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THE ROLE OF TRADITIONAL KNOWLEDGE IN COMMUNITY-BASED MANAGEMENT OF AN EIDERDOWN INDUSTRY DEVELOPING IN NORTHERN CANADA

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INTRODUCTION

The basic premise of this particular case study is that traditional knowledge and skills can be incorporated into decision-making processes to develop workable systems for community-based management. As Douglas Nakashima has illustrated Inuit traditional knowledge as a basic for arctic wildlife management is Justified, but it is a question of developing appropriate institutions for that knowledge to be applied and incorporated into decision—making.

The purpose of this paper is to describe development of a community-based management system for commercial harvesting of eiderdown in the Belcher Islands. In doing so, we hope to illustrate how indigenous knowledge is integral to the management process. It is important to note that upon starting this research and development initiative, there was little consensus on how to achieve sustainable, community-based development of living common-property resources in northern Canada or elsewhere.

THE EIDERDOWN RESOURCE

As you know the Belcher Islands are situated in southeast Hudson Bay. The Inuit living in these islands have a long tradition with the Hudson Bay eider; a non-migratory species that lives in this small arctic archipelago year—round. In the past 20-25 years, the community has also started collecting eiderdown for domestic sewing of winter clothing. One of the reasons for community-based development of an eiderdown industry is that through sale of eiderdown to a community cooperative, people can receive cash to help finance trips in August to mine carving rock. This is a laborious activity during which time people have no incomes.

Domestically, eiderdown is collected as one seasonal activity that contributes to the overall value of subsistence hunting during the summer months. It is collected in the month of July during the nesting period. During this time, the decision of where to hunt and camp are influenced by the hunters' knowledge of nesting areas, and other wildlife harvesting opportunities. Figure One indicates, the hunters familiarity with the distribution of eider nest colonies in the islands; and, Figure Two indicates, the diversity of wild foods available during the month of July. These may be arctic char, molting geese, beluga whale, eggs, reindeer and walrus on occasion.

