



United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Mississippi Ecological Services Field Office  
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Jackson, Mississippi 39213

Standing Analysis for Threatened and Endangered Species in Mississippi

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# 1 INTRODUCTION

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## 1.1 PURPOSE OF STANDING ANALYSIS

This standing analysis provides an optional, streamlined alternative consultation process for federal action agencies to address potential effects of future actions, pursuant to section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act), to the following species and critical habitat(s) shown in Table 1, below. The U.S. Fish and Wildlife Service (Service) developed this standing analysis to streamline the process of reviewing actions that would result in a “may affect, not likely to adversely affect” (NLAA) determination for the subject species and critical habitat(s). This standing analysis also provides proactive technical assistance to federal action agencies in making a “No Effect” (NE) determination.

Where appropriate, this standing analysis groups the covered species and critical habitat by taxa and habitat type to assess covered activities, limits or sideboards, and conservation measures. In other instances, limits or sideboards and conservation measures are more appropriately described for each species. This structure includes the following groups:

- Plants and Insects
- Reptiles and Amphibians
- Marine
- Shorebirds
- Birds
- Aquatics
- Freshwater Turtles

This standing analysis provides an optional consultation process that is available to federal agencies for federal actions that meet the criteria described below as delivered through a Determination Key (DKey) in the Service’s Information for Planning and Consultation (IPaC) application. To obtain consultation documents, including technical assistance for NE and concurrence with NLAA determinations, federal agencies must use the associated DKey in IPaC to answer questions about the proposed action. By screening the project through the DKey, all or part of the standing analysis is adopted by the federal action agency and used to submit a concurrence request to support their NLAA determination. It also provides technical information to help agencies determine whether an action will have no effect on the species or critical habitat. Formal consultation under Section 7(a)(2) of the Act (Act) is required for actions that "may affect" a listed species or critical habitat, unless the Service concurs in writing that actions are not likely to adversely affect listed species or critical habitat. Actions which an action agency determines will have no effect on species or critical habitat do not require submittal to the Service.

With the IPaC DKey established for this standing analysis, the action agency may receive a letter of concurrence for eligible projects by providing specific information requested by the DKey. Throughout the remainder of this document, statements regarding this standing analysis refer to both the standing analysis and the associated DKey.

**Table 1.** The following threatened and endangered species and designated critical are included in this standing analysis that supports the Mississippi statewide Dkey. The Federal listing status (threatened, endangered, proposed threatened, proposed endangered, or nonessential

experimental population) is indicated as T, E, PT, PE, or NEP, respectively, following the species common name. The group in which the actions, effects, and conservation measures are described for each species is shown in the Analysis Group column.

Common Name	Scientific Name	Analysis Group
Louisiana quillwort (E)	<i>Isoetes louisianensis</i>	Plants and Insects
Price's potato bean (T)	<i>Apios priceana</i>	Plants and Insects
White fringeless orchid (T)	<i>Planthura integrilabia</i>	Plants and Insects
Whorled sunflower (E)	<i>Helianthus verticillatus</i>	Plants and Insects
Pondberry (E)	<i>Lindera melissifolia</i>	Plants and Insects
Mitchell's satyr butterfly (E)	<i>Neonympha mitchellii mitchellii</i>	Plants and Insects
Gopher tortoise (T)	<i>Gopherus polyphemus</i>	Reptiles and Amphibians
Black pinesnake (T)	<i>Pituophis melanoleucus lodingi</i>	Reptiles and Amphibians
Black pinesnake critical habitat	<i>Pituophis melanoleucus lodingi</i>	Reptiles and Amphibians
Dusky gopher frog (E)	<i>Rana sevosa</i>	Reptiles and Amphibians
Dusky gopher frog critical habitat	<i>Rana sevosa</i>	Reptiles and Amphibians
Eastern indigo snake (T)	<i>Drymarchon couperi</i>	Reptiles and Amphibians
West Indian manatee (T)	<i>Trichechus manatus manatus</i>	Marine
Green sea turtle (T)	<i>Chelonia mydas</i>	Marine
Hawksbill sea turtle (E)	<i>Eretmochelys imbricata</i>	Marine
Kemp's Ridley sea turtle (E)	<i>Lepidochelys kempii</i>	Marine
Leatherback sea turtle (E)	<i>Dermochelys coriacea</i>	Marine
Loggerhead sea turtle (Northwest Atlantic)	<i>Caretta caretta</i>	Marine

Ocean Distinct Population Segment) (T)		
Loggerhead sea turtle (Northwest Atlantic Ocean Distinct Population Segment) critical habitat	<i>Caretta caretta</i>	Marine
Piping plover (T)	<i>Charadrius melodus</i>	Shorebirds
Piping plover critical habitat	<i>Charadrius melodus</i>	Shorebirds
Rufa red knot (T)	<i>Calidris canutus rufa</i>	Shorebirds
Red knot critical habitat	<i>Calidris canutus rufa</i>	Shorebirds
Eastern black rail (T)	<i>Laterallus jamaicensis ssp. Jamaicensis</i>	Shorebirds
Red-cockaded woodpecker (T)	<i>Dryobates (Picoides) borealis</i>	Birds
Mississippi sandhill crane (E)	<i>Antigone canadensis pulla</i>	Birds
Mississippi sandhill crane critical habitat	<i>Antigone canadensis pulla</i>	Birds
Whooping crane (NEP)	<i>Grus americana</i>	Birds
Alabama lampmussel (E)	<i>Lampsilis virescens</i>	Aquatics
Alabama moccasinshell (T)	<i>Medionidus acutissimus</i>	Aquatics
Alabama moccasinshell critical habitat	<i>Medionidus acutissimus</i>	Aquatics
Black clubshell (E)	<i>Pleurobema curtum</i>	Aquatics
Cumberlandian combshell (E)	<i>Epioblasma brevidens</i>	Aquatics
Cumberlandian combshell critical habitat	<i>Epioblasma brevidens</i>	Aquatics

Cumberland moccasinshell (PE)	<i>Medionidus conradicus</i>	Aquatics
Fat pocketbook (E)	<i>Potamilus capax</i>	Aquatics
Heavy pigtoe (E)	<i>Pleurobema taitianum</i>	Aquatics
Inflated heelsplitter (T)	<i>Potamilus inflatus</i>	Aquatics
Louisiana pigtoe (PT)	<i>Pleurobema riddelli</i>	Aquatics
Louisiana pigtoe critical habitat	<i>Pleurobema riddelli</i>	Aquatics
Orangenacre mucket (T)	<i>Hamiota perovalis</i>	Aquatics
Orangenacre mucket critical habitat	<i>Hamiota perovalis</i>	Aquatics
Ovate clubshell (E)	<i>Pleurobema perovatum</i>	Aquatics
Ovate clubshell critical habitat	<i>Pleurobema perovatum</i>	Aquatics
Oyster mussel (E)	<i>Epioblasma capsaeformis</i>	Aquatics
Oyster mussel critical habitat	<i>Epioblasma capsaeformis</i>	Aquatics
Pink mucket (E)	<i>Lampsilis abrupta</i>	Aquatics
Rabbitsfoot (T)	<i>Quadrula cylindrica cylindrica</i>	Aquatics
Rabbitsfoot critical habitat	<i>Quadrula cylindrica cylindrica</i>	Aquatics
Round hickorynut (T)	<i>Obovaria subrotunda</i>	Aquatics
Round hickorynut critical habitat	<i>Obovaria subrotunda</i>	Aquatics
Sheepnose mussel (E)	<i>Plethobasus cyphus</i>	Aquatics
Slabside pearlymussel (E)	<i>Pleuonaia dolabelloides</i>	Aquatics

Slabside pearlymussel critical habitat	<i>Pleuroaia dolabelloides</i>	Aquatics
Snuffbox mussel (E)	<i>Epioblasma triquetra</i>	Aquatics
Southern clubshell (E)	<i>Pleurobema decisum</i>	Aquatics
Southern clubshell critical habitat	<i>Pleurobema decisum</i>	Aquatics
Southern combshell (E)	<i>Epioblasma penita</i>	Aquatics
Tennessee pigtoe (PE)	<i>Pleuroaia barnesiana</i>	Aquatics
Bayou darter (T)	<i>Etheostoma rubrum</i>	Aquatics
Pearl darter (T)	<i>Percina aurora</i>	Aquatics
Pallid sturgeon (E)	<i>Scaphirhynchus albus</i>	Aquatics
Gulf sturgeon (T)	<i>Acipenser oxyrinchus</i> (= <i>oxyrhynchus</i> ) <i>desotoi</i>	Aquatics
Gulf sturgeon critical habitat	<i>Acipenser oxyrinchus</i> (= <i>oxyrhynchus</i> ) <i>desotoi</i>	Aquatics
Ringed map turtle (T)	<i>Graptemys oculifera</i>	Freshwater Turtles
Yellow-blotched map turtle (T)	<i>Graptemys flavimaculata</i>	Freshwater Turtles
Pearl River map turtle (T)	<i>Graptemys pearlensis</i>	Freshwater Turtles
Alabama red-bellied turtle (E)	<i>Pseudemys alabamensis</i>	Freshwater Turtles

## 1.2 BENEFITS OF THE STANDING ANALYSIS

For those federal actions that the Service has accumulated significant knowledge in analyzing previously, the Service is able to develop a standing analysis to streamline the consultation process for eligible federal actions. The streamlined process facilitated by this standing analysis will reduce the amount of Service staff time necessary to review actions requesting consultation and provide federal agencies, consultants, and other project proponents a predictable, consistent, and timely response for qualified actions. In addition, development of a standing analysis to assess the impacts of individual projects allows the Service to more efficiently track multiple independent actions on listed species and critical habitat.



### **1.3 ELIGIBILITY FOR USE OF THE STANDING ANALYSIS**

A standing analysis does not convey concurrence with NLAA determinations for individual projects. Rather, it serves as a streamlining tool. Action agencies may use it to develop their request for concurrence from the Service and support their finding that the action is not likely to adversely affect species and critical habitat. The standing analysis also allows the Service to quickly evaluate an action agency's analysis of effects to listed species and critical habitat. If the action agency's proposed action is consistent with covered<sup>1</sup> area and covered activities, including any required conservation measures in the standing analysis, the Service will concur that the action will have insignificant, discountable, or completely beneficial effects on the relevant listed species and critical habitat (i.e., NLAA).

The standing analysis may also provide technical information to help agencies identify actions that will have no effects to the listed species and critical habitat. For projects that do not qualify to use the standing analysis, action agencies/project proponents should coordinate directly with the Mississippi Ecological Services Field Office (MSFO) and address any consultation requirements, as appropriate.

### **1.4 ENSURING ACCURATE DETERMINATIONS**

As is true in all consultation procedures, the Service relies on complete and accurate information provided by federal action agencies during consultation. To apply this standing analysis to a project, it is the responsibility of the action agency/project proponent to provide information that is truthful and accurate and that fully represents the entire scope of the project in order to comply with the Act.

Where appropriate in our analysis, we make note of which activities are expected to have no effects<sup>2</sup> on a species and critical habitat. This information is provided as technical assistance to action agencies making no effect/may affect determinations.

### **1.5 UPDATES TO THE STANDING ANALYSIS**

This standing analysis will be reviewed annually and updated as needed to ensure the analysis contains the best scientific and commercial data available. This update process will include regular reviews to ensure that the analysis is accurate and valid, and that the standing analysis still meets the Act's requirements. All updates will also ensure that the logic is sound, and determinations are appropriate for covered activities. Updates will be signed under an updated cover.

Projects reviewed under this standing analysis must rely on the version that is current on the date consultation is completed. For reference, both current and previous versions of the standing analysis will be maintained by the MSFO.

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<sup>1</sup> The term "covered" is used throughout this document to define the limits of use of a standing analysis. However, although the area, activities, and species are "covered" by the standing analysis, the future activities themselves are not "covered" by the standing analysis; there are additional steps (with or without a DKey) that take place for an action agency to utilize the information in the standing analysis and to request FWS concurrence that their proposed action is NLAA for listed species and critical habitat.

<sup>2</sup> A "no effect" determination is appropriate when either the species is not present in the action area or is not exposed to any possible stressors or impacts from the proposed action, or the proposed action would not result in any physical, chemical, or biotic changes to the environment that are reasonably certain to occur and would not occur but for the action (i.e., no action area can be defined).

If we revise the standing analysis and determine reinitiation is required for any ongoing activities that used the previous standing analysis, the Services will contact the respective action agency and advise them of their need to reinitiate.

The standing analysis will be reviewed and updated by MSFO staff following the addition of a species to the Federal List of Endangered and Threatened Wildlife or Federal List of Endangered and Threatened Plants, reclassification of a species, or delisting of a species or revision or designation of critical habitat within the State of Mississippi. The most current standing analysis and previous analyses may be found on the MSFO website at <https://www.fws.gov/office/mississippi-ecological-services/library> or by contacting the MSFO at 601-965-4900 or 6578 Dogwood View Parkway, Suite A, Jackson, Mississippi 39213.

## 2 COVERED AREA

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This standing analysis applies within the area described below, unless otherwise excluded (Section 3.1). In delineating the geographic scope of this standing analysis (coverage area), we determined the appropriate extent based on the species and critical habitat(s) included and the activities covered herein. To qualify to use this standing analysis, a project's action area must fall completely within the covered area. Projects that do not fall entirely within the covered area should contact the MSFO to initiate coordination or consultation.

This standing analysis applies to the geographic area included in all counties in the State of Mississippi including coastal barrier islands and inland rivers.



### 3 COVERED ACTIVITY DESCRIPTION

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The activities described herein include all activities addressed in this standing analysis. The activity description, conservation measures, and covered area inform the standing analysis and describe which specific activities are appropriate for NE or NLAA outcomes under this analysis. The description of activities and their inclusion in the standing analysis should not be construed to indicate that these activities will always result in effects to the species or its critical habitat, nor is it meant to cover activities that fall outside of the analysis as described below. Action agencies are not required to use this standing analysis; they continue to have the option to request individual consultation on a project; however, in most cases, we anticipate use of the standing analysis will substantially decrease consultation timeframes.

#### **Plants and Insects**

The covered activities include a compilation of different types of projects that typically would not significantly affect Federally listed plant species listed in Table 1 or the Mitchell's satyr butterfly. To use this standing analysis and receive a NLAA conclusion from IPaC through the DKey, each project must not include suitable habitat within its Action Area or must not include specified activities that might expose the species to stressors that would result in take of the Mitchell's satyr butterfly or remove or reduce to possession listed plants that occur on Federal lands.

#### **Reptiles and Amphibians**

The covered activities include the compilation of many different types of projects that typically would not significantly affect the species listed under the Reptiles and Amphibians analysis group in Table 1 including Federally listed frogs, snakes, and tortoises.

##### *Gopher tortoise*

To use this standing analysis and receive a conclusion for gopher tortoise from IPaC through the DKey, each project in areas where gopher tortoise occurs or is expected to occur must be surveyed by someone with experience in the species' biology or ecology. The survey must either not detect gopher tortoises or their burrow (including small hatchlings or smaller burrows) or adhere to the following conditions:

- Projects that permanently remove suitable gopher tortoise habitat must implement the following three practices: 1) establish a 50-foot permanent undisturbed vegetated buffer between all burrows and project construction limits, 2) provide at least 2 acres of suitable foraging and burrowing habitat per each active and inactive burrow during and after project implementation, and 3) install temporary tortoise barrier fencing between all burrows and project construction.
- Projects that temporarily disturb gopher tortoise habitat must implement the following two practices: 1) establish a 25-foot undisturbed vegetated buffer between all burrows and project construction limits, and 2) install temporary tortoise barrier fencing between all burrows and project construction.

### *Black pinesnake and Eastern indigo snake*

To use this standing analysis and receive a conclusion for black pinesnake or Eastern indigo snake from IPaC through the DKey, each project in suitable habitat for the species must follow a no-kill snake policy within the regulated action area during the project lifetime.

### *Dusky gopher frog*

To use this standing analysis and receive a conclusion for dusky gopher frog from IPaC through the DKey, projects in the species range must not occur within 1 mile of a pond that sometimes goes dry or a seasonally-flooded pool or depression in an area that has open tree canopy or limited shade.

## **Marine Species**

The covered activities include the compilation of many different types of projects that typically would not significantly affect the species listed under the Marine analysis group in Table 1 including the Federally listed West Indian manatee and sea turtles.

### *West Indian Manatee*

To use this standing analysis and receive a conclusion for this species from IPaC through the DKey, each project must qualify by not including any of the following activities:

- Blasting or other detonation activity
- Modification or construction of warm or freshwater discharges from industrial sites, power plants, water treatment facilities or natural springs or artesian wells
- Ungrated (open) culverts from 8 inches to 8 feet in diameter.

### *Sea turtles*

To use this standing analysis and receive a conclusion for these species from IPaC through the DKey, each project must qualify by not including any of the following activities:

- Actions on or that affect open sandy beaches above the high tide line that will be conducted between May 1 and October 31
- Actions that disturb 0.5 acre or more of open sandy beach above the high tide line and cannot fence off the work area prior to May 1
- Piers or walkways constructed parallel to the shore.

## **Shorebirds**

The covered activities include the compilation of many different types of projects that typically would not significantly affect the species listed under the Shorebirds analysis group in Table 1 including piping plover, rufa red knot, and Eastern black rail.

### *Piping Plover*

To use this standing analysis and receive a conclusion for piping plover from IPaC through the DKey, each project must qualify by not including any of the following activities:

- Beach or dune renourishment
- Human disturbance or ground disturbance in the area from the average annual low tide line to the sea wall or to the wooded/vegetated extent
- Be conducted between July 16 and April 30.

### *Rufa Red Knot*

To use this standing analysis and receive a conclusion for rufa red knot from IPaC through the DKey, each project must qualify by not including any of the following activities:

- Beach or dune renourishment
- Human disturbance or ground disturbance in the area from the average annual low tide line to the sea wall or to the wooded/vegetated extent
- Be conducted between July 16 and May 31.

### *Eastern black rail*

To use this standing analysis and receive a conclusion for Eastern black rail from IPaC through the DKey, each project must qualify by not affecting the hydrology of existing marsh habitat.

## **Birds**

The covered activities include the compilation of many different types of projects that typically would not significantly affect the species listed under the Birds analysis group in Table 1 including the red-cockaded woodpecker, Mississippi sandhill crane, and whooping crane.

### *Red-cockaded woodpecker*

To use this standing analysis and receive a conclusion for red-cockaded woodpecker from IPaC through the DKey, for projects that will remove suitable foraging or nesting habitat, each project must qualify by surveying for cavity trees within 0.5 mile of the proposed project. In addition, the project must not remove or damage woodpecker cavity trees or involve a disturbance within 200 feet of a cavity tree. Projects that include actions that are expected to cause incidental take, but the prohibition of take is excepted in the final 4(d) rule of October 25, 2024, may receive a determination from IPaC for the project. These actions include measures that are necessary and advisable for the conservation of the species including those related to artificial cavities, prescribed fire, herbicide application, habitat management or military training, and habitat management on Federal lands. In addition, projects that do not meet the above conditions must retain foraging habitat at or above the managed stability standard described in the RCW Foraging Habitat Analysis Guidelines on private lands and in the 2003 RCW Recovery Plan for Federal lands.

### *Mississippi sandhill crane*

To use this standing analysis and receive a conclusion for Mississippi sandhill crane from IPaC through the DKey, each project must qualify by not including any of the following activities:

- Impact suitable Mississippi sandhill crane foraging, roosting or nesting habitat
- Create potential for flight collision
- Conduct construction activities within 1,500 feet of crane nesting areas between March 1 and July 30
- Take place between sunset and sunrise
- Remove a 10-meter forested buffer along rights-of-ways
- Decline to install bird flight diverters every 15 feet along the top transmission line or static line.

