Lagenorhynchus cruciger – Hourglass Dolphin

Regional Red List status (2016)	**Least Concern**
National Red List status (2004)	Not Evaluated
Reasons for change	Non-genuine change: New information
Global Red List status (2008)	Least Concern
TOPS listing (NEMBA) (2007)	None
CITES listing (2003)	Appendix II
Endemic	No

The least known of all dolphin species, the Hourglass Dolphin is very small. In fact, the few measurements recorded suggest it grows to a maximum of 1.8 m and weighs 90–120 kg.

Taxonomy

Lagenorhynchus cruciger (Quoy & Gaimard 1824)

ANIMALIA - CHORDATA - MAMMALIA - CETARTIODACTYLA - DELPHINIDAE - *Lagenorhynchus* - *cruciger*

Synonyms: *Delphinus albigena* (Quoy & Gaimard 1824); *Delphinus bivittatus* (Lesson & Garnot 1826); *Electra clancula* (Gray 1868); *Electra cruciger* (Gray 1870); *Lagenorhynchius clanculus* (Gray 1846); *Lagenorhynchus latifrons* (True 1889); *Lagenorhynchus supercillosus* (Trouessart 1904); *Lagenorhynchus wilsoni* (Lillie 1915); *Phocaena crucigera* (Philippi 1893); *Phocaena d'orbignyi* (Philippi 1893)

Common names: Hourglass Dolphin (English)

Taxonomic status: Species

Taxonomic notes: Originally, this species was described as *Delphinus cruciger*, yet no type specimen was collected, and the description of this species was based on the characteristic colour pattern exhibited by individuals sighted in the southern Pacific Ocean around 49°S (Brownell & Donahue 1998). The genus *Lagenorhynchus* has been controversial since the 1820s, and currently six species are recognised, three of which are confined to the southern hemisphere (Mead & Brownell 1993). LeDuc et al. (1999) expects that this is an artificial genus, and the Hourglass Dolphin could ultimately fall under the genus *Sagmatias*.

Assessment Rationale

Although this species is frequently sighted in Antarctic waters, and has a circumpolar and widespread distribution, it is one of the least-known of all dolphin species. This species is considered fairly abundant within its range, and no major threats have been recognised. Thus, in line with the global assessment, the Hourglass Dolphin is listed as Least Concern within the assessment region.

Regional population effects: The Hourglass Dolphin is wide-ranging throughout the pelagic waters of the southern oceans, and no obvious barriers to dispersal have been identified, thus rescue effects are possible.

Distribution

The Hourglass Dolphin has a circumpolar distribution within the higher latitudes of the Southern Ocean (Goodall 1997; Goodall et al. 1997; Brownell & Donahue 1998). It is one of three species of delphinid which is considered truly Antarctic (Boyd 2002), and the only delphinid regularly occurring in the Antarctic Polar Front (Brownell & Donahue 1998). They predominantly inhabit sub-Antarctic and Antarctic waters between 45° and 67°S, and although primarily occur offshore, they are occasionally sighted along banks or islands (Goodall 1997, 2002). A recent study into the occurrence of Hourglass Dolphins in the south-west Atlantic and Southern Oceans (Dellabianca et al. 2012) found the presence of two group separated by environmental conditions. The first of these groups occurs in shallow, coastal waters, while the other is primarily located in deeper, colder regions offshore (Dellabianca et al. 2012). Other localised concentrations have been identified around the southern tip of South America, South Georgia, the Falkland Islands (Goodall 1997; Goodall et al. 1997), and north of the South Shetland Islands in the southern Drake Passage (Santora 2012). Although the northern extent of its range is uncertain (there are occasional records from around 33°S), the southern parameters of its distribution extends to the ice-edges in the south. Within the assessment region, this species occurs around the Prince Edward Islands. The Hourglass Dolphin is the only small delphinid that regularly frequents areas south of the Antarctic Convergence and along the Agulhas Current.

Population

There are no recent global estimates of abundance for this species, although Kasamatsu and Joyce (1995) integrated abundance and distribution data collected during sighting surveys from 1976/77 to 1987/88, generating a population estimate for the region south of the Antarctic convergence

