

California Bat Working Group Meeting – Tenaya Lodge, Fish Camp

Friday February 8, 2019: 9:00 – 5:00

Notes posted in Sept. 2019 from Heather Johnson and she inserted updates (marked by **) and related email content.

- Scott Osborn set up Skype for Business to share projected images with remote participants.

Introductions

- 4 co-chairs: Scott Osborn (California Department of Fish and Wildlife [CDFW]), Bronwyn Hogan (U.S. Fish and Wildlife [FWS]), Pat Brown (Bat Specialist consultant), and Heather Johnson (Bat Specialist consultant).
- A minimum of 37 persons were in attendance, Scott Osborn asked for raised hands indicating how many students, agency folks, private individuals? - seemed like an even mix.

Overview of various bat working groups:

- California Bat Working Group (CBWG): has been meeting regularly for approx. 20 years; in recent years our annual meeting has been held in conjunction with the Western Section of The Wildlife Society conference but we would like to meet more often, and add webinars. In 2006 we provided “Guidelines for Assessing Impacts to Bats at Wind Energy Development sites in California” which were incorporated into a California Energy Commission document, and we issued a position statement on protecting habitat for the western red bat in the Central Valley.
- Western Bat Working Group (WBWG): representatives from 15 states, three Canadian provinces and two Canadian territories meet biennially and hold monthly conference calls, had newsletters up until 2015 available online <http://wbwg.org/newsletters-2/>
- CDFW Bat Working Group: intra-agency.

Updates from regional bat groups:

- North Coast/Humboldt Bat Group: Scott provided slide on behalf of the group listing activities including three working group meetings held where they discussed new sampling gadgets and techniques, current and proposed research and monitoring projects, and potential development projects (primarily related to wind development and bridge replacements or modifications) as related to local bat species and habitats; proposed Humboldt Wind Energy Project, Lauren Dusek coordinated a group response to the public comment period for the operation of 60 turbines; heard from local Humboldt State graduate students (Amon Armstrong) on assessing bat use in redwood basal hollows (Amon Armstrong was present at meeting expanded on his research and answered questions); 2018 field trip included joining Ted Weller (USDA-FS) and HSU students to sample in Humboldt Redwood State Park; talked bats and sampling to elementary kids at a Science Night; coordinated a Bat Ecology and Field Techniques Workshop in Eureka through the California North Coast Chapter of the Wildlife Society. The workshop was instructed by Ted Weller (USDA-FS), Dave Johnston (H.T. Harvey), and Joe Szewczak (Humboldt State University). The three-day workshop, with two nights field sampling, for 33 participants raised about \$3,500. The next steps in 2019 include identifying and implementing a plan to

provide grant opportunities for students/researchers to fund north coast bat research. And, in turn, request that the recipients debrief to the working group about their study.

- Sacramento Area Bat Café: Leila Harris described various activities such as Yolo Causeway count, Heather Johnson boasted that this regional group has the best bat-themed desserts, they have performed group field work, had guest speakers including Joe Szewczak, and hosted an acoustic workshop with Chris Corben and Kim Livengood.
- Bay Area: Gabe Reyes reported they have held two meetings. Heather will add this new group to CBWG website. In an email to Heather prior to CBWG meeting, Bethany Schultz said they met in March and April, discussed goals for the group including literature reviews, project critiques, acoustic call verification, and potential projects including MOTUS towers, guano key, view/work with Museum of Vertebrate Zoology at Berkeley bat collection.
- SoCal Bat Group: Jill Carpenter reported they have had brainstorming sessions to address unscrupulous wildlife control operators illegally exterminating bats, discussed humane exclusions, NABat collaborations and outreach with cavers, climbers, etc., gray literature, had a workshop for rehabilitation workers to set up a network, met with the Los Angeles Natural History Museum, put together a promotional booth, and enjoyed field trips.
- Kern River Bat Group - Erika Noel provided slide, started in 2018, participants include NWR Kern County water District, students, agency folks, and consultants; had a bat identification workshop, CEQA discussion by Randi McCormick, species profile series, discussed rabies vaccinations, review one species per meeting, discussed mock project scenarios, provided pup-catchers for Yuma myotis maternity at California living museum zoo, have a google workspace. Among their 2019 goals is to obtain species distribution baselines.
- General discussion with Kern River group's Alex ___ about electronic means of facilitating communication among all groups, he will send link to join to listserve.
- North Inland San Luis Obispo County Bat Group: Bill Haas announced the formation of this new group, described first meeting, and asked to add group to CBWG website (action item for Heather).

