

Catalogue of American Amphibians and Reptiles.

LAHANAS, PETER N. 1986. *Graptemys nigrinoda*.***Graptemys nigrinoda* Cagle
Black-knobbed sawback***Graptemys lesueurii*: Agassiz, 1857: plate II (see COMMENT).*Graptemys nigrinoda* Cagle, 1954:173. Type-locality, "Black Warrior River, above lock 9, 17.5 miles SSW of Tuscaloosa, Tuscaloosa County, Alabama." Holotype, juvenile female, Tulane Univ. 14662, collected by a Tulane University field crew in 1952 or 1953 (not examined by author).*Graptemys oculifera nigrinoda*: Mertens and Wermuth, 1955: 356.*Malaclemys nigrinoda*: Cochran and Goin, 1970:151.

- CONTENT. Two subspecies are recognized: *Graptemys nigrinoda nigrinoda* and *G. n. delticola*.

- DEFINITION. *Graptemys nigrinoda* is a moderate-sized, fluviatile species with pronounced sexual dimorphism. Adult females are 170–220 mm in carapace length; adult males from 70–120 mm. Females possess smooth, anteriorly cambered, high-domed, ovate shells, which are widest at the level of the seventh marginal, and markedly serrate posteriorly. A weak dorsal keel is present supporting four widely spaced, knob-like spines that arise from the posterior portion of the first four vertebrae and project backwards. The second and third are more prominent. Carapacial serration and vertebral knobs become obscure or lost in large females. Males possess lower, broadly ovate shells widest at the level of the sixth marginal. Their dorsal keel is more pronounced as are the vertebral knobs. Additionally, males have relatively longer fore-claws and tails, with the vent extending well beyond the carapacial rim. Carapace ground color varies from olive or greenish-grey, to nearly black in old individuals. Each pleural scute and the first vertebral contains a prominent, thin, nearly circular yellow-green, black-bordered ring that may encircle a dark central smudge. Vertebrae 2–4 possess three similarly colored rings which unite to form an irregular chain-like pattern, the center one encircling the vertebral spine. Marginals have posteriorly facing angular marks, rings or irregular figures. The hingeless, pale yellow to yellow-orange plastron has both an anterior and posterior notch, and usually supports an irregular, olive-grey to black, variable seam-following pattern. Soft-parts are cream-yellow, streaked longitudinally with black (northern race), or vice versa (southern race). Head pattern is highly variable but typically a series of three vertical post-orbital marks exist, the anterior most prominent. This heavy, recurved or linear mark angles posteriorly to join one of a pair of longitudinal lines on the nape, and is often united with the opposite post-orbital by a short, transverse line resulting in a Y- or H-shaped pattern.

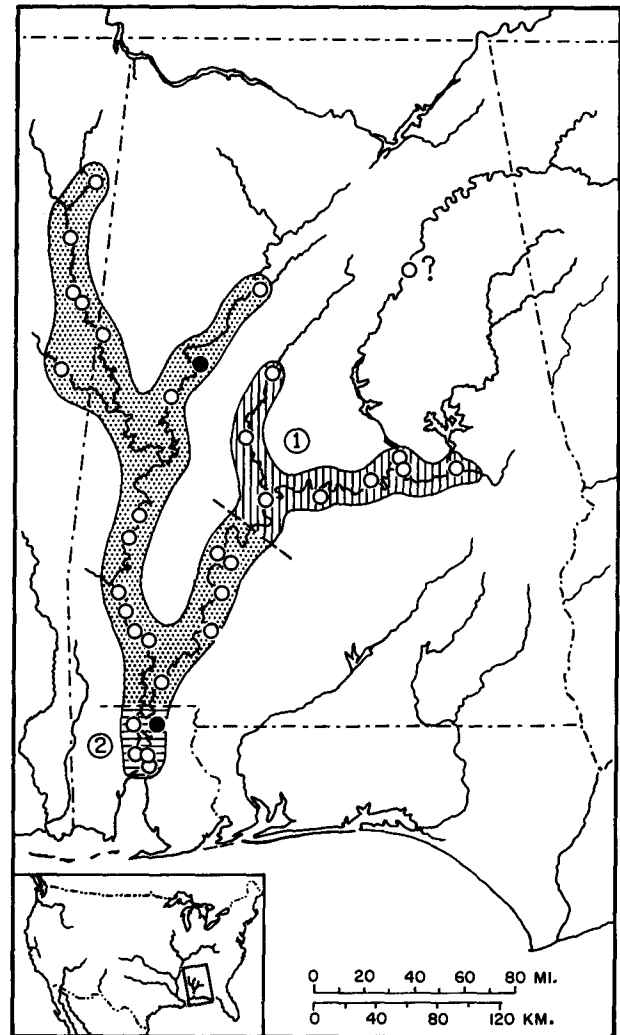
- DESCRIPTIONS. General descriptions are in Cagle (1954), Mount (1975), Pritchard (1979), Ernst and Barbour (1972), and Behler and King (1979). Folkerts and Mount (1969) provide descriptions of subspecies. Descriptions of eggs, hatchlings and nests are in Mount (1975) and Lahanas (1982). Anatomical descriptions include carapacial seam arrangements (Tinkle, 1962), repetitive shield variants (Zangerl, 1969), and choanae (Parsons, 1960, 1968). Killebrew (1977) describes the karyotype.

