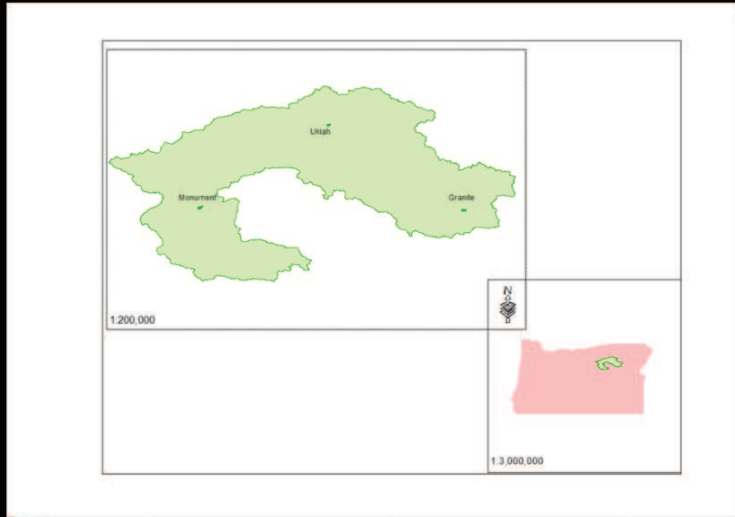


# Geospatial Analysis of the North Fork John Day Watershed for Optimal Multi-species Critical Habitat Preservation

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March 20, 2012

## Study Area



### Research Question:

What properties within the North Fork John Day Watershed Council should be targeted as conservation priorities for endemic threatened or endangered vertebrates?

# Setting Conservation Priorities

'Silver Bullet' strategy identifies priority conservation areas--"hot spots" (Myers 2000).

- Species richness
- Conservation status of species (endangered/candidate/concern/sensitive)
- Endemic species
- Rate of habitat loss

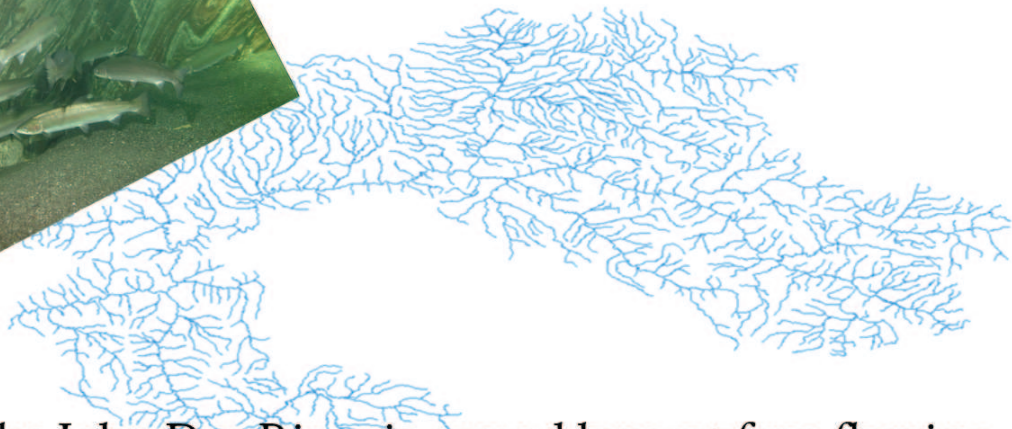
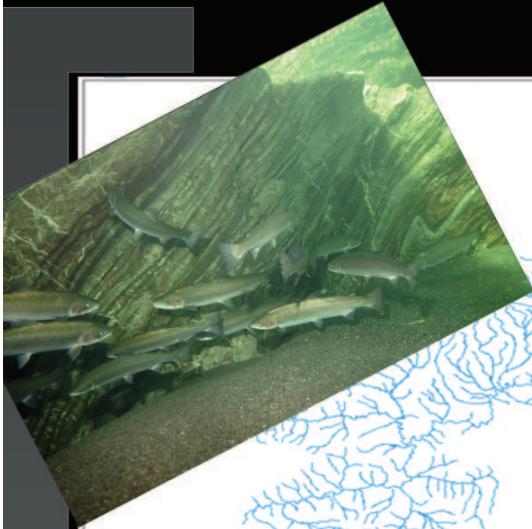
## Why the John Day Watershed?



photo: panoramio.com



free-flowing  
to endangered  
d runs.