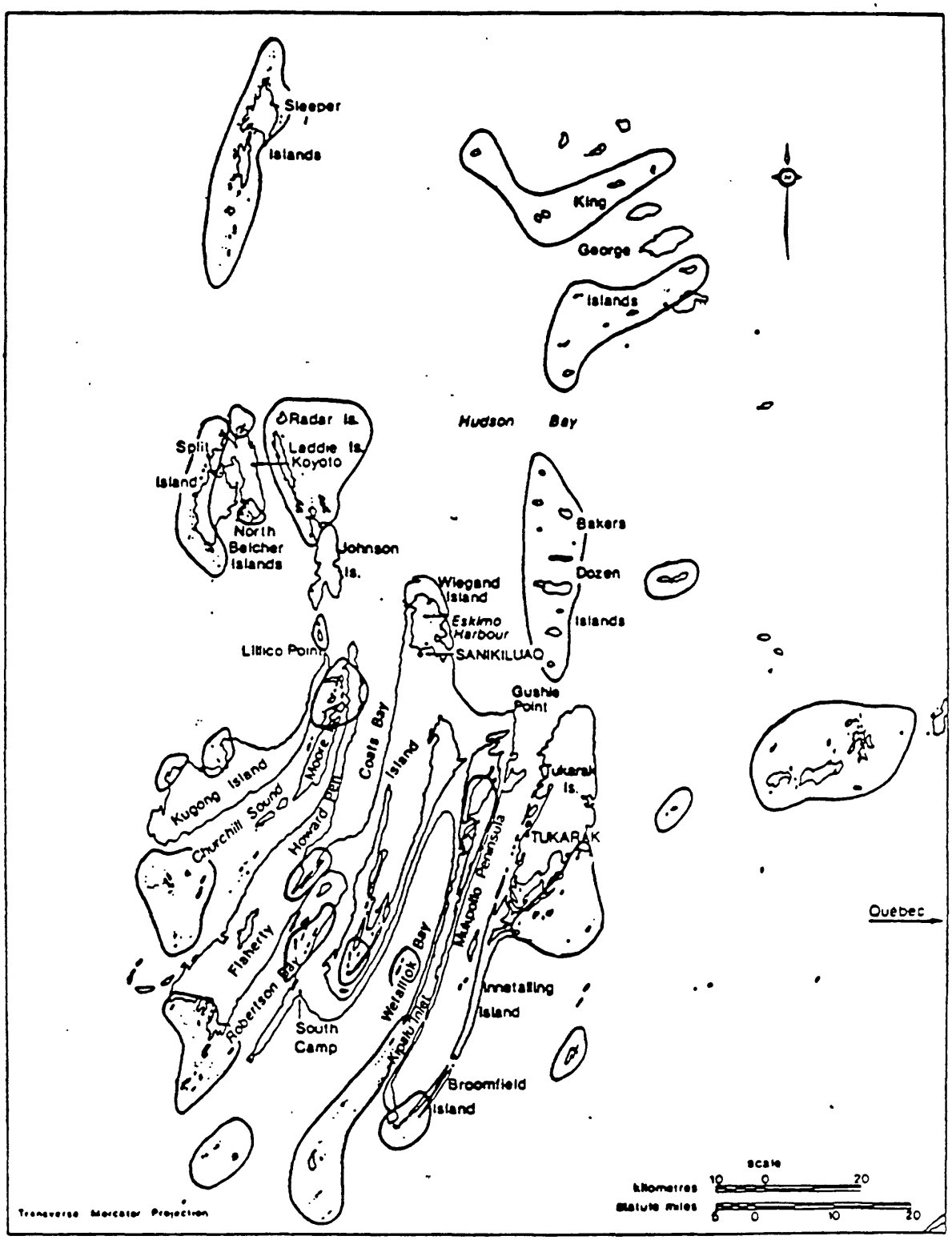


Figure 1 : Eider Duck Nesting Locations
Known by Residents of Sanikiluaq

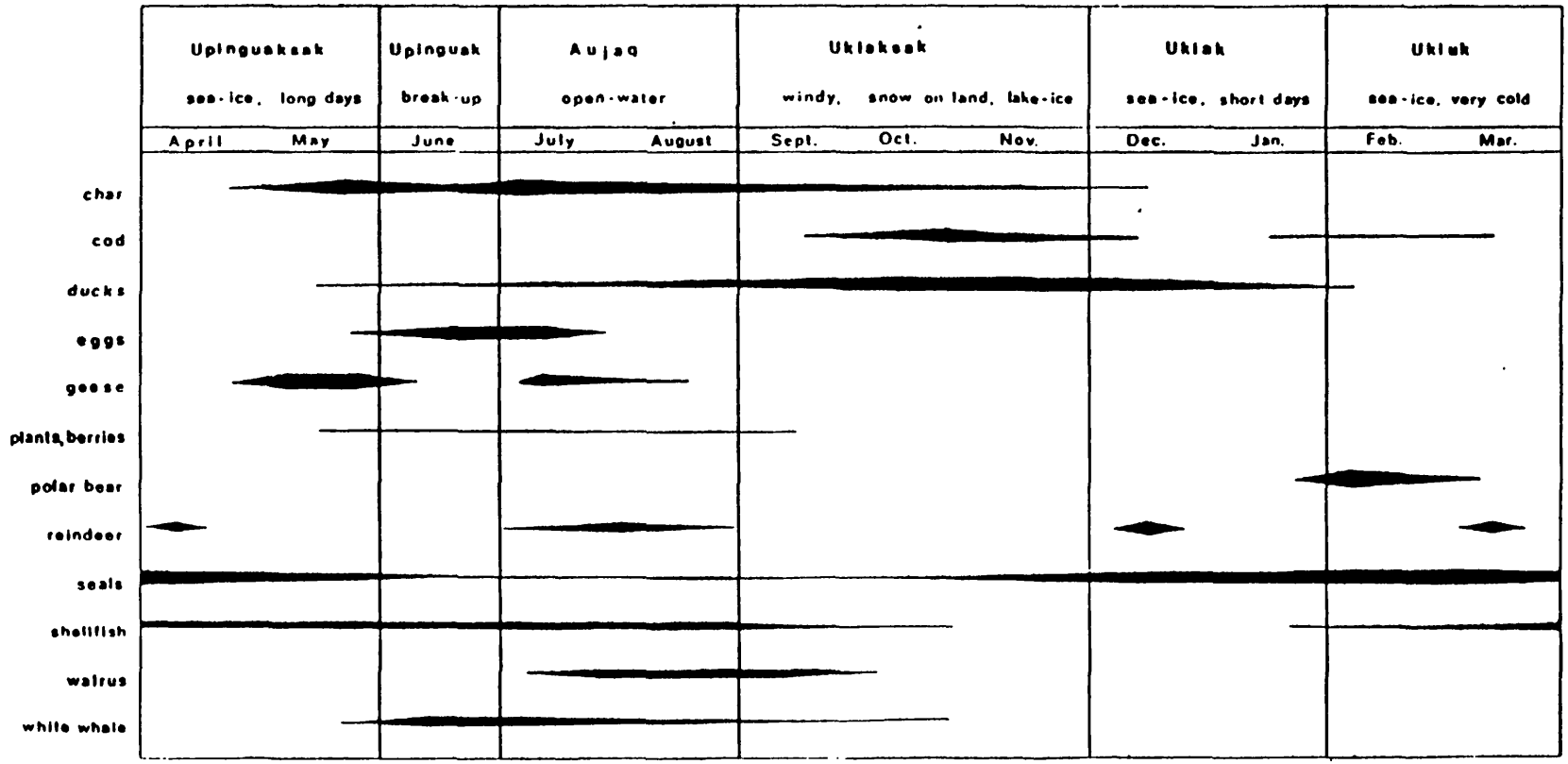


Figure 2 : The seasonal availability of wild foods in the Belcher Islands.

Thus, in addition to their knowledge of nesting colonies, the specific places families go to harvest eiderdown depend upon personal preferences, the availability of other harvesting opportunities, economic factors and environmental considerations such as sea ice conditions.

The eiderdown is often harvested on hunting excursions in small groups of men or in family camp settings. The amount of down harvested from a particular nest depends on a variety of factors including whether there is sufficient down in the nest to collect, and its particular quality. There are also codes of conduct for harvesting down from nests.

For example, within the family setting adults are discouraged and children prevented from collecting down in isolation of others. It is also considered improper and highly inconsiderate to the nesting eiders not to leave a sufficient amount of down in the nest for the eggs to stay warm. In the community, people discuss the consequences of such action, through the radio; in terms of, its effects on the nesting eider, human relations with the eiders, and human responsibilities toward each other.

Egg gathering and the harvesting of eiderdown also tend not occur at the same time. Egg gathering usually occurs when the eggs are fresh, or at the time of harvest when people desire or require them for immediate consumption. To determine if an egg is suitable for eating it is placed in a pool of water near the nest. If the egg sinks it is considered fresh, but if floats it is placed back in the nest because it is in a late stage of incubation.

