

The Florida Pinesnake: *Pituophis melanoleucus mugitus*¹

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Species Description

The Florida pinesnake (*Pituophis melanoleucus mugitus*) is one of three subspecies of pinesnakes found in the southeastern United States. One other subspecies, the black pinesnake (*P. m. melanoleucus*), is also found in Florida, but its range is limited to the extreme western Panhandle. Adult Florida pinesnakes are large, handsome, heavy-bodied snakes that can vary considerably in size, averaging 48–66 inches long, with the largest recorded snake reaching 90 inches (about 7 ½ feet). Adult Florida pinesnakes have a variable pattern of dark brown or rust-colored blotches on a light cream to tan background color. These markings are more distinct and vividly colored toward the tail and more indistinct or faded in appearance toward the head, which often has variable darker markings (Figure 1). Young Florida pinesnakes look much like the adults, but the dark markings are more defined (Figure 2). Throughout the southeastern US there are regional variations in the color of pinesnakes, with individuals of some populations being extremely pale, whereas others are exceptionally dark.

Similar Species

The Florida pinesnake is somewhat similar in appearance to the eastern coachwhip (*Coluber flagellum flagellum*) and the Florida kingsnake (*Lampropeltis getula floridana*), which are found within the range of the Florida pinesnake. The eastern coachwhip (Figure 3) is a slender-bodied snake with a dark brown-black head that lacks blotches. The coachwhip

gets its name from its long tail that looks braided, like a whip. The Florida kingsnake (Figure 4) has faint banded markings that do not become more distinct toward the tail. Both the eastern coachwhip and the Florida kingsnake have smooth scales, whereas the scales of pinesnakes have a longitudinal ridge or keel that makes them appear rough. If captured, pinesnakes can easily be identified by the large, elongated *rostral* scale on the nose (Figure 5), and the large, spade-shaped head—important traits that aid them in digging. The rostral scale of eastern coachwhips and Florida kingsnakes is much smaller and does not extend onto the top of the head.



Figure 1. The markings of adult Florida pinesnakes are indistinct toward the head, but become more obvious toward the tail. Coloration of Florida pinesnakes varies regionally—some individuals may be much paler or darker than the adult shown here. Credits: Gabriel Miller, University of Florida, 2008

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Figure 2. The markings of young Florida pinesnakes are much more distinct than those of adults.

Credits: Steve A. Johnson, University of Florida, 2008



Figure 5a. Pinesnakes can be easily identified by the large rostral scale on the nose.

Credits: Steve A. Johnson, University of Florida, 2007



Figure 3. The eastern coachwhip (*Coluber flagellum flagellum*) is similar in appearance to the Florida pinesnake, but has a dark brown-black head and lacks obvious blotches.

Credits: Nancy West, University of Florida, 2008



Figure 5b. Pinesnakes have a spade-shaped head that helps them burrow into the soil.

Credits: Melissa H. Friedman, University of Florida, 2007



Figure 4. The Florida kingsnake (*Lampropeltis getula floridana*) is similar in appearance to the Florida pinesnake, but has a faint, banded pattern and lacks obvious blotches or an enlarged rostral scale.

Credits: Kenneth Krysko, Florida Museum of Natural History, 2008

When approached or handled, pinesnakes may hiss loudly or may make a rattling noise by shaking their tail rapidly in dry leaves. However, although they appear menacing, pinesnakes are *non-venomous* and become defensive only when they feel threatened. Because of the rattling noise made by pinesnakes (and many other snakes) when threatened, and their similar coloration, the harmless Florida pinesnake is sometimes confused with the venomous eastern diamond-backed rattlesnake (*Crotalus adamanteus*; Figure 6). However, the eastern diamond-backed rattlesnake is much heavier-bodied, has a dark facial band and obvious dark diamond marks bordered in white down its back (Figure 6), and has a large rattle.



