

**“We monitor by living here”:**  
**Developing monitoring methods based in Indigenous knowledge**

BC Parks Living Labs – Final Report  
21 April 2018

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## **1. INTRODUCTION**

Gitga’at people have been caring for their territory since time immemorial. In recent times, Gitga’at stewardship has largely embraced the methods and technology that science has to offer. Monitoring efforts and studies conducted by the Gitga’at Guardians and partnering scientists have been valuable in ensuring that the territory, its resources and inhabitants remain healthy. In addition to these efforts, 90% of Gitga’at people consume traditional foods on a daily basis and a significant portion of the population continues to be active in the harvest and preparation of traditional foods. Through this harvest and food preparation, people are keeping track of the abundance and quality of resources in the territory, as well as noticing changes in the surrounding environment. When combined with the knowledge of Elders, who know how things were long ago, and the information produced through scientific studies, the observations of harvesters allow for a more complete picture of the health of Gitga’at territory to be painted. In the words of Sm’oogyit Wahmoodmx, “We monitor by living here”.

This report outlines the steps that were taken to design and test data collection methods to be used by and for Gitga’at people to document Gitga’at harvesters’ knowledge on a regular basis. It also provides some recommendations that can be used to inform similar partnered initiatives between other First Nations and BC Parks to monitor ecological change using Indigenous knowledge. This research project was initiated by Gitga’at interest in beginning a program to complement the scientific data collection occurring in Gitga’at territory. The research formally began in the Fall of 2016 and included informal interviews, a literature review, community meetings in the Gitga’at communities of Hartley Bay and Prince Rupert, as well as a two pilot seasons of data collection and feedback gathering.

## **2. INFORMAL INTERVIEWS**

During two visits to Hartley Bay and Prince Rupert, one in October and one in December 2016, I conducted informal interviews with 36 harvesters and Elders during trips to Hartley Bay and Prince Rupert. Participants were selected based on my own personal relationships and knowledge of active

harvesters in the Gitga'at communities of Hartley Bay and Prince Rupert, and through introductions that were made by Chris Picard, the Acting Director of the Gitga'at Oceans and Lands Department (GOLD).

**Guiding questions:**

- How could Gitga'at monitoring of the marine environment incorporate the knowledge of those who harvest, hunt, and/or fish?
- How can this knowledge be used to inform decisions about how the marine environment of Gitga'at territory is managed and protected?
- Would you be interested in sharing your knowledge and observations?
- How would you like to see your knowledge documented?
- How would you like to see your knowledge used?

**Response Summary:**

All interviewees demonstrated interest in the potential program, with one participant saying "It's too bad something like this wasn't happening when my dad was alive" (anonymous, pers. comm.), and another affirming that "We are the people who have been living on the land. We know when it's changing." (anonymous, pers. comm.) Many others shared these views, and suggested that data collection begin as soon as possible due to the large number of unusual occurrences observed in the year leading to the interviews, including large red tides, poor seaweed growth, and a paucity of kelp.

Three key and interrelated objectives can be parsed out of the conversations regarding how harvesters would like to see their knowledge and observations used. The first was to use these observations to track changes occurring in Gitga'at Territory, and informing stewardship decisions. The second was encouraging youth to learn about their traditional foods and how the territory is changing through the knowledge of their Elders. The third was that it should be used to inform Rights and Title negotiations as well as strengthening the case for Gitga'at rights to manage the resource their territory. A fourth objective (informing health and wellness programming) was suggested after a first round of data collection in the spring of 2017. In addition to these objectives, another key takeaway from these first conversations was the importance of keeping culturally sensitive information confidential throughout the course of the pilot project and the potential resulting program.

Interviewees suggested several methods for documenting their knowledge and observations in order to apply them to the methods described above. Many suggested self-reporting tools such as keeping a harvesting logbook, while other, typically younger, harvesters suggested creating a digital app that they could use from their phones. It was stressed that whatever the tool, it would be important to outline exactly which pieces of information harvesters were supposed to record. Another commonly suggested method was the use of interviews during or following a harvest season. Many suggested combining methods, and encouraging harvesters to meet in groups to discuss their observations as this would "...jog their memories about the harvest season." (anonymous pers. comm.).

Throughout the conversations most interviewees mentioned several species that they would like to see monitored via this project and/or that had experienced changes in abundance or quality recently. Many participants were also interested in how changes in some species could and have impact the health of others. The species and changes discussed included:

- |           |                    |
|-----------|--------------------|
| - Seaweed | - Abalone          |
| - Halibut | - Katy Chitons     |
| - Crab    | - Chinese Slippers |

- Sockeye white spots in Coho
- Kelp
- Benthic Amphipods (sea lice)
- Clams
- White spots in the flesh of seals
- Changes at Kiel
- Red Tide
- Bears
- Berries
- Seagull eggs
- Fruit flies
- Weather patterns (snowfall, storm patterns, rainfall)
- Urchins
- Sea-cucumbers
- Cockles
- Seabirds as indicators of halibut availability

### 3. LITERATURE REVIEW

Between January and April 2017, I conducted a literature review of existing academic and grey literature to gain insight into the design and elements of effective and self-sustaining Indigenous community based monitoring systems. With the intention of informing a growing number of initiatives, including the one solicited by the Gitga’at First Nation, the specific objectives of the review were to: (1). Outline the state of the literature about existing CBM projects that involve Indigenous knowledge; (2). Examine the range of approaches that have been used to document and use Indigenous knowledge within CBM projects; (3). Investigate common challenges encountered by these projects; and (4). Characterize the elements of effective CBM projects that involve Indigenous knowledge.

Thomson-Reuter’s Web of Knowledge was searched using terms *Indigenous environmental monitoring*, *Indigenous resource monitoring* then [*“environmental monitoring”* OR *“ecological monitoring”* OR *“biological monitoring”* OR *“resource monitoring”*] AND [*“Indigenous Knowledge”* OR *“Traditional Ecological Knowledge”* OR *“Aboriginal Knowledge”*]. The relevant literature was analyzed following predetermined questions outlined in Table 1.

