DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R4–ES–2016–0121; 4500030113]

RIN 1018–BB46

Endangered and Threatened Wildlife and Plants; Threatened Species Status for Louisiana Pinesnake

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine threatened species status under the Endangered Species Act of 1973 (Act), as amended, for Louisiana pinesnake (*Pituophis ruthveni*), a reptile species from Louisiana and Texas. The effect of this regulation will be to add this species to the List of Endangered and Threatened Wildlife.

DATES: This rule is effective May 7, 2018.

ADDRESSES: This final rule is available on the internet at *http://www.regulations.gov* in Docket No. FWS–R4–ES–2016–0121 and *https://www.fws.gov/lafayette/*. Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at *http://www.regulations.gov* and will be available by appointment, during normal business hours at: U.S. Fish and Wildlife Service, Louisiana Ecological Services Office, 646 Cajundome Boulevard, Suite 400; 337–291–3101; 337–291–3139.

FOR FURTHER INFORMATION CONTACT: Joseph Ranson, Field Supervisor, U.S. Fish and Wildlife Service, Louisiana Ecological Services Field Office (see **ADDRESSES** above). Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Endangered Species Act, as amended (''Act'' or ''ESA''; 16 U.S.C. 1531 *et seq.*), a species may warrant protection through addition to the Lists of Endangered and Threatened Wildlife and Plants (listing) if it is endangered or threatened throughout all or a significant portion of its range. Listing a species as an endangered or threatened species may be completed only by issuing a rule.

What this document does. This final rule will add the Louisiana pinesnake (*Pituophis ruthveni*) as a threatened species to the List of Endangered and Threatened Wildlife in title 50 of the Code of Federal Regulations at 50 CFR 17.11(h).

The basis for our action. Under the Endangered Species Act, we may determine that a species is an endangered or threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that the Louisiana pinesnake is threatened primarily because of the past and continuing loss, degradation, and fragmentation of habitat in association with incompatible silviculture, fire suppression, road and right-of-way construction, and urbanization (Factor A), and the magnified vulnerability of all the small, isolated, genetically compromised extant populations to mortality events, including vehicle strikes and from predators (Factors C and E).

Peer review and public comment. We sought comments from independent specialists to ensure that our determination is based on scientifically sound data, assumptions, and analyses. We invited these peer reviewers to comment on our listing proposal. We also considered all comments and information received during the comment periods.

Previous Federal Action

Please refer to the proposed listing rule for the Louisiana pinesnake, which was published on October 6, 2016 (81 FR 69454), for a detailed description of previous Federal actions concerning this species.

Summary of Comments and Recommendations

In the proposed rule published on October 6, 2016 (81 FR 69454), we requested that all interested parties submit written comments on the proposal by December 5, 2016. We reopened the comment period on October 6, 2017 (82 FR 46748), with our publication of a document announcing a 6-month extension of the final listing determination. This second 30-day comment period ended on November 6, 2017. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. We did not receive any requests for a public hearing. All substantive information provided during comment periods has either been incorporated directly into this final determination or addressed below.

Peer Reviewer Comments

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinion from six knowledgeable individuals with scientific expertise that included familiarity with Louisiana pinesnake and its habitat, biological needs, and threats, and experience studying other pinesnake species. We received responses from all of the peer reviewers.

We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the listing of Louisiana pinesnake. The peer reviewers generally concurred with our presentation of the known life history, habitat needs, and distribution of the species, and provided additional information, clarifications, and suggestions to improve this final rule. Peer reviewer comments are addressed in the following summary and incorporated into the final rule as appropriate.

Two of the six peer reviewers commented that overall, the proposed rule was a thorough review of what is currently known about the Louisiana pinesnake, and another reviewer stated that the Service had used the best available science. One reviewer noted that information on life-history attributes and potential threats was limited, but he stated his support for the Service's proposed listing of the Louisiana pinesnake as threatened. Three peer reviewers stated that the Louisiana pinesnake was declining, and two of those three thought that the species should be listed as endangered rather than threatened. Specific substantive comments from peer reviewers, and our responses, follow:

(1) Comment: Two peer reviewers recommended that trapping effort should be included when discussing numbers of individuals captured in areas receiving beneficial management versus areas not receiving beneficial management in the Bienville population. One peer reviewer also cautioned that when we reported trapping success for the whole Bienville population, we did not indicate that two of the three sites being trapped are being managed to benefit the Louisiana pinesnake and much of the surrounding habitat is unsuitable for the species.

Our Response: We agree that trapping effort is important when making comparisons across sites. We have added capture-per-unit effort (*i.e.,* trap success) where we made comparisons of capture numbers among sites in Bienville. We also clarified which two sites in the Bienville area are being managed to benefit the Louisiana pinesnake, and indicate that trap success has been much greater in those two areas compared to a third site that is not managed to benefit the species.

(2) Comment: One peer reviewer stated that trap-days provide only a relative index with unknown precision and thus cannot be used to estimate population size. The reviewer also contended that, without a population size or vital rates for the species, no minimum population size or minimum area required for population persistence can be estimated.

Our Response: We acknowledge the limitations of using trap-days, and by extension trap success values, for estimating population size. Because of that limitation, we do not offer any quantitative estimation of population numbers or minimum habitat area in the rule. We use trap-days as a tool for relative comparisons between sites.

(3) Comment: One peer reviewer advised caution in using trapping results to determine Louisiana pinesnake EOHAs because much trapping was done prior to knowledge of the species' soil preferences (Wagner et al. 2014 and the Landscape-scaled Resource Selection Functions Model (LRSF model)), and because the criteria used to rank habitat quality for the purpose of identifying additional sites to conduct surveys in the Rudolph et al. (2006) study may not have accurately reflected actual habitat use by the species. The peer reviewer also stated that recent trapping records show that Louisiana pinesnakes are frequently trapped in areas not resembling a mature forest, even though they have otherwise desirable habitat characteristics. Therefore, potential trapping areas may have been overlooked.

Our Response: We agree soil types and the current understanding of the species' habitat preferences affected the selection of trapping areas and, therefore, the delineation of estimated occupied habitat for the Louisiana pinesnake. While some sites with no forested habitat may have been excluded because they were presumed to have a poorer quality habitat, we have no evidence that the number of untrapped sites that were potentially inhabited but not forested was greater than the number of untrapped sites that were forested and characterized as higher quality. Regarding soils, we know that some trapping areas were not located on preferred or suitable soils, especially before Wagner et al. (2014); however, the vast majority of all traps (84%) are located on preferred or suitable soils. So while some potential Louisiana pinesnakes areas may have been overlooked, the method used to delineate EOHAs is valid and represents the species' known locations as accurately as possible with the best available data. We have always recognized that there may still be undiscovered individuals and the threatened status extends to wherever the species is found.

(4) Comment: One peer reviewer and one other commenter stated that the proposed rule does not discuss consideration of distinct populations of the Louisiana pinesnake for separate listing status. They argue that the Texas and Louisiana populations represent distinct population segments and that the Texas populations should be listed as endangered.

Our Response: According to our DPS policy, for a population to be a distinct population segment it must be both discrete (either markedly separate from other populations of the same taxon, or delimited by international boundaries) and significant. To be significant, the population: (a) May persist in a unique or unusual ecological setting; (b) would, if lost, result in a significant gap in the range; (c) is the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historical range; and (d) differs markedly from other populations of the species in its genetic characteristics. As required by the policy, we first considered the discreteness of the Texas and Louisiana populations. We determined that they were discrete due to the physical barrier of the Sabine River and the lack of continuous suitable habitat between the Texas and Louisiana populations. We then looked at the significance of the Texas population. The habitat is the same, so there is no unusual or unique ecological setting for the species. The Texas population makes up only 19 percent of the total occurrence record, so its loss would not result in a significant gap in the range of the species. The genetics of both the Texas and Louisiana populations do not differ markedly from other populations of the species in characteristics. Therefore, it does not meet the significance criteria for being a DPS. The listable entity is the species, and we have determined that the species is threatened species throughout its entire range.

(5) Comment: Two peer reviewers stated that, although no verified records of Louisiana pinesnake occur from Grant Parish, Louisiana, where the reintroduction population is located, the species likely occurred there historically as there are occurrence records in parishes immediately north and south of Grant Parish.

Our Response: We relied on the county and parish occurrence records in Louisiana and Texas to describe the historical range of the species, and agree that it is likely that the Louisiana pinesnake occurred in at least some portions of Grant Parish, Louisiana, based on its known occurrences in parishes nearby.

(6) Comment: One peer reviewer stated that the small size of the two core management areas (CMAs), Kepler and Sandylands, within the Bienville EOHA should be emphasized. That reviewer estimated that fewer than 100 individuals could live there, and that neither the Bienville nor the Scrappin' Valley populations have enough habitat to support a viable population.

Our Response: We have clearly stated the size of the two CMAs within the Bienville EOHA both in terms of acreage and as a percentage of the total area of the EOHA. Based on the best available information, we could not determine whether the Bienville population or any other population is viable or not or what the minimum required habitat size may be.

(7) Comment: One peer reviewer and several other commenters believe that the Service should determine endangered rather than threatened status for the Louisiana pinesnake. The peer reviewer mentioned that there have been minimal conservation accomplishments concerning the Louisiana pinesnake since it was first identified as a candidate species 34 years ago, and that the conclusions cited in the rule are not adequate to support a threatened listing.

Our Response: The Act defines an endangered species as any species that is ''in danger of extinction throughout all or a significant portion of its range'' and a threatened species as any species ''that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.'' The determination to list the Louisiana pinesnake as threatened was based on the best available scientific and commercial data on its status, based on the immediacy, severity, and scope of the existing and potential threats and ongoing conservation actions (see Determination section, below). We found that an endangered species status was not appropriate for the Louisiana

pinesnake because, while threats to the species were significant, ongoing, and occurring mostly range-wide, multiple populations continue to occur within the species' range, and for all the populations, some occupied habitat is currently being managed to provide more suitable habitat for the species.

While it may be difficult to determine the ultimate success of these conservation actions, we know that discussions between the Service and our public lands partners, in particular, have resulted in new language within formal management plans that will protect and enhance Louisiana pinesnake habitat. For example, the Joint Readiness Training Center and Fort Polk have amended their integrated natural resources management plan to provide for the protection and management of the Louisiana pinesnake and its habitat. In addition, the Service, U.S. Forest Service (USFS), the Department of Defense, the Texas Parks and Wildlife Department, the Louisiana Department of Wildlife and Fisheries, the Natural Resources Conservation Service, and the Association of Zoos and Aquariums (AZA) are cooperators in a candidate conservation agreement (CCA) for the Louisiana pinesnake that allows the partnering agencies to work cooperatively on projects to avoid and minimize impacts to the species and to identify and establish beneficial habitat management actions for the species on certain lands in Louisiana and Texas. Some private landowners also maintain suitable habitat specifically for the Louisiana pinesnake in areas occupied by the snake.

(8) Comment: One peer reviewer and several public commenters questioned our conclusion that illegal collection from the wild and killing by humans were not threats to the Louisiana pinesnake.

Our Response: In the proposed rule, we relied upon the best scientific and commercial information available, which in the case of illegal collection included correspondence with individuals who have experience with the history of the pinesnake pet trade in the area (see ''Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes'' in the Summary of Factors Affecting the Species section, below). Those sources maintained that the demand for Louisiana pinesnake is limited. There was no information available to suggest that illegal collection will increase once the species is listed, and no new information to support this theory was received during the comment periods. Since the Louisana pinesnake is fossorial (and thus difficult to locate), occurs mostly on private and restricted access lands, and does not overwinter in communal den sites (making it difficult for humans to find), based on the best available information illegal collection is not a threat to the species. Similarly, no further data were provided during the comment periods to show that intentional killing by humans was a threat. Therefore, we concluded that neither illegal collection nor intentional killing by humans are threats to the species.

(9) Comment: Two peer reviewers, a State agency, and other commenters claim that the Louisiana pinesnake is likely extirpated in Texas due to lack of records in several years despite extensive trapping efforts. Some commenters thought that the Service should make a statement of extirpation.

Our Response: The Service, after discussion with researchers knowledgeable about the Louisiana pinesnake, determined a method based on occurrence records and trapping effort to estimate the area occupied by the Louisiana pinesnake (see *Historical and Current Distribution* section). According to that method, we still recognize two areas that we believe to be occupied in Texas. Species listed under the ESA are protected wherever found.

(10) Comment: One peer reviewer disagreed with the Service's use of the term ''population'' to describe the snakes in the Reintroduction Feasibility Study as too optimistic, as there has been no reproduction observed, and it is unknown if a viable population is feasible.

Our Response: We agree that it is too soon to conclude whether the experimental reintroduction is successful, which is why we did not make any claims in the proposed rule of reproduction or viability for the reintroduced population. However, a basic definition of the term ''population'' is a group of individuals of the same species that occur together in the same area. Our use of the term ''population'' for the Reintroduction Feasibility Study animals was to indicate that it was a group of individuals of the same species located in one geographical area, not to relay that we considered pinesnakes in this area to be reproducing or self-sustaining.

(11) Comment: One peer reviewer suggested that the EOHAs overestimate the extent of occupied habitat, because not all of the habitat within EOHAs is suitable, and not all suitable habitat is occupied. The reviewer also stated that occupied area has declined over time. The reviewer also stated that the Service incorrectly considered conservation planning on reasonably sized habitat blocks, in addition to likely occupation by the species, as the method to delineate the EOHAs.

Our Response: As described in the proposed rule, EOHAs were delineated around Louisiana pinesnake verified occurrence records obtained after to 1993 (when more extensive trapping began) excluding records older than 11 years (the estimated Louisiana pinesnake generational turnover period (Marti 2014, pers. comm.)), when traps within 0.6 mi (1 km) of following at least 5 years of unsuccessful trap effort. The method and criteria used by the Service to determine EOHAs are somewhat different from what the peer reviewer used (Rudolph et al. 2016). Whereas both incorporate a 1-km buffer around a minimum convex polygon (MCP) to account for within-home-range movement of individuals occurring at the periphery of the MCP, the peer reviewer developed MCPs of occupied habitat based on Louisiana pinesnake occurrences documented only within the 5-year intervals that each of the polygons represent. As noted by the peer reviewer, the Service's method is less conservative in how it assumes records relate to the presence of an animal. The peer reviewer's method assumes that an individual that occurred in one 5-year interval was not present during the next 5-year interval unless it was recaptured. The Service method assumes a longer persistence of individuals for purposes of estimating occupied habitat. Several individual snakes (among several populations) have been captured 4 to 5 years apart with no intervening captures in the same general area, indicating that snakes can persist for at least several years in areas without being captured (Pierce 2016, unpublished data; Battaglia 2016, pers. comm.).

Neither method should be construed to represent the absolute extent of Louisiana pinesnake occupied habitat at a specific point in time. Both attempt to predict the spatial extent of mobile animals over time based on data points that are nearly all tied to mostly permanent trap locations. However, both methods are based on factual evidence of the species' presence, and have value. The aerial extent of the EOHAs alone cannot be used to estimate the species' abundance, and therefore are only one part of the analysis used in the decision to list the Louisiana pinesnake as threatened. The Service method for determining occupied habitat does not rely on soil or habitat type or any variable other than occurrence records of the species. The

Service acknowledges the peer reviewer's comment that not all of the EOHAs comprise suitable habitat, and not all suitable habitat is likely to be occupied. The Service does not imply that this situation must be either true or necessary in order to describe the EOHAs.

