DRAFT

ENVIRONMENTAL ASSESSMENT

ENDANGERED SPECIES ACT SECTION 4(d) RULE FOR THE LOUISIANA PINESNAKE (*PITUOPHIS RUTHVENI*)

August 2018

U.S. Fish and Wildlife Service
Region 4

DRAFT ENVIRONMENTAL ASSESSMENT

PROPOSAL OF A RULE UNDER SECTION 4(d) OF THE ENDANGERED SPECIES ACT FOR THE LOUISIANA PINESNAKE (*PITUOPHIS RUTHVENI*)

August 2018

Prepared By:

United States Department of the Interior
United States Fish and Wildlife Service
Louisiana Ecological Services Office (Lafayette, LA),

Abstract: The United States Fish and Wildlife Service (Service) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969, and its implementing regulations in the Code of Federal Regulations (CFR) at 40 CFR 1506.6, and Section 4(d) of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq). Under Section 4(d) of the ESA, the Service may publish a rule that modifies standard protections for threatened species with regulations and exceptions tailored to the conservation needed of that species that are determined to be necessary and advisable. The Service proposes a "4(d)" rule to provide conservation measures to protect the Louisiana pinesnake (*Pituophis ruthveni*), while encouraging the continuation of forest management activities that are beneficial to the species. The Louisiana pinesnake is a reptile native to western Louisiana and eastern Texas that was added to the List of Endangered and Threatened Wildlife as a threatened species on May 7, 2018 (83 CFR 14958). Two alternative courses of action are analyzed in this document: Alternative 1 (No action), and Alternative 2 (Implement the 4(d) rule). Alternative 2 is the Service's preferred alternative.

Contents

FIGURES

TABLES

1.0 PURPOSE AND NEED FOR ACTION

1.1 Introduction

The Louisiana pinesnake (*Pituophis ruthveni*) was listed as threatened under the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) on April 6, 2018 (83 FR 14958), and the listing rule became effective on May 7, 2018. The Louisiana pinesnake (LPS) is a reptile that spends much of its life underground in open canopy forests with well-drained sandy soils and abundant herbaceous vegetation that provide forage for the Baird's pocket gopher (*Geomys breviceps*). Baird's pocket gopher is LPS's primary known source of food, and their burrows are the primary known shelter for the LPS.

One of the primary threats to the LPS is the continuing loss and degradation of the open pine forest that supports the Baird's pocket gopher. The Service is evaluating different measures to conserve the LPS and prevent it from becoming endangered; one of those proposed measures is the promulgation of a rule under section 4(d) of the ESA. The scope of our analysis covers impacts that are reasonably foreseeable, potentially significant, and likely to occur as a result of our issuance of a final 4(d) rule.

Under section 4(d) of the Act, the Secretary of the Interior, with authority delegated to the Service, has the discretion to issue such regulations as he or she deems necessary and advisable to provide for the conservation of threatened species. The Service has the discretion to prohibit, by regulation with respect to any threatened species of fish or wildlife, any act prohibited under section 9(a)(1) of the Act. The prohibitions of section 9(a)(1) of the Act, codified at 50 CFR 17.31, make it illegal for any person subject to the jurisdiction of the United States to take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these) endangered wildlife within the United States or on the high seas. These prohibitions are also extended to threatened wildlife in 50 CFR 17.31, except in cases where the Secretary promulgates a special 4(d) rule. In addition, it is unlawful to import; export; deliver, receive, carry, transport, or ship in interstate or foreign commerce in the course of commercial activity; or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally.

The courts have recognized the extent of the Secretary's discretion to develop prohibitions, as well as exclusions from those prohibitions, that are appropriate for the conservation of a species. For example, the Secretary may decide not to prohibit take, or to put in place only limited take prohibitions. See *Alsea Valley Alliance* v. *Lautenbacher*, 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council* v. *National Marine Fisheries Service*, 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002). In addition, as affirmed in *State of Louisiana* v. *Verity*, 853 F.2d 322 (5th Cir. 1988), the protective regulation for a species need not address all the threats to the species. As noted by Congress when the Act was initially enacted, "once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him with regard to the permitted activities for those species. He or she may, for example, permit taking,

but not importation of such species," or he/she may choose to forbid both taking and importation but allow the transportation of such species, as long as the measures will "serve to conserve, protect, or restore the species concerned in accordance with the purposes of the Act" (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

This Environmental Assessment analyzes two action alternatives: Do not implement a rule under section 4(d) of the ESA for the LPS (Alternative 1), or creating a rule under section 4(d) of the ESA to provide special conservation measures for this species that also allows most forest management activities to continue while protecting the LPS (Alternative 2). Alternative 2 would extend all the prohibitions and provisions of 50 CFR 17.31 and 17.32 to the LPS, with the exception of certain forest management activities that are detailed in the proposed 4(d) rule (83 FR 14836).

1.2 Purpose and Need

The purpose of this Environmental Assessment is to analyze the environmental consequences of Alternatives 1 and 2, and determine whether an environmental impact statement or finding of no significant impact is required. The proposal to implement a 4(d) rule for the LPS listing arises from the provisions of the ESA and its implementing regulations that set forth a series of general prohibitions and exceptions that apply to endangered wildlife. The regulations implementing the ESA include a provision that generally applies to threatened wildlife, the same prohibitions and exceptions that apply to endangered wildlife (50 CFR 17.31(a), 17.32), unless a special rule, in accordance with section 4(d) of the ESA is applied to the threatened wildlife species. This Environmental Assessment evaluates the environmental consequences of issuing such a rule under section 4(d) of the ESA.

The final listing rule published on April 6, 2018 (83 FR 14958), states that one of the primary threats to the LPS is the continuing loss and degradation of the open pine forest habitat that supports the Baird's pocket gopher. The continued threat of habitat loss to this threatened species and its prey highlights the need to evaluate additional conservation measures and assess whether or not a 4(d) rule is needed to provide exemptions to take prohibitions that allow beneficial forestry activities to continue.

One of the main causes of the degradation of this habitat is the decline in or absence of fire. Fire was the primary source of historical disturbance and maintenance, and prescribed fire is known to reduce midstory and understory hardwoods, and promote abundant herbaceous groundcover in the natural communities of the longleaf dominant pine ecosystem where the LPS most often occurs. In the absence of regularly recurring, unsuppressed fires, open pine forest habitat requires active management activities essentially the same as those required to produce and maintain red-cockaded woodpecker (RCW; *Picoides borealis*) foraging habitat. Those activities, such as thinning, prescribed burning, reforestation and afforestation, midstory woody vegetation control, herbaceous vegetation (especially forbs) enhancement, and harvest (particularly in stands that require substantial improvement) are necessary to maintain or restore forests to the conditions that are suitable (as described in the preceding paragraph) for pocket gophers and LPS.

Establishment and management of open pine forests beneficial to the LPS occurs on some privately owned land in Louisiana and Texas, but more work is needed to reverse the overall trend of degradation. Additionally, throughout the LPS's range, Federal and State agencies have developed conservation efforts, which have provided a conservation benefit to the species. Increased efforts, however, are necessary on both public and private lands to address continued habitat loss, degradation, and fragmentation, and it is the intent of this proposed rule to encourage these increased efforts. The purpose of the 4(d) rule would be to allow forest management practices to occur that would benefit the conservation of the species, specifically activities related to thinning, prescribed fire, and mid- and under-story vegetation control. Together, these activities promote open canopy forest and herbaceous vegetation growth, which are beneficial to the LPS. Those activities would be allowed outside of estimated occupied habitat areas (EOHAs), and in some cases within EOHAs with additional applicable conditions that are specified in the proposed 4(d) rule (83 FR 14836). The underlying need for these actions is to benefit the LPS so that the species can recover to a point where ESA protections are no longer needed.

1.5 Issues and Concerns

A prominent concern is the need to provide protections for this listed species while allowing continuation of forest management activities, which promote LPS habitat health. In the development of the LPS ESA listing and during the public comment period, members of the public expressed concerns that the ESA restrictions would increase restrictions on land management decisions in sectors such as forestry. The Service considered these issues in the development of the 4(d) rule, designing provisions in the rule that best provide for the conservation of the LPS by facilitating beneficial habitat for that species.

The Service must also consider the other effects of the proposed 4(d) rule, such as the impact of forestry activities on the environment, against the alternative of not implementing such a rule. The cycle of site preparation, planting, cultivation, and harvest associated with silviculture and other forestry activities that maintain forest cover are exempted from the prohibitions and provisions of 50 CFR 17.31 and 17.32 in the proposed 4(d) rule, and their benefits are described in the final LPS listing rule (83 FR 14958). Section 2 of this document analyzes the action alternatives in depth and will explore these issues and concerns further.

