Globicephala spp. – Pilot Whales


Globicephala macrorhynchus Lynsey Smyth

Regional Red List status (2016)	
Globicephala macrorhynchus	**Least Concern***
Globicephala melas	**Least Concern***
National Red List status (2004)	
Globicephala macrorhynchus	Data Deficient
Globicephala melas	Least Concern
Reasons for change	
Globicephala macrorhynchus	Non-genuine change
Globicephala melas	No change
Global Red List status	
Globicephala macrorhynchus	Data Deficient
Globicephala melas (2008)	Data Deficient
TOPS listing (NEMBA) (2007)	None
CITES listing (2003)	Appendix II
Endemic	No

*Watch-list Threat

Pilot whales are exceptionally social, form cohesive bonds within groups, and often accumulate in large aggregations comprised of hundreds of individuals (Sergeant 1962; Kasuya & Marsh 1984).

Taxonomy

Globicephala macrorhynchus (Gray 1846)

Globicephala melas (Traill 1809)

ANIMALIA - CHORDATA - MAMMALIA – CETARTIODACTYLA - DELPHINIDAE - *Globicephala*

Synonyms: *Globicephala scammoni* (Bailey 1936) (*G. macrorhynchus*); *Globicephala edwardii* (Bailey 1936) (*G. melas*)

Common names: *G. macrorhynchus*: Short-finned Pilot Whale, Pacific Pilot Whale (English), Kortvinloodswalvis (Afrikaans). *G. melas*: Long-finned Pilot Whale, Ca'aing Whale, Atlantic Blackfish, Common Pilot Whale, Pilot Whale, Pothead (English), Langvinloodswalvis (Afrikaans)

Taxonomic status: Species

Taxonomic notes: The *Globicephala* genus is comprised of two species, both of which occur within the assessment region. *Globicephala macrorhynchus*, the Short-finned Pilot Whale, has fewer teeth and shorter flippers than *G. melas*, the Long-finned Pilot Whale. Additionally, these species can be distinguished based on their skull shape (van Bree 1971), and in the assessment region, they differ in colouration, where *G. melas* has two lighter streaks behind its eye and dorsal fin (Skinner & Chimimba 2005). In a global assessment of *Globicephala* spp., Oremurs et al. (2009) found that these species exhibit low levels of mitochondrial DNA (mtDNA) diversity, which contrasts significantly with other abundant wide-ranging cetacean species. However, phylogeographic analyses revealed strong regional structuring within species (Oremus et al. 2009). Based on morphological, ecological and genetic variation, distinct northern and southern forms of *G. macrorhynchus* have been identified in the western North Pacific (Yonekura et al. 1980; Kasuya 1986; Kasuya et al. 1988; Wada 1988; Kage 1999), which may represent distinct subspecies (Oremus et al. 2009). Similarly, geographically separate northern and southern forms of this species have been recognised in the eastern North Pacific (Polisini 1980). The taxonomic status of *G. melas* remains under contention as there is some evidence suggesting that this may be a species complex. However, generally, *G. melas* is accepted as a single species comprising of the extant subspecies *G. m. melas* of the North Atlantic and *G. m. edwardii* of the southern hemisphere (Davies 1960).

Assessment Rationale

These are widely distributed species across the globe, where the offshore distribution patterns of the *Globicephala* species do not overlap with many major threats in the assessment region. Although these species are unstudied in the assessment region, based on strandings data, they appear to be relatively common offshore; and, in other parts of the world, increases in population size have been documented. While the general threats outlined for pelagic species could also apply here, there are no known threats that could cause a range-wide decline. However, there are no population size and trend data for the region of assessment and the taxonomy is uncertain, thus these species will need to be re-assessed as new data emerge. Additionally, as both species are deep-diving, they are potentially increasingly threatened by the emerging threats of marine noise and plastic pollution, the effects of which should be monitored. Currently, pilot whales are not conservation priorities within the assessment region as they are globally fairly abundant (for example, 589,000 in the tropical Pacific for

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Figure 1. Distribution range for Short-finned Pilot Whale (*Globicephala macrorhynchus*) within the assessment region (IUCN 2012a)

G. macrorhynchus; and 750,000 in the North Atlantic for *G. melas*). Therefore, they are listed as Least Concern.

Regional population effects: Pilot whales presumably occur seasonally in South African waters, and although continued research into their seasonal distribution and movements is required, no barriers to dispersal are recognised, thus rescue effects are considered possible.

