

# LINK Analysis: Potential Species Occurrence for a Selected Group of Important Grassland Birds in the State Of Minnesota

## GRASSLAND BIRDS USED IN LINK QUERY:

Dickcissel  
Field Sparrow  
Grasshopper Sparrow  
Greater Prairie-Chicken  
Henslow's sparrow  
Le Conte's sparrow  
Northern Harrier  
Sharp-tailed Grouse  
Short-eared Owl  
Swainson's Hawk  
Upland Sandpiper

## SOURCE LAYER:

National Land Cover Dataset (1992)

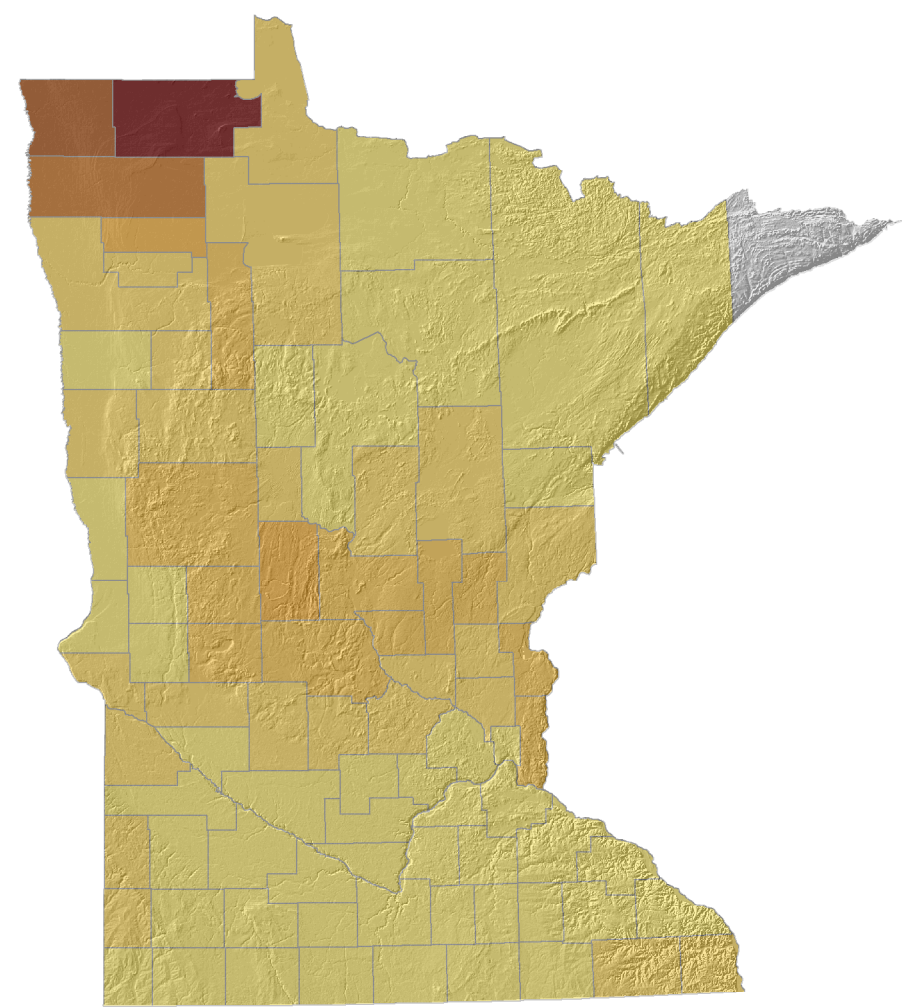
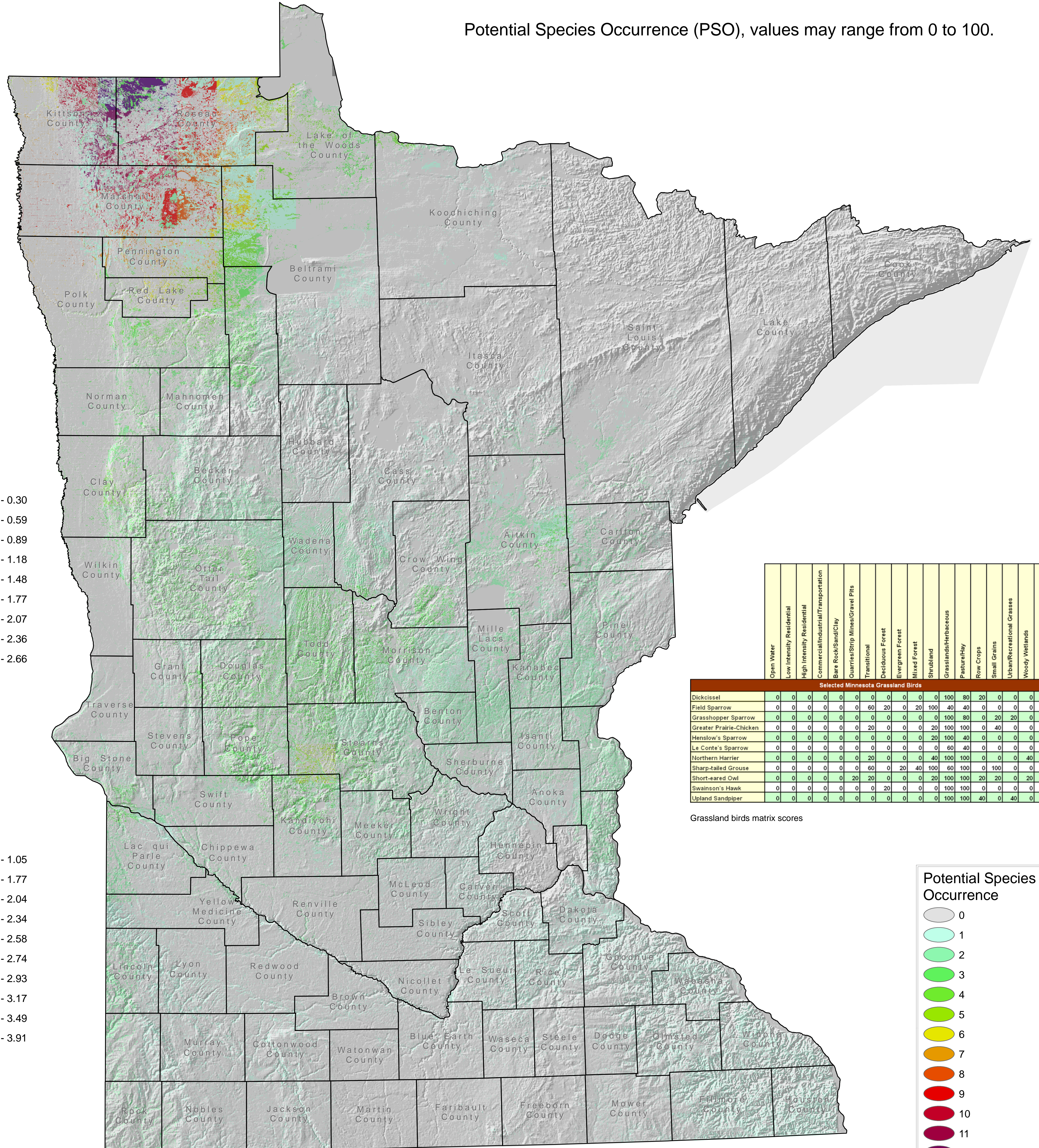
## ZONAL LAYER:

Counties

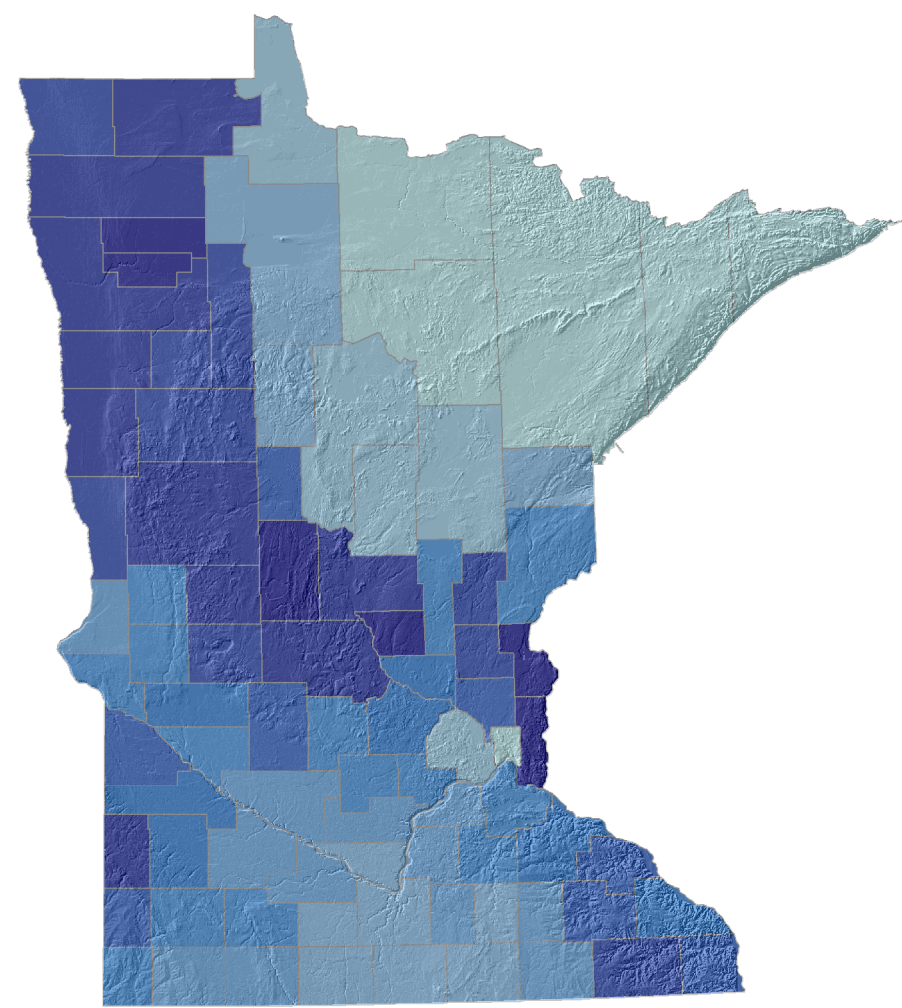
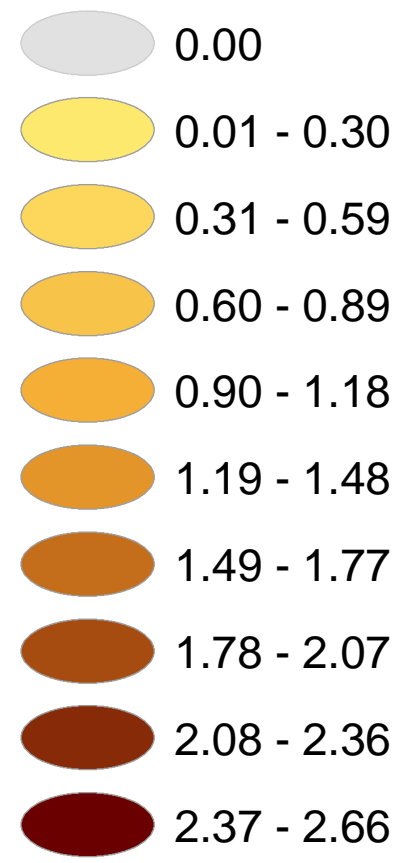
## RANGE USED:

Breeding Bird Survey (BBS)