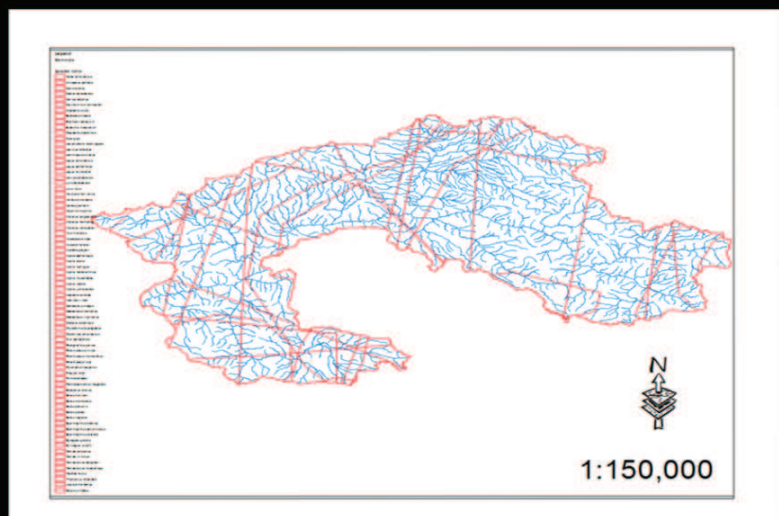


The John Day River is second longest free-flowing river in the Continental U.S., and home to endangered Chinook salmon and steelhead runs.

## Terrestrial Animals

### IUCN Red List

- mammals
- reptiles
- amphibians





# ESA Listed Mammals



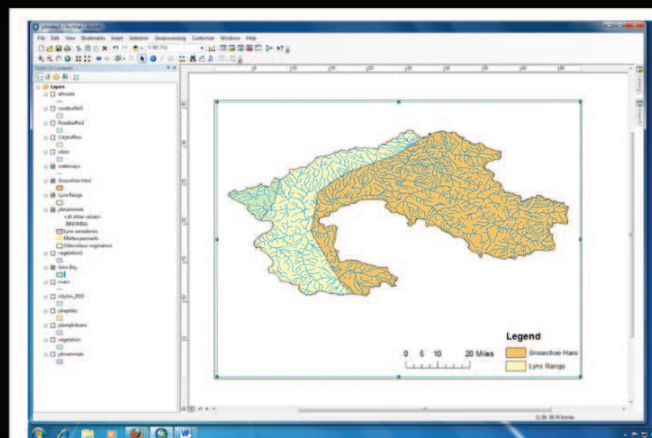
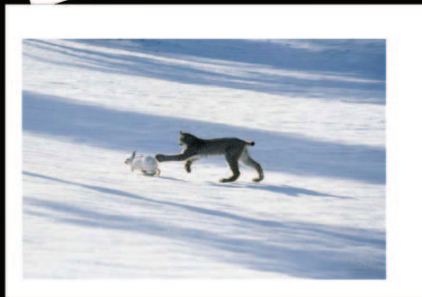
White-tailed Deer



Canada Lynx

stockpix.com

Identifying optimal Canada Lynx habitat using  
range of preferred prey, Snowshoe Hare