1.6 Scoping

Scoping for the proposed action involved coordination with state and federal agencies, as well as with the public and non-governmental organizations. The LPS has been a species of concern for many years before its ESA listing, and has thus been a topic of public discussion among many stakeholders.

In Texas, Service personnel have conducted at least three meetings since 2010 with private landowners, Texas A&M Forest Service, Texas Forestry Association, Texas Department of Parks and Wildlife, and the Texas Longleaf Task Force. Service personnel have also conducted

individual outreach with private landowners in Texas. During this scoping process, the prospective LPS listing and Candidate Conservation Agreement with Assurances (CCAA) were discussed, as well as post-ESA listing habitat restoration efforts. A meeting on April 13, 2018, at the Texas A&M Forest Service Office in College Station, TX was held to discuss public comments on the proposed 4(d) rule.

Representatives from the private forest industry (chiefly Louisiana Forestry Association members), Louisiana Department of Wildlife and Fisheries (LDWF), Louisiana Department of Agriculture and Forestry, and the Service have all attended quarterly meetings of the Joint Meeting of the Endangered Species and Wildlife and Recreation Committees. These occur at the Louisiana Forestry Association Office in Alexandria, LA, with the LPS as an agenda item as early as 2007 and continuing to the present. This group has discussed the LPS listing decision, the proposed 4(d) rule, CCAA enrollment, as well as their ideas and concerns related to the LPS.

The Pinesnake working group, created by the signing of the Louisiana Pinesnake CCAA in 2003, has held meetings annually as early as 2007, which are attended by researchers, Louisiana and Texas federal and state conservation agencies, non-profit organizations, private forest managers, and other stakeholders.

The proposed ESA listing rule was published in the federal register (81 FR 69454) on October 6, 2016. Public comments from all interested parties were accepted for 60 days, and the comment period closed on December 5, 2016. A final listing rule was published in the federal register on April 6, 2018, and took effect on May 7, 2018 (83 FR 14958). A proposed 4(d) rule was also published in the federal register on the same date as the final listing rule, with a 30 day public comment period that closed on May 7, 2018. The Service has received comments related to the proposed 4(d) rule and is responding to all relevant comments in its evaluation of that proposed rule. Major themes that emerged during the comment period for the proposed 4(d) rule concerned questions about what specific forestry practices would be allowed inside and outside of EOHAs, and the type of allowable subsurface ground disturbance on degraded lands. Commenters also expressed support for a rule that allows typical forest management activities to continue so that they are unencumbered by section 9 take prohibition liability. This Environmental Assessment will also be available for public review through a 30 day comment period, and all public comments received during that time will be reviewed and addressed.

1.7 DECISION THAT MUST BE MADE

The Secretary must decide whether to implement a 4(d) rule to provide conservation measures for the LPS, or to take no action. A decision will be made only after thorough public review and full consideration of all comments. Opportunity for public comment was provided during the advertisement of the proposed 4(d) rule (81 FR 69454) and those comments were reviewed in section 1.6 of this document. Opportunity for comment will also be provided through review of this document. Upon review of all public comments, the Service will determine if a finding of no significant impact or environmental impact statement is necessary.

2.0 ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

NEPA regulations require, among other things, the examination of a reasonable range of alternatives to the Proposed Action (*Preferred Alternative*), including taking *no action* (40 CFR § 1502.14). Specifically, Congress directed and authorized all agencies of the Federal government to interpret and administer their policies in accordance with NEPA, including the responsibility to "study, develop, and describe appropriate alternatives to recommended courses of action" (42 U.S.C. § 4332). This chapter first discusses Alternative 1 (*No action*). Alternative 2 (*preferred alternative)* is then examined, which describes the implementation of the proposed 4(d) rule. The environmental consequences of each available course of action are analyzed.

2.1 Alternatives Studied in Detail

The alternatives include: (1) Do not implement a 4(d) rule and take no action, and (2) Implement the 4(d) rule.

2.1.1 Alternative 1 – No action

Under Alternative 1, the Service would not implement the 4(d) rule. The LPS would remain listed as threatened under section 4 of the ESA, but the Service would not promulgate a special rule or regulation to provide for the conservation of the species. Section 9 (a)(1) take prohibitions would still be extended to the species under the final listing rule through 50 CFR 17.31(a), but no special rules, exemptions, or conservation measures would be provided under section 4(d).

In the absence of the proposed 4(d) rule, anyone conducting activities (for example, development, recreation, research, etc.) that may result in take of the LPS should consult with the Service prior to initiating those activities in order to avoid potential violations of section 9 of the ESA. For Federal agencies, that authorization would be obtained through a section 7 consultation with the Service. For private interests and non-Federal government agencies, incidental take would need to be permitted through section 10 of the Act. These regulatory requirements are currently in effect, and could impose additional costs on land managers such that beneficial forestry activities are delayed or not implemented. With no 4(d) exemptions in place, there is little incentive for landowners to manage habitat suitable for LPS because of the regulatory requirements imposed by the April 2018 listing under the ESA.

Under section 10(a)(1)(b) of the Act, take of LPS by private or non-Federal government agencies could be authorized by the Service if such taking occurs incidentally during otherwise legal activities. Applicants for an incidental take permit would be required to develop and submit a "habitat conservation plan" that specifies the impacts that are likely to result from the taking and the measures the permit applicant will undertake to minimize and mitigate such impacts. The following criteria will need to be satisfied before an incidental take permit could be issued: (1) taking will be incidental; (2) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking; (3) the applicant will ensure that adequate funding for the plan will be provided; (4) taking will not appreciably reduce the likelihood of the survival and

recovery of the species in the wild; and (5) other measures, as required by the Service, will be met. This entire process (that is, approval of habitat conservation plan and issuance of incidental take permit) can take anywhere from 6 to 12 months to complete, and sometimes can take longer.

Under section 7 of the ESA, Federal agencies would be required to consult with the Service for any project that may affect the LPS. This process typically takes up to 135 days to complete. The consulting agency will be required to show the Service that they have minimized the level of take associated with their project by avoiding or minimizing impacts to the species and its habitats. Under the no action alternative, each project would likely need to be reviewed and approved by the Service on a case-by-case basis. This would result in a level of uncertainty regarding the mitigation or minimization requirements that the Service would require of the applicants. In addition, as described above, there would be a considerable amount of time needed by the Service to review and approve projects that may impact the LPS. However, this alternative may result in benefits to the LPS in the form of additional mitigation and minimization of impacts to the species. This alternative would allow the Service to adapt mitigation and minimization measures to specific projects according to the needs of the species and available science at the time an application for an incidental take permit is submitted or consultation with a Federal agency is initiated.

2.1.2 Alternative 2 –*Implement the 4(d) rule*

The Service would implement the proposed 4(d) rule which would encourage beneficial forest management practices, such as thinning, prescribed fire, and other forestry practices that promote an open canopy and herbaceous understory. This action entails the Service's support of such forestry practices, but does not signal a shift in any land management practices prior to the listing; rather, the Service would encourage more widespread utilization of existing practices that benefit the LPS and Baird's pocket gopher. These practices include, but are not strictly limited to, those listed in the proposed 4(d) rule (81 FR 69454). In the absence of the proposed rule, those activities that could cause incidental take would be subject to all relevant consultation requirements even when they create or enhance LPS habitat that provide for the long term benefit of the species.

The proposed 4(d) rule would apply all prohibitions and provisions of 50 CFR 17.31 and 17.32, which codify take prohibitions in section 9 of the ESA, to the LPS, providing protections for the conservation of the species with some exemptions. These exemptions are outlined below. These exemptions are generally applicable to areas outside of EOHAs, and within EOHAs when certain conditions are met. EOHAs are zones with some suitable habitat and known occurrences of LPS, and where the likelihood of encountering a LPS is higher than outside of those zones. These exemptions also apply within EOHAs with additional conditions applied. This is not a final list of exemptions, because the public had an opportunity to comment on the proposed rule, and there will also be a public comment period for this document. Those comments will all be addressed, and the Secretary as necessary may apply changes to the list of exemptions.

The proposed 4(d) rule covers the following forest management activities occurring outside of known EOHAs, which would not be subject to the general prohibitions of 50 CFR 17.31:

(1) Forestry activities, including tree thinning, harvest (including clearcutting), planting and replanting pines, as well as other silvicultural practices outlined below, that maintain lands in forest land use and that result in the establishment and maintenance of open pine canopy conditions through time across the landscape.

