

SUBMISSION TO THE NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

Information:

Decision: X

Issue: Total Sustainable Harvest Limit Recommendation for Arctic Char in Kingnait Fjord, Nunavut.

Background:

A winter and summer commercial Arctic char fishery has previously operated in the Kingnait Fjord area. The winter fishery operated at Kagitugulu (66°23'N 64°19'W) and a small sister lake on the river system that flows into the head of Kingnait Fjord. The summer fishery primarily operated in the estuary area at the head of Kingnait Fjord. The Kingnait Fjord commercial fishery operated from 1982-1995/1996, and 1997-1999/2000 as per Schedule V of the Northwest Territories Fishery Regulations. The commercial quota that existed at the time (4500 kg) was deemed to be established by the Nunavut Wildlife Management Board (NWMB) at the time of ratification of the Nunavut Land Claims Agreement NLCA (NLCA 5.6.4). In 10 of these 16 years the reported commercial harvest exceeded the quota of 4500 kg. Concerns were initially raised by Fisheries & Oceans Canada (DFO) and the Pangnirtung Hunters and Trappers Association (HTA) in 1995 regarding the level of harvest of the Kingnait Fjord char stocks. In February 2000, the Pangnirtung HTA requested the NWMB close Kingnait Fjord to commercial fishing for a minimum of five years due to concern over the small size and numbers of Arctic char. The NWMB subsequently closed the commercial fishery for a five year period.

However, in 2002 the HTA requested that Kingnait Fjord be reopened as it was thought the stock had recovered. In February 2003, the NWMB deferred any change to the closure until it could undertake the setting of Total Allowable Harvest (TAH) and Basic Needs Level (BNL).

In late 2003, the HTA once again requested DFO reopen the commercial fishery in Kingnait Fjord. Based on assessment of existing biological information, DFO Science recommended a range of risk based options. In May 2005, DFO recommended the establishment of a total harvest of 2000 kg, which included all sources of harvest. Further, it was recommended the collection of biological data for five years and the reporting of both the exploratory and subsistence harvests from Kingnait Fjord.

In May 2005, following consultation with DFO, the HTA requested that the entire recommended 2000 kg harvest limit from all sources in Kingnait Fjord be used for the commercial fishery. The Minister accepted the NWMB's two decisions:

1. "Resolved that, pursuant to section 5.6.16 of the NLCA, the NWMB approve an annual level of harvesting by the Pangnirtung HTO for the commercial harvest of char in Kingnait Fjord of 2000 kilograms, conditional upon:
 - a. The collection of biological data each year for the commercial fishery in accordance with the five-year data collection plan for new fisheries (including length, weight, age, CPUE and total amount harvested), and
 - b. The reporting of all harvests each year in both the subsistence and commercial fisheries in Kingnait Fjord."
2. "Resolved that, pursuant to section 5.6.48 of the NLCA, the NWMB establish the following non-quota limitation with respect to the use of gillnets in the Kingnait Fjord commercial char fishery: a mesh size of five and a half inches only."

In 2005, the Kingnait Fjord char fishery reopened as an exploratory fishery with a quota of 2000 kg. Following the Minister's decision, Nunavut Tunngavik Inc. (NTI) filed an application for judicial review of the Minister's decision. However, the application was discontinued following the Board's indication that it would establish a TAH for the 2006 harvesting season.

The Kingnait Fjord char fishery continued to operate as an exploratory fishery with a quota of 2000 kg until 2008/09. From 2005 to present, no subsistence harvest data have been reported to DFO.

In 2008, the NWMB staff prepared a sample calculation of a BNL for the establishment of a TAH for Kingnait Fjord char. According to the harvest data from the NWMB Harvest Study, the five year average amount of char harvested by subsistence fishers between 1997 and 2001 was 4666 kg (assuming an average weight of 2 kg per char in Kingnait Fjord). A conversion factor of 2 kg per char is appropriate for this stock because the average weight from samples collected during DFO stock assessments from 1991, 1997, 2003, and 2007 was 1.892 kg.

Assessment:

Establishment of a sustainable total harvest level

DFO undertook an experimental approach to determine exploitation rates for Arctic char populations in the Canadian Arctic (Johnson, 1980). Following a number of years of study of the Nauyak Lake (~130 km southwest of Cambridge

Bay) anadromous Arctic char population, a harvest rate of 11% of the standing stock was found to be excessive and resulted in population decline. Based on what is known about Arctic char populations from this and other studies conducted across the Canadian Arctic, it appears that a harvest of equal to and greater than 10% of the harvestable stock likely poses a high risk of causing population decline.

