U.S. Department of the Interior
Bureau of Land Management

AIM-ing to Understand Stream Habitats

Using BLM's Assessment, Inventory, and Monitoring framework to determine conditions and trends for stream habitats across the Yukon-Kuskokwim-Norton Sound Region

Pacific salmon are of enormous economic, cultural and recreational value in rural Alaskan communities. Chinook, chum and coho salmon are currently experiencing significant population declines in the Yukon-Kuskokwim-Norton Sound region. Numerous regional collaborative efforts have emerged to identify reasons behind the declining salmon populations. One such effort, the Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative (SSI) was formed in the early 2000s to understand the trends and causes of variation in salmon abundance. The SSI Research Action Plan[1] proposed several hypotheses for Chinook declines, including a theory that changing freshwater habitat conditions have contributed to declines.

Past land uses like instream mining have changed waterways across Alaska, including portions of the Yukon-Kuskokwim-Norton Sound region. But the scope and scale of these changes aren't readily recognized as these impacts typically occur upstream of the areas used by adult salmon—predominately in headwater areas. Headwaters are the birthplace of streams and make up the majority of stream miles in a river network (over two-thirds). They play a foundational role in overall watershed health by providing up to half of the water volume and nutrients to downstream rivers where salmon spawn and rear. Ignoring the condition of headwater streams and their downstream effects could result in overlooking potential negative impacts to salmon.

Maintaining a large variety of healthy river habitats that support genetically distinct salmon populations is an important tenet of fish conservation. Diverse habitats filter large-scale climatic drivers differently, ensuring that declines of one population are offset by the productivity of another population. Maintaining healthy and productive habitats begins with a comprehensive understanding of resource conditions and how are changing over time. Unfortunately, comprehensive habitat data are lacking across the region, making it difficult to understand the current condition of habitats and the potential effects of past land use on watershed health. More importantly, habitat data are needed to steer restoration efforts to areas that will have the greatest benefit to declining salmon populations. With significant investments from the Department of the Interior under Gravel to Gravel, the BLM and other agencies are able to make meaningful progress towards addressing key habitat related data gaps.

Why expand BLM's Assessment, Inventory and Monitoring Program and why now?

The BLM's assessment, inventory and monitoring program provides the guidance and methods to assess stream habitat conditions and has been used across Alaska since 2013. This standardized approach for measuring natural resource conditions and trends provides quantitative data and tools to guide and justify policy actions, land uses, and adaptive management decisions. This program is easily portable beyond BLM-managed public lands and the data are shareable both of which help simplify co-stewardship of natural resources. *(Please see BLM Lotic Assessment, Inventory, and Monitoring Factsheet for more details).*

[1] *https://www.aykssi.org/wp-content/uploads/AYK-SSI-Chinook-Salmon-Action-Plan.pdf*

To date, over 200 stream sites have been assessed on BLM-managed lands within the Yukon-Kuskokwim-Norton Sound region and the number of sites continues to grow. These sites are used to describe the range of habitat conditions across the landscape, to understand impacts from human land uses by comparing altered stream reaches to reference stream reaches, and to describe how habitats are changing through repeat sampling over time.

Expanding stream habitat data collection across all land ownerships in the region will provide comprehensive information on the freshwater habitats critical to salmon. In the near term, data could be used to assess and prioritize restoration opportunities of impacted sites within the larger Yukon-Kuskokwim-Norton Sound region. In contrast, data from unimpacted sites will provide key information to shape restoration plans. As monitoring extends through time, stakeholders will be able to better understand how habitats are changing and compare those trends to issues occurring on a larger scale, like climate change.

How can Yukon-Kuskokwim-Norton Sound stakeholders and communities be involved?

What other data are important and should be considered?

The standardized BLM stream habitat assessment measurements are designed to describe key ecosystem attributes and are listed in the figure to the right. Additional data can also be collected that provide information to help answer local questions. For example, adding methods to survey fish can help improve what we know about fish occurrence in the region. Input from stakeholders and communities is essential to identifying and refining other types of data that should be collected across the Yukon-Kuskokwim-Norton Sound region.

Ecosystem Processes and Metrics

Water Quality	Acidity (pH), salinity and temperature.
Watershed Function & Instream Habitat Quality	Pool dimensions and frequency; streambed particle sizes; bank stability and cover; and floodplain connectivity.
Biodiversity & Riparian Habitat Quality	Macroinvertebrates; riparian vegetation cover and structure; and canopy cover.

What areas have been impacted in the past and should be assessed for potential restoration?

Communities and residents across the region are best equipped to identify streams impacted by past activities that may need restoration. The identification and assessment of impacted sites, like the stream shown in the image to the left, will provide critical information necessary to prioritize restoration and formulate plans to improve habitat conditions.

What entities have both an interest and potential capacity to help?

Shared implementation of a region wide habitat assessment program is essential to success. In addition to assisting in impacted site identification, helping to recruit field team members from local communities and assisting with logistics around lodging and transportation (e.g., boats, ATVs) are just a couple ways that stakeholders can further support this expanded habitat assessment program.

The BLM has funding to support habitat assessments across the Yukon-Kuskokwim-Norton Sound region in partnership with State agencies and Tribes. Please contact BLM using the information below if you have interest in partnering on region wide habitat assessments.

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