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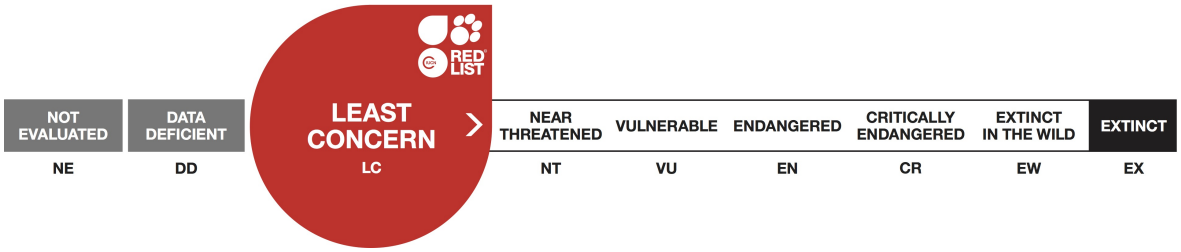
Arctocephalus gazella, Antarctic Fur Seal

Assessment by: Hofmeyr, G.J.G.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Carnivora	Otariidae

Taxon Name: *Arctocephalus gazella* (Peters, 1875)

Synonym(s):

- *Arctocephalus tropicalis* ssp. *gazella* Peters, 1875
- *Arctophoca gazella* Peters, 1875

Common Name(s):

- English: Antarctic Fur Seal, Kerguelen Fur Seal
- French: Arctocéphale de Kerguelen

Taxonomic Notes:

Antarctic Fur Seals were formerly considered a subspecies of *Arctocephalus tropicalis* and were known as *A. t. gazella* (Repenning *et al*. 1971). Rice (1998) listed the species as *A. gazella*. In 2011 the genus of this, and many other species of Fur Seals was changed 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 (Committee on Taxonomy 2013).

Assessment Information

Red List Category & Criteria: Least Concern ver 3.1

Year Published: 2016

Date Assessed: December 10, 2014

Justification:

Antarctic Fur Seals are the most abundant species of Fur Seal and are classified as Least Concern. While some 95% of Antarctic Fur Seals haul out and breed at the island of South Georgia, they also use 11 other sites. The estimated number of adult females at South Georgia in 2012 was 550,000 and this number is believed to represent a decline of 24% since 1984. These values have, however, been questioned because of limitations in sampling. The second largest population, at Bouvetøya, experienced rapid growth to 2001 but a decline between then and 2007. Most other colonies support several hundred to several thousand animals. No subpopulations exist and movement between colonies takes place. Neither this species as a whole, nor any separate colonies, are likely to become extinct in the near future. The greatest threat to this species is considered to be the impact of climate change on its physical environment and populations of its prey. The impacts of other threats, including the impact of incipient fishing industries on prey populations and entanglement in anthropogenic debris, remain low. Due to a population bottleneck experienced by this species at the height of intensive exploitation, genetic diversity is low, which may render this species more vulnerable to climate change and disease.

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Previously Published Red List Assessments

2014 – Least Concern (LC) – http://dx.doi.org/10.2305/IUCN.UK.2014-2.RLTS.T2058A45223888.en

2008 – Least Concern (LC)

1996 – Lower Risk/least concern (LR/lc)

Geographic Range

Range Description:

Antarctic Fur Seals inhabit the Southern Ocean and are widely-distributed in waters south, and in some areas north, of the Antarctic Convergence (Bonner 1968). While most Antarctic Fur Seals breed at South Georgia (Boyd 1993), colonies are also found on the South Shetland Islands (Goebel *et al*. 2003), the South Orkney Islands (Boyd 1993), the South Sandwich Islands (Holdgate 1962), the Prince Edward Islands (Bester *et al*. 2003, Hofmeyr *et al*. 2006a), Îles Crozet (Guinet *et al*. 1994), Îles Kerguelen (Guinet *et al*. 2000), Heard Island (Page *et al*. 2003), McDonald Island (Johnstone 1982), Macquarie Island (Goldsworthy *et al*. 2009) and Bouvetøya (Hofmeyr *et al*. 2005). Vagrants have been recorded at Gough Island (Wilson *et al*. 2006), Tristan da Cunha (Bester *et al*. 2014) and on the coasts of Antarctica (Shaughnessy and Burton 1986), southern South America (Drehmer and De Oliviera 2000), and Australia (Shaughnessy *et al*. 2014). Antarctic Fur Seals disperse widely when at sea (Boyd *et al*. 1998, Staniland *et al*. 2012), however few data on distribution and movements at sea have been published.

