Catalogue of American Amphibians and Reptiles.

Lovich, J.E. 1993. *Macroclemys, M. temminckii.*

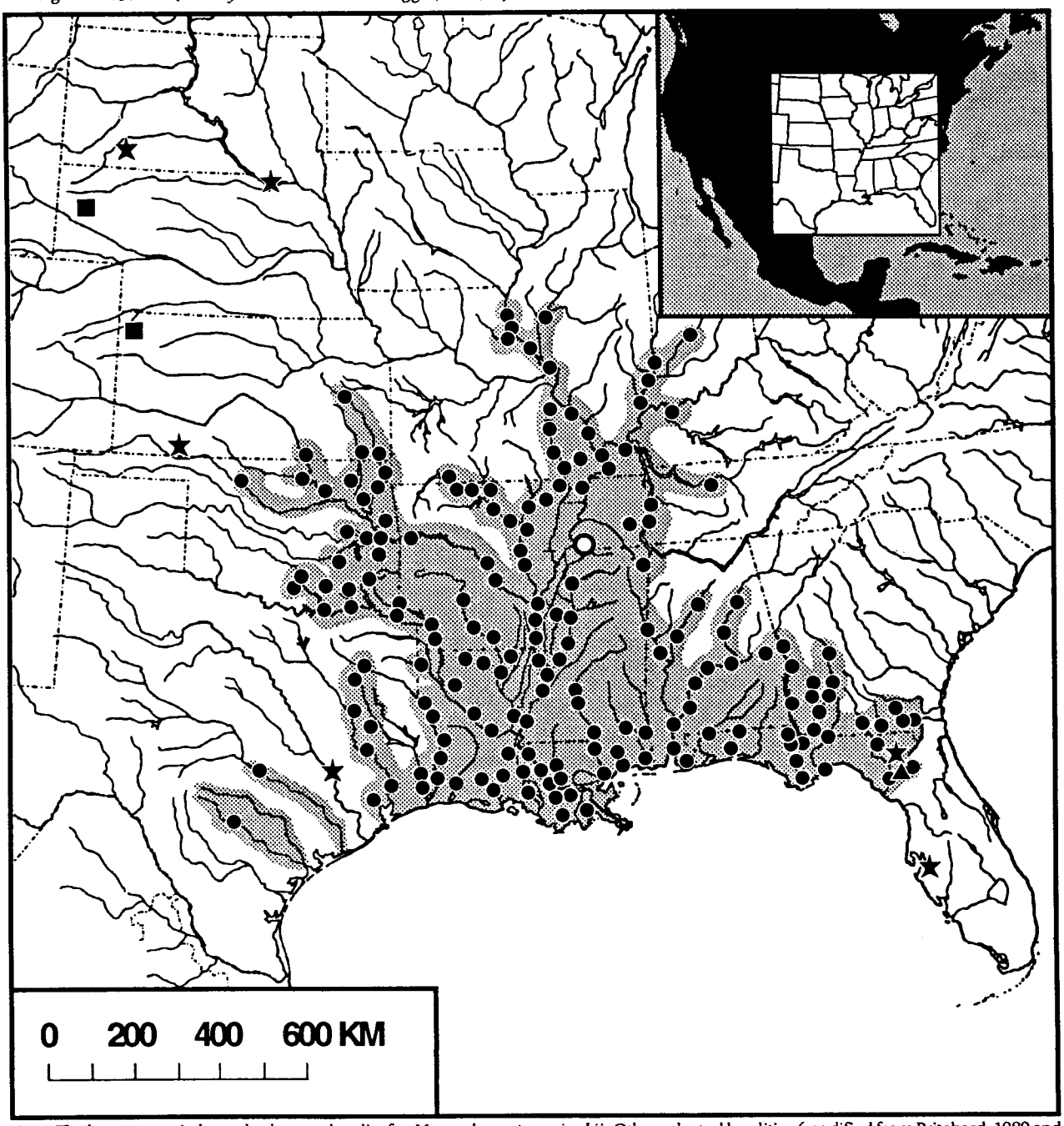
Macroclemys Gray
Alligator Snapping Turtles

Macroclemys Gray, 1855:48. Type-species, *Macroclemys temminckii* (Troost)(= *Chelonura temminckii* Troost, *in* Harlan, 1835:158) by monotypy.

