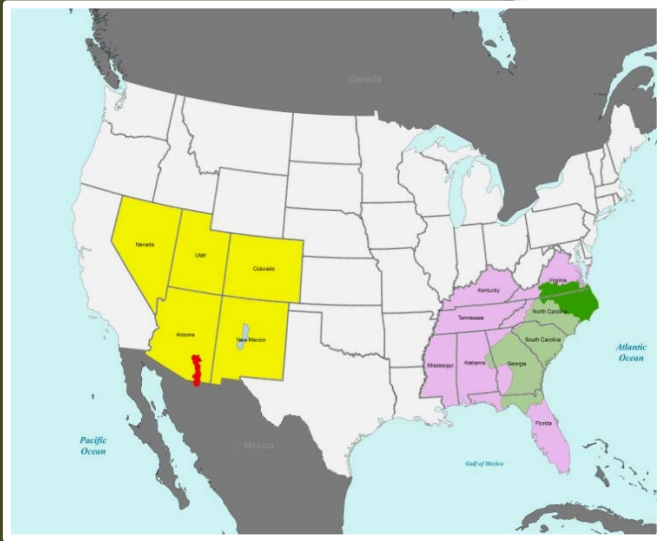


Biodiversity Metrics

EPA/600/F-11/006
December 2013
www.epa.gov



Project Study Areas

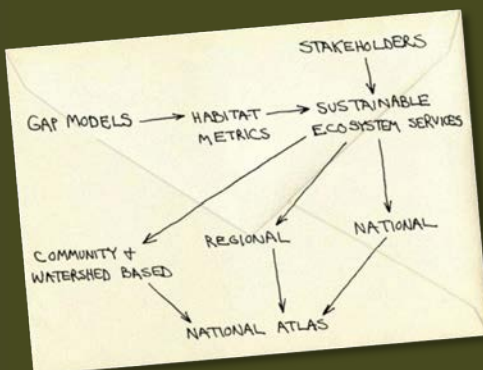
Focus on Clients

Include Decision Makers

Indicators to Inform Tradeoffs

Scaled to Inform Decisions

Relevant to People

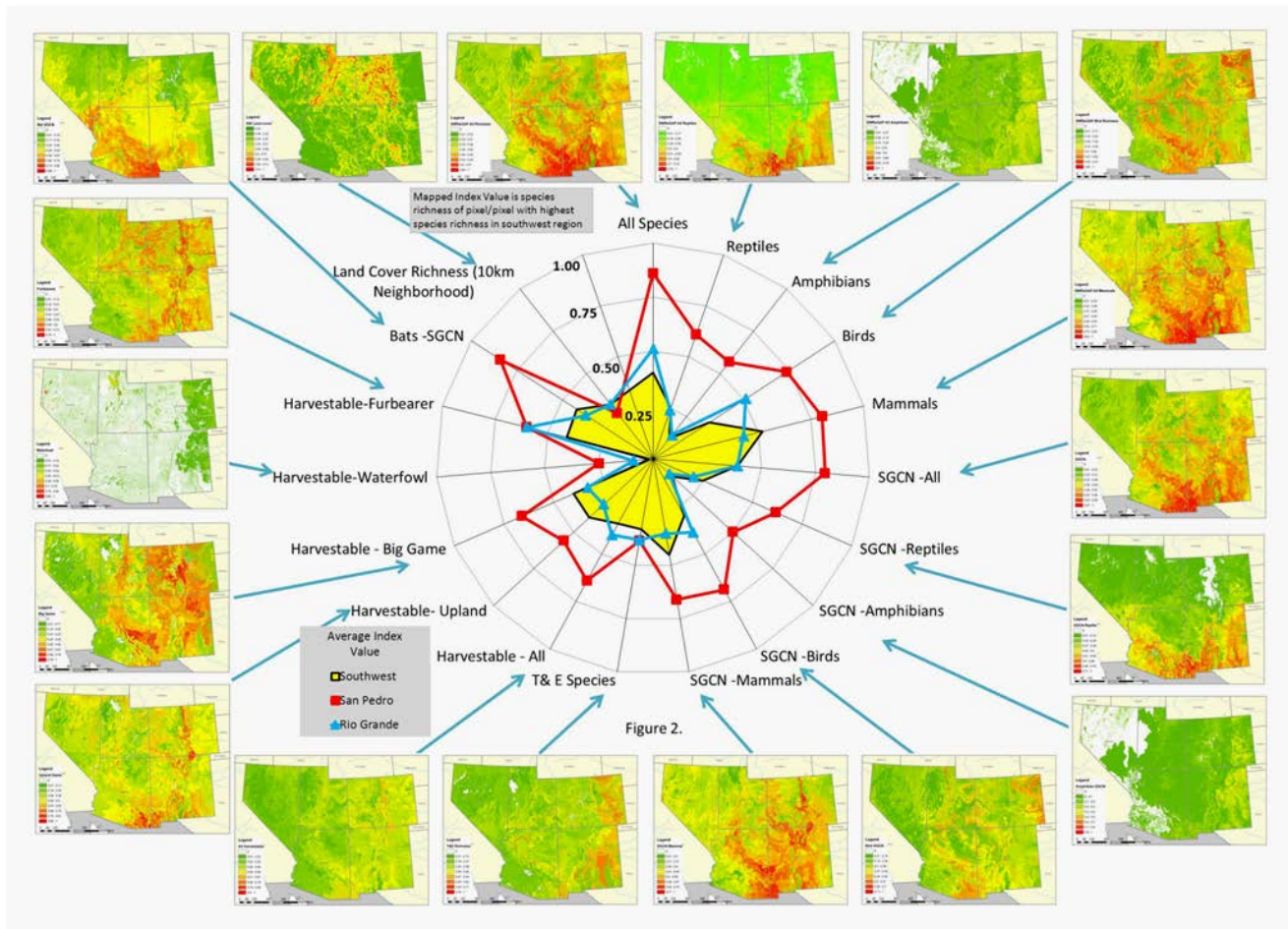


Ecosystem services, i.e., “services provided to humans from natural systems,” have become a centralizing theme in resource management, conservation planning, human well-being, and contemporary environmental decision analysis. Mapping and quantifying ecosystem services provide a strategic national tool for integrating ecology with economics and for analyzing the effects of human policies and their subsequent consequences or benefits on ecosystem function and human welfare. Characteristics of biodiversity are valued by humans in many ways, and thus are important to include in environmental assessments that seek to identify and quantify the value of ecosystems to humans. Some biodiversity metrics clearly reflect ecosystem services (e.g., abundance and diversity of game species), whereas others reflect indirect and difficult to quantify relationships to services (e.g., relevance of species diversity to ecosystem resilience or intrinsic value of native species). Wildlife habitat has been modeled at broad spatial scales and can be used to map a number of biodiversity metrics. In this approach, we map metrics reflecting ecosystem services related to biodiversity conservation using U.S. Geological Survey Gap Analysis Program data, including land cover, land stewardship, and deductive habitat models for terrestrial vertebrate species. Example metrics include threatened and endangered species, harvestable species (i.e., small game, waterfowl, fur bearers, and big game), total species, and specific taxa. The project is being conducted at multiple scales in a phased approach, starting with