

SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD



FOR

Information: X

Decision:

Issue: Sample Calculation of Basic Needs Level (BNL) in support of establishment of Total Allowable Harvest (TAH) for Arctic Char in Kingnait Fjord Nunavut.

Background:

The Nunavut Wildlife Management Board (NWMB or Board) has been asked to establish a TAH for Arctic Char (*Salvelinus alpinus*) in the water body known as Kagitugulu (66° 23'N 64° 19'W) in Kingnait Fjord Nunavut. A commercial arctic char fishery (4500 kg/yr) occurred in the water body from 1982 to 1999. In 2000, the Board closed the commercial char fishery in Kingnait Fjord at the request of the Pangnirtung HTO due to conservation concerns about the status of the stock. The concern was that overfishing had diminished the size and quality of the stock. A 5-year moratorium on commercial char fishing in Kingnait Fjord was established.

Two years later, in 2002, the Pangnirtung HTO petitioned the NWMB to lift the moratorium on the commercial char fishery in Kingnait Fjord, citing improved condition of fish captured during subsistence harvest in the area. In 2004, Fisheries & Oceans Canada (DFO) provided scientific advice on TAH levels for consideration in support of re-opening the commercial char fishery in Kingnait Fjord.

DFO has provided scientific advice to the Board for two levels of TAH for the water body dependent on the amount of risk the members are willing to accept:

1. DFO recommends a **TAH of 2000 kg/yr**, which in their scientific opinion, will result in a **low level of risk** of damaging the recovery and conservation status of the arctic char population.
2. DFO advises that a **moderate to high level of risk** of damaging the recovery and conservation status of the population would be presented if the Board chose to re-open the commercial char fishery with a **TAH of 4500 kg/yr**; the same level of harvest at which the fishery was prosecuted prior to the moratorium established by the NWMB in 2000.

The NWMB has not yet established a TAH with respect to the arctic char stock in Kingnait Fjord. The previous commercial quota of 4500 kg/yr for the water body was in force

immediately prior to the date of ratification of the NLCA and was removed by the Board in 2000.

Once a total allowable harvest has been determined by the NWMB in accordance with Sections 5.6.16 and 5.6.17 of the NLCA, the Board shall strike a BNL in accordance with Part 6 of Article 5 of the Claim (NLCA 5.6.19).

The BNL shall constitute the first demand on the TAH. Where the TAH is equal to or less than the BNL, Inuit shall have the right to the entire TAH (NLCA 5.6.20).

Where a total allowable harvest is established with respect to a stock or population not previously subject to a total allowable harvest (like Kingnait Fjord arctic char), the NWMB shall calculate the BNL in a **two-step process** as the higher of (NLCA 5.6.23):

- a. An amount based on data from the original five year NWMB Harvest Study, calculated according to the method described in Sub-section 5.6.21 (a) of the NLCA, or, where a Hunters & Trappers Organization (HTO) has previously elected the method described in Sub-section 5.6.21(b), the harvest level of the stock or population in the identified year; or
- b. The aggregate of the greatest amount harvested in any one year during the five years prior to imposition of a TAH and the average annual amount taken over the five years of the NWMB Harvest Study, which aggregate is then divided by two.

The Pangnirtung HTO did not nominate a specific year during the NWMB Harvest Study to use in calculation of BNL. So the method described in S.5.6.21(a) of the claim must be used to make the first, of the two-step calculation of BNL:

Step One of BNL Calculation (NLCA .5.6.21(a))

The aggregate of the greatest amount harvested in any one year during the NWMB Harvest Study, and the average annual amount harvested over the five years of the Study, which aggregate is then divided by two:

$$BNL = \frac{\textit{Greatest amount harvested per yr during HS} + \textit{Average amount harvested during HS}}{2}$$

The greatest amount of arctic char harvested per year recorded during the NWMB Harvest Study in Kagitugulu is 12,925.0 kg (Table 1, in year 1998).

The average amount of arctic char harvested during the 5-year NWMB Harvest Study in Kagitugulu is 6042.5 kg (Table 1).

So,

$$BNL = \frac{12,925.0 \text{ kg} + 6042.5 \text{ kg}}{2}$$

$$BNL = 9483.75 \text{ kg}$$

Step Two of BNL Calculation (NLCA .5.6.23(b))

The aggregate of the greatest amount harvested in any one year during the five years prior to imposition of a TAH and the average annual amount taken over the five years of the NWMB Harvest Study, which aggregate is then divided by two:

$$BNL = \frac{\text{Greatest annual harvest of last 5 yrs} + \text{Average amount harvested during HS}}{2}$$

In making any calculations under Sub-section 5.6.23 (b), the NWMB shall rely on the best evidence available as to the levels of harvesting by Inuit in the five years prior to establishment of a TAH (5.6.24).

The best evidence available for the last five years of arctic char harvest in Kingnait Fjord is provided by DFO commercial catch records (Table 2). There is no record of subsistence harvest available for this time-period to use in the calculation. As a result, this calculation will in all likelihood underestimate the true Basic Needs Level of Inuit.

The greatest annual recorded harvest of arctic char in Kagitugulu over the last five years is 2094.5 kg (Table 2, in year 2005).

So,

$$BNL = \frac{2094.5 \text{ kg} + 6042.5 \text{ kg}}{2}$$

$$BNL = 4068.5 \text{ kg}$$

The higher result from the two-step BNL calculation as per S.5.6.23 of the NLCA is **9483.75 kg**. This is the calculated BNL for arctic char in Kingnait Fjord.

