Arctocephalus gazella – Antarctic Fur Seal


Greg Hofmeyr

Regional Red List status (2016)	**Least Concern***
National Red List status (2004)	Near Threatened D1
Reasons for change	Genuine change: Increasing population
Global Red List status (2016)	Least Concern
TOPS listing (NEMBA)	None
CITES listing (1977)	Appendix II
Endemic	No

*Watch-list Threat

"…it is hoped that ethical considerations as well as commercial ones will decide the future use of the Antarctic Fur Seals, especially as this species has managed to re-establish itself in at least part of its old haunts, while elsewhere in the world mammal populations are fast disappearing." (Bonner 1968)

Taxonomy

Arctocephalus gazella (Peters 1875)

ANIMALIA - CHORDATA - MAMMALIA - CARNIVORA - OTARIIDAE - *Arctocephalus - gazella*

Synonyms: *Arctocephalus tropicalis* ssp. *gazella* (Peters 1875); *Arctophoca gazella* (Peters 1875)

Common names: Antarctic Fur Seal, Kerguelen Fur Seal (English), Antarktiese Pelsrob (Afrikaans)

Taxonomic status: Species

Taxonomic notes: Antarctic Fur Seals were formerly considered a subspecies of *Arctocephalus tropicalis* and were known as *A. t. gazella* (Repenning et al. 1971). The genus name *Arctophoca* was recently tentatively resurrected for some species of fur seals (Berta & Churchill 2012). In 2011, the Taxonomy Committee of the Society for Marine Mammalogy revised the genus of this, and a number of other species of fur seals to *Arctophoca,* Peters 1866 (Committee on Taxonomy 2011) based on evidence presented in Berta and Churchill (2012). However, in 2013, based on genetic evidence presented in Nyakatura and Bininda-Emonds (2012), this change was considered to be premature and these species were returned to the genus *Arctocephalus* pending further research.

Assessment Rationale

Nationally, due to the increasing size of the population at the Prince Edward Islands, their links with other populations, and a lack of major apparent threats, the Antarctic fur seal is listed Least Concern. Although this species was listed as Near Threatened in 2004, based on low abundance at the Prince Edward Islands, this population is still increasing. Pup production at Prince Edward Island itself in 2008/09 was 810 and had grown at 11.4% since 2001. Pup production at Marion Island was 1,553 in 2012/13, having grown at 4.0% since 2009/10. Growth at this population has slowed down from 17% in 2003/04 (744 pups) possibly due to saturation at the main rookery, where 77% of the pups are born. The current foraging population size (adults and subadults) on both islands is estimated as 8,979 animals. Furthermore, the Prince Edward Islands were proclaimed a Special Nature Reserve in 1995, under the South African Environmental Conservation Act (No. 73 of 1989), and a Marine Protected Area in 2013.

Although this species does not currently face any major threats within the assessment region, it is believed to be vulnerable to climate change due to the possible impact on populations of prey species. The recent slowing of their rate of increase at the assessment site should be monitored both in light of the decline in abundance of this species at Bird Island, South Georgia, and the recent decline in the sympatric population of Subantarctic Fur Seals (*A. tropicalis*). Given the scarcity of pup production data from other islands and Antarctic Fur Seals' ability to travel extreme distances, the effects of emigration on population estimates at the above-mentioned sites cannot be discounted. It should also be noted that Antarctic Fur Seals experienced a severe population bottleneck during the 19th and early 20th centuries which reduced their genetic variation and which may make this species particularly vulnerable to disease or climate change in the future.

Regional population effects: Antarctic Fur Seals are thought to have a continuous range and therefore the potential exists for immigrants from other subpopulations in the Southern Ocean to augment the Prince Edward Island population. Genetic evidence indicates that the large population at South Georgia was the source of immigrants that established the Prince Edward Islands population (Wynen et al. 2000). The arrival and birth of leucistic individuals (de Bruyn et al. 2007; Wege et al. 2015), a colour morph common at South Georgia (Bonner 1968), together with an exponential growth rate of this population at the end of the 20th century (Hofmeyr et al. 2006), indicates that such immigration likely continues.

