Northwest Power and Conservation Council

April 5th, 2007

MEMORANDUM

TO: Council Members

FROM: Steve Waste, Manager for Program Analysis and Evaluation
Peter Paquet, Acting Director, Fish and Wildlife Division

SUBJECT: Salmonid Field Protocol Handbook

PROPOSED ACTION:

Staff recommmends that the Council initiate the process for review of *The Salmonid Protocols Handbook* by the Independent Scientific Advisory Board. Following such a review the Council will consider endorsing the use of the handbook in conjunction with regional monitoring strategys.

BACKGROUND:

This memo explains several issues related to *The Salmonid Field Protocols Handbook;* see Attachment 1 for a summary of the contents of the hand book. The briefing on the Handbook will be presented by:

David H. Johnson – Lead Author of the Handbook and Executive Director, Global Owl Project (Smithsonian)

Jennifer O'Neal - Co-Author of the Handbook and Co-Chair of the PNAMP Fish Population Monitoring Workgroup (Fish Biologist/Aquatic Ecologist, TetraTech FWI)

Keith Wolf - Co-Chair of the PNAMP Fish Population Monitoring Workgroup and member of the PNAMP Steering Committee (KWA Ecological Sciences, Inc.)

Content of the Handbook

The *Salmonid Field Protocols Handbook* provides a succinct compilation of recommended field protocols for monitoring and collecting fish population data. It provides a reference guide that is needed to provide constancy in methods and analysis, and importantly, for making better training materials available to aquatic scientists and technicians. If used, many of these protocols will improve the accuracy and utility of aquatic data sets. The authors and contributors of this

Handbook have given us much to use and build upon in this regard and should be congratulated for their strong contribution to improving the monitoring of fish populations.

Why it is Important

This Handbook addresses many of the core research, monitoring and evaluation issues in the region: incomparable, lacking and/or inaccessible data. In fact, ad-hoc and/or non-standardized monitoring efforts have actually inhibited decision-makers and technical experts from correctly interpreting broad spatial and temporal fish data in a comparable manner. Consequently, this Handbook is significant contribution to the development of practical approach to coordinating monitoring at a regional scale. By furthering uniformity and consistency in the methods by which fish population data are collected, the protocols in the Handbook serve to increase the value of the data collected. By collecting these data using common protocols, a common currency can be achieved which can support subsequent high scale evaluations. Thus, the real value of this product will be accrued through its application over time.

Mutual Needs, Shared Resources

The genesis of the book began with the recognition of a widely shared need for this type of guidance. Initial discussions of how to develop it occurred at a meeting co-sponsored by the Washington Department of Fish and Wildlife and the Wild Salmon Center in Welches, Oregon in 2004 and in several subsequent work sessions between and among these two groups and the Handbook editors and contributors.

The USGS, NOAA, PNAMP and combined state, federal and tribal managers have called for standardized approaches and more scientifically rigorous designs on at least five occasions since 1997. In addition, PNAMP and it partners are responding to the clear and consistent recommendations of the Independent Scientific Review Panel (ISRP) as outlined in their first report in 1997 and repeated again and again in the following reports:

1. The ISRP Database Review. Report No. 2000-3
2. The ISRP Retrospective Report. Report No. 2005-14
3. The ISRP 2006 Fiscal Year Proposals for Acoustic Tracking. Report No. 2005-19
4. The ISRP Preliminary Review of 2007-09 Proposals Report No. 2006-4
5. The ISRP 2006 Retrospective Report http://www.nwcouncil.org/library/isrp/isrp2007-1.htm

Implications for the Pacific Northwest and the Columbia River Basin

Many of the resource management entities in the region have stated their intention to increase their accountability by improving their ability to monitor and do so in a manner that supports regional assessment and reporting of high level indicators. In contrast, Bonneville Power Administration wants to increase on the ground restoration work despite the inability to document or quantify what benefits are being generated by current projects. The paradox of wanting to develop a coordinated regional approach to monitoring, with attendant increases in capacity, without providing the resources necessary to generate this capacity can only be resolved in one way - by the type of collaboration and targeted effort that gave rise to this Handbook. Clearly, the collaborative development and joint sponsorship of the book have been

important ingredients of its success. Thus, the process by which this book was developed has set an important precedent for the region.

Adoption and Implementation of the Handbook

The following series of bullets summarizes elements of the PNAMP Charter relevant to the adoption/implementation of recommendations by its members, please note the two points in bold. PNAMP:

- Provides a forum to coordinate monitoring activities and develop common monitoring approaches
- Acknowledges different mandates, jurisdictions, issues and questions of its partners.
- Focuses coordination effort on shared interests and needs
- Coordinates programs and schedules to avoid duplication
- Applies common guiding principles to provide significant support to policy and management with scientifically valid monitoring
- Provides the framework for coordinated monitoring that each PNAMP partner may implement within its legal and jurisdictional boundaries
- **Partners decide their own individual management questions, which then guide development of PNAMP monitoring strategies**
- **Partners will make reasonable efforts to incorporate PNAMP recommendations into their respective programs**
- Partners support the partnership through allocation of staff time to participate in PNAMP and by contributing resources for administration of the effort, as appropriate

PNAMP has spent considerable time reviewing and vetting products subsequently offered as recommendations, both at the technical level by workgroups and at the policy level by steering committee members, and have had discussions about how to assist with their adoption and facilitate their implementation. Although the PNAMP charter contains the preceding language about recommendations, this is an historic occasion as this Handbook constitutes the first set of recommendations completed and ready for implementation, and PNAMP is still working its way through this step.

