Comments submitted via the Federal eRulemaking Portal

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Public Comments Processing  Roxanna Hinzman, Field Supervisor
U.S. Fish and Wildlife Service  South Florida Ecological Services Field
MS: JAO/1N  Office
5275 Leesburg Pike  1339 20th St.
Falls Church, VA 22041-3803  Vero Beach, FL 32960-3559

Re: Comments on U.S. Fish and Wildlife Service’s Proposed Designation of Critical Habitat for the Florida Bonneted Bat; FWS-R4-ES-2019-0106

Dear Ms. Hinzman,

The Center for Biological Diversity (Center), Conservancy of Southwest Florida, Miami Blue Chapter of the North American Butterfly Association, Friends of the Everglades, Florida Keys Chapter of Izaak Walton League (IWLA), Sierra Club, Natural Resources Defense Council (NRDC), National Parks Conservation Association (NPCA), and Tropical Audubon Society (collectively, “Conservation Organizations”) are pleased to provide these comments on the U.S. Fish and Wildlife Service’s (FWS) proposed critical habitat designation for the endangered Florida bonneted bat (Eumops floridanus).

The Center is a national, nonprofit conservation organization with more than 1.7 million members and online activists dedicated to the protection of endangered species and wild places. The Center’s Florida office focuses on Florida biodiversity issues and is supported by thousands of Floridians who share the Center’s mission.

The Conservancy of Southwest Florida has over 7,000 supporting families and as part of our organization’s mission, we seek to protect the wildlife of southwest Florida, in particular those species residing in Lee, Collier, Hendry, Glades, and Charlotte counties.
The Miami Blue Chapter is a chapter of the North American Butterfly Association (NABA); it serves Miami-Dade and Monroe Counties. NABA (with its chapters) has over 5,000 members. It was formed to promote the public enjoyment and conservation of butterflies. Friends of the Everglades was founded by Marjory Stoneman Douglas in 1969 to preserve, protect and restore the only Everglades in the world.

The Florida Keys Chapter of IWLA works to conserve, maintain, protect and restore the fragile natural resources of the Florida Keys and South Florida, to educate the public, particularly our youth, regarding those resources, and to promote ways to enjoy and use those resources in ways that simultaneously protect those resources and the ability of future generations to enjoy and use them.

Sierra Club is a national not-for-profit organization with about 800,000 members across the United States, and 39,000 members in its Florida Chapter, dedicated to exploring, enjoying, and protecting the wild places of the earth; practicing and promoting the responsible use of the earth’s ecosystems and resources; educating and enlisting humanity to protect and restore the quality of the natural and human environment; and using all lawful means to carry out these objectives.

NRDC is a non-profit membership corporation founded in 1970. NRDC uses law, science, and the support of members throughout the United States, including members who reside in Florida, to protect waters and wildlife and to ensure a safe and healthy environment for all living things. For fifty years, NRDC has engaged in scientific analysis, public education, advocacy, and litigation on a wide range of environmental and health issues. NRDC has had a longstanding and active interest in the protection of the nation’s waters and wildlife and has worked with federal agencies to enhance public participation in government decision making.

NPCA and its nearly 1.4 million members and supporters work together to protect and preserve our nation’s most iconic and inspirational places for future generations. NPCA’s Sun Coast regional office is based in South Florida; we work together with nearly 90,000 members and supporters in Florida to advance protections for treasured ecosystems and the species they provide refuge for.

Tropical Audubon’s Society was founded in 1947 and represents more than 2,000 Miami-Dade County residents. Its mission is to conserve and restore South Florida ecosystems, focusing on birds, other wildlife and their habitats.

Conservation Organizations strongly support designating critical habitat for the highly imperiled Florida bonneted bat; however, the proposed designation falls short of the Endangered Species Act’s (ESA) mandate to support the recovery and survival of the bat. FWS’ final decision must be based on the best available science which supports expanding the areas of occupied habitat by
removing the arbitrary 100,000-acre limitation and including artificial roosts and the habitat around them, by designating habitat vulnerable to foreseeable development, and including relevant natural and semi-natural urban and suburban areas. FWS must also designate unoccupied habitat in light of the projected impacts from climate change and sea level rise, including anticipated changes in land uses and coastal squeeze.

I. Bat Listing and Proposed Critical Habitat Designation Background

On October 4, 2012, FWS proposed listing the Florida bonneted bat as an endangered species. 77 Fed. Reg. 60750. The proposal included FWS’ finding that designation of critical habitat was prudent but not determinable. Id. FWS listed the Florida bonneted bat as endangered under the Endangered Species Act on October 2, 2013. 78 Fed. Reg. 61004. FWS determined that the bat is endangered due to habitat loss, degradation, and modification; because of threats resulting from climate change including coastal squeeze, loss of roost site, and loss of foraging habitat; and because of its small population size, restricted range, few colonies, slow reproduction, low fecundity, and relative isolation. Id. at 61004.

The final listing rule reported that bats had been recorded or observed in Everglades National Park (at two backcountry sites along the Wilderness Waterway at Darwin’s Place and Watson’ Place and at the junction of Main Park Rd. and Long Pine Key); in Miami-Dade County at the L-31N canal (at the proposed transmission line corridor on the eastern boundary of ENP), in Homestead on private property, at Fairchild Tropical Botanic Garden, at Zoo Miami, Larry and Penny Thompson Park, Martinez Preserve, Coral Gables (2 sites, including the Granada Golf Course), and at Snapper Creek Park; in Collier County (in Everglades City, Naples, and at multiple sites in Florida Panther National Wildlife Refuge, Fakahatchee Strand Preserve State Park, Picayune Strand State Forest, and Big Cypress National Preserve; in North Fort Myers at two sites, including bat houses; in Charlotte County at multiple sites at the Babcock-Webb Wildlife Management Area and Babcock Ranch Preserve (in Telegraph Swamp); in Polk County at the KICCO WMA and Avon Park Air Force Range; in Okeechobee County in the Kissimmee River Public Use Area (at Platt’s Bluff). Id. at 61007-08.

