



Ownership Patterns and Riparian Functions: Economic Implications for Protection Strategies

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- Where are streams with quality fish habitat?
 - Who owns the lands adjacent to these streams?
 - Are they at risk of land conversion?
 - What are the policies protecting these lands?
- How can computer technology identify patterns to inform habitat protection strategies?





My Project

- Study area is fish-bearing streams in Lewis County
- Use GIS to identify ownership of riparian forests along fish-bearing streams
- Describe spatial patterns in the ownership associated with streams
- Examine some of the economic implications of the ownership patterns







“Quality” Fish Habitat

- Quality is a squishy term
- Using methods developed in Lunetta *et al.* (1997) to identify areas of potential quality habitat
- Based on Elevation and Percent Slope, Forest Cover Age Class and Fish Accessibility





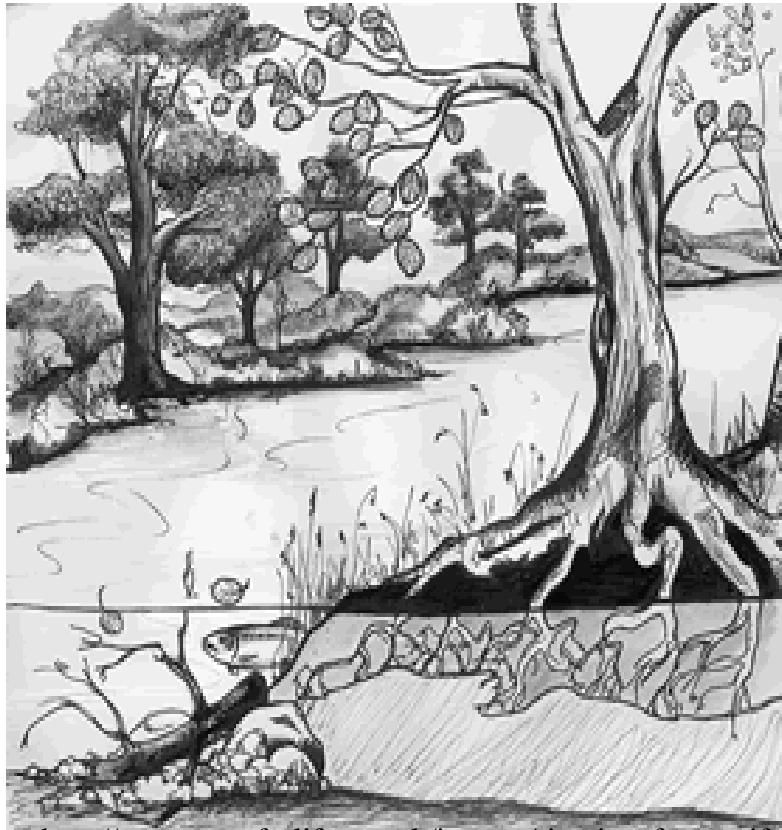
- Sequesters carbon from the atmosphere
- Produces timber
- A growing renewable resource
- Raw material for bio-fuels
- Building materials
- Woody debris for streams
- Decreases soil erosion
- Habitat and biodiversity
- Intercepts air pollution
- Slows wind
- Moderates temperatures
- Nice to look at
- Filters water
- Medicinal substances
- Shade

...A Few of the Benefits of Forests





Riparian Forests



http://www.treesforlife.org.uk/images/riparian_forest.gif

- Important for healthy streams
- Provides woody debris and small litter
- Area where water and land interact



