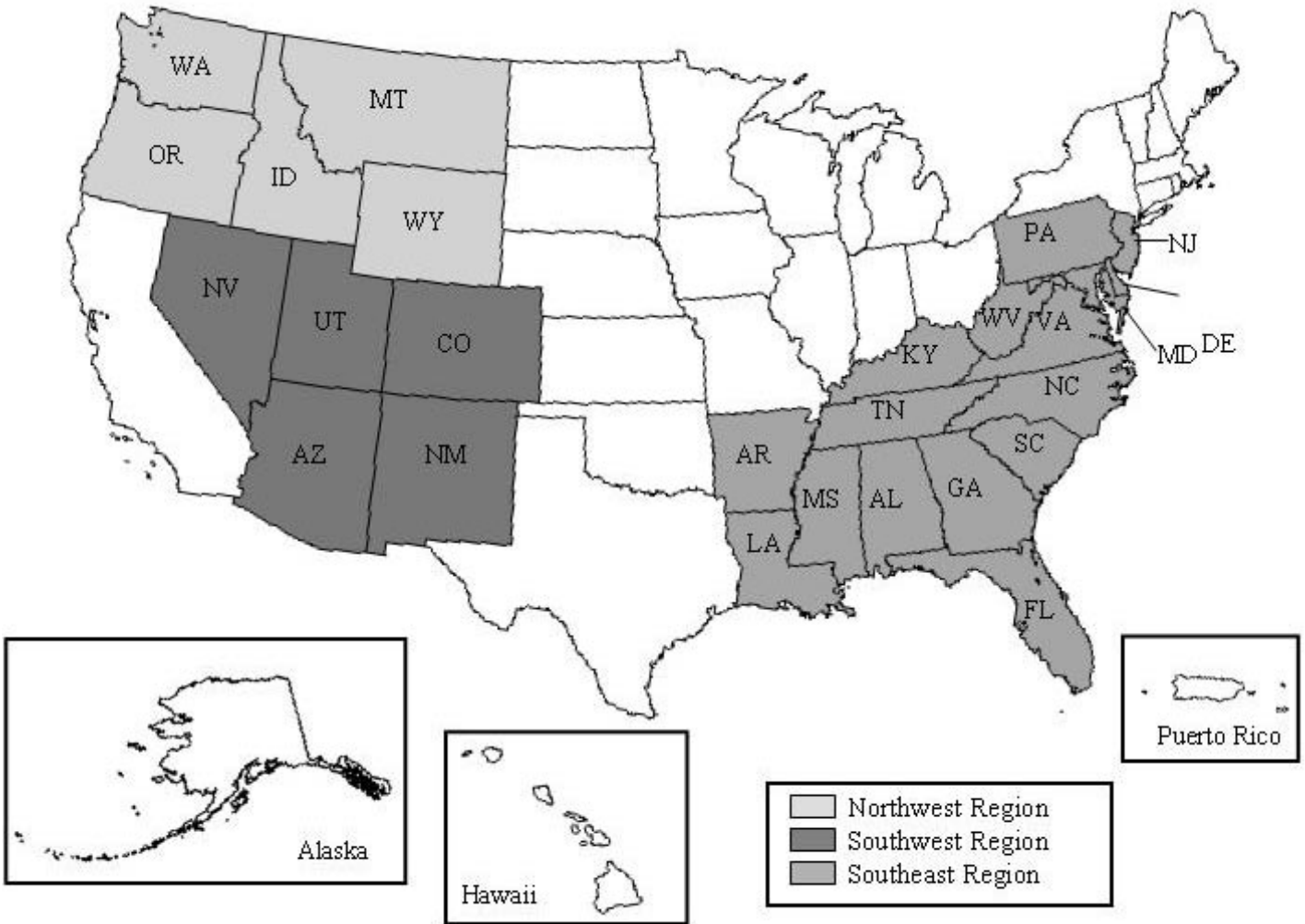


REGIONAL PROJECT REPORTS

(Status as of April 2005)



Northwest Regional GAP (NWReGAP)

Update under way this year for the five-state region including Washington, Oregon, Idaho, Montana, and Wyoming.

