Salish Sea
Marine Survival Project
The Salish Sea Marine Survival Project leverages human and financial resources from Canada and the United States to determine the most significant factors affecting the survival of juvenile salmon and steelhead in the Salish Sea marine environment. It is the largest-scale and most important research effort of its kind in the shared water of Washington State and British Columbia. This project will, for the first time, undertake a study of all biological and environmental factors simultaneously to more fully understand the limits to salmon production and the workings of this marine ecosystem.
Background

The Salish Sea supports approximately 3,000 species of marine life, including all seven species of Pacific salmon. Pacific salmon are fundamental to the biodiversity in the Salish Sea, which includes the Strait of Georgia, Strait of Juan de Fuca and Puget Sound. Changes in the marine ecosystems of the Salish Sea have been significant, including the loss of forage fishes, changes in marine plants, increases in seal populations, losses of some marine commercial fishes, and recently the introduction of several invasive species.

One of the most striking examples of reduced biodiversity is the loss of Chinook and coho salmon during the past 20 years in the Strait of Georgia. Recent catches in the Strait have been less than one-tenth of past levels, resulting in a ban on retention of wild coho salmon and historically low catches of Chinook salmon. These losses have been well acknowledged, particularly in communities surrounding the Strait; yet understanding causes of the declines have remained a mystery. Paradoxically, other Pacific salmon species like sockeye have had huge variability in returns. For example, during the past five years, Fraser River sockeye have returned at the lowest (2009) and highest (2010) levels in a century. Pink salmon, on the other hand, have consistently returned at historically high levels in the North Pacific in recent years.

Decline of Salmon and Steelhead Marine Survival in the Salish Sea

Y axis = Marine Survival Rates, and X axis = Years.
While these data are predominantly from hatchery fish, studies indicate that wild fish have generally been following the same trend. Data courtesy of Northwest Indian Fisheries Commission, Washington Department of Fish and Wildlife, and the Pacific Salmon Foundation.
In 2009, the Pacific Salmon Foundation designed a program of ecosystem research and habitat restoration intended to increase the production of Chinook and coho salmon within the Strait of Georgia, advise future conservation management policy, and restore the economic and cultural benefits of Pacific Salmon to communities surrounding the Strait of Georgia.

Benefits of the Project

Economic

A restoration of highly-prized coho and Chinook salmon in the Strait of Georgia would have tremendous economic up-side for recreational, commercial and First Nations fisheries and related industries such as tourism that employ people in coastal communities. Restored fisheries could generate at least $200 million annually, based on an economic analysis commissioned by the Pacific Salmon Foundation in 2014.

Environmental

Because salmon are an indicator species, understanding what’s influencing salmon declines in the Strait of Georgia will also influence our understanding of challenges facing other species, and their health can also serve as a key indicator of healthy and productive ecosystems for people.

Cultural

Pacific salmon are iconic in British Columbia and have cultural significance across ethnic and cultural lines. Confusion and misinformation among the public persists about the state of salmon, which must be addressed for people to be invested in sustaining salmon in the future.
How we'll figure this out?

Unraveling the factors that have limited salmon production in the Salish Sea and understanding their interactions within ecosystems requires a comprehensive, trans-boundary and multi-year effort, as no two years in the marine environment are exactly the same.

At the heart of biodiversity is the notion of inter-dependence. Since no factor functions independently, determining the factors that limit salmon production requires simultaneous consideration of all factors, at least for a few years. Targeting a single factor without considering the cause of interactions within a given year has proven to be uninformative and potentially misleading. Consequently, the Salish Sea Marine Survival Program will be comprised of:

1. **Environmental conditions**
   
The physical environment that is so dynamic in the Salish Sea. This will involve monitoring and collation of past and present weather variables influencing the Salish Sea, and freshwater flows in tributary rivers and streams.

2. **Bottom-Up Effects on Salmon**
   
   Biological production of what salmon eat, starting from the smallest marine plants and continuing to the small, pelagic fishes. Projects will assess the annual biological oceanography, including the spring plankton bloom through to a salmon’s food items and other juvenile fishes important to the Salish Sea ecosystem; and

3. **Top-Down Effects on Salmon**
   
   Biological limits to salmon production imposed by what eats, competes with, or can kill juvenile salmon, including diseases and parasites. Projects to address issues commonly suggested as affecting juvenile salmon survival and growth include marine mammals, hatchery and wild interactions (competition and disease), interactions with salmon farms, contaminants, and changes to local marine habitats.
Project Timeline

2014

Planning with a multidisciplinary group consisting of 20 federal and state/provincial agencies, tribes, academia and non-profit organizations on both sides of the U.S. and Canadian border.

