

Catalogue of American Amphibians and Reptiles.

ERNST, CARL H. 1981. *Rhinoclemmys*.*Rhinoclemmys* Fitzinger
Neotropical forest terrapins*Chemelys* Rafinesque, 1815:75. Nomen nudum.*Chemelys* Rafinesque, 1832:64. Type-species, *Testudo verrucosa* (not specified whether *T. verrucosa* of Walbaum, 1782; Schoepff, 1795; or Sucknow, 1798). Status indeterminate, see NOMENCLATURAL HISTORY.*Rhinoclemmys* Fitzinger, 1835:115. Type-species, not designated, see NOMENCLATURAL HISTORY.*Rhinoclemmys* Fitzinger, 1835:124. Lapsus calami.*Callopsis* Gray, 1863:183. Type-species, *Rhinoclemys annulata* (Gray) by original designation.*Rhinoclemys* Gray, 1863:183. Lapsus calami.

• CONTENT. Seven recent species are recognized: *R. annulata*, *R. areolata*, *R. funerea*, *R. nasuta*, *R. pulcherrima*, *R. punctularia*, and *R. rubida*.

• DEFINITION. Adults are medium-sized (to 290 mm in carapace length) semitropical and tropical turtles that frequent aquatic, semiaquatic and terrestrial habitats. The bridge and plastron are well developed; the plastron is rigid, well buttressed and lacks a hinge. The carapace is low arched to domed, and its surface may be sculptured with growth annuli or rugosities. A blunt, median carapacial keel is present in all species, but may be worn flat with age. Ground color of the carapace is olive, brown, or black with light mottling, lines, spots or ocelli. The carapaces of several species become darker with age. Plastral color is yellow with dark blotches. Cloacal bursae may be present.

The skull is short, flattened to slightly convex dorsally, with lateral orbits. The frontals form part of the orbital rim. The quadrate does not enclose the stapes and the otic notch is open. The dorsal surface of the tympanic bulla is ridged. The squamosal is only loosely attached, is either separated from the parietal or meets it posterolaterally to the trigeminal foramen, barely, if at all, touches the jugal, and touches the postorbital. The parietal is separated from the jugal but in contact with the palatine. The ventral end of the jugal is widened. The pterygoid projects strongly posteriorly. The vomer and the nasopalatine foramen are small. The zygomatic arch is absent or, if present, narrow and excavated dorsally and ventrally. The triturating surfaces of the maxillaries are narrow and ridgeless. The angular is separated from Meckel's cartilage. The joint between the centra of vertebrae V and VI is simple and with a single condyle. Choanal papilla are present.

• DESCRIPTIONS AND ILLUSTRATIONS. Most of the significant literature is listed in the species accounts. Only those not included there are listed here. External features of most species are illustrated in Pritchard (1967), and keys for identification are in Wermuth and Mertens (1961), and Ernst (1978). Wettstein (1934) presents a key to the species of Costa Rica. Osteological aspects of the skull are given by McDowell (1964) and Feuer (1970), and of the cervical vertebrae by Williams (1950). The penis is described by Zug (1966), the choanal structure by Parsons (1960), and Winokur and Legler describe the rostral pores (1974) and mental glands (1975).

• DISTRIBUTION. *Rhinoclemmys* range from southern Sonora in western Mexico and southeastern Veracruz and the Yucatan Peninsula in eastern Mexico southward through Central America to northern Ecuador in the west and Trinidad, the Guianas and northeastern Brazil in the east.

• FOSSIL RECORD. No fossils have been assigned to this genus, however, McDowell (1964:267) believed the Eocene turtle, *Echmatemys pusilla* Hay, 1908 from the Bridger B of Grizzly Buttes, southwestern Wyoming may belong to this genus.

• PERTINENT LITERATURE. Most literature is listed in the species accounts; the following are pertinent to the genus as a whole. Taxonomy: Wettstein (1934), McDowell (1964), Smith et al. (1976), and Ernst (1978). Zoogeography: Simpson (1943), Dunn (1931), Schmidt (1946), and Ernst (1978). Hind limb and pelvic girdle: Zug (1971). Cloacal bursae: Smith and James (1958).

