

# A three-way division of the New World Genus *Lampropeltis* Fitzinger, 1843 (Serpentes:Colubridae).

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## ABSTRACT

The King and Milk Snakes, *Lampropeltis* Fitzinger, 1843 are familiar to most American herpetologists. Notwithstanding their familiarity and general abundance. the taxonomy of the genus has remained unstable to the present time.

Confusion and dispute remains in terms of the exact number of species.

Even the generic placement of members has been unstable in recent years.

In 2009, Pyron and Burbink placed the short-tailed snake, known widely as *Stilosoma extenuatum* within the synonymy of *Lampropeltis*.

Other available genus names for subgroups and species groups have generally not been used.

Most recently the detailed evidence published by Pyron et. al. (2011) led the authors to note that they viewed the genus *Lampropeltis* to be paraphyletic at the genus level as currently defined.

Viewing this evidence and the obvious morphological and behavioral differences between the species groups, this paper divides the genus as currently accepted in three ways.

*Lampropeltis* retains the type species *getula* and several others, including *Stilosoma* which remains subsumed as does *Ophibolus* Baird and Girard, 1853. *Oreophis* Dugès, 1897 is resurrected to contain the type species *mexicana* and several others. Finally the divergent taxon, *calligaster* is placed within its own monotypic genus *Eksteinus* gen. nov.

**Keywords:** new genus; Kingsnake; Milksnake; *Lampropeltis*; *Stilosoma*; *Ophibolus*; *Oreophis*; *Eksteinus*; *calligaster*, Prairie Kingsnake; Mole Snake; Florida Mole Snake.

## INTRODUCTION

The King and Milk Snakes, *Lampropeltis* Fitzinger, 1843 are abundant across a wide area in the United States.

Consisting about 14 described species and another 30 recognised subspecies, they are popular pets in the reptile-keeping hobby. The snakes are reasonably active, docile and generally only bite when feeding.

Kingsnakes are regularly seen in pet shops across the United States, Europe and South Africa.

Notwithstanding their familiarity and general abundance in the region stretching from southern Canada, through most of the United States,

Central America and to Ecuador in northern South America, the taxonomy of the genus has remained unstable to the present time.

Confusion and dispute remains in terms of the exact number of species and the generic placement of members has also been unstable.

Most recently in 2009, Pyron and Burbink (2009a) placed the short-tailed snake, known widely as *Stilosoma extenuatum* within the synonymy of *Lampropeltis*, based on newly obtained phylogenetic evidence.

Available generic names for subgroups and species groups have generally not been used.

Most recently the detailed evidence published by Pyron et. al. (2011) led the authors to note that they viewed the genus *Lampropeltis* to be paraphyletic at the genus level.

However the authors made no taxonomic decisions at the time, save for their continued placement of the species *extenuatum* within *Lampropeltis*.

Viewing the evidence published by Pyron et. al. 2011 and the obvious morphological and behavioral differences between the species groups, this paper divides the genus as currently accepted three ways.

*Lampropeltis* retains the type species *getula* and several others, including *Stilosoma* which remains subsumed as does *Ophibolus* Baird and Girard, 1853. The holotype for the genus *Ophibolus* is *sayi*, a synonym for *L. getula*.

*Oreophis* Dugès, 1897 is resurrected to contain the type species *mexicana* and several others. Finally the divergent taxon, *calligaster* is placed within its own monotypic genus *Eksteinus* gen. nov..

#### GENERA LAMPROPELTIS FITZINGER, 1843 AND OREOPHIS DUGÈS, 1897

**Diagnosis:** Herein the two similar genera are diagnosed as one, in that they are both subject to diagnoses in other publications and this diagnosis is only for the purposes of setting out the diagnosis of the new genus *Eksteinus* gen. nov. defined below according to the Zoological Code (Ride et. al. 1999) in terms of separating it from these snakes.

The joint diagnosis of these genera is also made from the perspective that the genus *Eksteinus* gen. nov. is divergent from all members of both physically and phylogenetically and so can be differentiated against both other genera at the same time, as well as the fact that most readers in 2012 will probably still treat both *Lampropeltis* and *Oreophis* as a single group.

