

PACIFIC NORTHWEST AQUATIC MONITORING PARTNERSHIP

Annual Report for 2007

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SUBMITTED BY
Jennifer Bayer and Jacquelyn Schei
PNAMP Coordination Team

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Executive Summary

In 2007, PNAMP continued to focus on providing opportunities for inter-organizational committees to work together to identify needs and address elements of its goals. PNAMP workgroups and subcommittees continue to advance coordination goals by tackling projects and exchanging information about their respective agencies' monitoring activities. In addition, the PNAMP Steering Committee advanced our first formal recommendations to the partners, worked with regional information management entities to sponsor an executive summit to foster a regional environmental information strategy, and began to outline a "regional monitoring operational plan" that could meet aquatic resource information needs.

PNAMP workgroups and subcommittees continued progress on many projects. Many technical experts contributed to making PNAMP tasks successful, including:

- initiation of a project to explore needs with respect to fish population monitoring methods (the "Tagging, Telemetry, and Marking Project"),
- progress on a protocol catalogue/data dictionary (Protocol Manager),
- initiation of an integrated status and trend monitoring demonstration project,
- a draft manuscript outlining the results from the habitat Protocol Comparison study,
- and consideration of new needs, such as coordination between aquatic and riparian monitoring and the invasive species early detection network.

The PNAMP Steering Committee supported several key regional initiatives, including working with the Northwest Environmental Data Network and Pacific Northwest- Regional Geographic Information Council to define roles of the three groups in providing regional information management. As a result, these groups sponsored an Executive Summit - *Sharing*

Information for Improved Decisions (held October 2, 2007), designed to bring executives together to discuss information management issues and needs.

Another significant advancement in coordination was the PNAMP Steering Committee's decision to initiate an 'operational plan' that proposes design, adoption, and implementation of a coordinated and integrated approach to monitoring of aquatic resources in the Pacific Northwest. The plan identifies common management questions to foster coordination of relevant monitoring initiatives and knits together many tasks PNAMP has tackled since its inception. Since costs of monitoring needed to address common management questions are more than one program can support alone, only through the combined efforts of multiple entities can a sufficient level of information be developed to guide regionally shared resource management decisions through coordinated, standardized and programmatic approaches to monitoring. These tasks are complex and resolution involves partnership with other regional and national organizations as well as many individual participants. However, successful collaboration on these fundamentals could be a first step in the creation of a regional monitoring effort.

Lastly, in addition to specific tasks, PNAMP continuously functions as a forum where monitoring practitioners and policy staff can interact and exchange information. PNAMP strives to produce tools and products to assist with information exchange, such as production of *PNAMP Pursuits* (our first newsletter), and continuous improvements to the PNAMP website.

We believe the opportunity provided by PNAMP to assist experts to collectively focus on issues, results, and future needs related to monitoring increases coordination and collaboration in the near term, and increases effectiveness and efficiency of aquatic resource monitoring on a regional scale in the long term.

Section I. Background

Federal, state, tribal, local, and private aquatic monitoring programs in the Pacific Northwest have evolved independently in response to different organizational mandates, jurisdictional needs, issues and questions. Planning and coordination of federal, state and tribal monitoring activities have evolved slowly but steadily over the past ten years. In 2004, the Pacific Northwest Aquatic Monitoring Partnership (PNAMP) emerged from an ad hoc effort to become a formal institution charged with providing a forum for coordination of aquatic monitoring efforts in the region. The geographic area of this coordination includes the Pacific Northwest region from Northern California to Canada where the participating entities are implementing monitoring efforts. As of 2007, 19 state, tribal, federal, and regional entities signed the PNAMP Charter (Appendix A).

The basis of PNAMP is that monitoring will be improved if: all programs use consistent monitoring approaches and protocols; follow a scientific foundation; support monitoring policy and management objectives; and collect and present information in a manner that can be shared. These goals will require considerable effort and commitment to collaboration by many entities and individuals. PNAMP strives to provide the forum where this collaboration can occur and to facilitate the exchange among technical experts and between technical and policy staff that is necessary to accomplish these goals.

