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Rankin Hinds Pearl River Flood and Drainage Control District
P.O. Box 320790
Flowood, MS 39232
rankinhinds@gmail.com

Major General Richard G. Kaiser
Commander, Mississippi Valley Division
United States Army Corps of Engineers
1400 Walnut Street
Vicksburg, MS 39180

Stephen Ricks
Field Supervisor
U.S. Fish & Wildlife Service
6578 Dogwood View Parkway
Jackson, MS 39213

RE: Comments on the Integrated Draft Feasibility & Environmental Impacts Statement and Biological Assessment for the Pearl River Federal Flood Risk Management Project in Hinds & Rankin Counties, Mississippi

Please accept the following comments on behalf of the Center for Biological Diversity in response to the Integrated Draft Feasibility & Environmental Impacts Statement and Biological Assessment for the Pearl River Federal Flood Risk Management Project in Hinds & Rankin Counties, Mississippi. We have also attached several documents in support of our comments and we ask that they be included as part of the administrative record for this project.

The Center for Biological Diversity is a nonprofit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental and administrative law. The Center has over 1.6 million members and online activists dedicated to the protection and restoration of endangered species and wild places. The Center has worked for over twenty-five years to protect imperiled plants and wildlife, open space, air and water quality, and overall quality of life.

For the reasons explained below, the DEIS fails to adequately examine the impacts this project will have on several imperiled species, including the Gulf sturgeon, ringed sawback, northern long-eared bat, wood stork, and Pearl River Map turtle.

States throughout America are recognizing that the risks and costs of riverine dams far exceed the potential benefits of these structures and the Army Corps is busy restoring the natural conditions of America's great waters. For example, in Florida the Army Corps has invested nearly a billion dollars to restore the natural conditions of the Kissimmee River, which was channelized in the name of flood control. The project has exceeded the Corps' expectations and is delivering significant wildlife benefits.¹ The Corps is also working hard to restore America's Everglades, which has been crippled by thousands of miles of levees, channels, canals, and other structures. It is considered the largest and most ambitious ecological restoration project in the world.² America's rivers, including the Pearl River, are national treasures and if anything, they need to be restored, not further altered and impounded by more dams, levees, channels, and other structures. We urge the U.S. Army Corps of Engineers and Rankin Hinds Pearl River Flood and Drainage Control District ("District") not to go any further with the proposed project.

I. BACKGROUND

The Pearl River basin is home to several imperiled species including the Gulf sturgeon, ringed sawback turtle, and northern long eared bat. In the case of the ringed sawback turtle and the Pearl River map turtle, these species are found nowhere else on Earth. We provide important information about the biology, distribution, and threats facing each of these species below.

A. Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)

The Gulf Sturgeon traces its ancestry back 200 million years.³ A subspecies of the Atlantic sturgeon, the Gulf Sturgeon is a large, nearly cylindrical fish with an extended snout, vertical mouth, chin barbels, and with the upper lobe of the tail longer than the lower.⁴ Adult fish are bottom feeders and mostly eat invertebrates, including brachiopods, insect larvae, mollusks, worms, and crustaceans.⁵ Reaching lengths up to nine feet and weighing as much as 300 pounds, it can be found in the Northern Gulf of Mexico, bays, estuaries, and in major rivers in Florida, Alabama, Mississippi, and Louisiana.⁶ The species is anadromous-it spends most of the year in freshwater, where

¹ United States Army Corps of Engineers, Kissimmee River Restoration Project, at <http://www.saj.usace.army.mil/Missions/Environmental/Ecosystem-Restoration/Kissimmee-River-Restoration/>

² John Zarella, "Ambitious Everglades Restoration Project Unrivaled in Scale, Cost, CNN.com (December 25, 2000) at <http://www.cnn.com/2000/NATURE/12/25/everglades.restoration/index.html>.

³ U.S. Fish & Wildlife Service, Panama City Field Office, Gulf Sturgeon, at <https://www.fws.gov/panamacity/gulfsturgeon.html>.

⁴ National Oceanic and Atmospheric Administration and U.S. Fish & Wildlife Service, Endangered and Threatened Wildlife and Plants; Threatened Status for the Gulf Sturgeon, 56 Fed. Reg. 49653-49658, 49653 (Sep. 30, 1991)(Attachment D).

⁵ *Id.*

⁶ USFWS, *supra* note 3.

it reproduces and migrates to marine waters in the fall.⁷ In early spring, gulf sturgeon return to breed in the river system in which they were born.⁸

In listing the species as threatened under the ESA in 1991, the National Oceanic and Atmospheric Administration and U.S. Fish & Wildlife Service found that sturgeon stocks have been greatly reduced or extirpated throughout much of the historic range by overfishing, dam construction, and habitat degradation.⁹ Once ranging from the Mississippi River eastward to Florida's Tampa Bay area, the Service observed in its 1991 listing decision that three major rivers including the Pearl River in Mississippi, have been dammed, preventing use of upstream areas for spawning.¹⁰ Dam systems such as the Ross Barnett Dam have prevented sturgeon from moving further upstream, as sturgeon are unable to pass through dam systems.¹¹ Sturgeon, however, still access the lower 150 miles of the Pearl River and its tributaries and substantial spawning habitat remains in the Pearl River.¹² In addition to structures such as dams preventing Gulf sturgeon from reaching spawning areas, dredging, desnagging, and soil deposition carried out in connection with channel improvement and maintenance pose a threat to the species.¹³ As the Services explained in their listing decision, deep holes and rock surfaces are important for spawning and modification of these features, particularly in rivers in which upstream migration is already limited by dams, "could further jeopardize the already reduced stocks of the Gulf sturgeon."¹⁴ In determining that the species continues to warrant protection as threatened under the ESA, the Services found in 2009 that:

Access to historic Gulf sturgeon spawning habitat continues to be blocked by existing dams and the ongoing operations of these dams also effect downstream habitat. Several new dams are being proposed that would increase these threats to the Gulf sturgeon and its habitat. Dams continue to impede access to upstream spawning areas, and continue to adversely affect downstream habitat including both spawning and foraging areas.¹⁵

In view of these threats, the Recovery Plan for the Gulf sturgeon calls for the U.S. Fish & Wildlife Service to work with the U.S. Army Corps of Engineers to operate and/or modify existing dams to restore the benefits of historical flow patterns and sedimentation patterns as well as identify ways to restore and protect natural river habitat diversity.¹⁶

⁷ *Id.*

⁸ *Id.*

⁹ Threatened Status for the Gulf Sturgeon, *supra* note 4, at 49653.

