

# IMPACT OF FOREST PRACTICES ON FISH HABITAT

## ABSTRACT

Fishing is a key element in the lifestyle of the Waswanipi Crees. Given the extent of forest activities in the territory, assessing their impact on fish habitat and suggesting conservation-minded management strategies have become a necessity. The fish species that are aimed specifically in this study are: walleye, lake sturgeon, northern pike, lake whitefish and brook trout.

Cree fishermen were met in order to gather information on observed forestry impacts on the territory. It appears from this consultation that forest operations significantly disrupt fish habitat and the lifestyle of Cree fishermen: direct disturbances (water crossing structures, logging operations near watercourses, impairment of water quality) and indirect disturbances (increase in access and fish-catching).

A summary of scientific knowledge on the effects of forest activities on fish stocks points out the same impacts. The main element of disturbance for the aquatic ecosystem is the forest road network. The construction, maintenance and degradation of forest roads and water crossing structures are detrimental to the free mobility of fish populations, and destroy fish habitat and spawning areas. They also provide easier access to the resources, thus resulting in a stronger pressure on fish stocks, whose habitat is disrupted already. Maintenance of riparian forest buffer areas proves an essential component of fish habitat preservation. It contributes to the retention of the physicochemical quality of water, and provides shelter and structure to fish habitat in watercourses and lakes. Windthrow in riparian buffer strips is a serious problem that land managers must tackle. Other major impacts of forest operations arise where logging is carried out in a large portion of a watershed: water flow regime changes and peak flows increase, thus causing erosion; water quality changes, the aquatic fauna and flora may alter with environmental changes, thus affecting fish populations, which feed on those aquatic organisms. Finally mercury concentration in fish exceeds that in lakes where the watershed has undergone extensive logging operations compared to lakes where the watershed has not.

The territory of the Waswanipi Crees does not escape from forestry-caused disturbances. An analysis of maps have allowed to highlight the high density of the road network in the southern part of the territory under study; the roads are designed with many water crossing structures that may have led to the degradation of fish habitat and hindered fish mobility. Furthermore extensive harvesting operations have taken place in that very same sector; those activities have possibly affected the physicochemical quality of water and increased the mercury level in fish caught by the Crees. Finally it is possible that a very significant increase in access to fishing territories have



Water crossing structure creating erosion (source : MRNF)

resulted in a stronger pressure on fish stocks and caused a reduction in fish populations.

The *Draft directives on the protection and management of wildlife habitats on the territory of the Agreement concerning a new relationship between le gouvernement du Québec and the Crees of Québec* suggest fine recommendations for the protection of fish habitat. The directives chiefly recommend protecting the spawning areas, widening sloped riparian strips, and applying sound practices with respect to choice and construction of water crossing structures. To these are added the following recommendations to preserve or restore fish habitat:

- ❖ Roads:
  - Plan the road network in such manner as to keep water crossing structures and water access to a minimum;
  - Consult the tallymen concerned and make sure there is no spawning area prior to proceeding with the installation of any water crossing structure;
  - Repair damaged or obsolete structures to prevent habitat disturbances.
  
- ❖ Riparian areas:
  - Protect the riparian areas of small permanent streams better; do not harvest in the 10 m zone adjacent to these watercourses;
  - Keep windthrow in riparian strips to a minimum, in particular near spawning areas (some means are proposed).
  
- ❖ Harvesting
  - To preserve water quality, avoid peak flow increases, and keep mercury accumulation in fish to a minimum; make sure the deforested area never exceeds 50% of the equivalent cutting area (ECA) of the watershed and sub-watersheds.
  - Keep rutting to a minimum, and apply corrective measures in case of rutting occurrences;
  - Avoid disturbances in wetlands.



Brook trout spawning area (source : MRNF)