

Salmon and People in Alaska: A Workshop on Salmon Habitat Decision Tools for the 21st Century

Hosted by The Nature Conservancy and Ecotrust
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Workshop Notes

Wild salmon populations have declined throughout much of North America, yet are widespread in Alaska and continue to support local economies and cultures. As Alaska continues to develop its natural resources, better information and tools would be useful to improve planning for growth while maintaining the productivity of Alaska wild salmon populations and freshwater habitats.

This exploratory workshop engaged state and federal agencies, Alaska Native tribes and tribal organizations, non-profits, and a number of other stakeholders to explore partnerships, discuss salmon habitat decision-making in Alaska, and better understand information needs and potential opportunities to improve salmon habitat decision tools in Alaska.

The workshop objectives were to build a common understanding of current information needs, facilitate coordination amongst agencies and stakeholders, and provide a foundation to support planning for economic and community development, as well as the long-term health of wild salmon systems in Alaska.

The following four framing questions provided a guide for workshop presentations and discussions:

1. How is information on salmon habitat incorporated into decision-making in Alaska?
2. What information is currently used and how is it served and accessed?
3. Can information or access be improved to better support decision-making?
4. How do we evaluate tradeoffs among potentially competing uses of salmon habitat?

Panel Presentations

During the morning sessions, two panel presentations were given. The first panel considered **existing information tools for salmon habitat**. Examples of information tools that inform decision-making related to salmon distribution and habitat were presented. Panelists also commented on what data systems and decisions support tools are working and what can be improved.

David Albert, Director of Conservation Science from The Nature Conservancy started out the panel presentations by introducing salmon decision tools in Alaska, with an overview of salmon decision-making as an example of a coupled social-ecological resource system. Within this system, decision-making occurs at a number of levels: governance of harvest and use of salmon resources; site-specific decisions about conservation and use of salmon habitat; and broad-scale decisions that reflect Alaska's values and goals about salmon and other resource development. A key question is whether current decision systems and tools are sufficient to support resource development while maintaining a high likelihood of abundant salmon populations in the future. This history of salmon decline in North America is a cautionary note that could guide resource development in Alaska. Newly emerging information, such as high-resolution imagery and DEMs, and partnerships such as SEAK and SCAK Hydro provide a useful platform to better support decision-making in the future.

Jack Smodey and Peter Parker for the Alaska Department of Natural Resources (DNR) gave a demonstration of DNR's Alaska Mapper. This interactive data portal uses relatively dynamic data to display vector and raster data as well as best data layer (BDL) and the Statewide Digital Mapping Initiative. Mapped information can be accessed including land status, land ownership, mineral estates, water estates, as well as a range of useful data layers related to energy, mining, parks and recreation and tidelands. This is the primary GIS interface for all of DNR.

Also from *DNR, Anne Johnson* presented on the Statewide Digital Mapping Initiative (SDMI). The SDMI is compiling statewide data layers including SPOT imagery and 5m IfSAR DEMs. The Alaska Executive Mapping Committee (which is comprised of 16 federal and state agencies) is scheduled to provide statewide SDMI coverage within three years. The Alaska hydrography technical working group is developing new hydrography data sets using the highest resolution, or best available, data.

Mike Daigneault from the Alaska Department of Fish and Game (ADF&G) Habitat Division provided a briefing on the statewide Anadromous Waters Catalogue (AWC). By Alaska statute, ADF&G is responsible for mapping and maintenance of anadromous waters data for the entire state of Alaska. Entry into the catalog requires physical evidence of anadromous fish. Because survey intensity has been uneven in more remote parts of Alaska, it is estimated that the number of catalogued bodies of water may underrepresent actual anadromous waters by up to 50% in more remote areas in Alaska. Nominations to include additional stream segments or bodies of water in the AWC are open in June/July of each year.

Finally, *Coowe Walker from the Kachemak Bay Research Reserve* presented on salmon habitat modeling as decision support. KBRR developed a model to predict juvenile fish distribution in headwater streams of the lower Kenai Peninsula because of the extensive distribution of these streams, their importance to salmon populations, and the high proportion that occur on private land. The model uses watershed metrics (catchment slope, flow-weighted slope) to predict fish distribution and other habitat features. Flow-weighted slope is an effective predictor of salmon stream habitat and fish communities. This model can be used in multiple processes: restoration and mitigation; permit evaluation; focusing research; outreach and planning; and, AWC site nomination prioritization. The Kenai Peninsula Borough is using this information in planning/decision making

The second panel reviewed **the salmon habitat decision-making process in Alaska; who has decision authority, what is the decision making context, and what are the current data and decision-making needs.**