The habitat types where bats were found included earth midden hammocks; tropical hardwoods; pine rocklands; disturbed nonnative areas; developed park lands; groves; artificial freshwater lakes; remnant transition glade; residential; urban; pine flatwoods; wet prairie; lakes; artificial and ephemeral ponds bordered by royal palm hammock, cypress, pond apple, oak hammock; canal near hardwood hammock, pine flatwoods, strand swamp royal palms; exotics, cypress; palmetto; mixed and hardwood hammocks; mangroves; mixed shrubs; river; campground; bat houses; an oxbow; scrubby flatwoods; and at or near a boat ramp. Id. at 61007-08.
FWS proposed 1,478,333 acres of critical habitat on June 10, 2020. 85 Fed. Reg. 35510. FWS proposed seven physical or biological features (PBFs) essential for the bat’s conservation:

1. Representative forest types that provide roosting and foraging habitat within its core area;
2. Habitat that provides roosting and rearing of offspring;
3. Habitat that provides foraging;
4. A dynamic disturbance regime that maintains and regenerates forested habitat;
5. Large patches of more than 100,000 acres of forest and associated natural or semi-natural habitat types with reduced human influence;
6. Corridors, consisting of roosting and foraging habitat, to allow for population expansion, dispersal and connectivity among areas, including those necessary for climate change; and
7. A subtropical climate that provides tolerable conditions for bats to reproduce and rear offspring.

Id. at 35520. FWS did not propose designating areas outside the geographic area occupied by the bat because it did not find any unoccupied areas to be essential for the conservation of the bat. Id. at 35527.

II. FWS Must Expand Its Critical Habitat Designation for Florida Bonneted Bat Occupied Habitat

FWS’ proposed designation unlawfully omits important bat habitat by arbitrarily limiting PBF 5 to only “large” 100,000 acres patches; by failing to include artificial roosts and their nearby habitat as a PBF; and by otherwise failing to include known, occupied habitat essential to the survival and recovery of the species, for example, it does not appear FWS even considered all areas in its own consultation guidelines. (FWS 2019).

A. FWS Arbitrarily Limited PBF 5 to “large” patches, 100,000 acres or more

FWS arbitrarily limits PBF 5, which includes forest and associated natural or seminatural habitat types, to only “large patches” (100,000 acres or more) that “represent functional ecosystems with a reduced influence from humans.” Id. at 35520. This PBF appears to be based on two interrelated, incomplete or erroneous assumptions. First, FWS states that the bat “occurs in habitats that are protected from human-generated disturbances.” Id. at 35519. Next it provides two “examples of such areas” – Babcock-Webb WMA and APAFR – which it notes are both 100,000 acres or greater. Id. However, relying on these two interrelated factors to establish a PBF that limits smaller “patches” or habitat impacted by human influence flies in the face of survey data and studies showing bats use a variety of habitats including ones with human disturbance and those smaller than 100,000 acres. Id. Indeed, FWS acknowledges that in addition to occurring in habitat that are protected from human-generate disturbances, bats also occur in agricultural, urban, suburban, and residential areas. Id. at 35529. FWS itself has found that bats
appear somewhat tolerant of some level of human disturbances, noting for example, that the APAFR is an active military base, where bonneted bats are “exposed to disturbances such as periodic missions and training exercises, some within a mile of roosts.” Id. at 35519. This finding is paradoxical, since FWS pins its 100,000-acre PBF 5 minimum in-part on its finding that APAFR is an example of a “large patch” of habitat that is “protected from human-generated disturbances.” Id. at 35519.

While large, relatively undisturbed habitat areas may provide significant conservation benefits to bats, limiting PBF 5 to only “large patches” 100,000 acres or larger arbitrarily excludes known, productive habitat and is not based on the best available science. Survey data provided by FWS indicates that bats heavily use roost sites in areas with significantly less than 100,000 acres of “relatively functional habitat” (FWS). Based on FWS bat detection data and adding a 12-mile radius (“as a conservative estimate of foraging distance, we used a 19-km (12-mi) radius from documented presences” at 35524), there are an additional 6,802,937 acres used or potentially used by Florida bonneted bats in Florida that FWS did not propose designating as critical habitat (FWS 2020).

FWS arbitrarily excluded patches of natural and semi-natural habitat within urban and suburban areas from the proposal arguing they are not natural forested areas, or subjectively provide lower-quality habitat. However, these lands clearly provide valuable habitats because bats utilize these areas. FWS should either remove the 100,000-acre requirement, which does not appear to be based on the best available science, or otherwise emphasize that smaller habitat patches, even with human disturbance or influence, are valuable to the bat – which the proposed critical habitat rule already acknowledges. 85 Fed. Reg. at 35520 (stating foraging habitat includes “natural or semi-natural habitat patches in urban or residential areas that contribute to prey base and provide suitable foraging conditions.”).
B. FWS Should Include Artificial Roosts As A PBF

FWS should include artificial roosts and habitats nearby artificial roosts as a PBF. (NRDC 2016). FWS has found that in general, the important and basic components of bat conservation include “protection of roosting habitat; protection of foraging habitat; and protection of the prey base” Id. at 35514. Humphrey (1975) explains that “the importance of roosts indicates that roosts should be managed as a key feature of the habitat of bats.” FWS has also found that “the use of artificial structures for the Florida bonneted bat may also be beneficial in some locations, especially where roosting structures are lacking or deficient,” id. at 35521, 78 Fed. Reg. at 61004, and that “artificial structures could potentially help provide roosting opportunities in areas impacted by stochastic events or where suitable natural roost are lacking and deficient,” 85 Fed. Reg. at 35522.

