

Catalogue of American Amphibians and Reptiles.

Dodd, C. Kenneth, Jr. 1990. *Caretta*.

Caretta Rafinesque
Loggerhead Sea Turtles

Caretta Rafinesque, 1814:66. Type-species, *Caretta nasuta* Rafinesque, 1814 (= *Testudo Caretta* Linnaeus, 1758) by monotypy.
Chelonia (*Thalassochelys*) Fitzinger, 1835:121. Type-species, *Testudo couana* Lacépède, 1788 (= *Testudo Caretta* Linnaeus, 1758) by Fitzinger 1843:30, explicitly proposed as a subgenus.
Thalassochelys: Bonaparte, 1838:142. First use as a full genus.
Caouana Cocteau, in Sagra, 1838:35. Type-species, *Testudo caouana* Lacépède, 1788, by tautonymy.
Halichelys Fitzinger, 1843:30. Type-species, *Caretta atra* Merrem, 1820, by original designation.
Thalassiochelis: Nardo, 1864:1421. *Ex errore*.
Eremonia Gray, 1873:408. Type-species, *Caouana elongata* Gray, 1844, by monotypy.
Thalassiochelys: Philippi, 1887:85. *Ex errore*.
Thalassochelys: Barbour and Cole, 1906:148. *Ex errore*.
?Pliochelys Portis, 1890:17. Type-species, *Pliochelys derelicta* Portis, 1890, by monotypy.
?Proganosaurus Portis, 1890:25. Type-species, *Proganosaurus pertinax* Portis, 1890, by monotypy.

• **Content.** One extant species, *Caretta caretta*, is recognized (see Remarks). A number of fossils have been assigned tentatively, and perhaps in most cases incorrectly, to the genus (see Fossil Record, Remarks).

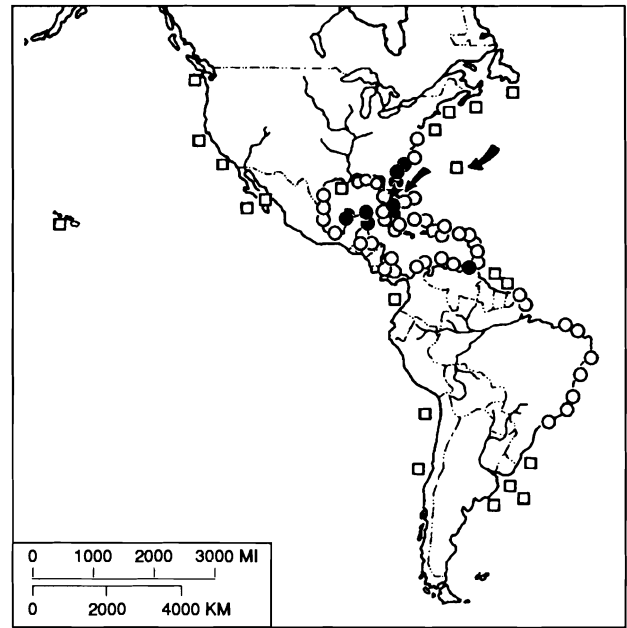
• **Definition.** [Adapted from Smith and Smith (1980) and Pritchard and Trebbau (1984)]. *Caretta* is characterized by 5-7 (usually 5) pairs of pleural scutes; usually 3 pairs of inframarginal scutes; cervical scute usually contacting pleural scutes; elongate carapace with intercostal fontanelles that close completely only in large adults; 7-11 (usually 9) neural bones with the neural series often posteriorly interrupted by mesially contiguous pairs of costal bones; no pores on inframarginals; intergular scute absent or small; hyo- and hypoplas- tra with numerous variable elongate projections medially and laterally; head massive; usual exclusion of frontals from orbits; two pairs of prefrontal scales; irregular, often asymmetrical division of the scales surrounding the large frontal scale on top of head; alveolar surface of maxilla not ridged or vertically ribbed; vomer not reaching premaxillae or separating maxillae; prefrontals contacting vomer and palatines; blunt ridge at anterior margin of choanae; pterygoids deeply concave posteriorly; crista praetemporalis strong; mandibular symphy-sis rounded, concave, longer than broad; neither labial nor lingual margins raised as cutting edges; no symphy-sial ridge.

• **Descriptions.** Dodd (1988, 1990) provided references for descriptions of all life stages of *C. caretta*.

