

# *Balaenoptera bonaerensis* – Antarctic Minke Whale



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<b>Regional Red List status (2016)</b>	<b>Least Concern*</b>
National Red List status (2004)	Least Concern
Reasons for change	No change
Global Red List status (2008)	Data Deficient
TOPS listing (NEMBA) (2007)	None
CITES listing (1986)	Appendix I
Endemic	No

#### \*Watch-list Data

Since the moratorium on commercial whaling came into force in 1986, this is the only species of baleen whale for which a decline in population abundance estimates in the Antarctic is considered likely, but it remains unconfirmed that this reflects an actual decline (and if so what the reasons for that are).

compared to *B. bonaerensis*. This smaller form, termed the “Dwarf” Minke Whale, may be genetically different from *B. bonaerensis*, and more closely related to the North Pacific Minke Whales, and thus has been classified *B. acutorostrata* (Wada et al. 1991; IWC 2001). This taxonomic position, although somewhat controversial, has been accepted by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Convention on Migratory Species (CMS).

## Assessment Rationale

The current IWC global estimate of abundance of Antarctic Minke Whales is about 500,000 individuals. The abundance estimates declined from about 700,000 for the second circumpolar set of abundance survey cruises (1985/86 to 1990/91) to about 500,000 for the third (1991/92 to 2003/04). Although this decline was not statistically significant, the IWC Scientific Committee does consider these results to reflect a change. However, whether this change is genuine or attributed to greater proportions of pack ice limiting the survey extent, has not yet been determined. More detailed results from an assessment model are available for the mid-Indian to the mid-Pacific region, and suggest that the population increased to a peak in 1970 and then declined, with it being unclear whether this decline has levelled off or is still continuing past 2000. There are no major identified threats within the assessment region. Hence, we retain the listing of Least Concern. If monitoring data and research verify a continuing genuine decline in the Antarctic, this species will need reassessment.

**Regional population effects:** The Antarctic Minke Whale exhibits seasonal migrations and is wide-ranging across the southern hemisphere. There are no barriers to dispersal, thus rescue effects are possible.

## Taxonomy

*Balaenoptera bonaerensis* (Burmeister 1867)

ANIMALIA - CHORDATA - MAMMALIA -  
CETARTIODACTYLA - BALAENOPTERIDAE -  
*Balaenoptera - bonaerensis*

**Common names:** Antarctic Minke Whale (English)

**Taxonomic status:** Species

**Taxonomic notes:** The taxonomic status of Minke Whales is yet to be resolved, and prior to the 1990s only one species was recognized, *B. acutorostrata* (Lacépède 1804). The most common Minke Whale in the southern hemisphere was found to differ morphologically from those in the North Atlantic and North Pacific, later named the Antarctic Minke Whale, *B. bonaerensis* (Burmeister 1867). The International Whaling Commission (IWC) Scientific Committee (SC) recently recognized this Antarctic population (*B. bonaerensis*) as a distinct species from those in the northern hemisphere (IWC 2001). However, further analysis has found that an additional southern hemisphere form exists, which is smaller in size

## Distribution

The Antarctic Minke Whale is considered a southern hemisphere species, but is widely distributed from the equator to the ice edge.

During the summer, this species is abundantly distributed throughout the Antarctic waters, usually south of 60°S, and occurs in great concentrations near the ice edge but also to a limited extent within the pack ice and in stretches of open water surrounded by ice. High densities of Antarctic Minke Whales have been sighted in Prydz Bay, and in the Weddell and Ross Seas (Kasamatsu et al. 1997).

Their winter distributions are far more uncertain. There are sighting records of this species off Durban, South Africa, and historically, small numbers of individuals were caught in this region. In South African waters, their seasonal distribution has been described as bimodal, with peaks in April/May and again in September/October, which suggest that these individuals seasonally migrate northwards past the region in spring, and then southwards back to the southern oceans in autumn (Best 1982).

