CBWG
Colorado Bat Working Group
254 General Stevens Building
Ft. Collins, CO 80523
Tel: 970.491.2541 Fax: 970.491.3343
www.batworkinggroup.org

2021 Colorado Bat Working Group Meeting
9am - 3pm, October 6, 2021

AGENDA

Greetings and introductions, housekeeping (Neubaum)
- Western Bat Working Group meetings (Schorr)
- Officer/Board member service, web administrator
- Matrix update: Moving forward (Navo)

COVID19 implications for bats
- Background on SARS-CoV-2 (Fox)
- Mexican free-tailed bat challenge trials (Fox)
- Winter risk assessment summary (Neubaum)
- Status of bat work in CO: rehabbers, nuisance operators, monitoring and surveillance efforts (Woods)

White-nose Syndrome
- General updates at the national and state levels (Jackson)
- Implications of bat swarming for WNS spread (Neubaum)

Little Brown Myotis Species Status Assessment
- Addressing modeling/content concerns (Jackson)

North American Bat (NABat) Monitoring efforts
- 2020 Colorado accomplishments (Siemers/Jackson/Reichert)

Thermal video monitoring efforts
- Video tracking software used at bridges and wind turbines (Aaron Corcoran)

AML summary/Withdrawal of mines (Navo)

Adding Acoustic Data to Bat Amp (Navo)

New CBWG web page info (Neubaum)
- Nuisance/Exclusion page
- Annotated CO Bat Lit page

Recreational climbing in relation to bats (10-15 min)
- Climbers for Bat Conservation update and cave buffer guidelines
- Castlewood Canyon S.P. bat/climbing investigations (Carpenter)

Seasonal roost use, movements, and survival of COTO (Siemers)

Round table

Minutes

Attendees: Mylea Bayless (BCI), Tina Jackson (CPW), Delana Freidrich (CPW), Kirk Navo (HeadFirst Biologic), Mike Sherman (CPW), Jeremy Siemers (CNHP), Karen Fox (CPW), Brian Reichert (USGS), Lance Carpenter (CPW), Mary Wood (CPW), Aaron Sidder (BCI), Missy Dressen (USFS), April Estep (CPW), Dane Smith (USGS), Aaron Corcoran (UCCS), Chris Branigan (rehab professional), Andrea Schuhmann (CNHP), Donald Solick (Vesper Bat/BCI), Kevin Castle (Veterinary Consulting LLC), Madison Simmons (UCCS), Angela Dahlby (USGS), Susan Spaulding (Boulder County), Brad Udell, Frankie Tousley (USGS), Will Keeley (City of Boulder), Kristin Philbrook (NPS), Mikele Painter (USFS), Jonas Haakansson (UCCS), Larisa Bishop-Boros (WEST, Inc), Robin Sell (BLM), Mary Kay Waltry (NPS), Dan Neubuam (CPW), Rob Schorr (CNHP/CBC)

Western Bat Working Group update (Rob S.)

2021 virtual meeting - ~300 attendees, modest profit, well-coordinated and engaging

2023 in-person meeting – still being debated depending on pandemic and human behavior, looking at a location in British Columbia (likely Victoria)

2023 Board – Rob (pres), Shannon Hilty (VP, MT), Larisa Bishop-Boros (Treasurer, WY), Monique Metza (Secretary, WY), Dan Neubaum (At-large, CO), Mandy Kellner (At-large, BC), Nate Fuller (Pres appointee, TX). Objectives for the next couple of years: transition to new Treasurer and accounting system, develop Diversity, Equity, & Inclusion Statement for WBWG, 2023 Conference Planning, revamping species profiles on website, revamping scholarship process.

CBWG website update (Dan)

Rob is looking to hand-off responsibility for webmaster. Andrea S. volunteered to take on this role since the website is hosted at CSU.

CBWG Matrix update (Kirk)

Kirk suggested re-ranking Colorado's species conservation status and threats since it has been some years since that happened. Visit the Matrix here: https://cnhp.colostate.edu/cbwg/batmatrix/

Covid SARS-Cov2 update (Karen/Mary)

Notes presented here are condensed and incomplete, please see Karen's and Mary's presentations for details.