Updates from WBWG including Tulsa meeting; and Scholarships

- Pat Brown encouraged regional bat groups to apply for Bonnie Bat Scholarship.

Online Resources Update

- CBWG website: Heather asked for round of applause for Natalie Downe and Steve Norton founders, Heather is an editor, all CBWG co-chairs can edit website. We navigated website on screen and admired several aspects; discussed the literature spreadsheet page.
- iNaturalist Community Science Roost Monitoring Project: Gabe Reyes presented slides on database fields, fields, terms of use, ideas for development, trial version on iNaturalist now, Gabe welcomed feedback. Pdf of slides is part of this document.
 - Pat and Jill Carpenter said great idea.
 - Project Wildlife in San Diego has pop-up warning on their website "don't touch bats" - this database could have pop-up warning not to disturb roosts.

- Dave Johnston and Leila brought up the fact that roosts can be “loved to death” by too much visitation – maybe roost camera could be mounted?
- “Got Bats?” campaign?
- DataBasin and Google Drive NABat tools: Bronwyn described a push to get more cells covered, said the USFS has been instrumental , databasin.org and NABat monitoring.org, there are training videos available on website, ex. how to set up detectors. The intent is to put people together/coordinate. <https://www.nabatmonitoring.org/>
- Asked what if a person is only able to survey a low-priority cell? Still useful to have this data!
- Bill Haas mentioned problems with access to his cell; he will bring them up at lunch breakout meeting.

Other Business

- Leila Harris shared photos and alerted group to unique Townsend’s big-eared bat (and myotis) roost in private barn at Oregon House Farms in Oregon House, California. This is a rare example of habituation and mutual tolerance - the owner sells meat, honey, produce, etc. as well as antiques/Americana to the public on weekends out of this barn while roosting maternity colony is present. The owner tolerates urine and guano everywhere, cleans it up weekly. The owner would like it if there were a way to get financial support for a weekly cleaner because the clean-up is becoming too challenging for her to do solo. She also wanted to know of options for keeping the guano out of the main public area. Bill Haas suggested an agricultural conservation easement and offered to visit and work with the owner to set up the easement. **Addendum: Bill Haas contacted owner who stated that at this time she is not interested in creating the easement; Heather visited this barn in the late summer and said it was a fabulous experience having the bats roosting overhead as she shopped, and the owner did a great job with natural history interpretation. The owner would like more bat enthusiasts to visit the barn. She would love if a meeting were held there or research study done. Owner could use help with cleaning, interpretation, and financial support (go buy some meat or produce there and see the bats!).
- Yolo Causeway Bat Count: Leila Harris described community science project at Yolo Bypass causeway between West Sacramento and Davis. Leila shared photos and described the Yolo Causeway, a three mile long structure with 16 concrete crevices, maybe up to 250,000 bats. She wants to generate calibration between methods, volunteers perform daytime visual counts utilizing binoculars and lights, divide the causeway into grids. Leila requested feedback on how to reduce disturbance, asked when is the best time to count? In 2018 volunteers counted on June 1 and that was considered too early for the full maternity colony to be present but was conservative for the sake of avoiding pupping time. She asked for experienced volunteers to guide other volunteers. After the count, randomly selected causeway sections will be recounted. Does anyone have concerns? Are there any volunteers?
- Dave Johnston reported a high count of 68,500 at the Cosumnes River causeway; he thinks he counted around 34,000 in 2018. We agreed Mexican free-tailed bats likely switch

between the Cosumnes River causeway and Yolo Causeway, and likely a good idea to count them concurrently.

BatAMP presented by Ted Weller: guided group around the acoustic monitoring portal, asked that we please submit records. The long term goal is to share data, someday to address questions like how do bats move? When do they start to move or arrive? Where are unusual occurrences?

