



## **Habitat Data Sharing Project Candidate Activity Portfolio**

With this candidate activity portfolio, the Habitat Data Sharing (HDS) core team<sup>1</sup> is continuing its effort to scope, select, and pursue projects which support improved aquatic habitat data sharing throughout the Pacific Northwest region. The habitat data considered includes species and physical parameters that indicate overall quality or environmental characteristics (sometimes referred to as attributes) of habitat. The scales at which these data are managed ranges from a specific site or reach to the entire watershed in which those sites or reaches exist.

The proposed activities described below represent a candidate portfolio; not all will necessarily be pursued. The purpose of describing the candidate activities here is to solicit the review and feedback of the HDS Leadership Team and the PNAMP Steering Committee. This feedback will inform which activities will be pursued and guide the development of work plans and time lines for the select activities.

### **Background**

A main driver for the sharing of habitat data is the need of agencies at all levels and tribes to report on status and trends. In the Columbia River Basin, the Federal Columbia River Power System BiOp reporting requirements is a specific and encompassing status and trends driver. Regionwide habitat is a limiting factor for many listed species and NOAA Fisheries needs habitat related data for fishery status assessments. Managers and data consumers are also interested in being able to quantify the effectiveness of habitat restoration actions and to be able to link these actions back to fish and other species.

The core team has developed descriptions of potential activities for the HDS project based on interviews, a workshop, input from the PNAMP Steering Committee, and comment on an initial prospectus. The interviews were conducted in June and July 2011 with 11 people representing federal, state, tribal, and NGO interests in aquatic resource management. A workshop was held on July 26, attended by nearly 20 invited participants and a broad scoping activity was conducted. Following the workshop an initial prospectus was developed describing three activities identified by participants. The PNAMP Steering Committee commented on this prospectus at a retreat held in August and discussed additional topics of habitat data sharing

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<sup>1</sup> The HDS core team consists of Jen Bayer, PNAMP Coordinator; Kathryn Thomas, PNAMP Information Management Liaison; Amy Puls, PNAMP; Louis Sweeny and Kristen Durance, Ross & Associates; and Tom Iverson, Columbia Basin Fish and Wildlife Authority

interest. In addition, participants of the workshop commented on the prospectus and suggested additional topics.

### **Candidate Activities Portfolio**

Seven activities are described below. Activities A-D are interrelated and build upon existing PNAMP sponsored projects and widespread habitat characteristics; activity A underlies all four proposed activities. Activity E builds upon existing work initiated by King County, Washington, with macroinvertebrates as indicators of habitat quality. Activities F and G link the HDS project with other projects being implemented through PNAMP.

#### **A) Identification of a Short List of Priority Habitat Characteristics**

**Concept:** Habitat data covers a very large set of potential characteristics and scales. As an initial step, PNAMP proposes to identify a short list of characteristics which are of greatest common interest and appear to be most “sharable”. This list will be used to focus the proposed activities listed below. The Integrated Status and Trends Monitoring (ISTM) project’s consolidated inventory of habitat characteristics for seven major habitat monitoring programs will be used initially to derive an initial list of commonly used and similar habitat characteristics. This list will be supplemented by a review of PNAMP’s previous work on high level indicators and Pacific Northwest action and reporting agency reports identifying habitat characteristics of interest.

**Expected product:** Short list of habitat characteristics for focus in activities B, C, and D below.

**Estimated time to complete:** 2-3 months

**Participation:** A draft short list will be developed by the HDS core team in coordination with the ISTM team. This list will be presented to the HDS Leadership Team for review, comment, and approval.

**Related Information:** [ [ISTM](#) , [High Level Indicators Project](#) ,and [Protocol Comparison Project](#) ]

#### **B) Data Exchange Template (DET) Prototype for Selected Habitat Characteristics**

**Concept:** Habitat monitoring data are collected by a wide variety of organizations each with their own methods of storing and providing access to this data. Consolidation of these data across providers is often complicated by differences in underlying data formats and data collection methodologies. This project will develop common data exchange templates (DET) for two to three habitat characteristics which are found to be sharable “as is” (i.e. without significant transformations). Data from various providers could be cross-walked, shared, and consolidated via the DETs.

Construction of a prototype DET will test both the feasibility of developing a DET and the utility of the DET in performing data sharing, consolidation, and use. Revisions will be made to the DET as appropriate and recommendations will be made to promote the most efficient inter-agency data flow using the DETs. In addition to looking at the use of the DETs in inter-agency data flows, the project will examine at how the DETs interact with regional tools developed to aid monitoring efficiency and interoperability, such as MonitoringMethods.org and with other regional efforts to develop data exchange templates such as with the Coordinated Assessments project. Lessons learned in developing

these DETs could then be used to inform decisions about development of additional templates for other habitat characteristics.

**Expected product:** Summary report to HDS Leadership Team and PNAMP Steering Committee.  
Participant workshop.

**Estimated time to complete:** 6 months

**Participation:** The HDS core team in coordination with HDS Leadership Team will direct the activity. An activity working group will need to be developed consisting of agencies (federal, state, tribal, and NGO) that wish to participate and contribute time toward vetting, testing, and refining the emerging data exchange template.

**Related Information:** [[MonitoringMethods.org](#), and [Coordinated Assessments](#) ]

## C) Creating Habitat Indices for Improved Sharing using Normalization of Habitat Metrics and Measurements

**Concept:** As illustrated by the ISTM project, habitat characteristics may require different kinds of transformation prior to sharing and consolidation. One common transformation is normalization of the measures to a common index. Normalization is a mechanism to consolidate characteristic data of differing but compatible base metric or measure units. The objective of this project is to identify 2-3 such characteristics (large wood and fine sediment are two possible characteristics) and perform a normalization and consolidation as a proof of concept that could be expanded to additional characteristics and geographies. This project will be coordinated with the DET development project above.