**Table 1. Literature Review objectives and associated research questions**

Objective	Research question(s)
Provide an overview of state of the current literature on existing CBM projects that draw on Indigenous Knowledge	<ul style="list-style-type: none"> <li>- How has number of relevant publications changed over time?</li> <li>- Where do relevant programs occur?</li> <li>- Which Indigenous peoples have been involved in these projects?</li> </ul>
Examine range of approaches to using Indigenous Knowledge in CBM programs.	<ul style="list-style-type: none"> <li>- What are the objectives of CBM programs that use Indigenous knowledge?</li> <li>- What methods are to used document and communicate IK?</li> <li>- How is data from such programs managed and analyzed?</li> <li>- To what extent are IK and scientific methods combined?</li> <li>- To what degree are Indigenous people involved in the design and implementation of these monitoring programs?</li> </ul>
Investigate challenges encountered by IK-based CBM programs	<ul style="list-style-type: none"> <li>- What are common challenges encountered by these programs?</li> </ul>
Characterize elements of successful IK-based CBM programs	<ul style="list-style-type: none"> <li>- What are characteristics of monitoring programs that overcome challenges?</li> <li>- What lessons are provided by existing projects?</li> </ul>

#### 4. COMMUNITY MEETINGS

In March 2017, community meetings were held in Hartley Bay and Prince Rupert to discuss the program objectives that were suggested during individual interviews and to begin designing data collection tools for the Spring harvest pilot season. Potential tools discussed during these meetings were inspired by earlier interviews and preliminary results of the literature review, which suggested that methods which interrupted harvesting activities as little as possible, such as post-harvest interviews, have been successful in other similar programs. Posters advertising the meetings were posted on an online forum (*Hartleybids* Facebook page) and in the Band Administration building. 17 band members attended the meeting in Hartley Bay, while 8 attended in Prince Rupert.

Meetings in both Gitga'at communities began with a brief presentation about common themes from the fall and winter interviews, and were followed by round table discussions. In Hartley Bay, attendees broke into several smaller groups, while all attendees in Prince Rupert participated in a single group discussion. Following the meetings in Hartley Bay and Prince Rupert, interested community members were invited to smaller scale workshops to discuss data collection methods in more detail. Due to conflicting schedules, would-be workshop attendees opted for individual meetings; a total of 12 individual meetings were held.

Over the course of community meetings and individual meetings all reiterated that they agreed with the key objectives summarized from the informal interviews, with many especially stressing their desire for student involvement in the program. Some additional monitoring objectives were also suggested including monitoring sharing and trading of Gitga'at traditional foods.

Many agreed that a combining harvest logbooks and interviews would be a good starting point for knowledge documentation, though several people reiterated that they would ultimately like to see a digital app developed for the program. During community meetings, three attendees suggested that the program attempt to extend the timeline of harvest-based knowledge back by referring to journals kept by Elders. At present time, one family has generously allowed myself and a research assistant to read and analyse the journal entries of a well-respected Elder who passed away in 2003.

During community and individual meetings many people restated that confidentiality of culturally sensitive information was critical when sharing results. However, many expressed that they hoped that program results be shared with the community on an ongoing basis through regular meetings and/or password protected website.

A draft logbook sheet and an example interview guide were brought to individual meetings to encourage further brainstorming about how to design Gitga'at-specific tools. These meetings were very helpful in guiding which species and environmental indicators should be included, what kind of layout would be most user friendly, how to gauge indicators of food quality, when to conduct interviews, and how often to distribute and collect logbooks. The final drafts of the spring harvest logbook and interview guide are appended.

## 5. SPRING PILOT SEASON

### ***Logbook Results***

Logbooks were handed out to harvesters prior to the spring harvest season (end of April) and were collected when harvest activities slowed down (end of June). Six participants returned completed logbooks. An additional 3 harvesters had filled in their logbook, but reported misplacing their books. Of the 6 who returned their logbooks, 4 reported that they had used their memory to fill it in the day prior to the interview. Thus data reported in logbooks only reflect a small fraction of all harvesting activities and harvesters' observations from Spring 2017. All harvesters who completed and returned logbooks also participated in interviews. Logbook data provided insights into amounts of traditional foods harvested from different locations throughout Gitga'at territory.

### ***Logbook feedback***

Fourteen interviewees provided feedback regarding the logbooks. Interviewees who did not use the logbook explained that they were either too busy, had recorded their harvests and observations in other places, had not brought their logbook out on their harvesting trips because it was too bulky and not waterproof, or had simply forgotten to fill in their logbooks because they were not used to recording their observations on paper. As one anonymous harvester explained, while pointing to their head: *"It's all up in here. Whether I remember and pull it out later, it's all up in here."* (anonymous, pers. comm.). Some harvesters suggested changes to make to the logbook for subsequent harvest seasons. These included making the logbook smaller and waterproof in order to pack out while harvesting, reducing the number of fields to fill out, and creating one logbook that could include entries over the course of an entire year.

### ***Interview Results***

Between late June and mid-July 2017, 23 knowledge holders were interviewed, including 8 women and 15 men. 23 harvesters represents approximately 50% of active harvesters from the Gitga'at First Nation. The age of harvesters interviewed ranged 24 to 91, with the majority of interviewees (61%) between 40-60 years of age. Interviews lasted half an hour up to 3 hours and were recorded with permission from the interviewee.

The number of years of harvesting experience varied by food species, as did the number of people involved in harvesting, preparing, and eating each food species (Table 2). Information documented during interviews included knowledge about changes in abundance and quality of food species, observations of environmental change including weather patterns, harvesting locations, food and skill sharing networks, and whether harvesters had met their needs for food species in Spring 2017.

Table 2. Number of interviewees that harvested, prepared and consumed spring foods, and years of harvest experience

Food Species	Number of harvesters	Harvest Experience			Number of participants in preparation	Number of consumers
		Minimum (years)	Maximum (years)	Average (years)		
Ła'ask ( <i>red laver seaweed</i> )	16	2	68	30	14	14
Yee ( <i>spring salmon</i> )	13	17	50	34	15	17
Txaw ( <i>halibut</i> )	11	2	47	18	14	15
'Yaans ( <i>black katy chitons</i> )	7	16	30	27	3	8
Dzik'wi'its ( <i>red and purple urchins</i> )	7	4	33	19	3	3
Üüla ( <i>harbour seal</i> )	7	5	48	17	10	10
Tsm'hoon ( <i>yellow eye rockfish</i> )	3	30	45	40	4	2
Gyenti ( <i>sea cucumber</i> )	3	1	45	22	4	4
Ts'ak ( <i>Gumboot Chiton</i> )	3	3	50	33	3	1
Hakw'n ( <i>California mussel</i> )	2	20	48	34	1	3

### **Interview feedback**

95% (22) of interviewees said that they would be willing to participate in another similar interview in the future, while 5% (n=1) said it would depend on their availability and interest at that time. Responses to the interview process were largely positive, with some harvesters stating that they were pleasantly surprised by the non-intimidating interview process. Some harvesters also suggested ways to improve the interview process including bringing recall tools such as their logbooks or photos and to conduct interviews as soon as possible after every

harvest season. Another harvester suggested including a section within the interview to ask the reasons why harvesters did not harvest certain species that harvest season.