¹⁰ *Id.* at 46955.

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

¹⁴ *Id.*

¹⁵ National Marine Fisheries Service & U.S. Fish & Wildlife Service, Gulf Sturgeon (*Acipenser oxyrinchus desotoi*), 5-Year Review: Summary and Evaluation, 15-16 (Sep. 2009) (Attachment E).

¹⁶ U.S. Fish & Wildlife Service and National Marine Fisheries Service, Gulf Sturgeon Recovery/Management Plan, at 52-53 (1995).

Dredging operations may also destroy benthic feeding areas, disrupt spawning migrations, and re-suspend fine sediments causing siltation over substrate in spawning habitat.¹⁷ The modification of the benthic areas affects the quality, quantity, and availability of prey.¹⁸ Poor water quality caused by pesticides, heavy metals, and industrial contaminants may also threaten the species.¹⁹ Pollution from industrial, agricultural, and municipal activities is believed to be responsible for a host of physical, behavioral, and physiological impacts to sturgeon throughout the world.²⁰

In 2003 the Services designated critical habitat for the Gulf sturgeon.²¹ This critical habitat designation identifies areas that are essential to the conservation of the species and may require special management considerations or protections.²² The entire project area includes critical habitat for the Gulf sturgeon (Unit 1).²³

B. Ringed Sawback Turtle (*Graptemys oculifera*)

The ringed sawback is a small turtle with a yellow ring bordered inside and outside with dark olive-brown on each shield of the upper shell or carapace and a yellow plastron.²⁴ This basking turtle is only found in the Pearl River system of Mississippi and Louisiana.²⁵ The species has specific habitat needs. It prefers wide sand beaches and a narrow channel with at least a moderate current and it spends many hours basking in the sun on logs and debris over deep water.²⁶ The river must be wide enough to allow sun penetration for several hours.²⁷ Nesting habitat consists of large, high sand and gravel bars adjacent to the river.²⁸ The ringed sawback turtle was listed as threatened under the Endangered Species Act in 1986 due to a number of threats facing this species, primarily the loss of habitat due to reservoir construction and flood control.²⁹ In fact, the U.S. Fish & Wildlife Service cited numerous flood control projects, very similar to the One Lake project, as a primary reason for listing the species under the ESA.³⁰ The species is also threatened by habitat degradation caused by deterioration in water quality and a corresponding loss of mollusks on which the turtle feeds.³¹ Water quality is degraded when floodplain clearing and channelization contributes to sedimentation, and the increased turbidity and siltation impacts the snails and other

¹⁷ *Id.* at 17.

¹⁸ *Id.*

¹⁹ *Id.* at 46956.

²⁰ Gulf Sturgeon Five Year Review, *supra* note 15 at 18.

²¹ U.S. Fish & Wildlife Service and National Oceanic and Atmospheric Administration, Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Gulf Sturgeon, 68 Fed. Reg. 13370-13495 (Mar. 19, 2003)(Attachment F).

²² *Id.*

²³ *Id.* at 13391;13456.

²⁴ U.S. Fish & Wildlife Service, Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Ringed Sawback Turtle (*Graptemys Oculifera*), 51 Fed. Reg. 45907-45910 (Dec. 23, 1986)(Attachment A).

²⁵ *Id.* at 45907.

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.*

²⁹ *See generally, supra* note 24.

³⁰ 51 Fed. Reg. at 45908-09.

³¹ *Id.* at 45907.

mollusks on which the turtle feeds.³² As the U.S. Fish & Wildlife Service stated in its decision to list the species under the ESA, the basking turtle is not able to inhabit large lake areas or polluted waters.³³

C. Pearl River Map Turtle (*Graptemys pearlensis*)

The Pearl River Map turtle is a moderate-sized, freshwater turtle with a high-domed shell, with a median keel, which has salient spines on the posterior portions of the anterior vertebral scutes.³⁴ These spines are much smaller than those of the ringed sawback.³⁵ The Pearl River Map turtle is endemic to medium sized creeks and large rivers in the Pearl River drainage of Mississippi and Louisiana.³⁶ They use sand bars as nesting sites and their diets largely consist of mollusks and snails.³⁷ Once considered to be the Pearl River population of *Graptemys gibbonsi*, the species was described by Ennen et. al. in 2010 as a full separate species.³⁸

The Pearl River Map turtle was once more abundant in the Pearl River but the population has declined significantly and beginning the 1990s, basking densities were lower than those of the ringed sawback.³⁹ As with many turtle species, habitat loss and degradation appears to be a leading cause for the decline in the Pearl River Map turtle population.⁴⁰ Threats include contaminants from urban and industrial sources, gravel mining, the modification of the downstream natural flow regime and its associated habitat changes caused by construction of the Ross Barnett Reservoir near Jackson.⁴¹ Ennen, et. al. (2016) observed that additional impoundment downstream of the reservoir would further impact downstream flow regimes and the species within the project area.⁴² Sedimentation and other anthropogenic alterations within the Pearl River drainage basin may have also caused a decline in native mussel and gastropod populations, thus decreasing a significant prey source for female Pearl River map turtles.⁴³ The state of Mississippi has listed the species as a Species in Need of

³² *Id.* at 45908.

³³ *Id.* at 45907.

