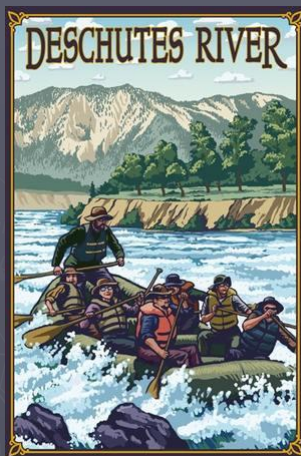# Co-Managing the Lower Deschutes River

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The Deschutes River

► Located in Central Oregon, flows into the Columbia River

► National Wild and Scenic River, Recreation Designation

► Lower Section flows from Warm Springs to the Columbia

The Deschutes River

The Deschutes features ruggedly beautiful scenery, outstanding whitewater boating, and a renowned sport fishery for steelhead, brown trout, and native rainbow trout. The Lower reaches offer the greatest opportunities for whitewater rafting and is one of Oregon's premier steelhead and trout fisheries.

Recreation

► White Water Rafting a major utility of river.
► Local economies and businesses depend on rafting revenue.
► Rafting regulated by BLM management plan
► Limited number of entry, and camp locations

Nature
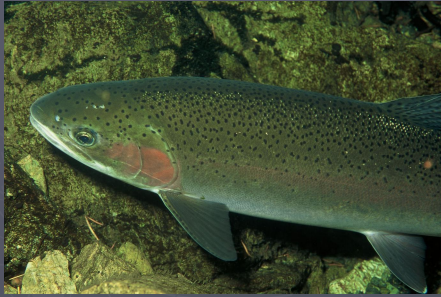
► Habitat for numerous species' of fish and wildlife.

► Several species listed at "threatened" under ESA, not yet endangered.

► Long term species survival depends on proper management

Co-Managing: Wild and Scenic

National Wild & Scenic Rivers

► The National Wild and Scenic Rivers System was created by Congress in 1968

  ▪ preserve certain rivers with outstanding natural, cultural, and recreational opportunities.

► Deschutes = Recreational

  ▪ Regardless of classification, each river in the National System is administered with the goal of protecting and enhancing the values that caused it to be designated.

Co-Managing: ESA

► The ESA protects species which are officially listed as "endangered" or "threatened".

► Habitat loss is the primary threat to most imperiled species

- original ESA of 1973 allowed agencies to designate specific areas as protected "critical habitat" zones.
  - ► Critical habitats are required to contain "all areas essential to the conservation" of the target species

► Federal agencies are prohibited from authorizing, funding or carrying out actions that "destroy or adversely modify" critical habitats

The Dilemma

► Maintain values which caused Deschutes to be dedicated a WSR/recreation river (recreational opportunities).

- As required by the WSRA of 1968.

► Preserve critical habitat to those species listed under the ESA (Steelhead, Spring Chinook, Bullhead Trout).

- As required by the ESA of 1973.

Our Question

Where should we focus riparian restoration efforts along the Lower Deschutes River, Oregon in order to prevent any conflict between the WSRA and the ESA?

Data Sets Used

► Digitized Campsites
► DEM, Merged (Oregon GEO)
► Rivers Polygon Layer (BLM)
► Vegetation Types (Oregon GEO)
► Cities (Oregon GEO)
► Highways (Oregon GEO)
► State Boundary (Oregon GEO)
► Sub-Basin: Lower Deschutes (USGS)

The Analysis

1. Digitize campsites along Lower Deschutes from the BLM Boater Pass website
2. Download Hydro data for Lower Deschutes from BLM website.
3. Download 2 DEMs from Oregon GEO website.
4. Merge The DEMs.
5. Calculate Slope from Merged DEMs.
6. Calculate Hillshade from Merged DEMs.

Digitizing
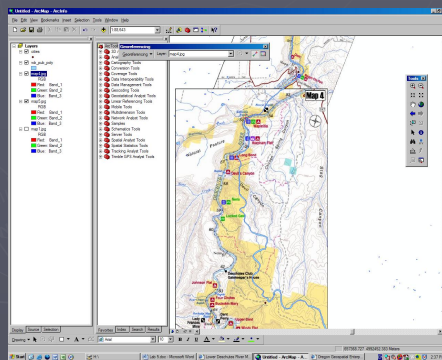
► Georeferencing used to digitize data from .jpg map to a shapefile layer.

