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March 20, 2014

Dear Coconino National Forest Planners

Bat Conservation International (BCI) appreciates the opportunity to provide input on the Coconino National Forest Draft Land & Resource Management Plan for the Coconino National Forest (Draft Plan). BCI's mission is to conserve the world's bats and their ecosystems to ensure a healthy planet. The Coconino National Forest (CNF) provides habitat for 21 bat species, almost half of all bat species known from the U.S. and Canada (Hoffmeister 1986, AZGFD 1993), making the Coconino one of the most bat-diverse National Forest in the country. Four of the species known to occur on the CNF, Townsend's big-eared bat (*Corynorhinus townsendii*), Allen's lappet-browed bat (*Idionycteris phyllotis*), spotted bat (*Euderma maculatum*), and western red bat (*Lasiurus blossevilli*), are on the Regional Forester's Sensitive Species list, with the last two also State Species of Greatest Conservation Need (SGCN), with another SGCN species, the western mastiff bat (*Eumops perotis*) also occurring on the CNF.

BCI has had an active Memorandum of Understanding with the Forest Service (FS) for more than a decade and works collaboratively with National Forests nationwide to integrate bat conservation and FS natural resource stewardship goals. BCI has also had a long-term presence in Northern Arizona, working with the CNF, Arizona Game & Fish Department (AZGFD), and multiple other partners on the conservation and management of bat habitat, including caves, abandoned mines, riparian areas, forests, and water resources, and addressing bat conservation and renewable energy production such as wind power and solar.

While adequate roost sites for hibernation and raising young are often considered a limiting factor for bat populations in much of the U.S. and Canada (Barbour and Davis 1969), and are important habitat components on the CNF, in the arid southwest the availability of surface water for drinking and insect-rich riparian foraging habitat (which also provides roosts in riparian trees) are thought to be equally if not more important for maintaining bat populations (Grindall et al. 1999, Adams and Hays 2008, Adams 2010). Due to their unique physiology and life-history traits, insectivorous bats , which comprise all of the CNF's bat species, have an exceptionally high physiological demand for free water, especially pregnant and lactating individuals, a key demographic for maintaining population levels in this long-lived and slowly-reproducing taxa (Carpenter

1969). Therefore, Plan decisions that affect surface water and riparian resources (including wetlands, springs, and cienegas) are paramount. The management and conservation of roosting habitat on the CNF, especially caves, abandoned mines, and live and dead upland and riparian trees, is also very important.

On a continental level, wind power generation is the current greatest threat to bats in the U.S. and Canada, killing an estimated 100,000-200,000 bats per year, however wind power generation does not appear to be a major current or immediate future land use on or immediately adjacent to the CNF, but wind power plants in the region can affect migratory bats that would also use the CNF. White-nose Syndrome (WNS) is a disease caused by an introduced cold-loving soil fungus that has killed more than five million bats in the eastern and Midwestern U.S. Conditions likely exist in some caves and abandoned mines on the CNF that could support the fungus, however its arrival in this region is not considered imminent. Changing climate, particularly as it affects water availability, associated riparian habitats, large-scale disturbance of roosts--primarily through wildfire and changes in internal cave and abandoned mine roost temperatures--is expected to have significant but difficult to predict effects on bat habitat suitability across the CNF and the entire southwest United States. The Coconino National Forest Draft Plan has the potential to make a significant contribution to the conservation of a large percentage of the region's bat species and populations.

Attached you will find our specific input and suggestions by chapter, topic, and or page.

Sincerely,

Daniel A.R. Taylor
Bat Conservation International

Comments on the USDA-Forest Service's Draft Land and Resource Management Plan for the Coconino National Forest, Arizona.

Bat Conservation International
March 20, 2014

General Comments

In general, the Desired Conditions were very good for the most important components of bat habitat, caves, abandoned mines, riparian habitat including wetlands, and forests, particularly snags, however, the Plan would benefit greatly from additional Objectives, Guidelines, and Standards, to help meet these Desired Conditions. For example, the Desired Conditions for most forest types included language describing the maintenance of snags and other mature or old-growth forest structure well-distributed at the mid and landscape level, however, there was little language in the form of Standards or Guidelines that called for the retention or recruitment of snags during forest management activities such as timber harvest, thinning, or prescribed burning. The same issue applied to the treatment of riparian habitats, but to a lesser extent. This is the one aspect of the Plan that we feel would provide the greatest improvement.

