Chisasibi - James Bay Fishery

Last Updated: November 16, 2020

1 Static Analysis - Collective action

Fort George is a large native settlement in the eastern James Bay area and the home of the Fort George band of the James Bay Cree Indian People. The resource units in the study are two species of Coregonus, whitefish (C. clupeaformis) and cisco (C. artedii). The original case, which spans from 1974 to 1976, documents an action situation involving 20 fishing groups or individuals who cooperated with the study for two years. The community uses social practices to regulate the fishery.

1.1 The Commons Dilemma

There is no commons dilemma or resource scarcity at the time of the study, only the possibility of the overexploitation of the fishery. There is good evidence that the two fish species have remained an important food source for the communities along the James Bay area. There is no evidence that the fish stocks have ever collapsed. It appears that the Cree have not depleted their fish stock and catch levels have remained high. By contrast, commercial fishing enterprises in north Canada have resulted in overfishing of the stocks.

1.2 Biophysical Context (IAD)

- **Natural Infrastructure** The study area about 1000 km north of Montreal, lies in the Canadian subarctic, close to the fringe of the arctic zone. The exposed coastline and the islands have a typical tundra landscape; the interior consists of muskeg and open-crown forest dotted with thousands of lakes. The treeline dips farther south on the Hudson Bay coast than in any other continental region of the world. The indented, low-lying coast is a unique environment where the transition from the marine to the freshwater ecosystem is gradual, and where the arctic fauna and flora blend into assemblages characteristic of more southerly ecosystems. The two fish stocks in the study are whitefish and cisco. Whitefish is a larger fish (average weight 525.7 g) than the more abundant cisco (average weight 277.5 g). The two species are of similar sizes and have similar growth rates between the ages of 3 and 5 years. After 5 years, whitefish grows more rapidly, attains a larger size, and probably lives longer than cisco. The age at maturity of whitefish could not be determined conclusively for lack of mid- and late-summer samples. Among the cisco examined, all of those 5 years and older were reproductively mature, as were some of the 4-year-olds, but not the younger fish. The two species together make up 64

- **Hard Human-made Infrastructure** The principal gear used in the fishery was a 50 m long multi-filament nylon gillnet measuring 2 12 in. (63.5 mm), 3 in. (76.2 mm), or 3 2 1 in. (88.9 mm) mesh (stretched measure), referred to as a No. 2 12 , No. 3, and No. 3 12 , respectively. In water, the nets measured about 35 m long and 1.3 m deep. They were weighted with small rocks and buoyed by about 1 m-long floats of dry cedar wood. The nets were usually set perpendicular to the coastline in shallow water, almost never deeper than about 3 m so that the tips of the floats showed above water. The gear and methods of ice fishing, following freezeup in November, were similar, but the nets had not long but small flat cedar buoys to minimize loss by icing. The gillnet was not the only fishing gear used in Fort George. In the August fishery at First Rapids, upstream on La Grande, a hand-drawn seine was used in small bays at the foot of the rapids to harvest concentrations of fish. On the coast, fishing boats were mostly 24 ft canoes powered with 20, 25, or 40 HP outboard motors.

1.3 Attributes of the Community (IAD)

Fort George [was] the name of the permanent settlement of 1,582 resident native people, including 1,399 Cree Indians, 106 non-status Indians (Metis), and 55 Inuit (Eskimo) according to a census in winter 1973-1974. With only some 225 nonnatives, mainly transient white people who [were] administrators, teachers, and hospital personnel, Fort George [was] one of the largest native-run communities in Canada's north.

Up until only about 1960, Fort George was essentially a trading post with a few permanent buildings. People came to the settlement principally after their winter trapping for trade and social exchanges (Weinstein, 1976). In Fort George [1976] the Cree people live[d] in fixed dwellings and there [were] a large variety of permanent structures, including a hospital, two schools, two missions, several stores, a restaurant,and a lodge. Hunting and trapping parties depart[ed] intermittently from the settlement for varying periods of time throughout the year. There [was] much harvesting on a commuter basis and on weekends (Weinstein, 1976).

