

Zoology



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WARNER COLLEGE
OF NATURAL RESOURCES
COLORADO STATE UNIVERSITY



CNHP's Zoology Team



Jeremy Siemers
Zoologist &
Team Leader

- Bat Projects
- Vertebrate Ranking & Assessment

Brad Lambert
Herpetologist

- Boreal Toad Research
- Amphibian & Reptile Inventory

Rob Schorr
Animal Ecologist

- Preble's Meadow Jumping Mouse
- Bat Projects

Andrea Schuhmann
Animal Ecologist

- Roaring Fork Project
- Bat & Bird Projects
- Invertebrate Assessment

John Sovell
Invertebrate &
Vertebrate Zoologist

- Pawnee Montane Skipper Monitoring
- Reptile Inventory
- County Inventories

Beth Stevenson
Zoologist

- Bat Projects
- Vertebrate Inventory
- GIS Mapping



CNHP's Zoology Team

Core Functions

- **Animal Conservation Ranking and Mapping**
- **Inventory** to identify new populations
- **Monitoring** the condition of animal populations
- **Research** to answer questions of conservation and management interest



Zoology Species Status Assessments

Status Assessments and Updates

Charismatic Microfauna

- Bees
- Moths (Chuck Harp, CSU)
- Tiger Beetles (Boris Kondratieff, CSU)
- Dragonflies and Damselflies (Bill Prather)
- Mayflies and Stoneflies (Boris Kondratieff, CSU)
- Caddisflies (Dave Ruitter)

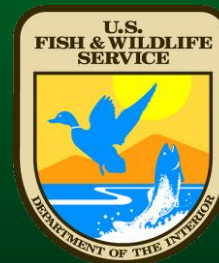
- Better alignment of CNHP's Tracking List with Colorado SWAP list
- CODEX data development



Zoology Species Status Assessments

Status Assessments and Reviews

- Birds and Irrigated Agriculture in the Colorado River Basin
 - Literature and Data Review
- Preble's Meadow Jumping Mouse Regional Monitoring Plan
 - Range-wide plan for USFWS
 - Methodology for monitoring populations
 - With Paul Lukacs, Univ. Montana



Zoology Inventory

Current & Recent Inventory Projects

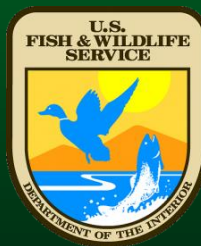
- County & Local Government Inventories
- Boreal Toad breeding site inventory
- White River National Forest Cave Bat Inventory
- Roaring Fork Watershed Biodiversity Assessment
- Button Rock Preserve Inventory



Zoology Monitoring

Current & Recent Monitoring Projects

- Boreal Toad breeding site monitoring
- Preble's Meadow Jumping Mouse population monitoring on USAFA
- Pawnee Montane Skipper (20+ years)
- White-nose Syndrome surveillance
- Reptile Monitoring on PCMS and Ft. Carson



Zoology Monitoring

Boreal Toad Monitoring

- Chaffee County
- Mark-recapture of largest population in Colorado
- 20+ years
- Population trend
- Chytrid fungus surveillance