Chapter 2. Forestwide Management

At page 19, Guidelines for Watersheds, Management Approaches for Watersheds

- Insert "USGS" after "Rocky Mountain Research Station"; the USGS Western Science Center is currently collaborating with the Coronado National Forest to conduct relatively inexpensive and effective remote sensing techniques for evaluating hydrological conditions at the 4th and 5th HUC code scale.

At page 22, Stream Ecosystems, General Description and Background

- Second paragraph: "They provide wildlife habitat, increased biodiversity, and wildlife corridors, enabling aquatic, riparian, and terrestrial organisms to move along river systems and thus avoiding isolated communities.

- The general description for stream ecosystems (pages 21-22) does a good job of pointing out the ecological importance of this ecosystem, and the Desired Conditions are very thorough and appropriate, however, given their importance as cited, it seems as if there should be at least some basic Objectives, Guidelines, Standards, and or Management Approaches, as there are only Desired Conditions. Perhaps this is intentional assuming these are being left to the subsequent, related ecosystems, i.e. springs and riparian, but if this is the case, this should be stated, or they can be added to this section, and re-stated in subsequent sections.

At page 23, Wetland/Cienega and Reservoirs/Lakes

- Reservoirs should be considered separately from Wetlands, Cienegas and Lakes. While the pooled water created by reservoirs can support wetland vegetation, wetlands, cienegas, and the two natural lakes on the Coconino National Forest and their associated wetlands are very different ecological systems than reservoirs, and at least originally were created and maintained by historic hydrological,

geologic, and geomorphological processes, while reservoirs are by definition human-made features with a very different ecological character and processes. Perhaps the general categories, Natural versus Constructed waters, as used in the Kaibab National Forest Plan would be a better construct for organizing these features.

- The sentence "Wetlands on the forest are generally disconnected from groundwater and perched above regional groundwater tables and, thus, are completely reliant on precipitation for water input" would be more accurate if "generally" was changed to "often", as cienegas are widely considered a type of wetland (hydric soils, periodically inundated, hydrophyllic plants), and these are usually directly connected to groundwater (Mitsch and Gosselink 2007). It may be better to use the term "ephemeral wetlands", which would describe sites like Allan Lake, and they type of wetlands found on Anderson Mesa and Roger's and Duck Lakes.

- It should be noted in the second paragraph on page 24 that the greatest threat and direct cause of wetland loss is the channelization and draining of wetlands via the disturbance that you listed, i.e. grazing, road-building, and stock tank construction, as well as the lowering of water tables by stream down-cutting and incision.

- On page 24, the first paragraph after the table, the sentence "Wetlands provide water storage, wildlife habitat, recreation, fisheries, and livestock watering" should be modified to read "….and water for livestock grazing". This would imply that water from wetlands could be piped to a trough for livestock use. To suggest that wetlands would be purposely used as a watering site for livestock would be contrary to the Desired Conditions for this plan, and regional and national Forest direction and policy.

- The last paragraph on page 24, beginning with "Cienegas are linear stream associated with spring recharge…." Is not the generally accepted definition of a cienega (Mitsch and Gosselink 2007), also, see the following definition from the Kaibab National Forest Plan; "The wetland/cienega vegetation communities are associated with perennial springs or headwater streams where groundwater intersects the surface and creates pools of standing water, sometimes with channels flowing between pools."

At page 25, Guidelines for Wetland/Cienega and Reservoirs/Lakes, FW-Aq-WtInds-G

- 1**,** insert "*and managed herbivory* (i.e. livestock and or elk*)*" after "fire" so the sentence reads, "Where necessary to restore waterfowl nesting habitat, fire *and managed herbivory* may be used to remove vegetation and maintain wetland conditions that provide open water, cover, and other beneficial habitat features for wild. Managed grazing is a good tool for maintaining open-water habitat for waterfowl, drinking access for bats, and other open-water wildlife needs.