Bulleted take-aways

- Bats have an assortment of known coronaviruses, but so do domestic animals, like pigs, dogs, cats
- Pangolins are no longer considered a possible intermediary for Cov2, because of the distance of pangolin populations and likely exposure site at Wuhan market
- Bat coronaviruses were undergoing mutation pressure prior to Cov2 outbreak, and this increase in diversity may have eliminated the need for an intermediary
- Bats up-regulate processes to fight viral exposure, but down-regulate post-exposure immune response, which seems to prevent mortality or prolonged sickness
- Investigations of bat susceptibility to Cov2 have identified *Tadarida brasiliensis* as a potential host based on ACE2 receptor conformation and spike protein affinity. However, exposure tests have yet to confirm TABR as a host.
- Dominguez et al. 2007 – sampled CO bats and found a host of alpha-coronaviruses but no beta-coronaviruses
- Osborne et al. 2011 – sampled urban CO bats and again found alpha-coronaviruses and some bats would test positive at one time, then test negative at a later time
- Dr. Rebekah Kading (CSU Vet School) – Preliminary results of sampling results of small mammals from CO. 3/120 animals sampled had beta-coronaviruses (including deer mice). 4/35 bats had coronaviruses. 0/35 species of bats had beta-coronaviruses.
- Big brown bats do not appear to be susceptible to Cov2 from exposure tests.
- Cook et al. 2021 – risk of transmission from humans to bats is very low

Question: Would Cov2 persist in guano? If that guano is in the shade, it is possible. If exposed to UV light, not likely.

Scientific Collection permits in CO and Cov2 (Mary/Tina)
2020 – No handling
2021 – In spring, handling was allowed with appropriate protection
- In summer, allowed rehabbers to treat bats, but could not release them
- After free-tailed trials suggested they are not susceptible either, treatment and release of all rehabbed bats was allowed to resume.

WNS updates (Tina/Brian)
Tina shared the WNS website (https://www.whitenosesyndrome.org/) to demonstrate spread and location of CO in that spread
2021 big news: MT and NM sites are testing *Pd* positive

Question: Are there any efforts to understand migratory patterns of bats to better model/understand potential WNS spread in CO? Yes, including NABat monitoring, Dan Neubaum's telemetry work to understand seasonal migration of some *Myotis* at Colorado National Monument.

Brian took us through some of the viewing and data presentation tools available on the WNS map on the WNS website. In particular, you can download maps and the tables that create the map for your own presentation needs.

WNS Case Definitions - https://s3.us-west-2.amazonaws.com/prod-is-cms-assets/wns/prod/de91e7d0-9c0e-11e9-ad22-19882a049409-WNS-Case-Definitions_v5162019_FINAL-clean-logo.pdf

General NWHC website with good WNS info/specifics (where the case definitions can be found) - https://www.usgs.gov/centers/nwhc/science/white-nose-syndrome?qt-science_center_objects=0#

Bat swarming and the potential for WNS spread (Dan)
Dan took us through the Neubaum and Siemers 2021 publication that documented bats with bat-substrate contact and bat-bat contact during this fall event. They studied 14 caves from (2011-2014), recording behaviors inside and outside. They saw 6 copulatory events. They attached light-tags with colors specific to caves and looked a movement among caves. Dan and Jeremy suggest this is a prime opportunity for bats with Pd to potentially spread the spores among individuals and geologic resources.

Question: How long does swarming last? From approximately August to October (peaks mid September), but it's variable

Little brown bat Species Status Assessment (Tina)
As part of a new species conservation assessment tool for USFWS listing process, the Species Status Assessment was developed. In March 2020, USFWS requested data on tricolored bats, northern long-eared bats, and little brown bats (MYLU) to develop a comprehensive SSA that summarized what is known and attempts to model trends and necessity for listing. In May 2021, the 100+ page SSAs for each species were released with a request for review.

The problem with the SSA for MYLU is that the models used hibernacula counts as the data for projecting trends and population abundance. Thus, in the West the estimates were woefully under-estimated. The MYLU model was subjected to a second review due in July 2021. The model is still based on hibernacula counts, with rough estimates of Rocky Mountain populations at approximately 60 individuals and Great Plains populations at approximately 20 individuals. It will be important for western bat biologists to track the process of listing and provide input on further review requests.

Brian highlighted the value of NABat data for developing better estimates and models for western bat population dynamics.

Angela pointed out that SSAs are "living" documents and are subject to change, but Tina reminded the audience that the listing status of MYLU will be based on this current SSA.

NABat monitoring in Colorado (Jeremy)

Jeremy took us through the on-going NABat monitoring occurring in Colorado, which includes the 10x10km GRIT-sampled acoustic plots and roost-site monitoring. In 2021, >50 grids were sampled (~36 BLM, ~10 NPS, ~10 USFS).

Jeremy took us through the Colorado data using the NABat data portal. He entered the site using the "Partner Portal", but Brian recommended logging-on via the "login.gov" access point.

Brian took us through some of the data submission and access points on the website (see tutorials at the NABat site), and mentioned that trainings will likely be occurring in the near future. Brian, and others, advocated for any project leaders recording acoustic and monitoring data to submit those data to the NABat database. There was some discussion of how Bat AMP relates to NABat dB (see discussion below "Bat AMP (Kirk)"). Brian reminded members that a host of monitoring data can be submitted to NABat and encouraged submissions from other on-going acoustic monitoring projects.