Mike Daigneault from the Alaska Department of Fish and Game (ADF&G) Habitat Division started this panel presentation by discussing ADF&G permitting systems that seek to protect anadromous habitat while also meeting needs of growing economy. Within the ADF&G Habitat Division, decisions on permit applications are made on applications from other agencies, private companies or individuals. The AWC statute, the Fish Passage Act, and Alaska Statute 1630 provide guidelines for protection of salmon habitat that ADF&G follows when issuing development permits. The sources of data used in evaluating permits include information submitted by the applicant and information from the local area biologists. After the ADF&G Habitat Division's permit evaluation, they determine how the activity affects the local resources. They have the authority to issue, request changes, or not issue, the requested permit. Often differences between ADF&G staff and parties requesting the permit are resolved through an iterative process of negotiation prior to final permitting decisions. Mike also explained that ADF&G only has

authority to issue permits on waterbodies included in the AWC. Streams, rivers, and lakes that may support salmon but have not been surveyed for the AWC are not afforded protection.

Clark Cox from the Alaska Department of Natural Resources (DNR) provided a briefing on the Division of Mining, Land, and Waters. The Division works under the authority of Alaska Statute 38 to provide for the appropriate use and management of Alaska's state-owned land and water, aiming toward maximum use consistent with the public interest. The Department assesses, monitors, and mitigates the affects of what takes place on the 100 million acres managed by the State of Alaska.

From the *Alaska Department of Environmental Conservation (ADEC)*, *Cindy Gilder* provided a presentation on the State's Water Quality Program. Recently, the State of Alaska took over NPDES permitting from the U.S. Environmental Protection Agency (EPA). Under this authority, the State of Alaska protects water quality in streams and lakes from point and nonpoint source pollution and works toward restoration of currently polluted waters to a healthier condition. All permits issued by ADEC seek to meet state water quality standards (which are the minimum thresholds set by the EPA). The ADEC Water Quality produces an annual report on the quality of water in the State of Alaska.

The next to present was *Phil Brna from the U.S. Fish and Wildlife Service*. The USFWS mission is to work with others to conserve and protect fish, wildlife, and plants. The USFWS is not a regulatory agency but makes recommendations to other agencies – both state and federal - to avoid adverse affects on federal public lands in Alaska. The recommendations provided by the USFWS are made on a case-by-case basis using the best available data. Phil recommends putting data into a landscape view and within a watershed scale to differentiate, contextualize, and illustrate potential for compounded impacts or conflicting interests; developing models to incorporate lessons learned into the decision-making processes; incorporating local communities and tribes into the evaluation processes; and creating more effective opportunities to share information and data with the public, including industry.

From the *Great Land Trust*, *Phil Shephard* presented on the organization and the work that it is doing to prioritize parcels and work with landowners to secure conservation easements in southcentral Alaska. Great Land Trust is one of six land trusts around the state; all of which are private non-profits with a mission to preserve natural areas. A land trust may become an owner for a specific property, or may hold the development rights transferred by a conservation agreement. Decisions on which properties to pursue are ultimately made by the Great Land Trust Board, with staff providing recommendations. Often projects are chosen with the best data available. To assist in making the best decisions on which properties to put into trust, Phil recommends updating the data and the quality of data held within the AWC, a key data set used in determining trust property eligibility.

Bruce Oskolkoff from the Ninilchik Native Corporation presented on the suite of projects the Ninilchik Native Corporation (NCC) has been involved in for, at least, the past 20 years. While the NCC pursues development work on their ANSCA lands, they are simultaneously involved in research concerning fisheries, habitat management, and resource management. The foremost interest to NCC, in regards to species and resource management, is to maintain and protect salmon habitats, the salmon, and the cultural ties to the resources. Salmon and fish resources are not only food, but are the tribal relationship to the lands and culture. As for habitat protections, the NCC works to maintain, improve, or restore physical, chemical, and biological functions of all rivers, streams, water bodies, and contributing wetland ecosystems to ensure sustainable salmon returns into the future. Bruce recommends better data to assess vulnerability of salmon stocks and habitat.

Breakout Sessions

In the afternoon, the exploratory workshop participants broke out into five groups of 10-12 individuals to discuss two questions. Each group considered the same questions. The following is a compilation of the responses to the first question, **what are the strengths and weaknesses of decision systems and information tools in Alaska that support planning for resource development and abundant salmon in the future?**:

Strengths

- Salmon are an important resource throughout Alaska and, therefore, salmon DSTs are important to Alaskan public interest;
- DSTs functionality is increasing;
- Options within DSTs are improving;
- User sophistication is increasing;
 - Citizen science capacity is increasing
 - Shift within agencies allows for and enables incorporation of citizen science
- Some regulatory tools are proactive for species protection;
- GIS/Mapping interface is improving agency decision-making;
- Advancements in salmon habitat mapping are ongoing (i.e. Cook Inlet wetland mapping);
- AWC is readily available to the public;
- AWC nomination process is open to the public;
- Water right laws are very protective (i.e. protects for all uses); and
- Forums, such as this exploratory workshop and the National Fish Habitat Partnerships, improve understanding and promote collaboration between organizations and agencies.