- ILLUSTRATIONS. Color illustrations of adults appear in Cagle (1954), Ernst and Barbour (1972), Conant (1975), Pritchard (1979), Behler and King (1979), and Smith and Brodie (1982); black and white illustrations are in Cagle (1954), Ernst and Barbour (1972), Folkerts and Mount (1969), and Mount (1975). Eggs and juveniles are shown in Agassiz (1857) and Folkerts and Mount (1969). The shell and skull are illustrated in Ernst and Barbour (1972), Killebrew (1979), and Dobie (1981).

- DISTRIBUTION. *Graptemys nigrinoda* is restricted to the Alabama-Tombigbee river systems of Alabama and Mississippi. The nominant subspecies occurs in the Tallapoosa, Coosa, Cahaba and Alabama rivers from the Fall Line south to near the Wilcox-Monroe county line in Alabama. The southern race is restricted to the Tensaw and Mobile river systems which form the delta of the Mobile Bay drainage.

- FOSSIL RECORD. None.

- PERTINENT LITERATURE. Published general accounts are by



MAP. Solid circles represent type-localities; open circles represent other localities. The stippled area between the dashed lines represents zone of intergradation.

Cagle (1954), Ernst and Barbour (1972), and Mount (1975). Lahanas (1982) reports details on reproductive cycles, nesting, growth, sexual dimorphism, diet, predation, and parasites. Additional references include: taxonomy: Leviton and Banta (1956), Folkerts and Mount (1970), Freeman (1970), Mertens and Wermuth (1977); osteology: Bertl and Killebrew (1983); evolution: Tinkle (1958a), McKown (1972), Wood (1977); zoogeography and distribution: Tinkle (1958a, 1959), Shoop (1967), Wahlquist (1970), Cliburn (1971), Wood (1977), McCoy and Vogt (1980); populations: Tinkle (1958b, 1959), McCoy and Vogt (1980); diet: Wahlquist (1970); reproduction: Shoop (1967); activity patterns and basking: Waters (1974), McCoy and Vogt (1980).

- ETYMOLOGY. The specific epithet, *nigrinoda*, is from the Latin *niger* meaning black, and the Latin *nodus* meaning knot, or node, and refers to the conspicuous, black, knob-like vertebral spines. The subspecific epithet, *delticola*, is a hybrid derived from the Greek *delta* meaning triangle which, due to their shape, has been associated with river-mouth deposits, and from the Latin *colere* meaning to inhabit, alluding to the delta region of Mobile Bay to which this race is restricted.

1. *Graptemys nigrinoda nigrinoda* Cagle*Graptemys nigrinoda* Cagle, 1954:173. See species account.*Graptemys oculifera nigrinoda*: Mertens and Wermuth, 1955: 356.*Graptemys nigrinoda nigrinoda*: Folkerts and Mount, 1969:679.

