

First records of killer whales successfully hunting largest animals on Earth

January 31 2022



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In late March 2019, annual whale and dolphin research surveys led by Cetacean Research Centre (CETREC WA), discovered the first ever record of killer whales hunting and killing an adult blue whale.

Just two weeks later a blue whale calf was taken by many of the same individuals. Since then, an additional event of another blue whale calf predation was recorded in 2021.

Killer [whales](#) are the ocean's apex predator and therefore have a large influence on marine environments. They prey on a large variety of species, including whales.

They are known to predate on large whale calves globally, such as gray and [humpback whales](#), however until now it was unknown whether they hunt and kill the largest whale, the blue whale. Understanding killer whales' role in the marine ecosystem is particularly important for monitoring their prey species, including those that are still recovering from commercial whaling.

In Australia, two populations of killer whales have recently been discovered and both feed at least in part on marine mammals. The southwestern Australian population, found predominately in the Bremer sub-basin (BSB) region has over 140 known animals to date. These large aggregations are observed mostly during summer and autumn, though may occupy these waters year-round.

This southwestern Australian population is most often found seaward of the continental shelf in the Bremer sub-basin.

"These guys are ferocious with a preference for squid, fish and beaked whales. In recent years recordings of the number of beaked whales taken have increased, in this region they are known to also predate on humpback and minke," says CETREC lead researcher, John Totterdell, the lead author.

In 2019, CETREC WA along with Project ORCA were running their annual whale and dolphin surveys heading towards the deep sub-basin

waters and stumbled across the first ever documented event of killer whales attacking and eventually killing a healthy adult blue whale.

"When we arrived about 14 killer whales were attacking the blue in 70m waters, with the female killer whales leading the attack. At arrival we already noticed a substantial flesh wound on the top of its head with bone exposed. The dorsal fin was missing, no doubt bitten off by the killer whales. Tooth-rake marks were evident in front and behind where the dorsal once was and even all the way to the whale's tail," says Flinders University Ph.D. Candidate, Isabella Reeves, co-author.

"Soon after, there was large chunks of skin and blubber stripped off the sides of the whale, the blue was bleeding profusely and was weakening, evident by its slow speed. Coordinated attack by several killer whales resulted in some females ramming the side of the whale while others attacked the head.

"Close to the end, a female animal lunged head first into the blue's mouth, presumably to feed on the tongue, the whale weakened more and we did not see the carcass again. After the whale carcass sunk, about 50 killer whales were in the area feasting and sharing around the blue's flesh," says Totterdell.

In 2019 and 2021, Naturaliste Charters and Whale Watch WA documented a single predation each year with juvenile blue whales in the Bremer sub-basin where relatively similar strategies were on display, however male killer whales were also active in the last two events and calves in the third attack.

Unlike event 1, [dorsal fins](#) remained attached but tooth-rakes were visible in these later events. In all three events, at least 16 of the same animals participated in the attacks, and multiple were active in two events.

During these predation events many flesh-footed shearwaters, albatross, storm petrels were attracted and towards the end of events 2 and 3, groups of 100+ long-finned pilot whales arrived, perhaps attracted by the chaos.

Although there is previous documentation of killer whales attacking and harassing blue whales, these three predation events are the first confirmed kills.

These predatory behaviors have been witnessed in other predation events with large whales. The hunting strategy, if successful, results in tiring out and immobilizing the [blue whale](#) leaving them defenseless and an easy target.

"It is suggested that killer whale predation has impeded gray whale population recovery in the Northwest Pacific, yet in Australia, with many whale species known to be targeted by [killer whales](#), the impact of their predation on these populations remains unknown.

"This study, combined with our recent research, highlights the need for increased understanding of killer whale population ecology so we can better determine their impact on the marine ecosystem in Australian waters," says Totterdell.

More information: John A. Totterdell et al, The first three records of killer whales (*Orcinus orca*) killing and eating blue whales (*Balaenoptera musculus*), *Marine Mammal Science* (2022). [DOI: 10.1111/mms.12906](https://doi.org/10.1111/mms.12906)

Provided by Flinders University

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