Weaknesses

- Large data gaps exist within the various geographies throughout the state;
 - Data collection should seek to include life-history needs for spawning, rearing, over-winter information
- Habitat management and permitting data are often not available in digital format and do not take advantage efficiencies provided by computer technology. This creates inefficiencies for both applicants and reviewers.
- Interoperability protocols are not built into most DST systems;
- Lack of communication and available information for Architectural/Engineering design firms both in terms of data access and explanation of regulations;
- Context for permit review is narrowly focused at site level – might be better to consider broader landscape and ecological context;
- Most, if not all, decisions are made in reaction to an event or a proposed event – very little proactive decisions are made;
- Most data within the DSTs lacks qualitative datasets; and
- Data sets and tools are disjointed;
- Web-based tools can be difficult for novice users, and users with limited/slow internet access.
- Habitat and watershed management lacks a model to inform trade-offs in watershed development, as the science behind maximum-sustained yield has provided to management of commercial fisheries.

The second break-out session considered **how can we support or improve decision tools about salmon and potentially other economic, social, and cultural values to better support planning and decision making?** Many of the groups developed commonality in their recommendations. The following is a summary of those recommendations:

Improve and expand existing databases and DSTs

- Expand existing databases, support completion of image and DEM acquisition in Statewide Digital Mapping Initiative;
- Improve statewide hydrography data layers;
- Support access to salmon databases and related multi-use data portals such as Alaska Mapper, GINA and UAS GIS Library;
- Develop clear guidelines and criteria for baseline data and information that is being collected so it can readily be incorporated into databases and data portals and be used by decision-makers;
- Standardize vocabulary and protocols so that information can be widely shared and distributed accurately;
- Improve and expand upon the Anadromous Waters Catalogue; and
- Increase funding and creative mechanisms to collect data (i.e. partnerships and citizen science).

Incorporate ecosystem complexity and function

- Advance the precautionary principle as part of permitting process (i.e. assume every stream has salmon and/or necessary water volumes until proven otherwise, assume every stream has the appropriate water volume);
- Expand mechanisms (e.g., legislation) to support consideration of ecosystem function in permitting processes (i.e. consider flow regimes);
- Incorporate reversibility into the decision making processes to evaluate the effects of a development project over time;
- Increase collaboration between parties (inter-agency and multi-stakeholder);
- Expand the watershed and development context in which decisions are being considered and unitize appropriately scaled data;
- Create conceptual models and prioritize research to investigate relationships between systems and functions;
- Increase understanding of thresholds and other biometrics and geometrics to enable their direct measurements to be a part of decision making processes (i.e., better understanding of salmon habitat); and
- Incorporate economic values and risk analysis into decision making processes (i.e. evaluate economic trade-offs versus habitat protections);
- Increase the understanding of biocomplexity, population genetics, and portfolio mapping;

Increase public outreach and education

- Engage constituencies like commercial fishing, tourism, and development industry to build understanding of issues and increase support for positive salmon habitat planning; and
- Enable the various user groups and stakeholders in the discussions about the importance of maintaining functioning salmon habitats throughout the state.

Opportunities for Collaboration

Delving into opportunities for collaboration, the exploratory workshop participants first affirmed that the collective goals to further collaborations and the frameworks to evaluate said goals need to be established. Goals ranged from short-term and long-term to practical and abstract.

First, upon consideration of strengths and weaknesses participants generally agreed that there were opportunities for improvement within current decision-making systems within Alaska. For example, potential benefits to salmon may arise from a more proactive approach to habitat conservation and monitoring, and from small-scale analysis to a more comprehensive, landscape-scale approach.

General consensus also maintained that forums, such as this exploratory workshop and the National Fish Habitat Partnerships, establish networks and lay foundations necessary to move forward. This includes continued discussions with larger audiences and varied stakeholders.

And, finally, discussions also established the need to pool resources – personnel and funding – since continued reductions federal and state funding create reactionary situations; issues are currently dealt with on an immediate, as-needed basis. The opportunities for and mechanisms to set up the partnerships are unlimited. Representatives of Alaska Native tribes and Tribal organizations reiterated their unique status as traditional stewards of the land and sovereign Nations. This status enables government-to-government relationships that can then be cultivated into powerful collaborations that are beneficial to all parties, including Alaska’s wild resources.

Exploratory Workshop Participants

Throughout the course of the day 58 individuals representing state and federal agencies, environmental non-profits, Alaska Native tribes and tribal organizations, and universities participated in the exploratory workshop. Contact information for 52 of the 58 individuals who attended is listed below:

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