► Each campsite was digitized as point.

► Data Entered included, name of campsite and approximate number of sites

DEM Merging
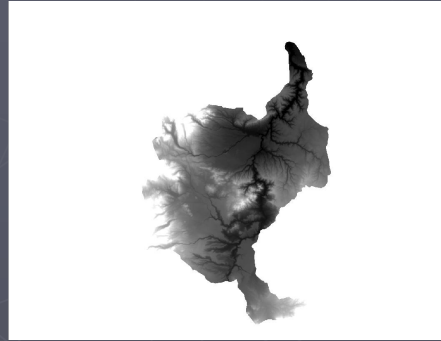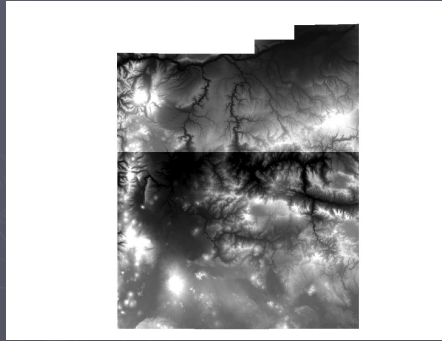
The Analysis

7. Create Buffer around Deschutes River data of 0.25 miles to indicate the WSR corridor.

8. Create Buffers around campsite point data. 0.1 miles for 1 site, 0.2 for 2, 0.3 for 3, 0.4 for 4 and 0.5 for 5+ sites.

9. Erase buffers from the WSR corridor.

10. Download Vegetation data from Oregon GEO website.

11. Clip Vegetation data to new WSR corridor.

12. Identity Vegetation data to WSR Corridor.

Campsite Buffers
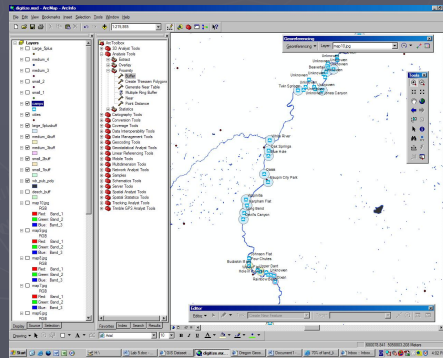
► Each digitized campground was given a buffer depending on how many campsites were at the location.

► 0.1 miles for 1 site, 0.2 for 2, 0.3 for 3, 0.4 for 4 and 0.5 for 5+ sites.

The Analysis

13. Feature to Raster Identity/Clip Vegetation/WSR data.

14. Reclassify Raster WSR/Study Area to have 5 classes of general vegetation groups.

15. Clip Slope DEM to WSR/Study Area raster.

16. Reclassify slope to 0-5 degrees, 5.1-10, 10.1-15, 15.1-20, 20+

17. Weighted Vegetation layer with AHP calculated values.

18. Weighted Slopes with manually selected weights.

AHP Weighting

|	Aig/Crop	Juniper	Big Sage	Bluebunch	Rigid Sage
Aig/Crop	1	3	5	7	9
Juniper	1/3	1	3	5	7
Big Sage	1/5	1/3	1	3	5
Bluebunch	1/7	1/5	1/3	1	3
Rigid Sage	1/9	1/7	1/5	1/3	1
			Weight		
Aig/Crop	945	3.94	0.51		
Juniper	35	2.04	0.26		
Big Sage	1	1.00	0.13		
Bluebunch	0	0.49	0.06		
Rigid Sage	0	0.25	0.03		
Total		7.72	1.00		

► The AHP process for weighting the vegetation types.

