



College of Agricultural, Consumer and Environmental Sciences

Department of Fish, Wildlife, and Conservation Ecology Profile

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Mission Statement

The Department of Fish, Wildlife, and Conservation Ecology is dedicated to natural resource stewardship. Our research program provides innovative solutions to natural resource problems by maintaining a competitive research agenda that results in peer-refereed publications and technical reports that advance our knowledge and enhance the management and conservation of fish and wildlife. We work collaboratively with state, federal, Tribal, and private stakeholders to resolve fishery and wildlife management challenges. FWCE faculty train the next generation of professionals using traditional and emerging scientific methods, and apply this knowledge to the conservation and management of fish and wildlife in New Mexico, the Southwest, and internationally.

ACES Pillars for Economic and Community Development



Selected Program Impacts

- **Black Bear Harvest Limits:** Research on the abundance and density of black bears in New Mexico led to the modification of harvest limits.
- **Conservation of Burrowing Owl Populations through Effective Translocation:** Collaborative research with the U.S. Fish and Wildlife Service, Global Owl Project and Arizona Game and Fish Department have improved translocation efforts in the Southwest for burrowing owls, a New Mexico species of conservation concern that often comes in conflict with development in urban areas.
- **Conservation Efforts for Bendire's Thrashers:** Habitat needs and development of best management practices for Bendire's thrashers will improve habitat conditions and thus conservation of this sensitive species.
- **Natural Resource Career Tracks Providing Opportunities for Under-represented Students:** We work with undergraduate and graduate students throughout New Mexico to train our future land managers. We have mentored approximately 150 students supported by two major USDA grants. In our first grant, 46% of our New Mexico students obtained a permanent position through the federal pathways program before or shortly after graduation and 21% continued on to graduate school. Others took positions outside the federal pathways program.
- **Bald and Golden Eagle Sustainable Take Rates:** We are predicting eagle mortality at wind energy projects, and assisting the U.S. Fish and Wildlife Service with technical components of the eagle permitting process for wind energy facilities.
- **Delisting of Stable Species Saves Money:** Research on the Hualapai Mexican vole led to its removal from the list of federally endangered species in 2017.
- **Ensuring Continued Persistence and Resiliency of Rio Grande Cutthroat Trout to Climate Change:** This most southwestern subspecies of cutthroat trout is a high conservation priority due to its cultural importance as New Mexico's state fish and its popularity as a native coldwater sport fish. Our work developed management strategies that target populations for conservation by removing non-native fishes and/or developing barriers to prevent future invasion.
- **Map Predicts Risk of Cattle Depredation by Wolves:** Research resulted in the development of predictive maps based on computer models that highlight the risk of cattle depredation by Mexican gray wolves. Knowing which areas are at high risk for cattle depredation will reduced impacts of wolves on livestock.
- **Amphibian and Reptile Conservation:** We are investigating life-history parameters and dispersal of rare and common amphibian and reptile species in the southwest to increase our ability to manage and conserve them. We are also looking at impacts of invasive American Bullfrogs on native communities.

Selected Partnerships

FWCE collaborates with government, non-government, and international agencies.

Type(s) of collaboration: **I:** Internships; **H:** Hire students that graduate from our department; **MOU:** A specific memorandum of understanding exists between FWCE and the agency; **R:** Research funded by agency, often supporting graduate students to work on project; **S:** Scholarships

Government Agencies and Organizations

- Arizona Game and Fish Department—R
- Arkansas Game & Fish Commission—R, I
- Bureau of Land Management—I, H, MOU, R
- BOR/Army Corps of Engineers—R
- City of Las Cruces—R
- Department of Defense (Fort Bliss, Kirtland Air Force Base, Fort Irwin - National Training Center; White Sands Missile Range)—R
- Environmental Protection Agency—R
- Mescalero Apache Tribe—R
- Mesilla Valley Bosque State Park—R
- Missouri Department of Conservation—R
- New Mexico Department of Game and Fish—I, H, R, S
- National Park Service (White Sands National Park, Valles Caldera National Preserve)—R
- Natural Resource Conservation Service (NRCS)—R
- Texas Parks and Wildlife—R
- US Fish and Wildlife Service—I, H, R, MOU
- US Department of Agriculture - Animal and Plant Health Inspection Service (Wildlife Services)—I, H, MOU, S
- US Department of Agriculture (Agricultural Research Service; Farm Service Agency)—R
- US Forest Service—H, R
- US Geological Survey—H, MOU, R, S

Non-Government Agencies—R

- AmericaView, Inc.
- Envirollogical Services
- Global Owl Project
- International Arid Lands Consortium
- Kansas City Zoo
- Mesa Ecological Services
- New Mexico and Arizona Audubon Societies
- New Mexico Ornithological Society
- New Mexico Association of Conservation Districts
- Safari Club International
- Southwest Environmental Center
- T & E, Inc.
- The Nature Conservancy
- Trout Unlimited
- Turner Endangered Species Fund
- Wilburforce Foundation

International Agencies—R

- Scarlet Six Biomonitoring Team (Belize)
- ProFauna (Mexico)



Selected Program Impacts (cont.)

- **Large Mammal Responses to Forest Restoration:** The increase in catastrophic wildfires in the western U.S. over the past two decades has spurred forest restoration projects to reestablish historic forest structure and fire regimes. We are determining the influence of landscape-scale forest restoration treatments on patterns of resource selection by mule deer, elk, black bears, and mountain lions in Northern New Mexico to help land managers determine how best to implement vegetation treatments that will meet forest restoration and wildlife management objectives.
- **Continental Movement Ecology of Golden Eagles:** Wind energy now accounts for nearly 50% of the electricity generated by renewable energy, but wind turbines can strike protected species, such as Golden Eagles, heightening mortality rates. We are describing the movement patterns and population genetic structure of Golden Eagles to ascertain where recovered eagles originated. This will help the U.S. Fish and Wildlife Service to mitigate eagle mortalities, conserving Golden Eagles and simultaneously facilitating renewable energy expansion.
- **Ecology of State Endangered Small Mammals:** We are researching the ecology of state endangered small mammal species to aid in development of management plans and to forestall federal protections under the Endangered Species Act.

Faculty and Expertise

- **Wiebke J. Boeing**, Professor, aquatic communities and algae as biofuel
- **Kenneth G. Boykin**, Research Professor, conservation, habitat modeling, riparian ecosystems, fire ecology, herpetology, amphibian declines
- **Martha J. Desmond**, Regents Professor, avian ecology and conservation
- **Jennifer K. Frey**, College Professor, mammalian diversity and conservation
- **Fitsum Abadi Gebreselassie**, Assistant Professor, capture-recapture models, integrated population models, Bayesian inference
- **Matthew E. Gompper**, Department Head and Professor, mammal ecology, management and conservation; disease ecology and zoonoses
- **Gary W. Roemer**, Professor, wildlife ecology, conservation, and population genetics

NM Cooperative Fish and Wildlife Research Unit

- **James W. Cain III**, Unit Assistant Leader and Affiliate Associate Professor, wildlife-habitat relationships and large mammal ecology
- **Colleen A. Caldwell**, Unit Leader and Affiliate Professor, fish conservation, aquatic ecology, fish physiology, aquatic toxicology