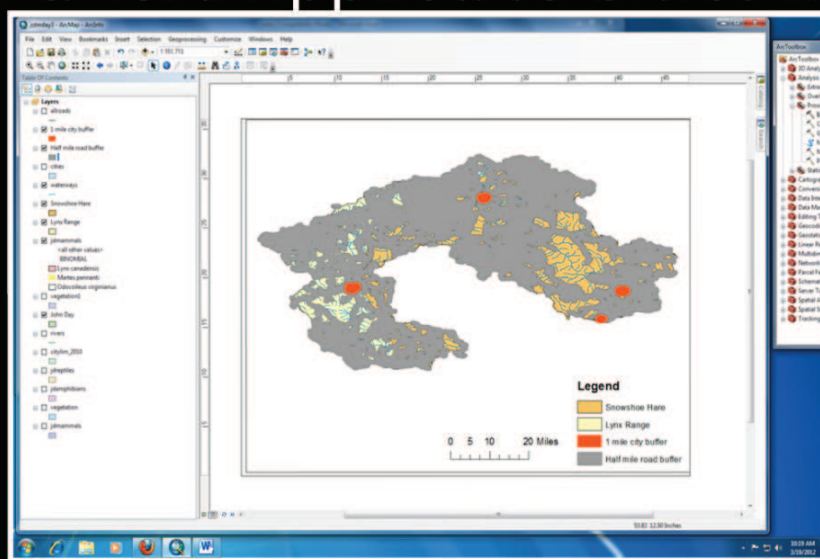


# Guidelines for buffering

kilometers away (von der Lippe and Kowarik 2007). Highway lighting also has important impacts on animals (Rich and Longcore 2006).

Characteristics making a species vulnerable to road effects (from Forman et al. 2003)	Effect of roads		
	Road mortality	Habitat loss	Reduced connectivity
Attraction to road habitat	★		
High intrinsic mobility	★		
Habitat generalist	★		
Multiple-resource needs	★		★
Large area requirement/low density	★	★	★
Low reproductive rate	★	★	★
Behavioral avoidance of roads			★