Country Occurrence:

Native: Antarctica; Bouvet Island; French Southern Territories (Crozet Is., Kerguelen); Heard Island and McDonald Islands; South Africa (Marion-Prince Edward Is.); South Georgia and the South Sandwich Islands (South Georgia, South Sandwich Is.)

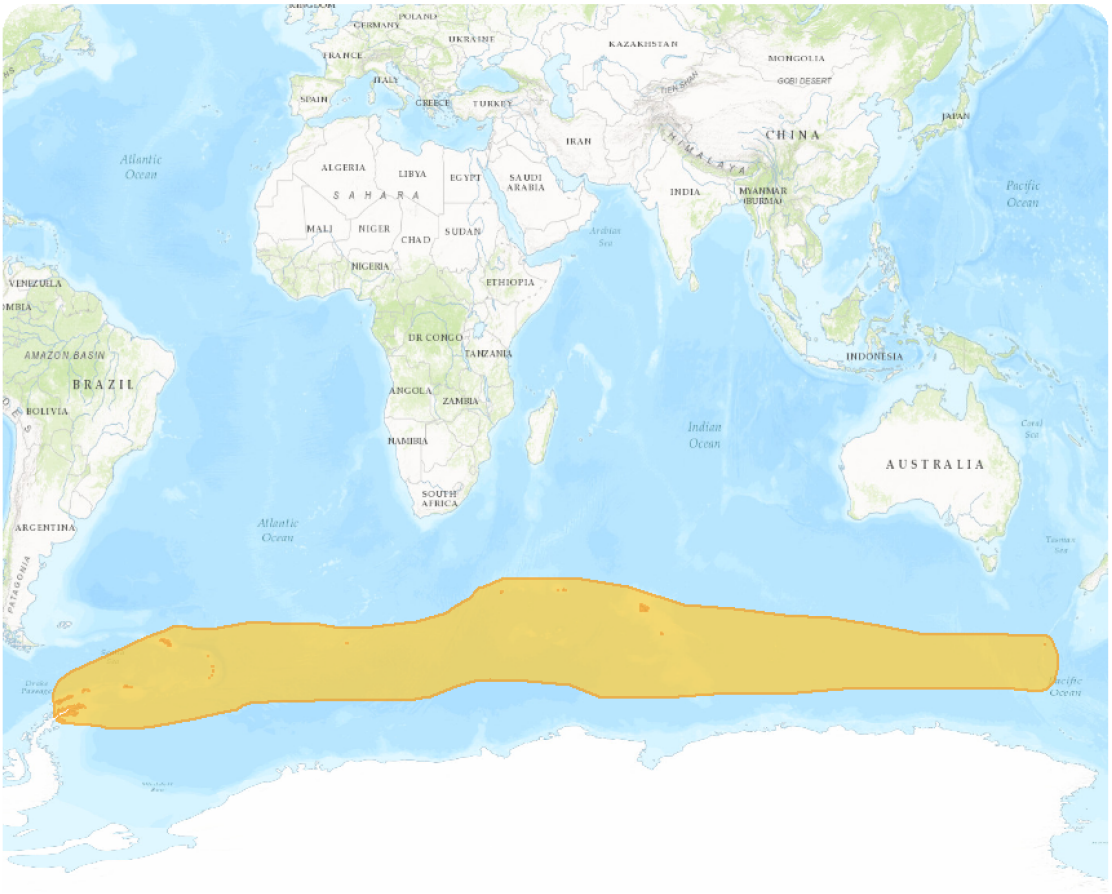
Vagrant: Argentina; Australia (Macquarie Is. - Native); Brazil; Chile; Saint Helena, Ascension and Tristan da Cunha (Tristan da Cunha)

FAO Marine Fishing Areas:

Vagrant: Atlantic - southwest, Atlantic - southeast, Atlantic - Antarctic, Indian Ocean - eastern, Indian Ocean - Antarctic, Pacific - southwest, Pacific - Antarctic

Distribution Map

Arctocephalus gazella



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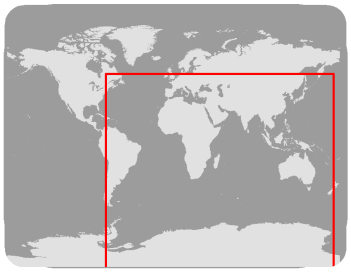
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Range

Extant (resident)

Compiled by:
Greg Hofmeyr



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

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Population

Antarctic Fur Seals are believed to be the most abundant species of Fur Seal (Wickens and York 1997). The island of South Georgia supports approximately 95% of all Antarctic Fur Seals. The total population of this site in 1999/2000 was estimated to be between 4.5 and 6.2 million (I. Boyd pers. comm. in SCAR EGS 2008). However, the abundance of adult females is estimated to have declined by some 30% between 2003 and 2012, and by 24% since 1984 to around 550,000. It has been suggested that this decline is due to the effects of global climate change on prey availability (Forcada and Hoffman 2014). The methods used to derive these population values have, however, been questioned (Boyd 2014).

