

Zoology (11:05-11:25)

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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



Rob Schorr
Animal Ecologist

- Preble's & NM Meadow Jumping Mouse
- Population Ecology
- Climbers for Bat Conservation



Andrea Schuhmann
Animal Ecologist

- Community Ecology
- Bat & Bird Projects
- Invertebrate Assessments



John Sovell
Invertebrate &
Vertebrate Zoologist

- Pawnee Montane Skipper Monitoring
- Reptile Inventory
- County Inventories



CNHP's Zoology Team



***Terutaka
Funabashi***
Zoology
Technician

- Field Projects
- GIS and data technician



***Brad
Lambert***
Herpetologist

- Boreal Toad Research
- Amphibian & Reptile Inventory



***Scott
Schneider***
Field Zoologist

- Boreal Toad Monitoring
- Field Projects



***Beth
Stevenson***
Zoologist

- Bat Projects
- Natural Resources Communication
- GIS Mapping



***Justin
Unrein***
Field Zoologist

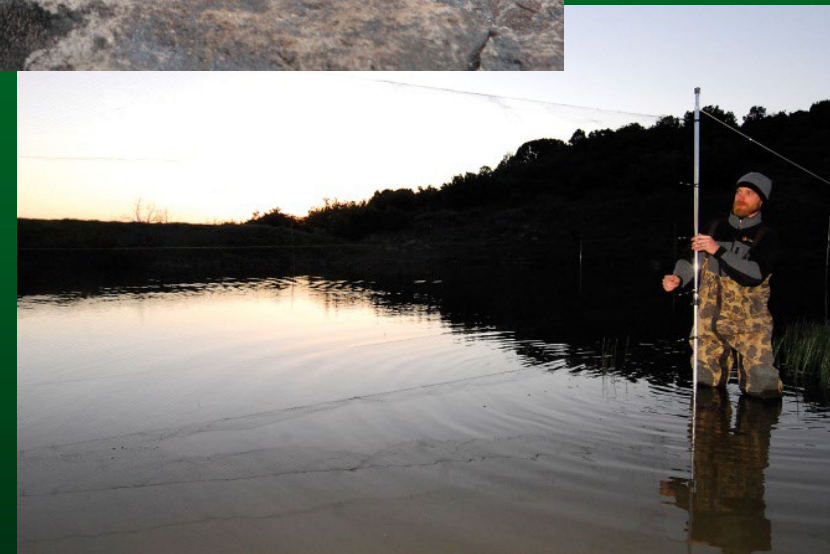
- NABat Monitoring
- Pygmy Rabbit Surveys
- Field Projects



CNHP's Zoology Team

Core Functions

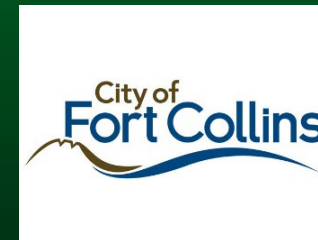
- **Animal Conservation Ranking and Mapping**
- **Inventory** to identify new populations
- **Monitoring** the condition of animal populations
- **Research** to answer questions of conservation and management interest



Zoology Inventory

Current & Recent Inventory Projects

- Boreal Toad breeding site inventory
- Conservation easement baseline reports for City of Fort Collins
- Roaring Fork Watershed Biodiversity Assessment
- Jefferson County Inventory
 - 1993 → 2010/11 → 2021/22



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
- Bat Monitoring at Rocky Mountain NP



Zoology Research

Recent Publications



• Bat Monitoring

- **Schorr and Siemers. 2021.** Population dynamics of little brown bats (*Myotis lucifugus*) at summer roosts: Apparent survival, fidelity, abundance, and the influence of winter conditions. *Ecology and Evolution*
- **Neubaum and Siemers. 2021.** Bat swarming behavior among sites and its potential for spreading white-nose syndrome. *Ecology*
- **Reichert et al. 2021.** NABat: A top-down, bottom-up solution to collaborative continental-scale monitoring. *Ambio*

• Boreal Toad Monitoring

- **Cayuela et al. 2021.** Thermal conditions predict intraspecific variation in senescence rate in frogs and toads. *Proceedings of the National Academy of Sciences*