Figure 6. The eastern diamond-backed rattlesnake (*Crotalus adamanteus*) is also similar in appearance to the Florida pinesnake, but is a much heavier-bodied snake with obvious dark diamond marks bordered in white down the back, a dark facial band, and a large rattle. Credits: Steve A. Johnson, United States Geological Survey, 2003

Distribution and Habitats

Florida pinesnakes are found in the extreme Southeastern Coastal Plain of the United States, in the area from the southern tip of South Carolina west through southern Georgia and extreme southeastern Alabama, and south through most of peninsular Florida (Figure 7). Florida pinesnakes favor dry, upland areas with well-drained, sandy soils. Their preferred natural habitats include upland pine forests and sandhills (Figures 8 & 9), but they are also found in scrubby flatwoods, oak scrub, dry oak forests, old fields and agricultural borders. Unfortunately, the development and fragmentation of these native habitats for residential and commercial use have caused Florida pinesnakes to become much less common in the landscape.

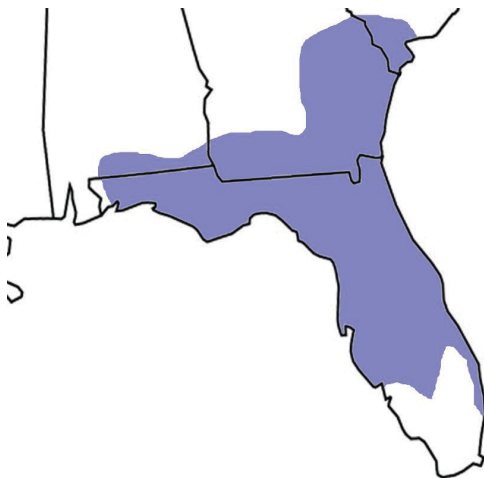


Figure 7. Distribution of Florida pinesnakes in the southeastern United States.

Credits: Adapted from Gibbons and Dorcas (2005) by Gabriel Miller, University of Florida, 2008



Figure 8. Upland longleaf pine-wiregrass (*Pinus palustris* - *Aristida beyrichiana*) habitat is excellent habitat for Florida pinesnakes. This habitat requires prescribed burning to maintain the appropriate conditions for Florida pinesnakes and many other species.

Credits: Steve A. Johnson, University of Florida, 2008



Figure 9. Upland turkey oak (*Quercus laevis*) barren sandhill habitat is also excellent habitat for Florida pinesnakes. When prescribed fire is used to manage oak-dominated sandhills they eventually revert back to pine-dominated systems and remain very suitable for Florida pinesnakes.

Credits: Dirk Stevenson, United States Department of Defense, 2008

Behavior

Florida pinesnakes are most active in spring and early fall, and become nearly inactive during the winter months (depending on the temperature). They are most active during the day as they forage for food, seek mates, and bask in the sun. They spend the majority of their time underground in refuges, such as mammal burrows, especially those of southeastern pocket gophers, *Geomys pinetis* (for more information on southeastern pocket gophers, read *Ecological Engineers: Pocket Gophers are one of Nature's Architects* at <http://edis.ifas.ufl.edu/UW285>), and stump holes (channels in the soil left by the decayed roots of long-dead

trees). Pinesnakes also seek refuge in the burrows of gopher tortoises. Tortoise burrows provide protection and shelter for many species of animals, ranging from large snakes like the Florida pinesnake and eastern indigo snake (for more information on indigo snakes, read ‘Black Snakes’: *Identification and Ecology* at <http://edis.ifas.ufl.edu/uw251>), to small invertebrates such as crickets and moths. Adept diggers, pinesnakes use their enlarged rostral scales and spade-like heads to burrow into existing underground retreats or to construct their own.

Diet

Pinesnakes are not venomous, but are powerful constrictors able to subdue a wide variety of rodent prey, including mice, cotton rats, rabbits, and pocket gophers. Pinesnakes are also known to prey on ground-nesting birds and their eggs. Pinesnakes forage for prey above and below ground, where they sometimes constrict prey by pinning them against the walls of burrows.

