Skeena Sustainability Assessment Forum's State of the Values Report for Wetlands

Skeena ESI Area

Prepared for Skeena Sustainability (SSAF) of the Skeena Environmental Stewardship Initiative

Version 1.3. (11.26.2020)

Executive Summary

Despite the limited distribution of wetlands on the land base, they are recognized as important ecosystems that bridge the terrestrial (e.g., forests) and aquatic (e.g., streams and lakes) realms. Among the services they provide to society for free, wetlands can: filter water, attenuate floods, and support a variety of wildlife species (e.g., moose & fish). First Nation communities have long recognized these areas as being significant locations to gather medicines, foods, and as special places with spiritual significance. The Skeena Sustainability Assessment Forum's (SSAF) State of the Values Report for Wetlands provides an overview of the current condition of wetlands in the SSAF study area and describes some of their key attributes.

The framework includes stressors, functions, benefits, & cultural elements, and is displayed as follows:

- potential **stressors** that may impact wetlands (i.e., road density at the watershed assessment unit scale, road density within 100m and 2000m of wetlands, equivalent clear-cut area at the watershed assessment unit scale, point sources for pollutants, and % un-natural landbase).
- relative capacity for wetlands to perform specific hydrological and habitat **functions** (i.e., hydrological functions include flood attenuation and water purification; habitat includes: aquatic life (fish) support, moose browse and screening, connectivity to mature and old forests relative to ecological targets, and percent protected).
- relative **benefit** of a wetland's ability to perform a function (e.g., shown as hydrological benefits of flood reduction potential and water purification protection for downstream communities or societal assets), and
- relative **cultural** significance (e.g., ease of access and documented archeological sites)

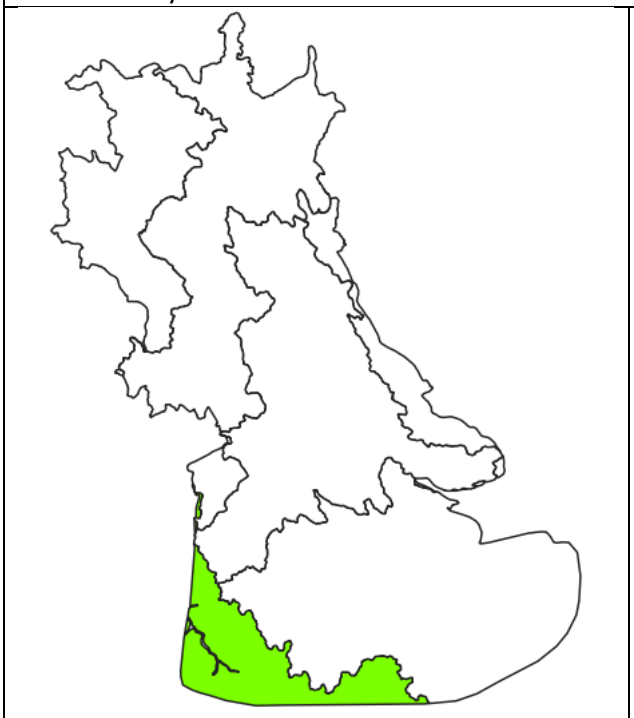
In the following pages of this Executive Summary, the results of this study are displayed as a dashboard for 5 major watersheds (i.e., Coastal, Nass, Nechako/Fraser, Skeena East, and Skeena West). Stressors are presented as box plots (large vertical line represents the median, whiskers represent the $5^{th}$and 95^{th} percentiles, and dots as outliers), whereas function, benefit, and cultural indicators are presented as bar charts (i.e., with distribution of wetlands categorized into levels of performance by high, medium, low, or zero categories).

