



## **BACKGROUND REPORT**

### ***Project Overview and Appendices***

Tides Canada Indigenous Stewardship Data  
Tools Solutions Initiative

June 2018

## Project Summary: Tides Canada Data Tools Solutions Initiative

Promoting knowledge and wise stewardship of wildlife, land, water and other natural resources is one of Tides Canada's four northern priorities under its Northern strategy<sup>1</sup>. With a focus on this pillar, Tides Canada has been supporting a number of Indigenous stewardship programs in the NWT, Yukon and Nunavut to help build their monitoring capacity, through community-based monitoring initiatives and Indigenous Guardian programs.



Tides Canada's Northern Priorities

The Tides Canada Data Tools Solutions Initiative involved pursuing the following objectives and activities, in assessing the needs of Northern Indigenous Stewardship programs with respect to data collection and management tools:

### Needs Assessment and Solutions Research

- A Needs Assessment Survey and Report intended to help Tides Canada learn more about what the successes and challenges have been in this aspect of Northern Indigenous Stewardship and other community-based monitoring programs, especially with respect to the tools being used, and what the interests were to build more knowledge and strengthen skills and overall capacity. The Needs Assessment Report Appendix 2 discusses current data collection and information management approaches, as well as the relevant gaps, longer-term goals, interests and objectives of the Northern programs Tides Canada is funding.
- Identifying, through discussions with subject matter experts, leading-edge tools and approaches suitable for current and emerging Northern Indigenous Stewardship programs;

<sup>1</sup> About Tides Canada: Tides Canada's mission is to provide uncommon solutions for the common good by helping Canadians secure a healthy environment in ways that promote social equity and economic prosperity. We accelerate positive change, achieve greater impact, and advance solutions across the country by bringing giving, investing, and doing under a single roof.

### **Collaboration and Discussion: Tides Canada Data Tools Solutions Conversation**

- A two-day Tides Canada Data Tools Solutions Conversation took place in Somba K'e/Yellowknife, NT, March 7-8, 2018.<sup>2</sup> The workshop brought together 17 Indigenous government/organization representatives and 18 resource people and subject matter experts to share information, build relationships and address data tool needs and possible solutions;

### **Identification of Recommendations and Next Steps**

- *Data Tool Selection: An Introductory Guide for Northern Indigenous Stewardship Programs* is a key product of the workshop, providing a decision-making framework that can be used to support Northern Indigenous Stewardship as they work to choose appropriate data tools for their programs;
- The Guide is intended as a first step in what will likely be an ongoing conversation about data tools, and should be treated as a living guidance document. Tides Canada encourages Northern Indigenous Stewards and other interested parties to keep working on the development of this guide, as data management and networks evolve North of 60!

The following documents from the Tides Canada Data Tools Solutions Initiative are included as part of this Background Report:

Appendix 1: Project Announcement.....	4
Appendix 2: Northern Program Participant Needs Assessment Survey Report .....	5
Appendix 3: Northern Guardian / Community –Based Monitoring Data Tools Solutions Workshop Participants .....	15
Appendix 4: Tides Canada Data Tools Solutions Conversation: Agenda.....	18
Appendix 5: A Review of Specific Data Tools .....	21

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<sup>2</sup> See *Data Tool Selection: An Introductory Guide for Northern Indigenous Stewardship Programs*, which this Background Report is an accompaniment to.

## Appendix 1: Project Announcement



### **“From Counting to Understanding” Tides Canada is Inviting You to Join a Data Tools Solutions Conversation**

*Indigenous Guardians and other community-based lands and resources program staff are the “boots-on-the-ground” in their communities, and act as the “eyes and ears” of their respective territories, serving to monitor, collect and make sense out of information in order to help decision-makers in their communities and in their regions make good choices for the land, the water and wildlife.<sup>1</sup> Making good choices about data and knowledge management tools that are best suited for these programs, the data we collect and how to use it can be complex and sometimes overwhelming.*

- Are you curious about new and emerging tools for collecting field data?
- Are you looking for more efficient ways to collect data in the field?
- Are you hoping to collect and apply environmental monitoring data in your territory in a way that will get your organization results?
- Do you struggle with effectively sharing environmental and cultural information with your community?
- Wish you had more opportunities to access expertise, share resources and connect with other indigenous people asking themselves the same questions?

If so, then Tides Canada, with the support of S.Ward Consulting and PlanIt North, is inviting you to tell us and others about your environmental data collection and display interests and challenges and to give you an opportunity to spend time with leading subject matter and community-based experts that are tackling these challenges in innovative ways.

Our team will be reaching out soon to gauge your interest in joining this conversation. If you are interested, we would like to learn more about what your successes and challenges have been in this aspect of your work, what your interests are to build more capacity, and what your availability is to join us in Yellowknife for a two-day results-based conversation prior to the end of March.

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<sup>1</sup>TNC 2017 <http://www.indigenousguardianstoolkit.ca>.

## Appendix 2: Northern Program Participant Needs Assessment Survey Report

### 1. Background and Introduction to the Conversation Objectives

Indigenous Guardians serve to monitor, collect and make sense out of information in order to help decision-makers in their communities and in their regions make good choices for the land, the water and wildlife. What Guardians do, and what other Indigenous groups have been doing for many years is commonly referred to as “community-based monitoring”.

As described in TNC Canada’s Indigenous Guardians Toolkit (2017), “Data are the concrete pieces of information that are produced by your monitoring activities. Data is collected, stored in some way, and analyzed so that the community can use it to make decisions or share it with external groups to inform and influence outcomes”.

“Tools can range from paper forms, survey forms, or handheld devices like tablets, phones, laptops, etc. In some cases you may want to photograph or video document observations, or leave remote cameras behind to capture footage. Increasingly Guardian programs have been making creative use of tools like drones, mapping and GIS, social media and open-source and custom applications to gather and document information.”