(2) Prescribed burning, including all firebreak establishment and maintenance actions, as well as actions taken to control wildfires.

(3) Herbicide application that is generally targeted for invasive plant species control and midstory and understory woody vegetation control, but is also used for site preparation when applied in a manner that minimizes long-term impact to noninvasive herbaceous vegetation. These provisions include only herbicide applications conducted in a manner consistent with Federal and applicable State laws, including Environmental Protection Agency label restrictions and herbicide application guidelines as prescribed by manufacturers.

Although these management activities may result in some minimal level of harm or temporary disturbance to the LPS, overall, these activities benefit conservation and recovery of the LPS by promoting and enhancing habitat. With adherence to the three limitations described in the preceding paragraph these activities will have a net beneficial effect on the species by encouraging active forest management that creates and maintains the herbaceous plant conditions needed to support the persistence of Baird's pocket gopher populations, which is essential to the long-term viability and conservation of the LPS. This is a reasonable conclusion and therefore meets the standard for applying endangered species prohibitions to threatened species under the second sentence of section 4(d) of the Act (16 U.S.C. 1533(d) ["The Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 1538(a)(1) of this title … with respect to endangered species."]). Moreover, even if the "necessary and advisable" standard in the first sentence of section 4(d) applied to regulations adopting endangered species prohibitions for a threatened species, we would find that adopting these prohibitions meets that standard.

These provisions are necessary because, absent protections, the species is likely to become in danger of extinction in the foreseeable future. Applying the prohibitions of the Act will minimize threats that could cause further declines in the status of the species. Additionally, these provisions are advisable because the species needs active conservation to improve the quality of its habitat. By exempting some of the prohibitions, these provisions can encourage cooperation by landowners and other affected parties in implementing conservation measures. This will allow for use of the land while at the same time ensuring the preservation of suitable habitat and minimizing impacts to the species.

When practicable and to the extent possible, the Service encourages managers to conduct such activities in a manner to maintain suitable LPS habitat in large tracts; minimize ground and subsurface disturbance; and promote a diverse, abundant herbaceous groundcover. Prescribed fire is an important tool to effectively manage open-canopy pine habitats to establish and

maintain suitable conditions for the LPS, and the Service strongly encourages its use over other methods (mechanical or chemical) wherever practicable.

The Service also encourages managers, when practicable and to the extent possible, to

(1) enroll their lands into third-party forest certification programs such as the Sustainable Forest Initiative, Forest Stewardship Council, and American Tree Farm System; and

(2) conduct such activities using best management practices as described and implemented through such programs, or by others such as State forestry agencies, the U.S. Department of Agriculture (the Forest Service's Forest Stewardship Program or the Natural Resources Conservation Service's Conservation Practices Manual), or the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program.

As noted above, the management activities discussed above are not subject to the general prohibitions at 50 CFR 17.31 outside of known EOHAs. Within any known EOHAs on lands with suitable or preferable soils that are forested, undeveloped, or non- farmed (i.e., not cultivated on an annual basis) and adjacent to forested lands, the management activities discussed above would also not be subject to the general prohibitions at 50 CFR 17.31, but only provided the following additional conditions are
met:

(a) Those activities do not cause subsurface disturbance including, but not limited to, wind-rowing, stumping, disking (except during firebreak creation or maintenance), root-raking, drum chopping, below-ground shearing, and bedding. In highly degraded areas with no herbaceous vegetation, subsurface disturbance shall be limited to that less than 4 in (10 cm) in depth; and

(b) Those activities do not inhibit the persistence of suitable pocket gopher and Louisiana pinesnake habitat.

These additional conditions on when the prohibitions would not apply within known EOHAs are reasonable because the actual likelihood of encountering individuals of the species is higher within the EOHAs. For the same reason, even if the "necessary and advisable" standard is applied to regulations adopting endangered species prohibitions for a threatened species, we would find that adopting these narrower prohibitions is necessary and advisable.
Anyone undertaking activities that are not covered by the provisions, including the additional conditions, and may result in take would need to: (1) ensure, in consultation with the Service that the activities are not likely to jeopardize the continued existence of the species (where the entity is a Federal agency or there is a Federal nexus), or (2) obtain a permit before proceeding with the activity (if there is no Federal nexus) if exemptions from section 9 prohibitions are desired. A map of the currently known EOHAs is found in the proposed listing rule (81 FR 69461, October 6, 2016). The Service intends to update maps identifying the locations of Louisiana pinesnake EOHAs and make them available to the public in the docket on www.regulations.gov as new

information becomes available. Alternatively, you may contact the Louisiana Ecological Services Field Office at 646 Cajundome Blvd, Suite 400, Lafayette, LA 70506.

Based on the explanations above, the prohibitions under section 9(a)(1) would apply to the LPS, with specific exemptions tailored to the conservation of the species. Nothing in the proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) and consultation requirements under section 7 of the ESA or the ability of the Service to enter into partnerships for the management and protection of the LPS.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

Alternative 1, No Action, has no specifically identifiable environmental impacts. The LPS would remain listed, but no specific management practices would be encouraged. Examples of activities that may violate section 9 under the ESA are given in the final listing rule (83 FR 14598), but that list is not comprehensive. Forest management, even of the type that facilitates open canopy pine forest, could face further restrictions without the exemptions listed in the proposed 4(d) rule.

Alternative 2, implement the 4(d) rule for the LPS, would only directly involve the promulgation of a rule under the authority of the ESA, which would exempt certain beneficial forest management practices occurring outside of EOHAs within the historical range of this species, and within EOHAs where special conditions apply. It is important to note that Alternative 2 entails the continuation of the management practices listed in section 2.1.2 of this Environmental Assessment, and not a major change in land use practices. It is unknown to the Service at this time exactly how many acres of forest land these practices occur on, but due to the small area of EOHAs compared to the species historic range and declining populations of LPSs, more widespread beneficial habitat management is needed. Alternative 2 would involve improving habitat conditions beyond that which currently exists because of the section 9 take prohibitions that are currently in effect, and the fact that the exempted practices are designed to maintain open-canopy pine forests, rather than maximization of timber production alone. These exemptions would seek to balance wildlife conservation and economic activities, focusing the Service's conservation efforts where they are most needed.

3.1 Location

Louisiana and Texas

The Louisiana pinesnake historically occurred in portions of northwest and west- central Louisiana and extreme east-central Texas (Conant 1956, p. 19). This area coincides with an isolated, and the most westerly, occurrence of the longleaf pine ecosystem and is situated west of the Mississippi River. The current EOHAs are located in four parishes (Bienville, Natchitoches, Sabine, and Vernon) in Louisiana and three counties (Angelina, Jasper, and Newtown) in Texas.

The 4(d) rule provisions would apply to areas outside and inside of the EOHAs (black polygons; See Figure 1).

The EOHA locations are as follows:

(1) the Bienville EOHA located on privately owned industrial timberlands in Bienville Parish, Louisiana;

(2) the Kisatchie EOHA located on U.S. Forest Service (USFS) lands (the Kisatchie Ranger District of the Kisatchie National Forest (KNF) in Natchitoches Parish, Louisiana);

(3) the Peason Ridge EOHA located on Department of Defense (DOD) lands (Vernon and Sabine Parishes) and a small amount of private lands (inholdings) in Louisiana;

