



Center for Applied Spatial Ecology

New Mexico Cooperative Fish and Wildlife Research Unit
US Geological Survey—Biological Resources

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The Center for Applied Spatial Ecology (CASE) was created by the Research Unit in 2004. The lab has participated in a variety of research projects and has provided technical assistance to university, non-governmental organizations, and state and federal agencies.

The emphasis of CASE is to conduct spatially oriented research at various scales to support natural resources management. Research results provide managers with the ecological context needed to make management decisions at a variety of temporal and spatial scales by incorporating field investigations with the application of computer technologies. The goal of CASE is to provide technical and biological knowledge to bridge the gap between spatial research and management application.

Staff have provided educational opportunities for a wide variety of cooperators including New Mexico Department of Game and Fish Game Commission short courses. Case staff have been invited speakers at professional meetings and developed, coordinated, and facilitated professional workshops.

Research on Community Ecology

CASE has conducted research on fire ecology, landscape vegetation change, invasive species, and climate change. CASE staff conducted fire ecology studies on White Sands Missile Range, vegetation change analysis in Big Bend National Park, invasive species modeling and risk analysis for Big Bend National Park and Holloman Air Force Base, New Mexico, and the effects of conservation practices on vegetation and focal species for the Natural Resources Conservation Service.

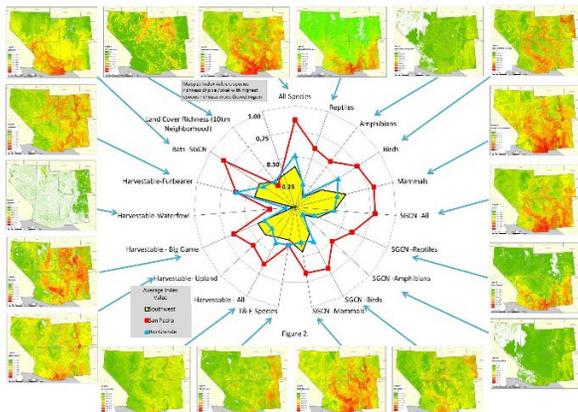


Figure 3. Biodiversity Metrics for Southwest Region portrayed as a Radar Graph

Research on Biodiversity and Ecosystem Services

CASE is currently working with the USGS National Gap Analysis Program to model terrestrial vertebrate species across the entire contiguous US. Our focus currently is on amphibian species. We recently completed the reptiles (<http://gapanalysis.usgs.gov/species/>).

CASE is also working with the EPA and USGS on identifying biodiversity metrics that represent ecosystem services at local, regional and national efforts. This data is then provided for use the EPA's EnviroAtlas (<https://www.epa.gov/enviroatlas>). CASE also worked with the NRCS and ARS to identify broad scale biodiversity metrics and link that information to fine scale conservation practices.

Case is currently collaborating on a working a National Science Foundation grant on Coupled Natural and Human Systems. The effort is looking at Acequia water systems in northern New Mexico and linking culture and nature in an integrated analysis of community resilience to climate and land-use changes.

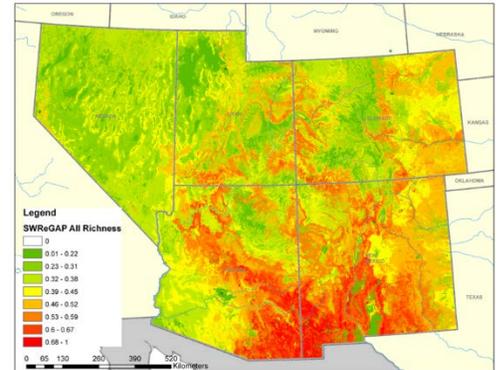


Figure 1. Terrestrial Species Richness Map of the Southwestern United States.

CASE is currently working with collaborators in the EPA, USGS, NRCS, and ARS on using alternative future scenarios using climate change urban growth to identify potential changes in biodiversity. This work includes the above mentioned projects as test cases for this analysis.

Research on Species and Habitat

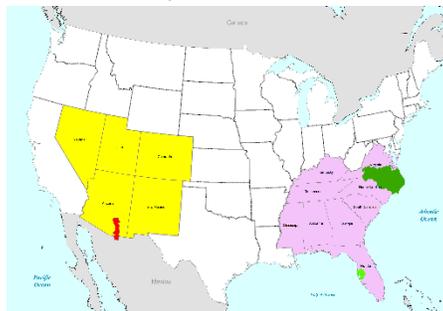


Figure 2. Project Study Area for Ecosystem Services

CASE has participated in specific species or species habitat research on a wide variety of scales. CASE staff used occupancy modeling to determine reptile presence on Holloman Air Force Base. CASE conducted research on the role of invasive plant species on White Sands pupfish and burrowing owl. In the past, CASE used a spatial risk assessment to assess Species At Risk (SAR) impacts military missions and provided management alternatives to preclude federal listing in the future.

CASE staff also completed a conservation modeling effort for Texas horned lizard on Holloman Air Force Base

New MexicoView

CASE the lead organization for New MexicoView (<http://newmexicoview.nmsu.edu/>). New MexicoView is part of AmericaView. AmericaView (AV) is a nationwide partnership of remote sensing scientists who support applied remote sensing research, K-12 and higher STEM education, workforce development, and technology transfer.

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