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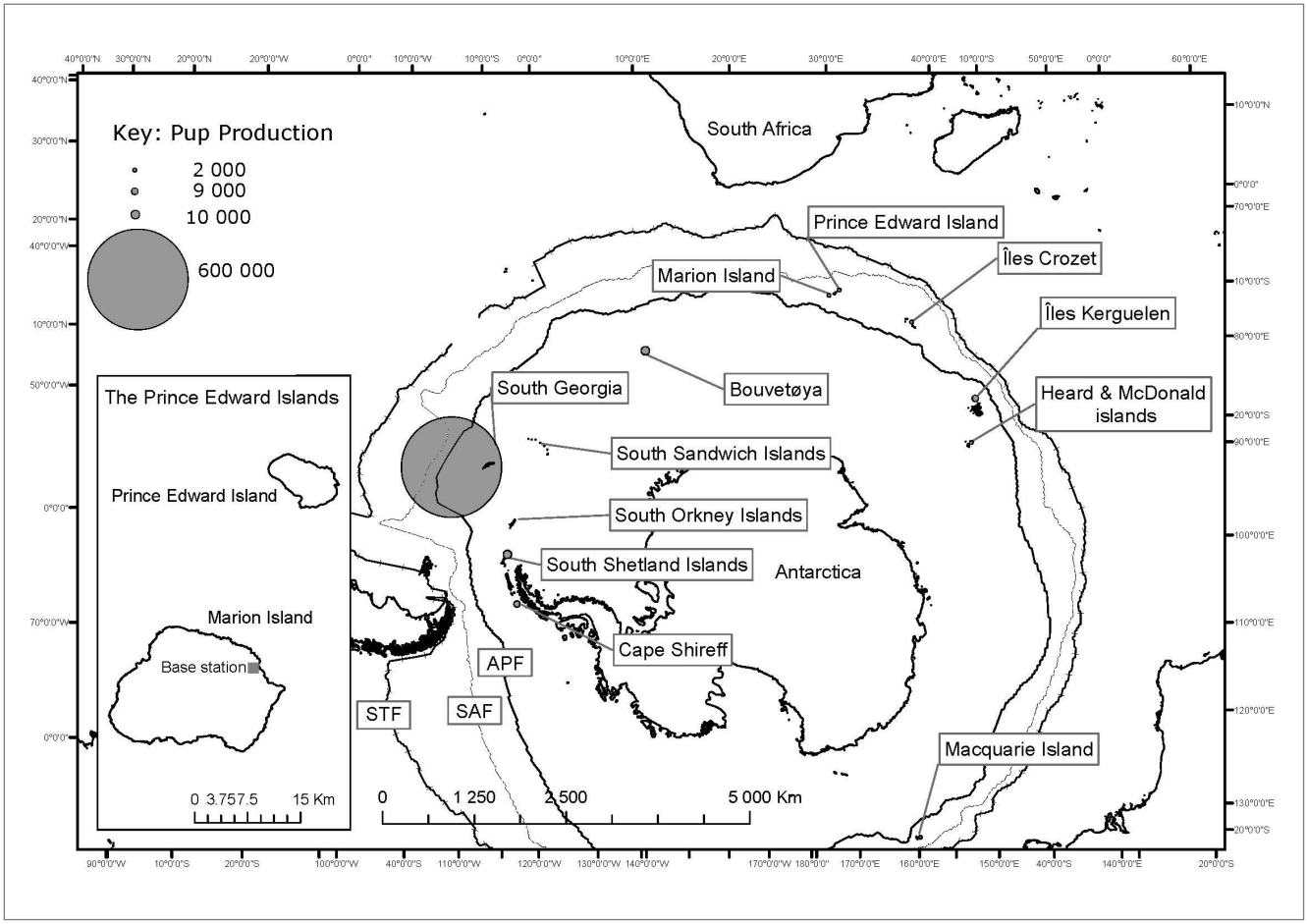

Figure 1. Distribution of Antarctic Fur Seal (*Arctocephalus gazella*) within the assessment region (Map: Mia Wege)

Table 1. Countries of occurrence within southern Africa

Country	Presence	Origin
Botswana	Absent	-
Lesotho	Absent	-
Mozambique	Absent	-
Namibia	Absent	-
South Africa	Extant	Native
Swaziland	Absent	-
Zimbabwe	Absent	-