³⁴ Ennen, J.R., Lovich, J.E., and Jones, R.L. 2016. *Graptemys pearlensis* Ennen, Lovich, Kreiser, Selman, and Qualls 2010-Pearl River Map Turtle. In: Rhodin, A.G.J., Pritchard, P.C.H., van Dijk, P.P., Saumure, R.A., Buhlmann, K.A., Iverson, J.B., and Mittermeier, R.A. (Eds.). Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group. Chelonian Research Monographs 5(9):094.1-8, doi: 10.3854/crm.5.094.pearlensis.v1.2016, <http://www.iucn-tftsg.org/cbftt/>. (Attachment B).

³⁵ *Id.*

³⁶ *Id.*

³⁷ *Id.*

³⁸ The IUCN Red List of Threatened Species, *Graptemys pearlensis*, at icunredlist.org/details/184437/0 (citing Ennen, J.R., Lovich, J.E., Kreiser, B.R., Selman, W. and Qualls, C.P. 2010. Genetic and morphological variation between populations of the Pascagoula Map turtle (*Graptemys gibbonsi*) in the Pearl River and Pascagoula Rivers with description of a new species. Chelonian Conservation and Biology 9(1):98-113) (Attachment C).

³⁹ Ennen, et. al. 2016, *supra* note 34.

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

Management⁴⁴ and the International Union for the Conservation of Nature (IUCN) considers the Pearl River Map Turtle endangered and possibly critically endangered, noting that the population has declined by 80-98% since 1950.⁴⁵ The species is under review by the U.S. Fish & Wildlife Service for listing under the Endangered Species Act.

D. Northern long-eared bat (*Myotis septentrionalis*)

The northern long-eared bat is a medium sized bat, which is distinguished from other *Myotis* species by its relatively long ears.⁴⁶ The species ranges across much of the eastern and north central United States. They feed nocturnally by catching insects in flight and picking insects from surfaces.⁴⁷ Most foraging occurs above the understory but under the forest canopy.⁴⁸

Northern long-eared bats predominately overwinter in hibernacula that include caves and abandoned mines.⁴⁹ During the summer they roost singly or in colonies underneath bark or in cavities or crevices of both live trees and snags.⁵⁰ The species appears to be flexible in tree roost selection, selecting various tree species and types of roosts throughout its range, such as black oak, northern red oak, silver maple, black locust, American beech, sugar maple, sourwood, and shortleaf pine.⁵¹ Canopy coverage at northern long-eared bat roosts varies greatly as well as the diameters of roost trees.⁵² The species actively forms colonies in the summer and exhibit fission-fusion behavior, where members frequently coalesce to form a group (fusion), but composition of the group is in flux, with individuals frequently departing to be solitary or to form small groups (fission) before returning to the main unit.⁵³ The species also engages in short, spring staging, a period between winter hibernation and spring migration to summer habitat.⁵⁴ During this time bats emerge from hibernation, exit the hibernacula to feed, then re-enter hibernacula to resume torpor.⁵⁵ Between the summer and winter season seasons, northern long-eared bats engage in the swarming season.⁵⁶ During this time behavior may include: introduction of juveniles to potential hibernacula, copulation, and stopping over sites on migratory pathways between summer and winter regions.⁵⁷ During the winter the species hibernates to conserve energy from increased thermoregulatory demands and reduced food sources. The species has shown often

⁴⁴ *Id.*

⁴⁵ IUCN Red List of Threatened Species, *Graptemys pearlensis*, at <http://www.iucnredlist.org/details/184437/0> (last visited August 30, 2018).

⁴⁶ U.S. Fish & Wildlife Service, Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Northern Long-Eared Bat With 4(d) Rule, 80 Fed. Reg. 17974-18033 (April 2, 2014)(Attachment G).

⁴⁷ *Id.* at 17988.

⁴⁸ *Id.*

⁴⁹ *Id.* at 17984.

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² *Id.* at 17985.

⁵³ *Id.* at 17985-17986.

⁵⁴ *Id.* at 17986.

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.*

return to the same location for a hibernaculum.⁵⁸ Seasonal migrations between seasonal habitats have also been documented.⁵⁹ Mating occurs from late July to early October.⁶⁰ The species has small maternal colonies (typically 30-60 individuals) and females give birth to a single pup.⁶¹ Northern long-eared bats exhibit site fidelity to their summer home range and roost and forage in forests.⁶² Home ranges may vary by sex.⁶³

In listing the northern long-eared bat as threatened under the ESA, the Service identified several threats to the species including, among many others, the loss of summer habitat resulting from forest conversion.⁶⁴ Forest conversion is the loss of forest to another land cover type, which may result in the loss of suitable roosting or foraging habitat; fragmentation of remaining forest patches, leading to longer flights between suitable roosting and foraging habitat; removal of travel corridors; and direct injury or mortality during active season clearing. Impacts often occur at a local-scale by affecting individuals and colonies.⁶⁵

E. Wood Stork (*Mycteria americana*)

The wood stork is a large, long-legged wading bird with white plumage and black primaries and secondaries and a short black tail.⁶⁶ The species' current range includes Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina.⁶⁷ The wood stork was listed as endangered under the ESA in 1984 and reclassified as threatened in 2014.⁶⁸ As part of the reclassification decision, the Service established the U.S. breeding population in Alabama, Florida, Georgia, North Carolina, Mississippi, and South Carolina as a distinct population segment (DPS).⁶⁹

The decline of the wood stork is largely due to the reduction in food base necessary to support breeding colonies.⁷⁰ This reduction is attributed to the loss of wetland habitat as well as changes in water hydroperiods from draining wetlands and changing water regimes by constructing levees, canals, and floodgates.⁷¹ Wood storks require higher prey concentrations than other wading birds.⁷² They often depend upon fluctuating

⁵⁸ *Id.* at 17987.

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.* at 17988.