**Expected product:** Summary report to HDS Leadership Team and PNAMP Steering Committee.  
Participant workshop

**Estimated time to complete:** 6 months

**Participation:** The HDS core team in coordination with HDS Leadership Team will direct the activity. An activity working group will need to be developed consisting of biologist/scientists from the Agencies (including the Forest Service) and Tribes. This work will be done in partnership with the existing ISTM team.

**Related Information:** [[ISTM](#)]

## D) Needs Assessment for Habitat Data Sharing

**Concept:** A key finding of the Coordinated Assessments project is that improved sharing of fish data in the Columbia Basin will require investments in the data management resources (e.g., hardware, software, technical resources, and business practices) of participating agencies and tribes. This is expected to be the case for regional habitat data sharing as well. This project will characterize the data sharing infrastructure gaps, needs and priorities of the project participants for aquatic habitat data. The project goal is to determine the internal capacity improvements necessary for participating agencies and tribes to effectively share the habitat data that they manage. The assessment would also identify opportunities for investment in shared infrastructure such as tools or other resources useful to multiple agencies and tribes. The assessment results will provide a regional picture of the overall needs for

improved aquatic habitat data sharing which can inform both individual agencies or tribes and regional resource allocation.

**Expected product:** Summary report to HDS Leadership Team and PNAMP Steering Committee.

**Estimated time to complete:** 3 months

**Participation:** The HDS core team will use the short list developed under task A above to survey participants to characterize their current capacity to manage and share the selected habitat characteristics.

**Related Information:** [[Coordinated Assessments](#)]

## E) Macroinvertebrate Data as a Component of Habitat Data Sharing

**Concept:** Many agencies and tribes collect and manage macroinvertebrate data. However, differences in protocols and data formats make sharing and compilation of these data difficult across the entire Pacific Northwest Region. The Puget Sound Stream Benthos project has developed a data repository and analysis tool for macroinvertebrate data that allows consistent comparisons among participating sites using the Benthic Index of Biotic Integrity. This work may serve as a guide to efforts to collect, manage, and apply macroinvertebrate data elsewhere. PNAMP can facilitate making this benthos tool known and available to other PNAMP partners and convene the various interested parties to help identify opportunities for collaboration. It's also possible that, once convened, partners would decide that a common DET for these data is of interest and is feasible. This convening role could also help to bridge the water quality and fish perspectives on these data.

**Expected product:** Workshop on the role of macroinvertebrates as fish habitat indicators with focus on sharing ideas, identifying areas of collaboration, and/or other forms of PNAMP support; workshop reporting

**Estimated time to complete:** 6-9 months

**Participation:** The HDS core team in coordination with the HDS Leadership Team will coordinate this event. A workshop co-coordinator and advisory group will be sought to help frame and develop the workshop agenda.

**Related Information:** [[Puget Sound Stream Benthos](#)]

## F) Remote Sensing as a New/Improved Source of Habitat Characterization Data at Multiple Scales

**Concept:** Remotely sensed data are of increasing interest to resource managers. Both data availability and advances in interpretation methodologies and technology continue to evolve rapidly. In an era where acquisition of data has become increasingly expensive, remote sensors provide an opportunity for data and analysis that would be cost-prohibitive through other means.

PNAMP has recently started working with the WA Department and Ecology and the WA Governor's Salmon Recovery Office to co-lead a remote sensing working group. This work builds upon work PNAMP has sponsored previously to provide current information on the use of remote sensing in aquatic monitoring. The initial focus of this new group is the application of satellite data for habitat characterization activities.

**Expected product:** Facilitate communication between the remote sensing working group and the HDS Leadership Team and other participants.

**Estimated time to complete:** ongoing

**Participation:** The PNAMP Information Management Liaison will coordinate interactions between the HDS and Remote Sensing groups.

**Related Information:** [ [PNAMP Remote Sensing Forum](#) ]

## **G) Habitat Data Discovery**

**Concept:** Habitat monitoring data are collected by a wide variety of organizations each with their own methods of storing and providing access. Finding these data, or even simply being aware of their existence, is sometimes difficult. One solution would be a web-based tool designed to provide a virtual integrated inventory of aquatic habitat data in the Pacific Northwest. Users would be able to search the inventory by a variety of parameters (e.g., spatial, temporal, organizational) to view/download metadata for habitat monitoring projects. Once the data is “discovered” using the tool, a link might be provided to the actual data if they are available online. This locator tool would provide a consolidated view by receiving (via automated or manual processes) sets of metadata from the participating systems, and storing this metadata in a centralized repository. The system design would be opportunistic, carrying as much or as little metadata as is readily available from the source systems.

Other tools are being considered by PNAMP staff and partners that might include similar data discovery functions to that described above. Specifically, scoping for a Monitoring Locator Tool that includes metadata elements has been approved for fiscal year 2012 and scoping work should begin in January. The scoping activity will provide a characterization of the extent to which the proposed Monitoring Locator Tool can meet some or all of these data discovery needs.

**Expected product:** Facilitate communication between the scoping activities for the Monitoring Locator Tool, the HDS Leadership Team and other participants. Provide avenues for input into the scoping by the HDS Leadership Team and other participants.

**Estimated time to complete:** 6-9 months

**Participation:** One or more of the PNAMP HDS core team will coordinate interactions between the HDS and scoping activities for the Monitoring Locator Tool.

**Related Information:** [ [PNAMP Master Sample Tool Development Project](#) ]