There were also suggestions made to improve the overall data collection program structure. For example: *"Just maybe I'd suggest to do it every harvest season. See sockeye's coming up. It would be good to do one in there... Because there's always something different for each month... Everything's that's harvested, it would be good to do in an interview. Yeah. 'Cause then if you want to go back and do something within three months, then they're going to have to try to remember what they did."* (anonymous pers. comm.)

### **Overall Program Feedback**

Results from the spring season were compiled into a summary report and presented at community meetings. A community meetings were held in Prince Rupert and Hartley Bay to discuss the results and reflect on the first pilot season's methods of documenting and reporting findings. Feedback forms and questionnaires were handed it out to participants to facilitate commenting. 21 community members attended the meeting to discuss spring pilot season results in Hartley Bay, and another six attended the meeting in Prince Rupert. 11 completed feedback forms were received. 10 respondents were happy with the amount of information presented in the summary report while one suggested that future seasons *"Include more species, ie. salmon, root, berry, ungulates."* (anonymous written feedback). All respondents agreed that they would like to see the Gitga'at First Nation collect this kind of information in future harvest seasons, with 82% percent saying they strongly agree. Two anonymous commenters added that *"It will be helpful in the future."* and *"Any information is good."* 91% of respondents agreed that they would like to see this kind of information used to make decisions about how to steward Gitga'at Territory, with 64% strongly agreeing. One anonymous participant felt neutral about whether or not such information should be used to make stewardship decisions adding *"Not if it means they tell me what and when I harvest."* (anonymous written feedback)

Within the form, participants were also asked to score various options for communicating monitoring results (summary report, website, community meetings, individual meetings, all of the above, other) from 1 to 5, where 1 meant strongly disagree and 5 meant strongly agree. A combination of all communication methods scored highest with 82% of participants rating it as "strongly agree" and 18% rating it as "neutral". The next highest ranking options were a summary report and community meetings, each with 75% ranking them as "strongly agree" and 25% rating as "agree". "Individual meetings" was the next highest rated option, with 50% rating as "strongly agree", 38% rating as "neutral" and 12.5% rating as "agree". The least popular option was a website, with 50% rating as "strongly agree", 25% rating as "agree", 12% rating as "neutral" and 12.5% rating as "strongly disagree".

### Departmental feedback

Following discussion of results, Interviews were also held with representatives of the Gitga'at Oceans and Lands Department, the Hartley Bay School, the Gitga'at Health Department, and the Gitga'at Treaty Office. During these interviews representatives made suggestions that would make sure the data collection process that would yield information that would further enhance their decision-making. These suggestions included conducting yearly check-ins with each department in regards to their information needs, and adjusting logbooks and interview questions accordingly on an annual basis. For example, Paul Paterson the lead Treaty negotiator, suggested asking questions about how harvesting decisions are made.

As harvesters and community members themselves, some representatives also suggested other methods to communicate results to Gitga'at people effectively in the future. Cameron Hill, the Hartley Bay School principal, said that the summary report was good, however

*"... the simpler, the better. I think there's a lot of people I know that... kind of get turned off when there's multitudes of pages and numbers. And trying to follow columns and things like that. So I like the way it was laid out and I think, for me, the reason why I wanted to read it was because it's about us. So, you know, I want to see those numbers. "*

Christa Keating, an active harvester and administrator of the Gitga'at Health Department, also suggested that a summary of seasonal results be communicated in password-protected videos and uploaded to a website where data could be downloaded in real-time by end-users as well as Gitga'at members.

Each department also shared their long-term visions for how the data collection program including how to transition to an entirely Gitga'at-run program and how to further involve youth. Cameron Hill echoed other departments' leaders when he said *"I think ten years, to me, would be a drop in the bucket. That's a generation. So you gotta keep that going."* All department representatives envisioned that the program would grow to involve all community members and GOLD representatives suggested that this could be facilitated by funding Gitga'at Guardian vessels to bring harvesters out to harvest regularly. All agreed that in order for the program to continue, a permanent ongoing position to collect, analyze and report on data, would need to be embedded into an existing Gitga'at department. Many envisioned that this should be included into the GOLD, while another suggestion was running the program through the Health department. In either case, several representatives emphasized that a robust transition of skills necessary to collect, analyze and report on data, would require the researchers so far involved to invest more time to train potential future program staff.

Emphasizing the vision to encourage youth to participate in food harvesting and the data collection program going forward Cameron Hill said:

*"I think the key for the school is to get the kids out there doing it. They got to get out doing and then paying attention to what we're getting. Not just how we're doing it and when we're doing it, but what we're getting, what we're doing with it and to be able to contribute that to a data base with which we'd be able to*



*monitor our needs and where they're going... also to gain an understanding of the cultural part of it; taking what you need and using what you take, but also making sure that we're understanding what the changes are that are happening around us and how good solid science can combine with traditional knowledge so we can gain an understanding of what we're losing."*

Thus he suggested that the program include youth on the land, and participating in after school programs to interview family members who are experienced harvesters, and to transcribe and analyze those interviews in harvesting seasons in the near future.

## **6. FALL/WINTER PILOT SEASON**

Recommendations made by participants and departmental representatives during the Spring pilot season were used to revise data collection and reporting methods for the Fall and Winter harvest pilot season. Data collection and analysis for this pilot season will be completed by the end of April 2018.

## **7. OBSERVATIONS SPECIFIC TO GITGA'AT-BC PARKS CONSERVANCIES AND PROTECTED AREAS**

During the spring and fall/winter harvest pilot season interviews conducted to date, several participants mentioned concerns about changes that they've experienced within BC Parks/Gitga'at conservancies and protected areas (Figure 2).

These include:

- **Fin Island/Lax Kwil Dziiz**
  - Persistent high levels of biotoxins in clams have prevented any harvest from the Fin Island conservancy clam beds in the Fall/Winter of 2017. There has been less clam harvesting activity overall in this conservancy since the Queen of the North sank nearby in 2006. Some harvesters are afraid that the lack of harvesting is creating toxic conditions in the clam habitat. As one knowledge holder put it: *"If you don't use it, you lose it."*
  
- **K'Nabiyaax/Ashdown and Lax K'agaas/Campania**
  - Though many harvesters agreed that there was more seaweed available for harvest in 2017 than in 2016 (a year during which virtually no seaweed was harvested), some harvesters with over 40 years of harvesting experience say that the quantity and quality of seaweed is still lower than what they would harvest prior to approximately 20 years ago
  - Some harvesters are also noticing that seaweed is also growing in small patches rather than in large swaths as they would have in the past. One harvester said *"It's different now. It just used to be the whole beach would be the same"*

*condition. Like if you had to trim the ends, you'd be doing that the whole way through. But now you find a rock that's completely rotten, the next one you can salvage a bit, and the next one is absolutely perfect."*

- Over 50% of harvesters reported that there were less 'yaans (black katy chitons) available to harvest in Spring 2017. As one harvester said "*There were hardly any [yaans] ... There's usually lots of those around but there was nothing. "* (anonymous, pers .comm.)