Distribution

Antarctic Fur Seals are widely distributed in waters south, and in some areas slightly north, of the Antarctic Convergence (Bonner 1968). Within the assessment area, a large number of rookeries are found on both islands in the Prince Edward Islands Archipelago (Bester et al. 2003; Hofmeyr et al. 2006; Wege et al. 2016). Antarctic Fur Seals disperse widely when at sea. Vagrants have been recorded at Gough Island (Wilson et al. 2006; Bester & Reisinger 2010), Tristan da Cunha (Bester et al. 2014) and on the coasts of Antarctica (Shaughnessy & Burton 1986), southern South America (Drehmer & de Oliveira 2000; Acevedo et al. 2011) and Australia (Shaughnessy et al. 2014).

Population

Globally, Antarctic Fur Seals breed at numerous sites on 11 islands or island groups. While some 95% of Antarctic Fur Seal pup production is on the island of South Georgia, eight other subpopulations are estimated to contain more than 1,000 adults each (Forcada & Hoffman 2014; SCAR_EGS 2014). Although Antarctic Fur Seals are still the most abundant species of fur seals with an estimated 600,000 breeding females in 2012 (Wickens & York 1997; I. Boyd pers. comm. in SCAR EGS (Scientific Committee for Antarctic Research Expert Group on Seals 2008); Forcada & Hoffman 2014), the numbers of adult females at Bird Island, South Georgia are estimated to have declined by 24% between 1984 and 2012 (Forcada & Hoffman 2014). Should this be representative of the South Georgia population as a whole, this would effectively be a decline in the global population. Forcada and Hoffman (2014) attributed this decline and an accompanying increase in population genetic diversity to climate change. However, Boyd (2014) challenged these conclusions and suggested the decline is most likely in response to density-dependent factors acting upon a population that had been growing exponentially for several decades.

Within the assessment region, both islands within the Prince Edward Islands Archipelago support increasing breeding rookeries and the total population (2008/13) is estimated at well over 11,342 animals using a conversion factor of 4.8 (pups to total population) (Kerley 1983). The foraging population (including subadults) is estimated as 8,979 animals using a conversion factor of 3.8 (Kerley 1983). Pup production in the 2008/09 summer at Prince Edward Island itself was estimated at 810 having grown by

11.4% since 2000/01. Pup production on Marion Island increased by 4.0% to 1,553 between 2009/10 and 2012/13, having slowed from 17% in 2003/04 (Wege et al. 2016). This deceleration is attributed to saturation at the main rookery (Watertunnel Beach). It is unlikely that this slowed growth is a result of interspecific competition for breeding space as Subantarctic Fur Seals prefer to breed on boulder/jumbled rocky beaches (Bester 1982), whereas Antarctic Fur Seals prefer small-pebble beaches backed by vegetated slopes (Kerley 1984). One location (Watertunnel Beach) currently harbours 77–81% of the total population on Marion Island, with only two other breeding rookeries (at Trypot and Landfall beaches on the east coast) producing in excess of 100 pups annually (Wege et al. 2016). Although the breeding rookeries are fragmented along the island coastlines, gene flow occurs as individuals occasionally move between rookeries (Mammal Research Institute unpubl. data).

Current population trend: Increasing

Continuing decline in mature individuals: No

Number of mature individuals in population: 8,979 animals (foraging population)

Number of mature individuals in largest subpopulation: 5,901 animals (Marion Island, foraging population)

Number of subpopulations: Antarctic Fur Seals likely have a continuous global range with no distinct subpopulations.

Severely fragmented: No

Habitats and Ecology

Antarctic Fur Seals are an extremely sexually dimorphic species and are highly polygynous. Males arrive at the rookeries in early November, some 2–3 weeks before the first females arrive, and establish territories. Males continue to arrive and challenge one another for territories through much of the season. Territories are acquired and held by use of vocalizations, threat postures and fighting (Bonner 1968). The median pupping date at the Prince Edwards islands is ~6th December (Hofmeyr et al. 2006). At the Prince Edward Islands the duration of the attendance cycle by lactating adult females varies between years, with mean shore periods varying between 1.5 and 2.2 days, and mean foraging trips varying between 6.0 and 9.4 days, becoming progressively longer as the 4-month lactation period progresses (Bester & Bartlett 1990; Kirkman et al. 2003).

