



Pacific Northwest Aquatic Monitoring Partnership: A Retrospective

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Regional Context – In the beginning...there were many regional scale planning documents in the Pacific Northwest that incorporated “adaptive management” as a means for evolving the program and advancing toward long range objectives. Yet few of them made more than a generalized reference to the role of monitoring as the mechanism for gathering data to support evaluation, learning, and re-prioritization. For adaptive management approach to bear fruit, it must include a monitoring component that:

- Provides the data necessary for evaluating and re-directing restoration and management priorities at a programmatic scale.
- Functions as a sentinel that provides early warning signals of unanticipated changes in the environment.

Origins of PNAMP – I first met Jim Geiselman when I joined BPA in March of 2001. We both worked on developing the Implementation Plan for the Biological Opinion for the FCRPS that landed in December of 2000. After reviewing the RPAs from NMFS for the sections of the plan for each of the Four-Hs (hydropower, harvest, hatcheries, and habitat) I noticed that each of them called for a separate monitoring plan to be developed as stand-alone components. We discussed this and agreed that this approach would preclude any opportunity to quantify cumulative impacts. We brought this concern forward to F&W Program Director Sarah McNary and she agreed that a unified approach to monitoring made more sense, and then tasked Jim with developing such an approach. In 2003 I joined the Northwest Power and Conservation Council and was shown a short paragraph in an Appendix to the F&W Plan that called for the Council to initiate the development of a regional monitoring forum, and I was charged with this task. I called Jim and said that we had the opportunity to work together again, and we proceeded to shop around for any ongoing monitoring efforts that could provide a foundation for our joint venture.

Finding Kindred Spirits – Soon after, we stumbled upon the Aquatic and Riparian Effectiveness Monitoring Program (AREMP) of the US Forest Service (Steve Lanigan), which the US Forest Service had launched as an outcome of the Presidents’ Forest Plan to implement long-range monitoring to inform the management of the national forests of the Pacific Northwest. The AREMP Plan was developed by collaborators from EPA (Phil Larsen), USGS (Dave Busch), NOAA (Mike Tehan, Kim Kratz) under the purview of the Regional Ecosystem Office (REO). Jen Bayer happened to be doing a detail to the REO in Dave Busch’s position and was tasked with exploring partnerships as part of a yearlong leadership program. Turns out Jen was in the right place at the right time to help bring Steve Lanigan’s NW Forest Plan

focused work to Steve, Jim, and others with Columbia basin interests. Consequently, the AREMP approach became the model for our broader effort both in terms of “how” to collect data, and with “whom” to collaborate. We then convened some start-up meetings with representatives from these same entities and invited representatives from the tribes e.g., Phil Roger (Columbia River Intertribal Fish Commission), and Frank Young (Columbia Basin Fish and Wildlife Authority) and the states e.g., Steve Leider and Bruce Crawford (Washington Governors Salmon Recovery Office aka GSRO), and Greg Sieglitz (Oregon Watershed Enhancement Board aka OWEB). Jen met with every executive of these and other prospective partners, they worked together and developed a Charter, and away we went.

An Idea Whose Time Had Come – At the time, many other monitoring efforts of federal, state, and tribal entities were also ongoing, but compartmentalized from one another with a narrow focus of collecting a particular type of data, or multiple types of data within a particular geographical area. The best early example of such efforts was the GSRO’s “State of the Salmon in Watersheds,” a biennial evaluation of biological, physical, and socioeconomic data gathered to inform the recovery of listed salmonids in Washington State.

Many of the practitioners managing these monitoring efforts recognized the value that could be gained from developing the capacity to associate the different types of data on the numbers and attributes of fish, the characteristics of fish habitat and aspects of water quality. However, the region lacked a forum for brokering collaboration across a broad set of partners that could address the inefficiencies resulting from the existing fragmentation of these programs. In sum, there was a lot of discrete monitoring efforts, and mandates for a regional forum, but no one entity designated or funded to convene such a forum. Several individuals involved with these programs and initiatives recognized that they shared mutual interests in developing:

- Common protocols for data collection to foster comparability and support the “scaling-up” of geographic data
- Tools for managing and archiving data in an form accessible for analytical manipulation
- A common lexicon and naming conventions
- A durable administrative structure to support collaboration into the future since the value of monitoring data increases as the time series lengthens

So it was out of necessity, that those who would become the “Pioneers of PNAMP” found each other, converged, and developed a shared vision of how valuable it would be to accomplish even the simple sharing of data across jurisdictional and programmatic boundaries. Although this clear and compelling goal brought the participants together, during the first few years of PNAMP, the early members grappled with several fracture lines that slowed early progress. These divides included: State/federal; Tribal/various governmental entities; ESA/non-ESA listed species; and proprietary data/publicly available data. Many spirited discussions led to the



resolution of these issues over time and helped forage the diverse members into an active and engaged community of practice.

