

# Literature Review

## Local and Traditional Knowledge In the Great Bear Lake Watershed

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Brenda Parlee



**trackingchange**

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Parlee, B.

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## SUMMARY POINTS

The Great Bear Lake Watershed is home to the Sahtú Dene communities of Fort Good Hope, Déljine, Tulita, and Colville Lake and is also an area historically used by other Indigenous peoples, including the Tłı̨chǫ and Inuit communities of the Kitikmeot region. A significant body of local and traditional knowledge has been documented by early anthropologists such as Rushforth, through the Sahtú Renewable Resources Board (SRRB), the Sahtú Land Use Planning process as well as the protected areas process associated with the Great Bear Lake region.

A *State of Knowledge* report about Great Bear Lake was published in 2004 by the Department of Indian and Northern Affairs but does not consider local and traditional knowledge in the description or conclusions. Compared to other regions of the Mackenzie River Basin, there is a relatively significant body of knowledge documented and publicly available for this region, and fewer gaps. The key areas of local and traditional knowledge that have been documented have been in the area of oral histories, place names, as well as details about fishing culture, practices and socio-economic patterns of fishing across the region. Detailed documentation of sites of cultural value was carried out by the Sahtú Heritage Places and Sites Joint Working Group, and others.

A large body of work about the impacts of resource development is in development. Most notable is the oral history about the impacts of the Rae Rock mine. The region has been a major focus of land and water protection when compared to other areas of the Mackenzie River Basin. Most notable is the work done to document local and traditional knowledge related to the governance of the watershed, and defined through the review document titled *The Water Heart—A Management Plan for the Great Bear Lake and its Watershed*, directed by The Great Bear Lake Working Group (2005/2006). Gaps determined through this review include documented sources of knowledge about the health of fish populations and other aquatic resources, knowledge related to water quality, quantity and flow as well as observations or knowledge that may be climate-related, including that associated with climate change. The historic and contemporary impacts as well as the future legacy, of oil and gas activity in the Norman Wells area and its impacts on the aquatic ecosystem are poorly documented. There are, however, a great number of documented sources of knowledge related to the community of Déljine when compared to other Sahtú communities and other Indigenous groups that might have overlapping interests in the region, including the Tłı̨chǫ and Kitikmeot Inuit peoples.

**Table 1: Summary of Knowledge by Indicator Theme**

<b>Indicator</b>	<b>LTK</b>	<b>Notable Sources, Programs, Projects</b>
Traditional Land Use—Indigenous		Great Bear Lake Working Group Sahtú Heritage Places and Sites Joint Working Group Sahtu Land Use Planning Board Sahtu Renewable Resources Board
Contemporary Use—Indigenous		
Subsistence Values/Historical—Fisheries		
Commercial Values/ Historical—Fisheries		
Subsistence Values/ Contemporary—Fisheries		
Commercial Values/ Contemporary—Fisheries		
Fish Diversity		
Fish Health		
Fish Movements and Migration		
Water Quality		
Water Flow, Levels		
Climate Change Effects		
Effects of Disturbance		
Traditional Stewardship Practices		

## INTRODUCTION

Add Introduction

## METHODS

This report was developed for the *Tracking Change...* project with the aim of synthesizing and documenting existing local and traditional knowledge about social and ecological change in the Great Bear Lake Watershed. The identification, synthesis and reporting on Traditional Knowledge for this region is complex, owing to the large number of Aboriginal groups who have documented historical and contemporary land and resource use and interest in the region, the absence of documented Traditional Knowledge research having been carried out, as well as the socio-economic and political inequities and tensions that exist between regional and provincial governments and many Aboriginal communities. Many Aboriginal groups may feel there is little purpose in devoting valuable time and resources to sharing their knowledge to a reporting process that is largely structured according to western science parameters and would seem to benefit a public council rather than their own communities.

Traditional Knowledge is generated differently from ‘western science’ and is tied to a unique set of values, perspectives, and historical/contemporary experiences; it is important that the following is acknowledged:

- Traditional Knowledge has many meanings; it is generally broader and more holistic of other ecological and socio-cultural variables than conventional scientific definitions of ‘aquatic ecosystem’;
- Documented and public sources of Traditional Knowledge only recognize a small percentage of existing Traditional Knowledge;
- The collection of Traditional Knowledge should increase the capacity of First Nations and Métis communities to participate in the planning, monitoring, and management of the Great Bear Lake Watershed.

### Searching for Secondary Sources of Publicly Available Traditional Knowledge

A search of publicly available sources of Traditional Knowledge was conducted between January 2015 and December 2016. This report accounts for six different kinds of secondary sources of Traditional Knowledge and related community studies gathered throughout the Great Bear Lake Watershed. The majority of information was found through a search of public databases, including the following:

- Academic Search Elite Database (University of Alberta);
- Google/Google Scholar;
- Royal Commission on Aboriginal Peoples Database (Our Legacy);
- Personal Communications/Sharing of Reports;
- Sahtú Land Use Planning Board;
- Sahtú Land and Water Board;
- Sahtú Renewable Resources Board;
- Prince of Wales Northern Heritage Centre.

Through this research, the following kinds of documents were found:

### **Oral Histories**

Traditional Knowledge is most closely associated with oral histories about the land, water, and wildlife in specific regions. As a consequence, much Traditional Knowledge documented to date in the region has been focused around understanding the distinct worldview, values, and way of life of Aboriginal peoples.

### **Traditional Land Use Studies**

Land and resource use studies are fundamental to our understanding of Traditional Knowledge in the Great Bear Lake Watershed. For many communities and scholars, traditional land use practices like hunting, fishing, trapping, and plant harvesting are the means by which Aboriginal people have come to know about ecosystems and ecosystem change. In other words, Aboriginal people have come to know about the land, not by some detached method of investigation but by living or dwelling within ecosystems. Any changes or decline in ecosystem health, in that sense, are not viewed as data but as a threat to the socio-economic and cultural well-being of communities. Such dwelling has also created a strong emotional and spiritual connection to the land that may make Traditional Knowledge holders particularly attuned to ecosystem change. Similarly to oral-history research, accepted methods for land and resource use studies vary across the Great Bear Lake Watershed.

### **Ecological Knowledge Studies**

Traditional Knowledge is of increasing interest to policy-makers and environmental managers, in large part because of the potential expertise and insight that can be gained about the environment and environmental change. In that context, communities, in collaboration with anthropologists, ecologists, and others have focused attention on documenting many aspects of ecosystems and ecosystem change. Relevant to this research is knowledge related to sustainable management, including ways of respecting the land, water, and wildlife (ex. rules, practices and tools).

