ACS

Echolocation

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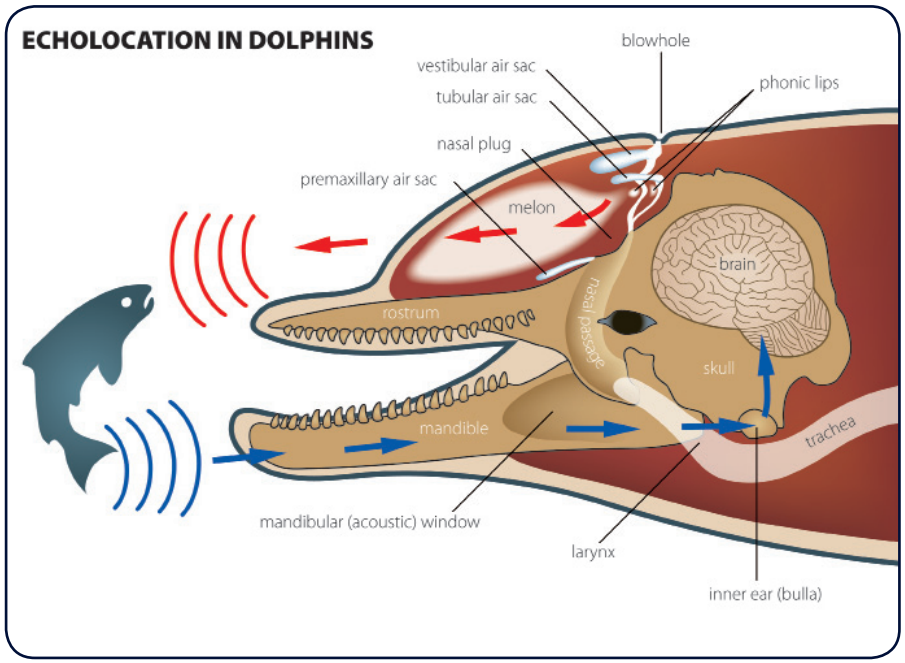
All toothed whales (Odontocetes) have a unique way of finding prey and navigating in their often dark and murky water world. Like bats, toothed whales (such as orcas, sperm whales, dolphins, porpoises) use echolocation, or SONAR (SOund Navigation And Ranging). They send out clicking sounds, and then they receive back echoes when these sounds bounce off objects. The echoes help deliver an "acoustic message" to the animal's brain about these objects.



How does echolocation work?

- **PHONIC LIPS -** Sounds are produced by two sets of "Phonic Lips" in a complex system of air sacs and nasal passages that the animal has below its blowhole. Each set of phonic lips works independently or simultaneously to produce sounds.
- **BEAM OF SOUND -** The animal projects these sounds through a fatty tissue in its forehead called the "Melon." The melon focuses this beam of sound on an object (such as a fish or an obstacle).
- **ECHOES BOUNCE BACK -** The sound waves bounce off the object and are received back as echoes by the animal through its lower jaw (mandible).
- **FROM JAW TO INNER EAR -** Inside the lower jaw an area of fatty tissue called the "acoustic or mandibular window" is directly connected to the animal's inner ear (bulla).
- **ACOUSTIC MESSAGE** The echo passes through the inner ear to form an acoustic message in the animal's brain.

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