Distribution

Both *G. macrorhynchus* (Short-finned) and *G. melas* (Long-finned) are widely distributed. However, their ranges show little geographic overlap. The Short-finned Pilot Whale occurs in the warm tropics and subtropics, predominantly in deep offshore waters of the North Atlantic, the Pacific and the Indian oceans (Reilly & Shane 1986; Olson & Reilly 2002); whereas the Long-finned Pilot Whale is generally restricted to temperate and subpolar regions (Olson & Reilly 2002). Southern hemisphere Long-finned Pilot Whales have a circumpolar distribution from warm temperate regions southwards to approximately 70°S (Skinner & Chimimba 2005).

Within the assessment region, van Bree et al. (1978) indicated that Short-finned Pilot Whales are generally restricted to the east coast of South Africa, while Long-finned Pilot Whales are primarily confined to the west coast. Short-finned Pilot Whales presumably range from the east coast of South Africa, southwards to Cape St Francis, Eastern Cape (van Bree 1971), although strandings at Sedgefield, and a skull found near Mossel Bay suggest a slight extension to this westerly limit (Skinner & Chimimba 2005). This species typically occurs in waters deeper than 1,000 m, beyond the edge of the continental shelf.

Long-finned Pilot Whales off South Africa, range along the west coast from Namibia and Saldanha Bay to East London, in the colder waters of the Benguela Current, probably overlapping partially with the Short-finned Pilot Whales in the region of Mossel Bay and East London (Skinner & Chimimba 2005). Long-finned Pilot Whales also occur around the Prince Edward Islands.

Population

No global estimates of abundance exist for these species; however, several regional population estimates indicate that in certain regions these species are relatively abundant. For example, Buckland et al. (1993) reported that there are approximately 778,000 Long-finned Pilot Whales in the Northeast Atlantic. Similarly, Wade and Gerrodette (1993) estimated 160,200 Short-finned Pilot Whales in the eastern tropical Pacific, while more recently, Gerrodette and Forcada (2002) estimated 589,000 individuals in the same region. Indeed, Short-finned Pilot Whales have increased significantly in the eastern tropical Pacific from 1986–1990 to 1998–2000 (Gerrodette & Forcada 2002). In summer, south of the Antarctic Convergence, Waring et al. (2006) estimated approximately 200,000 Long-finned Pilot Whales, however this is expected to include some misidentified Short-finned Pilot Whales. No population estimates are available for the assessment region. Model-based estimates of generation

