

Community-Based Fisheries Monitoring and Education Program in the Tłıchǫ Community of Behchokò

Final Report



May 19, 2011



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Introduction

The goal of the Community-based Fisheries Monitoring and Education Program was to establish a monitoring program and protocol for community education in monitoring for use in the Wek'èezhii area. The objectives included: 1) gathering information for the design and implementation of a community-based monitoring program; and 2) conducting a pilot project to evaluate the monitoring program design.

The community education program on monitoring was meant to feed into an integrated strategy for monitoring and resource management in the Wek'èezhii region that would serve the Wek'èezhii Renewable Resources Board (WRRB), Tłıchǫ Government (TG), Wek'èezhii Land and Water Board (WLWB) and Department of Fisheries and Oceans Canada (DFO). The project was intended to build capacity at the community level to assess and manage fish resources through a framework suited for the gathering of scientifically and culturally pertinent data.

The project was initiated with the community of Behchokò, and focused on Shortjaw Cisco (*Coregonus zenithicus*), a species at risk and Inconnu (*Stenodus leucichthys*) in Marian Lake and the North Arm of Great Slave Lake (GSL). Inconnu, or Coney as they are called locally, is a traditionally important subsistence species that declined in numbers over the last 20 years likely as a result of a commercial fishery for Whitefish on Great Slave Lake. Marian Lake, a long, shallow, turbid lake that drains into the North Arm of Great Slave Lake, supports many species of fish that spawn in its tributaries or in the lake proper. Both Marian Lake and North Arm are productive feeding grounds and habitat for all life stages of several fish species

Methods

To achieve the program objectives three main activities took place.

- a scoping workshop that engaged elders and fishers;
- a fish camp was held on Marian Lake; and,
- additional fish sampling took place in the North Arm of Great Slave Lake.

These activities are discussed in detail below. Simultaneous translation was utilized during all project activities. Appendix 1 lists participants for each activity.

Scoping Workshop

A planning workshop was held on July 20, 2010 in Behchokò, (a small Tłıchǫ community 110 km southwest of Yellowknife) with 22 participants:

- 10 Behchokò, elders,
- 3 representatives from TG,
- 3 representatives from WLWB,
- 4 representatives from WRRB,
- one representative from DFO, and
- one representative from Golder Associates.

Presentations covered topics on the Marian River Watershed Stewardship Program, a collaborative fish monitoring project conducted by the Yellowknives Dene First Nation and Golder Associates, and background information on the funding and initial objectives of the proposed project. Most of the workshop consisted of discussion on elders' interests with respect to fish monitoring and the design of the pilot monitoring program for this year.

Fish Camp – Marian Lake

A three-day camp was held August 18-20, 2010 at a traditional fish harvesting site on an island in Marian Lake. There were 25 participants (shown in figure 1):

- 7 elders
- 1 fishers
- 3 representatives from TG
- 1 representative from WLWB
- 2 representatives from WRRB
- 3 fisheries biologists from Golder
- 1 fisheries biologist from DFO
- 5 youth
- 1 camp cook
- 1 camp foreman

Two nets were set on Marian Lake, near the camp, and were left overnight. A multi-mesh net was used to target multiple sizes of various species of fish and one 5-inch net was used to target large fish like Inconnu. Scientific protocols were used for measuring length, weight, estimating age and taking tissue samples for contaminant analysis. Traditional methods of preparing fish for eating fresh and drying were also demonstrated.



Figure 1 - Project participants

Age estimation was done on twenty-three otoliths; 9 Inconnu and 14 Cisco. Figure 2 shows an otolith and how the annual growth rings can be counted to estimate fish age. Nine samples of Coney tissue from fish captured in Marian Lake were sent to ALS Environmental (Vancouver) for total metals analysis including mercury, arsenic and copper (wet weight).

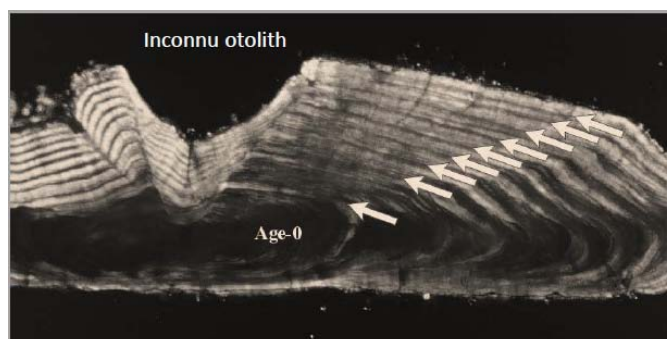


Figure 2 - Example of how otolith layers can be used to age fish¹

¹ Howland, K., Gendron, M., Tonn, M.T. and R.F. Tallman. 2004. Age determination of a long-lived coregonid from the Canadian North: comparison of otoliths, fin rays and scales in Inconnu (*Stenodus leucichthys*). *Ann. Zool. Fennici* 41: 205-214

Informal discussions with elders, usually in small groups, were conducted by the Traditional Knowledge Researcher from the Tłıchǫ Government. During discussions and during the measuring and sampling of the fish captured, Tłıchǫ names for the species of fish caught were shared and documented, as were Tłıchǫ names for fish anatomy. Elders also shared stories in the evenings which were recorded and archived in Tłıchǫ Government, Lands Protection Department files. Sharing circles were used as a format for group discussions usually in the mornings to plan the day's activities and in the evening to discuss the day's events. A feeding the fire ceremony, led by elder Robert McKenzie, was held at the start of the camp (figure 3).



Figure 3 - Robert MacKenzie feeding the fire at the start of camp

Additional Fish Sampling - Great Slave Lake

Additional fish sampling on Great Slave Lake occurred September 8-9, 2010 and conducted by a group of eight people comprised of two biologists, a fisherman, representatives from TG (4) and WRRB (1). It was based out of Sah Naji Kwe Lodge on the shore of the North Arm. Two multi-mesh nets, to target multiple species and sizes of fish, were set on the afternoon of September 8, left overnight and removed the next morning; species, length and weight were recorded. The location for setting nets on the North Arm, GSL were agreed upon before heading out on the lake and based on the knowledge of local fisherman.

