

Streams

Data Used:

Utah Automated Geographic Reference Center Streams Data.

Source and Date of Data:

Utah AGRC: SGID & GIS Data.

ftp://ftp.agrc.state.ut.us/NAD83/Hydrology/Streams/state_wide/shape_file/SGID024/SGID024_Streams.zip This data was produced from DLG's and CFF's and was in Vector digital data format. It was revised in 1989.

The tiering of the rivers data set was based on buffers of varying sizes. All streams code '1' (stream or braided stream) were selected and the others removed due to the size of the dataset. After the streams were buffered they were then converted to grid data.

Tier 1:

Utah AGRC: SGID & GIS Data Streams Code 1 Streams -15 meter buffer.

Tier 2:

Utah AGRC: SGID & GIS Data Streams Code 1 Streams -25 meter buffer.

Tier 3:

Utah AGRC: SGID & GIS Data Streams Code 1 Streams -50 meter buffer.

Habitat

Data Used:

Utah Gap Analysis: an environmental information system. Technical report 95-1, Utah Cooperative Fish and Wildlife Research Unit, Utah State University, Logan, Utah. 1138pp + 2 CD-ROMs. Edwards, T. C., Jr., C. G. Homer, S. D. Bassett, A. Falconer, R. D. Ramsey, and D. W. Wight. 1995.

Source and Date of Data:

Utah Gap Analysis: an environmental information system. Technical report 95-1, Utah Cooperative Fish and Wildlife Research Unit, Utah State University, Logan, Utah.

<http://www.gis.usu.edu/downloadabledata/UtahGAPAnalysis.html>

Coordinate System: UTM Zone 12

Spheroid: Clarke 1866

Datum: NAD 1927

Units: Meters

The habitat indicator is a species richness model. The amphibians, reptiles, birds, and mammals listed on the "Utah Sensitive Species List" on the Utah Division of Wildlife website (<http://www.wildlife.utah.gov/pdf/utsoclist.pdf>) were used in determining richness. These species are listed below:

Amphibians

535	relict leopard frog (extirpated)	<i>Rana onca</i>
206	Columbia spotted frog	<i>Rana luteiventris</i>
210	western toad	<i>Bufo boreas</i>
209	Arizona toad	<i>Bufo microscaphus</i>

Reptiles

195	desert tortoise	<i>Gopherus agassizii</i>
162	zebra-tailed lizard	<i>Callisaurus draconoides</i>
138	western banded gecko	<i>Coleonyx variegatus</i>
139	desert iguana	<i>Dipsosaurus dorsalis</i>
163	Gila monster	<i>Heloderma suspectum</i>
136	common chuckwalla	<i>Sauromalus ater</i>
150	desert night lizard	<i>Xantusia vigilis</i>
171	sidewinder	<i>Crotalus cerastes</i>
170	speckled rattlesnake	<i>Crotalus mitchellii</i>
168	Mojave rattlesnake	<i>Crotalus scutulatus</i>
182	smooth greensnake	<i>Opheodrys vernalis</i>

Birds

302	Gunnison Sage-grouse	<i>Centrocercus minimus</i>
248	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
259	Bald Eagle	<i>Haliaeetus leucocephalus</i>
370	Mexican Spotted Owl	<i>Strix occidentalis lucida</i>
242	Whooping Crane (extirpated)	<i>Grus americana</i>
277	Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>
290	Northern Goshawk	<i>Accipiter gentilis</i>
429	Grasshopper Sparrow	<i>Ammodramus savannarum</i>
368	Short-eared Owl	<i>Asio flammeus</i>
363	Burrowing Owl	<i>Athene cunicularia</i>
309	Ferruginous Hawk	<i>Buteo regalis</i>
450	Black Swift	<i>Cypseloides niger</i>
225	Bobolink	<i>Dolichonyx oryzivorus</i>
503	Lewis's Woodpecker	<i>Melanerpes lewis</i>
249	Long-billed Curlew	<i>Numenius americanus</i>
372	American White Pelican	<i>Pelecanus erythrorhynchos</i>
505	Three-toed Woodpecker	<i>Picoides tridactylus</i>
303	Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>

Mammals

83	Utah prairie-dog	<i>Cynomys parvidens</i>
42	Canada lynx	<i>Lynx canadensis</i>
101	Preble's shrew	<i>Sorex preblei</i>
4	Townsend's big-eared bat	<i>Corynorhinus townsendii</i>
12	spotted bat	<i>Euderma maculatum</i>
2	Allen's big-eared bat	<i>Idionycteris phyllotis</i>
10	western red bat	<i>Lasiurus blossevillii</i>
71	fringed myotis	<i>Myotis thysanodes</i>

