

Data Management Workshop: Identifying Priorities for StreamNet and Northwest Habitat Institute

Portland, Oregon
September 20 – 21

Workshop Proceedings

1. Workshop Purpose:

The purpose of this workshop was to recommend priorities for the data and data support services provided by StreamNet and the Northwest Habitat Institute (NHI) to the BPA funded Fish and Wildlife Program. Since many of these data and service priorities require basin-wide coordination, these recommendations also seek to capitalize on the progress made to date towards a regional data management framework, and identify where and how further progress can be made.

2. Background Briefings

Workshop began with background briefings by the following:

NPCC Fish & Wildlife Program	Doug Marker
BPA/Federal Caucus	Jim Geiselman
NOAA	Chris Jordan
CBFWA	Tom Iverson
NED (Northwest Environmental Data-Network)	Stuart Toshach
PNAMP (Pacific Northwest Aquatic Monitoring Partnership)	Jen Bayer
CSMEP (Collaborative System-wide Monitoring and Evaluation Project)	Dave Marmorek
Towards a Regional Information Framework	Phil Roger
Overview of StreamNet	Bruce Schmidt
Overview of Northwest Habitat Institute	Thomas O'Neill

These briefings are available online at:

<http://www.cbfwa.org/conferences/FY06Data/default.cfm>

3. Workshop Objectives Within the Context of a Regional Information Framework

This workshop was hosted by CBFWA to provide a broad-based venue in which data partners could develop recommendations to both StreamNet and NHI as they refine their funding proposals to the Council. For many related information areas, workshop participants also have broader information needs and interests which go beyond those provided by StreamNet and/or NHI. These needs and issues require a broader level of partner information coordination or a “regional information framework”. For example, CBFWA’s members have authorized development a “State of the Resource Report” to better summarize key regional fish and wildlife population status and trends. Implementation of this report will depend upon a regional capability to share key information more efficiently.

As discussed in the morning presentations (and summarized by Phil Roger) many partners have been working together, in several inter-related efforts, to begin assembling the pieces of an improved regional information framework. These projects include:

- PNAMP and CSMEP work on field sampling protocols and methodologies for habitat and fish population monitoring to better support management decisions at multiple scales, and
- NED’s work to establish broader coordination and improved tools for information management and sharing.

Both StreamNet and NHI are also seen as important components of this broader regional information framework, with StreamNet participating directly with all three groups and NHI participating in NED and PNAMP.

Participants also discussed the need to be realistic about the pace of change, especially given the diversity of data actors, and the fact that many data collectors receive only a small portion of their funding from the Council. Nevertheless, Council’s support for regional data management projects is seen as an important way to leverage larger partner investments while supporting both the Council and broader regional data needs.

4. How are workshop participants customers of StreamNet now?

Since a primary purpose of the workshop was to develop customer-based recommendations to StreamNet, the participants first identified *how* they were customers/users of these services now. Key data and services identified were:

- a. **Supporting State, Tribal and Federal Collaboration:** StreamNet provides a neutral platform through which partners can access each others’ data in a common, well documented format. This approach helps build inter-organizational trust and

confidence, which are absolutely essential in durable and effective data sharing relationships. StreamNet also supports cross-agency data discovery (for StreamNet hosted data). Participants noted several occasions when they used StreamNet to discover new data from current partners.

- b. **Providing Web Data Publishing:** StreamNet allows agencies to make data available via the Web without taxing agency web resources. As a dedicated platform, StreamNet can often provide responsiveness/flexibility that would be difficult or costly for agencies to procure internally. Agencies, in turn use StreamNet as a platform for both internal and external data publication, allowing usage by a broader audience than would otherwise be possible. This data publishing function is used for both data that has been regionally standardized, and agency unique data sources for which web distribution is desired.
- c. **Providing Internal Data Services:** Especially in smaller agencies, some StreamNet staff provide direct services (e.g. GIS support, protocol/standardization efforts) to agency staff as part of their StreamNet activities. This includes work on internal data resources (e.g. applications or databases) which both serve internal staff needs and facilitate broader sharing via StreamNet.
- d. **Providing a conduit for data from the field to the Region:** Participants identified current and potential uses where StreamNet's regional coverage was needed to:
 - support efforts by the Council to link projects together to create broader "virtual experiments" where different interventions could be compared
 - support "data mining" by NOAA and other researchers

In addition, a key future element identified was:

- support CBFWA development of a "State of the Resource" report/website, without having to duplicate existing agency data assets.

