

Casey J. Wagnon

Postdoctoral Research Associate

Department of Fish, Wildlife, and Conservation Ecology
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EDUCATION

- 2023 **Ph.D., Natural Resources & Environmental Sciences**, University of Illinois, UIUC
2015 **M.S., Wildlife & Fisheries Biology**, Frostburg State University, Maryland
2011 **B.S. (x3): 1. Wildlife Science; 2. Conservation Ecology; and 3. Biology**,
New Mexico State University, Las Cruces

ACADEMIC AND RESEARCH POSITIONS

- 2025 – **Postdoctoral Research Associate**
Present Dept. of Fish, Wildlife, and Conservation Ecology, New Mexico State University
Decision support modeling of environmental flow releases and management options for Rio Grande Silvery Minnow
Supervised by Drs. Abby Lawson and Kacey Pregler
- 2024 **Wildlife Conservation Biologist**
Osa Conservation, Washington DC, USA
Biodiversity assessments across the South Pacific region of Costa Rica (Osa Peninsula to La Amistad International Park)
Supervised by Yvonne Kemp & Dr. Christopher Beirne
- 2023 – **Postdoctoral Research Associate**
2024 Dept. of Natural Resources and Environmental Sciences, University of Illinois Urbana-Champaign
Indiana bat responses to forest management in northeastern Missouri
Supervised by Dr. Joy M. O’Keefe
- 2017 – **Graduate Research and Teaching Assistant**
2023 Dept. of Natural Resources and Environmental Sciences, University of Illinois Urbana-Champaign
Dissertation: Dryland state transitions, trophic interactions, and the restoration of a keystone species
Advisor: Dr. Robert L. Schooley
- 2015 – **Adjunct Faculty**
2016 Dept. of Biology, Frostburg State University
Teaching and Lecturer
Supervised by Dr. David Puthoff
- 2013 – **Graduate Teaching Assistant**
2015 Dept. of Biology, Frostburg State University

Thesis: *Surveying for carnivores with camera traps: An evaluation of carnivore detection patterns at Great Swamp N.W.R. and the implications for camera-trap survey design*

Co-advisors: Drs. Thomas L. Serfass and Dorothy M. Wells

REFEREED PUBLICATIONS

* Denotes undergraduate mentee. † Denotes invited publication.

- [7] **Wagnon, C. J.**, B. T. Bestelmeyer, and R. L. Schooley. 2024. Dryland state transitions alter trophic interactions in a predator-prey system. *Journal of Animal Ecology* 93:1881-1895.
- [6] **Wagnon, C. J.**, B. J. Cosentino, and R. L. Schooley. 2024. Linking animal personality and habitat restoration for a keystone species. *Animal Behavior* 212:13-30.
- [5] Schooley, R. L., Bestelmeyer, B. T, **Wagnon, C. J.**, Coffman J. M. 2021. Shrub encroachment, landscape restoration, and intraguild predation. *Journal of Arid Environments* 193:104588.
- [4] *Andreoni, K. J., **Wagnon, C. J.**, Bestelmeyer, B. T., Schooley, R. L. 2021. Exotic oryx interact with shrub encroachment in the Chihuahuan Desert. *Journal of Arid Environments* 184:104302.
- [3] †**Wagnon, C. J.**, R. L. Schooley, and B. J. Cosentino. 2020. Shrub encroachment creates a dynamic landscape of fear for desert lagomorphs via multiple pathways. *Ecosphere* 11(9):e03240. 10.1002/ecs2.3240. *Special Feature: Dynamic Deserts*.
- [2] **Wagnon, C. J.** and T. Serfass. 2017. Use of camera traps provides insight into the feeding ecology of red foxes (*Vulpes vulpes*). *The Canadian Field-Naturalist* 131:19-22 <https://doi.org/10.22621/cfn.v131i1.1950>.
- [1] **Wagnon, C. J.** and T. Serfass. 2016. Camera traps at northern river otter latrines enhance carnivore detectability along riparian areas in North America. *Global Ecology and Conservation* 8:138-143 <http://dx.doi.org/10.1016/j.gecco.2016.08.010>.

