

The Columbia Basin Collaborative

Revised Recommendations 1-24-24

Introduction

The Columbia Basin Collaborative (CBC) charter aims to achieve the quantitative and qualitative goals for salmon and steelhead documented in the Columbia Basin Partnership Task Force (CBPTF) Phase 1 and 2 Reports, as adopted by the Marine Fisheries Advisory Committee (MAFAC). The CBPTF “explored the various limiting factors that impact salmon and steelhead across their life cycles. The results of the analyses show that no single strategy (e.g., reducing predation, increasing habitat, reducing harvest) will achieve the Goals on its own. Instead, improvements in multiple factors will be needed to increase abundance to desired levels for most stocks. Together, these improvements create synergies that compound benefits greater than those achievable through single actions.”

The CBPTF also identified that, “reliable and predictable funding is essential. Funding must be targeted to achieve the Partnership’s Quantitative and Qualitative Goals. New funding sources should be identified. Funding must come from multiple sources, consider the burden across communities, and account for past, present, and potential impacts.”

The CBC agrees with these MAFAC-adopted objectives and hence the recommendations below are aimed to help achieve those CBPTF Goals. No one recommendation can meet these goals alone.

The parties of the CBC have come to consensus that this recommendation is valid for implementer consideration. As stated in the Charter “sovereigns with management decision-making authority will review recommendations and make independent decisions to implement or support actions. The CBC itself is not a management decision-making body, but will strive to support its recommendations through to implementation.”

Recommendation: Develop and fund a robust Columbia River Northern Pike and invasive nonnative fishes monitoring project

Problem Statement

Invasive non-native fishes compromise salmonid species in the Columbia River watershed through predation, competition for food, interbreeding, disease transmission, food web disruption, and physical habitat alteration. These fish pose direct threats to salmonid restoration efforts and compromise millions of public dollars spent to protect and conserve salmonids in the Columbia River watershed. Specifically, Northern Pike *Esox lucius* (Pike) have become established in the blocked area of the Columbia River. Pike have been documented to have profound predatory impacts on native fish species assemblages when they became established in waters within the Columbia Basin. The WDFW and Tribal comanagers have taken extreme measures to suppress these expanding populations with the goal of preventing or at least slowing the progression of these fish into the anadromous portion of the Columbia Basin. The establishment of Pike within the anadromous portion of the basin would be detrimental to the recovery of ESA listed salmon and steelhead stocks, affect salmon and steelhead-based economies and would continue to degrade fishery resources that are culturally significant to Native American Tribes connected to the Columbia Basin and Washington coastal fisheries.

Other non-native invasive fish such as Fathead Minnow *Pimephales promelas*, Brook Stickleback *Culaea insonstans*, Black bullheads *Ameiurus melas*, Yellow Bullheads *A. natalis*, Brown Bullheads *A. nebulosus*, Tadpole Madtom *Noturus gyrinus*, Common Carp *Cyprinus carpio*, Tench *Tinca tinca*, Western Mosquitofish *Gambusia affinis* and American Shad *Alosa sapidissima* are present in Washington State, primarily in the lower sections of the Columbia and Snake rivers. Their predatory impacts to native salmonids are unknown. Their populations will likely spread into new waterbodies as no suppression or monitoring is currently occurring on these species.

Predatory impacts to salmonids in the Columbia River watershed by non-native game fish such as Yellow Perch *Perca flavescens*, Pumpkinseed *Lepomis gibbosus*, Bluegill *Lepomis macrochirus*, Largemouth Bass *Micropterus salmoides*, White Crappie *Pomoxis annularis*, Black Crappie *Pomoxis nigromacultus*, Brook Trout *Salvelinus fontinalis*, Lake Whitefish *Coregonus clupeaformis*, Brown Trout *Salmo trutta* and, Channel Catfish *Ictalurus punctatus* likely occur at varying levels throughout the watershed; however, no specific monitoring programs exist that include these species.

Summary of Action:

Develop and fund a robust Columbia River Northern Pike and invasive non-native fishes monitoring project that leverages current suppression, monitoring, and research activities with new projects to fill data gaps:

1. Determine which water bodies are contributing to the increased abundance of Northern Pike or other invasive non-native fishes in the Columbia Basin.