community-based studies (San Pedro, Middle Rio Grande, and Albemarle-Pamlico), then multi-state regional areas (Southwest, Southeast, and South Atlantic Landscape Conservation Cooperative), and finally culminating in the national-level *EnviroAtlas* under development by the U.S. Environmental Protection Agency and its partners.

- Climate Vulnerable Species
- Common Species in Decline
- Grassland Obligate Species
- Harvestable Species
- Land Cover Richness
- Total Species & Taxa Richness
- Migratory Bird Species
- Riparian Obligate Species
- Global Rank Species
- Species of Greatest Conservation Need
- Threatened & Endangered Species
- Listing Candidate or Sensitive Species

<http://case.nmsu.edu/case/es/>

Biodiversity and Ecosystem Services



Biodiversity Metrics for Southwest Region portrayed as a Radar Graph

Environmental Protection Agency

Office of Research and Development, National Exposure Research Laboratory, Landscape Ecology Branch, P.O. Box 93478, Las Vegas, Nevada 89193-3478 USA (or 944 E. Harmon Ave., Las Vegas, Nevada 89119 USA)

- William G. Kepner, Research Ecologist, Tel: 702-798-2193; FAX: 702-798-2208; kepner.william@epa.gov

Research Triangle Park, NC 27711

- Anne C. Neale, Physical Scientist, Tel: 919-541-3832; FAX: 919-541-4329; neale.anne@epa.gov

New Mexico State University

Center for Applied Spatial Ecology, New Mexico Cooperative Fish and Wildlife Research Unit Department of Fish, Wildlife, and Conservation Ecology, Box 30003, MSC 4901, Las Cruces, NM 88003

- Kenneth G. Boykin, Research Associate Professor, Tel: 575-646-6303; FAX: 575-646-1281; kboykin@nmsu.edu

U.S. Geological Survey, Gap Analysis Program

USGS Gap Analysis Program, Core Science Systems, Core Science Analytics and Synthesis, 970 Lusk Avenue, Forest and Rangeland Ecosystem Science Center -- Snake River Field Station, Boise, Idaho 83706

- Kevin J. Gergely, National Program Manager, Tel: 208-426-5219; gergely@usgs.gov