• **Illustrations.** Dodd (1990) presented a general guide to illustrations of *C. caretta*. A more comprehensive review of whole animal illustrations (whether photographs are in black and white or color, the geographic location, the type of activity involved, and the life stage illustrated), external morphology, internal anatomy, and developmental biology (whether illustrations are line drawings or photographs) is provided by Dodd (1988).

• **Distribution.** Dodd (1988, 1990) presented detailed data on the modern distribution of *C. caretta*. Dodd (1990) illustrated the range of *C. caretta* in the eastern hemisphere. The location of fossils described as *Caretta* are discussed in Fossil Record.

• **Fossil Record.** A number of fossils have been referred to the genus *Caretta* primarily from Eocene and Miocene deposits in Europe and northern Africa (Kuhn, 1964). These include *Chelone bellunensis* Bergounioux, 1953, Italy and Tunisia; *Thalassochelys eocaenica* Lydekker, 1889, England; *Thalassochelys kempii* Bergounioux, 1936 (nec *Lepidochelys kempii* Garman), France; *Thalassochelys lezemensis* Bergounioux, 1936, France; *Thalassochelys*



Map. *Caretta* in the Western Hemisphere. Symbols: solid circle, major nesting area; open circle, minor or isolated nesting area; open square, non-nesting record; star, fossil site; arrows, designated type localities (Bermuda; Bimini, Bahamas).

libyca Andrews, 1901, Egypt; *Thalassochelys mutinensis* Zavattari, 1921, Italy; *Thalassochelys phosphatica* Stefano, 1903, Tunisia. These taxa are discussed in part by Kuhn (1964), Mlynarski (1976), Smith and Smith (1980), and Pritchard and Trebbau (1984). The systematic position of these forms, including *Caretta eocaenica*, is unclear (Mlynarski, 1976; Pritchard and Trebbau, 1984). For instance, *T. phosphatica*, although similar to *Caretta*, is actually a toxochelyid (Moody, 1972). Fossils described as *C. caretta* were reported from European Eocene deposits (Faura y Sans, 1915, Spain; Bergounioux, 1958) but their systematic placement is questioned (Mlynarski, 1976). Fossils referable to the genus *Caretta* from Pliocene deposits in Florida are in the Florida Museum of Natural History (Gary Morgan, pers. comm.) and are known from a nearly complete skull and scattered bones from Pliocene phosphate deposits near Aurora, North Carolina (Zug, in press). In the Americas, *C. caretta* is known only from a right squamosal bone from Pleistocene deposits at Vero, Indian River County, Florida (Hay, 1917). *Pliochelys*, known only from a small fragment of shell from the Pliocene of Italy (Portis, 1890; Kuhn, 1964; Smith and Smith, 1980), was questionably placed in synonymy with *Caretta* (Romer, 1956); it was not discussed by Mlynarski (1976). *Proganosaurus*, described from a single vertebra from the Pliocene of Italy (Portis, 1890; Kuhn, 1964; Smith and Smith, 1980), has been regarded as a pleurodire (Nopcsa, 1926; Kuhn, 1964), but Romer (1956) placed it questionably in synonymy with *Caretta*. It was not discussed by Mlynarski (1976).

• **Pertinent Literature.** A bibliography on *C. caretta* was published by Dodd (1987), and Dodd (1988, 1990) provided a discussion and review of the literature on *C. caretta*. Misidentifications involving *Caretta* and *Lepidochelys* have resulted in considerable confusion in the literature on these species (see Remarks). See Fossil Record for a review of the literature on fossil forms referred to *Caretta*.

• **Etymology.** The name *Caretta* is a latinized version of the French word "caret," meaning turtle, tortoise, or sea turtle (Smith and Smith, 1980).