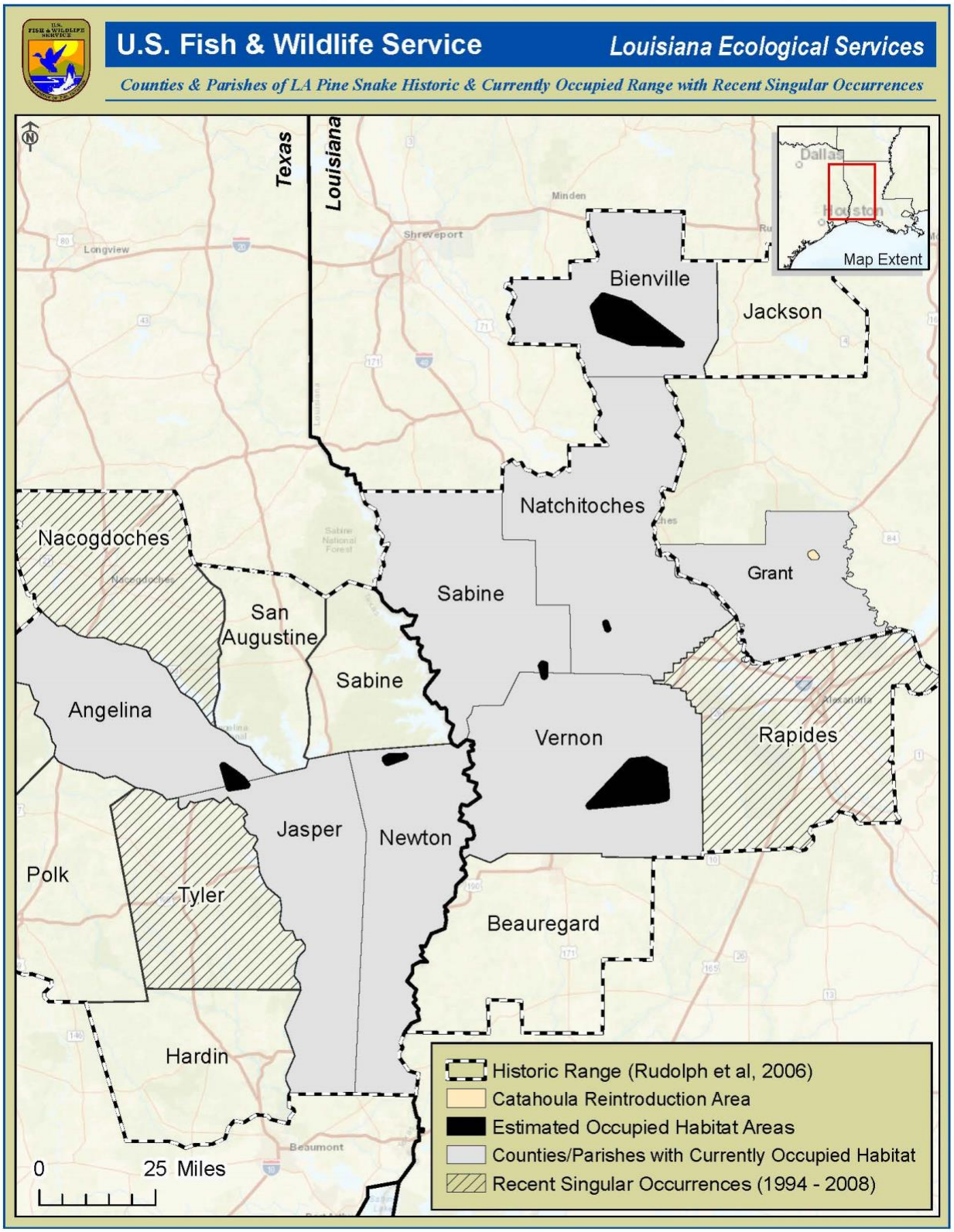
(4) the Fort Polk/Vernon EOHA located on DOD lands (Fort Polk), USFS lands (the Vernon Unit/Calcasieu District of the KNF), and a small amount of private lands (inholdings) in Vernon Parish, Louisiana;

(5) the Scrappin' Valley EOHA located primarily on privately owned timberlands in Newton County, Texas;

(6) the Angelina EOHA located on USFS lands (the southern section of Angelina National Forest (ANF) in Angelina and Jasper Counties) and private lands in Texas; and

(7) the Catahoula Reintroduction Feasibility EOHA located on USFS lands (the Catahoula Ranger District of the KNF in Grant Parish, Louisiana).

Figure 1: Location of EOHAs in Louisiana and Texas



3.2 Physical Characteristics and Land Use of Louisiana Pinesnake Range

Louisiana pinesnakes are known from and associated with a disjunct portion of the historic longleaf-dominated (hereafter, "longleaf") pine (*Pinus palustris*) ecosystem that existed in west-central Louisiana and east Texas (Reichling 1995, p. 186). LPS prefers xeric, sandy-soiled pine ridges dominated by fire-climax long leaf pine-oak vegetative associations supporting abundant pocket gophers (Reichling 1995). This habitat occurs on hilly uplands on acidic to loamy clays associated with Pleistocene or Tertiary formations (LDWF 2005). Only 10 to 25 % of the original 2 to 4 million acres of longleaf pine forest in western Louisiana remains, with much of it either converted to other forest types or developed (LDWF 2005).

After virgin longleaf pine was cut, it rarely regenerated naturally. In some parts of the Southeast, free-ranging hogs depredated the longleaf pine seedlings, and fire suppression allowed shrubs, hardwoods, and loblolly pine to dominate (Frost 1993, pp. 34–36). The naturally maintained open structure and abundant herbaceous vegetation characteristic of the historical longleaf pine forests was diminished or lost; therefore, it is likely that undocumented populations of this species occurred but were lost before 1930.

The remaining habitat in the LPS range occurs on both public and private land. Table 1 outlines the land ownership in acres (hectares) of the EOHAs. Those EOHAs occur on 30,751.9 ac (12,444.8 ha) of DOD lands, 47,101.3 ac (19,061.2 ha) of USFS lands, 499.7 ac (202.2 ha) of State and municipal lands, and 67,324.9 ac (27,245.4 ha) of private lands (Table 1). Fifty-three percent of all EOHA area is publicly-owned land, while the remaining 46.2% is private.

Table 1: Land Ownership in acres within EOHAs

State	EOHA	U.S. Forest Service	Department of Defense	State and municipal	Private	Total for EOHA
Louisiana	Bienville	0	0	363.7	60,727.20	61,090.90
	Kisatchie	1,598.80	0	0	0	1,598.80
	Peason Ridge	0	3,147.30	0	0	3,147.30
	Fort Polk/Vernon	34,164.70	27,601.30	0	222.6	61,988.70
	Catahoula Reintroduction	1,828.50	0	0	0	1,828.50
Louisiana Total	.....	37,592.00	30,748.50	363.7	60,949.90	129,654.10
Texas	Scrappin' Valley	0	0	21.3	5,036.50	5,057.80
	Angelina	9,509.30	3.3	114.7	1,338.60	10,965.80
Texas Total	.....	9,509.30	3.3	136	6,375.00	16,023.60
Total Ownership	.....	47,101.30	30,751.90	499.7	67,324.90	145,677.70

3.3. Biological Environment

This section presents a general description of the environment that would be affected by the proposed action.

3.3.1. Vegetation

Longleaf pine is the dominant overstory species where fire is frequent, but many overstory associates occur in areas where fire is less frequent or suppressed. These include Shortleaf pine (*Pinus echinata*), Loblolly pine (*Pinus taeda)*, Black gum (*Nyssa slyvatica*), and Sweetgum (*Liquidambar styraciflua*), to name a few. Herbaceous flora is highly diverse where fire is frequent. Grasses, composites, and legumes are predominant in the gound layer. *Andropogon* spp. (broomsedges) and *Schizachyrium* spp. (bluestems) are usually the dominant grasses, but several other genera are usually present, including *Aristida* (three-awn grasses), *Sporobolus* (dropseeds), *Panicum* (panic grasses), *Anthaenantia* (silky scales), *Ctenium aromaticum* (toothache grass), *Digitaria* (crab grasses), *Eragrostis* (love grasses), *Erianthus* (plume grasses), *Gymnopogon* (skeleton grasses), *Muhlenbergia* (muhly grasses), *Paspalum* (paspy grasses), and *Setaria* spp. (bristle grasses). Composites include *Eurybia* spp. and *Symphyotrichum* spp. (asters), *Carphephorus odoratissimus* (vanilla plant), *Chrysopsis* spp. (golden asters), *Heterotheca* spp. (golden asters), *Elaphantopus* spp. (elephant-foot), *Eupatorium* spp. (thoroughworts), *Euthamia* spp. (flat-topped goldenrods), *Gnaphalium* spp. (rabbit tobaccos), *Helenium* spp. (sneeze-weeds), *Helianthus* spp. (sunflowers), *Liatris* spp. (blazing-stars), *Rudbeckia* spp. (brown-eyed susans), *Solidago* spp. (goldenrods), and *Vernonia* spp. (ironweeds). Prominent legumes are *Baptisia* spp. (indigos), *Cassia* spp. (partridge-peas), *Centrosema virginianum* (butterfly pea), *Clitoria mariana* (pigeon wings), *Crotolaria* spp. (rattle pods), *Desmodium* spp. (beggar's ticks), *Lespedeza* spp. (bush clovers), *Stylsanthes biflora* (pencil-flower), *Rhynchosia* spp. (snout beans), and *Tephrosia* spp. (hoary peas). Additional frequent forbs include *Oenothera* spp. (evening primroses), *Polygala* spp. (milkworts), *Lobelia* spp. (lobelias), *Callirhoe papaver* (poppy-mallow), *Ruellia* spp. (wild petunias), *Hypoxis* spp. (yellow-eyed grasses), *Asclepias* spp. (mildweeds), *Lechea* spp. (pinweeds), *Euphorbia* spp. (spurges), *Sabatia* spp. (rose-gentians), *Agalinis* spp. (false foxgloves), and *Rhexia* spp. (meadow beauties). The fern *Pteridium aquilinum* (bracken fern) is often conspicuous in large colonies.