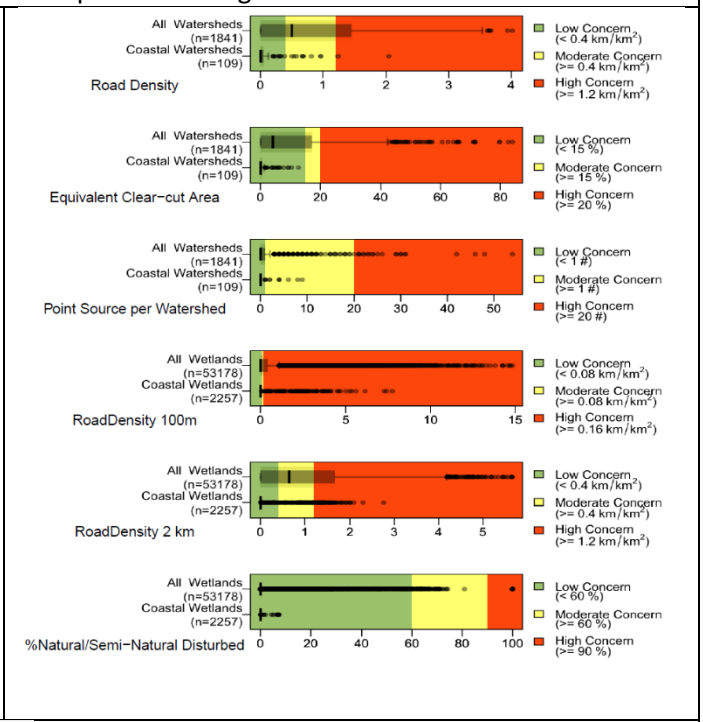
This information is a coarse filter approach, referred to as a Tier 1 approach, that is based on our current knowledge of readily available data that spans the entire SSAF study area. Complimentary initiatives will enhance our understanding of the state of wetlands by collecting and analyzing information from direct analysis and observations (Tier 1.5, 2, 3). Tier 1.5 involves detailed remote analysis from a subsample of wetlands to help calibrate a Wetland Ecosystem Services Protocol (a more detailed functional and benefit assessment tool). Tier 2 involves relatively rapid field assessments to gather ecological, functional, and stressor information from a subsample of wetlands to calibrate a Wetlands Ecosystem Services Protocol and improve/validate the wetland model. Tier 3 involves more intensive studies to answer specific management questions, such as the studies on wetlands within Lake Babine.

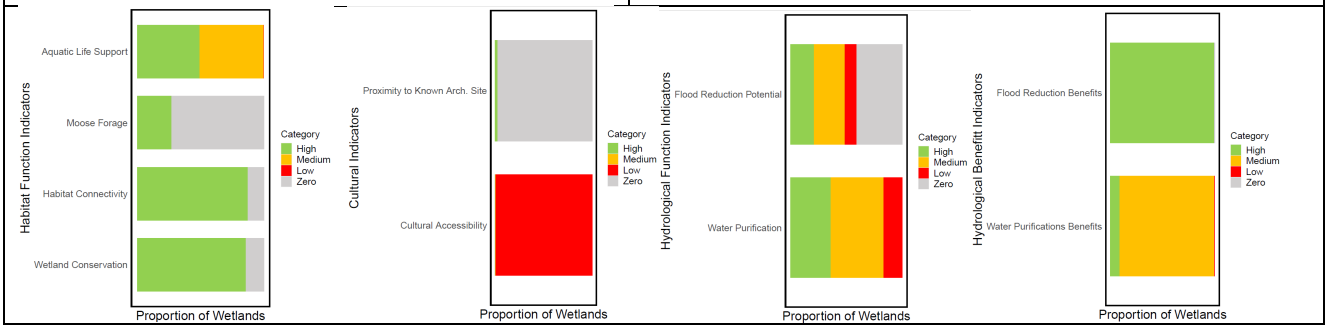
Although this report, on its own, will not lead to decision making, it can serve as a source of information that can be used to support decision making. Information provided within the report, and the associated database that was developed through the process, can be reframed to support decision makers - contingent on the specified management needs.

Coastal Unit Summary

The Coastal Unit contains the smallest proportion of wetlands out of all wetlands in the SSAF study area (i.e., 2248 documented wetlands, 14,520 Ha of wetlands (4.2%)). Wetlands are located primarily in BEC zones: ESSFmc, SBPSmc, and SBSmc2. Wetlands in the Coastal Unit have relatively less intense stressors, such as a lower density of roads and lower percent of Equivalent Clear-cut Area within the nested watershed assessment units. A relatively high proportion of wetlands are conserved through land-based conservation measures (e.g., parks, protected areas, ungulate winter range). There is relatively high habitat connectivity of Mature and Old Forests near wetlands. Approximately half of the wetlands are connected to fish bearing streams, and the remainder are within 5 km of a fish bearing stream. Wetlands in this Unit are relatively not very accessible to settlements or close to roads for human/cultural uses. Like most of the other Units, only a small fraction are associated with documented archeological sites within 500m, but this finding is assumed to largely underestimate the historic and current use by indigenous communities, and primarily speaks to the lack of information publicly available. In terms of hydrologic performance, the Coastal Unit has a moderate level of performance relative to other regions in terms of Flood Reduction Potential with about half of the wetlands performing this service (i.e., ranging from low to high function) and relatively low Water Purification function due to steep terrain and granitic bedrock.

