

## Salmon Conservation Unit (CU) reporting for BC's Skeena Basin

ESSA Technologies have developed short standardized “report cards” and ‘snapshots’ of all Skeena Conservation Units (CU) for sockeye, Chinook, coho, pink, and chum salmon to support the work of the Pacific Salmon Foundation (PSF) in northwest British Columbia. These report cards/snapshots summarize in map-based and graphic formats the habitat and biological information for each salmon CU. This work allows for evaluation of the regional habitat threats and pressures facing Skeena salmon Conservation Units (CUs) and represents easy-to-understand reference materials for evaluation/review of the status of various Skeena CUs. Interactive online tools have been developed to display this information, allowing a broad and diverse audience to access/discover and understand Skeena salmon habitat and population data.

This work provides a broadly-accessible and credible system for sharing core reference data in support of ongoing discussions on the health of Skeena salmon and their habitats. Possible future extensions to the functionality of supporting web applications include: additional data elements related to population status and trends; allowing users to interactively explore the effects of varied data assumptions; and developing interfaces that will facilitate regular updates to the information presented in the web tools as new data becomes available.

- **Skeena Salmon CU Habitat Report Cards:** Watershed and CU-scale GIS-based evaluations of the relative pressures/risks to habitats used by sockeye, Chinook, coho, pink and chum salmon across the Skeena Basin ([Lake sockeye CU report cards](#); [Other salmon species CU report cards](#))
- **Skeena Salmon CU Snapshots:** Short standardized reports (snapshots) summarizing in graphic form the current information available for the habitat and biological status of each of the sockeye, pink, chum, coho and Chinook Conservation Units (CUs) present in the Skeena drainage ([Skeena salmon CU snapshots](#)).

*Visually engaging,  
easy-to-use  
products that  
present key  
population and  
habitat information  
for each Skeena  
Salmon  
Conservation Unit*

### Key Contacts

**Marc Porter**  
Senior Systems Ecologist  
Vancouver, BC  
[mporter@essa.com](mailto:mporter@essa.com)  
1.604.733.2996

**Darcy Pickard**  
Senior Statistician  
Vancouver, BC  
[dpickard@essa.com](mailto:dpickard@essa.com)  
1.604.733.2996

### Skeena CU Habitat Report Cards

## CU overview of habitat vulnerabilities & pressures

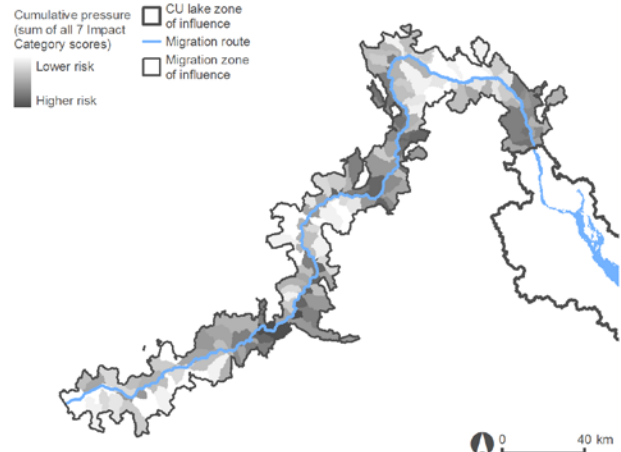
Pressure indicators were grouped into seven relatively independent habitat "impact categories" representing key factors affecting general watershed condition:

- **Hydrologic Processes** (Forest disturbance; ECA)
- **Vegetation Quality** (Insect and disease defoliation; Riparian disturbance)
- **Surface Erosion** (Road development)
- **Fish passage/Habitat connectivity** (Stream crossing density)
- **Water quantity** (Water licenses)
- **Human development footprint** (Total land cover alteration; Impervious surfaces; Linear development; Mining development)
- **Water quality** (Mining development acid generating; Wastewater discharges)

Indicators were also developed reflecting relative vulnerability to habitat pressures within the life stage-specific "zones of influence" defined for each lake sockeye CU:

