

# Modeling Habitat for Western Pond Turtle in the Cardwell Hill Conservation Area

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## Project Objectives

- Identify existing habitat for the western pond turtle in Cardwell Hill Conservation Area (CHCA)
- Help establish conservation and restoration priorities within the CHCA



## The Big Picture

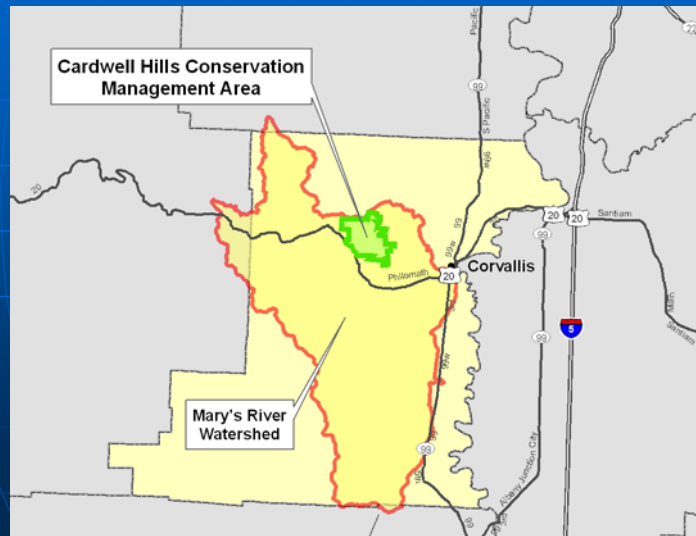
- This project is part of an on-going collaboration with the Mary's River Watershed Council
- Project is funded by a grant from OWEB
- Conducted in conjunction with other efforts in the area that are being managed by ODFW, through mitigation funding from BPA

## Project Location

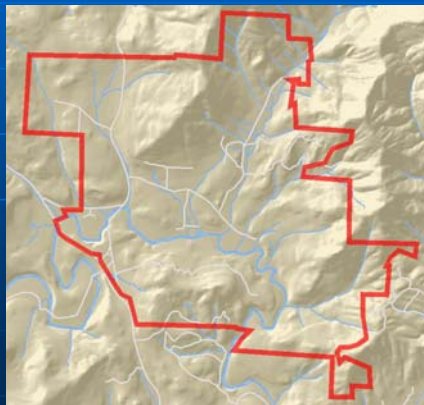
Mary's River Watershed is a fifth-field watershed in the Willamette Valley, west of Corvallis



## Cardwell Hills Conservation Area



An ecologically diverse, 6,500-acre area on the north edge of Mary's River Watershed



## Why the Western Pond Turtle?

- Federal and state listing as Species of Concern due to extirpation of many populations
- Lifecycle requires unique connectivity between water/wetland habitat and upland prairie habitat
- Known populations within Cardwell Hill Conservation area

## Multivariate analysis to identify key habitat, incorporating:

- **Terrain** (aspect)
- **Human disturbance** (proximity to roads)
- **Land cover/shade** (percent canopy closure)
- **Water/wetlands** (proximity)
- **Soils** (suitable for nesting)

## Data sources:

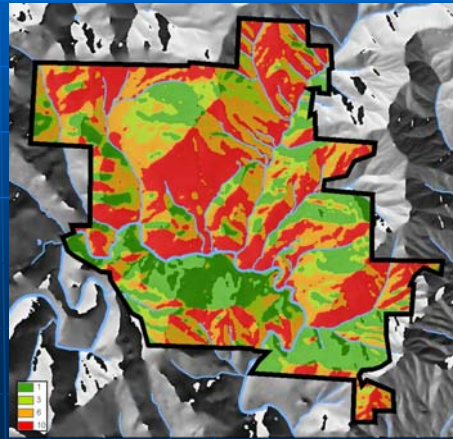
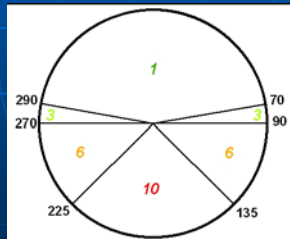
- Terrain *BLM 10 Meter DEM*
- Roads *Benton County*
- Land cover *David Evans and Assoc.*
- Water/wetlands *BLM, Benton Co*
- Soils *NRCS*

## Process:

1. Standardize coordinate system
2. Rasterize vector data (10 Meter cell)
3. Derive desired input data
4. Standardize input data suitability scores (1-10, least-most suitable)
5. Weight data

