

DFO Pacific Region ISAV, IHNV and IPNV Survey Goals

To obtain robust science-based information that will allow CFIA and DFO to address the concerns of First Nations, International Trading Partners (e.g. USA) and other groups about the presence of ISAV in British Columbia waters.

To confirm that ISAV is not present in BC waters

To confirm that IPNV is not present in BC waters

To obtain additional information on the prevalence and distribution of IHNV in populations of wild BC salmon

To obtain samples to be used to determine what non-NAAHP ISAV primer sets are amplifying from BC waters.

Issues that may need to be resolved:

If it is decided to obtain samples through DFO programs then the use of non-CFIA staff (DFO staff, First Nations and Contractors) for collection of survey samples will need to be discussed and agreed upon with the CFIA.

Several of these programs are examining health of wild salmonids and there would need to be an agreement with the CFIA to allow DFO to use the viral survey samples for additional pathogen screening (including non-NAAHP pathogens) and to use the data on IHNV, ISAV and IPNV in presentations and publications related to these programs.

Value of obtaining samples as part of DFO ongoing programs and activities:

It will be possible to sample a much broader geographical area and many salmon stocks, including those that do not support commercial fisheries, which would not be sampled within the proposed CFIA sampling program.

As many DFO programs routinely genotype fish the use of samples collected as part of these programs will enable us identify fish to stock/population. Under the

proposed CFIA sampling programs there are no resources identified to genotype fish.

Significant cost savings (travel, salaries)

Note: The use of DFO field programs as sources of samples would not necessarily exclude other sampling as outlined by the CFIA in their sampling proposal.

DFO Programs from which samples for viral screening could be obtained:

Early Seawater Entry/Smolts and resident juveniles:

Geographic Region: Strait of Georgia, Johnson Strait (Charter Vessel)

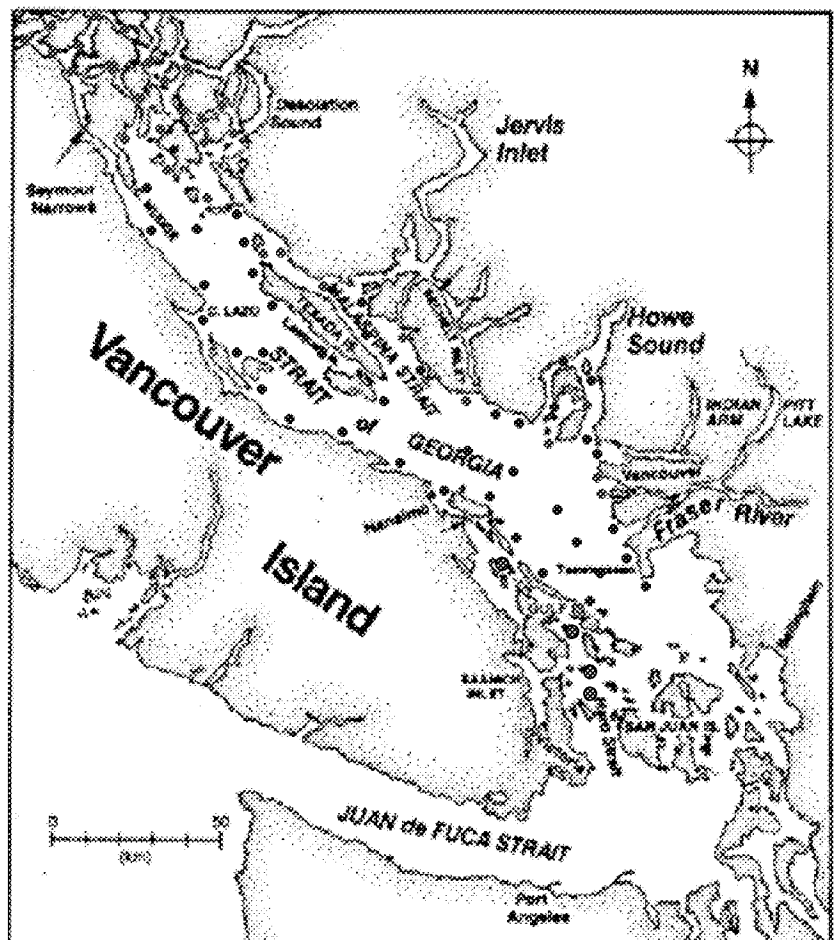
Species available: pink, chum, sockeye, coho and chinook

Dates at which samples can be obtained: 2 cruises are scheduled for May and June 2012. These are 12-14 day cruises. Fish are captured using a modified purse seine.