(12) Comment: One peer reviewer claimed that neither predation nor disease is a significant factor in the population decline of the Louisiana pinesnake as stated in the proposed rule. That reviewer also stated that disease is a concern in the captive population.

Our Response: The Service stated in the proposed rule that disease was not a threat, but that predation acting together with other known sources of mortality, coupled with the current reduced size of the remaining Louisiana pinesnake populations, constitutes a threat (see Factor C: Disease or Predation). Based on numerous accounts of predation on other related pinesnake species (and one attempted predation on a Louisiana pinesnake), we believe that the Louisiana pinesnake experiences natural predation, and that as long as the populations are low in abundance, this activity does constitute a threat. The Service did not find that disease in the captive population was a threat to the Louisiana pinesnake. Nearly all captive-animal propagation efforts are at risk of disease. Premature death due to disease has affected the captive population, but the mortality history of the captive population of Louisiana pinesnakes is consistent with that of any healthy captive population of snakes maintained for several decades (Reichling 2018, pers. comm.).

With a captive population of just under 200 animals, even a small number of deaths are potentially detrimental to the effort to maintain a secure captive population and provide animals for recruitment into the wild. However, because great losses due to disease have not occurred in the Louisiana pinesnake captive population and the member zoos have not reported a heightened concern about disease, we do not consider disease outbreak in the captive-bred population to be a threat at this time.

(13) Comment: One peer reviewer stated that all populations of Louisiana pinesnake continue to decline in abundance and the overall range of the species has contracted. Another peer reviewer stated that Louisiana pinesnake trap success in three Texas populations during the 5 years preceding the last captures in those populations is similar to what is happening with three Louisiana populations (Bienville, Fort Polk/Vernon, and Peason); therefore, the species should be listed as endangered rather than threatened.

Our Response: The Louisiana pinesnake has declined in both numbers and range. All populations in Texas continue to show a decline even after additional trapping efforts extended the number and range of potential detection points. Acknowledging the unfavorable outlook for Texas populations, some general limitations of trapping to determine the species' presence should be noted. The number of trapped snakes is almost certainly an underestimate of individuals, and while it is likely that the number of individual snakes captured is partly a function of trap density, that relationship remains unknown. Additionally, some individuals caught in one trapping season in a relatively small area of suitable habitat were not captured again for up to 5 years (Pierce 2016, unpub data; Battaglia 2016, pers. comm.). Finally, it should be noted that not all suitable habitat has been trapped.

While we not aware of any viability analyses based on demographic and life-history data, the peer reviewer has conducted research using state-space modelling based on trap success data to predict the timing of ''quasi-extinction'' for populations of the Louisiana pinesnake. The Service does not use a comparable statistical analysis tool that determines extinction or ''quasi-extinction.'' The Bienville and Fort Polk populations have a long history of regular captures, and trap success in the last 2 years (2015, 2016) at the Sandylands core management area (CMA) was greater than any other year since trapping started in 2004. While long-term persistence of these populations is in question, and there is no evidence to show an increase of individuals, a decline of the Louisiana populations cannot be concluded from trapping data.

(14) Comment: One peer reviewer stated that the effectiveness of conservation efforts for the Louisiana pinesnake cannot be demonstrated.

Our Response: As we acknowledged in the proposed rule, beneficial forest management has not resulted in an increase in abundance of the Louisiana pinesnake even though many acres of land have been included in conservation efforts. However, by increasing the amount of suitable habitat by appropriate forest management, the threat of habitat loss and fragmentation has been reduced in many areas. The connection between suitable habitat, pocket gophers, and the Louisiana pinesnake is thoroughly explained in the proposed rule and supported by research cited therein. Recent (2011–2016) captures of subadults in the Bienville EOHA indicates that conditions there support some level of reproduction and persistence. However, we agree that the long-term persistence of the Louisiana pinesnake is in danger; therefore, we are listing the Louisiana pinesnake as a threatened species.

(15) Comment: One peer reviewer stated that most forest conservation work that is beneficial to the Louisiana pinesnake is work that is already being conducted for the benefit of the red-cockaded woodpecker and requested that this be emphasized in the rule.

Our Response: Because their basic habitat requirements are very similar, conservation efforts for the red-cockaded woodpecker also benefit the Louisiana pinesnake. We noted these contributions in the proposed rule and have added text in the final rule to underscore their importance.

(16) Comment: One peer reviewer asked that the Service clarify the meaning of ''invasive species'' as used in the list of activities that may result in a violation of section 9 of the ESA.

Our Response: Executive Order 13112 defines ''invasive species'' in section 1, paragraph (f), as ''an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.'' Take to the Louisiana pinesnake may occur in the form of harm as a result of habitat degradation caused by invasive plant species.

(17) Comment: One peer reviewer questioned whether only wild snakes, as opposed to both wild and captive-bred individuals, should be subject to some or all of the prohibitions found in section 9 of the Act.

Our Response: We intend that the prohibitions of section 9 of the Act apply to both wild-caught and captive-bred Louisiana pinesnakes. While intrastate commerce, including that of threatened species, is not regulated by Federal law, interstate commerce of both threatened and endangered species is generally prohibited except by special permit. The permitting process would allow the Service to better monitor all individuals of the species, validate claims of captive-bred status, and inform the decision to approve or disapprove actions that could potentially affect the wild population.

Federal Agency Comments

(18) Comment: One Federal agency commented that the captive-breeding program and reintroduction efforts are promising but it is premature to call

them a success. That agency and some other commenters also recommended that any wild-caught snakes should be introduced into the captive-breeding population.

Our Response: As discussed in a *Response to Comment* above, the captive-breeding program and reintroduction efforts are promising, and in the proposed rule we did claim that the reintroduction program had shown partial success. Although there has been no evidence of reproduction, almost 60 percent of the total 77 snakes released were recaptured in 2016 (3 years later), which shows that captive-bred individuals can survive without assistance for several years.

Although two of the Service's partners, AZA and USFS are currently carrying out a captive-breeding and reintroduction effort, captive-propagation programs are generally a last recourse for conserving species. The Act directs the Service to focus on conserving the species in the wild. Loss of habitat is one of the primary threats to this species. Before captive animals are taken from the wild or can be reintroduced, questions of genetics, disease, and survival in the wild must be evaluated and addressed. Captive populations, even when they are healthy and genetically diverse, will likely not survive in the wild unless there is adequate habitat. However, as we begin the recovery process, we will consider various options for recovery of the species, which will likely continue to include captive propagation.

(19) Comment: The Army apprised the Service of new research on pocket gophers done at Fort Polk. The Army agreed with the Service's recommended habitat management for the Louisiana pinesnake at Fort Polk. It also commented that Fort Polk should be exempt from take for activities related to red-cockaded woodpecker and Louisiana pinesnake conservation and be exempted from critical habitat designation.

Our Response: The Service has reviewed the research provided and incorporated this new information in the *Habitat* section of the preamble to this rule. In a conference opinion, the Service conferred with the Army on habitat management activities and military training that takes place on Army-controlled land at Fort Polk and concluded that those actions analyzed in that conference opinion were not likely to jeopardize the continued existence of the Louisiana pinesnake. That opinion does not apply to the red-cockaded woodpecker, but only to the Louisiana pinesnake and the specific actions covered in the opinion. With the listing of the species, the conference opinion must be confirmed as formal consultation by adopting it as a biological opinion. The Service did not designate critical habitat in this final rule, but will make a decision in the near future to propose critical habitat if prudent and determinable, and if appropriate will evaluate whether lands in Fort Polk should be considered for designation (see Critical Habitat section).

Comments From States

We received comments from the Texas Comptroller of Public Accounts, the Texas Parks and Wildlife Department, Texas A&M Forest Service, and the Louisiana Department of Wildlife and Fisheries. The Texas Comptroller of Public Accounts and Texas A&M Forest Service stated that they believe the Louisiana pinesnake is likely extirpated in Texas. All three Texas State agencies stated their support for longleaf pine (*Pinus palustris*) restoration efforts, and also management of other pine species to benefit the Louisiana pinesnake. The Texas Parks and Wildlife Department provided an extensive list of what it represented were normal practices that would be necessary for forest management and that should not be restricted if the species was listed. Specific comments are addressed below.

(20) Comment: While all three Texas State agencies and several other commenters stated their support for longleaf pine restoration, they also commented that ongoing conservation efforts with other pine species, best management practices, and good stewardship or healthy forest certifications were also beneficial for the Louisiana pinesnake.

Our Response: The structure of the forest occupied by Louisiana pinesnakes is very important, and while some studies have shown that pinesnakes have not always been found to use longleaf pine forests exclusively, studies support the need for open-canopied pine forest with a sparse midstory and well-developed herbaceous ground cover composed of grasses and forbs. While other tree species could potentially be managed for an open canopy, the canopy structure of longleaf pine allows greater light penetration than other pine species for trees of comparable size. So for the same stem density, longleaf pine will generally allow more sunlight to reach the forest floor, which increases herbaceous vegetation cover. That said, while certification for well-managed forests or timber farms is likely an indication of good habitat for some wildlife, to our knowledge there is no certification that specifies what forest condition would need to be achieved in order to benefit the Louisiana pinesnake specifically.

Public Comments

(21) Comment: Several commenters representing the forestry industry stated that the Service mistakenly thinks that pine plantations are static ''closed canopies'' and have ''thick mid-stories.'' They stated that pine plantations can provide suitable Louisiana pinesnake habitat, and across a broad, actively managed forest landscape, pine plantations that are at different stages of development ensure that suitable habitat is available at all times. Some commenters referred to a 2013 National Council for Air and Stream Improvement report, which states that of the almost 9 million acres of planted pine forests owned by large corporate forest landowners, two-thirds of those acres were in some form of open-canopied condition. The commenters suggested that suitable Louisiana pinesnake habitat should include this type of matrix of forested stands where the canopy cover is at various stages of being open and closed, as the pinesnakes would always be able to find areas where they could locate food, shelter, and mates.

Our Response: We sincerely appreciate the efforts of forest landowners to provide habitat for a variety of species and would like to continue working with the forest industry to further explore the benefits of pine plantations. That said, not all forests are managed in a way that will protect the species or its habitat. In the survey cited by the commenter, two-thirds of those acres were composed of young trees that had not grown large enough to close the canopy, as many managed pine forest lands go through cycles of having closed canopies. For example, if a stand becomes closed when the trees are 5 to 7 years old, and the first thinning is at age 14 to 20, there is a period of 7 to 15 years when that stand is unsuitable for pinesnakes.

The idea that a matrix of intermittently open- and closed-canopied forest stands provides suitable habitat for Louisiana pinesnakes relies on several assumptions: That suitable open habitat will always be located in close proximity to areas where the canopy is closing, that areas of suitable habitat will be expansive enough to support the large home ranges of these snakes, and that snakes which must relocate due to canopy closure will be able to find adequate access to relocated mates and prey in their shifted home range. Small mammal abundance

decreases in response to canopy closure, often to the point of mammals abandoning the site (Lane et al. 2013, p. 231; Hansberry et al. 2013, p. 57). Also, the primary prey of the Louisiana pinesnake, Baird's pocket gopher (*Geomys breviceps*), forages on herbaceous vegetation, which requires sufficient sunlight penetration for growth. When the forest canopy of a stand becomes more closed, herbaceous vegetation is reduced or lost entirely. Therefore, stands with closed canopies, although open for a part of the time during the cycle of management and harvesting activities, are not stable habitats for pinesnakes and do not contribute to the long-term conservation of the species.

(22) Comment: Many commenters stated that the structure of the forest is more important to Louisiana pinesnake than the presence of longleaf pine per se. They note that Louisiana pinesnakes have been found in other habitats, such as monoculture pine plantations containing little if any longleaf pine.

Our Response: The best available information shows that structure of the forest occupied by Louisiana pinesnakes is very important, and while some studies have shown that pinesnakes have not always been found exclusively using longleaf pine forests, these studies support the need for open-canopied pine forest with a sparse midstory and well-developed ground cover composed of grasses and forbs. While other tree species could potentially be managed for an open canopy, the canopy structure of longleaf pine is such that it allows greater light penetration than other pine species for trees of comparable size. So for the same stem density, longleaf pine will generally allow more sunlight to reach the forest floor, which increases herbaceous vegetation cover. In the proposed rule, we described the types of forest and habitat where Louisiana pinesnakes have been found historically. For the vast majority of records occur in forested locations dominated by longleaf pine. When Louisiana pinesnakes are found in pine plantations devoid of longleaf pine, these areas are adjacent to areas with longleaf pine and areas of open canopy with herbaceous vegetation. As noted in the proposed rule, the individuals found in the plantation area appeared to be less healthy than those found in the beneficially managed areas indicating that they may have only been traversing the plantation in search of higher quality habitat (Reichling et al. 2008).

(23) Comment: Several commenters stated that the Service should have requested peer reviewers with expertise in forestry, especially from the private sector.

Our Response: In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we selected qualified peer-reviewers based on their particular expertise or experience relevant to the scientific questions and determinations addressed in our action. We solicited peer review from six knowledgeable individuals with expertise pertaining to pinesnakes, their habitat, and threats, including one reviewer with extensive experience with forestry management, especially as applied to conservation actions to benefit habitat for the red-cockaded woodpecker, an endangered species with habitat requirements similar to the Louisiana pinesnake.

(24) Comment: Several commenters indicated that concerns about liability limit landowners' ability to conduct prescribed fire, which benefits the Louisiana pinesnake.

Our Response: We acknowledge and commend landowners for their land stewardship and want to continue to encourage those management practices that support the Louisiana pinesnake. We understand the liability concerns associated with implementing prescribed fire, but note that, while prescribed fire is an effective and preferred forest management tool, private landowners will not be required to perform prescribed burning on their property as a result of the listing of the Louisiana pinesnake. Landowners who wish to pursue this activity may be able to purchase liability insurance specifically for conducting prescribed burns. Additionally, voluntary conservation programs such as the Service's Partners for Fish and Wildlife Program and various programs administered by the Natural Resources Conservation Service may provide financial assistance to eligible landowners who implement management activities that benefit the habitat for a listed species, including the Louisiana pinesnake.

(25) Comment: Several commenters indicated that listing the Louisiana pinesnake may lead to changes in forest management that would negatively impact the species.

Our Response: In compliance with the requirements of the Act and its implementing regulations, we determined that the Louisiana pinesnake warrants listing based on our assessment of the best available scientific and commercial data. We recognize that the Louisiana pinesnake remains primarily on lands where habitat management has supported survival, due in large part to voluntary actions incorporating good land-stewardship, and we want to continue to encourage land management practices that support the species.

We recognize the need to work collaboratively with private landowners to conserve and recover the Louisiana pinesnake.. We encourage any landowners with a listed species that may be present on their properties, and who think they may conduct activities that negatively impact that species, to work with the Service. We assist landowners to determine whether actions they may result in take of a listed species and, if so, whether a habitat conservation plan or safe harbor agreement may be appropriate for their needs. These plans or agreements provide for the conservation of the listed species while providing coverage for incidental take of the species during the course of otherwise lawful activities. Other voluntary programs, such as the Service's Partners for Fish and Wildlife program and the Natural Resources Conservation Service's Farm Bill programs offer opportunities for private landowners to enroll their lands and receive cost-sharing and planning assistance to reach their management goals. The recovery of endangered and threatened species to the point that they are no longer in danger of extinction now or in the future is the ultimate objective of the Act, and the Service recognizes the vital importance of voluntary, nonregulatory conservation measures that provide incentives for landowners in achieving that objective. We are committed to working with landowners to conserve this species and develop workable solutions.