Although we are eager for more participation, we believe PNAMP has the right combination of types of participants to address these goals. PNAMP's organizational structure includes a Steering Committee, Coordinator and Assistant Coordinator, and technical workgroups defined by aquatic monitoring topics: watershed condition monitoring, fish population monitoring, estuary monitoring, project effectiveness monitoring, and data management. The Steering Committee is composed of representatives from all entities that are

signatory to the Charter and leaders of the technical workgroups, a combination which allows the interface of technical and policy interests. The agency representatives are responsible for communication to PNAMP regarding their respective agencies' work and needs, as well as delivering PNAMP progress and challenges to their agencies.

More recently, PNAMP has developed a better understanding of how the goals and tasks of each technical workgroup, PNAMP subcommittee, and individual partners are inherently interdependent. PNAMP has identified and been working on a number of concepts important to establishing a regional partnership for aquatic resource monitoring that bridge technical focus areas and individual agencies. These are critical elements of a large scale, efficient, coordinated effort to monitor resources. We refer to these as “cross cut tasks”:

- Protocols: what to measure and how to measure it
- Survey design: how to decide where and when to monitor
- Data management: what are our data needs; what must we do before, during, and after data collection to facilitate data sharing
- Monitoring inventory: better facilitate coordination by describing ‘who is doing what monitoring where’
- High level indicators: seek agreement on a set of indicators (and metrics necessary to determine indicators) to describe landscape level changes in the region
- Regional network of monitoring efforts: explore ways to continuously improve our efficiency and effectiveness of monitoring on a regional scale

Each of these tasks is complex and resolution involves collaboration with other regional and national organizations, as well as many individual participants. However, successful coordination and collaboration on these fundamentals could be a first step in the creation of a

regional monitoring effort.

The PNAMP Steering Committee, Workgroup Leaders and Coordination Team share the responsibility to work across PNAMP to accomplish our goals efficiently and consistently. We encourage those in the region who seek assistance with aquatic resource monitoring issues to contribute to PNAMP. Coordination on complex topics with many partners takes time and hard work. Since PNAMP is a voluntary organization, our progress is directly correlated to participation. Support is essential for PNAMP to respond to needs of the region; we need to hear from both technical and policy staff what is needed for better coordinated aquatic resource monitoring.

Section II. 2007 PNAMP Activities

Section II (a). Coordination Team

The PNAMP Coordination Team includes the Coordinator (Jennifer Bayer) and Assistant Coordinator (Jacque Schei). The Coordination Team's goals are to facilitate the transfer of information within PNAMP and across all relevant organizations, work to support relationships between science and monitoring and to promote communication among organizations to help assure that monitoring plans and information are coordinated across the Pacific Northwest. The Coordination Team works to initiate and facilitate the development, presentation, and distribution of products aimed at heightening understanding of PNAMP issues, successes, and problems and to serve as a clearinghouse for PNAMP activities and products.

The Coordination Team is responsible for administrative requirements of PNAMP activities (e.g. meeting logistical support, record keeping, and responsibility for maintenance of membership information). Organizational support was provided to PNAMP by developing and negotiating fiscal support with government and non-government entities, and managing budgets

and associated contracts with government and non-government entities. Required progress reporting regarding Coordinator's activities (within PNAMP) and PNAMP activities to interested external parties was completed. In addition, the Coordinator conducted briefings at meetings, for individual agencies, executives, etc. throughout the region as requested regarding PNAMP's activities. The Coordination Team, with input from Steering Committee members, also produced PNAMP's first newsletter, *PNAMP Pursuits*, in October of 2007 (Appendix B). The PNAMP website continues to improve as the Coordination Team makes updates, including the addition of a page that serves as a resource for monitoring information in the region (<http://www.pnamp.org/web/Content.cfm?SectionID=9>).

Section II (b). Workgroup and subcommittee activities

Currently, there are five technical workgroups (WG) within PNAMP (Watershed Monitoring, Project Effectiveness Monitoring, Fish Population Monitoring, Data Management, and Estuary Monitoring), as well as a number of subcommittees (Protocol Manager/data dictionary; High Level Indicators; Invasive Species Coordination) formed to tackle specific tasks. Workgroups and subcommittees have met throughout the year on an as needed basis. Workgroup leaders initiate these meetings; the Coordination Team leads meeting preparation, facilitation, and follow-up, and assists with WG products.

