

*Notes on the Classification and Taxonomy of the Testudinata.*

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(Read before the American Philosophical Society, May 5, 1893.)

## I. THE TYPE OF HYDROMEDUSA TECTIFERA Cope, WITH GENERAL OBSERVATIONS ON THE GENUS HYDROMEDUSA AND THE CLASSIFICATION OF THE PLEURODIRA.

Through the kindness of Prof. E. D. Cope, I have received for examination the type specimen of *Hydromedusa tectifera* Cope. The carapace is totally different from that figured by Boulenger\* as *Hydromedusa tectifera*.

1. *Osteological Differences*.—In the diagnosis of *Hydromedusa* Boulenger states the number of neural bones as seven, and in the figure mentioned seven are shown. In the type specimen there are only six neural bones, allowing pleuralia 7 and 8 to meet in the middle line. The neurals are much more slender than in the specimen figured by Boulenger. The first neural is 39 mm. long and extends to the second pleural, excluding neurale 2 from pleurale 1. The first neural measures 6 mm. in front and 15 mm. behind. The second neural is only in connection with pleurale 2. The sixth neural bone is placed between the fifth and sixth pleuralia. The pleuralia 6 do not meet in the middle line, but are separated by the sixth neural and the seventh pleural of the right side, which touches the sixth pleural of the left. The first peripheral (marginal bone) is completely excluded from the second pleural; it is placed between the nuchal and the second peripheral. Notwithstanding the carapace measures over curve 29 cm. in length, it is not fully ossified; there are small fontanelles on the side between the pleurals and peripherals and also between the plastron and the peripherals.

2. *Differences in the Dermal Shields*.—The first vertebral shield is very much longer than broad (58 mm. : 31 mm.); where it meets the posterior cervical shield it is 32 mm. broad; the breadth of the posterior end of the second cervical shield is 63 mm. There cannot be any doubt that the specimen figured by Boulenger as *H. tectifera* belongs to a different species from the type. What name it ought to receive I am unable to determine.

Boulenger considers the specimen figured by Wagler† as *Hydromedusa maximiliani* and that figured by Peters‡ under the same name as identical species, which he also considers as *H. tectifera*.

*There seems to be no doubt that the specimens figured by Peters and Wag-*

\*Boulenger, G. A., *Catalogue of the Chelonians*, London, 1889, p. 211.

†Wagler, Joh., *Natürliches System der Amphibien*, Pl. iii, Fig. 25-42, 1830.

‡Peters, W., "Zur Osteologie der *Hydromedusa maximiliani*," *Müll. Archiv.*, 1839, pp. 280-289, Pl. xiv. I may mention here that this paper originally appeared as Peters' *Dissertatio Inauguralis*, under the title "Observationes ad Anatomiam Cheloniorum," with one plate (Berolini, 1838).

2. *I. gangetica* Cuv.  
Locality of type, Ganges.
3. *I. hurum* Gray, 1837.  
Locality of type, Ganges (probably).

*Chitra* Gray, 1844.

1. Type, *Trionyx indicus* Gray, 1831.  
Locality of type, Ganges, Pinang.

*Pelochelys* Gray, 1864.

1. Type, *Pelochelys cantorii* Gray, 1864.  
Locality of type, Pinang.
2. *P. cummingii* Gray, 1864.  
Locality of type, Philippines.
3. *P. poljakowii*, Strauch.  
Locality of type, Fu-tschan.

It may be seen that in the circumscription of the species I have nearly completely followed Boulenger. This, however, is only provisional. I am fully convinced that Boulenger has gone too far in contracting species. This I may especially say in regard to his *Trionyx sinensis*, *triunguis* and *subplanus*. Further detailed studies have to decide about this question.

I do not believe at all that the system proposed here is finished; but I think that it gives a more correct idea of this difficult group of tortoises. Much remains to be done yet for an exact knowledge of the Asiatic and African forms. But it is only by an exhaustive study of the osteological characters that any light can be brought here.

January 15, 1892.

#### IV. THE SPECIES OF THE GENUS PSEUDEMYIS.

The genus *Pseudemys* was established by Gray\* in 1855. The species referred to it were *Testudo concinna* LeC., *Emys hieroglyphica* Holbr. (*Pseudemys* (?) *hieroglyphica* Gray) and *Testudo rubiventris* LeC. (*Pseudemys serrata* Gray). Two years later, Agassiz † gave the generic name *Ptychemys* to the same group, distinguishing the following species:

- Ptychemys rugosa* Ag. (*Testudo rubiventris* LeC.).  
 “ *concinna* Ag.  
 “ *mobilienis* Ag.  
 “ *hieroglyphica* Ag.  
 “ *decussata* Ag.

It is evident that *Ptychemys* Ag. is a synonym of *Pseudemys* Gray. As the type of this genus I consider *Testudo concinna* LeC.

\* Gray, J. E., *Catal. Shield Rept. Coll. Brit. Mus.*, Part i, “Testudinata,” London, 1855.

† Agassiz, Louis, *Contrib. Nat Hist. Un. States*, Vol. i, Boston, 1857.