### *Whooping crane*

To use this standing analysis and receive a conclusion for whooping crane from IPaC through the DKey, each project must not take place in marshy or open flooded field habitat in a National Wildlife Refuge within the species' range in Mississippi.

### **Aquatics**

The covered activities include the compilation of many different types of projects that typically would not significantly affect the species listed in Table 1, Aquatics group, including Federally listed mussels and fishes. To use this standing analysis and receive a conclusion for these species from IPaC through the DKey, each project must qualify by not including any of the following activities:

- Effluent discharge into a stream or river
- Instream mining within the wetted channel, on sand bars, or on gravel bars
- Dredging or desnagging
- Ground disturbance on over 500 linear feet of riverbank including bank stabilization, armoring, riprap, or trenching
- Construction of over 200 linear feet of bulkheads or seawalls in rivers, stream, or bays
- Alterations to water flow or hydrology including but not limited to creation of a diversion channel
- Alterations to water flow or hydrology including but not limited to dewatering of the mainstem stream, river, creek, or other waterbody
- Disturbance to the stream bed or bank with culvert replacement or installation, bridge replacement or construction, trenching of stream bed, or other activities
- Employ heavy machinery in the river
- Land clearing or ground disturbance associated with forest or vegetation removal or urban, commercial, or residential development

In addition, qualifying proposed projects must implement the following conservation measures, as applicable. Projects must comply with Federal, State, and local regulations and obtain all necessary permits. Projects must implement BMPs to prevent illicit sediment or pollutant discharge into water in the project area or waterbodies receiving drainage or discharge from the project area. Projects that include application of pesticides, herbicides, insecticides, animal waste, or chemical fertilizer must adhere to label directions and state and local regulations. Projects that include forestry practices must comply with the most current State-approved forestry and silviculture BMPs (Mississippi Forestry Commission 2008 at the time of this standing analysis development [Mississippi Forestry Best Management Practices](#)).

### **Freshwater Turtles**

The covered activities include the compilation of many different types of projects that typically would not significantly affect the species listed under Freshwater Turtles analysis group in Table 1 including ringed map turtle, yellow-blotched map turtle, Pearl River map turtle, and Alabama red-bellied map turtle.

*Ringed map turtle, yellow-blotched map turtle, and Pearl River map turtle*

To use this standing analysis and receive a conclusion for these species from IPaC through the DKey, each project must qualify by not including any of the following activities:

- Remove or create shade over 0.5 acre or more of submerged or emergent vegetation
- Remove basking habitat including logs, downed trees, woody debris, or other natural structures above the water
- Employ heavy machinery on a sand bar or riverbank between April 16 and September 30

*Alabama red-bellied map turtle*

To use this standing analysis and receive a conclusion for Alabama red-bellied turtle from IPaC through the DKey, each project must qualify by not including any of the following activities:

- Remove or create shade over 0.5 acre or more of submerged or emergent vegetation
- Remove basking habitat including logs, downed trees, woody debris, or other natural structures above the water
- Employ heavy machinery on a sand bar or riverbank between April 16 and September 30
- Increase salinity in the project area
- Result in a permanent barrier greater than 200 feet in length between tidal area or seawater and land containing open, patchy forest

### **3.1 LIMITS/SIDEBOARDS**

To assist action agencies/project proponents in determining whether their project meets the requirements of this standing analysis, the Service will provide a series of questions (Appendix A) to assess whether the action is not likely to adversely affect listed species or critical habitat because the impacts are either unable to be meaningfully measured, detected, or evaluated and, therefore, insignificant; or extremely unlikely to occur and, therefore, discountable. Any actions that are likely to adversely affect a listed species or critical habitat do not qualify under this standing analysis and require separate individual project review and consultation by the MSFO.

Based on Section 7(a)(2) consultations conducted by the MSFO in fiscal years 2020 to 2024, we expect up to 3,500 projects/actions to be assessed per year under this standing analysis, including official species lists. We have considered the temporal extent of effects of expected proposed projects and the spatial distance between projects as we developed the questions to assess the direct, indirect, and cumulative effects of projects that qualify for the Dkey.

Actions that include certain activities, occur in certain geographic areas, or meet one or more context-dependent conditions will not be eligible to use the standing analysis. For projects requiring consultation (i.e., that “may affect” listed species or critical habitats) that do not qualify due to one or more of these exclusions, action agencies/project proponents must contact the appropriate MSFO directly to complete their consultation requirements.

#### **3.1.1 Activity Based Limits/Sideboards**

To receive the Service’s technical assistance acknowledgement of an action agency’s NE determination or the Service’s concurrence for a NLAA determination, based on this standing analysis, actions and activities may NOT include projects that implement the conditions described in Covered Activity Descriptions that would preclude use of this key, including but not

limited to actions that result in a may affect, or a may affect, likely to adversely affect determination.

### 3.1.2 Location Based Limits/Sideboards

As outlined in the **Section 2.0 Covered Area**, this standing analysis will apply broadly where the listed species in Table 1 may be present. For each species, the shapefiles used in the Dkey (area of influence, OneRange, refined range, species list area or other current terminology) were developed with the best available information on species' occurrences and suitable habitat. These shapefiles typically include a species and taxa-appropriate buffer around occurrences or habitat (Table 2) and reflect the extent of habitat and occurrence where we expect the species may occur, projects may impact the species, and the designated critical habitat for the species.

**Table 2.** Species- or taxa-appropriate buffer incorporated in area of influence shapefiles or Dkey questions based on species needs, projects covered under this Dkey, and expected impacts to species are indicated with supporting rationale.

<b>Species or Analysis Group</b>	<b>Buffer</b>	<b>Rationale</b>
Plants	0.5 mile around species occurrence records	Suitable habitat within 0.5 mile to support pollination and reproduction
Aquatics and Freshwater Turtles	400 meters extending from left and right bank ordinary high-water mark	Qualifying projects outside this buffer are not expected to impact the species or habitat
Red-cockaded woodpecker	0.5 mile of foraging habitat around cavity trees	Projects that occur within 0.5 mile of foraging habitat should be surveyed for nesting habitat
Mitchell's satyr butterfly	50 feet buffer around suitable habitat	Species is fairly restricted in dispersal and projects outside this buffer are less likely to impact species
Dusky gopher frog	1 mile around Action Area	Suitable ponds within 1 mile of actions that may affect the species may be impacted
Black pinesnake	Within 1,500 feet of suitable habitat	Black pinesnakes use suitable habitat less near edges or disturbed areas
Mississippi sandhill crane	Within 1,500 feet of nesting area	Construction within 1,500 feet of nesting areas is expected to affect species behavior, reproduction, and survival



### **3.1.3 Conditional/Other Limits/Sideboards**

In addition, the following conditional limits/sideboards are addressed below in **3.2 Conservation Measures**. Species or activity-based conservation measures are included in the Dkey survey questions and output letters. When project proponents agree to and implement these established conservation measures and BMPs to individual projects and in aggregate, we have determined that the impact of actions applying the standing analysis results in NLAA determinations.

## **3.2 CONSERVATION MEASURES**

This standing analysis applies conservation measures as design features to avoid adverse effects on an individual, population, or species. The Service has previously found that incorporation of certain conservation measures, while voluntarily adopted by action agencies, has reduced effects to the extent that the actions do not require formal consultation and the Service, and the action agency have found that actions are not likely to adversely affect species and critical habitat. Projects using this standing analysis to support a determination of NE or NLAA must meet all the requirements of the standing analysis. The inability to voluntarily adopt certain conservation measures may result in a project not qualifying to use this standing analysis. Additional conservation recommendations are also included that may be voluntarily implemented as part of a federal agency's program under a standing analysis section 7(a)(1).

The following sections describe the measures that the action agency will incorporate into the action to avoid adverse effects (or minimize effects the point of being discountable or insignificant) to species and critical habitat. These measures are grouped by analysis group or taxa when appropriate and are separated out by species as needed.

### **3.2.1 Louisiana Quillwort**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit Louisiana quillwort, those conservation measures are required as part of the action.

Conservation measures that are recommended and may result in a net benefit to the Louisiana quillwort include the following:

- Follow applicable State and local water quality measures including stormwater pollution prevention plan and other environmental compliance.
- Minimize turbidity and siltation from upstream and upslope activities.
- Minimize alterations to the prevailing hydrological regime from upstream and upslope activities.
- Minimize impacts to overstory canopy cover.
- Apply herbicides no closer than 165 feet from stream edge and apply according to label directions.

### **3.2.2 Price's Potato-bean**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit the Price's potato-bean, those conservation measures are required as part of the action.

Conservation measures that are recommended and may result in a net benefit to the Price's potato-bean include the following:

- Conduct visual surveys during the growing season prior to project implementation in suitable habitat.
- Conduct visual surveys during the growing season prior to herbicide treatments.
- Conduct visual surveys during the growing season prior to widespread ground disturbing activities, such as disking and tree removal.
- In areas with Price's potato-bean plants:
  - Clearly mark/flag (and avoid) individuals and occupied habitat (and alert the Service).
  - Record plant locations on construction planning drawings/designs and project specific maps.
  - Notify project personnel of plant presence.
  - Avoid or limit use of heavy equipment within 15 feet of known plants or plant populations to prevent disturbance to the soil profile.
  - Time application of herbicide treatments appropriately and use targeted herbicide application techniques.
  - Retain trellis plants near known Price's potato-bean plants to facilitate vertical plant growth.

### **3.2.3 White Fringeless Orchid**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit the white fringeless orchid, those conservation measures are required as part of the action.

Conservation measures that are recommended and may result in a net benefit to the white fringeless orchid include the following:

- Avoid mechanical treatments during wet periods to minimize heavy soil disturbance and hydrologic alteration from rutting caused by tractors and other heavy equipment.
- Apply herbicide to target only woody species and time the application to minimize risk of exposure to white fringeless orchid plants.
- Minimize alterations to bog hydrology and water drainage.
- Minimize heavy equipment use in bogs during timber operations.
- Control invasive species including Japanese honeysuckle, kudzu, and Japanese stilt grass through mechanical or chemical treatment to improve habitat suitability.
- Reduce or prevent feral hog damage to plants and habitats with a maintained fence.

### **3.2.4 Whorled Sunflower**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit the whorled sunflower, those conservation measures are required as part of the action.

Conservation measures that are recommended and may result in a net benefit to the whorled sunflower include the following:

- Minimize heavy equipment use in the species' habitat.
- Avoid mechanical treatments during wet periods to minimize soil disturbance and hydrologic alteration from rutting caused by tractors and other heavy equipment.
- Conduct mechanical treatments under conditions that limit rutting and soil scalping.

- Exercise caution when applying herbicides and mechanical treatments, such as mowing and brush cutting, in the vicinity of known whorled sunflower plants.
- Herbicide use should be avoided within and adjacent to whorled sunflower populations.
- Near whorled sunflower habitats, herbicides should be selected and applied to minimize drift and non-target effects.
- Apply herbicide to target only woody species and time the application to minimize risk of exposure to whorled sunflower plants.
- During timber operations, minimize alterations to the hydrology and drainage of wet meadows and remnant prairie.

### **3.2.5 Pondberry**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit pondberry, those conservation measures are required as part of the action.

Conservation measures that are recommended and may result in a net benefit to pondberry include the following:

- Establish buffer zones around each identified population and colony.
- Minimize land clearing and avoid discharges of fill/dredged material within 150 feet of pondberry populations and colonies.
- Minimize alterations to hydrology.

### **3.2.6 Gopher Tortoise**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit the gopher tortoise, those conservation measures are required as part of the action.

Conservation measures or best management practices that must be agreed to and implemented to conclude NLAA for the project include the following:

- For projects that occur within suitable gopher tortoise habitat, the project area was surveyed by someone with experience in the species' biology and ecology for the presence of gopher tortoises and/or their burrows (including small hatchlings or smaller burrows).
- For projects with permanent impacts, if gopher tortoise burrows are found, the project will leave or establish all of the following: 1) a 50-foot permanent undisturbed vegetated buffer, 2) two acres of suitable foraging and burrowing habitat per active and inactive burrows, and 3) a temporary tortoise barrier fencing between all tortoise burrows and project construction limits.
- For projects with temporary impacts, the project will implement a 25-foot undisturbed vegetated barrier and install temporary tortoise barrier fencing between all burrows and project construction limits.

### **3.2.7 Black Pinesnake and Eastern Indigo Snake**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit the black

piresnake or Eastern indigo snake, those conservation measures are required as part of the action.

Conservation measures or best management practices that must be agreed to and implemented to conclude NLAA for the project include the following:

- For projects that include permanent or temporary ground disturbing activities, project proponents, contractors, sub-contractors, and workers must follow a no-kill snake policy within the action area during the project lifetime.

Conservation measures that are recommended and may result in a net benefit to the species include the following:

- Avoid impacting longleaf forests on well drained sandy soils.
- Avoid removing pine stumps.
- Maintain a forested buffer between the project and black pinesnake or Eastern indigo snake primary habitat.
- Create wildlife underpasses for new roads bisecting longleaf forested habitats.

### **3.2.8 Aquatics and Freshwater Turtles**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit aquatic species in Mississippi, those conservation measures are required as part of the action.

Conservation measures that are recommended and may result in a net benefit to listed species include the following best management practices for aquatic species and freshwater turtles in Mississippi:

- Most aquatic species are sensitive to changes in water quality; therefore, water quality protection measures benefit many listed species. Many existing water quality BMPs reduce or avoid negative impacts to listed species. Properly implemented BMPs could prevent excessive erosion, drainage alteration, and stream obstruction.
- General water quality protection measures include preventing sediment from entering streams after soil disturbance, maintaining integrity of the streambed and banks, preventing trash and logging debris from entering streams, limiting pesticide applications in or near streams, avoiding chemical seepage into groundwater, restoring, and protecting forested streamside management zones (SMZs), and revegetating denuded areas. The following BMPs should be implemented to reduce impacts to listed species.
- Maintain sufficient SMZs and adhere to guidelines. Wider SMZs are recommended where listed species are found to protect water temperature, reduce runoff, and to trap sediment, chemicals, and nutrients. Based on most stream widths in Mississippi where listed species are found, a SMZ width of greater than 32 to 60 feet could be sufficient, although wider buffers are preferred depending on site conditions and slope, to protect most listed aquatic species.
- In addition, and with emphasis to the general water quality protection measures listed above, the following may reduce or avoid impacts to listed aquatic species:
- Avoid stream crossings. If unable to avoid bridge construction, opt for bridges which span the entire stream to avoid in-stream impacts to the substrate.

- Avoid instream disturbance during spawning/breeding season (typically, April through May) where there are known records of listed species.
- Avoid low water crossing and streambed disturbance in areas where species are known to occur.
- Avoid creating dams and other water impoundment structures, including culverts, that alter substrate stability and composition, or inhibit fish passage. Avoid altering water depth in creeks and rivers that contain mussel habitat.
- Leave instream gravel beds undisturbed.
- Prohibit use of drop culverts or any structure that may obstruct fish passage in permanent streams. Where culverts are necessary, countersink at depth that would not obstruct water flow and fish passage or use bottomless box culverts or bridges.
- Do not remove or disturb existing instream deadwood from streams. This deadwood provides important fish and turtle structure.
- Do not disturb or alter existing sandbars, which can be important nesting sites for turtles, especially during nesting season (typically May to September).
- Avoid introducing organic and inorganic debris into streams.
- Avoid impoundment of streams and rivers.
- Although prescribed fire is an important disturbance tool used to manage natural resources, intense fire, common in site preparation burns, in SMZs could impact species and should be avoided. Ensure conditions are favorable to avoid high intensity fires within these zones.
- Avoid rutting instream that could hinder fish passage or alter water flow.
- Provide sufficient erosion control measures (i.e., scattered slash, revegetation, silt fences, hay bales, water bars, turnouts, etc.) across the project site when working near or upstream of a listed species to prevent sedimentation and degradation of water quality.

### **3.2.9 West Indian Manatee**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit the West Indian manatee, those conservation measures are required as part of the action.

Conservation measures or best management practices that must be agreed to and implemented to conclude NLAA for the project include the following:

- Projects that include installation, maintenance, or modification of a culvert 8 inches to 8 feet in diameter in water that may be accessible by a manatee must be grated.
- Projects must adhere to the Standard Manatee Conditions for In-Water Activities in Mississippi. The following guidelines are included in the Standard Manatee Conditions for In-Water Activities in Mississippi.
  - All personnel associated with the project should be informed of the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. Such personnel instruction should also include a discussion of the civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.
  - All contract and/or construction personnel are responsible for observing water-related activities for the presence of manatee(s).

- Temporary signs should be posted prior to and during all construction/dredging activities to remind personnel to be observant for manatees during active construction/dredging operations or within vessel movement zones (i.e., work area), and at least one sign should be placed where it is visible to the vessel operator.
- Siltation barriers, if used, should be made of material in which manatees could not become entangled, and should be properly secured and regularly monitored. Barriers should not impede manatee movement.
- If a manatee is sighted within 100 yards of the active work zone, special operating conditions should be implemented, including: no operation of moving equipment within 50 feet of a manatee; all vessels should operate at no wake/idle speeds within 100 yards of the work area; and siltation barriers, if used, should be re-secured and monitored. Once the manatee has left the 100-yard buffer zone around the work area on its own accord, special operating conditions are no longer necessary, but careful observations would be resumed.
- Any manatee sighting should be immediately reported to the Dauphin Island Sea Lab's Manatee Sighting Network Hotline at (866-493-5803) or at [manatee.disl.org](http://manatee.disl.org) and the U.S. Fish and Wildlife Service's Jackson MS Field Office (228-493-6631).

### **3.2.10 Sea Turtles**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit sea turtles, those conservation measures are required as part of the action.

Conservation measures or best management practices that must be agreed to and implemented to conclude NLAA for the project include the following:

- The entirety of the project must take place between November 1 and April 30, with no actions, including post-construction activities, occurring outside that time frame.
- If the project will disturb more than 0.5 acre of habitat and will occur between April 30 and November 1, the project area must be fenced before May 1 to prevent sea turtles from entering the area.

### **3.2.11 Shorebirds**

For all conservation measures the project proponent commits to the measures as part of their project description, whether necessary to conclude NLAA or recommended to benefit the piping plover and rufa red knot, those conservation measures are required as part of the action.

Conservation measures or best management practices that must be agreed to and implemented to conclude NLAA for the project include the following:

- To avoid negative impacts to piping plover, the project must be conducted entirely between May 1 and July 15.
- To avoid negative impacts to rufa red knot, the project must be conducted entirely between June 1 and July 15.