2. Implement wide scale eDNA monitoring in key lakes, reservoirs, tributaries, tributary mouths and the mainstem Columbia River for the presence of Northern Pike and other key invasive non-native fishes.
3. Explore and implement actions to reduce or stop Northern Pike or other invasive non-native fishes from immigrating into anadromous waterbodies.
 - a. Suppression actions include physical removal, weirs, fences, grates or electric fences.
 - b. Design and implement watershed wide eradication efforts if applicable.
 - c. Adjust fishing regulations to allow the public to assist with harvesting fish at key locations to reduce the abundance of Northern Pike or other invasive non-native fishes in the Columbia Basin.
 - d. Engage in public outreach to inform the public of the problem, the planned solutions with a link to how it will help their local communities.
 - i. Removal actions will increase salmon fishing opportunities which have positive economic impacts to local communities.
 - ii. Removal actions will increase salmon abundance in the watershed which have positive impacts to the environment through marine derived nutrients.
 - iii. Removal actions will support an increase in salmon abundance which could assist with Orca Recovery.
 - iv. Removal actions will also assist with restoring culturally significant resident fish, salmon and steelhead fisheries within the entire Columbia Basin.
4. Develop Northern Pike Rapid Response plans for each “section” of the Columbia River.
 - a. The WDFW is currently developing a Statewide Northern Pike Rapid Response Plan that will be finalized by the fall of 2023. This is a high-level plan with the goal of developing watershed specific plans.
 - b. Plans have been developed for all of the mainstem reservoirs upstream of Priest Rapids Dam (Four Peaks Environmental 2022; McLellan et al. 2018).
 - c. Funds should be made available to the WDFW (or other designated agency) to develop Northern Pike Rapid Response Plans for the Columbia Basin Irrigation District and each mainstem Columbia River Project area below Priest Rapids Dam.
 - d. Monitoring and enforcement will be needed for the Northern Pike Rapid Response Plans.
5. Continue to fund Northern Pike Suppression projects in the upper Columbia River watershed beyond 2025 (the current end of most funding plans).

Existing or New Program:

New Programs. However, each area may have resources that can be leveraged to achieve the monitoring and suppression actions.

Benefit Provided by Action:

Basin wide reduction of Northern Pike and invasive non-native fishes will increase overall salmonid abundance.

Stocks Benefited by the Action:

Native resident fish communities and anadromous stocks (specifically Upper Columbia River (UCR) spring and summer/fall Chinook and UCR steelhead, Sockeye and Coho) will benefit from the removal of non-native predators by reducing predation, competition for food, interbreeding, disease transmission, food web disruption, and physical habitat alterations.

The specific magnitude of the benefit is unknown at this time as regional studies need to be conducted to determine which non-native species are causing harm and to what extent.

Data Supporting Benefits:

WDFW has data on a few irrigation drains in mid-Columbia River that currently support the movement of non-native invasive and non-native game fish into the Columbia River. However, more data on locations and species of concern is required before actions can be implemented.

Implementing Entities:

Federal, state, tribal, local utilities and other resource stewards.

Time Needed to Implement:

Pike and invasive non-native fish suppression and monitoring should occur throughout the year.

1. Determine fish communities and waterbodies of concern – ongoing as Northern Pike or other invasive non-native fishes increase in abundance or colonize portions of the basin - 1-10 years
2. Implement Northern Pike eDNA – year 1
3. Explore and implement actions to reduce abundance and distribution of Northern Pike or other invasive non-native fishes – Years 2-10 (and beyond)
4. Adjust fishing regulations – years 2-10 and beyond
5. Engage in public outreach – years 1-10
6. Develop Northern Pike Rapid Response Plans – 1-5 years
7. Support ongoing Northern Pike Suppression actions in the upper Columbia River – 1-10 years.

Time Needed to Benefit Fish Populations:

Fish populations will immediately begin to benefit from actions that reduce the abundance and distribution of Northern Pike and/or invasive non-native fishes.

Estimated Cost:

1. Determine fish communities and waterbodies of concern - \$500,000

2. Implement Northern Pike eDNA - \$100,000 per year for 10 years.
3. Explore and implement actions to reduce non-native fish - \$500,000- \$1 million per project per year.
4. Adjust fishing regulations – minimal cost covered by state management agencies.
5. Engage in public outreach - \$100,000 per year
6. Develop Northern Pike Rapid Response Plans - \$50,000 per plan
7. Support ongoing Northern Pike Suppression actions in the upper Columbia River - \$250,000 per agency per year to supplement funding received from other sources.

Uncertainties:

Active suppression will affect non-target fish populations. The impacts are unknown but can be monitored and mitigated (adaptive management) for each specific location and action taken.

Important to engage the public to avoid the spread of misinformation.

Associated Regulatory Processes or Policies:

State fishery management agencies develop and implement fishing regulations.

All suppression activities in areas occupied by ESA-listed salmonids will need to be reviewed and approved by NOAA.

Potential Challenges:

Ensuring enough funding is available to hire staff and to implement projects.

Adaptive Management:

Fish species present and actions taken in each “section” or watershed will be different. Regional experts will need to adaptively manage each action to fit their specific watershed.