Workgroups

Section II (b.1). Watershed Monitoring Workgroup

The Watershed Monitoring WG has evolved to using small workgroups to pursue areas of interest. The focus for the last three years has been: 1) a comparison of instream habitat assessment monitoring protocols (PNAMP Protocol Comparison Project) and 2) discussion of

the development of status and trend monitoring survey design based on the “master sample concept” (Integrated Status & Trends Monitoring Project).

Protocol Comparison Project - The goal of the PNAMP Protocol Comparison Project is to expand on previous work on defining acceptable levels of variability within stream habitat protocols. An evaluation was conducted on the correlation between attributes measured by different monitoring programs and more intensive ground measurements of the same attributes (i.e., the “truth”). A multi-author manuscript is in preparation to suggest minimally acceptable criteria that monitoring programs should have to meet when conducting stream evaluations. The benefits of such criteria should be integration of stream habitat data resources so as to increase statistical power, improve trend detection, and reduce total cost of aquatic monitoring programs. The manuscript will be submitted for peer-review publication in 2008.

Integrated Status and Trend Monitoring (ISTM) project - The ISTM project is intended to demonstrate an approach and utility of an integrated design framework for the collection of information to address questions on the status and trends of physical, chemical, and biological attributes in stream networks. To date progress has involved PNAMP workshops and work sessions with local partners to scope and refine the project, compilation of information and beginning analyses related to use of the master sample concept, consideration of available information and gaps, and identification of implications associated with implementation of the approach. A demonstration project is underway in the lower Columbia Recovery area (Figure 1).