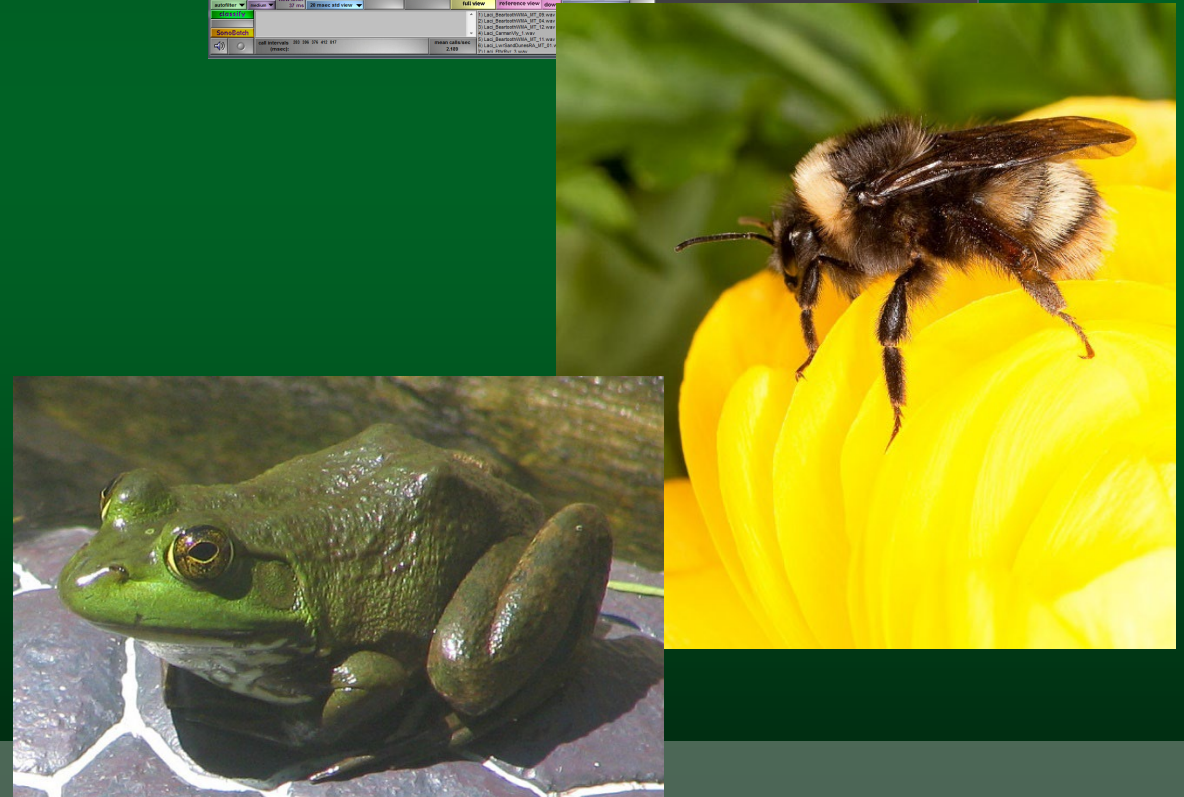
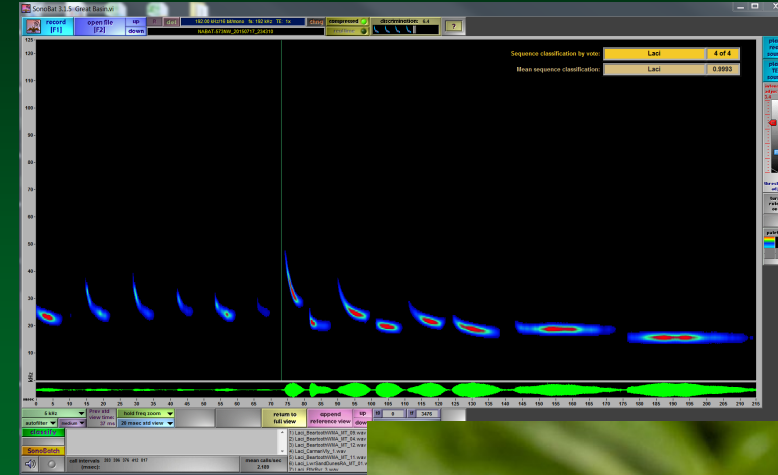
• Butterfly Ecology – With Student Co-Authors

