

The species

Killer whales (*Orcinus orca*) can be found in every ocean and are one of the most geographically widespread mammals on earth. Currently researchers only recognise one species, *Orcinus orca*, and several distinct 'types'. But are these 'types' separate species?

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Southern hemisphere orca pushing itself back into the sea from the shore after an attack on a seal on the beach

Diverse populations

Ancient sailors named orca 'asesina ballenas', or whale-killer. This name was eventually flipped to today's common name, killer whale. The scientific name for these whales also makes reference to this – the generic name *Orcinus* meaning 'of the kingdom of the dead' and *orca* referring to a kind of whale.

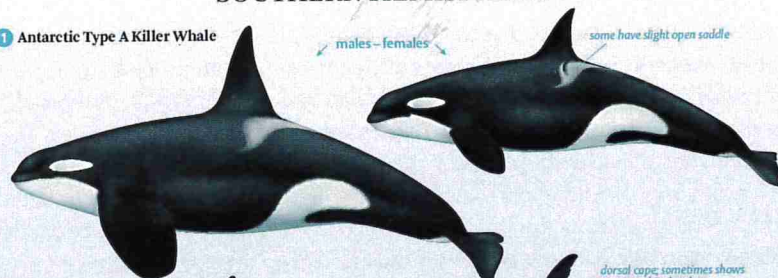
Since Linnaeus formally described them in 1758, orca have been regarded as a single species. Scientists have recently uncovered a surprising amount of diversity among the different orca populations around the world. Many populations of orca have distinct vocalisations, food preferences and hunting behaviours. So in a sense they have their own cultures.

While many of these populations inhabit the same waters, they appear to avoid each other, meaning they are effectively reproductively isolated. If a population is reproductively isolated, and shows distinct behaviour and morphology, when should it be described as a separate species? This is the problem faced by scientists as they try to study and identify differences between orca types (see main picture).

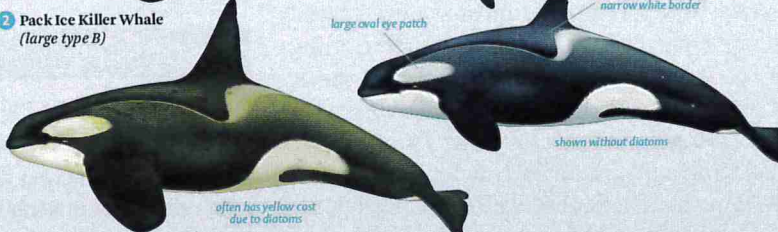
Initially, during the 1970s and 1980s, researchers in the northwest Pacific identified three distinct orca ecotypes: resident, transient and offshore. Further research into populations of orca around the world has led to more distinct types being identified. In the North Atlantic there may be two distinct types, while in the southern hemisphere there could be at least five types of orca. One of these has only recently been confirmed in the wild after initial photographs from a mass stranding in 1955 were matched to sightings at sea in 2004. There is some agreement among researchers on there being ten identifiable types of orca around the world.

SOUTHERN HEMISPHERE

1 Antarctic Type A Killer Whale



2 Pack Ice Killer Whale (large type B)



3 Gerlache Killer Whale (small type B)



4 Ross Sea Killer Whale (type C)



5 Subantarctic Killer Whale (type D)



There are different types of orca around the world, each with a distinct morphology, diet and set of behaviours. Source: NOAA Fisheries: <https://tinyurl.com/y9hufd75>