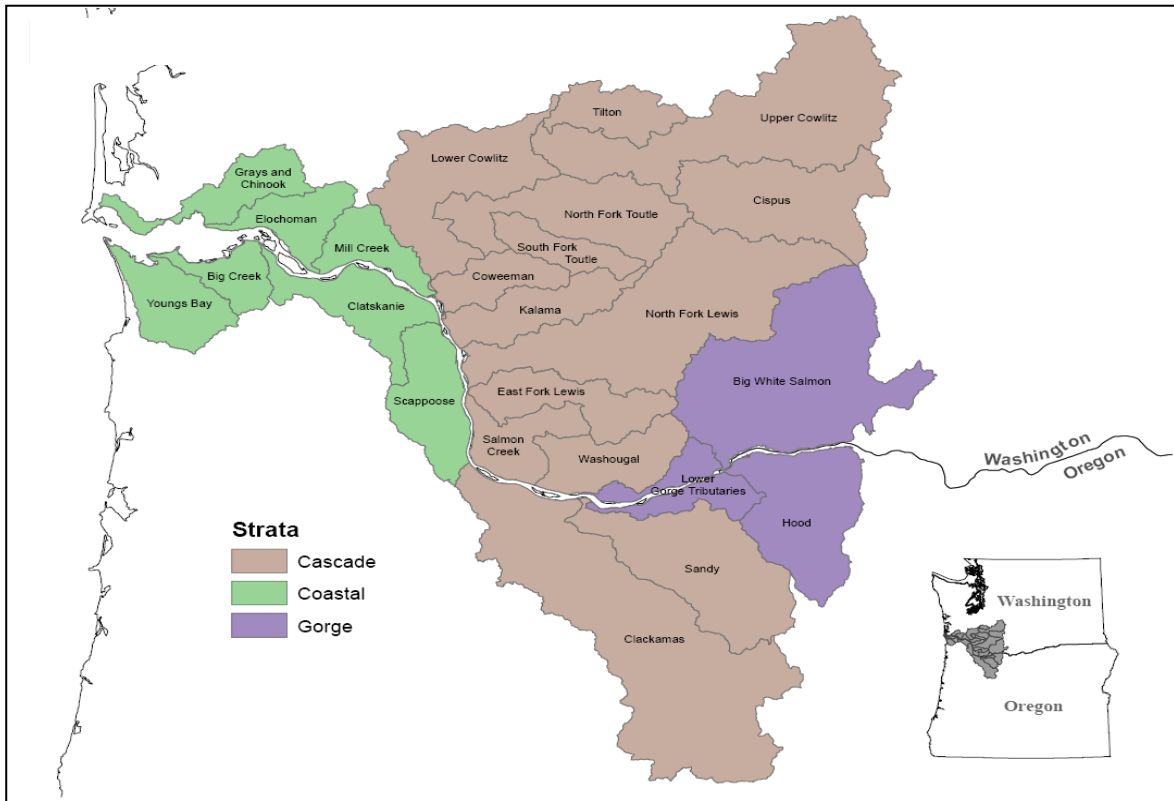


Figure 1. Lower Columbia River demonstration area

Section II (b.2). Project Effectiveness Monitoring Workgroup

The Project Effectiveness Monitoring WG, which includes a subcommittee dedicated to Intensively Monitored Watershed (IMW) topics, is focused on addressing the need to understand the effectiveness of watershed health and salmon recovery investments in terms of their stated outcomes and the resulting effect on salmon populations, water quality, water quantity, and habitat. PNAMP supports the development of a regional framework for determining which habitat projects are most effective, including addressing habitat project implementation monitoring, effectiveness monitoring, and the response of fish populations (validation monitoring) through intensively monitored watersheds

As part of the review of ongoing project-scale effectiveness monitoring programs and their protocols, the PNAMP Project Effectiveness Monitoring WG is developing methods for

assessing the quality (validity) of effectiveness monitoring projects. This work intends to address the quality of effectiveness monitoring programs at the project or reach scale, although the methods could be applied at larger spatial scales. Results from this work can be used to help identify gaps, allow construction of a coordinated effectiveness monitoring network at a regional scale, and mesh effectiveness monitoring at the project scale with status and trend monitoring.

In 2005, PNAMP recommended establishing a regional network of “Intensively Monitored Watersheds” (IMWs) to evaluate the effectiveness of restoration projects, programs and policies at the landscape scale. Effectiveness monitoring at the IMW scale addresses the following general questions: Does the collective effect of restoration and/or management actions result in improved watershed condition and fish response? Why or why not? What are the causes of those responses?

In 2007, the IMW subcommittee produced a white paper to describe the overall suite of action effectiveness approaches and a context for how IMWs fit in (“Intensively Monitored Watersheds in Context”; Appendix C.1). In addition, the group initiated a review of the PNAMP IMW strategy and is working to estimate costs for a network of IMWs (draft “Overview of PNAMP strategy and preliminary costs to establish a network of Intensively Monitored Watersheds in the Pacific Northwest”; Appendix C.2). In 2008, the IMW subcommittee plans to continue to update the characterization of all IMWs and the IMW map (Figure 2) as needed; draft results and implications of landscape classification work on IMW strategy; look at what current IMWs address and what gaps exist; and initiate discussion regarding technical and policy-level adjustments in the IMW network.

