THE SNAKES OF TEXAS

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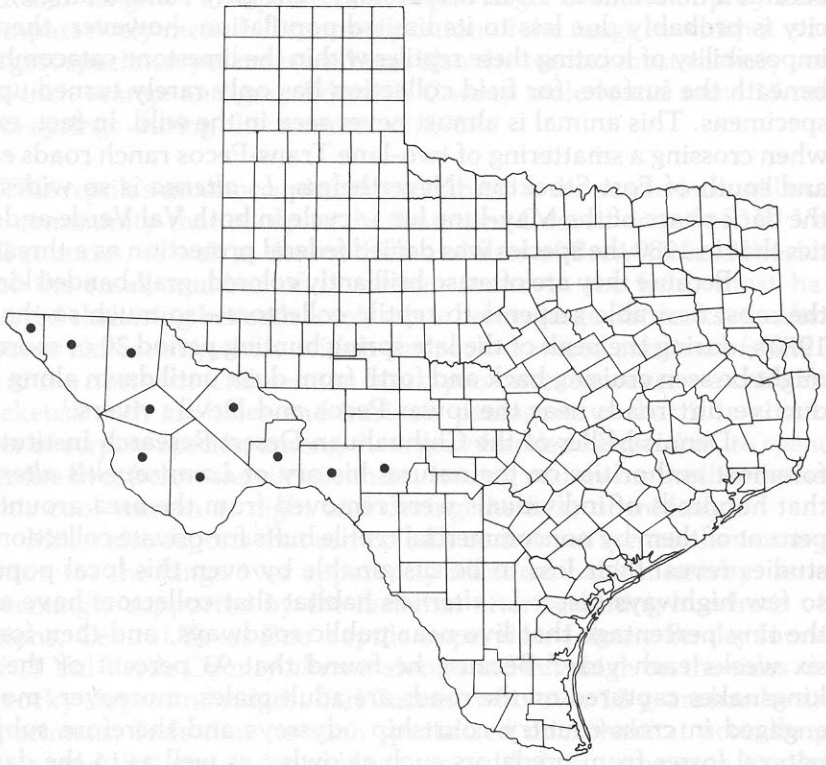
Texas Monthly Press



Texas Distribution of Gray-banded Kingsnake (*Lampropeltis alterna*)

Gray-banded Kingsnake

Lampropeltis alterna

photo 374, 375

Nonvenomous This gentle animal seldom nips even when first picked up in the field.

Abundance Controversial. Long thought to be among the rarest North American reptiles, since before the Second World War only five specimens had been formally described (Schmidt and Davis, 1941), while *L. alterna*'s orange or Blair's

color phase went unrecorded until 1950, when its description by A. G. Flury became a milestone in Texas herpetology. The gray-banded king's notorious scarcity is probably due less to its limited population, however, than to the near-impossibility of locating these reptiles within the limestone catacombs they inhabit beneath the surface, for field collection has only rarely turned up such hidden specimens. This animal is almost never seen in the wild, in fact, except at night when crossing a smattering of two-lane Trans-Pecos ranch roads east of El Paso and south of Fort Stockton. Nevertheless, *L. alterna* is so widespread during the dark phase of the May-June lunar cycle in both Val Verde and Terrell counties that in 1980 the species was denied federal protection as a threatened animal.

Because they are often so brilliantly colored, gray-banded kings are among the most desirable serpents to reptile collectors—so much so that in the early 1970's, during the peak of the late spring hunting period 20 or more automobiles might be seen cruising back and forth from dusk until dawn along the most productive dirt roads near the lower Pecos and Devil's rivers.[1]

Dennis Miller of the Chihuahuan Desert Research Institute, among the foremost authorities on the natural history of *Lampropeltis alterna*, estimates that hundreds of individuals were removed from the area around Langtry, 90 percent of them by noncommercial reptile buffs for private collections. Yet Miller's studies reveal their loss to be sustainable by even this local population, since so few highways bisect *L. alterna*'s habitat that collectors have access to only the tiny percentage that live near public roadways, and then for only five or six weeks each year.[2] Because he found that 93 percent of the gray-banded kingsnakes captured on the roads are adult males, moreover, most apparently engaged in cross-country courtship odysseys and therefore subject to heavy natural losses from predators such as owls,[3] as well as to the danger of being run over by traffic, Miller feels the minuscule additional loss of those taken by reptile enthusiasts is entirely insignificant, especially since it is apparently readily offset by the reproductive efforts of the remaining males, each of which copulates with as many females as it can locate.

