

REPTILIA: SQUAMATA: COLUBRIDAE

REGINA SEPTENVITTATA

Catalogue of American Amphibians and Reptiles.

Ernst, C.H. 2002. *Regina septenvittata*.

Regina septenvittata (Say 1825)

Queen Snake

Coluber leberis Linnaeus 1758:216. Type locality, "Habitat in Canada." Holotype, a male; originally either collected by Kalm or in Kalm's collection. See **Remarks**.

Vipera loberus: Latreille, in Sonnini and Latreille 1802:8.

Coluber septenvittatus Say 1825:240. Type locality, "Inhabits Pennsylvania;" Carlisle, Pennsylvania according to Cope (1900). Holotype, "Total length, 9 inches and nine-tenths [22.9 cm], of the tail 2 inches and a half," a juvenile, apparently originally in the collection of the Academy of Natural Sciences of Philadelphia (ANSP), but not designated nor numbered.

Tropidonotus leberis: Holbrook 1842:49.

Regina leberis: Baird and Girard 1853:45.

Natrix lerberus: Cope 1892:668.

Tropidonotus septenvittatus: Boulenger 1893:239.

Natrix septenvittata: Cope 1896:216.

Regina septenvittata: Smith and Huheey 1960:159. First use of present combination.

Natrix septenvittata mabila Neill 1963:1. Type locality, "D'Olive Creek at its junction with Federal Highway No. 90, about two miles E. Mobile Bay, Baldwin County, Alabama." Holotype, Florida State Museum of Biological Sciences (UF) 16265 (formerly Wilfred T. Neill US-2554), adult female, collected 20 September 1950 by W.T. Neill and E.R. Allen (examined by author).

Natrix septenvittata septenvittata: Neill 1963:2.

Regina septenvittata septenvittata: Cochran and Goin 1970:249.

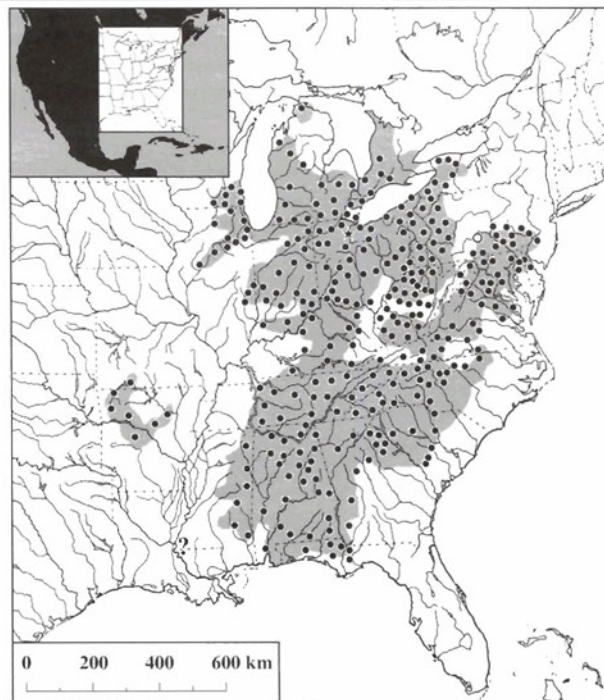
Regina septenvittata mabila: Cochran and Goin 1970:249.

• **CONTENT.** *Regina septenvittata* is a monotypic species.

• **DEFINITION.** The Queen Snake is a slender snake reaching a maximum TL of 99.2 cm (Boundy 1995); adult females (60.0–99.2 cm) are longer than adult males (45.0–70.0 cm); females average 45.1 cm SVL, males average 39.5 cm (Fitch 1981). Females are longer and more stout than males, average 138 ventrals (118–157) and 66 subcaudals (47–87), and have tails that average 23–24% (19–30%) of TL. Males are shorter and slimmer than females, average 141 ventrals (127–159) and 74 subcaudals (65–89), and have tails that average 26–27% (22–34%) of TL. Lateral head scales include either 1 or 2 nasals (if only a single nasal is present, the nostril is centrally located; if two nasals are present, the nostril partially separates the scales), 1 loreal, 2 (occasionally 1) preoculars, 1–3 (usually 2) postoculars, 1 + 2–3 + 2–4 temporals, 6–8 (usually 7) supralabials, and 8–11 (usually 9–10) infralabials. Dorsal body scales are weakly keeled, have two apical pits, and occur in 19 anterior and midbody rows, reduced to 17 rows posteriorly. The venter has 118–159 ventrals, 47–89 subcaudals, and a divided cloacal scute. The single hemipenis is occasionally slightly bilobed, and has a single, undivided sulcus spermaticus, one enlarged basal hook, and many rows of small spines on the shaft.

Ground color is brownish to olive, with a yellow stripe on each side flanking three narrow dark dorsal stripes. Four brown stripes mark a yellow venter. The labials, chin, and throat are cream to yellow.