In general, the bat’s dependence on artificial roosts is the result of historic urban sprawl and conversion of natural forests to agriculture. Ruegger 2016 recommends that where natural roost scarcity is identified, that artificial roosts be used as a conservation tool. Id. at 280. It is also possible that bat colonies provide benefits beyond sharing shelter, and that artificial roosts can support colony creation. Ruczynski 2009. Fenton (1997) notes some of the reasons bats thrive near urban areas: the use of buildings as roosting sites, and the concentration of insects near artificial lights.

Given that “there is high probability that individuals tend towards high roost site fidelity,” 78 Fed. Reg. at 61005, and that “bats spend over half their live within their roost environments,” the artificial roost sites themselves as well as the habitats nearby them are essential to the conservation of bat and FWS should list them as PBFs. 85 Fed. Reg. at 35517. FWS acknowledges that “many of the known active roosting sites for the species are bat houses” Id. at 35518. In fact, at the time of listing, no active, natural roost sites were known. 61006-07. FWS has also found that “the availability of suitable roosts is an important, limiting factor” given an apparent lack of natural roost sites and high-competition for those limited sites. 78 Fed. Reg. at 61004, 61007; 85 Fed. Reg. at 35521. FWS must designate these areas as critical habitat.

C. FWS Must Designate Additional Areas of Occupied Habitat

A significant amount of habitat used by Florida bonneted bat will be destroyed and fragmented by sea level rise and urbanization by 2060. The largest and most comprehensive acoustic study undertaken for bats detected bats “in all land cover types investigated, including the four major categories of uplands, wetlands, agricultural, and developed lands.” 85 Fed. Reg. at 35515. FWS has found that “based on the expected rates of human population growth and urbanization in south Florida, nearly all agricultural and private natural lands are predicted to be converted to developed land by 2060.” 85 Fed. Reg. at 35521; Zwick and Carr 2006. Yet, FWS “made every
effort to avoid including large areas of agriculture or developed areas...due to the general lack of PBFs for the Florida bonneted bat.” 85 Fed. Reg. at 35527. It is evident that bats are making their homes wherever they can, including in natural and semi-natural habitat within urban, suburban, and agricultural areas, and are not discriminating against foraging and roosting in and near agricultural and developed lands. Bailey 2017.
Yet, FWS has arbitrarily omitted 99.85% of urban and suburban areas used by Florida bonneted bats. Based on FWS bat detection data and adding a 12-mile radius (“as a conservative estimate of foraging distance (FWS 2020), we used a 19-km (12-mi) radius from documented presences” at 35524) Florida bonneted bats are using or potentially using 393,651 acres of urban and suburban habitat, yet FWS only proposed designating 590 of those acres. It is not uncommon for bats to thrive in urban areas. Parkins 2016. While it is not clear what effect human disturbance of urban areas can have on bats, for some bat species, artificial lights may not be a significant deterrent. Schoeman 2015. FWS should use all information at its disposal, including acoustic surveys, observations, guano analysis and any other tracking techniques like satellite tags and radio transmitters to identify and designate critical habitat. Below are some of the projects that will impact bat habitat in the foreseeable future.

**MCORES/Roads to Ruin**

The Florida Department of Transportation (FDOT) is currently implementing Senate Bill 7068 (SB 7068) which authorizes the design and construction of three new toll road corridors, formally known as Multi-use Corridors of Regional Significance (M-CORES). Of significance to the Florida bonneted bat is the southernmost corridor, Southwest-Central Florida Connector, proposed to extend 140 miles with impacts to nine predominantly rural counties; Polk, Hardee, DeSoto, Highlands, Charlotte, Glades, Lee, Hendry and Collier counties.

Roads can reduce bat abundance and diversity as bats tend to cross the road at vehicle height. Berthinussen, A. 2012; Lesinski, G. et al. 2011; Fensome 2015; Novaes 2011; Pourshoushtari 2018. Specific alignment alternatives have not been publicly presented at this time, however the FDOT anticipates alignments available in the final recommendation report to be finalized November 15, 2020. In the interim, the M-CORES process has developed Avoidance and Attraction Area maps to guide the future alignment alternatives.

Under the provisions of SB 7068, the Southwest-Central Connector Corridor shall:

- address the impacts of the construction of a project within the corridor on panther and other critical wildlife habitat and evaluate in its final report the need for acquisition of lands for state conservation or as mitigation for project construction, and
- evaluate design features, including wildlife crossings, and the need for acquisition of state conservation lands that mitigate the impacts of project construction within the respective corridors on: the water quality and quantity of springs, rivers, and aquifer recharge areas; agricultural land uses; and wildlife habitat.

While an exact route has not been determined, it is evident that if constructed, MCORES will significantly impact bat habitat, including the proposed PBFs. FWS should designate areas used by bats and potentially impacted by MCORES critical habitat.
In 2010, FWS received the application for a habitat conservation plan (HCP) from the Easter Collier Property Owners (Applicants) for an Incidental Take Permit (ITP) under Section 10 of the ESA. In 2016, FWS provided notice that it intended to gather information necessary to prepare a NEPA draft environmental impact statement for the HCP. 81 Fed. Reg. 16,2000. In 2016, FWS published a draft scoping report to support its DEIS. On October 19, 2018, FWS announced the availability of its draft environmental impact statement (DEIS) for the HCP and solicited public comment. 83 Fed. Reg. 53,079.
The proposed HCP is a part of a 195,000-acre planning area, 45,000 acres of which are to be developed for residential, mining, and other uses, with 107,000 acres to be designated as so-called “preserve land.” The Applicants own roughly 85 percent (approximately 151,779 acres) of the land in the planning area. The HCP is to cover actions in northeastern Collier County, completely surrounding the town of Immokalee. The action area is bordered to the south by the Florida Panther National Wildlife Refuge and the Big Cypress National Preserve; to the north and east is the Okaloacoochee Slough State Forest; and west of the proposed plan area is the Audubon Corkscrew Swamp Sanctuary and Corkscrew Regional Ecosystem Watershed, thus placing it in important bat habitat.