- **Schorr et al. 2020.** Multi-year occupancy of the hops blue butterfly (*Celastrina humulus*): habitat patch colonization and extinction. *Journal of Insect Conservation*



Zoology Future Directions

- Population estimation of rare species
 - Bats susceptible to WNS
 - Amphibians
- Bioacoustic Monitoring
 - Bird and Amphibian Surveys
- Invertebrate conservation
 - Bumble Bee monitoring
- Invasive species
 - Bullfrog and Red-eared Slider
- Disease ecology
 - White-nose Syndrome
 - Chytrid Fungus

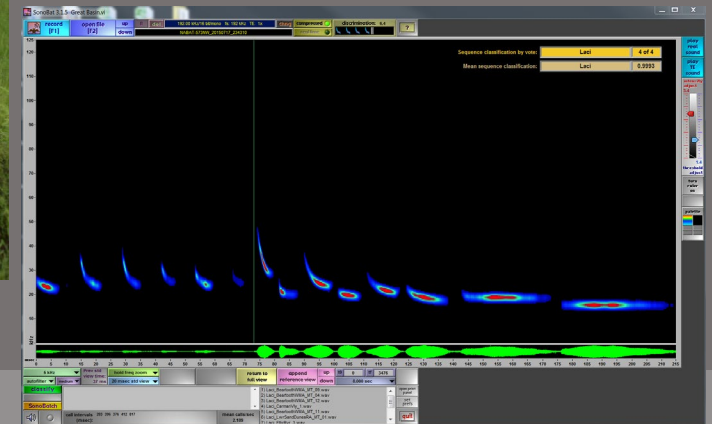
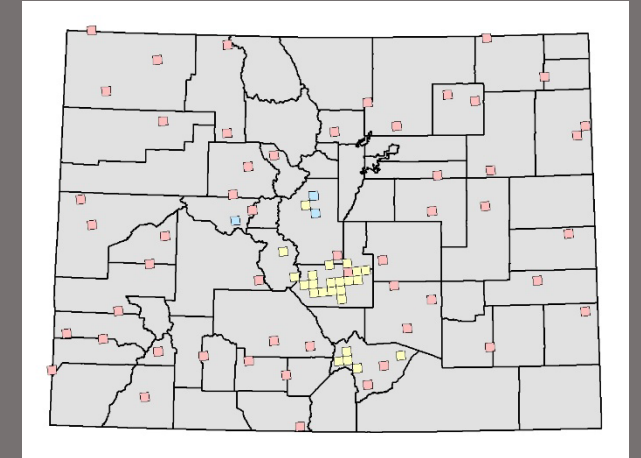


North American Bat Monitoring Project (NABat)