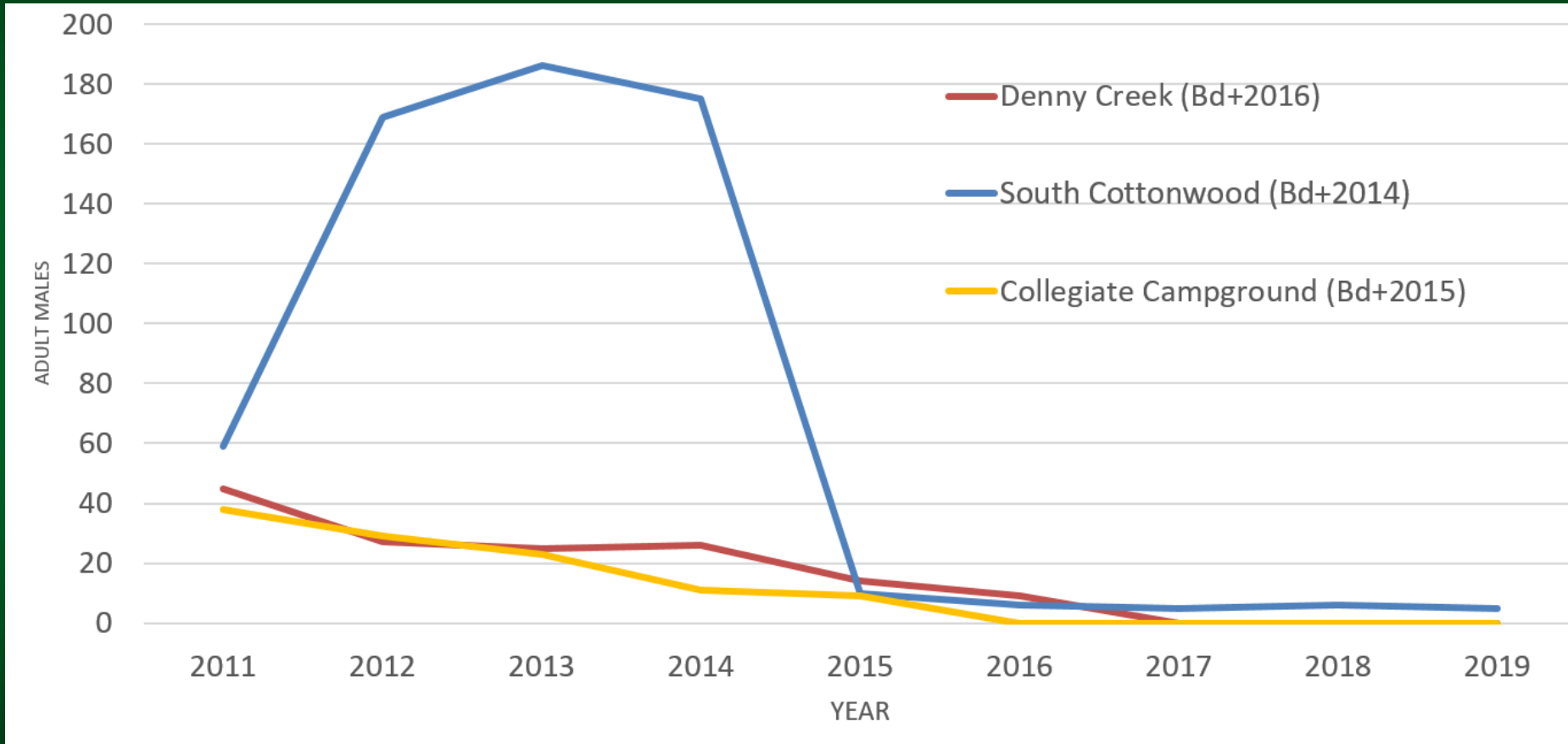
Recent Publications

- **Muths et al. 2018.** Estimating the probability of movement and partitioning seasonal survival in an amphibian metapopulation. *Ecosphere*
- **Lambert et al. 2016.** Influence of demography and environment on persistence in toad populations. *Journal of Wildlife Management*.



Zoology Monitoring

Boreal Toad Monitoring and Chytrid Fungus



Zoology Monitoring

Preble's Meadow Jumping Mouse on the US Air Force Academy

Longest-running monitoring (20+ years) of this Threatened subspecies.

Mark-recapture demographic survey

Survival, recruitment, and trend

Population genetics analysis of connectivity



Recent Publication

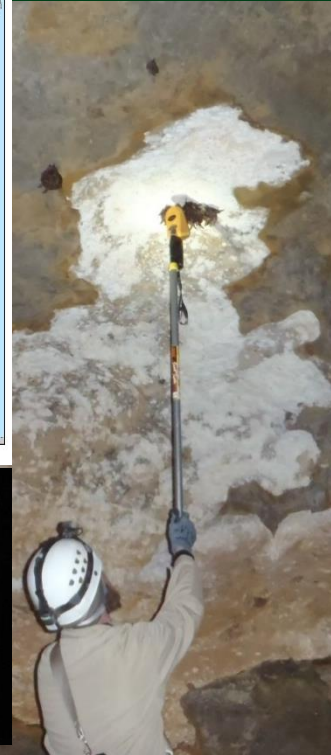
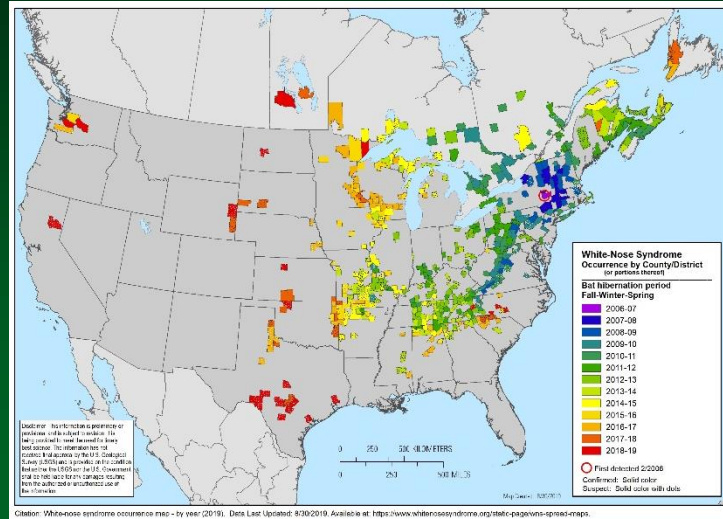
- **Schorr and Mihlbachler. 2018.** Understanding habitat quality for Preble's meadow jumping mouse: How survival responds to vegetation structure and composition. *Journal of Fish and Wildlife Management*.



