



# 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 wildlife management challenges. FWCE faculty train the next generation of wildlife 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 elsewhere.

## ACES Pillars for Economic and Community Development



## Selected Program Impacts

- **Black Bear Harvest Limits Modified.** Research on abundance and density of black bears in New Mexico led to the modification of harvest limits for this species.
- **Burrowing Owl Translocation Effective for Conservation.** Collaborative research with the U.S. Fish and Wildlife Service has 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.** Collaborative research with the New Mexico Department of Game and Fish is providing the information to understand habitat needs and ultimately develop best management practices for Bendire’s thrashers (a sensitive species with approximately 30% of its range in New Mexico) to improve habitat conditions for this species across western NM.
- **Natural Resource Career Tracks Providing Opportunities for Underrepresented Students.** We are working throughout New Mexico to train natural resource students (graduate and undergraduate) to become future land managers. We have worked with approximately 150 students across two major USDA grants. In our first grant, 46% of our New Mexico students ( $n = 68$ ) had a permanent position through the federal pathways program before or shortly after graduation. An additional 21% continued on to graduate school. Others took temporary positions or positions outside the federal pathways program.
- **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, preventing needless resource expenditures on a species where it is not warranted.
- **Ensuring Continued Persistence and Resiliency of Rio Grande Cutthroat Trout to Climate Change.** We are working collaboratively with state and federal agencies to ensure long-term persistence of Rio Grande cutthroat trout. The subspecies is the most southwestern cutthroat trout and remains 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 will be used to make informed management decisions as to which populations should be targeted 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 maps based on computer models that predict risk of cattle depredation by Mexican gray wolves. Knowing which areas are at high risk for cattle depredation can inform management that can lead to reduced impacts of wolves on livestock.
- **Growing Algae for Biofuel Production.** We are researching how to increase algae biomass yield for biofuel production, pharmaceutical and nutraceutical purposes, livestock feed, and wastewater remediation. Algae biomass can be cultivated more effectively through application of certain environmental conditions, species compositions, and optimized harvest rates.

## Selected Partnerships

FWCE collaborates with government, non-government, and international agencies. The type(s) of collaboration are shown after each name using the abbreviations listed below.

### Government Agencies and Organizations

- Arizona Department of Game and Fish (AZDGF)—R
- BLM/New Mexico Association of Conservation Districts—I, H, MOU, R
- BOR/Army Corps of Engineers—R
- City of Las Cruces—R
- Department of Defense (Fort Bliss and Kirtland Air Force Base)—R
- EPA—R
- New Mexico Department of Game and Fish—I, H, R, S
- National Park Service—R
- Natural Resource Conservation Service (NRCS)—R
- Texas Parks and Wildlife—R
- USFWS—I, H, R, MOU
- USDA-APHIS—I, H, MOU, S
- USDA-ARS—R
- USDA Farm Service Agency—R
- U.S. Forest Service—H, R
- USGS—H, MOU, R,
- White Sands Missile Range—R
- White Sands National Monument—R

### Non-Government Agencies—R

- AmericaView, Inc.
- Envirological Services
- Global Owl Project
- International Arid Lands Consortium
- Mesa Ecological Services
- Mescalero Apache Tribe (e.g., fish hatchery)
- Mesilla Valley Bosque State Park
- New Mexico and Arizona Audubon Societies
- New Mexico Ornithological Society
- Safari Club
- Southwest Environmental Center (SWEC)
- T & E, Inc.
- The Nature Conservancy
- Trout Unlimited
- Turner Endangered Species Fund

### 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 the implementation of numerous forest restoration projects to restore historic forest structure and fire regimes. We are determining the influence of landscape-scale forest restoration treatments on mule deer, elk, black bears, and mountain lions in Northern New Mexico to help land management agencies determine how best to implement vegetation treatments that will meet forest restoration and wildlife management objectives.

## Faculty and Expertise

- **Wiebke J. Boeing**, Professor, aquatic communities and marine microalgae as biofuel
- **David E. Cowley**, Professor, theory and experimentation in aquatic systems
- **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 and integrated population models
- **Gary W. Roemer**, Professor, wildlife ecology, conservation, and population genetics
- **Kathryn E. Stoner**, Department Head and Professor, ecology and conservation of mammals, plant-animal interactions, habitat fragmentation

### NM Cooperative Fish and Wildlife Research Unit

- **Kenneth G. Boykin**, Research Associate Professor, conservation, habitat modeling, riparian ecosystems, fire ecology, herpetology, amphibian declines
- **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

**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 paying grad students to work on project; **S:** Scholarships