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39.2 *CLIFFORD, A.*, WITMER, L.M.; Ohio University Department of Biomedical Sciences.* Proboscis evolution in mammalia: preliminary studies.

Specialized narial anatomy in Mammalia is involved in such diverse functions as manipulation, vocal and visual communication, sensation (both mechanosensory and olfactory), and physiological regulation (water and heat balance). Various clades have independently evolved a specialized narial structure often referred to as a proboscis. This study compares the probosces of various taxa to discover anatomical attributes that correlate with the functions noted above. Primary study taxa include moose, saiga, tapir, rhinoceros, manatee, and hooded seal, with data for additional taxa (elephant, dik-dik, takin) coming from the literature and for outgroups (deer, ox, horse, bearded seal) from direct observation. Anatomical data derives from CT imaging, gross dissection, gross sectioning, and examination of skull material. In general, proboscis building involves a rostrocaudal expansion of the nasal vestibule, concurrent with a caudal retraction of the bony naris often accompanied by reduced contact between the premaxillae and nasal bones. Nasal cartilages and musculature are greatly modified, in differing degrees in different probosces. For example, cartilages are greatly reduced in tapirs and saiga, but are enlarged in moose. Moreover, the narial musculature (e.g., Mm. levator nasolabialis, rectus nasi, and lateralis nasi) are generally expanded. Determination of the osteological correlates of these structures allows soft-tissue reconstruction (and hence functional interpretation) in extinct mammals thought to have had a proboscis. Moreover, these data ultimately will shed light on whether there are limited evolutionary options involved in building a proboscis; that is, there may be rules of anatomical construction that correlate with predominant functional role.