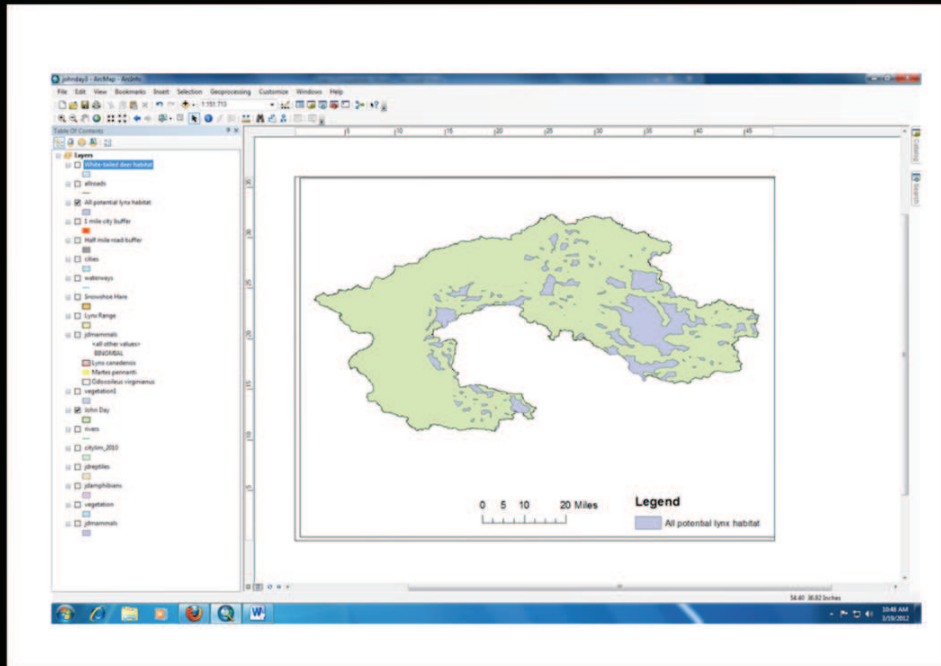
# Buffers Applied to Cities and Roads



Potential Lynx Habitat



# Potential Lynx Habitat



Burrowing Owl: 'Critical' status according to Fish & Wildlife Service

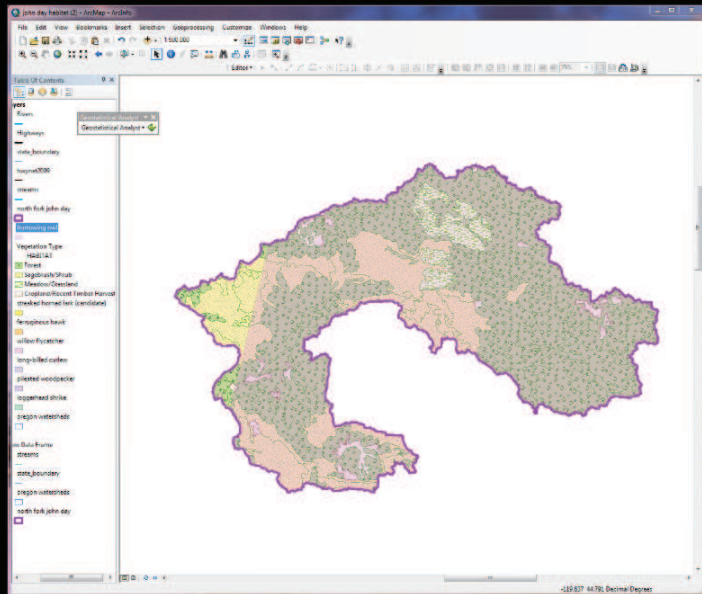
Habitat: occupies ground nests, often abandoned mammal burrows, in shrub and grasslands.



migratorybirdfestival.com



Preliminary map of vegetation overlaid with potential owl range.



The streaked horned lark is a Candidate for ESA listing and, like the burrowing owl, is a ground-nesting bird that utilizes open, treeless landscapes, including fallow fields (croplands).





Join Data

Join lets you append additional data to this layer's attribute table so you can, for example, symbolize the layer's features using this data.

What do you want to join to this layer?

Join data from another layer based on spatial location

1. Choose the layer to join to this layer, or load spatial data from disk:

Horned\_Lark\_hab

2. You are joining: Polygons to Polygons

Select a join feature class above. You will be given different options based on geometry types of the source feature class and the join feature class.

☒ Each polygon will be given a summary of the numeric attributes of the polygons in the layer being joined that intersect it, and a count field showing how many polygons intersect it.

How do you want the attributes to be summarized?

☐ Average ☐ Minimum ☐ Standard Deviation

☒ Sum ☐ Maximum ☐ Variance

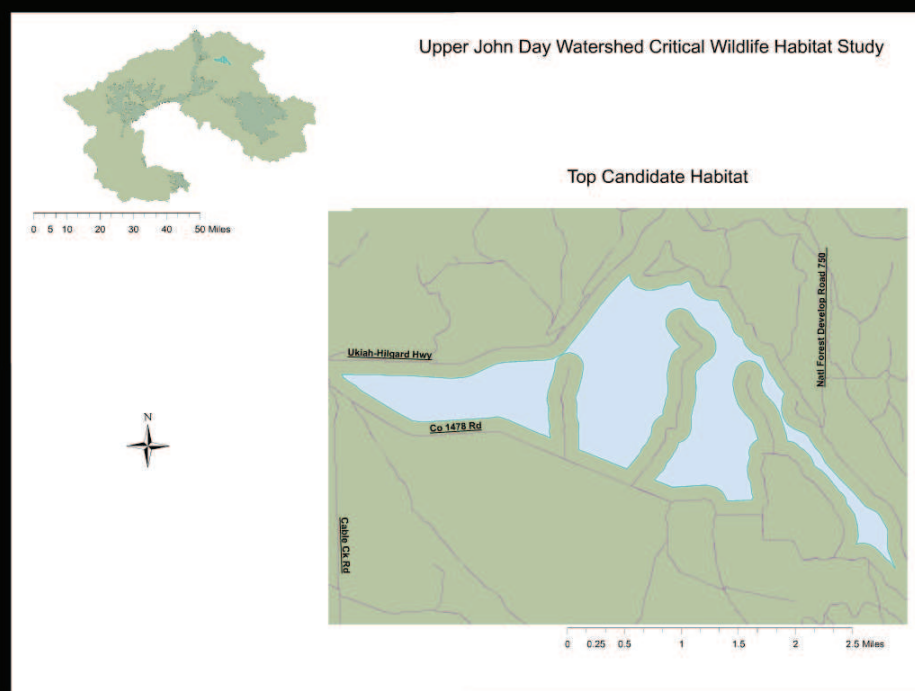
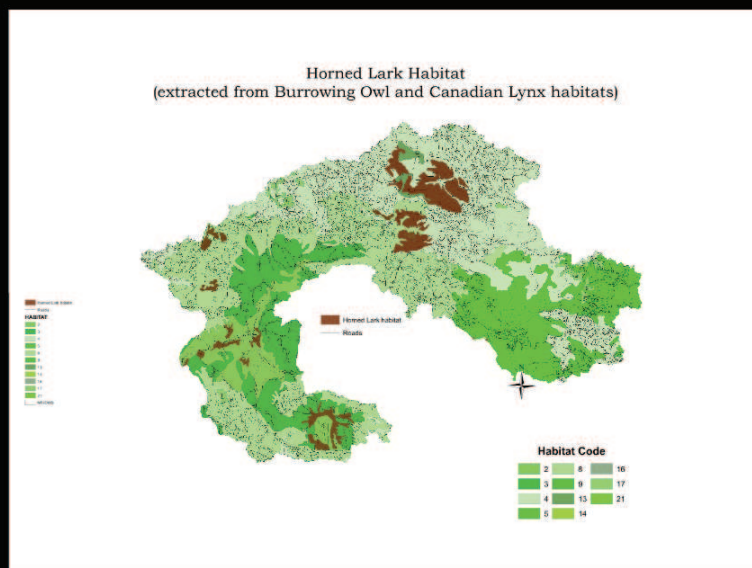
☐ Each polygon will be given the attributes of the polygon it falls completely inside of in the layer being joined. If a polygon falls completely inside more than one polygon in the layers being joined, the first one found will be joined.