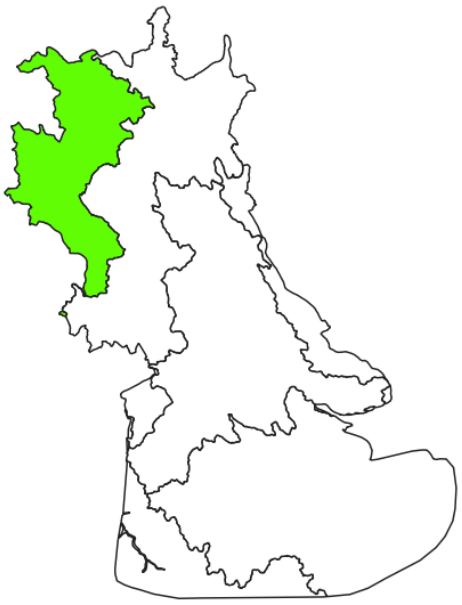


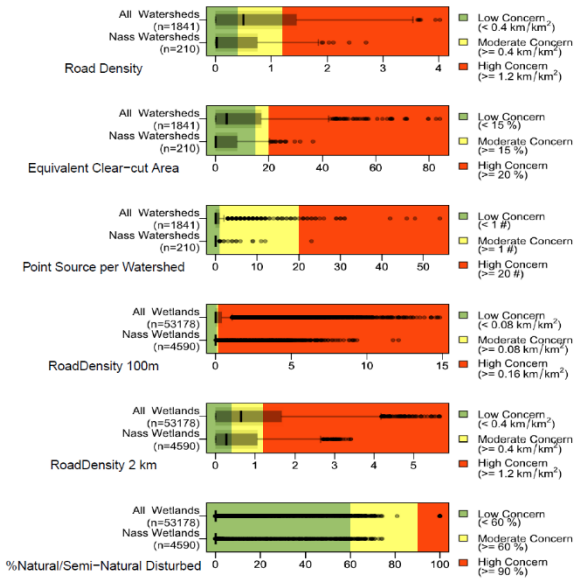


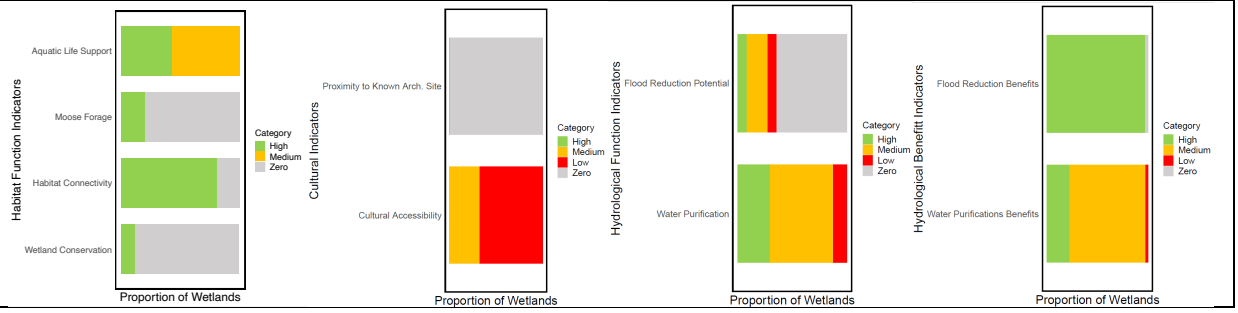


Nass Unit Summary

The Nass Unit contains the second smallest proportion of wetlands out of all wetlands in the SSAF study area (i.e., 4467 documented wetlands, 17,013 Ha of wetlands (8.6%)). Wetlands are located primarily in BEC zones: ICHmc1, MHmm2, and ESSFwv. Wetlands in the Nass Unit, compared to the entire area, has relatively less intense stressors, such as a lower density of roads and lower percent of Equivalent Clear-cut Area within associated watershed assessment units. Slightly less than half of the wetlands are connected to fish bearing streams, and the remainder are within 5 km of a fish bearing stream. A relatively small number of wetlands are close to roads and within 50 km for human/cultural uses. Like most of the other Units, only a small fraction are associated with documented archeological sites within 500m, but this finding is assumed to largely underestimate the historic and current use by indigenous communities, and primarily speaks to the lack of information available. In terms of hydrologic performance, wetlands in the Nass Unit generally have a lower level of performance relative to other regions in terms of Flood Reduction Potential with less than half of the wetlands performing this function to some degree, and lower Water Purification Potential due to steeper terrain.

