

# Cetaceans Talk Outline

## I. How are cetaceans taxonomically classified?

Domain: Eukarya

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Cetacea (whales)

## II. Characteristics of Mammals

A. Lungs, Hair, Endothermic, Live Birth, and Mammary glands

B. Cetacean milk contains up to 50% fats (lipids)

## III. Cetacean Ancestry and Development

A. *Amubulocetus* - Early cetacean

1. Lived 49 mya (Pakistan)

2. Swam with tail, but no well developed fin structure

3. 4- limbed, lived part on land and part in water

B. Modern cetaceans

1. Entirely Aquatic (feed and breed in the sea)

2. Swim with well developed fins

3. Have lost hind limbs (reduced to pelvic girdle)

4. Deep divers

## IV. Two types of Cetaceans

A. Mysticeti (baleen whales)

B. Odontoceti (toothed whales)

## V. Baleen Whales.

A. Commonly recognized baleen whales include: Blue, Gray, and Humpback.

B. All are characterized by lacking teeth and instead have a baleen (flexible mouth plate composed of keratin), are filter feeders, have two blow holes, and have large body size (some greater than 100ft).

C. Not known to echolocate, but do make loud sounds that can travel for tens or hundreds of kilometers underwater. Vocalizations are used for short and long range communication; however it is interesting to note that baleen whales lack vocal cords.

## VI. Common Mysticeti- Baleen Whales

1. Gray whales

a. Have one of longest migrations of any mammal, travel 12,000 miles round trip

b. Winter in Baja, Gulf of CA (Dec-Feb)-Breeding

c. Summer in Alaska (Mar-May)- feeding!

## 2. Humpbacks (rorqual)

- a. Travel ~3500 miles to varying locations
- b. Spend their winters in warmer low latitudes like, Hawaii, Japan and Baja California (breeding).
- c. Summers in Alaska and California feeding.
- d. Engage in various behaviors like breaching and bubble net feeding.

## VII. Toothed whales.

- A. Commonly recognized toothed whales include: Killer Whales, Sperm Whales, Dolphins and Porpoises. Less well known are the deep-diving beaked whales.
- B. All are characterized by having teeth and a single blow hole, are rapid swimmers, predators (eat fish, seals, whale calves) and use echolocation.
- C. Dolphin vs Porpoise.
  1. Dolphin are typically larger than porpoise
  2. Dolphin have conical teeth, porpoise have flat/ spatulate teeth.
  3. Dolphin have an elongated "beak"
  4. Porpoise have smaller dorsal.
- D. Echolocation
  1. Sonar system used by toothed whales (similar to system used by bats)
  2. Most important sense, more important than eyes.
  3. Sound is generated by air compressed in internal air passages, then emitted and focused by oily/fat filled melon and later received (after sound hits an object) by the lower jaw bone. Once sounds travel through the jaw bone they are passed to the inner ear and then the brain, where a "picture" of the target is formed.
- E. Social Animals- tend to live in larger groups or pods.

## VIII. Common Odontoceti- Toothed whales

- A. Dall Porpoise- black and white
- B. Harbor Porpoise- gray and white
- C. Bottlenose Dolphin- flipper, surfers
- D. Common Dolphin- White sides
- E. Pacific White-sided Dolphin- similar in appearance to common dolphin
- F. Orca, Killer Whale