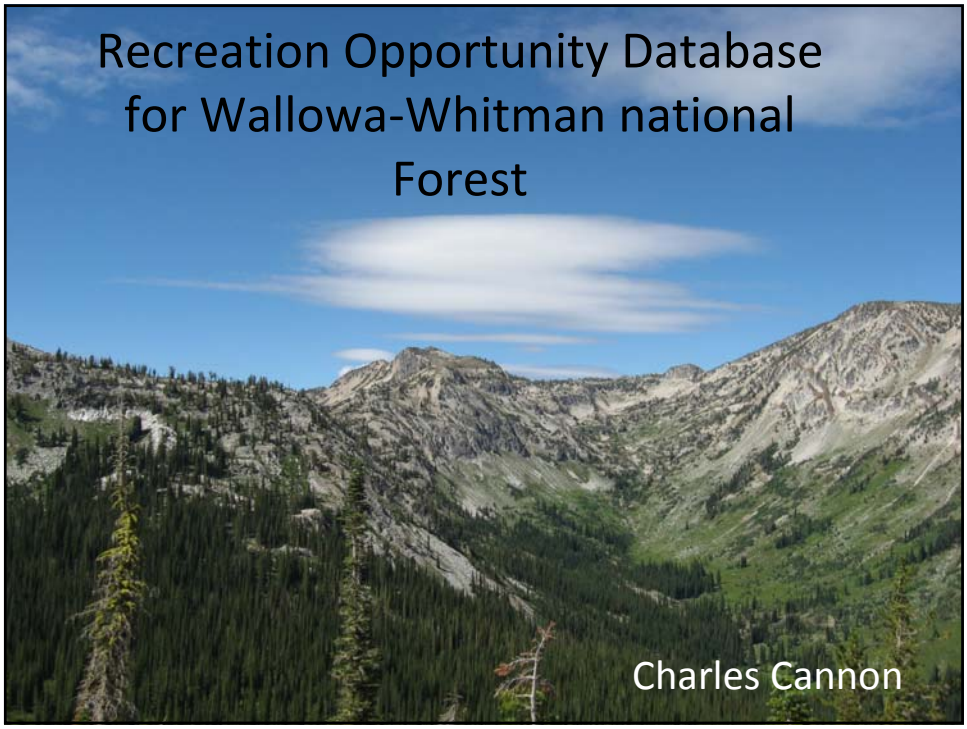
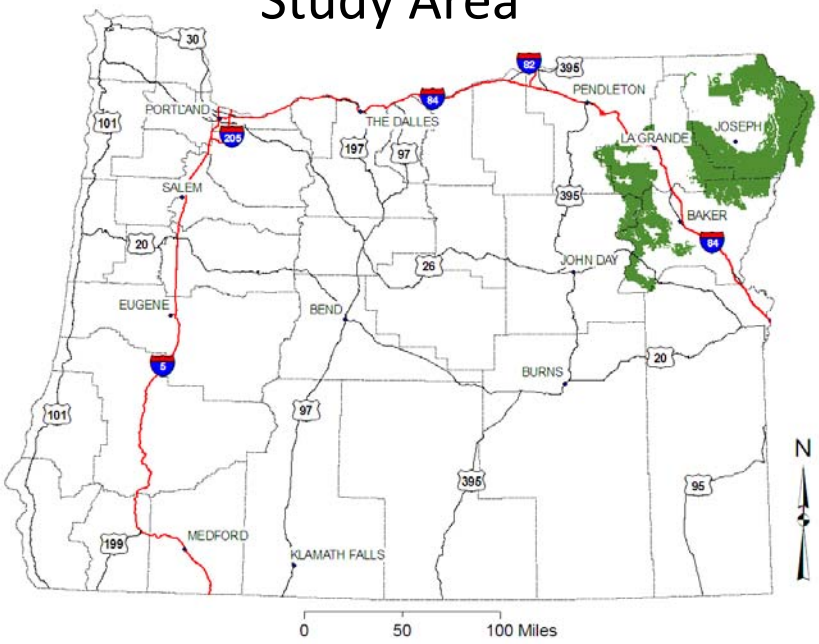


Why

- When planning a hike to National Forests, it is a nuisance to go back and forth between paper maps , web pages and phone calls
- Plan is to build a geodatabase that is easy to update with changing conditions and is easy to query.