Finally, an important consideration to this case study, is that eiderdown is a common–property resource to which every household has access through either direct participation or the community distribution network. In 1988, 50 of the 63 female heads in Sanikiluaq households had eiderdown of which 44 percent participated in the actual harvest. Sixteen percent had down collected on their behalf and 40 percent had down given to them by a family member or relative. Of the thirty households that harvested eiderdown, forty-three percent gave down to other people.

PURPOSE OF COMMON-PROPERTY MANAGEMENT

In the early 1980s, the people of Sanikiluaq became interested in acquiring cleaning technology to facilitate commercial harvesting and processing of eiderdown. Eiderdown, as it turns out, is one of the few renewable resources in the Belcher Islands with economic potential that can directly support

the domestic economy. Hence, the main reason for developing a community-based system for managing the commercial harvesting of eiderdown is because the hunters suggested if a management system did not accompany the introduction of commercial harvesting activity then the population may decline.

ECOLOGICAL CONSIDERATIONS FOR MANAGEMENT

A surveyed census of the nesting population, originally initiated by Douglas Nakashima in 1985 and subsequently conducted by the Municipality of Sanikiluaq in 1986, 1988 and 1989, derived a population estimate of 29,100 nesting eiders that produce 978 kilograms of raw eiderdown annually. But, as people in the community know, not all this down is available for commercial production, since:

First, some of this down is located on remote islands that are difficult to access. In such localities, travel costs and other opportunities may assume a higher priority than the economic return from harvesting eiderdown.