Conservation measures that are recommended and may result in a net benefit to the piping plover include the following:

- Do not disturb foraging or roosting piping plovers to the maximum extent practicable. The project area (i.e., operational site, access points, travel corridors, staging areas, etc.) should be surveyed by a qualified biologist for the presence of piping plovers or optimal habitat features (i.e., inlets, baysides and mud flats, tidal pools, and wrack lines). Educate personnel on avoiding those areas being utilized by the birds.
- When piping plovers are identified, vehicle and foot traffic should not occur within 150 feet from the birds or within 10 feet optimal habitat features (even when birds are not present). The recommended buffers should be maintained for the duration of the work activities even if the birds depart or relocate. Personnel and vehicles should follow existing/established travel and access corridors and maintain slow speeds to avoid disturbing birds.
- Stay 500 feet or more away from high tide roosting areas, including large flocks of shorebirds, when possible, as piping plovers may occur in mixed flocks. If birds in the area are repeatedly being flushed (i.e., flying away), then you are too close and need to back away.
- Designate access points and travel corridors away from known foraging and roosting areas and keep all personnel, vehicles, and equipment within those designated corridors to minimize disturbance to birds and beach topographic alterations. Post and rope, as needed, shorebird foraging and concentrated roosting sites during construction.
- Avoid driving up and down the shoreline to the maximum extent practicable to minimize disturbance to birds and beach topographic alterations. Keep all personnel, vehicles, and equipment within the designated work area/project footprint and access corridors.
- Use low-pressure tire (10 psi) or tracked vehicles (e.g., ATVs, dozers, etc.) or consult with a qualified biologist to avoid and minimize beach topographic alterations.
- Do not block major egress points in channels, rivers, passes, and bays to avoid disturbance to natural coastal processes.
- Staging areas and waste collection areas should be located to avoid beaches, dunes, inlets, and ephemeral tidal pools.
- Maintain a clean worksite and remove all trash and work-related debris on a daily basis.
- Avoid disturbing the wrack line during project work or while traveling to and from the project site. If the wrack line must be crossed by equipment or vehicles, gently rake the wrack out of the way to establish a designated travel corridor for crossing the wrack line. Restore the wrack to its original configuration once access across it is no longer needed.
- Avoid disturbing bay side sand and mud flats to the maximum extent practicable.
- Avoid impacts to dune systems, both vegetated and non-vegetated, including trampling any dune vegetation. Use existing designated travel and access corridors at all times. If necessary, establish a buffer with flagging from the toe of the slope of the dune to a distance of 10 feet. Where vegetation extends off the dune onto the beach, the buffer should extend 10 from the vegetation.
- Do not fly aircraft below 500 feet near bird concentration areas (i.e., foraging and roosting areas).
- Avoid hovering or landing aircraft near dunes and bird concentration areas (i.e., foraging and roosting areas).
- Restore beach topography and the wrack line to their natural pre-project conditions to the maximum extent practicable.

- Poles/pier pilings within 300 feet of shorebird use areas shall be made avian predator free with pointed tops instead of flat tops.

## 4 COVERED SPECIES AND CRITICAL HABITAT

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The following section includes a summary of relevant background information on the species and critical habitat(s) used to develop this standing analysis. A complete description of the species can be found on ECOS (<https://ecos.fws.gov>). This overview is included to inform the reader of the species prior to the analysis of the effects of the action presented below. Species and critical habitats within a project's action area that may be affected by the proposed action, but are not covered by this standing analysis, will require individual consultation with the MSFO.

### *Louisiana quillwort*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the Louisiana quillwort, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/7756>.

Louisiana quillwort is a nonflowering grass-like plant that occurs in perennial and intermittent freshwater systems of the East Gulf Coastal Plain. It is a small, semi-aquatic, facultative evergreen plant up to 10 inches tall with spore-bearing structures below ground. Potential suitable habitat includes all ephemeral, intermittent, first, and second order perennial freshwater streams in southeast and south-central Mississippi as indicated in the Dkey area of influence including the following Mississippi counties: George, Greene, Forrest, Hancock, Harrison, Jackson, Jones, Pearl River, Perry, Stone, and Wayne. Tidally influenced streams and streams greater than second order are not considered suitable habitat.

Louisiana quillwort can be found in sandy soils and gravel bars, in or near wet meadows adjacent to streams, shallow blackwater streams, and overflow channels in riparian woodland/bay-head forests of pine flatwoods and upland longleaf pine. Plants may grow singly or in the hundreds in highly localized sites with stable sand and/or gravel bars and moist overflow channels with silty or silty-sand substrates. The species can also be found on low, sloping banks near and below water levels where they occur in a relatively firm substrate of fine sandy loam, coarser sands, and small to medium-sized gravel. Periodic flood scouring of stream channels and floodplains are needed to maintain suitable habitat.

### *Price's potato-bean*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the Price's potato-bean, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/7422>.

Price's potato-bean, a twining, herbaceous perennial vine in the pea family (Fabaceae), is a climbing yellow-green vine that grows from a stout, potato-like tuber about seven inches in diameter. Vines may grow up to 15 feet long. Price's potato-bean is generally found in the southeast region of the United States in the Coastal Plain, Interior Low Plateaus, and



Appalachian Plateaus physiographic provinces (locally, Blackland Prairie ecoregion). Since discovery of the species, populations have been found in Alabama, Illinois, Kentucky, Mississippi, and Tennessee. In Mississippi, the species is known from Chickasaw, Clay, Kemper, Lee, and Oktibbeha counties (NatureServe 2015, Service 2016a, Service 2016b).

Price's potato-bean thrives in open, mixed-hardwood stands, often in forest gaps or along ravine slopes that grade into creek or stream bottoms or forest edges on slopes. It also can grow along highway right-of-way and powerline corridors bordered by open, mixed hardwood stands. Excessive shading by canopy trees may reduce growth and reproduction of the species (Service 1993). The species prefers mesic areas (i.e., moderate amount of moisture) on calcareous substrates (i.e., containing lime or being chalky) and is often found in open, low areas near streams or along the banks of streams and rivers.

It is also found near the base of small limestone bluffs and often grows in well-drained loams or old alluvium over limestone on rocky, sloping terrains. Associate plant species include cane, chinquapin oak, basswood, and slippery elm.

#### *White fringeless orchid*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the white fringeless orchid, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/1889>.

The white fringeless orchid is a perennial herbaceous plant with a light green stem arising from a tuber to nearly 2 feet tall. Flowering typically occurs from late July through September but can occur as early as June in the southern portion of its range (Alabama). Fruiting capsules mature in October (Service 2016b). The white fringeless orchid has only three known external pollinators, all of which are butterflies. They are the silver spotted skipper, spicebush swallowtail, and eastern tiger swallowtail. In Mississippi, this species is known to occur in Alcorn, Itawamba, and Tishomingo counties, and may also occur in Lowndes, Monroe, and Prentiss counties (Service 2016b).

The white fringeless orchid can be found in wet, boggy areas at the heads of streams and on slopes kept moist by groundwater seepage to the surface. This species is often associated with sphagnum moss in partially shaded areas. It occurs at elevations of 100 to 700 meters (325 to 2,300 feet) above sea level.

#### *Whorled sunflower*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the whorled sunflower, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/3375>.

The whorled sunflower (aster Family: Asteraceae) is a perennial herb arising from horizontal, tuberous-thickened roots with slender rhizomes, producing stems that can reach 4 meters (13 feet) or more in height (Mathews et al. 2002). Whorled sunflower is a self-incompatible, clonal perennial and flowers from August into October (Matthews et al. 2002; Ellis and McCauley 2009). The species propagates clonally as well as by sexual reproduction. Whorled sunflower's

clonal nature results in a clumped distribution and, as a result, many stalks that appear to be individual plants are genetically identical to their neighbors. Pollinating invertebrates are likely required for successful reproduction. Populations of whorled sunflower occur in north central and central Mississippi.

Whorled sunflower can be found in moist-soiled sites ranging from degraded sites along roadsides, railroads, and agricultural fields to higher integrity prairie remnants in openings in woodlands and adjacent to creeks. Creation and maintenance of whorled sunflower habitat requires managing for open conditions by controlling invasive plants and woody vegetation with herbicide, fire, or mechanical thinning. Whorled sunflower appears to be a narrow habitat specialist, occurring in natural wet meadows or prairies and calcareous barrens. Despite their commonly degraded condition, the list of associated species in these habitats indicates a community with strong prairie affinities.

### *Pondberry*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the pondberry, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/1279>.

Pondberry is a flowering woody plant with a range limited to the coastal plains of Alabama, Arkansas, Georgia, Mississippi, Missouri, North Carolina, and South Carolina. Historically, the species also occurred in Louisiana and Florida. Pondberry is a distinctive species, with diagnostic characters that clearly distinguish it from the two other species of spicebush in the southeastern United States, *L. benzoin* (spicebush) and *L. subcoriacea* (bog spicebush). Pondberry is a deciduous shrub that can grow to more than 6 feet in height.

Flowering occurs from March to April, with male flowers emerging prior to female flowers. Pondberry is identified as a facultative wetland species—plants that usually occur in wetlands but may also occur in non-wetlands (Lichvar et al. 2012)—in the Atlantic and Gulf Coastal Plains. Hydrology at pondberry sites is maintained by overbank flooding, local rainfall, storage in depressions or impeded drainage (independent of overbank flooding). In Mississippi, pondberry is associated with bottomland hardwood forests in the Delta region. The species is not likely to occur along forest margins due to its inability to compete.

### *Gopher tortoise – Western DPS*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the gopher tortoise, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/6994>.

The gopher tortoise is the only native tortoise found in the southeastern United States and is listed as a threatened species in the western part of its range, from the Tombigbee and Mobile Rivers in Alabama west to southeastern Louisiana on the lower Gulf Coastal Plain (Service 1987). The listed range of the gopher tortoise includes 19 counties in southern Mississippi including Clarke, George, Hancock, Jones, Smith, Covington, Harrison, Lamar, Stone, Forrest, Jackson, Marion, Walthall, Jasper, Pearl River, Wayne, Green, Jefferson Davis, and Perry.

The gopher tortoise is a long-lived, native burrowing species of the open, fire-maintained longleaf pine ecosystem. Historically, typical gopher tortoise habitat consisted of open, frequently burned longleaf pine or longleaf pine/scrub oak uplands and flatwoods on moderately well drained to xeric (dry sandy) soils. Such habitat provided adequate sunlight reaching the forest floor to stimulate the growth and development of the herbaceous plant stratum for forage, with sufficient warmth for basking and the incubation of eggs. Tortoises mostly forage on foliage, seeds, and fruits of grasses and forbs, generally in an area of about 150 feet surrounding each burrow (McRae et al. 1981; Diemer 1992). Females usually lay five to seven eggs from mid-May through the end of June in the soil of the apron at the burrow entrance (Butler and Hull 1996; Smith et al. 1997) and egg incubation lasts 80 - 110 days (Diemer 1986; Smith et al. 1997).

Gopher tortoises prefer “open” longleaf pine-scrub oak communities that are thinned and burned every few years. The general physical and biotic features thought to characterize suitable tortoise habitat are: 1) presence of well-drained, sandy soils, which allow easy burrowing; 2) an abundance of herbaceous ground cover; and 3) generally open canopy and sparse shrub cover, which allows sunlight to reach the ground (Cox et al., 1987). Gopher tortoises occur in a variety of habitat types in the Dkey area of influence in Mississippi. Habitat in upland forests include stands of longleaf pine, pine-scrub oaks, as well as sufficiently open sites converted to loblolly pine and slash pine production. Tortoises also occur in open ROWs for roads, gas and electric utilities, as well as pastures.

#### *Black pinesnake*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the black pinesnake, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/452>.

The black pinesnake is a large, nonvenomous, egg-laying, constricting snake with keeled scales and a disproportionately small head (Conant and Collins 1998). The species occurs in southern Mississippi, usually on well-drained, sandy-loam soils on hilltops, on ridges, and toward the tops of slopes in areas dominated by longleaf pine. Black pinesnakes are located below ground approximately 53–70 percent of the time (Duran 1998). They generally share overlapping range with the gopher tortoise and tend to use underground stump holes, tunnels, and gopher tortoise burrows. The nesting and egg deposition period of gravid females is believed to extend from the last week in June to the last week in August (Lyman et al. 2009).

Characteristics of primary habitat for the black pinesnake include (1) longleaf pine forests on well-drained, sandy soils; (2) pine stump holes; and (3) an abundance of herbaceous ground cover for prey items such as cotton rats and various species of mice. Characteristics of secondary habitat include riparian areas, hardwood forests, and pine plantations adjoining primary habitat that may be used for foraging and as travel corridors between core primary habitat units.

Unsuitable habitat includes, and is not limited to, non-forested areas such as open mowed areas, row-crop agriculture areas, ponds and lakes, intensively managed closed canopy pine plantations, pine forest with dense shrub/sapling layer, and dense hardwood forest stands that are not within 300 feet from longleaf pine forests, as well as forested lands within an urban setting where only patches of forest remain between neighborhoods and commercial development.

### *Dusky gopher frog*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the dusky gopher frog, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/5600>.

Historically, the dusky gopher frog (Mississippi gopher frog) was found in Louisiana, Mississippi, and Alabama, west of the Mobile River drainage. The species now occurs only in small, isolated populations in Mississippi. Current or historical occurrences and potential suitable habitat occur in Lamar, Forrest, Pearl River, Hancock, Harrison, Jackson, Stone, George, Perry, Greene, Jones, and Wayne counties in Mississippi.

Dusky gopher frog habitat includes both upland sandy sites historically forested with longleaf pine and isolated temporary wetland breeding sites embedded within the forested landscape. Frequent fires are necessary to maintain the open canopy and groundcover vegetation in the aquatic and terrestrial habitats. Adult frogs spend most of their lives underground in forests with an open canopy and abundant ground cover. They use active and abandoned gopher tortoise burrows, abandoned mammal burrows and holes in and under stumps as their underground retreats.

Breeding sites are small, relatively shallow, isolated (not connected to any other water body), depressional ponds that dry completely on a cyclic basis. Emergent herbaceous vegetation is important for egg attachment; thus, ponds with a closed canopy are not used for breeding. The dominant source of water to the ponds is rainfall within small, localized watersheds. Substantial winter rains are needed to ensure that ponds fill sufficiently to allow hatching, development, and metamorphosis of larvae. The timing and frequency of rainfall are critical to the successful reproduction and recruitment of dusky gopher frogs. Breeding typically occurs from December to April (Richter et al. 2003).

### *Dusky gopher frog critical habitat*

On June 12, 2012, the Service published the final critical habitat rule designating dusky gopher frog critical habitat on 1,544 acres (ac) in St. Tammany Parish, Louisiana, and 4,933 acres in four Mississippi counties (Forrest, Harrison, Jackson, and Perry Counties) (Service 2012).

The primary constituent elements (PCE) essential for the conservation of the dusky gopher frog are:

- Ephemeral wetland habitat. Breeding ponds, geographically isolated from other waterbodies and embedded in forests historically dominated by longleaf pine communities, that are small (generally <0.4 to 4.0 ha (<1 to 10 ac)), ephemeral, and acidic. Specific conditions necessary in breeding ponds to allow for successful reproduction of dusky gopher frogs are: (a) an open canopy with emergent herbaceous vegetation for egg attachment; (b) an absence of large, predatory fish that prey on frog larvae; (c) water quality such that frogs, their eggs, or larvae are not exposed to pesticides or chemicals and sediment associated with road runoff; and (d) surface water that lasts for

a minimum of 195 days during the breeding season to allow a sufficient period for larvae to hatch, mature, and metamorphose.

- Upland forested nonbreeding habitat. Forests historically dominated by longleaf pine, adjacent to and accessible to and from breeding ponds, that are maintained by fires frequent enough to support an open canopy and abundant herbaceous ground cover and gopher tortoise burrows, small mammal burrows, stump holes, or other underground habitat that the dusky gopher frog depends upon for food, shelter, and protection from the elements and predation.
- Upland connectivity habitat. Accessible upland habitat between breeding and nonbreeding habitats to allow for dusky gopher frog movements between and among such sites. This habitat is characterized by an open canopy, abundant native herbaceous species, and a subsurface structure that provides shelter for dusky gopher frogs.

### *Eastern indigo snake*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the Eastern indigo snake, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/646>.

Historically, the eastern indigo snake occurred throughout Florida and in the coastal plain of Georgia, Alabama, and Mississippi. The species is not known to occur in Mississippi currently. The eastern indigo snake is a diurnal species. The species prefers upland habitat types (e.g. longleaf pine sandhills, scrub, pine flatwoods, tropical hardwood hammocks, and coastal dunes), but also uses a variety of lowland and human-altered habitats and may move seasonally between upland and lowland. Throughout their range, eastern indigo snakes use below-ground shelter sites for refuge, breeding, feeding, and nesting. They depend on gopher tortoise burrows in xeric sandhill habitats throughout the northern portion of the species' range for overwintering shelter sites. Adult eastern indigo snakes move long distances and have very large home ranges; from several hundred to several thousand acres (tens to over a thousand hectares).

### *Mitchell's satyr butterfly*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the Mitchell's satyr butterfly, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/8062>.

Mitchell's satyr is a medium-sized brown butterfly with eyespots on both pairs of wings and an approximate 1.75-inch wingspan (Service 1999). In Alabama and Mississippi, Mitchell's satyr butterfly has been found in small depressional wetlands (sometimes created by beaver dams and road culverts) (Hart 2004), and on seepage slopes at the base of steep, moist, upland woods (Surrette et al. 2010). It is known to occur in the following Mississippi counties: Itawamba, Monroe, Prentiss, and Tishomingo (MSFO 2016).

Mitchell's satyr butterfly occurs in wetland habitats have with an herbaceous community dominated by sedges, the host plant for Mitchell's satyr butterfly (Hart 2004). Eggs are laid on young leaves of host plants and hatch into caterpillars (larvae) in about one week. The caterpillar



molts through several larval stages throughout the year. The fourth-stage caterpillar hibernates over winter, emerges in the spring, and resumes its development. The fully mature caterpillar makes a cocoon where it completes the final stages of metamorphosis, and it emerges as an adult butterfly that lives approximately 2–3 weeks (Service 1998). Mitchell's satyr populations in Mississippi are bivoltine, producing two breeding populations per year. The first brood emerges between late May through late June, and a second brood emerges between early August through late September (Hart 2004).

#### *West Indian manatee*

The following summary briefly describes the relevant biology of the subspecies that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the West Indian manatee, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/4469>.

The West Indian manatee is a subspecies of the West Indian manatee, a large aquatic mammal. Most manatee sightings in Mississippi occur in tidal rivers such as the Pascagoula and Jordan Rivers. Manatees also have been spotted in Biloxi Bay, Bay St. Louis, and near shore in the Gulf of Mexico. In Mississippi, most of the sightings occur from June through November; however, some individuals may remain in the area through December.

Manatees can be found in marine, estuarine, and freshwater environments. They are found in shallow, slow-moving rivers, estuaries, saltwater bays, canals, and coastal areas, specifically where seagrass beds or freshwater vegetation flourish. Manatees are herbivores that feed on a variety of marine, estuarine, and freshwater plants, including submerged, floating, and emergent vegetation. Manatees also require freshwater, from either natural or anthropogenic sources (Service 2016b). Manatees can be found at all water-column levels; however, they are more likely to be found at water depths greater than 4 feet at mean high tide.

*Sea turtles: Green sea turtle (originating from the North Atlantic Ocean), Hawksbill sea turtle, Kemp's Ridley sea turtle, Leatherback sea turtle*

The following summary briefly describes the relevant biology of the four sea turtle species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the green sea turtle, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/6199>, at <https://ecos.fws.gov/ecp/species/3656> for the hawksbill sea turtle, at <https://ecos.fws.gov/ecp/species/5523> for the Kemp's Ridley sea turtle, and at <https://ecos.fws.gov/ecp/species/1493> for the leatherback sea turtle.

Sea turtles are long-lived, slow-growing predominantly marine animals. The four species of large sea turtles described here may occasionally be encountered on barrier islands, coastal beaches, or bays and estuaries of inshore waters in Mississippi. Consultation with the Service is only for the nesting of sea turtles; the National Marine Fisheries Service must be consulted for in-water activities.

