Fisheries and Oceans | Pêches et Océans

MEMORANDUM **NOTE DE SERVICE**

To / À: Martine Giangioppi, Karen Ditz, Garth Reid
Fisheries Management
Fisheries and Oceans Canada
Iqaluit, NU

From / De: Kathleen Martin
Arctic Stock Assessment and Conservation Research,
Arctic Research
DFO, Winnipeg, MB

Security Classification - Classification de sécurité
Unclassified/Non Classifié
Our File - Notre référence
Your File - Votre référence
Date
08 March 2004

Subject / Objet: Revised Advice provided in regards to the reopening of the Kingnait Fjord fishery

Following the meeting of 12 January, 2004, Science provided provisional advice to Fisheries Management, Eastern Area Office, in regards to the request from the Pangnirtung HTA to reopen the Kingnait Fjord fishery with an exploratory licence to fish 8,000 lbs (3600 kg) of Arctic char. Science is now amending the advice provided based on the analysis of ages for fish collected in 2003.

Background

A commercial fishery had operated at Kagitugulu Lake (66°23'N 64°19'W), one of two small lakes in the river system flowing into head of Kingnait Fjord (off Cumberland Sound east of Pangnirtung). In six year of the ten years from 1986 to 1995 the commercial harvest had exceeded the quota of 4,500 kg (Table 1). In 2000, citing concern for the stock, the HTA requested that the Nunavut Wildlife Management Board (NWMB) close Kingnait Fjord. The NWMB agreed to close the commercial fishery for at least five years, however, in 2002, the HTA requested that Kingnait Fjord be reopened. The NWMB deferred any change to the closure until they could undertake the setting of Total Allowable Harvest (TAH) and Basic Needs Level (BNL). In late 2003, the HTA requested support from Fisheries & Oceans in another attempt to reopen the commercial fishery. Data, available from 1991 and 1997 (Fig. 1) were analyzed and indicated that there were more of the larger and older fish present in the 1997 sample. Length-frequency data (Fig. 2) from 197 fish collected in the subsistence harvest in 2003 were analyzed to assess the current status of the stock. Ages had not been determined at the time of the January meeting.

Updated Information

The 2003 length-frequency plot was similar to the pattern from 1991 with somewhat fewer large fish. Harvest data from the NWMB harvest study indicated high levels of harvesting by the subsistence fisheries leading up to and following the closure. The length frequency

pattern is consistent with a high level of harvesting which tends to remove the largest fish from the population, however the age data were needed to provide a more complete assessment. At a meeting with Fisheries Management personnel, the Pangnirtung HTO also expressed concern about using the harvest study data to gauge the level of domestic/subsistence harvest for this waterbody. They did not agree with the data reported and indicated that the subsistence fishery has always been low because of the distance from the community.

Based on the age structure from the 2003 sample, this stock appears to be quite healthy. There are four to six dominant age groups at ages well past the age of first reproduction. Therefore future production is not dependent upon a single good year class. The char appear to enter the fishery at about age 11 and, therefore, mortality would be spread out over about 6 age groups.

Science Advice

Based on the age data form 2003, we would change our advice as follows:

Two options are available to the community:

Option 1. There would be a low level of risk to the population to allow an exploratory harvest which should include the requirement to collect biological data including length, weight, age, CPUE and total harvest as per the five year data collection plan for new fisheries. Total harvest from both the exploratory and any concurrent domestic fishery should be reported. If an exploratory harvest is allowed then it is suggested that a total harvest from all sources (including both lakes on the river system) should be limited to 2000 kg.

Option 2. There would be a moderate to high level of risk associated with reopening the fishery at the original level. Char stocks typically do not respond well to high levels of exploitation which may have been the case here in the past. If the fishery is reopened, Science needs to know the total harvest of the stock from all sources to determine sustainable harvest levels. Sampling of harvested fish should be done to examine population characteristics.

DFO Science recommends Option 1 with a review of age structure in 2 to 3 years. If the population remains healthy then an increased quota could be considered. In all cases, the subsistence harvest levels and the total take need to be known.

If the additional information is required please do not hesitate to contact me.