- **K'waal**

- Tent caterpillars have infested many moolks (pacific crab apple) trees in the orchards of the K'waal conservancy. Many harvesters are concerned that lack of harvesting and pruning negatively affected the orchards' health.
- An abnormally high amount of moose and bears were reported in the K'waal conservancy during the Fall of 2017.

Some other changes that harvesters have noticed occur over large portions of the territory and may impact the cultural and ecological integrity of several conservancies and protected areas. These include:

- Over 50% of harvesters interviewed in the spring reported low numbers of spring salmon. In addition, many harvesters reported that the spring salmon were smaller than usual. One harvester said "*I would say they [spring salmon] are a lot smaller. We haven't been catching the size, you know, in the twenties. Most of them have been in the lower teens...."*
- Numerous landslides occurred along the channels of Gitga'at Territory in the Fall of 2017. Thus far 100% of interviewees have stated that this is the most landslides they've ever seen occur in a year. One slide of particular concern wiped out half of a salmon bearing stream in the **Moksgm'ol/Chapple-Cornwall**. As one knowledge holder put it: "*There were so many slides last fall in all these channels , which must have wiped out a lot of the salmon runs. Salmon were just laying their eggs when the slides happened. So watch out in four years."*
- The abundance of kelp dramatically declined in 2015 and has yet to return. Many interviewees are concerned about how this will impact recovering abalone populations.
- During the spring 2017 harvest season 77% of interviewees stated that the weather was colder and/or rainier than usual, with the majority saying that they had never a spring that was quite so rainy and/or cold. Two very experienced harvesters explained that wind patterns began changing from mostly northwesterly winds in the spring to more southeasterly winds about a decade ago, and that this brings unpredictable weather, which then impacts people's ability to harvest. 56% of harvesters noted that there were very few ripe salmonberries in the spring of 2017 due to the cold and rainy weather.

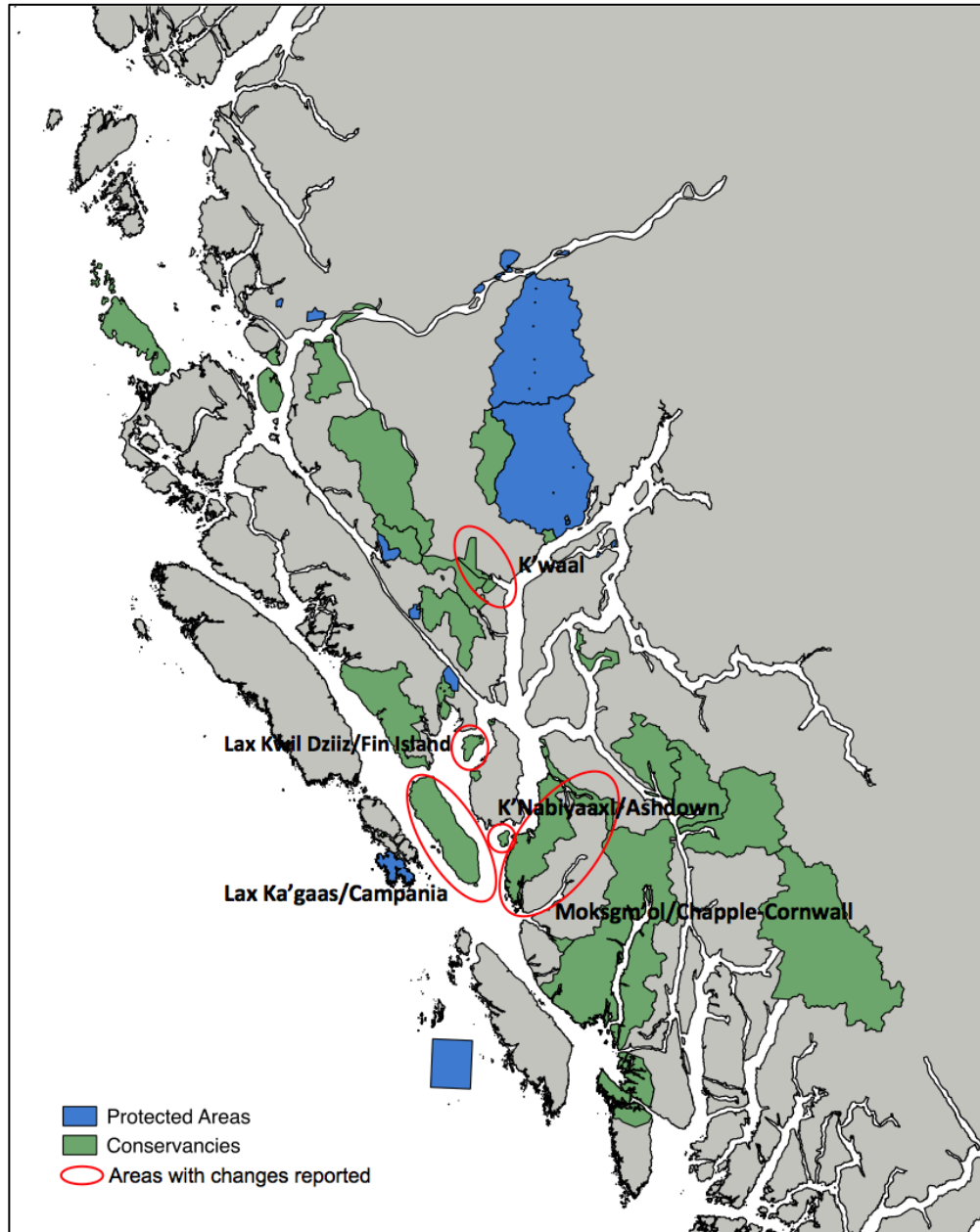


Figure 2. BC Parks conservancies and protected areas within the traditional territory of the Gitga'at First Nation

## 8. RECCOMENDATIONS TO BC PARKS FOR FUTURE INITIATIVES

- Continue efforts to include Indigenous knowledge in monitoring initiatives as it provides different yet complementary information to scientific monitoring.
- Support the longevity of such initiatives by helping to build capacity for a community-based program coordinator to collect and report on data and knowledge shared.
- Ensure that data collection methods and program objectives are shaped in full partnership with the community. Methods of reporting Indigenous knowledge should

also be designed in collaboration with the knowledge holders themselves. Be prepared to begin with a general program design and to reiteratively make adjustments as the program takes shape.