The 23–37 ($\bar{x}$ = 24) maxillary teeth are short and stout; other teeth are: dentary 26–31 ($\bar{x}$ = 28), palatine 11–14 ($\bar{x}$ = 12), and pterygoid 17–23 ($\bar{x}$ = 20).



MAP. Distribution of *Regina septenvittata*. The type locality is designated by a circle, other selected locality records by dots, and fossil records by stars.



FIGURE 1. *Regina septenvittata* from Kentucky (photograph by Roger W. Barbour).



FIGURE 2. *Regina septenvittata* from Kalamazoo County, Michigan (photograph by James H. Harding).

• **DESCRIPTIONS.** General descriptions are in Cope (1900), LeRay (1928), Allen (1938), Clay (1938), Schmidt and Davis (1941), Wright and Wright (1957), Neill (1963), Smith and Brodie (1983), Ernst and Barbour (1989), Mitchell (1994),

Palmer and Braswell (1995), Tennant and Bartlett (2000), and Ernst and Ernst (2003). Other descriptions are: **karyotype** (Eberle 1972, Kilpatrick and Zimmerman 1973), **cranial musculature** (Varkey 1979), **vertebrae** (Holman 2000), **scales and microdermatoglyphics** (Price 1983), **hemipenis** (Cope 1896, Rossman 1963), **nares** (Rossman 1963), and **teeth** (Rossman 1963).

• **ILLUSTRATIONS.** Color illustrations of the entire animal are in Barbour (1971), Behler and King (1979), Martof et al. (1980), Ashton and Ashton (1981), Linzey and Clifford (1981), Vogt (1981), Smith and Brodie (1982), Jackson (1983), Green and Pauley (1987), Mehrtens (1987), Ernst and Barbour (1989), Shaffer (1991), Allen (1992), Rossi (1992), Holman et al. (1993, 1999), Harding (1997), Tennant (1997), Conant and Collins (1998), Gibbons and West (1998), Holman (2000), Johnson (2000), Tennant and Bartlett (2000), and Ernst and Ernst (2003). **Black and white illustrations** are in Ditmars (1936, 1945), Schmidt and Davis (1941), McCauley (1945), Conant (1951), Parmalee (1955), Carpenter (1957), Wright and Wright (1957), Smith (1961), Neill (1963), Pope (1964), Anderson (1965), Huheey and Stupka (1967), Cochran and Goin (1970), Froom (1972), Minton (1972), Mount (1975), DeGraff and Rudis (1981), Cook (1984), and Palmer and Braswell (1995). Other illustrations are: **head** (Ditmars 1936, Schmidt and Davis 1941, Wright and Wright 1957, Linzey and Clifford 1981), **venter** (Ditmars 1945, Wright and Wright 1957, Ashton and Ashton 1981, Linzey and Clifford 1981, Smith and Brodie 1982), **radiograph of skeleton** (Godley et al. 1984), **vertebral muscle attachments** (Varkey 1979), **midbody color and scale row patterns** (Rossman 1963), **dorsal scale surface** (Price 1983), **hemipenis** (Cope 1900), **spermatogenic seminiferous tubules** (Trauth 1991), **neonates and juveniles** (Harrison 1971), and **worm-eating** (Kelly 1936).

• **DISTRIBUTION.** *Regina septemvittata* ranges from southeastern Pennsylvania, western New York, and southwestern Ontario west to southeastern Wisconsin and adjacent northeastern Illinois, and south to northern Georgia, Alabama, and eastern Mississippi. A disjunct population occurs in the Ozark Mountains of northern Arkansas and southern Missouri, although Johnson (2000) noted that the Missouri population is no longer extant.

Papers discussing distribution are Surface (1906), LeRay (1928), Cliburn (1958, 1959), Conant (1960), Logier and Toner (1961), Snyder (1972), Spurr and Smith (1980), Arndt (1985), Johnson (1987, 2000), King (1988), Trauth (1991), and King et al. (1997). Various **maps** are presented in McCauley (1945), Conant (1951, 1960), Wright and Wright (1957), Reed (1958), Logier and Toner (1961), Smith (1961), Neill (1963), Anderson (1965), Barbour (1971), Minton (1972), Mount (1975), Behler and King (1979), Martof et al. (1980), Ashton and Ashton (1981), DeGraff and Rudis (1981), Vogt (1981), Smith and Brodie (1982), Jackson (1983), Cook (1984), Green and Pauley (1987), Ernst and Barbour (1989), Shaffer (1991), Rossi (1992), Mitchell (1994), Palmer and Braswell (1995), Harding (1997), Tennant (1997), Conant and Collins (1998), Tennant and Bartlett (2000), and Ernst and Ernst (2003).

• **FOSSIL RECORD.** Vertebrae of *Regina septemvittata* have been found in Pleistocene (Rancholabrean) deposits in a cave in Wyandot County, Ohio (Holman 1997).