Making good choices about data and knowledge management tools that are best suited for these programs, the data to collect and how to use it can be complex and sometimes overwhelming.<sup>3</sup>

The Needs Assessment Survey was intended to help Tides Canada learn more about what the successes and challenges have been in this aspect of Northern Guardian and other community-based monitoring programs, especially with respect to the tools being used, and what the interests are to build more knowledge and strengthen skills and overall capacity. This Needs Assessment Report discusses current data collection and information management approaches, as well as the relevant gaps, longer-term goals, interests and objectives of the Northern programs Tides is funding.

With completion of the Needs Assessment Report, the following project activities are underway or planned:

#### **Solutions Research**

- Identifying, through discussions with subject matter experts, leading-edge tools and approaches suitable for emerging Northern Guardian programs.

#### **Collaboration and Discussion: Data Solutions Conversation in Yellowknife, March 7-8, 2018**

- Bringing Northern program and technical leads and subject matter experts together to share information, build relationships, discuss gaps, and to generate potential solutions to northern data and information management gaps and challenges.

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<sup>3</sup> TNC Canada 2017 <http://www.indigenousguardianstoolkit.ca>

## Identification of Recommendations and Next Steps

- Identifying specific recommendations that will lead to the development of approaches for data collection, information management, collaboration and harmonization (where appropriate) between Northern Guardian and community-based monitoring programs; and,
- Developing recommendations for the Tides Canada Northern Office and program leads respecting future investments in tools and data collection / information management approaches.

## 2. Summary results and analysis from online Needs Assessment Survey

Full survey responses are collated in Appendix 2.A. The following presents summary highlights of the Needs Assessment Survey.

### 2.1. Survey respondents

Eleven participants from across the North were invited to complete the survey. The respondents are largely comprised of Northern Land and Resource Managers, Coordinators and Technicians:

Name	Position	Organization
Deborah Simmons	Executive Director	ʔehdzo Got'Inę Gots'ę Nákedı (Sahtú Renewable Resources Board, SRRB)
Dahti Tsetso	Resource Management Coordinator	Dehcho First Nations (DFN)
Mike Low	Technical Advisor / Coordinator	Dehcho First Nations AAROM (DFN-AAROM)
Daniel Taukie	Inuit Marine Monitoring Program Coordinator	Nunavut Tunngavik Inc. (NTI)
Michael Birlea	GIS Coordinator	Tłıchq Government (TG)
Ray Griffith	Manager Wildlife, Lands and Environment	Lutsel K'e Dene First Nation (LKDFN)
Chloe Brogan	Community Based Monitoring Program Coordinator	Inuvialuit Regional Corporation (IRC)
Peter Redvers	Director of Lands, Resources, and Negotiations	Kát'odeeche First Nation (KFN)
Henry Tambour	Lands Technician	Kát'odeeche First Nation (KFN)
Sjoerd van der Wielen	Lands and Resources Director	Déljnę Got'jnę Government (DGG)
Josh Barichello	Assistant Director, Lands Department	Ross River Dena Council (RRDC)

## 2.2. A few community-based monitoring and Indigenous Guardians programs in the North!

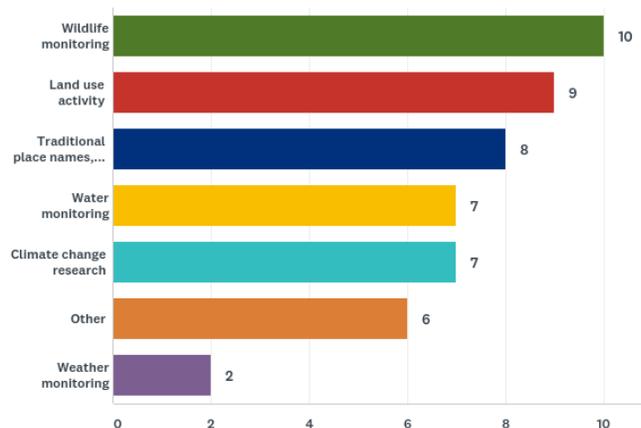
Organization	Community-Based Monitoring/Indigenous Guardian Programs
<p>ᑭᑭᑭᑭᑭᑭ ᑭᑭᑭᑭᑭᑭ ᑭᑭᑭᑭᑭᑭ (Sahtú Renewable Resources Board)</p> 	<ul style="list-style-type: none"> <li>• Nę K'ə Dene Ts'ı̨ı Forum</li> <li>• Sahtú Youth Network</li> <li>• Nío Nę P'ənę Guardian Program</li> <li>• Belare Wíle Gots'ę ʔekwę Working Group</li> <li>• Sahtú Community Mapping Initiative</li> <li>• Dene Ts'ı̨ı School</li> <li>• Cross-Cultural Research Camp</li> <li>• Health and Climate Change Adaptation</li> </ul>
<p>Dehcho First Nations</p> 	<ul style="list-style-type: none"> <li>• Dehcho K'ehodi Stewardship &amp; Guardian Program</li> <li>• Dehcho AAROM</li> </ul>
<p>Nunavut Tunngavik Inc.</p>	<ul style="list-style-type: none"> <li>• Inuit Marine Monitoring Pilot Program</li> <li>• (SmartIce) potential partnership possibilities</li> </ul>
<p>Tlicho Government</p>	<ul style="list-style-type: none"> <li>• Marian Watershed Stewardship Program</li> <li>• Boots on the Ground</li> <li>• Tlicho Aquatic Ecosystem Monitoring Program</li> </ul>
<p>Lutsel K'e Dene First Nation</p>	<ul style="list-style-type: none"> <li>• Nihatni Dene - summer on-the-lake program</li> <li>• Nihadi Xa - monitoring vicinity of Gahcho Kue Mine</li> <li>• Bathurst Caribou Monitoring</li> <li>• Beverly Caribou Monitoring</li> </ul>