Macrochelys Gray, 1856:200. Type-species, *Macrochelys temminckii* (Troost)(= *Chelonura temminckii* Troost, *in* Harlan, 1835:158) by monotypy.

Gypochelys Agassiz, 1857:413. Type-species, *Gypochelys lacertina* Agassiz 1857:414 (= *Chelydra lacertina* Schweigger, 1814) by

Figure. A juvenile *Macroclemys temminckii* from the Al Redmond collection.



Map. The large open circle marks the type locality for *Macroclemys temminckii.* Other selected localities (modified from Pritchard, 1989 and Iverson, 1992) are designated with solid circles. Fossil localities for the genus are marked as follows: *M. schmidti* - squares, *M. auffenbergi* - triangle, fossil *M. temminckii* - stars.

monotypy.
Macroclemmys: Strauch, 1862:35. *Nomen substitutum.*

• **Content.** One living monotypic species, *Macroclemys temminckii*, and two extinct species, *M. auffenbergi* Dobie, 1968a and *M. schmidti* Zangerl, 1945 are recognized.

• **Definition.** This genus contains the largest freshwater turtle in North America. *Macroclemys temminckii* attains a carapace length of 80 cm and a weight of 113 kg, possibly more. Males are much larger than females, have longer preanal tail-lengths, the anal opening posterior to the carapacial rim, and have a thicker basal tail diameter. The large, rough, dark carapace is strongly serrated posteriorly and has three prominent keels: a central keel on the vertebrals and two lateral keels on the pleural scutes. Knobs on the keels are elevated and somewhat curved posteriorly. A row of 3-8 supramarginal scutes is located between the marginals and the first three pleural scutes on each side. The bridge is small and the hingeless plastron is reduced, giving a cross-shaped appearance. The plastron is grayish; in juveniles it may be somewhat mottled with small whitish blotches. The skin is dark brown to gray above and lighter below; dark blotches may occur on the head. The tail is about as long as the carapace and has three rows of low tubercles above and numerous small scales below. The huge, pointed head has the eyes placed to the sides, thus the orbits cannot be seen from above. The eye is surrounded by a ring of small fleshy projections that are pointed, broad based, and flattened. Numerous, branching dermal projections occur on the sides of the head, on the chin, and on the neck. A vermiform appendage is present on the tongue and is attached, approximately at its center, to a round muscular base, and both ends are freely moveable.

The massive skull shows little temporal emargination and possesses a symphysial hook. The squamosal bone contacts the long postorbital but not the parietal. The foramen through which the anterior branch of the facial nerve travels is formed entirely by the pterygoid bone. The maxilla is separated from the quadratojugal, and the quadrate bone completely surrounds the stapes. The vomer possesses a weak medial ridge on its ventral surface. No secondary palate is present. The jaws are large and powerful, and the upper jaw is strongly hooked. Articulating surfaces of the cervical vertebrae are primitive; (2(,(3(,(4),)5),)6),)7),)8) (Williams, 1950).

• **Descriptions and Illustrations.** See species account.

• **Distribution.** See species account.