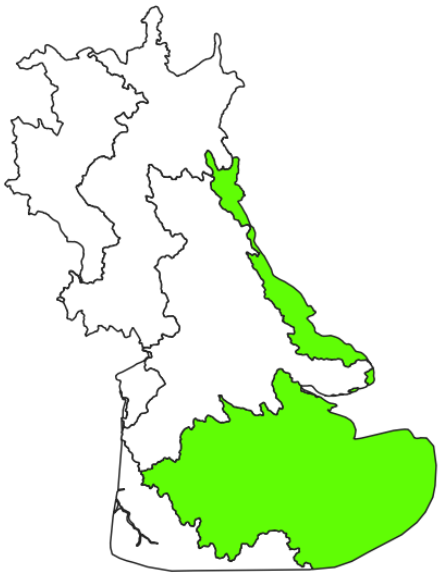


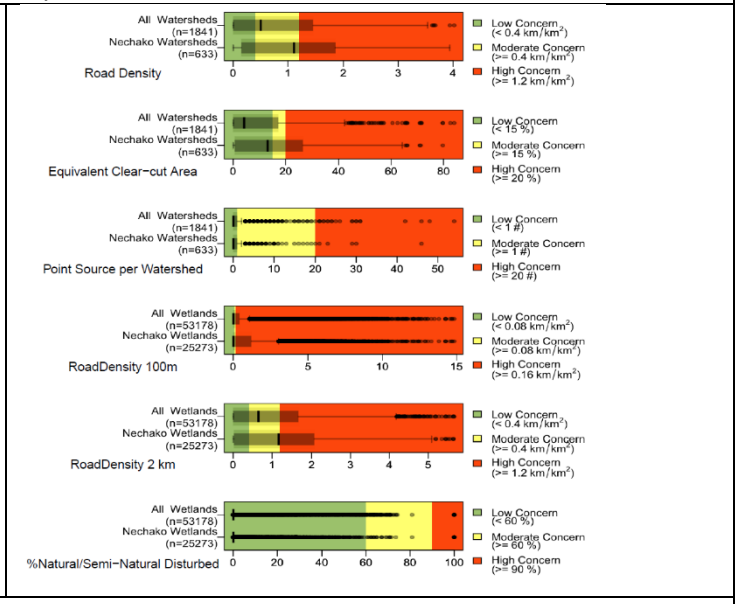


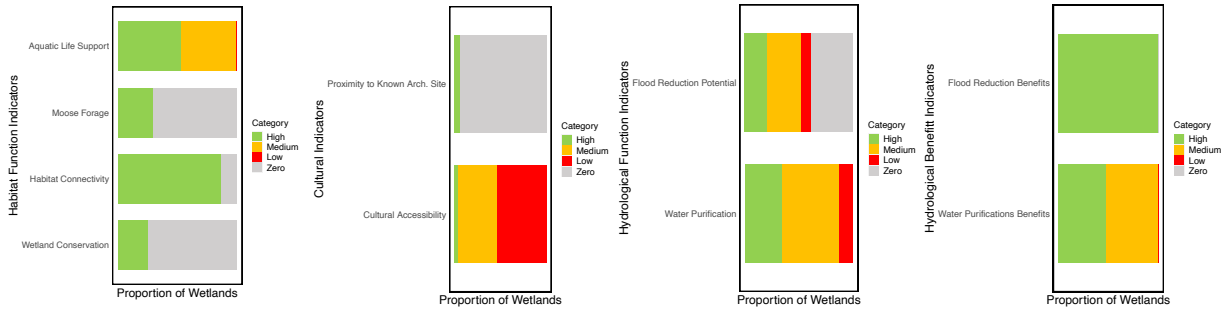


Nechacko/Fraser Unit Summary

The Nechacko/Fraser Unit contains the highest proportion of wetlands out of all wetlands in the SSAF study area (i.e., 25,201 documented wetlands, 168,802 Ha of wetlands (47.5%)). Wetlands are located primarily in BEC zones: SBSmc2, SBSdk, and ESSFmc. Wetlands in the Nechacko/Fraser Unit have relatively more pronounced stressors, such as a higher density of roads and higher percent of Equivalent Clear-cut Area within the nested watershed assessment units. This unit ranks second in terms of a relatively higher proportion of wetlands are conserved through land-based conservation measures (e.g., parks, protected areas, ungulate winter range). Despite the higher ECA, the quantity of Mature and Old Forests near wetlands generally conforms to target thresholds for landscape objectives; this is possibly because the threshold for SBS is set lower due to a more frequent Natural Disturbance Regime. Approximately half of the wetlands are connected to fish bearing streams, and the remainder are within 5 km of a fish bearing stream. Wetlands in this Unit are relatively accessible to settlements or close to roads for human/cultural uses. Like most of the other Units, only a small fraction are associated with documented archeological sites within 500m, but this finding is assumed to largely underestimate the historic and current use by indigenous communities, and primarily speaks to the lack of information available. In terms of hydrologic performance, the Nechako/Fraser Unit has a slightly elevated level of performance relative to other regions in terms of Flood Reduction Potential and Water Quality Purification, likely attributed to less mountainous terrain.