While the HCP purports to limit development to 45,000 acres, the lands in the planning area are not exclusively owned by the Applicants; and landowners, including the Applicants, may pursue development outside of the HCP resulting in additional impacts. Therefore, it is important to note that the HCP does not provide a complete vision of development for Collier or Hendry counties. The Applicants seek to include under the ITP activities that have previously taken place within the HCP area and are “planned to continue,” including agriculture, ranching, infrastructure, oil and gas exploration, off-road recreation, hunting, fishing, and transportation development for the conveyance of goods and services intrastate and interstate.

The HCP fails to account for all forms of take for the Florida bonneted bat. Focusing only on harm and harassment, the HCP fails to account for direct take in the form of injury or death from felling roost trees with bonneted bats inside, as well as deaths and injuries during land management practices such as forest thinning and prescribed fire. The HCP also fails to support its apparent assertion that take in the form of harassment will only occur from Covered Activities even though the Preservation/Plan-Wide Activities and Very Low Density Use areas will be used for agriculture, development, oil and gas exploration and production, and other human activities that are likely to cause light and noise and recognized by the HCP itself as potential causes of harassment.

More specifically, the HCP fails to minimize and mitigate impacts to the Florida bonneted bat caused by habitat loss to the maximum extent practicable. The HCP states that 5,100 acres of habitat, 2,571 acres of which is roosting habitat, will be lost to covered activities, and that 65,425 acres of existing habitat will be preserved in perpetuity, including 25,000 acres of freshwater herbaceous wetlands for foraging. HCP at 225. The HCP does not describe the total amount of roosting habitat to be “preserved.” However, the DEIS acknowledges that the Florida bonneted bat will lose approximately half of its roosting habitat in the HCP area, which is located in the consultation area and focal areas to the species, DEIS at 82, and that the loss of roosting habitat would be “offset” by “permanent preservation of approximately 43 percent of the HCP area containing large contiguous forested systems that would provide roosting habitat, interspersed with open area that would provide foraging habitat (approximately 16 percent of the HCP area).”
DEIS at 82-83. Neither the DEIS nor the HCP provide support for the finding that “preserving” approximately 43 percent of foraging habitat “offsets” the loss of 50 percent of foraging habitat in the Covered Areas, which represents a net loss of 50% of important habitat for the species’ survival. The HCP and DEIS also fail to explain how allowing agriculture, development, oil and gas exploration and production, and other uses on the “preservation land” will affect its viability as land intended to offset negative impacts to the species.

Based on FWS bat detection data and adding a 12-mile radius (“as a conservative estimate of foraging distance, we used a 19-km (12-mi) radius from documented presences” at 35524), the Florida bonneted bat appears to use or potentially use all 153,094 acres in the HCP footprint, yet FWS only proposed designating 32,151 acres (FWS 2020). FWS must designate all essential habitat regardless of any anticipated HCP.

**Big Cypress National Preserve – Seismic Oil and Gas Exploration**

Congress established Big Cypress National Preserve “[i]n order to assure the preservation, conservation, and protection of the natural, scenic, hydrologic, floral and faunal, and recreational values of the Big Cypress Watershed.” 16 U.S.C. § 698f (a). The National Park Service (NPS) “envisions the preserve as a nationally significant ecological resource” and “a primitive area where ecological processes are restored and maintained and where cultural sites are protected from unlawful disturbance.” (DOI 1992). The Preserve covers 720,567 acres of a water-dependent ecosystem in southwestern Florida, and includes much of the western Everglades. It is home to a wide array of important and imperiled species, including the Florida bonneted bat. (NPS 2008; NPS 2015; NPS 2016).

In 2016, NPS authorized unprecedented off-road seismic oil exploration in around 110 square miles (70,454 acres) of the Preserve. (NPS 2016). The oil exploration is located within the FWS Consultation Area and partially within the FWS Focal Area for the Florida bonneted bat. The National Park Service acknowledged that the Florida bonneted bat is anticipated within the seismic survey area(NPS 2015), and that the seismic testing for oil could potentially impact the bat’s behavior. (NPS 2015). The greatest threats to the survival of the bonneted bat are mainly anthropogenic threats, such as habitat destruction, fragmentation, and degradation closely linked to various types of development. This would certainly include oil exploration and subsequent development of roads, drill pads, drill rigs, pipelines, and associated infrastructure.

The first phase of the Burnett Oil Company’s exploration took place in 2017 and 2018 and involved the driving of massive “vibroseis” vehicles weighing as much as 33 tons to generate seismic signals to locate oil and gas, along with other off-road vehicles, through pristine wetland habitat. The first phase of seismic testing created over one hundred miles of new disturbance in the Preserve (Quest 2020; Quest 2018) including within Florida bonneted bat habitat. Cypress
trees were cut and run over during the seismic testing and have not been re-planted. Vegetation abundance, composition, and structure within the seismic survey area remains dissimilar to adjacent habitats that were not directly impacted by seismic survey activities. *Id.* This is important to note because the bonneted bat finds prime foraging habitat near “open, fresh water wetlands,” and the species, “will forage over ponds, streams, and wetlands.” 78 Fed. Reg. 61003, 61007. It is also dependent on forested areas for roosting. *Id.* The damage caused by the first phase of Burnett Oil Company’s oil exploration has not been adequately restored and it is unclear whether this is even possible. (Quest 2020).

