

CANDIDATE AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Pituophis melanoleucus lodingi

COMMON NAME: black pine snake

LEAD REGION: 4

INFORMATION CURRENT AS OF: January 5, 2001

STATUS/ACTION (Check all that apply):

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: \_\_\_\_

90-day positive - FR date: \_\_\_\_

12-month warranted but precluded - FR date: \_\_\_\_

Is the petition requesting a reclassification of a listed species?

Listing priority change

    Former LP: \_\_\_\_

    New LP: \_\_\_\_

Candidate removal: Former LP: \_\_\_\_ (Check only one reason)

A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

F - Range is no longer a U.S. territory.

M - Taxon mistakenly included in past notice of review.

N - Taxon may not meet the Act's definition of "species."

X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Reptile - Colubridae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Alabama, Louisiana, Mississippi

CURRENT STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Alabama, Mississippi

LEAD REGION CONTACT (Name, phone number): Lee Andrews, 404/679-7217

LEAD FIELD OFFICE CONTACT (Office, name, phone number): Jackson, Mississippi Field Office, Linda LaClaire, 601/321-1126

BIOLOGICAL INFORMATION (Describe habitat, historic vs. current range, historic vs. current population estimates (# populations, #individuals/population), etc.):

Black pine snakes are endemic to the upland longleaf pine forests that once covered the southeastern United States. Habitat for these snakes consists of sandy, well-drained soils with an overstory of longleaf pine, a fire suppressed mid-story, and dense herbaceous ground cover (Duran 1998b). Duran (1998a) conducted a radio-telemetry study of the black pine snake that provided data on habitat use. Snakes in this study were usually located on well-drained, sandy-loam soils on hilltops, ridges, and toward the tops of slopes. They were rarely found in riparian areas, hardwood forests, or closed canopy conditions. More than half of the time, black pine snakes were located underground, usually in the trunks or root channels of rotting pine stumps.

There are 15 recognized subspecies of Pituophis melanoleucus (pine, bull, and gopher snakes) distributed throughout the United States (Sweet and Parker 1990). The black pine snake is geographically isolated from all other pine snakes. However, there is evidence that the black pine snake was in contact with other pine snakes in the past. A form intermediate between the black pine snake and the Florida pine snake (P. m. mugitus) occurs in Baldwin and Escambia counties in Alabama and Escambia County in Florida. These snakes are separated from populations of the “true” black pine snake by the Mobile River Delta and the Alabama River (Duran 1998b).

There are historical records for the black pine snake from one parish in Louisiana, 14 counties in Mississippi, and 3 counties in Alabama west of the Mobile River Delta. Duran (1998b) recently completed a status survey for the species. He concluded that black pine snakes have been extirpated from Louisiana (Washington Parish) and from two counties (Lauderdale and Walthall) in Mississippi. They have not been reported west of the Pearl River in either Mississippi or Louisiana in 24 years (Duran 1998b). There are no recent (post-1979) records for three additional Mississippi counties (Greene, Jackson, and Lamar) where they once occurred. Surveys indicated that black pine snakes remain in 3 out of 3 counties in Alabama (Clarke, Mobile, and Washington) and 9 out of 14 counties in Mississippi (Forrest, George, Harrison, Jones, Marion, Pearl River, Perry, Stone, and Wayne). However, the distribution of populations within these counties has become highly restricted due to the fragmentation of the remaining longleaf pine habitat. In seven of the nine occupied Mississippi counties, populations of black pine snakes are concentrated on the DeSoto National Forest (68% of all known records). In the remaining occupied Mississippi counties, one population is known from the Marion County Wildlife Management Area and one occurs on private land. Most of the remaining populations in Alabama occupy private, non-industrial timberland where they have an uncertain future. All black pine snake populations outside of the DeSoto National Forest appear to be small and isolated on islands of suitable longleaf pine habitat (Duran 1998b).

