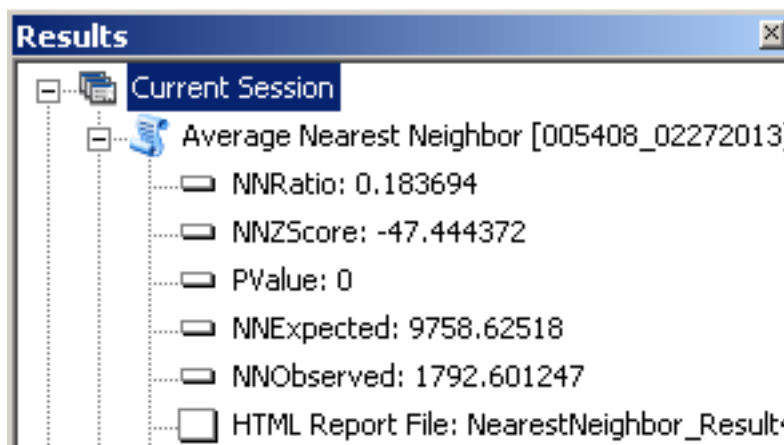


Assignment 4 : Spatial Patterns of Road Kill

The research questions for this analysis are : “Where is the most dense mortality of elk killed by roadkill events?” and “Where are the best places for wildlife corridors?”

In the data acquiring and preparation processes, Idaho boundary and a clipped National Land Cover Database(2006) of Idaho state were initially used as primary data. Next, Idaho Roadkill data was downloaded from fishandgame.idaho.gov as an XML file. Wildlife Management Areas and Protected Area Database were then obtained as additional data.

Before processing, all data were screened in the first step to make sure that they are the correct primary data. Moreover, these data were projected to North American Datum 1983 and Universal Transverse Mercator zone 11N to convert map units to metric system. Afterward, all data which are Idaho boundary, NLCD2006 and Highway road were imported and additional data were clipped by Idaho boundary. XML file was also imported to geodatabase as a table file and to dataset later on. Converting this table data to a layer, KML conversion tool was used. A number of resulted layers found to be dispersed. They were then grouped by using Merge Branch to combine to a single layer. Average Nearest Neighbor Analysis was the following tool used for calculation a Nearest Neighbor Index basing on the average distance from each feature to its nearest neighboring feature. The Average Nearest Neighbor tool yielded five digital figures: Observed Mean Distance, Expected Mean Distance, Nearest Neighbor Index, z-score, and p-value which could be checked in result windows. The index value (NNRatio) is 0.18, the pattern seems clustering. NNZScore is -47. The p-value is 0, this means that the distribution of points was found to be significantly different from random.



Assignment 4 : Spatial Patterns of Road Kill

Point Density was the following tool used. By using this tool, all values were set for serviceable results, output cell size is 400 and radius is 5000, but 15,000 was selected in order to the comfortable visualization; classes also changed to be greater than 30 classes to average values to outer clustering points.

Habitat Summary, by using Extract Value to Points and Summarize Tools. the most prevalent land cover types were Developed and low intensity areas as shown below.

sum_elk_raster_value			
	OID *	RASTERVALU	Cnt_RASTERVALU
▶	1	-9999	2
	2	11	3
	3	21	272
	4	22	377
	5	23	112
	6	24	2
	7	42	30
	8	52	70
	9	71	20
	10	81	9
	11	82	19
	12	90	2
	13	95	5

According to the findings, the most dense of elk killed were found in three main three main areas of which shown in the areas of darker tone. This analysis also showed the summarization of land use categories for road kill locations as shown in the picture above. The areas where most frequently found dead elks were Developed and low intensity areas. The areas most elk were killed are the areas under the supervision of the Forest Service(USFS), Bureau of Land Management (BLM) and Fish and Wildlife Service(FWS) where they are the normal places for wildlife habitation. As far as the best places for wildlife corridors are concerned, it was found in this analysis that the protected areas should be the best ones.

In conclusion, the most dense mortality of elk killed in the roadkill events in Idaho is in the southeastern part of the State. In addition, the best places for wildlife corridors were found to be the protected areas. This analysis suggested that the sign "Beware of Wildlife" or "Look for Elk" should be placed properly along the roadsides in south-east Idaho. In protecting elks from being killed by the roadkill events, the care drivers should pay much more attention while driving in the mentioned areas: the areas taken care by the USFS, BLM, and FWS.