There are several examples of char fisheries, such as the Sylvia Grinnell fishery, that provide evidence that if total removals from the population are not limited, the population will decline to levels from which it is unable to rebound to historic levels. There are also examples of char fisheries, such as the Cambridge Bay commercial fishery, that provide evidence that char fisheries can be fished sustainably. The current exploitation rates of less than or equal to 5% for rivers near Cambridge Bay (i.e., Ekalluk River), appear to be sustainable (Johnson, 1980). In summary based on what is known about other Arctic char populations across the Canadian Arctic, a total harvest limit needs to be established for the Kingnait Fjord char stock to ensure conservation of the stock and the maintenance of a healthy population capable of sustaining harvesting.

While DFO is ultimately responsible for the conservation of stocks, the NWMB is the main instrument of wildlife management in the Nunavut Settlement Area (NLCA 5.2.33) and also responsible to ensure conservation of wildlife (fisheries) populations (NLCA 5.1.5 (c)). The establishment of a total sustainable harvest level for Arctic char would be considered a good wildlife management practice, in addition to the establishment of non-quota limitations (i.e.; mesh size) to ensure sustainability of the fishery.

In May 2009, DFO Science reviewed all biological data available for Kingnait Fjord Arctic char. Based on information from other Arctic char populations across the Canadian Arctic, a 10% removal rate would likely be unsustainable and cause population decline while a 5% removal rate would likely be sustainable. In Kingnait Fjord, the 5% exploitation rate was applied to estimates of population size derived from a tagging study in 1993. The total levels of harvest (from all sources) are presented below with the associated levels of risk.

Total Harvest	Risk
>4800 kg	High
2700 – 4800 kg	Moderate
<2700 kg	Low

It is important to recognize that there is interest in developing the commercial char fisheries in Nunavut. In 2005, the Government of Nunavut undertook pre-assessments of some Arctic char fisheries in Nunavut to evaluate the potential for pursuing Marine Stewardship Council (MSC) Certification. To be certified by the MSC, the fishery must demonstrate that it meets three core principles. These

principles are 1) sustainable fish stocks, 2) minimizing environmental impact, and 3) effective management. According to the sustainable fish stocks principle, fishing activity must be at a level which is sustainable for the fish population. Any certified fishery must operate so that fishing can continue indefinitely and not overexploit the resource. Further, under the minimizing environmental impact principle, fishing operations should be managed to maintain the structure, productivity, function and diversity of the ecosystem on which the fishery depends. Lastly, the effective management principle maintains that the fishery must meet all local, national and international laws and must have a management system in place to respond to changing circumstances and maintain sustainability. Unless these requirements are met, certified commercial ventures could be severely limited. A total harvest level for the Kingnait Fjord stock would set the upper limit for removals to allow sustainable fishing over the long-term, which is the first principle of MSC certification.

Importance of complete harvest reporting

In order to provide scientific based advice on sustainable harvest levels, a good understanding of all removals from the population is required. The harvest record for the Kingnait Fjord fishery is not complete. Although commercial sales to the Pangnirtung Fish Plant have been recorded for many years (1982 onwards), the subsistence harvest is unclear. The community has expressed concerns in the past that the Harvest Study may have overestimated the fish harvested for subsistence purposes during the 1997 to 2001 study period in that it may have included some portion of the commercial harvest.

The Harvest Study recognized that it may have included some commercial harvests for some species. There were attempts to clarify the type of harvest reported in the study. Fish that were recorded as being sold to a plant or were reported as 'sold' or 'commercial' were removed from the database. Moreover, records with comments that indicated the harvest had been sold for local consumption (i.e.; to the local HTA or one of the local stores) were retained in the database.

In the future, all removals from the population should be accurately recorded to ensure that complete information is available for future stock assessments and provision of scientific advice on sustainable harvest levels.

Conclusion:

With the continued population growth of Pangnirtung and the close proximity and ease to which this waterbody can be accessed by Pangnirtung residents, the establishment of a total sustainable harvest level (that includes all sources of harvesting) for the Kingnait Fjord Arctic char population is necessary to ensure

that sound management decisions are made (NLCA 5.1.2 (e)) and that the fishery is healthy and sustainable (NLCA 5.1.2 (g), 5.1.3 (b)(i), 5.1.5 (c)).

Consultations: R. Tallman, K. Martin, & H. Cleator (Science –Winnipeg), K. Fisher (Resource Management - Winnipeg), S. Romberg, & S. Courchesne (Resource Management - NHQ), C. Lewis & A. Currie (Resource Management - Iqaluit).

Recommendations:

- 1) DFO recommends that the Board establish a total harvest level from all sources that will ensure the conservation of the stock.
- 2) DFO recommends that the Board accept a low to moderate level of risk in setting a sustainable total harvest level, which is less than 2700 kg or 2700-4800 kg respectively.
- 3) DFO recommends that in the future, all removals need be accurately recorded to ensure that complete information is available for future stock assessments and provision of scientific advice on sustainable harvest levels.

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Date: May 27, 2009