Pseudorca crassidens – False Killer Whale

Regional Red List status (2016)	**Least Concern**
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 (2003)	Appendix II
Endemic	No

In some portions of its range, the False Killer Whale has been identified as the cetacean most at risk of dangerous associations with longline fisheries, due to injury and mortality attributed to hook ingestion or anthropogenic persecution owing to high depredation levels (Baird 2009).

Taxonomy

Pseudorca crassidens (Owen 1846)

ANIMALIA - CHORDATA - MAMMALIA - CETARTIODACTYLA - DELPHINIDAE – *Pseudorca - crassidens*

Common names: False Killer Whale (English), Valsmoordvis (Afrikaans)

Taxonomic status: Species

Taxonomic notes: As the only species of its genus, the False Killer Whale was initially described from a sub-fossil skeleton found on the British Isles by Owen in 1846 (Odell & McClune 1999). No subspecies have been described, and the initial proposal of a distinction between northern and southern forms of False Killer Whales (Leatherwood et al. 1991) was later discredited based on the investigation of adult skeletons (Stacey et al. 1994). However, analyses of skull and dental morphology have revealed some degree of regional differentiation and evidence that this species occurs as several disjunct populations across the globe (Kitchener et al. 1990; Ferreira 2008). Genetic variation is not uncommon in cetaceans (Kitchener et al. 1990; Connor et al. 2000), and is likely attributed to changes in water temperature and prey distribution. Results exhibiting geographic variation in body size were found between Japanese and southern African populations, where Japanese specimens were significantly larger in comparison (Ferreira 2008), confirming previous suggestions that Southern Hemisphere populations are typically smaller and reach sexual maturity at shorter body lengths, compared to those of the northern hemisphere (Purves & Pilleri 1978; Kasuya 1986). Using mitochondrial DNA (mtDNA) control region sequence data Chivers et al. (2007) describe a demographically isolated population of False Killer Whales in the waters off Hawaii, in the eastern North Pacific.

Assessment Rationale

Global and regional population trends and abundance data is unavailable for this species, and it is considered elusive and rare in the waters of the assessment region. Although, occasional mass stranding events have been documented in South Africa, it is suspected that these are accredited to natural causes, rather than anthropogenic activities. No major threats that may cause substantial population depletion, have been identified, resultantly, this species is listed as Least Concern, in line with the global assessment. However, considering the rarity and low reproductive potential of the False Killer Whale, it may be particularly vulnerable to minor threats, including fisheries bycatch (especially longline fisheries) and persecution, competition for prey resources, climate change and anthropogenic pollution. Continued research into potential risks, population abundance and distribution, as well as the identification of critical habitats may be necessary.

Regional population effects: The False Killer Whale is a wide-ranging pelagic cetacean, with a continuous distribution and no obvious barriers to dispersal, thus rescue effects are possible.

Distribution

False Killer Whales are widely distributed across the globe, predominantly occurring within deep tropical and warm temperate regions (usually in waters more than 25°C), but unlike the Killer Whale (*Orcinus orca*), they only very occasionally roam into colder waters (below 20°C) (Mitchell 1975). Their worldwide range is thought to extend from 50°N to 50°S (Odell & McClune 1999). Within southern African waters, this species has been documented off the coast of Lüderitz, Namibia, and from St Helena Bay to the north coast of KwaZulu-Natal (Findlay 1989). A pod of six was recorded off the coast of KwaZulu-Natal, at 29°02' S; 32°02' E (Bruyns 1969). This species has been frequently sighted in association with large groups of Common Bottlenose Dolphins (*Tursiops truncatus*) in the waters of Plettenberg Bay, Eastern Cape.

