Balaenoptera physalus – Fin Whale

Regional Red List status (2016)	Endangered A1d*
National Red List status (2004)	Data Deficient
Reasons for change	Non-genuine change: New information
Global Red List status (2013)	Endangered A1d
TOPS listing (NEMBA) (2007)	None
CITES listing (1981)	Appendix 1
Endemic	No

*Watch-list Data

Of all baleen whales, Fin Whales are the fastest and were very rarely caught before the commencement of modern whaling, and even modern whaling boats were forced to pursue Fin Whales for up to half an hour at speeds of 18 knots, before the whales became fatigued enough to catch (Nishiwaki 1972).

Taxonomy

Balaenoptera physalus (Linnaeus 1758)

ANIMALIA - CHORDATA - MAMMALIA – CETARTIODACTYLA – BALAENOPTERIDAE – *Balaenoptera - physalus*

Common names: Fin Whale, Common Fin Back, Common Fin Whale, Common Rorqual, Fin-backed Whale, Finback, Finfish, Finner, Gibbar, Herring Whale, Razorback, True Fin Whale (English), Vinwalvis (Afrikaans)

Taxonomic status: Species

Taxonomic notes: Although not completely resolved, some authors suggest that two subspecies of the Fin Whale exist, with *B. p. physalus* occurring in the northern hemisphere, and *B. p. quoyi* being informally described as the southern hemisphere subspecies. The latter subspecies is considered larger in size to that of the northern hemisphere species. Although lacking in genetic evidence, and not widely accepted, an additional pygmy subspecies (*B. p. patachonica*) has also been proposed by Clarke (2004). Similarly, there is no genetic evidence to support the claim of the southern hemisphere subspecies.

Assessment Rationale

Most of the global decline over the last three generations is attributable to the major decline in the southern hemisphere. Most specifically, between the 1930s and 1960s Fin Whales were severely overexploited by commercial whaling in the Southern Ocean. There is no recent data documenting the current population status of this species, since the surveys that have been conducted in the southern hemisphere do not cover their entire summer distribution. There is no indication that they have recovered to levels anywhere near those prior to exploitation (which was estimated at 200,000), however the population is expected to be increasing.

The analysis in this assessment estimates that the global population has declined by more than 70% over the last three generations (1935–2013). The cause of the reduction, commercial whaling, has ceased, and they are regularly observed in polar waters where there do not appear to be any current major threats to this species. The national assessment for this species is considered in line with that of the global assessment, and since the majority of the decline is attributable to the southern hemisphere, this species is listed as Endangered A1d. However, more current data on population size and trends for the Southern Ocean are needed and this species should be reassessed once such data become available. Additionally, the ingestion of microplastics by this species has recently been documented as an emerging threat to populations elsewhere in the world and should be monitored within the assessment region.

Regional population effects: Fin Whales are highly migratory and wide-ranging. There are no barriers to dispersal, thus rescue effects are possible.

Distribution

Although rare in coastal waters, this species is located within all major ocean basins worldwide, including the Mediterranean. Similar to Blue (*Balaenoptera musculus*), Minke (*Balaenoptera acutorostrata*) and Humpback (*Megaptera novaeangliae*) Whales, southern Fin Whales spend summers in the Antarctic, where they gather at feeding grounds, exhibiting a circumpolar distribution. Sightings data and historical catches revealed that in winter they migrate to middle latitudes, usually between 40°S–60°S in the southern Indian and Atlantic Oceans, but are rare in the Tropics, aside from areas of cooler tropical water, such as the South Pacific (50–65°S) (Miyashita et al. 1996; IWC 2006a). During the winter months they move to lower latitudes and were once included in the catches of the Saldanha Bay and Durban whaling operators (Skinner & Chimimba 2005). Based on patterns of seasonal abundance, Fin Whales might not migrate much further north than Durban (Bannister & Gambell 1965). Abundance peaks in June/July on both the east and west coasts of South Africa (Bannister & Gambell 1965; Best