The Fort George area, as with much of Canada's north, [was] being opened up for resource exploitation, and the original development plans for the area were contested in court by the Cree and Inuit. A long court case, followed by negotiations, resulted in a treaty (1975) involving four parties: the Cree of James Bay, the Inuit of Northern Quebec, and the governments of Quebec and Canada. According to this treaty, the native peoples were provided with some safeguards for the retention of local control and the retention of exclusive hunting, fishing, and trapping on a large part of the land (some 29,000 square miles for the 6,500 Cree) in exchange for relinquishing their land claims. They were "guaranteed" a harvest level equal to present levels of all species in the area of the treaty.

The Cree subsistence fished in groups. Each fishing group usually set one to three nets, up to a maximum of five in the present study. It took only two individuals to manage the net and the boat, but others, usually women and children, were often taken along as well. Women occasionally led fishing groups and some were as skillful as men. Each person had a series of favorite fishing spots, some but usually not all of which were visited in the course of a fishing season. There was no territoriality, and fishing success in one area often quickly attracted others, but each fisher maintained a respectable distance from the others so as

not to interfere with the catch. The mean catch per net set did not vary in any systematic way over a wide range of fishing times, from less than 7 hr to over 48 hr. The Cree recognize that leaving the net in the water longer does not necessarily give larger catches.

1.4 Rules in Use (IAD)

1. **Position Rules:** The set of positions in this study contains only one position: fisher. Any member of the Cree People or Inuit can be a fisher.
2. **Boundary Rules:** The boundary rule is the James Bay and Northern Quebec Agreement of 1975. It gives the native people exclusive fishing in this area. A fisher would have to be a member of this community.
3. **Choice Rules:**
    - May extract only necessary resource unit and must fully utilize it.
    - May conduct fishing activity in shallow waters (3 meters or less).
    - May conduct fishing in a few traditional sites.
    - May use No. 2 1/2 size nets within 15 km of Fort George.
    - May use No. 3 1/2 and 4 size nets outside 15 km of Fort George.
    - May use greater than No. 2 size net.
    - May set 1-3 nets with a maximum of 5 and check them at least once a day
4. **Aggregation Rules:** Not mentioned in the study.
5. **Information Rules:** May place nets where other fishers are having success. .
6. **Payoff:** The fishery is one of sustenance. Fishing provides one-quarter of the peoples' diet. There was no incentive to create a surplus.
7. **Scope:** May claim a fishing location as a traditional family site.

1.5 Summary

This case is about the sustenance fishery of the Cree People located near the James Bay area in northern Canada. The motivation was to explain the success of the fishery in a time and place where overfishing was common. The null hypothesis was that the Cree harvested what they could, and that they had not overfished their stock because the human population was small. The author of the study showed that there was order in the fishery and they had the capability of over fishing the stocks which allows the rejection of the null hypothesis. The success of the fishery was attributed to the strategies of fishing multispecies stock, and the "social practices" that limited the size of the catch, the mesh size, depth areal extent of fishing, and ensuring that all the catch was utilized.

2 Dynamic Analysis - Robustenss

A follow up study by Fikret Berkes suggested that there were minimal biological impacts from the James Bay Hydroelectric Project, but that the fishermen changed their practices.

Flow alterations related to hydroelectric development have affected both the fish stocks and the Crée Indian subsistence fishery in the lower LaGrande River, northern Quebec. Evaluated against several years of baseline data, the initial biological impact of the project on fish populations, mostly whitefish (Coregonus clupeaformis) and cisco (C. artedii), appeared to be relatively small. Nevertheless, fishing activity in the lower river and the estuary largely ceased from 1979 to 1981 , due to physical modifications of traditional fishing areas and other social and economic effects related to the hydro project. Some fishermen modified their methods and continued harvesting in the affected area, but others abandoned the affected area and fished lakes and rivers along the recently constructed road network. It is concluded that earlier impact assessments fell short of predicting these impacts.

2.1 Exogenous Drivers

3 Case Contributors

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