The Analysis

19. Combined veg and slope layers with equal weights using raster calculator.

20. Displayed with hillshade and final result of optimal restoration areas.
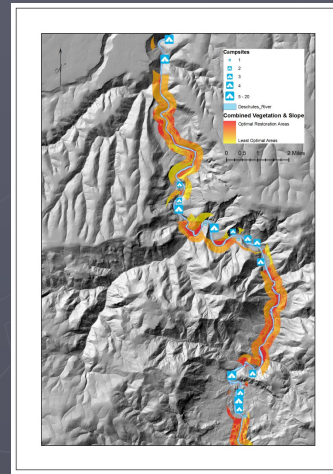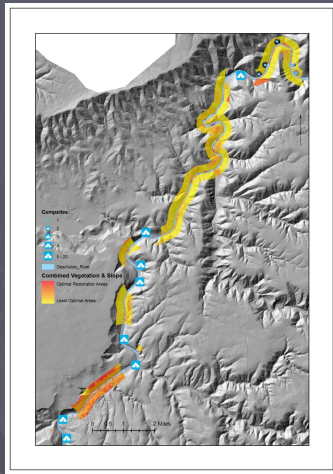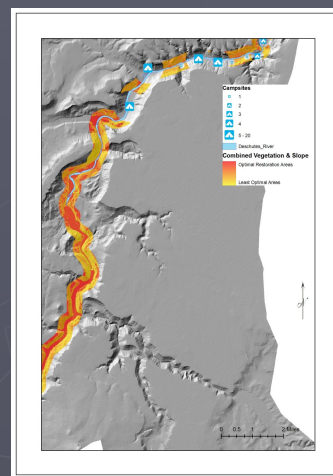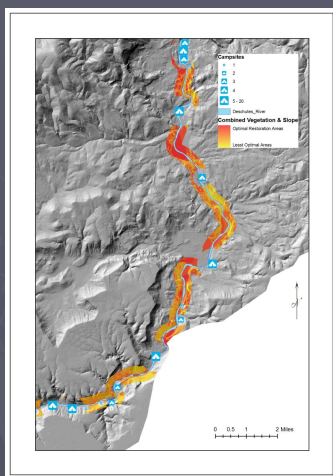
A Frame of Reference: The Study Area
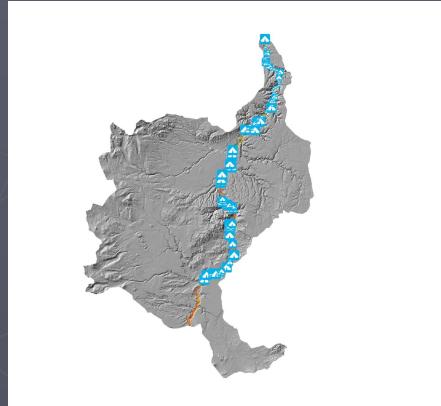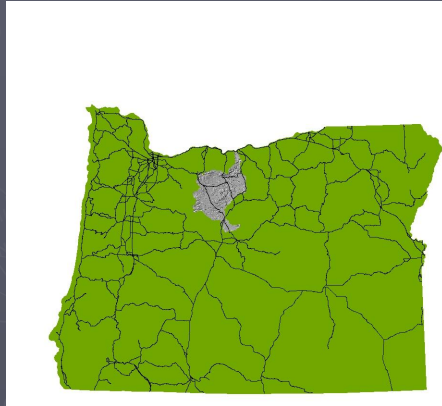
Results
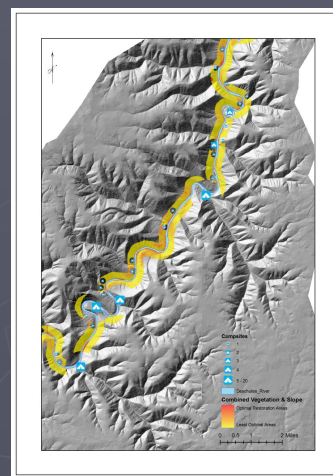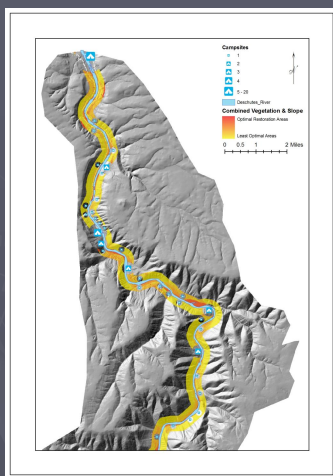
Results

Results

Further Studies

► Identify areas of access by boat or road.

► Ground truth study of optimal riparian restoration zones.

► Research and contact of landowners holding deed to optimal restoration zones.

► Ecological study of optimal vegetation rehabilitation species'.