(26) Comment: One commenter stated that the Service arbitrarily chose open-canopy longleaf forest as the ''historic'' habitat condition for the Louisiana pinesnake. They also commented that the habitat has been altered by humans (especially fire) since the arrival of the first Americans.

Our Response: The use of the term ''historical'' is not meant to suggest that the longleaf ecosystem was free of human (Native American) influence (*i.e.,* in a pristine state), but rather it refers to the ecosystem that occurred prior to European settlement and modern silviculture, and the ecosystem within which the Louisiana pinesnake evolved. It is for these reasons that the longleaf pine ecosystem is considered the Louisiana pinesnake's historical habitat. See our discussion of longleaf pine habitat under *Factor A: The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range* in the proposed rule.

(27) Comment: Two commenters suggested that conservation efforts are already helping the species and that the Service should use public-private partnerships and alternative conservation tools (*e.g.,* Candidate Conservation Agreement with Assurances) to recover the Louisiana pinesnake instead of Federal Endangered Species Act listing.

Our Response: Conservation of the Louisiana pinesnake will require collaboration between Federal, State, and local agencies and landowners. We recognize that the Louisiana pinesnake remains primarily on lands where habitat management has supported survival, due in large part to voluntary actions incorporating good land-stewardship, and we want to continue to encourage land management practices that support the species. However, our determination to list the species is required by the Act and its implementing regulations, considering the five listing factors, and using the best available scientific and commercial information. Our analysis supports our determination of threatened status for this species. Ongoing conservation actions, including those referenced by the commenters, and the manner in which they are helping to ameliorate threats to the species were considered in our final listing determination for the Louisiana pinesnake (see ''Conservation Efforts to Reduce Habitat Destruction, Modification, or Curtailment of Its Range'' under *Factor A* and ''Conservation Efforts to Reduce Threats under Factor E'' under *Factor E*). Habitat loss, degradation, and fragmentation has been a primary driver of the Louisiana pinesnake's decline. These ongoing conservation efforts were not sufficient to ameliorate the threats to the species such that listing was not warranted, and additional conservation efforts will be needed to recover the species to the point that the protections of the Act are no longer needed.

(28) Comment: Some commenters stated that there is no evidence that the Louisiana pinesnake needs any forest overstory at all.

Our Response: As discussed in the *Habitat* section of this rule, the best available scientific information indicates that Louisiana pinesnake habitat generally consists of sandy, well-drained soils in open-canopy pine forest, which may include species such as longleaf, shortleaf, slash, or loblolly pines with a sparse midstory, and well-developed herbaceous ground cover dominated by grasses and forbs (Young and Vandeventer 1988, p. 204; Rudolph and Burgdorf 1997, p. 117). Abundant ground-layer herbaceous vegetation is important for the Louisiana pinesnake's primary prey, the Baird's pocket gopher, (Rudolph *et al* 2012, p. 243). Pocket gopher abundance is associated with a low density of trees, an open canopy, and a sparse woody midstory, which allow greater sunlight and more herbaceous vegetation needed as forage for pocket gophers (Himes 1998, p. 43; Melder and Cooper 2015, p. 75).

The best available scientific information indicates that the structure of the open-canopy pine forest occupied by pinesnakes is important, despite some pinesnakes having found outside of longleaf pine forests. These studies also support the need for open-canopy pine forest with a well-developed herbaceous ground cover. The species has been collected in fields devoid of trees and trapped in areas with newly planted trees, suggesting that very open canopy conditions are preferred. The vast majority of records for the species come from pine forests, with only a few records from non-forested fields. The best scientific information available indicates that the Louisiana pinesnake can use some treeless areas, but there is no evidence that those areas are preferred over, or good substitutes for, open-canopy pine forest habitat as described in the rule.

(29) Comment: Commenters stated that the Service's data and information were not sufficient to proceed with a listing of the Louisiana pinesnake. Commenters noted the lack of critical information needed to assess the species' status and population trends, such as demographic data, rangewide surveys, and population estimates. Several others contended that population estimates are inaccurate and likely too low because Louisiana pinesnakes are difficult to locate, noting their tendency to remain below ground most of the time, and that trapping efforts are limited in scope across the animal's range.

Our Response: It is often the case that data are limited for rare species, and we acknowledge that it would be useful to have more information on the Louisiana pinesnake. However, as required by section 4 of the Act, we are required to base our determination on the best available scientific and commercial information at the time of our rulemaking. No new or alternative data were offered by any commenters that resulted in a change to our determination that the Louisiana pinesnake should be listed as threatened under the Act.

(30) Comment: Several commenters stated that the peer review of the proposed rule is flawed because the reviewers are not really independent because the proposed rule relies on some of their research.

Our Response: The Act and our regulations require us to use the ''best scientific data available'' in a listing decision. Further, in making our listing decisions, we use information from many different sources, including articles in peer-reviewed journals, scientific status surveys and studies completed by qualified individuals, other unpublished governmental and nongovernmental reports, reports prepared by industry, personal communication about management or other relevant topics, management plans developed by Federal agencies or the States, biological assessments, other unpublished materials, experts' opinions or personal knowledge, and other sources, including expert opinions of subject biologists.

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited peer review from knowledgeable individuals with scientific expertise that included familiarity with this species and other pinesnakes, the geographic region in which the species occurs, and conservation biology principles.

(31) Comment: Several commenters indicated the Service should consider the economic costs to the public when making a determination to Federally list a species.

Our Response: Section 4(a)(1) of the Act specifies that the determination of whether any species is an endangered species or a threatened species is based solely on the five factors A through E (see Executive Summary, basis of findings) none of which include economics. Therefore, the Service is precluded from considering such potential costs in association with a listing determination.

(32) Comment: Several commenters indicated there should be economic incentives or private landowners should be compensated if land use is restricted on their property due to listing of a threatened or endangered species.

Our Response: There is no provision in the Act to compensate landowners if they have a federally listed species on their property. However, the landowners' only obligation is not to ''take'' the species. We encourage any landowners that may have a listed species on their properties, and who think they may conduct activities that negatively impact that species, to work with the Service. The Service's Partners for Fish and Wildlife Program and various programs administered by the Natural Resources Conservation Service may provide financial assistance to eligible landowners who implement

management activities that benefit the habitat for a listed species, including the Louisiana pinesnake. Private landowners may contact their local Service field office to obtain information about these programs and permits.

(33) Comment: Some commenters stated that the Service rushed to list the Louisiana pinesnake because of a lawsuit settlement.

Our Response: The status of the Louisiana pinesnake has been under consideration by the Service for almost two decades. The Louisiana pinesnake was added to the candidate list of species in 1999, during which time the scientific literature and data indicated that the species was detrimentally impacted by ongoing threats. At that time, we determined that the Louisiana pinesnake warranted listing under the Act, but listing was precluded by the necessity to commit limited funds and staff to complete higher priority listing actions. We continued to find that listing was warranted but precluded through subsequent annual Candidate Notices of Review. On July 12, 2011, the Service filed a multiyear workplan as part of a settlement agreement with the Center for Biological Diversity and others, in a consolidated case in the U.S. District Court for the District of Columbia. A settlement agreement (Endangered Species Act Section 4 Deadline Litigation, No. 10–377 (EGS), MDL Docket No. 2165 (D.D.C. May 10, 2011)) was approved by the court on September 9, 2011. The settlement enabled the Service to systematically, over a period of 6 years, review and address the needs of more than 250 candidate species, including the Louisiana pinesnake, to determine if they should be added to the Federal Lists of Endangered and Threatened Wildlife and Plants. Our review of the Louisiana pinesnake was one of the last species addressed under this settlement agreement. Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. Notwithstanding the settlement agreement and its requirements, we also adhered to the requirements of the Act and its implementing regulations to determine whether the Louisiana pinesnake warrants listing, based on our assessment of the five-factor threats analysis using the best available scientific and commercial data.

(34) Comment: Commenters representing the captive-breeding community voiced concern over the impact of the listing to pet owners, many of whom indicated a willingness to contribute to Louisiana pinesnake conservation, work of researchers, and zoological institutions. Some questioned the need for Federal protection, citing the existing State regulations in Texas and Louisiana. Some specifically requested that captive-bred animals be excluded from the listing or exempted through a rule under section 4(d) of the Act to allow unfettered continuation of captive breeding, pet ownership, and trade.

Our Response: Louisiana pinesnakes acquired before the effective date of the final listing of this species (see **DATES**, above) may be legally held and bred in captivity as long as laws regarding this activity within the State in which they are held are not violated. This would include snakes acquired prior to the effective date of this listing by pet owners, researchers, and zoological institutions. Future sale or other use of captive-bred Louisiana pinesnakes, born from pre-listing acquired parents, within the State of their origin would be regulated by applicable laws of that State. If individuals outside a snake's State of origin wish to purchase captive-bred snakes, they would have to first acquire a section 10(a)(1)(A) Interstate Commerce permit from the Service (website: *http://www.fws.gov/forms/3-200-55.pdf*).

(35) Comment: Several commenters stated that the Louisiana pinesnake is closely associated with Baird's pocket gopher, which serves it as prey and a provider of shelter via its underground burrows. They contend that because the gopher is abundant and not declining, the Louisiana pinesnake is not at risk. Other commenters also suggested that not enough is known about the pocket gopher population to know how it might affect the Louisiana pinesnake.

Our Response: The Baird's pocket gopher is likely abundant and has a relatively large range (greater than the Louisiana pinesnake); however, the Louisiana pinesnake is currently known from only six relatively small isolated areas, a small subset of the overall Baird's pocket gopher range. Within those areas, the amount of suitable habitat for pocket gophers and Louisiana pinesnakes is limited even further. The abundance of the pocket gopher is only important to the Louisiana pinesnake in those local areas where the pocket gopher is available as prey and where its burrows provide refugia. Like other animals, pocket gopher populations can become locally scarce due to local adverse habitat conditions while simultaneously remaining abundant on a rangewide scale. Therefore, the rangewide abundance of the pocket gopher does not predict their abundance in other localized areas, including those known to be occupied by the Louisiana pinesnake.

(36) Comment: Several commenters indicated the species is already protected by State laws, and as such should not be listed under the Act (or that listing under the Act should not be necessary).

Our Response: Section 4(b)(1)(A) of the Act requires us, in making a listing determination, to take into account those efforts being made by States or foreign nations, or any political subdivision thereof, to protect the species. As part of our analysis, we consider relevant Federal, State, and tribal laws and regulations. Regulatory mechanisms may negate the need for listing if we determine such mechanisms address the threats to the species such that listing is not, or no longer, warranted. However, for the Louisiana pinesnake, the best available information supports our determination that State regulations are not adequate to remove the threats to the point that listing is not warranted. Existing State regulations, while providing some protection for individual snakes, do not provide any protection for their habitat (see Factors Affecting the Species, *Factor D* discussion). Loss, degradation, and fragmentation of habitat has been a primary driver of the species' decline. The Act provides protections for listed species and their habitats both through sections 7 and 10 of the Act, and the designation of critical habitat. In addition, listing provides resources under Federal programs to facilitate restoration of habitat, and helps bring public awareness to the plight of the species.

(37) Comment: Several commenters indicated that activities that may violate section 9 of the ESA are too broadly written and may encompass forest management activities that would not meet the regulatory definition of ''harm'' because they would not significantly impair essential behaviors. For harm to occur it must be proven that there is or will be death or actual injury to an identifiable member of the species that is proximately caused by the action in question.

Our Response: The term ''take'' is defined by the ESA to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. ''Harass'' is further defined by the Service to mean an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which

include, but are not limited to, breeding, feeding, or sheltering. ''Harm'' is further defined by the Service to mean an act which actually kills or injures wildlife, and such acts may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering.

The Service understands the concern of forest owners and managers regarding forest management activities that may potentially violate section 9 of the ESA. However, the Service did specify that ''*unauthorized* destruction or modification of suitable occupied Louisiana pinesnake habitat'' may potentially result in a violation. That statement may appear broad, but it covers activities in addition to forest management, such as conversion of suitable forest habitat to agriculture or other land use. If forest management activities would neither result in a significant disruption of normal behavior patterns (*i.e.,* harass) nor impair essential behavior patterns (*i.e.,* harm), then those activities would not violate section 9 of the ESA. The Service is committed to working with landowners and land managers to help them determine whether any forest management activities would potentially rise to the level of ''harass'' or ''harm'' of the Louisiana pinesnake in occupied habitat and, if so, whether a habitat conservation plan or safe harbor agreement may be appropriate for their needs.

(38) Comment: Several commenters stated that reintroduction should be done on public lands only, and private landowners in the immediate area should be notified.

Our Response: Reintroduction, with improved success, done in multiple populations where appropriate habitat is available, has the potential to eventually increase the number of individuals and populations, increase genetic heterozygosity, and alleviate presumed inbreeding depression in the populations, making them more resistant to threats described under *Factor E.* An informal committee was established to oversee and conduct an experimental reintroduction of the Louisiana pinesnake on public land in an attempt to demonstrate the feasibility of reintroducing a population using individuals from a captive population, and establishment of a viable population in restored habitat. As discussed under *Population Estimates and Status,* the resulting efforts to reintroduce Louisiana pinesnakes have been conducted only at the Kisatchie National Forest (KNF) Catahoula District site. So far, there have been no other attempts to augment existing populations of Louisiana pinesnakes with captive-bred individuals. The Service is committed to working with the appropriate Federal, State, and local partners, as well as private entities, to identify additional, appropriate reintroduction sites, and ensure that if such reintroductions occur, they are only conducted on lands with willing landowners and adjacent landowners are notified.

(39) Comment: Several commenters stated that they thought critical habitat, if necessary, should be designated on public land only.

Our Response: Critical habitat has been determined to be prudent but not determinable at this time. See Critical Habitat, below.

(40) Comment: Two commenters stated that there is debate among the scientific community concerning the validity of the taxonomic classification of the Louisiana pinesnake as a distinct species.

Our Response: We concluded that the species is a valid taxon (See *Species Description and Taxonomy* section in the proposed rule) based in part on Reichling (1995) and Rodriguez-Robles and Jesus-Escobar (2000) which concluded the same. The classification of the Louisiana pinesnake with the species name *Pituophis ruthveni* is recognized by Crother (2000) and accepted by the Society for the Study of Amphibians and Reptiles, the American Society of Ichthyologists and Herpetologists, and the Herpetologists League. That classification, while recognized as not unequivocally supported by the available data by the ICUN, is also adopted by the ICUN's own database. Some researchers (*e.g.,* Ernst and Ernst [2003]) may treat *ruthveni* as a subspecies of *Pituophis catenifer,* but it should be noted that subspecies can also be listed under the Act and afforded the same protections as a full species.

(41) Comment: One commenter stated that the Service had not provided relevant data about the Louisiana pinesnake to the public for review.

Our Response: Consistent with a 2016 Director's Memorandum, ''Information Disclosure Policy for ESA Rulemakings,'' we post all cited literature that is used in rulemaking decisions under the Act, and that is not already publicly available, on *Regulations.gov* concurrent with the **Federal Register** publication. Where cited references or literature used in the rulemaking process are not published and readily available to the public, (such as with grey literature, information from States, or other unpublished resources), we will post those documents on *Regulations.gov*. Documents that can already be accessed online by the public, either through purchase or for free, do not need to be uploaded onto *http://www.regulations.gov*. Any such information, documents, data, grey literature, or other information that we cite in our rulemaking will be posted and made available at the time of publication of the rule. In addition, as noted above, comments and materials we received, as well as supporting documentation we used in preparing this rule, will be available by appointment, during normal business hours at: U.S. Fish and Wildlife Service, Louisiana Ecological Services Office, 646 Cajundome Boulevard, Suite 400.