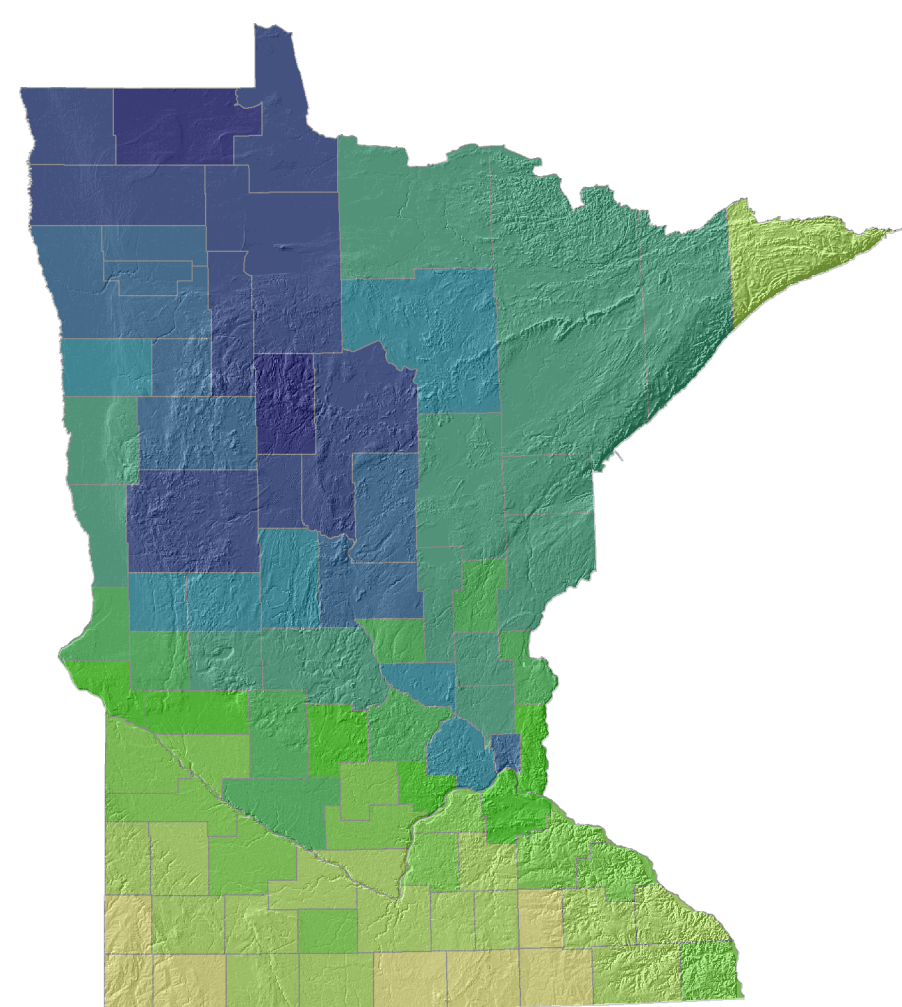
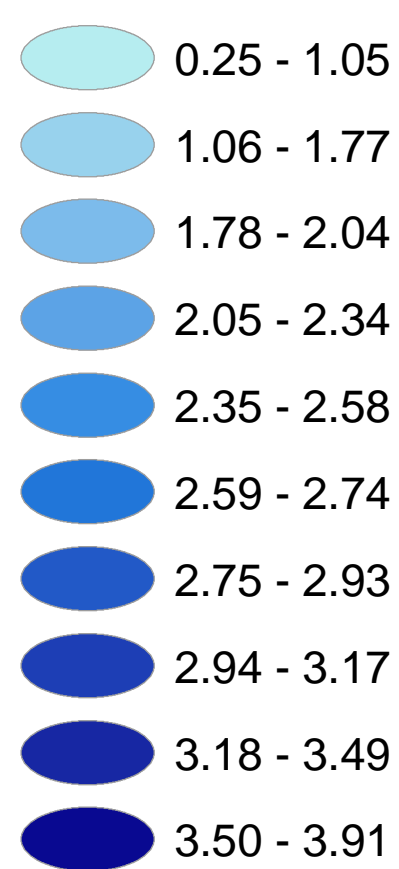
Potential Species Occurrence (PSO), values may range from 0 to 100.



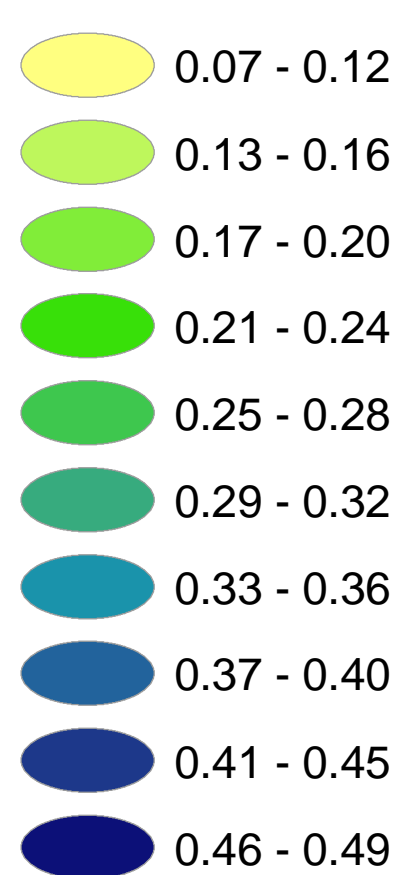
Potential Species Occurrence By County (Mean)



Potential Species Richness By County (Mean)