### **Acknowledgements**

This study would not have been possible without the participation and partnership of the Gitga'at First Nation, including the numerous harvesters and Elders who helped to design it. Thank you to Hereditary Chiefs Wahmoodmx (Albert Clifton), Wii Hai Waas (Arnold Clifton), and Sinaxeet (Ernie Hill Jr.) for allowing and encouraging this pilot study. Thank you to the Elected leadership for their support, as well as Chris Picard and Natalie Ban for their guidance at countless points in the design and execution of this study. Heartfelt thanks to all the interview and logbook participants who generously shared their time, insights, knowledge and information for this project. A special thanks to Havana-Jae Fisher and Nicole Robinson for their help designing data collection tools, entering data, interview support and friendship over the course of these pilot seasons. Thanks also to Josh Bolton and Olivia Robinson for their hours of work transcribing interviews. This work was part of a larger project supported by the Social Sciences and Humanities Research Council (SSHRC), National Science and Engineering Research Council (NSERC), Patagonia, the Jacobs Research Foundation, the Elizabeth Henry Scholarship for Communities and Environmental Health, the Vancouver Foundation, the Gitga'at First Nation, and the University of Victoria. We also gratefully acknowledge the financial support of the Province of British Columbia through the Ministry of Environment and Climate Change Strategy and the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

## APPENDIX A. Example Logbook page

Note: Spring logbooks included one page for everyday between April 23<sup>rd</sup> and June 30<sup>th</sup>, 2017

<b>Example Day</b>									
Time of Harvest	laask (seaweed)	txaw (halibut)	ts'mhoon (red snapper)	yeec (spring salmon)	other _____	other _____	other _____	other _____	other _____
	12:00pm			5:00pm	3 pm				
<b>Location</b>	Kagaas (campania)	The location you enter can be as general or specific as you'd like. A map with Gitga'ana place names is provided on Pages 6-7.		Behind Kiel	Kiel				
<b>Who harvested?</b>	Me and Dad			Uncle _____	Me				
<b>Who prepared?</b>	Me and Grammy	Please include the unit (for example, totes, sacs, number of fish, weight, etc) that you use to measure how much you harvested.		Me	Uncle				
<b>Quantity (units)</b>	2 totes			2, 20lbs and 15lbs	10				
<b>Quality (Low - Average - High)</b>	High	Quality and harvest success are based on your own standards. You may specify what made a harvest successful or not, and quality high or not in the "Other Notes/Observations" section.		Average (worms)	High				
<b>Successful harvest? (Yes/No)</b>	Yes			Yes	Yes				
<b>Shared with:</b>	Aunt and Uncle			Family					
<b>Photos or Videos? (Yes/No)</b>	No	Please enter "Yes" if you have photos or videos of your harvest that you are comfortable sharing.		Yes	No				

**Today's weather:**  
Sunny, about 10 degrees,  
wind 0-10NW

**Other Notes/Observations:**

- 3 humpback whales near Alexander
- Salmon had a worm on the outside of its stomach
- The gyentti was delicious!

## APPENDIX B. Spring 2017 Interview Guide

### SECTION A: Background

Date of Interview: \_\_\_\_\_

Name of Interviewee: \_\_\_\_\_

Gender: \_\_\_\_\_

Age: \_\_\_\_\_

### SECTION B: ʔaʔask (seaweed)

#### **B.1. SEAWEED HARVEST**

1. Did you harvest any seaweed this year?

*If no go to section B.2*

#### *Experience*

2. How many days did you spend picking seaweed this spring?
3. How old were you when you first picked seaweed? For how many years have you been picking seaweed since then?
4. Did you harvest seaweed with other people this spring? If yes, with whom?

#### *Phenology*

5. When was the seaweed ready to pick this year?
6. When did the seaweed begin to go "blonde"/be less good to pick?

#### *Abundance*

7. How much seaweed did you harvest this spring? *(please ask interviewee to specify whether amount was in large or small sacs)*
8. Would you say that there was more, less, or the same amount of seaweed available to harvest this year?
  - 7.1. *If there was more or less seaweed than usual: Why do you think there was less (or more) seaweed than usual?*
  - 7.2 Have you changed the way you harvest to adapt to the change in abundance?
9. Did you meet your needs for seaweed this year?
  - 9.1. *(If no to question 11), When was the last time you were able to meet your needs for seaweed?*

#### *Quality*

10. When you were picking this year, was the quality of seaweed better, worse, or the same as normal?
  - 10.1. *If the seaweed quality was different: Has the seaweed been like this before? For how long has the seaweed been this way?*
  - 10.2. *Why do you think the quality of seaweed is different this year?*
  - 10.3. *Have you changed the way you harvest to adapt to the change in quality?*

*Location*

11. If you're comfortable sharing, could you show me on a map where you picked seaweed?

**B.2. PREPARING SEAWEED**

12. Did you dry or prepare any seaweed this year?  
*If no, go to section B.3.*
13. Did anyone else help you prepare your seaweed this year? If yes, who?
14. Did you have to make any changes to the way you prepared seaweed this year, due to weather or seaweed quality?

**B.3. EATING SEAWEED**

15. Have you eaten any of this year's seaweed?  
*If no go to section C*
16. Compared to how normal, did the seaweed taste better, worse or average this year?
  - 16.1. *If taste was different:* Has seaweed tasted like that before? For how long has it been this way?
  - 16.2. Why do you think it tasted different this year?

**B.4. SHARING/TRADING NETWORKS**

17. Did you share or trade your seaweed this spring? If yes, with whom?
18. Did you receive or trade for any seaweed this spring? If yes, from who?

**B.5. OVERVIEW**

19. Overall, would you say that this was a good year for seaweed? Why or why not?

**SECTION C: Txaw (halibut)**

**C.1. HALIBUT HARVEST**

20. Did you catch any halibut this spring?  
*If no go to section C.2*

*Experience*

21. How many days did you go out fishing for halibut this spring?
22. What kind of gear did you use?
23. Did you go halibut fishing with other people this spring? If yes, with whom?
24. How old were you when you first went halibut fishing? For how many years have you been fishing for halibut since then?

*Phenology*

25. When was the halibut good to be caught this year?
26. When did you catch your first halibut this spring?

*Abundance*

27. Would you say that there was more, less, or the same amount of halibut available to catch this year?
  - 27.1. *(If there was more or less halibut than usual: Why do you think there was less (or more) halibut than usual?*
  - 27.2. Have you changed the way you fish to adapt to the change in abundance?
28. How many halibut did you catch?