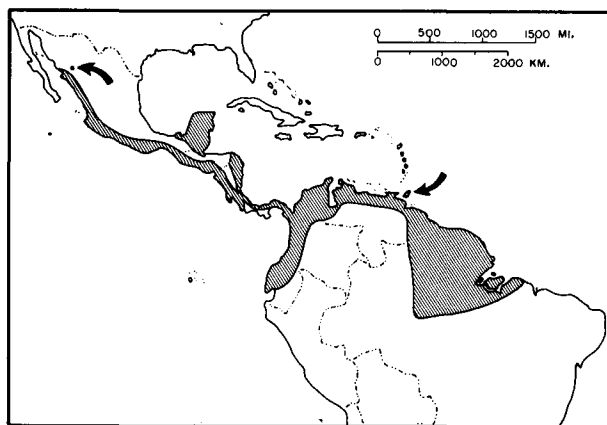
• KEY TO THE SPECIES. The catalogue account numbers are given in parentheses after the species name.

1. Hind feet heavily webbed 2
Hind feet with little or no webbing 4
2. Dorsal head stripes from nape to level of orbits or less; no light spots present at the occipital region 3
Dorsal head stripes from nape to beyond orbits or broken at orbits with a spot anteriorly; light spots present at the occipital region *R. punctularia* (276)
3. Snout strongly pointed; chin and lower jaw with dark bars; shell distinctly depressed *R. nasuta* (264)
Snout only moderately protruding; chin and lower jaw with numerous large black spots; shell domed ... *R. funerea* (263)
4. Tip of jaw hooked and unnotched 5
Tip of jaw straight and notched (sometimes with cusps) ... 6
5. Dorsal head pattern consists of a large, irregular horseshoe-shaped blotch; carapace depressed *R. rubida* (277)
Dorsal head pattern consists of a pair of supratemporal stripes, or no stripes present; carapace rather high, but flat on top *R. annulata* (250)
6. Head pattern with red stripes (usually 2 or 3) crossing tip of the snout and also a prefrontal arrow formed when a median sagittal stripe meets two supratemporal stripes on the dorsal tip of the snout; bridge with extensive dark pigment *R. pulcherrima* (275)
Head pattern with only a pair of broad supratemporal stripes posterior of orbit; bridge usually plain yellow without extensive dark pigmentation *R. areolata* (251)

• NOMENCLATURAL HISTORY. *Chemelys* proposed in 1815 by Rafinesque is a nomen nudum and has no nomenclatural standing, but was made available by description in 1832. However, the validity of *Chemelys* is questionable since Rafinesque gave the type species as "*T. verrucosa*, etc." and, further, did not designate the author, which could be either Walbaum (1782), Schoepff (1795) or Sucknow (1798). *Testudo verrucosa* Walbaum is not valid since it was not proposed in the binomial mode, and Schoepff's name is clearly assignable to *Trionyx ferox*. Even if Sucknow's name refers to *T. punctularia* Daudin, 1802, it is a junior homonym and not available for nomenclatural use. Hence the content and status of *Chemelys* remains indeterminate (see Smith et al., 1980).

Fitzinger (1835) did not list a type-species for *Rhinoclemmys*, but *T. punctularia* became the valid type-species by subsequent designation of "*Emys dorsata* Schweigger, 1812" (= *T. punctularia* Daudin, 1802) by Lindholm (1929:283). Smith et al. (1976) thought *Rhinoclemmys* Fitzinger to be invalid as based on *T. dorsata* Schoepff (1801), a nomen oblitum suppressed by the ICZN, and proposed that *Callopsis* Gray, 1863 was the legal name. However, Frey et al. (1977) (see also Smith, 1978) showed this to be invalid, so *Rhinoclemmys* Fitzinger, 1835 is the valid generic name.

• ETYMOLOGY. The generic name *Rhinoclemmys* is derived from the Greek *rhinos*, meaning a nose, and *klemmys*, meaning a tortoise.

MAP. Present range of the genus *Rhinoclemmys*.

