



## Nisga'a Fisheries Program Stock Assessment Updates

- [Nisga'a Fisheries In-season Update \[pdf\]](#)

The Nisga'a Lisims Government's Fisheries and Wildlife Department has conducted extensive fisheries research on the Nass River since 1992 in partnership with the Department of Fisheries and Oceans Canada (DFO) and BC Ministry of Environment. The Nisga'a Fisheries Program celebrated 20 years of operation in 2011 and currently operates 20 high calibre stock assessment, catch monitoring, habitat, and management projects each year. The majority of funding to the Nisga'a Fisheries Program is from the Lisims Fisheries Conservation Trust Fund, established in 2000 as part of the Nisga'a Final Agreement, and the program is guided by the Nisga'a-Canada-BC Joint Fisheries Management Committee and Nisga'a Lisims Government Fisheries and Wildlife Committee.

The current objectives and priority activities of the Nisga'a Fisheries Program are:

1. Monitor Nass salmon and Steelhead escapement;
2. Monitor salmon and non-salmon harvests in Nisga'a fisheries, in accordance with the Nisga'a Final Agreement;
3. Determine factors limiting the production of Nass salmon and non-salmon species; and
4. Promote and support Nisga'a participation in the stewardship of Nass Area fisheries.

The Nisga'a Fisheries Program provides weekly in-season updates on program activities including in-season Nass salmon and Steelhead run size forecasts and up-to-date harvest information. These updates can be downloaded above and at the following FTP site that also includes public announcements concerning Nisga'a fishery openings and closures:

<ftp://ftp.lgl.com/Nass%20Stock%20Assessment%20Updates/>.

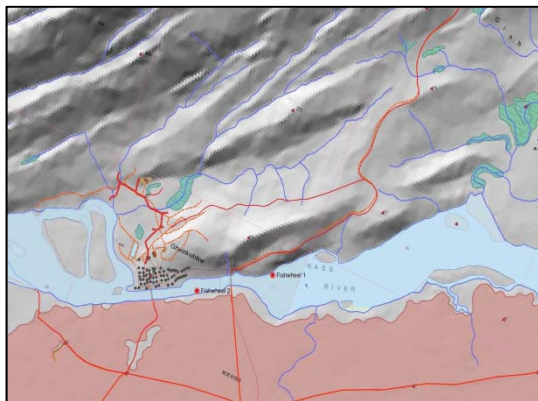
Further information is available on the Nisga'a Lisims Government's website:

<http://www.nisgaalisims.ca/protecting-nass-river>.

## Nass River Test Fishery – The Nisga'a Fishwheel Program



DFO operated a salmon gillnet test fishery on the Nass River at Monkley Dump, approximately 16 km upstream from the commercial fishing boundary near Kincolith (Gingolx), from 1963 to 1993. A number of limitations of the Nass gillnet test fishery were identified in 1992 and 1993 including problems with gear saturation, and consequently underestimates of Sockeye and Chinook salmon run sizes, as well as possible biases in age-length compositions of the two species. Starting in 1994, the Nisga'a Fishwheel Program effectively replaced the Monkley Dump gillnet test fishery for estimating in-season abundance of salmon (Sockeye, Chinook, Coho) and summer-run Steelhead and providing post-season estimates of overall escapements, age-length frequency distributions, and stock compositions.



Since 1992, the Nisga'a Fisheries Program, in partnership with DFO, has operated up to six fishwheels in the lower Nass River each year. Two test fishery fishwheels (FW1 and FW2) are located near the community of Gitwinksihlkw (approximately 46 river km from sea) to provide consistent catch index data and a marking site for mark-recapture escapement estimation. Up to four additional fishwheels (FW3, FW4, FW5, and FW6), located 17-20 km upstream of Gitwinksihlkw near Grease Harbour (upstream of Ts'im Anwiihlist), are used to recapture marks applied at Gitwinksihlkw for generating in-season estimates of escapement.

Fishwheels are powered solely by the river current and capture fish in net-lined baskets. On the Nass River, fishwheels operate 24 hours per day for over 100 days, typically starting on 1 June and operating to mid-September. Captured fish are directed toward slides as the basket comes out of the water; they are then directed into live tanks that are fitted into the pontoons. Fish are held in these tanks until the crew visits the fishwheel to tag and release fish (several times a day).

