

The friendly bottlenose dolphin

SCIENTIFIC NAME

Tursiops truncatus

TAXONOMY

PHYLUM: Chordata

CLASS: Mammalia

ORDER: Cetacea

FAMILY: Delphinidae

Physical description

The bottlenose dolphin gets its name from its short and stubby rostrum, in which its mouth seems permanently curved into a friendly smile. The smooth, gray aquatic mammal can be found worldwide in temperate and tropical waters. As the dolphin swims, its high and curved dorsal fin breaches the surface of the water, and it breathes the air through a blowhole. Propelled by its tail, the dolphin can reach speeds of over 18 mi per h in the wild and launch its body 16 ft out of the water, no small feat for an animal 8–12 ft in length and weighing as much as 1,400 lb. Their brains are among the largest, both in absolute size and in relation to body size, of all mammals. To support the high metabolic rate that sustains these large brains¹, they consume as much as 15–30 lb of fishes, squid and crustaceans a day.

Vocal communication

Although bottlenose dolphins have not shared a common ancestor with humans since the emergence of mammals over 90 million years ago^{2,3}, they possess a few attributes that are strikingly similar to those of many primates, including complex auditory and communicative capacities and social organization^{2,3}. Because the lesser gravity in the dolphins' home environment provides few landmarks for orientation³ and the opacity of water limits visibility in the ocean⁴, dolphins use large repertoires of acoustic signals for communication and navigation. In echolocation, for example, dolphins produce clicks and listen to returning echoes to determine the location and identity of objects⁴.

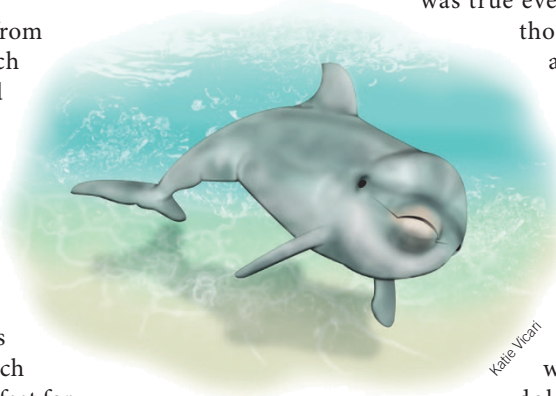
Dolphins use their communication abilities to recognize individuals and to maintain group cohesion and coordination³. Bottlenose dolphins live in 'fission-fusion' societies, in which dolphins may break apart from one group or 'pod' and fuse

with other pods many times^{3,5}. Each dolphin develops a unique signature whistle. Close associates, such as mother-calf pairs and male alliances, learn and repeat the signature calls of other individuals and respond when another dolphin mimics its unique call⁶. A recent study⁵ collected data from 53 different bottlenose dolphins at six facilities within a breeding consortium that had rotated dolphins and kept records for decades of which individuals had lived together. When recordings of signature whistles that the target dolphins had never heard before were played, the dolphins were quickly bored. But when a recording of a dolphin with which the target dolphins had lived was played, the dolphins perked up at the familiar sounds and responded immediately. This

was true even when the dolphins had not heard those calls in more than 20 years. Their advanced memory capacity suggests that dolphins' large brains evolved in order to maintain their social relationships^{1,3,5}.

Constant vigilance

A recent study showed that dolphins can continuously echolocate and accurately report the locations of targets for at least 15 d without interruption⁴. This is because dolphins have unihemispheric sleep: alternating hemispheres of their brain stay awake, allowing them to maintain vigilant states over long periods of time. During unihemispheric sleep, it has been observed that dolphins will keep one eye closed while the other is looking in the direction of group members. This way they can continuously monitor the locations of other group members to maintain group cohesion, even while they are sleeping⁴.



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