6	big free-tailed bat	<i>Nyctinomops macrotis</i>
86	pygmy rabbit	<i>Brachylagus idahoensis</i>
82	Gunnison's prairie-dog	<i>Cynomys gunnisoni</i>
84	white-tailed prairie-dog	<i>Cynomys leucurus</i>
65	silky pocket mouse	<i>Perognathus flavus</i>
56	dark kangaroo mouse	<i>Microdipodops megacephalus</i>
121	Mexican vole	<i>Microtus mexicanus</i>
32	kit fox	<i>Vulpes macrotis</i>

The map calculator was used to calculate areas of the study area where overlapping territory existed. These overlaps were then classified with a number for each cell of the map representing the number of species found in that 30 x 30 meter square. The possibilities of species richness ranged from 0-13 species per cell and were assigned the corresponding numbers of 0-13 to indicate that diversity.

Tier 1:

Between 7 and 13 sensitive species.

Tier 2:

Between 4 and 13 sensitive species.

Tier 3:

Between 1 and 13 sensitive species.

0 species is given a value of zero.

Lakes

Data Used:

Utah Automated Geographic Reference Center Lakes Data

Source and Date of Data:

Utah AGRC: SGID & GIS Data.

ftp://ftp.agrc.state.ut.us/NAD83/Hydrology/Lakes/state_wide/shape_file/SGID024/SGID024_Lakes.zip, ArcView shapefile format (digital vector data). Data was originally created on 1 January 2001.

The tiering of the lakes data set was based on buffers of varying sizes. Entities with the codes '1' (lake or pond) and '2' (reservoir) were queried out; all other water bodies were ignored (such as lagoons) because the data was too much to process in the model. After the lakes were buffered they were then converted to grid data.

Tier 1:

Utah AGRC: SGID & GIS Data Lakes Code 1 and 2 with 15 meter buffer.

Tier 2:

Utah AGRC: SGID & GIS Data Lakes Code 1 and 2 with 25 meter buffer.

Tier 3:

Utah AGRC: SGID & GIS Data Lakes Code 1 and 2 with 50 meter buffer.

Wetlands

Data Used:

U. S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Wetlands in Utah.

Source and Date of Data: Utah AGRC: SGID & GIS Data.

ftp://ftp.agrc.state.ut.us/NAD83/Hydrology/Wetlands/state_wide/shape_file/SGID024/SGID024_Wetlands.zip, Data was produced 1 January 2001, by the Utah Automated Geographic Reference Center.

The specific Water Regime Modifiers included are: Saturated, Seasonally Flooded, Seasonally Flooded/Well-drained, Seasonally Flooded/Saturated, Semi-permanently Flooded, Permanently Flooded, and Saturated/Semi-permanent/Seasonal. These permanent/seasonal wetlands layers were then buffered and converted to grids.

Tier 1:

Utah AGRC: SGID & GIS Data Lakes Code 1 and 2 with 15 meter buffer.

Tier 2:

Utah AGRC: SGID & GIS Data Lakes Code 1 and 2 with 25 meter buffer.

Tier 3:

Utah AGRC: SGID & GIS Data Lakes Code 1 and 2 with 50 meter buffer.

Agriculture

Data Used:

Statsgo Soil Survey for Utah, NRCS

Source and Date of Data:

NRCS <http://www.ncgc.nrcs.usda.gov/branch/ssb/products/statsgo/data/ut.html>
12/15/2004.

For Technical Information: http://www.nrcs.usda.gov/technical/techtools/statsgo_db.pdf
12/15/2004.

The statsgo survey includes a category (primfml) that shows land capability using several factors related to capability including soil type, available water, and erodibility. The data was sorted using prime farm land (primfml). There were only three categories present for the state of Utah namely one, four, and six, one being the best agricultural land. These categories were used for the tiers. Tier one includes only category one, tier two consists of categories one and four, and tier three includes categories one four and six.

Tier 1:

NRCS primfml category one.

Tier 2:

NRCS primfml categories one and four.

Tier 3:

NRCS primfml categories one, four and six.