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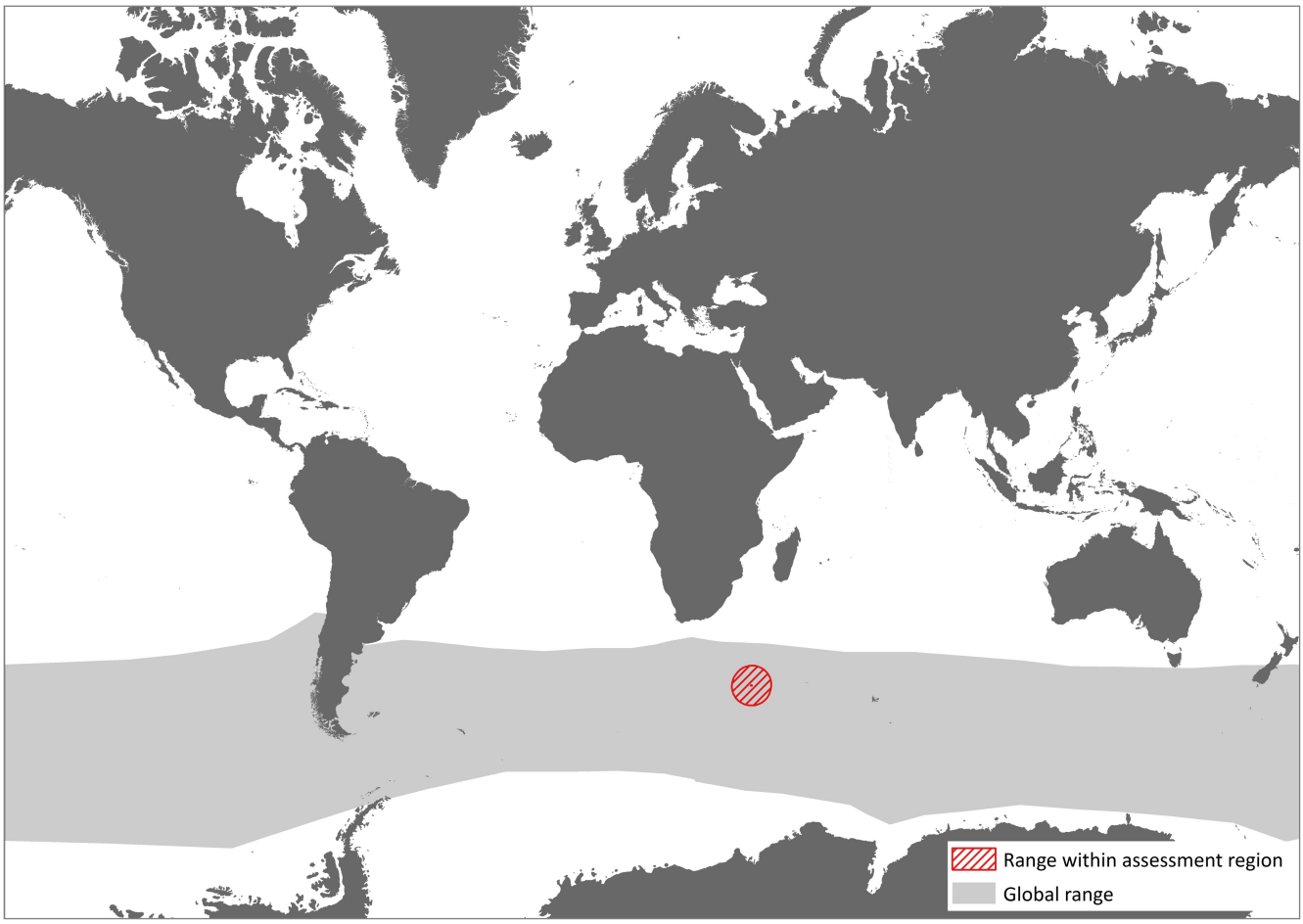

Figure 1. Distribution range for Hourglass Dolphin (*Lagenorhynchus cruciger*) within the assessment region (IUCN 2012)

of 144,300 (CV = 17%). Additionally, during the southern hemisphere Minke Whale Assessment Cruises (IWC/IDCR), which took place between 1978/79 and 1987/88, 233 schools of Hourglass Dolphins were recorded, including a total of 1,634 individuals (Kasamatsu et al. 1990). No records of abundance are available for the assessment region, where they occur around the Prince Edward Islands.

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

This species is primarily associated with waters exhibiting sea surface temperatures ranging from 0.3–13.4 °C (at an average of 4.8 °C; Goodall 1997), and within deep, open ocean waters (Dellabianca et al. 2012), but has also occasionally been sighted in the region of the Antarctic Peninsula where waters become fairly shallow, and at temperatures as low as -0.3 °C (Goodall 2002). Around southern South America and the Antarctic Peninsula, this species was recorded in groups ranging from 1–14 individuals, during 27 sightings, mostly around islands or banks, in waters less than 200 m deep (Goodall & Polkinghorn 1979). Due to its pelagic distribution and the shortage of stranding records, very little information is available regarding the habitat and diet preferences of this species, as well as its interactions with other marine mammals (Ashford et al. 1996; Goodall et al. 1997; Fernández et al. 2003; Goodall 2009).