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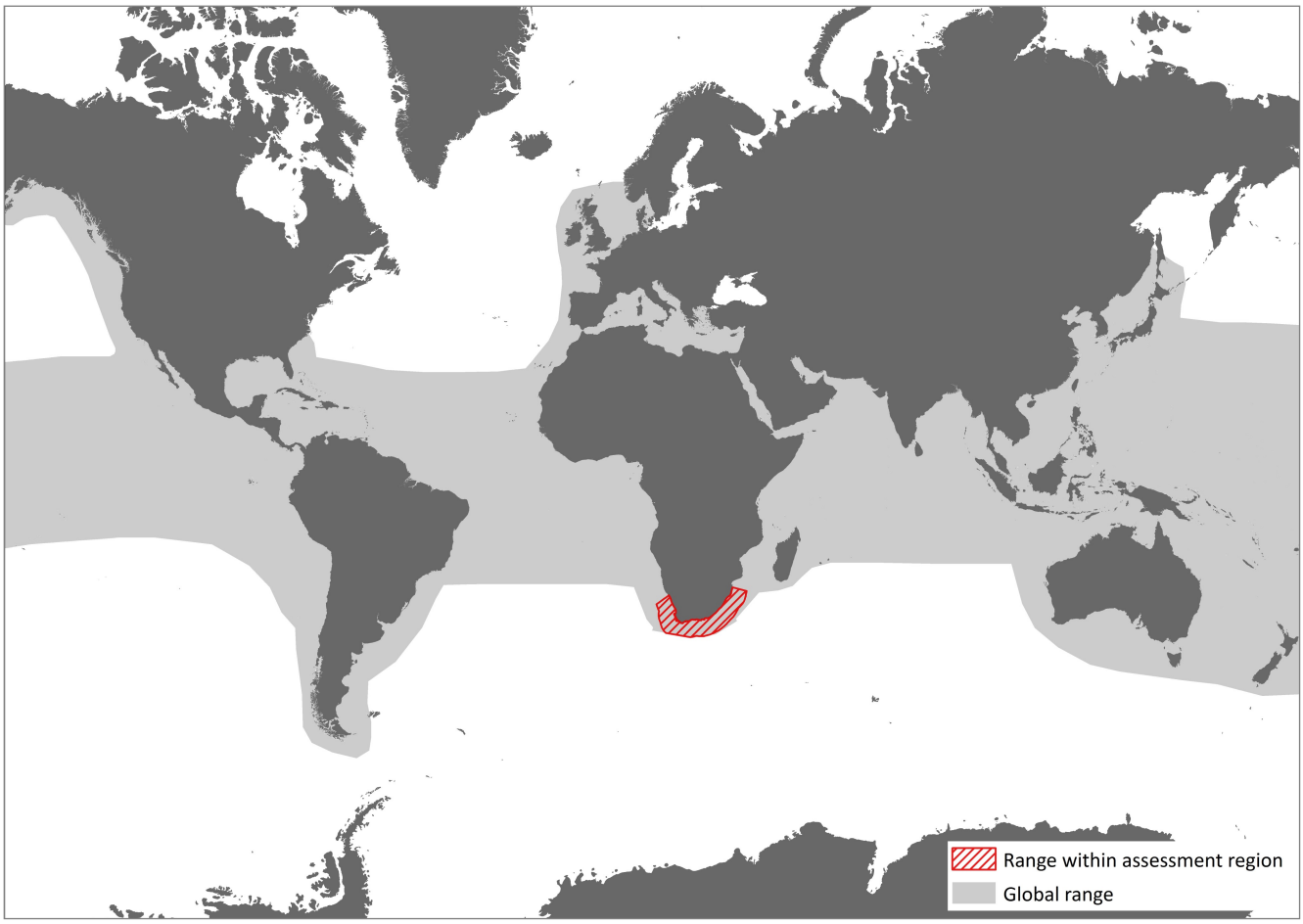

Figure 1. Distribution range for False Killer Whale (*Pseudorca crassidens*) within the assessment region (IUCN 2012)

Population

There are no global estimates of abundance available for this species, however approximately 39,800 (CV = 64%) individuals have been estimated in the eastern tropical Pacific (Wade & Gerrodette 1993), about 16,000 (CV = 26%) within the coastal waters of China and Japan (Miyashita 1993), and around 1,038 (CV = 71%) in the northern Gulf of Mexico (Mullin & Fulling 2004).

There are no estimates of abundance for the assessment region, as very little sighting data exists. However, a number of mass stranding events have been documented on South Africa's west coast, for example, 120 individuals at Kommetjie in 1928, more than 200 near Mamre in 1935, and at St Helena Bay, 58 in 1936 and 65 in 1981 (Skinner & Chimimba 2005). All of these mass stranding events took place between August and December.

