

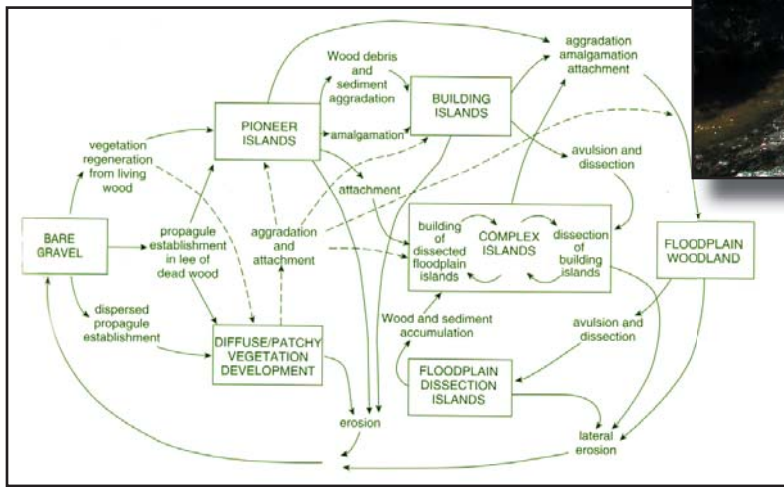
# GEOG 607: Seminar in Biohydrogeomorphology

Prof. Pat McDowell, Winter 2006

**The goal of this seminar is to examine recent scientific literature on the interactions between riparian vegetation, river flow and fluvial geomorphological processes. We will read and discuss recent published literature.**

Selected readings:

- Bendix, J., and Hupp, C.R., 2000. Hydrological and geomorphological impacts on riparian plant communities. *Hydrological Processes* 14: 2977-2990.
- Brooks, A. P., Brierly, G. J., and Millar, R. G., 2003. The long-term control of vegetation and woody debris on channel and flood-plain evolution: Insights from a paired catchment study in southeastern Australia. *Geomorphology* 51: 7-29.
- Chapin, D. M., et al., 2002. Relationships between flood frequencies and riparian plant communities in the Upper Klamath Basin, Oregon. *Journal of the American Water Resources Association* 38: 603-617.
- Gurnell, A. M., 1998. The hydrogeomorphological effects of beaver dam-building activity. *Progress in Physical Geography* 22: 167-189.
- Gurnell, A. M., et al. 2001. Riparian vegetation and island formation along the gravel-bed Fiume Tagliamento, Italy. *Earth Surface Processes and Landforms* 26: 31-62.
- Hughes, F. M. R., 1997. Floodplain biogeomorphology. *Progress in Physical Geography* 21: 501-529.
- Hupp, C. R., and Osterkamp, W. R., 1996. Riparian vegetation and fluvial geomorphic processes. *Geomorphology* 14: 277-295.
- Johnson, W. C., et al., 1996. Mapping the response of riparian vegetation to possible flow reductions in the Snake River, Idaho. *Geomorphology* 13: 159-173.
- Millar, R. G., 2000. Influence of bank vegetation on alluvial channel patterns. *Water Resources Research* 36: 1109-1118
- Naiman, R. H., Décamps, H., and McClain, M., 2005. *Riparia: Ecology, Conservation and Management of Streamside Communities*. Amsterdam: Elsevier.
- Piegay, H., 1997. Interactions between floodplain forests and overbank flows: data from three piedmont rivers of southeastern France. *Global Ecology and Biogeography Letters* 6: 187-196.



**Each participant will complete a substantial research paper based primarily on literature review. Some possible topics for seminar discussion and themes for research papers are listed below.**

- How does river hydrology – flood stage and frequency, period of inundation, low flow levels, etc. – influence the establishment and survival of riparian vegetation?
- How does riparian vegetation influence river flow and hydraulics?
- How do geomorphic processes, such as different types of sediment transport and deposition, influence establishment of riparian vegetation?
- What is the role of vegetation in channel recovery from incision?
- How do beavers influence riparian vegetation? How do beaver dams influence river flows?
- How has vegetation type been incorporated into river classification systems, and how universal are the relationships between vegetation and river type?