Inuvialuit Regional Corporation	<ul style="list-style-type: none"> <li>Inuvialuit Harvest Study</li> </ul>
Kátł'odeeche First Nation	<ul style="list-style-type: none"> <li>Nahendeh Kehotsendj</li> </ul>
Déljñę Got'jñę Government	<ul style="list-style-type: none"> <li>Déljñę Mapping Project</li> <li>DFO fish monitoring</li> <li>Caribou monitoring</li> <li>Future guardianship program</li> </ul>
Ross River Dena Council	<ul style="list-style-type: none"> <li>Nío Nę P'ęné Guardian Program</li> </ul>

### 2.3. Program focus

Northern programs are engaged in a wide range of activities – a case of ‘doing everything’, with a majority of programs undertaking wildlife monitoring, surveillance of land use activities, traditional place name and cultural places research, water monitoring, and climate change research.

Q6 Focus of your community-based monitoring and/or Indigenous Guardian programs

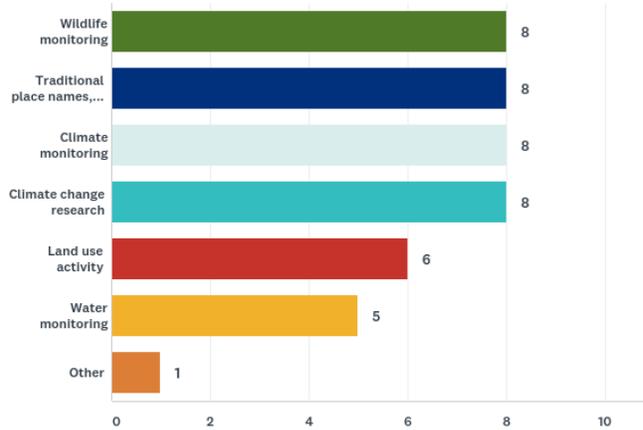


Given greater resources and capacity, there was consistency in terms of the activities the program leads would like to spend more effort on, including:

- wildlife monitoring,
- traditional place name and cultural places research, and
- climate change research.

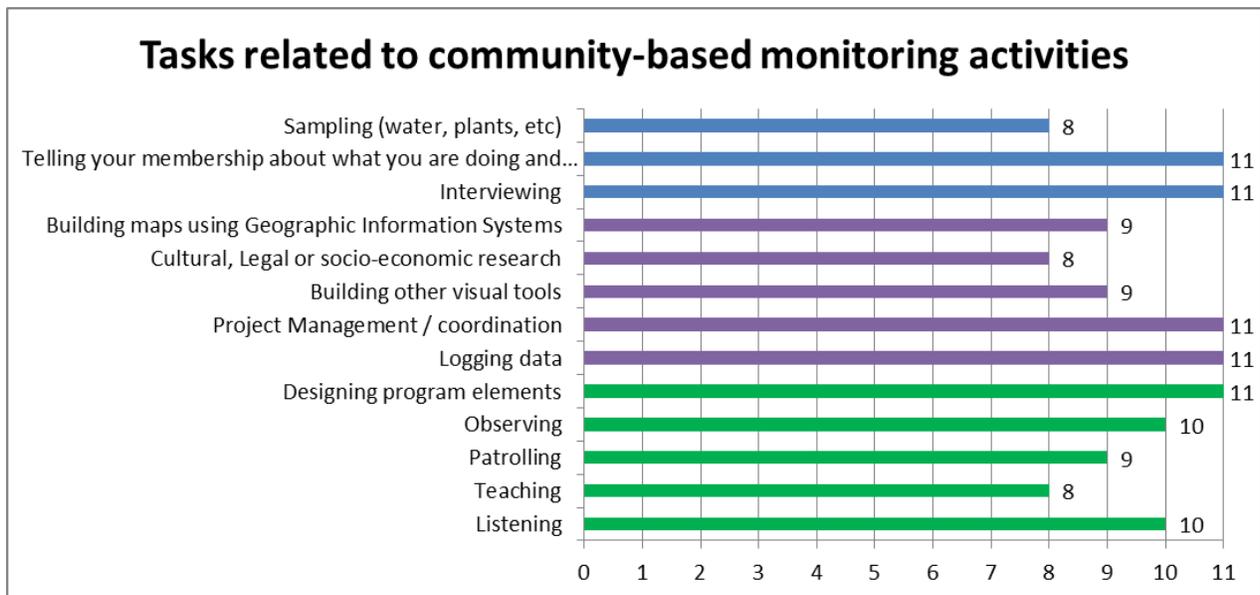
In addition, there was high interest for increased climate monitoring activities, suggesting a desire for more climate-related monitoring and research in general. This could be an area for specific funding development.

Q8 If your organization had unlimited capacity, which of the following activities would you like to spend more time on?