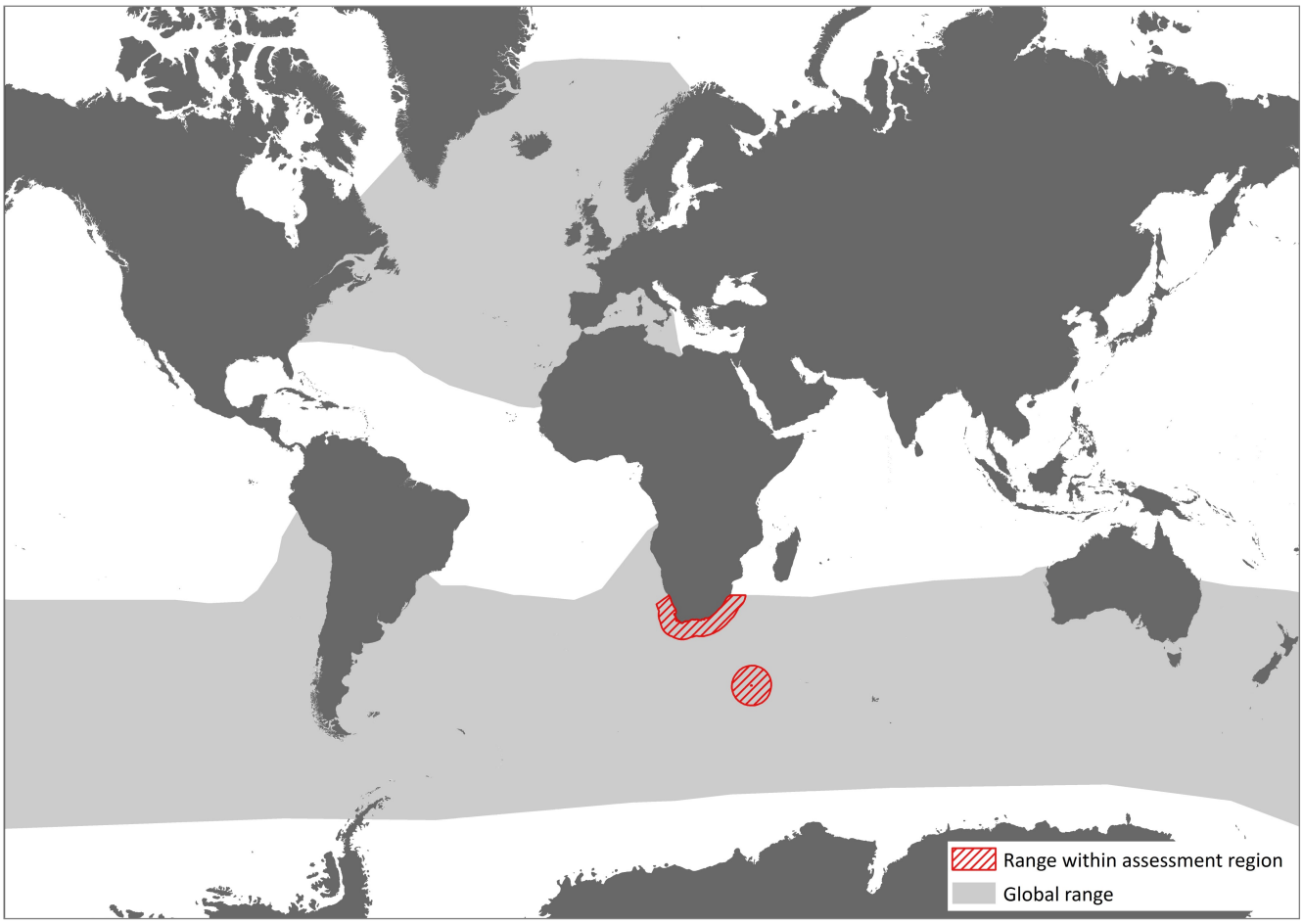

Figure 2. Distribution range for Long-finned Pilot Whale (*Globicephala melas*) within the assessment region (IUCN 2012b)

time are 23.5 years and 24.0 years for the Short-finned and Long-finned Pilot Whales, respectively (Taylor et al. 2007).

Current population trend: Increasing (for Short-finned Pilot Whales at least)

Continuing decline in mature individuals: Unknown

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: Unknown

Severely fragmented: No

Habitats and Ecology

Occurring predominantly in deep, tropical and cool temperate waters, Short-finned Pilot Whales occur at highest densities over the edge of the continental shelf or continental slope. Southern hemisphere populations of Long-finned Pilot Whales are circumpolar, occurring from warm temperate regions southwards to 70°S, and are present within the Benguela System, Humboldt Current and Falkland Current (Skinner & Chimimba 2005). This species tends to follow its prey (squid and mackerel) inshore and into continental shelf waters during the summer and autumn (Reeves 2003).

