DRAFT June 16, 2009

The Diadromous Species Restoration Research Network Science Meeting 2009
Restoration of Diadromous Fishes and Their Ecosystems: Confluence of Science and Restoration
22 – 24 July 2009 University of Maine

Annotated Bibliography for Breakout Session:

Natural Variability

Please note that this bibliography is not intended to be a complete list of publications on the topic. Rather it represents only those publications that were suggested by panelists and moderators of this breakout session. We hope to add to this list over time.
Please visit DSRRN KB webpage for full citations and abstracts:
http://www.umaine.edu/searunfish/dsrrn_activities/data.htm

Data and Modeling

- Andrew A Rosenberg WJB, Karen E Alexander, William B Leavenworth, Andrew B Cooper, Matthew G McKenzie. The history of ocean resources: modeling cod biomass using historical records. Frontiers in Ecology and the Environment 2004;3(2):84-90. Mid 19th-century New England fishing logs offer geographically specific daily catch records, describing fleet activity on fishing grounds with negligible incentive to falsify records. Combined with ancillary fishery documents, these logs provide a solid, reliable basis for stock assessment.
- Robert L. McLaughlin LMC, Trevor Middel, Marlene Ross, David L. G. Noakes, Daniel B. Hayes, and Jeffrey R. Baylis. Potentials and Pitfalls of Integrating Data From Diverse Sources: Lessons from a Historical Database for Great Lakes Stream Fishes. Fisheries 2001;26(7):14. We introduce the Biological Impacts of Low-head Dams (BILD) historical database, developed for assessing the impacts of small barriers used in the control of parasitic sea lamprey (Petromyzon marinus) on assemblages of stream fishes throughout the Great Lakes drainage basin. We provide general recommendations for developing databases integrating data from diverse sources and provide cautions about expectations for them.
- Wagner T, Hayes DB, Bremigan MT. Accounting for Multilevel Data Structures in Fisheries Data using Mixed Models. Fisheries 2006;31(4):180-187. Multilevel data structures are a common feature in fisheries research. We provide simulated fisheries data examples, similar in structure to other published studies, to illustrate the application of multilevel models and discuss how hypothesis testing and inferences can be incorrect if multilevel data structures are ignored.

Human Impacts

- Montgomery, D. R. 2003. *King of fish : the thousand-year run of salmon*. Boulder, Colo., Westview Press. In King of fish, Montgomery traces the human impacts on salmon over the last 1000 years and examines the implications for both salmon recovery efforts and the more general problem of human impacts on the natural world. The book concludes with recommendations for reinventing the ways in which we make environmental decisions about land, water, and fish
- Montgomery, D. R. 2008. Dreams of natural streams. Science 319(5861): 291-292. Enhancing our understanding of how natural streams work is essential to river restoration. Previous restorations centered around contruction of a single meadering channel river form, but this paper suggests (as supported by Walter and Merritts 2008 study) that given the long histories of human manipulation of the river, river restoration

efforts should first seek to identify and then replicate the original path of the river prior to restoration activity.

- Chaput, G. 1995. Temporal distribution, spatial distribution and the abundance of diadromous fish in the Miramichi River Watershed, p. 121-139. In E.M.P. Chadwick [editor]. Water, science, and the public: the Miramichi ecosystem. Canadian Special Publication of Fisheries and Aquatic Sciences 123. Also author and co-author on two other chapters: The effect of fisheries on the biological characteristics and survival of mature Atlantic salmon (Salmo salar) from the Miramichi River; size and growth of striped bass, Morone saxatilis, from the Miramichi River, Gulf of St. Lawrence, Canada. The analysis of the 22-year time series of biological characteristics of Atlantic salmon from the Mirimichi River had verified the predictions of the effects of fisheries on the biological characteristics. Changes in management of Atlantic salmon fisheries have had the greatest impact on the survival rates of salmon during their maiden and in subsequent spawning migrations.