This damage to habitat occurred during the first of four planned phases of oil exploration, which, when complete, will total around 366 square miles (234,000 acres) of the Preserve. (Burnett 2014). The scale of the proposed action is unprecedented in any National Park Service unit. When all four phases of this project are complete, seismic testing will have been completed in an area larger than many National Parks, including Shenandoah, Crater Lake, Biscayne, and Zion. At 70,000 acres, Phase I of the proposed action would rival the largest seismic testing operation ever to occur in a National Park Service unit, rivaled only by long histories of activity at Padre Island National Seashore and Big Thicket National Preserve.1 Of the 42 National Park Service units with at least some privately-owned mineral rights, there is no single project that comes close to the scope and scale of what is being proposed in habitats in the Big Cypress National Preserve.

Based on FWS bat detection data and adding a 12-mile radius (“as a conservative estimate of foraging distance, we used a 19-km (12-mi) radius from documented presences” at 35524), the Florida bonneted bat appears to use or potentially use all 236,182 acres within all four phases of oil exploration in the Big Cypress National Preserve proposed by the Burnett Oil Company, yet FWS only proposed designating 185,318 acres (FWS 2020). FWS must designate all essential habitat potentially impacted by seismic activities.

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1 Taken together, seismic testing has been conducted on at least 113.7 miles of the Padre Island National Seashore (see Padre Island National Seashore Oil and Gas Management Plan 2001, at 81, irmfiles.nps.gov/reference/holding/463774?accessType=DOWNLOAD), and much of the 109k acres of Big Thicket National Preserve, see Final Oil and Gas Management Plan Environmental Impact Statement, Big Thicket National Preserve, Texas, Dec. 2005 at 3-10, https://archive.org/details/finaloilgasmanag00nati.

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Phosphate Mining in the Peace River Watershed

The Peace River unit and areas nearby bat detections are the site of intense phosphate mining. Phosphate mining in Florida is open pit strip mining where a company strips approximately 10 meters of so-called overburden\(^2\) and removes the matrix below which contains the phosphoric ore.\(^3\) In 2003, Administrative Law Judge Johnston, in adjudicating a case regarding phosphate mining in neighboring Charlotte County found that “... phosphate mining in this area is accomplished through utter destruction of the local natural environment from ground surface down to a depth of approximately 50 feet.” *Charlotte Co. v. IMC-Phosphates Company*, DOAH Case No. 02-4134 (Aug. 1, 2003), Recommended Order. Unfortunately, that is true wherever phosphate is mined in Florida. The Peace and Myakka river basins have been substantially altered by open pit mining for phosphate, changes in land use for mining, and groundwater use for phosphate mining.\(^4\) (Metz 2009). It is beyond dispute that phosphate mining has forever altered the natural landscape, including streams and drainage. For example, in some areas of the upper Peace River basin, the surficial aquifer does not even exist because phosphate mining has removed the surface sediments. *Id.* In addition to scarring the landscape, groundwater pumping for phosphate mining has been implicated in the creation of sinkholes in the upper Peace River, and storage of the acidic, radioactive waste generated by the process has also caused sinkholes. Brenard 2016.

Based on FWS bat detection data and adding a 12-mile radius (“as a conservative estimate of foraging distance, we used a 19-km (12-mi) radius from documented presences” at 35524), the Florida bonneted bat appears to use or potentially use 8,586 acres in the proposed mining footprint, yet FWS only proposed designating 877 acres. Because this habitat is essential, FWS must designate all habitat used by bats in the area (FWS 2020).

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\(^2\) Overburden: Layers of soil or rock overlaying a deposit of useful materials or ores.  
\(^3\) Matrix: a mixture of phosphate pebbles, sand and clay.  
\(^4\) The surficial aquifer is a vital component of the groundwater system; Rain recharges the surficial aquifer which then percolates downward to the water table.
Miami-Dade County & Richmond Pine Rocklands

Even though FWS included numerous urban areas in Miami-Dade County in the final listing rule for the bat, and the best available science indicates that the Florida Bonneted bat occupies and thrives in urban areas due to its very high roost-site fidelity, FWS erroneously omitted essential natural and semi-natural habitats within urban Miami-Dade County from the proposed designation. The pine rockland community is one of the most endangered habitats in North America. (Williams 2007). Pine rocklands provide critical foraging and nesting habitat for a diverse array of wildlife, including federally listed species. (FWS 2014). They also provide cover and roosting sites to a variety of wildlife species. Id. at 3-167. Pine rockland ecosystems contain a rich herbaceous flora with many narrowly endemic animal species. (Snyder 2005). These once-extensive communities have been plagued by development in the region, and are now greatly reduced and have been divided into many smaller fragments. (URS 2007; FNAI 2010).

Pine rocklands are found in three areas of southern Florida: the Miami Rock Ridge of southeastern peninsular Florida, the Lower Florida Keys, and the southern Big Cypress pinelands. Id. The Miami Rock Ridge is characterized by a very diverse shrub layer dominated by hardwoods, and an equally diverse herb layer containing 35 taxa endemic to southern Florida, including several species listed by the federal government as threatened or endangered. Id. This area has been fragmented and degraded by past land use practices.

The north-south distribution of pine rocklands along the Miami Rock Ridge has already been reduced by over 12 miles. (FWS 2014). According to the Pine Rocklands Multispecies Recovery Plan (Recovery Plan) for South Florida, FWS’ ultimate goal is to restore the pine rocklands by maintaining the function, structure, and ecological processes of pine rocklands, and preventing any further loss, degradation, or fragmentation, of this imperiled South Florida community. Id. at 3-191; (Downing 2012).
In Miami-Dade County, the remaining pine rockland habitat is highly fragmented, with the majority of fragments being less than 50 ha in size and embedded in an urban landscape. Williams 2007 at 256, 257. The Richmond tract of pine rocklands in Miami-Dade County contains 260 taxa of native plants. FWS at 3-162. Imperiled species that may utilize or depend upon pine rocklands in this area include: Florida bonneted bat, Florida leafwing butterfly, Bartram’s scrub-hairstreak butterfly, Miami tiger beetle, eastern indigo snake, rim rock crowned snake, gopher tortoise, white-crowned pigeon, Everglades bully, Florida brickell-bush, Carter’s small-flowered flax, deltoid spurge, and tiny polygala. In addition, the native southeast Florida slash pine endemic to the rockland ecosystem, Dade County pine (*Pinus elliottii* var. *densa*), is redlisted by the International Union for the Conservation of Nature and Natural Resources. (ICUN) FWS identifies acquiring lands that are threatened with development as the main tool in preventing further destruction or degradation of existing pine rocklands. *Id.*