TECHNICAL REPORTS

- Wagnon, C. J.** 2024. Progress report on the status of the Ridge to Reef biodiversity monitoring project. Technical Report to Osa Conservation. 8 pp.
- Wagnon, C. J.**, R. De Sousa, Y. Kemp, and C. Beirne. 2024. Integrated biodiversity monitoring framework for the Farms for Nature program. Monitoring Protocol to Osa Conservation. 40 pp.
- Wagnon, C. J.**, K. Fitzgerald, A. Bennett, and J. O’Keefe. 2024. Indiana bat response to forest habitat management. Annual Report to Missouri Department of Conservation. 36 pp.
- Wagnon, C. J.**, T. Serfass, F. Ammer, and D. Wells. 2016. Population surveys and diet habits for the mammalian predators of Great Swamp National Wildlife Refuge, Morris County, NJ, and the implication for waterfowl management. Final Report to the U.S. Fish and Wildlife Service. 32 pp.

- Wagnon, C. J.**, M. Spindler, T. Serfass, F. Ammer, and D. Fecske. 2015. An assessment of mammalian predator detection rates, occurrence and distribution, and avian food habits at Great Swamp National Wildlife Refuge. Annual Progress Report to the U.S. Fish and Wildlife Service, Basking Ridge, New Jersey. 13 pp.
- Spindler, M., **C. J. Wagnon**, D. Fecske, F. Ammer, and T. Serfass. 2015. Evaluating production, survival, and habitat use of wood ducks at Great Swamp National Wildlife Refuge, New Jersey. Annual Progress Report to the U.S. Fish and Wildlife Service, Basking Ridge, New Jersey. 16 pp.
- Wagnon, C. J.**, M. Spindler, T. Serfass, F. Ammer, and D. Fecske. 2014. The occurrence, distribution, and food habits of mammalian predators at Great Swamp National Wildlife Refuge. Annual Progress Report to the U.S. Fish and Wildlife Service, Basking Ridge, New Jersey. 34 pp.
- Wagnon, C. J.**, M. Spindler, T. Serfass, F. Ammer, and D. Fecske. 2013. Mammalian predator detection rates, occurrence and distribution, and the degree of waterfowl predation at Great Swamp National Wildlife Refuge. Annual Progress Report to the U.S. Fish and Wildlife Service, Basking Ridge, New Jersey. 13 pp.
- Doyle J., **C. J. Wagnon**, and G. Roemer. 2010. Gray fox (*Urocyon cinereoargenteus*) genetic sampling in southern New Mexico. Report to the New Mexico Department of Game and Fish. 9 pp.

DATA RELEASE

- Wagnon, C. J.**, R. L. Schooley, and B. T. Bestelmeyer. 2024. Mammal occurrence data derive from camera traps in grassland-shrubland ecotones at 24 sites in the Jornada Basin, southern New Mexico, USA, 2014-ongoing ver 2. Environmental Data Initiative. <https://doi.org/10.6073/pasta/bf6aea9b4ff8656d6a7d3b0a1e5f9f30>.

TEACHING EXPERIENCE

University-level teaching

- 2017 – 2021 Dept. of Natural Resources & Environmental Sciences, University of Illinois
 Mammal Field Techniques, NRES 285, *Instructor of Record*, Fall 2021
 Mammalogy, IB 462/NRES 442, *Lab Instructor*, Fall 2017, 19, & 21
 Integrated Ecosystem Mgmt., NRES 456, *Teaching Assistant*, Spring 2020 & 21
 Restoration Ecology, NRES 420, *Teaching Assistant*, Spring 2019
- 2013 – 2016 Dept. of Biology, Frostburg State University
 General Biology, BIOL 149, *Instructor of Record*, Fall 2015 & Spring 16
 Human Bio. & The Env., BIOL 109, *Lab Instructor*, Fall & Spring 2013–14
 General Zoology, BIOL 160, *Lab Instructor*, Spring 2015

Non-university teaching

- 2016 Regional Math and Science Center, Frostburg State University

Environmental science teacher: Teacher for underserved high school students enrolled in the summer Upward Bound Program. Engaged students in a science research project evaluating the effects of anthropogenic forest disturbance on mammalian community structure.

Invited Guest Lectures

- “IB 462/NRES 442 – Mammalogy”, lecture titled, “The trophic ecology of mammals” University of Illinois Urbana-Champaign. 2021.
- “NRES 420 – Restoration Ecology”, lecture titled, “A case study in dryland restoration: The restore New Mexico initiative” University of Illinois Urbana-Champaign. 2019.
- "BIOL 230 – Wildlife Techniques", lecture titled, "Camera traps in wildlife research: Applications and usages" Frostburg State University. 2014.
- "BIOL 423 – Mammalogy", lecture titled, "The use of microscopic and macroscopic hair characteristics to identify mammalian prey in diet analyses" Frostburg State University. 2014.