In addition, gray-banded kings are so avidly bred by reptile fanciers that they are now among the most frequently exhibited serpents in both private and zoo collections, captive propagation techniques having been refined during the last six years to the point that enough young *alterna* can now be produced every season to virtually eliminate enthusiast pressure on the natural population, as occurred during 1979 and 1980 due to the disparity between the cost of the dozens of gallons of gasoline required to find a single wild individual on the roads and the steadily falling price of a captive-bred juvenile. Yet because the Texas Department of Parks and Wildlife has forbidden the sale of these domestically raised offspring (by departmental directive, the young may not even be turned back into their natural habitat without applying for transport papers and release permits), pet trade demand for wild-caught gray-banded kings is again on the rise. One solution, urged by both Miller and Jozsef Laszlo, reptile superintendent at the San Antonio Zoo, would be to allow herpetofauna breeders to satisfy commercial market pressures, much as is now the case with game birds and fur-bearing mammals, while limiting snake hunting in sensitive areas strictly to road-collecting.

Size Ten to 12 inches long at hatching, adult gray-banded kings average around 32 inches in length. Perhaps because of the larger biomass of prey available in the comparatively mesic hill country portion of the range in which it was found, the largest specimen yet measured was also the second most easterly on record: a 57¾-inch orange-and-gray Edwards County male found some 17 miles west of Rocksprings during the summer of 1967.[4]

Habitat This reptile's most-occupied macrohabitat is the acacia-lechugilla-sotol succulent community that occupies the limestone-floored desert of Val Verde and Terrell counties, as well as the foothills and flats of Brewster and Presidio counties; of the small number of *L. alterna* found in the field, most have been discovered sheltering beneath sotol, a few below large flat rocks. *L. alterna* may also occur almost anywhere within the rock-creviced substrate found beneath much of the northern Chihuahuan biotic province, however—a chthonic milieu so pocketed with air holes and intricate passageways that it is possible for a number of serpent species, among them gray-banded kingsnakes, to spend almost their entire lives below the surface there, feeding mainly on the lizards that retreat into this cool warren at night and during the heat of midday.

Miller also reports that certain hills or arroyos seem to have a mysterious attraction for the kings over apparently identical habitat nearby, an observation seemingly supported by the fact that after searching hundreds of similar elevations, Central Texas Zoo reptile supervisor Johnny Binder found all but one of 11 Val Verde County *alterna* along road cuts high on the sides of a handful of rocky slopes and ridges. Earl Turner, who over 18 years has located some 163 specimens, feels that no such specialized microhabitat actually prevails, however, and that gray-banded kings are as likely to appear on low-lying flats as on hillsides or canyon embankments. Their only consistent association, he maintains, is with a crumbly limestone substrate vegetated primarily by sotol cactus. Along the lower Pecos and Devil's rivers, proximity to major watercourses is purportedly of some importance, although in the western portion of their range these animals have been discovered beneath chalky limestone flags both in mid-desert and along highway excavations through mountain gaps like Guadalupe Pass, where three individuals were recently found.

Prey *Alterna* from rocky Val Verde and Terrell County desert flats, as well as those taken west of Lajitas along the Rio Grande, evidently feed almost exclusively on lacertilians, for in captivity they sometimes initially accept only lizards as prey.[5] Nevertheless, Kevin Schirmer picked up one small female on the county road north of Langtry as she struggled to swallow a large pocket mouse, while another newly captured *alterna* regurgitated a canyon tree frog. Since gray-banded kingsnakes are such slow-moving reptiles that even in small enclosures captives experience difficulty in capturing nimble lizards or mice, it is likely that in their native habitat these serpents take primarily cornered or nestling rodents and the sleeping lacertilians—canyon lizards frequently spend the night right out in the open—that they locate by scent after dark. As the only nonophiophagous member of the kingsnake family, *L. alterna* is usually a safe companion for smaller serpents, however.

Reproduction Egg-bearing. Although no reproductive behavior has been observed in the wild, captive courtship is recorded at length, often beginning with dominance competition between adult males wherein each animal strives to force its adversary to the ground by rearing slightly above it and descending. If a female is also present, following a 4- to 15-minute sequence of pursuit, head-rubbing, and parallel body alignment, the more assertive combatant will then almost always copulate with her. Small clutches of 3 to 13—average is 5 or 6—elongate leathery eggs 1¼ to 1⅝ inches in length are laid between late May and early July, followed by a 9-week incubation period during which the eggs grow slightly, stretching nearly ⅛ inch in length before hatching into 7½-inch to 10-inch replicas of the adults.[6] Immediately upon emerging—a process that because of numerous stops may take 24 or more hours—the hatchlings normally drink water, although usually not until after their first shed at 5 to 10 days of age do they accept newborn mice or small lizards as food.

