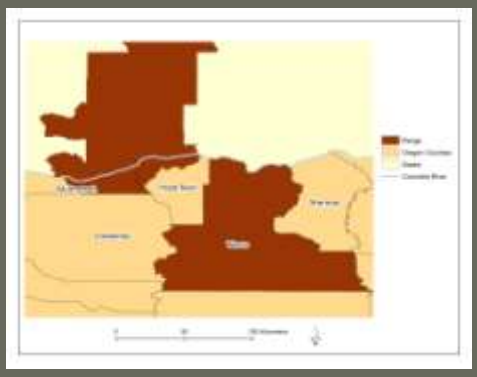
Habitat Suitability Analysis for *Plethodon larselli*

Wendy Berg – Geog 593

Introduction

- "Near Threatened" according to IUCN
- Current knowledge of the species range is incomplete
- **Goal**: Determine habitats likely to support *P. larselli* in order to direct search efforts by wildlife biologists

Known Occurences



Preferred Habitat

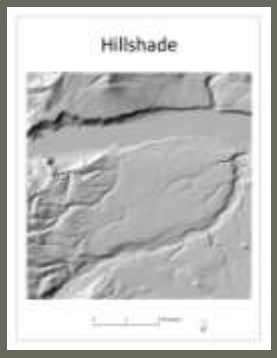
- 50-1280m elevation
- Mesic soils
- Gravel/cobble soils
- Scree and talus
- Lava tube entrances

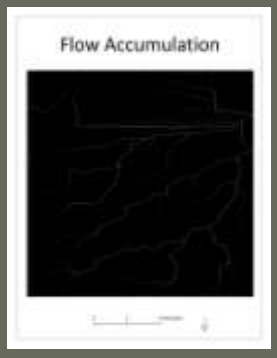
Methods

- Acquire DEM and soil data in area of interest
- Derive hillshade, curvature, flow accumulation, and total water holding capacity
- Reclass and perform weighted overlay to derive Soil Moisture Index
- Overlay with elevation and soil type to complete habitat suitability analysis