Sea turtles migrate between nesting beaches and marine waters and use multiple habitats across ocean basins throughout their life history, including terrestrial, inshore/estuarine, nearshore, and open ocean habitats. In the southeastern United States, mating occurs from late March to early July, followed by nesting from late April to early September. Nesting areas differ by species. For

green sea turtle, most nesting occurs on high-energy beaches with deep sand, usually on islands but also on the mainland. Sand can be coarse to fine and has little organic content; physical characteristics vary greatly in different regions. Hawksbill sea turtle, nesting occurs on undisturbed, deep-sand mainland or island beaches, from high-energy ocean beaches to tiny pocket beaches several meters wide contained in crevices of cliff walls; a typical site would be a low-energy sand beach with woody vegetation such as sea grape or saltshrub near the water line (NatureServe 2015d). For Kemps Ridley, nesting occurs on well-defined elevated dune areas, especially on beaches backed up by large swamps or bodies of open water having seasonal narrow ocean connections (NatureServe 2015c). Leatherback sea turtles are not known to nest on Mississippi beaches but may rapidly occupy newly formed nesting habitat (NatureServe 2015b). Leatherback sea turtle nesting occurs on sloping sandy beaches backed up by vegetation, often near deep water and rough seas. The largest colonies use mainland, rather than island, beaches (CSTC 1990). The absence of a fringing reef appears to be important to leatherback sea turtles. Turtles may return to the same area in subsequent years if habitat remains suitable. Beach development and illumination often make beaches unsuitable for successful nesting.

*Loggerhead sea turtle (Northwest Atlantic Ocean Distinct Population Segment)*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the loggerhead sea turtle, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/1110>.

Consultation with the Service is only for the nesting of sea turtles; the National Marine Fisheries Service must be consulted for in-water activities. Loggerheads use multiple habitats across ocean basins throughout their life history, including terrestrial, inshore/estuarine, nearshore, and open ocean habitats (NMFS 2013). Although sea turtles are predominantly marine animals, they come ashore to nest on barrier island and mainland beaches. Of the five sea turtle species found in Mississippi waters, only the loggerhead is known to nest on the mainland beaches of Mississippi. Loggerheads are known to occur in Mississippi in Hancock, Harrison, and Jackson Counties (Service 2015).

In the southeastern United States, mating occurs from late March to early July, followed by nesting from late April to early September. In the southeastern United States, mating occurs from late March to early July, followed by nesting from late April to early September. Loggerhead sea turtles lay one to nine clutches of approximately 45 to 200 eggs that incubate for 7–11 weeks before hatching. On average, a female loggerhead will nest two to six times per season, spaced at 2-week intervals, and will nest again 2–3 years later at the same beach if habitat remains suitable (NatureServe 2015a).

Loggerhead sea turtles usually nest on open sandy beaches above the high-tide mark, seaward of well-developed dunes. They nest primarily on high-energy beaches on barrier strands adjacent to continental land masses in warm temperate and subtropical regions; they favor steeply sloped beaches with gradually sloped offshore approaches. Successive nesting within the same season generally occurs at the same beach or within a few kilometers, and the turtles generally return to the same area in subsequent years if habitat remains suitable. Maximum hatching success and hatchling size occur when sand moisture level is about 25 percent.

*Loggerhead sea turtle (Northwest Atlantic Ocean Distinct Population Segment) critical habitat*

On July 10, 2014, the Service designated critical habitat for the loggerhead sea turtle, which includes Horn Island and Petit Bois Island in Mississippi (Service 2014). Loggerhead sea turtle critical habitat includes those coastal areas that support extra-tidal or dry sandy beaches from mean high-water line to the toe of the secondary dune, which are capable of supporting a high density of nests or serving as an expansion area for beaches with a high density of nests (Service 2014).

The PCEs of loggerhead sea turtle nesting habitat include relatively unimpeded nearshore access to the beach, elevation high enough to avoid being inundated frequently by high tides, appropriate sand that allows for nest construction, sand that facilitates gas diffusion conducive to embryo development, sand that has a temperature conducive to embryo development, and sufficient darkness to ensure that nesting turtles are not deterred from emerging onto the beach and that hatchlings and post-nesting females orient toward the sea (Service 2014).

*Piping plover*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the piping plover, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/6039>.

The piping plover is a small, pale, sand-colored shorebird that winters in coastal Mississippi and is present during spring and fall migrations. The distribution of the piping plover is divided into three North American breeding populations: the Great Lakes, the Northern Great Plains, and the Atlantic Coast. The plover does not breed in Mississippi; however, individuals from all three breeding populations' winter along the Atlantic and Gulf coastal areas from North Carolina to Texas. They roost in unvegetated or sparsely vegetated areas, which may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather.

Piping plovers leave the breeding grounds and can arrive to the coast as early as July, with late-nesting birds arriving in September. They may spend 7 to 8 months in their wintering areas. A few birds may be present year-round, but sightings are rare in late May, June, and early July. Plovers move among sites as environmental conditions change, and studies have indicated that they generally remain within a 2-mile area. Winter habitats include beaches, mud flats, sand flats, algal flats, and washover passes (areas where breaks in the sand dunes result in an inlet). Individual plovers tend to return to the same wintering sites year after year. Wintering plovers rely on a diversity of habitat patches and move throughout the patches depending on weather and tidal conditions.

*Piping plover critical habitat*

On July 10, 2001, the Service designated critical habitat for wintering piping plovers (Service 2001). Plover critical habitat includes those coastal areas that support intertidal beaches and flats and associated dune systems and flats above annual high tide (Service 2001). Twelve critical habitat units are designated in Mississippi.



The PCEs of wintering piping plover critical habitat include sand or mud flats or both with no or sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting piping plovers (Service 2001). Important components of the beach/dune ecosystem include surf-cast algae, sparsely vegetated back beach and salterns, spits, and washover areas. Washover areas are broad, unvegetated zones, with little or no topographic relief, that are formed and maintained by the action of hurricanes, storm surge, or other extreme wave action. In addition, the wrack line is an important foraging and roosting element.

#### *Rufa red knot*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the red knot, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/1864>.

The rufa red knot is a small shorebird about the size of a robin. The red knot breeds in the central Canadian arctic (June through mid-July) but can be found in Mississippi during spring and fall migrations and the winter months, typically from October to March. Red knot suitable habitat includes those coastal areas that support intertidal beaches and flats and associated dune systems and flats above annual high tide. Wintering suitable habitat include beaches, sand or mud flats or both with no or sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important. Important components of the beach/dune ecosystem include surf-cast algae, sparsely vegetated back beach and salterns, spits, and washover areas. Washover areas are broad, unvegetated zones, with little or no topographic relief, that are formed and maintained by the action of hurricanes, storm surge, or other extreme wave action where breaks in the sand dunes result in an inlet. In addition, the wrack line is an important foraging and roosting element.

#### *Red knot critical habitat*

No critical habitat has been designated for this species in Mississippi, however suitable habitat for the red knot includes those coastal areas that support intertidal beaches and flats and associated dune systems and flats above annual high tide.

#### *Eastern black rail*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the Eastern black rail, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/10477>.

The eastern black rail is a subspecies of black rail, a small, cryptic marsh bird that occurs in salt, brackish, and freshwater wetlands in the eastern United States (east of the Rocky Mountains), Mexico, Brazil, Central America, and the Caribbean. In the United States, eastern black rails are found in both coastal and interior areas, but the majority of detections are from coastal sites. The eastern black rail is a wetland dependent bird requiring dense overhead cover and soils that are moist to saturated (occasionally dry) and interspersed with or adjacent to very shallow water (typically  $\leq 3$  cm) to support its resource needs.

The eastern black rail was historically present during breeding months at inland and coastal locations throughout southeastern coastal states; this region includes North Carolina, South Carolina, Georgia, Florida, Tennessee, Mississippi, Alabama, Louisiana, and Texas (Watts 2016, pp. 75-76). Georgia, Tennessee, Mississippi, Alabama, and Louisiana either do not have a history of supporting eastern black rails consistently or are considered to be on the peripheries of known breeding areas (Watts 2016, p. 77). In 2013 and 2016 surveys, population estimates (number of breeding pairs) were estimated as zero for Mississippi. However, suitable habitat for the species occurs in Mississippi and other rail species occur in the state.

#### *Red-cockaded woodpecker*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the red-cockaded woodpecker, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/7614>.

The red-cockaded woodpecker (RCW) is a medium sized bird that lives in old growth longleaf pine (*Pinus palustris*) with a mostly grassy understory. While other woodpeckers bore out cavities in dead trees where the wood is rotten and soft, the RCW is the only woodpecker species that excavates cavities exclusively in living pine trees. The RCW often favor older pines that suffer from a fungus called red heart disease, which attacks the center of the trunk causing the inner wood, the heartwood, to become soft. Excavation of a cavity generally takes from 1 to 3 years. Cavity trees are used for nesting and roosting. Cavity trees being actively used by woodpeckers have numerous small resin wells which exude sap giving the tree a waxy candle appearance.

RCW's require open pine woodlands and savannahs with large mature pines for nesting and roosting, and foraging habitat. Longleaf, loblolly and shortleaf pine trees that are older (60 years or more) and have a minimum 10-inch diameter at breast height (dbh) are preferred cavity trees (nesting habitat). Nesting and roosting pine trees must be in open stands with little or no hardwood midstory and few or no overstory hardwoods. In Mississippi, the RCW is known to occur in the Homochitto, Bienville, Desoto, and Tombigbee national forests and on the Sam Hamilton Noxubee National Wildlife Refuge.

#### *Mississippi sandhill crane*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the Louisiana quillwort, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/1222>.

The Mississippi sandhill crane is one of six subspecies of sandhill cranes. It is 3 to 4 feet tall with a wingspan of over 7 feet with long legs and resembles great blue herons. During the late fall and early winter, unpaired cranes forge new pair bonds and establish their territories. Established pairs, which mate for life, are in a courting phase throughout winter. In late winter and early spring, sandhill crane pairs generally lay two eggs. Both parents work together to incubate the eggs for about a month. In spring, the precocial Mississippi sandhill colts are hatched. Young

cranes are able to fly after about 70-80 days. The species lives about 20 years in the wild. Mississippi sandhill cranes are non-migratory.

Savannas are the preferred habitat of the crane and are inhabited year-round (Hereford 1994). Mississippi sandhill cranes occur in the wild only on the Mississippi Sandhill Crane National Wildlife Refuge in Jackson County, Mississippi, and on suitable habitat on nearby private lands. Many known breeding, foraging, nesting, and roosting sites are included within the boundaries of designated critical habitat. However, the cranes use several areas outside critical habitat in south Jackson County for roosting, feeding, and occasionally nesting.

#### *Mississippi sandhill crane critical habitat*

On August 8, 1977, the Service published a final critical habitat designation for the Mississippi sandhill crane in the **Federal Register**. The areas delineated in this rule included all known breeding, summer feeding, and roosting sites for the species and flight paths connecting the more important sites.

#### *Whooping crane*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the species presence in the Covered Area. Additional information regarding the whooping crane, **Federal Register** publications, and recovery documents may be found at <https://ecos.fws.gov/ecp/species/758>.

The whooping crane occurs only in North America and is North America's tallest bird, with males approaching 1.5 m (5 ft) when standing erect. The whooping crane adult plumage is mostly white. Whooping cranes are a long-lived species; current estimates suggest a maximum longevity in the wild of at least 30 years. Whooping cranes currently exist in the wild at 3 locations and in captivity at 12 sites. There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, and winters in coastal marshes in Texas at Aransas. In addition, there is a small captive-raised, non-migratory population in central Florida, and a small migratory population of individuals introduced beginning in 2001 that migrate between Wisconsin and Florida in an eastern migratory population.

The species historical range included Alabama, Arkansas, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, Wisconsin, Wyoming. Cranes from non-essential experimental populations may occur in Mississippi on occasion. Non-essential experimental populations are treated as threatened species for the purposes of consultation when they occur on National Wildlife Refuges.

#### *Aquatics – Freshwater Mussels*

The following summary briefly describes the relevant biology of the species that may be exposed to the stressors identified in the proposed action, required habitat conditions, and general information about the freshwater mussel species presence in the Covered Area. Native freshwater mussels typically need clean, free-flowing water and sufficient food sources.

Freshwater mussels gather nutrients and food, such as detritus, plankton, and other microorganisms, by filter feeding. Adult mussels are sedentary. Mussel reproduction requires a stable, undisturbed habitat and a sufficient population of fish hosts to complete a mussel's glochidia development. The timing of breeding varies by species. Juvenile mussels may be particularly sensitive to water quality degradation or toxins, although all mussels are negatively impacted by pollution and degradation of the aquatic ecosystem (FMCS 2015). Species river reaches with mussel occurrence records are represented by the current species-specific area of influence in the Dkey.

**Table 3.** The table includes the listed mussels that occur in Mississippi and are included in the Dkey, the general habitat characteristics, counties and river, system, or basin of known occurrence in Mississippi, and links to additional species information, **Federal Register** documents, assessments and recovery documents found in the Service's ECOS database.

<b>Species</b>	<b>Habitat</b>	<b>River, river system, or basin in MS</b>	<b>MS counties of occurrence</b>	<b>Additional information</b>
Alabama lampmussel	Sand and gravel substrates in small to medium streams	Tennessee River drainage	Tishomingo	<a href="https://ecos.fws.gov/ecp/species/916">https://ecos.fws.gov/ecp/species/916</a>
Alabama moccasinshell	Sandy-gravel and gravel substrate in rivers and streams with moderate flow	Mobile River Basin	Itawamba, Monroe, Lowndes	<a href="https://ecos.fws.gov/ecp/species/7287">https://ecos.fws.gov/ecp/species/7287</a>
Black clubshell	Riffles and shoals on sandy gravel to gravel-cobble in moderate to fast currents	Tombigbee, East Fork Tombigbee	Itawamba, Monroe	<a href="https://ecos.fws.gov/ecp/species/5429">https://ecos.fws.gov/ecp/species/5429</a>
Cumberlandian combshell	Riffle and shoal areas in medium size streams to large rivers; coarse sand to gravel/cobble/boulder	Tennessee River drainage	Tishomingo	<a href="https://ecos.fws.gov/ecp/species/3119">https://ecos.fws.gov/ecp/species/3119</a>
Cumberland moccasinshell	Riffles and shoals with strong currents from headwaters to medium-sized rivers with gravel, cobble, boulder, large flat rocks, or cracks in bedrock	Tennessee River drainage	Tishomingo	<a href="https://ecos.fws.gov/ecp/species/9881">https://ecos.fws.gov/ecp/species/9881</a>
Fat pocketbook	Secondary channels, chutes, and dike fields along lower MS River; sand, mud, fine gravel substrates	Mississippi River	DeSoto, Tunica, Coahoma, Bolivar, Washington, Issaquena, Warren, Claiborne, Jefferson, Adams, Wilkinson, Sharkey	<a href="https://ecos.fws.gov/ecp/species/2780">https://ecos.fws.gov/ecp/species/2780</a>
Heavy pigtoe	Riffles and shoals in rivers and large creeks with moderate to fast currents on sandy-gravel to gravel-cobble substrates	Tombigbee River drainage	Itawamba, Monroe, Lowndes	<a href="https://ecos.fws.gov/ecp/species/298">https://ecos.fws.gov/ecp/species/298</a>

Inflated heelsplitter	Sand, mud, silt, and sandy gravel in slow to moderate currents	Tombigbee River drainage	Itawamba, Lowndes, Monroe	<a href="https://ecos.fws.gov/ecp/species/7286">https://ecos.fws.gov/ecp/species/7286</a>
Louisiana pigtoe	Medium-sized streams with cobble, rock, sand, gravel, and woody debris in riffle, run, and backwater tributary habitat	Pearl River drainage	Marion, Pearl River, Hancock	<a href="https://ecos.fws.gov/ecp/species/10233">https://ecos.fws.gov/ecp/species/10233</a>
Orangenacre mucket	Stable sand/gravel/cobble substrate in moderate to swift current	Western Mobile River Basin including Tombigbee River tributaries	Itawamba, Monroe, Lowndes	<a href="https://ecos.fws.gov/ecp/species/1980">https://ecos.fws.gov/ecp/species/1980</a>
Ovate clubshell	Sand and gravel shoals and runs of small rivers and large streams	Tombigbee River and tributaries	Lowndes, Monroe, Itawamba	<a href="https://ecos.fws.gov/ecp/species/5430">https://ecos.fws.gov/ecp/species/5430</a>
Oyster mussel	Small to medium rivers with coarse sand to boulder substrate and moderate to swift currents	Bear Creek	Tishomingo	<a href="https://ecos.fws.gov/ecp/species/2099">https://ecos.fws.gov/ecp/species/2099</a>
Pink mucket	Medium to larger rivers with silt, gravel, sand, rubble, and boulder substrates and moderate to fast flow	Tennessee River	Tishomingo	<a href="https://ecos.fws.gov/ecp/species/7829">https://ecos.fws.gov/ecp/species/7829</a>
Rabbitsfoot	Small to medium sized streams and some larger rivers with sand and gravel substrate	Bear Creek, Big Sunflower River, Big Black River, and Yazoo River watersheds	Hinds, Sunflower, Tishomingo, Bolivar, and Warren	<a href="https://ecos.fws.gov/ecp/species/5165">https://ecos.fws.gov/ecp/species/5165</a>
Round hickorynut	Stable sand, gravel, and cobble	Big Black River	Montgomery	<a href="https://ecos.fws.gov/ecp/species/9879">https://ecos.fws.gov/ecp/species/9879</a>
Sheepnose mussel	Sand and gravel substrate in larger stream, shallow shoals with moderate to swift currents or in larger rivers at deeper depths	Big Sunflower River	Sunflower	<a href="https://ecos.fws.gov/ecp/species/6903">https://ecos.fws.gov/ecp/species/6903</a>

Slabside pearlymussel	Large creek to large river with sand, fine gravel, and cobble in relatively shallow riffles and shoals with moderate current	Bear Creek	Tishomingo	<a href="https://ecos.fws.gov/ecp/species/1518">https://ecos.fws.gov/ecp/species/1518</a>
Snuffbox mussel	Small to medium sized creeks with swift current and sand, gravel, or cobble substrate	Historical occurrence in Bear Creek	Tishomingo	<a href="https://ecos.fws.gov/ecp/species/4135">https://ecos.fws.gov/ecp/species/4135</a>
Southern clubshell	Sand and gravel shoals and runs of small rivers and large streams	Tombigbee River and tributaries (Buttahatchee)	Itawamba, Monroe, Lowndes	<a href="https://ecos.fws.gov/ecp/species/6113">https://ecos.fws.gov/ecp/species/6113</a>
Southern combshell	Moderate to large rivers with moderate to swift current in riffle or shoal areas with stable sandy- gravel to gravel-cobble substrate	Tombigbee River and larger tributaries	Itawamba, Monroe, Lowndes	<a href="https://ecos.fws.gov/ecp/species/7285">https://ecos.fws.gov/ecp/species/7285</a>
Tennessee pigtoe	riffles, runs, shoals, and high gradient streams with stable substrates dominated by coarse sand, gravel, and cobble	Bear Creek	Tishomingo	<a href="https://ecos.fws.gov/ecp/species/9887">https://ecos.fws.gov/ecp/species/9887</a>

### *Alabama moccasinshell critical habitat*

At the time of the critical habitat listing, the Alabama moccasinshell occupied 283 miles (457 kilometers) of rivers in 7 of the 16 designated river segments in Mississippi and Alabama (Service 2004). Critical habitat in Mississippi includes the Buttahatchee and East Fork Tombigbee rivers, and Bull Mountain, Luxapalila, Sipsey and Yellow creeks. Only one of the four critical habitat river units in Mississippi, the East Fork Tombigbee River, is not currently known to be inhabited by the Alabama moccasinshell.

The PCEs for the Alabama moccasinshell include space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, and rearing (or development) of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species. PCEs essential for the conservation of the Alabama moccasinshell include the following:

- Geomorphically stable stream and river channels and banks;
- A flow regime (i.e., the magnitude, frequency, duration, and seasonality of discharge over time) necessary for normal behavior, growth, and survival of all life stages of mussels and their fish hosts in the river environment;
- Water quality, including temperature, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
- Sand, gravel, and/or cobble substrates with small-to-moderate amounts of fine sediment, small amounts of attached filamentous algae, and other physical and chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
- Fish hosts with adequate living, foraging, and spawning areas for them; and
- Few or no competitive or predaceous nonnative species present.