Coloring/scale form Perhaps in part because this species' subterranean habitat minimizes its need for camouflage patterning, it is among the most vividly and without question the most variably colored reptile in Texas,[7] with a continuum of intermediate combinations between the radically dissimilar-appearing animals formerly defined as Blair's and *alterna* races but now regarded as merely disparate color phases of a single species.[8] Although considerably differing dorsal pigmentation may occur in the same locality and even in the same brood of young, the two basic color morphs are generally typical of separate geographical areas: in the lower Pecos River and Devil's River drainages roughly 8 of 10 individuals exhibit the paler Blair-phase pattern of broad orange saddles bordered by narrower, thinly white-edged black bands widely separated by a light gray ground hue. (Duskier, less orange animals also occur here, although individual snakes can grow either lighter or darker with age.) The more northerly *alterna* morph is quite different, for in the typical Davis Mountains population, 17 to 23 thin, occasionally white-edged black bands—sometimes narrowly split with red—are separated by much broader areas of medium gray, although at the western tip of the state the typical *alterna* is mostly very pale gray above, with only a few dark dorsal crossbands.

Other gray-banded kings are simply unique in coloring, with an apparently strong tendency toward melanism: one gravid Val Verde County female (which eventually produced eight ordinary gray-and-orange Blair-phase young) was nearly solid black except for a scattering of narrow white crossdorsal lines, while several specimens reported by Miller are almost gunmetal-blue animals whose backs are slashed with narrow strips of dark red. All *L. alterna*, however, are characterized by slender necks much thinner than their wide, relatively flat gray crowns generally patterned with either black spots or transversely angled lines. The protruding eyes' round black pupils are surrounded by pale grayish irises, while the belly on all forms is also pale gray, irregularly blotched with black pigment that may form irregular transverse bands. The 25 midbody rows of dorsal scales are smooth and glossy; and the anal plate is undivided.

Similar snakes The proportionately much more slender **Texas coral snake** has

bright yellow and red adjacent dorsolateral-ventral bands that (along with its very wide black body bands) entirely circle its trunk. Its tiny black head, no wider than its neck, is marked only with a prominent chrome-yellow sash behind the eye. Its anal plate is divided. The **New Mexico milk snake** has broad, bright red bands bordered by thin black rings across its back and sides; each pair of red and black bands is separated by a prominent white band. The **Texas longnose snake** has heavily speckled yellowish lower sides, an elongate pinkish or brown nose, and no solid gray dorsolateral bands; unlike *Lampropeltis* there is a single belly-wide row of subcaudal scales beneath most of its tail.

Behavior Only in 1975 was it discovered that captive gray-banded kingsnakes need to brumate (hibernate) for two to four months (preferably in rooms with large windows that enable them to pick up the seasonal rhythm of late winter's gradually lengthening daylight photoperiod) in order to breed. Other sophisticated husbandry now used in propagating *L. alterna* includes building false floors drilled with appropriately sized entrance holes into their cages to approximate the kings' porous sub-desert-floor microhabitat: the "underground" space is filled with loose vermiculite into which the snakes can burrow during the day, then emerge onto the surface at night to feed. The combined result of such simulations is that hundreds of young *alterna* are now bred in captivity each summer; during 1977, a single enthusiast in Tucson hatched some 150 specimens.

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[1]Largely as a result of the unpopularity of these night-riding outsiders among area ranchers, state protection from capture was enacted for *L. alterna* in July, 1977.

[2]Except in that single small area of Val Verde County, Miller estimates, no more than 50 of these reptiles have ever been taken in a year's time from West Texas.

[3]Other recorded predators include the sometimes crepuscular western coachwhip: one traffic-killed example found near Dryden in Terrell County contained a small Blair-morph *Lampropeltis alterna*.

[4]Just northeast of Rocksprings, Clarence McCoy captured the *most* easterly recorded *alterna* – another very large male – in a cave of the Devil's Sinkhole.

[5]These lizard-eating gray-banded kings can gradually be persuaded to recognize laboratory mice as appropriate food, although this may require a long transition period during which the rodents are kept in cages with iguanas to acquire their lacertilian scent.

[6]Early in September, 1976, Turner hatched two orangish, Blair-color-morph *L. alterna* from a single egg. Except for a slight difference in size, the pair were identical, which because of this species' almost infinite variability in dorsal hue and marking means that they are probably the only exactly like-patterned gray-banded kings in existence.

[7]Despite their often gaudy backs and sides, even in the beam of a spotlight *alterna* are difficult to pick out at night, however, because their nonreflective dorsa closely resemble the twisted creosote branches that litter the verges of West Texas' back roads.

[8]Recent work by William R. Garstka (1982) has resulted in the reclassification of the northern Mexico and Texas gray-banded kingsnake population as a separate species distinct from the more southerly and westerly Mexican species now classified as *Lampropeltis mexicana*.

Gray-banded Kingsnake, *Lampropeltis alterna* (Blair phase) text, 409

Gray-banded Kingsnake, *Lampropeltis alterna* (Blair phase) text, 409

Craig McIntyre

Gray-banded Kingsnake, *Lampropeltis alterna* (alterna phase) text, 409

Northern Scarlet Snake, *Cemophora coccinea copei* text, 414