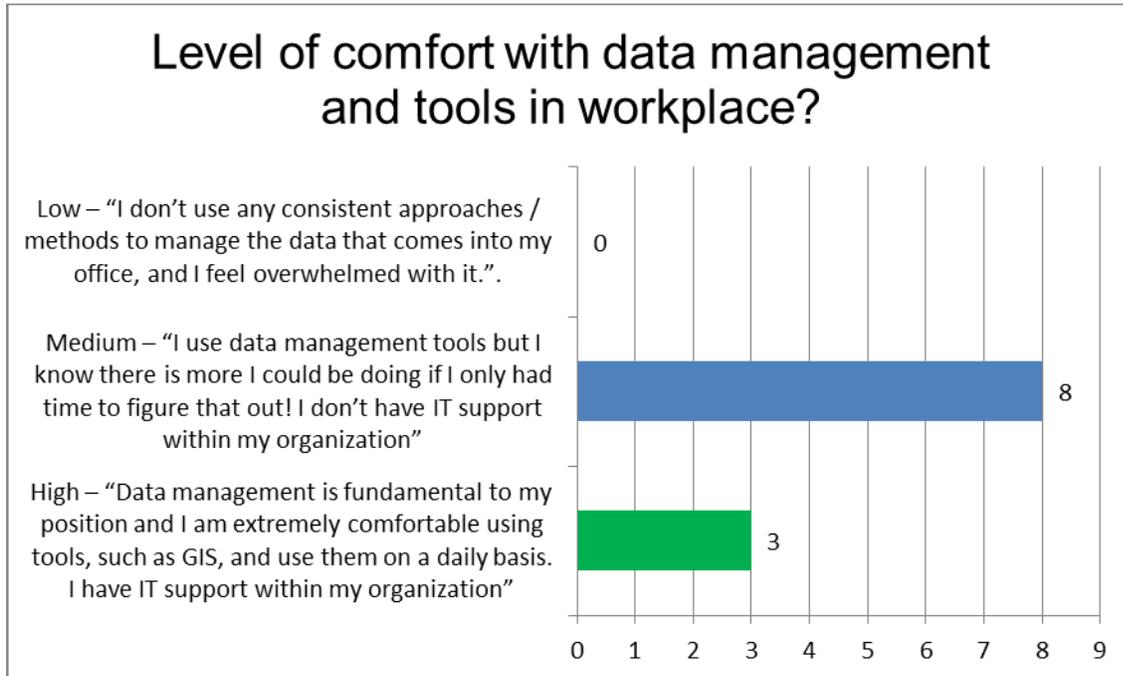
#### 2.4. Community-based monitoring activities and data management

Impressively, all programs were engaged in a wide range of community-based monitoring activities out on the land (data gathering), at the desk (data analysis and display) and in the community (communications).



- In the community
- At the desk
- On the land

Though all survey respondents were comfortable with some degree of data management, the majority were open to additional support.



## 2.5. On the land: Geo-spatial and other tools used in the field

### Field data collection methods

Northern programs report using a variety of collection methods, including:

- Various qualitative and quantitative methods
- Observations
- Monitoring

### Geo-spatial, GIS and other tools employed in data collection and management

Northern programs are using quite a variety of technology as they work "in the field", "at the desk" and "in the community", including:



- Automatic Identification Systems (AIS)
- Trailmark
- iPads and other tablets
- inReach
- GPS
- SPOT
- Mapping
- Google Earth
- Google Maps



- ArcGIS
- ArcMap
- ArcCatalog
- ESRI
- Excel and other Microsoft Office programs
- Fulcrum

### *Challenges and training needs in collecting and using field data*

Identifying the right tools and technologies for collecting and using field data according to program needs has been highlighted as a challenge, and training in and maintenance of the tools themselves is required for effective use:

- *“We need a tool capable of multimedia data collection and processing: GPS and mapping data, videos, photos, field notes, tape recordings – how do we coordinate all that into a data documentation and management system. What are the most effectively multimedia data gathering tools that will feed into the most seamless platform, where we can do some processing over time as well as present the data in raw form and report on in various ways? Also while the data gathering is easy to do in theory, there are challenges in practice: frozen batteries or fingers, rain, etc.”* – Peter Redvers, KFN (survey follow-up communication)
- *“The biggest challenge is training community members in using electronic devices. Devices also get lost, damaged or missing parts regularly. Maintenance of devices is expensive.”* – Sjoerd van der Wielen, DGG
- *“The biggest challenges have been to increase capacity for technology usage and to ensure that Hunters & Trappers Committees in the communities can sustain a Wi-Fi connection.”* – Chloe Brogan, IRC
- *“Keeping the equipment working was a challenge and training staff to use it.”* – Ray Griffith, LKDFN

Regional capacity in general was also raised:

- *“The SRRB is seeking ways to support development of socio-ecological leadership capacity in the Sahtú Region through diverse means including Environmental Monitor training, the Ne̱ K’ə Dene Ts’ḻ Forum, Cross-Cultural Research Camps, the Dene Ts’ḻ School, and supporting community involvement in various research and monitoring projects and programs.”* – Deborah Simmons, SRRB
- *“Having more people trained in data management and available to work [is a challenge].”* – Josh Barichello, RRDC
- *“We get great support from Trailmark. Because of training and staff turnover we would be non-functional without Trailmark support.”* – Ray Griffith, LKDFN

Specific challenges in gathering qualitative data were raised, as well as ensuring that Traditional Knowledge is collected and factored into decision-making:

- *“The type of research/monitoring that requires advanced training is related to qualitative documentation processes. Due to lack of capacity to undertake this kind of work, there tends to be a*

*default to simpler quantitative methods that may not be as meaningful or valid.” – Deborah Simmons, SRRB*

- *“More work on traditional place names research [is needed].” – Dahti Tsetso, DFN*
- *“Ensuring Traditional Knowledge is taken into consideration when it comes to decision making.” – Michael Birlea, TG*
- *“Right now data collection is based on extensive interviews/workshops with knowledge holders and observations... [The] biggest challenge in applying these methods has been having them taken seriously by policy makers.” – Josh Barichello, RRDC*

## 2.6. In the community: Reporting back on monitoring data and results

A wide range of conventional reporting tools are in use by the programs, but basic tools such as Microsoft Excel were not considered particularly effective for data management or reporting, and few data presentation platforms appeared to be utilized at present, including:

- Nunaliit Atlas Framework (in progress)
- ALCES modelling tool
- Books
- Websites
- Facebook and other social media
- Community radio, notices and bulletin boards
- In-person workshops, public forums, meetings, presentations
- Cross-Cultural Research Camp
- Excel
- Posters