Results

Results from each of the project activities are provided below.

Scoping Workshop

Local knowledge and consultation with elders played an important role in the design of the program in establishing issues of interest and then selecting appropriate protocols to address the issues.

Issues of Interest

Workshop participants identified a range of issues of interest related to fish and fish monitoring including changes in abundance especially with respect to Coney, health and contaminants, and habitat. Some of the participant comments on these issues are provided:

Abundance

- There used to be a lot of Coney and for a while Coney disappeared

- In the past because there was not much Coney, we use to share it among the people
- There are 2 types of Coney in this area that were captured in the past that are different from the one today
- We don't want to see the same thing happen to the fish that happened with the caribou (a drastic decline in numbers and subsequent harvest restrictions)

Health and contaminants

- There has been quite a big change in the health of fish
- Today fish are smaller than in previous years
- Whitefish are not as fat and some fish have worms
- Ever since development we have noticed changes in fish, in the taste and the texture
- Fish has been "gummy" in the past so we want to monitor fish in Russell Lake area

Habitat

- The water temperature is warmer than it used to be
- We set nets in different places now because of changes in fish habitat
- All the small rivers are blocked off around the lake now but beavers didn't use to be here
- It would be good to monitor the location of beaver dams
- We used to travel on the river and see fish eggs right along the shore, perhaps the beaver are responsible for disrupting the eggs
- Fish are spoiled in James Lake because of beaver, beavers seem to have something to do with fish health

As a result of the issues identified it was decided that some tissue samples would be sent out for contaminant (metals) analysis and diversity of fish species would be documented. Habitat issues related to beaver dams affecting water levels and water flow were outside the scope of the current project.

Design of the Monitoring Program

Guidance was provided on the design of the monitoring program such as location of sampling, involvement of youth and the need for Tłıchǫ control of monitoring. Participant comments on the monitoring program are provided:

- This is our opportunity on our land for monitoring on Marian Lake
 - We can identify fishing spots where fish migrate into the area, wet the nets and identify different fish that we catch
 - We should document fish age, what it eats, migration, temperature of water, maybe mining activities and contaminants
 - We need to identify changes that are happening
- It is important to have community members involved in the monitoring so that they are aware of the results and can understand the issues
 - This is our opportunity to start studies for future generations
 - We would like elders, youth and citizens to be educated
 - We should involve the youth, go to a fishing spot and do our study

The locations for fish sampling that were identified by workshop participants are shown in Figure 4. The Russell Lake location (Eneko kw'ò whela) was not attempted in 2010 but is a priority for 2011. The camp location was selected due to its proximity to locations 1, 2, 3 and 5. The timing of the camp was set for August 18-20 based on knowledge that Coney would be abundant during that time.

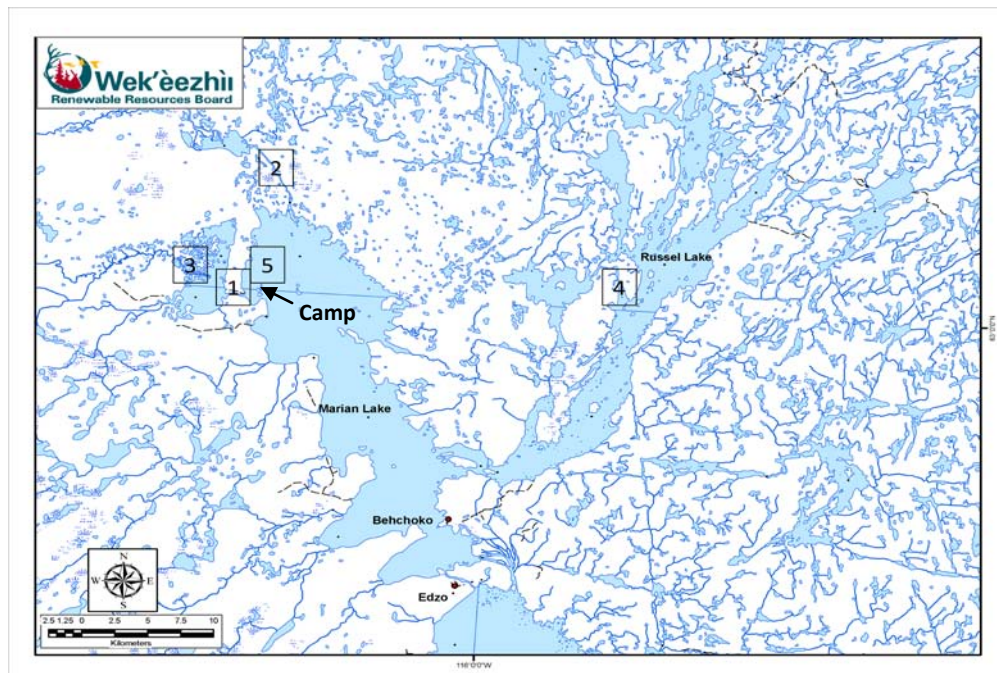


Figure 4- Areas of interest for monitoring fish as identified in the Scoping workshop, July 20, 2010
(1. Eht'è tì tsìlj; 2. Behk'ò dè; 3. Eht'è tì dè; 3. Eneko kw'ò whela; 4. Kwedelò di)

There was little interest in Shortjaw Cisco as it is not a subsistence species for the Tłjchǫ. Some workshop participants had seen the Cisco species in cases where it got entangled in a net targeting other species but many had not. As a result, no locations for Cisco sampling on Great Slave Lake were identified and the organizing committee decided that the biologists, supported by a local fisherman and a few Tłjchǫ Government representatives, would conduct the sampling and determine, at that time, suitable sampling locations.

