Pituophis ruthveni is a large, heavy-bodied snake with adults reaching a size of 121.9–152.4 cm in length (Boundy and Carr 2017; Werler and Dixon 2000). Male snakes reach slightly larger sizes than females (Himes et al. 2002). Neonates of Pituophis ruthveni are, on average, the largest neonates of any North American snake, reaching 55 cm or larger (Reichling 1988, 1990). Four prefrontal scales are present on the forecrown, a distinguishing trait of snakes in the genus Pituophis. They possess an enlarged rostral scale that is typically longer than it is wide, and an undivided anal plate. The dorsal scales are keeled above the seventh scale row and arranged in 27 to 33 rows at midbody (Wright and Wright 1957, 1994). Pituophis ruthveni has a distinct pattern consisting of 28 to 42 brown blotches that are conspicuously different at opposite ends of the body (Conant 1956, 1958, 1975; Conant and Collins 1991a, 1991b, 1998). Near the head and neck, these blotches are...
DIAGNOSIS. The key diagnostic feature that distinguishes *Pituophis ruthveni* from *Pituophis melanoleucus* (Pinesnakes) is the presence of an enlarged rostral scale in *Pituophis ruthveni*. The rostral scale is raised slightly above the surrounding scales. The conspicuous pattern and coloration of the middorsal markings of *Pituophis ruthveni* is another distinct diagnostic feature that distinguishes this species from *Pituophis melanoleucus* and the associated subspecies (Stull 1929). Middorsal markings in *Pituophis melanoleucus* are fewer in number than in *Pituophis ruthveni*, rang-

typically a darker brown, and tend to join and intermingle to form a continuous band of darker streaks over a yellowish-beige ground color. Blotches towards the posterior of the body can be a lighter reddish-brown or dark-brown, are widely spaced, and well-defined against a yellow ground color. Dark spots and splotches cover the crown, and in some specimens an indistinct dark bar crosses the head between the eyes. The venter is marked with small, irregular black splotches (Stull 1929). Juvenile coloration does not vary significantly from that of adults.

MAP. The open circle marks the type locality for *Pituophis ruthveni*, the black dots represent verified records. Shaded counties and parishes contain potential habitat for *Pituophis ruthveni* but do not demarcate a distribution for the species. Questionable specimen records were examined and verified to species.
De Jesús-Escobar (2000) recognized *Pituophis ruthveni* as a separate species despite the fact that multiple published hypotheses using parsimony, maximum likelihood, and Bayesian inference analyses of the mitochondrial DNA (mtDNA) ND4 region placed this taxon within a clade of *Pituophis catenifer sayi* (Collins 2010; Collins and Taggart 2008; Rodríguez-Robles and De Jesús-Escobar 1999). The third study identified *Pituophis ruthveni* as sister to *Pituophis catenifer* using maximum likelihood and Bayesian inference analyses of both nuclear and mtDNA sequences (Pyron and Burbrink 2009). Because of these genetic similarities, evidence supporting the designation of *Pituophis ruthveni* as a separate species comes from the geographic isolation of its populations from other species (Conant 1956; Fitch 2006; Smith and Kennedy 1951; Thomas et al. 1976) and a combination of morphometric characters distinguishing *Pituophis ruthveni* from close relatives (Collins 1991; Knight 1986; Reichling 1995; Thomas et al. 1976). Thus, *Pituophis ruthveni* is recognized as a species under the evolutionary species concept (Reichling 1995). A limitation of the four phylogenetic studies described above was the use of only one or two genes to draw inferences among taxa. Additional research including more genes might provide genetic data that further supports *Pituophis ruthveni* as a full species.