Discussion: there was discussion of the value of mobile transects for eastern areas of CO without a resolution when/how those would occur

Question: Can data that isn't following the GRITS sampling process still be submitted? Yes

Question: What capacity is there for Jeremy (CNHP) to analyze submitted acoustic files from other areas of CO? That depends on how many and how much funding there is to support that work. Dan, Kirk, and other suggested they are available for such data processing.

Question: What standardization exists for analyzing acoustic files and standards for each species? Jeremy has developed guidelines for processing, but not species-specific. That is still done based on the talents of each person analyzing the files, which presents some variability in what is being submitted and used.

Question: Will NABat eventually request the raw acoustic files instead of processed data? Yes, eventually, to eliminate the variability in such analysis.

Question: When will NABat be used to develop more-refined, better-informed distribution models? It's on the agenda.

Videography tools for understanding bat movement and populations (Aaron C.)
Aaron C. presented new software called ThruTracker that he developed for understanding bat movement from roosts and near wind turbines. He presented ThruTracker use at caves/mines, from a bridge/overpass, and at a wind turbine. See Aaron's website: https://sonarjamming.com/thrutracker/. ThruTracker can produce movement projects in 2D and 3D. Based on preliminary assessments, the accuracy of bat counts from the software varies from 0.7-7% depending on the resolution and contrast, which could be a reliable means of monitoring roosts over time.

Question: Can it tell birds and bats apart? Not well, at this point

Abandoned Mine Lands evaluation in 2021 (Kirk)
In 2021, Kirk evaluated 242 mines in 11 mine projects. Since 2013, 635 bat gate recommendations have been submitted for the 2400 mines that have been evaluated over that time. It is unclear how many of those recommendations have produced bat gates at the mine entrance.

Aaron S. commented that there are more and more "cable nets" being installed instead of gates. Aaron was able to share pictures of such nets. BCI has continued to have a strong presence in southwestern Colorado, evaluating mine closure needs.

Question: Are BLM gate recommendations getting back to CPW? Robin will find out and share those data.

Bat AMP (Kirk)
Bat AMP is a database developed by Ted Weller of USFS. Kirk was asking about the overlap/redundancy of Bat AMP and NABat. Brian explained that he has worked with Ted to incorporate all that was in Bat AMP into NABat, but there still needs to be some data cleanup. The Bat AMP site is expected to be retired in the near future to reduce confusion.

New CBWG website modifications (Dan)
Dan proposes to include a page(s) on the CBWG website that is a Literature Cited for all Colorado bat publications. Also, Dan has prepared a Nuisance and Exclusion page that is a needed resource for those looking to safely exclude bats. These will be incorporated soon as the webmaster position transitions from Rob to Andrea.

Climbers for Bat Conservation update and management guidance (Rob)
Rob presented the amount of data submission (~140 records from 6 countries) of bat encounters from climbers. These data are painting a more-complete picture of rock crevice roosting of bats. Rob reported on a management chapter in prep with Dan, Zac Warren (Zion NP), and the Access Fund (Boulder, CO) to address bat conservation at caves that are near climbing routes. This document is being modified for a chapter in The Climbing Initiative's online guide for climbing management.

Castlewood Canyon State Park – bats, telemetry, climbing (Lance)

Lance presented his work at Castlewood Canyon State Park, Douglas County. They surveyed to caves: Neanderthal Cave, which is a crack cave; and Dungeon, which is a true cave. They found approximately 50 bats at Neanderthal and approximately 110 bats (depending on season) at the Dungeon. Castlewood Canyon SP has approximately 500 routes. They telemetered big brown bats, little brown bats, and a small-footed bat. They uncovered at least 5 maternity colonies and found bats using a variety of areas of the canyon with some bats being along routes and some not. Lance thought it was interesting the amount of roosts located in less popular climbing areas.

Townsend's big-eared bat monitoring – Elephant Mt Mine (Jeremy)
Jeremy and Dan have continued monitoring COTO populations at the Elephant Mt mine, which is a geothermally-warmed mine near Carbondale. In the summer temps can be near 98˚F and in the winter around 80˚F. There is 1 opening and there is a gate on the mine. They have been tagging bats with PIT-tags for nearly a decade. Jeremy shared the level of tag loss seen in COTO; they found that COTO do not always lose tags right away and may retain them for years before losing them. At least 7 COTO have lived 10 years. Jeremy presented survival rate estimates for COTO (see Jeremy's presentation). Jeremy showed how some of the maternity roost COTO are being found at nearby (30 mi) hibernacula. There was a discussion about the utility of bat banding, branding, or tattooing as a secondary marking technique with PIT tags.

Cave closures (Missy)
Missy shared that there have been no substantial changes to cave closure status on USFS lands

Citizen science projects for NA Bat (Missy)
Missy shared that there is a Rocky Mountain Wild, USFS, and CNHP project to use citizen science to identify and monitor roosts in rural buildings and structures. Also, there is progress on using citizen scientists to look for bats in scree fields.