

# Crozet Islands IMMA

## Summary, continued.

subantarctic fur seals (*A. tropicalis*) and southern elephant seals (*Mirounga leonina*). The area also hosts at least two different populations of killer whales (*Orcinus orca*). The Crozet type population is thought to be related to Type A killer whales, while members of the genetically divergent D-type have also been recorded. Killer whales in the area prey on Patagonian toothfish (*Dissostichus eleginoides*) and have been observed interacting with the longline fishery for this species.

## Criterion C: Key Life Cycle Activities Sub-criterion C1: Reproductive Areas

The subantarctic fur seal population in the Crozet Islands increased during the 1980s and 1990s, stabilized in the late 2000s, but has been decreasing since then. Pup production at Île de la Possession (205 pups; CEBC-CNRS, unpublished data) probably represents less than 0.1% of the global pup production. The small Antarctic fur seal population (472 pups; CEBC-CNRS, unpublished data) accounts for less than 0.1% of the global population (assuming one pup to represent an adult female).

The southern elephant seal population is currently stable but experienced major declines in the 1960s and 1970s (up to 80% population decline). The elephant seal population of the whole Crozet Islands archipelago is estimated to be around 8,000-12,000 individuals (C. Guinet, pers. comm.), which represents around 1-2% of the global population. The decrease could be due to an environmental regime shift and strong predation pressure from killer whales (Guinet et al., 1999).

## Criterion C: Key Life Cycle Activities Sub-criterion C2: Feeding Areas

At-sea sightings of killer whales in the Crozet Islands archipelago are made from longline fishing vessels, and are therefore biased towards fishing areas;



## Area Size

244,650 km<sup>2</sup>

## Qualifying Species and Criteria

Killer whale– *Orcinus orca*

Criteria C2, D1

Southern elephant seal – *Mirounga leonina*

Criterion C1

Antarctic fur seal – *Arctocephalus gazella*

Criterion C1

Subantarctic fur seal – *Arctocephalus tropicalis*

Criterion C1

## Marine Mammal Diversity

*Arctocephalus gazella*, *Arctocephalus tropicalis*,  
*Balaenoptera musculus intermedia*, *Balaenoptera  
musculus brevicauda*, *Orcinus orca*, *Physeter  
macrocephalus*, *Mirounga leonina*

## Summary

The Crozet Islands archipelago comprises five islands that fall under French territorial jurisdiction. The IMMA includes the Crozet Plateau, on which the islands lie, as well as the Del Cano Rise to the northwest of the islands, extending to roughly the 2000 m contour. From 2006 onward these islands and their surrounding waters form part of the French Natural Reserves (Biological Integral Reserves), administered by the French Ministry of the Terres Australes and Antarctique Françaises. The islands serve as breeding, moulting and feeding areas for Antarctic fur seals (*Arctocephalus gazella*),

however the sightings are concentrated along the 1000 m depth contour delineating the Crozet Plateau and sightings also occur on the Del Cano Rise to the north west of the Crozet Plateau (Fig. 1; Tixier et al., 2016). While killer whales are attracted to fishing vessels operating in the area, recent stable isotope analyses (Reisinger et al., 2016; Tixier et al., 2019) and dive data (Reisinger et al., 2015; Towers et al., 2019) indicates that Patagonian toothfish are not only depredated by killer whales from fishing vessels, but are also their natural prey. Therefore, the plateau edge, the Del Cano Rise and various seamounts, which are profitable fishing areas, likely also represent key natural foraging sites for killer whales independent of the presence of fishing vessels. Killer whales patrol the inshore waters where they feed on seals and penguins (Guinet, 1991; 1992).

## Criterion D: Special Attributes

### Sub-criterion D1: Distinctiveness

Two different populations of killer whales occur in Crozet waters, the Crozet type, thought to be related to Antarctic Type A killer whales (A.R. Hoelzel, unpublished data), and Type D killer whales. From 2003-2014, 129 individuals belonging to the Crozet type were photo-identified in the Crozet EEZ (Tixier et al., 2014a) and 40 Type D killer whales were photo-identified (Tixier et al., 2014b). Type D killer whales are rarely observed, and little is known of their ecology, but they seem to have a circumpolar distribution in sub-Antarctic waters (Pitman et al., 2011). Mitogenome sequences indicate that Type D killer whales are highly divergent from any known killer whales and are probably a distinct species or subspecies (Foote et al., 2013).