**PUBLISHED DESCRIPTIONS.** Descriptions of *Pituophis ruthveni* as a subspecies of *Pituophis melanoleucus* were published by Conant (1956, 1975), Conant and Collins (1991a, 1991b), Dixon (1987), Dundee and Rossman (1989), Smith and Kennedy (1951), Stull (1929, 1932, 1940), Sweet and Parker (1990), Tennant (1984), Thomas et al. (1976), Wright and Wright (1957, 1994). A modern taxonomic review of *Pituophis ruthveni* was presented by Reichling (1995). Other published descriptions of *Pituophis ruthveni* as a distinct species were published by Boundy and Carr (2017), Conant and Collins (1998), De Jesús-Escobar (2000) recognized *Pituophis ruthveni* as a separate species despite the fact that multiple published hypotheses using parsimony, maximum likelihood, and Bayesian inference analyses of the mitochondrial DNA (mtDNA) ND4 region placed this taxon within a clade of *Pituophis catenifer sayi* (Collins 2010; Collins and Taggart 2008; Rodríguez-Robles and De Jesús-Escobar 1999). The third study identified *Pituophis ruthveni* as sister to *Pituophis catenifer* using maximum likelihood and Bayesian inference analyses of both nuclear and mtDNA sequences (Pyron and Burbrink 2009). Because of these genetic similarities, evidence supporting the designation of *Pituophis ruthveni* as a separate species comes from the geographic isolation of its populations from other species (Conant 1956; Fitch 2006; Smith and Kennedy 1951; Thomas et al. 1976) and a combination of morphometric characters distinguishing *Pituophis ruthveni* from close relatives (Collins 1991; Knight 1986; Reichling 1995; Thomas et al. 1976). Thus, *Pituophis ruthveni* is recognized as a species under the evolutionary species concept (Reichling 1995). A limitation of the four phylogenetic studies described above was the use of only one or two genes to draw inferences among taxa. Additional research including more genes might provide genetic data that further supports *Pituophis ruthveni* as a full species.

**PHYLOGENETIC RELATIONSHIPS.** Recent phylogenetic studies of the genus *Pituophis* recognized three species: *Pituophis melanoleucus* (Pinesnakes), *Pituophis catenifer* (Gopher Snakes and Bullsnakes), and *Pituophis ruthveni* (Louisiana Pinesnake) (Krysko et al. 2014; Pyron and Burbrink 2009; Rodriguez-Robles and De Jesús-Escobar 1999, 2000). Notably, two of these studies (Krysko et al. 2014; Rodriguez-Robles and
DISTRIBUTION. *Pituophis ruthveni* is an inhabitant of the Longleaf Pine savannas west of the Mississippi River in Louisiana and eastern Texas. The species is known from eight parishes in Louisiana (Boundy and Carr 2017, Dundee and Rossman 1989) and 11 counties in Texas (Dixon 2013); however, since 2000, this taxon has only been found in five Louisiana parishes (Bienville, Natchitoches, Rapides, Sabine, and Vernon) and four Texas counties (Angelina, Jasper, Nacogdoches, and Newton) (Hibbitts et al. 2016; U. S. Fish and Wildlife Service 2016). Records from the Louisiana parishes of Calcasieu and Jefferson Davis parishes and the Texas counties of Caldwell, Houston, Montgomery and Walker have been considered erroneous or are questioned (we examined these specimens as did Thomas et al. 1976).


**Figure 2.** A male *Pituophis ruthveni* from Jasper County, Texas. Photo by Toby J. Hibbitts.
FOSSIL RECORD. No fossils are known.


ETYMOLOGY. The genus Pituophis is derived from the Greek word pitys, which means pine, and ophios, which means serpent. The species name ruthveni is a patronym honoring Alexander Grant Ruthven, an American herpetologist and former president of the University of Michigan (Beolens et al. 2011).

ADDITIONAL VERNACULAR NAMES. Louisianan Pine Snake (Simon 1979).

COMMENT. Pituophis ruthveni is arguably the rarest large North American snake. Less than 100 snakes were known before 1993 when efforts were made to trap for this species to try and learn about their status. As of June 2017, the number of snakes known is less than 310. The longleaf pine habitat, the preferred habitat of Pituophis ruthveni, was mostly logged by the 1930’s, relegating populations of Pituophis ruthveni to remnant
forest patches. Additionally, fire suppression reduced available habitats where forest remnants remained. At present, only seven populations occur in Texas and Louisiana with no snakes observed in the three Texas populations since 2010. Texas populations are listed as endangered by the Texas Parks and Wildlife Department (Anonymous 1993); Louisiana (Boundy and Carr 2017) also prohibits the collections of this species from the wild. *Pituophis ruthveni* is currently a candidate for federal listing as a threatened species (U. S. Fish and Wildlife Service 2016).

**LITERATURE CITED**


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