### **Assessment/Impact Specific Studies**

Traditional Knowledge studies conducted in the Great Bear Lake Watershed that relate to specific human activities or effects (such as agriculture, oil sands mining, hydroelectric dams, etc.) have been somewhat common in the Great Bear Lake area. Considered within this context are studies related to community risk perception and studies guided by communities that seek to communicate about environmental risk. As noted by scholars such as Usher *et al.* (1992), perceptions that something is *wrong* with a given resource can be profoundly disturbing to land-based communities whose livelihood depends upon the continued health and sustainability of those resources. The Northern Contaminants Project, as well as other work undertaken through such agencies as the Centre for Indigenous Peoples' Nutrition and the Environment (CINE), provides valuable guidance on documenting risk perception in northern communities.

### **Traditional Knowledge Monitoring**

An emergent area of Traditional Knowledge documentation and sharing is through community-based monitoring and regional monitoring initiatives such as the *Guardians* program in Fort Chipewyan, led by the Mikisew Cree First Nation and the Athabasca Chipewyan First Nation.

## Other

Given there are significant gaps in the availability of Traditional Knowledge in the Great Bear Lake Watershed, this report has also made room for other kinds of knowledge and information that would be considered outside the definition of 'Traditional Knowledge.' These included studies that addressed any of the following:

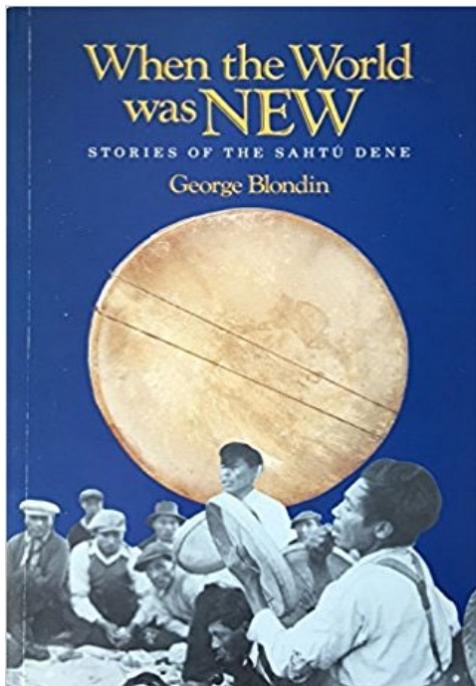
- Did the study involve documenting sources of Traditional Knowledge (i.e., documentation of the values, knowledge, practices and institutions of a particular Aboriginal group?)
- Was the study focus defined by Traditional Knowledge? (i.e., selection of issues or valued ecosystem components being studied?)
- Was the study led or guided by an Aboriginal community?
- Did the study have some other relevance to Aboriginal communities?

Those studies that were either defined or guided by Aboriginal organizations or communities were recognized as important to our understanding of community perspectives on the state of the aquatic ecosystem. The inclusion of other kinds of knowledge and information sources is important to many communities who see themselves as informed by many sources of knowledge and information.

A complete listing of the sources can be found in the reference section to this report.

## GREAT BEAR LAKE

Great Bear Lake is the second deepest lake in Canada after Great Slave Lake. The name 'Great Bear Lake' is thought to have originated from 'Sa tue dene' meaning 'grizzly bear water people.' Although all communities in the Sahtú region have connections to the Great Bear Lake Watershed, it is the Sahtú Got'ine of Délíne (people who live around the Great Bear Lake) who have a strong



relationship to this region and consequently much local and traditional knowledge. The community of Délíne and the surrounding area has long been an important fish camp for the Sahtú Got'tine but also became a trading post in the late 1700s after it was 'discovered' by Franklin. A North West Company trading post was established in this area around 1799. In 1825, the location became known as Fort Franklin in trading post records when the Hudson's Bay Company (HBC) erected an outpost there as the staging area and winter quarters for Sir John Franklin's second Arctic expedition (1825–1827).

The historic value of resources of this region were documented through the *Sahtú and Metis Comprehensive Land Claim Agreement*. The Inuvialuit, Kitikmeot Inuit as well as Tłı̨ch̨ communities also have historically used the region from time to time.

There are many rich stories about the significance of Great Bear Lake to the Sahtú region. Local elder George Blondin was among those who documented and retold oral

histories from the region. Among the histories documented are those about the origin of the Sahtú peoples and the landscapes of the Sahtú region<sup>1</sup>.

Blondin, as well as many others, including elders involved in planning and co-management in the region, have highlighted the important relationship that exists between the people and the land, including Great Bear Lake, known as the ‘waterheart’:

The elders assert that the health of people and the land are directly connected—and that people are not in reality separate from the land and other creatures. Our ‘minds,’ ‘souls’ and ‘hearts’ are directly tied to the health of the land. The use that we make of the land and other creatures—and the respect with which we treat them—will have a direct bearing on the health not only of ourselves but also of all aspects of the land. If we do not support the land, give it strength and treat it with utmost respect, the heart of Sahtú will not survive (Great Bear Lake Working Group 2005:10).

Among the most well-known oral histories from this region and others of the Mackenzie River Basin is the story of Yamoria. In one story, Yamoria chased giant beavers from the region.



**Figure 1:** *Yamoria NWT Exhibits. Painting by Archie Beaulieu*  
<http://www.nwtexhibits.ca/yamoria/paintings/painting-yamoria-11.jpg>

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<sup>1</sup> The name ‘Sahtu Dene’ is thought to originate from the Chipewyan dialect with ‘Sah’ meaning ‘Bear,’ ‘Tue’ meaning ‘Lake’ and Dene (People).

The giant beavers, which were about the size of black bears according to palaeontologists, were notorious for upsetting canoes with their large tails, for damming great rivers and changing their flow, and for being a danger to people (Sahtu Heritage Places and Sites Joint Working Group 2000:23).

At this time, the beavers had begun to build a beaver lodge at Caribou Point. Yamoria chased them from there to Clearwater Bay, where they began to build a dam. After chasing them from Clearwater Bay, the beavers travelled to Deerpass Bay, and on to Russell Bay. At each place Yamoria had to stop them from building dams. Russell Bay, one of their important hiding places, is very deep because of their underwater escape routes from their lodge. The beavers moved to the Bear River where they began to build a dam where St. Charles Rapids is located today. Finally Yamoria chased them to Bear Rock, located at the confluence of the Bear and Mackenzie rivers. Here he killed three of the beavers and stretched their hides on the face of the cliffs. The places where the hides were stretched can still be seen today (Sahtú Heritage Places and Sites Joint Working Group 2000:21).