Reproduction

Florida pinesnakes mate in spring and the early summer; during this time, males actively seek females across large areas of suitable habitat. When a male encounters a female, he holds her by biting her neck and proceeds to entice her to mate by entwining himself around her and rubbing her body with his. The courtship and mating process can take several hours to complete. Female Florida pinesnakes lay 4–8 very large (2–4.5 in. / 4.5–12 cm long), white, leathery eggs in June or July. Eggs are typically laid in an existing underground cavity or burrow, although females have been known to excavate their own egg chamber. The eggs hatch in approximately 2 months, requiring a much longer incubation period than the eggs of most snakes. Pinesnake hatchlings are also larger than most snake hatchlings, with an average length of 15 inches.

Conservation

The Florida pinesnake is now considered uncommon over most of its range, and many herpetologists (scientists who study reptiles and amphibians) believe that this species is in decline. In Florida, the Florida pinesnake is listed as a species of special concern by the Florida Fish and Wildlife Conservation Commission. Habitat fragmentation and habitat destruction for extensive commercial and residential development and the roads that accompany development are the most significant threats to the survival of Florida pinesnakes. Since Florida pinesnakes are most active in the daytime, they are often killed crossing Florida’s increasingly busy highways as they search for mates or forage for prey.

Sadly, due to the common misbelief that all snakes are dangerous, people sometimes purposely run over Florida pinesnakes and many other harmless snakes. Wildlife underpasses and other improvements in road construction that reduce animal mortality have been proven to be highly effective and should be implemented in areas heavily used by wildlife or in areas where imperiled species must be protected.

In order to conserve Florida pinesnakes, we must protect large tracts of upland habitat, actively manage this land using prescribed burning, and maintain the connectivity between these habitats. Like many large snakes, Florida pinesnakes require large tracts of habitat—the home range of a male snake may be as large as 400 acres—and cannot thrive in small habitat patches. These large tracts of upland habitat must not only be preserved, but must also be actively managed using prescribed burning. Historically, Florida pinesnake habitats were maintained by fire, and the pinesnakes, along with the majority of Florida’s native plant and wildlife species, have adapted to these conditions. When fire is removed or suppressed, many species disappear as the habitat gradually changes over time in the absence of fire and becomes inhospitable to these species. Therefore, fire management is essential to ensure habitat integrity for pinesnakes and many other native species. Equally critical is the need to maintain connectivity among these fire-maintained tracts of upland habitat. Connectivity allows genetic flow between populations, maintaining genetic diversity of these populations and increasing their capacity to adapt, resist disease, and persist in the landscape.

Most importantly, you can help to conserve Florida pinesnakes (and other snakes) by learning more about them and educating others. You can also help Florida scientists monitor the status of this imperiled species by reporting sightings of live or dead pine snakes at the FWC’s “Rare Snake Registry” page by visiting: <https://public.myfwc.com/fwri/raresnakes/>. Florida’s native snakes play important roles in our ecosystem, both as predators and prey. Snakes also provide a valuable service to humans, because they help regulate rodent populations that can invade our homes, become agricultural pests, or even spread disease to humans. Unfortunately, many snakes already threatened by habitat loss and road mortality are also persecuted by humans. In the US, humans kill thousands of snakes each year. Floridians must learn to respect snakes and understand the benefits they provide so that future generations will understand the importance of protecting snakes such as the Florida pinesnake.

Online Resources for More Information on Florida Pinesnakes

Dr. J's Wildlife Web Page—Online guide to Florida's Snakes: <http://ufwildlife.ifas.ufl.edu/snakes/florida.shtml>

Florida Museum of Natural History: <http://www.flmnh.ufl.edu/herpetology/FL-GUIDE/Pituophismmugitus.htm>

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