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Anatomical and functional aspects of Tusk in different animals

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Abstract

Tusks are elongated, continuously growing front teeth that protrude beyond the mouth of some mammal species. They are most commonly canine teeth, as with pigs and walruses, or, in the case of elephants, elongated incisors. Tusks share common features such as extra-oral position, growth pattern, composition and structure and lack of contribution to ingestion. Tusks are thought to have adapted to the extra-oral environments, like dry or aquatic or arctic. In most tusked species both the males and the females have tusks although the males are larger. Most mammals with tusks have a pair of them growing out from either side of the mouth. Tusks are generally curved and have a smooth, continuous surface. The male narwhal's straight single helical tusk, which usually grows out from the left of the mouth, is an exception to the typical features of tusks described above. Continuous growth of tusks is enabled by formative tissues in the apical openings of the roots of the teeth.

Introduction

The tusk is the upper incisor and continues to grow throughout the lifetime of male and female African elephants and of the male Indian elephant; the female Indian elephant has no tusks or small ones. The teeth of the hippopotamus, walrus, narwhal, sperm whale, and some types of wild boar and warthog are recognized as ivory but have little commercial value, because of their small size. About a third of the tusk is embedded in the bone sockets of the animal's skull. The head end of the tusk has a hollow cavity that runs for some distance along its interior, but the tusk gradually becomes entirely solid, with only a narrow nerve channel running through its centre. The only other creature to have ivory teeth is the walrus. Other than mammals, dicynodonts are the only known vertebrates to have true tusks. Males have larger tusks of up to 1.5 – 1.8m in length whilst the females do not have tusks at all. Milk tusks are fully grown at just 2 inches long and are

shed before the calf reaches its second birthday. Permanent tusks then begin to grow. Tusks never stop growing.

Common Tusked Mammals

The common tusked mammals are: Elephant, Narwhal, Common Warthog, Walrus, Deer, Strap-Toothed Whale,

Elephant Tusk- Elephant tusks are enlarged incisor teeth made of ivory. Tusks are teeth, elongated and projecting incisors with the same physical characteristics as most mammalian teeth. There is a pulp cavity, dentine, cementum and enamel to the tip of the tusk.

Babirusa- *The babirusas, also called deer-pigs are a genus, Babirusa, in the swine family found in Wallacea.* The tusks of the adult males are used in intraspecific fighting. The upper tusks are for defense while the lower tusks are offensive weapons. If a male babirusa does not grind his tusks (achievable through regular activity), they can eventually keep growing so as to penetrate the individual's own skull.

Narwhal Tusk- The narwhal's ivory spiral tusk is a truly impressive instrument. With almost 10 million nerve endings, it is an excellent sensory organ that can gather information about water pressure, temperature, and salinity. This horn actually develops from a large tooth and then protrudes through the upper lip of the skull to the left, giving it the appearance of a unicorn. Interestingly, the narwhal has two teeth. In most individuals, the second tooth usually remains undeveloped, but in very rare cases it has been known to grow into a second tusk from its skull.

Common Warthogs- Warthogs are animals with big heads with padded bumps on each side and four sharp tusks. They are dark brown in color and mostly bald, but they do have a thick mane that runs from their head to the middle of their back. They also have tiny, tufted tails that stand straight up in the air when they run. Warthogs are unusual in that they will kneel to drink from a pool of water or to graze which has given them calloused pads on their forelegs.

Walruses Tusk- The Walrus is marine mammals. Walruses have long tusks (extra-long upper canine teeth) that are used for both fighting and digging into the ice when they are pulling their heavy bodies out of the water.

Deer- The water deer *(Hydropotes inermis*) is a small deer found in China and Korea. Its prominent tusks, similar to those of musk deer, have led to both subspecies being colloquially named vampire deer in English-speaking areas to which they have been imported. Water deer tusks are structurally in line with those of other mammals. The water deer have developed long canine teeth which protrude

from the upper jaw like the canines of musk deer. The males, or bucks, use their tusks to fight off other bucks for potential mates and to protect themselves against predators.

Strap-Toothed whale- The strap-toothed beaked whale (*Mesoplodon layardii*), also known as Layard's beaked whale, is one of the largest members of the Mesoplodon genus, Male strap-toothed beaked whales begin to develop a large flat tusk from each lower jaw as juveniles, growing at a 45° angle back towards the head and over the rostrum (beak). It is thought male beaked whales use their teeth to compete for mating access to females, as evidenced by scars and scratches on the bodies of males. However, it is unlikely the whale uses the whole tusk for such aggressive interactions, instead, it is probable that only a small denticle found upon the upper surface of the tooth is utilized.

Importance of Tusk

Tusks have a variety of uses depending on the animal. Social displays of dominance, particularly among males, are common, as is their use in defense against attackers. Elephants use their tusks as digging and boring tools. Walruses use their tusks to grip and haul out on ice. It has been suggested that tusk's structure has evolved to be compatible with extra-oral environments. Tusks are used for defense, offense, digging, lifting objects, gathering food, and stripping bark to eat from trees. They also protect the sensitive trunk, which is tucked between them when the elephant charges.

Use by humans

Tusks are used by humans to produce ivory, which is used in artifacts and jewellery, and formerly in other items such as piano keys. Consequently, many tusk-bearing species have been hunted commercially and several are endangered. The ivory trade has been severely restricted by the United Nations Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

References

Nasoori, A. (2020). Tusks, the extra-oral teeth. Archives of Oral Biology, 117, 104835.

Tusk. (2010). In The Oxford English Dictionary.

Konjević, D., Kierdorf, U., Manojlović, L., Severin, K., Janicki, Z., Slavica, A., Reindl, B., & Pivac, I. (2006, April 4). The spectrum of tusk pathology in wild boar (Sus scrofa L.) from Croatia (PDF). Veterinarski Arhiv, 76(suppl.), S91–S100. Retrieved January 9, 2011.

Christy, B. (2015, August). Still Life. National Geographic Magazine, 97, 104.

Whitney, M. R., Angielczyk, K. D., Peecook, B. R., & Sidor, C. A. (2021). The evolution of the synapsid tusk: Insights from dicynodont therapsid tusk histology. Proceedings of the Royal Society B: Biological Sciences, 288.

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Fay, F. H. (1985). Odobenus rosmarus. Mammalian Species (238), 1–7. Retrieved January 22, 2009, from http://www.science.smith.edu/departments/Biology/VHAYSSEN/msi/pdf/i0076-3519-238-01-0001.pdf

Rose, J. B., Leeds, A., LeMont, R., Yang, L. M., Fayette, M. A., Proudfoot, J. S., Bowman, M. R., Woody, A., Oosterhuis, J., & Fagan, D. A. (2022, March 3). Epidemiology of Traumatic Tusk Fractures of Managed Elephants in North America, South America, Europe, Asia and Australia. Journal of Zoological and Botanical Gardens, 3(1), 89–101.

Mutinda, M., Chenge, G., Gakuya, F., Otiende, M., Omondi, P., Kasiki, S., Soriguer, R. C., & Alasaad, S. (2014). Detusking Fence-Breaker Elephants as an Approach in Human-Elephant Conflict Mitigation. PLOS ONE, 9(3), 91749.