Table Of Contents

Layers

- [-] PD_2
 - 0 - 0.170207368
 - 0.170207368 - 0.340414
 - 0.340414736 - 0.510622
 - 0.510622104 - 0.680829
 - 0.680829472 - 0.851036
 - 0.85103684 - 1.0212442
 - 1.021244209 - 1.191451
 - 1.191451577 - 1.361658
 - 1.361658945 - 1.531866
- [+] PD_1
- [x] Elk_roadkill_utm11
- [-] Placemarks
 - [-] Placemarks_point
- [x] hwy_clip
- [-] mjr_hwys
- [-] idaho
- [x] idaho_nlcd2006

Editor

Editor

Results

- [-] Current Session
 - [-] Average Nearest Neighbor [005408_02272013]
 - NNRatio: 0.183694
 - NNZScore: -47.444372
 - PValue: 0
 - NNEExpected: 9758.62518
 - NNObserved: 1792.601247
 - HTML Report File: NearestNeighbor_Result...
 - Inputs
 - Environments
 - Messages
 - [-] Point Density [004926_02272013]
 - [-] Point Density [004243_02272013]
 - [-] Average Nearest Neighbor [003716_02272013]
 - NNRatio: 0.032752
 - NNZScore: -58.515174
 - PValue: 0
 - NNEExpected: 50517.401513
 - NNObserved: 1654.570951
 - HTML Report File: NearestNeighbor_Result...
 - Inputs
 - Environments
 - Messages
 - [-] Previous Sessions

Search

Local Search

ALL Maps Data Tools

nearest

Search returned 16 items. [Help](#)

- Average **Nearest** Neighbor (Spatial Statistics)

Calculates a **nearest** neighbor index base...
 toolboxes\system toolboxes\spatial statisti...
- Nibble (Spatial Analyst)

Replaces cells of a raster corresponding to...
 toolboxes\system toolboxes\spatial analys...
- Resample (Data Management)

Alters the raster dataset by changing the c...
 toolboxes\system toolboxes\data manage...
- Euclidean Direction (Spatial Analyst)

Calculates, for each cell, the direction, in ...
 toolboxes\system toolboxes\spatial analys...
- Cost Back Link (Spatial Analyst)

Defines the neighbor that is the next cell o...
 toolboxes\system toolboxes\spatial analys...
- Euclidean Allocation (Spatial Analyst)

Calculates, for each cell, the **nearest** sou...
 toolboxes\system toolboxes\spatial analys...
- Near 3D (3D Analyst)

