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The Gap Analysis Program: A Proactive Approach to Biodiversity Conservation

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Abstract
This article introduces Extension professionals to the U.S. Geological Survey's Gap Analysis Program (GAP). GAP seeks to inform the natural resource policy process by providing land cover, stewardship, and species distribution data to decision makers. GAP data may be used to make land use decisions at different geographic levels. GAP aims to address biodiversity conservation in a proactive manner, paying unique attention to the protection of common species and their habitats. Extension professionals may also find GAP data helpful in education and outreach programs designed to inform the public of the role individuals can play in biodiversity maintenance.

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Introduction

This article introduces Cooperative Extension Service agents and other natural resource professionals to the Gap Analysis Program (GAP) of the U.S. Geological Survey. GAP is a "scientific means for assessing to what extent native animal and plant species are being protected" (GAP, 2007). The goal of GAP is to "keep common species common by identifying those species and plant communities that are not adequately represented on existing conservation lands" (GAP, 2007). Common species are "those not currently listed as threatened or endangered under the guidelines of the 1973 Endangered Species Act" (GAP, 2007). This article provides a brief overview of GAP analysis, discusses some current applications of GAP, and suggests the relevance of this tool to Extension professionals.

Overview of GAP

The mission of GAP is to "provide regional assessments of the conservation status of native vertebrate species and natural land cover types and to facilitate the application of this information to land management activities" (GAP, 2007). This mission is accomplished through a five-step process (GAP, 2007).

1. Map the land cover of the United States.

2. Map predicted distributions of vertebrate species.

3. Document the representation of vertebrate species and land cover types in areas managed

for the long-term maintenance of biodiversity.

4. Provide this information to the public and those entities charged with land use research, policy, planning, and management.

5. Build institutional cooperation in the application of this information to state and regional management activities.

Maps are generated detailing an area's land cover, stewardship, species distribution, and protected areas. "These maps are then combined to identify conservation 'gaps,' or areas in which conservation efforts are necessary, but missing" (GAP, 2007). These assessments can be done at the local, state, regional, or national level (GAP, 2007).

GAP Applications

"GAP data have proven useful in a variety of conservation, management, planning, and land use capacities" (GAP, 2007). Applications of GAP include "site specific management, reserve design, planning conservation corridors, local scale conservation planning, threat assessment, land acquisition, and evaluating land use change" (GAP, 2007). "GAP data have also aided in the monitoring of wildlife-borne diseases, monitoring habitat quality and carrying capacity, and education and outreach programs" (GAP, 2007). "GAP applications have been studied since the program's creation in the early 1980s, with continuous progress being made in the quest to make GAP more applicable to a broad array of policy and management issues" (GAP, 2007).

Portions of a particular GAP project may be used to affect natural resource decisions without using the results of the project as a whole. For example, the fragmentation and loss of farmland in Michigan to non-farm uses recently called for the implementation of an effective statewide farm preservation program designed to initiate land use policy reform (GAP, 2007). GAP land cover data were used to identify "high priority areas of agricultural and rural development which warrant unique preservation measures" (GAP, 2007). In this case, GAP data played a crucial scientific support role in the allocation of Michigan farmland preservation funds.

GAP has also made tremendous contributions to natural resource education and outreach programs across the United States. The natural resource policy and biodiversity planning processes are becoming increasingly dependent upon the input of an informed local citizenry. Therefore, GAP has made it a program goal to "educate local jurisdictions and the public regarding local species in hopes of increasing knowledge of species populations within a particular area" (GAP, 2007).

In Pierce County, Washington, GAP data and NatureMapping were used during a 24-hour species verification survey. The aptly named "bioblitz" was overseen by the Pierce County Biodiversity Alliance. The bioblitz called on citizens to receive training on data collection protocols (GAP, 2007). Shortly thereafter, citizens and natural resource professionals collected species data on lands upon which 34 landowners allowed the group access (GAP, 2007). In addition to the collection of invaluable species verification data, the community was educated in the ways of GAP and NatureMapping and allowed to play a vital role in the locally based biodiversity conservation process (GAP, 2007).

GAP and the Cooperative Extension Service

Species conservation is most often targeted toward threatened and endangered species. GAP is a unique tool that allows Extension and other natural resource professionals to track changes and gaps in the protection of common species. By tracking common species, natural resource professionals can be proactive in minimizing the potential negative impacts of future activities on these species, thereby achieving GAP's mission of "keeping common species common." Access to GAP data provides environmental decision makers with additional information for making better-informed natural resource decisions. The presence of contributing organizations in 44 states provides access to Extension agents across the United States (GAP, 2007).

GAP's versatility allows application at various geographic levels. This provides county-level Extension agents the opportunity to build localized datasets for contribution to the overall GAP program and for use in local conservation and natural resource decision-making. GAP also provides Extension agents with better information regarding biodiversity maintenance in currently designated conservation areas and identifies areas in need of future conservation considerations. This prevents ad hoc land conservation and provides scientific justification for land conservation decisions where limited resources exist.

Conclusion

GAP data constitute a tool worthy of further exploration by Extension professionals. The goals of GAP lend to scientifically affecting policy and conservation changes in high-priority areas. In addition to a wide array of professional applications, GAP has proven to be a very useful tool in

educating the public about surrounding species, the need for effective conservation practices, and the role each citizen can play in the biodiversity conservation process. A full description of the GAP is available online at <http://gapanalysis.nbii.gov/>. This Web site includes more detailed information on GAP and its applications. GAP data may also be accessed via the program's Web portal, which is part of the main GAP Web site, or by calling the national GAP offices in Reston, VA at (703) 648-4079.

References

Gap Analysis Program (GAP) (2007). Retrieved August 4, 2007 from: http://gapanalysis.nbii.gov/