• DEFINITION. This race is distinguished by having soft parts which are predominantly light colored, a dark plastral pattern occupying less than 30% of the plastron, and by the presence of a crescent shaped, strongly recurved post-orbital mark.

2. *Graptemys nigrinoda delticola* Folkerts and Mount

Graptemys lesueurii. Agassiz, 1857: plate II. See species account.
Graptemys nigrinoda delticola Folkerts and Mount, 1969:677.

Type-locality, "Hubbard's Landing on Tensaw Lake, 2.6 air miles SW of Latham, Baldwin County, Alabama." Holotype, an adult male, Florida St. Mus. Biol. Sci. 26238, collected by James Byford on 4 May 1968 (not examined by author).

• DEFINITION. This race is distinguished by having soft parts which are predominantly dark, a dark plastral pattern occupying 60% or more of the plastron, and the presence of a linear to angular post-orbital mark.

COMMENT

Although not formally described until 1954, drawings of *G. nigrinoda* appear in the literature nearly a century earlier. Agassiz (1857) illustrates hatchlings in plate II, figs. 10, 11, 12, and 12a, of volume II. The animal depicted in these lithographs is readily referable to the subspecies, *G. n. delticola*, based on the presence of an extensive plastral pattern and predominantly dark soft parts (Folkerts and Mount, 1969). Agassiz apparently did not distinguish hatchlings of *G. nigrinoda* from *G. kohni* (plate V, figs. 5-7), and placed both taxa together under the same name, *G. lesueurii*.