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ U.S. Fish & Wildlife Service, Environmental Conservation Online System, Wood stork (*Mycteria Americana*) at <https://ecos.fws.gov/ecpo/profile/speciesProfile?spcode=B06O>

⁶⁷ *Id.*

⁶⁸ U.S. Fish & Wildlife Service, Endangered and Threatened Wildlife and Plants; Reclassification of the U.S. Breeding Population of the Wood Stork From Endangered to Threatened, 79 Fed. Reg. 37078-37103 (June 30, 2014) (Attachment H).

⁶⁹ *Id.* at 37078.

⁷⁰ U.S. Fish & Wildlife Service, Environmental Conservation Online System, Wood stork (*Mycteria Americana*) at <https://ecos.fws.gov/ecpo/profile/speciesProfile?spcode=B06O>.

⁷¹ *Id.*

⁷² *Id.*

water levels with receding water levels concentrating smaller fish (such as topminnows and sunfish) at higher densities during the stork's nesting season.⁷³ Feeding occurs in shallow water, usually 6-10 inches deep.⁷⁴

The wood stork is a highly colonial species, usually nesting in large rookeries and feeding in flocks.⁷⁵ Nests are often located in the upper branches of large cypress trees, with several nests located in each tree.⁷⁶

Although the species was recently reclassified as threatened, the loss, fragmentation, and modification of wetland habitats continue to threaten the species.⁷⁷ The Service indicated in its 2014 decision that preventing loss of wood stork nesting habitat and foraging wetlands within a colony's core foraging area is of the highest priority.⁷⁸

II. DISCUSSION

A. The DEIS Fails to Adequately Examine the Project's Impacts to Several Imperiled Wildlife Species.

Federal agencies must take a "hard look" at the environmental consequences of their actions and consider all foreseeable direct, indirect, and cumulative impacts.⁷⁹ As discussed in detail below, the Draft EIS fails to adequately examine the project's impacts to a host of imperiled species.

1. Impacts to the Gulf Sturgeon.

The document downplays the significance of the impacts to the Gulf sturgeon by asserting that while the species "historically utilized" the Pearl River for spawning, existing structures mostly impede the upstream migration of the sturgeon.⁸⁰ The DEIS concludes that "the most recent ongoing study efforts seem to indicate that the historic migration patterns are for the most part limited to the portions of the Pearl River below the two weir structures miles south of the Project area."⁸¹

The data does not support the District's conclusion in the DEIS that the project will not have significant adverse impacts to the species. The District cites a 2018 study by the U.S. Fish & Wildlife Service but that study does not find that migration patterns are limited well south of the project area. Instead it found that 72% of the sturgeon population sampled successfully passed the Pools Bluff Still.⁸² As the District acknowledges, the 2018 study did not monitor or track the individuals once they crossed

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ 79 Fed. Reg. 37095.

⁷⁸ *Id.* at 37092.

⁷⁹ 40 C.F.R. § 1508.25 (c).

⁸⁰ DEIS at xi; 200.

⁸¹ *Id.*

⁸² *Id.*

the Pools Bluff Still; therefore, there is no way to know based on that study whether migration patterns are limited to areas south of the project area.⁸³ Further, no new study efforts have been initiated to determine migration patterns further upstream of the location of the lower sills.⁸⁴ The District also does not point to any studies that support their finding that other structures further upstream of the Pools Bluff Still prevent sturgeon from reaching the project area. The DEIS also does not discuss the extent to which these other structures impede Sturgeon migration and how they compare to the proposed project in their impacts on sturgeon migration. In fact, in a recent letter from the U.S. Fish & Wildlife Service, the Service highlights the higher than expected river passage of sturgeon in the 2018 study and identifies reports of sturgeon in the general area of Interstate 55 and another 2 miles below the Ross Barnett spillway.⁸⁵

Therefore, it is premature for the District to conclude that migration patterns are for the most part limited to the portions of the river south of the Project area and that the project would not have a significant impact on sturgeon migration.

In the absence of such important scientific information, NEPA requires federal agencies to dig deeper and provide relevant research and information unless the costs of doing so are exorbitant.⁸⁶ One of the primary purposes of NEPA is to obviate the need for speculation by insuring that available data is gathered and analyzed prior to the implementation of the proposed action.⁸⁷ This is particularly important where a project could jeopardize a listed species and adversely modify its critical habitat. Here there is not enough data for the agencies to conclude that the project would not significantly impact the species and the project's impacts to sturgeon must be further examined before any additional action is taken on this project.

The DEIS is further deficient in that it relies on vague mitigation measures to conclude that upstream migration would not be impeded by the project. When projects adversely affect a listed species, the ESA requires mitigation measures to be reasonably specific, certain to occur, and capable of implementation.⁸⁸ It is unclear from the DEIS what the District has in mind when it comes to a "fish passageway" and what monitoring and adaptive management planning is being contemplated by the District.⁸⁹ These mitigation plans need to be more fully discussed in the DEIS before it can be determined that the project's impacts would be "minor" and it would not jeopardize the continued existence of the species and not adversely modify its critical habitat.

Additionally, the DEIS fails to identify several other types of impacts the proposed project may have on the species. Dredging operations associated with channelization

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ Letter from Joseph A. Ranson, Field Supervisor, Louisiana Ecological Services, to Michael Goff, August 16, 2018, Appendix A.

⁸⁶ See 40 C.F.R. § 1502.22.

⁸⁷ *National Parks Conservation Ass'n v. Babbitt*, 241 F.3d 722 (9th Cir. 2001).

⁸⁸ *Center for Biological Diversity v. Rumsfeld*, 198 F. Supp. 2d 1139, 1152 (D. Ariz. 2002).