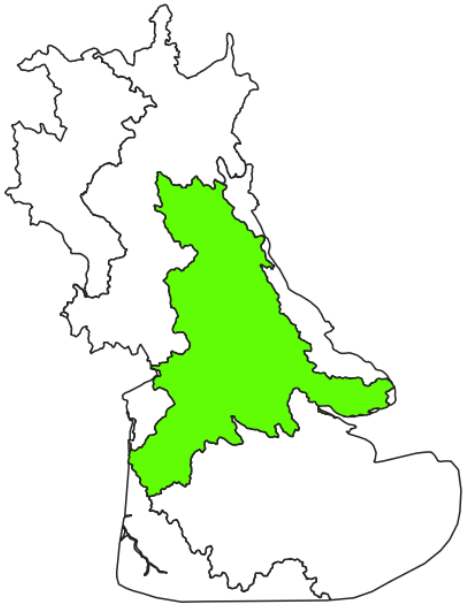


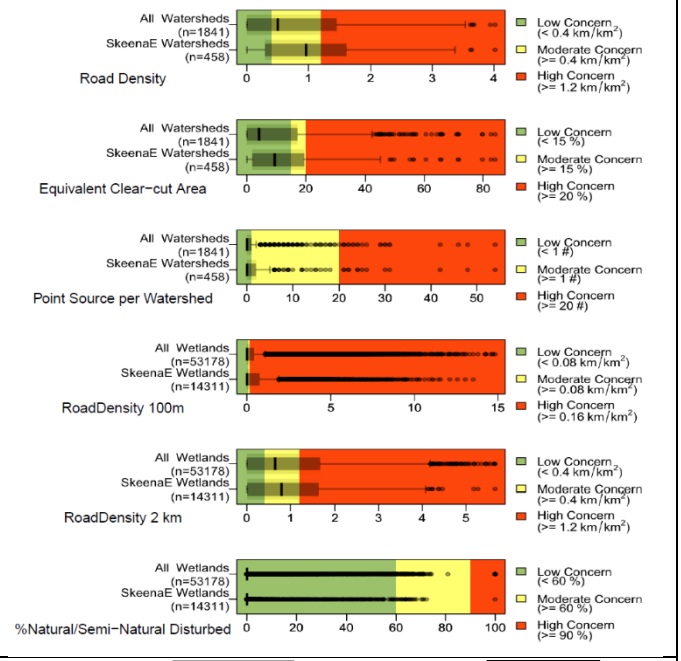


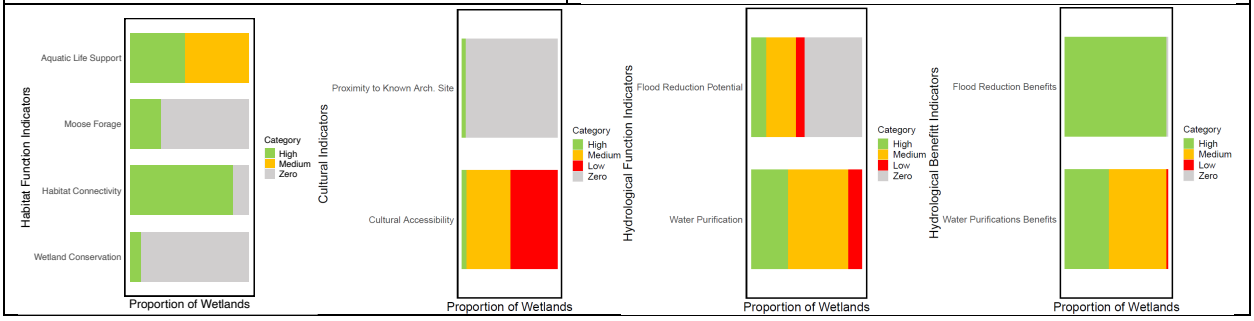


Skeena East Unit Summary

The Skeena East Unit contains the second highest proportion of wetlands out of all wetlands in the SSAF study area (i.e., 14,298 documented wetlands, 100,750 Ha of wetlands (27%)). Wetlands are located primarily in BEC zones: SBSmc2, ESSFmc, and SBSdk. Wetlands in the Skeena East Unit have relatively more pronounced stressors, such as a higher density of roads and higher percent of Equivalent Clear-cut Area within the nested watershed assessment units. A relatively lower proportion of wetlands are conserved through land-based conservation measures (e.g., parks, protected areas, ungulate winter range). Slightly less than half of the wetlands are connected to fish bearing streams, and the remainder are within 5 km of a fish bearing stream. Wetlands in this Unit are relatively more accessible to settlements or close to roads for human/cultural uses. Like most of the other Units, only a small fraction are associated with documented archeological sites within 500m, but this finding is assumed to largely underestimate the historic and current use by indigenous communities, and primarily speaks to the lack of information available. In terms of hydrologic performance, the Skeena East Unit has a moderate level of performance relative to other regions in terms of Flood Reduction Potential, with slightly less than half of the wetlands performing this function; Water Purification function also perform moderately.