5. Developing Recommendations for Improvements and Focus Areas for StreamNet Data and Data Services

Participants identified the following high level findings and associated recommendations for StreamNet data and data service improvements:

a. Towards the dual goals of improved coverage and services, StreamNet should assess how to better engage with and support the Tribes. StreamNet's regional coverage is a key reason many go to StreamNet (as opposed to the individual provider agencies). Participants noted that there is significant data collected by Tribes that is not currently in StreamNet.

Recommendation: StreamNet should propose how to better engage with and support participation by Tribes. This may include better linkages to existing tribal data management systems, co-development of new or additional data entry and data management tools and/or additional training/outreach.

b. Evaluate how to Improve Data Timeliness: Timeliness of StreamNet data postings is determined largely by: a) partner agency internal data management and QA/QC processes, and b) processing within StreamNet needed to translate data to common formats. These delays cause some potential StreamNet users to go directly to source agencies to obtain the most recent data, although such data may not yet be considered “official” by the agency. StreamNet staff noted that significant improvements in data timeliness could be achieved but that these improvements will require changes to current partner processes, as well as changes to StreamNet’s internal processes. These include:

- Establishing procedures for agencies to release “provisional” data to StreamNet (with appropriate flagging) for earlier posting;
- Converting data to the Data Exchange Format (DEF) and adding geo-referencing. Automating this process would significantly improve speed of posting data and free staff to work on additional data sets. This could be accomplished by the data source agencies adopting data formats closer to the regional DEF, or by the agencies developing more consistent internal data management systems at the field level, using a standard format, that feed data to the agency and also allow for automated transformation into the DEF format. StreamNet can assist agencies with development of such systems, as they are already doing in Idaho. The data source agencies will have to determine their own value and need for doing this.
- Establishing the DEF, the common format in which data is posted on StreamNet, is very time consuming. StreamNet staff noted that many delays in DEF development occur because work on the DEFs often competes with other StreamNet work. Also, each DEF is often treated as the “superset” of all possible data elements for a given area. If clear priorities could be articulated by StreamNet members, staff believes needed DEFs could be developed much more quickly.
- The DEF for individual data types could be too complex. StreamNet staff should review existing DEFs to see if they can be simplified to make data conversion simpler.

Recommendation: StreamNet should identify the factors that substantially limit data timeliness and identify what changes data providers and StreamNet would/could realistically make to improve timeliness.

c. Assess what current and potential new data/services would be needed to support Sub-Basin-Planning and the current set of draft core indicators: StreamNet staff and many participants noted that the lack of a consistent set of common core indicators makes regional data prioritization difficult, and hence it difficult to provide StreamNet and NHI with clear direction. During the workshop, participants identified that so far the following business drivers, are, from the Council’s perspective, the highest priorities:

- Ability to support the next round of sub-basin planning
- Ability to support the draft core “high level” indicators
- Ability to support the CBFWA “State of the Resource” report

Participants look to the Council to confirm these priorities. Agency representatives made it clear that these may not be the current state agency priorities for StreamNet. Managing

data to support state level research and monitoring are the management agencies priorities in many cases.

Recommendation: The StreamNet Steering Committee should do a crosswalk of current/needed data to support these priorities.

d. Population Scale Fish Abundance Indicators as an initial focus area for StreamNet

In addition to identifying the preceding high level recommendations, participants were also asked to develop a smaller number of near term, high priority focus areas for StreamNet consideration. This focus would also provide an opportunity to develop and pilot a regional process, applying the lessons from PNAMP, CSMEP and other components of the regional information framework, for how regional data management can work. This process could then be applied to additional areas.

Using the list of management questions developed by PNAMP as a reasonable starting point, many participants quickly identified the first question on the list:

Q1. Are fish populations meeting population level objectives under federal or state mandates?

a. What is the size of adult anadromous and resident fish populations?