LITERATURE CITED

- Agassiz, Louis. 1857. Contribution to the natural history of the United States of America. Vol. 1 & 2. Little, Brown, and Co., Boston. 643 p.
- Behler, John L., and F. Wayne King. 1979. The Audubon Society field guide to North American reptiles and amphibians. Alfred A. Knopf, Inc., New York. 719 p.
- Bertl, Jeff, and Flavius Killebrew. 1983. An osteological comparison of *Graptemys caglei* Haynes and McKown and *Graptemys versa* Stejneger (Testudines: Emydidae). *Herpetologica* 39(4):375-382.
- Cagle, Fred R. 1954. Two new species of the genus *Graptemys*. *Tulane Stud. Zool.* 1(11):167-186.
- Cliburn, J. William. 1971. The ranges of four species of *Graptemys* in Mississippi. *J. Mississippi Acad. Sci.* 16:16-19.
- Cochran, Doris M., and Coleman J. Goin. 1970. The new field book of reptiles and amphibians. G. P. Putnam's Sons, New York. xxii + 359 p.
- Conant, Roger. 1975. A field guide to reptiles and amphibians of eastern and central North America. Second Edition. Houghton Mifflin Co., Boston. xviii + 429 p.
- Dobie, James L. 1981. The taxonomic relationship between (Testudines: Emydidae). *Tulane Stud. Zool. Bot.* 23(1):85-102.
- Ernst, Carl H., and Roger W. Barbour. 1972. Turtles of the United States. Univ. Press Kentucky, Lexington. x + 347 p.
- Folkerts, George W., and Robert H. Mount. 1969. A new subspecies of the turtle *Graptemys nigrinoda* Cagle. *Copeia* 1969(4):677-682.
- . 1970. Reply to H. L. Freeman's (Herpetol. Rev. 2(1): 3) comments on: A new subspecies of the turtle *Graptemys nigrinoda* Cagle. *Herpetol. Rev.* 2(3):3-4.
- Freeman, Howard L. 1970. A comment on: A new subspecies of the turtle *Graptemys nigrinoda* Cagle. By George W. Folkerts and Robert H. Mount. 1969. *Copeia* 1969(4):677-682, 6 figs. *Herpetol. Rev.* 2(1):3.
- Killebrew, Flavius C. 1977. Mitotic chromosomes of turtles. IV. The Emydidae. *Texas J. Sci.* 29(3-4):245-253.
- . 1979. Osteological variation between *Graptemys flavimaculata* and *Graptemys nigrinoda* (Testudines: Emydidae). *Herpetologica* 35(2):146-153.
- Lahanas, Peter N. 1982. Aspects of the life history of the southern black-knobbed sawback, *Graptemys nigrinoda delticola* Folkerts and Mount. Master's Thesis, Auburn University, Auburn, Alabama. xviii + 293 p.
- Leviton, Alan, and Benjamin H. Banta. 1956. Catalogue of the amphibian and reptile types in the Natural History Museum of Stanford University supplement number 1. *Herpetologica* 12(3):213-219.
- McCoy, C. J., and Richard C. Vogt. 1980. Distribution and population status of the black-knobbed sawback *Graptemys nigrinoda* Cagle in Alabama and Mississippi. Unpublished report to the USFWS, contract 14-16-0004-79038.
- McKown, Ronald Ray. 1972. Phylogenetic relationships within the turtle genera *Graptemys* and *Malaclemys*. Ph.D. Thesis, Univ. Texas at Austin. ii + 111 p.
- Mertens, Robert, and Heinz Wermuth. 1955. Die rezenten Schildkroten, Krokodile, und Bruckenechsen. *Zool. Jahrb., (Syst.)* 83(5):323-440.
- . 1977. Liste der rezenten Amphibien und Reptilien, Testudines, Crocodylia Rhynchocephalia. *Das Tierreich, Berlin, Lieferung* 100, 1(27):1-174.
- Mount, Robert H. 1975. The reptiles and amphibians of Alabama. Auburn Univ. Agr. Exp. Sta. Auburn, Alabama vii + 347 p.
- Parsons, Thomas S. 1960. The structure of the choanae of the Emydinae (Testudines, Testudinidae). *Bull. Mus. Comp. Zool.* 123(4):113-127.
- . 1968. Variation in the choanal structure of Recent turtles. *Canadian J. Zool.* 46(6):1235-1263.
- Pritchard, Peter C. H. 1979. *Encyclopedia of turtles*. T.F.H. Publ., Inc., Neptune, New Jersey. 895 p.
- Shoop, C. Robert. 1967. *Graptemys nigrinoda* in Mississippi. *Herpetologica* 23(1):56.
- Smith, Hobart M., and Edmund D. Brodie, Jr. 1982. A guide to field identification: reptiles of North America. Golden Press, New York. 240 p.
- Tinkle, Donald W. 1958a. The systematics and ecology of the *Sternothaerus carinatus* complex (Testudinata, Chelydridae). *Tulane Stud. Zool.* 6(1):1-56.
- . 1958b. Experiments with censusing of southern turtle populations. *Herpetologica* 14(3):172-175.
- . 1959. The relation of the fall line to the distribution and abundance of turtles. *Copeia* 1959(2):167-170.
- . 1962. Variation in shell morphology of North American turtles. I. The carapacial seam arrangements. *Tulane Stud. Zool.* 9(5):331-349.
- Wahlquist, Harold. 1970. Sawbacks of the Gulf Coast. *Int. Turtle and Tortoise Soc. J.* 4(4):10-13, 28.
- Waters, Jerry C. 1974. The biological significance of the basking habit in the black-knobbed sawback, *Graptemys nigrinoda* Cagle. Master's Thesis, Auburn Univ., Auburn, Alabama. 81 p.
- Wood, Roger C. 1977. Evolution of the emydine turtles *Graptemys* and *Malaclemys* (Reptilia, Testudines, Emydidae). *J. Herpetol.* 11(4):415-421.
- Zangerl, Rainer. 1969. The turtle shell, p. 311-339. In Carl Gans, Angus d'A Bellairs and Thomas S. Parsons (eds.). *Biology of the Reptilia*. Vol. I. Morphology A. Academic Press, London.

P. N. LAHANAS, UNIVERSITY OF MIAMI, CORAL GABLES, FLORIDA 33124

Primary editor for this account, Carl H. Ernst.

Published 30 October 1986 and Copyright 1986 by the SOCIETY FOR THE STUDY OF AMPHIBIANS AND REPTILES.