At page 26, General Description and Background for Springs

- Second paragraph, the first sentence should read, "Many springs are used as water sources for domestic use, livestock, ***and*** or wildlife." as springs are often used simultaneously for all three. In the next sentence, add, "..*such as snails, plants, and invertebrates*" after "endemics".

At page 26, Desired Conditions for Springs

- 5, Second sentence, after …"spring type", add "..*and site factors such as slope, aspect, and solarization*, and can include…."

At page 27, Objectives for Springs" FW-Aq-Spr-Obj

- For the superscript footnote 10, re-word to read, "*Where there is a structure in place to utilize water from a spring as a water source, the spring and any immediate associated riparian habitat should be protected, by fencing if necessary, and water should be piped out of the riparian area to avoid trampling of the riparian area around the spring"*.

At page 27, Guidelines for Springs, FW-Aq-Spr-G

- Additional detail that can be added to the existing guideline could include, , "…*including adequate spacing of wire or horizontal structures to allow access for pronghorn, deer, and other mammals, and adequate distance from pooled water to allow access by bats swallows, and nighthawks, which drink while in flight*"

At page 28, Biophysical Features, Caves, Cliffs, and Talus Slopes, General Description and Background for Caves, Cliffs, and Talus Slopes

- Second paragraph, suggested wording, "A cave's suitability for bats is determined primarily by cave microclimate; especially temperature and humidity, as well as protection from disturbance."

At page 28, Desired Conditions for Caves, Cliffs, and Talus Slopes, FW-BioPhys-Geo-DC

- 3. "Caves provide habitat for species that require specialized conditions for ***raising young, resting, and overwintering*** such as bats."

At page 29, Desired Conditions for Caves, Cliffs, and Talus Slopes, FW-BioPhys-Geo-DC

- 9. Add small mammals, *"Talus slopes are natural, generally undisturbed features that provide habitat for small mammals, lizards, snakes, land snails, lichens, and rare plants*…"

At page 29, Guidelines for Caves, Cliffs, and Talus Slopes, FW-BioPhys-Geo-G2.

- Blasting and/or controlled source seismic surveys requiring explosives or other disruptive techniques should ***where possible avoid or*** minimize damage to cave features.

- "To increase chances of survival for young wildlife, active roosts, nests, and dens should not be disturbed." "should not be disturbed" should be strengthened by replacing with or adding language such as "*Seasonal restrictions should be considered to reduce disturbance and increase chances of survival for young wildlife in known active roosts, nests, and dens in caves, cliff faces, and talus slopes*".

- 4, this should be changed to "***Where*** human alteration of caves ***can not be avoided, they*** should be mitigated to mimic pre-disturbance conditions and function or where this level of restoration is not feasible to prevent further degradation of the cave resource and functions.

- 6, change "Closure areas around caves or gating of caves should only be considered as a management practice when there are no other options to protect cave and wildlife resources and public safety" to …:when there are no other options" to " Closure areas around caves or gating of caves should ~~only~~ be considered as a management practice when they are ***the best*** ~~there are no other~~ options to protect cave and wildlife resources and public safety"

At page 30, Management Approaches for Caves, Cliffs, and Talus Slopes

- White-nose Syndrome (WNS) should be mentioned specifically, i.e. "Educate the public on disease prevention "best practices" for caves," ***especially related to preventing the introduction of White-nose Syndrome***"

At page 32, Vegetation, All Vegetation Types, Desired Conditions for All Vegetation Types, FW-Veg-All-DC*, Landscape Scale (10,000 acres or greater)*

- 2, Snags are not specifically identified in the linked definition of structure, nor coarse woody debris, so they should be mentioned specifically, or included in the definition of structure.

At page 33, Vegetation, All Vegetation Types, Desired Conditions for All Vegetation Types, FW-Veg-All-DC

- 7, "Vegetation provides ***ecologically*** sustainable amounts of products…"

At page 34, Guidelines for all vegetation types. FW-Veg-All-G

- 2, How is even-aged management used as a strategy for old tree retention (and as opposed to other silvicultural treatments)?