This was very significant, considering the decades of litigation over salmonid allocation issues in the Pacific Northwest that arose from the Boldt Decision in 1975. While many entities have competed with each other for a bigger slice of the allocation pie, PNAMP has fostered collaborative efforts to learn how to better grow the pie itself, by sharing information and improving the effectiveness of restoration and recovery actions within the Pacific Northwest.

During this phase, PNAMP was much like a support group for monitoring practitioners who facing common technical challenges, emerged from the shadows, and gathered around the light and warmth of shared goals. The spirit of collaboration has in part been sustained by the fact that the group holds no organic authority or control over its members. While signatories to the PNAMP Charter agree to abide by the guidance and precepts that PNAMP develops collectively, they are only bound to do so within the constraints of their own parent entity. In fact, the lack of clear authority and the lack of control by a single entity have given all the members an equal voice and stake in the outcomes.

At the time, the Columbia Basin Fish and Wildlife Authority had a similar collaboration effort among the Federal, state, tribal fisheries managers. The Collaborative Systemwide Monitoring and Evaluation Project (CSMEP) was developing common evaluation frameworks for each of the H's impacting salmon. The NPCC's adoption of their 2009 F&W Program identified the need for an Anadromous Salmonid Monitoring Strategy (ASMS) as part of their Monitoring Evaluation Research and Reporting Plan (MERR). A regional workshop was convened by Bonneville, CBFWA, NOAA and NPCC during October 20-21, 2009 and November 3-5, 2009 in Skamania Washington to develop a Basin Coordinated Anadromous Salmon Monitoring Strategy. The purpose of the Regional Workshop was to reach agreement among participants on an efficient and effective framework and project specific implementation strategy for anadromous salmon and steelhead monitoring to assess (1) Viable Salmonid Population (VSP) criteria, (2) habitat effectiveness and (3) hatchery effectiveness in the Columbia Basin. The agreed-upon framework and strategy was to address the needs of the NPCC's Fish and Wildlife Program, meet the needs of the Federal Columbia River Power System (FCRPS) BiOp (at a minimum), and contribute to the monitoring needs of ESA recovery planning and other regional fisheries management needs.

This ASMS became the impetus for many spinoff programs including the Coordinated Assessments Partnership project coordinated with StreamNet, coordinating Intensively Monitored Watersheds across the Pacific Northwest through NOAA and many individual states and tribes, Monitoring Resources, and many others.

Today – Now, 20 years later, PNAMP is a well-established community of practice that provides an example of how scientists, managers, and policy makers can solve their own



problems from the ground up, when the landscape before them simply requires some good old fashioned “pioneering.” During these decades many former members of the PNAMP Steering Committee have moved on and up within their parent entities and have continued to advance the collaborative spirit at the heart of PNAMP. PNAMP has provided many resource managers with the opportunity to grow their professional network while working to achieve the shared objectives of monitoring to inform and guide future restoration and recovery actions.

Today PNAMP is the most sophisticated and durable multi-entity collaboration within the Columbia River Basin, as reflected in the many tools, products, and services available on the PNAMP website. The success of the collaborative approach by which PNAMP operates has attracted interest from other large scale ecological initiatives in need of technical support for developing monitoring infrastructure e.g., North American Bat Monitoring Program (USFS), the Monarch Butterflies Joint Venture (USFS). The success of PNAMP arises directly from the vision, leadership, and diligence of the intrepid Jen Bayer and her creative, dedicated, and loyal team members.

Threshold of a New Frontier – When PNAMP began, there was a strong interest in developing practical ways to quantify increases in salmonid life stage productivity in locations hosting habitat restoration projects. As time has passed, we came to learn that quantifying benefits to fish conferred by on the ground habitat restoration projects may be masked or confounded by the effects of what we called “out of basin impacts” arising from climate change, toxics, and invasive species, impacts that we now call “landscape scale stressors.”

PNAMP has recognized the value of harnessing the capacities that new technologies can bring to bear on monitoring these landscape scale challenges to salmonid habitats. In response, PNAMP has sponsored several workshops to help its members adopt new tools to improve their monitoring programs. The new technologies that have become available have increased our capacity to collect data in terms of economic efficiency as well as precision and scale e.g. smaller cheaper fish tags, the use of Unmanned Aerial Vehicles, remote sensing information from satellite images, and advances in data sharing technology e.g., AI, Machine Learning. Thus, we find ourselves poised on the threshold of developing the “Next Generation” of effectiveness monitoring.