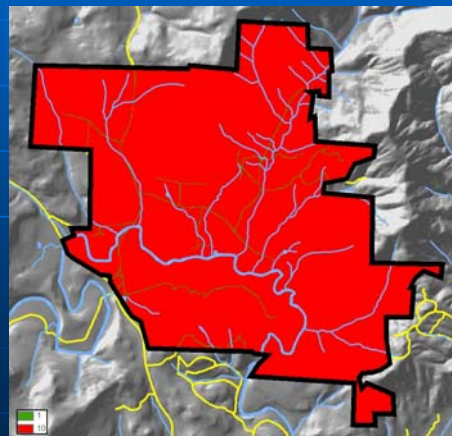
## Terrain

1. Derive aspect from DEM
2. Reclassify to aspect ranges
3. Score ranges 1-10



## Roads

- Distance (10 Meters)
- Score 1-10

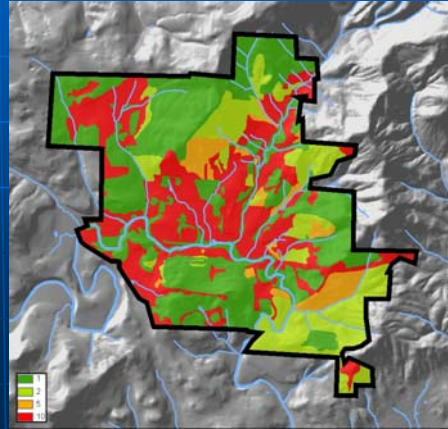




## Land Cover

- Rasterize (10 Meter)
- Score percent canopy closure

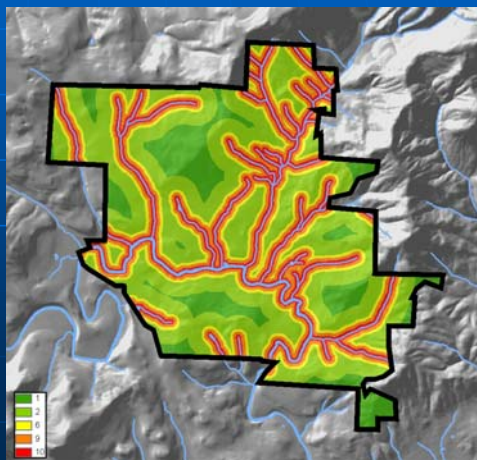
0-25%	10
25-50%	5
50-75%	2
75-100%	1
Managed	1



## Water/Wetlands

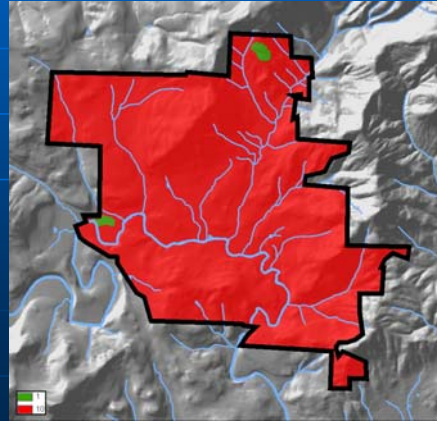
1. Distance GRIDs (waterbodies, streams)
2. Classify distances (waterbodies, streams)
3. Score classes
4. Combine score GRIDs

0-50 M	10
50-100 M	9
100-150 M	6
150-400 M	2
> 400 M	1

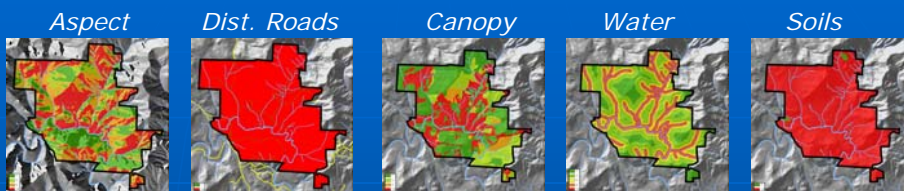


## Soils

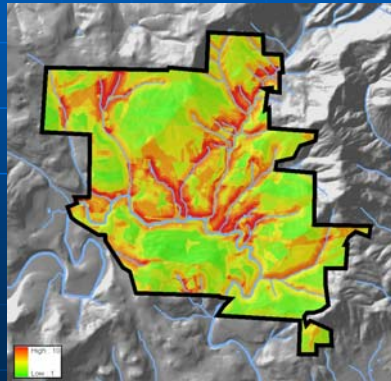
- Rasterize (10 M)
- Score soil types



## Weight Input Data



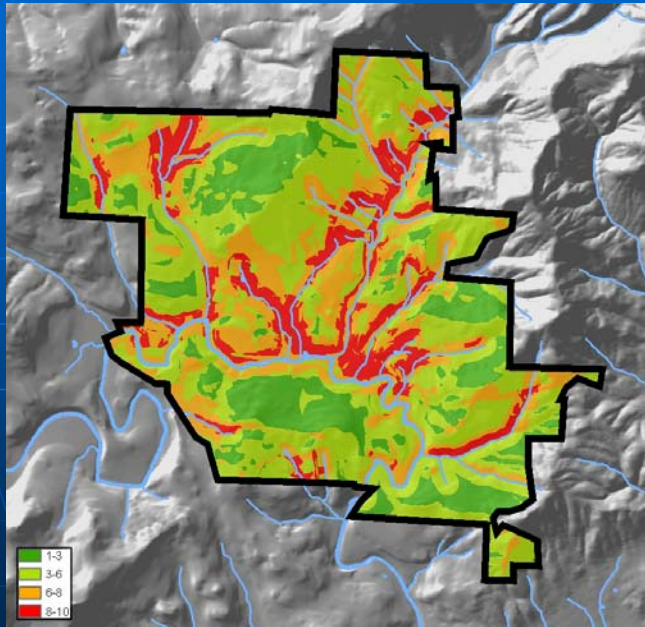
	<u>Weight</u>
Aspect	.25
Dist.Roads	.07
Canopy	.30
Water	.35
Soils	.03



$$HS = aspect*.25 + roads*.07 + canopy*.30 + water*.35 + soils*.03$$



## *Habitat Suitability*



## Discussion

- Resulting habitat suitability map can be used to help prioritize restoration and conservation efforts.
- Patterns illustrate a disconnect between water/wetland habitats and upland prairie habitats.
- Scoring and weighting are both subjective. Based on best available science, but cannot be verified/refuted.
- Field survey is scheduled for Summer 2007. Results of survey will be used to evaluate/calibrate model.