• **Remarks.** No sea turtle remains referable to any modern genus of cheloniid turtle are known from the abundantly fossiliferous middle Miocene Calvert Formation of Maryland and Virginia (Weems, 1974). In contrast, many mid-Pliocene sea turtle remains from North Carolina (Zug, in press) can be assigned to modern

genera, including *Caretta*. This lack of fossils provides important, although circumstantial, evidence that the modern genera of sea turtles had not evolved before the late Miocene (Robert Weems, pers. comm.). Reports of fragmentary *Caretta* remains older than late Miocene should be viewed with skepticism. Many names have been used in combination with *Caretta* (or *Thalassochelys*) but are now relegated to other genera (see Table 27 in Pritchard and Trebbau, 1984). For instance, *C. rostrata* Girard 1858 (U.S. National Museum cotypes 012387-8, carapaces, collected in the Fiji Islands by the U.S. Exploring Expedition) is referable to *Eretmochelys imbricata*. *C. remivaga* Hay, 1908 (U.S. National Museum 09973, skull, collected in Ventosa Bay on the western coast of the Isthmus of Tehuantepec, Mexico, by F. Sumichrast) is referable to *Lepidochelys olivacea*. There are numerous instances of misidentifications, usually involving *Caretta* and *Lepidochelys*, in the literature on sea turtles, particularly in the Pacific Ocean. These misidentifications have been discussed by Dodd (1988), Nishimura (1967) for the western Pacific, and Frazier (1985) for the eastern Pacific. *Caretta* is extremely rare in the central and eastern Pacific. Literature references to *Caretta olivacea* are usually *Lepidochelys*, but in some instances, descriptions are based on a combined suite of characters (e.g., Deraniyagala, 1930) or are in fact *C. caretta* (e.g., Hiro, 1936).

