

PRELIMINARY RESULTS OF SCANNING PROTON  
MICROSCOPE ANALYSIS OF STRONTIUM IN  
INCONNU OTOLITHS FROM THE MACKENZIE RIVER SYSTEM

A total of 53 otoliths from 8 locations (Table 1) were analyzed for strontium levels using a scanning proton microscope. A line scan plus three core probes were conducted on each otolith.

Only some preliminary results from the line scans will be presented at this time. Of the six inconnu captured in the Liard River two showed marine signals (elevated levels of strontium) for a segment of their life history. Otoliths from seven inconnu were analyzed from the Mackenzie River, Norman Wells area. Of these six showed evidence of being in marine or brackish waters. Of interest two of the six inconnu which had marine signals had these signals in the early segment of their life history and then freshwater signals for the rest of their life span. Fort Good Hope and Upper Arctic Red River samples showed both freshwater and anadromous forms as indicated by strontium levels in their otoliths. Samples analyzed from the West Channel (Akavik) and taken during the ice on period showed mostly freshwater signals with two inconnu with only slightly elevated levels of strontium. Only one inconnu taken from West Channel showed a marine signal.

All eight samples from Campbell Lake showed low levels of strontium across the otolith indicating a life history totally in freshwater. Samples from Tuktoyaktuk Harbour all showed some degree of anadromy. At Shingle Point (coastal area) seven of the eight inconnu sampled showed marine signals while one showed only a freshwater signal, which suggests this was the first time this inconnu had entered coastal waters.

There was no obvious pattern as to when an individual inconnu would enter coastal waters (based on strontium levels) or would remain in freshwater. It may be that environmental factors such as food availability or density may be responsible for when or if an inconnu enters coastal waters. However sample sizes were too small to make any conclusive statements regarding anadromous behavior - but its food for thought.

This information will be included in a report titled:

Chiperzak, D.B., K.L. Howland, R.F. Tallman and G. Low(?). 1998. Scanning proton microscope analysis of strontium in inconnu otoliths from the Mackenzie River system.

Report prepared for the FJMC and SRRB.

Table 1. Locations and number and sex of inconnu analyzed for strontium using a scanning proton microscope.

Location	Number	Male	Female
Shingle Point	8	4	4
Tuktoyaktuk Harbour	6	3	3
Campbell Lake	8	4	4
Aklavik (West Channel)	8	4	4
Upper Arctic Red River	6	3	3
Mackenzie River (Fort Good Hope)	4	2	2
Mackenzie River (Norman Wells)	7	3	4
Liard River	6	3	3