

Double-space all text in the paper, with the following exceptions: 1) Single-space block quotations as well as table titles and figure captions. 2) Single- space notes and bibliographies internally with extra line space externally between note and bibliographic entries.

UPPERCASE
and centered.



ANATOMY OF WHALES

Single-spaced,
centered, not
bolded, capitalized.



Name
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Dates are in
month-day-
year order.

Level 1 heading is centered and bolded.


Arabic page numbers begin in the header of the first page of text.

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Introduction

Whales are a widely distributed and diverse group of fully aquatic marine mammals. They comprise the extant families Cetotheriidae (whose only living member is the pygmy right whale), Balaenopteridae (the rorquals), Balaenidae (right whales), Eschrichtiidae (the gray whale), Monodontidae (belugas and narwhals), Physeteridae (the sperm whale), Kogiidae (the dwarf and pygmy sperm whale), and Ziphiidae (the beaked whales). There are 40 extant species of whales. The two suborders of whales, Mysticeti and Odontoceti, are thought to have split up around 34 million years ago. Whales belong to the clade Cetartiodactyla and their closest living relative is the hippo having diverged about 40 million years ago. Whales range in size from the 2.6 metres (8.5 ft) and 135 kilograms (298 lb) dwarf sperm whale to the 34 metres (112 ft) and 190 metric tons (210 short tons) blue whale, which is also the largest creature on earth. Several species exhibit sexual dimorphism, in that the females are larger than males. They have streamlined bodies and two limbs that are modified into flippers. Though not as flexible or agile as seals, whales can go at incredibly fast speeds, up to 20 knots. Balaenopterids (rorquals) use their throat pleats to expand their mouth to take in huge gulps of water.

Whales range in size from the 2.6 metres (8.5 ft) and 135 kilograms (298 lb) dwarf sperm whale to the 34 metres (112 ft) and 190 metric tons (210 short tons) blue whale. Overall, they tend to dwarf other cetartiodactyls; the blue whale is the largest creature on earth. Several species have female-biased sexual dimorphism, with the females being larger than the males. One exception is with the sperm whale, which has males larger than the females.

All whales have a thick layer of blubber.¹  that live near the poles, the blubber can be as thick as 11 inches. This blubber can help with buoyancy (which is helpful for a whale), protection to some extent as predators would have a hard time getting through the thick layer of fat, and energy for fasting when migrating to the equator; the primary usage for blubber is insulation from the harsh climate. It can constitute as much as 50% of a whale's body weight. Calves are born with only a thin layer of blubber, but some species compensate for this with a thick lanugos.²

Note numbers should be placed at the end of the clause or sentence to which they refer and should be placed after punctuation except the dash. Note numbers should begin with "1" and follow consecutively throughout a given paper, article, or chapter.

Whales have a two-to-three-chambered-stomach that is similar in structure to that of other marine carnivores. Mysticetes contain a proventriculus as an extension of the oesophagus; this contains stones that grind up food. They also have fundic and pyloric chambers.

Locomotion

Whales have two flippers on the front, and a tail fin. These flippers contain four digits. Although whales do not possess fully developed hind limbs, some, such as the sperm whale, possess discrete rudimentary appendages, which may contain feet and digits. Whales are fast swimmers in comparison to seals, who typically cruise at 5–15 kn (9–28 km/h or 6–17 mph); the fin whale, in comparison, can travel at speeds up to 47 kilometres per hour (29 mph) and the sperm whale can reach speeds of 35 kilometres per hour (22 mph). The fusing of the neck vertebrae, while increasing stability when swimming at high speeds, decreases flexibility; they can't turn their head. When swimming, whales rely on their tail fin propel them through the water. Flipper movement is continuous. Whales swim by moving their tail fin and lower body up and down, propelling themselves through vertical movement, while their flippers are mainly used

1. Roy R. Britt, *A New Philosophy of Society: Assemblage Theory and Social Complexity*, (London: Continuum, 2006), 67-68 

2. Ibid., 8 

If the source is used again, the footnote should contain 'Ibid., + page number'.

Footnotes are used to indicate the source from which particular information is taken. They are formatted similarly to bibliography items.

for steering. Some species log out of the water, which may allow them to travel faster. Their skeletal anatomy allows them to be incredibly fast swimmers. Most species have a dorsal fin.

Whales have several adaptations for diving to great depths. In addition to their streamlined bodies, they can slow down their heart rate to conserve oxygen, blood is rerouted from tissue tolerant of water pressure to the heart and brain among other organs, and hemoglobin and myoglobin store oxygen in body tissue; they have twice the concentration of myoglobin than hemoglobin.

Level 2 heading should be centered, not bolded and title case.

Senses

Whale Ear

The whale ear has specific adaptations to the marine environment. In humans, the middle ear works as an impedance equalizer between the outside air's low impedance and the cochlear fluid's high impedance. In aquatic mammals, such as whales, there is no great difference between the outer and inner environments. Instead of sound passing through the outer ear to the middle ear, whales receive sound through the throat, from which it passes through a low-impedance fat-filled cavity to the inner ear. The whale ear is acoustically isolated from the skull by air-filled sinus pockets. Whales have no directional hearing underwater.

Titles of published works (books, journals, films, etc.) are italicized.

Eyesight

In the work *Acoustic Traditions of Killer Whales* by Ford (1985), it is stated that the whale eye is relatively small for its size, yet they do retain a good degree of eyesight.³ As well as this, the eyes of a whale are placed on the sides of its head, so their vision consists of two fields, rather than a binocular view like humans have. When belugas surface, their lens and cornea correct the nearsightedness that results from the refraction of light; they contain both rod and

3. John K.B Ford, *Acoustic traditions of killer whales*, (New York: Cengage Learning, 1985), 3-6

cone cells, meaning they can see in both dim and bright light, but they have far more rod cells than they do cone cells.

Visual Pigments



Level 3 heading should be flush left, bolded and capitalized.

Whales lack short wavelength sensitive visual pigments in their cone cells indicating a more limited capacity for color vision than most mammals. Most whales have slightly flattened eyeballs, enlarged pupils (which shrink as they surface to prevent damage), slightly flattened corneas and a tapetum lucidum; these adaptations allow for large amounts of light to pass through the eye and, therefore, a very clear image of the surrounding area. In water, whales can see around 10.7 metres (35 ft) ahead of itself, but, of course, they have a smaller range above

Conclusion restates the problem the paper addresses and can offer areas for further research.



Conclusion

Whales are a widely distributed and diverse group of fully aquatic marine mammals. They comprise the extant families Cetotheriidae (whose only living member is the pygmy right whale), Balaenopteridae (the rorquals), Balaenidae (right whales), Eschrichtiidae (the gray whale), Monodontidae (belugas and narwhals), Physeteridae (the sperm whale), Kogiidae (the dwarf and pygmy sperm whale), and Ziphiidae (the beaked whales). There are 40 extant species of whales. The two suborders of whales, Mysticeti and Odontoceti, are thought to have split up around 34 million years ago. Whales belong to the clade Cetartiodactyla and their closest living relative is the hippo having diverged about 40 million years ago.



Reference page should be entitled 'Bibliography' (regular type and centered).

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Bibliography

Britt, Roy R. *A New Philosophy of Society: Assemblage Theory and Social Complexity*. London: Continuum, 2006.

Ford, John K.B. *Acoustic traditions of killer whales*. New York: Cengage Learning, 1985.



References should be listed in alphabetical order and include the necessary details for each type of source. 0.5" hanging is required. Sources must be single-spaced with an extra space between them. **Important:** full authors' names are required.