One of the primary features of suitable pocket gopher habitat is a diverse herbaceous (non-woody) plant community with an adequate amount of forbs (non-grass herbaceous vegetation) that provide forage for the pocket gopher. Louisiana pinesnakes and pocket gophers are known to be highly associated (Ealy et al. 2004, p. 389) and occur together in areas with herbaceous vegetation, a nonexistent or sparse midstory, and a low pine basal area (Rudolph and Burgdorf 1997, p. 117; Himes et al. 2006, pp. 110, 112; Wagner et al. 2017, p. 22). In a study of pocket gophers in a Louisiana forest system managed according to guidelines for red-cockaded woodpecker (*Picoides borealis*) habitat, it was shown that pocket gopher selection of habitat increased with increasing forb cover and decreased with increasing midstory stem density and midstory pine basal area (Wagner et al. 2017, p. 11). Few (less than 25 percent) sites used by

pocket gophers had less than 18 percent coverage by forbs alone (Wagner et al. 2017, p. 22). Use by pocket gophers is also inhibited by increased midstory stem density and midstory pine basal area even when herbaceous vegetation is present (Wagner et al. 2017, pp. 20, 22, 25). Pocket gophers used areas with higher densities of trees much less frequently than areas with fewer stems, presumably because of greater root mass, which reduces burrowing efficiency (Wagner et al. 2017, pp. 11, 22).

3.3.2 Wildlife

The wildlife assemblages of LPS habitat are accordingly diverse. In addition to LPS, there are 31 species of conservation concern across amphibians, birds, butterflies, mammals, and reptiles according to LDWF (See Table 2). Numerous other species occur here as well, please refer to LDWF for a comprehensive account of taxa.

Table 2: LDWF Species of Conservation Concern in Western Upland Longleaf Pine Forest

AMPHIBIANS	Loggerhead Shrike	**MAMMALS**
Eastern Tiger Salamander	Prairie Warbler	Southeastern Myotis
Louisiana Slimy Salamander	Bachman's Sparrow	Silver-haired Bat
Southern Red-backed Salamander	Field Sparrow	Big Brown Bat
Southern Crawfish Frog	Henslow's Sparrow	Ringtail
BIRDS	Le Conte's Sparrow	Long-tailed Weasel
Northern Bobwhite	**BUTTERFLIES**	**REPTILES**
American Woodcock	Wild Indigo Duskywing	Western Slender Glass Lizard
Yellow-billed Cuckoo	Dusted Skipper	Southern Prairie Skink
Red-cockaded Woodpecker	Pepper and Salt Skipper	Southeastern Scarlet Snake
Brown-headed Nuthatch	Falcate Orangetip	
Sedge Wren	Harvester	
Wood Thrush	Little Metalmark	

3.3.3 Disease

Snake fungal disease (SFD) is an emerging disease in certain populations of wild snakes. It has been linked to morbidity and mortality for other species (Allender et al. 2011, p. 2383; Rajeev et al. 2009, p. 1264 and 1268; McBride et al. 2015, p. 89), including one juvenile broad-banded watersnake (Nerodia fasciata confluens [Blanchard]) in Louisiana (Glorioso et al. 2016, p. N5). As of November 2017, the causative fungus (Ophidiomyces ophiodiicola [OO]) (Lorch et al. 2015, p. 5; Allender et al. 2015, p. 6) has been found on at least five Louisiana pinesnakes from the Bienville and Fort Polk populations since 2015, and evidence of disease has been documented in at least three individuals. Symptoms of SFD (e.g., skin lesions) were found on a LPS from the Bienville population in 2015, and OO was positively identified (Lorch et al., 2016). Another individual from Bienville that also tested positive for OO had necrotic tissue but it had been involved in a presumed agonistic confrontation with a weasel while entrapped; therefore, the cause of the injury was not determinable. Two individuals from the Fort Polk population were found in a diseased state. Their symptoms included: low body weight, anemia, dehydration, skin lesions and systemic inflammation, and their survival in the wild was doubtful

(Sperry 2017, pers. comm.). Both were treated with anti-fungal medication by a veterinarian and eventually recovered. A disease with symptoms consistent with SFD is suspected of contributing to as many as 20 mortalities in a small, isolated population of timber rattlesnakes (Crotalus horridus) (Clark et al. 2011, p. 888). We are currently unaware of any population-level negative impacts on the LPS. We know of no other diseases that are affecting the species. Because the causative fungus of SFD has been found in two LPS populations, SFD has caused severe negative impacts to at least two individuals, and SFD has caused morbidity and mortality in several other snake species, the Service has concluded that disease (SFD) is now considered a potential threat to the LPS. However, because the threat of disease is expected to be largely unchanged by the continuation of forestry practices proposed in the 4(d) rule, disease will not be further addressed in this EA.

3.3.4 Threatened and Endangered Species

The LPS range overlaps with several other federally threatened species. The Red-cockaded woodpecker (*Picoides borealis*) inhabits mature longleaf pine forests, excavating nest cavities only in pines roughly 60 years and older. The northern long eared bat (*Myotis septentrionalis*) range also extends into that of the LPS, although the only documented occurrences in Louisiana are from Winn and Grant Parishes. The Louisiana pearlshell freshwater mussel (*Margaritifera hembeli*) is found in Grant and Rapides Parishes, LA, inhabiting small clear streams with gravel substrate and moderate to swiftly flowing water.

3.4 Socioeconomic Environment

Across all counties and parishes in the affected area, there were 1,796 paid employees in forestry and logging according to the U.S. Census Bureau. Throughout the LPS historical range in Louisiana, there were 1,182 employees and 130 businesses in the forestry and logging industry in 2016. In Texas, there were 614 paid employees and 100 businesses in that sector in 2016. These are the most recent data provided by the U.S. Census Bureau.

As a region, the affected area has a total population of 727,425. San Augustine County, TX, is the smallest, with a population of 9,071, and Rapides Parish, Louisiana, is the largest with a population of 131,648. The mean population of all counties and parishes in the affected area if 40,413. This region has a mean number of 20% of households below the poverty line.

The median household income is $41,130 across counties in the affected area, which is $17,909 lower than the 2016 national median household income of $59,039. Table 3 summarizes the baseline socioeconomic data by county/parish.

Table 3: Summary of Population and Area Economy with Counties and Parishes in Currently Occupied LPS Range

County/Parish	Population	Unemployment Rate (%)	Per Capita Income
Bienville (LA)	14,148	5.8	$19,766
Grant (LA)	22,336	5.3	$18,376
Natchitoches (LA)	40,796	7	$20,894
Sabine (LA)	25,806	7	$22,719
Vernon (LA)	52,577	4.3	$21,878
Angelina (TX)	91,123	7.4	$22,243
Jasper (TX)	36,818	8.2	$22,949
Newton (TX)	14,291	10.2	$24,005
Sabine (TX)	11,520	6.1	$24,751

3.4.1 Study Area

The study area is wherever LPS occurs, but the focus of this document is on the LPS EOHAs and the nine counties and parishes where they occur. This document focuses on those specific areas to provide the most information possible on potential effect; please note that these effects apply wherever the LPS may occur. The counties in Texas are Angelina, Jasper, Newtown, and Sabine. The parishes in Louisiana are Bienville, Grant, Natchitoches, Sabine, and Vernon. Please refer to Figure 1 for the other counties included in the historic LPS range.

3.4.2 Forest Management

According to a 2005 USFS inventory, forests cover 53% of Louisiana's land area, comparable to the neighboring states of Arkansas and Mississippi. The southwestern region of Louisiana identified in the report covers the parishes within the LPS range, and has lost 430,000 acres of forested land since 1936, going from 4.97 million to 4.54 million acres (Oswalt and Bentley 2005). The USFS's southwest Louisiana forest unit, which contains all occupied parishes except Bienville, has more forest acres than any other unit, with 4.7 million acres, and is 71% forested (USDA 2012). Eastern Texas has 12.1 million acres of forest land, comprising 54% of the total land area there (USDA 2016).

Forestry is a major economic activity in the LPS range, though much of the old growth long leaf pine forest was converted to extensive monoculture pine plantations, which presumably were not managed for enhancement of herbaceous vegetation (Bridges and Orzell 1989, p. 246).