After pups are weaned, adult seals disperse widely at sea and few are seen at the rookeries before the next breeding season. However, a few subadults and adult males can be seen ashore at all times of the year (Bonner 1968; Payne 1977; Kerley 1983). The diet of Antarctic Fur Seals varies by season and location. At South Georgia and Bouvet Island, Antarctic Fur Seals are specialists, feeding primarily on krill (Bonner 1968; North et al. 1983; Kirkman et al. 2000; Hofmeyr et al. 2010). However, at Heard Island (Green et al. 1989, 1991), Macquarie Island (Robinson et al. 2003) and the Prince Edward Islands (Klages & Bester 1998; Makhado et al. 2008), krill is not available, and they follow a generalist diet, preying primarily on cephalopods and fish such as myctophids and notothenids. Antarctic Fur Seals have also been known to eat penguins at a number of sites (Bonner 1968; Green et al. 1989), including Marion Island (Hofmeyr & Bester 1993). Marion Island is the first location where Antarctic Fur Seals were observed to catch penguins on land (Hofmeyr & Bester 1993), but this behaviour has subsequently been recorded on Îles Crozet (Charbonnier et al. 2010).

Antarctic Fur Seals are sympatric with Subantarctic Fur Seals at the Prince Edward Islands (Hofmeyr et al. 2006) and Îles Crozet (Guinet et al. 1994) and with both Subantarctic Fur Seals and New Zealand Fur Seals (*A. forsteri)* at Macquarie Island (Goldsworthy 1999). Consequently hybridisation occur at all three sites (Hofmeyr et al. 2006; Kingston & Gwilliam 2007; Lancaster et al. 2010); however, at the Prince Edward Islands levels of hybridisation are very low and therefore no threat to the species (Hofmeyr et al. 2006).

Ecosystem and cultural services: The Antarctic Fur Seal is an important predator in the Southern Ocean (Boyd & Murray 2001; Goldsworthy et al. 2001; Reid et al. 2004; Lea et al. 2006). It is also a prey species for Leopard Seals (*Hydrurga leptonyx)* (Boveng et al. 1998) and potentially prey of Killer Whales (*Orcinus orca)* (Staniland & Robinson 2008; Reisinger et al. 2016).

Table 2. Threats to the Antarctic Fur Seal (*Arctocephalus gazella*) 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	*11.5 Climate Change & Severe Weather*: climate change affecting prey base and facilitating disease transmission.	Forcada & Hoffman 2014	Indirect	International	Increasing
		Lavigne & Schmitz 1990	Indirect	International	
2	*5.4.4 Fishing & Harvesting Aquatic Resources*: competition from new fisheries resulting in a loss of a species' prey base due to over-harvesting by humans. Current stress *2.3.2 Competition*.	Hanchet et al. 2003	Indirect	International	Increasing
3	*5.4.3 Fishing & Harvesting Aquatic Resources*: entanglement in coastal fisheries.	Bonner & McCann 1982	Empirical	International	Stable
		Croxall et al. 1990	Empirical	International	
		Hofmeyr et al. 2002	Empirical	Regional	
4	*6.1 Recreational Activities*: disturbance due to ecotourism at breeding grounds.	Hofmeyr & Bester 2008	Indirect	International	Stable

Table 3. Conservation interventions for the Antarctic Fur Seal (*Arctocephalus gazella*) 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	*2.1 Site/Area Management*: continue to monitor population trends in relation to climatic variables and minimise human disturbance at breeding rookeries.	Wege et al. 2016	Empirical	Local	Population has increased.	Mammal Research Institute, University of Pretoria

Use and Trade

Although this species was previously overexploited in the 19th century, it has not been exploited since 1927, partly being protected by the isolation of their habitat. However, any otariid species may be threatened by the trade in body parts for medicinal use in East Asia.