Second, environmental factors, particularly wind, and sea ice limit the outcome of all summer harvesting activities in the marine environment surrounding the Belcher Islands.

Third, people require eiderdown for domestic manufacturing of winter clothing.

Therefore in light of the environmental factors, and based on cumulative results of the nest surveys, the supply of eiderdown available for domestic and commercial harvesting is estimated at 830 kg or 85% of the total annual production.

Discussions with individual hunters, and meetings with the community's Hunters' and Trappers' Association, known as the HTA, identified additional ecological considerations including the non-migratory nature of the eider population in the Belcher Islands, environmental factors that influence population status, and causes of mortality.

In discussing the introduction of commercial harvesting, people recognized that aside from themselves, a number of animals also depend on the eiders for food. In the fall, when prevailing winds limit access to other marine species, eiders are a main source of meat for the community. In winter, polar bears feed on eider ducks by taking them in polynyas. Also, gulls scavenge food from the eider ducks by taking shellfish away while the ducks feed along the edge of a polynya or lead in the sea ice. Foxes are widely distributed throughout the islands and known to consume entire nesting colonies. Polar bears are also known to disturb nesting colonies in the summer. Of all the birds that

prey on eiders, the gulls are considered most threatening because they nest on the same islands and, from a very young age, feed on eider eggs and chicks.

The fact that the eider population lives year-round in the Belcher Islands is a unique behavioral attribute which hunters consider important to management. Unlike migrating birds, the Belcher Island eiders do not necessarily nest in the same place each year.

Finally, the hunters recognize climate as an important factor to population well-being. Winter is considered a primary enemy of the eider ducks whereby the availability and access to open water during the sea ice period are key determinants to the rates of winter mortality.

MANAGEMENT OPTIONS

The ecological considerations derived from the people's knowledge of the eider population and its environs led to further discussions pertaining to the introduction of commercial harvesting and its management. From a western scientific management perspective, a number of management options were proposed to the HTA by a Senior Scientist of the Canadian Wildlife Service. In the months following, the HTA discussed these options in terms of their practicality, relevance and impact on the population. From these discussions, some important features to the community-based management system were discerned.

Essentially, members of the HTA and community did not want the introduction of commercial harvesting to disrupt existing patterns of domestic harvesting. Therefore, unless there is an overharvesting problem, they do not want to restrict people's access to particular nesting regions. Natural restrictions already exist on an annual basis and they feel further restrictions could introduce competition among harvesters and increase pressure on certain colonies. Likewise, the HTA did not favour hiring people to collect eiderdown for commercial production because the people collecting down for domestic use might try to precede the commercial harvest and thereby intensify harvest activity.

We also discussed zoning nesting areas according to the type of use; commercial, domestic and sanctuaries. Again, the HTA did not see a purpose in this unless it responded to a particular problem that has yet to identify itself. They foresaw the designation of commercial and domestic zones as a problem because it might reduce the value of eiderdown harvesting to being solely a monetary activity.

As for sanctuaries, did not consider them necessary based on the principle based on the principle that if the birds are disturbed too much they will simply nest in areas less assessable to humans the following year. They also identified areas where natural sanctuaries already exist. The east coast of Kugong Island, for example, is a nesting region that is difficult to access by boat due to strong winds and currents on that side of the island. Also, the southern Belcher Islands is a large nesting region but, for two successive years, packed sea ice limited access to the people with a lot of navigating experience and knowledge of the area. In this regard, there is a natural system of rotating sanctuaries for the nesting eiders.

In terms of introducing nest enhancement programs some interesting cross-cultural perceptions were expressed. Individuals questioned if people really went so far as to build "little houses" for the eiders. "Isn't that going a bit far?", someone asked.

The introduction of nest shelters was seen as a potential impact on the population because in the 1960s nest shelters were established on one island, but the eiders stopped nesting on that island until the last few years. They further questioned if it was practical to increase population size through nest enhancement when winter mortality is already high due to limited availability and access to open water.