The working title for this area was: “*Population Scale Fish Abundance Indicators.*”

Participants then further explored the practical implications and limitations in piloting a broader regional aggregation of this data, via StreamNet. The major areas discussed were:

- *Population scale*: estimates are conducted at the scale appropriate for that (unique) population.
- *Population estimates are derived data*; StreamNet would be reliant on agency biologists to provide the estimates and the algorithms and/or assumptions used in the calculations.
- *Importance of Metadata on Abundance Basis and Methodology*: The methodology and underlying basis(s) (e.g. redd counts and an adult to redd conversion factor) used to estimate abundance (where such estimates are made) may vary from one population to the next. Participants held extensive discussion concerning the need for sufficient documentation for both the basis data, and for the abundance estimates themselves (including their estimated precision).
- *Consider all Life Stages but begin with Adult returns*: participants identified that ideally these abundance estimates would be collected for the relevant life stages. Starting off with just adult abundance estimates was suggested for both anadromous and key (i.e., listed, proposed, or high concern) resident fish. Including resident fish will provide a more comprehensive picture, and, by including a broader range of sub-basins and stakeholders, provide a good pilot opportunity for the region.

Since this type of abundance data is not currently collated or shared regionally, this effort is expected to present many significant, but tractable challenges. These include concerns over inappropriate uses and comparisons of abundance estimates, especially those using different methodologies; and the challenge of getting the field biologists to adequately document these methodologies. Participants noted that abundance estimates will not be available for all areas, but that at least some of the basis information should be, and that this should be collected and documented.

While StreamNet staff indicated that they could, with adequate resources, collate such data, they stressed that it would take significant commitment by the data source agencies to make that data (and its metadata) available, and to work with StreamNet staff to collate it. Source agencies will also be expected to assist StreamNet with the development of required QA/QC and other procedures for this data.

Participants who relied on current StreamNet services were concerned about what tradeoffs would need to be made for StreamNet to provide this service, assuming level funding. The group therefore made the following recommendation:

Recommendation: The StreamNet Steering Committee should estimate the resource (and required tradeoffs) required to pilot the region-wide collation of Population Scale Fish Abundance Indicators, as described above. In estimating these resources StreamNet should include resources to:

- Inventory who is collecting such data now.
- Develop common Data Exchange Formats for the data (separate formats for population estimates of returning adults and some resident spawner populations, smolt production, and instream abundance will be needed).
- Encourage data collectors to provide this data. Publication of this data, including the basis methodology, will be a significant change in practice for some partners.
- Encourage and assist in the creation of the requisite metadata, especially the description of the basis data, calculation methodology and assumptions.
- Characterize critical coverage gaps in these estimates.
- Develop improved tools, or other efficiency investments, to improve the overall collection process.

[StreamNet Note:]

Expansion of StreamNet to include tribal data: An initial start at this was requested in the FY 2007-2009 StreamNet project proposal for the lower river tribes; however, the upper river tribes need to be included and a level funding recommendation may preclude this opportunity.

6. Habitat/Wildlife Issues and Recommendations for Northwest Habitat Institute

Since fewer of the workshop participants were as familiar with the NHI's services, NHI discussions did not reach the same level of detail as those for StreamNet. The following were the major areas of discussion (note that recommendations were not developed for all areas):

a. Customer Priorities for NHI: Participants identified habitat mapping to support the subbasin planning process as a priority area for NHI.

Recommendation: NHI focus should be on providing habitat mapping to support the subbasin planning process. This specifically involves continued support for IBIS and the maintenance of current subbasin plan data.

b. Challenges in determining habitat changes. Only coarse-scale habitat characterizations were conducted in the first round of subbasin plans. Several habitat types do not lend themselves well to coarse-level mapping; therefore they become a challenge when detecting change. In many cases there will have been major changes/improvements in both the basis data and the methodologies in use for the habitat characterizations. This will complicate estimation of habitat changes since the last subbasin plan. Participants are interested in the NHI's approach to dealing with these challenges (see following issue).

