

# It's not black and white: Orca ecotypes in New Zealand

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## Intro

## Results

- Orca (*Orcinus orca* or killer whale) are perhaps one of the most recognisable of cetacean species.
- There is substantial variation at the population-level including; morphology, genetics and ecology, yet many populations are not recognised (Figure 1).
- Diet preferences are another key indicator for population delimiters.
- Different orca populations are often termed ecotypes.
- Two New Zealand (NZ) orca populations have distinct characteristics which allow separation into ecotypes (Panels, right).
- *NZ Coastal* ecotype distribution is around the entire coastline and they target elasmobranchs (11 species).
- *Pelagic* ecotype distribution has three key sites (Figure 2) and they target cetaceans (8 species).
- Pigmentation, including eye patches, varies between ecotypes.

Fig. 1. A poster depicting 10 orca ecotypes.

Typically, other ecotypes are overlooked e.g., Argentina (Punta Norte), Falkland Islands, Fiji, Mexico, New Zealand and Papua New Guinea.

Illustration by Amadeo Bachar, extracted from Riesch "Species in the making" Scientific American. November 2016.

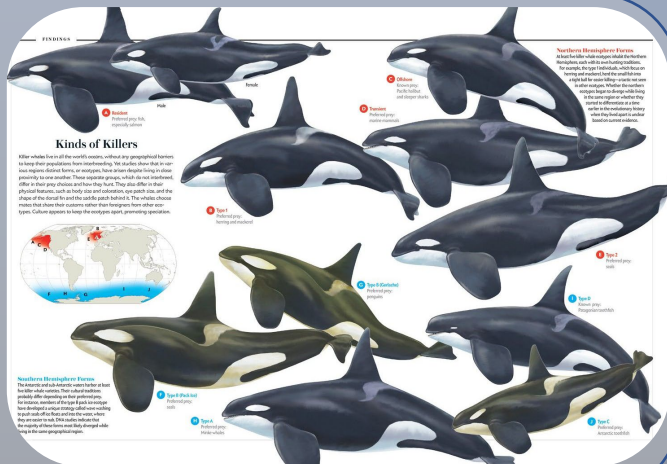


Fig 2. Key *Pelagic* sites are also cetacean biodiversity hotspots.

## NZ COASTAL

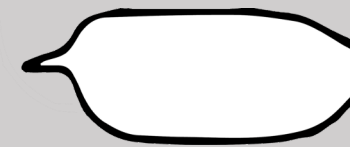
Frequently observed.  
~ 130 individuals.  
Average group size: 6-12.



Target elasmobranchs (but takes other prey).



Dorsal fin relatively wide, rounded at tip.



Most common eye patch shape is 'hook'.

## PELAGIC

Sporadic, Autumn & Winter.  
< 40 individuals.  
Average group size: 8-9.



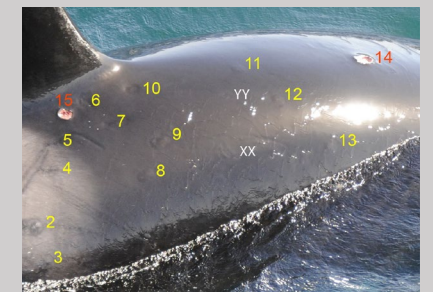
Target cetaceans (but takes other prey).



Dorsal fin relatively narrow, pointed at tip.



Eye patches often have variations & anomalies.



High prevalence of cookie cutter shark (*Isistius* sp.) bite marks.

## Conclusions

- Many orca ecotypes are either not represented or not recognised, resulting in unknown or undocumented diversity worldwide, yet each warrants recognition and protection.
- New ecotypes of marine megafauna serve as crucial reminders of our essential role to not only understand a species, but also how we can target our conservation efforts to preserve biodiversity.
- We recommend that the *NZ Coastal* and *Pelagic* ecotypes be assessed separately under the NZ Threat Classification System and also managed as independent stocks by the NZ Government's Department of Conservation Te Papa Atawhai, who are legally mandated to protect our cetaceans.

## More Details

Visser IN, Cooper TE. 2020. Orca Research Trust Guide to New Zealand Orca. Available at: <https://www.orcaresearch.org/index.php/2020-orca-id-guide>.



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## It's not black and white: Orca ecotypes in New Zealand.

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There are an unknown number of orca ecotypes (*Orcinus orca*, killer whales) worldwide; currently scientists have proposed 22 distinct ecotypes within the monotypic species. However, those 22 do not include some of the ecotypes around New Zealand. We describe two New Zealand ecotypes with significantly different characteristics to each warrant recognition. New ecotypes of marine megafauna serve as crucial reminders of our essential role to not only understand a species, but also how we can target our conservation efforts as the UN Decade of the Oceans begins.

Termed New Zealand Coastal and Pelagic ecotypes, we describe key attributes *inter alia*; pigmentation variations, prevalence of cookie cutter shark (*Isistius* sp.) bite marks, foraging, seasonality and group sizes. Furthermore, the distribution of the two ecotypes overlaps, however the Pelagic ecotype has only been documented in three distinct maritime geographic locations (Bay of Islands, Hauraki Gulf and Kaikoura), which are each known for their marine mammal biodiversity. Such marine diversity may be an important factor, as Pelagic orca target cetaceans when foraging.

We recommend that these two ecotypes be managed separately under the New Zealand Threat Classification System, which is administered by the Governments' Department of Conservation Te Papa Atawhai.

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