

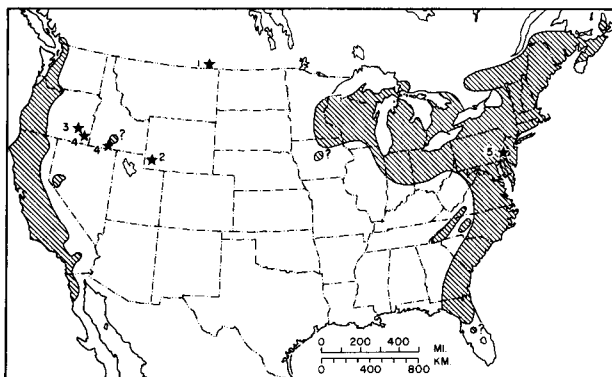
## Catalogue of American Amphibians and Reptiles.

BURY, R. BRUCE AND CARL H. ERNST. 1977. *Clemmys*.***Clemmys* Ritgen  
Marsh Turtles***Clemmys* Ritgen, 1828:272. Type-species, *Emys punctata* Schoepff, 1792 (= *Testudo guttata* Schneider, 1792) by subsequent designation (Baur, 1892:43).*Clemmys* Wagler, 1830:159. Type-species, *Clemmys caspica* Wagler, 1830, by subsequent designation (Fitzinger, 1843:29). This name is a junior homonym, thus it and its type species are rejected.*Chelopus* Rafinesque, 1832:64. Type-species, *Emys punctata*, by subsequent designation (Stejneger, 1907:492).*Nanemys* Agassiz, 1857:442. Type-species, *Nanemys guttata* (= *Testudo guttata* Schneider, 1792), by monotypy.*Calemys* Agassiz, 1857:443. Type-species, *Calemys muhlenbergii* (= *Testudo muhlenbergii* Schoepff, 1801), by monotypy.*Glyptemys* Agassiz, 1857:443. Type-species, *Glyptemys insculpta* (= *Testudo insculpta* LeConte, 1830), by monotypy.*Actinemys* Agassiz, 1857:444. Type-species, *Actinemys marmorata* (= *Emys marmorata* Baird and Girard, 1852), by monotypy.*Kalemys*: Ennis, 1861:124. *Lapsus calami*.*Geoclemmys* Gray, 1870:26 (not *Geoclemys* Gray, 1855:17). Type-species, *Geoclemmys guttata*, by subsequent designation (Stejneger, 1907:492).*Melanemys* Shufeldt, 1919:155. Type-species, *Testudo guttata* Schneider, 1792, by subsequent designation (Dunn, 1920:8).

- CONTENT. Four Recent species are recognized: *C. guttata*, *C. insculpta*, *C. marmorata*, and *C. muhlenbergii*.

- DEFINITION. Adults are medium-sized turtles (80–230 mm in carapace length) that frequent aquatic, semi-aquatic or, occasionally, terrestrial habitats. The bridge and plastron are well developed; the plastron is rigid, weakly buttressed, and lacks a hinge. The carapace is low arched, and its surface may be sculptured with growth annuli. A carapacial keel is present in two species, absent in the other two. Ground color of the carapace is brown or black with mottling, lines, spots or plain features. Plastral color is yellow to cream.

The skull is short, flattened to slightly convex dorsally, with lateral orbits. The pterygoid does not meet the basioccipital, but the angular bone contacts Meckel's cartilage. The caroticopharyngeal foramen is large and may be entirely within the pterygoid. The jugal tapers to a point ventrally and does not touch the pterygoid. Dorsal ridge on the tympanic bulla is indistinct or lacking. The triturating surfaces of the maxillaries are narrow and ridgeless and the upper jaw is notched at the tip. Cervical vertebrae not elongated, vertebrae II to VIII subequal in length. The joint between the centra of vertebrae V and VI is double with a pair of condyles. The thoracic rib heads are short and unarched.



MAP. Present range of the genus *Clemmys*. The numbered stars indicate fossil localities for: 1. *C. backmani*, Paleocene. 2. *C. morrisiae*, Eocene. 3. *C. saxea*, Upper Miocene. 4. *C. owyheensis*, Pliocene. 5. *C. percrassa*, Pleistocene. See species accounts for fossils and archeological records of extant species.

