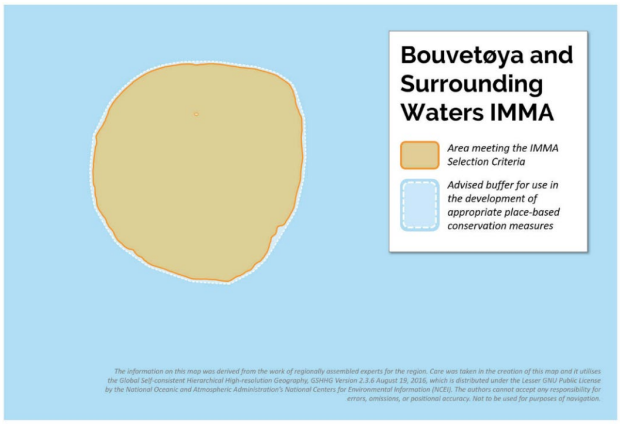

Area Size

817,702 km²

Qualifying Species and Criteria

Antarctic fur seal – *Arctocephalus gazella*

Criteria B2, C1, C2

Southern elephant seal – *Mirounga leonina*

Criteria C1, C2

Marine Mammal Diversity

Arctocephalus gazella, *Mirounga leonina*, *Megaptera novaeangliae*, *Ommatophoca rossi*

Summary

Bouvetøya (Bouvet Island) is one of the most isolated islands on earth. Situated in the southern Atlantic Ocean, it hosts the second largest breeding population of Antarctic fur seals in the world as well as a small breeding population of southern elephant seals. The isolation of the island accentuates its importance as a breeding haulout for pinnipeds that forage in the region. Tracking data has demonstrated how the waters surrounding the island within a radius of around 400 km serve as foraging grounds for resident Antarctic fur seals and elephant seals, but also pinnipeds that breed elsewhere, but visit these rich feeding grounds (e.g. Ross seals, from Antarctica). Humpback whales that breed along the coast of Africa also forage on the dense krill biomass in the waters around the island. Despite being declared a Norwegian Nature Reserve in 1971, the waters around the island have experienced significant illegal and unreported fishing activity, requiring further conservation efforts.

Bouvetøya and Surrounding Waters IMMA

Description

Bouvetøya (Bouvet Island) (54.41˚ S, 03.29˚ E) is situated on the 'Bouvet Triple Junction', or the meeting point for the South American, African and Antarctic tectonic plates at the southernmost terminus of the mid-Atlantic Ridge. Considered the most remote island on earth, Bouvet Island rises more than 4 km above the seafloor, with Olavtoppen peak rising 780 m above sea level. The island encompasses an area of 49 km² with more than 93% covered in ice. The island is a Norwegian nature reserve (declared 1971), affording full protection to the fauna on the island and the surrounding waters. However, the remoteness of the island does restrict adequate monitoring and policing, and significant illegal and unreported fishing activity apparently occurs (Padilla et al., 2015).

Bouvet Island hosts the world's second largest population of Antarctic fur seals, *Arctocephalus gazella*, which is one of four relic populations that survived the Southern Ocean sealing times (Hoffman et al., 2018). The island is also a breeding and moulting site for a small population of southern elephant seals, *Mirounga leonina* (Kirkman et al., 2001). The surrounding waters, especially to the south of the island, harbour a significant krill (*Euphausia superba*) biomass (Krafft et al., 2010). Dietary studies confirm the overwhelming importance of krill for resident Antarctic fur seals (Kirkman et al., 2000). Tracking studies show that these seals are foraging within 200 km of Bouvet Island (Blanchet et al., 2013; Lowther et al., 2014). Despite a general lack of knowledge regarding Ross seal (*Ommatophoca rossii)* ecology, some tracking evidence suggests that Bouvet waters might be a foraging area for individuals breeding in ice habitats along coastal Queen Maud Land (Blix and Nordoy, 2007). Tracking evidence suggests the waters surrounding Bouvet may be important foraging grounds for humpback whales (*Megaptera novaeangliae*) that breed along the African coast (Rosenbaum et al., 2014).

Criterion B: Distribution and Abundance Sub-criterion B2: Aggregations

Nyrøysa beach, on the west coast of Bouvet Island, represents arguably the largest single Antarctic fur seal aggregation globally (Hofmeyr et al., 2005). This breeding aggregation, presumably established in the mid-1950s when a large landslide created the available substrate at Nyrøysa, has increased rapidly and currently supports ~2.5% of the global breeding population of the species.

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

Antarctic fur seal pup production at Bouvet Island increased rapidly in the 1980s and 1990s and has since stabilized at around 15,000 pups per year (1996-2002), indicating a total population of about 66,000 at the single site (Nyrøysa) monitored on the island (Hofmeyr et al., 2005). While the Bouvet population is (at least) the second largest for this species, pup production at the Nyrøysa beach monitoring site accounts for ~2.5% of the global total. The most recent estimations of pup production during expeditions in 2007, 2014 and 2017 seem to indicate continued stability or possibly a slight decline in pup production (Norwegian Polar Institute, unpublished data).

A small population of southern elephant seals breed and moult on the beaches of Nyrøysa, Bouvetoya (Kirkman et al., 2001). Expedition timing has precluded consistent or confident enumeration of the breeding population of elephant seals, although the total island population certainly contributes a small percentage to the global total (McMahon et al., 2005). However, the remoteness of this site provides the only potential breeding or moulting substrate for land-breeding pinnipeds within this vast oceanic sector, functionally surpassing its apparent numerical importance in a global perspective.