Current population trend: Unknown

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

Very little is known about this elsuive, pelagic species, and much of what has been described has been opportunistically collected during mass stranding events or from captive individuals (Ferreira 2008). More commonly located in deep, open waters exceeding 1,000 m, this species only sporadically enters shallower regions of the continental shelf or the waters around oceanic islands (Baird 2016).

False Killer Whales are considered gregarious, exhibiting cohesive social structures and long-term associations between individuals (Baird et al. 2008). Occurring in pods of between 20 and 100 individuals, subdivided into smaller family groups (Bruyns 1969; Baird 2002), individuals regularly interact with one another (Baird 2009). In South African waters, Findlay et al. (1992) recorded groups up to about 50, with an average of 16, but documented one incidental sighting of 68 individuals. False Killer Whales have a tendency to share prey resources amongst members of the same group, and will transport prey resources in their mouths for prolonged periods (Baird et al. 2008).

This species is exceptionally active during the day, usually hunting within surface waters (Baird 2013). Although little information is available documenting the diving behaviour of False Killer Whales, dive data from individuals tagged off Hawaii revealed that they spend a large proportion of time near the surface, however during infrequent deep dives, one individual reached a depth of over 1,000 m (Baird 2013). They are considered opportunistic hunters, and depending on their range, False Killer Whales primarily prey upon a variety of squid and fish, including Dorado (*Coryphaena hippurus*), tuna (Alonso et al. 1999; Odell & McClune 1999) and sailfish. Ross (1984) assessed the stomach contents of an individual caught in southern

African waters, which contained the remains of cephalopods, mostly *Todarodes angolensis.* Additionally, Sekiguchi et al. (1992) found that the stomachs of 13 individuals contained a range of cephalopod species, but no fish remains. While, around the Hawaiian Islands, they feed predominantly on large commercially and recreationally harvested game fish (Gilman et al. 2007). There are also rare records of False Killer Whales feeding on smaller cetaceans (Odell & McClune 1999).

False Killer Whales have been recorded reaching speeds of approximately 30 km/hr for short durations (Williams 2009), and frequently approach ships, engaging in bow-riding behaviour. In comparison to Pygmy Killer Whales (*Feresa attenuata*), with which they are often confused, False Killer Whales often engage in high-speed travel, while Pygmy Killer Whales are considered fairly lethargic in comparison. During a surface sighting, the most obvious difference between the two species is the size of the dorsal fin relative to its back, as Pygmy Killer Whales have proportionately larger dorsal fins (Baird et al. 2010).

This species is considered the most aggressive cetacean in captivity, and will attack other cetaceans or equipment (Defran & Pryor 1980). In the wild, they have been documented attacking dolphins around purse-seine tuna fisheries in the eastern Pacific (Perryman & Foster 1980). Additionally, reports of False Killer Whales damaging Japanese long-line fisheries are not unusual (Mitchell 1975). Non-aggressive associations between False Killer Whales and Common Bottlenose Dolphins is common in the wild, and a number of unsuccessful instances of hybridization between the two species has occurred in captivity.

As a long-lived, slow-maturing species, *P. crassidens* have low reproductive potential. Results of a study conducted on False Killer Whales stranded on South Africa's west coast revealed that females reach sexual maturity at an age of between 9 and 10.5 years, at lengths of approximately 3.25 m, which is shorter by 30 cm than individuals from Japanese waters (3.59 m) (Ferreira 2008). Males have been reported to reach sexual maturity several years older than females (Ferreira 2008), and at lengths ranging from 3.96 to 4.57 m (Skinner & Chimimba 2005). Additionally, a recent study found that South African False Killer Whales from a stranded group had lower fecundity than Japanese false killer whales harvested during a drive fishery (Photopoulou et al. in review). Some degree of seasonal reproduction is supported by the presence of significant numbers of calves in summer (Purves & Pilleri 1978), but no evidence of seasonality in conception was found in stranded South African individuals (Ferreira 2008). Calves are born at lengths of between 1.73 and 1.83 m, following a gestation period of just over 15 months (Purves & Pilleri 1978). Male and female lifespan has been estimated at 57 years and approximately 62 years, respectively (Photopoulou et al. *in review*; Kasuya 1986). Along with pilot whales (*Globicephala* spp.), Killer Whales and common dolphins (*Delphinus* spp.), False Killer Whales are commonly involved in mass stranding events, although the explanation for these phenomena remains unclear (Ferreira 2008).