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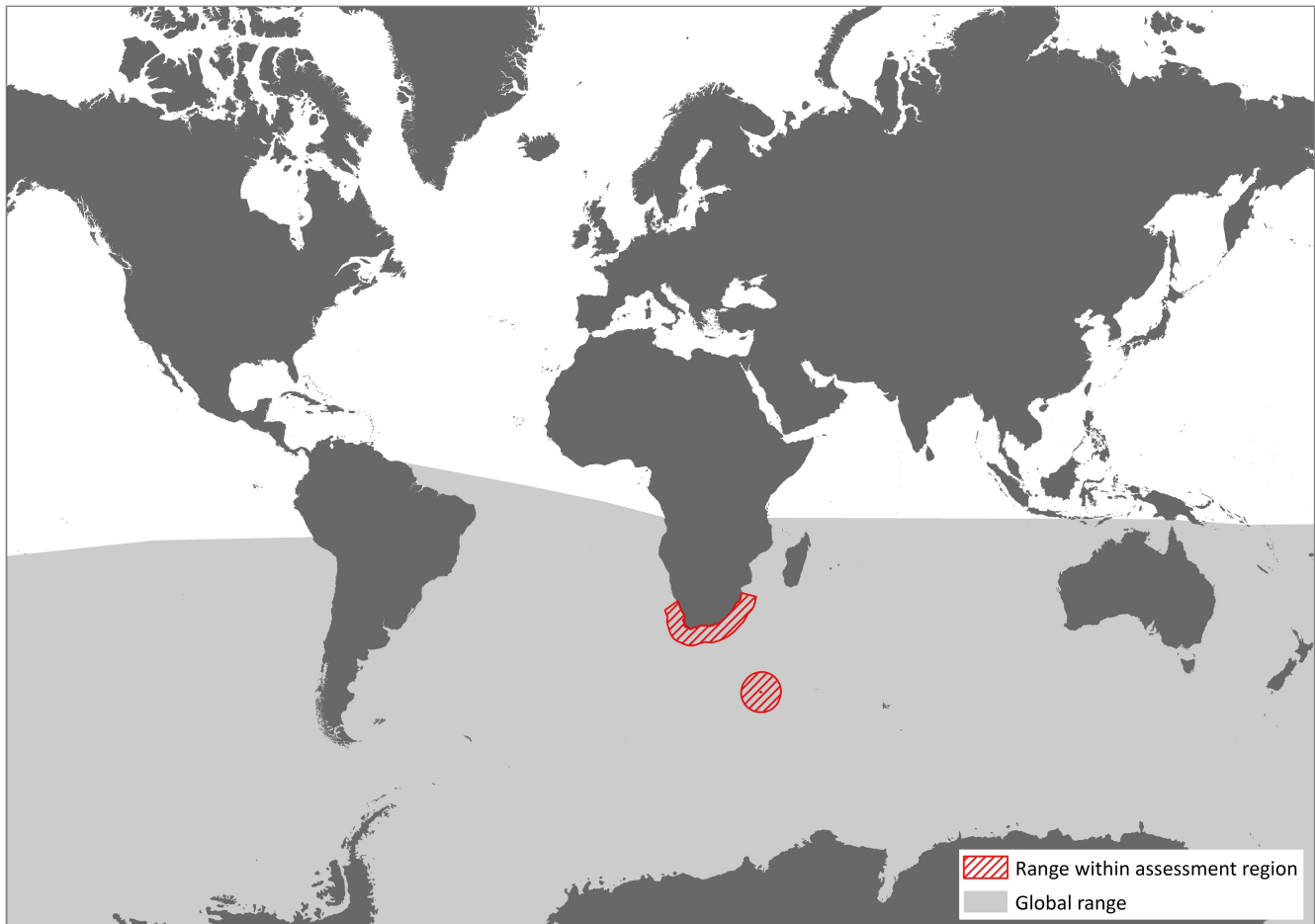


Figure 1. Distribution range for Antarctic Minke Whale (*Balaenoptera bonaerensis*) within the assessment region (IUCN 2008)

At least some of the Antarctic Minke Whale population remains in the Antarctic in winter (Ensor 1989), but the proportion has not been quantified.

## Population

Similar to other baleen whales, the IWC has divided the southern hemisphere longitudinally into six key geographical areas (pie slices, which range between 50° and 70° wide). Although biological evidence for these boundaries is generally weak, their delineation is useful in the description of baleen whale distribution and abundance. Antarctic Minke Whales are the most abundant of all Balaenopterid species in the southern hemisphere (Skinner & Chimimba 2005). Although the Dwarf Minke Whale is also present within Antarctic waters (as far south as approximately 65°S), they are far less common than the Antarctic Minke Whale, thus Minke Whale estimates of abundance taken south of 60°S, for simplicity's sake, can be considered *B. bonaerensis*.

