

Fish and Wildlife Program Retrospective: 1980 - 2022

Introduction

The Northwest Power and Conservation Council's Fish and Wildlife Program represents a 40-year effort to protect, mitigate, and enhance fish, wildlife, and habitat affected by the hydrosystem in the Columbia Basin. It is one of the largest fish and wildlife mitigation efforts in the world.

This retrospective was developed to understand how the Program has grown and changed over time, and to identify elements that could be used to assess program performance.

Development of the Columbia Basin

Before development, the Columbia Basin was characterized by diverse, high-quality habitats. Abundant salmon and steelhead runs returned to the basin annually and contributed to a rich and interconnected ecosystem of anadromous fish, resident fish, and wildlife.

The first hydropower dam in the Columbia Basin was constructed in 1890 on the Spokane River, marking the beginning of a century of hydropower development in the basin. Major mainstem Columbia River dams were built between 1933 and 1971; most Snake River dams were built between 1952 and 1975. Some dams included facilities for juvenile or adult fish passage and others were complete blockages to fish migration.

The construction, inundation, and operation of the hydropower system had significant local and regional impacts on fish and wildlife. Other human activities in the region at the time also contributed to a decline in fish and wildlife populations, including: overharvesting; extractive land use like mining, ranching, logging, and intensive agriculture; development of the railroads and other transit, and growing population centers.

The Northwest Power Act

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 was developed in response to an energy and financial crisis in the Pacific Northwest. Inaccurate power demand forecasting resulted in the development of unneeded energy facilities, with significant cost to ratepayers. In addition to forecasting issues, there were also concerns that the power planning did not take into consideration environmental concerns and lacked public involvement.

The Power Act was passed to address these multiple power planning and environmental deficiencies. It authorized the states of Idaho, Montana, Oregon, and Washington to create an interstate compact agency – the Pacific Northwest Power and Conservation Council – and specified three primary responsibilities:

- Develop a Fish and Wildlife Program to protect, mitigate and enhance fish and wildlife affected by hydroelectric facilities in the Columbia River Basin.
- Develop a Power Plan assuring the Pacific Northwest of an adequate, efficient, economical, and reliable power supply, consistent with the Fish and Wildlife Program.
- Inform and involve the public.



Impacts of Hydrosystem on Fish and Wildlife

- Blocked 4,600 stream miles, or about 31% of previously accessible habitat for anadromous fish
- Fragmented habitat for anadromous and potamodromous species
- Altered sediment and nutrient transport
- Inundated habitat
- Changed the natural hydrograph dramatically, including impacts to flow, volume, velocity, water temperature and water quality
- Created conditions favorable for predation and invasive species
- Impacted food web

The Columbia River Basin Fish and Wildlife Program

The Fish and Wildlife Program is updated every five years based on recommendations from state and federal agencies, tribes, and others, with extensive public review and comment. Over the last 40 years, there have been 7 Programs and 10 amendments or addendums. Programs are based on language in the Power Act that calls for both onsite (in-kind and in-place) actions related to the hydrosystem and offsite actions to protect, mitigate, and enhance populations of fish and wildlife affected by the hydrosystem.

Program and Regional Timeline



Pre-Power Act mitigation and events through 1970s

- Passing of environmental laws like NEPA, Clean Water Act, Endangered Species Act, Marine Mammal Protection Act
- Early developments in passage including fish ladders for adult salmon and steelhead and considerations for juvenile passage (screens, transportation, bypass)
- Hatcheries and fish production
- Mitchell Act (1938)
- Lower Snake River Compensation Plan (1976)

1980s

- Continued decline of wild salmon and steelhead
- Northwest Power Act (1980)
- Prioritize onsite mitigation and improve adult and juvenile fish passage
- Water budgets developed: a way to ensure flow for juvenile fish by designating and releasing a certain amount of water from storage and releasing it during juvenile migration
- Protection of 44,000 miles of river from new hydro development
- Set interim goal of 5 million adult returns
- Regional capacity building, including the development of regional forums
- Created measures foundational to subsequent Fish and Wildlife Programs

1990s

- ESA listings – salmon, steelhead, Kootenai River white sturgeon, bull trout, Oregon chub – resulted in a series of biological opinions (BiOps) that were either reflected in or incorporated measures from the Programs
- Expansion in size and complexity of Programs, including prioritizing certain production and habitat actions for salmon and steelhead
- Increased attention to resident fish and wildlife
- Growing emphasis on habitat restoration and protection
- Independent Scientific Review Panel (ISRP) and Independent Science Advisory Board (ISAB) created

2000s

- New scientific framework implemented, connecting a vision to goals, objectives, strategies, principles, and measures, with an emphasis on ecosystem function and habitat actions
- Recognition of different geographic scales for implementation: basinwide, ecological provinces, and subbasins
- Development and adoption of mainstem plan
- Development and adoption of subbasin plans, with assessments of limiting factors and associated management plans created on a more localized basis
- Call for research on marine mortality vs. freshwater mortality, and for a better understanding of survival rates in the estuary

2010s

- Impacts from significant climate events, including extreme marine heat waves
- Increased need to consider the effects of climate change
- New program strategies focused on sturgeon, lamprey, eulachon, burbot
- Increased mitigation effort and funding for blocked areas, including phased approach to evaluating reintroduction above Chief Joseph and Grand Coulee
- Increased emphasis on managing salmon and steelhead predation
- Invasive species measures call for detecting and preventing zebra and quagga mussels
- Operational changes at Libby and Hungry Horse dams
- Creation of the Ocean and Plume Science and Management Forum
- Developed and revised program goals, objectives, and performance indicators

Performance Assessment

The retrospective provides important information on why different elements have been included in the program over time as well as what, when, and where changes were expected to occur as a result. This forms the basis for assessing Program performance, answering the questions of what has been called for, what has actually been implemented, and how well have they succeeded in achieving their described goals.

Program Categories

Hydrosystem

Water management
Passage
Water Quality

Habitat

Restoration
Protection
Wildlife
Non-native and invasive species
Native predator management

Artificial Production

Artificial production
Facility construction

Program Adaptive Management

Regional planning
Harvest recommendation
Regional coordination
RM&E and reporting
Data management
Science review
Public engagement

Staff document // July 2024

Full report at
[nwcouncil.org/f/18802/
Retrospective.pdf](http://nwcouncil.org/f/18802/Retrospective.pdf)



Northwest Power and
Conservation Council