Summary of Changes From the Proposed Rule

This final rule incorporates minor changes to our proposed rule based on the comments we received, as discussed above in the Summary of Comments and Recommendations, and newly available survey information. Many small, nonsubstantive changes and corrections were made throughout the document in response to comments (*e.g.,* updating the Background section, threats, and minor clarifications). However, the information we received in response to the proposed rule did not change our determination that the Louisiana pinesnake is a threatened species. Below is a summary of substantive changes made to the final rule:

- Additional information on habitat from recent studies (Wagner et al., 2016) was added to include forb species as part of the preferred ground-layer herbaceous vegetation. In addition, we added that snakes appeared to select areas based on the diameter at breast high (dbh) (>25 cm dbh) trees, rather than the number of trees per plot.
- Updated occurrence records and individuals of Louisiana pinesnakes from the USFS to include a total 291 verified occurrence records of 251 individual Louisiana pinesnakes from 1927 through November 1, 2017 (excluding reintroductions), all from Louisiana and Texas. In addition, Louisiana pinesnake trapping across the species' entire range from 1992 through November 1, 2017, has resulted in 113 unique individual captures during 451,501 trap days (1:4,220 trap success) (Pierce 2017, pers. comm.; Pierce 2016a, pers. comm.)
- Updated information related to trapping efforts to include data from 1992–2017 throughout the historical range of the Louisiana pinesnake, which

has resulted in 116 unique (*i.e.,* new or first capture) individual captures.

- Updated trap success rate at Bienville EOHA, which is 61,091 ac (24,722.6 ha), with a trap success rate of 1:1,133.1 (Pierce 2017, pers. comm.; Pierce 2016a, pers. comm.).
- Updated the number of trap days and survey years on the Kisatchie District of the KNF to read that no Louisiana pinesnakes were captured during 13,372 trap days (1995 to 2003).
- Revised captive-breeding release information to include 91 captive-bred Louisiana pinesnakes released into the wild at the Catahoula Ranger District of the KNF (Pierce 2017, pers. comm.)
- Updated detection information released snakes through monitoring of deployed Automated PIT Tag Recorders and trapping.
- Updated Factor C disease discussion paragraph to include new disease information.

Background

Please refer to the proposed listing rule for the Louisiana pinesnake (81 FR 69454, October 16, 2016) for a full summary of species information. We also present new information published or obtained since the proposed rule was published (see also Summary of Changes from the Proposed Rule, above).

Species Description and Taxonomy

Pinesnakes (genus *Pituophis*) are large, short-tailed, non-venomous, powerful constricting snakes with keeled scales and disproportionately small heads (Conant and Collins 1991, pp. 201–202). Their snouts are pointed, and they have a large scale on the tip of their snout presumably contributing to the snakes' good burrowing ability. The Louisiana pinesnake (*P. ruthveni*) has a buff to yellowish background color with dark brown to russet dorsal blotches covering its total length (Vandeventer and Young 1989, p. 35; Conant and Collins 1991, p. 203). The belly of the Louisiana pinesnake ranges from unmarked to boldly patterned with black markings. It is variable in both coloration and pattern, but a characteristic feature is that the body markings on its back are always conspicuously different at opposite ends of its body. Blotches run together near the head, often obscuring the background color, and then become more separate and well-defined towards the tail. Typical head markings include dark spots on top, dark suture marks on the labial (lip) scales, head markings, although rarely, and a dark band or stripe may occur behind the eye (Boundy and Carr 2017, p. 335). The length of typical adult Louisiana pinesnakes ranges from 48 to 56 inches (in) (122 to 142 centimeters (cm)) (Conant and Collins 1991, p. 203).

Habitat

Louisiana pinesnakes are known from and associated with a disjunct portion of the historical longleaf-dominated pine ecosystem that existed in west-central Louisiana and east Texas (Reichling 1995, p. 186). Longleaf pine forests are dominated by longleaf, but may also contain other overstory species such as loblolly and shortleaf pine and sparse hardwoods. They have a species-rich herpetofaunal community and harbor many species that are specialists of the longleaf pine habitat (Guyer and Bailey 1993, p. 142). Louisiana pinesnake habitat generally consists of sandy, well-drained soils in open-canopy pine forest, which may include species such as longleaf, shortleaf, slash, or loblolly pines with a sparse midstory, and well-developed herbaceous ground cover dominated by grasses and forbs (Young and Vandeventer 1988, p. 204; Rudolph and Burgdorf 1997, p. 117). The vast majority of natural longleaf pine habitat has been lost or degraded due to conversion to extensive pine plantations and suppression of the historical fire regime. As a result, current Louisiana pinesnake habitat occurs within smaller, isolated patches of longleaf forest and other open forest with well-developed herbaceous ground cover.

Abundant ground-layer herbaceous vegetation, especially forb species, (Wagner et al. 2016, p. 11) is important for the Louisiana pinesnake's primary prey, the Baird's pocket gopher which constitutes 75 percent of the Louisiana pinesnake's estimated total prey biomass (Rudolph et al 2012, p. 243). Baird's pocket gophers feed on various parts of a variety of herbaceous plant species (Pennoyer 1932, pp. 128–129; Sulentich et al. 1991, p. 3). Pocket gopher abundance is associated with a low density of trees, an open canopy, and a small amount of woody vegetation cover, which allow greater sunlight and more herbaceous forage for pocket gophers (Himes 1998, p. 43; Wagner et al. 2016, p. 11).

Baird's pocket gophers also create the burrow systems in which Louisiana pinesnakes are most frequently found (Rudolph and Conner 1996, p. 2; Rudolph and Burgdorf 1997, p. 117; Himes 1998, p. 42; Rudolph et al. 1998, p. 146; Rudolph et al. 2002, p. 62; Himes et al. 2006, p. 107), and the snakes use these burrow systems as nocturnal refugia and hibernacula, and to escape from fire (Rudolph and Burgdorf 1997, p. 117; Rudolph et al. 1998, p. 147; Ealy et al. 2004, p. 386; Rudolph et al. 2007 p. 561; Pierce et al. 2014, p. 140). Most Louisiana pinesnake relocations have been underground in pocket gopher burrow systems (Ealy et al. 2004, p. 389; Himes et al. 2006, p. 107). In Louisiana, habitat selection by Louisiana pinesnakes seems to be determined by the abundance and distribution of pocket gophers and their burrow systems (Rudolph and Burgdorf 1997, p. 117). Active Louisiana pinesnakes occasionally use debris, logs, and low vegetation as temporary surface shelters (Rudolph and Burgdorf 1997, p. 117; Himes 1998, p. 26; Ealy et al. 2004, p. 386); however, most Louisiana pinesnakes disturbed on the surface retreat to nearby burrows (Rudolph and Burgdorf 1997, p. 117). Louisiana pinesnakes also minimally use decayed or burned stumps, or nine-banded armadillo (*Dasypus novemcinctus*) burrows as underground refugia (Ealy et al. 2004, p. 389).

Baird's pocket gophers appear to prefer well-drained, sandy soils with low clay content in the topsoil (Davis et al. 1938, p. 414). Whether by choice for burrowing efficiency or in pursuit of Baird's pocket gophers (or likely both), Louisiana pinesnakes also occur most often in sandy soils (Wagner et al. 2014, p. 152). In addition to suitable forest structure and herbaceous vegetation, specific soil characteristics are an important determinant of Louisiana pinesnake inhabitance (Wagner et al. 2014, entire). The snakes prefer soils with high sand content and a low water table (Wagner et al. 2014, p. 152).

In one study, Louisiana pinesnakes were found most frequently in pine forests (56 percent), followed by pine plantation (23 percent) and clear-cuts (9 percent). Across all sites including pine plantation, snakes appeared to select areas with fewer large (>25 cm dbh) trees. Preferred sites had less canopy closure and more light penetration, which supports increased understory vegetation growth and therefore more pocket gophers (Himes et al. 2006, pp. 108–110; 113), regardless of the type of wooded land. A 2-year (2004–2005) trapping study was conducted at three locations: two were mixed long leaf/loblolly pine stands being managed specifically for Louisiana pinesnake habitat, and one was a loblolly pine plantation managed for fiber tree production. Using an equal number of traps at each location, Reichling et al. (2008, p. 4) found the same number of Louisiana pinesnakes in the pine plantation (n = 2) as one of the mixed-pine stands managed for Louisiana pinesnake (n = 2); however,

the greatest number of snakes was found in the second mixed-pine stand managed for Louisiana pinesnake (n = 8). In addition, the snakes found in pine plantation conditions appeared thin or emaciated (indicating they probably had not fed recently), and were not recaptured in that habitat, which may indicate they were moving through these sites (Reichling et al. 2008, pp. 9, 14).

Life History

Louisiana pinesnakes appear to be most active March through May and September through November (especially November), and least active December through February and during the summer (especially August) (Himes 1998, p. 12). During the winter, Louisiana pinesnakes use Baird's pocket gopher burrows as hibernacula (Rudolph et al. 2007 p. 561; Pierce et al. 2014, p. 140). The species does not use burrows communally, and they does not exhibit fidelity to hibernacula sites in successive years (Pierce et al. 2014, pp. 140, 142). Louisiana pinesnakes observed in east Texas appear to be semi-fossorial and diurnal, and also moved relatively small distances (Ealy et al. 2004, p. 391). In one study, they spent, on average, 59 percent of daylight hours (sunrise to sunset) below ground, and moved an average of 541 ft (163 m) per day (Ealy et al. 2004, p. 390).

Summary of Biological Status and Threats

Historical and Current Distribution

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. Most of the sandy, longleaf-pine-dominated savannahs historically inhabited by the Louisiana pinesnake had been lost by the mid-1930s (Bridges and Orzell 1989, p. 246; Frost 1993, p. 30). 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 USFS has compiled and maintains a database of all known Louisiana pinesnake locations (excluding telemetry data). According to that database, 291 occurrence records of 251 individual Louisiana pinesnakes have been verified from 1927 through November 1, 2017 (excluding reintroductions), all from Louisiana and Texas (Pierce 2015, unpub. data). By comparison, for the Florida pinesnake (*Pituophis melanoleucus mugitus*), a species with a four-state range (Ernst and Ernst 2003, p. 281), has 874 records of occurrence through 2015 in the Florida alone (Enge 2016, pers. comm.). Approximately 395 records of occurrence exist for the black pinesnake (*Pituophis melanoleucus lodingi*), a species listed as threatened, throughout its range since 1932 (Hinderliter 2016, pers. comm.).

The Louisiana pinesnake records database is continually updated and corrected based on the latest information and analysis of record quality, and thus the number of verified records may change over time.

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Figure 1. Current and Historic Range of Louisiana Pinesnake

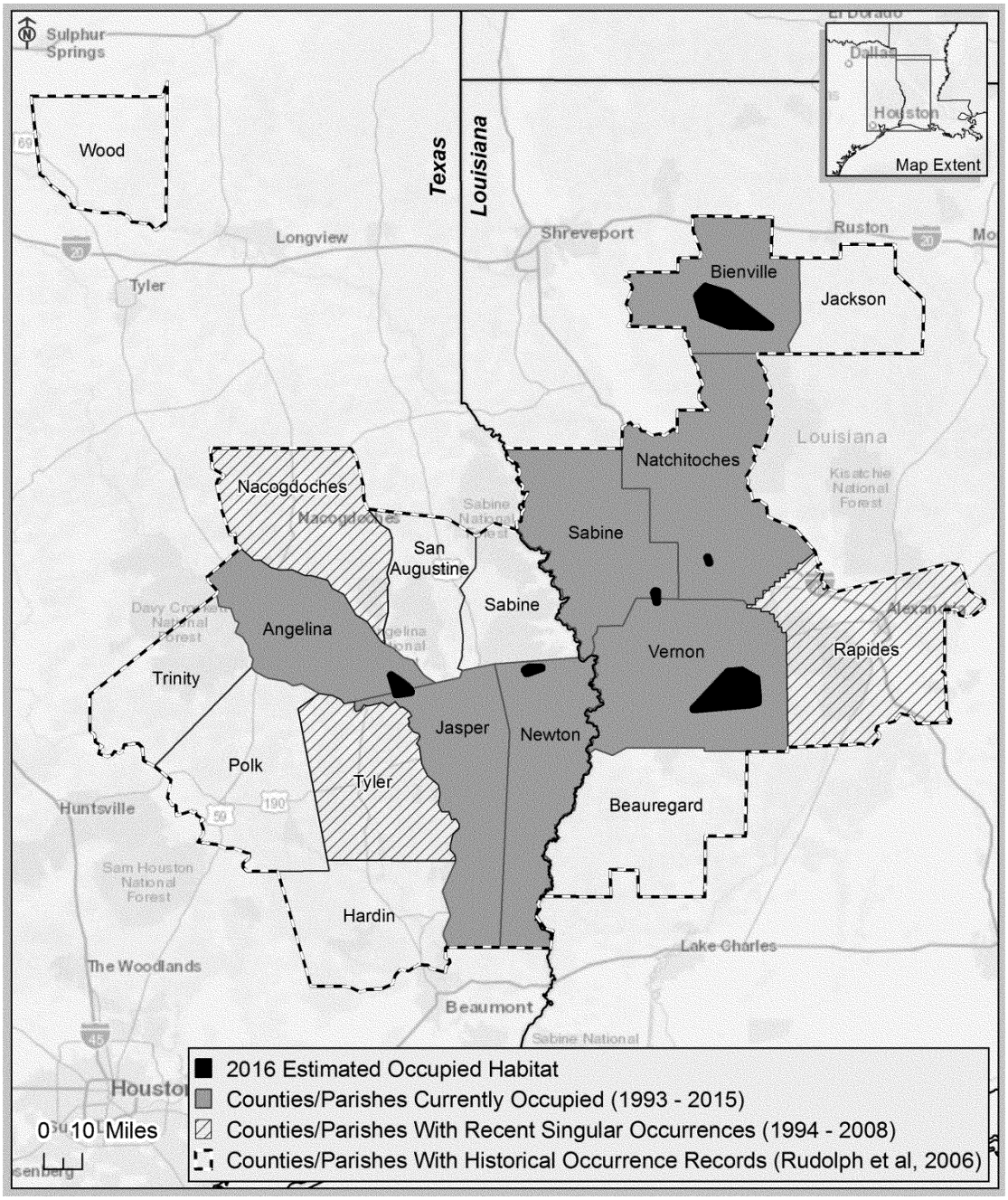
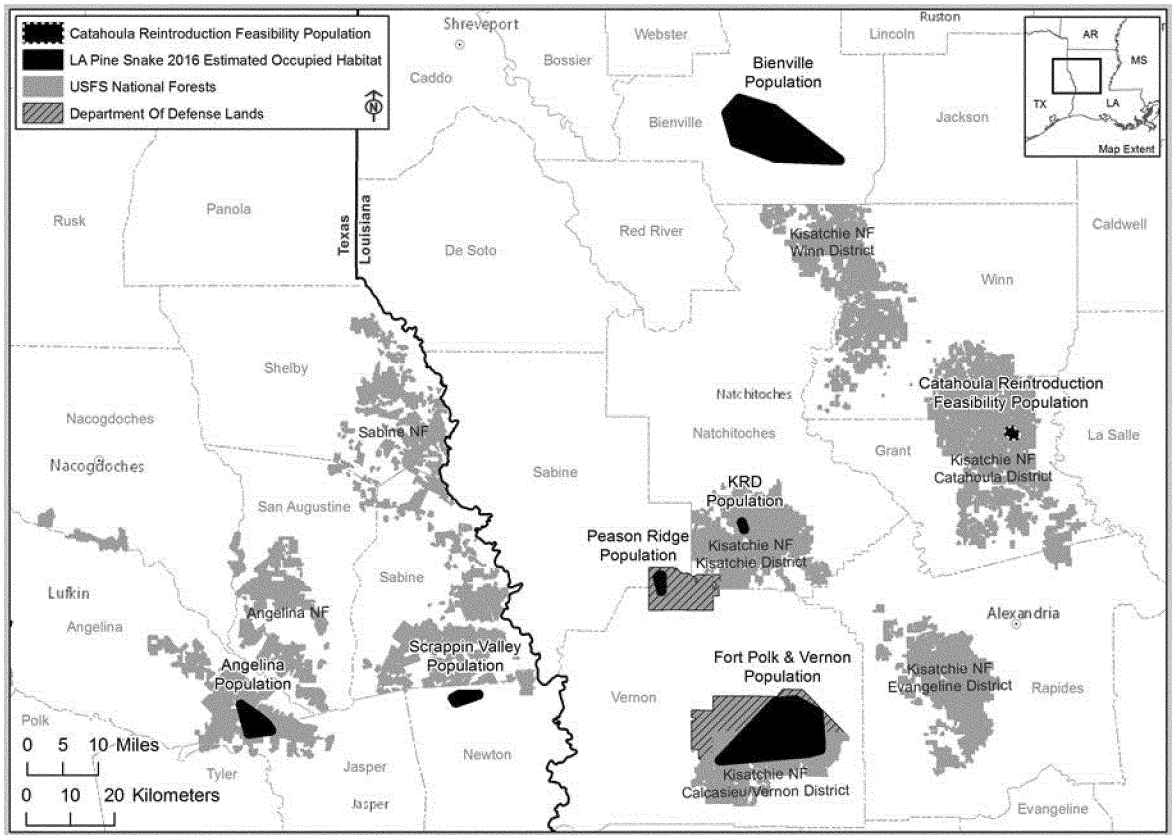


