



## Overview of Progress and Direction: Challenges of Meeting Multiple Expectations

### The Pacific Northwest Aquatic Monitoring Partnership

May 3, 2007

This document will help readers better understand the Pacific Northwest Aquatic Monitoring Partnership (PNAMP), what it is doing, and how to gauge expectations. It should also help set the stage for consideration of changes in direction that may be desired. It provides a snapshot of the major monitoring components PNAMP has focused on. Further, it identifies a set of core elements for all monitoring programs that are intended to complement and support regional needs. Finally, this paper includes basic policy options to help inform the direction and pacing of coordination for ongoing and future monitoring, consistent with PNAMP's guiding principles, recommendations, and strategic plan.

#### **Background – Response to the call for improved coordination**

Federal, state, tribal, local, and private natural resource monitoring programs in the Pacific Northwest have evolved in response to different organizational mandates, jurisdictional needs, issues and questions. However, while some issues are unique to particular entities, PNAMP has learned there is much common ground. Where common ground exists, improved coordination can avoid duplication of effort and increase cost-effectiveness of expenditures. This cooperation also allows more timely and accessible information and increases the overall quantity and quality of scientific information used to inform public policy and resource management decisions. This common ground and cooperation is central to the PNAMP strategy and mission.

Considerable progress has been made in coordinating aquatic monitoring across the Pacific Northwest in recent years. In 2004, a collaboration of parties interested in improving the effectiveness and efficiency of monitoring through improved coordination, coalesced to form PNAMP<sup>1</sup>. Their work has identified shared monitoring principles, objectives, questions, needs, and opportunities. These

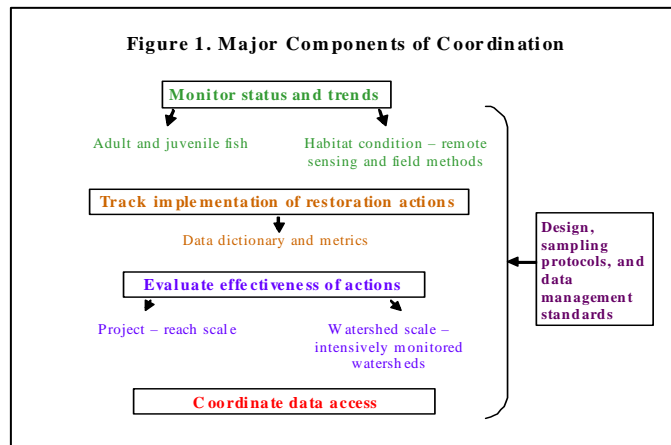
The work of PNAMP is guided by the following principles:

- *Resource Policy and Management:* The purpose of monitoring efforts is to provide the most important scientific information needed to inform public policy and resource management decisions.
- *Efficiency and Effectiveness:* Cooperative monitoring will enhance efficiencies and effectiveness of our respective and collective efforts.
- *Scientifically Based:* Environmental monitoring must be scientifically sound.
- *Shared Information:* Monitoring data must be accessible to all participants on a timely basis.

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<sup>1</sup> PNAMP charter (2004)

activities directly and indirectly support various needs, including the state, federal, and tribal monitoring activities related to resource management, the ESA, the Columbia Basin Fish and Wildlife Program under the Power and Conservation Act, the Northwest Forest Plan, and other



monitoring programs under the purview of governmental and non-governmental organizations.

To date, PNAMP has provided functional support, a venue, and a monitoring coordination framework by:

- Providing policy support and direction by member organizations,
- Committing technical resources and staff time,
- Providing funding for desired levels of coordination, and
- Providing higher-level focus and guidance for regional monitoring outcomes.<sup>2</sup>

### **A Framework for Coordination – Focusing on major components**

As detailed in the PNAMP Strategy<sup>3</sup> and annual work plans, PNAMP work has focused first on improving coordination of monitoring efforts addressing four “*major components*,” that together represent the greatest shared interest among PNAMP members. As illustrated in Figure 1, these components are:

- Status and trends of fish populations (particularly those listed under the ESA [VSP<sup>4</sup> considerations]) and habitat,
- Tracking implementation of actions,
- Effectiveness of management actions, and
- Coordination of data access.