Literature Cited

- Andrews, C. W. 1901. Preliminary note on some recently discovered extinct vertebrates from Egypt, 2. *Geolog. Mag.* (London), n.s. 4, 8(10):436-444.
- Barbour, T., and L. J. Cole. 1906. Reptilia, Amphibia, and Pisces, p. 146-155. In: *Vertebrata from Yucatan*. Bull. Mus. Comp. Zool., Harvard 50(5):101-159.
- Bergounioux, F. M. 1936. *Thalassochelys lezennensis*, tortue nouvelle du nord de la France. *Ann. Soc. Géol. Nord Lille* 61:35-42.
- . 1953. Chéloniens fossiles des terrains tertiaires de la Vénétie. *C. R. Acad. Sci.* 236(2):222-224.
- . 1958. Les reptiles fossiles de la catalogue. *Estud. Geol. (Madrid)* 14(39):129-219.
- Bonaparte, C. L. 1838. *Tavola analitica dei chelonii o testuggini*. G. Arcad. Sci. Lett. Arti, Roma, 69:54-64.
- Deraniyagala, P. E. P. 1930. The Testudinata of Ceylon. *Ceylon J. Sci.* B 16(1):43-88.
- Dodd, C. K., Jr. 1987. A bibliography of the loggerhead sea turtle *Caretta caretta* (Linnaeus), 1758. U. S. Fish Wildl. Serv., Endang. Sp. Rep. (16):1-64.
- . 1988. Synopsis of the biological data on the loggerhead sea turtle *Caretta caretta* (Linnaeus 1758). U. S. Fish Wildl. Serv., Biol. Rep. 88(14):vii + 110 p.
- . 1990. *Caretta caretta*. *Cat. Amer. Amph. Rept.* 483:1-483.7.
- Faura y Sans, M. 1915. Una tortuga fósil en el eocénico de Gerona. *Bol. Soc. Espan. Hist. Natur. (Madrid)* 15(6):291-295.
- Fitzinger, L.J.F.J. 1835. Entwurf einer systematischen Anordnung der Schildkröten nach den Grundsätzen der natürlichen Methode. *Ann. Mus. Wien* 1:103-128.
- . 1843. *Systema reptilium. Fasciculus primus, Amblyglossae*. Bräumlüller et Seidel, Vienna. 106 + vi p.
- Frazier, J. 1985. Misidentifications of sea turtles in the eastern Pacific: *Caretta caretta* and *Lepidochelys olivacea*. *J. Herpetol.* 19(1):1-11.
- Girard, C. 1858. Herpetology. Prepared under the superintendence of S. F. Baird. United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842, under the command of Charles Wilkes, U.S.N. Vol. 20. J.P. Lippincott & Co., Philadelphia. xvii + 492 p., and Atlas, 32 pl.
- Gray, J. E. 1844. Catalogue of the tortoises, crocodiles, and amphibians in the collection of the British Museum. London. viii + 80 p.
- . 1873. Notes on the genera of turtles (Oiacopodes) and especially on their skeletons and skulls. *Proc. Zool. Soc., London* 1873:395-411.
- Hay, O. P. 1908. On three existing species of sea turtles, one of them (*Caretta remivaga*) new. *Proc. U. S. Natl. Mus.* 34(1605):183-198.
- . 1917. Vertebrata mostly from Stratum No. 3, at Vero, Florida, together with descriptions of new species. *Ann. Rep. Florida Geol. Surv.* 9:43-68.
- Hiro, F. 1936. Occurrence of the cirriped *Stomatolepas elegans* on a loggerhead turtle found at Seto. *Annot. Zool. Japan* 15(3):312-320.
- Kuhn, O. 1964. *Fossilium catalogus, I: Animalia. Pars 107, Testudines*. Dr. W. Junk, Gravenhage, 299 p.
- Lacépède, B.G. E. de la V. 1788. *Histoire naturelle des quadrupèdes ovipares et des serpens. Vol. 1. Hotel de Thou, Paris.* 668 p.
- Linnaeus, C. 1758. *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. 10th ed. Vol. 1. L. Salvius, Stockholm. iv + 826 p.
- Lydekker, R. 1889. Notes on a chelonian humerus from the middle Eocene of Bracklesham. *Proc. Geologists' Assoc.* 11:177-179.
- Merrem, B. 1820. *Tentamen Systematis Amphibiorum (Versuch eines Systems der Amphibien)*. Johann Christian Krieger, Marburg. xv + 191 p.
- Mlynarski, M. 1976. *Handbuch der Paläoherpetologie. Part 7, Testudines*. Gustav Fischer Verlag, Stuttgart, 130 p.
- Moody, R. T. J. 1972. The turtle fauna of the Eocene phosphates of Metlaoui, Tunisia. *Proc. Geol. Assoc.* 83(3):327-336.
- Nardo, G. 1864. Sopra una nuova rarissima specie di Cheloniano pescato nelle nostre spiagge. *Atti R. Ist. Ven. Sci. Lett. Arti, Ser. 3*, 9:1418-1422.
- Nishimura, S. 1967. The loggerhead turtles in Japan and neighboring waters (Testudinata: Cheloniidae). *Publ. Seto Mar. Biol. Lab.* 15(1):19-35.
- Nopsca, F. von. 1926. *Fossilium catalogus, 1: Animalia. Pars 27, Osteologia reptilium fossilium et recentium*, Berlin. 397 p.
- Philippi, R. A. 1887. Vorläufige Nachricht über die chilenischen Seeschildkröten und einige Fische der chilenischen Küste. *Zool. Garten, Frankfurt am Main*, 28:84-88.
- Portis, A. 1890. I rettili pliocenici del Valdarno superiore e di alcune altre località plioceniche di Toscana. Privately publ., Firenze. 32 p.
- Pritchard, P. C. H., and P. Trebbau. 1984. The turtles of Venezuela. *Soc. Stud. Amph. Rept. Contrib. Herpetol.* (2):viii + 403 p.
- Rafinesque, C. S. 1814. *Prodromo di erpetologica Siciliana. Specchio delle Scienze o giornale enciclopedico di Sicilia (Palermo)* 2(9): 65-67.
- Romer, A. S. 1956. *Osteology of the reptiles*. Univ. Chicago Press, Chicago. xxi + 772 p.
- Sagra, D. Ramón de la. 1838-1843. *Historia física, política y natural de la isla de Cuba. Part 2. Bertrand, Paris.* 12 Vols.
- Smith, Hobart M., and Rozella B. Smith. 1980. Synopsis of the herpetofauna of Mexico. Vol. VI. Guide to Mexican turtles. *Bibliographic addendum III*. John Johnson, North Bennington, Vermont, xviii + 1044 p.
- Stefano, G. de. 1903. Nuovi rettili degli strati a fosfato della Tunisia. *Bol. Soc. Geol. Ital. (Roma)* 22:51-80.
- Weems, R. E. 1974. Middle Miocene sea turtles (*Syllomus, Procolpochelys, Psephophorus*) from the Calvert Formation. *J. Paleontol.* 48(2):278-303.
- Zavattari, E. 1921. Descrizione di un cranio fossile di *Thalassochelys* del Modenese. *Palaeontogr. Ital. (Pisa)* 27:147-150.
- Zug, G. R. in press. Turtles of the the Lee Creek Mine (Pliocene: North Carolina). *Smithsonian Contrib. Paleobiol.*

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