

Marine Mammals ^{Amph} ^{King} ^{Amph} ^{King}
 Examples → dolphin, dog, narwhal, walrus, humpback, squid, seal, walrus, elephant, platypus, cows

I. What makes something a mammal?




- ① All have a backbone
- ② Endothermic / Homeothermic
 temp is controlled internally vs. maintained @ a constant level
- ③ Hair/Fur
- ④ Copulation
- ⑤ Live births → viviparity w/ an umbilical cord
- ⑥ Mammary glands → produce milk → feed young
- ⑦ Altricial → require parental care
- ⑧ Complex social structure
 " " nervous systems
- ⑨ Heterotrophic → must consume food

II. Marine Mammals

- a) What makes something a "marine" mammal?
 mammal that lives in water
- b) Examples →
 whale, dolphin, sea lion, sea otter, seal, walrus
- c) Two Major Groups
 ① Pinnipeds → fin-footed → seals, sea lions, walrus
 ② Cetaceans → "no feet" → whales

III. Pinnipeds

- a) Def → seals, sea lions, walrus
- b) Include: seals, sea lions, walrus

SEAL	SEA LION	WALRUS
		
- No External ears (ear flaps) - hind flippers are vestigial - flippers catch rattle - can't sit up (slide a belly) - NO FUR	- has external ears (ear flaps) - fore flippers are used for swimming - flippers do rotate - sea lion can sit-up (gallop) - HAVE FUR	Has Tusks

- c) Diet → Carnivores
 → fish/squid
 → squid/octopus
 → shellfish
 crabs, lobsters, mussels, scallops, clams
- d) penguins
- e) Predators
 killer whales, sharks, humans, parasites (lice)
- f) Reproduction
 → courtship
 → males are territorial w/ flippers to attract a mate
 → biggest is better the most aggressive, best parent
 → HAREM Making
 → one male mates w/ many females
 → Copulation
 → internal fertilization
 → viviparity → live birth
 → babies are called pups
 → first four weeks they nurse on land
 milk → fat protein
 → 1x per week nursing (24 hrs)

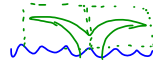
IV. Cetaceans Animals - King
Character - Plant
Class - Mammals
Order - Cetaceans

a) Def → "great animal"
"great mammal"



b) Examples
↳ "Killer" whale
"orca", porpoise,
Blue whale, sperm whale, humpback, beluga, narwhal, humpback, fin whale, right whale

c) Overlapping characteristics

- ① Live in water
- ② All have blowholes/lungs
- ③ Make sounds
- ④ Blubber → insulation
- ⑤ Smooth rubbery skin → hydrodynamic
- ⑥ Tails → 2 flukes
- ⑦ Social/Intelligent

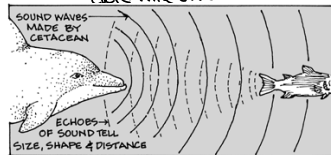


d) 2 distinct groups

TOOTHED	BALEEN
Has teeth conical teeth "cone-shaped" 	Has baleen "bristle-like material" "toothbrush" 
- larger fish, seals, sea lions, other whales, sharks - smaller in size * sperm whale (65 ft) - 65 toothed whales	- Krill, plankton - larger in size * blue whale (100 ft) - 5 baleen whales
Odontoceti	Mysteceti

e) Echolocation

↳ using reflected sound waves (echoes) in order to determine one's surroundings



- i. air sacs → creates clicks ← monkey's muzzle
- ii. melon → focuses sound ← sperm whale's forehead
- iii. lower jaw → receives sound ← lower jaw

f) Blowhole

↳ breathing (gas exchange)
 O₂ comes in
 CO₂ goes out
 ↳ acts similar to a nasal passage
 "tube that connects to lungs"
 ↳ normally shut; voluntarily forced open

g) Flukes/Flippers



1/3 of fluke to fluke tip = total size

h) Diving Adaptations

(i.e. How come whales can stay under water longer than humans?)

- ① Blowholes remain shut naturally
- ② Lungs are larger ($\uparrow O_2$)
- ③ Blubber \rightarrow keep warm in deep cold water
- ④ More blood (\uparrow hemoglobin; $\uparrow O_2$)
- ⑤ Myoglobin (in muscle, $\uparrow O_2$)

i) Unique Behaviors

- unusual
- ① Spy-hopping
 - ② Lob-tailing
 - ③ Pec-slapping
 - ④ Breaching



- humpback
- ⑤ Bubble-netting (humpback)
 - \hookrightarrow hunting strategy
 - ⑥ Singing (humpback)