

Marine Mammals

Introduction Presentation

Mammal Characteristics

- Endothermic
 - > Warm-blooded
- Live birth
- Breathe with lungs
- Feed young with milk
- Have hair*

*Some only have hair at birth (example: dolphins)



Marine Mammal Characteristics

- Endothermic
 - > Warm-blooded
- Live birth
- Breathe with lungs
- Feed young with milk
- Have hair
- **Live in the ocean***

*A few species live in fresh water



Marine Mammals

- Order Cetacea (89 species)
- Order Carnivora (35 species)
- Order Sirenia (4 species)

Over 100 species in the world!



Marine Mammals

- Order Cetacea (89 species)
- Dolphins, Whales and Porpoises
 - > Suborder Mysticeti (baleen whales)
 - > Suborder Odontoceti (toothed whales – including dolphins and porpoises)



Marine Mammals

- Order Carnivora (35 species)
- Seals, sea lions, polar bears, sea otters
 - > Suborder Pinnipedia (flipper footed)
 - *Seals, sea lions, walruses*
 - > Suborder Fissipedia (paw footed)
 - *Sea otters and polar bears*



Marine Mammals

- Order Sirenia (4 species)
- Manatees and Dugongs



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 - > Manatees and Dugongs



Adaptations

Physical



Behavioral



Adaptation Exploration

- Use the Adaptation Web Search to explore some unique marine mammal adaptations

Adaptations

Thermoregulation

- **Countercurrent heat exchange**
 - > Blood vessels close together for heat exchange
- **Blubber**
 - > For insulation

Breathing

- **Small lung size**
 - > Increased efficiency in gas exchange
 - > Dolphins: 80% of O₂ exchanged in a single breath
 - > Humans: 20% of O₂ exchanged in a single breath

Swimming

- **Hydrodynamic body plan**
 - > Smaller appendages and sleek body
- **Blowhole**
 - > Baleen: 2 blowholes
 - > Toothed: 1 blowhole

Adaptations

Water Conservation

- **Water source**
 - > Fresh water intake comes from food source
- **Kidneys**
 - > Urine has a higher salinity than saltwater

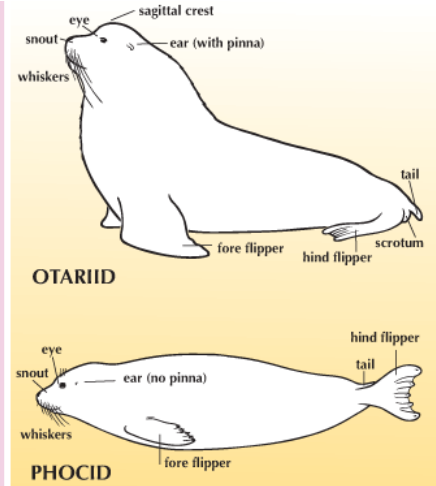
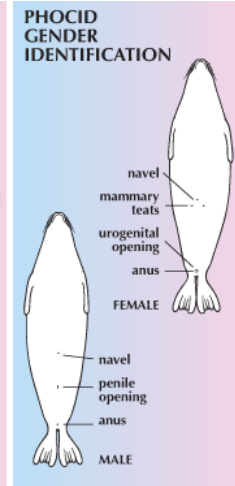
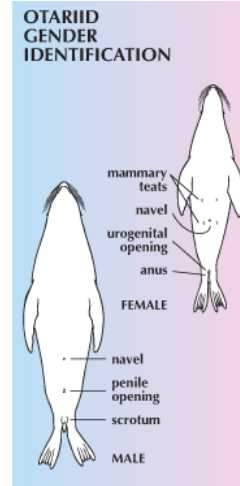
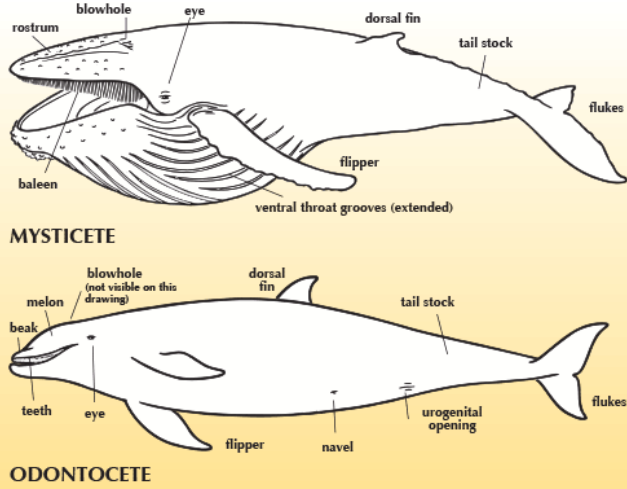
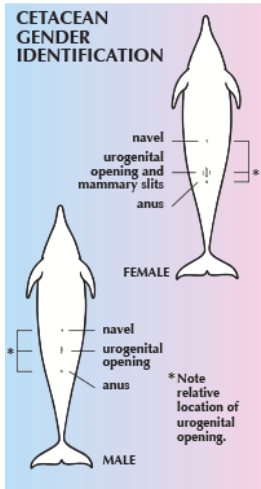
Sensory

- **Echolocation** (toothed whales)
 - > Melon (part of the forehead) sends out sounds waves
 - > Lower jaw receives returning waves
- **Whiskers** (seals, sea lions, walruses)
 - > Highly sensitive
 - > Pick up vibrations in water

Journal Prompt

- Why do marine mammals have so many adaptations?
- Which one do you think is the most important?

External Anatomy for Cetaceans & Pinnipeds



External Anatomy Activity

- Draw your assigned marine mammal, labeling the physical features and matching the adaptation/s

- > **Bottlenose dolphin**
- > **Orca**
- > **Harbor seal**
- > **Sea lion**
- > **North Atlantic right whale**

Physical Features

Word Bank

Blowhole
Rostrum
Dorsal Fin
Fluke
Flipper
Melon
Whiskers

Adaptations

Word Bank

Hunting
Balance
Breathing
Echolocation
Stability
Propulsion
Eating



Marine Mammal Identification

- Now its your turn. Use the Species ID cards and the Dichotomous Key to figure out all 10 species!