Cephalopods constitute a large proportion of the diet of *Globicephala* spp., and although fish are also consumed, they are predominantly adapted to a diet of squid. The stomach contents of four Short-finned Pilot Whales stranded at Port Elizabeth comprised of cephalopod remains (Ross 1984). Although primarily squid eaters, Long-finned Pilot Whales will also take small to medium-sized fish, such as mackerel, when available (Gannon et al. 1997). Sekiguchi et al. (1992) reported that the stomachs of Long-finned Pilot Whales from South Africa contained 23 species of cephalopods, but the squid *Todarodes angolensis* constituted the vast majority (80.8%) of the diet.

Although found in groups averaging about 20 individuals (Bernard & Reilly 1999), pilot whales are considered extremely gregarious, forming cohesive bonds, and are often reported in pods comprising of several hundred (Oremus et al. 2009). This strong social cohesion may be an influencing factor in the occurrence of mass stranding events (Perrin & Geraci 2002). Pilot whales frequently occur in association with bottlenose dolphins (*Tursiops* spp.). Short-finned Pilot Whales are fairly slow swimmers, and large groups have been recorded stationary on the surface of the water (Mitchell 1975). Off South Africa's east coast, van Bree et al. (1978) reported groups of pilot whales ranging from 2–25 individuals, which presumably represented *G. macrorhynchus*.

Although little is known about the reproductive biology of these species locally, in the northern hemisphere, breeding of *G. macrorhynchus* is seasonal, with births occurring in late summer (July/August) following a gestation period of 14.9 months (Skinner & Chimimba 2005). In comparison, the gestation period of *G. melas* is slightly longer, documented at 15.5–16 months (Skinner & Chimimba 2005). *G. melas* seems to mature at a younger age and have a shorter lifespan than *G. macrorhynchus*,

with females reaching maturity at a body length of 3.63 m (6–7 years old) and males reaching sexual maturity at 4.6 m (12 years old; Kasuya et al. 1988). However, female and male *G. macrorhynchus* mature at an average length of 3.16 m (9 years old) and 4.14 m (16 years), respectively (Skinner & Chimimba 2005).

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 (Moore 2008).

Use and Trade

Although pilot whales in the northern hemisphere have been historically exploited for their oil, and are still hunted in regions such as Japan, there is no trade or use of this species within the assessment region.

Threats

Due to their deep-water distribution, pilot whales within South African waters are not expected to experience any major threats that may severely impact their population status in the assessment region. However, additional research into the population status, taxonomy and seasonal movements of these species is needed, following which a reassessment of their conservation status may be necessary. A number of minor threats have been recognised:

1. Bycatch, particularly in long-line squid fisheries, is a minor threat to Short- and Long-finned Pilot Whales. There is also a potential emerging threat posed by a southern shift in the distribution of effort by the tuna purse-seine fisheries. It is also possible that there is direct competition between the Long-finned Pilot Whale and the squid fishery, which has been documented in other parts of its range (Taylor et al. 2008a). Although, there is no local information available, commercial squid fisheries are widespread in the western North Atlantic, and the target species for these fisheries are squids commonly eaten by pilot whales, raising the possibility of prey depletion. Bernard and Reilly (1999) suggest that bycatch of pilot whales is likely to be considerably more common than is currently reported.
2. Similar to beaked whales, both species of pilot whales are thought to be vulnerable to anthropogenic noise pollution, specifically those produced by seismic exploration and navy sonar (Cox et al. 2006). Although, the cause of pilot whale mass stranding events remains controversial in many regions, Short-finned Pilot Whales are thought to be frequently impacted by high levels of anthropogenic marine noise (Hohn et al. 2006). As the intensity of marine noise pollution is thought to be increasing within South African waters (Koper & Plön 2012), this potentially represents an emerging threat. Similar to other deep-diving species, marine plastic pollution may also represent an emerging threat, as it has been known to cause fatalities in sperm whales.
3. Although the impacts of climate change to pilot whales are largely unknown, it is likely that changes in water temperature and CO_2 concentration will have cascading effects on pilot whale movements and feeding ecology. Learmonth et al. (2006) reported that in the Faroe Islands, where Long-finned Pilot Whales have been historically hunted, catch rates were positively correlated with occurrence of a popular prey species, *Todarodes sagittatus.* This pelagic squid is thought to be either directly influenced by water temperature and CO_2 concentration, or possibly indirectly influenced by productivity (Bjørge 2002). Additionally, environmental variation as a result of the 1982–1983 El Niño is likely to have indirectly caused the absence of Short-finned Pilot Whales, and their associated prey-species *Loligo opalescens*, in some regions.