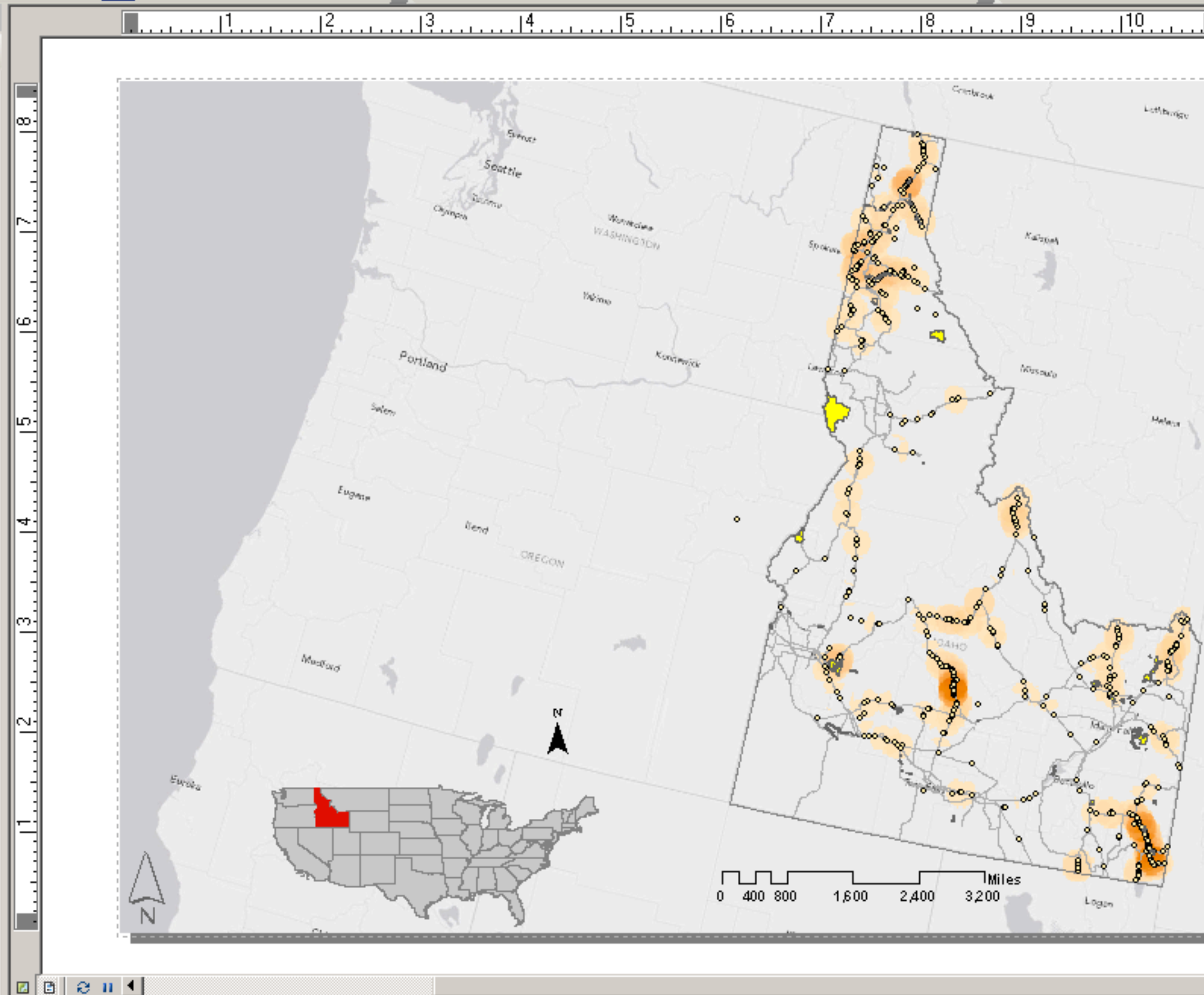
Determines the distance from each featur...
 toolboxes\system toolboxes\3d analyst to...
- Near (Analysis)

Determines the distance from each featur...
 toolboxes\system toolboxes\analysis tools...
- Reverse Geocode (Geocoding)

Creates addresses from point locations in ...

Table Of Contents

- Layers**
- -
 - Elk_roadkill_utm11_2003
 - Elk_roadkill_utm11_1
 -
 -
 - PD_6
 - Elk_roadkill_utm11_1
 - PD_3
 - idaho_nlcd2006
 - PD_5
 - PD_4
 - PD_2
 - PD_1
 - idaho3
 - Basemap
 - Reference
 - Light Gray Canvas
 - Basemap
 - New Data Frame**
 - idaho
 - North_US