**Nunaliit**

Nunaliit Atlas Framework

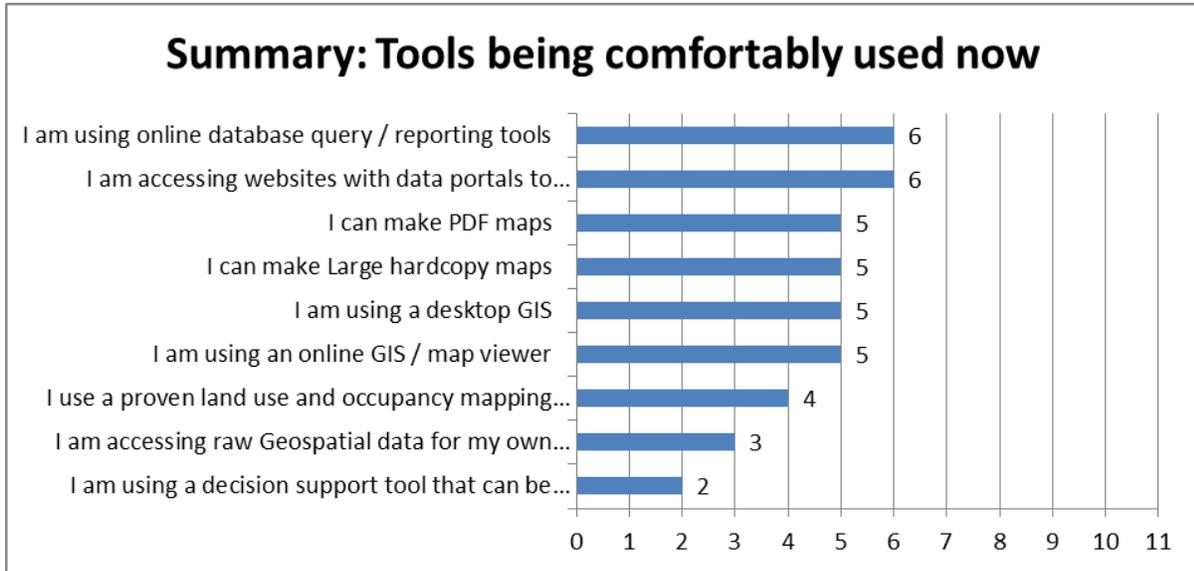
For some of the programs, community reporting was still in the early stages, and respondents raised both effective methods and challenges they encounter, including:

- *“Facebook, books and in-person/on the land activities are especially effective. Higher tech approaches are still in experimental stages.” – Deborah Simmons, SRRB*
- *“The challenge is to keep it interesting for the community members, while telling them all they need to know. Also the community members should not feel that we are withholding information, but we should also not overwhelm them with boring data.” – Sjoerd van der Wielen, DGG*

Importantly, Mike Low of the DFN-AAROM program noted, *“There is no real way for the communities to access and use the data.”* This raises the need for data platforms that go beyond simply reporting functions, and that can be interactive for the community.

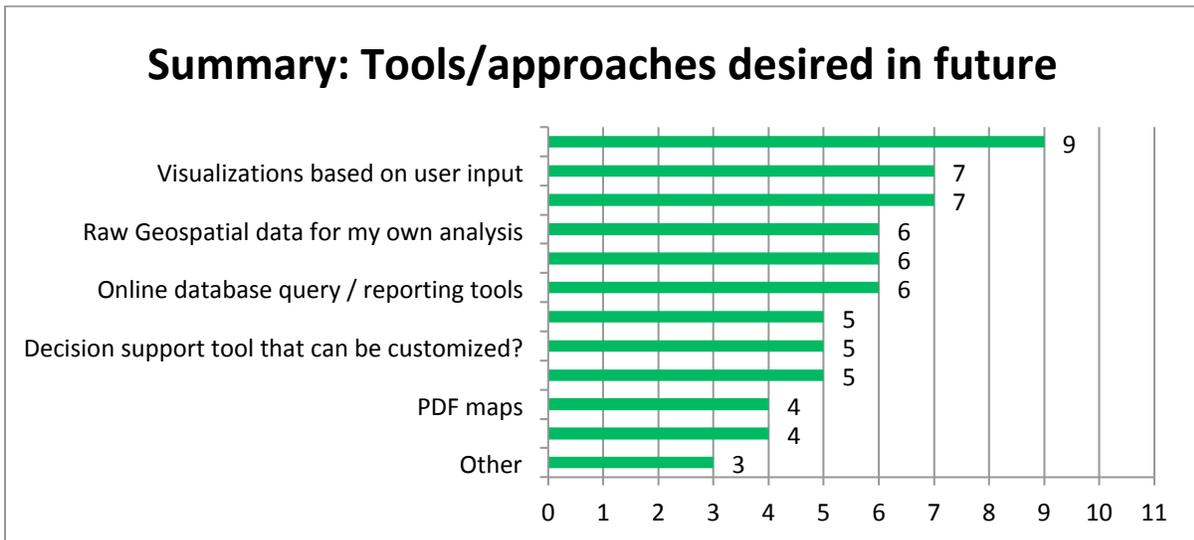
## 2.7. Summary: “What we are using now”

A wide range of GIS and other mapping functions are currently being employed across the Northern programs:



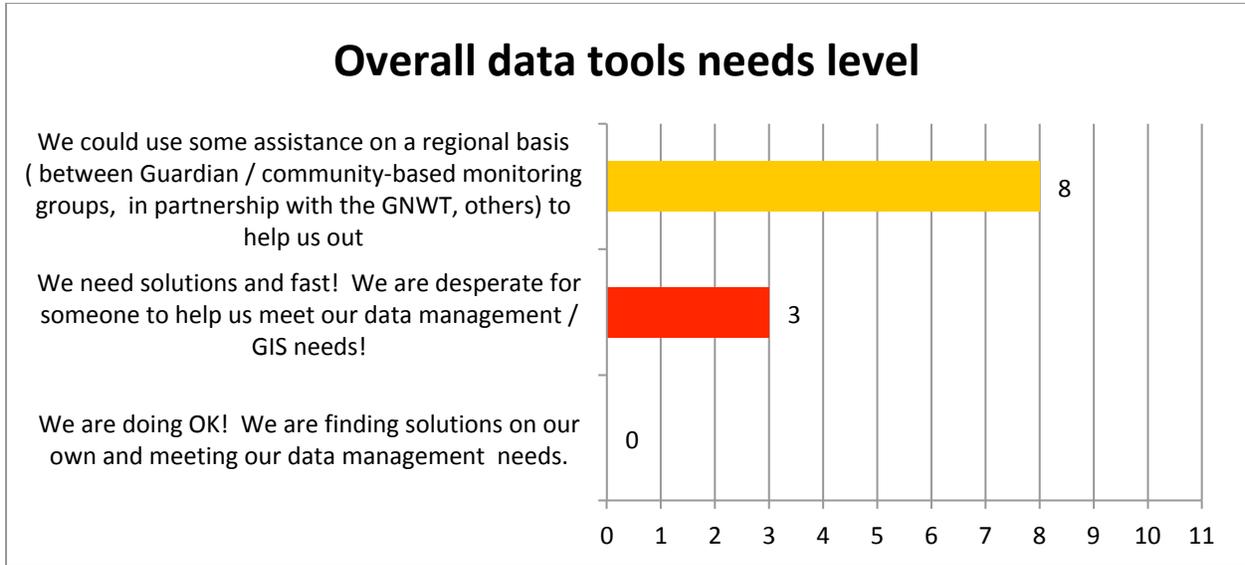
**2.8. Summary: In future**

However, there is strong demand across the programs for expanded data management/reporting and mapping resources:



**2.9. Summary: Need for this work!**

It is clear that the Northern programs in this study desire additional support around data collection tools and information management, which suggests that this conversation comes at the right time.



Respondents were eager to hear about potential solutions for improving collection, storage, access and analysis of data, and there was specific interest in coordination across regions and scales:

- *“There is a need for community or regional map-based databases.”* – Mike Low, DFN-AAROM
- *“Overall there are many Guardian programs just starting up or already, as well as monitoring programs. Acknowledging that every program collects different information and has different needs, it would be really good to have a coordinated database that can accommodate the information of all of these different monitoring and Guardian programs. A next step is to utilize all this data to its full capacity – the power of putting the data out there, under the right conditions.”* – Sjoerd van der Wielen, DGG (survey follow-up communication)
- *“What are our different options for sharing data? NWT, Pan-Arctic, nationally? We have substantial baseline and comparative data – what do we do with it? We’re ready to share it with the world, but want to do it properly and ensure the safety of the information too.”* – Michael Birlea, TG (survey follow-up communication)

### Appendix 3: Northern Guardian / Community –Based Monitoring Data Tools Solutions Workshop Participants

Indigenous Government/Organization participants		
Name	Position	Organization
Deborah Simmons	Executive Director	ᐱehdzo Got'Inę Gots'ę Nákedı (Sahtú Renewable Resources Board, SRRB)
Mike Low	Technical Advisor / Coordinator	Dehcho First Nations AAROM (DFN-AAROM)
Robyn McLeod	Resource Management department	Dehcho First Nations
Daniel Taukie	Inuit Marine Monitoring Program Coordinator	Nunavut Tunngavik Inc. (NTI)
Michael Birlea	GIS Coordinator	Tłıchq Government (TG)
Terrell Knapton – Pain	Land Use Planner Intern	Tłıchq Government (TG)
Ray Griffith	Manager Wildlife, Lands and Environment	Lutsel K'e Dene First Nation (LKDFN)
Ron Fatt	Councillor	Lutsel K'e Dene First Nation (LKDFN)
Gloria Enzoe	Ni hadi Xa Coordinator, WLE Department	Lutsel K'e Dene First Nation (LKDFN)
Chloe Brogan	Community Based Monitoring Program Coordinator	Inuvialuit Regional Corporation (IRC)
Peter Redvers	Director of Lands, Resources, and Negotiations	Kátł'odeeche First Nation (KFN)
Henry Tambour	Lands Technician	Kátł'odeeche First Nation
Sarah Taylor	Environmental Program Coordinator	Kátł'odeeche First Nation

Cyre Yukon	Acting Lands Advisor	Déljñę Got'jñę Government (DGG)
Marlene Tutcho		Déljñę Got'jñę Government
Josh Barichello	Assistant Director, Lands Department	Ross River Dena Council (RRDC)
Robby Dick	Lands Department	Ross River Dena Council

<b>Resource people, subject matter experts, presenters and observers</b>		
<b>Name</b>	<b>Position</b>	<b>Organization</b>
Steve Ellis	Program Lead, Northern Canada	Tides Canada
Shannon Ward	Project Manager, Workshop coordinator and facilitator	Shannon Ward Consulting
Tee Lim	Research, Workshop coordinator and facilitator	Shannon Ward Consulting
Brenda Van Hauvert	Note-taker	Volunteer
Peter Pulsifer	Principal Investigator	Exchange for Local Observations and Knowledge of the Arctic (ELOKA)
Lara Hoshizaki	Regional Monitoring System Coordinator	Coastal Stewardship Network
Morgan Voyageur	Acting CBM Coordinator	Athabasca Chipewyan First Nation CBM/Guardian Program
Noni Paulette	Mapping and GIS Specialist	The Firelight Group