LITERATURE CITED

- Daudin, F. M. 1802. Histoire naturelle générale et particulière des reptiles, vol. 2. F. Dufart, Paris. 432 p.
- Dunn, Emmett Reid. 1931. The herpetological fauna of the Americas. *Copeia* 1931(3):106-119.
- Ernst, Carl H. 1978. A revision of the neotropical turtle genus *Callopsis* (Testudines: Emydidae: Batagurinae). *Herpetologica* 34(2):113-134.
- Feuer, Robert C. 1970. Key to the skulls of Recent adult North and Central American turtles. *J. Herpetol.* 4(1-2):69-75.
- Fitzinger, Leopold. 1835. Entwurf einer systematischen Anordnung der Schildkröten nach den Grundsätzen der natürlichen Methode. *Ann. Mus. Wien* 1:103-128.
- Freytey, Jacques, Marinus Steven Hoogmoed, and Jean Lescure. 1977. Etude taxinomique de *Rhinoclemmys punctularia punctularia* (Daudin) (Testudinata, Emydidae). *Zool. Med. Rijksmus. Natuur. Hist., Leiden* 52(6):63-80.
- Gray, John Edward. 1863. Notes on American Emydidae, and Professor Agassiz's observations on my Catalogue of them. *Ann. Mag. Natur. Hist. (London), ser. 3*, 12:176-183.
- Hay, Oliver Perry. 1908. The fossil turtles of North America. *Carnegie Inst. Washington Publ.* (75):1-568.
- Lindholm, W. A. 1929. Revidiertes Verzeichnis der Gattungen der rezenten Schildkröten nebst Notizen zur Nomenklatur einiger Arten. *Zool. Anz.* 81(11-12):275-295.
- McDowell, Samuel B. 1964. Partition of the genus *Clemmys* and related problems in the taxonomy of the aquatic Testudinidae. *Proc. Zool. Soc. London* 143(2):239-279.
- Parsons, Thomas S. 1960. The structure of the choanae of the Emydinae (Testudines, Testudinidae). *Bull. Mus. Comp. Zool.* 123(4):113-127.
- Pritchard, Peter C. H. 1967. Living turtles of the world. T. F. H. Publ., Inc., Jersey City, New Jersey. 288 p.
- Rafinesque, C. S. 1815. Analyse de la nature; ou, Tableau de l'Univers et de corps organises. Privately printed, Palermo, Italy. 224 p.
- 1832. Description of two new genera of soft shell turtles of North America. *Atlantic J. Friend Knowledge, Philadelphia* 1(2):64-65.
- Schmidt, Karl P. 1946. On the zoogeography of the Holarctic Region. *Copeia* 1946(3):144-152.
- Schoepff, Ioannis Davidis. 1792-1801. *Historia testudinum, iconibus illustrata.* Ioannis Iacobi Palm., Erlangae. xii + 136 p.
- Schweigger, A. F. 1812. *Prodromus monographiae cheloniorum.* Königsberger Archiv. Naturwiss. Math. 1:271-368, 406-468.
- Simpson, George G. 1943. Turtles and the origin of the fauna of Latin America. *Amer. J. Sci.* 241(7):413-429.
- Smith, Hobart M. 1978. The status of suppressed names and of *Callopsis* Gray (Reptilia: Testudines). *Herpetol. Rev.* 9(3):93.
- , and Louis F. James. 1958. The taxonomic significance of cloacal bursae in turtles. *Trans. Kansas Acad. Sci.* 61(1):86-96.
- , Carl H. Ernst, and Rozella B. Smith. 1980. *Geoemyda* Gray, 1834, and *Rhinoclemmys* Fitzinger, 1835 (Reptilia, Testudines): proposed conservation. *Z.N. (S.)* 2287. *Bull. Zool. Nomencl.* 37(4):233-239.
- , Rozella B. Smith, and H. Lewis Sawin. 1976. The generic name of the neotropical semiterrestrial emydine turtles. *Trans. Kansas Acad. Sci.* 77(4):211-217.
- Sucknow, Georg A. 1797-98. Anfangsgrunde der theoretischen und angewandten Naturgeschichte der Thiere. Vol. 3. Amphibien. Weidmann, Leipzig. 298 p.
- Walbaum, Johann Julius. 1782. *Chelographia oder Beschreibung einiger Schildkröten nach natürlichen Urbildern.* Johann Friedrich Gleditsch, Lübeck and Leipzig. 132 p.
- Wermuth, H., and R. Mertens. 1961. Schildkröten, Krokodile, Brüchenschen. G. Fischer, Jena. 422 p.
- Wettstein, O. 1934. Ergebnisse der österreichischen biologischen Costa Rica—Expedition 1930. Die Amphibien und Reptilien. *Sitzungsber. Acad. Wiss. Wien, Math.-Naturw. Kl. Abt. 1*, 143(1-2):1-39.
- Williams, Ernest E. 1950. Variation and selection in the cervical central articulations of living turtles. *Bull. Amer. Mus. Natur. Hist.* 94(9):507-561.
- Winokur, Robert M., and John M. Legler. 1974. Rostral pores in turtles. *J. Morphol.* 143(1):107-119.
- , and — 1975. Chelonian mental glands. *Ibid.* 147(3):275-292.
- Zug, George R. 1966. The penial morphology and the relationships of cryptodiran turtles. *Occ. Pap. Mus. Zool. Univ. Michigan* (647):1-24.
- 1971. Buoyancy, locomotion, morphology of the pelvic girdle and hindlimb, and systematics of cryptodiran turtles. *Misc. Publ. Mus. Zool. Univ. Michigan* (142):1-98.

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