



Environmental Stewardship Initiative Lake Babine Nation Wetland Case Study

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Introduction

The Environmental Stewardship Initiative (ESI) is a collaborative initiative involving First Nations, the Province of British Columbia, the Government of Canada, and industry. The goals of ESI are to develop a new, collaborative approach to establishing positive environmental legacies related to resource development and to generate high quality, accessible, and trusted environmental information. This paper provides a case study of an Indigenous Stewardship Project (ISP) that was funded through ESI, as an example of how government-to-government collaboration can provide the opportunity to build the knowledge, expertise and capacity of participants to ensure that future resource decisions are based on trusted environmental data and incorporate Indigenous perspectives.

“The ESI is providing a model for collaboration on stewardship that gives meaningful effect to reconciliation and the United Nations Declaration on the Rights of Indigenous Peoples (UN Declaration).” - Province of BC

Evolution of the ESI

Multiple, large development projects were proposed to go through Indigenous territories in northern British Columbia in 2013 and 2014. Each of the proposals was independent from one another, meaning they had different timelines, site locations and routes, and underwent separate environmental assessments and Indigenous community consultation. Multiple projects made it challenging for Indigenous communities to meaningfully engage with each proposal and to understand the wider implications and potential impacts to the land and water.

In 2014, the Province of British Columbia committed \$30 million to develop and implement ESI to partially address Indigenous environmental concerns about the construction of three proposed natural gas pipelines across northern BC. While originally predicated on the LNG industry, the initiative has since broadened its scope to foster a government-to-government collaboration to address First Nations' long-standing concerns with stewardship of the land and cumulative impacts in their traditional territories by investing in projects related to:

- Ecosystem monitoring and assessment;
- Ecosystem restoration and enhancement;



- Ecosystem research and knowledge exchange; and
- Stewardship education and training.

The ESI is guided by a governance group with representatives from four Regional Stewardship Forums that have been established in the Skeena, Omineca, Northeast, and North coast. The Regional Stewardship Forums consist of 32 First Nation organizations in northern BC that work together to identify, design, and implement projects according to priorities in each region through ESI framework agreements between the Forums and the Province of BC. For example, in 2016, representatives of the Province of BC and Indigenous groups in the Skeena region reached agreements and endorsed the *Skeena Sustainability Assessment Forum (SSAF) and Indigenous Stewardship Projects (ISPs) Framework Agreement*. Members in the SSAF work collaboratively on initiatives to meet the agreed upon objectives of the SSAF, as well as Nation-specific ISPs that support the SSAF; this relationship is shown in Figure 1.