Some of the participant comments on Shortjaw Cisco:

- In 1955 I worked in the commercial fishery
 - There are no fish like that Cisco in this area, we would only see this Cisco in deep water in Great Slave Lake
 - We would catch that type of Cisco with its jaw tangle in the net in deep water with a commercial fishery (We don't have deep water in Marian Lake (only 3 ft))
 - I never saw one with a brown back like that one (Shortjaw)
- In the Sahtu region they have small nets for catching small fish
 - All along Mackenzie River they catch herring (Cisco) or Least Cisco (*Coregonus sardinello*)

Fish Camp – Marian Lake

Because of high winds it was necessary to locate nets near to the camp. Figure 5 shows the location of the two nets in relation to the camp (Kwebehdilo) on Marian Lake. Locations 1,2 and 3 were not sampled.

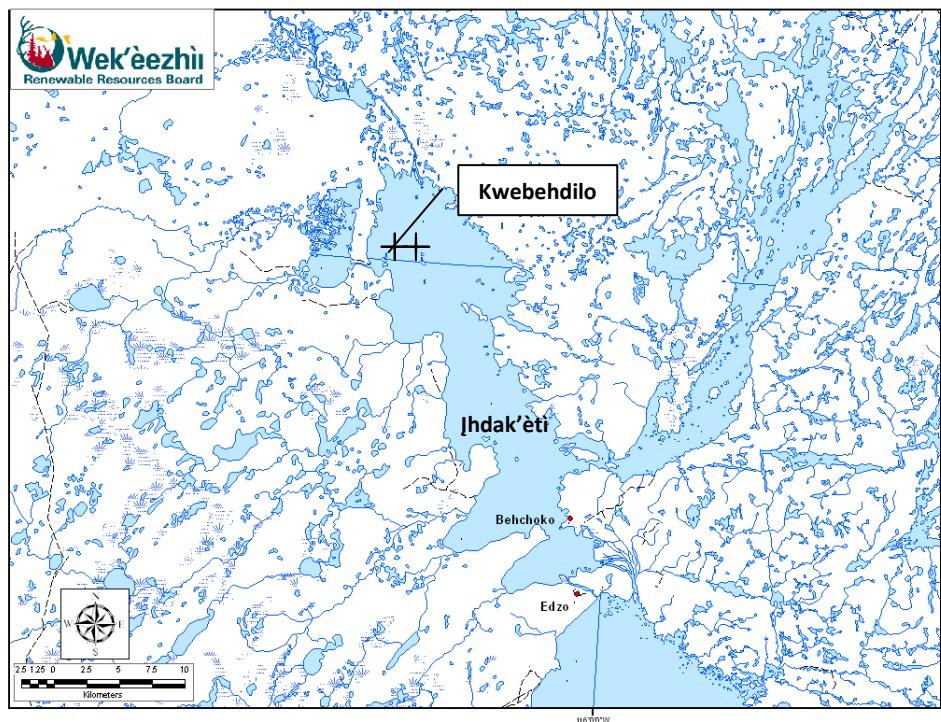


Figure 5 - Locations of nets (+) and camp (Kwebehdilo) on Marian Lake (Ihdak'eti)

Species diversity

Ten species of fish were caught on Marian Lake ranging in number from one to 97 (figure 6).

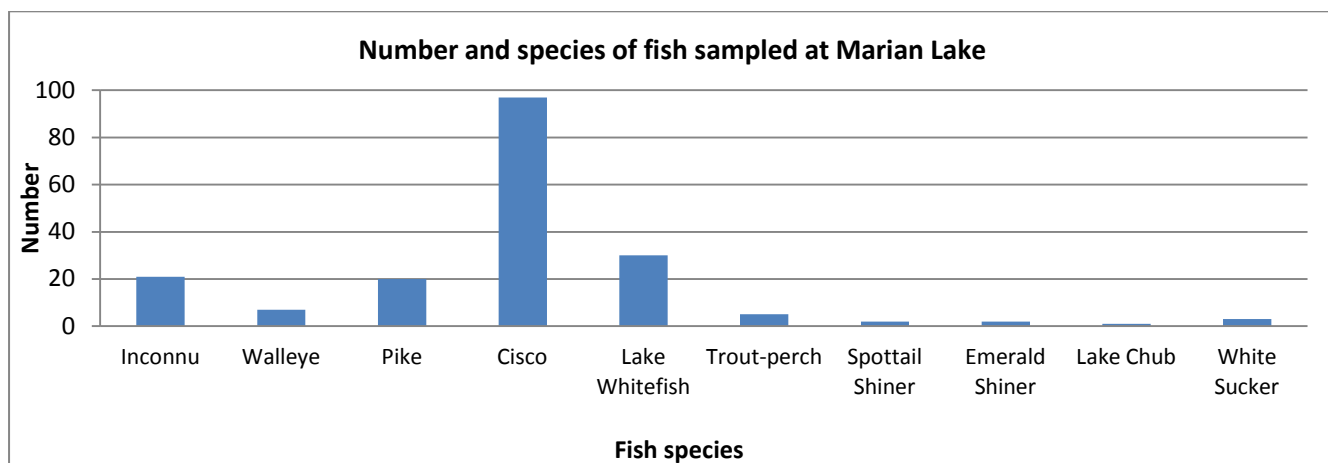


Figure 6 - Species and number of fish captured on Marian Lake

Table 1 presents Tłıchǵ species names along with the English and scientific equivalents for those fish captured. No Shortjaw Cisco were captured at either the Marian Lake or North Arm locations (complete data on species, length and weight for all sampled fish is included in Appendix 2).

Table 1 - Tłjchq̓, English and Scientific names for the fish species captured

Tłjchô	English	Scientific
wille	Inconnu	<i>Stenodus leucichthys</i>
ehts'êë	Walleye	<i>Sander vitreus</i>
łhdaa	Northern Pike	<i>Esox lucius</i>
łewedzia	Cisco	<i>Coregonus sp.</i>
łih	Lake whitefish	<i>Coregonus clupeaformis</i>
	Trout-perch	<i>Percopsis omiscomaycus</i>
	Spottail shiner	<i>Notropis hudsonius</i>
	Emerald shiner	<i>Notropis atherinoides</i>
	Lake Chub	<i>Couesius plumbeus</i>
Dehdoo	White sucker	<i>Catostomus commersonii</i>

Anatomy

The anatomy of fish was discussed at length at the fish camp during scientific sampling and during Tłjchq̓ fish preparation. Tłjchq̓ and English words for various parts of the fish are presented in Table 2. Figure 7 shows the internal anatomy labelled in Tłjchq̓.