*Pseudemys concinna* LeC., Gray.

This species was described by LeConte\* under the name of *Testudo concinna* LeC. LeConte says: "Inhabits the rivers of Georgia and Carolina, where the beds are rocky. I have never seen them below Augusta on the Savannah, or Columbia on the Congaree." We have therefore to consider specimens from these localities as typical.

The upper jaw in this species is smooth, not notched, and without lateral cusps; the lower jaw is serrated and has a sharp median cusp on the symphysis. This species is characterized by its broad and low shell and its small head.

*Pseudemys hieroglyphica* Holbrook.

This species was described by Holbrook, in 1836, in the first edition of his *Herpetology* (Vol. i, p. 47, Pl. ii). The type now in the collection of the Philadelphia Academy came from the Cumberland river, Tenn.

A species very close to *Pseudemys concinna* LeConte, but distinguished by its elongated, narrow shell and its head, which is still smaller. The yellow stripes and dots on the head and neck are also very much more expressed than in *Pseudemys concinna* LeConte.

*Pseudemys labyrinthica* Lesueur, MSS., C. Duméril.

Boulenger places this species as a synonym of *Malaclemys geographica*, but there cannot be any doubt that it belongs to *Pseudemys*. It was originally described by C. Duméril, in *Catalogue méthodique de la Collection des Reptiles*, Paris, 1851, p. 13. The type specimens collected by Lesueur came from the Wabash river, Ill., probably from New Harmony.

That it cannot be *Malaclemys geographica* is at once seen from the description of the jaws: "Mâchoire inférieure dentelée, munie à son extrémité antérieure d'un crochet venant se loger dans une petite échancrure de la supérieure." Duméril correctly compares it with *P. hieroglyphica* Holbr., and says: "Cette E. diffère de la précédente [hieroglyphica] par la forme de sa carapace, dont l'ovale est moins allongé, et par l'élévation quelle présente sur la ligne vertébrale, qui est au contraire déprimée dans l'E. hiéroglyphique, et enfin par le volume preportionnellement plus considérable de la tête."

This species shows the coloration of head and neck of *P. hieroglyphica*, but the head is larger and the shell more as in *P. mobiliensis*, but by far not so large.

I have examined two heads of this form, from Illinois, preserved in alcohol; it is mentioned as *Pseudemys concinna* LeC. by H. Garman in "Notes on Illinois Reptiles and Amphibians" (*Illinois State Laboratory of Nat. Hist.*, pp. 185, 186). This species is said to be found at Mt. Carmel, Ill.

\* LeConte, J., "Description of the Species of North American Tortoises," *Ann. Lyc. Nat. Hist.*, New York, Vol. iii, Febr., 1830.

*Pseudemys floridana* LeC.

In 1830, LeConte described a tortoise from the St. John's river, in East Florida, under the name of *Testudo floridana*. This species was recognized as distinct by Holbrook, in 1842, and figured (Pl. viii). Agassiz stated that it has to be considered a synonym of *P. concinna* LeC., and it seems that all recent authors have followed him.

There is no doubt that this species is distinct from *Pseudemys concinna* LeC. and *P. mobiliensis* Holbr.

The description given by LeConte is very good. The species is at once distinguished by its oval form and the great elevation of the carapace and its color. The carapace is not emarginate in front. It has a very dark-brown color, with numerous irregular lines of yellow. The marginals are also dark brown and have only one vertical median yellow line and are without the yellow concentric lines so characteristic for *P. concinna* and *P. mobiliensis*. The carapace is much more arched than in *P. mobiliensis* and nearly forms a half circle. The skull is also larger than in this species and the jaws are not serrated. This species seems to be restricted to Florida and Southern Georgia.

*Pseudemys texana*, sp. nov.

Agassiz mentions specimens of his *Ptychemys mobiliensis* "from Guadalupe mountains, Pecos river, Texas, and New Leon, near Cadereita, Mexico," and also young specimens collected in Texas by Mr. G. Stolley.

I have examined different specimens of this so-called *Ptychemys mobiliensis*, from Texas, and reach the conclusion that it belongs to a new species of *Pseudemys* related to *P. rubiventris* LeC., which may be called *Pseudemys texana*. As typical specimen of this new species I consider a stuffed specimen, No. 246, of the Philadelphia Academy, collected by Dr. Hermann in San Antonio, Texas.

*Pseudemys texana*, sp. nov.

Shell very thin behind, posterior border serrated, longitudinally rugose; nuchal long and slender; upper shell brown, with yellow reticulations similar to *Pseudemys concinna*; shell not much elevated. Plastron emarginated behind, yellow or with brown markings. ---

Skull small, similar to *P. rubiventris*; upper jaw notched in the centre, with a rounded tooth on each side, not so prominent as in *P. rubiventris*. Lower jaw similar to *P. rubiventris*. The coloration of the head quite different from the other species. A yellow longitudinal spot behind the eye; above this, a yellow line ending in a long longitudinal spot above the temples; from the lower posterior portion of the eye a yellow line appears, sending a branch upwards in front of tympanic cavity, and continues behind on the neck. Three very strong yellow and some slender yellow stripes on lower face of neck.