### *Cumberlandian combshell critical habitat*

In 2004, the Service designated five river and stream segments in the Tennessee and Cumberland River basins as critical habitat for this species. Critical habitat includes all of Bear Creek (Unit 2, 25 river miles) in Tishomingo County, Mississippi (Service 2004). The critical habitat does not include existing features of the human-built environment such as water intakes and outfalls, low-level dams, bridge footings, piers and abutments, boat ramps, and exposed pipelines.

The PCEs essential for the conservation of the Cumberlandian combshell mussel include the following:

- Permanent, flowing stream reaches with a flow regime necessary for normal behavior, growth, and survival of all life stages of the mussels and their host fish;
- Geomorphically stable stream and river channels and banks;
- Stable substrates, consisting of mud, sand, gravel, and/or cobble/boulder, with low amounts of fine sediments or attached filamentous algae;
- Water quality necessary for the normal behavior, growth, and survival of all life stages of the mussels and their host fish; and
- Fish hosts with adequate living, foraging, and spawning areas for them.



### *Louisiana pigtoe critical habitat*

On March 20, 2023, the Service proposed to designate 1,028 miles of critical habitat for the Louisiana pigtoe. Proposed critical habitat in Mississippi includes 86.6 miles of the Pearl River in Pearl River, Marion, and Hancock counties.

The physical or biological features essential to the conservation of the Louisiana pigtoe include:

- Water quality parameters within the following ranges:
  - a. Water temperature below 27 °C (80.6 °F);
  - b. Dissolved oxygen levels greater than 3 mg/L;
  - c. Low salinity (less than 2 ppt) and total dissolved solids;
  - d. Low total ammonia and nitrogen (below 0.3–0.7 mg/L total ammonia nitrogen);
  - e. Low levels of copper, nickel, and other trace metals;
  - f. Low levels of pesticides, sulfate, chloride, potassium, and other harmful constituents;
  - g. Low pollutants and environmental contaminants common to wastewater.
- Moderately flowing water rates suitable to prevent excess sedimentation but not so high as to dislodge individuals or sediment.
- Stable bank and riffle habitats with bedrock and boulder crevices, point bars, and vegetated run habitat comprising sand, gravel, and larger cobbles.
- Red shiner (*Cyprinella* (= *Notropis*) *lutrensis*), blacktail shiner (*Cyprinella venusta*), and bullhead minnow (*Pimephales vigilax*) present.

### *Orangenacre mucket critical habitat*

At the time of the critical habitat designation, the orangenacre mucket occupied 480 miles (788 kilometers) of rivers in 12 of the 15 designated river segments in Mississippi and Alabama (Service 2004). Critical habitat in Mississippi includes the Buttahatchee and East Fork Tombigbee rivers, and Bull Mountain, Luxapalila, Sipsey and Yellow creeks (although Bull Mountain Creek is considered unoccupied).

The PCEs essential for the conservation of the orangenacre mucket include the following:

- Geomorphically stable stream and river channels and banks;
- A flow regime (i.e., the magnitude, frequency, duration, and seasonality of discharge over time) necessary for normal behavior, growth, and survival of all life stages of mussels and their fish hosts in the river environment;
- Water quality, including temperature, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
- Sand, gravel, and/or cobble substrates with small-to-moderate amounts of fine sediment, small amounts of attached filamentous algae, and other physical and chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
- Fish hosts with adequate living, foraging, and spawning areas for them; and
- Few or no competitive or predaceous nonnative species present.

### *Ovate clubshell critical habitat*

At the time of the critical habitat listing, the ovate clubshell occupied 250 miles (402 kilometers) of rivers in 6 of the 20 designated river segments in Mississippi and Alabama (Service 2004). Critical habitat designation in Mississippi includes the Buttahatchee and East Fork Tombigbee rivers, and Bull Mountain, Luxapalila, Sipsey and Yellow creeks. Two of the four critical habitat river units in Mississippi, Bull Mountain Creek, and East Fork Tombigbee River, are not currently known to be inhabited by the ovate clubshell mussel.

The PCEs essential for the conservation of the ovate clubshell mussel include the following:

- Geomorphically stable stream and river channels and banks;
- A flow regime (i.e., the magnitude, frequency, duration, and seasonality of discharge over time) necessary for normal behavior, growth, and survival of all life stages of mussels and their fish hosts in the river environment;
- Water quality, including temperature, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
- Sand, gravel, and/or cobble substrates with small-to-moderate amounts of fine sediment, small amounts of attached filamentous algae, and other physical and chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
- Fish hosts with adequate living, foraging, and spawning areas for them; and
- Few or no competitive or predaceous nonnative species present.

### *Oyster mussel critical habitat*

In 2004, the Service designated eight river and stream segments in the Tennessee and Cumberland River basins as critical habitat for this species. Unoccupied critical habitat includes all of Bear Creek (Unit 2, 25 river miles) in Tishomingo County, Mississippi (Service 2004).

The PCEs essential for the conservation of the oyster mussel include the following:

- Permanent, flowing stream reaches with a flow regime necessary for normal behavior, growth, and survival of all life stages of the mussels and their host fish;
- Geomorphically stable stream and river channels and banks;
- Stable substrates, consisting of sand, gravel, and/or cobble/boulder, with low amounts of fine sediments or attached filamentous algae;
- Water quality necessary for the normal behavior, growth, and survival of all life stages of the mussels and their host fish; and
- Fish hosts with adequate living, foraging, and spawning areas for them.

### *Rabbitsfoot critical habitat*

In 2015, the Service designated 2,312 river miles in 12 states as critical habitat for the rabbitsfoot. Critical habitat in Mississippi is designated in 32 river miles in the Big Sunflower River, Sunflower County, in 3039 river miles in Bear Creek in Tishomingo County, and 26.9 river miles of the Big Black River in Hinds and Warren counties. The PCEs essential for the conservation of the rabbitsfoot mussel include the following:

- Geomorphically stable stream and river channels and banks;

- A hydrologic flow regime (i.e., the magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species is found and to maintain connectivity of rivers with the floodplain, allowing the exchange of nutrients and sediment for maintenance of the mussel and its fish host's habitat, food availability, spawning habitat for native fishes, and ability of newly transformed juveniles to settle and become established in their habitats;
- Water quality, including temperature, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
- Occurrence of natural fish assemblages, reflected by fish species richness, relative abundance, and community composition, for each inhabited river or creek that will serve as an indication of appropriate presence and abundance of fish hosts necessary for recruitment of the rabbitsfoot; and
- Competitive or predaceous invasive (nonnative) species in quantities low enough to have minimal effect on survival of freshwater mussels.

#### *Round hickorynut critical habitat*

In 2023, the Service designated 921 river miles in 14 units in Pennsylvania, Ohio, Indiana, Kentucky, West Virginia, Tennessee, Alabama, and Mississippi as critical habitat for this species. Critical habitat includes 4 river miles in the Big Black River in Mississippi (Unit RH14, 26 river miles) in Montgomery County, Mississippi (Service 2023).

The PBFs essential to the conservation of the round hickorynut include the following:

- Adequate flows, or a hydrologic flow regime (magnitude, timing, frequency, duration, rate of change, and overall seasonality of discharge over time), necessary to maintain benthic habitats where the species are found and to maintain stream connectivity, specifically providing for the exchange of nutrients and sediment for maintenance of the mussels' and fish host's habitat and food availability, maintenance of spawning habitat for native fishes, and the ability for newly transformed juveniles to settle and become established in their habitats. Adequate flows ensure delivery of oxygen, enable reproduction, deliver food to filter-feeding mussels, and reduce contaminants and fine sediments from interstitial spaces. Stream velocity is not static over time, and variations may be attributed to seasonal changes (with higher flows in winter/spring and lower flows in summer/fall), extreme weather events (e.g., drought or floods), or anthropogenic influence (e.g., flow regulation via impoundments).
- Suitable substrates and connected instream habitats, characterized by geomorphically stable stream channels and banks (i.e., channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation) with habitats that support a diversity of freshwater mussel and native fish (such as stable riffle-run- pool habitats that provide flow refuges consisting of predominantly silt-free, stable sand, gravel, and cobble substrates).
- Water and sediment quality necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages, including (but not limited to): Dissolved oxygen (generally above 2 to 3 parts per million (ppm)), salinity (generally below 2 to 4 ppm), and temperature (generally below 86°F (°F) (30 °Celsius (°C))). Additionally, water and sediment should be low in ammonia (generally below 0.5 ppm

total ammonia-nitrogen) and heavy metal concentrations and lack excessive total suspended solids and other pollutants (see Threats Analysis, above).

- The presence and abundance of fish hosts necessary for recruitment of the longsolid (currently unknown, likely includes minnows of the family Cyprinidae and banded sculpin (*Cottus carolinae*)) and the round hickorynut (i.e., eastern sand darter (*Ammocrypta pellucida*), emerald darter (*Etheostoma baileyi*), greenside darter (*E. blennioides*), Iowa darter (*E. exile*), fantail darter (*E. flabellare*), Cumberland darter (*E. susanae*), spangled darter (*E. obama*), variegate darter (*E. variatum*), blackside darter (*Percina maculata*), frecklebelly darter (*P. stictogaster*), and *banded sculpin*).

#### *Slabside pearlymussel critical habitat*

In 2013, the Service designated 13 river and stream segments in Alabama, Mississippi, Tennessee, and Virginia as critical habitat for this species. Critical habitat includes all of Bear Creek (Unit SP11, 26 river miles) in Tishomingo County, Mississippi (Service 2013).

The PCEs essential for the conservation of the slabside pearlymussel include the following:

- Riffle habitats within large, geomorphically stable stream channels;
- Stable substrates of sand, gravel, and cobble with low to moderate amounts of fine sediment and containing flow refugia with low shear stress;
- A flow regime (i.e., the magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species is found and connectivity of waterway with the floodplain, allowing the exchange of nutrients and sediment for habitat maintenance, food availability for all life stages, and spawning habitat for native fishes;
- Water quality with low levels of pollutants that include a natural temperature regime, pH (between 6.0 and 8.5), oxygen content (not less than 5.0 milligrams per liter), hardness, and low turbidity necessary for normal behavior, growth, and viability of all life stages; and
- The presence of abundant fish hosts—which can include the popeye shiner, rosyface shiner, saffron shiner, silver shiner, striped shiner, telescope shiner, Tennessee shiner, warpaint shiner, whitetail shiner, white shiner, and eastern blacknose dace—necessary for recruitment of the slabside pearlymussel.

#### *Southern clubshell critical habitat*

In 2004, the Service designated approximately 752 miles as critical habitat for the southern clubshell mussel. At the time of the critical habitat listing, the southern clubshell occupied 394 miles (637 kilometers) in 13 of these in Mississippi and Alabama (Service 2004). Critical habitat designation in Mississippi includes the Buttahatchee and East Fork Tombigbee rivers, and Bull Mountain, Luxapalila, Sipsey and Yellow creeks. All four critical habitat river units in Mississippi are currently occupied (Service 2004).

The PCEs essential for the conservation of the southern clubshell mussel include the following:

- Geomorphically stable stream and river channels and banks;
- A flow regime (i.e., the magnitude, frequency, duration, and seasonality of discharge over time) necessary for normal behavior, growth, and survival of all life stages of mussels and their fish hosts in the river environment;

- Water quality, including temperature, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
- Sand, gravel, and/or cobble substrates with small-to-moderate amounts of fine sediment, small amounts of attached filamentous algae, and other physical and chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
- Fish hosts with adequate living, foraging, and spawning areas for them; and
- Few or no competitive or predaceous nonnative species present.

#### *Bayou darter*

The bayou darter is a minnow approximately 2.5 inches (6.3 cm) long. Spawning occurs from late April to mid-June at water temperatures between 70- and 86-degrees Fahrenheit over coarse sand. Females are thought to spawn at least twice during the breeding season. Most bayou darters mature at 1 year and do not live more than 4 years (Mississippi Museum of Natural Science (MMNS) 2014). Eggs are buried and unattended and larvae may drift 1,000 feet from the spawning site before resettling. Bayou darters feed primarily on immature stages of midges, blackflies, water mites, caddisflies, and mayflies (Service 1990).

The darter is currently known to occur in Claiborne, Hinds, and Copiah counties. Suitable habitat for the species consists of clean, silt-free gravel riffle areas. While the bayou darter typically prefers swift, shallow water flowing over coarse gravel, during the winter, bayou darters may occupy areas with large cover objects like logs and boulders as refugia during floods. Occasionally, large individuals are found along steep banks with aquatic vegetation and swift currents (MMNS 2014).

#### *Pearl darter*

The pearl darter is a small percid fish reaching a length of 2.28 to 2.56 inches (Suttkus et al. 1994). Most pearl darters mature in 1 year. Subadult pearl darters may migrate upstream during the fall and winter to spawn in suitable gravel reaches. Elevated river discharge during the spring aids in downstream dispersal of young fish (Bart et al. 2001; Ross et al. 2000). Pearl darter occurs in low-gradient, coastal plain rivers and creeks (Suttkus et al. 1994) and has been observed in the main stem portion of the Pascagoula River drainage (Southeastern Fish Council 2008).

#### *Pallid sturgeon*

The pallid sturgeon is closely related to the relatively common shovelnose sturgeon but grows to a larger size. Pallid sturgeon life history characteristics include lengthy spawning migrations and long larval drift distances. Pallid sturgeon are primarily found on the bottoms of large rivers with moderate to swift river currents. They also prefer turbid waterways, depths between 3 and 25 feet, and sand or gravel substrates.

In the Mississippi River, the range extends from just above Saint Louis, south to New Orleans, and includes the Atchafalaya River from the Old River Control Complex to below Morgan City. In the Lower Mississippi River, pallid sturgeon have been collected from main channel habitats including island margins and tips, secondary channels, sand bars, dike tips, and natural and engineered banks (Herrala et al. 2014). Islands and secondary channels are associated with, and important to pallid sturgeon larval recruitment (Hartfield et al. 2013).

### *Gulf sturgeon*

Gulf sturgeon is a subspecies of the Atlantic sturgeon. Adults range from 4 to 8 feet with an average life expectancy of 20 to 25 years. Gulf sturgeon are anadromous fish, inhabiting coastal rivers from Louisiana to Florida during the warmer months (March through October), and the Gulf of Mexico and its estuaries and bays in the cooler months (November through March). Adults move upstream (between March and May) to spawn in areas of clean substrate, usually rock and rubble. Sturgeon eggs are sticky, negatively buoyant and adhere in clumps to snags, rock, rubble, or other clean surfaces. Larval sturgeon move downstream as they develop; juvenile gulf sturgeons generally stay in or near the river mouth for the first 2-3 years of life. Gulf sturgeon are bottom feeders, and eat primarily macroinvertebrates, including brachiopods, mollusks, worms, and crustaceans. All foraging occurs in brackish or marine waters of the Gulf of Mexico and its estuaries; adult sturgeon do not feed in riverine habitat. Suitable spawning habitat includes large free-flowing rivers with areas of clean substrate, usually rock and rubble. During the warm summer months, gulf sturgeon will congregate in deeper sandy and rocky areas of large free-flowing rivers. During winter months (October to February), Gulf sturgeon live and forage in the shallow seagrass beds and muddy and sandy bottoms of the Gulf of Mexico.

### *Gulf sturgeon critical habitat*

In 2003, the Service designated 14 geographic areas among the Gulf of Mexico Rivers and tributaries as critical habitat for the Gulf sturgeon. Two critical habitat units occur in Mississippi in the Pearl River system (Unit 1) and the Pascagoula River system (Unit 2). Unit 1 includes the Pearl River mainstem and tributaries in Walthall, Hancock, Pearl River, Marion, Lawrence, Simpson, Copiah, Hinds, Rankin, and Pike counties, Mississippi, and Unit 2 includes the Pascagoula River mainstem and tributaries in Forrest, Perry, Greene, George, Jackson, Clarke, Jones, and Wayne counties, Mississippi. The river reaches designated as critical habitat lie within the ordinary high-water line, which is defined on non-tidal rivers as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank. Regulatory jurisdiction in coastal areas extends to the line on the shore reached by the plane of the mean (average) high tide line (Service 2003, p. 13390). Gulf sturgeon critical habitat does not include existing developed sites such as dams, piers, marinas, bridges, boat ramps, exposed oil and gas pipelines, oil rigs, and similar structures or designated public swimming areas.

The PCEs (now PBFs) essential to the conservation of the Gulf sturgeon include the following:

- Abundant prey items within riverine habitats for larval and juvenile life stages, and within estuarine and marine habitats and substrates for juvenile, subadult, and adult life stages;
- Riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone or hard clay;
- Riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, subadult, and/or juveniles, generally, but not always, located in holes below normal riverbed depths, believed necessary for minimizing energy expenditures during freshwater residency and possibly for osmoregulatory functions;

- A flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of freshwater discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, and staging; and necessary for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larvae staging; (
- Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; Sediment quality, including texture and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and
- Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g. a river unobstructed by any permanent structure, or a dammed river that still allows for passage).

#### *Ringed map turtle*

The ringed map turtle is narrow-headed, with the head and body having black and yellow stripes (Jones and Selman 2009). These turtles are small. The carapace of females may attain 8 inches in length and that of males about 4 inches (Jones and Selman 2009). Mating has been observed in April. From mid-May to mid-July, eggs are deposited on sandbars approximately 60 feet from the water's edge. Rarely, a female may lay two clutches in a year (Jones 2006). Hatchlings emerge after sunset in late July and early August (Jones 2006).

The ringed map turtle is restricted to the Pearl River, Bogue Chitto River, and lower reaches of the Yockanookany and Strong rivers in the states of Mississippi and Louisiana. The ringed map turtle occurs in wide, sand- or clay-bottomed rivers with strong currents and adjacent white sand beaches. An abundance of basking sites in the form of brush, logs and/or debris is also an important part of its habitat (Jones and Selman 2009).

#### *Yellow-blotched map turtle*

The yellow-blotched map turtle is a medium-sized riverine turtle in the "narrow-headed" *Graptemys* complex. The yellow-blotched map turtle requires streams with moderate currents, abundant basking sites, and large sandbars for nesting. Turtles spend much of the day basking and require streams that are wide enough to receive several hours of direct sunlight per day and have abundant snags, logs, and brush piles on which to bask. These turtles also use oxbow lakes, semipermanent ponds, and occasionally temporary flood pools (Jones 1996). Yellow-blotched map turtles avoid smaller streams where the surface of the water is shaded by bank vegetation for much of the day. Nesting occurs from mid-May to mid-August. Most adult females do not lay more than one clutch per nesting season and not all nest yearly (Selman and Jones 2011). The species is endemic to the Pascagoula River system in southeastern Mississippi and the current extent is reflected in the Dkey area of influence associated with this standing analysis.

#### *Pearl River map turtle*

The Pearl River map turtle is a freshwater turtle species known for the intricate pattern on the carapace that often resembles a topographical map. Females grow proportionally larger heads and jaws than males as they age (Gibbons and Lovich 1990, pp. 2–3). The species inhabits rivers and large creeks with sand and gravel bottoms in the Pearl River drainage from central Mississippi to the border of southern Mississippi and Louisiana. Pearl River map turtles are found in swift-flowing rivers and creeks with sand and gravel bottoms and dense accumulations of

emergent and floating deadwood or other basking structures. Pearl River map turtles have not been documented in oxbow lakes or other floodplain habitats. The species is absent from lakes, oxbow lakes, or other floodplain habitat, but do occur at the upstream reach of Ross Barnett Reservoir, an impoundment of the Pearl River (Lindeman 2013, p. 298).