CONTRIBUTED PRESENTATIONS

First Author Presentations

- Wagnon C. J.** and R. L., Schooley. 2022. Dryland state transitions alter trophic interactions in a predator-prey system. The Wildlife Society’s 29th Annual Conference. Spokane, WA.
- Wagnon C. J.** and R. L., Schooley. 2022. Shrub encroachment alters trophic interactions in a canid-lagomorph community in the Chihuahuan Desert. 101st Annual Meeting of the American Society of Mammalogist. Virtual presentation. Tucson, AZ.
- Wagnon C. J.**, B. J. Cosentino, and R. L., Schooley. 2021. Personality structure and the movement behavior of an ecosystem engineer, *Dipodomys spectabilis*, following landscape restoration. The Wildlife Society’s 28th Annual Conference. Virtual meeting.
- Wagnon, C. J.**, R. L., Schooley, B. J. Cosentino. 2021. Shrub encroachment, landscape restoration, and the behavior of an ecosystem engineer. 100th Annual Meeting of the American Society of Mammalogist. Virtual meeting.
- Wagnon, C. J.**, R. L., Schooley, B. J. Cosentino. 2021. Shrub encroachment, landscape restoration, and the behavior of an ecosystem engineer. The Dept. of Natural Resources and Environmental Sciences Annual Research Symposium. University of Illinois. Urbana, IL.
- Wagnon, C. J.**, R. L., Schooley, B. J. Cosentino. 2021. Shrub encroachment creates a dynamic landscape of fear for desert lagomorphs via multiple pathways. 23rd Annual Graduate Student Symposium. University of Illinois. Urbana, IL.
- Wagnon C. J.**, R. L., Schooley, B. J. Cosentino, and B. Bestelmeyer. 2019. Shrub encroachment alters the landscape of fear for lagomorphs in the Chihuahuan Desert. The Wildlife Society & American Fisheries Society Joint Annual Conference. Reno, NV.
- Wagnon, C.** and T. Serfass. 2016. Are river otter latrines a natural attractant for sympatric carnivores: a preliminary assessment of latrines as potential camera sites for surveying a carnivore guild. 72nd Annual Northeast Fish and Wildlife Conference. Annapolis, MD.
- Wagnon, C. J.**, M. Spindler, T. Serfass, F. Ammer, D. Fecske, and S. Henry. 2015. Evaluating carnivore detection patterns using 3 camera-trap sampling designs at Great Swamp

National Wildlife Refuge, New Jersey, 71st Annual Northeast Fish and Wildlife Conference. Newport, RI.

Wagnon, C. J., M. Spindler, T. Serfass, F. Ammer, and D. Fecske. 2014. Do otter latrines act as an attractant for other sympatric carnivores? 70th Annual Northeast Fish and Wildlife Conference. Maine, ME.

Poster Presentations (* Denotes undergraduate mentee)

Dobrosky, N., **C. J. Wagnon**, M. Hoggatt, C. Starbuck, J. O’Keefe. 2024. Activity trends of Missouri bat species in response to forest management. The Wildlife Society’s 31st Annual Conference. Baltimore, MD.

*Andreoni, K. J., **C. J. Wagnon**, B. Bestelmeyer, and R. L., Schooley. 2022. Invasive oryx and encroaching shrubs: implications for landscape change in the Chihuahuan Desert. 101st Annual Meeting of the American Society of Mammalogist. Tucson, AZ.

*Andreoni, K. J., **C. J. Wagnon**, and R. L., Schooley. 2020. Diel activity and habitat selection of invasive oryx in the Chihuahuan Desert. Undergraduate Research Symposium, University of Illinois. Urbana, IL. ***Outstanding Poster Presentation Award.***

Goncarovs, B., M. Suchewski, B.J. Cosentino, **C. J. Wagnon** and R.L. Schooley. 2019. Effects of shrub cover on movement behavior in banner-tailed kangaroo rats. Student Research Symposium. Hobart and William Smith Colleges. Geneva, NY.

Schooley, R., **C. J. Wagnon**, and B. Bestelmeyer. Shrub encroachment, landscape restoration, and intraguild predation in the Chihuahuan Desert. 2018. 98th Annual Meeting of the American Society of Mammalogist. Manhattan, KS.