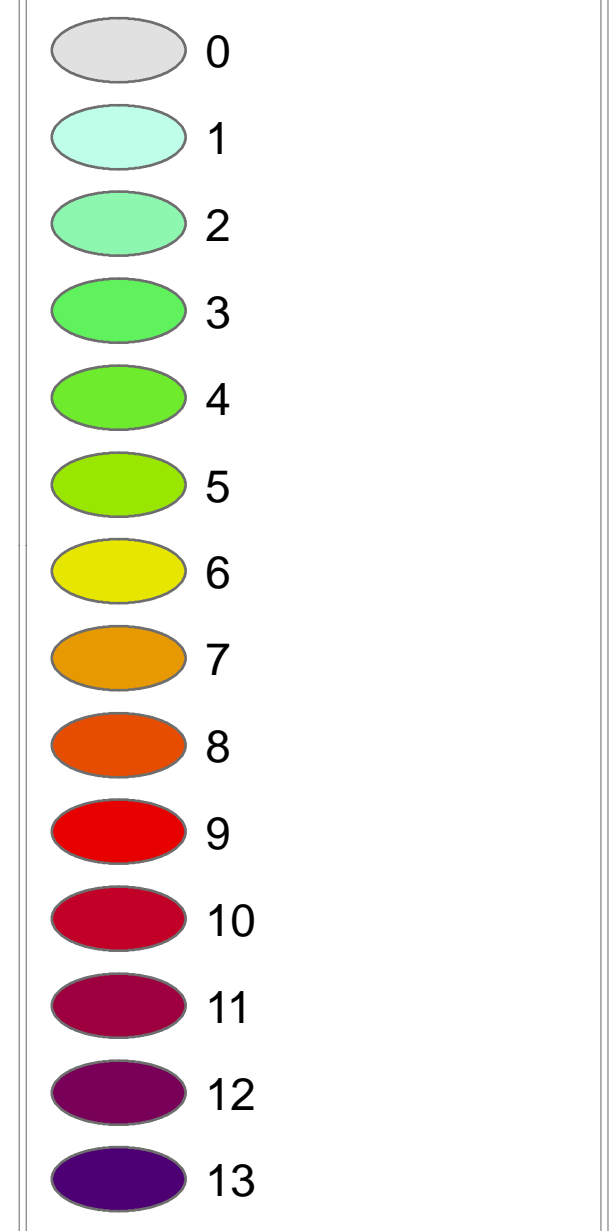
Simpson's Diversity Index By County (Mean)



	Open Water	Low Intensity Residential	High Intensity Residential	Commercial/Industrial/Transportation	Bare Rock/Sand/Clay	Quarries/Strip Mines/Gravel Pits	Transitional	Deciduous Forest	Evergreen Forest	Mixed Forest	Shrubland	Grassland/Herbaceous	Pasture/Hay	Row Crops	Small Grains	Urban/Recreational Grasses	Woody Wetlands	Emergent Herbaceous Wetlands
Dickcissel	0	0	0	0	0	0	0	0	0	0	100	80	20	0	0	0	0	0
Field Sparrow	0	0	0	0	0	60	20	0	20	100	40	40	0	0	0	0	0	0
Grasshopper Sparrow	0	0	0	0	0	0	0	0	0	100	80	0	20	20	0	0	0	0
Greater Prairie-Chicken	0	0	0	0	0	20	0	0	0	20	100	100	0	40	0	0	0	0
Henslow's Sparrow	0	0	0	0	0	0	0	0	0	20	100	40	0	0	0	0	0	40
Le Conte's Sparrow	0	0	0	0	0	0	0	0	0	0	60	40	0	0	0	0	0	100
Northern Harrier	0	0	0	0	0	20	0	0	0	40	100	100	0	0	0	40	80	0
Sharp-tailed Grouse	0	0	0	0	0	60	0	20	40	100	60	100	0	100	0	100	0	0
Short-eared Owl	0	0	0	0	0	20	20	0	0	20	100	100	20	20	0	20	60	0
Swainson's Hawk	0	0	0	0	0	0	0	0	0	20	0	0	100	100	0	0	0	0
Upland Sandpiper	0	0	0	0	0	0	0	0	0	0	0	100	100	40	0	40	0	0

Grassland birds matrix scores

## Potential Species Occurrence



LINK is a set of Environmental Systems Research Institute (ESRI, Redlands, California) ArcGIS tools designed to map species-habitat patterns across a landscape. LINK uses species-habitat matrices to model potential species habitat and landscape diversity. Three main data sources are needed to run LINK: a species-habitat matrix, source maps such as land cover, and a zonal layer used to average model output scores such as counties, watersheds, or other management units.

LINK relates the values contained in the species-habitat matrix to the source maps generating several indices of potential habitat including potential species richness (PSR), mean potential species occurrence (PSO) and habitat diversity as measured by the Simpson's Diversity Index (SDI). PSR is described as the potential total number of the queried species that may be found in a given area. Mean PSO is described as the average matrix score for all the queried species. The SDI measures the diversity of habitats and is influenced by the number of habitat types and how they relate to each other.

An extension was developed to the LINK tool that incorporates bird species ranges into models of habitat suitability; in this way, species are modeled only for those areas within their range. This range limitation emphasizes that the LINK tool models potential rather than occupied habitat. As part of this extension, we incorporated ranges of all birds in the Western Hemisphere as provided in the collection of digital distribution maps by NatureServe.

[http://www.umesc.er.usgs.gov/management/dss/bird\\_conservation\\_tools\\_link.html](http://www.umesc.er.usgs.gov/management/dss/bird_conservation_tools_link.html)

Map Date: February 2007