29. Did you meet your needs for halibut this year?

29.1. If no, when was the last time you were able to meet your needs for halibut?

*Location*

30. If you're comfortable sharing, could you show me on a map where went fishing for halibut this year?

**C.2. PREPARING HALIBUT**

31. Did you prepare any halibut from this year?

*If no, go to section C.3.*

32. How did you prepare it? What parts of the fish did you prepare?

33. Did anyone else help you prepare your halibut this year? If yes, who?

34. Did you have to make any changes to the way you prepared seaweed this year, due to weather or quality of halibut?

**C.3. EATING HALIBUT**

35. Have you eaten any of this year's halibut?

*If no go to section D.*

36. What parts of the fish did you eat?

37. How was it prepared when you ate it?

38. Compared to usual, did the halibut taste better, worse or average this year?

38.1. (If the halibut tasted different), Has halibut tasted that way before? For how long has it tasted that way?

38.2. Why do you think it tasted different?

**C.4. SHARING/TRADING NETWORKS**

39. Did you share or trade your halibut this spring? If yes, with whom?

40. Did you receive or trade for any halibut this spring? If yes, from who?

**C.5. OVERVIEW**

41. Overall, would you say that this was a good year for halibut? Why or why not?

**SECTION D: Yee (Spring Salmon)**

**D.1. SPRING SALMON HARVEST**

42. Did you catch any spring salmon this spring?

*If no go to section D.2*

*Experience*

43. How many days did you go fishing for spring salmon this spring?

44. What kind of gear did you use?

45. Did you go fishing with other people this spring? If yes, with whom?

46. How old were you when you first went fishing for springs? For how many years have you been fishing since then?

*Phenology*

47. When did the springs arrive this year?

48. When did you catch your first spring this year?

*Abundance*



49. Would you say that there was more, less, or the same amount of spring salmon available to catch this year?

49.1. *If there was more or less than usual, why do you think there was less (or more) than usual?*

49.2. Have you changed the way you fish to adapt to the change in abundance?

50. How many springs did you catch this spring?

51. Did you meet your needs for springs this year?

51.1. If no, when was the last time you were able to meet your needs for springs?

#### *Location*

52. If you're comfortable sharing, could you show me on a map where you went fishing for springs this year?

### **D.2. PREPARING SPRING SALMON**

53. Did you prepare any springs from this year? *(If no, go to section D.3.)*

54. How did you prepare it? Which parts of the fish did you prepare?

55. Did anyone else help you prepare your halibut this year? If yes, who?

56. Did you have to make any changes to the way you prepared spring salmon this year, due to weather or quality of the fish?

### **D.3. EATING SPRING SALMON**

57. Have you eaten any of this year's spring salmon?

*If no go to section E.*

58. How was it prepared when you ate it?

59. Compared to how usual, did the halibut taste better, worse or average this year?

59.1. (If the halibut tasted different), Has halibut tasted that way before? For how long has it tasted that way?

59.2. Why do you think it tasted different?

### **D.4. SHARING/TRADING NETWORKS**

60. Did you share or trade your springs from this year? If yes, with whom?

61. Did you receive or trade for any springs from this year? If yes, from who?

### **D.5. OVERVIEW**

62. Overall, would you say that this was a good year for springs? Why or why not?

## **SECTION E: Ts'mhoon ("Red Snapper", Yellow Eye Rockfish)**

### **E.1. RED SNAPPER HARVEST**

63. Did you catch any red snapper this spring?

*If no go to section E.2.*

#### *Experience*

64. How many days did you go out fishing for red snapper this spring?

65. What kind of gear did you use?

66. Did you go fishing for red snapper with other people this spring? If yes, with whom?

67. How old were you when you first went fishing for red snapper? For how many years have you been fishing for them since then?

68. When did you catch your first red snapper this year?

#### *Abundance*

69. Would you say that there was more, less, or the same amount of red snapper available to catch this year?
- 28.1. *(If there was more or less than usual: Why do you think there was less (or more) than usual?*
  - 28.2. Have you changed the way you fish to adapt to the change in abundance?
70. How many did you catch this spring?
71. Did you meet your needs for red snapper this year?
- 30.1. If no, when was the last time you were able to meet your needs for springs?

*Location*

72. If you're comfortable sharing, could you show me on a map where you went fishing for red snappers this spring?

**E.2. PREPARING RED SNAPPER**

73. Did you prepare any red snapper from this year? *(If no, go to section E.3.)*
74. How did you prepare it? Which parts of the fish did you prepare?
75. Did anyone else help you prepare your red snapper this year? If yes, who?
76. Did you have to make any changes to the way you prepared red snapper this year, due to weather or quality of the fish?

**E.3. EATING RED SNAPPER**

77. Have you eaten any red snapper caught this year?
- If no go to section F.*
78. How was it prepared when you ate it?
79. Compared to how usual, did the red snapper taste better, worse or average this year?
- 79.1. (If different), Has red snapper tasted that way before? For how long has it tasted that way?
  - 79.2. Why do you think it tasted different?

**D.4. SHARING/TRADING NETWORKS**

80. Did you share or trade your red snapper from this year? If yes, with whom?
81. Did you receive or trade for any red snapper from this year? If yes, from who?

**D.5. OVERVIEW**

82. Overall, would you say that this was a good year for red snapper? Why or why not?

***SECTION G: Gyenti (Sea cucumber)***

**G.1. GYENTI HARVEST**

83. Did you pick any gyenti this spring?
- If no go to section G.2*

*Experience*

84. How many days did you go out picking gyenti this spring?
85. Did you go picking with other people this spring? If yes, with whom?

86. How old were you when you first went to pick gyenti? For how many years have you been fishing for them since then?

*Abundance*

87. Would you say that there was more, less, or the same amount of gyenti available to pick this year?  
104.1. *(If there was more or less than usual: Why do you think there was less (or more) than usual?*  
104.2. Have you changed the way you pick to adapt to the change in abundance?
88. How much gyenti did you pick this spring? (May have to ask to specify totes or sacs)
89. Did you meet your needs for gyenti this year?  
106.1. If no, when was the last time you were able to meet your needs for gyenti?

*Location*

90. If you're comfortable sharing, could you show me on a map where you went gyenti picking this spring?

**G.2. PREPARING GYENTI**

91. Did you prepare any gyenti from this year? *(If no, go to section G.3.)*  
92. How did you prepare it?  
93. Did anyone else help you prepare gyenti this year? If yes, who?  
94. Did you have to make any changes to the way you prepared gyenti this year, due to weather or quality of the gyenti?

**G.3. EATING GYENTI**

95. Have you eaten any gyenti picked this year?  
*If no go to section H.*  
96. How was it prepared when you ate it?  
97. Compared to how usual, did it taste better, worse or the same?  
114.1. *(If different)* Has gyenti tasted that way before? For how long has it tasted that way?  
114.2. Why do you think it tasted different?

**G.4. SHARING/TRADING NETWORKS**

98. Did you share or trade gyenti from this year? If yes, with whom?  
99. Did you receive or trade for any gyenti from this year? If yes, from who?