Wagnon, C. J., M. Spindler, T. Serfass, F. Ammer, D. Fecske, and S. Henry. 2015. An evaluation of 3 camera-trap survey designs to detect carnivores at Great Swamp National Wildlife Refuge, Basking Ridge, New Jersey, 1st annual Frostburg State University Graduate Symposium, Frostburg, MD.

*Pesi, S., *T. Hall, M. Spindler, D. Fecske, T. Serfass, and **C. J. Wagnon**. 2015. Summer food habits of nearctic river otters (*Lontra canadensis*) at Great Swamp National Wildlife Refuge, Basking Ridge, New Jersey, Maryland-Delaware Chapter of The Wildlife Society Spring Meeting, New Germany State Park, MD. ***Best Undergraduate Poster Presentation Award.***

*Hiller, R., *A. Hayes, *S. Pesi, *K. Hassler, and **C. J. Wagnon**. 2015. Classifying mammalian prey items from carnivore scat samples using macroscopic and microscopic hair characteristics, Maryland-Delaware Chapter of The Wildlife Society Spring Meeting, New Germany State Park, MD.

Wagnon, C. J., M. Spindler, T. Serfass, F. Ammer, D. Fecske, and S. Henry. 2015. An evaluation of 3 camera-trap survey designs to detect carnivores at Great Swamp National Wildlife Refuge, Basking Ridge, New Jersey, Maryland-Delaware Chapter of The Wildlife Society Spring Meeting, New Germany State Park, MD.

Technical Meeting Presentations

Wagnon C. J. and J. M. O’Keefe. 2023. Indiana bat responses to forest management in northeastern Missouri, Upper Mississippi River Conservation Committee fall technical sections meeting.

Invited Presentations

- Tidy data: Transforming messy data into structured insight, Osa Conservation, Conservation and Science Meeting. 2024.
- Shrub encroachment creates a dynamic landscape of fear for desert lagomorphs via multiple pathways, The Jornada LTER Research Group. 2020.
- Shrub encroachment and the landscape of fear for lagomorphs in the Chihuahuan Desert, Jornada LTER Desert Ecology Short Course. 2018.
- Changes in predator activity and the landscape of fear across shrub gradients, Jornada LTER Desert Ecology Short Course. 2017.

FELLOWSHIPS, SCHOLARSHIPS, & GRANTS

- 2019 & 22 **Educational Opportunity Grant (\$800)**, Department of Natural Resources and Environmental Sciences, University of Illinois, Urbana, IL.
- 2017–18 **Jornada Graduate Research Fellow (\$48,000)**, Jornada Basin Long-term Ecological Research Site, Las Cruces, NM.
- 2004–06 **Lottery Scholarship (\$2,500 per semester)**, New Mexico State University, NM.
- 2005 **Presidential Scholarship (\$700)**, New Mexico State University, NM.

HONORS & DISTINCTIONS

- 2021 **Recognized as Excellent Teacher (x2)**, Dept. of Integrative Biology (IB 462) & Dept. of Natural Resources and Environmental Sciences (*NRES 285), University of Illinois, Urbana, IL. **Instructor ratings were outstanding (top 10% of all instructors university-wide).*
- 2016 **Departmental Honors**, Dept. of Biology, Frostburg State University, Frostburg, MD.
- 2011 **Most Outstanding Student**, Dept. of Fish, Wildlife, and Conservation Ecology, New Mexico State University, Las Cruces, NM.
- 2011 **Crimson Scholar Graduate**, College of Arts and Sciences & College of Agricultural, Consumer, and Environmental Sciences, New Mexico State University, Las Cruces, NM.

WORKSHOPS & JOB-RELATED TRAINING

- Introduction to Continuous-time Movement Modeling**, TWS Annual Conference (8 hrs) Nov 2022
- Data Carpentry for Environmental Scientists**, Jornada Basin LTER (12 hrs) Mar 2022
- Multi-species Occupancy Modeling**, TWS Annual Conference (8 hrs) Sep 2021
- Introduction to Climbing (top-rope belay certified)**, University of Illinois Campus Recreation (6 hrs) Feb 2021
- Camera Trapping Workshop**, TWS Colorado Chapter (4 hrs) Feb 2021
- Fundamentals of Structured Decision Making**, TWS Annual Conference (8 hrs) Sep 2020
- Geospatial Analysis in R**, TWS Annual Conference (8 hrs) Sep 2020
- Using Netica to Create Bayesian Networks for Ecological Applications**, Illinois Natural History Survey, (4 hrs) Dec 2019
- GIS for Research (I-III)**, University of Illinois Scholarly Commons (12 hrs) Feb 2018