In summary, the HTA felt an open access system to harvesting eiderdown was important to maintain; and that this system could sustain commercial harvesting by:

1. adopting a commercial harvesting system based on setting annual quotas for a "harvestable surplus" rather than setting quotas based on total resource availability,

2. reinforcing and encouraging conservation practices,

3. monitoring the use of areas by recording down harvested and comparing it with baseline information available from the population census.

THE COMMUNITY-BASED MANAGEMENT SYSTEM

The underlying objective to manage commercial eiderdown collection involves integration of both economic and environmental considerations to support a sustainable community-based industry.

Towards this end, an adaptive management process has been adopted, whereby the HTA sets an annual commercial quota for the industry. The quota is established by taking into account the minimum harvest required to sustain the industry, and the maximum harvest the resource can sustain without causing adverse impact on the nesting population. As suggested in Figure Three, the annual quota may fluctuate between these two limits.

The way the commercial quota for a particular year is established involves:

1. recording the amount of eiderdown and place it was collected when residents sell their down to the Cooperative, and

2. tabulating and summarizing the eiderdown harvest by region

After annual harvest results are processed, the Cooperative presents the information to the HTA along with their forecasted requirement for manufacturing purposes in the upcoming year. In turn, the HTA reviews and evaluates this information by:

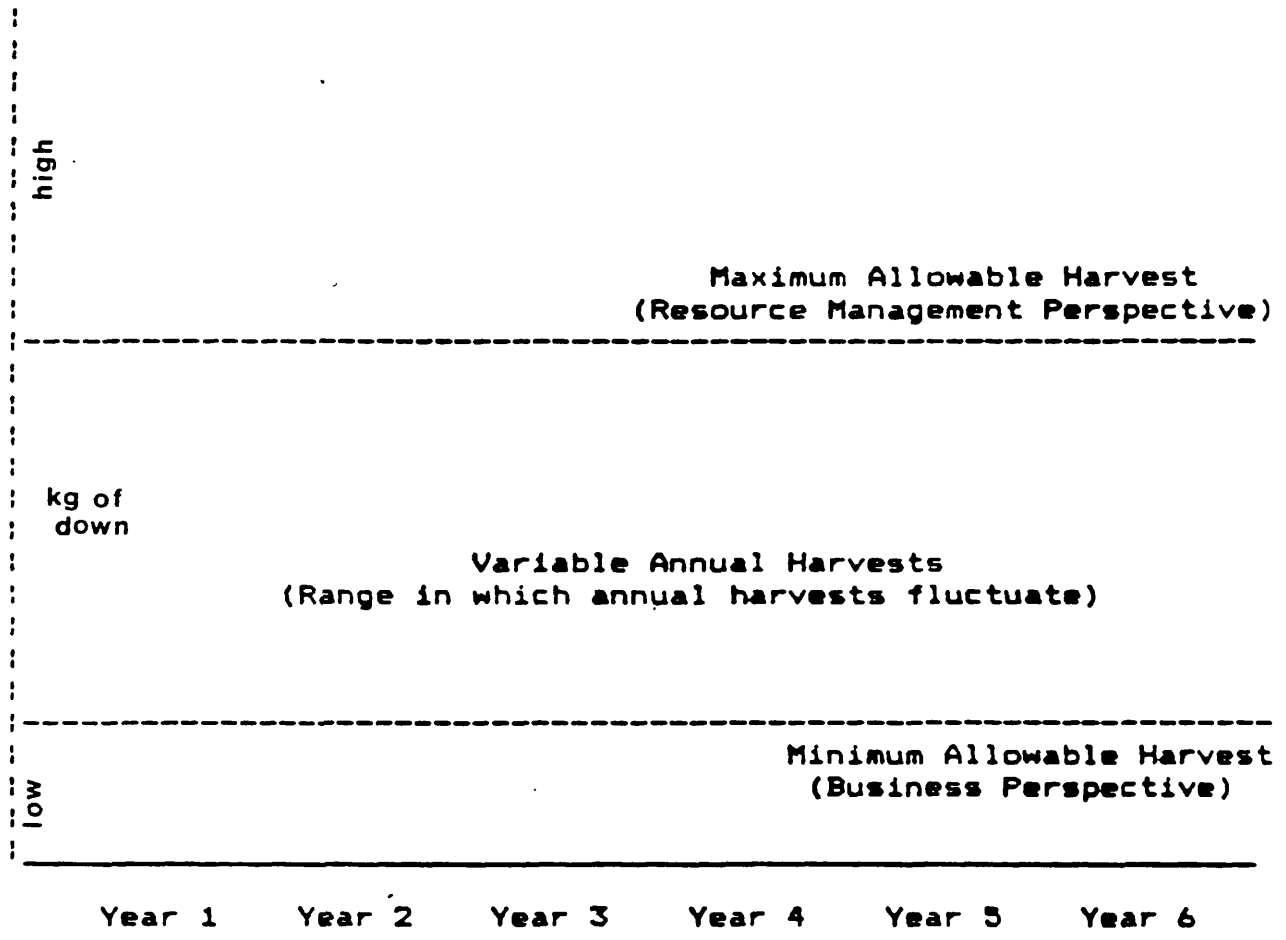
1. comparing the amount harvested in each region to the baseline supply of eiderdown estimated from the eider nest census