Duran (2000) reported the initial results of a habitat assessment of all known black pine snake records. Habitat suitability of the sites was based on how the habitat compared to that selected by black pine snakes in a recently completed telemetry study (Duran 1998b). A probability of occurrence rating was derived for each locality using a combination of the habitat suitability rating and data on how recently and/or frequently black pine snakes had been recorded at the site. Of

the 157 known records, it was determined that black pine snakes probably no longer occurred at 53 sites (34% of total). Comparing individual records gives equal weight to the many occurrences that have been recently recorded in areas of pine snake abundance, to the sparse records from areas where pine snakes have been extirpated. This greatly underestimates population losses. Removing the more recent records from 1990 to the present eliminates significant bias because during this period a concerted effort was made to locate black pine snakes, especially in areas of quality habitat. Subtracting these records would leave a total of 83 sites which could be considered “historical” records. Of these, black pine snakes probably no longer occur at 42 (51% of historical records).

**THREATS** (Describe threats in terms of the five factors in section 4 of the ESA providing specific, substantive information. **If this is a removal of a species from candidate status or a change in listing priority, explain reasons for change**):

- A. The present or threatened destruction, modification, or curtailment of its habitat or range. The historical distribution of the black pine snake is highly correlated with the historical range of the longleaf pine ecosystem in extreme southeastern Louisiana, southern Mississippi, and extreme southwestern Alabama (Duran 1998b). Today, the remaining longleaf pine forest in the southeast has been reduced to less than 5 percent of its original extent (Frost 1993, Outcalt and Sheffield 1996). In the range of the black pine snake, longleaf pine is now largely confined to isolated patches on private land and the DeSoto National Forest (DNF) in Mississippi. Black pine snake habitat has been eliminated through land use conversions, primarily urban development and conversion to agriculture and pine plantations. Most of the remaining patches of longleaf pine on private land are fragmented, degraded, second-growth forests.

Conversion of longleaf pine forest to pine plantation often reduces the quality and suitability of a site for black pine snakes. Duran (1998a) found that black pine snakes prefer open canopies, reduced mid-stories, and dense herbaceous understories. He also found that these snakes are frequently underground in rotting pine stumps. Forest management strategies such as fire suppression (see Factor E), increased stocking densities, and removal of downed trees and stumps all contribute to degradation of habitat attributes preferred by black pine snakes.

Fragmentation and degradation of longleaf pine habitat is continuing. The coastal counties of southern Mississippi and Mobile County, Alabama, are being developed at a rapid rate due to increases in the human population. Urbanization appears to have reduced historical black pine snake populations in Mobile County by approximately 50 percent (Duran 1998b). Much of this reduction has occurred in the last 15 to 20 years. For example, Jennings and Fritts (1983) reported that, in the 1980's, the black pine snake was one of the most frequently encountered snakes on the Environmental Studies Center (Center) in Mobile County. Urban development has now engulfed lands adjacent to the Center and black pine snakes have not been seen on the property in the last 16 years (D. Myers, pers. comm. in Duran 1998b). Black pine snakes were occasionally seen in the 1970's on the

campus of the University of South Alabama in western Mobile (Duran 1998b). They have not been observed there in over a decade (D. Nelson, pers. comm. in Duran 1998b). There is no extensive public ownership of longleaf pine habitat in Mobile County and the black pine snake continues to survive only on parcels of unprotected private land.

- B. Overutilization for commercial, recreational, scientific, or educational purposes. Direct take of black pine snakes for recreational, scientific, or educational purposes is not currently considered to be a threat. However, there is some indication that collecting for the pet trade may be a problem (Duran 1998b).
- C. Disease or predation. Disease and predation are not presently considered to be threats to the black pine snake.
- D. The inadequacy of existing regulatory mechanisms. In Mississippi, the black pine snake is classified as endangered by the Mississippi Department of Wildlife, Fisheries and Parks (MMNS 1996). In Alabama, it is protected as a non-game animal. Both Mississippi and Alabama regulations restrict collecting of the species. However, they do nothing to alleviate the loss of habitat which has caused the decline of this snake.