Introduction to R, University of Illinois High Performance Biological Computing (6 hrs) Nov 2017
Utility Vehicle Training, Great Swamp National Wildlife Refuge (4 hrs) Jun 2013

DATA PROCESSING SKILLS & SOFTWARE PACKAGES

Programming: R (advanced), JAGS/BUGS, STAN (beginner),
R analysis packages: MCMCglms, jagsUI, rjags, nlme, lme4, glmmTMB, lavvan, piecewiseSEM, unmarked, terra, sf, iNEXT, spsurvey
Statistical/Analysis software: R, MARK, ESRI suite (ArcGIS Pro, ArcScene, StroyMaps, ArcGIS Online), Netica, PRESENCE, BORIS, Bat Call Identification (BCID), Anabat Insight, Kaleidoscope Pro
Other expertise: data visualization (Tidyverse, ggeffects, BioRender), relational databases (Microsoft Access), Microsoft suite (Access, Word, Excel, Teams, Outlook), Google Workspace (Sheets, Docs, Slides, Drive, Meet)

PROFESSIONAL ACTIVITIES & SERVICE

Journal Reviewer

Journal of Mammalogy, Royal Society Open Science, Journal of Arid Environments, Journal of Animal Ecology, Southeastern Naturalist, Integrative Zoology

Professional membership

The Wildlife Society (National, Maryland-Delaware Chapter, and New Mexico Chapter) | American Society of Mammalogists | Society of Wetland Scientists | National Society of Collegiate Scholars

Institutional service

Mammal-trapping clinic | The Wildlife Society Student Chapter, University of Illinois. 2022.

Judge | Student presentation awards, Dept. of Natural Resources and Environmental Sciences research symposium, University of Illinois. 2022.

Freshman Field Day | Dept. of Natural Resources and Environmental Sciences, University of Illinois | Hands-on presentations on mammal field techniques for freshman undergraduate students. 2019 & 2020.

PUBLIC OUTREACH & MEDIA COVERAGE

- 2023 **Featured research**, *The Wildlife Society's eWildlifer*, article titled, "Rising Oryx Numbers May Distress New Mexico Ecosystem", (article published March 29). <https://wildlife.org/rising-oryx-numbers-may-distress-new-mexico-ecosystem/>
- 2022 **Featured presentation**, *The Wildlife Society's eWildlifer: Student and Early Career Professionals Edition*, presentation titled, "Personality structure and the movement behavior of an ecosystem engineer", (published April 22).
- 2020 **Featured research**, *Frontiers in Ecology and the Environment 'Dispatches'*, article titled, "Introduced oryx may accelerate grassland loss", (article published November 02). <https://doi.org/10.1002/fee.2268>

- 2017-2018 **High School Class Program.** Helped deliver, present, and participate in a 60-min program to high school students on “*Matter and Energy Cycling in the Chihuahuan Desert*” in Las Cruces Public School District. Asombro Institute for Science Education.
- 2017 **Desert Data Jam.** Collaborated with Asombro Institute to develop a dataset on mammals collected from camera traps for middle school students in Las Cruces Public School District. The dataset was used to create the winning entry called “Shrub Shenanigans” in the LTER Data Jam challenge. Asombro Institute for Science Education. <https://www.youtube.com/watch?v=P9HfDvTiu1M&t=419s>
- 2017 **Asombro Institute for Science Education.** Set-up and participated in the annual “Butterfly Flutterby” festival. Engaged kids and their guardians on topics promoting the conservation of butterflies in the Chihuahuan Desert.
- 2016 **Educational talk.** "Camera-trap surveys and diet habits for the mammalian predators of Great Swamp National Wildlife Refuge and the implication for waterfowl management", Friends of Great Swamp National Wildlife Refuge Second Sunday Presentation.
- 2015 **Featured biologist,** *U.S. Fish & Wildlife Service Field Notes*, article titled, "Great Swamp National Wildlife Refuge wrapping up waterfowl predation study" (article published February 20)
- 2014 **Featured biologist,** *Daily Record* article titled, "Secret lives of Great Swamp's otters, coyotes, and more revealed" (article published February 6).
- 2014 **Educational talk** titled "An evaluation of carnivore detection patterns, occurrence and distribution, and food habits at Great Swamp National Wildlife Refuge", Friends of Great Swamp National Wildlife Refuge Second Sunday Presentation.
- 2013 **Educational talk** titled, "The ecology and natural history of carnivores at Great Swamp National Wildlife Refuge", Friends of Great Swamp National Wildlife Refuge Second Sunday Presentation.