⁸⁹ See DEIS at 200-01.

can destroy benthic feeding areas, disrupt spawning migrations, and re-suspend fine sediments causing siltation over substrate in spawning habitat.⁹⁰ The modification of the benthic areas affects the quality, quantity, and availability of prey.⁹¹ Impoundments and dams can adversely affect water quality by transporting sediments, organic matter, and nutrients.⁹²

Poor water quality caused by pesticides, heavy metals, and industrial contaminants threaten the species⁹³ and pollution has been documented to have a host of physical, behavioral, and physiological impacts to sturgeon throughout the world.⁹⁴ The DEIS does not discuss how project construction and operation could impact local water quality and further threaten the species.⁹⁵

2. Impacts to the Ringed Sawback Turtle.

The DEIS similarly fails to adequately discuss the project's impacts to the ringed sawback turtle, a species that is declining over much of its range in the Pearl River.⁹⁶ As previously discussed, flood control projects pose a significant threat to the species and the turtle is not able to inhabit large lake areas or polluted waters.

Fundamentally, the impacts analysis is deficient because it lacks the necessary baseline information to make an informed decision regarding the significance of the project's impacts to the species. The DEIS states that the project area has not been subject to monitoring and surveying by MDWFP for quite some time and survey efforts have been limited and the extent of the population within the Project Area is not known at this time.⁹⁷ Later, the District states that "ongoing survey and monitoring activities have shown a very limited presence" within the project area.⁹⁸

Research by Dr. Will Selman from 2017-2018, however, paints a far different picture of the impacts this project will have on this species than what is portrayed in the DEIS.⁹⁹ The objective of Dr. Selman's study was to determine the abundance of both the ringed sawback and Pearl River map turtle in the Pearl River and local oxbow lakes throughout Hinds and Rankin counties.¹⁰⁰ Three of the Pearl River stretches surveyed are inclusive

⁹⁰ *Id.* at 17.

⁹¹ *Id.*

⁹² Federal Interagency Stream Restoration Working Group. 1998. Stream corridor restoration-principles, processes, and practices.

⁹³ *Id.* at 46956.

⁹⁴ Gulf Sturgeon Five Year Review, *supra* note 15 at 18.

⁹⁵ In fact, there is very little baseline water quality data for this section of the Pearl River. *See* DEIS at 61.

⁹⁶ Jones, R.L. 2017. Long-Term Trends in Ringed Sawback (*Graptemys oculifera*) Growth, Survivorship, Sex Ratios, and Population Sizes in the Pearl River, Mississippi. *Chelonian Conservation and Biology* 16(2):215-228.

⁹⁷ DEIS at 202.

⁹⁸ *Id.* at 203.

⁹⁹ Selman, W. 2018. Diamonds in the Rough: Status of Two Imperiled *Graptemys* Species (*Graptemys oculifera* and *G. pearlensis*) in the Pearl River of Jackson, MS. Year 2. (Attachment I).

¹⁰⁰ *Id.* at 3.

of the proposed One Lake Project.¹⁰¹ In all river surveys during 2017 and 2018, Selman observed 5,643 turtles with ringed sawbacks comprising 85.8% (4,843 individuals).¹⁰² Using a 20-30% visual correction factor for undetected individuals, the mean number of ringed sawbacks that would be directly impacted by the One Lake project would be 1,690 individuals.¹⁰³ Further, Dr. Selman estimated an additional 2,138 individuals would be indirectly impacted in two other stretches of the river.¹⁰⁴

As Dr. Selman explains, the One Lake Project will dramatically alter the hydrologic regime of the stretch of the Pearl River, transforming the existing lotic, riverine habitat to a lentic, lake setting.¹⁰⁵ Reduced river velocities will result in a lack of snag inputs along banks and minimize the annual scouring of sandbars that the ringed sawback depends on.¹⁰⁶ Generalist turtles would benefit at the expense of specialist riverine turtles (including the ringed sawback and Pearl Map turtle). Over time these generalist species would colonize the project area and the ringed sawback would population would disappear over time.¹⁰⁷ Dr. Selman concludes that the project's impacts would be significant and long-lasting and negatively impact the recovery of the species.¹⁰⁸ This important baseline information is absent from the DEIS.¹⁰⁹ The DEIS also does not analyze the impacts Dr. Selman has identified.

In addition, the species is threatened by habitat degradation caused by a change in flow regimes, deterioration in water quality, and a corresponding loss of mollusks on which the turtle feeds.¹¹⁰ Water quality is degraded when floodplain clearing and channelization contributes to sedimentation, and the increased turbidity and siltation impacts the snails and other mollusks on which the turtle feeds.¹¹¹ As the U.S. Fish & Wildlife Service stated in its decision to list the species under the ESA, the basking turtle is not able to inhabit large lakes or polluted waters.¹¹² The species could also be threatened by increased recreation resulting from the change in riverine conditions to a lake environment. After all, the DEIS suggests that the project is expected to bring about additional recreational opportunities. Not only could an increased human presence result in greater exploitation (i.e. collection) of the species, but also an increase in recreational boating on the river and extended human presence on nesting sandbars (including the very islands the DEIS states would be created to mitigate impacts) could result in behavioral changes (limited basking), physiological changes (increased long-

¹⁰¹ *Id.*

¹⁰² *Id.* at 9.

¹⁰³ *Id.* at 2, 12.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.* at 18.

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ *Id.* at 19.

¹⁰⁹ The U.S. Fish & Wildlife Service also noted the absence of this information in its recent letter to the District discussed earlier. *See supra*, note 85.

¹¹⁰ 51 Fed. Reg. at 45907; Selman, W. and Jones, R.L. 2017. Population Structure, Status, and Conservation of Two Graptemys Species from the Pearl River, Mississippi. *Journal of Herpetology* 51(1):27-36 (Attachment L).

¹¹¹ 51 Fed. Reg. at 45908.

¹¹² *Id.* at 45907.

term stress) and direct mortalities from faster and larger boats.¹¹³ The DEIS fails to analyze all of these impacts to the species.