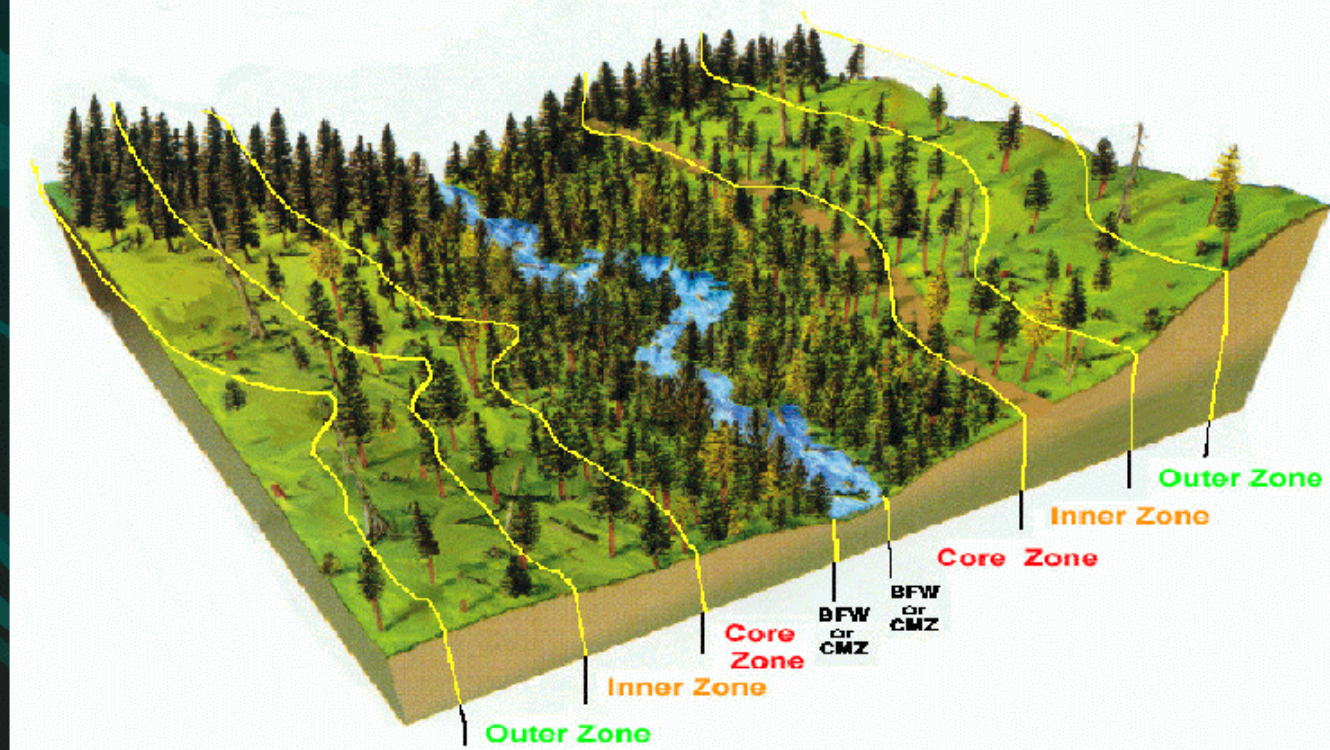


Forest and Fish Regulations

- Intended to protect aquatic habitats
- Has lead to economic impacts for private forest landowners
- Can possibly lead to a change in land use out of forestry
- What are the consequences of this for the long-term protection of aquatic habitat?



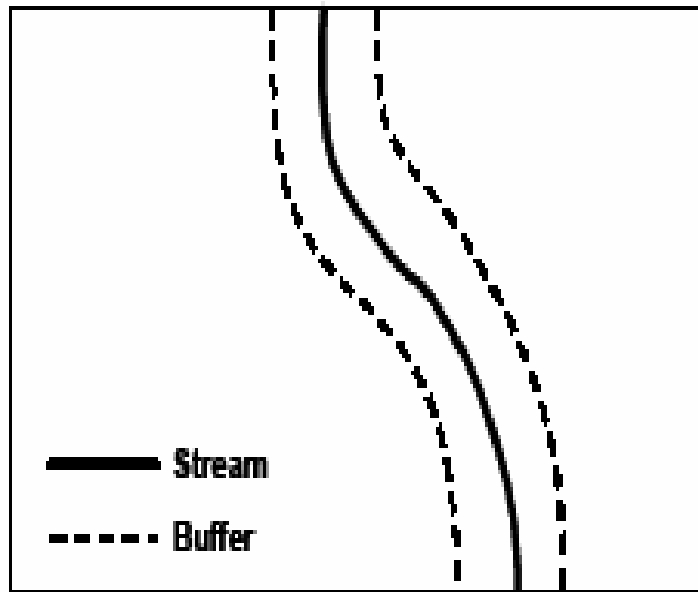
Graphic Representation of Riparian Zones



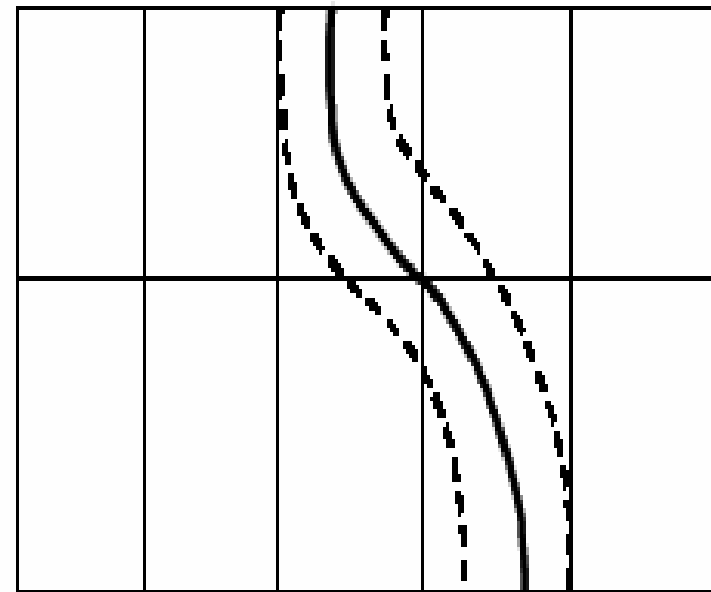
Jeff Grizzel, WA DNR



Smaller Landowners can be more impacted



(a)



