

**Raad, Maureen. "Flood Damage and Riparian Forest Restoration: Selecting Focal Areas and Setting Restoration Goals on Oregon's Willamette River." Master's Project, University of Oregon, 1999. (Reviewed by Susan Mershon)**

The title says it all. This Landscape Architecture masters project develops a method for locating areas in the Willamette Basin with high potential for restoration of riparian forests, which are a form of flood control. Carefully chosen areas upstream, which can store water, protect downstream communities from flooding.

The large Midwest floods of 1993, and then the 1996 Willamette floods, spurred research into floodplains. Hundred-year floodplains have a 1% chance of flooding each year, and encompass smaller, more frequently Inundated floodplains.

Federal policies have altered the "flood *flow*, floodplain and channel *form*, and riparian forest *cover*" to reduce the area of land that gets flooded and make it more suitable for agriculture. This has destroyed many riparian forests.

As floodplains are diverse, so are the riparian forests, which can be anywhere within the 100 year floodplain. The riparian forest used to dominate in the Willamette floodplain. Raad creates a trinity typology for the river: geomorphologic features, hydrological processes, and forest types, plus human alterations.

She wants to determine which conditions are best for creating riparian forests. She spells out some guiding principles: Complex river channels support many plants and wildlife, and provide more flood storage capacity. Periodic flood inundation and dynamism, channel change, are important to riparian ecosystems. A diverse floodplain makes for diverse ecosystems.

Raad assumes all potential restoration sites will lie within the 1996 floodplain. She chose a study area, the Willamette River between Corvallis and Eugene, and a focal area within that, Harkens Lake. Harkens Lake is an old meander of the Willamette adjacent to the current channel. Today, it has a variety of forest and agriculture. Raad thoroughly studies it and recommends conserving existing forests, reforesting in some areas, reconnecting side channels to the main river, and altering some land contours. The "restored" area would hold more water during times of flood.

## **Critique**

This work was cited in the *Willamette River Basin Planning Atlas* (Second Edition, 2002). Maureen Raad took part in ongoing research into floodplain restoration, a collaboration involving the University of Oregon's Institute for a Sustainable Environment, OSU, the EPA, and ECONorthwest. These groups were also involved with the Atlas, and the research Raad writes about is on pages 146-147 of the Atlas.

Raad is concerned that the USACE (Army Corps of Engineers) Willamette River Floodplain Restoration Study will not adequately address both flood damage reduction and ecosystem restoration (it doesn't need to address both in order to be approved). In 1999, this study was in the reconnaissance phase.

Raad's work is written in clear language. It makes good sense of primary source documents. She also has good diagrams of her processes and organization. The scientists involved must have influenced Raad to be highly organized.

Much of the report is background information, which Raad does well. She gives a succinct layman's historical overview of flood control policies in the Willamette Valley.

Raad admits that her work isn't comprehensive. There are many more variables to be modeled that she was unable to pursue (flood flow, benefits of flood storage to downstream communities). But the strategy, the process of identifying good sites for restoration, may be broadly applied in the Willamette Valley.

This is not just an isolated masters project; it is part of a larger professional effort.

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