- DESCRIPTIONS AND ILLUSTRATIONS. Most of the significant literature is listed in the Catalogue species accounts (Ernst, 1972a, 1972b; Bury, 1970; Ernst and Bury, 1977). Only those missing there are here. External features of all species illustrated, with keys for identification, are in Wermuth and Mertens (1961) and Ernst and Barbour (1972). Osteological aspects are given as follows: pelvis, Baur (1891) and Ruckes (1929); vertebrae and cervical ribs, Shufeldt (1921), Williams (1959), and Hoffstetter and Gasc (1969); skull, Siebenrock (1897), and Feuer (1970); and shell, Zangerl (1969), and Bramble (1974). Other descriptions are: ear, Baird (1970); nose, Parsons (1959, 1970); adrenal gland, Gabe (1970); head muscles, Schumacher (1973).

- DISTRIBUTION. *Clemmys* range in eastern North America from Nova Scotia westward to the Great Lakes and southward east of the Appalachians to northern Florida, and along the Pacific Coast region from British Columbia to northern Baja California. The southernmost extension of *Clemmys* is eastern North America appears to consist of relict populations of *C. guttata* in Florida (Berry and Gidden, 1973).

- FOSSIL RECORD. Several species of *Clemmys* have been described from North American fossils: *C. morrisiae* Hay, 1908, the Bridger Eocene of Grizzly Buttes, southwestern Wyoming; *C. saxea* Hay, 1903, the Upper Miocene Mascall beds on Beaver Creek near Crooked River, Oregon; *C. percrassa* Cope, 1899, Pleistocene deposits of Port Kennedy Cave, Montgomery County, Pennsylvania, a questionable species; *C. owyheensis* Brattstrom and Sturn, 1959, Owyhee, Hemphillian Pliocene deposits of Dry Creek, a tributary of Crooked Creek near Rome, Malheur County, Oregon, and Upper Pliocene deposits near Hagerman, Twin Falls County, Idaho (Zug, 1969); *C. backmani* Russell, 1934, the Paleocene Ravenscrag formation of Big Muddy Valley, Saskatchewan, a questionable *Clemmys*. The extant species *C. marmorata* is known from the Pliocene and Pleistocene, and *C. insculpta* from the Pleistocene (see Catalogue species accounts for references: Bury, 1970; Ernst, 1972b).

- PERTINENT LITERATURE. Most literature is listed in the Catalogue species accounts: cited above under Descriptions the following are pertinent to the genus as a whole. Evolution: Milstead (1969) and Bramble (1974). Zoogeography: Dunn (1931) and Schmidt (1946). Systematics: Baur (1892), Dunn (1920), McDowell (1964), Bickham (1975), and Merkle (1975). Karyotypes: Goin and Goin (1971), Stock (1972), and Bickham (1975). Serum proteins and blood chemistry: Dessauer (1970) and Merkle (1975). Rostral pores and mental glands: Winokur and Legler (1974, 1975). Shield abnormalities: Zangerl and Johnson (1957). Locomotor apparatus and walking patterns: Zug (1971, 1972) and Walker (1973). Respiratory anatomy and physiology: Mitchell and Morehouse (1863).

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

- Hind foot webbed to base of claws, vertebral keel lacking, found west of Rocky Mountains . . . . . *C. marmorata* (100).  
Hind foot webbed to base of penultimate phalanges of 3 middle toes, vertebral keel may be present, found east of Rocky Mountains . . . . . 2.
- Carapace strongly serrated on posterior border, strong vertebral keel . . . . . *C. insculpta* (125).  
Carapace with nearly or quite smooth posterior border, vertebral keel weak or absent . . . . . 3.
- Head and carapace black with small yellow spots, temporal region with a yellow blotch, carapace never keeled. . . . . *C. guttata* (124).  
Head and carapace brown to black and lacking small yellow spots, temporal region with conspicuous orange to red blotch, carapace may be weakly keeled . . . . . *C. muhlenbergii* (204).

- ETYMOLOGY. The generic name *Clemmys* is derived from the Greek *Klemmys*, meaning a tortoise or turtle.

## COMMENT

McDowell (1964) demonstrated that the Old World pond turtles once placed in *Clemmys* belong to the genera *Mauremys* and *Sacalia* of the subfamily Batagurinae. The New World genus *Clemmys* are in the subfamily Emydinae.

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Published 31 October 1977 by the SOCIETY FOR THE STUDY OF AMPHIBIANS AND REPTILES.