

Habitat Strategies

Susan Hanna, Ph.D., Professor of Marine Economics, Oregon State University
susan.hanna@oregonstate.edu

Peter J. Paquet Ph.D., Manager, Wildlife and Resident Fish,
Northwest Power & Conservation Council
503-222-5161, ppaquet@nwcouncil.org

This session provides an overview of the context of habitat changes in the Columbia River Basin and a discussion of some key issues affecting the protection and restoration of habitat.

Hanna opens the session with a brief overview of the changing context of habitat restoration in the Columbia River Basin. The operating hypothesis of the Fish and Wildlife Program is that protection and restoration of habitat will improve habitat capacity and productivity leading to increased fish and wildlife abundance. The operating assumption underlying habitat restoration actions is that external factors such as population and climate will be stable over time. But climate and population are changing in the Columbia River Basin, creating conditions of uncertainty for habitat protection. Climate change will influence the timing and quantity of water. Human population has been steadily increasing and these increases are projected to continue. Change in climate and population lead to specific habitat effects through alterations in water quantity and quality, conversion of forestland, farmland and rangeland, modified development patterns and increases in airborne pollution and invasive species. Because of the importance of these habitat impacts, habitat strategies have to deal not only with physical and biological elements of habitat protection and restoration, but also with economic and social aspects. Recent Council reports on climate change (ISAB), population growth (ISAB) and strategies for habitat acquisition (IEAB) have made recommendations for strategies to deal with these changes that include planning processes, tools and coordination. Paquet then highlights some of the more promising strategies for identification and protection of critical habitat under conditions of uncertainty. Effective application of mitigation measures will require identification of those locations where they will have the greatest benefit. Locations especially sensitive to climate and population change and with high ecological value are prime conservation targets. Future assessments need to take into account two interrelated processes: socio-economic change and climate change. To date, future changes in populations and climate have not been sufficiently integrated with habitat assessments. Most effort in "futures modeling" has focused on extrapolating past trends rather than envisioning alternative futures. A number of currently used methods may prove promising in future iterations of subbasin planning and other regional efforts as they attempt to incorporate climate and population change parameters. These include tools such as EDT, IBIS, CLAMS, and more recently developed models such as proposed by Schaller and Budy, particularly if they are used in conjunction an Alternative Futures Analysis process.

1. Berkhout, F. Hertina J., and Jordan. A. "Socio-economic futures in climate change impact assessment: using scenarios as 'learning machines'." Global Environmental Change 12.2 (2002): 83-95.
2. Budy, P. and Schaller, R. "Evaluating Tributary Restoration Potential for Pacific Salmon Recovery." Ecological Applications 14.4 (2007): 1068-1086.

3. Costanza, R. "Visions of Alternative (Unpredictable) Futures and Their Use in Policy Analysis." Conservation Ecology 4(1): 5. (2000): [online] URL: <http://www.consecol.org/vol4/iss1/art5/>.
4. ISAB. "Climate Change Impacts on Columbia Basin fish and wildlife." 2007.
5. —. "Human Population Impacts on Columbia River Basin Fish and Wildlife." 2007.
6. Reed, B. Lavigno and J. Alternative Futures Analysis Case Studies; Environmental Law Practicum. Athens, Georgia: University of Georgia, 2003.
7. Sheppard, Stephen R.J. "Landscape visualisation and climate change: the potential for influencing perceptions and behaviour." Environmental Policy and Science 8.6 (2005): 637-654.
8. United States Environmental Protection Agency;. Willamette Basin Alternative Futures Analysis. Washington, DC 20460: U.S. EPA, Office of Research and Development, n.d.