Figure 2: Estimated Occupied Habitat Areas for Louisiana Pinesnake 2016



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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).

TABLE 1—LAND OWNERSHIP IN ACRES (HECTARES) OF ESTIMATED OCCUPIED HABITAT AREAS (EOHAS) FOR LOUISIANA PINESNAKE AS DETERMINED FOR 2016 ACCORDING TO LOCATION RECORDS THROUGH 2015

[Totals may not sum due to rounding]

State	Estimated occupied habitat area	U.S. Forest Service	Department of Defense	State and municipal	Private	Total for estimated occupied habitat area
Louisiana	Bienville	0 (0)	0 (0)	363.7 (147.2)	60,727.2 (24,575.5)	61,090.9 (24,722.6)
	Kisatchie	1,598.8 (647.0)	0 (0)	0 (0)	0 (0)	1,598.8 (647.0)
	Peason Ridge	0 (0)	3,147.3 (1,273.7)	0 (0)	0 (0)	3,147.3 (1,273.7)
	Fort Polk/Vernon	34,164.7 (13,826.0)	27,601.3 (11,169.8)	0 (0)	222.6 (90.1)	61,988.7 (25,085.9)
	Catahoula Reintroduction	1,828.5 (739.9)	0 (0)	0 (0)	0 (0)	1,828.5 (739.9)
Louisiana Total		37,592.0 (15,213.0)	30,748.5 (12,443.5)	363.7 (147.2)	60,949.9 (24,665.6)	129,654.1 (52,469.2)
Texas	Scrappin' Valley	0 (0)	0 (0)	21.3 (8.6)	5,036.5 (2,038.2)	5,057.8 (2,046.8)
	Angelina	9,509.3 (3,848.3)	3.3 (1.4)	114.7 (46.4)	1,338.6 (541.7)	10,965.8 (4,437.7)
Texas Total		9,509.3 (3,848.3)	3.3 (1.4)	136.0 (55.1)	6,375.0 (2,579.9)	16,023.6 (6,484.5)
Total Ownership		47,101.3 (19,061.3)	30,751.9 (12,444.8)	499.7 (202.2)	67,324.9 (27,245.4)	145,677.7 (58,953.7)

Population Estimates and Status

The Louisiana pinesnake is one of the rarest snakes in North America (Young and Vandeventer 1988, p. 203; Himes et al. 2006, p. 114). It was classified in 2007 as endangered on the IUCN's Red List of Threatened Species (version 3.1; *http://www.iucnredlist.org/*).

Most Louisiana pinesnake records used to approximately delineate occupied habitat were acquired by trapping. Louisiana pinesnake trapping across the species' entire range from 1992 through November 1, 2017, has resulted in 113 unique individual captures during 451,501 trap days. This amount of effort amounts to a 1:4,220 trap success, which is a very low level of trapping success compared to other pinesnake species (Pierce 2017, pers. comm.; Pierce 2016a, pers. comm.). For instance, a Florida pinesnake trapping effort using similar drift-fence trapping methods in one 30,000-ac (12,141-ha) section of the species' range captured 87 unique individuals during 50,960 trap

days (1:585.7 trap success) over a 13-year period from 2003 to 2015 (Smith 2016b, pers. comm.). The Louisiana pinesnake site with the greatest long-term trap success by far, the Bienville EOHA, which is 61,091 ac (24,722.6 ha), has a trap success rate of 1:1,133.

Catahoula Reintroduction Feasibility EOHA

An informal committee was established to oversee and conduct an experimental reintroduction of the Louisiana pinesnake in an attempt to evaluate the feasibility of using individuals from a captive population to establish a viable population in restored habitat. To date, 91 captive-breed Louisiana pinesnakes have been released into the wild at the Catahoula Ranger District of the KNF.

Captive-Breeding Population

The captive Louisiana pinesnake zoo population established in 1984 was initially maintained through wild collection. The AZA Species Survival Plan (SSP) for the Louisiana pinesnake was implemented in 2000, to manage the zoo population (Reichling et al., in litt. 2015, p. 1). The goals of the SSP are to: Maintain an assurance colony for wild Louisiana pinesnake populations, preserve or increase genetic heterozygosity into the future, preserve representative genetic integrity of wild populations, and provide individuals as needed for research and repopulation for the conservation of wild populations (Service 2013, pp. 32–33).

As of November 2017, the captive-breeding Louisiana pinesnake population consists of 191 individuals at 13 institutions (Reichling 2017, pers. comm.; Foster 2017a pers. comm.). Except for a downturn between about 2001 and 2005, hatching success has steadily increased since about 1987 (Reichling 2017, pers. comm.), especially in the last 2 years: the number of hatchlings produced in 2017 increased nearly 50 percent over the number of hatchlings produced in 2016 (Foster 2017b, pers. comm.).

Summary of Factors Affecting the Species

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, we may list a species based on (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination. In this section, we summarize the biological condition of the species and its resources, and the influences of the listing factors on them, to assess the species' overall viability and the risks to that viability.

Factor A: The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Both the quantity and quality of the natural longleaf pine ecosystem, the primary historical habitat of the Louisiana pinesnake, have declined sharply in Louisiana and Texas since European settlement. The loss, degradation, and fragmentation of the longleaf pine dominant ecosystem was historically caused by logging, turpentining, fire suppression, alteration of fire seasonality and periodicity, conversion to generally offsite pine species plantations, agriculture, and free-range hogs (Frost 1993, pp. 24–30, 31, 35). Virtually all virgin timber in the southern United States was cut during intensive logging from 1870 to 1920 (Frost 1993, p. 30). Only about 2.9 percent of longleaf pine forests in Louisiana and Texas were uncut old-growth stands in 1935 (Bridges and Orzell 1989, p. 246). During the latter half of the 20th century, Louisiana, Alabama, and Mississippi lost between 60 and 90 percent of their already reduced longleaf acreage (Outcalt and Sheffield 1996, pp. 1–10). By the late 1980s, the natural longleaf pine acreage in Louisiana and Texas was only about 15 and 8 percent, respectively, of what had existed in 1935 (Bridges and Orzell 1989, p. 246). Those longleaf pine forests were primarily converted to extensive monoculture pine plantations (Bridges and Orzell 1989, p. 246).

In short, the longleaf-dominant pine forest (longleaf pine forest type plus longleaf pine in mixed-species stands) in the southeastern United States declined approximately 96 percent from the historical estimate of 92 million ac (37 million ha) (Frost 1993, p. 20) to approximately 3.75 million ac (1.52 million ha) in 1990 (Guldin et al. 2016, p. 324). Since the 1990s, longleaf-pine-dominant forest acreage has been trending upward in parts of the Southeast through restoration efforts (Guldin et al. 2016, pp. 323–324). The longleaf-dominant pine forest stands had increased to approximately 4.3 million ac (1.7 million ha) by 2010 (Oswalt et al. 2012, p. 10; Guldin et al. 2016, pp. 323–324) and 4.7 million ac (2.8 million ha) in 2015 (America's Longleaf Restoration Initiative 2016, p. 12).

In general, overall forest land area in the southeastern United States is predicted to decline between 2 and 10 percent in the next 50 years (Wear and Greis 2013, p. 78). The projected losses of natural pine forest in the Southeast would occur mostly as a result of conversion to planted pine forests (Wear and Greis 2013, p. 79). For the southern Gulf region, model runs assuming worse case scenarios of high levels of urbanization and high timber prices predict large percentage losses in longleaf pine in some parishes and counties of Louisiana and Texas that were historically and that are currently occupied by the Louisiana pinesnake, while two Louisiana parishes in the current occupied range are expected to gain (less than the percent decline predicted in the other parishes and counties) in longleaf pine acreage (Klepzig et al. 2014, p. 53). The outer boundary or ''footprint'' of the longleaf pine ecosystem across its historical range has contracted as recently as the period of 1990 to 2010, with losses (primarily due to conversion to loblolly pine) in western Louisiana and eastern Texas (Oswalt et al. 2012, pp. 10–14).

Impacts from urbanization vary across the Southeast, with most population growth predicted to occur near major cities (Wear and Greis 2013, p. 21), which are generally not near known Louisiana pinesnake occurrences. However, the most recent assessment still predicts decreased use of land for forests (mainly due to urbanization) in the next 45 years in all of the parishes (Louisiana) and counties (Texas) historically and currently occupied by the species (Klepzig et al. 2014, pp. 21–23).

High-quality longleaf pine forest habitat, which is generally characterized by a high, open canopy and shallow litter and duff layers, is maintained by frequent, low-intensity fires, which in turn restrict a woody midstory and promote the flowering and seed production of fire-stimulated groundcover plants (Oswalt et al. 2012, pp. 2–3). The Louisiana pinesnake is historically associated with natural longleaf pine forests, which were maintained in good condition by natural processes and have the abundant herbaceous vegetation necessary to support the Louisiana pinesnake's primary prey, the Baird's pocket gopher (Himes 1998, p. 43; Sulentich et al. 1991, p. 3; Rudolph and Burgdorf 1997, p. 17). Areas managed with silvicultural practices for fiber production do not

allow sufficient herbaceous vegetation growth and are not adequate to support viable Louisiana pinesnake populations (Rudolph et al. 2006, p. 470). Indeed, further trapping at the same sites sampled in the Reichling et al. (2008) study from 2006 through 2016 has resulted in a 1:877.2 trap success rate and a 1:808.5 trap success rate for the first and second beneficially managed stands, respectively, and a 1:2,744.0 trap success rate for the plantation site (Pierce 2017, unpub. data).

Existing and Planned Conservation Efforts: As early as the 1980s, forest restoration and management had been implemented on Fort Polk, Peason Ridge, and adjacent USFS lands to restore and maintain conditions of widely spaced trees, clear of dense midstory growth (U.S. Department of the Army 2014, p. 21). Management occurred for training suitability and red-cockaded woodpecker habitat, and most recently for Louisiana pinesnake habitat. The requirements for those three objectives happen to have significant overlap, especially the maintenance of open-canopy pine forest. Most forest management beneficial to the Louisiana pinesnake to date has been performed primarily for the benefit of the red-cockaded woodpecker.

USFS has implemented habitat restoration and management for many years on Sabine National Forest (SNF), Angelina National Forest (ANF), and KNF to benefit the red-cockaded woodpecker, as provided for in its land and resource management plans (USFS 1996, pp. 107–134; USFS 1999, pp. 2–61 to 2–73). In 2003, a candidate conservation agreement (CCA) for the Louisiana pinesnake, which includes the Service, USFS, DOD, Texas Parks and Wildlife Department (TPWD), and Louisiana Department of Wildlife and Fisheries (LDWF), was completed. Targeted conservation actions are currently being implemented as part of that agreement. The CCA identifies and establishes beneficial habitat management actions for the Louisiana pinesnake on Federal lands in Louisiana and Texas, and provides a means for the partnering agencies to work cooperatively on projects that avoid and minimize impacts to the species. The CCA also set up mechanisms to exchange information on successful management practices and coordinate research efforts. SNF (Sabine Louisiana pinesnake population considered extirpated since 2014) and ANF in Texas, and KNF and Fort Polk in Louisiana, agreed in the CCA to continue or start new stem thinning and prescribed burning operations in sections of upland pine forests and, where possible, to convert forests to longleaf pine (CCA 2003, pp. 12–16).

Since completion of the CCA, beneficial forest management activities conducted by USFS and Fort Polk now formally include conservation of the Louisiana pinesnake. Removing some trees from a dense stand with heavy canopy cover allows more light to reach the ground, which can promote the growth of herbaceous vegetation, an important food source for the primary prey of the Louisiana pinesnake. Prescribed burning helps to control midstory cover, particularly hardwood species that compete with pine seedlings and reduce light penetration. Converting forests to longleaf pine is helpful because longleaf pine is better adapted to fire (and tolerates it at an earlier age) than other pine species and, therefore, is generally easier to manage with prescribed fire over multiple rotations. Historically, Louisiana pinesnakes were predominantly found in longleaf pine forests, and that forest type was historically the dominant type in the areas that now make up the KNF, ANF, and Fort Polk.

The CCA was revised in 2013, and now also includes the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) and the AZA as cooperators (Service 2013, pp. 7–8). That agreement updates, supersedes, and improves upon the 2003 CCA, and uses significant new information from research, threats assessments, and habitat modeling that was not available in 2003 to focus conservation actions, including beneficial forest management, in areas with the best potential to become suitable habitat for the Louisiana pinesnake. Those areas are called habitat management units (HMUs), which were delineated based on existing red-cockaded woodpecker habitat management areas in upland pine forests. Those areas were further defined by the location of preferable and suitable soils (LRSF Model) for the Louisiana pinesnake in order to dedicate resources to areas the species is most likely to inhabit. The CCA also includes guidance on practices to reduce impacts to Louisiana pinesnakes from vehicles on improved roads and off-road all-terrain vehicle (ATV) trails (see ''Conservation Efforts to Reduce Threats Under Factor E,'' below).