**G.5. OVERVIEW**

100. Overall, would you say that this was a good year for gyenti? Why or why not?

**SECTION H: Ts'ak (Chinese slippers/Giant chitons)**

**H.1. CHINESE SLIPPER HARVEST**

101. Did you pick any Chinese slipper this spring?  
*If no go to section H.2*

*Experience*

102. How many days did you go out picking Chinese slipper this spring?  
103. Did you go picking with other people this spring? If yes, with whom?  
104. How old were you when you first went to pick Chinese slipper? For how many years have you been picked them since?

### *Abundance*

105. Would you say that there was more, less, or the same amount of Chinese slipper available to pick this year?
- 122.1. *If there was more or less than usual: Why do you think there was less (or more) than usual?*
- 122.2. Have you changed the way you pick to adapt to the change in abundance?
106. How much Chinese slipper did you pick this spring? (May have to ask to specify totes or sacs)
107. Did you meet your needs for Chinese slipper this year?
- 124.1. If no, when was the last time you were able to meet your needs for gyenti?

### *Location*

108. If you're comfortable sharing, could you show me on a map where you went Chinese slipper picking this spring?

## **H.2. PREPARING CHINESE SLIPPER**

109. Did you prepare any Chinese slipper from this year? (*If no, go to section F.3.*)
110. How did you prepare it?
111. Did anyone else help you prepare Chinese slipper this year? If yes, who?
112. Did you have to make any changes to the way you prepared Chinese slipper this year, due to weather or quality of the Chinese slipper?

## **H.3. EATING CHINESE SLIPPER**

113. Have you eaten any Chinese slipper picked this year?
- If no go to section I.*
114. How was it prepared when you ate it?
115. Compared to how usual, did it taste better, worse or the same?
- 37.1. (If different) Has Chinese slipper tasted that way before? For how long has it tasted that way?
- 37.2. Why do you think it tasted different?

## **H.4. SHARING/TRADING NETWORKS**

116. Did you share or trade Chinese slipper from this year? If yes, with whom?
117. Did you receive or trade for any Chinese slipper from this year? If yes, from who?

## **H.5. OVERVIEW**

118. Overall, would you say that this was a good year for Chinese slipper? Why or why not?

## **SECTION I: 'Yaans (Sea prunes/black katy chitons)**

### **I.1. 'YAANS HARVEST**

119. Did you pick any 'yaans this spring?
- If no go to section I.2*

### *Experience*

120. How many days did you go out picking 'yaans this spring?
121. Did you go picking with other people this spring? If yes, with whom?

122. How old were you when you first went to pick 'yaans? For how many years have you been picking them since then?

*Abundance*

123. Would you say that there was more, less, or the same amount of 'yaans available to pick this year?  
140.1. *(If there was more or less than usual):* Why do you think there was less (or more) than usual?  
140.2. Have you changed the way you pick to adapt to the change in abundance?
124. How many 'yaans did you pick this spring? (May have to ask to specify totes or sacs)
125. Did you meet your needs for 'yaans this year?  
142.1. If no, when was the last time you were able to meet your needs for 'yaans?

*Location*

126. If you're comfortable sharing, could you show me on a map where you went gyenti picking this spring?

**I.2. PREPARING 'YAANS**

127. Did you prepare any 'yaans from this year? *(If no, go to section I.3.)*
128. How did you prepare it?
129. Did anyone else help you prepare 'yaans this year? If yes, who?
130. Did you have to make any changes to the way you prepared 'yaans this year, due to weather or quality of the 'yaans?

**I.3. EATING 'YAANS**

131. Have you eaten any 'yaans picked this year?  
*If no go to section J.*
132. How was it prepared when you ate it?
133. Compared to usual, did it taste better, worse or the same?  
150.1. *(If different)* Have 'yaans tasted this way before? For how long have they tasted that way?  
150.2. Why do you think they tasted different?

**I.4. SHARING/TRADING NETWORKS**

134. Did you share or trade 'yaans from this year? If yes, with whom?
135. Did you receive or trade for any 'yaans from this year? If yes, from who?

**I.5. OVERVIEW**

136. Overall, would you say that this was a good year for 'yaans? Why or why not?

**SECTION J: Hak'wn (horse mussels)**

**J.1. HAK'WN HARVEST**

137. Did you pick any hak'wn this spring?  
*If no go to section J.2*

*Experience*

138. How many days did you go out picking hak'wn this spring?

139. Did you go picking with other people this spring? If yes, with whom?  
140. How old were you when you first went to pick hak'wn? For how many years have you been picking them since then?

#### *Abundance*

141. Would you say that there was more, less, or the same amount of hak'wn available to pick this year?  
158.1. *(If there was more or less than usual):* Why do you think there was less (or more) than usual?  
158.2. Have you changed the way you pick to adapt to the change in abundance?  
142. How many hak'wn did you pick this spring?  
143. Did you meet your needs for hak'wn this year?  
160.1. If no, when was the last time you were able to meet your needs for hak'wn?

#### *Location*

144. If you're comfortable sharing, could you show me on a map where you went to pick gyenti this spring?

### **J.2. PREPARING HAK'WN**

145. Did you prepare any hak'wn from this year? *(If no, go to section J.3.)*  
146. How did you prepare it?  
147. Did anyone else help you prepare hak'wn this year? If yes, who?  
148. Did you have to make any changes to the way you prepared hak'wn this year, due to weather or quality of the hak'wn?

### **J.3. EATING HAK'WN**

149. Have you eaten any hak'wn that was picked this spring?  
*If no go to section K.*  
150. How was it prepared when you ate it?  
151. Compared to usual, did it taste better, worse or the same?  
168.1. *(If different)* Have hak'wn tasted this way before? For how long have they tasted that way?  
168.2. Why do you think they tasted different?

### **J.4. SHARING/TRADING NETWORKS**

152. Did you share or trade hak'wn from this year? If yes, with whom?  
153. Did you receive or trade for any hak'wn from this year? If yes, from who?

### **J.5. OVERVIEW**

154. Overall, would you say that this was a good year for hak'wn? Why or why not?

## **SECTION K: Dzik'wi'its (red/purple sea urchins)**

### **K.1. URCHIN HARVEST**

155. Did you pick any urchins this spring?  
*If no go to section K.2.*

#### *Experience*

156. How many days did you go out picking urchins this spring?  
157. Did you go picking with other people this spring? If yes, with whom?

158. How old were you when you first went to pick urchins? For how many years have you been picking them since then?

#### *Abundance*

159. Would you say that there was more, less, or the same amount of urchins available to pick this year?  
176.1. *(If there was more or less than usual):* Why do you think there was less (or more) than usual?  
176.2. Have you changed the way you pick to adapt to the change in urchin abundance?
160. How many urchins did you pick this spring?
161. Did you meet your needs for urchins this year?  
178.1. If no, when was the last time you were able to meet your needs for urchins?