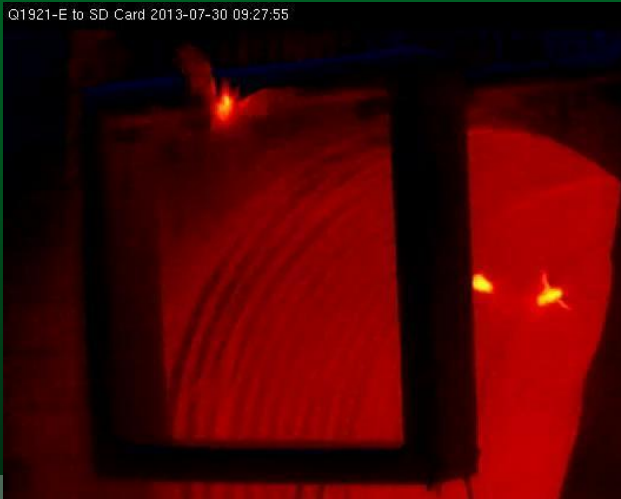
Zoology Research

Bat Research Projects

- Little Brown Bat Monitoring
- Cave Inventory and Monitoring on White River National Forest
- Townsend's Big-eared Bat Monitoring



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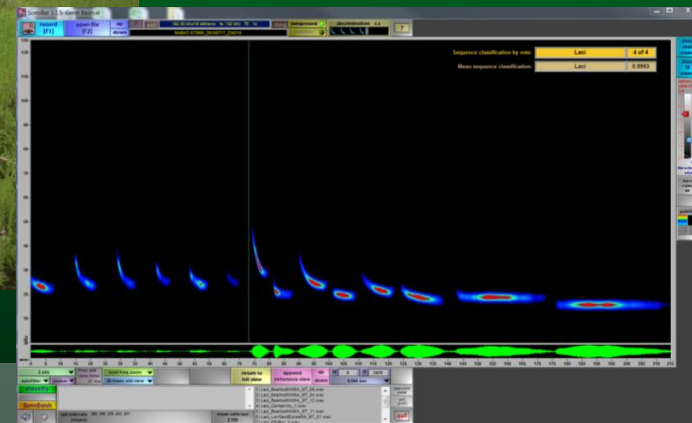
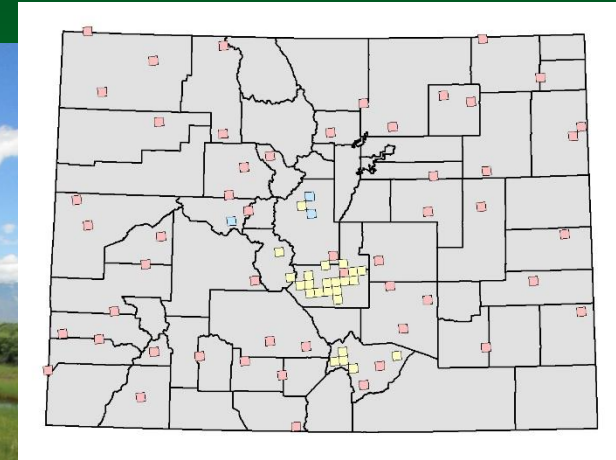
Zoology Research

Bat Research Projects

- North American Bat Monitoring Project (NABat)
 - *State-wide coordination in CO with CPW*
 - *BLM Royal Gorge Resource Area acoustic analysis*
 - *Rocky Mountain NP*



NABat



Zoology Research

Bat Research Projects

- Climbers for Bat Conservation
 - Meetings with climbers in CO, KY, SD, WY, ID, UT
 - Support from Petzl, Access Fund, CPW, WGFD, City of Boulder OSMP, Jefferson County Open Space
- Florida Bonneted Bat
 - Acoustic occupancy and telemetry of an Endangered species on Avon Park Air Force Range.



Zoology Future Directions

- Population estimation of rare species
 - Bats susceptible to WNS
 - Amphibians
- Bat Hub – regional acoustic processing and coordination of NABat
- Invertebrate conservation
 - Bumble Bee monitoring
- Invasive species
 - Bullfrog and Red-eared Slider
- Disease ecology
 - White-nose Syndrome
 - Chytrid Fungus