The best remaining habitat for the black pine snake is on the DNF in Mississippi. Forestry management programs, which protect gopher tortoises and red-cockaded woodpeckers or reestablish longleaf pine on the DNF, are of benefit to the snakes. Nevertheless, the DNF has no management program in place specific to the black pine snake. There are no restrictions on activities such as stump removal, which may have been detrimental to black pine snakes in the past (Duran 1998b). Multiple use priorities, such as timber production, and military and recreational use, do not put protection of the black pine snake at the forefront.

- E. Other natural or manmade factors affecting its continued existence. Fire is needed to maintain the longleaf pine ecosystem. Fire suppression has been considered the primary reason for the degradation of the remaining longleaf pine forest. It is a contributing factor in reducing the quality and quantity of available habitat for the black pine snake. Lowered fire frequencies and reductions in average area burned per fire event (strategies often used in management of pine plantations) produce sites with thick mid-stories. These areas are avoided by black pine snakes (Duran 1998a).

Habitat fragmentation within the longleaf pine ecosystem threatens the continued existence of all the black pine snake populations on private lands. This is frequently the result of urban development, conversion of longleaf pine sites to pine plantations, and the associated increases in number of roads. When patches of available habitat become separated beyond the dispersal range of a species, populations are more sensitive to genetic, demographic, and environmental variability and extinction becomes possible. This is likely the cause for the extirpation of the black pine snake in Louisiana and the loss of

populations in two (and possibly a total of five) counties in Mississippi (Duran pers. comm. 1999).

Roads surrounding and traversing the remaining habitat pose a threat to the black pine snake. Lalo (1987) estimated that one million individual vertebrates are killed per day on roads in the United States. Black pine snakes frequent the sandy hilltops and ridges where roads are most frequently sited. During Duran's (1998a) study, 17 percent of the black pine snakes with transmitters were killed while attempting to cross a road.

In many parts of Louisiana, Mississippi, and Alabama, there is a lack of understanding of the importance of snakes to a healthy ecosystem. Snakes are often killed intentionally when they are observed. During his study, Duran (1998a) found a dead black pine snake that had been shot. In another instance, the tracks of a 4-wheel drive vehicle could be seen swerving to the wrong side of the road and into a ditch where a flattened dead black pine snake was found. As development pressures increase on the remaining black pine snake's habitat, especially in Mobile County, Alabama, human/snake interactions will increase and frequently result in the death of the snake.

Duran (1998a) suggested that reproductive rates of wild black pine snakes may be low. Thus, the loss of mature adults, through road mortality or direct killing, increases in significance. As existing occupied habitat becomes reduced in quantity and quality, low reproductive rates threaten population viability.

#### BRIEF SUMMARY OF REASONS FOR REMOVAL OR LISTING PRIORITY CHANGE:

##### FOR RECYCLED PETITIONS:

- a. Is listing still warranted? \_\_\_
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? \_\_\_
- c. Is a proposal to list the species as threatened or endangered in preparation? \_\_\_
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded.

**LAND OWNERSHIP** (Estimate proportion Federal/state/local government/private, identify non-private owners): Of extant populations, 60 percent are on Federal (DeSoto National Forest), 39 percent are on private, and 1 percent are on State-managed (Marion County Wildlife Management Area) lands.

##### PRELISTING (Describe status of conservation agreements or other conservation activities):

There have been some preliminary conversations with the U.S. Forest Service concerning development of a Memorandum of Understanding for the black pine snake. This agreement would identify management needed to protect the snake on the DeSoto National Forest.

REFERENCES (Identify primary sources of information (e.g., status reports, petitions, journal publications, unpublished data from species experts) using formal citation format):