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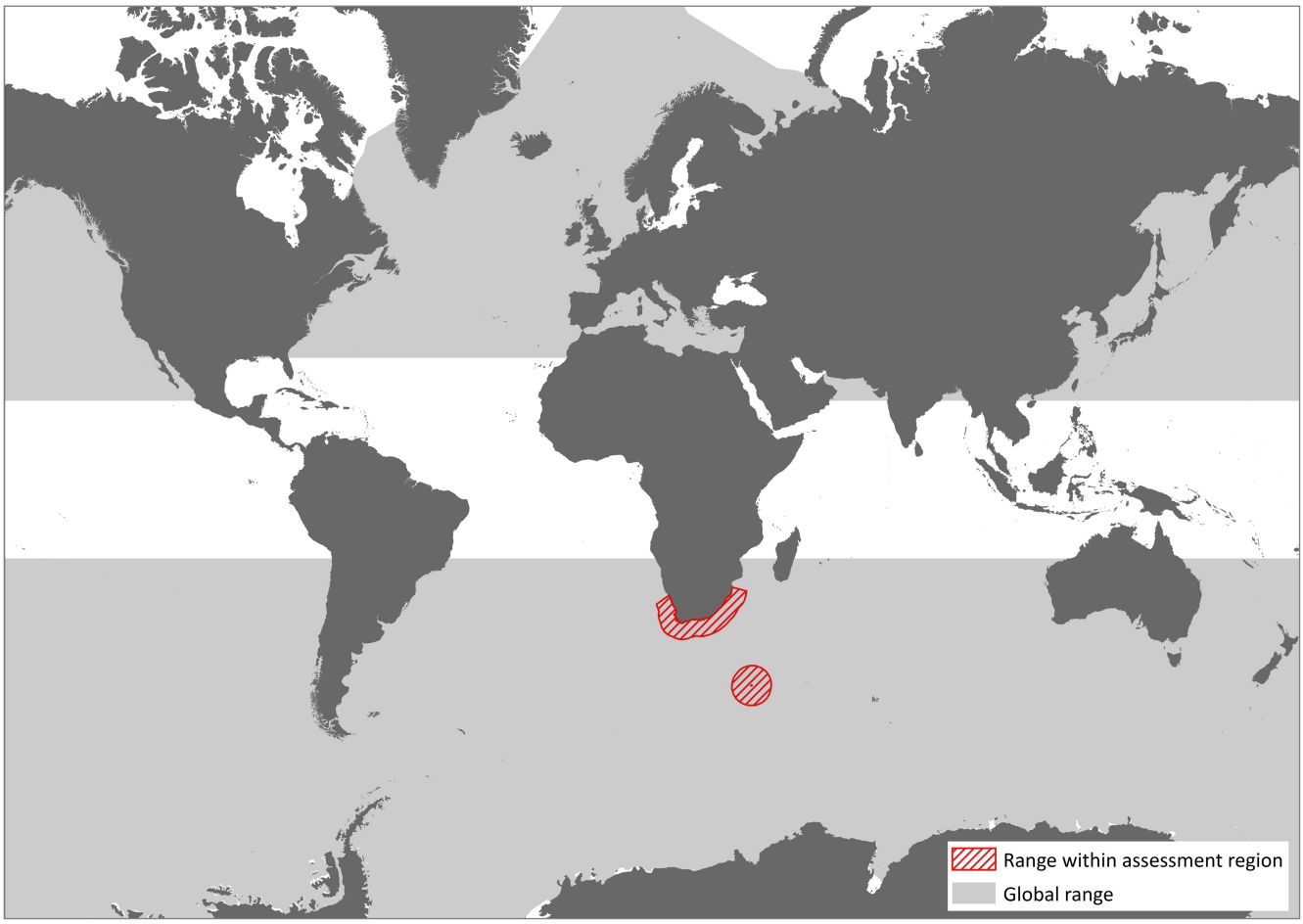

Figure 1. Distribution range for Fin Whale (*Balaenoptera physalus*) within the assessment region (IUCN 2013)

1967). According to catch data, migrations appear to occur along the edge of the continental shelf. Migratory whales were frequently caught off South Georgia (Southern Atlantic) but Moore et al. (1999) found that they no longer commonly occur in this region. The extent of their winter distribution is not well-known, because it is difficult to track Fin Whales, as they don't travel along coastlines, but rather in deep, open oceans. Catch records revealed that they were common off southern Africa in winter, but as Southern Ocean stocks declined due to commercial whaling, their frequency depreciated off southern Africa, suggesting that this was a popular wintering area for the migrating population (Best 2003). Although the majority of catches occurred in South African waters in the early 20th century, whaling expanded into regions off Angola, Congo and Mozambique (Best 1994). Their current distribution is considered extensive throughout South Africa's EEZ (Exclusive Economic Zone).

Population

Conventionally, the IWC has assessed Fin Whales across the southern hemisphere within six key management areas, which are divided longitudinally, approximately between 50° and 70° wide. For Fin Whales, these management areas possess little biological distinction (Donovan 1991), as they are based primarily on Humpback Whale breeding and feeding grounds. Since the majority of hunting occurred within breeding grounds rather than feeding areas in lower latitudes, most population estimates are described from feeding aggregations. It is probable that some whales within particular feeding grounds overlap and intermingle with other subpopulations across their breeding grounds in winter.