Table 2 - Fish anatomy in Tłjchq̓ and English

Tłjchq̓	English
łika	Gills in gill cavity
łidzee	Heart
łiwo	Liver
łit'aa	Fin
łit'o	Gall bladder
łits'i	Pylorus
łits'i tsà	Stomach
wegah	Spleen
łibo	Wall of body cavity
łik'i	Sex organ or gonad (male testis)
łit'atsò	kidney
łit'ahsho	Swim bladder
łiwets'i	Intestine
łinatsò	Muscle
łits'e	Skin
łikwo	anus

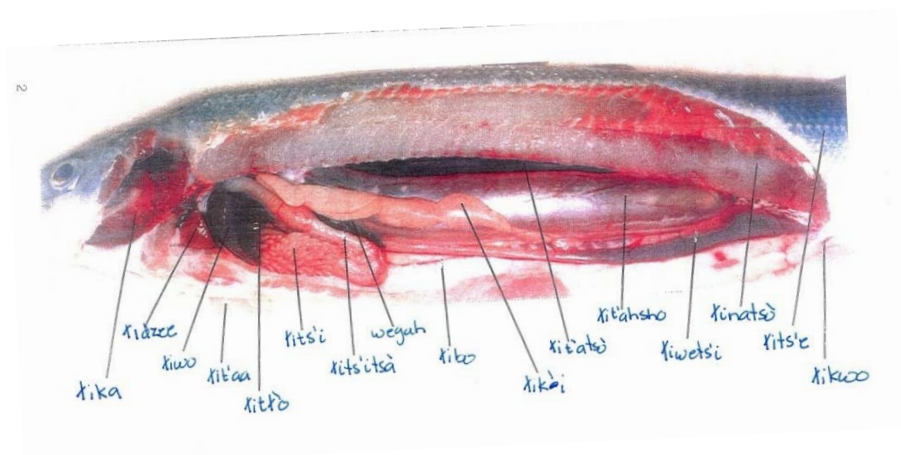


Figure 7 - Fish Anatomy in Tłjchq

Fish tissue analysis

The full list of metals tested for and results are given in Appendix 3. Mercury levels in the Coney sampled from Marian Lake were lower than Health Canada Guidelines for commercial sales of fish for consumption (figure 8). Other metals in the tissue were either extremely low or below detection limits.

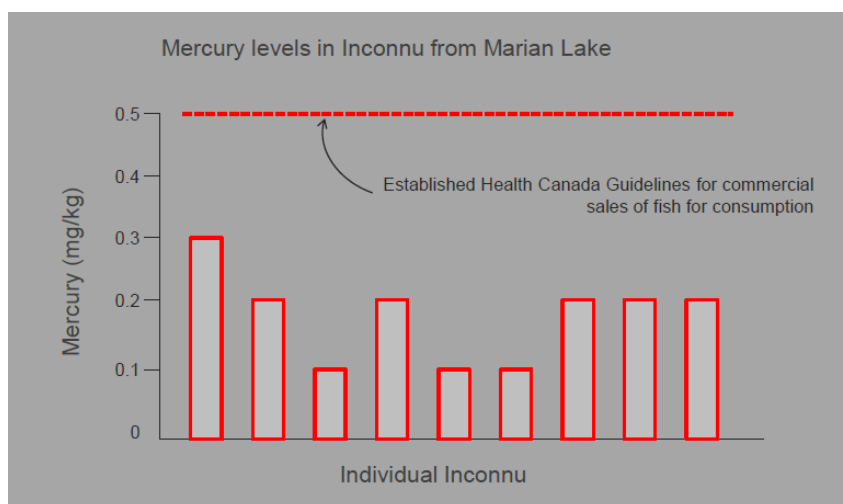


Figure 8 - Mercury levels in 9 samples of inconnu tissue from Marian Lake

Age, Size and Maturity

Multiple size classes of the 10 species of fish were captured in Marian Lake. Average size for each species is given in Table 3.

Table 3 - Average fork length (mm) of fish species captured in Marian Lake

Species	Average Fork length (mm)
Cisco	134.2
Emerald shiner	66.0
Inconnu	448.6
Lake chub	107.0
Lake whitefish	273.2
Northern pike	533.4

Spotail shiner	70.0
Trout perch	69.2
Walleye	377.8
White sucker	232.0

Large numbers of Cisco were captured in Marian Lake that ranged from 7 to 19cm. Their morphology is unique and currently, does not fit the description of any known species. The caudal peduncle region is short, the caudal fin is large and paddle-like and the body depth is significant. Further analysis may determine if this new Cisco is a dwarf form or something new and unique, possibly endemic to the region (figure 9).



Figure 9 - Example of the Dwarf Cisco found in Marian Lake (and North Arm, GSL)

Coney ranged in size from 20 to 80 centimetres while the majority of Coney sampled in Marian Lake were in the 20 - 30 cm size range (figure 10).

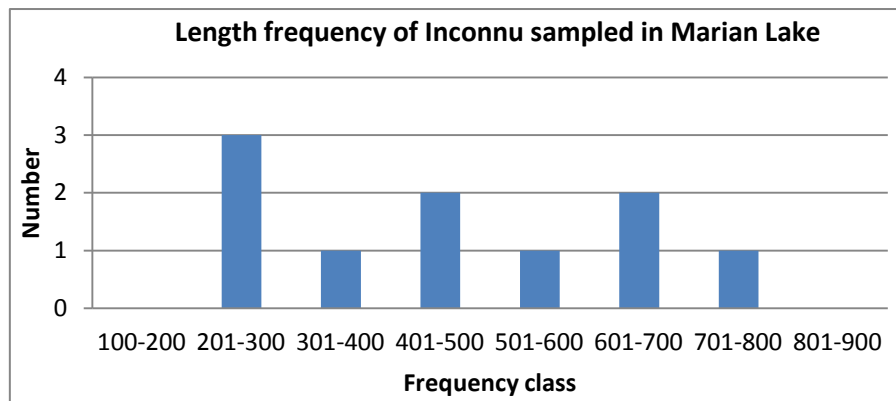


Figure 10 - Frequency of Coney in various size classes

Ages of Coney ranged from 1 to 17 years while ages of Cisco ranged from 2 – 8 years (figure 11). Complete age results are shown in Appendix 4.