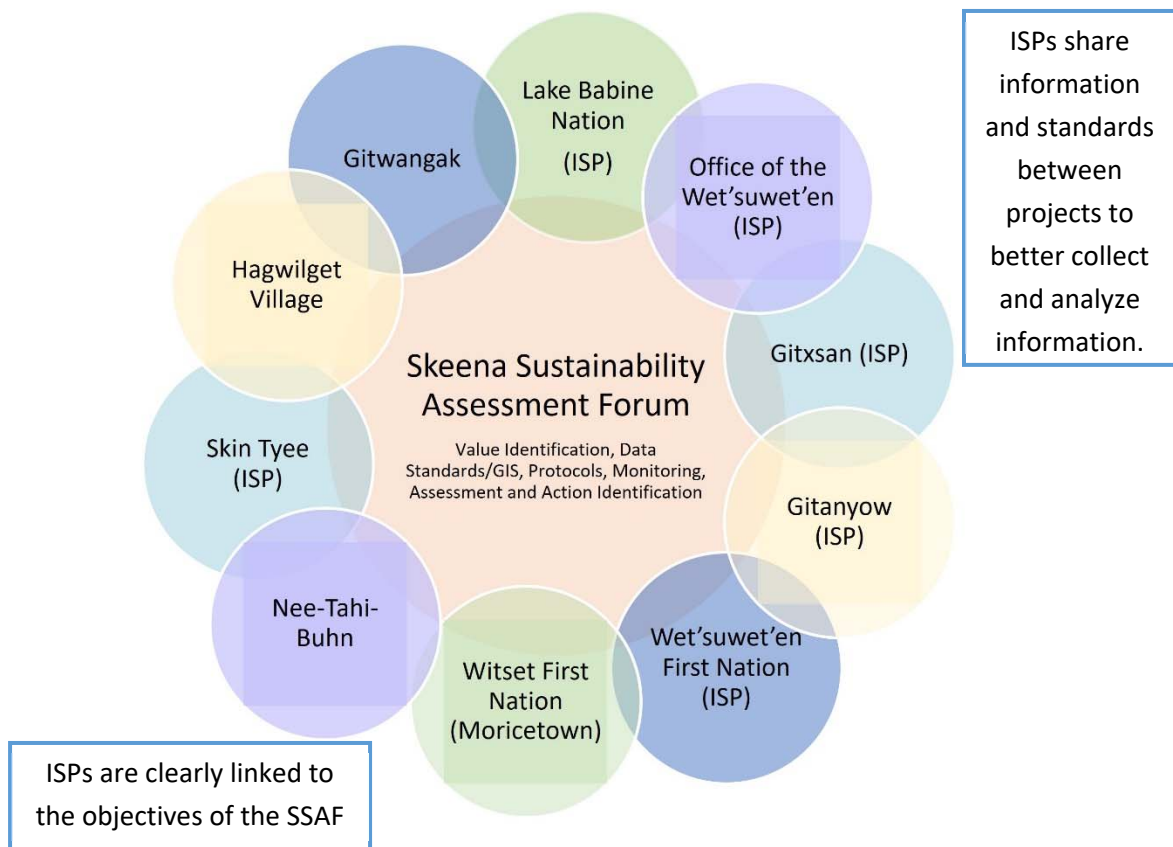


Figure 1. Relationship between the Skeena Sustainability Assessment Forum (SSAF) and the Indigenous Stewardship Projects (ISPs). Source: Adapted from the ESI: SSAF and ISP Framework, March 31, 2018. Appendix B.

Wetlands support a variety of cultural, social, and ecological values important to the Lake Babine Nation (LBN), a founding member of the SSAF. However, wetlands in BC have no specific policy directed for their management or protection. Through ESI funding agreements, LBN initiated an Indigenous Stewardship



Project to map, assess, and monitor wetlands in their traditional territory with an overall goal of improving wetland management. LBN worked collaboratively with Ecofish Research Ltd, an environmental consulting firm who provided expert technical advice and support for this wetland monitoring project.

Lake Babine Nation's ISP Wetland Project

The LBN Wetland Monitoring and Assessment ISP (the Project, or ISP Wetland Project) was a phased, three-year office and field-based study that was initiated in the summer of 2015, to integrate cultural information on wetland use and priorities gathered from the LBN community with a scientific approach. The primary objectives of the Project were:

- (1) To map wetlands within the LBN Statement of Intent (SOI) to gain an understanding of the scale of development pressure and potential cumulative effects on wetlands in the SOI;
- (2) To determine reliable and accurate parameters to assess wetland functions and to collect field data to characterize and assess functions of wetland habitats within the LBN Critical Cultural Zone; and
- (3) To train and mentor LBN members in the collection and assessment of field data pertaining to monitoring wetland functions.

Study Development

The original Project was designed to document valuable wetland complexes within the LBN's SOI, and to monitor current wetland functions to assess status and trends of physical and biological responses to anticipated LNG development. In July 2017, the proposed pipeline projects were put on hold indefinitely. Consequently, the study design was modified to focus on documenting wetland condition and functions using detailed and rapid assessment techniques to assess impacts of forestry operations and other disturbances on wetlands with the objective of informing land management.

Around the same time, results of a Traditional Ecological Knowledge (TEK) study became available which highlighted LBN community wetland use, values, and concerns. The TEK project sought feedback on potential future wetland monitoring sites and the biological and cultural functions that are most important for assessment and monitoring. This information was used to modify the study design. Enhancements included field observations of cultural use within the wetlands.

Study Sites and Field Data Collection

Field data were collected to characterize and assess wetland condition and functions at 12 different wetlands within the LBN SOI. Wetland study sites were selected based on cultural and scientific values and relevance to Project objectives, as well as to capture a range of wetland classes¹. Wetland sites were

¹ Fen, bog, swamp, and marsh



selected based on their proximity and connection to potential fish-bearing streams and/or lakes, their potential high value to moose, their potential exposure to various stressors (e.g., proximity to forestry operations), and included wetlands near Fort Babine², as highlighted by the LBN community.

Field Training and Mentorship

A primary objective of the ISP Wetland Project was to increase LBN capacity with implementing ecological studies. This was achieved in all years of the Project, through the following activities.

- In Year 1, a full-day wetland training workshop was led by Ecofish Technical Working Group members and environmental specialists for the Project to introduce LBN members to the standard physical, hydrological, and biological data collection methods for wetlands, followed by five days of hands-on training in the field.
- In the summer of Year 2, three LBN Project field technicians, supported by Ecofish environmental specialists, collected physical and biological field data at 12 wetland complexes to characterize wetlands and monitor wetland functions.

Training involved field and safety planning, installation of surface water and groundwater monitoring wells, deployment and download of pressure sensors to measure and record water levels, use of a GPS, compass, and clinometer, identification and description of soils and vegetation, wetland delineation and classification, assessment of wetland condition, and use of field data collection programs on iPads.
- In the fall of Year 2, the wetland sites were re-sampled independently by the three LBN Project field technicians. During this field data collection program, LBN Project field technicians used the skills learned during previous field programs to collect hydrology and wildlife use data, and information on site and buffer condition.
- In Year 3, two of the LBN Project field technicians were trained in a rapid wetland functions assessment technique and subsequently conducted a rapid assessment of the wetlands, with the guidance of two Ecofish environmental specialists. A rapid assessment technique can provide an efficient means to achieve LBN's goal to classify and assess all wetlands within their SOI.