• **Fossil Record.** The genus *Macroclemys* once had a much wider geographic distribution; remains of *M. schmidti* are known from Miocene (Hemphillian) Hemmingfordian and Marsland deposits in Nebraska (Zangerl, 1945; Whetstone, 1978; Parmley, 1992), and *M. auffenbergi* is known from Pliocene (Hemphillian) deposits in Alachua County, Florida (Dobie, 1968a), a location south of the present distributional limit of the genus. Fossils referable to *M. temminckii* are known from the Pliocene (Clarendonian) of South Dakota (Zangerl, 1945), Pliocene (Blancan?) of Kansas (Hibbard, 1963), presumed Pleistocene (Rancholabrean?) deposits in Hillsborough and Columbia Counties, Florida (Auffenberg, 1957), and late Pleistocene (Rancholabrean) to Recent deposits from the Brazos River, Texas (Hay, 1911).

• **Pertinent Literature.** See species account.

• **Etymology.** The generic name, *Macroclemys*, is feminine and is derived from the Greek words *macros* (= large) and *klemmys* (= turtle).

Macroclemys temminckii (Troost) Alligator Snapping Turtle

Testudo planitia Gmelin, 1789:1045. *Nomen rejectum.*
Chelonura temminckii Troost, *in* Harlan, 1835:158. Type locality "a tributary stream of the Mississippi, which enters that river above Memphis, in West Tennessee," restricted to Wolf River, Shelby County, Tennessee, by Bour (1987). Holotype, Museum National d'Histoire Naturelle, Paris (MNHN-AC A.4540), an adult male collected by Petival ca. 1834 (not examined by author). See comments.
Emysaurus temminckii: A. Duméril, *in* Duméril and Duméril, 1851: 16.
Macroclemys temminckii: Gray, 1855:48. First use of present combination.
Macrochelys temminckii: Gray, 1856:200.
Gypochelys lacertina: Agassiz, 1857:414.
Macroclemmys temminckii: Strauch, 1862:134.
Macrochelys lacertina: Cope, 1872:23.

• **Content.** Only one living, monotypic species is recognized.

• **Definition.** See generic account.

• **Descriptions.** In addition to those included in numerous regional guides, general descriptions are in Boulenger (1889), Cahn (1937), Pope (1939), Carr (1952), Ernst and Barbour (1972, 1989), Mount (1975), Pritchard (1979, 1989), Conant and Collins (1991), and Ernst et al. (in press). Sources for other descriptions are: cervical vertebrae (Williams, 1950), choanal structure (Parsons, 1968), penial morphology (Zug, 1966), erythrocyte morphology (Frair, 1977), cranial arteries (Albrecht, 1976), rostral pores (Winokur and Legler, 1974), integumentary appendages (Winokur, 1982), lingual appendage morphology (Spindel et al. 1987), karyotype (Killebrew, 1977; Haiduk and Bickham, 1982; Bickham and Carr, 1983), stapes morphology (Monks, 1878), gonadal and sperm morphology (Dobie, 1971), and eggs and embryos (Allen and Neill, 1950; Dobie, 1971; Powders, 1978; Grimpe, 1987; Drummond and Gordon, 1979; Ewert, 1976, 1979).

• **Illustrations.** This species has been profusely illustrated; a selection of important references follows. Color illustrations of adults and juveniles are found in Barbour (1971), Ernst and Barbour (1972), Pritchard (1975, 1979, 1989), Behler and King (1979), Caldwell and Collins (1981), Ashton and Ashton (1985), Dobie (1986), Gibbons (1987: cover of issue), Christiansen and Bailey (1988), Dundee and Rossman (1989), Conant and Collins (1991), and Ernst et al. (in press). Color photos of skulls, shells, and hatchlings are in Pritchard (1989). Black and white photographs and line drawings are in Boulenger (1889), Cahn (1937), Pope (1939), Allen and Neill (1950, 1951), Carr (1952), Smith (1961), Dobie (1968b, 1971), Barbour (1971), Jackson and Ross (1971), Zappalorti (1976), Mount (1975), Gibbons (1983), Pritchard (1975, 1978, 1979, 1989), Hofstra (1981), Morris and Sweet (1985), Obst (1988), Ernst and Barbour (1972, 1989), and Conant and Collins (1991). Photographs and line drawings of lingual appendage morphology are found in Cahn (1937), Ernst and Barbour (1972), Spindel et al. (1987), and Ernst et al. (in press). Black and white photographs of a corpus luteum, an egg, and a nest are given in Dobie (1971), Pritchard (1989), and Powders (1978), respectively. Black and white photographs of scutes showing annuli are in Dobie (1971). Drawings and photographs of skulls and other bony elements are in Gray (1855), Boulenger (1889), Hay (1907, 1908), Williston (1925), Cahn (1937), Romer (1956), Auffenberg (1957), Dobie (1968a), Feuer (1970), Ernst and Barbour (1972), Gaffney (1979), Bour (1987), Obst (1988), and Pritchard (1989). Black and white illustrations of *Macroclemys schmidti* are in Zangerl (1945), and Dobie (1968b) provided similar illustrations of *Macroclemys auffenbergi*. Illustrations of karyotypes are in Killebrew (1977) and Haiduk and Bickham (1982).