Ship-based summer abundance surveys have been conducted in the Antarctic, south of 60°S, since 1978/1979, covering different geographical areas each year (Matsuoka et al. 2001). It is assumed that the majority of the population occurs between 60°S and the pack ice zone during the survey season (Branch & Butterworth 2001; Shimada & Kato 2006). In 1990/1 a population estimate of 760,000 individuals was suggested (IWC 1991). However, subsequent surveys revealed lower population estimates (IWC 2001), and the new current estimate (2003/4) by the IWC is between 460,000 and 690,000 individuals. The most likely explanations include a

decline in sighting efficiency, variations in the extent of pack ice or a combination of both. Another hypothesis, using multi-species modelling, is that they increased in abundance until the mid-20<sup>th</sup> century in response to increased krill abundance following the decline in other large baleen species (Mori & Butterworth 2006); and subsequently declined as other baleen species became protected and increased in number (thus competing for krill). Recently, catch data from 1990/1 to 2009/10 from the Japanese Whale Research Programme in the Antarctic revealed a 31% decrease in the weight of Antarctic Minke Whale stomach contents (Konishi et al. 2013), which support the hypothesis that the availability of krill has declined over the past 20 years. This possible decline is specific to minke whales, and is not reflected in abundance records for other Antarctic baleen species. Highest densities have been observed near the pack ice (Shimada & Kato 2006). Currently, no abundance estimates are available for Antarctic Minke Whales migrating through the assessment region.

The generation time estimated for Antarctic Minke Whales is 22 years (Taylor et al. 2007).

**Current population trend:** Declining

**Continuing decline in mature individuals:** No

**Number of mature individuals in population:** < 500,000

**Number of mature individuals in largest subpopulation:** Unknown

**Number of subpopulations:** Unknown

**Severely fragmented:** No

**Table 1. Threats to the Antarctic Minke Whale (*Balaenoptera bonaerensis*) ranked in order of severity with corresponding evidence (based on IUCN threat categories, with regional context)**

Rank	Threat description	Evidence in the scientific literature	Data quality	Scale of study	Current trend
1	5.4.1 <i>Fishing &amp; Harvesting Aquatic Resources</i> : intentional and subsistence use and 5.4.2 <i>Fishing &amp; Harvesting Aquatic Resources</i> : large-scale intentional use, historic whaling (no longer a threat).	-	Anecdotal	-	-
2	11.1 <i>Habitat Shifting &amp; Alteration</i> : due to climate change. Current stress 2.3.8. <i>Indirect Species Effects</i> : on food resources.	Burns 2001	Indirect	International	Unclear
3	5.4.4 <i>Fishing &amp; Harvesting Aquatic Resources</i> : unintentional effects from entanglement in coastal fisheries. Current stresses 2.1 <i>Species Mortality</i> and 2.2 <i>Species Disturbance</i> .	-	Anecdotal	-	-

## Habitats and Ecology

During the winter months, Antarctic Minke Whales in the Southern Ocean feed predominantly on krill, mostly *Euphausia superba* (Antarctic Krill), and to a lesser extent *E. crystallorophias* (Ice Krill, which dominates in the Ross Sea), *E. frigida* and *Thysanoessa macrura* (Tamura & Konishi 2006). Occasionally, copepods are also consumed (Skinner & Chimimba 2005). Whether Antarctic Minke Whales continue to feed during their migrations out of their Antarctic feeding grounds, is largely unknown. Individuals taken off the Durban coast have been reported to have fed on Euphausiids, however the stomach contents were greatly reduced compared to those recorded from Antarctica (Best 1982).

Aside from the Blue Whale (*Balaenoptera musculus*), no other southern rorqual species is expected to penetrate as deeply into the pack ice, and this species has been observed extending its head vertically to breathe through cracks in the ice (Skinner & Chimimba 2005). They are fast swimmers, documented swimming alongside ships traveling 13 – 16 knots (24 – 30 km / hour) (Watson 1981).

Seasonal migrations take place from tropical and subtropical waters in winter to feeding areas in the high latitudes of the Southern Ocean in summer. Breeding is known to occur in warmer waters, and although information regarding the extent of their breeding sites is lacking, Kasamatsu et al. (1995) documented two core breeding areas in the eastern and western South Pacific, and two additional breeding sites in the eastern and western Indian Ocean. In contrast to coastal species, such as Right Whales (*Eubalaena glacialis*), Humpback Whales (*Megaptera novaeangliae*) and Gray Whales (*Eschrichtius robustus*), the breeding populations of Antarctic Minke Whales appear to be relatively widely dispersed in deep waters (Kasamatsu et al. 1995). They appear to move directly southwards from their breeding areas to feeding sites in the Southern Ocean (Kasamatsu et al. 1995).