Between 1905 and 1976, more than 725,000 Fin Whales were documented as caught in the southern hemisphere (IWC 2006b). This figure, although possibly unreliable, was based on a number of sources, including catch per unit whaling trends, and sightings by Japanese scouting vessels. More recently, from data collected between 1966 and 1979, the IWC (1995) estimated the overall summer Fin Whale population south of 30°S at 18,000, and at 15,000 from data collected between 1979 and 1988. These results were produced by extrapolating population estimates for the region south of 60°S to the area south of 30°S from international surveys conducted by the International Decade of Cetacean Research (IDCR) and data from Japanese scouting ships. However, these estimates were considered rather imprecise and to be an overestimation of the population. Thus, using alternate methods, the same data produced estimates of 8,387 for 1966–1979 and 15,178 for 1979–1988 (IWC 1996). In agreement, Best (2003) suggested that the previous estimates may have been overly optimistic, and proposed a decline of 89–97% between 1954 and 1975 for Fin Whales at the South African winter whaling grounds. There is no recent data documenting the current population status of this species, since the surveys that have been conducted in the southern hemisphere do not cover their entire summer distribution. However, Branch and Butterworth (2001) estimated Fin Whale abundance south of 60°S in the Southern Ocean for the period 1991/92–1997/98 as 5,500, an increase from the period 1985/86–1990/91, which was estimated as 2,100. Importantly, these

results should not be recognised as estimates for the entire southern hemisphere population.

As an incredibly popular species of the southern hemisphere whaling industry following the Second World War, 28,761 Fin Whales were reportedly taken during the 1960/61 whaling season in Antarctica. Around this period, the global Fin Whale population was estimated to have declined from 400,000 to around 84,000, and as a result this species has been formally protected since 1976. The recovery rate (if any) of this species currently remains inconclusive, though Brown (1973) suggests that they may have a 37 year recovery period. However, the generation period of a non-depleted Fin Whale population is estimated at 25.9 years (Taylor et al. 2007).

Current population trend: Increasing (suspected)

Continuing decline in mature individuals: No

Number of mature individuals in population: Unknown, but possibly > 5,500.

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: Unknown

Severely fragmented: No

Habitats and Ecology

Fin Whales are only known to form large aggregations within feeding grounds or while migrating, but are usually present within schools of up to five individuals. Females with calves usually separate themselves from the rest of the group, and pregnant females are known to arrive at feeding grounds earlier than the rest of the group, and leave earlier towards the end of the season (Skinner & Chimimba 2005). They are the fastest of all baleen whales, and have been recorded swimming at speeds of approximately 20 knots over substantial distances. While feeding, Fin Whales engulf up to 70 tonnes of seawater into an elastic throat pouch, and filter food, in what has been declared the greatest biomechanical action exhibited by any animal (Brodie 1993). Southern hemisphere Fin Whales consume mostly euphausiid prey, but may fortuitously engulf fish simultaneously during feeding.

During migrations through waters off Durban to wintering grounds, whales caught had mostly empty stomachs. Only 12.7% contained food, which mostly consisted of euphasid remains (*Euphausia recurva* and *Thysanoessa gregaria*), but also amphipods, copepods, needlefish and megalopa larvae (Bannister & Baker 1967). On South Africa's West Coast (at Donkergat), the stomachs of 35.8% of caught whales held food. Again, the majority were euphasiids (*E. recurva*, *E. lucens*, *E. spinifera* and *T. gregaria*), and to a lesser degree copepods and amphipods (Best 1967). It is uncertain whether they rely predominantly on blubber for energy during winter, or whether they actively locate food. Results have confirmed that Fin Whales are thinner at the beginning of summer when they return to their Antarctic feeding grounds.

On the contrary, in the northwest Atlantic, Overholz and Nicolas (1979) described Fin Whales feeding on American Sand Lance/Sand Eel (*Ammodytes americanus*); additionally in waters off Newfoundland, 80–90% of the diet of Fin Whales was thought to consist of Capelin (*Mallotus villosus*). The inter-annual variability associated with Capelin abundance suggests that Fin Whales probably feed opportunistically on this species when its availability increases.

Following a gestation period of 11 to 12 months, Fin Whale calves are born within temperate and subtropical waters in winter (typically between April and June). Newly born calves are usually around 6.4 m in length, and are generally dependent on their mother's milk for the first seven months of life, before reaching a length of approximately 11.5 m. Females in the southern hemisphere become sexually mature after reaching a length of 20.0 m, and usually produce a calf every two years, while Northern Hemisphere individuals reach sexual maturity at shorter body lengths (Ohsumi et al. 1958).

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).