• **PERTINENT LITERATURE.** General accounts are in Surface (1906), Ditmars (1936, 1945), Kelly (1936), Conant and Bridges (1939), Schmidt and Davis (1941), McCauley (1945), Wood (1949), Conant (1951), Parmalee (1955),

Carpenter (1957), Wright and Wright (1957), Smith (1961), Cook (1962), Pope (1964), Anderson (1965), Barbour (1971), Froom (1972), Minton (1972), Mount (1975), Behler and King (1979), Ashton and Ashton (1981), DeGraaf and Rudis (1981), Linzey and Clifford (1981), Vogt (1981), Jackson (1983), Trutnau (1986), Green and Pauley (1987), Ernst and Barbour (1989), Shaffer (1991), Trauth (1991), Allen (1992), Holman et al. (1993, 1999), Mitchell (1994), Palmer and Braswell (1995), Ernst et al. (1997), Harding (1997), Tennant (1997), Tennant and Bartlett (2000), and Ernst and Ernst (2003).

Other papers, listed by topics, include: **systematics and taxonomy** (Smith and Huheey 1960, Rossman 1963, Rossman et al. 1982, Dowling et al. 1996, Alfaro and Arnold 2001 [see Ernst et al. 2002 for more extensive comments]), **karyotype** (Eberle 1972, Kilpatrick and Zimmerman 1973), **fossils** (Holman 2000), **zoogeography** (Conant 1960, King 1988), **general morphology** (Rossman et al. 1982), **respiratory system** (Brongersma 1957, Wallach 1998), **sexual dimorphism** (Rossman 1963, Clark 1967, Branson and Baker 1973, Fitch 1981), **scutellation** (Cope 1892, Ruthven and Thompson, 1913, Wood and Duellman 1950, Branson and Baker 1973, Trauth 1991), **blood chemistry** (Dessauer 1970), **osmoregulation and skin permeability** (Dunson 1978, Lillywhite and Maderison 1982, Minnich 1982, Stokes and Dunson 1982), **reproduction** (Grijs 1898, Dunn 1915, Conant and Downs 1940, Triplehorn 1949, Cliburn 1959, Minton 1972, Dyrkacz 1975, Ford 1982, Minesky and Aldridge 1982, Seigel and Fitch 1984, Fitch 1985, Iverson 1987, Seigel and Ford 1987, Trauth 1991, Brown 1992, Fontenot et al. 1996, Shine and Seigel 1996), **growth** (Raney and Roecker 1947), **longevity** (Snider and Bowler 1992), **ecology** (Branson and Baker 1974), **life history patterns** (Dunham et al. 1988), **populations** (Branson and Baker 1974, Turner 1977, Parker and Plummer 1987), **habitat** (LeRay 1928, Carr 1940, Judd 1955, Martof 1956, Brown 1992), **aggregation** (Wood 1944, 1949; Neill 1948), **burrowing** (Carr 1940), **hibernation and winter activity** (Wood 1944, 1949; Neill 1948; Reinert 1975), **stereotyped behavior** (Carpenter and Ferguson 1977), **diet and feeding behavior** (Surface 1906; Uhler et al. 1939; Raney and Roecker 1947; Penn 1950; Judd 1955; Adler and Tilley 1960; Burghardt 1968; Brown 1979, 1992; Godley et al. 1984; Mushinsky 1987; Arnold 1993; Pinder 1996), **movements** (Finkler and Claussen 1999), **orientation and navigation** (Newcomer et al. 1974), **predation and defense** (Layne and Ford 1984), **parasites** (Talbot and Hutton 1935, Chu 1936, Baker 1978), **environmental contamination** (Fontenot et al. 1994, 1996), **anomalies** (Tuck 1973, Dyrkacz 1981, Herman and Johnson 1986), and **husbandry** (Trutnau 1986, Mehrtens 1987, Rossi 1992), **conservation** (Dodd 1987), and **common name** (Banks et al. 1987, Collins 1990, Frank and Ramus 1995, Crother 2000). The species also is included in **checklists** (e.g., Obst et al. 1984) and **keys** (e.g., Cagle 1968, Gibbons and Semlitsch 1991, Powell et al. 1999).

• **ETYMOLOGY.** The name *septemvittata* is derived from the French *septum*, seven, and the Latin *vittatus*, striped, referring to the seven stripes that compose the dorsal and ventral patterns.

• **REMARKS.** Holbrook (1842) considered *Coluber leberis* Linnaeus 1758 a senior synonym of *Tropidonotus septemvittata* (= *Regina septemvittata*) (Say 1825), but Boulenger (1893) rejected this allocation and tentatively placed the name in the synonymy of *Heterodon platyrhinos*. Klauber (1948) and Smith and Huheey (1960) showed that the description of *Coluber leberis* given by Linnaeus more properly matches that of *Coluber occipito-maculata* (= *Storeria occipitomaculata*) Storer 1839 than that of *Regina septemvittata*, and rejected its assignment to *R. septemvittata*. The type locality, "Canada," does not

distinguish between the two species, as both occur there, and the holotype of *Coluber leberis* is not known to exist, and cannot provide further help in determining which snake was described by Linnaeus.

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