² A small LBN reserve community of approximately 60 year-round residents, located at the northern tip of Babine Lake, approximately 100 km north of Smithers. Its traditional Babine name is "Wit'at," which is an abbreviated form of "Wit'ane Keh," meaning "place of making dry fish"; sourced from <http://www.lakebabine.com/files/Fort-Babine-band.php>



Project Outcomes

Status of Wetland Condition and Functions within LBN's SOI

Development of the landscape, especially from logging, is extensive in the LBN SOI and Critical Cultural Zone. Nevertheless, assessment results indicate the study wetlands appear to retain a relatively high functioning condition. Specifically, the hydrology, water quality, soil characteristics, and vegetation characteristics appear to be within the range of natural variation, and a variety of culturally and regionally important, at-risk, and keystone wildlife species continue to use the wetlands.

Although signs of disturbance for each wetland type (e.g., invasive species) were within the natural range of variation, the wetlands were only monitored for two to three years and many of the adjacent disturbances, such as logging, were recent. Therefore, continued monitoring of the health and functions of the wetlands was recommended as a basis for land use planning and prioritizing management and restoration actions.

Wetland Function Monitoring Methods – Toward an Assessment Approach for LBN

A goal of this ISP Wetland Project was to integrate LBN cultural values and traditional knowledge into a science-based study design. The study approach was designed with the LBN Natural Resources Department and included information gathered from the community through TEK meetings, community meetings and the Annual General Assembly. Meetings involved discussions about the assessment parameters and indicators used to monitor and assess wetland functions. Selected wetland functions were considered important to monitor for the following reasons:

- hydrological function is key to support all wetland processes;
- water quality is important to support all aquatic life and human health and provides information on the biogeochemical processes;
- soils provide information on historic environmental conditions and land use, and are an indicator for the overall function of a wetland;
- vegetation composition and vigour provide insight to wetland function, traditional uses, and wildlife forage and habitat; and
- wildlife provides information about wetland health, and the health of wildlife populations on the greater landscape, including culturally important species.

Enhancement of LBN Capacity

This Project has provided the LBN Natural Resources Department and field technicians with the methods to monitor wetland condition and functions that are informed by the LBN community.

LBN field technicians had an opportunity to learn and implement wetland monitoring techniques in the field with trained environmental professionals and to take lead roles in field planning and data collection



and management. The technicians not only learned how to collect data, but also how to interpret various indicators on the landscape and what potential impacts to look for in relation to specific disturbance types.

Additional training, employing technicians in the long-term, and providing them with reasonable responsibilities that challenge them, is expected to result in procurement of engaged and capable technicians that can not only collect wetland data but that also can be easily trained to conduct other environmental studies.

Conclusions

The LBN Wetland Monitoring Project team was committed to delivering a meaningful project with scientific excellence and cultural relevance. Cultural knowledge supported by scientific study can be a strong tool for informed decision making. This Project has furthered LBN's knowledge of the function and condition of the wetlands in their traditional territory and provided LBN with the tools for identifying and monitoring these wetlands. The baseline information collected on the ground and through meetings can be used to support land management decisions and provide a basis for monitoring potential response to pressures on the landscape through time.

The length of the study (three-years) allowed us to adapt the study design and methods to reflect the needs, goals, and traditional ecological values of the LBN community, trial a rapid wetland assessment technique, and provide repeat training and mentoring opportunities for LBN field technicians. The skills and experience gained by the LBN field technicians increases the technical capacity of the LBN Natural Resources Department to classify, monitor and assess wetland condition and functions.

Overall, the Project was successful in mapping wetlands and development pressures, determining reliable and accurate parameters to assess wetland functions, and collecting baseline data on wetland condition and functions within the LBN SOI. The study was originally designed to monitor the effects of pipeline development on wetland functions. As such, the data collection methods were detailed and appropriate for statistical analysis to assess potential impacts. For more general inventory and monitoring of wetlands and wetland functions, some simplifications to the study design were recommended. However, the data collected for the detailed assessment could be used in the future to explain changes or trends in wetland functions.

The information gained through this study informed LBN members, leadership, provincial government decision makers, industry, and the public about wetlands in LBN's SOI, with the goal of protecting wetlands through informed decision making during current and future resource developments. In addition, the results and lessons learned from the wetland assessment methodology informed the development of a Skeena Sustainability Assessment Framework (SSAF) wetlands monitoring protocol that can be used by all Skeena Indigenous Groups to collect consistent and reliable wetland data.