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NOTES REGARDING SKULL CHARACTERISTICS  
OF *OXETOCYON CUSPIDATUS* GREEN,  
(MAMMALIA, CANIDAE)

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ABSTRACT: The original description for the genus and species of the small canid, *Oxetocyon cuspidatus* Green was proposed on a single upper molar from the Oligocene of South Dakota. The teeth contained in the skull present evidence, which would suggest that *Oxetocyon cuspidatus* Green from late Oligocene deposits is most closely related to the canids.

In 1970, a partial skull of a small carnivore was collected from Late Oligocene deposits (Whitneyan), 8 ½ feet below the base of the Upper Ash in the Whitney Member of the Brule Formation. The University of Nebraska State Museum Coll. Loc. which yielded the specimen is Mo-J04 (at the base of Roundhouse Rock), located in the SE ¼, sec. 21, T. 19 N., R. 51 W., Morrill County, Nebraska.

The Whitneyan of Nebraska has yielded only a limited number of taxa. Schultz and Falkenbach (1968:407) concluded that during most of Whitneyan times the climate was arid so only the more specialized forms were able to survive.

The partial skull (Fig. 1) is that of a primitive canid, and is best compared to the genus and species *Oxetocyon cuspidatus* Green. The holotype (Museum of Geology, South Dakota School of Mines and Technology No. 2980) is an  $M^1$  (Green, 1954, p. 218-220), which was collected from Late Oligocene (Whitneyan) deposits of South Dakota. The Nebraska specimen was found in Late Whitneyan sediments.

The teeth of this animal are highly specialized, characterized by a very bunodont molar series, the presence of a parastyle, and the development of multiple cones on the teeth. The lingual cingulum of upper molar one is divided into 3 variably-sized cusps, this strongly developed cingulum extends to the center of the anterior portion of the molar.

The left side of the University of Nebraska State Museum partial skull of *Oxetocyon cuspidatus* is more complete than the right and includes the following: alveolae for the posterior portion of the canine and  $P^1$ - $P^3$ ; also three teeth,  $P^4$ - $M^2$ , which are almost perfectly preserved. The right side of the palate has the alveolae for  $P^1$ - $P^4$  with  $M^1$  and  $M^2$  preserved in excellent condition.

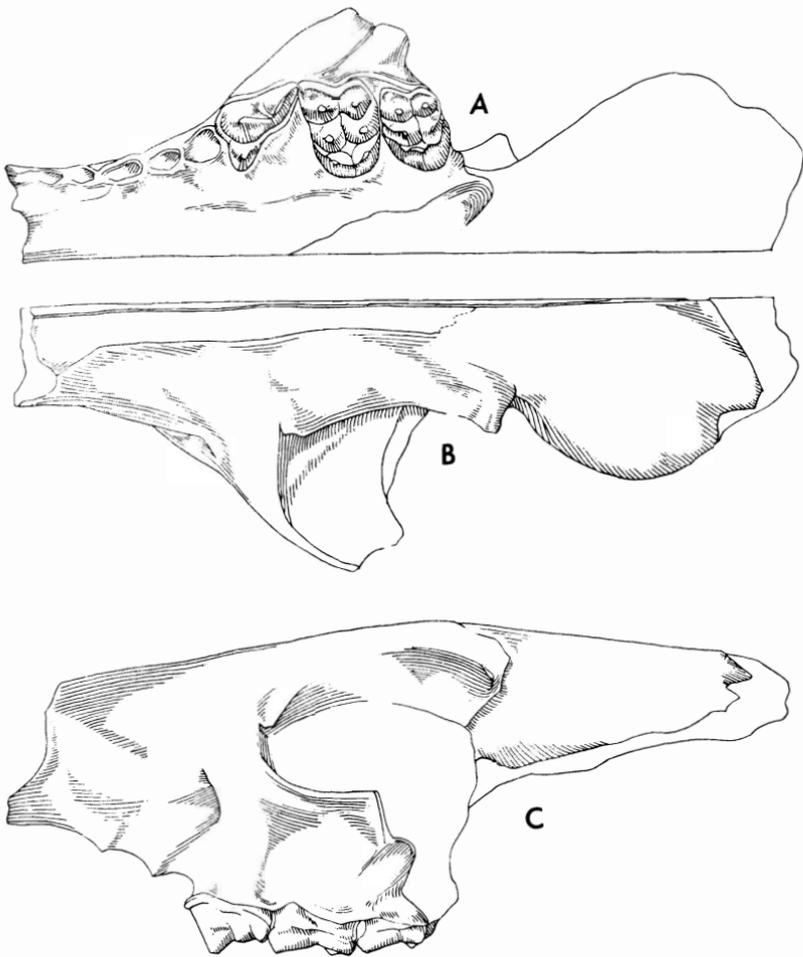


Figure 1. A, B, and C. Ventral, dorsal and lateral views (left side), partial skull of *Oxetocyon cuspidatus* Green, U.N.S.M. 2665. X2

According to Green (1954), only the roots of  $P^4$  and a partial alveolus for the  $M^2$  were included in the fragmentary left maxilla as a part of the type. The partial skull, University of Nebraska State Museum 2665 herein reported,

possesses characters which are not present on the South Dakota specimen. These additional characters support the generic and specific conclusions proposed by Green.

