
| 17 | C | C | | |
| 18 | | | | |
| 19 | G | G | G | G |
| 20 | C | C | C | |
| 21 | | | | |
| 22 | G | G | G | G |
| 23 | C | C | | |
| 24 | | | | |
| 25 ¹ | G | G | G | G |

¹Grant PUD sampling schedule from license year 26 through expiration of license (2052) will be same frequency as license years 23-25. Chelan and Douglas PUDs sampling schedules TBD by technical committees.

²Cheland PUD uses long-life acoustic tags to help inform when to assess level of natural reproduction in Rocky Reach Reservoir.

Figure 3. Current white sturgeon size structures in MCR reservoirs

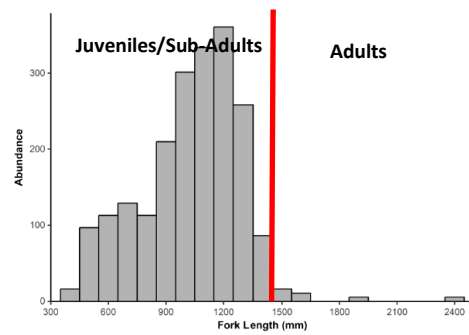
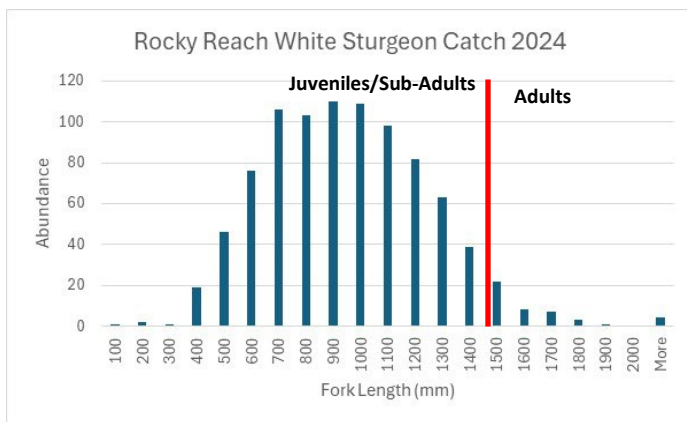
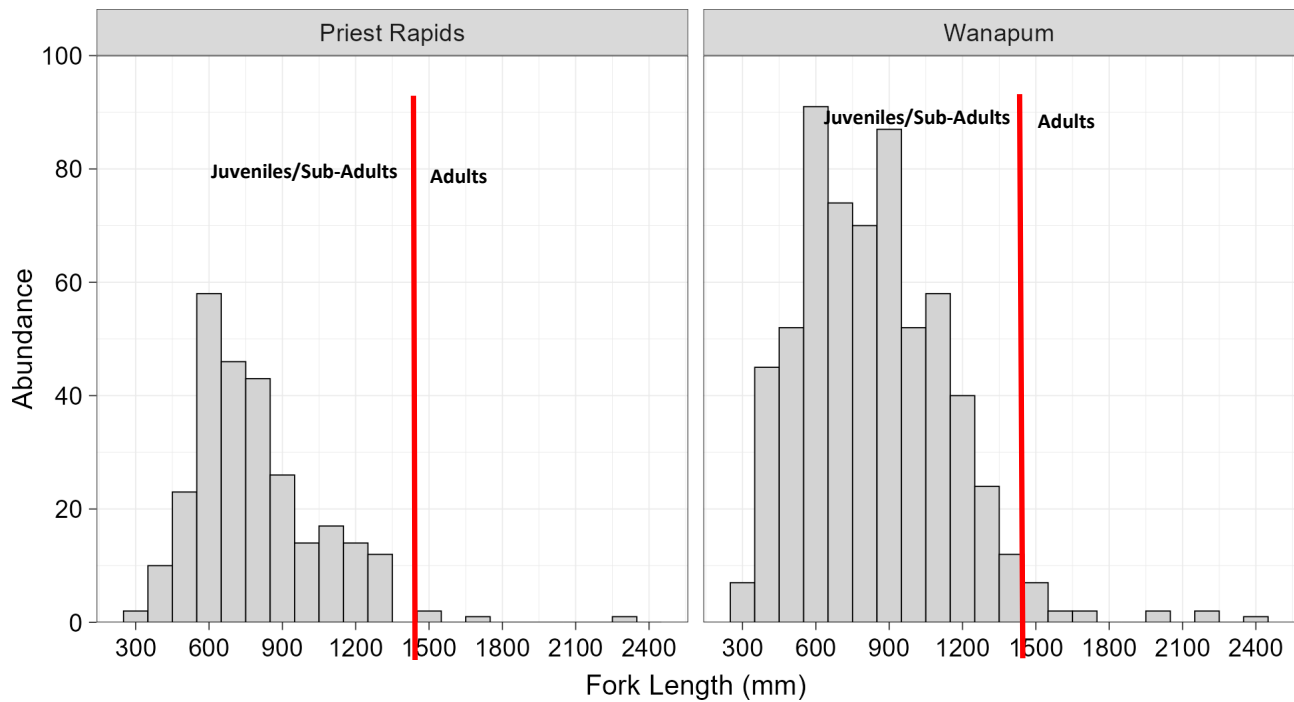


Figure 23. Length frequency distribution of individual White Sturgeon caught during the 2022 indexing survey, with y-axis scaled to sum to the estimated overall abundance of White Sturgeon in the Reservoir. The distribution and the overall abundance were both calculated exclusive of the fish released in 2021 and 2022.

Recreational Fisheries

As described above, concerns remain over early releases of direct gamete white sturgeon in MCR reservoirs and how to equalize (genetically) the representation of all hatchery release groups within populations. Recreational harvest has been identified as a tool to help reduce certain hatchery release groups or size classes of concern. This approach has been used with great success in Lake Roosevelt. Reservoir-specific M&E results will determine when and where to prosecute recreational fisheries, which groups of fish to target, and establish reservoir-specific harvest goals. Coordination and agreement with tribal co-managers is imperative because harvest goals will be shared with effected tribes. Recreational fisheries will also be closely monitored to ensure harvest goals are not exceeded.

Fishery managers will consider multiple season structures and/or fishing rules when prosecuting recreational fisheries in MCR reservoirs. Season lengths might include consecutive days/weeks or one to three-day openings depending upon the harvest goal. Standardized or reservoir-specific slot length limits will be used to target certain groups of fish. The daily limit will be one white sturgeon with an annual limit of two. In addition to fishery monitoring, anglers will be required to record harvested white sturgeon on catch record cards. Other statewide fishing rules for white sturgeon will apply. It is

anticipated a recreational fishery would first open in Rocky Reach Reservoir with other MCR reservoirs to follow.