Thousands of acres of forests on Federal lands have been treated over many years (beginning well before the CCA) with prescribed burning, and that treatment along with tree thinning continues to the present. The following tables summarize recent forest management activities on Federal lands where Louisiana pinesnake populations occur. Values have been rounded to the nearest acre.

TABLE 2—ACRES (HECTARES) OF PRESCRIBED BURNING AND THINNING CONDUCTED IN THE KISATCHIE RANGER DISTRICT OF THE KNF (KISATCHIE POPULATION) WITHIN THE 2014 DELINEATED EOHA (1,599 TOTAL ac [647 ha]) AND THE LARGER SURROUNDING HMU (36,114 TOTAL ac [14,615 ha])

Area	Prescribed burning 2015	Prescribed burning 2013–2015	Stocking reduction (thinning) 2015
EOHA	963 (390)	1,980 (801)	0 (0)
HMU	4,285 (1,734)	24,893 (10,074)	193 (78)

TABLE 3—ACRES (ha) OF PRESCRIBED BURNING AND THINNING CONDUCTED IN THE VERNON UNIT OF THE KNF (FORT POLK/VERNON POPULATION) WITHIN THE 2014 DELINEATED EOHA (34,487 TOTAL ACRES [13,956 ha]) AND THE LARGER SURROUNDING HMU (61,387 TOTAL ACRES [24,842 ha])

Area	Prescribed burning 2015	Prescribed burning 2013–2015	Stocking Reduction (thinning) 2015
EOHA	12,670 (5,127)	43,281 (17,515)	1,541 (624)

TABLE 4—ACRES (ha) OF PRESCRIBED BURNING AND THINNING CONDUCTED AT FORT POLK (FORT POLK/VERNON POPULATION) WITHIN THE 2014 DELINEATED EOHA (27,502 TOTAL ACRES [11,130 ha]) AND THE LARGER SURROUNDING HMU (29,037 TOTAL ACRES [11,751 ha])

Area	Prescribed burning 2015	Prescribed burning 2013–2015	Stocking reduction (thinning) 2015
EOHA	7,675 (3,106)	22,628 (9,157)	430 (174)
HMU	9,159 (3,707)	24,241 (9,810)	586 (237)

TABLE 5—ACRES (HECTARES) OF PRESCRIBED BURNING AND THINNING CONDUCTED AT PEASON RIDGE (PEASON RIDGE POPULATION) WITHIN THE 2014 DELINEATED EOHA (4,886 TOTAL ac [1,977 ha]) AND THE LARGER SURROUNDING HMU (11,265 TOTAL ac [4,559 ha])

Area	Prescribed burning 2015	Prescribed burning 2013–2015	Stocking reduction (thinning) 2015
EOHA	489 (198)	2,597 (1,051)	0 (0)
HMU	2,651 (1,073)	7,440 (3,011)	100 (40)

TABLE 6—ACRES (ha) OF PRESCRIBED BURNING AND THINNING CONDUCTED IN ANF (ANF POPULATION) WITHIN THE 2014 DELINEATED EOHA (10,966 TOTAL ac [4,438 ha]) AND THE LARGER SURROUNDING HMU (24,200 TOTAL ac [9,793 ha])

Area	Prescribed burning 2015	Prescribed burning 2013–2015	Stocking reduction (thinning) 2015
EOHA	2,735 (1,107)	10,179 (4,119)	0 (0)
HMU	6,702 (2,712)	18,940 (7,665)	0 (0)

TABLE 7—ACRES (HECTARES) OF PRESCRIBED BURNING AND THINNING CONDUCTED IN THE CATAHOULA RANGER DISTRICT KNF (CATAHOULA REINTRODUCTION FEASIBILITY POPULATION) WITHIN THE 2014 DELINEATED EOHA (1,828 TOTAL ac [740 ha]) AND THE LARGER SURROUNDING HMU (57,394 TOTAL ac [ha])

Area	Prescribed burning 2015	Prescribed burning 2011–2015	Stocking reduction (thinning) 2015
EOHA	784 (317)	784 (317)	0 (0)
HMU	8,279 (3,350)	40,419 (16,357)	231 (93)

Within the Bienville EOHA, the 851–ac (344–ha) Kepler Lake and 859–ac (348–ha) Sandylands Core Management Areas (CMAs) (approximately 2.8 percent of the EOHA) were voluntarily established by the landowners at the time to be managed for Louisiana pinesnake habitat. According to the current landowner (Cook 2016a, 2016b, pers. comm.), in the loblolly-longleaf pine mixed stands of the Kepler Lake and Sandylands CMAs, approximately 50 percent (430 ac (174 ha)) and 55 percent (475 ac (192 ha)), respectively, have been planted with longleaf pine beginning in 2001. Using a combination of supplemental funding sources (*e.g.,* Service Private Stewardship Grant, Western Gulf Coastal Plain Prescribed Burning Initiative), the present landowner has completed prescribed burning of hundreds of acres on the CMAs each year since 2000 (except in 2005, 2008, 2009, and 2012). Additionally, midstory (hardwood and shrub) control is achieved in the CMAs by application of herbicide in narrow bands alongside the planted trees instead of broadcast spraying, which limits damage of herbaceous vegetation.

Most of the 59,380 acres (24,030 ha) of timberlands surrounding the CMAs of the Bienville population are managed with intensive silvicultural practices that typically preclude continual, robust herbaceous vegetation growth. Reichling

et al. (2008, p. 10) did not believe that isolated management areas that were 800 to 1,000 ac (324 to 405 ha) or less in size were sufficient to support viable Louisiana pinesnake populations and therefore concluded the snakes in the Kepler Lake CMA were likely dependent upon the surrounding habitat. Consequently, Reichling et al. (2008, p. 10) felt that it was essential to the conservation of the species to restore and preserve the thousands of hectares of privately owned, upland, xeric habitat that surround the Kepler Lake CMA.

The 5,057.8–ac (2,046.8–ha) Scrappin' Valley EOHA is located at least partially within 11,000 acres (4,452 ha) of privately owned forested land referred to as Scrappin' Valley. That area was managed for game animals for decades (Reid 2016, pers. comm.), and one section (approximately 600 ac (243 ha)) was managed specifically for quail.

Prescribed burning was applied only to the 600–ac (243–ha) quail area annually and to another 1,500 ac (607 ha) at less frequent intervals. The remainder of the property was not beneficially managed for Louisiana pinesnake habitat. In 2012, the property was subdivided and sold as three separate properties of 1,900, 1,500, and 7,700 acres (769, 607, and 3,116 ha), respectively.

On the 1,900–ac (769-ha) property from 2013 to spring 2016, hundreds of acres (some acres burned multiple times) of longleaf-dominated pine forest occupied by the red-cockaded woodpecker or near red-cockaded woodpecker clusters were prescribed-burned each year; hardwood removal was conducted on 300 ac (121 ha); thinning by removal of loblolly and slash pine trees was conducted throughout the entire property; and 105 ac (42 ha) of longleaf pine restoration (removal of existing trees and planted with long leaf pine) was completed. The landowner is also currently working with The Nature Conservancy toward a perpetual conservation easement on 2,105 ac (852 ha) to protect habitat for the red-cockaded woodpecker and the Louisiana pinesnake.

On the 1,500–ac (607–ha) property in 2015, approximately 250 ac (101 ha) of loblolly pine with dense understory vegetation was harvested, and 200 ac (81 ha) of the area was planted with longleaf pine. The landowner voluntarily agreed to manage the area to promote longleaf pine forest over a 10-year period through a Partners for Fish and Wildlife Program agreement with the Service.

On the 7,700–ac (3,116–ha) property, most of the forest was not burned, so there is a dense midstory. Several hundred acres are composed of young loblolly pine plantation. In 2014, approximately 400 ac (162 ha) were harvested, and in 2015, approximately 205 ac (83 ha) of longleaf pine were planted. The landowner voluntarily agreed to manage the area to promote longleaf pine forest over a 10-year period through a Partners for Fish and Wildlife Program agreement with the Service. Additionally, approximately 1,000 ac of this property are prescribed burned annually.

Overall, less than 50 percent of the Scrappin' Valley EOHA is being managed beneficially for the Louisiana pinesnake, but more than 50 percent of the area is covered under safe harbor agreements for the red-cockaded woodpecker, which require forest management that is generally beneficial to the Louisiana pinesnake.

Longleaf pine forest improvement and restoration efforts are also currently occurring within the historical range of the Louisiana pinesnake on smaller private properties, especially through programs administered by natural resource agencies such as NRCS and nonprofit organizations such as The Nature Conservancy (TNC). NRCS has provided assistance with thousands of acres of forest thinning, longleaf pine planting, and prescribed burning (Chevallier 2016, pers. comm.). However, the extent of overlap of increases in longleaf pine acreage, due to this program, with occupied or potential Louisiana pinesnake habitat (*i.e.,* preferable or suitable soils) is unknown because the specific locations of the projects within the area serviced are private and unavailable to the Service. TNC owns 1,551 ac (628 ha) of land within the Vernon Unit of KNF that is managed for the red-cockaded woodpecker and the Louisiana pinesnake (Jacob 2016, pers. comm.).

The Service and LDWF have developed a programmatic candidate conservation agreement with assurances (CCAA) for the Louisiana pinesnake. A CCAA is intended to facilitate the conservation of candidate species by giving non-Federal property owners (enrollees) incentives to implement conservation measures. The incentive to a property owner provided through a CCAA is that the Service will impose no further land-, water-, or resource-use restrictions beyond those agreed to in the CCAA should the species later become listed under the Act. If the species does become listed, the property owner is authorized to take the covered species as long as the level of take is consistent with the level identified and agreed upon in the CCAA. The CCAA policy considers that all CCAAs will provide benefits to covered species through implementation of voluntary conservation measures that are agreed to and implemented by property owners.

The Louisiana pinesnake programmatic CCAA is intended to establish a framework for participation of the Service and LDWF, and enrollees, through specific actions for the protection, conservation, management, and improvement of the status of the Louisiana pinesnake. Initiation of this CCAA will further the conservation of the Louisiana pinesnake on private lands by protecting known populations and additional potential habitat by reducing threats to the species' habitat and survival, restoring degraded potential habitat on preferred and suitable soils, and potentially reintroducing captive-bred snakes to select areas of the restored habitat.

Additional research and survey efforts related to the Louisiana pinesnake are funded by the Texas Comptroller's office and being underway by Texas A&M University; results are expected to provide additional information on the species' habitat requirements in Texas, which may contribute to future conservation efforts. Surveyors are expected to access suitable habitat on private lands that have previously been unavailable.

In summary, forest management beneficial to the Louisiana pinesnake has occurred across significant portions of most Louisiana pinesnake EOHAs. The significant increases in the acreages of burning and thinning conducted have improved habitat conditions on many Federal lands that support Louisiana pinesnake populations (Rudolph 2008b, pers. comm.) and reduced the threat of habitat loss in those areas. On private land, there has also been habitat restoration and beneficial management, on generally a smaller scale than on Federal lands. The Bienville population, which appears to be the most abundant, has only about 1,700 ac (688 ha) of habitat currently managed specifically for the Louisiana pinesnake, and the home range of one Louisiana pinesnake can be as much as 267 ac (108 ha).

Trap success within Louisiana pinesnake populations has not increased over time (Rudolph et al. 2015, p. 33; Pierce 2015, unpub. data) that would imply an increase in abundance. As just discussed, extensive habitat restoration efforts have occurred on Federal lands where the Louisiana pinesnake occurs. Although the threat of habitat loss has been reduced on much of these lands, none of the populations have shown an observable response to forest management conservation

activities. The species also has a low reproductive rate, so recruitment to the population may not be detected for several years. However, it is also possible that some potential increases in snake abundance may not be captured where newly created suitable habitat may not be in close proximity to the current trap locations.

Summary of Factor A

In summary, the loss and degradation of habitat was a significant historical threat, and remains a current threat, to the Louisiana pinesnake. The historical loss of habitat within the longleaf pine ecosystem occupied by Louisiana pinesnakes occurred primarily due to timber harvest and subsequent conversion of pine forests to agriculture, residential development, and managed pine plantations with only intermittent periods of open canopy. This loss of habitat has slowed considerably in recent years, in part due to efforts to restore the longleaf pine ecosystem in the Southeast. In areas occupied by the Louisiana pinesnake on USFS and U.S. Army lands, mixed-pine forests (*e.g.* longleaf, loblolly, slash, and minor amounts of scattered shortleaf) are managed beneficially for the species through thinning, and through prescribed burning of thousands of acres of forests every year. However, habitat loss is continuing today on private land due to incompatible forestry practices, conversion to agriculture, and urbanization, which result in increasing habitat fragmentation (see discussion under Factor E: Other Natural or Manmade Factors Affecting Its Continued Existence). While the use of prescribed fire for habitat management and more compatible site preparation has seen increased emphasis in recent years, expanded urbanization, fragmentation, and regulatory constraints will continue to restrict the use of fire and cause further habitat degradation (Wear and Greis 2013, p. 509).

Extensive conservation efforts are being implemented that are restoring and maintaining Louisiana pinesnake habitat for the Fort Polk/Vernon, Peason Ridge, Kisatchie, and Angelina populations. Those populations are not threatened by continuing habitat loss. Portions of occupied habitat of the Scrappin' Valley (approximately 50 percent) and Bienville populations (about 2.8 percent) of the Louisiana pinesnake are also currently being managed beneficially through voluntary agreements. However, future conservation on private lands, which can change ownership and management practices, is uncertain, and the remaining land in the EOHAs with suitable or preferable soils is generally unsuitable habitat because of the current vegetation structure.

Although the threat of habitat loss has been reduced in much of the Louisiana pinesnake's occupied habitat overall, the likely most abundant population has relatively little beneficially managed land, and none of the populations has yet shown a definitive response to forest management conservation activities.

Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Ongoing take of Louisiana pinesnakes in Louisiana for commercial, recreational, scientific, or educational purposes has not been previously considered a threat (Boundy 2008, pers. comm.). Removal from wild populations for scientific purposes is not expected to increase significantly in the future. Any potential overutilization would be almost exclusively to meet the demand from recreational snake enthusiasts. According to a 2009 report of the United Nations Environment Program—World Conservation Monitoring Centre (UNEP—WCMC 2009, p. 17), captive-bred Louisiana pinesnakes were advertised for sale on four German websites, and two U.S. breeders were listed on another website. However, current levels of Louisiana pinesnake collection to support the commercial captive-bred snake market have not been quantified. There appears to be very little demand for this species by private collectors (Reichling 2008, pers. comm.; Vandeventer 2016, pers. comm.); however, there are at least a few Louisiana pinesnake breeders, and the snakes were still featured in advertisements recently for several hundred dollars for one adult (Castellanos 2016, pers. obs.). Given the restricted distribution, presumed low population sizes, and low reproductive potential of Louisiana pinesnakes, even moderate collecting pressure would negatively affect extant populations of this species. In long-lived snake species exhibiting low fecundity, the sustained removal of adults from isolated populations can eventually lead to extirpation (Webb et al. 2002, p. 64).

Non-permitted collection of the Louisiana pinesnake is prohibited by State law in Texas and Louisiana (see Factor D below), and most areas in Louisiana where extant Louisiana pinesnake populations occur restrict public access or prohibit collection. In addition, general public collection of the Louisiana pinesnake would be difficult (Gregory 2008, pers. comm.) due to the species' secretive nature, semi-fossorial habits, and current rarity.