Among the areas of greatest significance is the Ramparts:



Figure 2: *The Ramparts (Historic Postcard)* <http://www.playle.com/pictures/SCVIEW359094.jpg>

The Ramparts rapids [located at the head of the Ramparts] were created when Wichididelle threw rocks at a giant beaver. There's also a place where he laid down for a nap—his head and footprints can still be seen today. The small waterfall is where he had a pee. These places are close [to Fort Good Hope]... . There's a fish camp with

cliffs close by where he took a bear. He continued his travels until he got to Bear River where he killed some beavers and pegged their skins on Bear Rock. His arrows can still be seen in the river near Tulita. They'll remain this way until the end of time. His boat is located above the rapids [Spruce Island is said to be his overturned boat]. He said in the legends that he would return one day for it. The giant did return for his boat once but he met the wolverine and told him his intentions to return to this land to get his boat, and also that there should be more people for him to eat. The wolverine told him, "Everything remains the same as when he left, not many people there at all." So the giant turned back and forgot his plans to come back. His boat is still there (Sahtú Heritage Places and Sites Joint Working Group 2002).

The Sahtú Dene ('Bear Lake People') traditionally utilized the entire area surrounding Great Bear Lake. They lived a nomadic lifestyle dictated by movements of caribou, which were their main dietary staple (Hall 1978:12).

The lake was a meeting place for many Dene groups and the Inuit to the north:

The various bands of Hare Indians occupied, and hunted in, areas to the north of Great Bear Lake; the Mountain, or Slave, the area around Great Bear River; the Dogrib the area between Great Bear Lake and Great Slave Lake; and the Copper in the vicinity of the Deese and McTavish Arms. Hunters regularly made trips to the north shore of the lake, but they and the Indians deemed it prudent to avoid mutual contacts (Stefansson in Johnson 1975:235).

As elsewhere in the boreal and tundra regions, communities in the Great Bear Lake Watershed are strategically located along rivers and lakes and at the edges of the boreal-tundra ecozones, enabling communities to harvest from both these ecosystems where the diversity of resources are greater than in one ecozone alone.

In the central boreal forest, the areas having the greatest potential populations of both game and fur animals are the areas along rivers and around lakes. This is the case because it is here that the greatest diversity, as well as the greatest number of habitats occur. It is a well-known ecological principle that areas of great environmental diversity and areas where two or more plant communities join (ecotones) are the areas which support the greatest numbers and diversity of animal species (Sims 1974:16).

As further elaborated by Sims, the location of communities along rivers and lakes was absolutely critical to mobility.

...movement in the boreal forest is easiest along water courses. In the summer, the nearly impassable muskeg and swarms of insects make overland travel extremely difficult. In the winter, deep accumulations of snow hinder overland travel. It is therefore around lakes and along water courses that a population would find both the greatest game and fur animal resources, coincident with the greatest ease of movement to and communication about these resources (Sims 1974:16).

## **WATER**

### **Beliefs and Values of Water**

The significance of Great Bear Lake to the culture, economy and communities of the Sahtú region has been well documented in processes such as the Sahtú Land Use Planning Process, the *Water Heart*—*Great Bear Lake Management Plan* as well as by numerous anthropologists, other scholars and authors such as George Blondin). Oral histories about Great Bear Lake itself are well known in the region and have been retold in other regions:

The elders of Déline have passed down a story through many generations. In times past, their spiritual teachers were often ‘mystically tied’ to different parts of the environment: some to the caribou, some to the wolf, some to the northern lights and some to the willow. Kayé Daoyé was one such person. He lived all around GBL or ‘Sahtú’ in the Slavey language, but made his home primarily in Edaiila (the Caribou Point area), on the northeast shore of the lake... . Kayé Daoyé was mystically tied to the loche. One day, after setting four hooks, he found one of them missing. This disturbed him—in those days hooks were rare and very valuable—and that night he traveled in his dreams with the loche in search of the fish that had taken his hook. As he traveled through the centre of GBL, he became aware of a great power in the lake—the heart of the lake or the ‘water heart.’ Contemplating this heart, he became aware that it is connected to all beings—the land, the sky, plants, other creatures, people—and that it helps sustain the entire watershed of GBL.

The elders of Déline stress that the interconnectedness of all things includes all people—Dene and non-Dene alike. From this ‘universal law’ of the interconnectedness of things flows the responsibility of people to care for the world in which we live. The water heart sustains the watershed of GBL, and we in turn have a responsibility to sustain it. We do this by treating it and other beings with the utmost respect (Charlie Neyelle in Great Bear Lake Working Group 2005:4).

However, there are other rich oral histories about other aspects of the region including lakes, rivers and waterfalls such as the ramparts. Underground water sources also have tremendous cultural meaning as described in this story.

I'll tell you the story Neyádalín—the river that runs underground and how two brothers went through it. There was once a Dene that always lived alone with his family. He made his living at Odarah Tué [near Bellot Lake]. People would say that he lived alone with his family because he was jealous of his wife. He had two grown sons that were old enough to take wives. But how could they since they were always alone? One day the brothers were hunting ducks along the shores of the lake. They each had their own canoe, and they were chasing a goose with two chicks. They were very close to them when the goose ran ashore with one chick. The other kept going and the brothers continued to chase it. The chick went into a creek then suddenly disappeared. The older brother was wondering what happened to the chick when suddenly he too went underground in that creek! His younger brother also went

underground. The creek became very swift as the older brother shot through it. As he went thrashing around in the underground creek he came upon a giant pike. He went into his mouth and passed right through it. Next he came upon a giant Loche that he also passed through. On and on he went until he saw a small light. He yelled out in joy because he thought he might have a slight chance of surviving. Then suddenly he came shooting out from the side of a cliff where the creek was gushing out. His whole canoe flew in the air, and then landed on Xaistá Niliné [Hare Indian River]. He was waiting there hoping that his younger brother would show up, when suddenly he came shooting out of the cliff. The older brother said, “So this is the reason why, when I was coming to my mother before I was born, I saw flying canoes that carried me into her.” It was a good thing these boys were able to handle things with their medicine. This was a strange land for the two boys because they have never gone further south from where they were raised at Odarah Tué. They paddled along the Hare Indian River until they could see signs of people. They talked about the signs and wondered if they would be able to understand their language. They paddled on and on until they suddenly came out into the Dasho Ho [Mackenzie River]. They had never seen such a big muddy river before. They stopped on the shore and noticed smoke rising from Koigojeré Du [Manitou Island...]. They crossed the river and found that the people spoke the same language. They were very thankful but they weren't feeling good because they had been underground. They had medicine in their bodies so they weren't feeling good. They decided that they were going to go to the Ramparts. There they went through the cliffs. These are the two lines that run through the cliffs that can still be seen today. These are the marks that these two brothers left. After they did this they felt much better and they lived with people in the Good Hope area for two years.