Stock Benefits Report Card:

Predation: Recommendation for Northern Pike and invasive non-native fishes monitoring project

| Sub-Region | Stock | Status | Abundance | | | MAFAC Phase II Impact Priority | | | | | | | | |
|---------------|------------------------------------|------------|-----------|-------------------|-----------------------------|--------------------------------|-----------------|------------------|----------------|-----------------|-----------|---------|----------|---------|
| | | | Current | MAFAC Medium goal | Current as % of Medium Goal | Tributary Habitat | Estuary Habitat | Hydro (Mainstem) | Hydro (Latent) | Hydro (Blocked) | Predation | Fishery | Hatchery | Harvest |
| Low-C | L Col R Spring Chinook | Threatened | 2,240 | 21,550 | 10% | 1 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 |
| Low-C | L Col R Winter Steelhead | Threatened | 5,989 | 27,900 | 21% | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Low-C | L Col R Fall (tule) Chinook | Threatened | 12,329 | 54,100 | 23% | 1 | 2 | 3 | 3 | 3 | 3 | 1 | 2 | 1 |
| Low-C | L Col R Coho | Threatened | 31,524 | 129,550 | 24% | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 |
| Low-C | L Col R Summer Steelhead | Threatened | 10,594 | 29,800 | 36% | 2 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 4 |
| Low-C | Col R Chum | Threatened | 11,762 | 33,000 | 36% | 2 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | |
| Low-C | SW WA Winter Steelhead | Threatened | 3,252 | 5,850 | 56% | 2 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Low-C | L Col R Late Fall (bright) Chinook | | 10,800 | 16,700 | 65% | | | | | | | | | |
| Low-C | L Col R Fall (bright) Chinook | Threatened | 11,000 | 11,000 | 100% | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 4 |
| Mid-C | M Col Sockeye | Not Listed | 1,036 | 45,000 | 2% | 3 | 3 | 3 | 2 | 1 | 3 | 3 | | 3 |
| Mid-C | M Col R Spring Chinook | Not Listed | 11,600 | 40,425 | 29% | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Mid-C | M Col R Summer Steelhead | Threatened | 18,155 | 43,850 | 41% | 2 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 |
| Mid-C | M Col R Coho | Not Listed | 6,324 | 11,600 | 55% | | 5 | 4 | 5 | 5 | 5 | 4 | | 4 |
| Mid-C | M Col R Summer/Fall Chinook | Not Listed | 11,500 | 13,000 | 88% | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4 |
| Up-C | U Col R Coho | Not Listed | 392 | 15,000 | 3% | | | | | | | | | |
| Up-C | U Col R Summer Steelhead | Threatened | 1480 | 31,000 | 5% | 1 | 1 | 2 | 1 | 1 | 1 | 3 | 2 | 3 |
| Up-C | U Col R Sockeye | Not Listed | 40,850 | 580,000 | 7% | 1 | 3 | 1 | 1 | 1 | 2 | 3 | 3 | 3 |
| Up-C | U Col R Spring Chinook | Endangered | 1430 | 19,840 | 7% | 1 | 3 | 1 | 1 | 1 | 2 | 3 | 1 | 3 |
| Up-C | U Col R Summer Chinook | Not Listed | 16920 | 78,350 | 22% | 1 | 2 | 1 | 1 | 1 | 3 | 1 | 2 | 1 |
| Up-C | U Col R Fall Chinook | Not Listed | 92,400 | 62,215 | 149% | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 4 |
| Snake | Snake R Coho | Not Listed | 100 | 26,600 | 0% | | | | | | | | | |
| Snake | Snake R Sockeye | Endangered | 100 | 15,750 | 1% | 3 | 3 | 1 | 1 | 1 | 2 | 3 | | 3 |
| Snake | Snake R Spring/Summer Chinook | Threatened | 6,988 | 98,750 | 7% | 1 | 3 | 1 | 1 | 2 | 2 | 3 | 3 | 3 |
| Snake | Snake R Summer Steelhead | Threatened | 28,000 | 75,000 | 37% | 2 | 4 | 4 | 2 | 2 | 2 | 4 | 4 | 4 |
| Snake | Snake R Fall Chinook | Threatened | 8,360 | 10,780 | 78% | 5 | 5 | 4 | 4 | 4 | 5 | 4 | | 3 |
| <u>Willam</u> | U Will R Spring Chinook | Threatened | 4,278 | 47,850 | 9% | 1 | 2 | 3 | 3 | 1 | 3 | 3 | 2 | 3 |
| <u>Willam</u> | U Will R Winter Steelhead | Threatened | 2,816 | 27,805 | 10% | 1 | 2 | 3 | 3 | 3 | 1 | 3 | 3 | 3 |

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 Stocks most benefited
 Stocks receiving secondary benefit