Table

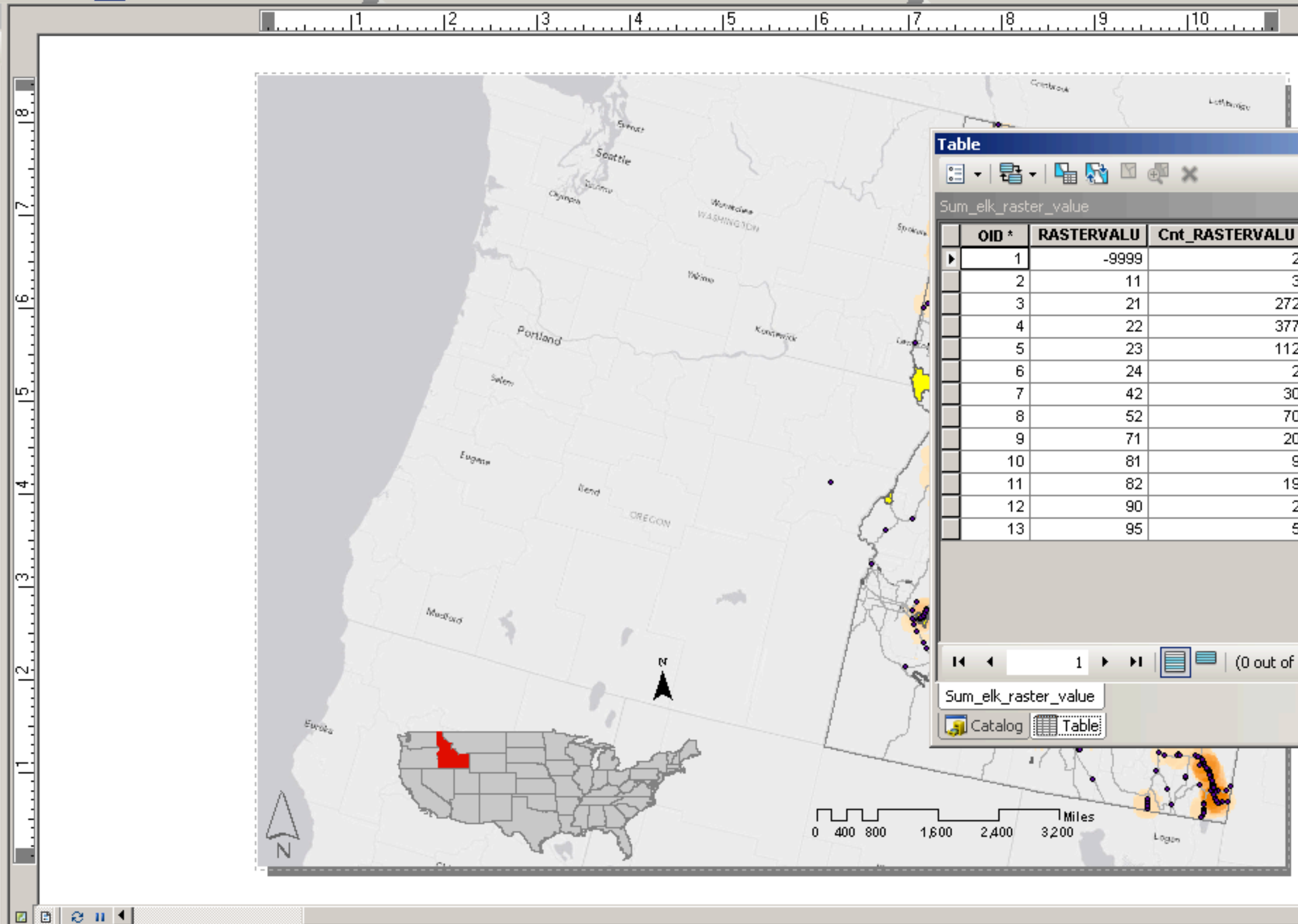
RASTERVALU	
95	
21	
95	
21	
21	
22	
42	
22	
23	
42	
42	
21	
21	
22	
23	
22	
22	
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23	
22	
22	
52	
22	
22	
82	
22	
52	
21	
22	
23	
42	
22	
22	
22	
22	

(0 out of 923 Selected)

Table of Contents

Layers

- C:\Users\chontanatsuwa
 - extract_nlcd_elk
 -
 - Elk_roadkill_utm11_2
 - Elk_roadkill_utm11_1
 -
 -
 - PD_6
 - Elk_roadkill_utm11_1
 - PD_3
 - idaho_nlcd2006
 - PD_5
 - PD_4
 - PD_2
 - PD_1
 - idaho3
 - Sum_elk_raster_valu
- C:\Users\chontanatsuwa
 -
 -
 - Reference
 - Light Gray Canvas
- New Data Frame
 - C:\Users\chontanatsuwa
 - idaho



Table

Sum_elk_raster_value

OID *	RASTERVALU	Cnt_RASTERVALU
1	-9999	2
2	11	3
3	21	272
4	22	377
5	23	112
6	24	2
7	42	30
8	52	70
9	71	20
10	81	9
11	82	19
12	90	2
13	95	5

(0 out of 13 Selected)

Sum_elk_raster_value

Catalog Table

"ROAD KILL"

STATE OF IDAHO

ELK

(CERVUS CANADENSIS)