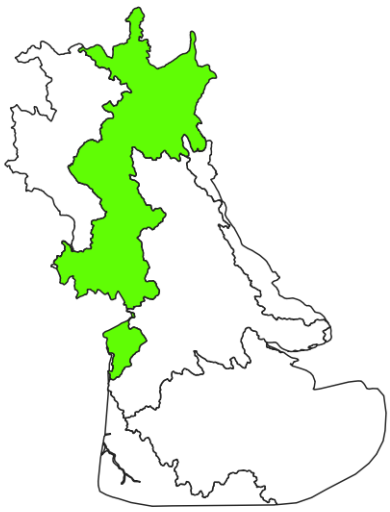


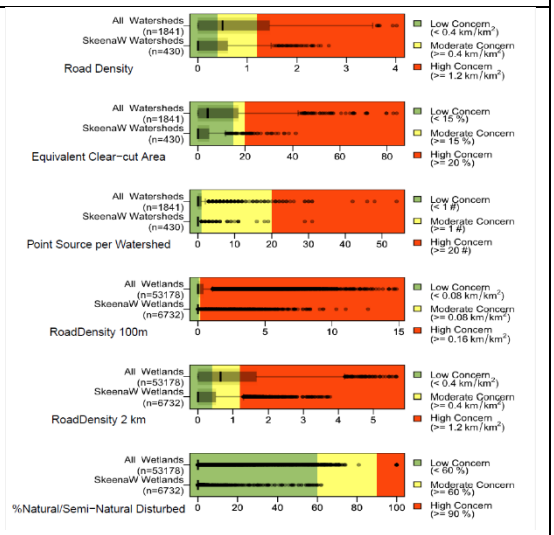


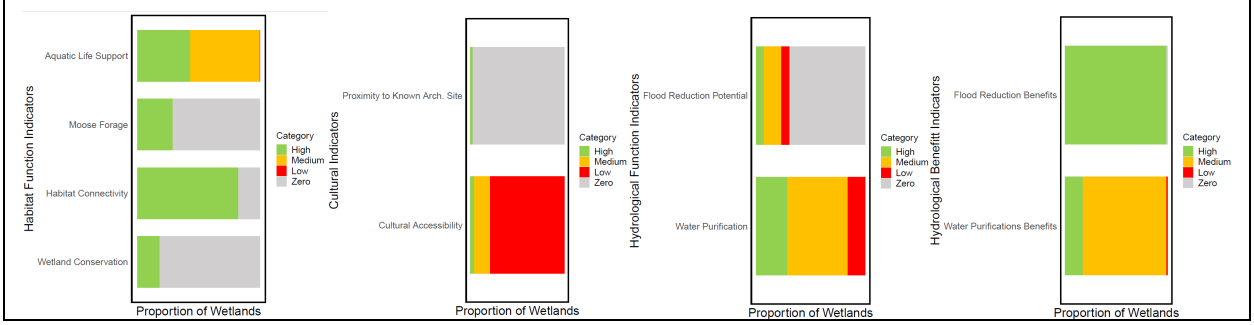


Skeena West Unit Summary

The Skeena East Unit contains the third highest proportion of wetlands out of all wetlands in the SSAF study area (i.e., 6,712 documented wetlands, 46,500 Ha of wetlands (12.7%)). Wetlands are located primarily in BEC zones: ESSFwv, ESSFmc,SBSmc2, and ICHmc1. Wetlands in the Skeena West Unit has relatively less pronounced stressors, such as a lower density of roads and lower percent of Equivalent Clear-cut Area within the nested watershed assessment units. A small but relatively moderate proportion of wetlands are conserved through land-based conservation measures (e.g., parks, protected areas, ungulate winter range). Slightly less than half of the wetlands are connected to fish bearing streams, and the remainder are within 5 km of a fish bearing stream. Many of the wetlands in this Unit are relatively not accessible to settlements or close to roads for human/cultural uses. Like most of the other Units, only a small fraction are associated with documented archeological sites within 500m, but this finding is assumed to largely underestimate the historic and current use by indigenous communities, and primarily speaks to the lack of information available. In terms of hydrologic performance, the Skeena West Unit has a low level of performance relative to other regions in terms of Flood Reduction Potential with about a third of the wetlands performing this service.







State of the Value Report - Disclaimer

The Skeena Sustainable Assessment Forum (SSAF) Wetland State of the Value Report (SOV) is the result of a collaboration between the Province and ten member Nations: Lake Babine Nation, Office of the Wet'suwet'en, Gitxsan Nation, Gitanyow Nation, Wet'suwet'en First Nation, Witset (Moricetown), Nee-Tahi-Buhn, Skin