Golf courses are heavily used by the bat for foraging and roosting. The Melreese Golf and Granada golf courses are used by the bat. The bat uses other urban and suburban areas in Miami-Dade County including the L-31N canal (at the proposed transmission line corridor on the
eastern boundary of ENP), certain areas in Homestead, Fairchild Tropical Botanic Garden, the Martinez Preserve and Snapper Creek Park.

Miami Wilds is a proposed theme park on Miami-Dade County property used by the bat. The county recently approved $13.5 million to 20th Century Fox, however, it is unclear how soon work would begin (Munzenrieder 2014). The first phase of Miami Wilds would be a water park, hotel, retail, dining, event complex, and 52 acre parking lot, in direct contact with pine rockland. The second phase of the project would be a theme park on U.S. Coast Guard land. Miami-Dade County is considering entering into a long-term lease with Miami Wilds, LLC for the development of a proposed theme park consisting of a 200-room hotel (@5 Acres), retail space (@4.5 A.) and a water park (@20 A.) along with parking for over 4200 vehicles (@35+ A). In addition, the proposed lease contemplates an option to develop a separate, non-contiguous parcel (@39 A) located within the Richmond Pinelands for the development of a hotel/spa.

FWS must include the Richmond Pine Rocklands in the final critical habitat designation and consider the inclusion of the smaller areas in urban Miami-Dade county as well, including the above mentioned golf courses.

CREW lands and Lee County Density Reduction/Groundwater Resource Area

In northern Collier County and eastern Lee County lies the Corkscrew Regional Ecosystem Watershed (CREW). CREW is a critical environmental landscape that includes large areas of public lands such as Bird Rookery Swamp, Flint Pen Strand, Corkscrew Marsh, and Audubon’s Corkscrew Swamp Sanctuary. CREW contains the largest remaining strand of undisturbed bald cypress and slash pine flatwoods in Florida. (US Army Corps, 2010). Lee County contains Corkscrew watershed lands, as well as the southeast Density Reduction/Groundwater Resource (DR/GR) area, the latter of which is about 81,500 acres in size.

These areas in Lee and Collier counties have experienced immense threat from development. Over 13,000 acres have historically been impacted by mining in the DR/GR alone. Additionally, FWS has consulted on nearly 10,000 acres of lands in this area in just the last 5 years, some of these lands containing important bonneted bat habitat such as the Timbercreek residential development. FWS should designate these areas as critical habitat.

Hendry County Sector Plans

Hendry County contains important conservation land resources as well, including the Okaloacocchee Slough State Forest, Dinner Island Ranch Wildlife Management Area, and Spirit-of-the-Wild Wildlife Management Area. However, even the most remote rural lands in Hendry County are also threatened with additional large scale residential development and mining.

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Hendry County has approved two large-scale sector plans, including the Southwest Hendry (King’s Ranch) Sector Plan and Rodina Sector Plan. The Southwest Hendry sector plan would allow 23,600 acres of urban development, and the Rodina sector plan would allow 10,089 acres of development. These sector plans are just north of the Eastern Collier Multi-Species HCP area. FWS should designate these areas as critical habitat.

III. FWS Unlawfully Excluded Unoccupied Habitat

The proposed critical habitat designation for the Florida bonneted bat acknowledges that sea level rise and other climate change effects pose a threat to the species. However, the proposal notes that, since the species was listed as endangered largely due to development and agriculture-related habitat loss and degradation, FWS primarily considered those factors in the critical habitat designation. Thus, the FWS in this proposal fails to designate currently unoccupied habitat as critical despite knowing that climate change, sea level rise, continued population growth, and coastal squeeze could force the Florida bonneted bat northward and inland into unoccupied areas in the future.

Climate change has significantly altered the south Florida ecosystem since 1992 (DOI 1992). Areas that provide habitat for the Florida bonneted bat, such as Big Cypress, are near sea level, have little topographic gradient, and contain terrestrial and aquatic ecosystems that are highly sensitive to changes in precipitation patterns, and may be the first areas to exhibit alterations as a result of global climate change. According to the Committee on Independent Scientific Review of Everglades Restoration Progress of the National Research Council, climate change is a major threat to the persistence and functioning of wetlands ecosystems. The Panel has concluded that sea level in south Florida “is rising almost an order of magnitude faster than the long-term rate of 0.35 mm/yr that prevailed for the past 4,000 years.” The National Oceanic and Atmospheric Administration has calculated the average sea-level rise in south Florida to be 8.8 inches over the past century, “more than 30 percent higher than the global average of 6.7 inches (17 cm) for the 20th century.” (NRC 2014).

According to FWS “the recovery of the Florida bonneted bat requires both habitat protection and management, where necessary, to provide sufficient high-quality habitat to allow for population-growth and to provide a buffer against threats such as habitat loss, climate change, coastal squeeze, and other threats. 78 Fed. Reg. 61004. 85 Fed. Reg. at 35520. FWS has acknowledged that “retaining natural habitats will become more important in the future with the anticipated habitat losses from development, climate change. And coastal squeeze, which occurs when habitat is pressed between rising sea levels and coastal development that prevents landward movement.” 85 Fed. Reg. at 35519; 78 Fed. Reg. at 61004. It is evident that “changing habitat conditions due to changes in climate and responses by humans may make the bonneted bat shift from its current range, possibly moving inland or north. One model projects that the bonneted bat
is likely to experience major range contraction both within Everglades National Park and regionally by 2060. “Although we are able to accurately estimate the extent of other climate change-related effects, we expect additional occupied habitat will be impacted by saltwater intrusion, drier conditions, and increased variability in precipitation, likely resulting in changes to vegetation composition and prey availability, decreased forest regeneration, and potential increase in wildfire frequency, severity, and scale.” 78 Fed. Reg. at 61004. 85 Fed. Reg. at 35521.