2012-2013



MCARTHUR LAKE



KETCHUM



SODASPRING



MONTPELIER



ROADKILL DENSITY



MANAGEMENT AREAS



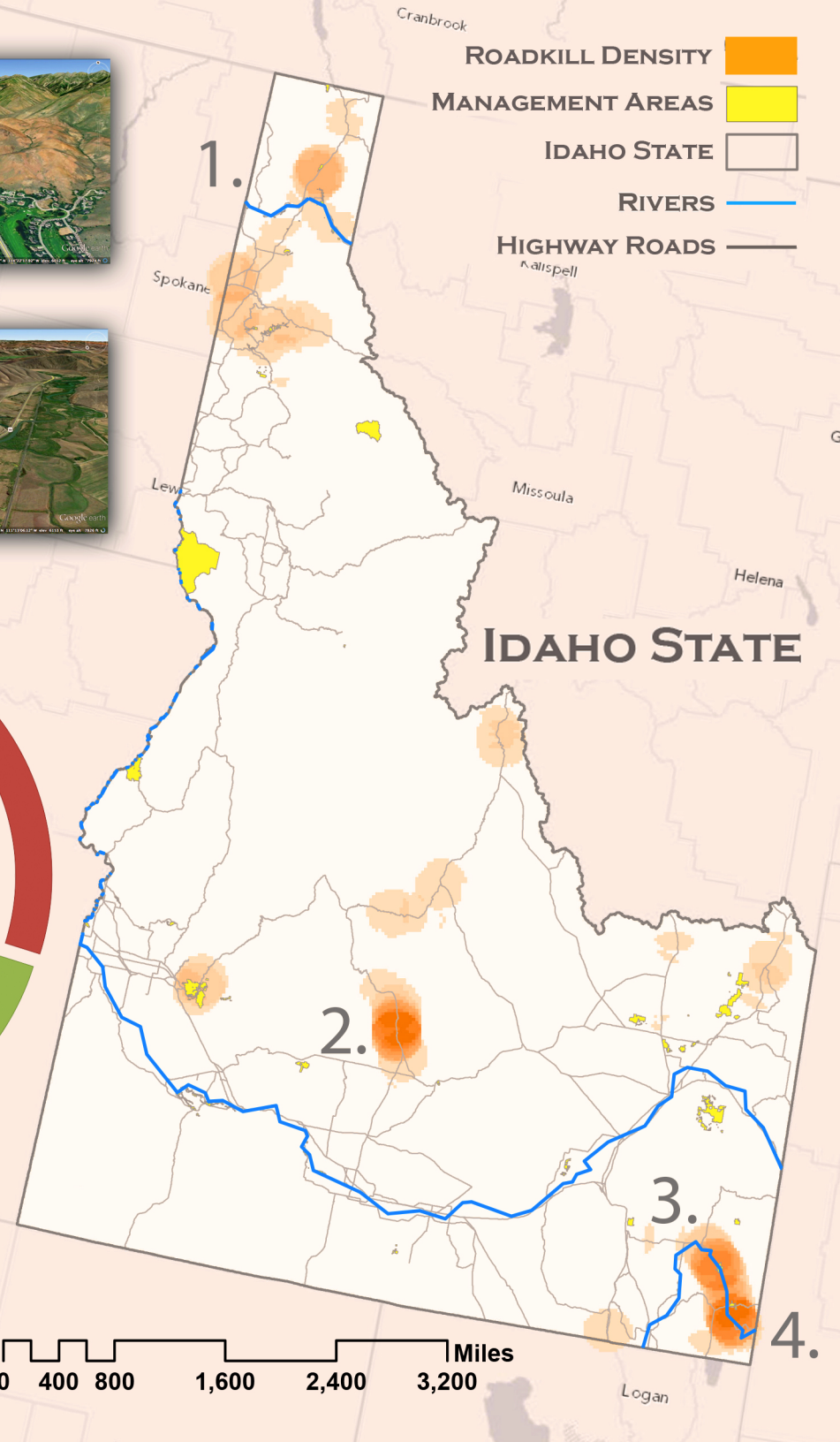
IDAHO STATE



RIVERS



HIGHWAY ROADS



HABITAT SUMMARY