On the Kisatchie National Forest in Louisiana, the value of all timber sold in all forest units from October 2017 to March 2018 (USFS quarters one and two) was over $1.1. million. In the 13 national forests of Texas, a total sale value of $1.9 million was reported over that same time period. Data on sale and harvest volumes specifically within the LPS range are not available at this time, because the U.S. Forest Service provides data for National Forests as a whole, and in the case of Texas, they are aggregated statewide. Specific timber volume and harvest data are not available for timber harvests on private lands because those data are proprietary.

Data from the Louisiana Department of Agriculture and Forestry indicates that an average of 963,813,222 board feet per year were harvested in Louisiana between 2012 and 2017. According to the Texas A&M Forest Service, 577.5 million cubic feet of live trees are removed from timberland each year in the eastern Texas region. Jasper, Newton, Tyler, Polk, and Hardin counties are over 75% timberland by land area, while Angelina, Sabine, Nacogdoches, and St. Augustine are between 51 and 75%. In the East Texas region as a whole, 92% of the timberland is privately owned (Texas A&M Forest Service 2015). Table 4 approximates the area of timber land in each county/parish and EOHA using the National Land Cover Dataset (2011). The land cover type "evergreen forest" is used as a proxy for timberland, since pine is the primary type of tree grown commercially in this region.

Table 4: Area of Evergreen Land Cover in the Current LPS Range

State	EOHA Name	County	Acres Evergreen Land Cover in County	Acres of Evergreen Land Cover inside EOHA	Total EOHA Acreage	Total County Acreage	% of County area outside EOHA
Texas	Angelina	Angelina	14,646.4	5,865.3	10,965.8	553,600	99.16
Texas	Scrappin' Valley	Newton	202,861.5	2,851.2	5,057.8	601,600	99.51
Louisiana	Bienville	Bienville	271,677.5	36,870.8	61,090.9	526,080	99.63
Louisiana	Fort Polk	Vernon	301,696	27,527.7	61,988.7	858,240	99.81
Louisiana	Kisatchie	Natchitoches	304,814.3	1,389.3	1,598.8	831,360	92.78
Louisiana	Peason Ridge	Sabine	238,343.7	322.3	3,147.3	647,680	88.39
Louisiana	Peason Ridge	Vernon	301,696	261.9	3,147.3	858,240	98.02
Louisiana	Catahoula	Grant	201,412.3	1,500.9	1,828.4	425,600	99.57

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 *Alternative 1 – No action*

Under the no action Alternative, the Service would not implement a special rule under section 4(d) of the ESA. The Service would apply the general regulatory provisions for threatened wildlife under 50 CFR 17.31 and 17.32 as stated in the final listing rule (83 FR 14598). All purposeful take and incidental take of LPS would be prohibited wherever it occurs. Activities that could cause incidental take could still occur, but with legal protection only after consultation with the Service under section 7 of the ESA (federal agencies) or section 10 of the ESA (non-federal agencies). No changes in forest management activities would be proposed, but land managers conducting activities that could cause incidental take would have to consult with the Service for each action potentially causing that incidental take to be exempted from prohibition. Please refer to the final listing rule (83 FR 14598) for more information on existing land use restrictions.

4.1.1 Physical Characteristics

The physical characteristics of the affected environment are expected to remain unchanged. There is a chance that due to the take prohibitions discussed under section 4.1 of this document, that the increased regulatory pressure could change some forest management decisions. Those forest management activities that could cause incidental take would likely require consultation with the Service to avoid section 9 violations, and those additional constraints have the potential to change forest management decisions. The Service is unaware at this time how those decisions would be affected by implementation of the no action alternative.

4.1.2 Biological Environment

The biological environment is expected to be unaffected by implementation of the no action alternative.

4.1.2.1 Vegetation

Vegetation is expected to be unaffected by implementation of the no action alternative.

4.1.2.2 Threatened, Endangered, and Candidate Species

The white nose syndrome buffer zone for the federally threatened northern long eared bat overlaps with the LPS range. However, there are no documented northern long-eared bat occurrences near current LPS occupied habitat, and no effects on bats are expected as a result of the no action alternative. The federally endangered red-cockaded woodpecker (RCW) shares similar habitat requirements with the LPS, inhabiting mature longleaf pine forests. The RCW excavates mature pine trees that are generally 60 years and older. The RCW would not be

affected under the no action alternative, and it has its own set of federal rules and regulations guiding RCW conservation.

4.1.2.3 Other Wildlife Species

No impacts to other wildlife species are anticipated as a result of the no action alternative.

4.1.2.4 Disease

No consequences related to disease are expected as a result of the no action alternative. As stated in section 3.3.3 of this document, forestry activities are not expected to affect the threat of SFD to the LPS at this time.

4.1.3 Land Use and Socioeconomic Environment

All purposeful and incidental take would be prohibited as a result of taking no action, as those prohibitions are set forth in the final LPS listing rule. Economic activities such as forest management that could cause incidental take could still occur, but only after consultation with the Service under section 7 of the ESA (federal agencies) or section 10 of the ESA (private entities). These consultation mechanisms mean that the implementation of activities that could cause incidental take would be delayed by up to 135 days under section 7, and 6 to 12 months under section 10, while consultation is completed and negative effects are minimized or mitigation measures agreed on. There are currently no publicly available data on how exactly these delays would affect local socio-economic conditions because those are related to the decisions of local employers.

According to a 2005 USFS inventory, forests cover 53% of Louisiana's land area, comparable to the neighboring states of Arkansas and Mississippi (Oswalt and Bentley 2005). The no action alternative is not expected to affect land uses in the LPS range. There would be no exemptions to section 9 prohibitions, and land managers would continue consulting with the Service when conducting activities that could cause incidental take if they desire. Each project that could cause incidental take would likely need to be reviewed and approved by the Service on a case-by-case basis if protection from take prohibition is desired. This involves a considerable amount of time and effort by both the Service and federal action agency or private entity. Actions that may affect the LPS could take up to 135 days to consult with the Service under section 7, and 6 to 12 months under section 10 using a habitat conservation plan.

4.1.3.1 Agriculture, Oil and Gas, Industrial Use, and Land Management

Oil and gas extraction occurs in the LPS range. Any oil and gas activities that could cause incidental take would require consultation with the Service under sections 7 or 10 of the ESA to avoid potential violations of section 9. This is also the case for other industrial uses and land management activities that would occur within the LPS range.

4.1.3.2 Residential Use

No effects on residential uses are expected. Landowners seeking to convert forests into residential uses where there is a potential for incidental take to occur would be required to consult with the Service to avoid potential violations of section 9 of the ESA due to its threatened status.

4.1.3.3 Recreational use

Recreational values are expected to be unaffected as a result of the no action alternative.

4.1.3.4 Water Usage

No major effects on water usage by either private or government entities are expected as a result of the no action alternative.

4.1.4 Cultural/Paleontological Resources

Alternative 1 would not affect any cultural or paleontological resources because no action would be taken.

4.2 *Alternative 2 –Implement the 4(d) rule.*

Under Alternative 2, the Service would issue a final rule through section 4(d) of the ESA for the LPS that contains targeted prohibitions and exceptions tailored to the conservation needs of the species. The provisions of this proposed rule are specified in section 2.1.2 of this Environmental Assessment.

4.2.1 Physical Characteristics

The forestry practices as described in the 4(d) rule are designed to maintain forested land uses and facilitate habitat characteristics that provide for the conservation of the species. The physical characteristics of the landscape would remain largely the same, and would hopefully improve as more working forest land is managed as open canopy pine forest with abundant herbaceous vegetation. It is anticipated that these practices would benefit the physical characteristics of the xeric long leaf pine ridges where the LPS and Baird's pocket gopher live. The practices being excepted from section 9 take prohibitions, listed in section 2.1.2 of this document, are identified because of their long term beneficial effects to this species and its habitat. These practices are designed to maintain and enhance the physical characteristics of LPS habitat, ensuring an open-canopy pine forest system with abundant herbaceous understory and minimal woody midstory.

Alternative 2 does not entail any significant changes to existing landscapes and practices, and thus is not expected to have negative environmental consequences. The Service hopes that the implementation of beneficial forest management practices will help maintain resilient and

productive long leaf pine forests where the LPS occurs.

