



# Fisheries and Oceans Canada

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## Pacific Region

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## Key Outcomes

DFO is taking an approach based on three key outcomes:

1. [Development of tools for ecosystem-based marine management](#)
2. [Problems with salmon populations, in particular coho and Chinook](#)
3. [Food-webs, and the role of Harbour seals.](#)

### 1. Development of tools for ecosystem-based marine management.

#### *Why?*

Ecosystem-based assessment and management requires new tools to be developed, which take a whole-ecosystem approach rather than focus on single species. Many of these tools are still at very early stages for the Strait of Georgia.

#### *What will the Strait of Georgia ERI do?*

##### **a) Computer models.**

This key activity is centered on the development of modeling tools for understanding how the ecosystem functions. These are a physical circulation model, a lower trophic level model, an upper trophic level model, and a whole-ecosystem model which uses a different modeling framework from the previous three models.

##### **b) Indicators, and historical information.**

Models may not be able to incorporate rare or unexpected events (such as species invasions), therefore ecosystem indicators are being developed to assess the current status of the Strait and to reveal linkages for use in the computer models. In addition, a bibliography of what is already known about the Strait is being finalized.

##### **c) Observations of present conditions.**

Computer models and ecosystem indicators require data on current and historical conditions. A number of small field observational programs are being funded to provide this information. These include classification of bottom types and near shore habitats throughout the Strait, high-frequency observations of winds and resulting plankton blooms, satellite observations, and exchanges of nutrients and contaminants between the bottom and the water column.

### 2. Problems with salmon populations, in particular coho and Chinook.

#### *Why?*

Pacific salmon are iconic species in British Columbia. Some species migrating into the Strait of Georgia, such as coho and Chinook, have suffered significant declines, whereas abundances of other species such as pink and chum are strong. Salmon are key indicators of the Strait of Georgia ecosystem. It is crucial to understand what is causing these changes.

#### *What will the Strait of Georgia ERI do?*

Several projects are studying how salmon interact with this marine environment,

including the quality of prey for salmon, how coho, Chinook and sockeye use the Strait of Georgia (migration patterns, key growing areas, when they leave the Strait), and the impact of large numbers of pink salmon on the feeding environment for coho and Chinook salmon, as well as compiling historical salmon data.

### 3. Food-webs, and the role of Harbour seals.

#### ***Why?***

The abundance of Harbour seals has increased substantially over the past decades, and they are likely to have significant effects on several species in the Strait. The interactions of these animals with the marine environment can be used to assess the overall condition of the Strait.

#### ***What will the Strait of Georgia ERI do?***

Several projects are studying the food webs leading to seals. These include seal-hake-herring interactions, abundances of and key locations for forage fishes, predators on these forage species in addition to seals (such as small cetaceans and dogfish), and the physiological health of the seals as an indicator of contaminant stresses.

Overall, this DFO initiative is intended to provide a foundation for assessing the changes in the Strait of Georgia, evaluate potential management responses to these changes, and to collaborate with research activities in the Strait of Georgia that may be conducted by universities and other interested groups.

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