

When you picture a *Orcinus orca*, or killer whale, you imagine a rather large black and white mammal of the sea. So why is it that in some sightings in the antarctic, the orca's white areas appear to be 'yellowing'?



Scientists believe that this discoloration is caused by sea ice diatoms. Diatoms are single celled algae distinguished by their silica frustules. They are found most often in colonies or as unicells and are one of the Arctic ice's most important primary photoautotrophic producers. Sea ice diatoms are an important food source for sea ice meiofauna and under-ice amphipods. When the sea ice melts, some of the diatoms sink to the seafloor and are consumed by benthic herbivores.

It is important to note though that not all orcas become discolored by yellow-pigmented diatoms. The conservation status of *Orcinus orca* is currently set in the data deficient category by the International Union for Conservation of Nature (IUCN)

because there is genetic evidence that the different populations of orcas found around the world may be separate species. This yellowing phenomenon has only been observed by populations who take residence in the antarctic. Though there are four types (based off of feeding patterns) of orcas in this area, only two (Type 'B' and Type 'C') exhibit this effect. Exact reasons are currently unknown. Some theories include the fact that the traditionally darker spots on their body are more medium-gray then black (or two-toned) and have more sensitive skin that is susceptible to diatom infestation. These killer whale types are also known to forage closer to the ice pack, making it easier for diatoms to cling on and grow.

So why do we see the same orca pictured above completely discolored in one sighting, and pristine in another sighting a few months later? As it turns out, on occasion these orcas will complete a rapid migration (~40 days) to South America, where they will shed their skin to remove the diatom buildup. However, the process of diatom build up and catching/growing on the orca's skin begins anew when they return the cold arctic waters. The study of this orca migration is shown to be completely unrelated to feeding or breeding patterns. It is currently unknown if the diatom buildup on the orca causes harm or discomfort to the animal. Similar yellowing occurrences have been observed on *Balaenoptera musculus*, the blue whale.

Sources:

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