Each of the four components has many dimensions and challenges. However, the components are very interrelated, and thus should be viewed as part of an integrated whole. Each depends on the other for success. For example, to understand effectiveness of actions, it is essential to have an appropriate design, to know what actions have been implemented, and because evaluations occur over long time frames, to also have a sense of how biological and environmental features are

<sup>2</sup> Excerpted from PNAMP (2005) strategy.

<sup>3</sup> PNAMP’s coordination plan for monitoring in the Pacific Northwest, “*Recommendations for Coordinating State, Federal, and Tribal Watershed and Salmon Monitoring Programs in the Pacific Northwest*” (PNAMP 2004), and “*Strategy for Coordinating Monitoring of Aquatic Environments in the Pacific Northwest*” (2005).

<sup>4</sup> VSP (NOAA Viable Salmonid Population).

changing so that information can be interpreted in that context. Finally, for each component, data must be collected and accessible for the evaluation, reporting, and decision-making.

Within the above four components, PNAMP's work has focused on common "*core elements.*" When applied to all current and potential future components of PNAMP work, resolving details associated with these core elements will make monitoring across the Pacific Northwest more efficient and effective.

The core elements are:

- Common management and monitoring questions and critical information needs
- Monitoring design(s) that allow cooperative monitoring and information sharing
- Compatible and documented protocols for sampling, analysis, and quality assurance
- Supporting the need for data management standards and structure(s) to provide common access to information and multi-level reporting

### **Overview of Progress and Direction**

PNAMP has contributed to development of products containing monitoring guidance and/or recommendations on all major components and most core elements. Table 1 provides a summary and analysis, at-a-glance, of progress to date (as denoted by color-coding) along with examples of associated PNAMP products from 2004 to 2006 listed in Appendix A. A summary of PNAMP's 2007 work plan identifying tasks and products is provided in Appendix B. All PNAMP products are accessible online at [www.pnamp.org](http://www.pnamp.org).

Table 1 shows that considerable progress has been made in resolving some components, while much less progress has been made in others. For example, identifying shared monitoring objectives and questions for fish, habitat, and action effectiveness has moved along fairly well. However, significantly less progress has been made on remote sensing of habitat condition because PNAMP work on that topic started only relatively recently. PNAMP efforts have helped to support improved data management standards and structures, although much work remains to be done. The PNAMP data management efforts are supported by the Northwest Environmental Data Network and PNAMP data management interests are discussed in this forum.

Improved coordination across the wide spectrum of monitoring efforts of shared interest (e.g., design and implementation, from local to Pacific Northwest scales) will only occur if commitments exist within and among the hierarchy of affected programs. As reflected in the membership of PNAMP, these include local, state, tribal, federal and other entities and programs. While the mere existence of PNAMP represents a base level of commitment toward improved coordination, the specifics of how much coordination is sufficient for individual entities or how much coordination is attainable or sufficient to meet management expectations needs further clarification through interaction with and among PNAMP Executives.

**Table 1. Relative progress of PNAMP coordination by major component and core element**

<p><b>Key:</b>  <span style="background-color: #ADD8E6;"> </span> Blue = major accomplishment(s) and/or product(s)  <span style="background-color: #FFFF00;"> </span> Yellow = minor accomplishment(s) and/or products in progress  <span style="background-color: #FF8C00;"> </span> Orange = minimal to no progress to date</p>
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Major component	Core element			
	Common questions and information needs	Cooperative designs	Compatible protocols	Data management standards and structure(s)
<b>Monitoring status and trends</b>				
<b>Fish population</b>				
- Juvenile	Report <sup>a</sup>	Workshop <sup>b</sup>	Review <sup>c</sup>	
- Adult	Report <sup>a</sup>	Workshop <sup>b</sup>	Review <sup>c</sup>	
<b>Habitat condition</b>				
- Field methods	Report <sup>a</sup>	Watershed pilot <sup>d</sup>	Side-by-side watershed protocols test <sup>e</sup>	
- Remote sensing	Workshop <sup>f</sup>			
<b>Monitoring the effectiveness of actions</b>				
Project-reach scale	Report <sup>a, g</sup>		Review <sup>g</sup>	Protocol Catalogue, data dictionary and tools <sup>h</sup>
Watershed scale (IMWs)	Report <sup>i</sup>	Report <sup>i</sup>	Report <sup>i</sup>	
<b>Monitoring the implementation of actions</b>				
Restoration actions	Report <sup>a, g</sup>	Review <sup>g</sup>	Review <sup>g</sup>	Review <sup>g</sup>