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

Tracking data show that lactating Antarctic fur seals that pup at Nyrøysa forage in an area within 200 km around Bouvet Island, ranging from over the mid-

Figure 1: Moulting southern elephant seals on Bouvet Island. Photo: Nico de Bruyn

Figures 2: Antarctic fur seals hauled out on Nyroysa, Bouvetoya. Photo: Nico de Bruyn

Atlantic ridge to the north of the island, to roughly equidistant regions west, south and to a lesser extent east of the island (Biuw et al., 2009; Blanchet et al., 2013; Lowther et al., 2014).

Antarctic fur seals feed mainly on krill in waters around Bouvetøya, though they also do take variable amounts of myctophid fish (Kirkman et al., 2000; Tarroux et al., 2016). Subadult male (n = 7) and adult female (n = 12) southern elephant seals tracked after moulting (2007/2008) from Bouvet foraged in a vast expanse of ocean over a period spanning ~ 10 months. Males foraged all the way south to the Antarctic continent, while females tended to stay north of the ice edge or alternatively remained close to Bouvetøya, targeting the ACC (Biuw et al., 2010). Southern elephant seals from other populations, notably the Prince Edward Islands, also forage close to Bouvet Island (e.g. McIntyre et al., 2017).

Supporting Information

Barendse J, Carvalho I. 2016. A conservation assessment *of Megaptera novaeangliae*. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

Biuw M, Nøst OA, Stien A, Zhou Q, Lydersen C, Kovacs KM. 2010. Effects of Hydrographic Variability on the Spatial, Seasonal and Diel Diving Patterns of Southern Elephant Seals in the Eastern Weddell Sea. PLoS ONE 5: e13816.

Biuw M, Krafft BA, Hofmeyr GJG, Lydersen C, Kovacs KM. 2009. Time budgets and the at-sea behaviour of lactating female Antarctic fur seals *Arctocephalus gazella* at Bouvetøya. Marine Ecology Progress Series 385: 271-284.

Blanchet M-A, Biuw M, Hofmeyr GJG, de Bruyn PJN, Lydersen C, Kovacs KM. 2013. At-sea behaviour of three krill predators breeding at Bouvetøya – Antarctic fur seals, macaroni penguins and chinstrap penguins. Marine Ecology Progress Series 477: 285-302.

Blix AS, Nordoy ES. 2007. Ross seal (*Ommatophoca rossii*) annual distribution, diving behaviour, breeding and moulting, off Queen Maud Land, Antarctica. Polar Biology 30: 1449-1458.

Hoffman JI et al., 2018 A global cline in a colour polymorphism suggests a limited contribution of gene flow towards the recovery of a heavily exploited marine mammal. Royal Society Open Science 5: 181227. http://dx.doi.org/10.1098/rsos.181227

Hofmeyr GJG, Krafft BA, Kirkman SP, Bester MN, Lydersen C, Kovacs KM. 2005. Population changes of Antarctic fur seals at Nyrøysa, Bouvetøya. Polar Biology 28: 725-731.

Kirkman SP, Hofmeyr GJG, Bester MN, Isaksen K. 2001. Counts of southern elephant seals, *Mirounga leonina*, at Bouvet Island. Polar Biology 24: 62-65.

Kirkman SP, Wilson W, Klages NTW, Bester MN, Isaksen K. 2000. Diet and estimated food consumption of Antarctic fur seals at Bouvetøya during summer. Polar Biology 23: 745-752.

Krafft BA, Melle W, Knutsen T, Bagøien E, Broms C, Ellertsen B, Siegel V. 2010. Distribution and demography of Antarctic krill in the Southeast Atlantic sector of the Southern Ocean during the austral summer 2008. Polar Biology 33: 957-968.

Lowther AD, Lydersen C, Biuw M, de Bruyn PJN, Hofmeyr GJG, Kovacs KM. 2014. Post-breeding at-sea movements of three central-place foragers in relation to sub-mesoscale fronts in the Southern Ocean around Bouvetøya. Antarctic Science 26: 533-544.

McIntyre T, Bester MN, Bornemann H, Tosh CA, de Bruyn PJN. 2017. Slow to change? Individual fidelity to three-dimensional foraging habitats in southern elephant seals, *Mirounga leonina*. Animal Behaviour 127: 91-99.

McMahon CR, Bester MN, Burton HR, Hindell MA, Bradshaw CJA. 2005. Population status, trends and a re-examination of the hypotheses explaining the recent declines of the southern elephant seal *Mirounga leonina*. Mammal Review 35:82-100

Padilla A, Zeller D, Pauly D. 2015. The fish and fisheries of Bouvet Island. In: Palomares MLD and Pauly D (eds), Marine Fisheries Catches of Sub-Antarctic Islands, 1950-2010, p. 21-30. Fisheries Centre Research Report 23(1). Fisheries Centre, University of British Columbia, Vancouver, BC

Rosenbaum HC, Maxwell SM, Kershaw F, Mate B. 2014. Long-range movement of humpback whales and their overlap with anthropogenic activity in the South Atlantic Ocean. Conservation Biology 28:604-615.

Tarroux A, Lowther AD, Lydersen C, Kovacs KM. 2016. Temporal shift in the isotopic niche of female Antarctic fur seals from Bouvetøya. Polar Research 35: 31335.

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. Bouvetøya and Surrounding Waters IMMA Factsheet. https://www.marinemammalhabitat.org/wp-content/uploads/imma-factsheets/ExtendedSouthernOcean/bouvetoya-surrounding-waters.pdf. Downloaded on (day month year).

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