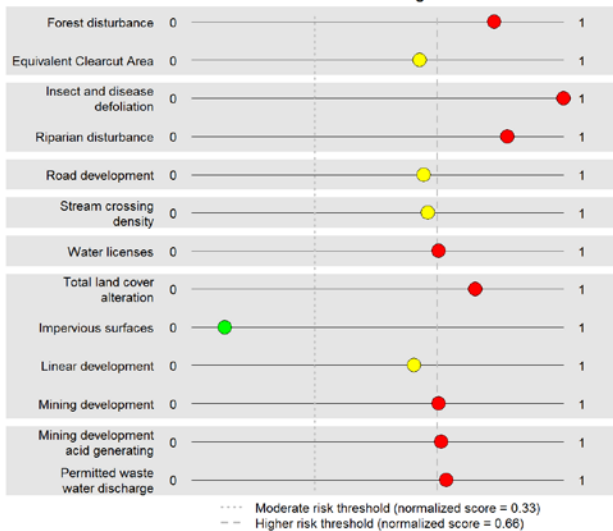
- **Migration** (Total migration distance; Length & % of migration route summer flow sensitive)
- **Spawning** (Total spawning length; Spawning length in tributary, lake or mainstem; Ratio of lake influenced to total spawning length; Length of accessible habitat)
- **Rearing** (Rearing lake area, Rearing lake productive capacity)

### Cumulative pressure—migration

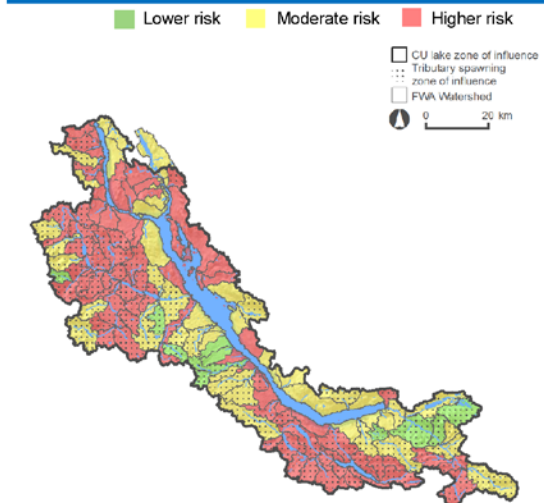


### Summary of pressure indicators—rearing

Area weighted average of all watershed scores (normalized) for Babine CU rearing lake ZOI