Lastly, the DEIS contains unfounded statements regarding the project's benefits to the species. In a rather conclusory manner, the DEIS finds that relocating a weir structure will continue to provide necessary conditions and habitats and mitigation measures will provide "significant benefits" to the species.¹¹⁴ There is no explanation of how these mitigation measures will benefit the species. In view of the science that large lake areas cannot sustain the species, a position taken by the U.S. Fish & Wildlife Service as well as experts such as Dr. Selman,¹¹⁵ the District's claims are dubious even with the incorporation of islands into the project design as the District proposes. Perhaps most telling are the findings of the U.S. Fish & Wildlife Service in 2010. The Service determined in its Five-Year Review of the Species:

An impoundment for flood control of the Pearl River within ringed map turtle habitat at Jackson, Mississippi, south of the existing Ross Barnett Reservoir, has been considered. A feasibility study was conducted by the Corps of Engineers on the formation of this impoundment; however the future of the project is unclear. *If the proposed reservoir is completed, it would likely result in the extirpation of the known ringed map turtle at this location.* The population at this location represents the best known population on the Pearl River south of the Ross Barnett Reservoir.¹¹⁶

Given the lack of accurate baseline information, the failure to analyze the project's effects on the ringed sawback, the unsupported assertions that mitigation measures will otherwise offset these impacts, and the overwhelming scientific support for the conclusion that the project would have a profound impact on this listed species, the District cannot fairly and accurately conclude that the impact on the species would be "moderate."

3. Impacts to the Northern Long-Eared Bat.

The impacts analysis for the Northern long-eared bat is wholly inadequate as it also lacks critically important baseline information for the species in the project area. The DEIS states, "[a]t this point, the USFWS does not have survey data that would indicate the migration patterns for the NLEB. More specifically, little is known whether the available summertime woodland habitat present within the Project Area is being utilized by the NLEB."¹¹⁷ It goes on to say that "no existing data is available that would indicate that the NLEB currently utilizes the Project Area during the summer migration."¹¹⁸ The

¹¹³ Selman, W. and Jones, R.L. 2017. Population Structure, Status, and Conservation of Two Graptemys Species from the Pearl River, Mississippi. *Journal of Herpetology* 51(1):27-36 (Attachment L).

¹¹⁴ DEIS at 202-03.

¹¹⁵ 51 Fed. Reg. 45907; Selman (2018).

¹¹⁶ U.S. Fish & Wildlife Service, Ringed map turtle (*Graptemys oculifera*), 5-Year Review: Summary and Evaluation (2010) (Attachment J) (emphasis added).

¹¹⁷ DEIS at 83.

¹¹⁸ *Id.*

District also finds that “the project will not impact or occur near any known maternity roost trees since currently, there are no known maternity roost trees within the state.”¹¹⁹

The lack of baseline data regarding the occurrence of bats within the project area renders the impacts analysis fundamentally flawed. Without knowing the extent to which the NLEB uses the project area, the extent of suitable habitat that could be impacted, and whether roost trees are present in the project area, the District cannot reasonably conclude that the impacts would be “minor.”¹²⁰ An EIS must “describe the environment of the areas to be affected or created by the alternatives under consideration.”¹²¹ The establishment of the baseline conditions of the affected environment is a required and practical requirement of the NEPA process. Without establishing baseline conditions there is simply no way to determine what effect an action will have on the environment.¹²² This frustrates a fundamental purpose of NEPA which is to allow for informed public participation and informed decisionmaking.¹²³

Moreover, the District’s determination that the impacts would be “minor” cannot be squared with the little information the District does provide in the DEIS. The District explains that the project:

would include the clearing of a *substantial amount* of existing forestland habitat within the project area that could be potential summertime habitat for the NLEB. Though the significance of the available habitat utilization by the NLEB is not known at this time, the *potential available habitat does exist* within the Project Area. In addition, *the availability of suitable NLEB habitat within close proximity to the Project Area is also substantial*. As a result, the potential direct, adverse impacts to the available NLEB habitat within the Project Area would be minor in intensity and long-term in duration.¹²⁴

Given the substantial amount of potential summertime habitat that may be within and in close proximity to the project area, the District’s conclusion that the effects would nevertheless be “minor” is entirely premature and not supported by the facts.

The analysis of indirect and cumulative impacts to the NLEB is similarly flawed. With respect to indirect impacts, the DEIS concludes that they would be “limited to the time period when the clearing activities take place and associated with any potential relocation of NLEBs that might utilize the habitat within the clearing areas to adjoining habitats. Given this, the potential indirect, adverse impacts to the NLEB habitat within the Project Area would be minor in intensity and short-term in duration.”¹²⁵ Not only does the DEIS fail to provide any scientific support for this conclusion but it also fails to consider several important aspects of NLEB ecology. Impacts from forest clearing are

¹¹⁹ *Id.* at 84.

¹²⁰ DEIS at 203.

¹²¹ 40 C.F.R. § 1502.15.

¹²² *American Rivers v. Federal Energy Regulatory Comm’n*, 201 F.3d 1186, 1195 n.15 (9th Cir. 2000).

¹²³ *See Earth Island Institute v. U.S. Forest Service*, 442 F.3d 1147 (9th Cir. 2006).

¹²⁴ DEIS at 203 (emphasis added).

¹²⁵ DEIS at 204.

not limited to direct mortality and injury and simply relocating to another roost site. As explained earlier, forest conversion may not only result in the loss of suitable roosting or foraging habitat, but it also results in fragmentation of remaining forest patches, leading to longer flights between suitable roosting and foraging habitat as well as the removal of travel corridors, affecting both individuals and colonies.¹²⁶ Depending on a number of factors including the extent of the NLEB population in the project area and the distance from other roost sites, the impacts could be significant and long-term. But again, the District provides no information about the local population and summarily concludes that even with “limited to non-existent data about the actual utilization of the available habitat” by the species, the cumulative effects would be minor given the extent of summertime habitat throughout the watershed.¹²⁷ The cumulative effects analysis includes no data on the amount of habitat otherwise available to the species in the watershed.

