

## ANOMALIES OF BOBCAT SKULLS FROM OKLAHOMA

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An examination of 285 bobcat skulls (*Felis* (= *Lynx*) *rufus*) from Oklahoma, preserved in the Oklahoma State University Museum of Natural and Cultural History (OKSU), revealed several anomalous conditions including supernumerary bones, atypically shaped bones, and dental irregularities.

Bregmatic bones are formed when fontanelles, cartilaginous "soft spots" in the fetal skull located at the potential intersection of the sagittal and coronal sutures, ossify forming additional bones as the parietals and frontals complete ossification around them. Bregmatic fontanelle bones were found in 33 of 285 (11.6%) bobcat skulls examined, and varied in size, shape, and number (Fig. 1). The appearance of bregmatic fontanelles in Oklahoma bobcats is comparable to those found in other areas: 14.7% in Nebraska (1); 16.8% in Oregon, 14.6% in Nevada, 15.5% nationally (as represented in the U. S. National Museum) (2); and 14.9% in Arkansas (3). Although bregmatic bones usually occur singularly, one bobcat skull from Pittsburg County (OKSU 11432) possessed two supernumerary bones (0.4% of sample). Mahan (1) found only one skull with two additional bones (0.9%) in Nebraska, and Pratt (4) reported two specimens (0.12% of sample) with two additional bones.

One McCurtain County specimen (OKSU 11214) appeared to have suffered a sharp blow to the upper rostrum while a juvenile. The normally convex interorbital region of the rostrum was concave in this specimen. Several (approximately six) anomalous bones developed in the region of the frontals just above the nasals (Fig. 1). The exact number of bones could not be determined because of their small size and the irregularity of the suture lines. Presumably, broken bones resulting from a traumatic event would simply fuse during repair in an adult animal. Therefore, the presence of extra bones suggests that the event occurred early in ontogeny while cartilage was still in evidence.

Hall (5) indicated that bobcat and lynx (*Felis* (= *Lynx*) *lynx*) skulls differ in certain cranial characters. The presphenoid of the bobcat is generally straight, but the presphenoid of the lynx is broad at the middle and tapers toward both ends. In addition, the posterior lacerate foramen and anterior condyloid foramen are confluent in the bobcat but are separated by a bony ridge in the lynx. Examination of these characters in the Oklahoma sample indicated that some variation does occur. Of 275 bobcat skulls in which the presphenoid could be examined, 3 (1.1%) were found to have lynx-like broad bones. Lynx-like foramina occurred in 13 of 247 (5.3%) bobcat skulls. Apparently, these two characters are reasonably good characters to distinguish between bobcat and lynx skulls, especially since no skull with a lynx-like presphenoid also possessed lynx-like foramina (and vice versa).

Only one specimen (OKSU 11228) dem-

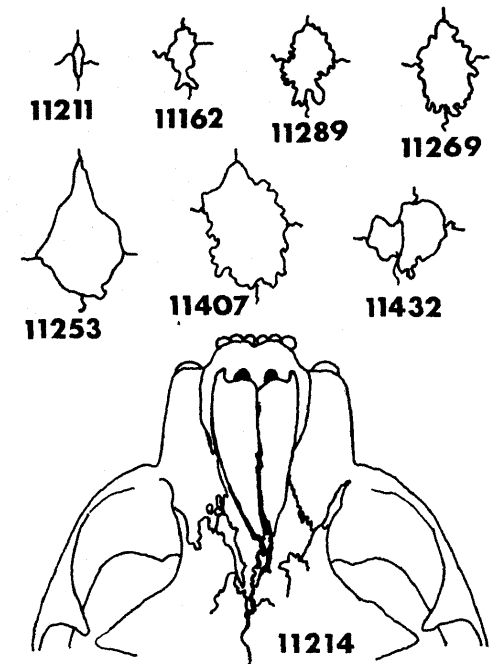


FIGURE 1. Upper two rows: representative bregmatic bones from Oklahoma bobcats. Illustrations are actual size and can be visualized as the union of the sagittal and coronal sutures on the dorsal aspect of a skull oriented as in the lower illustration. Bottom: bobcat skull with broken frontals which formed several anomalous bones. Numbers represent OKSU museum assignments.

onstrated supernumerary dentition. This specimen possessed a second left upper molar located posterolingually to the normal tooth. The supernumerary molar was smaller than the other molar but was structurally similar. Malocclusion did not occur. In addition, OKSU 11356 developed atypical upper molars. The paracone, normally a small cusp on the anterior of the molar, was formed rather as a ridge. Its union with the metastyle created a crescent surrounding a shallow pit. Both the pit and the crescent paracone are atypical dental structures for bobcats.

#### REFERENCES

1. C. J. MAHAN, Trans. Kansas Acad. Sci. 83:95-97 (1980).
2. R. H. MANVILLE, Science 130:1254 (1959).
3. C. R. TUMLISON and V. R. MCDANIEL, Proc. Arkansas Acad. Sci. 35:94-96 (1981).
4. L. W. PRATT, J. Mammal. 23:411-416 (1942).
5. E. R. HALL, *The Mammals of North America*, 2nd Ed, John Wiley and Sons, Inc., New York, 1981, 1181 pp.