Female Pearl River map turtles excavate nests and lay their eggs on sandbars and beaches along sandy riverbanks during the late spring and early summer months. Hatchlings emerge after sunset approximately 69 days later. This life stage depends on adequate abundance of invertebrate prey and emergent branches near the riverbank. All life stages require adequate quality and quantity of water as they are primarily freshwater aquatic turtles.

#### *Alabama red-bellied turtle*

The Alabama red-bellied turtle is one of a group of turtle species commonly called *cooters* and may reach 12-14 inches in length. Females typically lay eggs between May 14 and August 1 on land bordering coastal rivers and marshes, typically in loamy sand and heavier siltier substrate typically within 600 feet of the shoreline or marsh. Nesting habitat includes open, patchy forest of maritime live oak or longleaf pine, usually within the dripline of large trees, and sometimes at the base of the tree trunk (Leary et al. 2008). Most nest sites appear to receive less than 50 percent sunlight. Nesting sites for Alabama red-bellied turtle in Mississippi have been identified along the West Pascagoula and Escatawpa rivers and their associated swamps, and at the Grand Bay National Estuarine Reserve (Service 2015).

Alabama red-bellied turtles are found in fresh and brackish (salinity below 5 parts per thousand) waters with submerged and emergent vegetation, typically in channels with little current bordered by extensive marshes comprised principally of black needle rush and sawgrass (Mann et al. 2000). Suitable foraging habitat is a species need and occurs in areas associated with submergent and emergent vegetation such as watermilfoil, pondweed, or eelgrass bordering the waterbodies.

## **5 EFFECTS OF COVERED ACTIVITIES**

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This section covers the effects of the anticipated activities covered in this standing analysis to the covered species and critical habitat (above). Where appropriate in our analysis, we make note of which activities are expected to have no effect on a species and critical habitat. This information is provided as helpful technical assistance to those agencies and project proponents who may be unfamiliar with the species and activities and can be incorporated by reference by action agencies when they make a NE determination.

The effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action but that are not part of the action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02).

A project's action area must include all areas affected (i.e., modifications to land, air, or water) by the proposed action, and not merely the immediate area involved in the action. If the activities satisfy the two-part test for causation ("but for" and "reasonably certain to occur"), they should be considered as part of the action. To qualify for use of this standing analysis, a project's action



area must be wholly encompassed by the coverage area for this standing analysis as described above and all activities within the proposed action must fit within the scope of the standing analysis. Qualifying actions typically involve one or more of the stressors addressed by analysis group or species-specific sections below.

### **5.1 EFFECTS OF HABITAT ALTERATION ON PLANTS INCLUDING LOUISIANA QUILLWORT, PRICE’S POTATO-BEAN, WHITE FRINGELESS ORCHID, WHORLED SUNFLOWER, AND PONDBERRY**

If a proposed project occurs within the area of influence for a plant species, the DKey first evaluates the potential for effects to each plant species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project’s footprint. If the project includes only these actions, a “no effect” (NE) conclusion is appropriate as listed plants will not be present in the Action Area. The Dkey then asks species-specific questions to determine if the Action Area includes habitat suitable for the species. If the user answers the species-specific question with the answer specified in Table 4, the DKey will guide the user to a “not likely to adversely affect” (NLAA) determination for that species.

**Table 4.** Species-specific questions in the DKey and their corresponding answers that indicate that the Action Area of the proposed project does not include habitat suitable for the species. If the Action Area does not contain habitat where the species is expected to occur, the species will not be exposed to the effects of the action and a “no effect” conclusion is appropriate.

<b>Species</b>	<b>Questions</b>	<b>Answer</b>
Louisiana quillwort	Will the project occur in highly degraded or altered small or medium-sized streams that may or may not have consistent or year-round flow (intermittent streams) or within 165 feet of such streams?	Yes
Price’s potato-bean	Will the project occur in open, mixed hardwood forests, forest edges, forest gaps or rights-of-way that are underlain by calcareous soils?	No
White fringeless orchid	Will the project occur in wet, boggy areas near headwaters or on seepage slopes or partially shaded areas associated with sphagnum moss?	No
Whorled sunflower	Will the project occur in natural wet meadows or prairies, moist soil sites along roadsides, railroads, and agricultural fields, or openings in moist soil woodlands adjacent to creeks?	No
Pondberry	Will the project occur in seasonally flooded bottomland hardwood stands or forested hardwood-dominated wetland depressions with a closed canopy and minimal shrub layer?	No

If the user cannot conclude that the Action Area of the proposed Action does not contain habitat in the answer to the first question in the DKey, IPaC will ask an additional question or set of questions to evaluate the potential for effects to the species (Table 5). These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. The negative impacts described for each species are caused by the proposed action and reasonably certain to occur. The activities expected to impact the species described in Table 5 are those that will change the habitat condition or affect species needs such that the species growth requirements, reproduction, or other life history needs (including pollinators) are affected.

**Table 5.** Species-specific questions or set of questions in the DKey and their corresponding answers that indicate that the proposed project effects are insignificant or discountable to the species. For the responses listed under **Answer** below, “not likely to adversely affect” is the appropriate determination for the species as a result of the effect of the proposed action.

Species	Activities or stressors expected to impact the species	Answer
Louisiana quillwort	1) increase stream sedimentation (erosion and runoff), 2) reduce stream flow, 3) reduce stream canopy cover (trees or overarching vegetation), 4) apply herbicides 5) in any other way negatively affect Louisiana quillwort plants	No
Price’s potato-bean	1) ground-disturbing activities, 2) land-clearing 3) herbicide application	No
White fringeless orchid	1) measurable increase in precipitation runoff (e.g., from impervious surfaces, from timber removal) 2) involve grading that would change hydrological patterns	No
Pondberry	1) remove or alter hardwood forests with a closed canopy 2) involve herbicide application 3) alter hydrology, water flow, flooding, or ponding of water on the site	No

If the proposed project will include activities expected to have a negative impact on the plant species, including, but not limited to those described in Table 5, the Dkey asks if a species-specific survey has been completed and the results of the survey. For projects that will include activities expected to negatively impact the species, but the species is not present (negative survey), IPaC will return a “may affect, not likely to adversely affect” (MANLAA or NLAA) determination or conclusion.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for a plant species on the official species list for the Action Area, IPaC will provide a MAA determination for that plant species and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter

(for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a “no effect” or a “may affect – not likely to adversely affect” determination for the plant species or that the Service concurs with the determination.

## **5.2 EFFECTS OF HABITAT ALTERATION ON BLACK PINESNAKE**

If a proposed project occurs within the area of influence for the black pinesnake, the DKey first evaluates the potential for effects to the species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project’s footprint. If the project includes only these actions, a “no effect” conclusion is appropriate as black pinesnake will not be present in the Action Area. The Dkey then asks questions to determine if the Action Area includes habitat suitable for the black pinesnake. If the user answers the species-specific question to indicate that the specified activities will not occur as part of the proposed project, the DKey will guide the user to a NLAA determination for that species.

Black pinesnakes are accomplished burrowers capable of tunnelling in loose soil, potentially for digging nests or excavating rodents for food (Ernst and Barbour 1989, pp. 100–101). Mating activities may take place in other species’ (armadillo, gopher tortoise) burrows. The species uses underground refugia, often at shallow depths (9–14 inches) in chambers formed by the decay and burning of pine stumps and roots (not excavated). Black pinesnakes home ranges and movement patterns vary with habitat quality as snakes are forced to increase the search radius to locate preferred habitat, their home range invariably increases.

Projects that include activities that alter, remove, or fill upland pine habitat with herbaceous ground cover are expected to negatively affect black pinesnakes or the habitat where they occur such that it impacts feeding, breeding, or sheltering of the species. Activities that may be included in projects that qualify to use the Dkey and are expected to affect the species include stump-grinding, road construction, and other ground-disturbing activities, often associated with silviculture or forestry management and timber harvest. These activities reduce the availability of species requirements for underground feeding, destroy mating and egg laying sites, eliminate refugia and reduce habitat suitability for black pinesnake. The negative impacts described for each species are caused by the proposed action and reasonably certain to occur.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for black pinesnake on the official species list for the Action Area, IPaC will provide a MAA determination for the species and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a “no effect” or a “may affect – not likely to adversely affect” determination for the black pinesnake.

## **5.3 EFFECTS OF HABITAT ALTERATION ON DUSKY GOPHER FROG**

If a proposed project occurs within the area of influence for the dusky gopher frog, the DKey first evaluates the potential for effects to the species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project’s footprint. If the project includes only these actions, a “no effect” conclusion is appropriate as dusky gopher frog will not be present in the Action Area.

The Dkey then asks questions to determine if the Action Area includes habitat suitable for the dusky gopher frog (i.e., open-canopied pine uplands). If the user answers the following species-specific questions to indicate that the specified activities will not occur as part of the proposed project (answers “no” to the questions below), the DKey will guide the user to a NLAA determination for the frog.

- Will the project generate noise at night?
- Will the project occur between January and May?
- Is there a pond that sometimes goes dry or a seasonally-flooded pool or depression in an area that has an open tree canopy or limited shade within 1 mile of the project location?
- Will the project alter or change a pond that sometimes goes dry or a seasonally-flooded pool or depression in an area that has an open tree canopy or limited shade?

Activities that generate noise interfere with the communication of mating calls of the dusky gopher frog and impact reproduction. Projects outside of the time from January and May have very limited potential to impact frog reproduction, maturation to metamorphs, and dispersal from the natal pond as these life history periods occur in the late winter and spring. Many ponds that contain habitat suitable for dusky gopher frog occur in open-canopied pine uplands, although ponds with known species’ occurrences are much more limited. Unknown dusky gopher frog ponds within a mile of the project location may be impacted by noise, vibration, hydrology changes, vegetation or canopy changes, or other stressors that impact frog habitat that supports feeding, breeding, or sheltering.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for dusky gopher frog on the official species list for the Action Area, IPaC will provide a MAA determination for the species and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a “no effect” or a “may affect – not likely to adversely affect”.

#### **5.4 EFFECTS OF HABITAT ALTERATION ON EASTERN INDIGO SNAKE**

If a proposed project occurs within the area of influence for the eastern indigo snake, the DKey first evaluates the potential for effects to the species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project’s footprint. If the project includes only these actions, a “no effect” conclusion is appropriate as eastern indigo snake will not be present in the Action Area. The Dkey then asks questions to determine if the Action Area includes habitat suitable for the eastern indigo snake (i.e., open canopied pine forest on well-drained sandy soils with pine stumps and herbaceous ground cover). If the project does not occur in an area with suitable habitat for the species, then the eastern indigo snake is unlikely to occur there and the Dkey guides the user to a NLAA determination. If the project will occur in suitable habitat and the user answers the following species-specific questions to indicate that the specified activities will not occur as part of the proposed project (answers “no” to the questions below), the DKey will guide the user to a NLAA determination for the snake.

- Will the project include ground-disturbing activities that permanently remove, fill, or otherwise permanently alter eastern indigo snake habitat?

Throughout their range, eastern indigo snakes use below-ground shelter sites for refuge, breeding, feeding, and nesting. They depend on gopher tortoise burrows in xeric sandhill habitats throughout the northern portion of the species' range for overwintering shelter sites. Actions that are expected to occur as part of the action and permanently alter below ground habitat negatively impact the feeding, breeding, and sheltering of eastern indigo snake.

- Will the project site be revegetated and returned to pre-project condition within three months?

Eastern indigo snakes have a large home range and travel long distances in search of habitat and prey. Although individual snakes may leave an area when it is not suitable, the species may return to an area when it is revegetated and prey items return to the site and it becomes suitable habitat again.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for eastern indigo snake on the official species list for the Action Area, IPaC will provide a MAA determination for the species and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a "no effect" or a "may affect – not likely to adversely affect".

## 5.5 EFFECTS OF HABITAT ALTERATION ON MITCHELL'S SATYR BUTTERFLY

If a proposed project occurs within the area of influence for Mitchell's satyr butterfly, the DKey first evaluates the potential for effects to the species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project's footprint. If the project includes only these actions, a "no effect" (NE) conclusion is appropriate as Mitchell's satyr butterfly will not be present in the Action Area.

The Dkey then asks a question to determine if the Action Area includes or is within 50 feet of habitat suitable for the species (herbaceous wetlands with *Carex* species or sedges). If the Action Area does not contain habitat where the species is expected to occur, the species will not be exposed to the effects of the action and a NLAA conclusion is appropriate.

If the user cannot conclude that the Action Area of the proposed Action does not contain habitat in the answer to the first question in the DKey, IPaC will ask an additional set of questions to evaluate the potential for effects to the species. These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. The negative impacts described for Mitchell's satyr butterfly are caused by the proposed action and reasonably certain to occur. The activities expected to impact the species described in Table 6 are those that will change the habitat condition or affect species needs such that the species feeding, reproduction, or sheltering or other needs are affected.

**Table 6.** Activities that are expected to impact Mitchell's satyr butterfly and the effect on the species.

Activities or stressors	Impact to species
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<p>For projects that consist only of vegetation mowing and/or prescribed fire:</p> <ol style="list-style-type: none"> <li>1) the project will occur entirely between May 15 and June 30, or</li> <li>2) the project will occur entirely between August 1 and September 30</li> </ol>	<p>Mitchell's satyr butterfly has two flight periods in Mississippi (May 15-June 30 and August 1 to September 30). Adult butterflies can move away from mowing or fire disturbance during these time frames.</p>
<p>Projects will not drain, alter, or convert the wetland area including ground disturbance (rutting, etc.).</p>	<p>The host plant <i>Carex</i> species or sedges required by the Mitchell's satyr butterfly require wetland hydrology and stable soils. Projects that do not change the hydrology or disturb the soil are not expected to degrade habitat conditions for the species' host plant and thus, the butterfly.</p>
<p>Projects will not apply of herbicide, insecticide, or fungicide.</p>	<p>Mitchell's satyr butterfly is sensitive to the application of herbicide through the loss of the host plant needed for eggs and caterpillars. Direct mortality may occur with exposure to insecticides. Fungicides may also be detrimental to lepidopterans. Projects that do not apply these substances within satyr habitat will not cause these detrimental effects.</p>

If the user's responses indicate the proposed action does not include these activities or corresponding answers that indicate that the Action Area of the proposed project in effects that are insignificant or discountable to the species, "not likely to adversely affect" is the appropriate determination for the species as a result of the effect of the proposed action.

If the proposed project will include activities expected to have a negative impact on Mitchell's satyr butterfly, including, but not limited to those described in Table 6, the Dkey asks if a species-specific survey has been completed and the results of the survey. For projects that will include activities expected to negatively impact the Mitchell's satyr butterfly, but the species is not present (negative survey), IPaC will return a "not likely to adversely affect" (NLAA) determination or conclusion.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for Mitchell's satyr butterfly on the official species list for the Action Area, IPaC will provide a MAA determination for Mitchell's satyr butterfly and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a "no effect" or a "may affect – not likely to adversely affect" determination for Mitchell's satyr butterfly or that the Service concurs with the determination.

## 5.6 EFFECTS OF IN-WATER ACTIVITIES ON WEST INDIAN MANATEE

If a proposed project occurs within the area of influence for West Indian manatee, the DKey first evaluates the potential for effects to the species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project's footprint. If the project includes only these actions, a "no effect" (NE) conclusion is appropriate as West Indian manatee will not be present in the Action Area.

The Dkey then asks a question to determine if the project will take place in waters greater than 2 feet depth at mean high tide. West Indian manatees are not known to occur in water shallower than 2 feet, therefore, for projects that will take place in shallower waters, the species will not be exposed to the effects of the action and a NLAA conclusion is appropriate. If the user cannot conclude that the proposed Action will occur in waters shallower than 2 feet in the answer to the first question in the DKey, IPaC will ask an additional set of questions to evaluate the potential for effects to the species. These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. The negative impacts described for the West Indian manatee are caused by the proposed action and reasonably certain to occur. The activities expected to impact the species described in Table 7 are those that will change the habitat condition or affect species needs such that the species feeding, reproduction, or sheltering or other needs are affected.

**Table 7.** Activities that are expected to impact West Indian manatee and the anticipated impact on the species.

Activities or stressors	Impact to species
Blasting or other detonation activity (e.g., for channel deepening and/or widening, geotechnical surveys or exploration, bridge and structure removals, movies, military shows, or special events, etc.)	Blasting or detonation in-water may cause mortality, injury, or impairment such that the manatee is unable to feed, swim to refugia or foraging areas, or obtain fresh drinking water. Manatees may become disoriented and unable to avoid other hazards, become separated from young or other companions.
Modification or construction of warm or freshwater discharges from industrial sites, power plants, water treatment facilities, etc., or natural springs or artesian wells.	Manatees are sensitive to cold and seek out warm water aggregation areas (natural and artificial) in cooler and cold weather. Additional warm water attractants in industrial outflows may alter manatee migratory behavior and cause manatees to aggregate at the new site.  Manatees seek out sources of fresh drinking water when in marine and estuarine habitats. For all life stages, manatees require access to fresh water for drinking. Loss or reduction of

	this resource impacts the availability of species' needs and reduces manatee condition and fitness. Manatees may expend additional energy in search of fresh water to drink or may inappropriately congregate near artificial freshwater sources.
Installation, maintenance, or modification of a culvert from 8 inches to 8 feet in diameter in water that would be accessible by a manatee.	Manatees, particularly calves or juveniles, may become injured or stuck in culverts as they move in search of fresh water. Manatees that cannot dislodge to seek food, affecting feeding, and may injure themselves when distressed (affecting fitness). Entrapment avoidance devices may be deployed, including grates, to prevent or reduce potential entrapment.
In-water construction other than described above (e.g. bulkhead construction or repair, rip-rap, bridge, dredging, mooring buoys, etc.).	In-water construction that follows the publicly available and linked Standard Manatee Conditions for In-Water Activities in Mississippi as part of the permit conditions includes conservation measures that are expected to prevent impacts to manatee that are more than insignificant or discountable (NLAA).

If other in-water construction will occur, users are asked if the project will follow the current Standard Manatee Conditions for In-Water Activities in Mississippi. If the user's responses indicate the proposed action does not include these activities or corresponding answers that indicate effects that are insignificant or discountable to the species or the Standard Manatee Conditions for In-Water Activities in Mississippi will be followed, the Dkey will guide users to a "not likely to adversely affect" as the appropriate determination for the species as a result of the effect of the proposed action.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for West Indian manatee on the official species list for the Action Area, IPaC will provide a MAA determination for West Indian manatee and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a "no effect" or a "may affect – not likely to adversely affect" determination for West Indian manatee or that the Service concurs with the determination.

## **5.7 EFFECTS OF BEACH ACTIVITIES ON SEA TURTLES**

If a proposed project occurs within the area of influence for a sea turtle species, including green, hawksbill, Kemp's Ridle, leatherback, or loggerhead sea turtles, the DKey first evaluates the potential for effects to each sea turtle species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an



existing structure that will take place within the existing project's footprint. If the project includes only these actions, a "no effect" (NE) conclusion is appropriate as listed sea turtles will not be present in the Action Area.

The DKey then asks species-specific questions to determine if the Action Area includes habitat used by the species (open sandy beaches above the high tide line). Additionally, if the project consists entirely of replacement of existing culverts, utility lines, or outfall structures and the area will be returned to pre-project conditions, then the effect to listed species will be insignificant (effects are undetectable, not measurable, or cannot be evaluated), and a NLAA determination is appropriate. If the user cannot conclude that the Action Area of the proposed Action does not contain habitat used by the species in the answer to the first question in the DKey, IPaC will ask an additional question or set of questions to evaluate the potential for effects to the species (Table 8). If the user answers the species-specific questions indicating the impact to the species will not occur, or the impact is insignificant or discountable, the DKey will guide the user to a "not likely to adversely affect" (NLAA) determination for that species.