An assessment of the stomach contents of two individuals from Patagonia was conducted by Fernández et al (2003), revealing a diet of squid (primarily *Semirossia tenera* and *Loligo gahi*), Argentine Hake (*Merluccius hubbsi*), pelagic *Protomyctophum* spp., several crustaceans, and other cephalopods, such as the benthic *Eledone massyae*, and the demersal-pelagic *Illex argentinus.* Although no specific predators have been identified, considering the distribution of Hourglass Dolphins south of the Antarctic Convergence, the Killer Whale (*Orcinus orca*) may very likely prey upon this species (Brownell & Donahue 1998).

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**;** polar cetaceans are useful for assessing the effects of rapid changes in sea ice conditions on food webs in these strongly seasonal ecosystems (Moore 2008).

Use and Trade

Although one scientific sample was collected during commercial whaling operations, and a number of other individuals have been caught during research cruises (Brownell & Donahue 1998), there is considered to be no contemporary trade or use of this species.

Table 1. Threats to the Hourglass Dolphin (*Lagenorhynchus cruciger*) 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	*5.4.4 Fishing & Harvesting Aquatic Resources*: entanglement in deep-sea fisheries of the southern oceans. Current stresses *2.1 Species Mortality* and *2.2 Species Disturbance*.	Brownell & Donahue 1998	Empirical	Regional	Unknown
2	*11.1 Habitat Shifting & Alteration*: due to climate change. Current stresses *1.2 Ecosystem Degradation* and *2.3.8 Indirect Species Effects*: on food resources.	MacLeod 2009	Indirect	International	If the predicted range changes for *Lagenorhynchus* spp. were to occur, it is likely that these species could have a high risk of extinction of at least one population.

Threats

There is very little anthropogenic influence within their distribution and hence there are no known major threats to this species. However, there may be some risk of entanglement in deep-sea fisheries set in the southern oceans, even though records of this are extremely rare. A Japanese experimental drift net fishery, which was set for squid in the southern Indian Ocean, incidentally caught at least one individual (Brownell & Donahue 1998).

MacLeod (2009) suggests that some cetacean species are more vulnerable to the effects of climate change than others, due to certain ecological characteristics, such as a preference for non-tropical regions and shelf waters, which are exhibited by most porpoises and *Lagenorhynchus* species. In fact, a framework for assessing predicted range changes in response to climate change revealed that 60% of *Lagenorhynchus* species have a high risk of extinction of at least one population (MacLeod 2009). Additionally, a range contraction is predicted for Hourglass Dolphins, as they are expected to track a range of water temperatures, to which they are adapted. Furthermore, indirect effects of climate change include changes in prey availability, which in turn, may affect dolphin abundance, distribution, movement patterns, social structure, reproductive rate, as well as their susceptibility to disease and the build-up of toxins (Learmonth et al. 2006).

Current habitat trend: Declining, due to a predicted range contraction and decline in food availability as a result of the effects of climate change.

Conservation

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed the Hourglass Dolphin on Appendix II, and this species is also protected by national legislation under the Marine Living Resources Act (No. 18 of 1998). Although no species-specific conservation initiatives have been identified for the Hourglass Dolphin, it is likely that this species would benefit from the ongoing collection of sightings records during ship-based surveys directed at other species, in order to monitor the abundance and distribution of this unfamiliar species. Additionally, comprehensive data collection of bycatch in deep-sea fisheries is necessary in order to determine the severity of this threat to Hourglass Dolphins within the assessment region.

Recommendations for managers and practitioners:

- Accurately assess bycatch in the Southern Ocean deep-sea fisheries.
- Enforce regulations associated with deep water fisheries, including bycatch mitigation efforts.
- Record sightings data during systematic monitoring of other marine species.

Research priorities:

- Taxonomic resolution of the *Lagenorhynchus* genus.
- Basic life history parameters, population size, structure and trends within the waters around the Prince Edward Islands.
- Bycatch assessments in deep-sea Southern Ocean fisheries.
- Current threats, including possible range shifts or indirect effects on prey resources, associated with global climate change.

Encouraged citizen actions:

- 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.
- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP) to help with mapping geographical distribution.

Table 2. Conservation interventions for the Hourglass Dolphin (*Lagenorhynchus cruciger*) 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 assessments in deep sea fisheries, particularly within the Southern Ocean and around the Prince Edward Islands.	-	Anecdotal	-	-	-

Data Sources and Quality

Table 3. Information and interpretation qualifiers for the Hourglass Dolphin (*Lagenorhynchus cruciger*) assessment

Data sources	Indirect information (literature, expert knowledge)
Data quality (max)	Inferred
Data quality (min)	Suspected
Uncertainty resolution	Expert consensus
Risk tolerance	Evidentiary

- Save electricity and fuel to mitigate CO_2 emissions and hence, the rate of climate change.

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Details of the methods used to make this assessment can be found in *Mammal Red List 2016: Introduction and Methodology.*