Generally, males reach sexual maturity at about 7.5 m, while females only at 8.1 m (Skinner & Chimimba 2005). As the only baleen whale known to experience post-partum oestrus, Antarctic Minke Whales have a much shorter calving interval, averaged at 14 months (Best 1982). Average calf length at birth is between 2.7 and 2.9 m (Best 1985).

**Ecosystem and cultural services:** Marine mammals integrate and reflect ecological variation across large spatial and long temporal scales, and therefore they are prime sentinels of marine ecosystem change; migratory

mysticete whales may be used to investigate broadscale shifts in ecosystems (Moore 2008). Some authors suggest that Antarctic Minke Whales are an important prey source for Killer Whales (*Orcinus orca*) (for example, Pitman & Ensor 2003).

## Use and Trade

Major commercial whaling of Antarctic Minke Whales ceased in 1986, but currently under a scientific research permit issued by the Government of Japan, this species is hunted at a reduced level in the Antarctic.

## Threats

Commercial whaling of this species commenced in the 1970s, and ceased in 1986, when a whaling moratorium was enforced. However compared to other baleen whale species, Minke Whales were far less heavily exploited (Mori & Butterworth 2006) and commercial whaling began much later than it did for other species. Large-scale catches of this species only commenced in 1971, following the depletion of other larger baleen species (IWC 2006); before this, only small-scale experimental catches were conducted.

Approximately 100,000 Minke Whales are reported to have been caught during pelagic whaling expeditions in the Antarctic, and more than 14,000 from Costinha, the Brazilian land station, between 1964 and 1985. After 1987, whaling of this species continued to a lesser extent under a scientific permit, with records of 853 whales caught during the 2005/2006 season (Miyashita & Kato 2006). The current Japanese Scientific permit catch limit is set at 330 individuals.

Additionally, minor threats to Antarctic Minke Whales include bycatch in fishing gear (see van Waerebeek & Reyes 1994), and the effects of anthropogenic climate change. Increased sea temperatures in the Antarctic (Turner et al. 2006), resulting in a substantial loss of sea ice, may result in a substantial decline in food resources available to Southern Ocean baleen whales.

This species is relatively rare within South African waters and no major threats have been identified within South Africa's EEZ (Exclusive Economic Zone).

**Current habitat trend:** Possibly declining in quality due to climate change.

## Conservation

Large-scale commercial whaling of Antarctic Minke Whales effectively ceased in 1986 with the implementation of the IWC moratorium on commercial whaling. The summer range of this species also receives protection from the 1994 IWC Southern Ocean Sanctuary, which forbids whaling activity south of about 40°S. However, this does not prevent whales from being caught under a scientific permit.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed Antarctic Minke Whales on Appendix I, but this does not relate to Japan, who have registered an objection to this listing since July 2000. Additionally, Japan holds a reservation on the Southern Ocean Sanctuary. This species is also listed on Appendix II of the Convention on Migratory Species (CMS).

Although a local systematic monitoring programme would be beneficial for this species, this is not considered a priority, as Antarctic Minke Whales are under no major threat within South African waters. Additionally, no specific conservation interventions have been identified for this species in the assessment region.

### Recommendations for managers and practitioners:

- Systematic monitoring: design and implement a monitoring programme (acoustic and sightings) that can distinguish between Minke whale species in the southern hemisphere, in order to estimate population size and trends.
- Ensure that accidental catches (in fishing or shark nets), strandings or collisions of Antarctic Minke Whales are reported, and managed by the relevant authorities, and in the case of mortality, make certain that the remains are made available for ongoing scientific investigation of the life history and genetics of this species.

### Research priorities:

- Research into the possible reasons behind the detected declining population trend.
- Current population size, distribution and trend estimates.
- Current and future threats which may impact this species, its habitat, or its primary food source.
- Research into the use, trade, livelihoods and harvest trends associated with this species.

### Encouraged citizen actions:

- Save electricity and fuel to mitigate CO<sub>2</sub> emissions and hence the rate of climate change.
- Report any stranding reports to the relevant local authorities.

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## Data Sources and Quality

**Table 2. Information and interpretation qualifiers for the Antarctic Minke Whale (*Balaenoptera bonaerensis*) assessment**

Data sources	Field survey (literature, unpublished), indirect information (literature, unpublished, expert knowledge)
Data quality (max)	Estimated
Data quality (min)	Suspected
Uncertainty resolution	Best estimate
Risk tolerance	Evidentiary

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Details of the methods used to make this assessment can be found in *Mammal Red List 2016: Introduction and Methodology*.