Here, the project area is within the buffer zone for the summer hibernation area for the NLEB¹²⁸ and the U.S. Fish & Wildlife Service identified forest conversion the loss of summer habitat resulting from forest conversion as a threat to the species when it listed the NLEB as a threatened species in 2014.¹²⁹ As explained earlier, federal agencies have a duty to provide this missing information, examine the relevant data, and articulate a satisfactory explanation for why the project would not have significant impacts to the NLEB.¹³⁰

4. Impacts to the Wood Stork.

The DEIS contains a cursory and flawed analysis of the project’s impacts to the wood stork. As with numerous other species this project threatens, the DEIS fails to provide necessary baseline information saying that, “no data exists of observations of wood storks within the Project Area.”¹³¹ The DEIS goes on to say that “though no known nesting locations are present within the Project Area, suitable habitat is present.”¹³² Nevertheless, the DEIS summarily concludes that the direct impacts would be “minor” in intensity.¹³³ Indirect impacts would also be minor according to the District as some unspecified amount of available nesting habitats within close proximity to the project area would continue to provide nesting opportunities.¹³⁴ The District similarly finds that cumulative impacts would be minor as the extent of overall nesting habitat throughout the Pearl River is substantial, despite the “limited to non-existent data about actual utilization of the available habitats.”¹³⁵

¹²⁶ *Id.*

¹²⁷ *Id.* at 205.

¹²⁸ *Id.* at 199.

¹²⁹ *Id.*

¹³⁰ *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).

¹³¹ DEIS at 84.

¹³² *Id.* at 199.

¹³³ *Id.* at 203.

¹³⁴ DEIS at 204.

¹³⁵ *Id.* at 205.

Without any information about the status of the species in the project area, the District cannot fairly and reasonably conclude that impacts to wood stork nesting would be minor. There is also no consideration of the project's impacts to foraging habitat. The U.S. Fish & Wildlife Service has determined that the decline of the wood stork is largely due to the reduction in food base necessary to support breeding colonies.¹³⁶ This reduction is attributed to the loss of wetland habitat as well as changes in water hydroperiods from draining wetlands and changing water regimes by constructing levees, canals, and floodgates.¹³⁷ There is absolutely no discussion of how transforming a riverine ecosystem into a lake could impact the species by removing potentially important foraging habitat. The agencies must compile and analyze the missing data, analyze how this project could impact wood stork nesting and foraging habitat, and make informed conclusions about the significance of the project's impacts to the species.

5. Impacts to the Pearl River Map Turtle.

There is absolutely no discussion of the project's impacts to the Pearl River Map turtle. NEPA requires agencies to take a "hard look" at the environmental consequences of their actions, including all foreseeable direct, indirect, and cumulative impacts to wildlife.¹³⁸ The DEIS is deficient in that it ignores the project's impacts to this imperiled species.

As previously discussed, the Pearl River map turtle is a highly imperiled species. The population has declined significantly since the 1980s and Dr. Selman's research in 2017-2018 found densities lower during all surveys and in all stretches of the Pearl River in comparison to the ringed sawback.¹³⁹ Water quality and riverine regulation at the reservoir have likely impacted prey species.¹⁴⁰ Ultimately, as Dr. Selman explains, the chances of localized extinctions are higher in small populations like the Pearl River map turtle due to environmental and demographic stochastic events.¹⁴¹ Further, their absence in surveyed oxbows suggests that they may depend exclusively on riverine conditions for their survival.¹⁴²

As Dr. Selman estimates, 87 individuals would be directly impacted by the project with another 110 individuals indirectly affected upstream and downstream of the project area.¹⁴³ Impacts would be similar as those to the ringed sawback. As previously discussed, the One Lake Project will dramatically alter the hydrologic regime of the stretch of the Pearl River, transforming the existing lotic, riverine habitat to a lentic, lake setting.¹⁴⁴ Reduced river velocities will result in a lack of snag inputs along banks

¹³⁶ U.S. Fish & Wildlife Service, Environmental Conservation Online System, Wood stork (*Mycteria Americana*) at <https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B06O>.

¹³⁷ *Id.*

¹³⁸ 40 C.F.R. §§ 1508.7; 1508.8.

¹³⁹ Selman (2018), *supra* note 99 at 17.

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ *Id.* at 2.

¹⁴⁴ *Id.* at 18.

and minimize the annual scouring of sandbars that the ringed sawback depends on.¹⁴⁵ Generalist turtles would benefit at the expense of specialist riverine turtles (including the Ringed sawback and Pearl River Map turtle). Over time these generalist species would colonize the project area and the ringed sawback and Pearl River map turtle population would disappear over time.¹⁴⁶ As Selman and Jones (2017) explain both species are already experiencing a decline both upstream and downstream of the Ross Barnett Reservoir, likely as a result of impaired water quality from industrial and/or municipal effluents, associated impacts of reservoir flow regulation, collection by the pet trade, or a combination of these factors.¹⁴⁷ Dr. Selman concluded the project's impacts would be significant and long-lasting and negatively impact the recovery of the species.¹⁴⁸

In light of the project's likely impacts to the ringed sawback, Pearl River map turtle, and other imperiled species, the IUCN Tortoise and Freshwater Turtle Specialist Group (a global network of over 300 leading scientists and conservationists focused on tortoises and freshwater turtles) urged the State in July to cancel its plans for the project.¹⁴⁹

B. The U.S. Army Corps of Engineers and U.S. Fish & Wildlife Service Must Engage in Formal Consultation.

The biological assessment prepared for this project and incorporated into the DEIS as Appendix D similarly fails to adequately examine the impacts this project will have on several listed species. The BA, like the DEIS, lacks necessary baseline information about the status of these species and their habitat in the project area. The BA's discussion of the impacts mirrors that of the DEIS and its conclusions that the project will not adversely affect several species or jeopardize/adversely modify the critical habitat of others, are not supported by the best available science. As we have previously discussed in our comments on the DEIS, the project has significant and long-term impacts on a number of species. Under the ESA, the threshold for triggering formal consultation is "very low" and "any possible effect...triggers formal consultation requirements."¹⁵⁰

Therefore, we urge the Army Corps of Engineers and Fish & Wildlife Service to engage in formal consultation regarding this project's impacts to the gulf sturgeon, ringed sawback map turtle, Northern long eared-bat¹⁵¹, and wood stork. The agencies must also consult on the project's impacts to all other potentially impacted species including

¹⁴⁵ *Id.*

¹⁴⁶ *Id.*

¹⁴⁷ Selman, W. and Jones, R.L. 2017. Population Structure, Status, and Conservation of Two Graptemys Species from the Pearl River, Mississippi. *Journal of Herpetology* 51(1):27-36 (Attachment L).