It should also be noted that the most recent phylogeny of these three groups of snakes placed *calligaster* as basal to the rest (Pyron et. al. 2011).

Both *Lampropeltis* and *Oreophis* consist of the so-called Kingsnakes and Milksnakes, which are small to medium-sized snakes usually from 30-90 cm in total adult length, although some species exceed a metre.

They are all shiny non-venomous snakes with smooth scales, 19-27 (usually about 23) dorsal mid-body scale rows and a single anal plate. They are powerful constrictors with other serpents featuring in the diet of several species. For this reason, captives should not be housed together and if placed together for breeding they should be watched at all times.

In the normal course of events, other vertebrates such as lizards and rodents form the main part of their diets.

For the Kingsnakes, most specimens are black or dark brown with white or yellowish spots on their scales, the exact size and arrangements varying between species and even within species.

When encountered in the wild these snakes often hiss and strike, but once picked up they become calm almost immediately.

The so-called Milksnakes are usually tri-coloured with red or brown, black and white or yellow in the form of transverse rings. In some kinds there are rows of blotches instead of rings, but in all cases the reddish part of the pattern is surrounded by black. These snakes are usually somewhat more pugnacious with specimens commonly biting when handled. The name "Milksnakes", comes from the myth that these snakes milk cows and has been perpetuated by this being the "common name" for the snakes in all major reptile field guides and the like, including Stebbins (1966) and Conant (1975).

Hatchlings measure 17-25 cm in total length.

The body of literature in terms of these snakes, including the species *calligaster* is huge and includes field guides, captive notes in herpetological journals and various taxonomic treatises and reviews. Relevant and important publications include, Allen (1932), Allen and Neill (1954), Anonymous (2007), Austin and Gregory (1999), Bailey (1939), Baird and Girard (1853), Barbour (1917), Barbour and Engels (1942), Bateman et. al. (2009), Bentley (1919), Bergman (1998), Bird et. a. (2005), Blainville (1835), Blanchard (1919, 1920, 1932), Blaney (1973, 1977, 1979), Blom (2003), Boback, et. al. (1996), Brady (1927), Burkett and Painter (1988), Burt (1933, 1935), Collins (1995), Collins and Collins (2010), Collins and Sapienza (1998), Conant (1934, 1938), Conant and Collins (1991), Cope (1860, 1875, 1892), Carrington (1927, 1929), Crother

(2000), Davenport et. al. (1998), Degenhardt et. al. (1996), Dessauer and Pough (1975), Duméril and Bibron (1835), Engle (2009), Fitch (1936), Franklin (1998), Green and Pauley (1987), Grismer (1999), Gutberlet and Franklin (1996), Hallmen (2005, 2006), Hay (1902), Hibbitts (1998), Irwin (2004), Jan (1865a, 1865b), Klauber (1938), Kreutz (2005), Krysko (1998), Krysko and Hurt (1998), Krysko and Judd (2006), Lara-Gongora et. al. (1993), Lazell and Musick (1973), LeClere (1995), Limer (1996), Linné (1766), Lönnberg (1894), Mattison (2007), Means (1998), Meierkord (2010), Mitchell (1994), Murphy and Ottley (1984), Neill and Ross (1949), Palmer and Braswell (1995), Phillips and Petzing (1998), Price (1987), Pyron and Burbink (2009a, 2009b, 2009c), Schmidt (2004, 2005), Seufer and Jauch (1980a, 1980b), Shoop (1957), Skubowius (2009, 2010), Slevin (1950), Smith (1956), Snyder (1945), Stebbins (1985), Stejneger (1902), Stevens (1994), Tanner (1927), Tanner (1958), Taylor (1952), Thissen and Hansen (2001), Thornton and Smith (1993), Thums (2004), Van Denburgh and Slevin (1921), Werner (1924), Wilgers et. al. (2006), Woodbury (1928), Yarrow (1882), Young and Iverson (1997) and Zweifel and Norris (1955).