Joe Szewczak said someday soon Sonobat will be able to upload directly to NABat.

Pat Brown asked if there is any chance data will be stored by NABat? Ted replied at this point no vouchers or files are stored, just submit results.

Bats Near Me: we watched online as Natalie Downe toured this application, which pulls information from iNaturalist. She had some great photos of hoary bats hanging in pine trees on Farallon Islands. Let Natalie Downe know if you need help, or have ideas on what to add to it.

WNS Update

- Bronwyn Hogan and Scott Osborn said there is a debate over what to call low-threshold detections of the fungus, referred to as “equivocal results”, for example there has been such a detection near Chester, California. These low threshold detections are directing more intensive sampling.
- Scott asked that if we know of a roost site with myotis present in early spring, please talk to him about it.
- WNS Bat Skin Lipids study: Scott described Craig Frank's study looking at how lipid profiles in the skin of different species affect susceptibility to the fungus; Craig Frank is looking at lipid inhibitory properties.

Genetic tissue bank project; coordination of tissue sampling- new CDFW project, ask Scott if you can help.

- It was asked if bat guano could be used to detect white-nose spores?
- Cori Lausen’s swabbing protocol is useful for genetic tissue? Leila Harris said DNA from swabbing is not good enough quality.
- Concern regarding whether or not people doing wing punches are properly trained and permitted.

Incidentally mentioned that Museum of Vertebrate Zoology people are happy to take bats following rabies testing, i.e., with open craniums – do we have names for MVZ contacts?

CDFW Scientific Collecting Permit new procedures: Scott said that some people are finding the new procedures a challenge. His advice for filling out the “planned undertaking” section is to be as broad as possible, for example working on “all bats throughout the state”.

California State Bat: pallid bat as state bat- Dave Johnston needs us to contact senators and our local representatives, and ask bat rehab presenters to promote with public. Heather will follow up with email to CBWG listserv.

Caltrans Mitigation Study: Dave Johnston and Kim Briones spent two summers visiting about 80 bridges; results not available yet.

California Bat Conservation Plan: a big project, ongoing for many years, Scott reviewed a couple options on the plan to move project forward.

Should we have a California bat blitz? Bronwyn said there is interest to do one at Yosemite National Park, maybe in the last week of September? Noted that Nevada Department of Wildlife is having one in Mesquite, Nevada -- find out when to avoid date overlap.

eDNA techniques: Dave Wyatt described the technique and tools. He has found bat DNA in water samples using handheld quantitative PCR assay in the field. Dave said it takes about 45 min to sample for chytrid fungus, may be useful for WNS fungus, Pd.

Environmental Review Working Session/Group Discussion facilitated by Heather Johnson

Jill Carpenter and Leila Harris spoke about replacing habitat. Jill stated that humane eviction is not mitigation if there is permanent roost loss. The regional groups are building guidelines identifying the level of confidence for current practices. Leila stated that currently much of what we have for tree removal methods is based on professional judgment and anecdotal evidence; others added we have professional judgement and X Y Z gray literature; Bill Rainey said we have better than anecdotal evidence, for example telemetry research in other states have proven myotis and other species roost in trees.

Heather's slides- Environmental review for bats occurs as part of:

- Forest Practice Act - Calif. Dept. of Forestry and Fire Protection, Timber Harvesting Plans
- Surface Mining and Reclamation Act - Calif. Dept. of Conservation, Division of Mine Reclamation, Abandoned Mine Lands Unit
- California Public Utilities Commission (CPUC) - infrastructure and services, privately owned utilities
- Federal Energy Regulatory Commission - hydro, gas, electric
- California Energy Commission - renewable energy
- California Environmental Quality Act (CEQA) - bat measures in Mitigation and Monitoring Plans
- CDFW – Lake and Streambed Alteration Agreements, often involve tree removal and have bat avoidance/protection measures