Populations Sampled: Fraser River stocks and other stocks arising from watersheds along the Strait of Georgia and Johnstone Strait. Samples will include fish from enhancement facilities and wild stocks.

DFO routinely genotypes for stock identification purposes all samples of sockeye, chinook and coho. Pink and chum salmon could be genotyped.

This figure shows the distribution of sites sampled during the 2011 survey. The 2012 survey will cover the same area.



Smolts and Resident Juveniles:

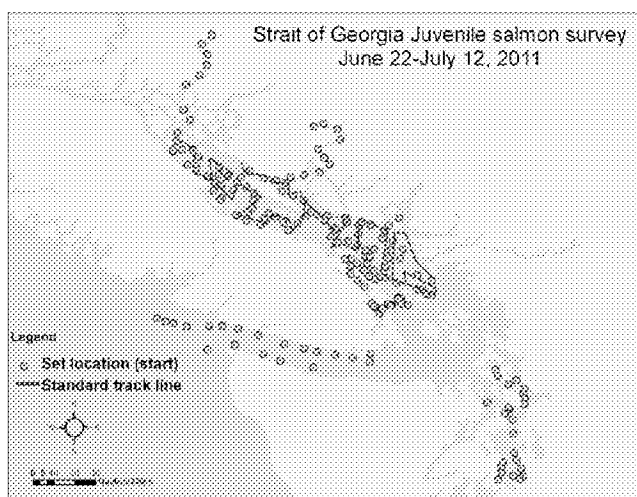
Geographic Region: Strait of Georgia, Johnson Strait (DFO vessel) Juan de Fuca Strait, mainland inlets (DFO vessel)

Species available: sockeye, coho and Chinook, pink and chum salmon.

Dates at which samples can be obtained: 2 annual cruises are scheduled for June/July and September 2012. These are usually 21-25 day cruises. An additional 7 day survey is proposed for the end of May 2012. Fish are captured using a midwater trawl that is fished along a standard track line through the Strait of Georgia. Additional sets are made in associated waters including the Gulf Islands, Juan de Fuca Strait, mainland inlets and Johnstone Strait.

Populations Sampled: Fraser River stocks and other stocks arising from watersheds along the Strait of Georgia and Johnstone Strait. Samples will include fish from enhancement facilities and wild stocks. Some sampling does take place in US waters.

DFO routinely genotypes for stock identification purposes samples of sockeye, chinook and coho. Pink and chum salmon could be genotyped.



This figure shows the distribution of sites that were sampled during the 2011 midwater trawl surveys. The 2012 survey will cover the same area.

Offshore Juvenile Salmon Research Surveys.

Geographic Regions: The summer survey usually conducts operations primarily on the continental shelf off the west coast of Vancouver Island, in Queen Charlotte Sound, Hecate Strait, Dixon Entrance, Southeast Alaska, and off the west coast of the Queen Charlotte Islands. The dates for this survey are have not been finalized. The availability of space on the ship is also unknown as this will likely be a charter. The fall and winter surveys conduct scientific operations on the continental shelf off the west coast of Vancouver Island, in Queen Charlotte Sound, Hecate Strait, Dixon Entrance, Southeast Alaska, and off the west coast of the Queen Charlotte Islands, as well as the inlets of the west coast of Vancouver Island, central British Columbia, and straits of Southeast Alaska. These surveys will be conducted using a DFO vessel. Additional staff can be accommodated for these surveys.