There is no hypocone or metaconule developed on the upper carnassial of *Oxetocyon cuspidatus*, at least not on the University of Nebraska State Museum specimen. In comparison, most other allied forms are characterized by having a hypocone developed on the P<sup>4</sup>, or by smaller, incipient swellings posterior to the protocone. The hypocone on the P<sup>4</sup> of *Nothocyon annectens* is noted by McGrew (1938:337) as being present in the form of "the cingular cusp, lying posterior to the protocone on P<sup>4</sup>." Green (1954:220) indicates that if the carnassial had been present along with the type molar of *Oxetocyon cuspidatus*, the relationship of *Oxetocyon cuspidatus* to *Nothocyon* could be determined. Some species of *Nothocyon* have a "swelling behind the deuterocone that could be interpreted as an incipient hypocone."

The lack of this character of the P<sup>4</sup> of the University of Nebraska State Museum specimen also definitely separates *Oxetocyon cuspidatus* from *Bassariscus*, as *Bassariscus* has a cusp almost as prominent as the protocone (deuterocone) posterior to the protocone. Also as is pointed out by McGrew (1938:327) this swelling is the "only important divergence from the typical canid pattern."

The carnassial is different on *Camplyocynodon personi* in that there seems to be a small cusp developed directly behind the protocone, judging from Chaffee's illustration (1954:44-45, figs. 1-3). The M<sup>1</sup> is also relatively larger and does not have the bench developed on the lingual cingulum. Upper molar two of the Nebraska specimen appears to be a much more specialized tooth when compared to this genus. It seems doubtful if the Chadronian form is an ancestor to *Oxetocyon*, and perhaps only a remote relationship exists between the two genera.

The carnassial has characteristics similar to the canids, but the smaller size and complex teeth separates *Oxetocyon* from the other carnivores such as *Hesperocyon*, *Bassariscus*, *Phylacocyon*, and *Procyon*.

These characteristics, furthermore, indicate a line of canids which had specialized molars and are separate in direct ancestry from the cynarctines, which also have an incipient hypocone on the P<sup>4</sup> directly behind the protocone or deuterocone.

*Aletocyon multicuspis* Romer and Sutton, has a distinct cusp present directly behind the protocone of the P<sup>4</sup>, and has multiple development of cusps but not the definite breaking up of the lingual cingulum into three cusps, found in *Oxetocyon cuspidatus*.

The measurements (in mm) of the partial skull (UNSM 2665) and the holotype M<sup>1</sup> of *Oxetocyon cuspidatus* (data from Green, 1954) are as

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follows. The data for the holotype consist of two measurements and are given parenthetically after the comparable measurements of UNSM 2665. Distance from the posterior edge of canine alveolus to posterior edge of  $M^2$  – 29.0; distance from posterior edge of canine alveolus to anterior edge of  $P^4$  – 13.9; anterior edge of  $P^4$  to posterior edge of  $M^2$  – 15.1; anterior to posterior diameter  $P^4$  – 7.0; transverse diameter of  $P^4$  (at deutercone) – 4.4; anterior to posterior diameter of  $M^1$  – 4.7 (5.0); transverse diameter of  $M^1$  – 7.0 (7.3); anterior to posterior diameter  $M^2$  – 3.9; transverse diameter of  $M^2$  – 5.8.

### SUMMARY

This study and description of a partial skull of *Oxetocyon cuspidatus* was prepared to present further information regarding the species, heretofore known only from a single molar. It now seems apparent that these small canids can be separated from *Nothocyon*, *Bassariscus*, procyonids, and other allied forms, in that *Oxetocyon* has a canid-like  $P^4$ .

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### LITERATURE CITED

- Chaffee, Robert. 1954. A new Oligocene Carnivore from the Beaver Divide Wyoming. *Jour. of Paleo.* 28 (11): 43-46, figs. 1-4.
- Green, Morton. 1954. A Cynarctine from the Upper Oligocene of South Dakota. *Trans. of the Kansas Acad. Sci.* 57 (2): 218-220, Fig. 1.
- McGrew, Paul O. 1938. Dental morphology of the procyonidae with a description of *Cynarctoides*. *Gen. Nov. The Field Mus. Nat. Hist. geol. ser.* 6 (22): 323-339, Figs. 85-94.
- Schultz, C. Bertrand and Charles H. Falkenbach. 1968. The phylogeny of the Oreodonts. parts 1 and 2. *Bull. Amer. Mus. Nat. Hist.* 139: 1-498, Figs. 1-56, 19 tables, 26 charts.