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NWReGAP started in August 2004 and will be mapping the land cover, species distributions, and land stewardship for Washington,

Oregon, Idaho, Montana, and Wyoming. These data will help with conservation efforts throughout the Northwest.

Land cover: Sanborn (formerly Space Imaging) in Portland, Oregon, has been contracted to classify imagery from mapping zone 1 (Western Washington). They are working with Natural Heritage biologists to define the ecological systems occurring within this mapping zone.

To date, Sanborn staff have developed a final classification scheme using ecological systems. They have acquired numerous ancillary data from various sources, including the Washington Department of Natural Resources and the U.S. Forest Service. They have developed transitional classes for forest clear-cuts that

indicate what vegetation currently exists within mapped clear-cuts. They have obtained copious amounts of training data, which have helped them develop an Olympic National Park prototype.

Olympic National Park has been defined as one of the ecoregions within mapping zone 1, within which classification and regression tree (CART) modeling will be conducted. Based on training data obtained from the U.S. Forest Service, an initial run of the CART model has been completed for this ecoregion. The results indicated that CART broke out different ecological systems reasonably well. This prototype has helped identify issues that need to be addressed to effectively apply the CART modeling approach in the other ecoregions.

Sanborn intends to complete this mapping zone by September 2005.

Vertebrate modeling: The Conservation Biology Institute (CBI) has begun to build a species occurrence database. CBI staff have assembled a species list for the Northwest and have obtained occurrence as well as ancillary data from numerous sources. At this time, national GAP is exploring avenues for conducting vertebrate modeling over this five-state region. Since the completion of the individual state projects in the Northwest, many modeling innovations have been developed, which may improve our ability to predict species distributions.

Southeast Regional GAP (SEReGAP)

Update under way for the thirteen-state region.
Anticipated completion date: June 2006

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Land cover: Four of the seven mapping zones for which we are developing the National Land Cover Data Set (NLCD) (2001) have been submitted to EROS Data Center (EDC) for a second review (Figure 1). Those include the East Gulf Coastal Plain (46), the Southern (54) and Northern Piedmont (59), and the Coastal Plain of North and South Carolina (58). The remaining

three mapping zones are currently under way with the BaSIC lab taking the lead on the Southern Coastal Plain (55) and Interior Highlands of Tennessee (48) and NaRSAL taking the lead in the Blue Ridge and Ridge and Valley (57).

Impervious surface estimates have been completed for all but one (55) of the seven zones and that is expected to be approved and released through the NLCD web site within weeks.

Canopy closure estimates for the Coastal Plain of North and South Carolina (58) are near completion, with the East Gulf Coast (46) and the Southern Coastal Plain (55) scheduled for completion by April 2005. The remaining four zones (57, 54, 59, and 48) will be completed in a staggered fashion through the end of the project period.

We are shifting to the GAP-level detailed vegetation mapping phase of the project. The Alabama Gap Analysis Project (AL-GAP) has the majority of their field data gathered and compiled with respect to the target map units (see McKerrrow and Pyne, this volume, for additional description of the classification system). For the Northern Coastal Plain, the system-level reference data collection is near completion. We are currently reviewing the point data from the North Carolina Gap Analysis Project (NC-GAP) to remove points where the land cover has shifted. For the Piedmont zones, the Georgia Gap Analysis Project (GA-GAP) and NC-GAP data and additional field data and photo-interpreted reference points are starting to be compiled now. For the remaining five mapping zones, reference data collection based on the digital photos, field visits, and existing data sets