Species Available: coho, chinook, pink, chum and sockeye

Dates: DFO conducts several cruises in offshore waters in which juvenile and some adult salmon are sampled. These surveys are usually conducted in late spring-early summer (June-July) in the fall (October-November and) since 2001 in the winter (February – March).

Populations Sampled: Individuals from most BC populations will be captured. Some fish originating from American watersheds will also be captured.

DFO routinely genotypes for stock identification purposes all samples of sockeye, chinook and coho from the offshore surveys. Pink and chum salmon could be genotyped if required.

SEP and Non-DFO Hatchery Broodstock Screening Program

Each year between 20 and 40 hatchery and spawning channels submit samples from broodstock to PBS for pathogen screening. These include all of the major

DFO hatcheries, some community hatcheries and First Nations hatcheries, throughout BC and into the Yukon. Numbers of fish sampled is variable ranging from 10 to 400 fish per site. Samples are obtained by hatchery or fisheries staff members who have received training. The program receives kidney samples from coho, chinook and sockeye salmon and ovarian fluids from sockeye salmon. These samples are received from August to January-February each year. Diagnostic testing is primarily for BKD but sockeye tissues and fluids are also put into tissue culture on EPC and CHSE cells. I do not think it would be difficult to take advantage of this program to obtain tissues for broader viral screening efforts. This program would provide information for some river systems and stocks that do not support commercial, recreational or First Nations fisheries.

Test Fisheries

DFO conducts test fisheries (usually as contracts to individuals). There were 21 test fisheries in 2011 conducted in the regions (see below). Test fisheries may be a good source of samples from areas such as the Stikine River.

Species	Test Fishery Name	Start Date	End Date
Chinook	Area F Cn	40695	40848
	Skeena Gn	21-May-11	25-Aug-11
Fraser all species	Albion Gn	1-Apr-11	30-Nov-11
Barkley SX	Barkley Sn	13-Jun-11	19-Jul-11
Fraser SX	Round Island Gn	11-Jul-11	15-Aug-11
Fraser SX	Blinkhorn Sn	21-Jul-11	10-Sep-11
Fraser SX	Area 13 Sn	25-Jul-11	7-Sep-11
Fraser SX	Area D	0-Jan-00	0-Jan-00
Fraser SX	Area 20 SN	21-Jul-11	10-Sep-11
Fraser SX	Area 20 GN	11-Jul-11	18-Aug-11
Fraser SX	Whonnock	22-Jun-11	30-Sep-11
Fraser SX	Cottonwood	12-Jul-11	25-Sep-11
Fraser SX	Gordon Group Sn	0-Jan-00	0-Jan-00
Fraser SX	Qualaark	0-Jan-00	0-Jan-00
Fraser SX	Gulf Troll	10-Aug-11	30-Sep-11

Chum	Nitnat Gn	25-Sep-11	31-Oct-11
Chum	Sannich Sn	November	November
Chum	Area 12 Chum Sn	15-Sep-11	30-Oct-11
Chum	Cowichan Sn	November	November
Coho	Taku River Co	29-Aug-11	9-Oct-11
	Stikine River Sk	20-Jun-11	2-Sep-11
Coho	Stikine River Co	5-Sep-11	16-Oct-11
	Upper Stikine	19-Jul-11	1-Aug-11

Resources: In addition to staff members who part of the NAAHP we would need to approach the CFIA to provide some resources.

Field staff/costs:

For the cruises 1 staff member (or contractor) would be necessary to assist in the collection of samples at sea on each cruise. There would be overtime costs as the days are longer than 7.5 hours and weekends are usually worked. There are no costs for accommodation or food as these are covered in the charter costs/ or by DFO in the case of their vessels. It may be possible to participate in only part of these cruises however this would need to be arranged in advance with the scientist in charge of the cruise. Genotyping of pink and chum salmon is not routinely done and would cost approximately \$17 per fish if the work is done by the Salmon Genetics Group at PBS.

Laboratory staff/costs:

To take advantage of the broodstock screening program we would need to provide at least a ½ time technician to assist in sample preparation and submission to the NAAHP.