The second largest Antarctic Fur Seal population, at Bouvetøya, supported some 47,000 individuals in the 2007/08 season (G. Hofmeyr pers. comm. in SCAR EGS 2008). Estimates indicate that while it was stable between 1992 and 2001 (Hofmeyr *et al.* 2005) this population experienced a 5.6% mean annual decline between 2001 and 2006. Other populations range in size from a few hundred to a few thousand (SCAR EGS 2008). All other populations are believed to be either increasing or stable, although in many cases recent estimates are lacking (Bester *et al.* 2003, Goebel *et al.* 2003, Page *et al.*2003, Lancaster *et al.* 2006, SCAR EGS 2008, Goldsworthy *et al.* 2009, Wege *et al.* in prep.). Because of questions with the adequacy of sampling at South Georgia, and the lack of systematic monitoring at other locations, the overall magnitude of recent declines is unknown.

Antarctic Fur Seals likely have a continuous global range with no distinct subpopulations. Genetic evidence indicates relatively low levels of population substructure, however with two partially differentiated regions, one centred on South Georgia and one on the Îsles Kerguelen (Wynen *et al.* 2000). Antarctic Fur Seals are able to travel great distances, having been recorded to move between island groups (Boyd *et al.* 1998) and as vagrants to distant localities (Shaughnessy and Burton 1986, Drehmer and De Oliviera 2000, Bester *et al.* 2014, Shaughnessy *et al.* 2014). Further evidence of movement between island groups is indicated by the exceptional population growth of some sites, which can only be attributed to immigration (Shaughnessy and Goldsworthy 1990, Page *et al.* 2003, Hofmeyr *et al.* 2005a, Hofmeyr *et al.* 2006a) and the appearance of leucistic individuals, which are characteristic of South Georgia, at other distant sites (Hofmeyr *et al.* 200,5de Bruyn *et al.* 2007, Wege *et al.* 2014).

Generation length has been calculated at 9.1 years (Pacifici *et al.* 2013). Population change over the three generations from 1984–2012 has likely been negative at South Georgia Island (Forcada and Hoffman 2014).

Current Population Trend: Decreasing

Habitat and Ecology **(see Appendix for additional information)**

Antarctic Fur Seals are a sexually dimorphic species. Adult males are approximately 1.8 m long and weigh between 130 and 200 kg. Adult females are 1.2-1.4 m and 22-50 kg. Newborns weigh six to seven kilograms (Laws 1993). Age of first reproduction is three years for females (Lunn *et al.* 1994) and seven years for males (McCann and Doidge 1987).

Antarctic Fur Seals are highly polygynous. The first adult males arrive at their colonies in late October, some two to three weeks before the first adult females. Males continue to arrive and challenge one

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another for territories throughout the season. Territories are acquired and held by use of vocalizations, threat postures, and fighting (Bonner 1968). Females begin to arrive in mid-November and most pupping and breeding occurs from late November to late December. Adult females give birth one to two days after arrival at the colony and subsequently attend their pup for six to seven days. They come into oestrous, mate and then depart shortly afterwards on their first foraging trip of the season (Payne 1977, Doidge *et al.* 1986). Foraging trip and attendance periods vary inter-annually depending on the availability of the lactating female's prey, but generally last four to five days at sea followed by two to three days attendance on shore (Costa *et al.* 1989, Boyd 1999, Guinet *et al.* 2000, Kirkman *et al.* 2003). Antarctic Fur Seals undertake short shallow dives, primarily at night (Boyd and Croxall 1992, Costa *et al.* 2000, Robinson *et al.* 2002, Goldsworthy *et al.* 2010). Mean dive depth and duration increase during the lactation period (Costa *et al.* 1989, Boyd 1999, Guinet *et al.* 2000). The maximum diving depth recorded for lactating females is 181 m (Boyd and Croxall 1992).

Pups are weaned at about four months of age. After the pups are weaned, seals are thought to disperse widely and are seldom seen at the colonies before the next breeding season (Kerley 1983, Boyd *et al.* 1998, Warren *et al.* 2006). Breeding bulls also depart the rookery, but subadults and some adult males can be seen at rookeries at all times of the year (Bonner 1968, Payne 1977, Kerley 1983, Boyd *et al.* 1998).