[NHI Note:]

- These challenges can be addressed by the NHI proposal, which addresses multi-scale mapping.
- Prioritization for mapping was discussed as being accomplished collaboratively with CBFWA members.

c. There is strong interest by participants in being aware of, and understanding the basis for NHI's habitat designations, especially how and where those designations have been calibrated and refined using actual population occurrence information.

Participants discussed that, unlike most StreamNet data, NHI's habitat information consists of estimates and projections derived from underlying data (from many sources) using a peer-reviewed process. Participants were especially interested in better understanding the precision of those estimates and how and where the estimates are being calibrated or refined using actual population occurrence data, and how such calibrations could be better supported through better management/linkage of that population data (see following issue).

[NHI Note:]

- Understanding that not everyone at the meeting is familiar with the published text, "Wildlife Habitat Types in Oregon and Washington" (Johnson & O'Neil, 2001), NHI would just like to clarify that this text discusses and addresses this very

topic. The book includes detailed descriptions of the habitat types, structural conditions, and Key Environmental Coordinates used in NHI's habitat mapping efforts, including how they were determined.

Suggestion:

- This point (“c” above) highlights the need for further outreach to disseminate this information in order to increase awareness and form connections to current projects/efforts (see also point “e” below).
- Develop a tool to capture wildlife population data.

d. From the Regional Data Management perspective, who should be the keeper of wildlife (fur & feathers) and non-fish aquatic population abundance and occurrence data? StreamNet has traditionally been the regional repository/keeper of fish population data. Many actors, including workshop agencies and NHI (e.g. in the course of its habitat characterization projects) collect habitat and wildlife data, but there is no obvious regional repository/keeper for this information.

[NHI Suggestions:]

- Given that NHI is currently archiving much of these terrestrial and other non-fish aquatic data already, they may be in a good position to become the regional repository/keeper for this information.

e. Some State and Tribal wildlife managers are not aware of NHI or other regional data projects---if they are to be engaged, these projects must be made more relevant to those managers' work. Related topics discussed were:

- Possible support by NHI on application of HEP (Habitat Evaluation Procedures)
- Better linkage/support for the “Habitat Loss Ledger”
- Better incorporation of wildlife data into regional planning efforts (see comment above)
- Coordination of NHI activities with State “Wildlife Action Plans” (Note: Tribal FW managers were not aware of this state activity)

[NHI Suggestions:]

- As stated under point “c” (above), outreach efforts are essential to increase awareness of the information and services provided by NHI that are relevant to State and Tribal wildlife managers.
- In addition to outreach, coordination with State and Tribal groups is needed to facilitate the alignment of NHI's work with other projects or visa versa.

NHI staff indicated that they have included “data coordination and outreach” activities in their current council proposal, which might address some of these issues. In addition, NHI solicited priority habitat information interest from their State counterparts. These were not discussed at the workshop but are provided in Appendix A.

Summary:

The workshop was able to develop the basis for recommending priorities to the Northwest Power and Conservation Council for the data and data support services provided by StreamNet and the Northwest Habitat Institute (NHI); however, specific data priorities were not established. The primary basis on which regional data priorities should be established include: CBFWA “Status of the Resources” report, ESA recovery monitoring, and data necessary for the next round of subbasin planning. There was disagreement on the relative priority of continuing current acquisitions and distribution of raw data versus the shift to include collation and distribution of the derived data needed for these broader regional needs. As illustrated by the discussion on *Population Scale Fish Abundance Indicators.* Above, participants also noted that these two issues are inter-dependent, since some users of the derived data will need access to the raw data on which those estimates are based.

Finally, it was very clear that these projects will require time to transition into a new framework for data management for the region. Data comprehensiveness and timeliness were the two primary drivers where improvement is needed. Both of these drivers require funding. It is not a matter of redistributing current funds to begin collating data from the thirteen tribal entities in the basin or to initiate new data exchange formats to quicken data delivery. Outreach to the tribes will require funding and is included in proposal for the FY07-09 process. Timeliness of data acquisition and distribution will require affirmative action by the state (and tribal) agencies.