What the Future Holds

It is important to acknowledge that a series of data management, project effectiveness, and habitat assessment program products, similar to this Handbook, are either in the final stages of approval and release, or are clearly outlined in thoroughly discussed and sequenced work plans. At the May Council meeting, PNAMP Coordinator Jen Bayer will brief the Council on the progress of PNAMP on there other products that are nearing completion, including:

<u>Complete Recommendations</u>

- NED Best Practices for Location and Time Data
- Effectiveness Protocols: Adopt standardized metrics for project tracking for RME (based on NOAA proposal)

Upcoming Products/potential recommendations in 2007

- High level indicators “white paper”: RECOMMENDATION: core set of indicators that can be shared among all types of monitoring.
- Management questions “white paper”: RECOMMENDATION: use of these results 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): RECOMMENDATION: results of protocol comparison project
- Macro-invertebrate field and laboratory sampling protocol (rapid bio-assessment protocol): RECOMMENDATION of protocol for use in certain applications
- PNAMP Aquatic Monitoring Activity Inventory: RECOMMENDATION addresses the adoption and maintenance of a tool to facilitate collaboration by identifying who is doing what monitoring where, how, etc.
- Development of a regional data dictionary and protocol catalogue tool: RECOMMENDATION: adoption and maintenance of Protocol Manager
- Gap Analysis for Salmonid Protocols: RECOMMENDATION will address protocols that need to be developed to provide, to the fullest extent and detail possible, guidance and recommendations for the region.
- Review of current Tagging, Telemetry and Marking Programs. RECOMMENDATION will address standardization and collaboration of the large number of ad-hoc programs currently in place.

New Starts

- Integrated Monitoring Survey Design recommendation for a regional aquatic status and trends monitoring design (using the EMAP probabilistic GRTS design developed by the EPA): demonstration project in Lower Columbia River ESU

Attachment 1.

Salmonid Field Protocols Handbook

> Johnson, D. H., B. M. Shrier, J. S. O'Neal, J. A. Knutzen, X. Augerot, T. A. O'Neil, and T. N. Pearsons, 2007. Salmonid field protocols handbook: techniques for assessing status and trends in salmon and trout populations. American Fisheries Society, Bethesda, Maryland. 478 p.

What it is

The *Salmonid Field Protocols Handbook* reflects the advancement of scientifically-rigorous techniques for assessing salmonid populations in freshwater and estuarine environments. The Handbook contains a set of monitoring protocols and best practices that decision makers and funding organizations can adopt and practitioners can use to design study and sampling techniques, conduct field activities, and manage spatial and tabular data associated with the capture and counting of salmonids. While based largely upon work conducted in the Pacific Northwest of the United States and western Canada, the materials within this book can be used for salmonids anywhere.

During this three-year project, we reviewed and drew from more than 375 published and unpublished techniques and guidelines. Fisheries managers, scientists, and students will find 13 principle techniques for assessing salmonid populations in the wild. These scientifically rigorous, peer-reviewed methods are: carcass counts, cast nets, dam counts, boat and backpack electrofishing, hydroacoustics in rivers and lakes, redd counts, seining, rotary screw and inclined plane traps, snorkeling, tangle nets, counting towers, and weirs. We included five additional techniques—aerial surveys, fyke nets, gill nets, foot-based spawner counts, and video surveys—to supplement salmonid population information gathered. The prefatory chapters explain the book's genesis and goals and include instructive essays on the importance of sampling design and data management.

Applications

The standardized methods for collecting salmonid data detailed in this book represent an opportunity for scientists and managers to link independent monitoring efforts and improve the quality and consistency of data gathered during fieldwork. Common protocols allow scientists to compare results among projects more reliably and will give managers greater confidence in data collected to adjust harvest levels or prioritize research and conservation efforts. Funding institutions supporting field research will be more inclined to do so if monitoring is grounded in proven techniques that yield the most useful data.

Importantly, the Handbook is designed to more put more scientific rigor around the primary methods used to capture and count salmonids. The Handbook is an advancement of the science in this regards, and through time, we expect (and encourage!) continued research, method comparisons, and field testing to further advance the arrays of methods.

Context

Government agencies, fisheries resource managers, and scientists depend on reliable, consistent, high-quality data to make informed management decisions and test hypotheses. Our research and salmonid management questions are increasingly complex. For instance, determining key aspects of regional and species-wide population status and distributions and the reasons behind changes in status is critical for effective management. The effects of hatchery fish or habitat changes on wild stocks, the impacts of marine-derived nutrients on ecosystem health, and basic salmonid life history and genetic characteristics are also key considerations for researchers and managers. All these questions require well-structured and well-planned data acquisition programs. The Handbook reflects an important contribution to these programs.

Funding Sources for the Salmonid Handbook

Major Funding Sources
The Gordon and Betty Moore Foundation
Wild Salmon Center
Bonneville Power Administration/Northwest Power and Conservation Council
Washington Department of Fish and Wildlife

Additional Funding and Project Partners
Alaska Department of Fish and Game
BioAnalysts, Inc.
Confederated Tribes of the Siletz Indians, Oregon
Fisheries and Oceans Canada, British Columbia
Columbia Basin Fish and Wildlife Authority
Hokkaido Institute of Environmental Sciences, Japan
National Oceanic and Atmospheric Administration, Northwest Fisheries Science Center
Northwest Habitat Institute
Northwest Power and Conservation Council
Oregon Department of Fish & Wildlife
Oregon State University
Public Utility District No. 1 of Chelan County, Washington
Smithsonian Institution, Division of Fishes
StreamNet
Skagit River System Cooperative
Sustainable Fisheries Foundation
Talon Scientific
Tetra Tech EC Inc.
Office of the Interagency Committee, Washington Salmon Recovery Funding Board
Wild Salmon Center
USDA Forest Service
U.S. Department of Energy, Bonneville Power Administration
U.S. Geological Survey
Washington Department of Fish and Wildlife
Yakama Nation, Washington
