# Geographic Information System Tools for Conservation Planning

History

Conservation planning is a high priority for many Federal and state agencies. The U.S. Fish and Wildlife Service is currently developing Comprehensive Conservation Plans for all refuges, the National Park Service is developing Inventory and Monitoring Networks for all Parks, and states are developing State Wildlife Plans. With millions of acres of publicly managed lands, land managers need better ways to incorporate landscape, species, and habitat relationships into the conservation planning process. Decision support systems (DSS) provide a process for organizing existing geographical, physical, and biological data for better management of natural resources.

What USGS has done

For over a decade, the U.S. Geological Survey (USGS) Upper Midwest Environmental Sciences Center (UMESC) has been developing DSS tools used in conservation planning. Recently, UMESC has focused on the development of spatial DSS tools to assist in the Comprehensive Conservation Planning (CCP) process for lands managed by the FWS. UMESC now has a set of DSS planning tools that will improve the efficiency and objectivity of conservation planning at spatial scales ranging from continental to local.

2000 **2100** **2015**
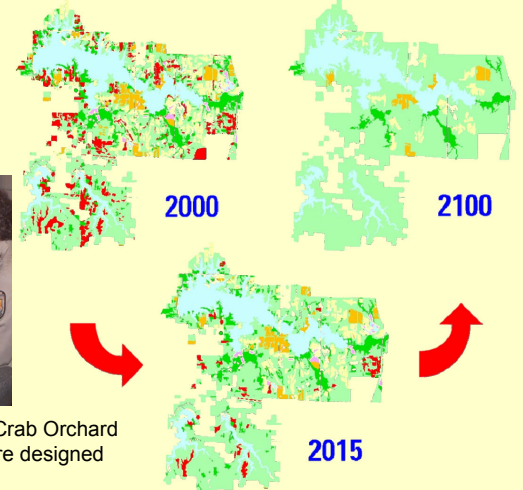
Future land use plans for Crab Orchard National Wildlife Refuge are designed to support species at risk.
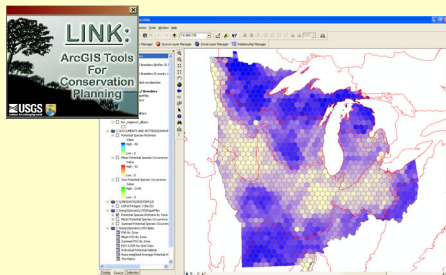
These tools allow users to rapidly assess landscape attributes by scoring species-habitat associations and running analyses that result in tables, charts, and maps summarizing potential species occurrence, potential species richness, and the area and proportion of land cover types. The tools make explicit a set of alternative future conditions and quantify the effects of these alternative management scenarios on species of conservation concern.

Program LINK analysis of potential bird species richness for USFWS Region 3 using only species of highest conservation concern.

Program LINK allows users to analyze large regions such as states or Bird Conservation Regions. They can compare the potential conservation attributes of local management units with the county, state, or ecoregion surrounding the unit.

The newest conservation planning tool is a website designed to efficiently summarize land cover and bird survey data across the continental United States for purposes of continental and regional conservation planning. The website allows users to select routes or groups of routes from the Breeding Bird Surveys. They can also select states, counties, or an area surrounding their management unit for a summary of land uses.

Regional Bird Conservation Site

Breeding Bird Survey Routes

Common Name	Ranked Abundance	Total Count
Red-winged Blackbird	1	30,061
House Sparrow	0.737	22,148
Common Grackle	0.487	14,650
European Starling	0.348	10,459
Mourning Dove	0.249	7,485
Northern Cardinal	0.194	5,843
Eastern Meadowlark	0.194	5,827
Barn Swallow	0.191	5,746
Northern Bobwhite	0.183	5,516
Indigo Bunting	0.182	5,485
Bell's Vireo	0	4
Sharp-shinned Hawk	0	4
Ring-necked Pheasant	0	4
American Woodcock	0	3
Mississippi Kite	0	3
Broad-winged Hawk	0	3
Northern Harrier	0	2
Black-and-white Warbler	0	2
Blue-winged Teal	0	2
Hooded Warbler	0	2
Yellow-headed Blackbird	0	1
Yellow-crowned Night-Hero	0	1
Sedge Wren	0	1

% Forest **% Grassland** **% Population**
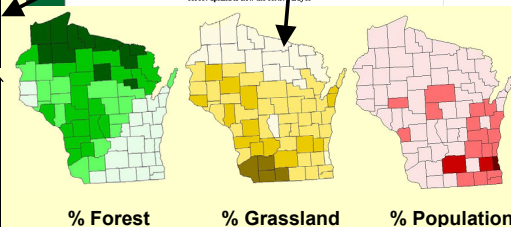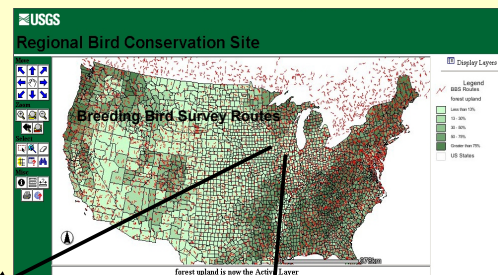
Bird species ranked by abundance and summaries of land use data for Wisconsin.

Results

These conservation planning tools have been used by federal and state managers responsible for natural resources as diverse as the Upper Mississippi River System, the Columbia River, the St. Croix National Scenic Riverway, the Great Lakes, Acadia National Park, the Everglades Ecosystem, and several FWS refuges. A primary function of the DSS tools is to help managers prioritize both species and habitats that are most in need of management action. The tools are especially useful if stakeholders disagree about the benefits of alternative management scenarios. If agreement can be reached about assignment of the species-habitat matrix scores, the analysis itself is simple, objective, and the products are easy to interpret.

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