They both took wives and probably even had children when they decided to return to their parents who were still searching the shores of Nilín Tué [Belot Lake] with a raft. The parents had been searching the shores of that great big lake and had given them up for dead, when one day they saw two canoes coming to their camp. They waited on the shore and the family was overjoyed to see one another. Their family lived with other groups from then on. It is said that this is how the groups from around Colville area became aware of the people who lived further south. This is a very ancient story (Sahtú Heritage Places and Sites Joint Working Group 2000:58).

Although the waters of the Great Bear Lake flow south into the Mackenzie River system, the Sahtú peoples define their region by the directions of water flow.

The Sahtú can be seen as having four major directions of water flow: 1) The West Mackenzie Region, in which water flows down from the Mackenzie Mountains and whose watersheds drain into the west side of the Mackenzie River; 2) The East Mackenzie Region, in which water flows eastward and whose watersheds flow into the Mackenzie River on it's east side; 3) The Arctic Region, in which water flows northward and whose watersheds flow directly into the Arctic ocean; and, 4) The Great Bear Region, in which all water flows into Great Bear Lake which then

empties into the Mackenzie River via Great Bear River (Auld and Kershaw 2005:235).

## Ice Conditions

Freeze-up and break-up were important periods during the year for the people of the region.

Here is one moment I will never forget, because it was so exciting. The ice was almost ready to go. One early morning, my dad and uncle went out hunting. They were gone all day. Everyone was sitting around after a hard day of work, when all of a sudden the ice cracked in half. It slowly started to move. We all started to get very frightened because my dad and uncle were still not back from their hunt. The rest of us sat around in an endless wait for my dad and uncle, calling all the places we could to see if anyone up river had seen them. Finally we saw a little black dot at the end of the point on the river. Sure enough, it was them. I can't really remember what had happened next, but what I do remember was that while the ice was moving, I was standing along the riverbank, watching a good friend of the family running on the ice while it was still moving. She saved our skiddoo from drowning. Somebody had left it on the ice before it started to move. We were very thankful that we had her there with us. If not, we would have never had a skiddoo for next winter (Auld and Kershaw 2005:36).

The Bear Lake Dene people remained nomadic until 1949. The Hudson's Bay Company opened a post at Fort Franklin in 1950. The federal government built a school here and in 1952, Fort Franklin became a permanent settlement. Bear Lake Dene families settled here, as did missionaries. On June 1, 1993, the name of Fort Franklin was changed to Déline, meaning 'moving water' in North Slavey.

## Fish and Fishing

### *Oral Histories—The Cultural Significance of Fishing Resources*

Sahtú oral histories such as those by Baton speak to the importance of fish to the culture of the region. This is the story of the giant fish, told by Peter Baton, as printed in the *Sahtú Atlas*.

Bodo went to check his hooks by knife point. He only caught a very skinny fish. He then thought to himself that other people might be using medicine to keep the animals away, so catching this little fish made him angry because there are people and dogs to feed and they are not catching any animals. He put his hook back in the water and caught a fish, but the hole was too small, so he had to use his knife to make the hole bigger. He then got the fish out. It was so big that he had to cut it up and bring some home. My Grandmother said Bodo told them to get two dogs and go to the hooks and pick up the rest of the fish. My granny says that the trout was so big that it had horns about the size of a thumb and the guts were out in a separate pile for the dogs. It was just fat. That is what my granny has told me about Bodo and the Giant Fish (Peter Baton as quoted by the Sahtú Renewable Resources Board 2015).

The nature of the economy was determined essentially by the location of Great Bear Lake on the boundary between boreal forest and tundra, and in the path of migrating caribou... . Fish, though usually available was not a preferred diet (Clark 1975 in Johnson 1975:234).

Fish were typically captured as a supplementary food source at a variety of locations around the lakes (Hall 1978). In the early 1950s they began to take up permanent residence in the community of Délı̄ne at the southern end of Keith Arm. At this time, large quantities of fish (mainly lake whitefish, *Coregonus clupeaformis*, and lake cisco, *Coregonus artedii*) were captured as food for sled dogs (Howland and Tallman 2005:145).

### ***Fish Species and Diversity***

Many different species of fish have been harvested in the region including inconnu (*sı̄h*), lake whitefish (*luge áu*), broad whitefish (*luge wá*), lake trout (*sahba*), dolly varden char/bull trout (*dehgá sahba*) jackfish (*ʔóhad*), arctic grayling (*t'áe*), walleye/pickerel (*ʔéhch'ı̄q*) as well as loche (*nofee/nofwi*), arctic cisco (*lugeya*) and arctic char (*luge dedélé*).<sup>2</sup> Less commonly found and harvested are chum salmon (*geo sahba*), which some have considered increasingly invasive to the region as a result of climate change.

A number of the fish species harvested in the Sahtú Dene and Metis Settlement Area migrate long distances on a seasonal basis each year (Stewart 1996:5).

Fisheries in the lower reaches of the Mackenzie Basin, then, directly affect those in the upper reaches, and *vice versa*. This is also true, but to a lesser extent, for species that undertake shorter seasonal migrations such as Arctic grayling, longnose sucker, and walleye. This makes it very difficult for fishery managers to determine the level of harvest that can be sustained at a particular location by a particular species, and to estimate the harvest pressure on a given fish stock. It also makes it increasingly important that managers understand stock dynamics and estimate stock size (Tallman 1996 in Stewart 1996:5).

Their predictable availability in large numbers and relatively parasite-free flesh has made broad whitefish a target for many economic development initiatives over the past 30 years. None of these has proven to be economically viable... The most recent of these, an experimental fishery by the Uummarmiut Development Corporation in the Inuvialuit Settlement Area, began in 1989 and operated through 1993 (Treble and Dahlke 1994; Treble and Tallman 1996; G. Fricke pers. comm.). This fishery and its future development is of particular importance to the management of broad whitefish stocks in the Sahtú Dene and Metis Settlement Area, since it is likely to be targeting many of the same stocks that support the subsistence harvest (Stewart 1997:6).

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<sup>2</sup> These spellings of the fish names as presented in the cited report are not necessarily accurate and should be verified if intended for further use.