Ecosystem and cultural services: As top-level predators on a wide variety of fishes and squids, False Killer Whales concentrate contaminants through bioaccumulation and integrate broadly across the ecosystem in terms of exposure to environmental impacts.

Use and Trade

There is no contemporary trade or use of this species in South Africa.

Threats

No major threats to this species have been identified within the assessment region, however considering that

Table 1. Threats to the False Killer Whale (*Pseudorca crassidens*) 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	*5.4.3 Fishing & Harvesting Aquatic Resources*: incidental catch, predominantly on longline hooks. Current stresses *2.1 Species Mortality* and *2.2 Species Disturbance*.	Carretta et al. 2009	Empirical	Local	Between 1994 and 2007, > 24 False Killers Whales were recorded hooked/entangled in one deep-set longline fishery off the coast of Hawaii.
2	*5.4.5 Persecution/Control*: retaliatory killings by longline fishers. Current stress *2.1 Species Mortality*.	Oleson et al. 2010	Anecdotal	Local	Unknown
3	*5.4.4 Fishing & Harvesting Aquatic Resources*: competition with pelagic fisheries. Current stress *2.3.8 Indirect Species Effects* on food resources.	Oleson et al. 2010	Indirect	Local	Increasing
4	*9.4 Garbage & Solid Waste*: plastic bag ingestion. Current stresses *2.1 Species Mortality* and *2.2 Species Disturbance*.	Baird 2002	Indirect	International	Increasing
5	*9.2 Industrial & Military Effluents* and *9.3 Agricultural & Forestry Effluents*: bioaccumulation of persistent organic pollutants in body tissues. Current stress *2.3.7 Reduced Reproductive Success*.	Oleson et al. 2010	Indirect	International	Although many contaminants (such as PCBs and DDTs) have been banned in multiple areas, they continue to be recorded within the tissues of stranded individuals.

Table 2. Conservation interventions for the False Killer Whale (*Pseudorca crassidens*) ranked in order of effectiveness with corresponding evidence (based on IUCN action categories, with regional context)

Rank	Intervention description	Evidence in the scientific literature	Data quality	Scale of evidence	Demonstrated impact	Current conservation projects
1	*5.4 Compliance & Enforcement*: bycatch assessment in longline fisheries.	-	Anecdotal	-	-	-

this species is naturally rare in most regions and some evidence of lower reproductive rates in the southern African region compared to other areas, even low levels of mortality and serious injury, could cause detrimental impacts to local populations. In South Africa, seasonal strandings (between August and December) have been recorded since 1920, all before anthropogenic sounds became a threat to marine animals. As a deep-water species, shallow water may cause disorientation, leading to stranding. Given these facts, it is highly probable that the strandings are not the result of anthropogenic activity and are more likely attributed to natural causes, for example, confusing acoustic reflection within sea canyons. A number of minor threats have been identified:

1. **Fisheries bycatch**: Studies have found that this cetacean is more vulnerable than any other to dangerous interactions with Hawaiian long-line fisheries (Forney & Kobayashi 2007). They take fish off long-line hooks and may be incidentally caught, leading to drowning, injury and/or subsequent death when hooks are lodged inside the mouth or gullet (Forney & Kobayashi 2005). In 2005, average rates of depredation of swordfish by False Killer Whales was estimated at 2,999–4,804 in the Atlantic, 509-2,706 in the Indian, and 114–348 in the Pacific Oceans (Ramos -Cartelle & Mejuto 2008). A number of individuals in the coastal waters off Hawaii have scars consistent with wounds inflicted by long-line fishing equipment (Baird & Gorgone 2005). Additionally, this behaviour often leads to persecution and shootings by fishermen, as seen in Killer Whales, in order to decrease depredation and limit economic loss (Ramos-Cartelle & Mejuto 2008).
2. **Competition with fisheries**: Overexploitation of large fish species, such as tuna and swordfish by fisheries, causing a decline in prey biomass and size, has been recognised as an additional and increasing threat to this species in Hawaii (Oleson et al. 2010). It is likely that this threat may be extrapolated to other regions of this species' range, because False Killer Whales target many of the same fish and squid species as commercial fisheries (Ramos-Cartelle & Mejuto 2008).
3. **Anthropogenic pollution**: Plastic pollution is a wide-spread and increasing problem within all oceans. The ingestion of plastic debris has been documented in stranding records of False Killer Whales (Baird 2002), and is a fairly common phenomenon in similar species (Stamper et al. 2006), and those that commonly feed on cephalopods. Finally, the bioaccumulation of persistent organic pollutants (POPs) within the body tissues of False Killer Whales may put this species at risk of diminishing reproductive potential and immunosuppression (Oleson et al. 2010). As long-lived top predators, the risk of exposure to organic pollutants is increased, compared to other species that feed at lower trophic levels (Oleson et al. 2010). Aside from in Hawaii, there is limited data documenting the concentrations of POPs in False Killer Whales. Although reports of high concentrations of toxins contained within the blubber of False Killer Whales stranded off Canada (Jarman et al. 1996), Taiwan (Chou et al. 2004) and Japan (Haraguchi et al. 2006) have been recorded.

Current habitat trend: Declining, due to overexploitation of prey resources by commercial fisheries.

Conservation

The species is listed in Appendix II of the Convention on Internation Trade I Endangered Species of Wild Fauna and Flora (CITES) and protected by the Marine Living Resources Act (No. 18 of 1998) of the national legislation.

Considering the substantial interaction rate and vulnerability of this species to longline fisheries in Hawaiian waters, investigations into the bycatch associated with South Africa's longline fisheries is imperative for this species. Unfortunately, bycatch is often discarded overboard and unrecorded, therefore hindering the documentation of abundance estimates, and the quantification of this threat. Sustainable mitigation of cetacean bycatch is only possible if accurate records regarding fishing techniques and equipment, geographic distribution, season and quantitative data of bycatch is recorded. Additionally, fatally injured individuals may be valuable for dissection in order to enhance the scientific study into the ecology and morphology of this poorly-known species.

The current lack of abundance and distribution data for this species within the assessment region, currently prevents the implementation of species-specific mitigation actions, however, it is likely that this species may benefit from the development and expansion of marine protected areas developed with other cetaceans in mind, as they are frequently sighted in association with other cetacean species. The implementation of seasonal and geographic longline fishery exclusion zones of 'critical habitat' in areas of high cetacean concentration, such those developed for False Killer Whales in Hawaii since 1992, may reduce False Killer Whale mortality and injury associated with fishery interactions. Critical habitats should be carefully considered and associated with primary feeding and reproduction areas, which are protected from disturbance (Baird et al. 2012).

Recommendations for managers and practitioners:

- Accurate bycatch assessments in the longline fishery.
- Enforce regulations associated with deep water fisheries, including bycatch mitigation efforts.
- Sightings data should be recorded during systematic monitoring of other marine species.

Research priorities:

- Population size and trend estimates for the assessment region.
- Threats to this species in relation to long-line fisheries.
- Identification of high concentration areas, and critical habitats in South African waters, including distributional limits, seasonal movements and diving behaviour.
- Diet, reproduction and general biology.
- Cumulative impacts of anthropogenic influences, such as pollution, commercial fisheries and persecution.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP) to help with mapping geographical distribution.
- Use information dispensed by the South African Sustainable Seafood Initiative (SASSI) to make good choices when buying fish in shops and restaurants, e.g. wwfsa.mobi, FishMS 0794998795.
- Buy local products that have not been shipped.
- Avoid using plastic bags.
- Report any stranding reports to the relevant local authorities.

Data Sources and Quality

Table 3. Information and interpretation qualifiers for the False Killer Whale (*Pseudorca crassidens*) assessment

Data sources	Museum records, indirect information (literature, 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.*