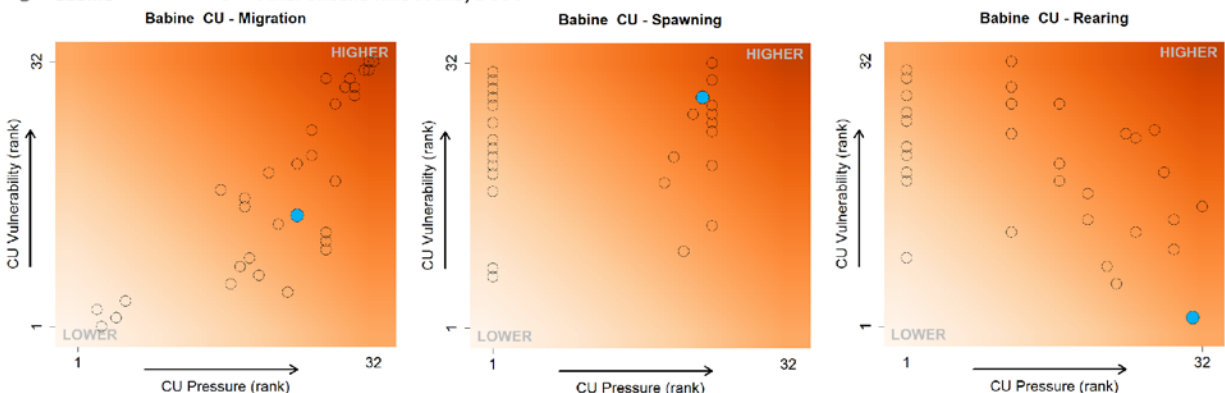


### Cumulative pressure—rearing & spawning

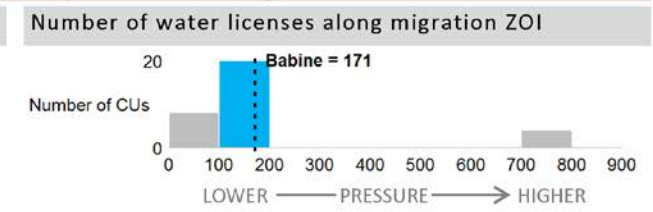
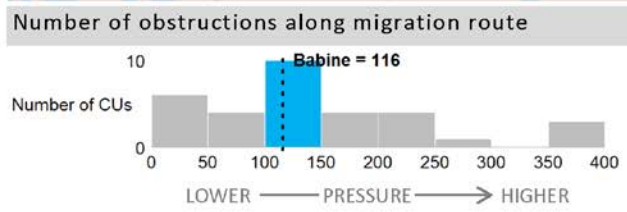
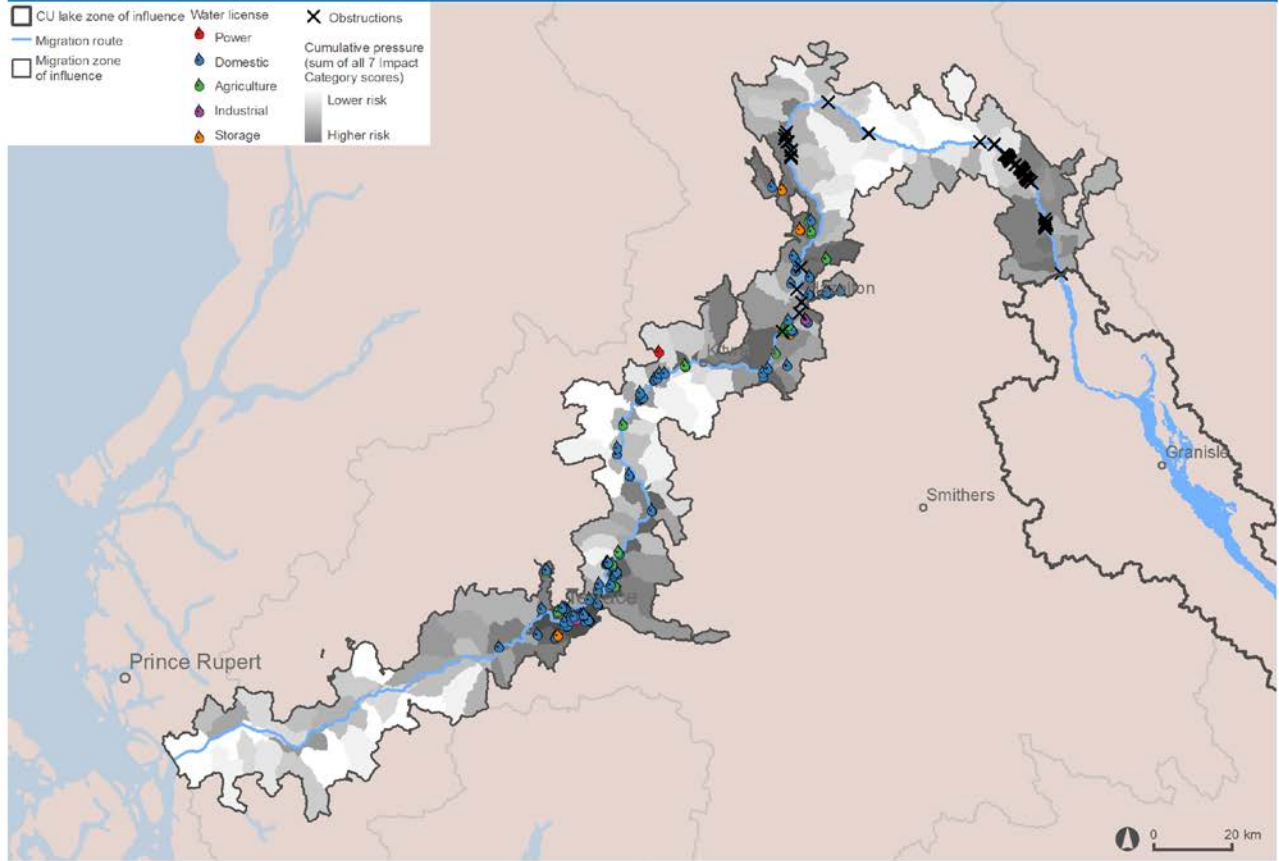