At page 38, Guidelines for Riparian Types, All Riparian Forest Types, FW-Veg-Rip-All-G

- 1, This should read, "In riparian areas, recreation activities, permitted uses, and management activities should occur at levels or scales that have ***no or minimal impact*** to soil function, riparian vegetation, and water quality." Saying "do not significantly impact" means it could be allowed to cause "considerable" impact, as there is not a quantitative measure or standard for what is "significant". This is an extremely underrepresented habitat type that is disproportionately valuable to biological diversity, so the emphasis or burden of proof should be on the side of conservation.

At page 45, Guidelines for Grassland Types, All Grassland Types, FW-Veg-Grass-All-G

- 1. Disturbance from management activities in key pronghorn fawning areas during fawning season should be ***avoided*** ~~minimized~~ to maximize reproductive success (since you are using the qualifier, "should", rather than "will be", you should use the more restrictive verb)

At page 45, Guidelines for Grassland Types, Great Basin and Montane/Subalpine Grasslands FW-Veg-Grass-GB&MSG-G

- 2. This is unclear; it seems that by their very function, stock tanks and wildlife water developments will increase concentrations of grazing animals, in open or closed areas. Perhaps saying they should be placed "in a location or manner" might make more sense, but this guideline could use more clarification.

At page 53, Desired Conditions for Ponderosa Pine, FW-Veg PP-DC

- Table 9. Please explain why mid-age forest and mature/old forest are lumped together in column one ('state") in the table, their structural characteristics and value as wildlife habitat are very different, with the mature forest having more features valuable to bats and other cavity and snag-roosting wildlife, i.e., more and larger snags, larger green trees, more broken tops, broken limbs, and cavities.

At page 57, Guidelines for Ponderosa Pine, FW-Veg-PP-G

- 5. When referencing snags, it should be qualified to the effect of "the largest and tallest snags representative for that stand", as research in multiple forest types has demonstrated that snag-roosting bats (at least 10 of the Coconino's 21 species) often prefer the largest and tallest snags in a stand.

At page 65, Mixed Conifer with Aspen, FW-Veg-MC-MCA-DC, *fine scale (10 acres or less)*

- Snags should still be mentioned/included in the Desired Conditions at this scale.

At page 66, Guidelines for Mixed Conifer Types, *FW Veg-MC-MCFF-G*

- 1. and 2. Be more specific, "old-growth" forest structures" and "old-growth structural characteristics" should be defined, i.e. snags, large broken-topped trees, etc.

At page 71, General Description and Background for Wildlife, Fish, and Plants

- Insert "primarily" before "dependent", i.e., species are *primarily dependent*…as some species with adequate habitat (grey wolf, northern leopard frog, etc.,) may have healthy habitat but are persecuted or subjected to disease, or other non-habitat factors.

- The correct common name is "bison" (*Bison bison*), not buffalo

At page 73, Desired Conditions for Wildlife, Fish, and Plants, FW-WFP-DC

- The word "riparian" or phrase "riparian habitat" is not mentioned anywhere in the Desired Conditions. In 6., "vegetation and stream connectivity" is the closest thing. Given the importance of this habitat to wildlife, it should be specifically mentioned.

At page 74, Objectives for Wildlife, Fish, and Plants, FW-WFP-0

- 1, 2. Provide example of an "action" (…."implement at least 20 actions…")

At page 75, Management Approaches for Wildlife, Fish, and Plants

- Specific mention should be made regarding coordinating/collaboration with AZGFD on the implementation of the State Wildlife Action Plan. These plans apply to the management and conservation of wildlife on all jurisdictions, private and public.

At page 79, Standards for Livestock Grazing, FW-GRAZ-S

- 1. Suggest re-wording to; "To prevent accidental wildlife entrapment and mortality, all troughs and open-topped storage tanks shall incorporate escape devices that are firmly attached to and meet the sides of the water development, are made of long-lasting and grip-able materials, and extend down to the bottom or lowest expected water level.

Relevant Literature, literature Cited

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