There has never been a commercial fishery on Great Bear Lake, with the exception of a limited fishery to supply the needs of other communities and itinerant anglers in the region (Howland and Tallman 2005:146).

### ***Total Fish Harvest***

There is a tension in the ethnographic literature as to the relative historic significance of fish to the diet of communities in the Great Bear Lake Watershed. Although some archaeologists and ethnographers suggest there is little evidence that fishing was a major economic activity, there are difficulties in finding and dating fishing gear, remains etc. when compared to moose or caribou hunting. This is not only an issue in the Mackenzie River Basin—Great Bear Lake sub-basin but in other areas of the arctic, including Inuit regions characterized by a history of Thule culture.

And what about fish! Why, if one wishes to talk of subsistence, do so many ignore that nourishing, dependable, widespread, obtainable, abundant, and storable resource? Can it be simply because we find so few of their bones and scales? Their lack of fur, sinew, and blubber? In those omnivorous and flexible economies, just as the whale was oversold (and oversubscribed), the fish seem still underappreciated. But if this celebration of fish is correct, how do we explain the remarkable absence of fish remains, even in Thule culture contexts with excellent preservation? (Taylor 1979:iv).

A number of anthropologists have pointed out that fishing resources significantly influenced the travel and location of Aboriginal peoples across the boreal region. These locations were chosen carefully since success or failure of fishing had life and death implications, including for early explorers. According to Sims and Janes, the location of explorer posts are good indicators of the reliability of fishing resources (Sims 1974; Janes 1975).

Fishing success was often a matter of life or death to early explorers and fur traders in the north. Preble 1908 wrote, “so important are the whitefish as an article of diet that the sites of many, perhaps the majority, of the trading posts, as well as the wintering stations of a number of exploring expeditions—places which have been famous in the Arctic literature—have been selected with a view to the local abundance of fish (Sims 1974).

Although the following literature suggests fish were not a significant or major food source, it is important to recognize (as above) the biases that had been critiqued in the archaeological and ethnographic record. Essentially, the lack of hard evidence of fishing camps and fish resources, which were easily degraded or eroded due to their proximities to rivers and lakes, has greatly limited our understanding of the historic value of fishing in this and other regions in the Mackenzie.

The dietary importance of fishing resources in the Great Bear Lake Watershed were theorized in the 1970s (Rushforth 1977b). It was estimated that until the 1960s, fishing resources comprised about 40% of the total diet of Athapaskan peoples and 50% of those of the Great Bear Lake Watershed (Murdock 1967). According to Osgood (1931:38), fish was the primary or principle food of the northern Athabascans, including the Sahtú of Great Bear Lake.

The relative importance of fish at any one time, however, would depend on a variety of factors, including the number of dogs and the length of time one anticipated traveling.

If a man is using dogs while trapping, he will normally leave Fort Franklin somewhat earlier than if he has a snowmobile, and will set his camp near a fish lake such as Tuetatue or near the mouth of a river such as Turili. In this way, he can set nets, take advantage of the late October runs of whitefish, and be assured of food for both himself and his dogs. The length of time he keeps his nets in the water depends upon the productivity of his nets and upon his own requirements in the bush... . For example, men who trapped at Johnny Hoe River in November and December of 1974 fished long enough to feed themselves and at least 12 dogs and then send approximately 1,000 whitefish (i.e., over 3,000 pounds) back to Fort Franklin (Rushforth 1977b:159).

Today, the harvest of fish and the yield consumed varies by community, but based on the Sahtú harvest data is not considered to be as high as 40%.

It was reported in 1947, that the lake-wide fishery at Great Bear Lake was estimated at 900 tons per year, and the harvest for direct human consumption at 3 tons per family per year (Miller in Dana *et al.* 2009:101).

Stewart (1996) reported that residents of Fort Good Hope harvested an estimated 157,500 kg of fish for subsistence in 1961; much of this was to feed dog teams, used for transport until the introduction of the snowmobile. Stewart continued, "In 1972, the combined subsistence harvest of fish by residents of Fort Good Hope and Colville Lake was estimated at 45,450 kg" (Stewart 1996:21). The decline in fishing may be associated with the decline in the use of dog teams, rather than on a change in human consumption habits. Confirming the importance of country food, Berkes (1990) noted that the annual fish harvest for residents of Fort Good Hope was 125 kg per capita in 1982 (Dana *et al.* 2009:105).

Prior to 1974, the daily catch and possession limits for lake trout at Great Bear Lake, were 5 and 10, respectively (Yaremchuk 1986). These limits were reduced in 1974 to 3 and 5, in 1979 to 2 and 3, and in 1991 to 1 and 2. These reductions were implemented to ensure a sustainable fishery for large trophy lake trout (R. Moshenko, pers. comm.). In 1991, the daily catch and possession limits for Arctic grayling and northern pike at Great Bear Lake were reduced from 5 and 10 to 2 and 3 (Stewart 1996:6).

In addition to total consumption value, the vitamin D found in fish oil represents an important part of the diet and health of the Sahtú people of the region, as elsewhere in the Mackenzie Basin (Auld and Kershaw 2005:48). Although research on the significance of fish to the diet has been relatively limited in the last several decades, dietary significance can be extrapolated to a certain extent from the Sahtú harvest study data.

### ***Fishing Locations***

This story by Jonas Neyelle speaks to the way in which fishing was important as people traveled throughout the region.

Dad used to tell us stories of people along the Dehcho (Mackenzie River) in summer. This was before my time. Some people only came to trading posts to sell their furs and moved back to their chosen camp along the river. Usually the camps would be in a good fishing place. People would stay there for the summer making dry fish (Jonas Neyelle in Auld and Kershaw 2005:49).

Among the areas that provided a particularly stable source of fish for local communities is the area of Keith Arm on Great Bear Lake. It is also a well-known area in the history of Sir John Franklin; these combined values led to its designation as a National Historic Site.

Located at the bottom of Keith Arm, Great Bear Lake, at the mouth of the Great Bear River, the Deljne fishery has provided a continuous and reliable source of food for Sahtú Dene and Metis for centuries. Sir John Franklin chose to locate the winter quarters of his Second Overland Expedition here because of the reliable fishery. Throughout the early 1990s the Deljne community and Parks Canada worked together to designate the site a National Historic Site (Sahtú Heritage Places and Sites Joint Working Group 2000:38).

Another key area that has always provided a valuable source of stable fish resources is Whitefish Lake at the headwaters of the Anderson River.