Some resources include: (1) CDFW Conservation Lecture Series “Recent Advances in Effective Bat Mitigation” and “Conserving California’s Bats Through the Lake and Streambed Alteration Program and California Environmental Quality Act”; (2) Bat Tree Habitat Key, battreehabitatkey.co.uk includes thermal imaging and scoping survey methods; (3) German technical guidelines for wildlife species in tree hollows and cavities; and (4) Caltrans/West Ecosystems Analysis- Technical Guidance for the Assessment and Mitigation of the Effects of Traffic Noise and Road Construction Noise on Bats, July 2016 available at <http://www.dot.ca.gov/env/noise/docs/noise-effects-on-bats-jul2016.pdf>

Heather described CDFW streambed alteration project example, and brought up two types of questions “what qualifies a biologist?” Agency-approved, in the UK the Bat Conservation Trust produced a standards for ecological consultants list; and “what are the standards for survey zones?” She has observed requirements for 50, 100, 200, 250 foot buffers.

Heather concentrated on defining “habitat assessment” versus “pre-construction survey” and said the two are often confused. She said mitigation measures that only require pre-construction survey just prior to construction kick-off can lead to communication problems, lack of budget to mitigate for bats, delays in schedule, the problem of personnel and equipment already mobilized by the time bat survey is performed, and can propagate ill-will in construction community towards bats. She cited a CDFW streambed alteration permit protection measure that required “...visual inspection ... for potential roosting features no more than 48 hours prior to disturbance ...” and a CEQA mitigation measure that required “...a survey for roosting bats or maternity roosts shall be performed by a qualified biologist (approved by CPUC) within seven (7) days of the construction start date ...”

Heather stated these measures did not provide enough time. While it is important to do pre-construction survey not too far ahead of impacts, the habitat assessment needs to be done during planning. General discussion seemed to agree that bats must be addressed in project planning stage.

Heather proposed tree-roosting habitat guidelines to be posted on the CBWG website:

Addressing bats for tree removal projects is a two-phase process:

Phase 1- Perform ground-based assessment of potential roost features (assess habitat) and the potential to affect (“bats” or “maternity habitat”) and provide a removal plan; and

Phase 2 - Perform pre-construction surveys and monitor tree removal.

General discussion didn’t seem to be in agreement for these particular guidelines/this particular wording, although seemed most attendees were in agreement that guidelines on the website concept was a good idea.

Greg Tatarian remotely responded to this topic (on the phone line) but attendees couldn’t hear him.

** Currently Sept. 2019 Heather is proposing to post on website just the definitions of habitat assessment and pre-construction survey to point out the differences between the two.

Roost Monitoring Working Session/Group Discussion facilitated by Pat Brown

Pat’s slides - Importance of Roost Monitoring: Useful in determining status and population trends of colonial species. It is one of the methods of NABat.

- Where winter hibernacula are unknown, warm season roost monitoring can be used as an indicator of possible declines caused by WNS in susceptible species.
- Important to track maternity colonies (and hibernacula) for Townsend’s big-eared bat to ascertain if future state listing is warranted.

Methods:

- To be scientifically valid, individual roosts should be monitored by the same methods at the same time of year in a manner that does not disturb the bats (and skew the results). Via email Scott asked how much variation in monitoring date(s) between years would be acceptable?

Could we develop a good rule of thumb? Conduct surveys within one week, two weeks, a month?