### Integrated vulnerability/habitat pressures—migration, spawning, & rearing

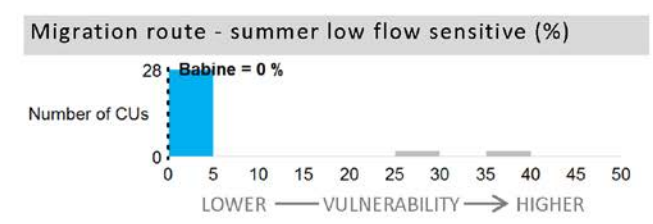
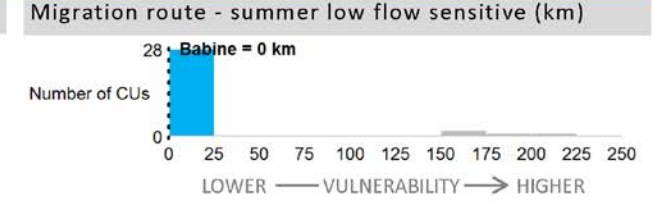
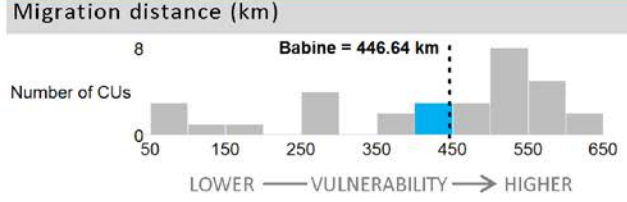
● = Babine ○ = other Skeena lake sockeye CUs



### Migration vulnerability & pressure



### Migration period vulnerability



Skeena CU Snapshots



Version 1.0. December 19, 2013

# Skeena Salmon: Chinook Conservation Unit Snapshot Ecstall



Introduction	Location of this CU
<p><i>This Conservation Unit Snapshot ('CU Snapshot') is part of a 2013 project that summarizes key population and habitat information for Skeena salmon CUs. These Snapshots are intended to serve as a reference document to assist discussions about the state of salmon and their habitats. For data sources and a more detailed explanation of each figure, please see the accompanying 'CU Snapshot Quick Reference' booklet. Full methods can be found in the main report, 'Skeena Salmon Conservation Unit Snapshots'.</i></p>	
<p>CU snapshot information roadmap</p>	
<p><b>Figure 1.</b> This roadmap summarizes the types of information included in the following pages of the CU Snapshot. Arrows show the flow of information from raw data towards more complicated elements that are estimated based on one or more information inputs. For example, 'stock-recruitment' can't be estimated without information about 'age composition' and 'catch and run size', and also all of the information that flows into 'catch and run size'. Estimates such as 'stock-recruitment' that require many inputs are less likely to be available for all CUs and may be more uncertain as they incorporate uncertainty from multiple sources.</p> <p><b>Figure 2.</b> Location of this CU within the Skeena watershed.</p> <p style="text-align: center;"><b>Glossary</b></p> <p><b>Benchmark:</b> A standard or point of reference against which condition can be compared.</p> <p><b>Brood Year:</b> Information in this report is often organized by 'Brood Year', the year in which each individual fish was spawned.</p> <p><b>Conservation Unit (CU):</b> A geographically, ecologically and genetically distinct population of wild Pacific salmon.</p> <p><b>Productivity:</b> The ability of a salmon population to sustain itself, often defined as the number of adult fish produced per spawner.</p> <p><b>Recruit:</b> A salmon that survives to maturity is considered a 'recruit' from its parent generation, or 'Brood Year'. Fish harvested as adults are still considered recruits.</p> <p><b>Smolt:</b> A young salmon which has survived the early stages of development: incubation as an egg, emergence as an alevin and freshwater rearing as a fry. It undergoes the necessary changes to transition from freshwater to the ocean, and will migrate to the ocean during this life-stage.</p> <p><b>Spawner:</b> Adult salmon that successfully migrate from marine to freshwater spawning grounds and have the opportunity to reproduce, avoiding natural mortality and harvest.</p> <p><b>Status:</b> Condition of a metric relative to a defined benchmark.</p> <p><b>Zone of Influence (ZOI):</b> Areas upstream or adjacent to habitats used by salmon during the various life stages (e.g., migration or spawning). ZOIs represent the geographic extent for measurement of habitat pressure indicators.</p>	