Previously in Texas, TPWD has allowed captured Louisiana pinesnakes to be removed from the wild by permitted scientific researchers to help supplement the low representation of snakes from Texas populations in the AZA-managed captive-breeding program. Currently, LDWF does not permit the removal from the wild of any wild- caught Louisiana pinesnakes to add founders to the AZA-managed captive-breeding program.

Although concern has been expressed that Federal listing may increase the demand for wild-caught animals (McNabb 2014, in litt.), based on the best available information, we have no evidence that overutilization for commercial, recreational, scientific, or educational purposes is currently a threat to the Louisiana pinesnake.

Factor C: Disease or Predation

Like many other animals, the Louisiana pinesnake is very likely impacted by native predators, and potentially by introduced predators.

Known natural wild predators of pinesnakes include mammals such as shrews, raccoons, skunks, and red foxes (Ernst and Ernst 2003, p. 284; Yager et al. 2006, p. 34). All of these species are common in the range of the Louisiana pinesnake. Several of these mammalian predators may be anthropogenically enhanced; that is, their numbers often increase with human development adjacent to natural areas (Fischer et al. 2012, pp. 810–811). Birds, especially hawks, also prey on pinesnakes (Ernst and Ernst 2003, p. 284; Yager et al. 2006, p. 34). One Louisiana pinesnake was described as being ''in combat with hawk,'' presumably the result of a predation attempt by the bird (Young and Vandeventer 1988, p. 204; Pierce 2015, unpub. data). Some snake species prey on other snakes, including pinesnakes. The scarlet snake (*Cemophora coccinea*) preys on northern pinesnake eggs (Burger et al. 1992, p. 260). This species is found within the range of the Louisiana pinesnake. An eastern coachwhip (*Masticophis flagellum flagellum*), which is an abundant species in the Louisiana pinesnake's range, was observed attempting to predate a juvenile northern pinesnake in North Carolina (Beane 2014, p. 143). Speckled kingsnakes (*Lampropeltis getula holbrooki*) prey on pinesnakes (Ernst and Ernst 2003, p. 279), and one caught in a trap set for the Louisiana pinesnake was observed to have recently consumed another snake (Gregory 2015, pers. comm.).

Pinesnakes also suffer from attacks by domesticated mammals, including dogs and cats (Ernst and Ernst 2003, p. 284). Lyman et al. (2007, p. 39) reported an attack on a black pinesnake by a stray domestic dog, which resulted in the snake's death.

Invasive feral hogs inhabit some Louisiana pinesnake EOHAs (Gregory 2016, pers. comm.), including the Catahoula Reintroduction Feasibility EOHA (Nolde 2016, pers. comm.), and are known to prey upon vertebrate animals, including snakes (Wood and Roark 1980, p. 508). They will also consume eggs of ground-nesting birds (Henry 1969, p. 170; Timmons et al. 2011, pp. 1–2) and reptiles (Elsey et al. 2012, pp. 210–213); however, there is no direct evidence that feral hogs prey on Louisiana pinesnakes or their eggs. Therefore, at this time, feral hogs are not known to be a threat to the Louisiana pinesnake. The Service and USFS are currently engaged in feral hog population control throughout Louisiana and Texas.

Red imported fire ants (*Solenopsis invicta*), an invasive species, have been implicated in trap mortalities of black pinesnakes during field studies (Baxley 2007, p. 17). Red imported fire ants also occur in areas occupied by Louisiana pinesnakes and are potential predators of Louisiana pinesnake eggs and hatchlings (Parris et al. 2002, p. 514; Beane 2014, p. 142); they have also been documented predating snake eggs under experimental conditions (Diffie et al. 2010, p. 294).

There are no documented occurrences of successful predation (excessive or otherwise) specifically on Louisiana pinesnakes, predation on pinesnakes has been documented (Burger et al. 1992, entire; Baxley 2007, p. 17; Ernst and Ernst 2003, p. 284; Ernst and Ernst 2003, p. 284; Yager et al. 2006, p. 34).

Malicious killing of snakes by humans is a significant issue in snake conservation because snakes arouse fear and resentment from the general public (Bonnet et al. 1999, p. 40). Intentional killing of black pinesnakes by humans has been documented (Duran 1998, p. 34; Lyman et al. 2008, p. 34). The intentional killing of Louisiana pinesnakes by humans is not unlikely, but because of the species' relatively low abundance and secretive nature, it likely happens very infrequently and, therefore, is not considered a threat at this time.

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 Louisiana pinesnake 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 Louisiana pinesnake. We know of no other diseases that are affecting the species. Because the causative fungus of SFD has been found in two Louisiana pinesnake 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 Louisiana pinesnake.

Factor D: The Inadequacy of Existing Regulatory Mechanisms

In Texas, the Louisiana pinesnake is listed as State threatened, and prohibited from unauthorized collection (31 Texas Administrative Code [TAC] sections 65.171–176). As of February 2013, unpermitted killing or removal of the Louisiana pinesnake from the wild is prohibited in Louisiana (Louisiana Administrative Code, title 76, part XV, Reptiles and Amphibians, chapter 1, section 101.J.3(f)). Collection or harassment of Louisiana pinesnake is also specifically prohibited on USFS properties in Louisiana (USDA Forest Service 2002, p. 1). The capture, removal, or killing of non-game wildlife from Fort Polk and Peason Ridge (DOD land) is prohibited without a special permit (U.S. Department of the Army 2008, p. 6; U.S. Department of the Army 2013, p. 51). USFS's land and resource management plans (KNF, ANF), the Army's integrated natural resources management plans (Fort Polk Main Post and Peason Ridge), and the Louisiana pinesnake CCA all require habitat management that is beneficial to the Louisiana pinesnake for the Kisatchie NF, Angelina NF, Fort Polk/Vernon, and Peason Ridge populations (see ''Conservation Efforts to Reduce Habitat Destruction, Modification, or Curtailment of Its Range,'' above). The Service has never been informed of any difficulties in the implementation or enforcement of the existing regulatory mechanisms that protect Louisiana pinesnakes by TPWD, LDWF, or Federal land managers, and no occurrences of noncompliance, including killing of snakes, have been reported to us (see Factor E discussion, below).

Its habitat requirements being similar to that of the red-cockaded woodpecker, the Louisiana pinesnake receives indirect protection of its habitat via the protections of the Act provided for the endangered red-cockaded woodpecker, where it co-occurs with the red-cockaded woodpecker on Federal lands.

These existing regulatory mechanisms provide no protection from the threat of Louisiana pinesnake habitat loss and degradation on privately owned lands. Private landowners within some occupied habitat of the Scrappin' Valley population have voluntarily committed to agreements with the Service to manage those areas with prescribed burning and to promote the longleaf pine ecosystem for 10 years.

In summary, although existing regulatory mechanisms appear to be adequate to prohibit direct harm to individual Louisiana pinesnakes across their entire range, and offer some protection to habitat on publicly owned land, they offer no protection to the already degraded, fragmented, and declining habitat that exists on private lands.

Factor E: Other Natural or Manmade Factors Affecting Its Continued Existence

The historical loss, degradation, and fragmentation of the longleaf pine ecosystem across the entire historical range of the Louisiana pinesnake have resulted in six natural extant Louisiana pinesnake populations that are isolated and small. Habitat fragmentation and degradation on lands in between extant

populations (Rudolph et al. 2006, p. 470) have likely reduced the potential for successful dispersal among remnant populations, as well as the potential for natural recolonization of vacant or extirpated habitat patches.

Those Louisiana pinesnake populations are already small, which could potentially reduce the positive fitness effect of having greater numbers or density of conspecifics (also known as the Allee principle or effect). One mechanism for Allee effects is thought to be the greater ability to locate mates. For the Louisiana pinesnake, it is the lack of Allee effects that could be negatively affecting this species and preventing the observance of positive effects of beneficial forest management.

Small, isolated populations resulting from habitat fragmentation are vulnerable to the threats of decreased demographic viability, increased susceptibility of extirpation from stochastic environmental factors (*e.g.,* extreme weather events, epidemic disease), and the potential loss of valuable genetic resources resulting from genetic isolation with subsequent genetic drift, decreases in heterozygosity, and potentially inbreeding depression (Lacy 1987, p. 147). Wild populations of the Louisiana pinesnake had lower heterozygosity and higher inbreeding than what is expected from a randomly breeding population (Kwiatkowski et al. 2014, pp. 15–18). Low genetic diversity in small, isolated populations has been associated with negative effects on reproduction in snakes (Madsen 1996, p. 116). Recovery of a Louisiana pinesnake population from the existing individuals within the population following a decline is also uncertain because of the species' low reproductive rate (smallest clutch size of any North American colubrid snake) (Reichling 1990, p. 221). Additionally, it is extremely unlikely that habitat corridors linking extant populations will be secured and restored; therefore, the loss of any extant population will be permanent without future reintroduction and successful recruitment of captive-bred individuals.

Roads surrounding and traversing the remaining Louisiana pinesnake habitat pose a direct threat to the species. Population viability analyses have shown that extinction probabilities for some snake species may increase due to road mortality (Row et al. 2007, p. 117). Adult eastern indigo snakes *(Drymarchon corais couperi)* have relatively high survival in conservation core areas, but greatly reduced survival in edges of these areas along highways and in suburbs (Breininger et al. 2012, p. 361). In a Texas snake study, an observed deficit of snake captures in traps near roads suggests that a substantial proportion of the total number of snakes may have been eliminated due to road-related mortality (Rudolph et al. 1999, p. 130). That study found that populations of large snakes may be depressed by 50 percent or more due to proximity to roads, and measurable impacts may extend up to approximately 0.5 mi (850 m) from roads.

During a radio-telemetry study in Louisiana and Texas, 3 of the 15 (20 percent) Louisiana pinesnake deaths documented could be attributed to vehicle mortality (Himes et al. 2002, p. 686). Approximately 16 percent (37 of 235) of all documented Louisiana pinesnake occurrences were on roads, and about half of those were dead individuals (Pierce 2015, unpub. data). During Duran's (1998, pp. 6, 34) study on Camp Shelby, Mississippi, 17 percent of the black pinesnakes with transmitters were killed while attempting to cross a road. In a larger study currently being conducted on Camp Shelby, 14 (38 percent) of the 37 pinesnakes found on the road between 2004 to 2012 were found dead, and these 14 individuals represent about 13 percent of all the pinesnakes found on Camp Shelby during that 8-year span (Lyman et al. 2012, p. 42). In Louisiana and Texas, areas with relatively large areas of protected suitable habitat and controlled access such as Fort Polk, KNF, and ANF, have several roads located within Louisiana pinesnake occupied habitat, and there have been a total of eight known mortalities due to vehicles in those areas (Pierce 2015, unpub. data).

In addition, Dodd et al. (2004, p. 619) determined that roads fragment habitat for wildlife. Clark et al. (2010, pp. 1059–1069) studied the impacts of roads on population structure and connectivity in timber rattlesnakes *(Crotalus horridus).* They found that roads interrupted dispersal, which negatively affected genetic diversity and gene flow among populations of this large snake. Those effects were likely due to road mortality and avoidance of roads (Clark et al. 2010, pp. 1059, 1067).

On many construction project sites, erosion control blankets are used to lessen impacts from weathering, secure newly modified surfaces, and maintain water quality and ecosystem health. However, the commonly used polypropylene mesh netting (also often utilized for bird exclusion) has been documented as being an entanglement hazard for many snake species, causing lacerations and sometimes mortality (Stuart et al. 2001, pp. 162–163; Barton and Kinkead 2005, p. 34A; Kapfer and Paloski 2011, p. 1; Zappalorti 2016, p. 19). This netting often takes years to decompose, creating a long-term hazard to snakes, even when the material has been discarded (Stuart et al. 2001, p. 163). Although no known instance of injury or death from this netting has been documented for Louisiana pinesnakes, it has been demonstrated to have negative impacts on other terrestrial snake species of all sizes and thus poses a potential threat to the Louisiana pinesnake when used in its habitat.

Exotic plant species degrade habitat for wildlife, and in the Southeast, longleaf pine forest associations are susceptible to invasion by the exotic cogongrass *(Imperata cylindrica).* Cogongrass may rapidly encroach into areas undergoing habitat restoration and is very difficult to eradicate once it has become established, requiring aggressive control with herbicides (Yager et al. 2010, pp. 229–230). Cogongrass displaces native grasses, greatly reducing foraging areas for some animals, and forms thick mats that restrict movement of ground-dwelling wildlife; it also burns at high temperatures that can kill or injure native seedlings and mature trees (DeBerry and Pashley 2008, p. 74; Alabama Cooperative Extension System 2005, p. 1). Its value as forage for pocket gophers is not known. Currently, cogongrass is limited to only a few locations in Louisiana and Texas and is not considered a threat to the Louisiana pinesnake. However, cogongrass has significantly invaded States to the east of Louisiana, such as Alabama and Mississippi (Alabama Cooperative Extension System 2005, p. 1–4; USDA NRCS Plant Database 2016, p. 2), where it occurs in pine forests on Camp Shelby (Yager et al. 2005, p. 23) potentially impacting the habitat of black pinesnakes found there.

The effects of climate change are predicted to have profound impacts on humans and wildlife in nearly every part of the world (International Panel on Climate Change [IPCC] 2014, p. 6). One downscaled projection for future precipitation change within the historical range of the Louisiana pinesnake varies between increasing and decreasing, but the average change is between 0.1 in (0.254 cm) drier and 1.1 in (2.8 cm) drier from 2020 to 2039 (Pinemap 2016, entire). Precipitation is projected to decrease for the 20 years following 2039. Additionally, the average summer temperature in the species' historical range is expected to increase by 2.7–3.5 degrees Fahrenheit (Pinemap 2016, entire). Increasing

temperature and decreasing precipitation could potentially affect the pine forest habitat of the Louisiana pinesnake due to drought stress on trees, and the snake itself may be susceptible to injury from higher temperatures or from decreased water availability. However, we are not aware of any information that would substantiate those effects or how the Louisiana pinesnake might adapt to those potential environmental stressors.

Effects of native phytophagous (plant-eating) insect species on Louisiana pinesnake habitat may increase due to the effects of climate change. In a study that modeled the effects of the southern pine beetle *(Dendroctonus frontalis)* related to environmental variables, southern pine beetle outbreak risk and subsequent damage to southern pine forests were substantially increased when considered for four separate climate change scenarios (Gan 2004, p. 68). In the openings left in the beetle-damaged pine forests, hardwoods may become the canopy dominants, and invasive vegetation may be more likely to colonize (Waldrop 2010, p. 4; Coleman et al. 2008, pp. 1409–1410), both of which can decrease the amount of herbaceous vegetation that the Louisiana pinesnake's primary prey (Baird's pocket gopher) depends upon for food. However, the threat of future increased risk of southern pine beetle infestation since Gan (2004, p. 68) has so far not been realized in the southeast generally or in Louisiana and Texas specifically (Asaro et al. 2017, p. 341, 343). In fact, the annual number of counties in southern pine beetle outbreak status has actually decreased in Louisiana and Texas since a recent peak around 1986 (Asaro et al. 2017, p. 341–347).

We consider the effects of increased temperatures, decreased precipitation, and increased insect impacts on the Louisiana pinesnake and its habitat due to climate change to be a potential threat in the future; however, because of the uncertainty of the rate, scale, and location of impacts due to climate effects, climate change is not currently considered a threat to the species.