4.2.2 Biological Environment

Through the proposed 4(d) rule in Alternative 2, the Service encourages managers to conduct such activities that maintain suitable LPS habitat in large tracts and promote a diverse and abundant herbaceous groundcover. Prescribed fire is an important tool to effectively manage open-canopy pine habitats to establish and maintain suitable conditions for the LPS, and the Service strongly encourages its use over other methods (mechanical or chemical) wherever practicable. These practices are designed to mimic natural processes, and western long leaf pine forests were historically fire-driven landscapes. While short term disruption of the biological environment would occur through the forestry activities permitted under the rule, the long term effects are the establishment and maintenance of natural open canopy pine systems.

One of the main causes of the degradation of LPS habitat is the decline in or absence of fire. Fire was the primary source of historical disturbance and maintenance, and prescribed fire is currently known to reduce midstory and understory hardwoods and promote abundant herbaceous groundcover in the natural communities of the longleaf dominant pine ecosystem where the LPS most often occurs. In the absence of regularly recurring, unsuppressed fires, open pine forest habitat requires active management activities essentially the same as those required to produce and maintain red-cockaded woodpecker foraging habitat. Those activities, such as thinning, prescribed burning, reforestation and afforestation, midstory woody vegetation control, herbaceous vegetation (especially forbs) enhancement, and harvest (particularly in stands that require substantial improvement) are necessary to maintain or restore forests to the conditions that are suitable for pocket gophers and Louisiana pinesnakes.

4.2.2.1 Vegetation

Practices covered under the proposed 4(d) rule would help maintain and potentially increase the open canopy pine system with abundant herbaceous vegetation that historically occurred in the LPS range. Many of the native species to this region, such as other woody species, herbaceous species including broomsedges and panic grasses, and forbs such as asters and goldenrods, would benefit from maintenance of the long leaf pine system. While short term damage is possible from forestry operations, such as replanting, herbicide application, and renewal (clear) cuts, the long term benefit of maintaining open canopy pine systems, rather than monocultural pine plantations or forest conversion, would help the vegetative associations in the LPS range.

4.2.2.2 Threatened, Endangered, and Candidate Species

The federally-threatened LPS is not expected to be negatively affected because the conservation measures listed in the proposed 4(d) rule were specifically designed with the facilitation of LPS and pocket gopher habitat in mind. The Service recognizes that there is a small chance that take of a LPS may occur by continuing forest management outside of EOHAs. However, because of

the low probability of encountering an individual outside of EOHAs because of their rarity and fossorial nature, this falls within an acceptable threshold of risk. Furthermore, those forest management practices will help create open canopy longleaf pine ecosystems, which in the long term will continue to provide suitable habitat for the LPS and pocket gopher.

The RCW roosts and forages year round in habitat similar to LPS. However, RCWs dig their nest cavities only in mature pine trees, which are generally about 60 years and older. Thus, RCW nests are unlikely to be found in short rotation stands that are more characteristic of commercial timber production on private lands. RCWs are closely monitored on National Forests and Department of Defense Lands, where the LPS also occurs. The RCW is listed as federally endangered under the ESA, and is thus subject to ESA section 9 prohibitions. Any action that could result in incidental take of RCWs would require coordination with the Service, under section 7 for federal agencies, and section 10 for non-federal entities. These protections make it unlikely that any RCWs would be affected by implementation of the proposed alternative. As LPS and RCW both favor park-like longleaf pine forests, management actions to conserve and enhance those landscapes would benefit both species.

The federally threatened norther long eared bat does not share the same type of habitat with the LPS, although the white nose syndrome buffer zone does overlap with the LPS range. As a federally listed species, the northern long eared bat is protected by section 9 prohibitions, and those actions that could result in incidental take would require coordination with the Service under sections 7 or 10 of the ESA. The northern long eared bat also has its own 4(d) rule to provide special conservation measures. Because of the existing protections in place for the RCW and northern long eared bat, implementation of alternative 2 is not expected to have any effects on these species.

4.2.2.3 Other Wildlife Species

The species listed in section 3.3.1 and 3.3.2 of this Environmental Assessment are expected to benefit from implementation of the proposed 4(d) rule. Forest management activities, including thinning, prescribed fire, mid- and under-story vegetation control promote open canopy pine forest and herbaceous vegetation growth, supporting the characteristic natural habitat of the LPS and other wildlife species adapted to that habitat type.

4.2.2.4 Disease

As stated in section 3.3.3 of this document, forestry activities are not expected to affect the threat of SFD at this time, and the existing forest management practices supported in the proposed 4(d) rule are not expected to introduce any additional disease.

4.2.3 Land Use and Socioeconomic environment

Major changes to land use are not expected because implementation of the preferred alternative would allow the implementation of those forestry practices listed in section 2.1.2 of this document. The impact of this alternative is expected to be more widespread use of those

practices because they would not be subject to section 7 or section 10 consultation, making it easier for land owners to conduct management activities covered under the 4(d) rule. By exempting some of the prohibitions from section 9 of the ESA, the provisions of the proposed 4(d) rule can encourage cooperation by landowners and other affected parties in implementing conservation measures. This will allow for use of the land while at the same time ensuring the preservation of suitable habitat and minimizing impact on the species. By following that provisions of the 4(d) rule, landowners could realize a potential cost savings through reduced time spent consulting with the Service, and have more certainty that their actions would not be in violation of section 9 of the ESA. Section 7 consultations can take up to 135 days to complete that may affect the LPS, and Habitat Conservation Plans under section 10 can take 6 to 12 months to complete. Reducing this regulatory burden on landowners is a major benefit to forest managers while also providing for the conservation of the species. Maintaining forested land uses with open canopies and abundant herbaceous ground cover are essential for the conservation of the LPS, and the implementation of the preferred alternative is designed to achieve this goal.

No adverse effects on local socio-economic conditions are expected. The 4(d) rule is designed to encourage timber production because forest management can provide adequate wildlife habitat when managed in ways specified in the rule. There could potentially be additional costs of adherence to the 4(d) rule in cases where practices covered under the rule are different from existing landowner practices. As these costs would be different on a case-by-case basis, the Service is unable to determine exactly what those costs of 4(d) rule adherence would be. Without the 4(d) rule in place, forest managers could be liable under section 9(a)(1) prohibitions, which could negatively affect their operations. As forest managers using practices in the proposed 4(d) rule would be exempt from section 9 take prohibitions, it is expected that those economic activities will continue.

4.2.3.1 Agriculture, Oil and Gas, Industrial Use, and Land Management

Compared to extensive forested lands, there is relatively little agriculture in the LPS range. Existing farms would not be affected by implementation of the preferred alternative, as those areas have previously been permanently converted to uses not suitable for the LPS.

Oil and gas extraction also occurs in the LPS range. These activities are not covered under the proposed 4(d) rule, and any oil and gas activities that could cause incidental take would require consultation with the Service under sections 7 or 10 of the ESA to avoid potential violations of section 9. This is also the case for other industrial uses and land management activities that would occur within the LPS range. Therefore, under Alternative 2, no changes would occur for oil and gas extraction or other industrial uses.

4.2.3.2 Residential Use

No effects on residential uses are expected. Landowners seeking to convert forests into residential uses where there is a potential for incidental take to occur should consult with the Service to avoid potential violations of section 9 of the ESA due to its threatened status.

4.2.3.3 Recreational use

Recreational values are expected to be unaffected as a result of implementation of the preferred alternative, because many of the activities covered under the proposed 4(d) rule are already occurring on private forest land. For example, portions of the Kisatchie and Angelina National Forests are managed for natural park-like stands of longleaf pine, without impeding on the existing recreational opportunities there. Much of the land within the LPS range in Louisiana and Texas occurs on National Forests, which are open to recreation and would not be affected by implementation of the preferred alternative.

4.2.3.4 Water Usage

No major effects on water usage by either private or government entities are expected as a result of this action. Alternative 2 does not address water usage, nor is it expected to have any effects on water usage.

4.2.4 Cultural/Paleontological Resources

No adverse effects on existing archaeological resources are expected to result from implementation of the 4(d) rule. Any major land use changes would be governed by the existing cultural/paleontological resource laws, such as consultation with the State Historic Preservation Offices in Louisiana and Texas. Therefore, the proposed action would have no effect on these resources.

5.0 CONSULTATION AND COORDINATION WITH OTHERS

As discussed in section 1.6 of this document, the previous federal actions leading up to the development of the proposed 4(d) involved extensive consultation and coordination with others. Public comments were received in response to the proposed LPS listing rule under the ESA, and those comments were addressed in the final rule. Public comments were also received on the proposed 4(d) rule, and those will be addressed in the event that the Service selects the preferred alternative. Please refer back to section 1.6 of this document for more details on the coordination with others involved in developing the proposed 4(d) rule.

