

Which animal can hold its breath the longest?

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Scientists recorded an individual Cuvier's beaked whale diving and holding its breath for a total of 3 hours and 42 minutes. The record was recorded in a five-year study with 23 members of this species.



Beaked whales in the study had an average diving time of 59 minutes. Only 5% of individuals observed had diving times exceeding 1 hour 17.7 minutes.

Some other marine animals have the ability to hold their breath for as long as the sperm whale, about 1.5 hours, and whales and elephant seals are not far behind, holding their breath while diving for up to two hours.

Marine mammals can stay underwater for so long partly because their muscles are filled with a protein called myoglobin, which stores oxygen and supplies it to muscle cells. Humans also have myoglobin but at a much lower density.

According to a 2012 study, the myoglobin of deep-diving marine mammals is positively charged, causing proteins to repel each other, helping to prevent them from sticking together and clogging muscles.

In addition to myoglobin, researchers believe that Cuvier's beaked whales' high diving times are due to their low metabolic rate, meaning they don't use up oxygen as quickly. Whales have a better tolerance for lactate (a product of cellular metabolism) that accumulates in their muscles, when they need to switch to anaerobic respiration.

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