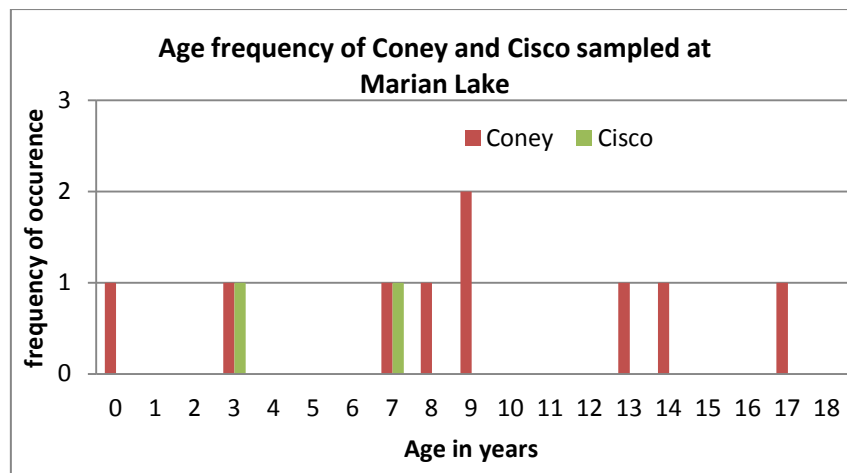


Figure 11- Age frequency of Inconnu and Cisco sampled from Marian Lake

Gonadal development indicated that not all adult Coney present in Marian Lake were spawners. Many were present for feeding and would become mature next fall or the year after that.



Figure 12 - Gonads from similar sized Coney showing differences in stages of maturity

Traditional methods of preparing fish

While there was no written documentation of traditional fish preparation methods, photographs were taken of several stages in the preparation of Lake Whitefish (*Coregonus clupeaformis*) and White Sucker (*Catostomus commersonii*). These are shown below in figures 13 and 14

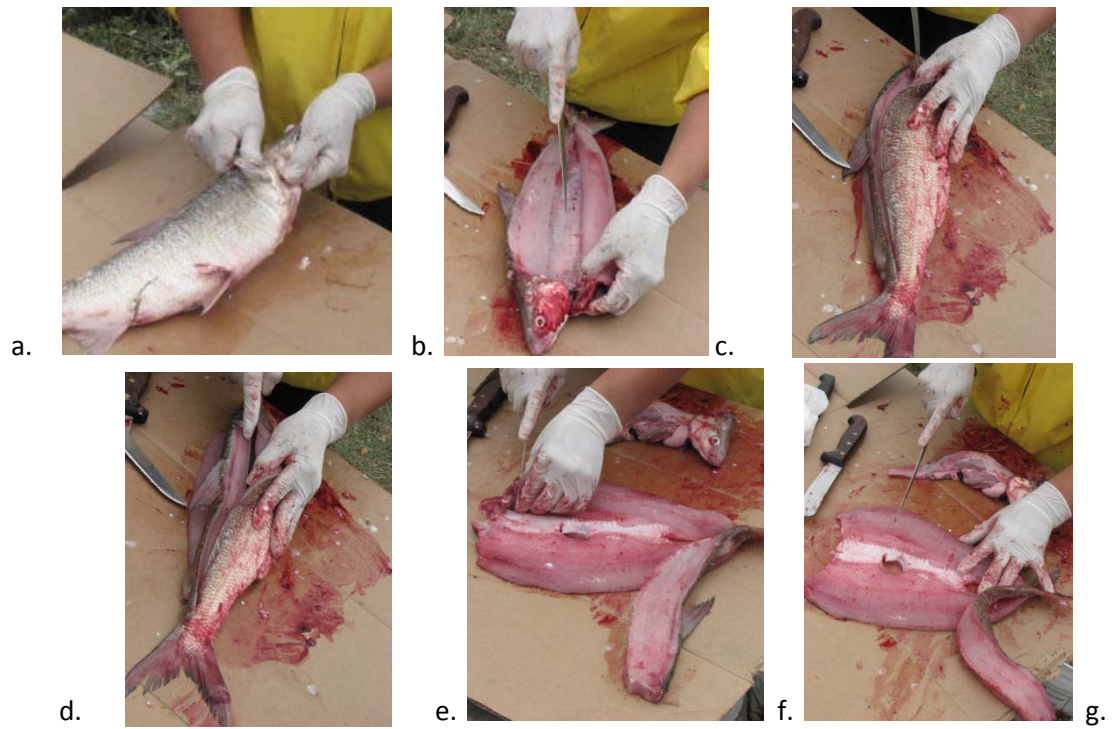


Figure 13 - Preparation of Lake Whitefish for drying



Figure 14 - Preparation of White Sucker for drying

Additional Fish Sampling - Great Slave Lake

The locations for the nets were decided on by the group of eight participants based on their collective knowledge of fishing in the North Arm area focusing on areas of known deep water in an attempt to capture Shortjaw Cisco. Figure 15 shows the location of the two nets in the North Arm of Great Slave Lake.