Locality of type, San Antonio, Texas.

There is a shell of the same species in the Philadelphia Academy. No. 247. It has the Smithsonian Institution number 7173 and was collected near Old Fort Cobb, I. T. The soft parts, limbs and head are preserved in alcohol at the Smithsonian. The two specimens mentioned by Agassiz are also at the Smithsonian (No. 80, Guadalupe mountains, Pecos river, Texas, and No. 76, New Leon, near Cadereita, Mexico) and belong to this species.

I consider *Pseudemys texana* as the representative of *Pseudemys* in the southern portions of this country west of the Mississippi—Texas, Indian Territory, Northern Mexico.

*Pseudemys rubiventris* LeC., Baur.

This species has been first mentioned by Say,\* who described it erroneously as *Emys serrata* Daudin, in 1825. LeConte † introduced it as a new species under the name of *Testudo rubiventris* LeC., the "red-bellied terrapin, vulg." According to LeConte, it inhabits "in rivers from New Jersey to Virginia, chiefly in such as are rocky." He says that they are very numerous in the Delaware, near Trenton; specimens from this locality may be considered as typical, therefore.

In this form both jaws, especially the lower one, are strongly serrated; the upper one is notched mesially and has a cusp on each side; the lower jaw has a strong, median, serrated cusp and a notch on each side of it.

*Pseudemys alabamensis*, sp. nov.

In the collection of Mr. Gustave Kohn, of New Orleans, La., I found two specimens from Mobile, Ala., which are closely allied to *P. rubiventris*. They are at once distinguished, however, by their much more arched shell. This species has been noted by Agassiz as *Ptychemys mobiliensis*. It is, however, totally different from this, having the structure of the skull of *Pseudemys rubiventris* LeC. The shell is much more arched than in *P. rubiventris*; the coloration is like that in the latter form, but the plastron is yellow, or yellow with brown reticulations or dots.

Locality of types, Mobile bay, Ala. Collection of Mr. G. Kohn, New Orleans, La. This species exists in different museums, with the name *P. mobiliensis* Holbr.

*Pseudemys mobiliensis* Holbr.

The types of this species are from Alabama and are Nos. 241 and 242 of the Philadelphia Academy collection. I have examined the types and found that they are very close to *P. concinna* LeC. The skull agrees exactly with that of *P. concinna*, but is considerably larger. There is no notch in the upper jaw and no lateral cusps; the lower jaw only has a

\* Say, Thomas, "On the Fresh-water and Land Tortoises of the United States," *Journ. Acad. Nat. Sc., Philad.*, Vol. iv, Part 2, 1825.

† LeConte, J., *l. c.*

sharp median hook, but no lateral notches. The upper jaw is very finely, the lower one strongly, serrated. A number of specimens in Mr. Kohn's collection from Mobile bay, Ala., and New Orleans, La., agree with the type.

Skull like *Pseudemys concinna* LeC., but larger; shell very much more arched, especially in front, than that of *P. concinna*; coloration as in the latter form. Animal much larger than *P. concinna*, the upper shell reaching a length of 385 mm. (over curve).

We have, therefore, the following species of *Pseudemys*:

*Pseudemys concinna* LeC.

- “ *hieroglyphica* Holbr.
- “ *labyrinthica* C. Dum.
- “ *floridana* LeC.
- “ *mobiliensis* Holbr.
- “ *rubiventris* LeC.
- “ *alabamensis* Baur.
- “ *texana* Baur.

These forms can be arranged in two series.

A. Both jaws strongly and coarsely serrated; upper one notched mesially, with a cusp on each side. Lower jaw with a median cusp.

1. *Pseudemys rubiventris* LeC., Baur.

Type from Delaware, near Trenton.

2. *Pseudemys alabamensis* Baur.

Syn., *Ptychemys mobiliensis* Ag. (part).

Type from Mobile bay, Ala. In the collection of Mr. G. Kohn, New Orleans, La.

3. *Pseudemys texana* Baur.

Syn., *Ptychemys mobiliensis* Ag. (part).

Type from San Antonio, Texas. No. 246 Philadelphia Academy.

B. Generally lower jaw only strongly and coarsely serrated; upper without median notch, no cusps on the sides. Lower jaw with a median cusp.

1. *Pseudemys concinna* LeC., Gray.

Type from upper parts of rivers of South Carolina and Northern Georgia.

2. *Pseudemys mobiliensis* Holbr., Baur (non Ag., non Boul.).

Type from Mobile, Ala. Philadelphia Academy, Nos. 241, 242.

Syn., *Emys orthonix* Wied.

3. *Pseudemys floridana* LeC., Baur.

Type from St. John's river, Eastern Fla.

4. *Pseudemys hieroglyphica* Holbr., Gray.

Type from Cumberland river, Tenn. No. 217, Philadelphia Academy.

5. *Pseudemys labyrinthica* (Les. MSS.) C. Dum., Gray.

Type from Wabash river, Ill. Museum Natural History, Paris.