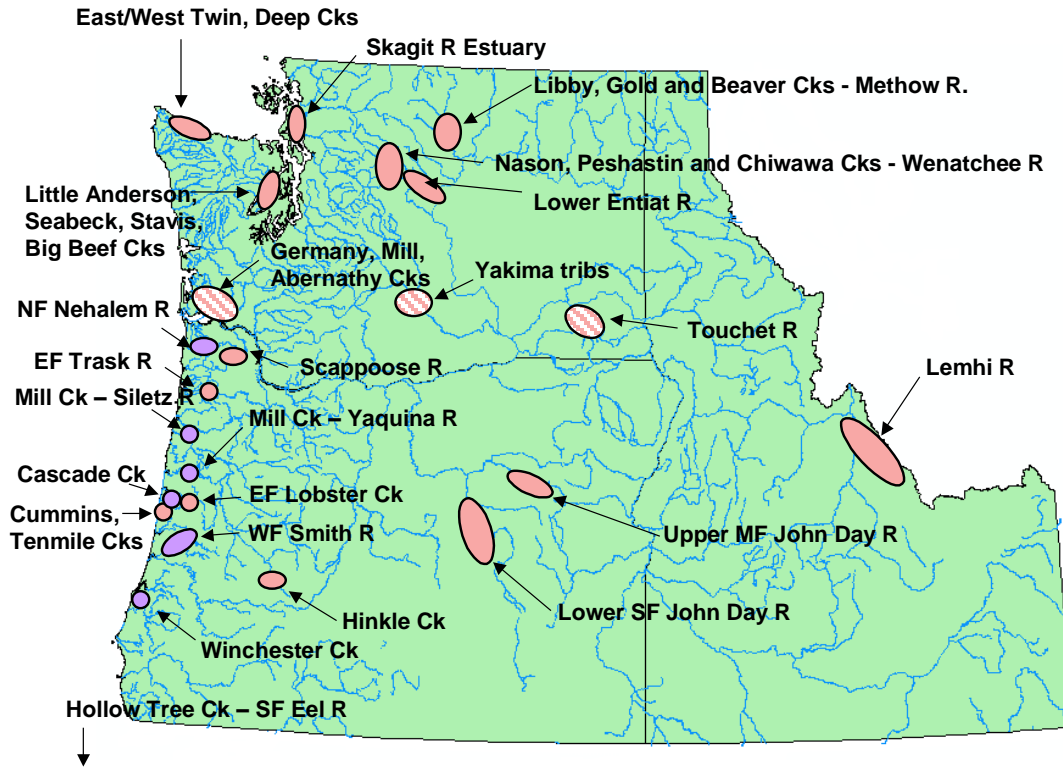


Figure 2. PNAMP Phase I Intensively Monitored Watersheds

Section II (b.3). Fish Population Monitoring Workgroup

In 2007, the Fish Population Monitoring WG initiated a task to review and catalog tagging, telemetry, and marking protocols in the region. The proposed Techniques Guide will provide new information, case studies, design and technological advances and will describe methods and protocols. The closing chapters will provide a summary of commonalities and areas of technical convergence. We will use a comparative analysis approach to propose recommendations that will improve tagging, telemetry and marking programs and techniques. This proposal will be reviewed by the NPCC's Independent Science Review Panel in early 2008, to assist the PNAMP Steering Committee in making decisions about the final nature of this product.

Section II (b.4). Estuary Monitoring Workgroup

The Estuary Monitoring WG was reinvigorated in 2007. New workgroup leadership is focusing on increasing participation and defining topics to address. The WG is working toward a review and future recommendation regarding estuary protocols in use in the Pacific Northwest, such as the Columbia River and Estuary Monitoring Protocols, newly developed OWEB protocols, and EPA protocols. In addition, the WG discussed continuing the inventory process and will start data dictionary content work soon.

Section II (b.5). Data Management Workgroup

The Data Management Workgroup continued to benefit from support from the Northwest Environmental Data Network (NED) and the NED coordinator also serves as the lead for this workgroup. PNAMP data management items were routinely brought to the NED Steering Committee (via shared meetings) for input and review. Conversely, NED work items and products were shared with PNAMP Steering Committee and workgroups. In late 2007, the PNAMP Steering Committee agreed to support hiring a full time data steward staff position to the PNAMP Coordination Team. The PNAMP Data Steward will be responsible for specific projects (such as Protocol Manager) and also facilitate dialog between PNAMP technical workgroups, regional information management groups, and regional application development teams. The Data Steward will be responsible for providing recommendations to the PNAMP Coordinator and Steering Committee on regional data management issues, tools, and procedures; communicating with monitoring practitioners to identify needs; communicating user requirements to development teams.

Subcommittees

Section II (b.6). Protocol Manger Subcommittee

PNAMP continues to support development of Protocol Manager, a relational database application designed to serve as a data dictionary for monitoring data. As a data dictionary, Protocol Manager prescribes standardized methods, by providing abstracts and citations for reference documents describing data collection procedures, and specifically defines the data elements (attributes) that represent habitat and biological variables. Testing of Protocol Manager software continued throughout 2007, including additional content updates, discussion of business rules, testing of FeatFiremon software, and development of a data dictionary template. In addition to beta testing, the team continues to discuss collaboration between the Protocol Manager team and related projects, such as the Integrated Status and Effectiveness Monitoring Project team and further progress on data entry template work. A Protocol Manager progress report was prepared in November 2007 (Appendix D).