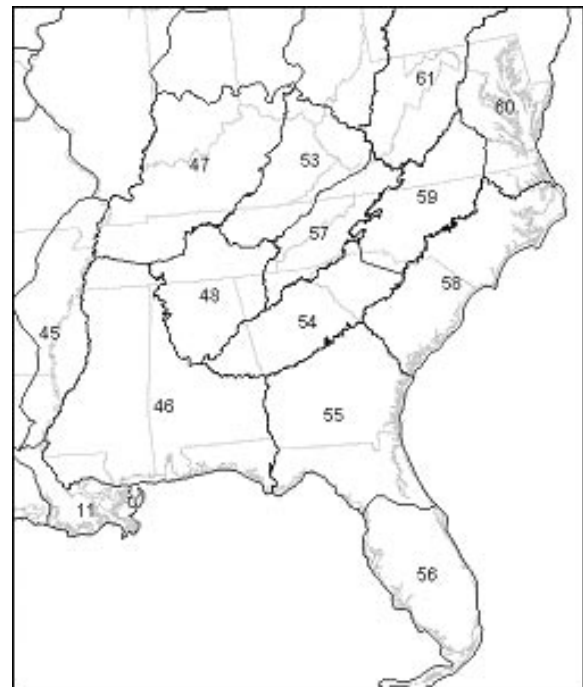


Figure 1. Mapping zones of the Southeast.

will begin in earnest after June 2005, when the first GAP-level maps will be complete. In the meantime, we have been working with NatureServe to compile a variety of existing data sets and get them cross-walked to Ecological Systems for all zones in the region. In addition to the point data collection, NatureServe has been actively delineating spatial ranges for target map units in our region. These maps are in draft format and ready for review. AL-GAP and the Alabama Heritage Program have been active in the refinement of those maps for the systems occurring in the East Gulf Coast.

The digital photo system designed for this project has been used to gather transects of photos at approximately 20 cm resolution for the majority of the region. This spring flights over the mapping zones 53 and 47 in Kentucky will be conducted to supplement the systems-level reference data collection in that area.

Ancillary data development, primarily programming and quality control on the digital elevation modeling data, has been a major focus this fall. We have been actively working with a variety of data sources to make the best available data for each of the mapping zones in the Southeast. That effort should be complete by the end of March 2005. The National Wetlands Inventory data have been vectorized for over 1,000 quads that were previously missing from our digital coverage; these quads were scanned at Auburn University and vectorized to create binary coverages at the Information Technology Outreach Services office in collaboration with the Georgia lab.

Animal Modeling: Polygonal ranges are in draft form for all

species being modeled by the SEReGAP (Figure 2). Those ranges are scheduled for review as part of the final review of the habitat affinity and distributional models. A total of 607 species will be modeled for SEReGAP (133 amphibians, 253 birds, 97 mammals, and 124 reptiles). For the full list of species being included, see the SEReGAP web site <www.segap.org>.

The habitat affinity database has been designed and is being used by the three labs to develop the species models. By April 2005, one-third of all of the species will have their models described in the database and an internal review will have occurred. Habitat affinity and ancillary parameter associations for all 607 species, along with internal reviews, are scheduled to be complete by June 2005. The final year of the project will involve incorporating the land cover project with the habitat models and conducting external reviews of the data.

Other accomplishments and innovations: This year we have continued with the SEReGAP and U.S. Fish and Wildlife Service (USFWS)/Joint Ventures Pilot project (see Williams and McKerron, this volume). We have been represented at a long list of meetings, from the national to the local level; some examples include the American Society of Photogrammetry and Remote Sensing, the Ecological Society meetings, the Department of Interior's Land Cover Summit, the Southeastern Partners in Flight, and the North Carolina Center for Geographic Information and Analysis conference. Two relevant workshops this year included the Rapid Assessment Project workshops led by the U.S. Forest Service Fire Lab and The Nature Conservancy, and the Cactus Mapping and Modeling workshop.