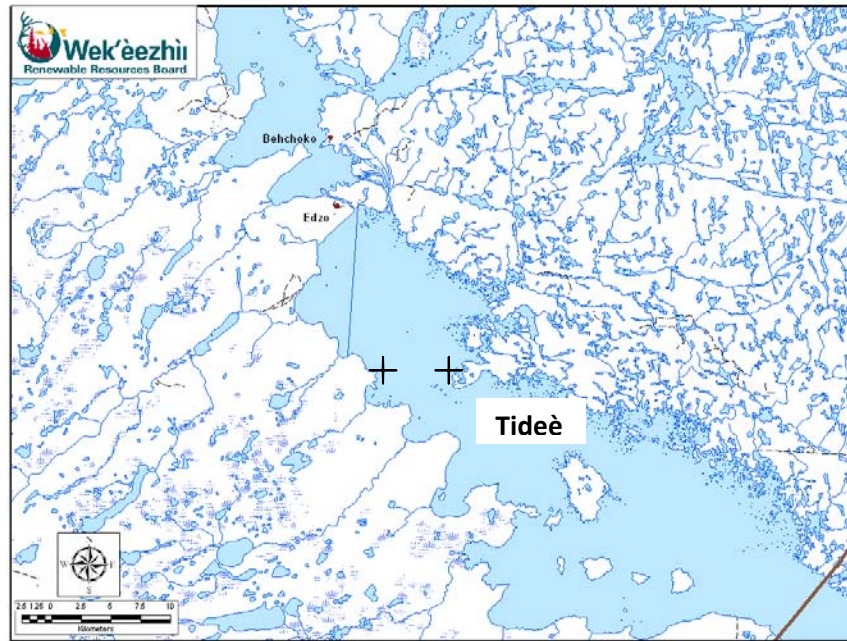


Figure 15 - Locations of nets (+) in North Arm of GSL (Tidee)

Species diversity

Eight species of fish were captured in the North Arm of Great Slave Lake. The predominant species were Inconnu, Northern Pike (*Esox lucius*), Cisco sp. , Lake Whitefish, Emerald Shiner (*Notropis atherinoides*) and Lake Chub (*Cousesius plumbeus*) (figure 16). Few Walleye (*Sander vitreus*) and Trout perch (*Coregonus clupeaformis*) were captured and no Spottail Shiner (*Notropis hudsonius*) or White Sucker.

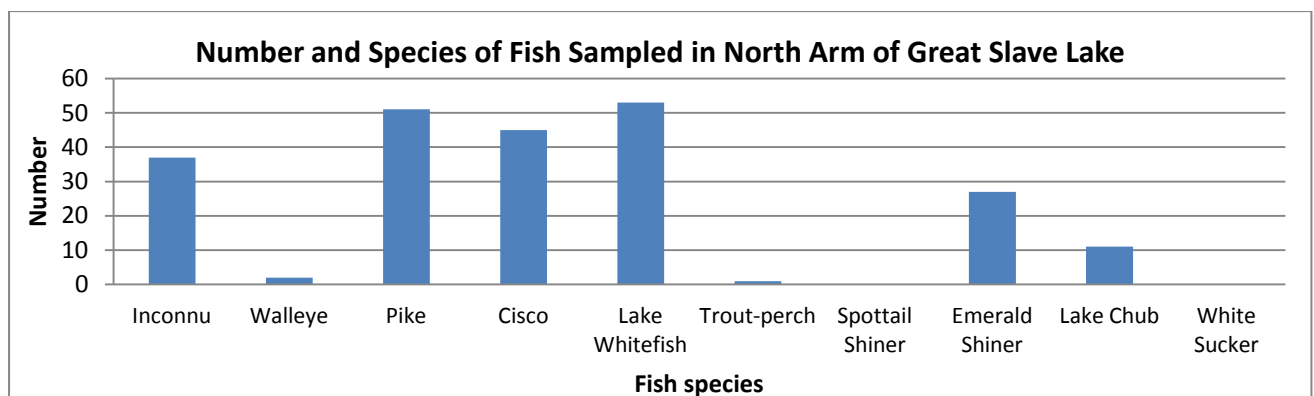


Figure 16 -Species and number of fish captured on North Arm, GSL

Age, Size and Maturity

Multiple size classes of the eight species of fish were captured in North Arm of Great Slave Lake. Table 4 shows the average fork length of the eight species

Table 4 - Average Fork length (mm) of the eight species of fish captured in North Arm, GSL

Species	Average Fork length (mm)
Cisco	161.6
Emerald shiner	56.7
Inconnu	471.1
Lake chub	113
Lake whitefish	329.5
Northern pike	554
Trout perch	74
Walleye	430

Of the Cisco otoliths that were analyzed, age ranged from 3 to 9 years (figure 17)

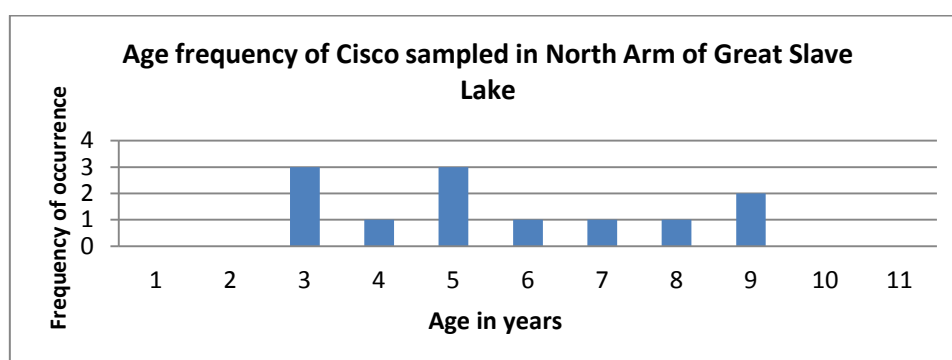


Figure 17 - Age frequency of Inconnu and Cisco sampled in North Arm, GSL

The size of Coney captured in the North Arm ranged from 10 – 70 cm in length. The majority of Coney were in the 40 - 60 cm size range (figure 18) – generally larger than those captured in Marian Lake.