Whitefish Lake is the home territory of the T'ashrn Got'rne, and is [at] the headwaters of the Anderson River. Good quality whitefish can be caught here, and the area is an important caribou hunting area, as the lake is located on a caribou migration route. There are ancient caribou fences in the area, and several currently used cabins are located on the lake. A site of many ancient and recent stories, Whitefish Lake was also used as a stopover camping area for families traveling through the area. While here, they would stock up on fish for winter use, and sometimes build fish traps for catching whitefish during the fall run (Sahtú Heritage Places and Sites Joint Working Group 2000:54).

Notable fishing areas are also found on the Anderson River and at the Johnny Hoe fish camp.

A narrowing of the Anderson River, T'agan is noted for its richness in fish, and is considered a place where one could always find food in times of stress. Fish traps for whitefish, during the fall run, were often employed here. Families would often camp here while their men were away hunting or trapping on the barrenlands. The area is also known as a good hunting and trapping area. The location was a particularly important subsistence area for the T'ashm Got'me (Sahtú Heritage Places and Sites Joint Working Group 2000:64).

An important place for the elders of Déljne, Tunlj is known as a traditional domestic spring fishery, and is considered the traditional territory of the Turilj Got'ine. Elders say that in the old days, at the mouth of the river, the Dogribs would begin building a fish weir from the east side, and the Slaveys from the west. When they met in the middle, the event would be celebrated by a feast (Sahtú Heritage Places and Sites Joint Working Group 2000:88).

Anthropologists and archaeologist suggest that the seasonal location of fishing sites and camps mirrored both knowledge of fish ecology (e.g., location of fish runs) and the relative ease/difficulty of harvest.

... the pattern was to winter at a 'fish lake,' thus assuring a food supply. At the 'fish lakes' there is almost always enough fish for human beings and their dogs (Helm 1961:32).

In times of environmental stress (winter), they would tend to aggregate around clear water lakes. In the spring and fall, at least part of the population would be found in areas which afforded exploitation of fish 'runs' (Sims 1974:16).

With the increased use of snowmobiles and the move away from traditional ways of living there has been a decrease in the amount of fish required to feed dogs (Crawford 1989). Fishing, however, still remains an important part of the Dene culture and provides an essential source of protein. Déljne is the main source of lake char in the Sahtú Region. Most of the harvest is consumed in Déljne but fish are also shared and/or bartered with other communities (Howland and Tallman 2005:145).

### ***Fishing Technology and Practices***

As the previous quotes suggest, many different kinds of technologies were used to catch fish in the Great Bear Lake region including canoes, fish traps, and fish weirs. Rushforth (1977b) describes the specific kinds of technology used in the use of fish nets in Great Bear Lake.

Fish were taken by the Bear Lake People with nets, weirs, spears, and set hooks. Fish nets, prior to the acquisition of twine gill nets, were made primarily of willow bark; however, nets were also made of babiche. These nets were set during the summer on open water and during the winter under the ice. Only during periods of 'freeze-up' and 'break-up' and while traveling from one place to another were a man's nets out of the water (Rushforth 1977b:102).

In addition to fishnets, hooks and weirs were also important in some areas of the Great Bear Lake Watershed.

The Bear Lake People also constructed fish weirs at favorable locations along rivers, which enter the big lake. Such traps were constructed of rocks or brush in the shallows of such rivers. At these locations, during the spring and fall, seasonal runs of whitefish to and from the Great Bear Lake were exploited. During these runs, relatively large numbers of people gathered at the weirs in order to catch and dry

large quantities of fish... Hooks were set for trout in the open water on anchored drop-lines and under the ice attached to poles stuck in the ice. Hooks were made by tying sharpened bone, beaver teeth, or eagle claws to a small stick. Bait consisted of a piece of herring or other fish (Rushforth 1977b:104).

Some anthropologists theorize that those cultures and economies more dependent on fish resources (and less dependent on meat) are more complex in their innovation and use of technology and environmental management practices (Oswelt 1977). Although many anthropologists refer to the use of technologies (e.g., fish weir), the use of weirs and fish traps has not been well documented in the Great Bear Lake Watershed, nor elsewhere in the Mackenzie Basin. The use of nets has been common for decades, however, and the various mesh sizes and locations of use are well documented.

Prior to the trade and use of the twine net, many anthropologists claim that fishing was of limited significance to the diets and economies. It was suggested that spearing fish and fish trapping was too difficult, given ice conditions etc., and that fishing was an 'unreliable' source of food. However, Rushforth (1977b) points out that fishing in the Great Bear Lake region was more reliable than other regions of the arctic and that reliability is also a notion that needs to be interpreted in the context of local ecological factors, local cultural values, and expectations.

The reliability of fishing sites should be defined in terms of the expectations which people have regarding the productivity of those sites at different times of the year and in different years. If a particular site fails to fulfill such expectations, then it can be labeled unreliable. The essential point is that the Bear Lake Indians (and, presumably, the Hare Indians as well) have different expectations of fishing sites for different times of the year and for different years. Since their expectations of sites are based upon an intricate knowledge of those sites and of fish populations, fish are and were a relatively reliable food resource for the Bear Lake People (Rushforth 1977b:101).

Char are harvested using 5-5.5 inch mesh gillnets. Residents occasionally travel to other locations such as the mouths of the Johnny Hoe and Whitefish rivers to capture whitefish that congregate in these areas at particular times of the year. Small mesh (3 inch) gillnets, which were traditionally used to capture lake cisco are now rarely used (Howland and Tallman 2005:145).

Rushforth (1977b) highlighted that these fishing activities are not performed equally across kinship groups. The community, according to Rushforth, is organized in different task groups with one group being particularly focused on fishing.

The processing of fish, including making of dry fish, has been an important skill and contributes to diet and household economies. Aspects of dry fish making have been documented by various anthropologists from this region over the last half century (Christian and Gardner 1977).

Fishing remains one of the most important cultural and social activities for the people of the Sahtú. While wildlife may be absent from some areas during certain portions of the year, some fish species always remain accessible and thus have played a major role in the well-being of the original inhabitants (Auld and Kershaw 2005).

1. ek<sup>wé</sup>-ka ac'et'j ('people going for caribou) or ek<sup>wé</sup>'ka nác'ede ('people dwelling for caribou'),
2. cáwé'-ka c'eniwe ('people looking for beaver fur'--"beaver hunting),
3. ehjo ac'et'j ('people going trapping') or cáwé'-ka nác'edé ('people dwelling for beaver fur'), and
4. ɬue-ka c'eniwe ('people looking for fish') or ɬue-k'e nác'edé ('people dwelling at fishery').