It is anticipated that the StreamNet steering committee will face these dueling priorities and prepare a statement of work that best reflects the desires of the region with the practical application of continuing key work. For NHI, their current proposal addresses much of what was discussed in the workshop; however, the current funding recommendation will not support meeting these all of these priority tasks.

Appendix A: State Fish and Wildlife Habitat Information Interests

Idaho

- Priority habitat – Flowing Water
- Ecological System – Open Water
- Distribution – State wide
- Habitats & Species associations

Oregon

- tool for locating conservation & restoration projects
- coordination for Regional biodiversity monitoring

Montana

- Mapping Riparian, wetland, sagebrush/grassland complexes
- 13 focal species

Washington

- Performance tool that lists local Planning initiatives and Conservation Opportunities
- Monitor loss, fragmentation, conversion
- Invasive species control
- Monitor wildlife habitat for limiting factors for priority species
- Standardize datasets between states
- Wild life corridors & migration routes

Appendix B: Attendee List

ATTENDEE	AGENCY
Stan Allen	Pacific States Marine Fisheries Commission
John Arterburn	Colville Confederated Tribes
Mark Bagdovitz	U.S. Fish and Wildlife Service
Mike Banach	Pacific States Marine Fisheries Commission
Jen Bayer	USGS PNAMP
Mike Beaty	U.S. Bureau of Reclamation
Roy Beaty	Bonneville Power Administration
Bill Bosch	Yakama Nation Yakima Klickitat Fisheries Project
Bart Butterfield	Idaho Department of Fish and Game
Cedric Cooney	Oregon Department of Fish and Wildlife
Michele DeHart	FPC
Dinah Demers	Colville Confederated Tribes, Fish and Wildlife Dept
Ray Entz	Kalispel Tribe of Indians
Jim Geiselman	Bonneville Power Administration
Van Hare	StreamNet
Jay Hesse	Nez Perce Tribe
Janet Hess-Herbert	MDFWP
Avi Hihinashvili	Oregon State University
Joann Hunt	NWPCC
Chris Hunter	Montana Fish, Wildlife and Parks
Tom Iverson	CBFWA
Chris Jordan	NOAA/NMFS/NWFSC
Jimmy Kagan	OSU-INR
William Kinney	Pacific States Marine Fisheries Commission
Kelly Kiyohara	WDFW
Sara LaBorde	WDFW
Cory Langhoff	Northwest habitat Insitute

Amy Langston	Columbia Basin Fish & Wildlife Authority
Doug Marker	NPCC
David Marmorek	ESSA Technologies
Joe Maroney	Kalispel Tribe of Indians
Curt Melcher	ODFW
Kelly Moore	ODFW Fish Research
Micheal Newsom	USBR
Tony Nigro	Oregon Department of Fish & Wildlife
Dick O'Connor	Washington Department of Fish and Wildlife
Thomas O'Neill	Northwest Habitat Institute
Steve Pastor	US Fish & Wildlife Service
Peter Paquet	NPCC
Ronald Peters	Coeur d'Alene Tribe
John Piccininni	Bonneville Power Administration
David Price	Washington Dept fish and Wildlife
Tom Rien	ODFW
Phil Roger	CRITFC
Moran Rosenthal	Oregon State University
Jim Ruff	NW Power and Conservation Council
Candace Russo	Northwest Habitat Institute
Howard Schaller	USFWS
Bruce Schmidt	StreamNet
Jesse Schwartz	Confederated Tribes of the Umatilla Indian Reservation
Sheri Sears	Colville Confederated Tribes F&W
Sam Sharr	Idaho Department of Fish and Game
Greg Sieglitz	OWEB
Scott Soultz	KTI
Dave Statler	Nez Perce Tribe
Louis Sweeny	Ross & Associates
Doug Taki	Shoshone-Bannock Tribes

Stuart Toshach	NED
Jim Uehara	WDFW
Steven Vigg	WDFW
Dave Ward	Columbia Basin Fish & Wildlife Authority
Neil Ward	Columbia Basin Fish & Wildlife Authority
Steve Waste	Northwest Power and Conservation Council
Karl Weist	NW Power and Conservation Council
Paul Wilson	U.S. Fish and Wildlife Service
Keith Wolf	KWA
Frank Young	CBFWA