Janelle Kuntz (by Skype)	Research Coordinator	The Firelight Group
Carolyn Dubois	Director, Water Program	The Gordon Foundation
Lindsay Day	DataStream Coordinator	Mackenzie DataStream
Claire Hutton	Community Conservation and Leadership Advisor	TNC Canada
Tracey Williams	Northwest Territories Conservation Lead	TNC Canada
Joel Health (by phone)	Executive Director	Arctic Eider Society; SIKU
Sarah Rosolen	Manager, South Slave Research Centre	Aurora Research Institute
Gila Somers	Watershed Management Advisor	Environment and Natural Resources, Government of the Northwest Territories
Sydney Stenekes	Graduate student, Tracking Change project	University of Alberta
Elaine Maloney	Project Coordinator, Digital Library North	University of Alberta

## Appendix 4: Tides Canada Data Tools Solutions Conversation: Agenda

# Tides Canada Data Tools Solutions Conversation

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**March 7-8, 2018**  
Champagne Room  
Corner 50th Street & 50th Ave  
(Upstairs on the second floor, opposite CIBC)  
Somba K'e/Yellowknife

## AGENDA

### Day 1 - March 7th

#### *Introductions and Conversation Context*

8:15-8:45	Arrival, Refreshments	
8:45-9:15	<b>Welcome, Introductions Opening Remarks Conversation Objectives</b>	Steve Ellis, Tides Canada
	<b>Confirm conversation Objectives Review and confirm Conversation Agenda Housekeeping Confirm Group Norms</b>	Shannon Ward
9:15-10:15	<b>Northern Guardian/CBM Program Introductions</b>	Northern participants
10:15- 10:30	<b>Needs Assessment Report Summary</b>	Tee Lim
10:30- 10:45	Break	

**Session 1 – Challenges and Innovations in Data Management**

10:45-11:15	<b>The TNC Guardian Toolkit and the Challenge of Data Management</b>	Claire Hutton, TNC Canada
11:15-noon	<b>Innovations in Data Platforms and Data Networks</b>	Peter Pulsifer, ELOKA with Carolyn DuBois, The Gordon Foundation
12:00-1:00	Lunch (catered)	

**Session 2 – Case Studies: Data Solutions Lessons Learned Elsewhere**

1:45-2:15	<b>Case Study #1: Coastal Stewardship Network</b>	Lara Hoshizaki, Coastal Stewardship Network
2:15 –2:45	<b>Case Study #2: Sahtú Renewable Resources Board (SRRB) Regional Monitoring Program</b>	Deborah Simmons, SRRB
2:45-3:00	Break	
3:00-3:30	<b>Case Study #3: Peace-Athabasca Delta Ecological Monitoring Program</b>	Morgan Voyageur, ACFN
3:30-4:00	<b>Case Study #4 – Clyde River Atlas Project and SIKU: The Inuit Knowledge Wiki and Social Mapping Platform</b>	Peter Pulsifer Joel Heath
4:00-4:30	<b>Day 1 Wrap-Up / Check-in</b>	Shannon/Tee

**Day 2 – March 8th**

**Session 3 – Data Collection and Management in Practice**

8:30-8:45	Arrival, Refreshments	
8:45-9:00	<b>Recap of Day 1</b> Keep your layers close as we'll be heading outside shortly!	Shannon

9:00-9:30	<b>On the Land - Data Collection Tools:</b> Introduction to a range of data collection tools, in preparation for field session next	Lara/Noni/Morgan
9:30-10:45	<b>On the Land - Data Collection in Practice:</b> Field session outside led by Lara, Noni and Morgan, where we will practice with the tools	All (Frame Lake)
10:45-11:00	Break	
11:00-12:00	<b>Panel Discussion: Kátł'odeeche First Nation Nahendeh Kehotsendij</b>	(KFN) - Peter Redvers/Henry Tambour/Sarah Taylor, with Peter Pulsifer and Lara Hoshizaki
12:00-1:00	Lunch (catered)	
1:00-2:30	<b>At the Desk and In the Community - Data Management and Presentation in Practice:</b> Presenting, visualizing and reporting back on the data collected in the morning. Discussion of what groups liked and what they didn't.	All, led by Lara, Noni and Morgan
2:30-2:45	Break	

#### *Session 4 – Onward and Upward*

2:45-3:45	<b>Pros and Cons of Tested / Discussed Data Tools</b> <i>TNC facilitated a group discussion on pros and cons of data tools</i>	Facilitated by Claire Hutton, TNC
3:45-4:30	<b>Northern Participant Round Table</b>	Northern participants

## Appendix 5: A Review of Specific Data Tools<sup>4</sup>

A number of tools were tested and/or discussed at the Tides Canada Data Tools Solutions Conversation in Yellowknife. The group took some time to review each and identify pros, cons and additional questions they had for each tool. Results of that exercise are presented in the Table below.

It is by no means an exhaustive list, but may be a useful refresher in thinking through many of the considerations listed in the Data Tool Selection Guide.

Tool	What did you like? (Pros)	What didn't you like? (Cons)	Questions
InReach	<ul style="list-style-type: none"> <li>• Can be used in the field</li> <li>• Robust in cold weather</li> <li>• People already using them – functions as a safety tool</li> <li>• Data can be input into anything that reads GPX</li> <li>• Good signal</li> <li>• Doesn't require internet</li> <li>• Phone app available</li> </ul>	<ul style="list-style-type: none"> <li>• Buttons small – requires gloves off</li> <li>• Uses satellite time – expensive</li> <li>• For specific uses only</li> <li>• No audio/video?</li> </ul>	<ul style="list-style-type: none"> <li>• Goes through multiple databases – do third parties retain control?</li> <li>• How complex to make custom forms?</li> <li>• Are there limited options/queries?</li> </ul>
GeoKeeper	<ul style="list-style-type: none"> <li>• Easy to use</li> <li>• Enforcement and notification capability</li> <li>• Categories and specific programmability</li> <li>• Specific to needs of community (local depth)</li> <li>• Evolution – tested using paper forms, refined, then created app</li> </ul>	<ul style="list-style-type: none"> <li>• Need a lot of space/storage</li> <li>• Custom app built by Affinity Bridge</li> <li>• High cost – ~\$200K</li> <li>• No room for comments, doesn't convert cm/inches (this is being worked on)</li> </ul>	<ul style="list-style-type: none"> <li>• Still under development?</li> </ul>