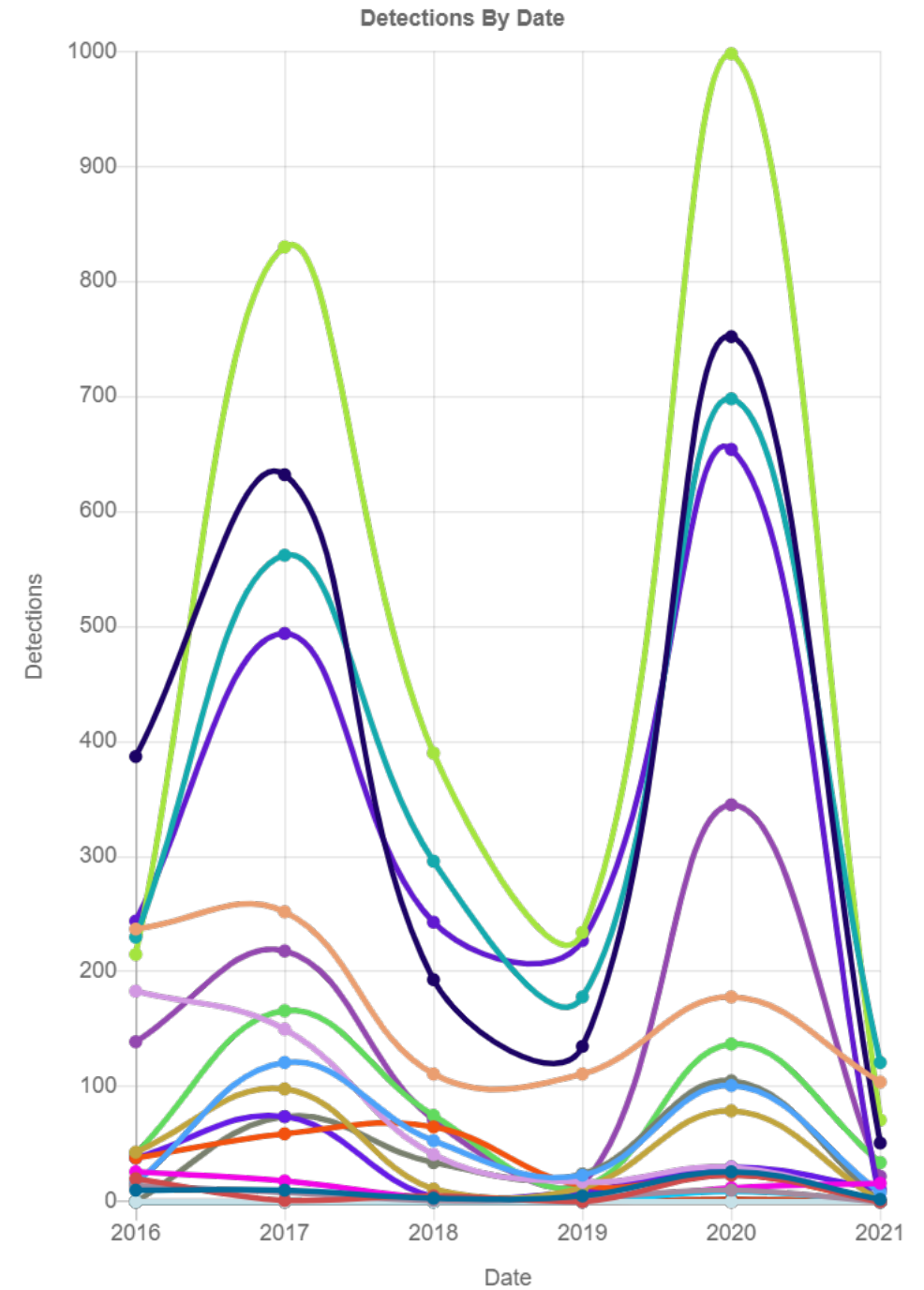
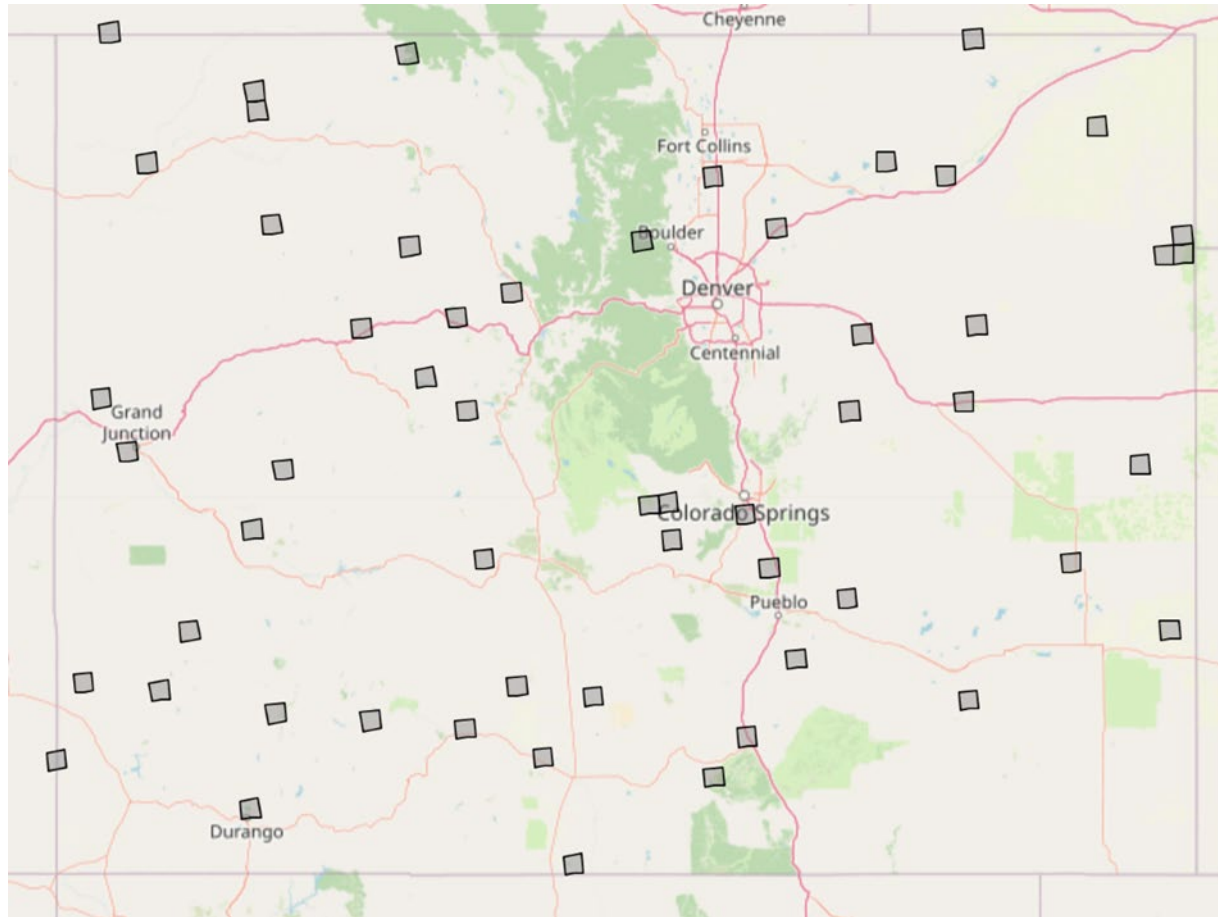
- *USGS-led Program*
- *State-wide coordination in CO with CPW & CNHP*
- *BLM Gunnison Field Office acoustic analysis*
- *Rocky Mountain National Park*
- *USFS Collaboration*