- For maternity colonies, exit counts using night vision or thermal imaging cameras provide permanent records. Counts should be done in the spring when only pregnant females and/or non-volant young are present, or mid-summer after all the juveniles are flying. The time of parturition can vary between species and years, and at different latitudes and elevations within California, so these variables need to be considered when selecting a roost for monitoring and date(s) for monitoring of selected roosts.
- During the optimal time frame, exit counts should avoid inclement weather (rain and wind >10mph). Some bat species appear to be lunar-phobic and all individuals may not exit in the 90 minutes after dark during the week before the full moon. When first selecting a roost for long-term monitoring, conduct an exit count a few nights before full moon, and then a few nights after the full moon (both counts within the same week). Via email Scott asked can a list of known/suspected lunar-phobic species be provided? For other species, is it known that they are NOT lunar-phobic, or is it unstudied/unknown? Pat replied via email that for most species we don't know, but definitely California leaf-nosed bat is lunar-phobic, and she has observed dramatic differences in fringed myotis roost emergence likely due to moon phase.
- Not all roosts need to be monitored every year, but since some roost changing can occur between years (sometimes in response to roost disturbance), counting nearby roost sites in the same year is important, especially if a significant increase or decrease occurs in the primary target roost. This seems like an essential consideration; especially given some species are known to routinely switch roosts even within a single maternity season.
- To determine long-term trends, CDFW needs to provide a template to record data (Arizona Game and Fish has a standardized form) that provides the observers, methods, weather, moon-phase and other environmental variables. CDFW needs to determine which roost sites are key for a species in different geographic areas and for different species in the same geographic area. Scott noted that he'd like CBWG to offer suggestions on what makes a roost a "key" roost for monitoring. Pat replied in an email regarding this question, several possible criteria for key roosts are: a special concern species (e.g., Townsend's big-eared or California leaf-nosed), species that could be impacted by WNS (e.g., colonial myotis, big brown bat), or species that could be impacted by developments (e.g., Mexican free-tailed bat and wind turbines).
- Ideally, the selected roosts would be a single species (or mixed myotis); the roost structure would be physically strong enough to persist for at least a decade or longer; the roost would have few exit points for bats so counting would be simple and reliable; the roost would be relatively secure from human disturbance.
- Pat remarked that it is more important to survey more roosts, rather than same roost every year.

Why monitor roosts?

- Determining if climate related changes affect species range.
- Gabe Reyes commented roost monitoring also used to assess mitigation success.

- Assess impacts of wind farms and solar farms.
- Monitor the impacts of changes in habitat availability.

How to prioritize roosts for monitoring?

- Large maternity colony of any species.
- Roosts with historic data.
- Roosts that have different species in the same habitat; also roosts with same species in different habitats.
- Townsend's big-eared bat roosts.
- Roosts containing species that are susceptible to WNS.
- Roosts that will persist over decades.
- Roosts that may be within or adjacent to habitat areas that will be impacted.
- Dave Johnston said good to monitor cool, moist roosts where WNS will affect bats.
- Joe Szewczak said roost monitoring is important, ex. Indiana bat listed because historic roost monitoring data documented decline.

How to standardize methods?

- Arizona Game and Fish has a standard roost monitoring form – maybe California could use as a template?
- It was noted that bats can see red light -someone said “don't use red lights/filters”.
- Could we have an equipment lending library?
- Advised to Google “phantom lights” to find lower cost equipment for night work - these infra-red lights (for example) intended for “supernatural work” are cheaper.
- Someone asked, is it proper to close some of a roost's multiple openings to force bats to use just one entrance/exit, thereby facilitating a count? In general, the response to this question was to watch how bats use openings first before making decision.
- Local knowledge is important, for example rehabbers often have the best local knowledge on bat roosts.

Heather asked if anyone is following up Gary Fellers' work monitoring famous Townsend's big-eared bat roost at Pt. Reyes? Someone replied that Gabe Reyes does counts there. She suggested via email that we:

- critique and adapt Arizona standard form
- decide on 1-3 species for monitoring and discuss to see if we know of maternity roosts in several geographic areas within the state for comparisons
- debate spring versus summer counts
- look to bird models as precedents that we could emulate – for ex. tricolored blackbird- at what stage of breeding do they make count official given year to year variation?

- share what other states (ex. Washington) are doing for standardizing roost monitoring as part of NA Bat and see if we can adopt?
- ask for volunteers to kick-off based on initial plan?
- form a committee to address a few specific questions.

General Comments:

- Katrina Smith from Lava Beds National Monument addressed the group. She performs Mexican free-tailed bat counts in mid-July and early August when young are volant. Several people asked her questions about bat work and roosts on the monument.
- Dave Johnston mentioned 10 Mexican free-tailed roosts in Santa Clara County where he has observed declines and mentioned that Drew Stokes and Janet Tyburec have emphasized declines at roosts in southern California.
- Bill Haas mentioned work he is doing at 5 wooden bridges in SLO County, and at one of which he has found 9 species, year-round activity, and installed detectors and HOB0 loggers. He remarked "I could make an art book out of pallid bat social calls".