LONG LIVE THE KINGS

Herring Research & Recovery

Project Goals

Support a key salmon food source

Improve knowledge base about Puget Sound herring

Support application of Indigenous knowledge

Project Duration

2021-2025

Project Status

In Progress

Project Partners

Nisqually Indian Tribe

Port Gamble S'Klallam Tribe

Washington Department of Fish & Wildlife

The SeaDoc Society

University of Washington

Funding Sources

The SeaDoc Society

Northwest Indian Fisheries Commission

The Nisqually Indian Tribe and LLTK staff transport evergreen trees to deposit along shorelines in the Nisqually Reach.

Can Traditional Ecological Knowledge help recover a key species in the salmon food web?

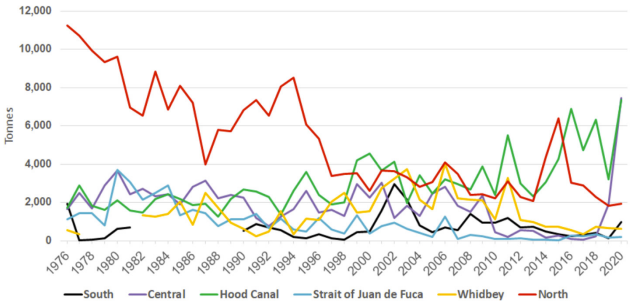
A KEY LINK IN THE FOOD WEB

Pacific herring are a key link in the Salish Sea ecosystem, with cultural and economic significance in addition to their critical role in the marine food web. Herring populations have been declining for decades, with several spawning stocks at a fraction of their historical numbers. Their decline poses a huge challenge for salmon recovery. The Salish Sea Marine Survival Project found a close link between forage fish abundance and juvenile Chinook salmon survival: forage fish like herring are both an important food source for salmon themselves, and an alternative prey source for predators like harbor seals.

HERRING DECLINES

Herring spawn in nearshore areas where their eggs attach to vegetation, like eelgrass and kelp. Many eelgrass and kelp beds in Puget Sound have been lost since the 1800s due to a combination of factors including shoreline development, pollution, and warming waters. Managers suspect that the loss of spawning habitat, along with poor water quality and predation, are major factors in herring declines. Until recently, however, there hasn't been enough research to clearly understand Puget Sound herring populations, their spawning habitat, and how to recover them.

Regional Herring Spawn Biomass (from the Puget Sound Partnership's Vital Signs, WDFW)



Coast Salish and Alaskan Tribes have a long-standing practice of sinking cedar and hemlock trees in nearshore waters during spawning season to collect herring eggs for harvest. Eggs stick to the tree branches as they would to eelgrass or other marine plants. In partnership with the Nisqually Indian Tribe and Port Gamble S'Klallam Tribe, we are adapting this practice as a potential tool for herring management and recovery.

For more information, please contact: Ashley Bagley, Project Manager | (206) 328.9555 | abagley@lltk.org | www.lltk.org

RECOVERING HERRING TO SUPPORT SALMON

In January, before herring spawning season begins, our team submerges evergreen trees and boughs at several depths in the Nisqually Reach and Port Gamble Bay. The evergreens are monitored regularly throughout the spawning season (January to June) to check for herring eggs. The Washington Department of Fish and Wildlife monitors herring spawn in Port Gamble Bay, a known spawning area, while our team checks for herring eggs while monitoring eelgrass beds and other potential spawning habitat in the Nisqually Reach. In both study locations, our work with the Tribes and co-managers at WDFW is helping inform Puget Sound-wide understanding of herring and to advance recovery of this key species to support salmon.

"Elders here talked a lot about the magic in January and February, that when the herring came into the bay to spawn, the whole world woke up, with salmon coming in to eat the herring, ducks, marine birds and many other fish. It was a very big deal."

—PAUL MCCOLLUM, PORT GAMBLE S'KLALLAM TRIBE NATURAL RESOURCES MANAGER

NISQUALLY REACH

Tribal histories report that herring used to spawn in the Nisqually Reach in South Puget Sound, but there hasn't been confirmed spawning in recent decades. In 2022, LLTK and the Nisqually Indian Tribe gegan catching adult herring to determine their ages, sexes, and reproductive maturity, hoping to find mature herring that may be spawning nearby. Genetic analysis of these adult herring will help us learn more about the composition and behavior of herring populations in South Sound.

Dissecting an adult female herring caught in the Nisqually Reach.

PORT GAMBLE BAY

Port Gamble Bay is a known herring spawning site, although the number of herring spawning there has declined significantly since 2000. One suspected cause may be that birds and other fish are eating too many herring eggs. In this location, we plan to test whether we can improve egg survival by placing boughs with herring spawn into experimental enclosures in the bay designed to keep predators out.

Preparing to check boughs deployed on a floating boom in Port Gamble Bay.

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