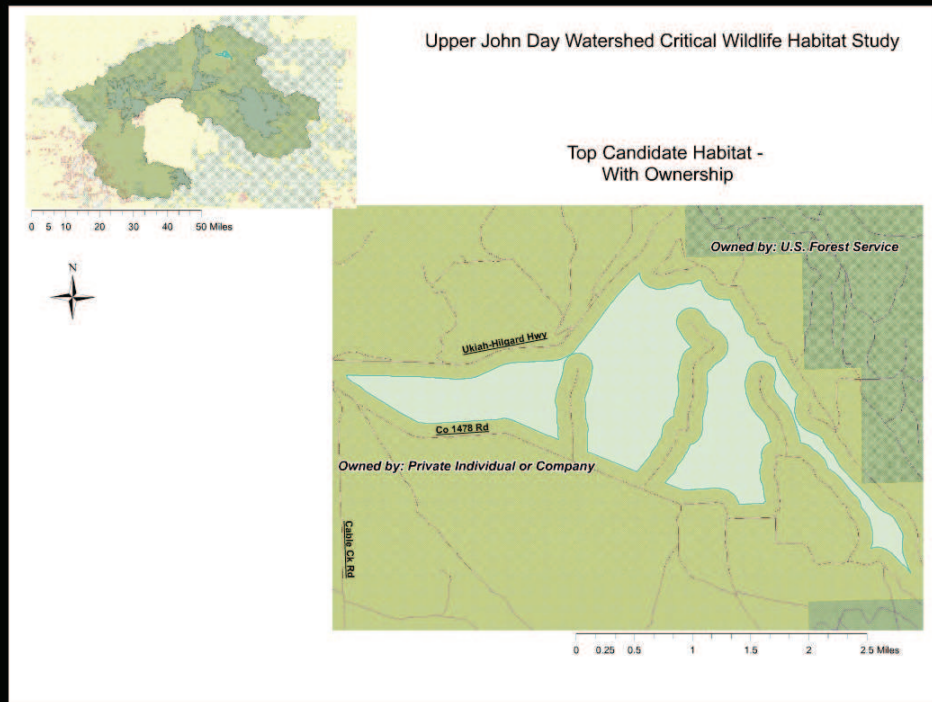
3. The result of the join will be saved into a new layer.

Specify output shapefile or feature class for the new layer:

D:\Backup\FreshDrive\KMCKINNON\School\Geog452\Proje

About Joining Data OK Cancel





## Possible Future Directions:

- Local/regional expertise
- Field assessment of species diversity and presence



## References

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Images collected from:

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<http://jcpeterson.blogspot.com/2011/04/snowshoe-hares.html>

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# Questions?