These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. The negative impacts described for sea turtles are caused by the proposed action and reasonably certain to occur. The activities expected to impact the species described in Table 8 are those that will change the habitat condition or affect species needs such that the species feeding, reproduction, or sheltering or other needs are affected.

**Table 8.** Activities that are expected to impact sea turtles and the anticipated impact to the species.

Activities or stressors	Impact to species
Project will take place outside of the period from November 1 and April 30, including post-construction activities.	Sea turtles are known to occur on beaches on barrier islands or the mainland during this time period of the nesting season in Mississippi.
For projects that will take place between May 1 and October 31, the project will include more than 0.5 acre of ground disturbance activities and the area will not be fenced off prior to May 1.	When a limited area of ground-disturbing activities (< 0.5 acre), a large amount of suitable habitat is nearby and available for beach-nesting sea turtles. Fencing off the work area prior to the potential nesting season prevents sea turtles from entering the project area to begin nesting.
Pile-supported piers or walkways will be constructed parallel to the shoreline.	Piers or walkways that run perpendicular to the shoreline (not along it) do not interfere with sea turtles' approach to nesting areas onshore. Piers or walkways that run parallel or along the shore create an obstruction that turtles must expend additional energy to find an appropriate nesting site. Sea

	turtles do not travel along the beach out of the water to find suitable. Therefore, piers and walkways reduce sea turtle access to nesting areas and reduce reproductive success and recruitment.
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If the user's responses indicate the proposed action does not include these activities or corresponding answers that indicate that the Action Area of the proposed project in effects that are insignificant or discountable to the species, the Dkey will guide users to a "not likely to adversely affect" as the appropriate determination for the species as a result of the effect of the proposed action.

The Dkey for sea turtles also asks a question to determine if beach renourishment activities are included in the proposed project; all beach renourishment projects are provided a MAA determination for sea turtles. A NE or NLAA conclusion is not appropriate for these projects as beach renourishment may affect the quality of nesting areas through compaction and potential differences in sand type or depth. In addition, renourishment during nesting season may bury nests leading to loss of eggs through crushing or mortality of hatchlings that cannot escape a deeply buried nest.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for sea turtles on the official species list for the Action Area, IPaC will provide a MAA determination for sea turtles and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a "no effect" or a "may affect – not likely to adversely affect" determination for sea turtles or that the Service concurs with the determination.

## **5.8 EFFECTS OF BEACH ACTIVITIES ON PIPING PLOVER AND RUFA RED KNOT**

If a proposed project occurs within the area of influence for a listed shorebird species, including piping plover and rufa red knot, the DKey first evaluates the potential for effects to each shorebird species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project's footprint. If the project includes only these actions, a "no effect" (NE) conclusion is appropriate as listed shorebirds will not be present in the Action Area.

The Dkey for shorebirds then asks if the project will involve beach or dune renourishment to determine if the project may affect shorebirds in the Action Area. These shorebirds feed in beaches, washover passes, and flats. Application of sand to beaches or dunes changes the food availability and access for shorebirds and actions that involve this activity do not qualify for a NE or NLAA determination through the key. All beach and dune renourishment projects are provided a MAA determination for piping plover and rufa red not.

If the proposed project does not involve beach or dune renourishment, the Dkey then asks species-specific questions to determine if the Action Area includes habitat used by the species (area from the average low tide line to the sea wall or to the wooded/vegetated extent). If the user cannot conclude that the Action Area of the proposed Action does not contain habitat used by the species in the answer to the first question in the DKey, IPaC will ask an additional question or

set of questions to evaluate the potential for effects to the species (Table 9). If the user answers the species-specific questions indicating the impact to the species will not occur, or the impact is insignificant or discountable, the DKey will guide the user to a “not likely to adversely affect” (NLAA) determination for that species.

These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. The negative impacts described for shorebirds are caused by the proposed action and reasonably certain to occur. The activities expected to impact the species described in Table 9 are those that will change the habitat condition or affect species needs such that the species feeding, reproduction, or sheltering or other needs are affected.

**Table 9.** Activities that are expected to impact shorebirds and the anticipated impact to the species.

Activities or stressors	Impact to species
Disturbance by humans including, but not limited to foot traffic, vehicles, other motorized or tracked equipment.	Foot traffic or equipment disrupts shorebirds, causing them to move away or fly off. This additional energy expenditure may result in reduced fitness expressed as lower reproductive rates and, in some cases, reduced ability to add weight due to exclusion from or interrupted access to food or resting locations.
Ground (beach) disturbance including, but not limited to excavating, grading, or placing fill materials.	Ground disturbing activities reduce feeding habitat available to shorebirds by compacting, deepening, removing, or otherwise changing the composition of the beach or flats such that prey items are no longer supported in the amount to support shorebird energy requirements.
Visual, noise, or other disturbance that is expected to affect shorebird nesting, resting, or foraging behavior including causing birds to take flight or leave the area.	Similar to the foot traffic or equipment disruption, other disturbances (visual, noise, or other) disrupts or alters shorebird activity, causing them to move away or fly off to leave the area. This additional energy expenditure may result in reduced fitness expressed as lower reproductive rates and, in some cases, reduced ability to add weight due to exclusion from or interrupted access to food or resting locations.

If the user’s responses indicate the proposed action does not include these activities or corresponding answers that indicate that the Action Area of the proposed project in effects that are insignificant or discountable to the species, the Dkey will ask seasonal questions to determine if the species will be impacted. Piping plovers and rufa red knot that winter in Mississippi

typically return to the northern United States during the breeding season (May 1 and July 15 for piping plover and June 1 and July 15 for rufa red knot). Projects that occur entirely within these periods will take place when the listed shorebirds are not in the area. If the user's responses indicated that the proposed action will take place when listed shorebirds are not in the area, the Dkey will guide users to a "not likely to adversely affect" as the appropriate determination for the species as a result of the effect of the proposed action.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for piping plover or rufa red knot on the official species list for the Action Area, IPaC will provide a MAA determination for the shorebirds and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a "no effect" or a "may affect – not likely to adversely affect" determination for shorebirds or that the Service concurs with the determination.

## 5.9 EFFECTS OF HABITAT ALTERATION ON EASTERN BLACK RAIL

If a proposed project occurs within the area of influence for Eastern black rail, the DKey first evaluates the potential for effects to the species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project's footprint. If the project includes only these actions, a "no effect" (NE) conclusion is appropriate as Eastern black rail will not be present in the Action Area.

The Dkey then asks species-specific questions to determine if the Action Area includes habitat used by the species (wetland or marsh areas with herbaceous vegetation and canopy cover with moist soils). If the user cannot conclude that the Action Area of the proposed Action does not contain habitat used by the species in the answer to the first question in the DKey, IPaC will ask an additional question or set of questions to evaluate the potential for effects to the species (Table 10). If the user answers the species-specific questions indicating the impact to the species will not occur, or the impact is insignificant or discountable, the DKey will guide the user to a "not likely to adversely affect" (NLAA) determination for that species.

These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. The negative impacts described for the Eastern black rail are caused by the proposed action and reasonably certain to occur. The activities expected to impact the species described in Table 10 are those that will change the habitat condition or affect species needs such that the species feeding, reproduction, or sheltering or other needs are affected.

**Table 10.** Activities that are expected to impact Eastern black rail and the anticipated impact on the species.

Activities or stressors	Impact to species
Hydrology of existing marsh habitat is altered. Actions that may affect the	Eastern black rails depend on marsh hydrology for feeding, breeding, and sheltering. The

hydrology include, but are not limited to, habitat restoration, new construction or development, change in existing operation of water control structures waterbody diversion, major water withdrawals, and levee construction.	wetland habitats that provide dense overhead cover for shelter and very shallow water depths may be altered if hydrology is changed. Alterations in hydrology may include water depth changes affecting food resources and changes in vegetation community affecting overhead cover, decreasing the suitability of the habitat to meet species needs. Predation risk may also change as a result of changes to habitat condition.
<p>The project consists of prescribed fire that complies with the conditions of the October 8, 2020, final 4(d) rule including:</p> <p>1) Areas of all sizes should maintain a broad range of habitat condition through rotational burning. At least 50 percent of the habitat should provide the dense overhead cover required. This percentage does not apply to landholdings smaller than 640 acres.</p> <p>2) Where the species is known or expected to be present, use tactics to provide unburned refugia (e.g., using short flanking, backing fires, or similar approaches). Apply fire under fuel and weather conditions (e.g., soil moisture and/or relative humidity) to result in patchy unburned habitat.</p> <p>3) Ignition tactics, rates of spread, and flame lengths should allow for wildlife escape routes. Avoid ring and strip head fires, that have long, unbroken boundaries and/or that come together in a short period of time. Aerial ignitions should be conducted in such a way that large, fast-moving fires are avoided.</p>	Prescribed fire conducted in areas where the species occurs may result in take of this secretive marsh bird if it is unable to flee the area due to behavioral characteristics. When the conditions described are followed, the conservation benefit of habitat improvement is expected to provide an overall benefit to the species. Incidental take as a result of these actions is excepted from prohibition under the final 4(d) rule.
The project consists of haying, mowing, or other mechanical treatments conducted entirely within existing moist soil management units or prior converted croplands.	Eastern black rails typically hide and become immobile when threatened. Individuals are well-camouflaged and cannot be seen by operators conducting haying, mowing, or other mechanical treatments. Take of Eastern black rail individuals may occur; however, haying, mowing, or other mechanical treatments conducted as part of habitat restoration including control of woody encroachment and

	other invasive plant species is expected to provide an overall benefit to the species. These activities are excepted from the prohibition of take under the final 4(d) rule of October 8, 2020.
The activity is required maintenance to ensure safety and operational needs. This may include maintaining existing infrastructure such as firebreaks, roads, rights-of-way, levees, dikes, fence lines, airfields, and surface water irrigation infrastructure (e.g., head gates, ditches, canals, water control structures, and culverts).	These activities are excepted from the prohibition of take under the final 4(d) rule of October 8, 2020.

If the user's responses indicate the proposed action does not include alterations to the hydrology of the marsh habitat, the Dkey will guide users to a "not likely to adversely affect" as the appropriate determination for the species as a result of the effect of the proposed action. For the remaining three types of activities or stressors in Table 10, take may occur, but the final 4(d) rule of October 8, 2020, provides measures that are necessary and advisable for the conservation of the species and excepts the prohibition of incidental take for those activities.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for Eastern black rail on the official species list for the Action Area, IPaC will provide a MAA determination for Eastern black rail and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a "no effect" or a "may affect – not likely to adversely affect" determination for Eastern black rail or that the Service concurs with the determination.

#### **5.10 EFFECTS OF FOREST ALTERATION ON RED-COCKADED WOODPECKER**

If a proposed project occurs within the area of influence for red-cockaded woodpecker, the DKey first evaluates the potential for effects to the species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project's footprint. If the project includes only these actions, the Dkey asks if the project will occur within 200 feet of a known cavity tree (active or inactive). If the project includes only these actions and is greater than 200 feet from a cavity tree, a NLAA conclusion is appropriate as maintenance, repair, or replacement within an existing footprint farther than 200 feet of known cavity trees has not been shown to disturb red-cockaded woodpeckers in the area such that feeding, breeding, or sheltering are negatively impacted more than insignificant or discountable effects.

The Dkey then asks species-specific questions to determine if the Action will remove foraging habitat (pine or pine/hardwood stands in which 50 percent or more of the dominant trees are

pinetrees and the dominant pine trees are 30 years old or older or greater than 9 inches diameter at breast height) or nesting habitat used by the species (pine or pine/hardwood stands that contain pinetrees 60 years old or older or greater than 10 inches diameter at breast height). If suitable nesting habitat occurs within 0.5 mile of suitable foraging habitat, further assessment of the Action Area is required to determine if effects to the species will occur. If suitable nesting habitat is not located within 0.5 mile of suitable foraging habitat, removal of this habitat is not expected to negatively impact the species such that take will occur and a NLAA determination is appropriate.

If the Action Area includes suitable nesting habitat within 0.5 mile of suitable foraging habitat, a survey for red-cockaded woodpecker cavity excavation is requested to further assess potential impacts of the Action. If the user cannot conclude that the Action Area of the proposed Action does not contain foraging or nesting habitat used by the species and cavity trees in the answer to these questions in the DKey, IPaC will ask an additional set of questions to evaluate the potential for effects to the species (Table 11). If the user answers the species-specific questions indicating the impact to the species will not occur, or the impact is insignificant or discountable, the DKey will guide the user to a “not likely to adversely affect” (NLAA) determination for that species. If the user answers the species-specific questions indicating that impacts to the species will occur such that take is likely, but that take is excepted from prohibitions in the final October 23, 2024, 4(d) rule that describes measures that are necessary and advisable for the conservation of the species.

These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. The negative impacts described for the red-cockaded woodpecker are caused by the proposed action and reasonably certain to occur. The activities expected to impact the species described in Table 11 are those that will change the habitat condition or affect species needs such that the species feeding, reproduction, or sheltering or other needs are affected.

**Table 11.** Activities that are expected to impact red-cockaded woodpecker in the Action Area when cavity trees are observed and the anticipated impact on the species.

Activities or stressors	Impact to species
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Activities that result in removal or damage to cavity trees. This may include, but is not limited to, root compaction, soil compaction, prescribed fire, herbicide, mechanical damage, changes in hydrology not compatible with species requirements, and other alterations.	Red-cockaded woodpeckers nest in live pine trees with sufficient heart wood to allow for cavity excavation. Damage to cavity trees that results in tree death or change in tree condition such the excavated cavity is not suitable for species use impacts the breeding and sheltering needs of the red-cockaded woodpecker.
Disturbance within 200 feet of a cavity tree. This may include, but is not limited to, seismic activity, all-terrain vehicle or other off-road vehicle use, motorized equipment, forest management, or other disturbance.	Disturbance near cavity trees may cause woodpeckers to take flight to escape the disturbance. Abandonment of chicks may cause reduced fitness or mortality. Abandonment of eggs may cause mortality or reduced hatching. Excess energy expenditure may result in reduced fitness in adults if nesting cavities are not available for refuge and shelter.
Project includes installation, maintenance, or replacement of artificial cavities.	Disturbance to existing artificial cavities or placement of new artificial cavities causes temporary impact to woodpeckers in the vicinity of the work. This may result in take of the species; however, the section 4(d) rule provides an exception to take prohibition resulting from these actions if the conditions described in the rule are met. Generally, these conditions describe the proficiency and training of individuals conducting the installation. Maintaining an adequate number of cavities is fundamental to the conservation of the species.
Prescribed burns or herbicide application on private lands.	Although the application of prescribed fire may result in loss of cavity trees, impacting red-cockaded woodpecker breeding and sheltering requirements or direct mortality of adults, juveniles, chicks, or eggs, when these activities are conducted following the conditions described in the final 4(d) rule of October 25, 2024, including best management practices and minimization or avoidance of adverse effects to active clusters and roosting and nesting behavior, the activities are excepted from the prohibition of incidental take.



Habitat management or military training activities on Department of Defense installations conducted in compliance with a Service-approved INRMP.	These activities may result in take of all life stages, loss of habitat, or decrease in the feeding, breeding, and sheltering requirements of the red-cockaded woodpecker; however, where these actions result in incidental take, that take is excepted from prohibition under the final 4(d) rule of October 25, 2024.
Habitat management activities on Federal land management agency properties.	When these activities are intended to restore or maintain red-cockaded woodpecker habitat and comply with the conditions in the final 4(d) rule, incidental take is excepted from prohibition. Management of habitat is an overall benefit and conservation need for the woodpecker.

If the user's responses indicate 1) the proposed action does not include actions expected to result in take, 2) the project will not reduce foraging habitat to below the managed stability standard, or 3) the project will adhere to the 2003 RCW Recovery Plan Guidelines for Federal Lands, the Dkey will guide users to a "not likely to adversely affect" as the appropriate determination for the species as a result of the effect of the proposed action. For the remaining types of activities or stressors in Table 1, incidental take may occur, but the final 4(d) rule of October 25, 2024, provides measures that are necessary and advisable for the conservation of the species and excepts incidental take for those activities.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for red-cockaded woodpecker on the official species list for the Action Area, IPaC will provide a MAA determination for red-cockaded woodpecker and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a "no effect" or a "may affect – not likely to adversely affect" determination for red-cockaded woodpecker or that the Service concurs with the determination.

#### **5.11 EFFECTS OF HABITAT ALTERATION ON MISSISSIPPI SANDHILL CRANE**

If a proposed project occurs within the area of influence for Mississippi sandhill crane, the DKey first evaluates the potential for effects to the species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project's footprint. If the project includes only these actions, a "no effect" (NE) conclusion is appropriate as Mississippi sandhill crane will not be present in the Action Area.

The Dkey then asks species-specific questions to determine if the Action Area includes habitat used by the Mississippi sandhill crane (wet pine savanna grasslands often with wiregrass and scattered pine, open shallow herbaceous wetlands, wet prairies, pastures, croplands and fields, marshes, and shallow freshwater ponds (inclusive of foraging, roosting, and nesting habitats).

If the user cannot conclude that the Action Area of the proposed Action does not contain habitat used by the species in the answer to the first question in the DKey, IPaC will ask an additional question or set of questions to evaluate the potential for effects to the species (Table 12). If the user answers the species-specific questions indicating the impact to the species will not occur, or the impact is insignificant or discountable, the DKey will guide the user to a “not likely to adversely affect” (NLAA) determination for Mississippi sandhill crane.

These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. The negative impacts described for the Mississippi sandhill crane are caused by the proposed action and reasonably certain to occur. The activities expected to impact the species described in Table 12 are those that will change the habitat condition or affect species needs such that the species feeding, reproduction, or sheltering or other needs are affected.

**Table 12.** Activities that are expected to impact Mississippi sandhill crane and the anticipated impact on the species.

Activities or stressors	Impact to species
<p>Project will create a potential flight collision risk including, but not limited to, cell towers, power lines, new or increased capacity roads such as large subdivisions on smaller, low use roadways.</p> <p>Transmission line work – repair, modification, or installation – will not install bird flight diverters every 15 feet along the top/static line or ensure the height of the top line is at or slightly below the height of any adjacent trees.</p>	<p>The Mississippi sandhill crane faces a significant collision risk with human-created structures such as fences, cell towers, and especially powerlines. From 1989 through 2013, there have been 13 known Mississippi sandhill crane mortalities from powerlines, with 3 from electrocution and 8 from entanglement trauma. Additionally, roads within occupied habitats pose a threat, with 44 vehicle collisions documented from 1994 through 2017, resulting in the death of 39 cranes. The increase in motorized vehicular traffic, particularly due to development surrounding the Mississippi Sandhill Crane National Wildlife Refuge, exacerbates this risk. Efforts to mitigate these risks include marking powerlines with bird flight diverters and, in some cases, replacing overhead lines with underground ones.</p>
<p>Project will occur during nesting season (March 1 to July 30) or during the hour after sunrise or before sunset.</p>	<p>Mississippi sandhill cranes, like other sandhill cranes, typically fly during the day. They are most active during the early morning and late afternoon, which are their primary times for foraging and moving between roosting and feeding sites. They generally avoid flying at</p>

	night. Cranes are particularly sensitive to disturbance during nesting season.
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If the user's responses indicate the proposed action does not include these activities or corresponding answers that indicate that the effects in the Action Area of the project are insignificant or discountable to the species, the Dkey will guide users to a "not likely to adversely affect" as the appropriate determination for the species as a result of the effect of the proposed action.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for Mississippi sandhill crane on the official species list for the Action Area, IPaC will provide a MAA determination for Mississippi sandhill crane and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a "no effect" or a "may affect – not likely to adversely affect" determination for Mississippi sandhill crane or that the Service concurs with the determination.