As a result of these changes, FWS has found that “PBFs may no longer be available in some areas, and the amount of suitable occupied habitat is likely to shrink dramatically in the future.” 85 Fed. Reg. at 35521; 35519-20. FWS anticipates that additional populations near the coast will be reduced in size, “resulting in decreased overall health and fitness of those populations.” 85 Fed. Reg. at 35521. Yet, FWS decided not to propose “any areas outside the geographical area occupied by the species at the time of listing because we did not find any unoccupied areas to be essential to the conservation of the species….the areas are sufficiently large to allow for populations with adequate resiliency.” 85 Fed. Reg. at 35527. FWS should designate unoccupied habitat that contain PBFs as they are essential to the conservation of the bat because sea level rise and development will eliminate a significant amount of bat habitat in the foreseeable future.

A. Sea Level Rise Will Significantly Impact Bat Habitat

FWS estimates 16.4% or 241,748 acres of the proposed designation will be inundated by 6 feet of saltwater by 2070. 85 Fed. Reg. at 35521. FWS has also found that “habitat loss from sea-level rise and saltwater intrusion will be greatest in areas closer to the coast and is likely to result in the loss of some bat populations, such as those in the eastern Miami-Dade County, reducing the species’ ability to withstand catastrophic events.” 85 Fed. Reg. at 35521. FWS contemplated that a management action that could “ameliorate the effects of sea level rise” would be to provide protection of “inland or higher elevation suitable habitats that are predicted to be unaffected or less affected by sea level rise” 85 Fed. Reg. at 35521-22.

Global average sea level rose by seven to eight inches over the past century as the oceans have warmed and land-based ice has melted. Sea level rise is accelerating in pace with almost half of recorded sea level rise occurring since 1993. The Fourth National Climate Assessment estimated that global sea level is very likely to rise by 0.3 to 0.6 feet by 2030, 0.5 to 1.2 feet by 2050, and 1.0 to 4.0 feet by the end of the century relative to the year 2000, with sea level rise in excess of 8 feet possible (Hayhoe et al. 2018). The impacts of sea level rise will be long-lived: under all emissions scenarios, sea levels will continue to rise for many centuries (Walsh et al. 2014, USGCRP 2017).

Unfortunately, the sea level rise projected for Florida reflects the global outlook, with sea level rise projections of between 2 and 6 feet within this century for south Florida in the range of the
bonneted bat. The Southeast Florida Regional Climate Change Compact counties—Monroe, Miami-Dade, Broward, and Palm Beach counties—released a 2019 update to their “Unified Sea Level Rise Projection” for south Florida. The projections by the Climate Change Compact for south Florida suggest sea-level rise in excess of the expected global average: 0.6 to 1.0 feet by 2030; 1.1 to 1.9 feet by 2050; and 2.7 to 6.1 feet by 2100. These projections are considered most likely, but less conservative estimates indicate that sea level rise could go as high as 1.2, 2.5, and 8.6 feet in 2030, 2050, and 2100, respectively (Southeast Florida Regional Climate Change Compact Sea Level Rise Work Group 2019).

On this backdrop of rising sea levels, coastal regions are threatened by increased flooding and intensifying storm surge, which in combination further threaten bonneted bat habitat (Climate Central 2019). Coastal flooding is becoming more damaging as Atlantic hurricanes and hurricane-generated storm surges grow more severe due to climate change (Hayhoe et al. 2018). Projections anticipate an increase in the acceleration of sea level rise in Florida (Southeast Florida Regional Climate Change Compact Sea Level Rise Work Group 2019), which when combined with intensifying hurricanes and storm surge, is greatly increasing the flooding risk (Little et al. 2015). Under a lower emissions RCP 4.5 scenario, storm surge is projected to increase by 25 to 47 percent along the U.S. Gulf and Florida coasts due to the combined effects of sea level rise and growing hurricane intensity (Balaguru et al. 2016). The increasing frequency of extreme precipitation events is also compounding coastal flooding risk when storm surge and heavy rainfall occur together (Wahl et al. 2015).

Flooding concerns extend to those associated with high tide. Since the 1960s, sea level rise has increased the frequency of high tide flooding by a factor of 5 to 10 for several U.S. coastal communities, and flooding rates are accelerating in many Atlantic and Gulf Coast cities (Hayhoe et al. 2018). For much of the U.S. Atlantic coastline, a local sea level rise of 1.0 to 2.3 feet would be sufficient to turn nuisance high tide events into major destructive floods (Hayhoe et al. 2018). In Florida specifically, which could have over 6 feet of sea level rise by the end of the century, nuisance flooding due to sea level rise has already resulted in severe property damage and social disruption (Wdowinski et al. 2016). The frequency, depth, and extent of tidal flooding are expected to continue to increase in the future (Hayhoe et al. 2018). As the sea level rises, storm surge and tidal flooding will occur on an increasingly higher sea surface which will push water further inland and create more flooding of coastal habitats (Tebaldi et al. 2012).