(b)

From Zobrist 2003





Kevin Zobrist (2003)

- Ten case studies from Lewis and Grays Harbor Counties of small forest landowners
- Economic impacts varied depending on ownership
- Effects can be mitigated with partial harvest alternatives
- Economic incentive programs can help compensate for lost revenue





George Ice *et al.* (2006)

- Modeled buffers for fish-bearing streams in GIS
- Effects of Riparian Management Zones (RMZ) do not consider economic factors
- Can accrue additional costs from road construction to avoid crossing streams
- Land classified as RMZ may overlap and make non-RMZ land unavailable





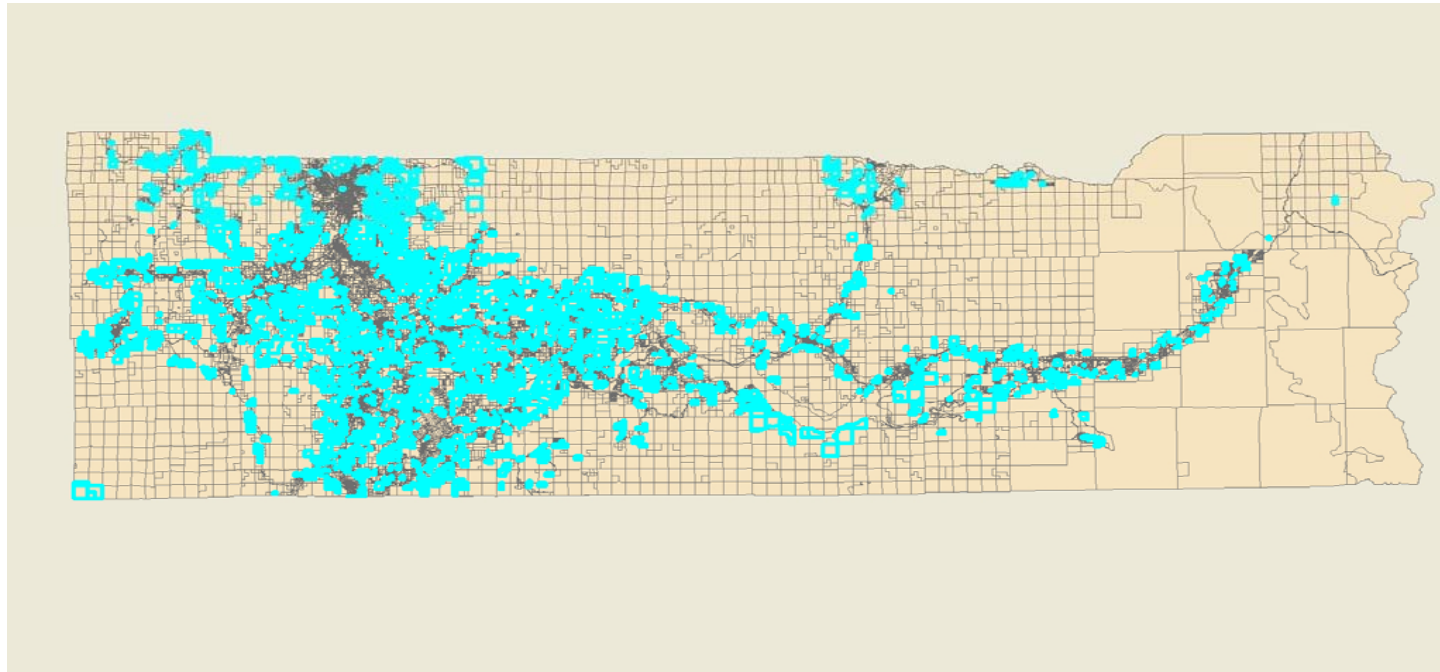
Land Conversion Issues

- Western Washington lands are converted from forests to residential and urban
- Especially along the I-5 corridor
- Urbanization reduces economic sustainability of working forests
- Urbanization changes the hydrologic cycle and aquatic habitat potential of streams





Spatial Location of Small Forest Owners in Lewis County





Project Plans – Looking Ahead

- Develop spatial and functional priority areas using computer technology
- Apply the methods to other counties in Western Washington
- Inform policy decisions regarding the possible tradeoffs of current protection strategies





References

- Ice, G; Skaugset, A; Simmons, A. 2006. Estimating areas and timber values of riparian management on forest lands. JAWRA. 42(1) 115-24
- Lunetta, R; Cosentino, B; Montgomery, D; Beamer, E; Beechie, T, 1997. GIS-Based Evaluation of Salmon Habitat in the Pacific Northwest. PERS 63(10). 1219-29
- Zobrist, K. 2003. Economic Impacts of the Forest and Fish Rules on Small, NIPF Landowners. RTI Working Paper 1 http://www.ruraltech.org/pubs/working/west_econ_ffr/index.asp

