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## A New Species of *Brachyuranochampsa* (Crocodilia) from the Bridger Beds of Wyoming<sup>1</sup>

BY CHARLES C. MOOK

A well-preserved, though not complete, skull of a crocodilian was collected by Albert Thompson in 1903 from the Bridger Beds of Grizzly Buttes in Wyoming.

This skull exhibits some characters that are unusual among crocodilians. It agrees in many characters with *Brachyuranochampsa eversolei* Zangerl from the Washakie beds of southern Wyoming and differs essentially from *Crocodylus*. It also exhibits some differences from Zangerl's species and is therefore made the type of a new species, named in honor of the founder of the genus.

### ***Brachyuranochampsa zangerli*, new species**

TYPE: Skull without lower jaws (A.M.N.H. No. 6048) in good state of preservation, with a few parts missing.

TYPE LOCALITY AND LEVEL: Grizzly Buttes, Wyoming; Bridger Beds, middle Eocene.

SPECIFIC CHARACTERS: Zangerl did not distinguish clearly between characters of *Brachyuranochampsa* and those of *Brachyuranochampsa eversolei*. The American Museum specimen resembles Zangerl's type only in some characters. Those that are different, which may be considered as having specific value, follow:

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<sup>1</sup> Contributions to the Osteology, Affinities, and Distribution of the Crocodilia, No. 47.



FIG. 1. *Brachyuranochampsia zangerli*, new species, type, skull (A.M.N.H. No. 6048), superior view. One-half natural size.



FIG. 2. *Brachyuranochampsia zangerli*, new species, type, skull (A.M.N.H. No. 6048), inferior view. One-half natural size.

The processes of the premaxillaries on the snout are shorter; the nasal bones extend forward to the external narial aperture; the maxillo-nasal sutures are relatively longer, being about 20 per cent as long as the skull along the midline, in contrast to 15 per cent or less in the other species. The anterior process of the frontal has more irregular contacts with the nasals. This process is broader than that of *Brachyuranochamps**a* *eversolei* and does not taper to a point as in that species. The prefrontals are narrower anteriorly and broader posteriorly and occupy more space on the orbital borders. The extension of the supraoccipital on the cranial table is broader. The premaxillo-maxillary sutures on the palate are more irregular. The palatine fenestrae are more uniform in breadth throughout their lengths; they also extend farther forward, i.e., almost to the level of the eighth maxillary teeth, instead of just to the ninth.

The maxillo-palatine sutures are different in outline, being irregularly convex forward, instead of irregularly concave, as in the other species.

The palato-pterygoid suture is situated slightly farther forward, permitting the pterygoid to occupy a larger portion of the border of each palatine fenestra. Five teeth are present in each premaxillary and 14 in each maxillary.

The measurements (in millimeters) of *Brachyuranochamps**a* are:

|   |         |
|---|---------|
| Length of skull, premaxillary tip to occipital condyle . . . . .                  | 279     |
| Length of skull, premaxillary tip to posterior border of cranial table . . . .    | 274     |
| Length of snout . . . . .   | 172     |
| Maximum breadth across premaxillaries . . . . .                                   | 55      |
| Breadth across premaxillary notch . . . . .                                       | 42      |
| Breadth across expansion at the level of the fifth maxillary teeth . . . . .      | 78      |
| Breadth of snout at base . . . . .  | 117     |
| Breadth of interorbital plate . . . . .   | 20      |
| Breadth of interfenestral plate . . . . .   | 9       |
| Breadth of cranial table, anterior end . . . . .                                  | 80      |
| Breadth of narrowest point between palatal fenestrae . . . . .                    | 22      |
| Length of external narial aperture . . . . .                                      | 28      |
| Breadth of external narial aperture . . . . .                                     | 27      |
| Length of right orbit . . . . .   | 47      |
| Breadth of right orbit . . . . .  | 32      |
| Length of left orbit . . . . .  | 41      |
| Breadth of left orbit . . . . .   | 32      |
| Length of premaxillary fenestra . . . . .   | 18      |
| Breadth of premaxillary fenestra . . . . .  | 11      |
| Length of right palatine fenestra . . . . .                                       | 82      |
| Breadth of right palatine fenestra . . . . .                                      | 31      |
| Breadth of left palatine fenestra . . . . .                                       | 30 est. |
| Length of skull along mid-line from tip of snout to anterior tip of frontal . .   | 150     |
| Length of skull from anterior tip of frontal to posterior border of cranial table | 127     |

The ratios are:

|  |     |
|--|-----|
| Breadth of snout to length of snout . . . . .  | 680 |
| Breadth of snout to length of skull, premaxillary tip to occipital condyle . .                       | 419 |
| Breadth of snout to length of skull, premaxillary tip to posterior border of cranial table . . . . . | 427 |

RELATIONSHIPS

The two species of *Brachyuranochamps*a are rather obviously closely related. Whether *Brachyuranochamps*a *zangerli* of the Bridger is a direct descendant of *Brachyuranochamps*a *eversolei* of the Washakie is another matter. Very likely it is, but verification of certain characters, presently somewhat uncertain or altogether unknown, must be available before a positive statement regarding this relationship can be made.

With respect to generic relationship, Zangerl favored an interpretation of rather close relationship between *Brachyuranochamps*a and *Tomistoma*. He states that: "The fact that the fossil is distinctly short-snouted should be of no concern in this connection since the genus *Gavialis*, too, contains long-snouted and short-snouted forms (*Gavialis gangeticus* Gmelin and *G. breviceps* Pilgrim)."

This interpretation can be followed only to a limited extent. Certainly there is considerable range in snout length within crocodilian genera (*Crocodylus cataphractus* and *Crocodylus palustris*, for example). Nevertheless, it is true that some genera are characteristically long-snouted and others are short-snouted. *Gavialis breviceps* was not actually short-snouted; it was medium-snouted. No known teleosaur is short-snouted.

In a large genus with many species, there is normally a considerable range in snout length, from long to medium, or from medium to short.

The interpretation that snout length is of no concern in crocodilian classification is no more acceptable than Hay's (1930) idea of *Crocodyli-formes* and *Gavialoformes*, these major groups being based primarily on snout length.

According to the classification that has been followed in the preparation of my *Crocodylia* monograph, the *Eusuchia* may be considered as consisting of the *Gavialidae*, the *Crocodylidae*, and the *Alligatoridae*, with the *Stomatosuchidae* set aside for the time being as problematical. The *Crocodylidae* consist of three subfamilies, the *Crocodylinae*, the *Leidyosuchinae*, and the *Tomistominae*. In my opinion *Brachyuranochamps*a belongs definitely in the *Crocodylinae*. As to the origin of these subfamily lines, considerable investigation is still necessary. The genus *Thoracosaurus* as well as the genus *Hylaeochamps*a must be considered.

## REFERENCES

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