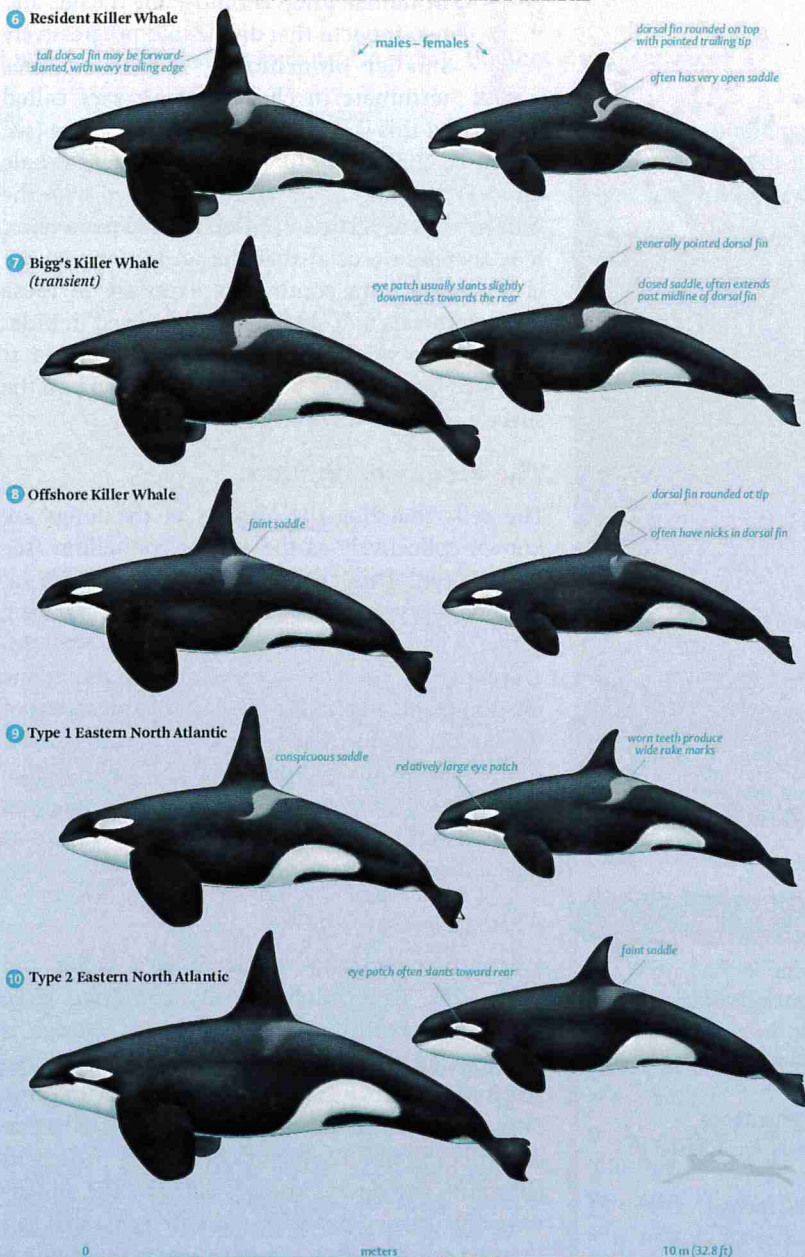
What's in a name?

Does all this worry over species and naming actually matter? When considered as one global species, orca may not be threatened, although currently the IUCN describes their conservation status as data deficient due to the likelihood of some of these killer whale types being separate species. If we consider the different types as potentially separate species, this affects our assessment of their conservation status, with some local populations already threatened or endangered. The southern resident orca present around British Columbia and the west coast of the USA were placed on the US endangered species list in 2004. A better knowledge of each distinct population will not only broaden our understanding of their role as predators in our oceans, but also enhance our ability to conserve them effectively.



North Atlantic type 1 orca 'carousel feeding' on herring

NORTHERN HEMISPHERE



Species identification

It is difficult to define a species in a way that applies to all organisms. There are many different definitions of a species that apply to different sets of organisms. For example, a biological definition cannot be used to help classify organisms that reproduce solely asexually, so they would need their own separate concept.

The biological species concept uses the idea of reproductive isolation to define a species. Reproductive isolation means that a group of breeding or inter-breeding populations are unable to breed with other such groups, whether that is because they produce infertile offspring, or there are behavioural differences that stop them breeding in the first place. Using this definition may give a very different number of potential species compared with using an ecological species concept where a set of organisms is adapted to a particular set of resources in the environment (niche). In turn, this would be different if a genetic species definition is used, which places stronger emphasis on genetic isolation in populations of organisms.

RESOURCES

Meet the different types of orcas, WDC:
<https://tinyurl.com/y9zhxvun>

The killer whale's killer weapon – its brain, *Nature*:
<https://tinyurl.com/y8p4wfmj>

Visser, I. N. et al. (2008) 'Antarctic peninsula killer whales (*Orcinus orca*) hunt seals and a penguin on floating ice', a scientific paper with diagram explaining how one type of orca creates waves when hunting: <https://tinyurl.com/yce2uqcw>

National Geographic movie showing orca hunting behaviour:

<https://youtube.com/watch?v=K16IZU0agbg>

Video showing carousel feeding:

<https://youtube.com/watch?v=pEP0sMO-nUQ>

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