Conservation Efforts To Reduce Threats Under Factor E

Efforts to reduce Factor E threats would have to address increasing the resiliency of individual populations by increasing abundance and decreasing mortality, or preferably both. Currently, efforts are underway to reduce at least some types of mortality and to study the potential of increasing the number of wild Louisiana pinesnakes via introduction of captive-bred individuals.

As discussed above under Population Estimates and Status, efforts to reintroduce Louisiana pinesnakes have been conducted only at the KNF Catahoula District site. So far, there have been no attempts to augment existing populations of Louisiana pinesnakes with captive-bred individuals. While reintroduction as a conservation tool is not universally accepted as effective for all animals, and the results of current reintroduction pilot efforts remain uncertain, the number (91) of captive-bred Louisiana pinesnakes released into the wild since 2010 demonstrates that captive-propagation efforts can be successful, and provides the opportunity for reintroduction and augmentation to benefit the conservation of the species. Reintroduction, with improved success, done in multiple populations where appropriate habitat is available, has the potential to eventually increase the number of individuals and populations, increase genetic heterozygosity, and alleviate presumed inbreeding depression in the populations, making them more resistant to threats described for Factor E.

As outlined in the CCA, the U.S. Army has committed to avoiding the use of erosion-control blankets, and USFS is committed to trying to locate ATV routes outside of the boundaries of Louisiana pinesnake occupied habitat. Additionally, some improved roads on National Forests are also closed to the public during certain times of the year (*e.g.,* September to February at ANF [U.S. Forest Service 2015, entire]), which should reduce the number of pinesnakes potentially killed by vehicle traffic during those times.

In summary, a variety of natural or manmade factors, alone and in combination with other factors, currently threaten the Louisiana pinesnake. Fire suppression has been considered a primary reason for continuing degradation of the pine forests in Louisiana and Texas. Roads and rights-of-way, and fragmented habitat, isolate populations beyond the dispersal range of the species. Mortality caused by vehicle strikes is a threat because there are many roads bisecting Louisiana pinesnake habitat, and the remaining populations appear to be small and declining. The species' small clutch size may limit its ability to effectively counteract mortality. Other potential threats to Louisiana pinesnakes include SFD, erosion-control blankets, insect and invasive vegetation effects on habitat, and malicious killing by humans. Overall, the threats under Factor E may act together and in combination with threats listed above under Factors A through D and increase their severity.

For additional information related to the summary of factors affecting the species, please refer to the Summary of Factors Affecting the Species section in the October 6, 2016, proposed rule for additional discussion of the factors affecting the Louisiana pinesnake (see **ADDRESSES**).

Determination

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations in title 50 of the Code of Federal Regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, we may list a species based on (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Louisiana pinesnake. Threats to the six known remaining Louisiana pinesnake populations exist primarily from: (1) Historical and continuing habitat loss and fragmentation (Factor A) primarily through land-use changes or degradation caused by fire suppression; and (2) synergistic effects from mortality caused by vehicle strikes and by predators acting on vulnerable, reduced populations (Factor E and Factor C). We did not find that the Louisiana pinesnake was impacted by overutilization (Factor B). While there are regulatory mechanisms in place that may benefit the Louisiana pinesnake, the existing regulatory mechanisms did not reduce the impact of the stressors to the point that the species is not in danger of extinction (Factor D).

Portions of habitat occupied by two Louisiana pinesnake populations on private land are currently being managed beneficially for the species (some through formal agreements with the Service), and conservation efforts on Federal lands, such as KNF and ANF, and U.S. Army lands at Fort Polk and Peason Ridge through a CCA in existence since 2003, have been extensive and successful in restoring suitable Louisiana pinesnake habitat. However, the lack of a definitive positive response by the species'

populations indicates that habitat restoration may take longer than expected to increase snake abundance, especially when they are subjected to negative effects associated with small populations of animals (*i.e.,* reduced heterozygosity, inbreeding depression) and mortality pressure from vehicles and predators.

A captive-breeding population of Louisiana pinesnakes is being managed under an SSP and has provided 91 captive-bred Louisiana pinesnakes for release into the wild at the Catahoula Ranger District of the KNF (see Conservation Efforts above). This reintroduction feasibility effort has shown that at least one of the 91 captive-bred Louisiana pinesnakes has survived for at least 4 years after release in suitable, beneficially managed habitat.

The Act defines an endangered species as any species that is ''in danger of extinction throughout all or a significant portion of its range'' and a threatened species as any species ''that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.'' We find that the Louisiana pinesnake meets the definition of a threatened species based on the severity and immediacy of threats currently impacting all populations of the species throughout all of its range. The species' overall range has been significantly reduced, populations have apparently been extirpated, and the remaining habitat (on private lands) and populations are threatened by factors acting in combination to reduce the overall viability of the species.

We find that the Louisiana pinesnake does not meet the definition of an endangered species. There are currently multiple known extant populations within the species' range. There are currently extensive habitat restoration and management efforts to benefit the species ongoing within occupied areas currently being managed by the USFS and U.S. Army, as well as similar efforts ongoing (albeit generally smaller and to a lesser extent) within occupied areas currently being managed on private lands; and reintroduction of captive-bred animals into the wild, which has shown some limited success (see Catahoula Reintroduction Feasibility EOHA, above).

Extensive habitat restoration efforts have occurred on USFS and U.S. Army lands where the species occurs, and those populations are no longer threatened by continuing habitat loss. While it is difficult to show an increase in population size with a species that is so difficult to detect, it is reasonable to assume that these populations will benefit from improved habitat management over time.

The Louisiana pinesnake captive-breeding population provides some capability for population augmentation or re-establishing populations in areas with suitable habitat, while maintaining an assurance colony for wild Louisiana pinesnake populations through the SSP. The multiple current populations combined with habitat management and restoration as well as captive-breeding decrease the current risk of extinction to the species. The Louisiana pinesnake is not in danger of extinction now, but we expect that into the future threats will continue to impact the species such that the species is likely to become endangered in the foreseeable future.

The ''foreseeable future'' extends only so far as the Services can reasonably rely on predictions about the future in making determinations about the future conservation status of the species. Those predictions can be in the form of extrapolation of population or threat trends, analysis of how threats will affect the status of the species, or assessment of future events that will have a significant new impact on the species. The foreseeable future described here uses the best available scientific data and takes into account considerations such as the species' life history characteristics, threat projection time frames, and environmental variability such as typical forest harvest rotation, forest and natural resource management plans, and current conservation efforts, which may affect the reliability of projections. We also considered the time frames applicable to the relevant threats and to the species' likely responses to those threats in view of its life history characteristics. The foreseeable future for a particular status determination extends only so far as predictions about the future are reliable.

In cases where the available data allow for quantitative modelling or projections, the time horizon for such analyses does not necessarily dictate what constitutes the ''foreseeable future'' or set the specific threshold for determining when a species may be in danger of extinction. Rather, the foreseeable future can only extend as far as the Service can reasonably explain reliance on the available data to formulate a reliable prediction and avoid reliance on assumption, speculation, or preconception. Regardless of the type of data available underlying the Service's analysis, the key to any analysis is a clear articulation of the facts, the rationale, and conclusions regarding foreseeability.

Based on a review of the biology of the species, the threats acting on it, and its population trends, the foreseeable future used in this determination is approximately 30 to 40 years. This timeframe encompasses 3 to 4 generations of the Louisiana pinesnake and is a time period where we can reliably detect population and species level responses to threats and conservation actions acting on the snake. Any predictions of threats acting on the species beyond 30 to 40 years into the future, would be speculative and beyond the foreseeable future for the species.

We rely on the experience of 26 years of trapping data for the species, activities that threaten its continued viability, as well as conservation actions intended to benefit the snake. During that timeframe, trap success has been relatively lower for the populations in Texas compared to those in Louisiana. Within the Scrappin' Valley EOHA, there have been no trap captures or other occurrences since 2009, and within the Angelina EOHA, the most recent unique individual trap capture was in 2007, however, a previously captured snake was recaptured in 2012. During that same time period, within Louisiana, the two populations within the Bienville and Fort Polk EOHAs have shown relatively consistent captures over time including captures in 2017. The last snake captured within the Kisatchie EOHA was in 2007, and within the Peason Ridge EOHA, six occurrence records exist between 2003 and 2013, with the last in 2013. Based on the available data, it appears that the Texas populations and the Kisatchie population in Louisiana will likely become unoccupied in 7 years or less, unless occurrences are documented in those areas before then.

In addition, open-canopy forest fragmentation and modification, due to conversion to other forest (closed canopy plantations) or non-forest land uses, or due to the lack of active management (*e.g.,* prescribed fire, thinning, mid- and understory woody vegetation control) to maintain healthy open forest conditions, is the driving threat moving into the foreseeable future. Typical working forest rotation in the range of the species ranges between 20 to 30 years. There are currently extensive habitat restoration and management efforts to benefit the species ongoing within occupied areas currently being managed by the USFS and U.S. Army, and current USFS land and resource management plans as well as integrated natural resources management plans implemented by Fort Polk range between 5 to 15 years.

Similar efforts are also ongoing (albeit generally smaller and to a lesser extent) within occupied areas currently being managed on private lands; several relatively small areas are being managed under voluntary agreements (minimum of 10 years) with the Service through the Partners for Fish and Wildlife program, or through safe harbor agreements (maximum of 99 years) managed by the States for the red-cockaded woodpecker (which generally provide suitable habitat conditions). In addition, in 2017, the Service developed a conference opinion for NRCS's Working Lands for Wildlife program for the Louisiana pinesnake. This conference opinion is valid for 30 years.

The Louisiana pinesnake is likely to become endangered in the foreseeable future because the remaining populations are small, isolated, subject to ongoing natural and unnatural mortality pressure, and to date have not shown an observable, positive response to habitat restoration. The species currently has almost no potential for natural recolonization between populations, and multiple significantly affected populations may be unable to recover even with the restoration of appropriate habitat. Half (three) of the known natural extant populations (*i.e.,* Kisatchie, Scrappin' Valley, and Angelina EOHAs) have had no captures in several years and it is likely that their EOHAs will be considered unoccupied in 7 years or less based on our EOHA determination criteria, unless occurrences are documented in those areas before then.

Future conservation of the two extant populations on private lands, which can change ownership and management practice, is uncertain. Portions of the occupied habitat on these private lands are being managed beneficially for Louisiana pinesnake, but there is no permanent commitment from the current landowners to continue such efforts; the other portions with suitable or preferable soils are generally unsuitable habitat because of the current vegetation structure. The Scrappin' Valley population EOHA is at risk of being considered unoccupied, as discussed immediately above. The Bienville population is one of the two populations believed to be the largest; should the ownership of those lands change or the commitment to current habitat management efforts on lands supporting the population cease, it is likely that this population would decline and could become extirpated within the foreseeable future.

Under the Act and our implementing regulations, a species may warrant listing if it is endangered or threatened throughout all or a significant portion of its range. Because we have determined that the Louisiana pinesnake is threatened throughout all of its range, no portion of its range can be ''significant'' for purposes of the definitions of ''endangered species'' and ''threatened species.'' See the Final Policy on Interpretation of the Phrase ''Significant Portion of Its Range'' in the Endangered Species Act's Definitions of ''Endangered Species'' and ''Threatened Species'' (79 FR 37578, July 1, 2014).

Critical Habitat

Section 3(5)(A) of the Act defines critical habitat as: (i) The specific areas within the geographical area occupied by the species, at the time it is listed on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed upon a determination by the Secretary that such areas are essential for the conservation of the species.

Section 4(a)(3) of the Act and implementing regulations (50 CFR 424.12) require that we designate critical habitat at the time a species is determined to be an endangered or threatened species, to the maximum extent prudent and determinable. In the proposed listing rule (81 FR 69454, October 6, 2016), we determined that designation of critical habitat was prudent but not determinable because specific information needed to analyze the impacts of designation was lacking. We are still in the process of obtaining this information.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning includes the development of a recovery outline within 30 days of when the species is listed and preparation of a draft and final recovery plan. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan identifies site-specific management actions that set a trigger for review of the five factors that control whether a species remains endangered or may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and final recovery plan will be available on our website (*http://www.fws.gov/endangered*) or from our Louisiana Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribal, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (*e.g.,* restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Following publication of this final listing rule, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of Louisiana and Texas will be eligible for Federal funds to implement management actions that promote the protection or recovery of the Louisiana pinesnake. Information on our grant programs that are available to aid species recovery can be found at: *http://www.fws.gov/grants.*

Please let us know if you are interested in participating in recovery efforts for the Louisiana pinesnake. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered by the U.S. Forest Service and the U.S. Department of Defense.

Under section 4(d) of the Act, the Service has discretion to issue regulations that we find necessary and advisable to provide for the conservation of threatened wildlife. We may also prohibit by regulation with respect to threatened wildlife any act prohibited by section 9(a)(1) of the Act for endangered wildlife. For the Louisiana pinesnake, the Service is proposing a section 4(d) rule that is tailored to the specific threats and conservation needs of this species. The proposed rule may be found elsewhere in this issue of the **Federal Register** in Proposed Rules. We may issue permits to carry out otherwise prohibited activities involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32. With regard to threatened wildlife, a permit may be issued for the following purposes: For scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a final listing on proposed and ongoing activities within the range of a listed species. Based on the best available information, the following activities may potentially result in a violation of section 9 the Act; this list is not comprehensive:

(1) Unauthorized collecting, handling, possessing, selling, delivering, carrying, or transporting of the Louisiana pinesnake, including interstate transportation across State lines and import or export across international boundaries, except for properly documented antique specimens of these taxa at least 100 years old, as defined by section 10(h)(1) of the Act.

(2) Introduction of nonnative animal species that compete with or prey upon the Louisiana pinesnake.

(3) Introduction of invasive plant species that contribute to the degradation of the natural habitat of the Louisiana pinesnake.

(4) Unauthorized destruction or modification of occupied Louisiana pinesnake habitat that results in damage to or alteration of desirable herbaceous vegetation or the destruction of Baird's pocket gopher burrow systems used as refugia by the Louisiana pinesnake, or that impairs in other ways the species' essential behaviors such as breeding, feeding, or sheltering.

(5) Unauthorized use of insecticides and rodenticides that could impact small mammal prey populations, through either unintended or direct impacts within habitat occupied by Louisiana pinesnakes.

(6) Unauthorized actions that would result in the destruction of eggs or cause mortality or injury to hatchling, juvenile, or adult Louisiana pinesnakes.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Louisiana Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**).

Required Determinations

National Environmental Policy Act

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes. No tribal lands or other interests are affected by the rule.

References Cited

A complete list of references cited in this rulemaking is available on the internet at *http://www.regulations.gov* in Docket No. FWS–R4–ES–2016–0121 and upon request from the Louisiana Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are the staff members of the Louisiana Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245; unless otherwise noted.

■ 2. Amend § 17.11(h) by adding an entry for ''Pinesnake, Louisiana'' in alphabetical order under REPTILES to the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
*	*	*	*	*
		REPTILES		
*	*	*	*	*
Pinesnake, Louisiana	*Pituophis ruthveni*	Wherever found	T	83 FR [insert **Federal Register** page where the document begins], April 6, 2018.
*	*	*	*	*

* * * * *

Dated: March 12, 2018.

James W. Kurth

Deputy Director, U.S. Fish and Wildlife Service, exercising the authority of the Director, U.S. Fish and Wildlife Service.

[FR Doc. 2018–07107 Filed 4–5–18; 8:45 am]

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