Note: Products corresponding with the letters are listed in Appendix A

Summary of some key PNAMP products to be completed in 2007 and 2008:

- Common questions and information needs:
  - Report recommending a core set of indicators for use in high level reporting of high level indicators for use in reports to decision-makers across the Pacific Northwest
  - Report summarizing results of a PNAMP survey of monitoring and resource management questions
- Cooperative designs:
  - Integrated watershed condition status and trends sampling design framework and demonstration project
- Comparable protocols:
  - Recommendations and scientific publications summarizing the watershed habitat condition protocol test evaluating the comparability of field attributes and sampling protocols used by various agencies of protocol comparison project
  - Report and recommendations on protocols for macroinvertebrate field and laboratory sampling
- Data management:

- Recommendations on data management design for project implementation and effectiveness monitoring (produced by S. Katz et al, NOAA Fisheries)
  - Recommendations for locational and time-related data (produced by the Northwest Environmental Data Network)
- Technical workshops on remote sensing
- Recommendations on use of protocol catalogue tool (Protocol Manager) to manage protocol and data dictionary information

### **Additional Coordination Possibilities – What else merits coordinating?**

In addition to or in conjunction with the four major components discussed above, PNAMP has also begun work toward improving monitoring coordination associated with:

- estuary and nearshore marine environments,
- aquatic habitat conditions in larger (i.e., non-wadeable) streams and rivers, and
- aquatic invasive species.

In addition, a number of topics have been identified of interest to some PNAMP members, but for which meaningful coordination by PNAMP has not been initiated to date. These topics include:

- resident fish or wildlife,
- water quality,
- stream flows,
- research related to monitoring,
- adaptive management decision tools, and
- cost analyses.

A fundamental ongoing challenge has been to balance PNAMP's resources with the level of shared interest in working on potential subject areas. There will always be many more areas of interest than there is the capacity to address them.

### **Obstacles and Limitations**

It is important to recognize that, if PNAMP has been successful in any way, it has done so essentially as a volunteer organization. PNAMP has operated since its inception with a minimal amount of formal organizational structure and funding dedicated to complete tasks and deliverables. For example, with the exception of the coordination/administrative support, and some of the costs of the habitat protocol comparison project, PNAMP's accomplishments have for the most part been performed via in-kind contributions of staff from member organizations and other interested parties.

This volunteer approach, combined with the diverse interests of participants, presents many challenges. Although PNAMP has made progress, expectations about scope and pace of work need to be realistic given this infrastructure. Expectations of PNAMP members and others should be tempered with these realities, while recognizing that adjustments in approach would yield different results. Most importantly, consistent with PNAMP's guiding principles, PNAMP's expertise and limited resources must be focused on topics of the highest priority to decision-makers.

## **Adjusting Expectations – What are the options?**

The rate or direction of PNAMP’s progress can be adjusted by the PNAMP Executive Network if needed. The PNAMP charter describes the organizational structure and formal process for PNAMP Executives to make changes in direction if and when deemed necessary.

PNAMP has identified policy options below for consideration by the Executive Network that would maintain, accelerate, or modify PNAMP progress and/or direction; they are not mutually exclusive.