## Supporting Information

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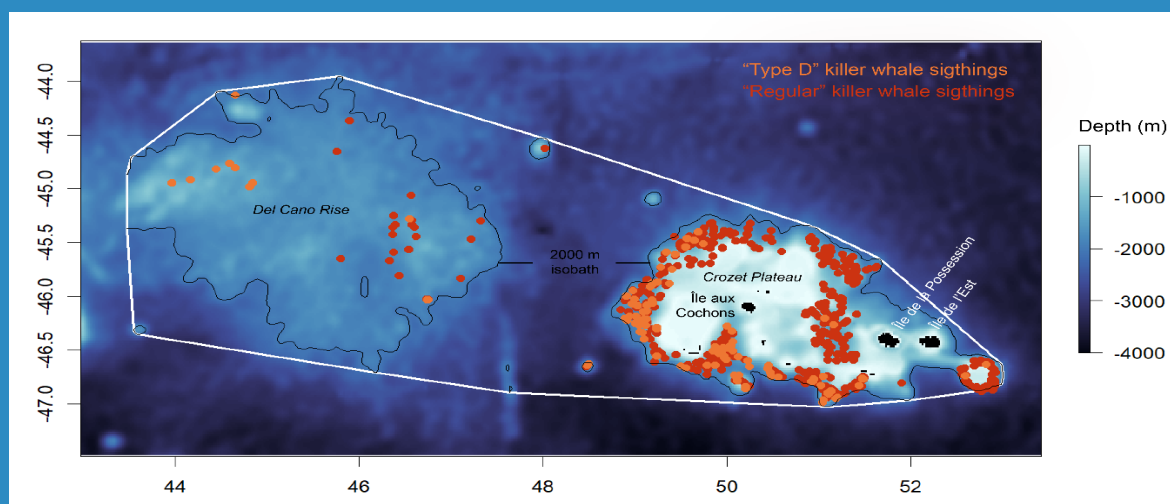


Figure 1: Killer whale sightings (orange points – "Type D", red points – "Regular") from longline vessels, shown in relation to the Crozet Plateau and the Del Cano rise (delimited by the 2000 m depth contour – black line). The cIMMA boundary is shown in white. Data from Tixier et al., 2016.

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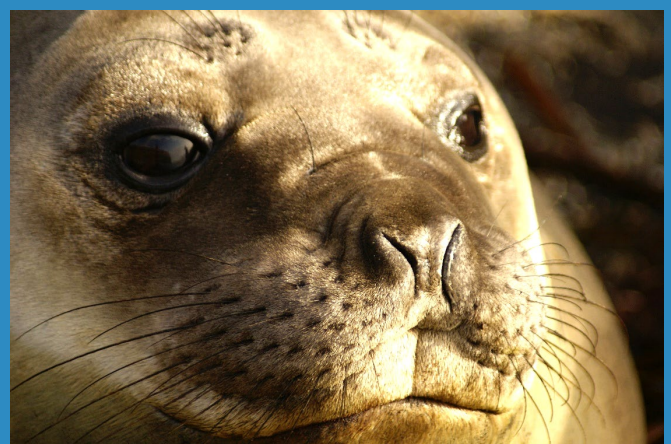


Figure 1: A close-up photograph of a southern elephant seal on Crozet Island. Photo: Yan Ropert-Coudert

## Acknowledgements

We would like to thank the participants of the 2018 IMMA Regional Expert Workshop held in Brest, France for the identification of IMMAs in the Extended Southern Ocean. Funding for the workshop was provided by the French Biodiversity Agency, IUCN Global Marine and Polar Programme, the Fondation Prince Albert II de Monaco, OceanCare, Animal Welfare Institute (AWI) and the Natural Resources Defense Council (NRDC). Support was also provided by Whale and Dolphin Conservation and the Tethys Research Institute.



Suggested Citation: IUCN-Marine Mammal Protected Areas Task Force, 2021. Crozet Islands IMMA Factsheet. <https://www.marinemammalhabitat.org/wp-content/uploads/imma-factsheets/ExtendedSouthernOcean/crozet-islands-ExtendedSouthernOcean.pdf>. Downloaded on (day month year).

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