Geog 607: Seminar
River Restoration: Practice and Critique

Winter 2008, Prof. Patricia McDowell
Fridays 9:00-11:50, 206 Condon

The goal of this seminar is to examine critically the enterprise of river restoration, with an emphasis on its scientific basis. In our weekly meetings we will read and discuss recent published literature. Specific topics for readings and discussion include:

- Recent critiques of river restoration
- Current practices in river restoration
- Historical roots of modern river restoration,
- Scientific concepts for healthy rivers
- Role of large wood in river functions and restoration
- Channel design and the Rosgen controversy
- Monitoring restoration projects
- Ethics in restoration

This is not a course on how to do restoration. It is assumed that you are already familiar with general approaches in river restoration, or that you are willing to do some catch-up reading before the term or early in the term to get this foundation.

We will have one or two field trips to look at local restoration projects.

Seminar participants will, individually or in teams of two, produce an original research paper that will be submitted for publication or delivered at a professional meeting, on a topic based on one of the major themes of the seminar.

Examples of Possible Topics for Seminar Papers

To what extent and in what ways are the concepts of flood pulse and lateral connectivity incorporated in restoration projects (in a given region)?

Comparison of manuals from U.S. Forest Service, U.S. Bureau of Land Management, and U.S. Fish and Wildlife Service in terms of principals of ecological river restoration.

Effectiveness of log deflectors (or any specific types of restoration structure)

Effectiveness of passive restoration

Evaluation of the restoration program of a specific government agency or NGO

Evaluation of restoration activities within a particular river basin

Selected Readings

Palmer, M. A., et al., 2005. Standards for ecologically successful river restoration. *Journal of Applied Ecology* 42: 208-217.

FISRWG, 1998. Stream Corridor Restoration: Principles, Processes, and Practices. By the Federal Interagency Stream Restoration Working Group (FISRWG -- 15 Federal agencies of the US government).

Frissell, C. A., and R. K. Nawa. 1992. Incidence and causes of physical failure of artificial habitat structures in streams of Western Oregon and Washington. *North American Journal of Fisheries Management* 12:182–197.

Poff, N. L., J. D. Allan, M. B. Bain, J. R. Karr, K. L. Prestegaard, B. Richter, R. Sparks, and J. Stromberg, 1997. The natural flow regime: A paradigm for river conservation and restoration. *BioScience* 47: 769– 784.

Tockner, K., Malard, F. and Ward, J.V., 2000. An extension of the flood pulse concept. *Hydrological Processes* 14: 2861-2883.

Downes, B. J., et al., 2002. *Monitoring Ecological Impacts: Concept and Practice in Flowing Waters*. Cambridge University Press.

Roni, P. et al., 2002. A review of stream restoration techniques and a hierarchical strategy for prioritizing restoration in Pacific Northwest watersheds. *North American Journal of Fisheries Management* 22: 1-20.

Underwood, A. J., 1994. On beyond BACI: Sampling designs that might reliably detect environmental disturbances. *Ecological Applications* 4: 3-15.

Thompson, D.M., 2006. Did the pre-1980 use of instream structures improve streams? A reanalysis of historic data. *Ecological Applications* 16: 784-796.