Kathleen Martin

Table 1. Summary of Commercial Fishery Harvest Data and Subsistence fishery* harvest data for Kingnait Fjord:

* Subsistence data is taken from the Nunavut Harvest Study

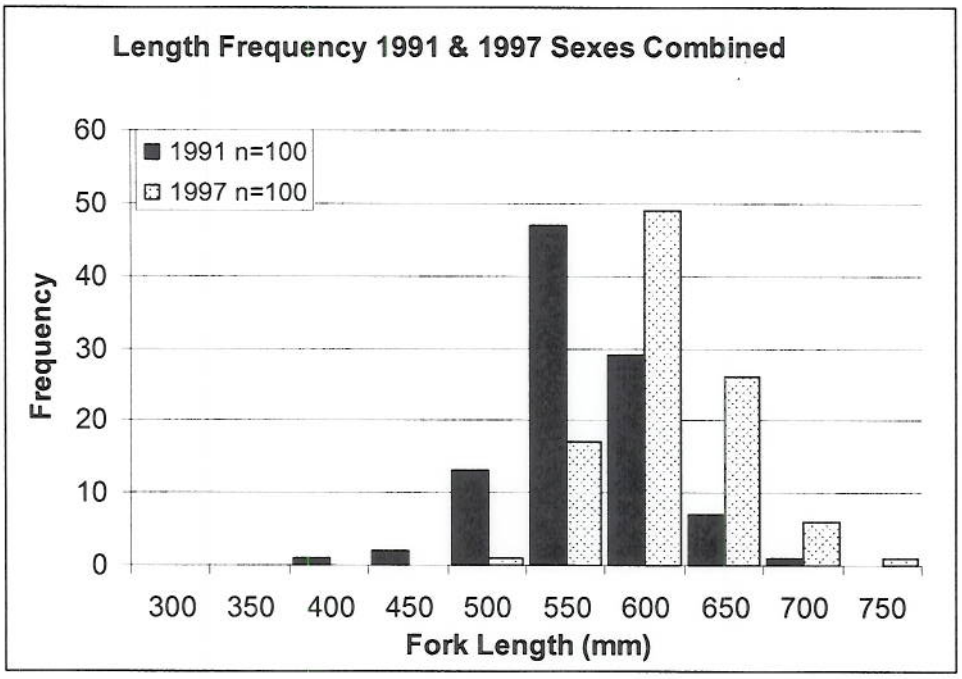
Location	year	Quota (kg)	Harvest (kg round)	Subsistence (no. of fish)	Estimated Sub. Harv. (kg)
Kingnait Fiord (PG014)	1982	4500	4500		
	1983	4500	4545		
	1984	4500	1346		
	1985	4500	4871		
	1986	4500	5600		
	1988	4500	6018		
	1989	4500	7603		
	1990	4500	1000		
	1991	4500	4545		
	1992	4500	4955		
	1993	4500	6247		
	1994	4500	5598		
	1995	4500	7184		
	1996	1000E	334	20	40
	1997	4500	3200	885	1770
	1998	4500	3186	5170	10,340
	1999	4500	4127	3715	7430
	2000			1525	3050
	2001			370	740