POPULAR ARTICLES

- Wagnon, C. J.** 2016. Foxes, otters, and bears, oh my: key findings from a 2-year predator study. *Swamp Scene* 51:4–5.
- Wagnon, C. J.** 2015. A research study of carnivores and their prey at Great Swamp NWR. *Swamp Scene* 48:8–9.

TECHNICIAN & FIELD EXPERIENCE

Wildlife Conservation Biologist, Osa Conservation

Biodiversity monitoring and assessments across the South Pacific region of Costa Rica. Conducted terrestrial mammal and ground-dwelling bird surveys using camera trapping techniques; conducted dung beetle surveys using pitfall traps; performed bird count surveys; sampled stream macroinvertebrates using standardized procedures; conducted bat surveys at bat

boxes; traveled to remote areas to collect biological data; responsible for tracking inventory of field supplies and equipment.

Postdoctoral Research Associate, University of Illinois Urbana-Champaign

Indiana bat response to forest management in northeastern Missouri. Conducted mist netting surveys using triple, double, and single high mist nest; extracted, handled, and identified seven species of bats (morphometrics, forearm banding, sample collection [blood, saliva, hair], Reichard's Wing Damage Index); safely handled, identified, and measured federally listed bats (Indiana bat, $n = 35$; Gray bat, $n = 8$); searched for Indiana bat roost sites using triangulation and homing radio-telemetry with Yagi antennas, topographical maps, compass, and onX Maps; conducted nightly exit counts at roost trees located with telemetry; collected data on roost tree characteristics (DBH, roost decay stage, roost height, tree identification); utilized Anabat swift detectors to conduct passive acoustic surveys; responsible for tracking inventory of field supplies and equipment, as well as vehicles and needed vehicle repairs/maintenance; responsible for IACUC and USFWS sampling/collection permits. *May 2023 – May 2024.*

Graduate Research Assistant, University of Illinois Urbana-Champaign

Lagomorph-canid trophic interactions and the behavioral ecology of banner-tailed kangaroo rats in the Chihuahuan Desert of New Mexico, Ph.D. field work. Conducted camera-trap surveys for lagomorphs (black-tailed jackrabbits and desert cottontails) and canids (coyotes and kit foxes) across shrub gradients; classified vegetation cover at camera stations (3-ha plots) using line-point intercept methods, including identifying vegetation to species and functional type; measured perceived predation risk for lagomorphs using flight initiation distance (FID) trials; measured vegetation cover (20 × 20 m plots) for FID trials using step-point intercept and coverboard methods; used Sherman live traps to capture bannertails (marked, morphometrics, sex and age determination); implemented personality assays (open hole-board and mirror-image simulation test) and performed movement experiments on captured bannertails; conducted surveys for lizards and banner-tailed kangaroo rat mounds along 3-km belt transects; recorded and identified lizard species (Whiptails $n = 7$ spp.; Earless $n = 2$ spp.; Spiny $n = 5$ spp.; and Collard/Leopard $n = 2$ spp.) and status of kangaroo rat mounds (active, inactive, legacy); classified ecological states (vegetation type, cover, and soils) along transects using Domin-Krajina cover class methods; planned and coordinated field work with state agencies (New Mexico State Police), federal agencies (US Border Patrol and BLM) and private ranch owners; responsible for IACUC and state sampling/collection permits; traveled to remote sites using 4WD trucks (manual and automatic transmission). *Jan. 2017 – May 2023.*

Island Fox Research Technician, Colorado State University

Assisted The Nature Conservancy (TNC) with population monitoring and recovery efforts for endangered island foxes on Santa Cruz Island (California Channel Islands); responsible for setting up and monitoring trapping grids for a mark-recapture study; safely captured and handled foxes and island spotted skunks (blood, whisker, and tissue sample collection; morphometrics, physical assessment, age determination); administered PIT tags to foxes and skunks; attached radio transmitters to foxes; administered rabies and canine distemper vaccinations; processed blood samples (i.e., draw serum from blood clot) using a centrifuge and pipette in a field lab; recovered fox mortalities using radio telemetry; supervised volunteers while conducting vaccination trap lines for island foxes; performed fox “work-up” demonstrations for TNC donors; operated ATVs and 4WD trucks (manual and automatic transmission); lived and worked on a remote island. *Aug. – Oct. 2016.*