With water pushed further inland, not just during storm surge events but also due to a general state of elevated sea level, habitat once suitable for the Florida bonneted bat may no longer be so. One way this could present itself is through the seawater-intrusion-induced retreat of coastal forests utilized by the bonneted bat. For instance, a case study on coastal forest retreat at the Withlacoohee Gulf Preserve in Yankeetown, Florida found that the coastal forest is retreating as saltwater intrudes freshwater at an estimated rate of seven meters per year (Williams et al. 2003;
Desantis et al. 2007). Another study in south Florida similarly found that even before the onset of seawater inundation, sea level rise will influence the species composition of coastal forests in the Everglades National Park (Saha et al. 2011). Reductions in freshwater inflows into the Everglades will accelerate the loss of salinity-intolerant coastal plant communities such as hardwood hammocks and buttonwoods and lead to replacement with salt-tolerant plant species. The Florida bonneted bat’s reliance on various coastal forest species is well-noted, so in the event of such forests’ decline, the bonneted bat may be forced to move to once unoccupied habitat. Therefore, in preparation for this eventuality, currently unoccupied habitat should also be part of the critical habitat designation.

All four of the habitat units proposed as critical habitat will be affected as sea levels rise from one to six feet, as found using the NOAA Sea Level Rise and Coasting Flooding Impacts Viewer (NOAA). Within Unit 3, for instance, the Fakahatchee Strand Preserve State Park, Everglades National Park, and the Picayune Strand State Forest would all be partially inundated at just one foot of sea level rise. At six feet of sea level rise, the proportion of the Fakahatchee Strand Preserve State Park and Picayune Strand State Forest that would be inundated approaches 50 percent, along with lesser inundation of the Big Cypress National Preserve. Likewise, Unit 4, consisting largely of the Everglades National Park in the Miami-Dade area, would be partially inundated at sea level rise of one to six feet. Units 1 and 2 would see less of an impact from projected sea level rise, but some inundation could occur in these areas as well, especially if the upper limit of potential sea level rise of over eight feet by 2100 is considered.

Based on FWS bat detection data and adding a 12-mile radius (“as a conservative estimate of foraging distance, we used a 19-km (12-mi) radius from documented presences” at 35524), the Florida bonneted bat appears to use 1,322,139 acres that will be inundated by 1 ft of sea level rise, of which FWS proposes designating 69,760 acres (FWS 2020). Based on FWS bat detection data and adding a 12-mile radius (“as a conservative estimate of foraging distance, we used a 19-km (12-mi) radius from documented presences” at 35524), the Florida bonneted bat appears to use or potentially use 1,984,110 acres that will be inundated by six feet of sea level rise, of which FWS proposes designating 237,690 acres (FWS 2020). FWS must designate additional habitat, coastal and inland, that is essential for the conservation of the bat given the certainty of imminent inundation from sea level rise that presents threats worsened by coastal squeeze and development.
In agreement with the sea level threats discussed above, the FWS estimates that 16.4 percent of the occupied habitat proposed for designation will be inundated by six feet of saltwater around 2070, with an additional 7.5 percent of the area predicted to be converted to developed land. This highlights the extreme vulnerability of the bonneted bat habitat to sea level rise and development. Only designating critical habitat for currently occupied areas when it is known that nearly a quarter of the habitat will be lost by 2070 further indicates the importance of including currently unoccupied habitat in critical habitat designation.

**B. Climate Change Will Cause Bats to Migrate North**

FWS found that “conserving areas in the northern portion of the range may be particularly important, as bats may respond to increases in temperatures and other changes in the environment, possibly becoming more heavily dependent upon these areas in the future,” 85 Fed. Reg. at 35522, yet FWS proposed virtually no portion of the northern range.

With climate change, summer temperatures in Florida have increased by about 1°F since 1950, averaging 81.4°F (27.4°C) from 1991 to 2010. In the next 20 years, average summer temperatures are expected to rise above 83°F (28.3°C) under moderate and high emissions scenarios. Meanwhile, winter temperatures in Florida have increased by about 2°F, averaging 57.4°F (14.1°C) between 1950 and 1970 and averaging 59.5°F (15.3°C) between 1991 and 2010. In the next 20 years, average winter temperatures are expected to rise above 60°F (15.6°C) under moderate and high emissions scenarios (Raimi et al. 2020). Furthermore, Florida is projected to experience some of the highest frequencies of extreme heat in the U.S. by mid-century with 105 days with a heat index over 100°F (in an average year and averaged across the state) in comparison to just 25 days historically. This includes 63 days with a heat index over 105°F (Dahl et al. 2019).

With such temperature trends in mind, a study found that bonneted bats have been historically limited to southern Florida because of a preference for average temperatures above 59°F (15°C) (Bailey et al. 2017). So, while statewide average winter temperatures of above 60°F do not mean that all regions of the state will experience temperatures that high, they do mean that the state as a whole is moving towards more favorable temperature conditions for the Florida bonneted bat. So, as time progresses, the bonneted bat will increasingly have access to parts of Florida to which it once did not because of temperature constraints. This only further supports the need for critical habitat designation for currently unoccupied habitat. Sea level rise and development will increasingly motivate the species’ migration as temperature constraints are gradually lessened as a deterrent.
IV. Conclusion

Conservation Organizations strongly support designating critical habitat for the highly imperiled Florida bonneted bat; however, the proposed designation falls short of the ESA’s mandate to support the recovery and survival of the bat and fails to use the best available science. FWS’ final decision must expand the areas of occupied habitat by removing the arbitrary 100,000-acre limitation and including the essential artificial roosts and the habitat around them, by designating habitat vulnerable to foreseeable development and including relevant essential natural and semi-natural patches of habitat within urban and suburban areas. FWS must also designate unoccupied habitat in light of the known projected impacts from climate change, sea level rise, coastal squeeze and expected losses from development.

If you have any questions, wish to discuss this matter, please contact me at 727-490-9190 or jlopez@biologicaldiversity.org. Thank you for your concern.

Sincerely,

[Signature]

Jaclyn Lopez
Senior Attorney, Florida Director
Center for Biological Diversity
jlopez@biologicaldiversity.org
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