Study Area



Data Compilation: Spatial

- Spatial data downloaded from USFS websites
- Converted all to same coordinate system
- Albers NAD83 for Washington and Oregon
- Clip by select by location and exporting data to existing feature dataset

Spatial Datasets

- Trails
- Roads
- Trailheads
- Wildlife: bighorn sheep and lynx
- Water Bodies: lakes and streams
- Wilderness Areas
- Cities

Tabular data

- Acquired from tables on websites for each ranger district
- Standardized and compiled into one table for road conditions and one for trail conditions
- These were joined to feature classes by relationship classes

Trail attributes

- Attribute fields added for wildlife, water bodies, trailhead name, trail length
- Trail length calculated in miles using calculate geometry
- Trailhead name value derived from spatial join of nearest trailhead
- All other added fields Boolean

Water

- Fields for streams and lakes
- Value determined by spatial query of trails less than 100 meters from water and updating table values with Field Calculator

Wildlife

- Bighorn sheep and lynx attributes
- Calculated by spatial query of whether trails intersect the polygons for their habitat
- Unfortunately no good mountain goat habitat polygons!

Network – roads

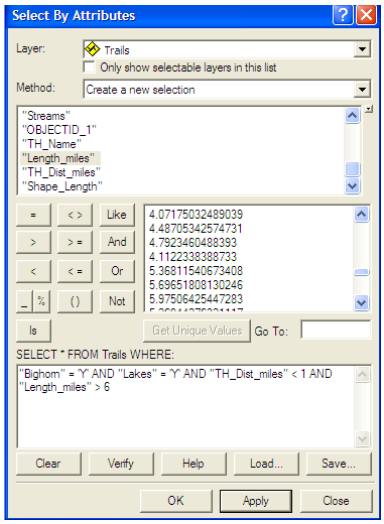
- Roads layer, m-values in miles
- Create new network dataset
- Assigned speeds to highway & calculate time to traverse
- Used snapping to make cities and trailheads align with roads

Steps to use

- Query trails by attributes desired
- Check conditions via related table
- Lookup trailhead name in attribute table
- Select a city of departure such as Baker City or La Grande
- Find shortest route using Network Analyst
- Check road conditions via related table

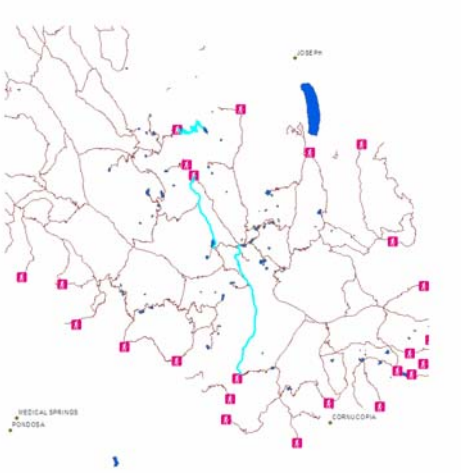
Example

- Somebody looking to go backpacking.
- They would like to see see bighorn sheep and be able to camp by a lake1



Example

- Three trails meet these criteria.
- In the related table, it is found that none of them have any adverse conditions reports
- Trail #1670 (middle one at right) looks interesting…



Example

- The trailhead associated with Trail #1670 is the Two Pan Trailhead, and I will be coming from Portland, so I know how to get at least as far as La Grande.
- I can then solve for a network analyst route to get driving directions for after I leave the freeway and check the road conditions to see if they are open.

Future Versions

- Fix Network Analyst bugs
- Attribute for hyperlinks to trail descriptions on web
- More attributes to select from
- Incorporate elevation – 3D trails
- Web-based interface

References

- Arctur, D., & Zeiler, M. (2004). *Designing Geodatabases*. Redlands: ESRI Press.
- Chang, K., (2008). *Introduction to Geographic Information Systems.* New York: McGraw-Hill.
- ESRI Resource Center for the geodatabase
- Data dictionary for the national forests of the Blue Mountain Province
- Recreation page for the Wallowa-Whitman National Forest


The End