

# GAPServe Brings GAP Data Online

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## Introduction

The Gap Analysis Program (GAP) is now in a very exciting period of development. With 36 state projects complete and more to be finished in the next year, GAP is tackling the challenge of effectively serving data products to customers. The sheer volume of data generated over many years makes it necessary to have better discovery and visualization tools, so that resource managers, scientists, and other interested parties can find and view the data from GAP.

After a year of design and development work, GAP is ready to introduce GAPServe. The full rollout of this new product occurred in June 2005. Usability testing will occur over the summer, and any modifications to the site will be made in the fall. GAPServe can be found at <http://gapanalysis.nbii.gov/>.

The primary goal of GAPServe is simple: to serve as a data warehouse where users can search for and visualize GAP data. It is important to note that this product is not intended for advanced mapping or analytical processing of GAP data over the Internet. Rather, it is designed to serve the data to any other Internet mapping service through the Open GIS Consortium's Web Map Service (WMS) 1.1 specification.

In the past, users trying to integrate data across state or regional boundaries had to download individual files for each state, then spend a considerable amount of time converting data into a single projection system so they could be used in a seamless manner within a mapping program. This process was tedious and time consuming.

With GAPServe, users can search for all applicable species distribution models by entering a common or scientific name, or by browsing through the taxonomy. This single user interface (Figure 1) allows users to explore available GAP data easily and efficiently.

Users can now view the data in any Internet browser using a map viewer. They can look for data on such things as land cover, stewardship, or single-species distributions, and the map viewer presents a seamless view across states based on the availability of online data. For example, the mountain beaver (*Aplodontia rufa*) species models, as delivered by California, Nevada, Oregon, and Washington, are shown in Figure 2.

## GAP Data Issues

From the inception of the program, GAP projects have been conducted on a state-by-state basis and data have been delivered for single states. While each project used the processes and standards in the GAP Handbook, data from one state could be in a different format, projection, or classification scheme than data from neighboring states. When viewing multiple-state project data, therefore, users have encountered the following issues:

- differences in the species names and species models used by states;
- differences in the categorization of stewardship and management areas; and
- differences in the categories of land classification. For example, while one state might have four types of land cover (forest, agriculture, water, and urban), a neighboring state could have five (deciduous forest, coniferous forest, agriculture, water, and urban).

It is important to note that base data, as delivered from the state projects, remain in GAPServe. However, since the primary goal of GAPServe is to let users visualize the data on a map, some changes were made in the way the data are visualized. For example, in the case of land classification data, all of the classifications were cross-walked to a more generalized set of NLCD 2001 categories to present a meaningful seamless map. Species distribution models are shown as either Habitat (potential presence) or Not Habitat (potential absence), since different types of models could have been run in each state.



Figure 1. GAPServe's user interface.



Figure 2. Map viewer depiction of mountain beaver (*Aplodontia rufa*) species models.



Figure 3. Map viewer depiction of land cover types.

As shown in Figure 3, even though the land classification was cross-walked, there are still discrepancies associated with using the data in a seamless manner. These data discrepancies or differences will exist in GAP state data until the regional projects, which will address the data issues described above, are delivered. Once completed, these regional products will also be made available within GAPServe. The new five-state Southwestern U.S. data set will be available through the portal in late 2005.

Next Steps

As we release version 1.0 of GAPServe, we would like to gather comments from GAP researchers and data users. We are interested in your input so that the best product to showcase GAP data and results can be made available to the broader community. Comments on the current version of the portal should be sent to [jmaxwell@uidaho.edu](mailto:jmaxwell@uidaho.edu) or [droy@usgs.gov](mailto:droy@usgs.gov).

In addition to ensuring that the product meets the data searching and visualization needs of the user community, we have also redeployed the current GAP web site using tools and methodologies provided by the National Biological Information Infrastructure (NBII), a program managed within the U.S. Geological Survey Biological Resources Discipline. By using the

NBII tools, both GAP and NBII will meet the following objectives:

- allow for the creation of consistent content and gather input from distributed sources by applying NBII standards;
- allow the serving of GAP resources to and from NBII node web sites through the use of the input tool developed for resource cataloging;
- minimize the time spent in web page development and maximize content development and management efforts, thus allowing for richer content with less effort from the web developer;
- facilitate collaboration among GAP projects by providing discussion lists, document sharing, and project management capabilities; and
- make it easier for users to find resources and documents by using the power search engine used by NBII.

**Summary**

As GAPServe is rolled out, we look forward to your comments. We are confident that the new site and data warehouse, integrated more closely with the structure of the NBII, will enable us to more effectively deliver the results of over fifteen years of work by GAP professionals.