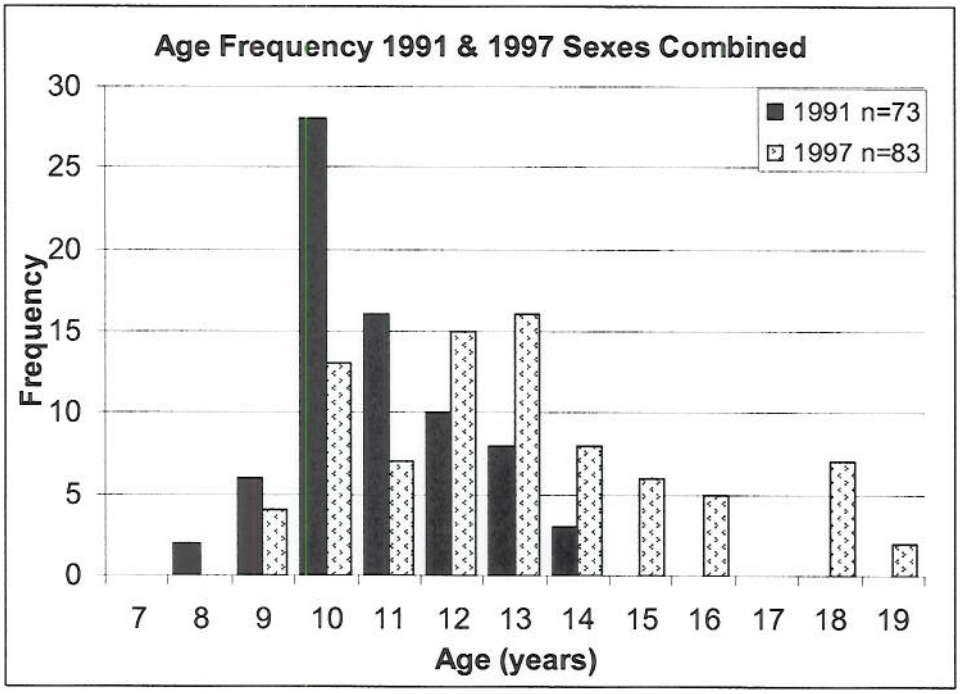
E indicates experimental licence (otherwise commercial licences)

This is a factor of 2

do we use a 2.5kg per char

Fig. 1. **Kingnait Fiord** 1991 & 1997 Length & Age Frequency



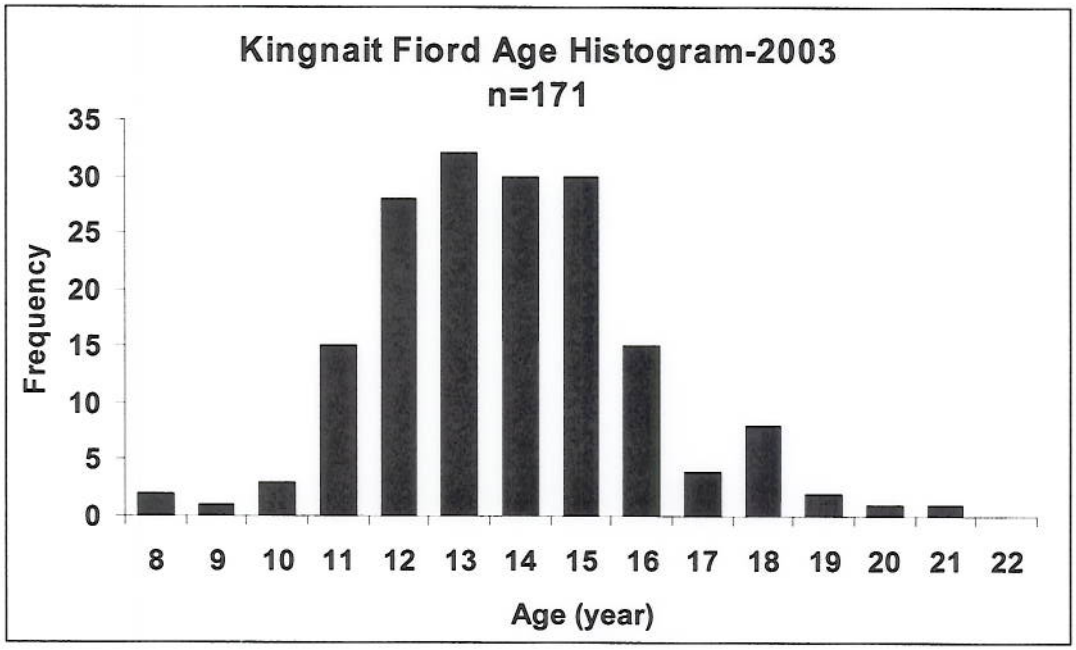


Mesh Size (1991&1997): 127 mm (5")

Fig. 2. **Kagitugulu (Kingnait Fjord)** 2003 Age-Frequency (A) and Length-Frequency (B)

Mesh Size (2003): 127 mm (5")

A.



B.