• **Distribution.** The Alligator Snapping Turtle is confined to river systems in the United States that drain into the Gulf of Mexico. The species is widely distributed in the Mississippi Valley from Kansas (Clarke 1981), Illinois (Galbreath, 1961; Morris and Sweet, 1985), and Indiana (Grannan and Anderson, 1992), to the Gulf, and has been reported from almost all river systems from the Suwannee River in Florida (Iverson and Etchberger, 1989) to the San Antonio River in Texas (Iverson, 1992, Pritchard, 1989). Distribution maps are presented in Iverson (1992), Pritchard (1989), and Conant and Collins (1991).

• **Fossil Record.** See generic account.

• **Pertinent Literature.** A review of literature on the Alligator Snapping Turtle was given by Pritchard (1989). Other general accounts are in Allen and Neill (1950, 1951), Carr (1952), Ernst and Barbour (1972), and Ernst et al. (in press). Additional references are listed by topic: phylogenetic relationships (Gaffney, 1975; Mao et al., 1987; Bickham and Carr, 1983), taxonomy (Frair, 1972; Bour, 1987), peripheral distribution (Glass, 1949; Clarke, 1981; Carpenter, 1982;

Morris and Sweet, 1985; Iverson and Etchberger, 1989), movements (Wickham, 1922; Sloan and Taylor, 1987; Shipman et al., 1991), basking (Ewert, 1976), behavior (Brode, 1958; Grimpe, 1987), reactions of *Sternotherus* to *Macroclemys* based on chemical cues (Jackson, 1990), defensive posture (Hayes, 1989), reproduction (Dobie, 1968b, 1971; Ewert, 1976; Powders, 1978; Grimpe, 1987), embryology (Ewert, 1985), egg components and incubation period (Ewert, 1979) luring behavior (Allen and Neill, 1950; Drummond and Gordon, 1979), lingual appendage morphology (Spindel et al., 1987), food habits (Allen and Neill, 1950; Redmond, 1979; George, 1987; Spindel et al., 1987), barnacle infestation (Jackson and Ross, 1971), helminth parasites (Ernst and Ernst, 1977), coccidian parasites (Upton et al., 1992), morphology (Romer, 1956; Zug, 1966; Parsons, 1968; Winokur and Legler, 1974; Winokur, 1982), cranial arteries (Albrecht, 1976), blood collection technique (Powell and Knesel, 1992), blood components (Powell and Knesel, 1993), size (Pritchard, 1980; Pawley, 1987), longevity (Snider and Bowler, 1992), and conservation (George, 1987; Pritchard, 1989).

• **Etymology.** The specific epithet, *temminckii*, is a patronym honoring Coenraad Jacob Temminck, former director of the Rijkmuseum van Natuurlijke Historie, Leiden, Netherlands.

• **Comment.** The taxonomic history of this turtle was reviewed by Bour (1987).

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