¹⁴⁸ Selman (2018), *supra* note 99 at 19.

¹⁴⁹ Letter from IUCN SSC Tortoise and Freshwater Turtle Specialist Group (July 31, 2018) (Attachment K).

¹⁵⁰ U.S. Fish & Wildlife Service and National Oceanic and Atmospheric Administration, Interagency Cooperation-Endangered Species Act of 1973, as amended, Final Rule, 51 Fed. Reg. 19, 949-19,950 (June 3, 1986).

¹⁵¹ This species currently risks extinction from white nose syndrome and habitat loss. According to recent reports white nose syndrome has been discovered in the Black Hills of Wyoming and South Dakota. *See Here and Now, Researchers Combat Killer Fungus That's Putting Bats in Danger*, August 30, 2018 at <http://www.wbur.org/hereandnow/2018/08/30/killer-fungus-bats-wyoming>

the Louisiana Black bear, Pearl darter, bald eagle, and threatened inflated heel splitter.¹⁵² The Service must prepare a biological opinion on this project.

C. The Draft EIS Is Otherwise Deficient.

In addition to the District's failure to adequately analyze the direct, indirect, and cumulative impacts to imperiled species, the Draft EIS is deficient in several other respects. These deficiencies include the lack of a reasonable range of alternatives for the public to consider, a failure to analyze the growth inducing impacts of the proposed project, and the lack of a mitigation plan to offset the impacts to the human environment.

III. CONCLUSION

The DEIS fails to analyze the numerous impacts this project will have on several listed and otherwise imperiled species. These impacts will be both significant and long-term and in the case of species such as the ringed sawback and Pearl River map turtle, result in their local extirpation, thereby putting these species at grave risk of extinction. We urge the Corps not to approve the proposed project.

Thank you for your consideration of our comments and the attached scientific studies, listing rules, and other documents that we reference in our letter. Please include these documents in the administrative record for this project.

Sincerely,



Jason Totoiu

¹⁵² See letter from Joseph Ranson to Michael Goff, *supra* note 85 at 5 (noting that the DEIS and BA do not even mention the inflated heel splitter).

ATTACHMENTS

Attachment A

U.S. Fish & Wildlife Service, Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Ringed Sawback Turtle (*Graptemys Oculifera*), 51 Fed. Reg. 45907-45910 (Dec. 23, 1986).

Attachment B

Ennen, J.R., Lovich, J.E., and Jones, R.L. 2016. *Graptemys pearlensis* Ennen, Lovich, Kreiser, Selman, and Qualls 2010-Pearl River Map Turtle. In: Rhodin, A.G.J., Pritchard, P.C.H., van Dijk, P.P., Saumure, R.A., Buhlmann, K.A., Iverson, J.B., and Mittermeier, R.A. (Eds.). Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group. Chelonian Research Monographs 5(9):094.1-8, doi: 10.3854/crm.5.094.pearlensis.v1.2016, <http://www.iucn-tftsg.org/cbft/>.

Attachment C

Ennen, J.R., Lovich, J.E., Kreiser, B.R., Selman, W. and Qualls, C.P. 2010. Genetic and morphological variation between populations of the Pascagoula Map turtle (*Graptemys gibbonsi*) in the Pearl River and Pascagoula Rivers with description of a new species. *Chelonian Conservation and Biology* 9(1):98-113.

Attachment D

National Oceanic and Atmospheric Administration and U.S. Fish & Wildlife Service, Endangered and Threatened Wildlife and Plants; Threatened Status for the Gulf Sturgeon, 56 Fed. Reg. 49653-49658 (Sep. 30, 1991).

Attachment E

National Marine Fisheries Service & U.S. Fish & Wildlife Service, Gulf Sturgeon (*Acipenser oxyrinchus desotoi*), 5-Year Review: Summary and Evaluation, (Sep. 2009).

Attachment F

U.S. Fish & Wildlife Service and National Oceanic and Atmospheric Administration, Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Gulf Sturgeon, 68 Fed. Reg. 13370-13495 (Mar. 19, 2003).

Attachment G

U.S. Fish & Wildlife Service, Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Northern Long-Eared Bat With 4(d) Rule, 80 Fed. Reg. 17974-18033 (April 2, 2014).

Attachment H

U.S. Fish & Wildlife Service, Endangered and Threatened Wildlife and Plants; Reclassification of the U.S. Breeding Population of the Wood Stork From Endangered to Threatened, 79 Fed. Reg. 37078-37103 (June 30, 2014).

Attachment I

Selman, W. 2018. Diamonds in the Rough: Status of Two Imperiled Graptemys Species (Graptemys oculifera and G. pearlensis) in the Pearl River of Jackson, MS. Year 2.

Attachment J

U.S. Fish & Wildlife Service, Ringed map turtle (Graptemys oculifera), 5-Year Review: Summary and Evaluation (2010).

Attachment K

Letter from IUCN SSC Tortoise and Freshwater Turtle Specialist Group (July 31, 2018).

Attachment L

Selman, W. and Jones, R.L. 2017. Population Structure, Status, and Conservation of Two Graptemys Species from the Pearl River, Mississippi.