Figure 3: Task Groups of the Sahtú Dene (From Rushforth 1977b:281).

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## RESOURCE DEVELOPMENT

### Commercial Fishing and Angling

The Great Bear Lake Watershed is a well-recognized region for angling, and at one time was considered a site of potential commercial fishing operations.

Apart from the domestic fishery of the people of Fort Franklin and attempts at a small-scale commercial fishery for local supply, the lake has been reserved for angling. The great attraction is the relatively large number of very large lake trout. Between 1958 and 1964, four sport fishing lodges were established, one each at Sawmill Bay, Hloo Channel at the entrance of Conjuror Bay, Cameron Bay (close to Port Radium) and on Cornwell Island in the western end of Smith Arm. Further development of sport fishing has been considered undesirable if stocks of lake trout are to be maintained (Johnson, no date:1).

A study in the 1960s by the Department of Fisheries and Oceans determined that a commercial fishery was not feasible on the lake 'on account of the low density and slow growth of the fish present' (Johnson, no date:1). There are fewer species in the lake than in other areas of the drainage basin (Johnson, no date:1)

In 1966, a sports lodge was opened at Colville Lake and guests have since been angling for Arctic grayling, inconnu, lake trout, northern pike, and whitefish (Dana *et al.* 2009:103).

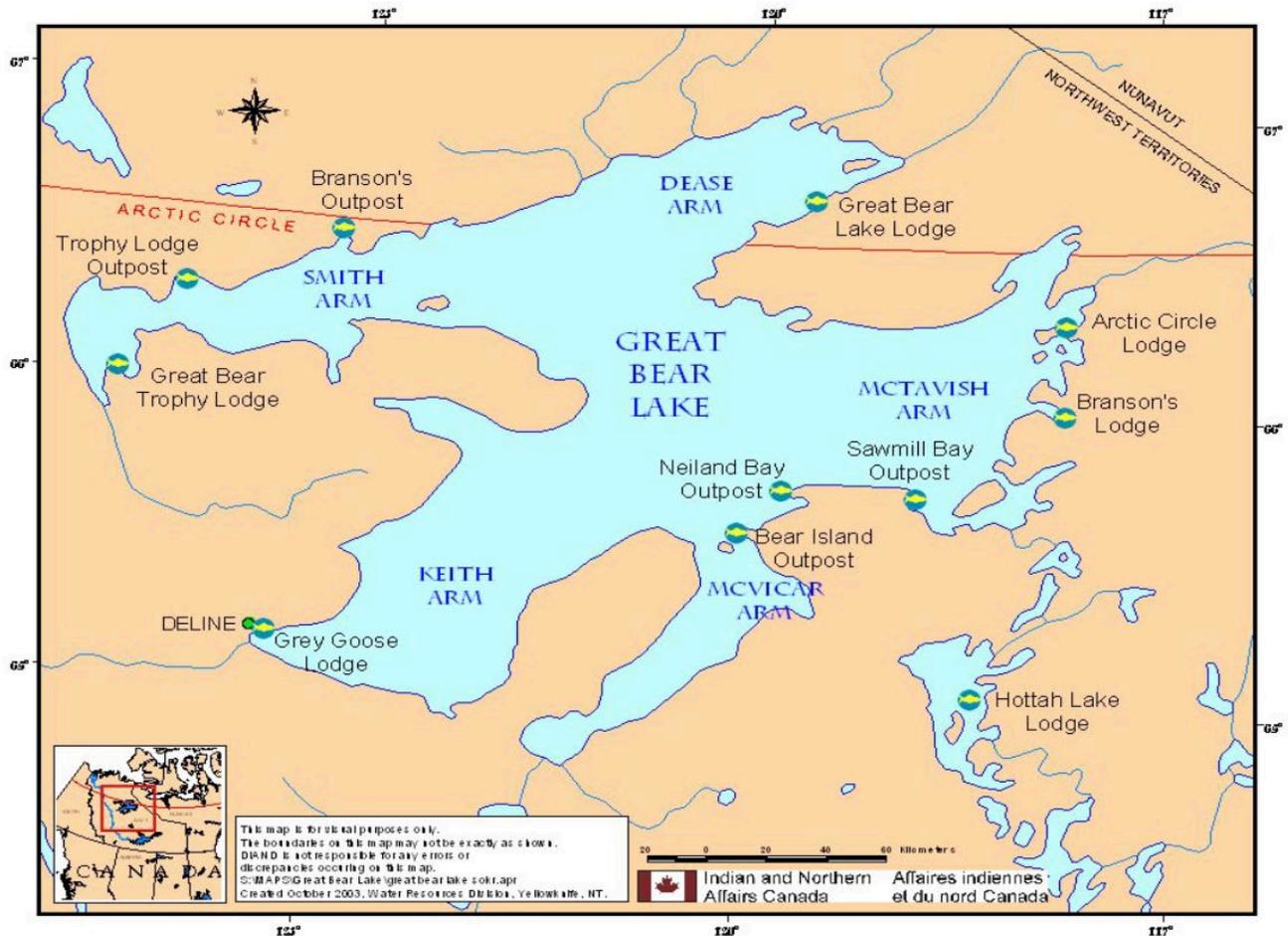


Figure 4: Fishing lodges on Great Bear Lake (From the Canada-Deline Uranium Table 2005:F1).

## Mining Activity

Uranium mining on the east side of Great Bear Lake has been a major issue of concern and the focus of several key reports and research initiatives that involved the documentation of local and traditional knowledge. Such mining began with the discovery of radium and related ores in the vicinity of Port Radium in the 1920s.

In the 1920s, radium, pitchblende, and silver were discovered in the vicinity of Port Radium. Soon thereafter (i.e., early 1930s), mining operations were developed at this location to extract uranium ore, which was processed into radioactive material for the atomic bombs used during the second World War. Other mines were also developed in the watershed, primarily to extract silver ore from the Camsell River drainage basin. None of these mines are currently in operation (McDonald *et al.* 2004).



**Figure 5:** *Port Radium on the east side of Great Bear Lake.*

The documentation of local and traditional knowledge about the impact and legacy of the Port Radium project were carried out through the Canada-Déline Uranium Table.

Several TK projects were carried out to gather information from Déline elders and community members who lived and worked at Port Radium and transportation route sites. This information supported other human health and environmental studies. In particular, information about employment and land use during the mining period was critical in the reconstruction of historical radiation exposures and was unavailable through other sources (Canada Déline Uranium Table 2005).