NABat



NABat Monitoring



CNHP and the PSICC

Pike and San Isabel National Forests, Comanche and Cimarron National Grasslands




With John Sovell



With Brad Lambert

Forest Service
U.S. Department of Agriculture

In Partnership with Colorado Natural Heritage Program



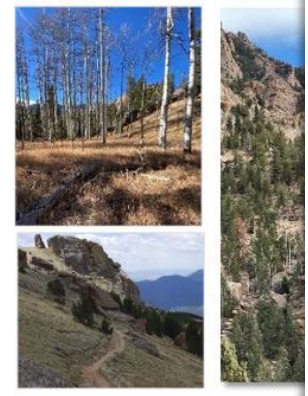
Indigenous Fish and Wildlife Management Strategy

Forest Service
U.S. Department of Agriculture

In Partnership with Colorado Natural Heritage Program

Lost Creek Watershed

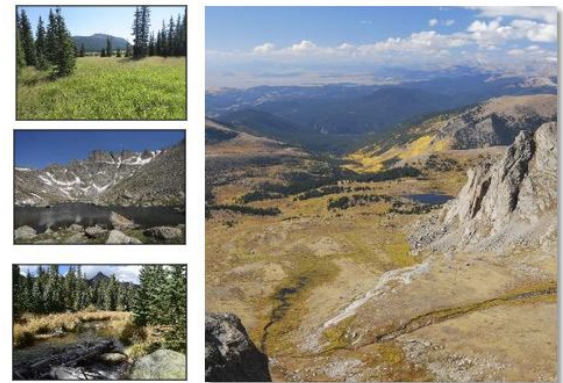
Pike-San Isabel National Forests



Indigenous Fish and Wildlife Management Strategy

Mt. Evans Wilderness

Pike-San Isabel & Arapaho-Roosevelt National Forests



With Lee Grunau