Section II (b.7). High Level Indicators Subcommittee

PNAMP continued efforts to craft a white paper to facilitate selection and use of “High Level Indicators” as common currency to assess watershed health and salmon or steelhead recovery. “High level” is not intended to connote a high degree of importance; rather, high-level indicators (HLI) are biological and physical habitat variables that are monitored and evaluated over time at a watershed and regional scale, and can be communicated in easily understood terms. The white paper will describe a “Core List” of 17 generic indicators, a minimum Short List subset of seven indicators, a process to shape evaluation, and suggestions to address constraints that could and have stopped indicator implementation.

Substantial work on indicators has been done by PNAMP partners and other programs. We did not comprehensively cover all programs, but reviewed key indicators and programs

important to the Pacific Northwest. Applications of this paper, however, are expected for the Northwest, the Nation, and through established collaboration, to the Pacific Rim. The white paper is expected to be complete in the beginning of 2008.

Section II (b.8). Invasives Species Monitoring Coordination

A new subcommittee formed this year to discuss aquatic and riparian invasive/nonnative species monitoring coordination issues. The subcommittee requested PNAMP facilitate a workshop in early 2008 to identify specific actions that can be taken in the 2008 field season to increase coordination between existing monitoring programs and invasive/nonnative early detection efforts. A second workshop is planned for spring 2008 to discuss invasive/nonnative monitoring data management and sharing coordination issues (this workshop will likely be co-sponsored by NED).

Section II (c). Steering Committee Activities

The PNAMP Steering Committee (SC) provides the science-policy interface between the Executive partners and technical workgroups, guides work of technical workgroups, obtains resources needed to accomplish tasks, and directs the activities of the Coordinator. The SC provides assistance to PNAMP initiatives by participating in the formulation, development, and review of recommendations for activities of PNAMP workgroups and integrating these activities with agency activities. The SC facilitates the transfer of information between PNAMP and their respective agencies. By promoting communication among organizations, the SC strives to assure that monitoring plans and information are coordinated across the Pacific Northwest.

The SC met ten times in 2007 for regular, monthly meetings. The primary activity at these meetings was tracking the progress of current activities and discussion of new tasks that align with PNAMP's goals. These meetings also facilitated information exchange between SC

members and WG members. The PNAMP Coordination Team facilitated meetings and prepared notes following the meetings. In addition, the SC met for a two-day retreat in June to discuss strategic directions for PNAMP. Subgroups of the SC also met to discuss PNAMP's role in the region, alongside the Northwest Environmental Data Network and Pacific Northwest- Regional Geographic Information Council. Representatives from the three groups discussed the roles each plays in providing regional information management and how they can complement each other.

The result of these discussions was the October 2007 Executive Summit - *Sharing Information for Improved Decisions*, which brought executives from 32 entities and staff from a number of additional agencies (Appendix E.1) together to discuss information sharing issues and needs. Staff from PNAMP, NED, and PNW RGIC prepared several products in advance of the summit, including a business case and descriptive "Focus" document, to help describe the background and present goals for the summit (Appendix E.2, E.3). Of particular interest to PNAMP partners is the monitoring case study developed for the Business Case. This excellent case study, highlighting monitoring coordination in the Upper Columbia, was developed by the Upper Columbia Regional Technical Team (Appendix E.2, pages 62-64).

Section II (d). PNAMP Formal Recommendations

PNAMP advanced four products to formal recommendation to the Executive Network in 2007 (Appendix F). A formal recommendation requests that the partners of PNAMP adopt and implement the product in their organizations. The first three recommendations were "Data Management Needs for Regional Project Tracking to Support Implementation and Effectiveness Monitoring", "NED Best Practices for Reporting Location and Time Related Data", and the "Salmonid Field Protocols Handbook". These recommendations were sent out to the Executive Network in March of 2007 and finalized as PNAMP recommendations in April. The fourth

recommendation, “Methods for the collection and analysis of benthic macroinvertebrate assemblages in wadeable streams of the Pacific Northwest”, was formally recommended to the Executive Network and accepted in November 2007.

In 2008, PNAMP will consider how to measure results and impacts of recommendations and products advanced to the PNAMP partners.