## **5.12 EFFECTS OF HABITAT ALTERATION ON WHOOPING CRANE**

If a proposed project occurs within the area of influence for whooping crane, the DKey first evaluates the potential for effects to the species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project's footprint. If the project includes only these actions, a "no effect" (NE) conclusion is appropriate as whooping crane will not be present in the Action Area.

The whooping crane occurs rarely as a non-essential experimental population in Mississippi. Non-essential populations are treated as a proposed species for the purposes of consultation unless they occur on a National Wildlife Refuge or National Park, in which case they are treated as a threatened species for the purposes of consultation. Therefore, the Dkey then asks if the project will occur within a National Wildlife Refuge or a National Park. If the user responses indicate the project will occur on a refuge or national park, the Dkey then asks species-specific questions to determine if the Action Area includes habitat used by the whooping crane in Mississippi (marshy or flooded open field habitat). If the user's responses indicate the proposed action will not occur in habitat used by the whooping crane, the Dkey will guide users to a "not likely to adversely affect" as the appropriate determination for the species as a result of the effect of the proposed action.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for Mississippi sandhill crane on the official species list for the Action Area, IPaC will provide a MAA determination for Mississippi sandhill crane and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a

consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a “no effect” or a “may affect – not likely to adversely affect” determination for Mississippi sandhill crane or that the Service concurs with the determination.

### 5.13 EFFECTS OF WATER QUALITY DEGRADATION ON AQUATIC SPECIES

If a proposed project occurs within the area of influence for an aquatic species (including the 25 Federally listed mussels or fish in Table 1 under analysis group Aquatics), the DKey first evaluates the potential for effects to each aquatic species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project’s footprint. If the project includes only these actions, a “no effect” (NE) conclusion is appropriate as listed aquatic species will not be present in the Action Area.

If the user cannot conclude that the Action Area of the proposed Action includes only maintenance, repair, or replacement in an existing footprint in the answer to the first question in the DKey, IPaC will ask an additional question or set of questions to evaluate the potential for effects to the species (Table 13). These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. If the user answers the taxa-specific questions with the answer specified in Table 13, the DKey will guide the user to a “not likely to adversely affect” (NLAA) determination for covered aquatic species that are expected to occur in the Action Area. The negative impacts described for each species are caused by the proposed action and reasonably certain to occur. The activities expected to impact the species described in Table 14 are those that will change the habitat condition or affect species needs such that the species feeding, reproduction, or sheltering or other needs are affected.

**Table 13.** Aquatic species-specific questions or set of questions in the DKey and their corresponding answers that indicate that the Action Area of the proposed project in effects that are insignificant or discountable to the species. For the responses listed under **Answer** below, “not likely to adversely affect” is the appropriate determination for the species as a result of the effect of the proposed action.

<b>Activities or stressors expected to impact the species</b>	<b>Answer</b>
Will the proposed project include or result in effluent discharge into a stream or river?	No
Will the proposed project include or result in instream mining (e.g., within the wetted channel, on sand bars, or on gravel bars), dredging, or desnagging?	No
Will the proposed project include or result in over 500 linear feet of riverbank ground disturbance (e.g., bank stabilization, armoring, riprap, trenching)?	No
Will the proposed project include or result in over 200 linear feet of bulkheads or seawalls in rivers, streams, or bays?	No

Will the project include the creation of a permanent impoundment, dam, lowhead dam, or any other structure that impedes water flow?	No
Will the project include the creation of a diversion channel?	No
Will the project include dewatering of the mainstem stream, river, creek or other waterbody?	No
Will the project cause stream bed or bank disturbance?  <b>Note:</b> Bed or bank disturbance includes but is not limited to culvert replacement or installation, bridge replacement or construction, trenching of stream bed, construction, other ground disturbances activities.	No
Will the proposed project employ heavy machinery in the river?	No
Will the project involve land clearing or ground disturbance associated with forest or vegetation removal or urban, commercial, or residential development?	Yes; NLAA if next two questions are also Yes
Does the project comply with the Mississippi Department of Environmental Quality stormwater pollution prevention plan requirements, including monitoring of implementation of best management practices? <a href="https://www.mdeq.ms.gov/wp-content/uploads/2017/05/Volume_2.pdf">https://www.mdeq.ms.gov/wp-content/uploads/2017/05/Volume_2.pdf</a>	Yes
Will the project applicant obtain all necessary federal and state permits (such as 401 water quality certification, etc.) as well as implement best management practices to prevent illicit sediment or pollutant discharge into water in the project area or waterbodies receiving drainage or discharge from the project area?	Yes
Does the project include the application of any of the following: 1. Pesticides, 2. Herbicide, 3. Insecticide 4. Effluent or animal waste 5. Manure, 6. Litter, or 7. Chemical fertilizer?	Yes; NLAA if next question is also Yes
Will all applications follow label directions and comply with local and state regulations?	Yes
Does the project include forestry practices including silviculture, timber management, site prep, or any other associated action that may cause ground disturbance?	Yes; NLAA if next question is also Yes
Does the project comply with State-approved forestry and silviculture best management practices (link to <a href="https://www.mfc.ms.gov/wp-content/uploads/2020/03/Entire_bmp_2008-7-24_2.pdf">https://www.mfc.ms.gov/wp-content/uploads/2020/03/Entire_bmp_2008-7-24_2.pdf</a> )?	Yes

**Table 14.** Types of activities or stressors included in proposed projects or resulting from projects and the corresponding expected impacts to aquatic species.

Activities or stressors	Impact to species
<p>Discharge of effluent</p> <p>Application of pesticides, herbicides, insecticides, effluent or animal waste, manure, litter, or chemical fertilizer</p> <p>Heavy machinery in river</p> <p>Land clearing or ground disturbance associated with forest or vegetation removal or urban, commercial, or residential development</p>	<p><i>Water Quality Degradation:</i> Nonpoint-source pollutants from upland activities may enter rivers or streams in which these species occur and become suspended in the water column. Increased turbidity can indirectly effect mussels by impairing their ability to respire, reproduce, and feed (Watters 2009). Landis et al. (2013) observed a sharp decrease in pondmussel (<i>Ligumia subrostrata</i>) reproduction with higher total dissolved solids independent of food availability and speculated that it was likely attributed to physical interference with fertilization. Mussels may respond to turbidity with an increased clearance rate (rate at which water is moved through the mussel) and increased production of pseudofeces to expel particulates from the gills. These responses may decrease fertilization rates by decreasing the chances of sperm uptake and causing sperm to become bound in mucus. Due to the relatively small scale of most projects covered by this DKey and the criteria that limit stream channel and bank disturbance and excavation and grading in projects, we believe that any effects of sediment deposition to species covered under this DKey would be insignificant.</p> <p>On-site equipment could leak fuel, oil, and other fluids that would contaminate water into streams. The scale of the leak is relative to the amount of fluids contained in the equipment at the site of the project. Due to the criteria that limit the proximity of activities to intermittent and perennial streams that could contain the species, we believe that water quality degradation from equipment leaks is discountable.</p>
<p>Ground disturbance of riverbank including bank stabilization, armoring, riprap, or trenching (over 500 linear feet)</p> <p>Land clearing or ground disturbance associated with forest or vegetation removal</p>	<p><i>Sediment Deposition</i></p> <p>Nonpoint-source pollutants from upland activities may enter rivers or streams in which these species occur and settle out onto the substrate. Sediment deposited on the riverbed</p>

<p>or urban, commercial, or residential development</p> <p>Heavy machinery in river</p> <p>Stream bed or bank disturbance including but not limited to culvert replacement or installation, bridge replacement or construction, trenching of stream bed, construction, or other ground disturbance</p>	<p>may smother or bury mussels and could cause individual harm or mortality (Marking and Bills 1980; Waters 1995). Depending on the depth of the substrate disturbance and/or deposition, some mussels may be able to adjust their vertical position such that the disturbance does not result in death. Sediment disturbance may also render habitats unsuitable for mussels by making the substrate more unstable. Sediment deposition may additionally affect mussel host fishes by smothering eggs or larvae of essential fish hosts, rendering fish spawning areas unsuitable and causing fish to abandon previously suitable habitats. Due to the relatively small scale of most projects covered by this DKey and the criteria that limit excavation and grading in projects, we believe that any effects of sediment deposition to species covered under this DKey would be insignificant.</p> <p>Sediment, both suspended in the water column and accumulated on the substrate of the stream, has the potential to effect species covered by this DKey. As a result of sedimentation, fish experience hindered development of juveniles, clogged gill rakers and gill filaments, and decreased foraging efficiency (Wood and Armitage 1997). The aquatic invertebrates upon which fish and crayfish prey will be impacted by reduced primary production in turbid water and microhabitat alteration resulting from sedimentation (Wood and Armitage 1997). Increased sedimentation may induce physiological stress, change behavior, and/or reduce feeding rates and success of fish species (Newcombe and Jensen 1996).</p> <p>Though clear correlations have not been documented, excessive sedimentation could potentially affect mussel species by disrupting the fish host relationship through several mechanisms: reduced visibility of lures/conglutinates, and decreased substrates for adherence of conglutinates (Brim Box and</p>
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	<p>Mossa 1999, Berkman and Rabeni 1987, Messinger and Chambers 2001, Sutherland et al. 2002,). Sediment that deposits on the riverbed may smother or bury mussels by sediment (Marking and Bills 1980; Waters 1995). It can alter mussel habitat by changing the makeup of substrate to be coarser or finer, resulting in substrate conditions unsuitable for a particular mussel species.</p> <p>Due to the relatively small scale of projects covered under this DKey and the criteria that limit impacts to streams and excavation and grading, we believe that any effects of sedimentation to species covered by this DKey would be insignificant.</p>
<p>Instream mining, dredging or desnagging</p> <p>Creation of diversion channel</p> <p>Dewatering</p> <p>Creation of a permanent impoundment, lowhead dam, dam, or any other structure that impedes water flow (alterations to hydrology or water flow)</p> <p>Construction of bulkheads or seawalls in rivers, streams, or bays (over 200 linear feet)</p>	<p>Instream mining, dredging or desnagging removes large or coarse woody debris and the areas of microhabitat these features create. In addition, loss of sunning or resting areas for aquatic turtles are lost when woody debris above the surface of the water is removed.</p> <p>Creation of a diversion channel or dewatering alters the geohydromorphology of a stream or river and changes the substrate or presence of water required for listed species survival. Changes in the flow of water in a waterbody – lotic to lentic – as a result of an impoundment, lowhead dam or other impediment has a variety of negative impacts on aquatic species including changes in temperature, sediment deposition, flow rate, connectivity, mussel and fish community composition.</p>

If the user's responses indicate the proposed action does not include these activities or corresponding answers that indicate that the effects in the Action Area of the project are insignificant or discountable to the species, the Dkey will guide users to a "not likely to adversely affect" as the appropriate determination for the species as a result of the effect of the proposed action.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for aquatic species on the official species list for the Action Area, IPaC will provide a MAA determination for those aquatic species and will recommend project-specific



coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a “no effect” or a “may affect – not likely to adversely affect” determination for the aquatic species on the official species list for the Action Area or that the Service concurs with the determination.

#### **5.14 EFFECTS OF HABITAT ALTERATION ON FRESHWATER TURTLES**

If a proposed project occurs within the area of influence for a listed freshwater turtle species, including ringed map turtle, yellow-blotched map turtle, and Pearl River map turtle, the DKey first evaluates the potential for effects to each turtle species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project’s footprint. If the project includes only these actions, a “no effect” (NE) conclusion is appropriate as listed freshwater turtles will not be present in the Action Area.

If the proposed project includes actions other than maintenance, repair, or replacement of an existing structure, IPaC will ask an additional question or set of questions to evaluate the potential for effects to the species (Table 13 for aquatic species). If the user answers the species-specific questions indicating the impact to the species will not occur, or the impact is insignificant or discountable, the DKey will guide the user to a “not likely to adversely affect” (NLAA) determination for that species.

These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. The negative impacts described for freshwater turtles are caused by the proposed action and reasonably certain to occur. The activities expected to impact aquatic species described in Table 14 are also those that are expected to affect freshwater turtles through changes in habitat conditions or species needs such that the species feeding, reproduction, or sheltering is affected. In addition to the activities or stressors and impacts described in Table 14, the Dkey also evaluates the impact of heavy machinery on the riverbank during the nesting period for freshwater turtles in Mississippi. Heavy machinery may compact the soil or sand in nesting areas, making nesting or hatching (nest escape) more difficult, leading to reduced recruitment. Machinery may also crush nests, causing direct mortality of eggs or hatchlings.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for freshwater turtles on the official species list for the Action Area, IPaC will provide a MAA determination for the three freshwater turtle species and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a “no effect” or a “may affect – not likely to adversely affect” determination for freshwater turtles or that the Service concurs with the determination.

### 5.15 EFFECTS OF HABITAT ALTERATION, SALINITY, AND BARRIERS ON ALABAMA RED-BELLIED TURTLES

If a proposed project occurs within the area of influence for the Alabama red-bellied turtle, the DKey first evaluates the potential for effects to the species by asking a question to determine if the Action Area of the proposed Action will consist entirely of maintenance, repair or replacement of an existing structure that will take place within the existing project's footprint. If the project includes only these actions, a "no effect" (NE) conclusion is appropriate as Alabama red-bellied turtle will not be present in the Action Area.

The Dkey then asks species-specific questions to determine if the Action Area includes habitat used by the Alabama red-bellied turtle (wet pine savanna grasslands often with wiregrass and scattered pine, open shallow herbaceous wetlands, wet prairies, pastures, croplands and fields, marshes, and shallow freshwater ponds (distinguish foraging, roosting, and nesting habitats). If the user cannot conclude that the Action Area of the proposed Action does not contain habitat used by the species in the answer to the first question in the DKey, IPaC will ask an additional question or set of questions to evaluate the potential for effects to the species (Table 15). If the user answers the species-specific questions indicating the impact to the species will not occur, or the impact is insignificant or discountable, the DKey will guide the user to a "not likely to adversely affect" (NLAA) determination for Alabama red-bellied turtle.

These species-specific questions assess expected impacts to the species and its habitat from activities that the MSFO commonly conducts consultations on with Federal agencies. These activities vary by project but stressors to species or impacts to species needs resulting from activities are captured in the species-specific questions. The negative impacts described for the Alabama red-bellied turtle are caused by the proposed action and reasonably certain to occur. The activities expected to impact the species described in Table 15 are those that will change the habitat condition or affect species needs such that the species feeding, reproduction, or sheltering or other needs are affected.

**Table 15.** Activities that are expected to impact Alabama red-bellied turtle and the anticipated impact on the species.

Activities or stressors	Impact to species
Increased salinity of the water in the Action Area (maintenance of tidally-influenced streams and channels, new channel dredging projects).	Alabama red-bellied turtles are a freshwater species but can tolerate low levels of salinity (less than 5 parts per thousand). Salinity increased beyond this tolerance affects turtle physiology, behavior, and fitness.
Permanent barrier between the water and land (construction of seawalls, bulkheads, armoring or shoreline riprap, or other change in natural access).	Alabama red-bellied turtles lay eggs in small pockets of appropriate habitat. Reduced access to this habitat alters turtles nesting behavior and requires more energy output to find appropriate nesting sites, may increase predation, and reduces nesting success and recruitment.

Project will occur during nesting season.	Nesting season for Alabama red-bellied turtles is May 1 to October 31. Disturbance associated with projects during this time interferes with turtle mating, reproduction, and nesting, reducing nesting success and recruitment.
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If the user's responses indicate the proposed action does not include these activities or corresponding answers that indicate that the effects in the Action Area of the project are insignificant or discountable to the species, the Dkey will guide users to a "not likely to adversely affect" as the appropriate determination for the species as a result of the effect of the proposed action.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for Alabama red-bellied turtle on the official species list for the Action Area, IPaC will provide a MAA determination for Alabama red-bellied turtle and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a "no effect" or a "may affect – not likely to adversely affect" determination for Alabama red-bellied turtle or that the Service concurs with the determination.

## **5.1 EFFECTS OF HABITAT ALTERATION AND OTHER ACTIVITIES ON CRITICAL HABITAT**

In our analysis of the effects of the proposed actions that qualify to use this Dkey, the effects are all reasonably certain consequences to its physical and biological features caused by the action, including the consequences of other activities caused by the action. Activities caused by the action would not occur but for the action. Consequences to critical habitat features may occur later in time but are limited to portions of the designation that occur within the Action Area.

Critical habitat designation for some species used the term "primary constituent elements" (PCEs) to identify the key components of critical habitat that are essential to its conservation and may require special management considerations or protection. Revisions to the critical habitat regulations in 2016 (81 FR 7214–7440, 50 CFR §424) discontinued our use of the term PCEs and substituted the term "physical and biological features" (PBFs) to refer to these components, because the latter term is used in the statute. This shift in terminology does not change how the Service conducts a "destruction or adverse modification" analysis. The identified PCEs or PBFs are described in Chapter 4 of this standing analysis.

Activities and stressors considered in our effects analysis for each species are often habitat-based as impacts to species often occur through changes to habitat needs and species requirements. Actions that affect occupied critical habitat and its ability to function normally would typically also adversely affect the species. Recommendations including conservation measures applicable to habitat conditions and best management practices affecting critical habitat condition as well as species-specific recommendations including timing and other considerations are included in the Dkey and described above in Chapter 3. For each designated critical habitat that occurs in Mississippi, we have analyzed the potential impacts on the physical and biological features necessary for a species' survival within the designated critical habitat area and considered factors including space for population growth, food sources, shelter, breeding sites, and whether the

proposed action would directly alter or disrupt these features through activities that result in habitat destruction, degradation, or fragmentation. Species-specific questions are included in the Dkey to assist users in this determination.

If the user's responses indicate the proposed action including agreed-to conservation measures or other best management practices will result in effects in the Action Area of the project that are minor, temporary, or not considered significant to the critical habitat, the Dkey will guide users to a "not likely to adversely affect" as the appropriate determination for the designated critical habitat as a result of the effect of the proposed action.

If a project does not qualify through the DKey as a project that typically results in a NE or NLAA conclusion for designated critical habitat on the official species list for the Action Area, IPaC will provide a MAA determination for the critical habitat and will recommend project-specific coordination with the MSFO. If the project does qualify, IPaC will generate a consistency letter (for non-Federal action agencies) or a concurrence letter (for Federal action agencies) concluding that the project is consistent with a "no effect" or a "may affect – not likely to adversely affect" determination for the designated critical habitat or that the Service concurs with the determination.

## 6 SUMMARY AND CONCLUSION

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After considering the relevant information pertaining to the species and critical habitat, reviewing the covered activities and associated required conservation measures, and evaluating their anticipated effects, we conclude that the actions subject to this standing analysis will support a federal action agency determination of "No Effect" or support a section 7(a)(2) determination pursuant to the Act of "may affect, not likely to adversely affect," as appropriate, for the subject species and critical habitat as described above. This standing analysis is based on the consultation provisions of section 7(a)(2) of the Act and the information cited and will undergo review and revision, as needed, if any of the following conditions have been met: 1) If new information reveals the effects of the covered action(s) to the covered species or critical habitat are occurring in a manner or to an extent not considered in this standing analysis based on applied use; or 2) If the species or critical habitat covered by the standing analysis has a change in status.

This standing analysis will be provided through IPaC via a link within the DKey output letter. The most current standing analysis and previous analyses may be found on the Mississippi ESFO website at <https://www.fws.gov/office/mississippi-ecological-services/library> or by contacting the Mississippi ESFO at 601-965-4900 or 6578 Dogwood View Parkway, Suite A, Jackson, Mississippi 39213.

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**APPENDIX A– Structured Questions for screening a project via a DKey to determine whether it is applicable for use under this standing analysis**