2015-2017

Perform research through multiple unique projects to test current knowledge, and to provide a baseline for development of a community-driven restoration plan. The project will employ adaptive resource management, a process of decision making in the face of uncertainty, with an aim to reducing uncertainty over time via monitoring, evaluation, and learning. A series of restoration targets and processes will be developed in collaboration with researchers, community organizations and government representatives.

2018

Dissemination and application of research findings and planning for long-term monitoring, evaluation and restoration that will stretch years into the future.
Management

Two non-profit organizations, Pacific Salmon Foundation in Vancouver, B.C. and Long Live the Kings in Seattle, will co-manage the Salish Sea Marine Survival Project. This will involve coordination of collaboration across multiple institutions, including universities, government departments, tribes and First Nations bands, other non-profits, independent scientists, and local sources of knowledge within communities. Pacific Salmon Foundation and Long Live the Kings will each manage their own project budgets, estimated at $10 million each. Project oversight will be provided by a management board comprised of members from the boards of directors of the Pacific Salmon Foundation and Long Live the Kings, and senior government personnel and funding partners. A strategic communications and public affairs plan will be developed to communicate results and seek engagement from key stakeholders.

Progress to Date

$5 MILLION SEED GRANT

In October 2013, the Southern Fund Committee and the Pacific Salmon Commission announced a commitment of $5 million dollars (U.S.) to support the Salish Sea Marine Survival Project. The Pacific Salmon Commission is the international body formed by the United States and Canada in 1985 to oversee implementation of the Pacific Salmon Treaty. The Southern Fund Committee, comprised of three U.S. and three Canadian members, was established separately in 1999 by the two countries to administer the Southern Boundary Restoration and Enhancement Fund, one of two endowment funds created to support the Pacific Salmon Treaty. The fund has supported projects to advance the science of salmon management; improve understanding of Pacific salmon stocks; restore and conserve habitat; and support natural stock enhancement.

SALISH SEA TECHNICAL PLANNING WORKSHOP

A trans-boundary conference and planning meeting was held November 2012. The participants of this workshop confirmed the value of pursuing a Salish Sea-wide research collaboration and provided recommendations for doing so in the near term. The workshop engaged a multidisciplinary group consisting of 20 federal and state agencies, tribes, academia and non-profit organizations on both sides of the U.S. and Canadian border.

STRAIT OF GEORGIA DATA CENTRE

In 2012 the Pacific Salmon Foundation, Sitka Foundation and the University of British Columbia launched a partnership to organize and document past research programs and results from the Strait. Significant past research has been conducted in the Strait but there has been no secure archive of these results. A Strait of Georgia Research Centre was initiated in 2012 to provide critical security to past investments, and allow access for today’s researchers to past results. The Data Centre will house bibliographic systems, access to existing data systems, and secure storage and access to data files currently held by individual researchers.
Fundraising Campaign

The total budget for the five-year Salish Sea Marine Survival Project is $20 million - estimated at $10 million for the U.S. work and $10 million for the Canadian work. Twenty per cent of the budget has been committed by the Pacific Salmon Commission and Southern Endowment Committee. The intention of the Foundation is to fund the program through a partnership of private/corporate donors, foundations, and government contributions.

The Foundation is seeking at least $2 million pledged over five years from philanthropic, corporate and foundation donations. To date, commitments for planning and preliminary work have been received from Goldcorp and the Sitka Foundation. Canadian Fishing Company has also offered the lease of their vessels and crews for data collection. Port Metro Vancouver also provided funding for the Salish Sea technical workshop held in November 2012. The Pacific Salmon Endowment Fund will also contribute to the funding.

These investments provide important market validation to individuals, corporations and foundations that would consider donations to the project.

The Foundation has also proposed to the federal government that the existing Salmon Stamp collaborative agreement with Fisheries and Oceans be amended to allow for a portion of Salmon Stamp funds be dedicated to the Strait of Georgia.

"The $5 million investment by the Pacific Salmon Commission Southern Endowment will catalyse our efforts to raise the additional funds needed to launch the Salish Sea Marine Survival Project."

- Dr. Brian Riddell, President and CEO
  Pacific Salmon Foundation
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