Wildlife Research Assistant, Frostburg State University

Provided technical assistance to Maryland Department of Natural Resources to identify and target intervention strategies for Allegheny woodrat recovery in western Maryland. Estimated and evaluated the relative abundance of raccoon populations at extirpated and extant woodrat sites using camera-trap monitoring data; created and managed a database for historical and contemporary woodrat mark-recapture data; utilized ArcGIS to developed distribution maps of existing and extirpated woodrat populations in western Maryland using contemporary and historical occurrence records. *Apr. – July 2016.*

Bat Research Technician, University of Maryland Center for Environmental Science

Bat population monitoring in western Maryland and eastern Pennsylvania. Conducted bat staging/swarming surveys using harp traps; conducted summer mist netting surveys using triple high and ground mist nest; extracted, handled, and identified seven species of bats (morphometrics, forearm banding, tissue and hair sample collection, Reichard's Wing Damage Index); identified presence of *Pd* spores using ultraviolet light; attached radio transmitters to eastern small-footed and northern long-eared bats and tracked individuals to summer roost sites. Seasonal work: *Sept. – Oct. 2014, Mar. – Oct. 2015, Mar. – July 2016.*

Graduate Teaching Assistant, Frostburg State University

Carnivore camera-trap monitoring and summer food habits, MS field work at Great Swamp NWR, New Jersey. Conducted camera-trap surveys for carnivores along refuge roads, bait-stations, and river otter latrines; identified and sampled habitat characteristics at camera-trap locations; conducted river otter latrine surveys on foot and by kayak; identified, collected, and analyzed 283 scat samples from five carnivore species (river otter, red fox, raccoon, mink, and coyote); created a reference database for mammalian guard hairs; identified fish scales to families using scale morphology; supervised six lab interns; responsible for report writing; operated UTVs and 4WD trucks. *May 2013 – Feb. 2015.*

Volunteer, U.S. Fish and Wildlife Service, Great Swamp National Wildlife Refuge

Assisted with biology and conservation related projects. Monitored wood duck hens using radio telemetry; sampled physical characteristics at wood duck nest boxes; conducted point-count surveys for songbirds; checked nest-boxes for eastern bluebird clutches; invasive plant species removal using glyphosate applications; Canada geese and duck banding; dove banding; rare turtle monitoring using radio telemetry (bog and wood turtles); roving white-tailed deer spotlight surveys. *May – Aug. 2013, 2014 (1,500 volunteer hrs).*

Wildlife Research Technician, New Mexico State University

Occupancy and intraguild interactions of coyotes and kit foxes at White Sands National Park, New Mexico. Deployed camera traps to estimate carnivore occupancy; conducted distance sampling along 2-km transects to estimate the density of lagomorphs; used Sherman traps and mark-recapture surveys to estimate the abundance of small mammals; identified, marked, and measured seven species of desert rodents; deployed pitfall transects to estimate the relative abundance of ground-dwelling insects; coordinated field work with NPS staff. *Apr. – Sept. 2011.*

Grey Fox Research Technician, New Mexico State University

Population connectivity and the disease ecology of grey foxes. Captured, handled, and measured gray foxes and other carnivores (ringtail, bobcat, hog-nosed skunk, striped skunk, and badger) using padded leg-holds and live box traps; processed carnivores using mechanical restraint and chemical immobilization (medetomidine and ketamine); monitored vital signs; administered PIT

tags; collected biological samples (blood, hair, tissue, scat); established and maintained padded-leg hold transects on lands managed by the Bureau of Land Management, U.S. Forest Service, U.S. Fish and Wildlife Service, and Ted Turner Enterprises; coordinated trapping activities with state, federal, and private wildlife officials; prepared a written report. *Apr. – Sept. 2010.*

Undergraduate Assistant, New Mexico State University

Prepared samples ($n = 170$) for a stable isotope analysis (weighing using a microbalance, operating a freeze-dryer) to assess trophic relationships between Golden Eagles and their prey occupying California's Channel Islands; performed data entry for a variety of research projects; established camera traps at prairie dog towns at Sevilleta National Wildlife Refuge; assisted in maintaining NMSU's Natural History Museum. *Aug. 2009–May 2010.*