The diet of Antarctic Fur Seals varies by season and locality. At South Georgia and other islands of the Scotia Arc, and at Bouvetøya, they feed primarily on Krill (Kirkman *et al.* 2000, Staniland and Pond 2005, Hofmeyr *et al.* 2010, Polito and Goebel 2010). At Heard Island, Macquarie Island, the Îles Crozet and the Prince Edward Islands, Krill is not as abundant and Antarctic Fur Seals prey primarily on cephalopods and fish such as myctophids and notothenids (Lea *et al.* 2002, Robinson *et al.* 2002, Casper *et al.* 2007, Cherel *et al.* 2007, Cherel *et al.* 2008, Makhado *et al.* 2008, Kernaléguen *et al.* 2012). Antarctic Fur Seals have also been known to eat Penguins at a number of sites (Bonner 1968, Green *et al.* 1989, Hofmeyr and Bester 1993).

Antarctic Fur Seals are sympatric with other species of Fur Seals at three sites. Hybridization with Subantarctic Fur Seals occurs at the Prince Edward Islands (Hofmeyr *et al.* 2006a) and the Îles Crozet (Kingston and Gwilliam 2007) and with both Subantarctic Fur Seals and New Zealand Fur Seals at Macquarie Island (Lancaster *et al.* 2006, Goldsworthy *et al.* 2010, Lancaster *et al.* 2010). Levels of hybridization are low at the Prince Edward Islands (Hofmeyr *et al.* 2006a) and at Îles Crozet (Kingston and Gwilliam 2007) and thus do not affect the integrity of this species. The population at Macquarie Island comprises 0.02% of the species total population (Goldsworthy *et al.* 2009).

Systems: Terrestrial, Marine

Use and Trade

Antarctic Fur Seals were last harvested in the early 20th century. Some 170 were taken at South Georgia in 1907 (McCann and Doidge 1987), and 800 were taken at Bouvetøya in 1927 (Olstad 1929 cited in Fevolden and Sømme 1976). This species has not been exploited since then.

Threats (see Appendix for additional information)

Commercial sealing drove Antarctic Fur Seals to the brink of extinction by the late 19th century. It is now

believed that this species survived the period of over-exploitation in very small numbers at three sites: South Georgia, Bouvetøya and the Îles Kerguelen (Wynen *et al.* 2000, Hofmeyr *et al.* 2005), and possibly a fourth site at the South Shetland Islands (Bonin *et al.* 2013). While this species has lost considerable genetic diversity due to the historical population bottleneck (Wynen *et al.* 2000) and is potentially at risk from disease outbreaks and environmental change, unexpected levels of diversity are present (Bonin *et al.* 2013).

Waters inhabited by Antarctic Fur Seals are exploited by few fisheries, but these may expand in their range in the future (Hanchet *et al.* 2003). This species has been recorded entangled in marine debris such as discarded fishing line, nets, packing bands and other objects. The majority of this debris is believed to be generated by the fishing industry (Arnould and Croxall 1995, Hofmeyr *et al.* 2006b). The numbers of Antarctic Fur Seals entangled in anthropogenic debris has been estimated to be 0.4% of the total population at South Georgia (Arnould and Croxall 1995), 0.24% of the combined Antarctic/Subantarctic Fur Seal populations at the Prince Edward Islands (Hofmeyr *et al.* 2002), and 0.059 % at Bouvetøya (Hofmeyr *et al.* 2006b). Most entangled seals are expected to die as a result of their entanglement (Bonner and McCann 1982, Croxall *et al.* 1990).

Leopard Seals have been noted to take as many as a third of the Antarctic Fur Seal pups born at sites in the South Shetland Islands (Hiruki *et al.* 1989). Levels of predation may be high enough to cause a population decline at these sites (Boveng *et al.* 1998). New Zealand Sea Lions have been reported to kill up to half of the Antarctic Fur Seal pup production in a season at Macquarie Island (Robinson *et al.* 1999).

The risk of transfer of diseases such as morbillivirus from other pinnipeds or terrestrial animals to Antarctic Fur Seals is unknown. Antarctic Fur Seals are considered to be one of several pinnipeds at high risk of future disease outbreaks because of their tendency to congregate in large dense aggregations and the effect of environmental changes associated with global warming on the spread of diseases (Lavigne and Schmitz 1990).

Tourism takes place at several localities, but due to the isolation of haulout sites, visits by tourists are rare (Kirkwood *et al.* 2003, Hofmeyr and Bester 2008).