2. assessing the harvest and survey information in relation to relevant ecological factors such the rate of recruitment based on the abundance of eider ducks observed during the previous fall hunt, and the past winter.

In this latter evaluation, traditional ecological knowledge of the hunters is crucial to the management process because it essentially provides meaning to the quantitative information provided from harvesting records.

After the results have been reviewed and discussed by the HTA, they set a commercial eiderdown quota for the following year, and apply to the Canadian Wildlife Service for a commercial permit.

Figure 3 I COMMERCIAL HARVEST LIMITS



PRELIMINARY RESULT AND PROSPECTS

In 1990, this management model was used to conduct a pilot commercial eiderdown harvest. The HTA set a commercial quota of 272 kilograms, which is 33 % of the estimated supply available in the Belcher Island area. The remaining 568 kilograms was set aside for potential domestic use.

Table One presents the results of this pilot commercial harvest. As you can see, the commercial quota was not used. Of the 262 kilograms allocated for commercial use, only 202 kilograms was purchased, from a total of forty people. In addition, of the 202 kilograms purchased, only 86 kilograms was harvested in 1990 and the remaining 116 kilograms had been collected in previous years, between 1980 and 1989.

A main reason why the commercial harvest was low in 1990, stems from widespread sea ice that severely restricted marine travel during the nesting period. Access to nesting colonies was particularly restricted in the South Belcher Islands. Consequently, as we can see in Figure Four, only 1.2 % of the available down was commercially harvested. In contrast, 36 % of the estimated available supply was harvested in the Sleeper Islands which reflects, in part, the fact that marine travel was less restricted in this region.

With this information, and their traditional knowledge the HTA can set a commercial quota for the following year. Subsequently, and pending the outcomes of their discussions, they can then advise the cooperative and community of particular areas that are "over" or "underutilized".

In 1991, only 10.4% of the estimated supply of harvested for commercial use and because we had only one year's data on the commercial harvest by region, the HTA kept the commercial quota at 272 kgs. The Canadian Wildlife Service approved HTA's quota by issuing the community a commercial eiderdown harvest permit for 1991.

TABLE ONE

COMMERCIAL HARVEST BY REGION: 1980 - 1990

Year Collected	Sleeper Islands	Churchill Sound	South Belchers	N. Belchers Spin Island	East Tukarak	Others	TOTAL
1990	59.7	1.4	1.2	12.6	8.7	2.2	85.8
1989	31.5	18	Nil	7.8	Nil	15.4	72.7
1988	19.2	Nil	10.2	Nil	3.6	Nil	33
1987	2	Nil	Nil	Nil	Nil	Nil	2
1980	Nil	Nil	Nil	2.5	Nil	Nil	2.5
TOTAL	119	19.4	11.5	22.9	12.3	16.9	202

1990 COMMERCIAL HARVEST vs. ESTIMATED SUPPLY IN SURVEYED REGIONS