We report two partial skulls of fossil beaked whales (Odontoceti, Ziphiidae) of uncertain age trawled from the sea floor of the sub–Antarctic Indian Ocean (58 to 60° S), representing the southernmost record of the family. The skulls possess diagnostic features of the genus *Africanacetus*, several specimens of which have been recovered from the sea floor off South Africa, but differ from the type and only known species *Africanacetus ceratopsis* in their larger size. This difference may either reflect intraspecific variation or indicate the existence of a hitherto unrecognised species. The two specimens are characterised by unusually developed mesorostral ossifications, combined with maxillary crests occurring in the facial region. Both of the latter are found in a range of extant and extinct ziphiids, and known to be sexually dimorphic in extant beaked whales. These structures may be the result of hypermorphosis driven by sexual selection, and could be involved in male–specific behaviour.

**Key words:** Mammalia, Cetacea, Ziphiidae, hypermorphosis, sexual selection, Antarctic.

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