Biodiversity

- Montgomery, D. R. 1999. Channel type and salmonid spawning distribution and abundance. Canadian Journal of Fisheries and Aquatic Sciences 56(3): 377. We find that salmonid spawning distributions track channel slope distributions in several west-slope Pacific Northwest watersheds, implying that spatial differences in channel processes influence community structure in these rainfall-dominated drainage basins. More detailed field surveys confirm that different channel types host differential use by spawning salmonids and reveal finer-scale influences of pool spacing on salmonid abundance.
- Chaput, G. 1995. Temporal distribution, spatial distribution and the abundance of diadromous fish in the Miramichi River Watershed, p. 121-139. In E.M.P. Chadwick [editor]. Water, science, and the public: the Miramichi ecosystem. Canadian Special Publication of Fisheries and Aquatic Sciences 123. Also author and co-author on two other chapters: The effect of fisheries on the biological characteristics and survival of mature Atlantic salmon (Salmo salar) from the Miramichi River; size and growth of striped bass, Morone saxatilis, from the Miramichi River, Gulf of St. Lawrence, Canada.
- Prévost, E, and G. Chaput [Editors]. 2001. Stock, recruitment and reference points: assessment and management of Atlantic salmon. INRA Editions. 223 p.
- Swansburg, E., N. El-Jabi, D. Caissie, and G. Chaput. 2004. Hydrometeorological trends in the Miramichi River, Canada: implications for Atlantic salmon growth. North American Journal of Fisheries Management 24: 561-576.
- Yoder, C. O., R. F. Thoma, L.E. Hersha. 2007. Maine Rivers Fish Assemblage Assessment: Development of an Index of Biotic Integrity for Large Rivers. Final Project Report to U.S. EPA, Region I, MBI Technical Report MBI/2008-11-2. This project involved the systematic sampling of large rivers in Maine with the eventual goal of developing a fish assemblage assessment tool that is useful to multiple water quality and natural resource management programs and objectives.
- Karr, J. R. and C. O. Yoder. 2004. Biological assessment and criteria improve total maximum daily load decision making. Journal of Environmental Engineering-Asce 130(6): 594-604. The system for improving water quality nationally needs to focus beyond TMDL protocols and instead focus on increasing water quality standards, systematic monitoring and monitoring the health and abundance of organisms inhabiting the water body (biological criteria).

- Yoder, C. O. 1994. Toward Improved Collaboration among Local, State, and Federal Agencies Engaged in Monitoring and Assessment. Journal of the North American Benthological Society 13(3): 391-398.
- Yoder, C. O. and E. T. Rankin. 1998. *The role of biological indicators in a state water quality management process.* Emphasizes the importance of using biocriteria for monitoring water quality health.
- Poff, N. L., Richter, B., Arthington, A. H., Bunn, S. E., Naiman, R. J., Kendy, E., Acreman, M., Apse, C.D., Bledsoe, B. P., Freeman, M., Henriksen, J., Jacobson, R. B., Kennen, J., Merritt, D. M., O'Keefe, J., Olden, J., Rogers, K., Tharme, R. E. and Warner, A. (in press). The Ecological Limits of Hydrologic Alteration (ELOHA): A new framework for developing regional environmental flow standards. Freshwater Biology.
- Ernst, A.G., Baldigo, B.P., Schuler, G.E., Apse, C.D., Carter, J.L., and Lester G.T., 2008, Effects of habitat characteristics and water quality on macroinvertebrate communities along the Neversink River in southeastern New York, 1991–2001: U.S. Geological Survey Scientific Investigations Report 2008–5024, 15 p. http://pubs.usgs.gov/sir/2008/5024/
- Baldigo, B.P., Ernst, A.G., Schuler, G.E., and Apse C.D. 2007. Relations of Environmental Factors with Mussel-Species Richness in the Neversink River, New York, U.S. Geological Survey Open-File Report 2007-1283, by http://pubs.usgs.gov/of/2007/1283/
- Vaux, P. 1990. Watershed management from the perspective of aquatic ecosystems. In: C. Potter (ed.). Planning for sustainable watershed management: environmental and institutional assessments. USAID, Washington D.C.
- Vaux, P., S. Nelson, N. Rajakaruna, G. Mittelhauser, K. Bell, B. Kopp, J. Peckenham and G. Longsworth. 2008. Assessment of natural resources in and adjacent to Acadia National Park, Maine. Natural Resource Report NPS/NRPC/WRD/NRR-2008/069. National Park Service, Fort Collins, Colorado. 256 pp. http://www.nature.nps.gov/water/technicalReports/Northeast/ACAD_RCA_112508_FINAL.pdf
- Webster, K., P. Soranno, K. Spence Cheruvelil, M. Bremigan, J Downing, P. Vaux, T. Asplund, L. Bacon, and J. Connor. 2008. An empirical evaluation of the nutrient color paradigm for lakes. Limnology and Oceanography 53(3): 1137-1148.
- Wagner, T., P. Soranno, K. Spence Cheruvelil, W.H. Renwick, K.E. Webster, P.D. Vaux and R.J. Abbiitt. 2008. Quantifying sample biases of inland lake sampling programs in relation to lake surface area and land use/cover. Environmental Monitoring and Assessment 141(1-3): 131-147.
- Vaux, P. 2005. Freshwater Biodiversity in Maine: an assessment of aquatic systems and their ecological communities. Final report, Maine Aquatic Biodiversity Project. The Nature Conservancy, Maine Department of Environmental Protection, Maine Dept. Inland Fisheries & Wildlife. 299 pp. + app. http://www.maine.gov/doc/nrimc/mnap/aquatic/techrept.htm