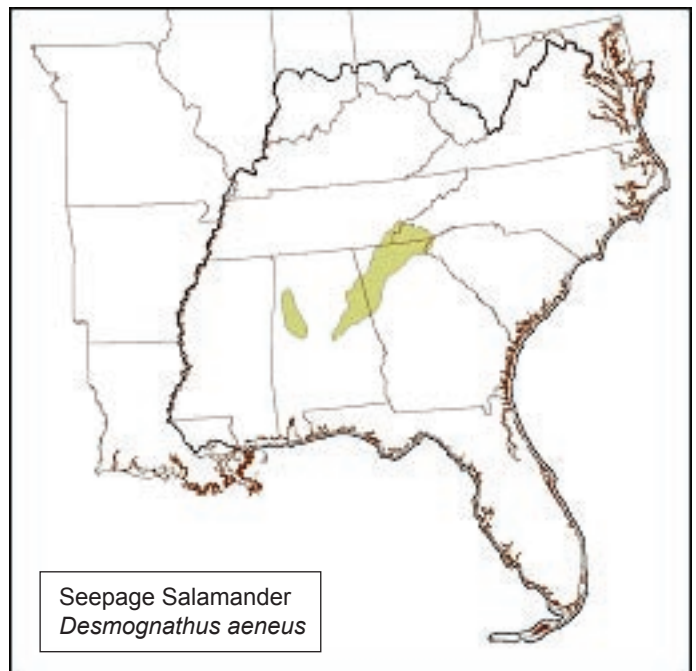
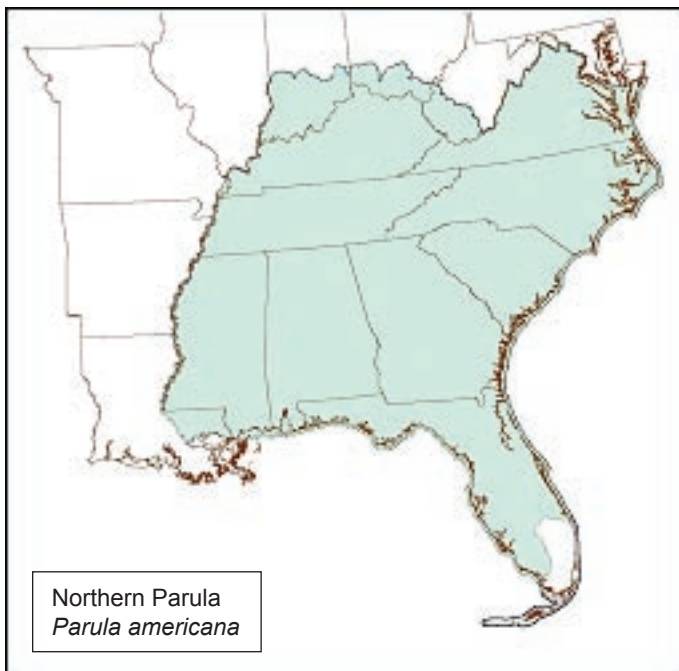


Figure 2. Examples of species range maps being developed for the SEReGAP.

Southwest Regional GAP (SWReGAP)

An update is under way for the five-state region encompassing Arizona, Colorado, Nevada, New Mexico, and Utah. State coordination for the project is facilitated through the SWReGAP web site <<http://leopold.nmsu.edu/fwscoop/swregap/default.htm>>.

Anticipated completion date: October 2005

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Land cover: The RS/GIS Lab at Utah State University is the regional land cover mapping lab for the five-state Southwest region. The regional project focused on four major objectives in 2004: (1) completing land cover modeling activities; (2) model validation; (3) producing a regional mosaic of the mapping zones; and (4) developing a data delivery system for the provisional land cover product.

The majority of natural and seminatural land cover classes were modeled using a decision-tree (DT) classifier. Advantages of

DT include the ability to use both continuous and categorical predictor data sets with different measurement scales, good computational efficiency, and an intuitive hierarchical representation of discrimination rules. Decision-tree models were validated by generating initial models using 80 percent of available samples, while withholding 20 percent of samples. Withheld samples were randomly selected and stratified by cover class. Withheld sample polygons were intersected through the land cover map to create an error matrix, presenting users, producers, and overall “accuracies.” Using the 4 km overlap region between mapping zones, a “cutline” was used to edge-match adjacent mapping areas where land cover discontinuities resulted from the modeling process. The resulting five-state region mosaic was qualitatively reviewed by the five state teams and NatureServe. Following review, a limited number of errors were “flagged” for final editing. The “edits” were determined to be relatively easy to correct with localized recoding, or a simple conditional model, and were made to the regional map.