<b>Option</b>	<b>Policy description</b>	<b>Pros</b>	<b>Cons</b>
1	<i>No change</i>	Lowest cost; Implies work is proceeding acceptably	Continues risk that important needs and expectations will not be met or not met in timely manner
2	<i>Rebalance existing workplan</i> – modify PNAMP’s workplan of activities within the limits of available resources	Keeps cost low; Assures alignment of PNAMP work with the priorities of most importance to Executives	Creates the need to manage unmet expectations for activities that become lower priorities; Puts burden on executives to establish priorities
3	<i>Increase capacity</i> – accelerate progress and/or change direction to address new or higher priority (ongoing or new) activities and products	Improves ability to complete work and meet expectations of Executives	Increases cost; Puts burden on executives to establish priorities

## Appendix A

### Summary of key PNAMP products - 2004 to 2006 <sup>5</sup>

(Note: Letters in **(bold)** correspond to products identified in Table 1)

#### 2004

- **Charter and Business Practices** signed by 19 state, federal, tribal and regional entities.
- Prepared considerations for monitoring in **subbasin plans**.

#### 2005

- (c) Facilitated review of the State of the Salmon handbook on **salmonid field monitoring protocols**, and facilitated implementation of those protocols by and through PNAMP partners.
- Supported or hosted three publicly accessible technical **workshops** or forums:
  - (b) Workshop for fish practitioners
  - (f) Remote sensing
    - Large-scale monitoring symposium (at the American Fisheries Society North Pacific International Chapter meeting)
- (e) Initiated a **habitat condition protocol test** in which field attributes and sampling protocols used across numerous agencies are compared.
- (i) Prepared a regional plan to establish a network of **intensively monitored watersheds** (IMWs).
- Prepared long-range **strategic plan**.
- Developed **website** for PNAMP information and products.

#### 2006

- (d) Advanced development of an integrated watershed **status and trend monitoring design pilot**.
- (g) Facilitated review of **data management design for project tracking**.
- (h) Supported development and began testing of a regional **data dictionary and protocol catalogue** tool.
- Conducted a pilot **inventory** of aquatic monitoring activities.
- Hosted technical **workshops** on:
  - Coordination of aquatic invasive species monitoring
  - Workshop for monitoring practitioners

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<sup>5</sup> All PNAMP products are accessible online at [www.pnamp.org](http://www.pnamp.org)

## Appendix B

### Summary of PNAMP Products Anticipated in FY 2007

*Note: not all recommendations and products have arisen from PNAMP; some items have been brought to PNAMP by outside entities for review and support; some have benefited from joint development by PNAMP and other entities.*

#### Recommendations regarding products originating outside PNAMP:

- NED Best Practices for Reporting Locational and Time Related Data
- Salmonid Field Protocols Handbook (prepared with assistance from PNAMP)
- Effectiveness Protocols: standardized metrics for project tracking for RME (document review and recommendations associated with NOAA-Fisheries proposal)

#### PNAMP products/recommendations

- High level indicators “white paper” to identify and recommend a core set of indicators that can be shared among all types of aquatic monitoring.
- Management questions “white paper” to facilitate coordination by identifying relative importance of management questions (and their related hierarchical set of information needs) shared by the PNAMP partners.
- Habitat protocols recommendations (watershed assessment methods): report the results of protocol comparison project.
- Macroinvertebrate field and laboratory sampling protocol recommendation
- Monitoring Survey Design recommendation for a regional aquatic status & trends monitoring design (using the EMAP probabilistic GRTS design developed by the EPA).
- Project Effectiveness Monitoring Protocols: protocols shared by Oregon and Washington agencies; facilitate discussion about formally recommending these to PNAMP partners.
- Project Effectiveness Monitoring Protocols: recommend strategy for implementation of the PNAMP-recommended network of Intensively Monitored Watersheds (IMW) and reach specific studies for effectiveness monitoring.
- Remote Sensing Applications for Aquatic Monitoring Workshop (spring 2007) to facilitate application of remote sensing tools for aquatic monitoring.
- Identify and implement a process for developing/refining common GIS layers by working in partnership with Pacific Northwest Regional Geographic Information Committee (PNW RGIC).

#### Products that require funding for completion

- PNAMP Aquatic Monitoring Activity Inventory to facilitate collaboration by identifying who is doing what monitoring where, how, etc.
- Pilot regional data dictionary & protocol catalogue tool (Protocol Manager)
- Fish Protocols: Develop Protocol Comparison Tests

- Standardized field method training manual (template to be used to foster consistent implementation of protocols)