- Blanchard, F.N. 1920. A black Pituophis. Copeia 80:30-33.
- Blanchard, F.N. 1924. A name for the black Pituophis from Alabama. Papers Michigan Academy of Science, Arts, and Letters 4:531-532.
- Collins, J.T. 1991. Viewpoint: A new taxonomic arrangement for some North American amphibians and reptiles. Herpetological Review 22:42-43.
- Conant, R. 1956. A review of two rare pine snakes from the Gulf coastal plain. American Museum Novitates 1781:1-31.
- Cook, F.A. 1943. Snakes of Mississippi. Survey Bulletin, Mississippi Game and Fish Commission. Jackson, Mississippi. 73 pp.
- Cook, F.A. 1954. Snakes of Mississippi. Survey Bulletin, Mississippi Game and Fish Commission. Jackson, Mississippi. 45 pp.
- Crain, L. and W.J. Cliburn. 1971. Pituophis melanoleucus lodingi from the western part of its range. Southwestern Naturalist 15:496-497.
- Duran, C.M. 1998a. Radio-telemetric study of the black pine snake (Pituophis melanoleucus lodingi) on the Camp Shelby Training site. Report to the Mississippi Natural Heritage Program and the Mississippi National Guard. 44 pp.
- Duran, C.M. 1998b. Status of the black pine snake (Pituophis melanoleucus lodingi Blanchard). Unpublished report submitted to U.S. Fish and Wildlife Service, Jackson, MS. 32 pp.
- Duran, C.M. 2000. Quantitative analysis of the status of the black pine snake (Pituophis melanoleucus lodingi). Preliminary report. Unpublished report submitted to U.S. Fish and Wildlife Service, Jackson, MS. 15 pp. + appendices.
- Frost, C.C. 1993. Four centuries of changing landscape patterns in the longleaf pine ecosystem. Pgs, 17-43 In: S.M. Hermann (ed.), Proceedings of the Tall Timbers Fire Ecology Conference, No. 18, the Longleaf Pine Ecosystem: ecology, restoration and management. Tall Timbers Research Station, Tallahassee, FL.
- Jennings, R.D. and T.H. Fritts. 1983. The status of the black pine snake Pituophis melanoleucus lodingi and the Louisiana pine snake Pituophis melanoleucus ruthveni. U.S. Fish and Wildlife Service and University of New Mexico Museum of Southwestern Biology, Albuquerque, NM. 32 pp.

- Lalo, J. 1987. The problem of roadkill. *American Forests* 50:50-52.
- Mississippi Museum of Natural Science (MMNS). 1992. Endangered species of Mississippi, Mississippi Department of Wildlife, Fisheries, and Parks, Jackson, MS. 80 pp.
- Mount, R.H. 1975. The reptiles and amphibians of Alabama. Auburn Printing Company, Auburn, AL. 347 pp.
- Outcalt, K.W. and R.M. Sheffield. 1996. The longleaf pine forest: Trends and current conditions. USDA Forest Service, Southern Research Station, Resource Bulletin SRS-9, Asheville, NC. 23 pp.
- Sweet, S.S. and W.S. Parker. 1990. Pituophis melanoleucus. *Catalogue of American Amphibians and Reptiles* 474.1-474.8.
- Vandeventer, T.L. and R.A. Young. 1989. Rarities of the longleaf: the black and Louisiana pine snakes. *Vivarium* 1:32-36.
- Walker, J.M. 1965. Notes on two rare Louisiana serpents. *Herpetologica* 21:159-160.
- Wiley, E.O. 1978. The evolutionary species concept reconsidered. *Systematic Zoology* 27:17-26.
- Wright, A.H. and A.A. Wright. 1957. Handbook of snakes of the United States and Canada. Cornell University Press, Ithaca, NY. 1105 pp.

LISTING PRIORITY (place \* after number)

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6*
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, annual retentions of candidates, removal of candidates, and listing priority changes.

Approve: \_\_\_\_\_  
Regional Director, Fish and Wildlife Service Date \_\_\_\_\_

Concur: \_\_\_\_\_  
Director, Fish and Wildlife Service Date \_\_\_\_\_

Do not concur: \_\_\_\_\_  
Director, Fish and Wildlife Service Date \_\_\_\_\_

Director's Remarks: \_\_\_\_\_

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Date of annual review: January 2001

Conducted by: Linda LaClaire - Jackson, Mississippi FO

Changes from October 25, 1999 CNOR(check one) Yes X No\_\_\_

Approval: \_\_\_\_\_ Dated \_\_\_\_\_  
Regional Director

Comments: \_\_\_\_\_  
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(rev. 6/00)