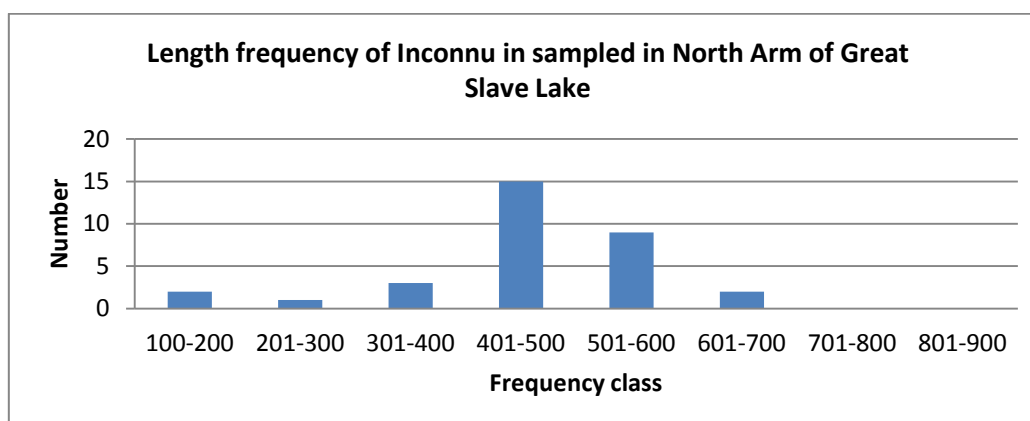


Figure 18 - Frequency of Cisco in various size classes sampled in North Arm, GSL

Conclusions and Next Steps

The Community-Based Fisheries Monitoring and Education Program was a success in many ways. It was a first step in engaging communities in fisheries monitoring from project design through implementation. It was the first time the TG, WRRB and WLWB have worked together on a project of this nature. And was also the first time a program was initiated to monitor fish in the Marian Lake and North Arm regions.

The program met the two main objectives of: 1) gathering information for the design and implementation of a community-based monitoring program; and 2) conducting a pilot project to evaluate the monitoring program design. Additionally, a Draft Education Framework (Appendix 5) will help guide the design and implementation of further monitoring programs.

Feedback from participants has been positive in the desire to keep working together and improving on the program. Comments from participants on the continuation of the program included:

- add sample sites on Russell Lake at traditional fishing spots;
- continue to examine health and contaminants;
- build on the traditional knowledge component of fisheries monitoring;
- have regular sampling times in all seasons for Walleye, Whitefish and Coney;
- test water quality at sampling locations; and,
- develop posters and pamphlets in Tłıchǵ language.

The data collected during the pilot project forms a solid beginning for a future fisheries monitoring program. With similar sample sizes on a yearly basis stock structure within species can be monitored. The metals analysis confirms that metals such as mercury are present in Coney in Marian Lake and that more work should be done in this area. The presence of Walleye in Marian Lake may indicate the lake is important habitat for summer and fall foraging and not just a migratory conduit to streams in the spring for spawning. Similarly, Coney may also be using Marian Lake as a productive fall feeding area in non-spawning years. The presence of a potential dwarf form of Cisco and Trout-perch warrant further investigation into the prevalence of these species in this region. The documentation of Tłıchǵ fish anatomy, fish species and traditional preparation methods is a start towards more in-depth traditional knowledge research to be conducted on traditional methods of resource management and monitoring.

Next steps have already been taken on developing and submitting proposals for future fisheries monitoring on Marian Lake with the added location of Russell Lake. There continues to be concern expressed over contaminants in fish and therefore a proposal was submitted to Northern Contaminants Program to augment this portion. A proposal was submitted to the Cumulative Impact Monitoring Program to test scientific protocols for fisheries monitoring and develop and test Traditional Knowledge based protocols. A proposal went to Government of Northwest Territories to support a spring 2011 workshop for planning of new-year activities. And lastly, a proposal went to the Environmental Damages Fund for a continuation of the program essentially as is. At this point, there has been no confirmation of funding.

Appendix 1 – Project Participants

Workshop Participants

Elders from Behchokò

- Francis Williah
- Harry Apple
- Francis Gon
- Robert Mackenzie
- Edward Camille
- Louie Flunky
- Jonas Football
- Nick Football
- Harry Mantla
- Pierre Tlokka

Tłıchǫ Lands Protection Division

- Eddie Erasmus
- Joline Huskey

- Albertine Eyakfwo

Wek'èezhìi Land and Water Board

- Mark Cliffe-Phillips
- Rebecca Chouinard
- Mike Nitsiza

Wek'èezhìi Renewable Resources Board

- Grant Pryznyk
- Jody Snortland
- Karin Clark
- Moise Rabesca

Department of Fisheries and Oceans

- Deanna Leonard

Golder Associates

- Paul Vecsei

Fish Camp Participants

Elders from Behchokò

- Harry Apple
- Robert Mackenzie
- Edward Camille
- Jonas Football
- Nick Football
- Harry Mantla
- Pierre Tlokka

Camp Cook/Workers

- Doreen Liske
- Harry Rabesca

Fisher

- Leon Weyallon

Tłıchǫ Lands Protection Division

- Georgina Chocolate
- Joline Huskey
- Albertine Eyakfwo

Wek'èezhìi Land and Water Board

- Rebecca Chouinard

Wek'èezhìi Renewable Resources Board

- Karin Clark
- Moise Rabesca

Department of Fisheries and Oceans

- Holly Patrick

Golder Associates

- Paul Vecsei
- Andrew Muir
- Damian Panayi

Translators (3)

- Peter Huskey

Youth

- Skye Ekendia
- Cory Weyallon
- Clayton Football
- Marvis Migwi
- Sheila Bishop

North Arm sampling participants

Tłıchǫ Lands Protection Division

- Georgina Chocolate
- Joline Huskey
- Albertine Eyakfwo
- Mark Fenwick

Fisher

- Leon Weyallon

Golder Associates

- Paul Vecsei
- Damian Panayi

Wek'èezhìi Renewable Resources Board

- Moise Rabesca

Appendix 2 – Fish species diversity, length and weight

Appendix 3 – Metals analysis for fish tissue samples

Appendix 4 – Age analysis for fish otolith samples

Appendix 5 - Draft Education Framework for Community Monitoring Programs

The Draft Education Framework for Community Monitoring Programs was developed using components of an Education Strategy Guideline produced by the WLWB in 2009². The Draft Education Framework is organized by topics covered in the Guideline with discussion provided on how each topic was addressed in the current program.