The effect of global climate change on Antarctic Fur Seals is unknown, but it has been suggested that warming may impact them indirectly by altering environmental conditions and causing changes in prey population distribution and abundance, resulting in population decline (Learmonth *et al.* 2006, Siniff *et al.* 2008, Kovacs *et al.* 2012, McDonald *et al.* 2012, Forcada and Hoffman 2014, McBride *et al.* 2014). The severe population bottleneck experienced by this species, and the resulting reduction in genetic variation (Wynen *et al.* 2000), may render this species more vulnerable to climate change (Kovacs *et al.* 2012, Forcada and Hoffman 2014).

Conservation Actions **(see Appendix for additional information)**

Antarctic Fur Seals are protected by virtue of the isolation of their marine habitat and haulout sites. The Antarctic Treaty and the Convention for the Conservation of Antarctic Seals protects populations of this species of Fur Seal below 60ºS. North of the Antarctic Treaty area, Antarctic Fur Seals are protected by the nations that govern the islands on which they breed. The Falkland Islands Dependencies Conservation Ordinance provides protection for Antarctic Fur Seals on South Georgia and the South

Sandwich Islands (Reijnders *et al.* 1993). Seals on the Prince Edward Islands are protected by virtue of these islands status as a special nature reserve, their location within a marine protected area, and also by the South African Seabirds and Seals Protection Act (PEIMP 2010). Large reserves have also been established around Heard and McDonald islands (http://heardisland.antarctica.gov.au/protection-and-management/marine-reserve) and Macquarie Island (http://www.environment.gov.au/topics/marine/marine-reserves/south-east/macquarie-island) that serve to protect Seals.

Credits

Assessor(s): Hofmeyr, G.J.G.

Reviewer(s): Goldsworthy, S.D.

Facilitators(s) and Compiler(s): Lowry, L., Ahonen, H., Pollock, C.M., Chiozza, F. & Battistoni, A.

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Disclaimer

External Resources

For Images and External Links to Additional Information, please see the Red List website.

Appendix

Habitats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
9. Marine Neritic -> 9.1. Marine Neritic - Pelagic	Resident	Suitable	Yes
10. Marine Oceanic -> 10.1. Marine Oceanic - Epipelagic (0-200m)	Resident	Suitable	Yes
12. Marine Intertidal -> 12.1. Marine Intertidal - Rocky Shoreline	Resident	Suitable	Yes
13. Marine Coastal/Supratidal -> 13.1. Marine Coastal/Supratidal - Sea Cliffs and Rocky Offshore Islands	Resident	Suitable	Yes

Threats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Threat	Timing	Scope	Severity	Impact Score
11. Climate change & severe weather -> 11.5. Other impacts	Future	Majority (50-90%)	Slow, significant declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.2. Intentional use: (large scale) [harvest]	Past, unlikely to return	Whole (>90%)	No decline	Past impact
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.3. Unintentional effects: (subsistence/small scale) [harvest]	Ongoing	Minority (50%)	Negligible declines	Low impact: 4
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
8. Invasive and other problematic species, genes & diseases -> 8.2. Problematic native species/diseases -> 8.2.1. Unspecified species	Future	Unknown	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality		

Conservation Actions in Place

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions in Place
In-Place Research, Monitoring and Planning
Action Recovery plan: No
Systematic monitoring scheme: Yes
In-Place Land/Water Protection and Management

http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T2058A66993062.en

Conservation Actions in Place
Conservation sites identified: Yes, over entire range
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 91-100
Area based regional management plan: No
Invasive species control or prevention: Not Applicable
In-Place Species Management
Harvest management plan: No
Successfully reintroduced or introduced beningly: No
Subject to ex-situ conservation: No
In-Place Education
Subject to recent education and awareness programmes: No
Included in international legislation: Yes
Subject to any international management/trade controls: Yes

Conservation Actions Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions Needed
2. Land/water management -> 2.1. Site/area management

Research Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.5. Threats
3. Monitoring -> 3.1. Population trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km²): 17531216
Continuing decline in area of occupancy (AOO): No
Extreme fluctuations in area of occupancy (AOO): No

http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T2058A66993062.en

Distribution
Estimated extent of occurrence (EOO) (km²): 39315299
Continuing decline in extent of occurrence (EOO): No
Extreme fluctuations in extent of occurrence (EOO): No
Number of Locations: 10
Continuing decline in number of locations: No
Extreme fluctuations in the number of locations: No
Upper elevation limit (m): 50
Lower depth limit (m): 181
Population
Number of mature individuals: 700000-1000000
Continuing decline of mature individuals: Unknown
Extreme fluctuations: No
Population severely fragmented: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: No
Generation Length (years): 9.1
Movement patterns: Not a Migrant
Congregatory: Congregatory (and dispersive)

The IUCN Red List Partnership

The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership.

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