#### GENUS EKSTEINUS GEN. NOV.

**Type species:** *Coluber calligaster* Harlan, 1827.

**Diagnosis:** The nominate form is known in most contemporary texts as the Prairie Kingsnake *Lampropeltis calligaster*. This taxon (including subspecies), monotypic for *Eksteinus* gen. nov. is easily separated from all other *Lampropeltis* and *Oreophis* by the following suite of characters: It is a distinctly blotched snake, relatively uncommon among Kingsnakes and Milksnakes; in this taxon the back and tail are patterned with about 60 brown reddish or greenish black-edged markings or alternatively about 55 or 52 small well-separated spots in the subspecies *rhomboaculata* and *occipitolineata*. Occasionally these are split in two down the back. There are two alternating rows of dark markings on each side, but pairs of these may fuse together. The ground colour is brownish grey or tan. Older specimens with faded pattern are commonly known as the "dark phase" often characterized by longitudinal dusky stripes. These snakes are characterized by a distinctive "V"-shaped arrow-head marking on the crown of the head. The venter is yellowish with squarish brown blotches. The young are strongly spotted, sometimes with lengthwise dark streaks on the neck and 23-28 cm in total length when hatched.

There are usually 23 dorsal mid-body rows, 9 infralabials, 7 supralabials, with numbers 3 and 4 in contact with the eye.

These snakes are similar in appearance to some Milksnakes (*Lampropeltis* spp.), which they are separated from by the fact that in Milksnakes the reddish blotches or rings are very boldly surrounded by black, and there are black markings on the belly.

These snakes are most commonly confused with Ratsnakes (*Elaphe*), and Cornsnakes (*Pantherophis*), which differ in having a divided anal, keeled scales and with the underside of tail often striped. Glossy Snakes (*Arizona*) have plain white venters.

The preferred habitat of *Eksteinus* gen. nov. is open grassland with loose, dry soil, typically on the edge of a forested region, not far from a permanent source of water. The diet consists primarily of rodents, but they will also consume lizards, frogs and occasionally other snakes. They are typically docile when handled, even as wild-caught. Like most colubrids if harassed they will shake their tail, which if in dry leaf litter can sound remarkably like a Rattlesnake (Crotalids). They are not typically prone to biting, but in terms of wild snakes, if handled will often excrete a foul-smelling musk. When threatened, they flatten and appear to have white spots. Many specimens are found by earth-moving operations and the like, these snakes being more prone to burrowing than other species within *Lampropeltis* and *Oreophis*.

As already mentioned, the genus *Eksteinus* gen. nov. is monotypic for the species *E. calligaster*. There are three recognised subspecies, namely:

*E. calligaster calligaster* Harlan, (1827), (Common name: Prairie Kingsnake),

*E. calligaster rhomboaculata* (Holbrook, 1840), (Common name: Mole snake),

*E. calligaster occipitolineata* (Price, 1987), (Common name: Florida Mole Snake).

**Distribution:** A United States endemic, found in mid-western areas from Nebraska to Florida in the south-east.

**Etymology:** Named in honor of Bob Ekstein of Belrose in Sydney, Australia for various services to herpetology.

#### SPECIES REMAINING IN *LAMPROPELTIS*

- Lampropeltis getula* (Linnaeus, 1766) (type species)  
*Lampropeltis alterna* (Brown, 1901)  
*Lampropeltis californiae* (Blainville, 1835)  
*Lampropeltis extenuata* (Brown, 1890)  
*Lampropeltis holbrookii* (Stejneger, 1902)  
*Lampropeltis nigra* (Yarrow, 1882)  
*Lampropeltis splendida* (Baird and Girard, 1853)  
*Lampropeltis triangulum* (Lacépède, 1789)

#### SPECIES WITHIN *OREOPHIS*

- Oreophis mexicana* (Type species)  
*Oreophis elapsoides* (Allen, 1932)  
*Oreophis pyromelana* (Cope, 1866)  
*Oreophis ruthveni* (Blanchard, 1920)  
*Oreophis webbi* (Bryson, Dixon and Lazzano)  
*Oreophis zonata* (Lockington, 1835)

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