

Gap Analysis Program Data Help Address State Conservation Priorities

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The Gap Analysis Program (GAP) will continue to play an important role in conservation efforts across the United States by providing the land cover, land ownership, and species data that state wildlife planners need to address the priorities identified in State Wildlife Action Plans (SWAPs). In 2005, each state and U.S. territory completed a plan to evaluate its wildlife conservation needs and outline its conservation priorities. The plans contain information on Species of Greatest Conservation Need (SGCN), critical habitat, threats to wildlife species and habitats, research needs, necessary actions, and conservation strategies. Together they provide a blueprint for national conservation efforts.

Top threats to wildlife and habitat conservation identified in the SWAPs were: habitat conversion/loss, invasive/exotic species, changes in

hydrological processes, pollution, fire suppression, disturbance caused by transportation/infrastructure development, consumptive use of biological resources, improper forest management, lack of knowledge about species, organizational issues, climate change, loss of natural community integrity, degradation of migration corridors/routes, destructive resource harvesting, and non-consumptive use of resources.

SWAP coordinators were also tasked with identifying priorities and strategies for their state conservation efforts. The top ten priorities are shown in the chart (below). GAP has a wealth of freely-available data, which have valuable applications for many of the priorities the plans identified.

Research on Species

Each GAP final project report includes wildlife habitat relationship databases, species presence/absence

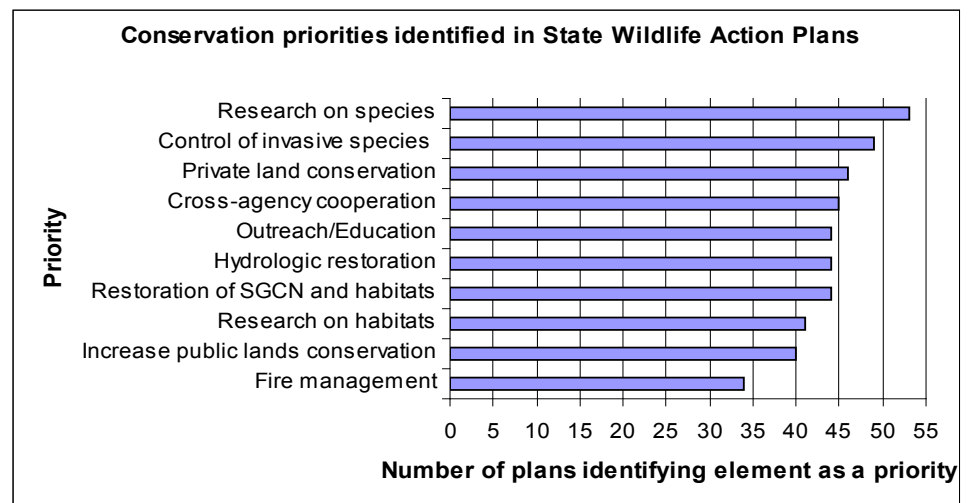
data, predicted habitat distribution, and species richness information about all of the species mapped in the state. This information can augment existing species information or provide a baseline on which to build.

Control of Invasive Species

GAP data can be used to address this issue. For example, the Nevada Natural Heritage Program used field-collected vegetation plot data from the Southwest Regional Gap Analysis Program (SWReGAP) to analyze the accuracy of their map of annual grass distribution across Nevada. The Nature Conservancy of Idaho used Idaho GAP data to develop and evaluate predictive models to identify areas of juniper encroachment in the Owyhee Uplands areas of Idaho, Oregon, and Nevada.

Private and Public Land Conservation

GAP land cover data can help identify conservation opportunity areas for



purchase or easements. For example, the Grand Canyon Wildlands Council used SWReGAP land cover data to analyze the distribution of more than 70 ecosystems that provide habitat for 2,577 plant and animal species in the Grand Canyon ecoregion. They found that current land management practices do not protect all ecosystems in the region. Also, predicted species distribution data can facilitate the identification of areas that provide habitat for SGCN species, or that support a wide variety of species. Stewardship data can identify potential conservation buffers, or help create corridors and networks between already protected areas.

Restoration

GAP land cover data can help establish the ecological context for a parcel under consideration for restoration. The U.S. Natural Resources Conservation Service compared their Ecological Sites Description (ESD) data for Box Elder County, UT, with the SWReGAP land cover map for the county. Although the correlation between the two data sets was generally high, further analysis within big sagebrush dominated ESDs shows approximately 39,000 fewer hectares of sagebrush in the SWReGAP land cover map compared to ESD estimates. The majority of this difference in big sagebrush is due to agricultural conversion, followed by conversion to juniper and annual grasses. The GAP land cover map placed within the context of a reference condition such as an ESD, on a site by site basis, will allow managers to prioritize restoration activities and to better understand condition and trend.

Research on Habitats

GAP species models and land cover data can also help fill existing knowledge gaps about high priority habitats in a state. The data can serve as a baseline against which to monitor trends, or to help identify underrepresented habitats on state conservation lands.

Fire Management

GAP data have many applications for fire management. University of Arizona researchers have used Arizona GAP data as a component of their Fire-Climate-Society Strategic model, which will aid in both strategic planning for and strategic management of fire. The Utah Fire Assessment Project used GAP land cover data to help identify general hazard areas at a state-wide level for fire management. State Fire Management Officers from Utah and Nevada developed a map for Fire Regime and Condition Class for Bureau of Land Management administered lands in Utah and Nevada. Great Basin GAP vegetation GIS data, along with professional experience, were used to categorize vegetation layers into fire regimes and condition classes.

Hydrologic Restoration

GAP data can also be used to address hydrologic restoration problems. Land and water resource managers can use the Automated Geospatial Watershed Assessment tool, developed by the U.S. Department of Agriculture-Agricultural Research Service Southwest Watershed Research Center, and GAP land cover data together to evaluate the impact of wildfire on the hydrologic response of sagebrush shrubland-dominated rangelands.

Monitoring

Each state and territory is required to monitor its progress. GAP data can be used to address this requirement. The Iowa Cooperative Fish and Wildlife Research Unit at Iowa State University is using GAP land cover data in the planning and design of field surveys for its SGCN species. Similarly, the Minnesota Wildlife Action Plan calls for identifying potential release sites for wild turkey. The criteria for prioritizing potential sites will include current turkey habitat as identified by the Minnesota-GAP land cover data, along with other GIS layers.

Comparisons of land cover and species distribution maps between original state maps and more current regional maps could also help assess species and habitat status and trends. Finally, the NatureMapping program, which grew out of GAP, can help conservation planners enlist citizen scientists to help with monitoring efforts in state parks, conservation easements, and wildlife refuges.

For More Information

More information on the applications discussed here can be found in the GAP Portal at <http://gapanalysis.nbii.gov>, or contact:

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