Slope

Data Used:

30 meter Digital Elevation Model (DEM) of the State of Utah

Data Source: Digital Elevation Models found at: <ftp://ftp.agrc.state.ut.us/DEM/>

The steep slope indicators are based on observations of standard development practices across the United States. A steep slope is generally defined as a land with a 20 - 25% or greater slope. A statewide slope map (percentage) was created from the statewide DEM. The slopes were then reclassified into the three the three tiers based on the percentages shown below.

Tier 1:

Land with a 30% slope or greater

Tier 2:

Land with a 25% slope or greater

Tier 3:

Land with a 15% slope or greater

Models

Each of the input data layers described above was recoded according to the following values:

Habitat: 1

Slope: 2

Wetlands: 4

Streams: 8

Lakes: 16

Agriculture: 32


















































Three tier-specific layers were created for each input data type. For example, the Lakes Tier 1 layer contains a value of 16 in all locations that that fall within the Lakes Tier1 specifications and 0 everywhere else. Likewise, the Lakes Tier 2 layer contains a value of 16 in all locations that fall within the Lakes Tier 2 specifications and 0 everywhere else. And so on.











When the user chooses specific tiers of each data type to include in the model, the appropriate layers are summed up. The sums are always values between 0 and 63, and a particular number always means the same thing. For example, if a location gets a value of 40, you know both agriculture and streams were important there, although you don't know what tiers were used.

A second data set is also created that is the sum of the tier levels. For example, if Lakes Tier 2 and Wetlands Tier 3 were important for a location then a value of 3 would be assigned. This gives an indication of relative conservation importance. These data sets have an "a" tacked onto the end of the filename.




















The filenames indicate which tiers were used in a model. The files are named ag_lak_str_wet_sl_hab_.* and ag_lak_str_wet_sl_hab_a.*, where the underscores are numbers indicating which tiers of agriculture, lakes, streams, wetlands, slope, and habitat, respectively, were input into the model.

Model Data Values

	0	None
	1	Habitat
	2	Slope
	3	Slope, Habitat
	4	Wet
	5	Wet, Habitat
	6	Wet, Slope
	7	Wet, Slope, Habitat
	8	Stream
	9	Stream, Habitat
	10	Stream, Slope
	11	Stream, Slope, Habitat
	12	Stream, Wet
	13	Stream, Wet, Habitat
	14	Stream, Wet, Slope
	15	Stream, Wet, Slope, Habitat
	16	Lakes
	17	Lakes, Habitat
	18	Lakes, Slope
	19	Lakes, Slope, Habitat
	20	Lakes, Wet
	21	Lakes, Wet, Habitat
	22	Lakes, Wet, Slope
	23	Lakes, Wet, Slope, Habitat
	24	Lakes, Stream
	25	Lakes, Stream, Habitat
	26	Lakes, Stream, Slope
	27	Lakes, Stream, Slope, Habitat
	28	Lakes, Stream, Wet
	29	Lakes, Stream, Wet, Habitat
	30	Lakes, Stream, Wet, Slope
	31	Lakes, Stream, Wet, Slope, Habitat
	32	Ag
	33	Ag, Habitat
	34	Ag, Slope
	35	Ag, Slope, Habitat
	36	Ag, Wet
	37	Ag, Wet, Habitat
	38	Ag, Wet, Slope
	39	Ag, Wet, Slope, Habitat
	40	Ag, Stream
	41	Ag, Stream, Habitat
	42	Ag, Stream, Slope
	43	Ag, Stream, Slope, Habitat
	44	Ag, Stream, Wet
	45	Ag, Stream, Wet, Habitat
	46	Ag, Stream, Wet, Slope
	47	Ag, Stream, Wet, Slope, Habitat
	48	Ag, Lakes
	49	Ag, Lakes, Habitat
	50	Ag, Lakes, Slope
	51	Ag, Lakes, Slope, Habitat
	52	Ag, Lakes, Wet
	53	Ag, Lakes, Wet, Habitat

	54	Ag, Lakes, Wet, Slope
	55	Ag, Lakes, Wet, Slope, Habitat
	56	Ag, Lakes, Stream
	57	Ag, Lakes, Stream, Habitat
	58	Ag, Lakes, Stream, Slope
	59	Ag, Lakes, Stream, Slope, Habitat
	60	Ag, Lakes, Stream, Wet
	61	Ag, Lakes, Stream, Wet, Habitat
	62	Ag, Lakes, Stream, Wet, Slope
	63	Ag, Lakes, Stream, Wet, Slope, Habitat

Model Index Values

	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15
	16
	17
	18