Inclusion of Commercial Catch Data in BNL Calculation

To the best of our knowledge, the NWMB Harvest Study did not record commercial harvest during the 5-years it was conducted. We cannot, with absolute certainty, rule out the possibility that some commercial harvest of arctic char in the Pangnirtung area was inadvertently reported as subsistence catch in the Harvest Study. However, independent commercial harvest records for the area and that period are available from DFO (Table 3).

These commercial data are primarily generated from fish landed at the Pangnirtung fish plant. The plant can only accept as much landed fish as it has the capacity to process and sell. At times, more fish are commercially caught in the Pangnirtung region than can be landed at the plant. As a result, even the inclusion of the DFO commercial catch data

may underestimate the true amount of commercial harvest of arctic char from Kingnait Fjord.

If we add the DFO recorded commercial harvest with the NWMB HS recorded harvest then:

$$BNL = \frac{\text{Greatest amount harvested per yr during HS} + \text{Average amount harvested during HS}}{2}$$

The greatest amount of arctic char harvested per year recorded by the combined NWMB Harvest Study and DFO commercial records in Kagitugulu is 16,111.0 kg (Table 3, in year 1998).

The average amount of arctic char harvested per year recorded by the combined NWMB Harvest Study and DFO commercial records during the 5-year Harvest Study period in Kagitugulu is 8149.10 kg (Table 3).

$$BNL = \frac{16,111.0 \text{ kg} + 8149.10 \text{ kg}}{2}$$

$$BNL = 12,130.05 \text{ kg}$$

Consultations: DFO Iqaluit & Winnipeg

Recommendations:

1. Decide whether arctic char commercial harvest data collected by DFO from Kingnait Fjord at the same time the NWMB Harvest Study data was recorded for the area should be included in the BNL calculation.
2. If the commercial data is included in the calculation, it appears a BNL for arctic char in Kingnait Fjord may be **12,130.05 kg/yr** (wet weight) pursuant to S.5.6.19 of the NLCA.
3. If the commercial data is not to be included in the calculation, it appears a BNL for arctic char in Kingnait Fjord may be **9483.75 kg/yr** (wet weight) pursuant to S. 5.6.19 of the NLCA.

Prepared By:

Joe Justus
Director of Wildlife Management

Date: Monday July 21th 2008

Table 1. Harvest statistics for landed arctic char from the water body known as Kagitugulu (66° 23'N 64° 19'W) in Kingnait Fjord Nunavut recorded during the five year (1997-2001) Nunavut Wildlife Harvest Study conducted by the NWMB. Only subsistence harvest was recorded during the Harvest Study. A commercial fishery with a quota of 4500 kg/yr was conducted in the water body during this time. That information is not included in the table. The Harvest Study recorded the number of arctic char reported as captured from Kagitugulu over the five-year period. The weight of the recorded catch is estimated by multiplying the number of fish landed by a factor of 2.5, which is the DFO calculated average wet mass (kg) of arctic char from the region.

NWMB HS Date	Community	Species	Harvest location	# Harvested	Wet Wt. (Kg)
Year 1 (1997)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	905	2262.50
Year 2 (1998)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	5170	12925.00
Year 3 (1999)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	4115	10287.50
Year 4 (2000)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	1525	3812.50
Year 5 (2001)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	370	925.00
5 yr Total				12085	30212.50
5 yr Average				2417	6042.50
5 yr Greatest				5170	12925.00

Table 2. Best evidence available for the last five years of arctic char harvest in Kagitugulu (66° 23'N 64° 19'W) in Kingnait Fjord Nunavut is provided from DFO commercial catch records. Catch is recorded as wet weight (kg). Number of arctic char harvested is estimated by dividing the reported catch wet weight by a factor of 2.5, which is the DFO calculated average wet mass (kg) of arctic char from the region.

DFO Commercial Catch Date	Community	Species	Harvest location	# Harvested	Weight (Kg)
Year 5 (2004)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	0	0.00
Year 4 (2005)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	838	2094.50
Year 3 (2006)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	324	810.50
Year 2 (2007)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	504	1260.00
Year 1 (2008)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	807	2016.30
5 yr Total				2473	6181.30
5 yr Average				495	1236.26
5 yr Greatest				838	2094.50

Table 3. Combined subsistence and commercial harvest statistics for landed arctic char from the water body known as Kagitugulu (66° 23'N 64° 19'W) in Kingnait Fjord Nunavut recorded during the five year (1997-2001) Nunavut Wildlife Harvest Study conducted by the NWMB and commercial catch records for the same period from DFO. The Harvest Study recorded the number of arctic char reported as captured from Kagitugulu over the five-year period. The weight of the recorded catch is estimated by multiplying the number of fish landed by a factor of 2.5, which is the DFO calculated average wet mass (kg) of arctic char from the region.

NWMB HS Date	Community	Species	Location	HS Wet Wt. (kg)	DFO Com. Wet Wt. (kg)	Combined Wet Wt. (kg)
Year 1 (1997)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	2262.50	3220.00	5482.50
Year 2 (1998)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	12925.00	3186.00	16111.00
Year 3 (1999)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	10287.50	4127.00	14414.50
Year 4 (2000)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	3812.50	0.00	3812.50
Year 5 (2001)	Pangnirtung	Arctic Char Sea-Run	KAGITUGULU	925.00	0.00	925.00
5 yr Total				30212.50	10533.00	40745.50
5 yr Average				6042.50	2106.60	8149.10
5 yr Greatest				12925.00	4127.00	16111.00