6.0 COMPLIANCE WITH LAWS, REGULATIONS AND POLICIES

This Environmental Assessment was prepared in accordance with the National Environmental Policy Act of 1969. It is consistent with the policy contained in the Service's manual (550 FW 3), and employs a systematic, interdisciplinary approach. The proposed project has been reviewed for compliance with other Federal and state requirements including but not limited to, the Endangered Species Act of 1973, as amended; Archeological and Historic Preservation Act of 1974; National Historic Preservation Act of 1966, as amended; Executive Order 11988 (Floodplain Management); and Executive Order 11990 (Protection of Wetlands).

The Executive Order 12898 on Environmental Justice issued on February 11, 1994, requires all Federal agencies to assess the impacts of Federal actions with respect to environmental justice. The Executive Order states, to the extent practicable and permitted by law, neither minority nor low-income populations may receive disproportionately high and adverse impacts as a result of a proposed project. Due to the rural nature of the LPS range, the surrounding population tends to be in lower income categories, but no identifiable group of individuals can be considered to have lower income in relation to local averages. The counties and parishes within the historic LPS range have a lower median income ($41,130) on average than the national median income ($59,039) (ESRI 2018; Semega et al 2017). The impacts of Alternative 2 on human activities in the areas surrounding the affected areas are expected to be minimal, and so do not represent any disproportionate high and adverse impacts to low-income and minority groups.

7.0 PREPARERS

This Environmental Assessment was prepared by David A. Oster (Primary Author), Fish and Wildlife Biologist at the Service's Louisiana Ecological Services Office (LESO) in Lafayette, LA. This document was reviewed by Brigette Firmin, David Castellanos, and Monica Sikes (Fish and Wildlife Biologists at LESO), Brad Rieck (LESO Deputy Field Supervisor), and Joseph Ranson (LESO Field Supervisor).

8.0 LITERATURE CITED

Allender, M.C., M. Dreslik, S. Wylie, C. Phillips, D.B. Wylie, C. Maddox, M.A. Delaney, and M.J. Kinsel. 2011. Chrysosporium sp. Infection in Eastern Massasauga Rattlesnakes. Emerging Infectious Diseases 17:2383-2384

Allender M.C., Baker S., Wylie D., Loper D., Dreslik M.J. (2015) Development of Snake Fungal Disease after Experimental Challenge with *Ophidiomyces ophiodiicola* in Cottonmouths (*Agkistrodon piscivorous*). PLOS ONE 10(10): e0140193. https://doi.org/10.1371/journal.pone.0140193

Bridges, E.L. and S.L. Orzell. 1989. Longleaf pine communities of the West Gulf Coastal Plain. Natural Areas Journal 9:246-263.

Clark, R.W., M.N. Marchand, B.J. Clifford, R. Stechert, S. Stephens. 2011. Decline of an isolated timber rattlesnake (Crotalus horridus) population: Interactions between climate change, disease, and loss of genetic diversity. Biological Conservation 144:886-891

Conant, R. 1956. A review of two rare pine snakes from the Gulf Coastal Plain. American Museum Novitates 1781:1-31.

Ealy, M.J., Fleet, R.R., and Rudolph, D.C.. 2004. Diel activity patterns of the Louisiana Pine Snake, Pituophis ruthveni. Texas Journal of Science 56:383-394.

Environmental Systems Resource Institute (ESRI). 2018. Household median income compiled from U.S. Census Bureau Data. Accessed July 18, 2018.

Frost, C.C. 1993. Four centuries of changing landscape patterns in the longleaf pine ecosystem. Proceedings of Tall Timbers Fire Ecology Conference 18:17-43.

Glorioso, B.M., Waddle, J.H., Green, D.E., and Lorch, J.M.. 2016. First documented case of snake fungal disease in a free-ranging wild snake in Louisiana. Notes of the Southeastern Naturalist 15(1):4-6.

Himes, J.G., Hardy, L.M., Rudolph, D.C., and Burgdorf, S.J.. 2006. Movement patterns and habitat selection by native and repatriated Louisiana Pine Snakes (Pituophis ruthveni)'. Implications for conservation. Herpetological Natural History 9:103-116.

Homer, C.G., Dewitz, J.A., Yang, L., Jin, S., Danielson, P., Xian, G., Coulston, J., Herold, N.D., Wickham, J.D., and Megown, K., 2015, Completion of the 2011 National Land Cover Database for the conterminous United States-Representing a decade of land cover change information. *Photogrammetric Engineering and Remote Sensing*, v. 81, no. 5, p. 345-354.

Lorch J.M., Lankton J., Werner K., Falendysz E.A., McCurley K., Blehert D.S.. 2015. Experimental infection of snakes with *Ophidiomyces ophiodiicola* causes pathological changes that typify snake fungal disease. mBio 6(6):e01534-15. doi:10.1128/mBio.01534-15

Lorch J.M., Knowles, S., Lankton, J.S., Mitchell, K., Edwards, J.L., Kapfer, J.M, Staffen, R.A.m Wild, E.R., Schmidt, K.Z., Ballmann, A.E., Blodgett, D., Farrell, T.M., Glorioso, B.M., Last, L.A., Price, S.J., Schuler, K.L., Smith, C.E., Wellehan, J.F.X., Behert, D.S. 2016. Snake fungal disease: an emerging threat to wild snakes. Phil. Trans. R. Soc. B 371: 20150457. URL: http://dx.doi.org/10.1098/rstb.2015.0457.

Louisiana Department of Wildlife and Fisheries. 2005. *Western Upland Longleaf Pine Forest.* URL: < http://www.wlf.louisiana.gov/sites/default/files/pdf/document/32893-western-upland-longleaf-pine-forest/western_upland_longleaf_pine_forest.pdf>.

McBride, M.P., Wojick, K.B., Georoff, T.A., Kimbro, J., Garner, M.M., Wang, X.,, Childress, A.L and Wellehan, J.F.X., Jr. 2015. *Ophidiomyces ophiodiicola* dermatitis in eight free-ranging timber rattlesnakes (*Crotalus horridus*) from Massachusetts. Journal of Zoo and Wildlife Medicine 46(1):86-94.

Oswalt, S.N., and J.W. Bentley. Louisiana's Forests, 2005. United States Department of Agriculture Forest Service Southern Research Station. Resource Bulletin SRS-192.

Rajeev, S., Sutton, D.A., Wickes, B.L., Miller, D.L., Giri, D., Van Meter, M., Thompson, E.H., Rinaldi, M.G., Romanelli, A.M., Cano, J.F., and Guarro, J. 2009. Isolation and characterization

of a new fungal species, *Chrysosporium ophiodiicola* from a mycotic granuloma of a black rat snake (*Elaphe obsoleta obsoleta)*. Journal of Clinical Microbiology. 47(4):1264-1268.

Reichling, S.B. 1995. The taxonomic status of the Louisiana Pine Snake tuophis melanoleucus ruthveni) and its relevance to the evolutionary species concept. Journal of Herpetology 29:186-198.

Rudolph, D.C, and S.J. Burgdorf. 1997. Timber Rattlesnakes and Louisiana Pine Snakes of the West Gulf Coastal Plain: Hypotheses of decline. Texas Journal of Science 49(supplement): 111-122.

Semega, J.L, Fontenot, K.R., and Kollar, M.A.. 2017. Income and Poverty in the United States: 2016. U.S. Census Bureau, Report No. P60-259.

Sperry, J. 2017. Biologist, U.S. Army Corps of Engineers. December 12, 2017 email communication with David Castellanos. U.S. Fish and Wildlife Service, Lafayette, Louisiana.

United States Census Bureau. 2016. American Fact Finder, County Business Patterns. URL: <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml". Accessed: August 2, 2018

United States Department of Agriculture. 2012. Forests of Louisiana, 2012. Resource Update FS-5. URL: https://www.srs.fs.usda.gov/pubs/45748.

United States Department of Agriculture. 2016. Forests of East Texas, 2016. Resource Update FS-151. URL: https://www.fs.usda.gov/srsfia/states/texas.shtml.

United States Department of Agriculture. 2018. Periodic Timber Sale Accomplishment Reports. Current Fiscal Year 2018, Region 8. URL: < https://www.fs.fed.us/forestmanagement/products/ptsar/index.shtml>.

University of Texas A&M Forest Service. 2015. East Texas Forests, 2015. URL: < http://txforestservice.tamu.edu/forestinventoryandanalysis/>.

Wagner, R.O, Connor, M.B., Melder, C.A., Cooper, B.S., Hightower, D., and Pearce, S. 2017. Movement and Resource Selection of Baird's Pocket Gopher within a Longleaf Pine Ecosystem.