Table 1. Threats to the Fin Whale (*Balaenoptera physalus*) 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	*5.4.2 Fishing & Harvesting Aquatic Resources*: historical whaling (no longer a threat). Current stress *2.3 Indirect Species Effects*: inherent small population size and genetic isolation.	International Whaling Commission 2006b	Empirical	Global	Ceased
2	*11.1 Habitat Shifting & Alteration*: due to climate change. Current stress *2.3.8. Indirect Species Effects*: on food resources.	Burns & Baker 2000	Simulation	International	Increasing
3	*4.3 Shipping Lanes*: ship strikes. Current stresses *2.1 Species Mortality* and *2.2 Species Disturbance*.	Cole et al. 2006	Indirect	Local	Ongoing
4	*5.4.4 Fishing & Harvesting Aquatic Resources*: entanglement in fishing gear. Current stresses *2.1 Species Mortality* and *2.2 Species Disturbance*.	-	Anecdotal	-	-
5	*9.2.3 Industrial & Military Effluents*: microplastic pollution.	Fossi et al. 2012	Indirect	Regional	Unknown

Use and Trade

Extensive commercial whaling of this species has ceased, but is known to continue on a minor scale in the North Atlantic and Antarctic. Japanese scientific whaling in the southern hemisphere is set at 50 Fin Whales per year.

Threats

Before the commencement of modern whaling in the late 19th Century, Fin Whales were mostly safe from human exploitation due to their speed and evasiveness. However, modern whaling, characterised by larger ships with diesel engines and helicopters to locate and overtake target animals, resulted in a major global decline of Fin Whales in the 20th century. Since 1976, Fin Whales in the southern hemisphere and North Pacific have been protected, and whaling in the North Atlantic ceased in 1990, aside from small-scale catches off Greenland. Japanese scientific whaling in Antarctica recommenced in 2005, where 10 whales were taken during both the 2005–2006 and 2006–2007 summer seasons, and with a proposal to take 50 individuals per year during the seasons to follow (IWC 2006a). In the waters off Iceland, commercial whaling resumed in 2006, with nine individuals of this species taken that same year. The likelihood that the commercial exploitation of this species will return to the historically high levels is low, owing to the limited demand for whale products. However, bycatch in fishing gear may be a minor threat to Fin Whales. For example, off the eastern coast of the United States, four mortalities and severe injuries were reported for Fin Whales between 2000 and 2004 (Cole et al. 2006). On average, the IWC records one Fin Whale caught in fishing nets per year. The severity of this threat within the assessment region is unknown.

Of the other large whale species, Fin Whales are one of the most commonly reported in collisions with ships (Laist et al. 2001, 2014). For example, off the east coast of the United States, five Fin Whales were fatally injured by ships between 2000 and 2004 (Cole et al. 2006). Additionally, in the Mediterranean, Fin Whale-vessel collisions appears to be an important source of mortality; however it is not suspected to have any major effect on the population (Panigada et al. 2006). Similarly, within the oceans off South Africa, collisions with vessels are not deemed a major threat to this species.

A potential emerging threat to Fin Whales is the ingestion of microplastics, which has been documented in the blubber of stranded Fin Whales in the Mediterranean where Fossi et al. (2012) found 56% of planktonic samples contained microplastic samples. Fin Whales are sensitive to microplastic pollution due to their filter-feeding activity and have been proposed as an indicator species for this threat (Fossi et al. 2014). The severity of this threat within the assessment region is unknown.

Overall, no current major threats to this species have been identified for southern hemisphere stocks, though climate change may severely impact food sources in the Antarctic, resulting from a decline in sea ice. For example, recent research predicts that sea ice in the southern hemisphere will reduce by more than 40% in the next century, thus affecting food resources for whales in the form of *Euphausiacea* spp (Burns & Baker 2000).

Current habitat trend: Declining in the quality of feeding grounds off Antarctica, as a result of the effects of climate change (Burns & Baker 2000).

Conservation

Large-scale commercial whaling of Fin Whales in the North Pacific and southern hemisphere was deemed illegal by the IWC in 1976. In 1982 the IWC adapted the commercial whaling moratorium, which set all catch limits for commercial whaling to zero from 1986. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed Fin Whales on Appendix I, however this does not relate to Iceland, Norway or Japan. This species is also listed on Appendices I and II of the Convention on the Conservation of Migratory Species of Wild Animals (CMS). Within the assessment region, no specific interventions are necessary but we recommend continuous systematic population monitoring to estimate population size and trend.

Recommendations for managers and practitioners:

- Systematic monitoring: design and implement a monitoring programme (acoustic and sightings) that can detect population size and trends.

Research priorities:

- Estimate current population size, distribution and trend.
- Quantify current and future threats which may impact this species or its habitat.

Encouraged citizen actions:

- Whale-watching operators could contribute to photo-ID catalogues and behavioural observations.
- Report strandings to relevant authorities.
- Participate as volunteers in Fin Whale research projects.

Data Sources and Quality

Table 2. Information and interpretation qualifiers for the Fin Whale (*Balaenoptera physalus*) assessment

Data sources	Field survey (literature, unpublished)
Data quality (max)	Estimated
Data quality (min)	Inferred
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.*