



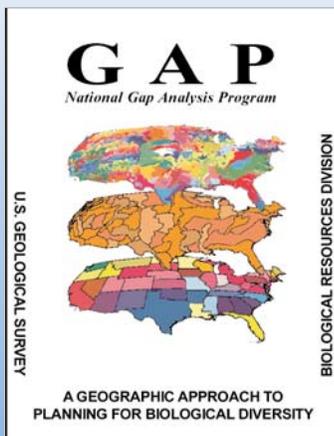
Southwest Regional Gap Analysis Project

Office of Research and Development

National Exposure Research Laboratory

Environmental Sciences Division

Landscape Ecology Branch



Despite widespread public support for conservation and environmental protection, many species that were once common are now threatened with loss of habitat. Native species generally decline in occurrence and distribution as natural habitats are altered, fragmented, or eliminated due to human activities. The purpose of the Gap Analysis Program (GAP) is to provide broad geographic information on biological diversity that land planners, managers, and policy makers need to make informed decisions relative to resource conservation.

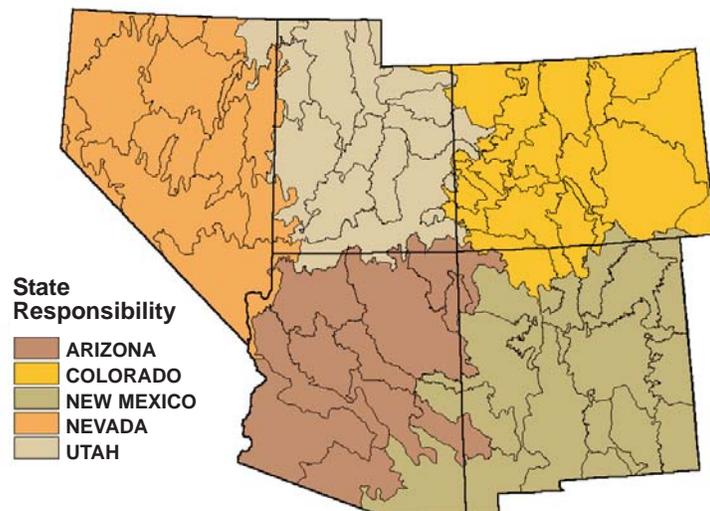
GAP is a multi-agency scientific program for identifying the extent to which native animal species and plant communities are represented. The program is administered through the U.S. Geological Survey and involves working partnerships with over 500 federal (e.g., U.S. Environmental Protection Agency), state, and local agencies, universities, and private organizations. Essentially the goal of the program is to identify "gaps" in the protection of native species, i.e. communities or species, that occupy areas receiving little or no conservation protection. The technique helps reveal conservation problems before they become acute, thus helping land stewards take a proactive approach to biodiversity management.

Although technically challenging, remarkable breakthroughs in science, technology, and collaborative interagency relationships have made regional-scale resource mapping possible. For a given area such as a state or a region, researchers combine contemporary satellite imagery (Landsat Thematic Mapper) with existing data, expert knowledge, and field and air video reconnaissance to create digital land cover maps. Plant communities are identified according to the National Vegetation Classification System (NVCS) which provides a universal set of standards. Predictive modeling is used to map habitat distributions for all vertebrate species (that breed or use habitat for important life history functions within the project area) using Geographic Information Systems technology. Lastly, a third data layer depicts management ownership, land stewardship, and management policy and produces measures for the levels of protection within the project area. Researchers can overlay these maps and can analyze patterns of biodiversity and land use to quickly identify those species and habitats that may need protection.

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Southwest Regional Gap Analysis Project

The Southwest Regional Gap Analysis Project (SW ReGAP) is a multi-agency effort directed across, Nevada, Utah, Colorado, Arizona and New Mexico to produce a new generation database for land cover, vertebrate species data, and land ownership with improved resolution, detail, and accuracy. The project area includes 530,425 sq. miles (339,465,600 acres) and is approximately 93% the size of Alaska. U.S. Bureau of Land Management lands encompass 31% of the project area and U.S. Forest Service covers 14%.

Landsat 7 Thematic Mapper imagery (30-meter resolution) will be used as the source information to classify vegetation. The 5-state region has been divided into mapping zones (see figure) that represent fairly homogeneous physiognomic land cover classes or subclasses. SW ReGAP investigators will map land cover to the Ecological System Level within the NVCS and assess classification accuracy within these zones rather than within state boundaries. The mapping zone approach is intended to achieve a seamless, regional land cover map.

Based on land cover mapping and other data sets, models will be developed by the SW ReGAP principal investigators for approximately 830 terrestrial vertebrate species that inhabit the 5-state area. SW ReGAP will also produce a 5-state land stewardship map that identifies categories of land ownership, managing authority, and management intent. All of the derived maps are then overlain and analyzed for "gaps" in long-term security to biodiversity management.

ReGAP products will include 1) digital land cover maps produced from contemporary 30-meter satellite imagery and described using consistent classification nomenclature; 2) digital maps depicting the predicted distribution of approximately 830 vertebrate species; 3) digital land stewardship maps indicating ownership,

managing authority, and management status; and 4) project reports for each state. ReGAP products and data will be available on CD-ROM and available for internet download.

Also see:

<http://leopold.nmsu.edu/fwscoop/swregap/default.htm>

<http://www.gap.uidaho.edu>

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