Threats

By the late 19th century, the Antarctic Fur Seal was almost extinct due to commercial sealing (Kovacs et al. 2012). Populations survived this period is small numbers at three sites: 1) South Georgia, 2) Bouvet Island and 3) Îles Kerguelen (Wynen et al. 2000; Hofmeyr et al. 2005). It is also possible that the species survived at a fourth site: the South Shetland Islands (Bonin et al. 2013). Although this population bottleneck resulted in a substantial reduction of genetic diversity (Wynen et al. 2000), unexpectedly high levels of genetic diversity remain (Bonin et al. 2013).

Few legal fisheries exploit the range of the Antarctic Fur Seal. However, illegal fishing in the area is likely to increase (Hanchet et al. 2003). Antarctic Fur Seals have been recorded entangled in marine debris (including discarded fishing line, nets and other foreign objects). As the fisheries expand, it is further likely that this threat too will increase. The most recent estimate of entanglement rates of Antarctic Fur Seals at South Georgia is 0.4% (Arnould & Croxall 1995). At the Prince Edward Islands, the rate of entanglement (together with the sympatric Subantarctic Fur Seal) was estimated to be lower, at approximately 0.24% for the period 1996–2001 (Hofmeyr et al. 2002). Entangled animals are expected to die as a result of their injuries (Bonner & McCann 1982; Croxall et al. 1990; Hofmeyr et al. 2002).

While tourism at Subantarctic islands is minimal (Shirihai 2002; Hofmeyr & Bester 2008), its increase could cause disturbance. However, the South African government prohibits tourism at the Prince Edward Islands (Prince Edward Islands Management Plan 2010).

Although this species does not currently face any major threats within the assessment region, it is believed to be vulnerable to climate change due to the possible impact on populations of prey species (Siniff et al. 2008; Kovacs et al. 2012; McDonald et al. 2012), with recent suggestions that some subpopulations of this species may be declining (Forcada & Hoffman 2014). Global climate change may result in additional future negative impacts (Learmonth et al. 2006). The risk of disease transmission may increase (Lavigne & Schmitz 1990). Due to their colonial habits, otariids, such as the Antarctic Fur Seal, are at greater risk of future disease outbreaks. Climate change may also negatively impact the abundance of prey species (Kovacs et al. 2012). At Bird Island, South Georgia, the abundance of adult females is estimated to have declined by approximately 24% since 1984, possibly as a result of climate induced changes in prey availability (Forcada & Hoffman 2014). The recent slowing of their rate of increase at the assessment site should be monitored both in light of the decline in abundance of this species at Bird Island, South Georgia and the recent decline in the sympatric population of Subantarctic Fur Seals (Wege et al. 2016). Growing populations of other krill-feeding predators, such as whales, recovering from previous century's harvesting might also compete with Antarctic Fur Seals for food.

Current habitat trend: Stable

Conservation

Governments that claim island territories manage breeding sites of Antarctic Fur Seals as protected areas. The South African Seabirds and Seals Protection Act (Prince Edward Islands Management Plan 2010), for instance, protect the Prince Edward Islands. These islands are a special nature reserve and a marine protected area (Chown & Froneman 2008; DEA 2013). The management plan restricts visitor access to specific areas, including all of Prince Edward Island itself and parts of Marion Island (Prince Edward Islands Management Plan 2010). No specific interventions are required at present, but the population should continue to be monitored.

Recommendations for land managers and practitioners:

- Continuation of the monitoring and research programme conducted over the past two decades to date by the Marion Island Marine Mammal Programme under the auspices of the Mammal Research Institute, University of Pretoria. Aspects of this work feeds into an international monitoring programme run by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR): the CCAMLR Ecosystem Monitoring Programme (CEMP).

Research priorities:

- The effects of global climate change on the foraging and breeding behaviour of this species.
- The effects of global climate change on the prey species of the Antarctic Fur Seal.
- The effects of local fisheries on prey populations.
- Characteristics and causes of population changes.

Encouraged citizen actions:

- Due to the isolation of Antarctic Fur Seal habitat, citizen actions are limited. However, citizens can report potential sightings on virtual museum platforms (for example, iSpot and MammalMAP).

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Antarctic Fur Seal (*Arctocephalus gazella*) assessment

Data sources	Field study (literature, unpublished)
Data quality (max)	Estimated
Data quality (min)	Estimated
Uncertainty resolution	Confidence intervals
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.*