Table 1. Threats to pilot whales (*Globicephala* spp.) ranked in order of severity with corresponding evidence (based on IUCN threat categories, with regional context)

Rank	Threat description	Evidence in the scientific	Data quality	Scale of study	Current trend
1	*5.4.4 Fishing & Harvesting Aquatic Resources*: entanglement and competition with pelagic fisheries, particularly long-line and squid fisheries. Current stresses *2.1 Species Mortality*, *2.2 Species Disturbance* and *2.3.8 Indirect Species Effects*.	-	Anecdotal	-	Ongoing competition with squid and tuna purse-seine fisheries.
2	*9.6 Noise Pollution*: marine noise pollution through seismic surveys and navy sonar operations. Current stresses *2.1 Species Mortality* and *2.2 Species Disturbance*.	Hohn et al. 2006	Empirical	Regional	Increasing within South African waters.
3	*11.1 Habitat Shifting & Alteration*: climate change may exacerbate shifts in prey base. Current stress *2.3.8 Indirect Species Effects.*	Learmonth et al. 2006	Indirect	Global	Increasing. Increased CO_2 acidifies the body fluids and tissues of squid, which impacts their ability to carry oxygen. Additionally, increased temperature directly affects the reproductive success, growth and survival of cephalopod species.
4	*9.4 Garbage & Solid Waste*: plastic bag ingestion. Current stresses *2.1 Species Mortality* and *2.2 Species Disturbance*.	-	Anecdotal	-	Increasing

4. Although pilot whales are hunted in some parts of their range (for example, Long-finned Pilot Whales are caught in “drive-kill fisheries” off Japan, Taylor et al. 2008a), these species are not hunted within the assessment region, and the small-scale exploitation in the southern hemisphere is considered to be irregular (Skinner & Chimimba 2005).

Current habitat trend: Declining in quality due to marine noise pollution, plastic pollution and climate change.

Conservation

Both pilot whale species are listed in Appendix II of CITES and are protected in South Africa under the Marine Living Resources Act. No specific conservation measures can be recommended for these species within the assessment region until more information on population sizes, trends and threats are generated. As such, they would benefit from continued research into their population dynamics, distribution patterns and the impact of competition and bycatch with local squid fisheries. Globally, too, more research is needed to determine the impact of potential threats on pilot whales (Taylor et al. 2008b).

Recommendations for managers and practitioners:

- Interactions between pilot whales and long-line fisheries require urgent investigation. The spatial distribution of squid fisheries and pilot whales should be mapped and overlaps identified. The impacts and severity of potential competition between the fisheries and the cetaceans should be quantified.

Research priorities:

- The severity and potential impacts of threats, specifically the impacts of squid fisheries, could affect the listings of pilot whales.
- It is recommended that population census surveys are undertaken in South African waters, and Marion Island could be used as a monitoring base for *G. melas*.
- Data pertaining to these species’ distribution patterns and taxonomy is required.

Encouraged citizen actions:

- Use information dispensed by the South African Sustainable Seafood Initiative to make good choices when buying fish in shops and restaurants, e.g. wwfsa.mobi, FishMS 0794998795.
- Save electricity and fuel to mitigate CO_2 emissions and hence, the rate of climate change.
- Buy local products that have not been shipped.
- Sightings data from pelagic commercial tourism operators may be particularly valuable.
- Report any strandings to the relevant local authorities.

Data Sources and Quality

Table 2. Information and interpretation qualifiers for the pilot whales (*Globicephala* spp.) assessment

Data sources	Field study (strandings – unpublished, literature), indirect information (expert knowledge)
Data quality (max)	Inferred
Data quality (min)	Suspected
Uncertainty resolution	Expert consensus
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.*