Tyee, Hagwilget Village, and Gitwangak. This report is one section of a suite of products that assess and monitor the current state of wetlands in the SSAF study area (see Figure 2). The other sections of the SSAF wetlands program include the Wetland Ecosystem Services Protocol (WESP), Tier 1.5 assessment methods (see Introduction Section for further details), and Tier 3 wetland research conducted by Lake Babine Nation. Together, these other initiatives contribute to the validation of the indicators as presented in this report. The intention of this report is to broadly assess the pressures, impacts, and conditions of wetlands across the SSAF study area; the other three components of the SSAF's wetlands program are integral pieces to understand what is happening on the ground and at the individual wetlands level.

The results presented here are intended to inform understanding of the stressors, sensitivity, and functioning condition of wetlands in the SSAF study area, and do not constitute specific management direction. Further research, including the research undertaken by Lake Babine Nation, is needed to validate the indicator results as presented here and to determine next steps for management and conservation of wetlands.

Information and data used in the development of this report are current to report initiation [November 26, 2020] and are of the highest quality that was readily available.

The SSAF Scientific and Technical Committee acknowledges the knowledge keepers and recognizes that further work is required to reflect the cultural importance of wetlands for food, social, and ceremonial value. A linked project 'Cultural Indicators for the Skeena Enviornmental Stewardship Initiative' is providing a cultural lens to the SSAF Wetland program in the hopes of improving future state of the value reports for wetlands in the SSAF study area.