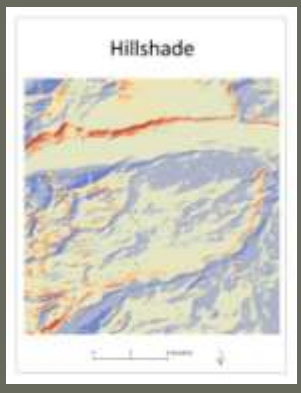
Area of Interest

Derived Rasters

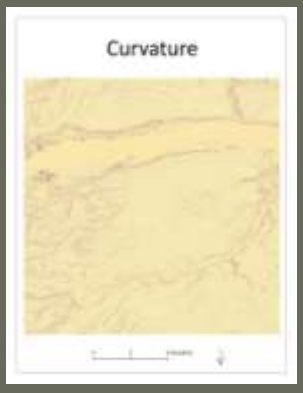




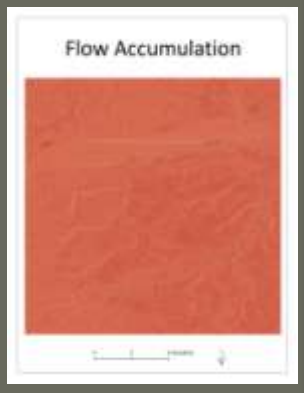
Reclassification



Equal Interval

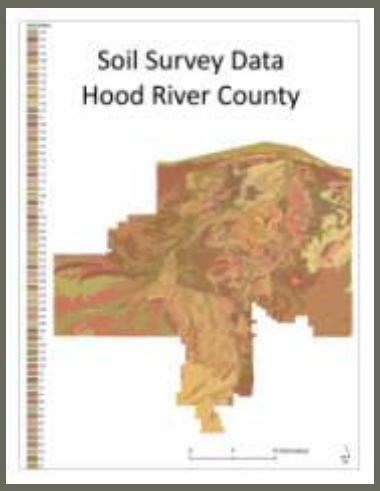


Equal Interval



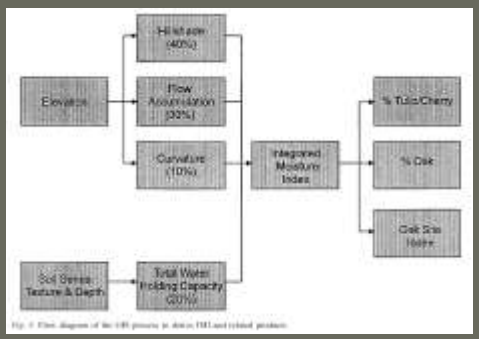
Quantile

Total Water Holding Capacity

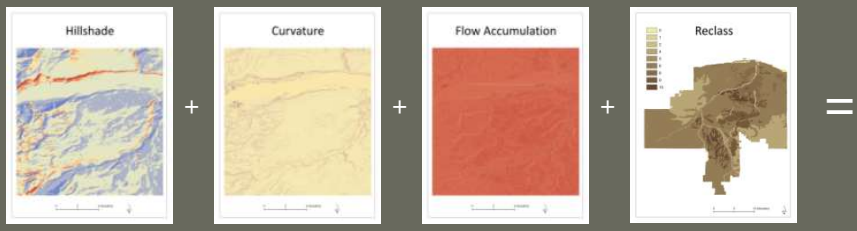


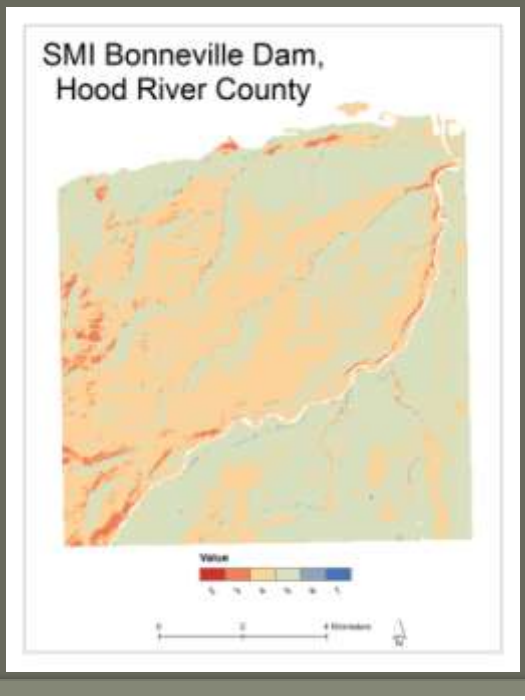
Soil Moisture Index

- "A GIS-derived integrated moisture index to predict forest composition and productivity of Ohio forests (U.S.A.)"
- Iverson, Dale, Scott, and Prasad 1997

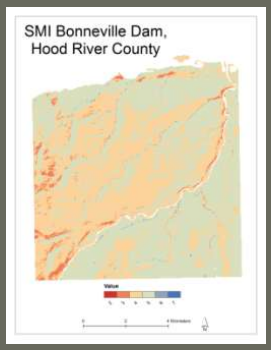


Soil Moisture Index





Habitat Suitability Analysis



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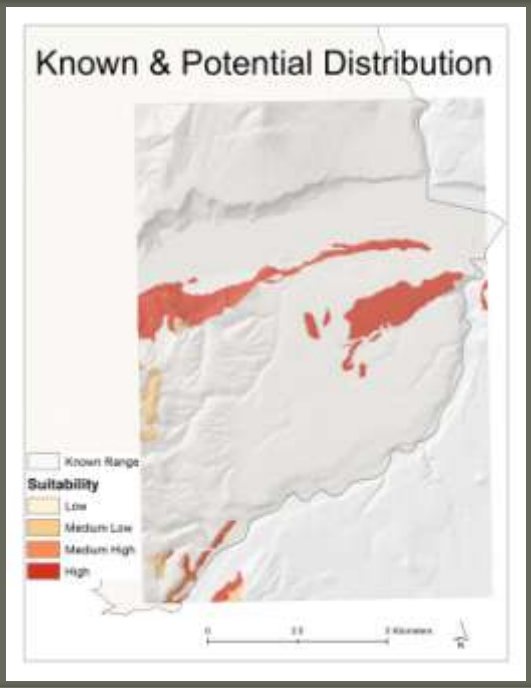

Conclusions

- My process predicted *P. larselli* occurrence within it's known range – this helps verify its accuracy
- There is suitable habitat outside of the salamander's known range – possibly new populations to discover
- This process could be applied to additional DEMs across OR and WA to find even more potential habitat

Field trip anyone?