<sup>4</sup> Referrals and monitoring tools, and associated considerations in choosing the right tools, are discussed in detail in the Ecotrust Canada report 'Referrals Software: an analysis of options' (<http://ecotrust.ca/wp-content/uploads/2017/08/AMN-Referrals-Tools-Analysis-sm.pdf>) and the WWF report 'Community-based monitoring, reporting and verification know-how: Sharing knowledge from practice' ([http://d2ouvy59p0dg6k.cloudfront.net/downloads/cmr\\_web.pdf](http://d2ouvy59p0dg6k.cloudfront.net/downloads/cmr_web.pdf))

<p>Kobo Toolbox</p>	<ul style="list-style-type: none"> <li>• Simple</li> <li>• Easy to use</li> <li>• Build forms easily</li> <li>• Nice online analysis</li> <li>• Looks user-friendly</li> <li>• Free</li> </ul>	<ul style="list-style-type: none"> <li>• Can't change forms on the fly</li> <li>• Interface not engaging</li> </ul>	<ul style="list-style-type: none"> <li>• Direct to your server?</li> <li>• Flexibility of forms?</li> </ul>
<p>Nunaliit</p>	<ul style="list-style-type: none"> <li>• Good for making data accessible</li> <li>• Open-source</li> <li>• Free</li> <li>• Stability/longevity/tried and true: lots of Indigenous users to learn from – leveraging experience, building on each other's apps</li> <li>• Potential upside: can be hosted by you or partner (e.g. ELOKA hosts 17 sites, Carleton University hosts others. Grant money used to pay for hosting and also development)</li> <li>• Flexible: can relate anything to anything</li> <li>• Built-in multilingual functionality</li> </ul>	<ul style="list-style-type: none"> <li>• Potential downside: needs to be hosted by you or by partner</li> <li>• Limited staff time</li> <li>• Limited developer community</li> <li>• Learning curve for data entry</li> <li>• Document-oriented data model – different. People not used to this</li> <li>• Not an analysis tool</li> <li>• Difficulties with large amounts of data at once</li> <li>• Challenges with presenting complexity</li> </ul>	
<p>CoastTracker</p>	<ul style="list-style-type: none"> <li>• Multiple forms and ability to go back to main screen</li> <li>• Simple to use</li> <li>• Tested by Indigenous nations for eight years</li> <li>• Nice display, easy to share</li> <li>• Aesthetic/interface design is customizable</li> </ul>	<ul style="list-style-type: none"> <li>• Limits to how complex data collection can be</li> <li>• Required a developer for whole system</li> <li>• Small community supporting CyberTracker (the underlying base of CoastTracker)</li> </ul>	<ul style="list-style-type: none"> <li>• How to record things without writing? Speech to text capability?</li> <li>• Durability of tablets?</li> </ul>

<p>Trailmark</p>	<ul style="list-style-type: none"> <li>• Excellent user support</li> <li>• Widely used</li> </ul>	<ul style="list-style-type: none"> <li>• Software updates incompatible with current tablets</li> <li>• Difficult to use in field – can’t skip or jump to items on a form</li> <li>• Upload and download times</li> </ul>	<ul style="list-style-type: none"> <li>• They say they are a “social enterprise” – what does that mean?</li> </ul>
<p>ESRI Storymap</p>	<ul style="list-style-type: none"> <li>• Data on your server/platform – with access limitations</li> <li>• Compatibility with ArcGIS – good analytical options</li> <li>• Collector used by techs w/minimal training</li> <li>• Syncing pretty quick</li> <li>• Large storage capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Collector limited for media</li> <li>• Costs associated with licensing - expensive to have it integrated</li> <li>• Requires GIS capacity</li> <li>• Crashed because of bug took ESRI three weeks to deal with</li> </ul>	
<p>Excel</p>	<ul style="list-style-type: none"> <li>• Widely available</li> <li>• Long-term availability and usability</li> <li>• Simple and accessible</li> </ul>	<ul style="list-style-type: none"> <li>• Limited effectiveness for data management and reporting</li> <li>• Data entry can be labour-intensive and time consuming</li> <li>• Coding, data integrity and interoperability limitations</li> </ul>	

<p>Fulcrum (data management tool)</p>	<ul style="list-style-type: none"> <li>• Gives option of video, audio, photos</li> <li>• Customizable form</li> <li>• Can use Excel to have multiple questions in one set</li> <li>• Can create a desktop service – direct download back at office</li> <li>• Compatible with .csv/Excel</li> </ul>	<ul style="list-style-type: none"> <li>• Costly if many users (pay per user)</li> <li>• Cost beyond data limit (3GB)</li> </ul>	<ul style="list-style-type: none"> <li>• How long will it be around for? U.S. based company</li> <li>• Independence vs. dependence?</li> </ul>
<p>SIKU</p>	<ul style="list-style-type: none"> <li>• Slick</li> <li>• Good job of integrating different types of data, e.g. weather</li> <li>• Developed based on harvesters' input</li> <li>• Links to users</li> <li>• Appeals to youth</li> <li>• Free to users</li> </ul>	<ul style="list-style-type: none"> <li>• A lot of interface – a bit overwhelming</li> <li>• Relationship to Google?</li> <li>• Reliance on technology for hunters decreasing</li> </ul>	<ul style="list-style-type: none"> <li>• Interoperability? Can include other apps?</li> <li>• What's their plan to roll this out? Across the Inuit regions? Selling it?</li> <li>• Where does data go, export functions?</li> <li>• How did harvesters give input? Using it?</li> <li>• Accessing internet?</li> </ul>