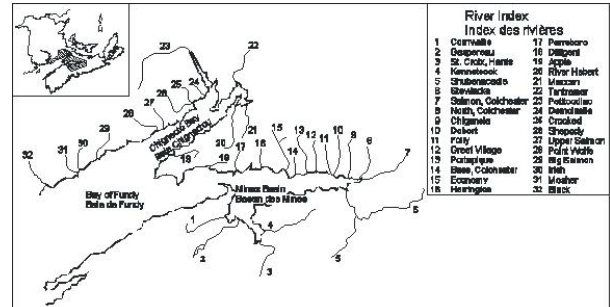


## Allowable Harm Assessment for Inner Bay of Fundy Atlantic Salmon



Inner Bay of Fundy Rivers.

### Background

The inner Bay of Fundy Atlantic salmon population is designated as "endangered" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and is listed on Schedule 1 of the Species at Risk Act (SARA). The prohibitions associated with SARA are scheduled to come into force on June 1 2004 and subsequently SARA will provide legal protection to this population. SARA provides that the Minister of Fisheries and Oceans may issue a permit to allow for incidental harm to a listed species if a number of conditions are met.

Under section 73(2), authorizations may only be issued if:

- the activity is scientific research relating to the conservation of the species and conducted by qualified persons;
- the activity benefits the species or is required to enhance its chance of survival in the wild; or
- affecting the species is incidental to the carrying out of the activity

Section 73(3) establishes that authorizations may be issued only if the competent minister is of the opinion that:

- all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted;
- all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and
- the activity will not jeopardize the survival or recovery of the species.

The analysis provided herein will allow the Minister of Fisheries and Oceans to determine the basis under which permits are to be issued in Atlantic Canadian waters. In the context of this status report, "harm" is refers to all prohibitions as defined in SARA.

### Summary

- Inner Bay of Fundy (iBoF) Atlantic salmon is a distinct genetic component of the anadromous species, *Salmo salar*, with no external diagnostic characteristics.
- The population has been in decline since 1990 and has varied from a peak of 40,000 mature fish in the 1970s to less than 200 wild adult salmon in 2003.
- Freshwater production in the wild cannot offset the high marine mortality and remnant populations already at extremely low levels will continue to decline without supportive rearing.
- Any level of human-induced harm could jeopardize survival or recovery of this genetically distinct population of salmon.
- Recovery activities, including research directed towards understanding the processes acting on the population, are essential to the survival of the population.
- All efforts are encouraged to minimize the impact of human activities on this population.

## ***Issue***

In support of a SARA permitting evaluation for Inner Bay of Fundy Salmon, the Director of Fisheries Management, Maritimes Region, requested that Science Branch undertake a scientific evaluation of regional commercial fisheries (taking place in the Bay of Fundy) to determine whether or not incidental harm would jeopardize survival or recovery of Inner Bay of Fundy Salmon. This would allow Fisheries Management Branch to provide a recommendation to the Minister of Fisheries and Oceans as to whether the SARA pre-conditions are met and incidental harm of this population may be permitted.

A Regional Advisory Process (RAP) meeting was convened 6 April 2004 to address this issue.

## ***Assessment of Issue***

### *Description of the Species*

The inner Bay of Fundy (iBoF) Atlantic salmon is a distinct genetic component of the anadromous species, *Salmo salar*. There are no external diagnostic characteristics of this population and only 20-30% of the population can be identified genetically using current techniques. Inner Bay of Fundy Atlantic salmon were known to spawn in 32 rivers northeast of (but excluding) the Saint John River in New Brunswick and the Annapolis River in Nova Scotia. While in their marine phase, these salmon are thought to inhabit the Bay of Fundy in all months except December through February.

### *Species Status*

The population has been in decline since 1990 and has varied from a peak of 40,000 mature fish in the 1970s to less than 200 wild adult salmon in 2003. Index river assessments show a declining trend (90% probability of 99.8% and 94.7% decline of five-year mean population size for Stewiacke and Big Salmon Rivers, respectively) and juvenile population monitoring indicate wide

spread extirpations. Salmon from these latter two rivers represented approximately 58% of the population in the 1980s. Their freshwater environment can still support salmon, as evidenced by the survival of Live Gene Bank (LGB) progeny released into these rivers. However, return rates from smolt to adult, an indicator of survival in the marine phase, has declined to extremely low levels relative to the 1970s and 1980s. Post-spawning adult survival has also decreased since the 1970s. Under these conditions freshwater production in the wild cannot offset the high marine mortality and remnant populations already at extremely low levels will continue to decline without supportive rearing.

Persistence of the population is currently maintained through the Live Gene Bank (LGB) program (a pedigree-supported spawning and rearing program designed to minimize the effects of hatchery programs on fish populations) currently utilizing 11 rivers. Almost all of the juvenile fish encountered in 16 rivers assessed in 2003 were in rivers where LGB progeny had been released. These fish are placed in the residual wild population to provide for natural selection, to provide research opportunities, and to maintain a recovery potential for the stock if major threats are identified and corrected or abate naturally.

The iBoF Recovery Team set the recovery target as the population distribution and abundance observed prior to the collapse in 1990. However, the cause of the observed marine mortality is still unknown. Despite the LGB supported juvenile production rates, which are currently in the mid to high range of juvenile salmon production rates in North America, the recent marine survival rates for both maturing (smolts) and mature (repeat spawning) salmon are among the lowest recorded in North America. Therefore, there is no time horizon for recovery.

### *Scope for Human-Induced Harm*

At present, the iBoF salmon population is not recovering and is not viable without LGB support. As a result, any level of human-

induced harm could jeopardize survival or recovery of this genetically distinct population of salmon. Affecting the recovery of this population requires scientific activity. Hence, some level of human interaction with these salmon is required.

### **Conclusions**

The severely depressed state and productivity of Inner Bay of Fundy salmon implies that any level of human-induced harm could jeopardize its survival or recovery. Recovery activities, including understanding the processes acting on the population, are essential to the survival and recovery of the population. All efforts are encouraged to minimize the impact of human activities on this population.

### **For more Information**

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