1. Incorporate Local Customs and Values

Education situations should incorporate local culture and values – the participants should understand and respect the local cultural or social-norms. In Dene culture, respect is built around relationships, human-to-human or human-to-non-human, and is rooted in reciprocity. The cultural-social norms that should be considered include local traditions, routines, hobbies, and the “little rules” that are unique to each society (p. 4, WLWB).

The Community-based Fisheries Monitoring Program incorporated local customs and values by working very closely with members of the community through the First Nations government and elders and youth participants. Working closely meant regular Working Group meetings during activity planning with Tłıchǝ government representatives and workshops with project participants (elders, youth and fishers) that provided input into project design and guided the activities. Also, of a more specific nature, prayers were held at the start and end of the workshop and the camp. A feeding the fire ceremony was also conducted at the camp to honour and “pay” the land and provide for safe travel home.

2. Know the Participants and be known to them

Spend time with the participants, in a place that is comfortable and common to them. Take the time to get to know people on a one-on-one basis both within and outside of the educational setting... Talking to people, on a one-on-one basis, allows for deeper relationships to develop and for an awareness and appreciation of different perspectives and opinions within the community (p. 6, WLWB).

The frequent Working Group meetings, workshop and camp allowed for participants to get to know one another in different settings, formal (workshop) and informal (on the land). Frequent meetings built trust among Working Group partners and project participants. Establishing trust is the first step towards true partnership and building programs that are culturally relevant, appropriate and are likely to be sustained.

3. Teach how they teach

Communicate knowledge in a form that caters to the participant’s traditional way of sharing information. This involves how information is communicated, but also considers where, when, and by whom information is shared... Knowing constitutes believing that something is true based on culturally derived justifications. Thus, reasons for believing are inseparable from what to teach or how (p. 7, WLWB).

² Wek’eezhii Land and Water Board, 2009. Draft Education Strategy Guideline. Unpublished manuscript. Yellowknife, NT. 19pp.

The on-the-land component of the Community-based Fisheries Monitoring Program is an important aspect of the project as it allowed for shared education to occur in a culturally appropriate manner, “teaching by doing”. When we brought the scientists and elders together at the camp it provided a natural opportunity to share knowledge about fish and the aquatic environment while observing and interacting with it in ways that were traditionally practiced and new ways.

In workshops, material was primarily presented orally and visually with posters and pictures of fish. Maps were used also to discuss locations of important fisheries and potential sampling locations, where certain water characteristics warranted special consideration, etc.

4. Relate education to local realities

Use local “tools” and realities to connect the educational concepts, methods, and materials to the world of the participants... Learning from specific examples, places, and stories that are local improves discernment of the objects of learning because learners can reference the personal experience required to justify truths (p. 8).

The location of the camp at a traditional fishing spot helped bring location-specific knowledge about the site, kinds of fish present, water characteristics, etc. into discussion. This knowledge was critical in determining where and how to set the net, how long to leave it out, what mesh size to use, etc. The traditional location also allowed for site specific stories to be shared.

5. Break down the teacher-student barrier

Create an educational experience that situates all participants as “teachers” and “learners”; allow the authority on information to shift throughout the program... Breaking down the teacher-student barriers emphasizes the importance of everyone’s knowledge, encourages participation, and promotes equality. Participants are more willing to participate because of elevated interest and confidence (p. 9).

Including a range of elders, fishers, youth, scientists of both male and female gender allowed the coming together of different sets of knowledge and inter-generational and cross-cultural opportunities for learning. No one person or set of people were the teachers and another the students. All participants were valued as knowledge holders that had something valuable to share.

6. Build the program with them

Use a community participatory approach that involves all of the participants in the design and execution of the educational program... Without community support, without community input on what topics are useful and meaningful to them, and without direction on how best to convey topics of learning, it is difficult – perhaps even impossible – for true discernment to take place (p. 9).

The Community-based Fisheries Monitoring and Education Program was inclusive from the start by holding a planning workshop with a wide-range of participants from elders, fishers, First

Nations Government, the WLWB and the WRRB. Together the group decided on priorities for sampling, what should be looked at, where and when, recognizing there were some constraints associated with the funding requirements. The Working Group implemented the activities according to the advice given in the workshop. There was support for this approach and a desire to continue working this way into the future.

7. Take the program to them

Go to various communities (not just Yellowknife), and host meetings in novel locations (not just Boardrooms). ... It allows for the participants to experience new places, and perhaps new phenomena that exist in these places. Engaging in education on the land brings forth new knowledge and exposes different teachers or authorities on topics (p. 10).

All Working Group meetings were held in Behchokò as was the workshop with the wider group of participants. Meetings were held in English whereas the workshop and camp had simultaneous translation available. These practices allowed the Tłıchǵ participants comfort in their surroundings and provided the scientists unique learning opportunities for cross-cultural interactions in both formal (workshop) and informal (camp) settings. Having the camp at a traditional fishing location showcased the environmental knowledge the Tłıchǵ participants had specific to the region and allowed for Tłıchǵ participants to be the drivers of the camp.

8. Create credible alliances

Make alliances with community leaders and respected authority figures. ...Having support from community leaders helps build alliances and gain faith from the community up front. Involving community political figures with authority helps pave the way towards establishing formalized permanency in educational methods and initiatives (p. 11).

The Community-based Fisheries Monitoring and Education Program included Chairpersons from the WLWB and WRRB and the Director of Lands Protection Department of TG in the initial workshop. Having their participation and support for the project heightened its profile in the community and gave the project “legitimacy”. A visit from the TG Chief Executive Office during the camp and a subsequent article in the local newspaper also served the project well in terms of raising the profile and having participants feel respect for and commitment to the program.

Conclusions

The Draft Education Framework presented above demonstrates how the Community-based Fisheries Monitoring and Education Program addressed each of the education strategies from the WLWB guidance document. Overall, the education philosophy for the program is one of sharing two knowledge systems, the western scientific and the traditional, and of mutual respect. By working very closely with the Tłıchǵ Government and Tłıchǵ participants the program attempted to be relevant and responsive, culturally sensitive, and scientifically rigorous.