The SWReGAP land cover data set is currently available to the public with “provisional” status from <<http://earth.gis.usu.edu/swregap/>> (see Figure 1). Because the data set encompasses such a large region, the web site allows users to download specific geographic segments of the region, such as individual states, counties, or ecoregions. Additionally, the web site offers an Internet map server from which users can interactively clip a specified rectangle in the region. The clipped data set is subsequently bundled with metadata and made available for downloading.

Animal habitat modeling: The regional project focused on six objectives during 2004: (1) collecting habitat modeling attributes;



Figure 1. SWReGAP provisional land cover data.

(2) creating region-wide modeling data sets; (3) creating a database to facilitate association compilation, expert review, and modification, and potential end-user application; (4) internal and expert review; (5) accuracy assessment; and (6) conducting a regional animal-habitat modeling workshop in Las Vegas, Nevada, in March 2004.

The region is working with an MS Access database to facilitate data collection and to compile taxa specific information for modeling purposes. The intent was to create a data set that manages information and was used to construct each taxon's wildlife habitat relationship model. Included within the database is a method for defining range limits using the eight-digit hydrologic unit code (HUC). The database also incorporates the core data layers the region had identified to be minimally addressed in each wildlife habitat relationship model. These core data layers are land cover, elevation (minimum and maximum), slope, aspect, soils, hydrology (distance to and association with permanent water), and patch size. Species were allocated to each state based on expertise and species distribution. These states were responsible for creating the habitat models for those species. The individual databases were then combined and currently any modification to the database is done through an online connection to the master database. All species data collection is complete as of this report, with modifications occurring as internal and external reviews are completed.

The region has undergone an internal review process to check consistency within the models and to provide the framework for an external review. The internal review is complete as of February 14, 2005. Expert review is beginning as of February 1, 2005, and is scheduled to be completed by April 30, 2005. The region will complete the standard gap analysis habitat modeling measure of agreement, as well as a measure of agreement with existing species occurrence records. States are currently identifying qualified species lists for the standard measure of agreement; these lists will then be provided to the regional laboratory. The Arizona project, in coordination with the regional laboratory, is identifying a procedure for using existing data to

measure the degree of concordance between habitat models and species occurrence records. This analysis will be done as models are completed, and is scheduled to be finished by July 2005.

Land stewardship mapping: The final regional stewardship and management status map is expected to be complete by June 2005. External review of stewardship mapping products began in December 2004. Nevada stewardship and management status maps have undergone the external review process, resulting in updates to internal parcel boundaries and refinements to the GAP status codes. The draft maps for Colorado are also complete and the external review is scheduled for March 2005. External reviews are also scheduled for Arizona, New Mexico, and Utah this spring. As a conservative estimate, the regional stewardship lab has collected over 300 management planning documents from various federal, state, and county entities. The process of reviewing current management plans, interviewing various land stewards, and assigning the GAP status codes is complete. In addition, most of the digital boundary information for all five states has been collected, and cooperators have been generous with providing digital parcel data layers. Currently, the regional stewardship lab is in the process of assembling the GIS database using the geodatabase format to maintain data integrity. In an effort to keep the stewardship mapping effort consistent across the region, the regional stewardship lab digitizes additional internal information when digital information is unavailable from local sources. This effort is designed to provide a consistent product across the region in both the level of mapping detail and the assignment of the GAP status codes. In addition, the detail and refinements of the stewardship product will create a better assessment in the final gap analysis.

Analysis: Analysis for SWReGAP will take place when all mapping tasks are completed. Land cover analysis and animal habitat modeling analysis will begin in May 2005.

Reporting and data distribution: All products derived from SWReGAP are scheduled to be complete by approximately October 2005.