## Petroleum Resource Development

There are numerous local and traditional knowledge studies aimed to document the potential impacts of petroleum resource development in the Great Bear Lake Watershed in the public registries of the Mackenzie Valley Environmental Impact Review Board, as well as the National Energy Board, which hosts the public registry of hearing transcripts related to the Mackenzie Gas Project. The impact studies significantly emphasize concerns about the impacts of such projects on the water and fish resources and other values within the Great Bear Lake Watershed, including human-environment relations.

### 2.1.5 CDUT Findings and Recommendations on Traditional Knowledge

There are two types of findings arising from TK studies: findings about the role of TK research in Action Plan implementation, and findings that contributed to other human health and environmental research. The latter will be discussed in other sections of this report.

#### Findings:

- Information about employment and historic land use and occupancy was critical in the reconstruction of historical radiation exposures and was only available from oral histories.
- TK studies were very effective in involving community members as active participants in the CDUT process.
- A high level of training and attention to detail is crucial to ensure the accuracy of oral history evidence.
- Elders and other community members would like to see D elne youth and the public in general educated about the history of Port Radium and the involvement of D elne people in this history.
- Interview projects should be designed carefully to ensure that the information gathered fulfills all intended objectives.
- Extensive involvement of community members in TK research was empowering for individuals and in some cases contributed to the healing process.

#### Recommendations:

1. TK should be incorporated into the implementation of CDUT recommendations, such as the design of a site remediation plan, long-term monitoring plan and community healing activities.
2. Given the development of community capacity around TK research, it is recommended that the community consider other areas that would benefit from TK research (e.g. self-government, resource management, etc.).

**Figure 6:** *Canada-Deline Uranium Team: Findings and recommendations of traditional knowledge.*

We stay because of our attachment to the land. We go out on the land. We hunt and fish. We simply enjoy being there [. . .] This is our home and the home of our ancestors. The land was passed to us, and we have an obligation to protect it, to pass it on to future generations. The community demands that proper safeguards are in

place to ensure that we protect the reverence that we have for our land, the beauty we see in our community, the unique qualities of our beneficiaries (Lee 2006:9 in Dana *et al.* 2009:105).

The impacts of fracking in the region on ground water resources are of growing concern according to news reports from the region; however, no local and traditional knowledge has been documented on this issue.

## **Governance and Stewardship**

The governance of the Great Bear Lake Watershed is a major focus and area of work for the people of Déline and the Sahtú region. In recent years, this has manifested in the development of a review titled '*Water Heart*'—*A Management Plan for Great Bear Lake and its Watershed*, that deals with many aspects of governance from a cultural or traditional knowledge perspective.

The elders of Déline stress that the interconnectedness of all things includes all people—Dene and non-Dene alike. From this 'universal law' of the interconnectedness of things flows the responsibility of people to care for the world in which we live. The water heart sustains the watershed of GBL, and we, in turn, have a responsibility to sustain it. We do this by treating it and other beings with the utmost respect. Déline's elders also remind us that, in times past, laws have often been imposed upon the Dene, with little or no consultation, by the federal and territorial governments. Their exclusion from decision-making has created an unhealthy relationship between the Dene and other Canadians, as represented by the Crown. The elders want to change that relationship. They see the cooperative development of the GBL Management Plan—and its incorporation into the Sahtú Land Use Plan—as an opportunity for all three natural levels of government—Déline, the Northwest Territories, and Canada—to work together in the development of one law for the good of all (Great Bear Lake Working Group 2005:5).

Members of Bear Lake society today have equal access (with certain constraints imposed by age and gender) to the means and forces of production, which are not privately owned and over which the people maintain collective dominion; they either own collectively or do not own productive resources such as land, animals, and plants. There is, however, one significant limitation on such free accessibility. A Sahtúot'jne convention prohibits one Bear Laker from occupying and appropriating resources from a productive site that is already being used by another, until the former obtains the latter's permission... . A man who first sets his fishnet in the water at a particular location retains control of that fishing site and the fish he obtains there until he extracts his net. While the first man's fishnet is in the water, no one else may place a net that limits the man's catch. A man who first discovers and marks a beaver den reserves the right to harvest the beavers that inhabit it. Other Sahtúot'jne will not infringe on that right without the discoverer's permission (Rushforth 1992:490).

The great Master knew the suffering of the poor people, so He decided on a plan to help them, and at the same time made a big river for us, to drink from, to fish in, and

travel on [...]. A great, wide path was left where the huge ball rolled, leaving no trees standing [...]. Soon, word was spread and people moved their camps to this strip of land [...]. Many, many moons later, the days grew long and warmer. By and by, spring came again, and with spring, the birds came back from the South. The snow on the mountains and trees melted, turned into water, and made little rivers come back to life with the merry sound of running water (Tetso 2003 in Wonders 2003:22).

The co-management arrangements created through these processes, as well as those created out of the *Sahtú Land Claim Agreement* have created a variety of opportunities. However, more evidence is needed to understand how subsistence users of fishing resources, and their knowledge is influencing the decision-making process in real terms.

Co-management has led to a more complex but more realistic assessment of management issues due to the interplay between subsistence, sport, and potential commercial fisheries... Management decisions to date have been somewhat *ad hoc* in nature. There is no clear record of management actions to date, nor the scientific bases upon which management actions were taken. Factors such as economics and opinions of resource users presumably had an influence on decisions; however, there are no records of how these factors were incorporated into the process (Howland and Tallman 2005:151)

Other kinds of hard evidence or research about the condition of fishing resources is needed; the absence of ‘fisheries science’ and/or traditional knowledge leads to high levels of uncertainty, and often management decision-making is being made with a significant degree of subjective interpretation.

Historically, fisheries science has relied upon formal statistical models. However, decision-making in fisheries management has not been undertaken using these models alone, but relies on guesses regarding areas of uncertainty and may be heavily influenced by political, economic, and cultural concerns. As noted by Wilimovsky (1985), when records are available, formal scientific predictions on fisheries have almost always been modified by judgment where there is uncertainty (Howland and Tallman 2005:151).

Although very detailed data-gathering is not possible, some short cuts in addressing knowledge gaps through traditional knowledge may be possible using such questions as “are the fish larger or smaller than historically?” to learn more about the age structure or health of fish in key areas.

An alternative approach to obtain TEK is to ask the local people a number of specific questions to fill knowledge gaps in the scientific information. For example, the elders may be asked “Are the fish larger or smaller than when you fished 30 years ago?” If the majority of the elders thought that fish were smaller after a few years of sport fishing, a researcher might conclude that the stock has been affected by this activity (Howland and Tallman 2005:153).

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