The live-capture nature of fishwheels makes them ideally suited for stock assessment research as few fish die as a result of the capture and tagging operation. The original design of the fishwheels operated on the Nass River in 1992 was based on a "Taku River" two-basket wooden fishwheel. The design changed in 1993 to a three-basket fishwheel was largely based on photographs of fishwheels used on the Columbia River about 100 years ago. After 1993, there was a gradual transition from wood to aluminum as the primary material for the fishwheels. Virtually all of the fishwheel components were made of aluminium by 1997. In addition to the structural components, the knotless, nylon netting which lines the fishwheel basket has varied between years. From 1992 until 1995, all



fishwheels were fitted with 9.8 cm, 13x16 cm knotted salmon seine net. In 1996, FW2 and FW4 were fitted with a smaller 3.8 cm mesh (stretched, knotless nylon mesh, BL 210-60). Since 1997, all fishwheels have been fitted with the smaller 3.8 cm mesh. Tower structures are used to elevate the entire basket assembly for moving the fishwheel and during flood conditions.



The fishwheels are used primarily to monitor the abundance of salmon and Steelhead returning to spawn to the Middle and Upper Nass River each year. Fish captured in the Gitwinksihlkw fishwheels are tagged with external tags and released back to the river for generating mark-recapture estimates.

The fishwheels that operate at Gitwinksihlkw capture from 2-8% (5.4% mean) of the upstream-migrating Sockeye salmon, 2-13% (7.3% mean) of the Chinook salmon, and from 3-7% (4.7%) of the Coho salmon runs. The

upstream fishwheels (Grease Harbour) are used to examine the salmon run to determine the proportion of the fish that have tags. By knowing the proportion of the fish with tags and knowing the total number of tags applied, we can estimate the number of returning fish and compare with historical catch index estimates at Gitwinksihlkw.

For example, if one in 20 fish has a tag in the Grease Harbour fishwheel catch and we had previously applied 10,000 tags at the Gitwinksihlkw fishwheels, we can assume that there are 20 times more fish than we tagged (i.e., 5% capture rate) and we can estimate the total run as:

$$20 \times 10,000 = 200,000 \text{ fish}$$



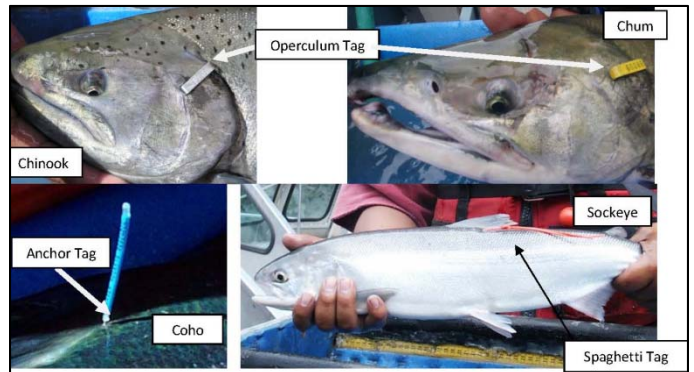
The fishwheel program also provides a wealth of information on the ages and size of returning salmon, Steelhead, and non-salmonid species. All species of fish that migrate in the Nass River are caught in the fishwheels. Salmonid species include: salmon (Chinook, Sockeye, Pink, Coho, and Chum), Steelhead, Rainbow trout, Cutthroat trout, Dolly Varden, and Whitefish. Other species include: Chubbs, Sculpins, Smelts, Suckers, Shiners, Pacific lamprey, and River Lamprey. The occasional beaver, duck, and seal are also captured. The fishwheel capture information is used to better understand the productive

capacity of Nass River fish stocks.

## Nass River Tag Return Information

If you catch a Sockeye, Coho, Chinook or Chum salmon in the Nass River, Kincolith River, or other Nass tributaries, please check to see if the fish is tagged, as follows:

- **Chinook:** Grey Aluminum tag on left gill plate;
- **Sockeye:** Plastic 'Spaghetti' tag under dorsal fin;
- **Coho:** Light Blue Anchor tag under dorsal fin; and
- **Chum:** Yellow and Orange Aluminum tag on left gill plate.



Please record species, capture date and location and contact the Nisga'a Fisheries and Wildlife Department (250-633-2617; or PO Box 228, New Aiyansh, BC, VOJ 1A0).

**By participating in the Nisga'a Fisheries Tag Recovery Program you will be entered into an annual prize draw (three \$250 draws).** Lottery draws are conducted in the summer following the tagging year.