#### *Location*

162. If you're comfortable sharing, could you show me on a map where you went urchin picking this spring?

### **K.2. PREPARING URCHINS**

163. Did you prepare any urchins from this year? *(If no, go to section F.3.)*
164. How did you prepare it?
165. Did anyone else help you prepare urchins this year? If yes, who?
166. Did you have to make any changes to the way you prepared urchin this year, due to weather or quality of the urchins?

### **K.3. EATING URCHINS**

167. Have you eaten any urchins picked this year?  
*If no go to section K.*
168. How was it prepared when you ate it?
169. Compared to usual, did it taste better, worse or the same?  
186.1. *(If different)* Have urchins tasted this way before? For how long have they tasted that way?  
186.2. Why do you think they tasted different?

### **K.4. SHARING/TRADING NETWORKS**

170. Did you share or trade urchins from this year? If yes, with whom?
171. Did you receive or trade for any urchins from this year? If yes, from who?

### **K.5. OVERVIEW**

172. Overall, would you say that this was a good year for urchins? Why or why not?

## **SECTION L: Uula (Seal)**

### **L.1. SEAL HARVEST**

173. Did you hunt any seal this spring?  
*If no go to section L.2*

#### *Experience*

174. How many days did you go out seal hunting this spring?
175. Did you go hunting with other people? If yes, with whom?

176. How old were you when you first went seal hunting? For how many years have you been hunting seal since then?

#### *Abundance*

177. Would you say that there was more, less, or the same amount of seal available to hunt this year?  
194.1. *(If there was more or less than usual):* Why do you think there was less (or more) than usual?  
194.2. Have you changed the way you hunt to adapt to the change in abundance?
178. How many seals did you hunt this spring?
179. Did you meet your needs for seal this year?  
196.1. If no, when was the last time you were able to meet your needs for seals?

#### *Location*

180. If you're comfortable sharing, could you show me on a map where you went urchin hunting this spring?

### **L.2. PREPARING SEAL**

181. Did you prepare any seals from this year? *(If no, go to section L.3.)*
182. How did you prepare it? Which parts of the seal did you prepare?
183. Did anyone else help you prepare seals this year? If yes, who?
184. Did you have to make any changes to the way you prepared seals this year, due to weather or quality of the seal?

### **L.3. EATING GYENTI**

185. Have you eaten any seal from this year?  
*If no go to section M.*
186. How was it prepared when you ate it? Which parts of the seal did you eat?
187. Compared to usual, did it taste better, worse or the same?  
204.1. *(If different)* Has seal tasted this way before? For how long has it tasted that way?  
204.2. Why do you think they tasted different?

### **L.4. SHARING/TRADING NETWORKS**

188. Did you share or trade seal from this year? If yes, with whom?
189. Did you receive or trade for any seal from this year? If yes, from who?

### **L.5. OVERVIEW**

190. Overall, would you say that this was a good year for seals? Why or why not?

## **SECTION M: Other Traditional Foods**

### **M.1. HARVEST**

191. Did you harvest any seal other traditional foods this spring? If yes, which ones?  
*If no go to section G.2*  
*If the interviewee lists more than one other traditional food, repeat questions in order as necessary.*

#### *Experience*

192. How many days did you go out harvesting \_\_\_\_\_ this spring?



193. Did you go harvesting with other people? If yes, with whom?  
194. How old were you when you first harvested \_\_\_\_\_? For how many years have you been harvesting \_\_\_\_\_ since then?

*Abundance*

195. Would you say that there was more, less, or the same amount of \_\_\_\_\_ available to harvest this year?  
212.1. (*If there was more or less than usual*): Why do you think there was less (or more) than usual?  
212.2. Have you changed the way you harvest to adapt to the change in abundance?  
196. How much \_\_\_\_\_ did you harvest this spring?  
197. Did you meet your needs for \_\_\_\_\_ this year?  
214.1. If no, when was the last time you were able to meet your needs for \_\_\_\_\_?

*Location*

198. If you're comfortable sharing, could you show me on a map where you went harvested \_\_\_\_\_ this spring?

**M.2. PREPARING \_\_\_\_\_**

199. Did you prepare any \_\_\_\_\_ from this spring?  
(*If no, go to section K.3.*)  
200. How did you prepare \_\_\_\_\_? Which parts did you prepare?  
201. Did anyone else help you prepare \_\_\_\_\_ this year? If yes, who?  
202. Did you have to make any changes to the way you prepared \_\_\_\_\_ this year, due to weather or quality of the \_\_\_\_\_?

**M.3. EATING \_\_\_\_\_**

203. Have you eaten any \_\_\_\_\_ from this spring?  
*If no go to section L.*  
204. How was it prepared when you ate it? Which parts did you eat?  
205. Compared to usual, did \_\_\_\_\_ taste better, worse or the same?  
222.1. (If different) Has \_\_\_\_\_ tasted this way before? For how long has \_\_\_\_\_ tasted that way?  
222.2. Why do you think they tasted different?

**M.4. SHARING/TRADING NETWORKS**

206. Did you share or trade any \_\_\_\_\_ from this spring? If yes, with whom?  
207. Did you receive or trade for any \_\_\_\_\_ from this spring? If yes, from whom?

**M.5. OVERVIEW**

208. Overall, would you say that this was a good year for \_\_\_\_\_? Why or why not?

**Section N: Weather and Environment**

209. Did you notice anything unusual about the weather this spring? If yes, what was different?  
226.1. *If the weather was different*, Have you heard of the weather being this way in the past? What year did it start being different?
210. Did you notice any changes in the landscape or water this spring (for example: new landslides, red tide...)
211. Did you notice any unusual plants or animals? If yes, what were they?
212. Did you notice any unusual animal behaviour? If yes, can you describe it?

**SECTION O: Interview and log book experience**

213. What was your overall experience participating in this interview?
- a. Excellent (I would like to participate in future harvest season interviews) [3pts]
  - b. Good [2pts]
  - c. Poor (I did not enjoy the experience, and would prefer to not participate in the future) [0pts]
  - d. Neutral [1pt]
214. What changes would you suggest to improve this interview in the future?
215. Did you use a logbook?  
*If not, why not?*
216. What was your overall experience completing the logbook?
- a. Excellent (I would like to complete another one in the future) [3pts]
  - b. Good [2pts]
  - c. Poor (I did not enjoy the experience, and would prefer to not participate in the future) [0pts]
  - d. Neutral [1pt]
217. What changes would you suggest to improve the logbook in the future?

**Thank you very much for participating in the pilot study for the  
Gitga'at Environmental Knowledge Project!**