

The Minister's delegate approved this conservation advice on 01/10/2015

Conservation Advice

Balaenoptera borealis

sei whale

Conservation Status

Balaenoptera borealis (Sei Whale) is listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act). The species is eligible for listing as Vulnerable as, prior to the commencement of the EPBC Act, it was listed as Vulnerable under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth).

The main factor that is the cause of the species being eligible for listing in the Vulnerable category is its small population size due to being severely impacted by whaling last century and most of this decline occurred in the southern hemisphere. An updated global population assessment indicated that the global population of mature sei whales was estimated to have declined by about 80% over the previous three generation period (= 70 years), with no direct evidence of a recent increase in the population (Reilly et al., 2008e).

Description

Sei whales are dark grey or blue-grey on their back and sides. The undersides and sides may appear mottled with light coloured circular scars caused by various types of parasites, including scars from the bite of the 'cookie-cutter' shark (*Isistius brasiliensis*) (Aguilar 2002).

At sexual maturity, sei whales are approximately 12 – 16 m long, although they can reach lengths of 17.7 m in males and 21 m in females (Gambell 1985). The body of the sei whale is slim, streamlined and laterally compressed in the hind region. A pronounced longitudinal ridge begins at the highest point of the head, close to the blowholes and extends to the tip of the rostrum. The dorsal fin is 25-60 cm tall, strongly falcate and set two-thirds of the way along the back (Leatherwood & Reeves 1983).

Mating and calving occur mainly in winter, but their presumed low-latitude breeding grounds have not been identified (Bannister 2008; Horwood 2009). The sei whale produces one offspring every 2 – 3 years. This low reproductive rate hinders rapid population recovery (Gambell 1985).

The similarity in appearance of sei whales and bryde's whales (*Balaenoptera edeni*) has resulted in confusion about distributional limits and frequency of occurrence, particularly in warmer waters (>20 °C) where bryde's whales are more common. Bryde's whales have three distinct head ridges running along the length of the rostrum while the sei whale only has a single central ridge (Horwood 1987).

Sei whales exhibit both skimming and lunging modes of feeding which is unique for baleen whales (Jefferson et al., 2008). Sei whales feed on planktonic crustacea, in particular copepods and amphipods. Below the Antarctic convergence sei whales feed exclusively upon Antarctic krill (*Euphausia superba*) though, as a proportion of their diet, krill makes up a much smaller component than the other great rorquals (Kawamura 1974; Nemoto 1970).

Two subspecies of sei whales have been suggested (Rice 1998) *B. borealis schlegellii* in the southern hemisphere and *B. borealis borealis* in the northern hemisphere. These subspecies are listed by the Society for Marine Mammalogy (Committee on Taxonomy 2014), however they are not widely recognized (Reilly et al., 2008) and will not be considered separately within this advice.

The total abundance and population trends of sei whales in Australian waters is unknown. The southern hemisphere population was originally around 100,000 and in 1980 was decreased to around 24,000 individuals (Horwood 2009).

Distribution

Sei whales are primarily found in deep water oceanic habitats and their distribution, abundance and latitudinal migrations are largely determined by seasonal feeding and breeding cycles (Horwood 2009).

These whales are thought to complete long annual seasonal migrations from subpolar summer feeding grounds to lower latitude winter breeding grounds (Mackintosh 1965; Horwood 2009), but details of this migration, and whether it involves the entire population, are unknown.

In the Australian region, sei whales occur within Australian Antarctic Territory waters and Commonwealth waters, and have been infrequently recorded off Tasmania, New South Wales, Queensland, the Great Australian Bight, Northern Territory and Western Australia (Parker 1978; Bannister et al., 1996; Thiele et al., 2000; Chatto and Warneke 2000; Bannister 2008a).

Sightings of sei whales within Australian waters includes areas such as the Bonney Upwelling off South Australia (Miller et al., 2012), where opportunistic feeding has been observed between November and May (Gill et al., 2015.). A small number of sei whale females and calves were observed about 40 km south of Hobart, Tasmania (Ensor et al., 2002).

Sei whales were the most commonly observed whales during Australian National Antarctic Research Expedition voyages in the 1960s and 1970s, with the majority recorded south of 60°S in the Southern Ocean (Parker 1978). Sei whale vocalizations have also been detected at three East Antarctic sites from 64.5°S -65.5°S during acoustic surveys conducted in 2006 (Gedamke & Robinson 2010).

Threats

The Action Plan for Australian Mammals 2012 by Woinarski et al., (2014) has identified a number of threats:

Threat factor	Consequence rating	Extent over which threat may operate
Climate and oceanographic variability and change	minor to moderate	large, potentially operating and increasing throughout the range
Anthropogenic noise and acoustic disturbance	minor	moderate-large
Habitat degradation including pollution (increasing port expansion and coastal development)	minor	likely to be localised for sei whales due to their mainly offshore habitat use in Australian waters
Pollution (persistent toxic pollutants)	minor	localised
Vessel strike	minor	localised, but potentially increasing in future as sei whale populations increase and shipping and fisheries increase

Prey depletion due to fisheries (potential threat)	potentially minor depending upon the scale of future over-harvesting	localised to minor
Resumption of commercial whaling (potential threat)	minor to severe depending upon the scale of whaling impacts	potentially throughout large part of range depending upon the scale of commercial whaling if it were to resume

Conservation Actions

Conservation and Management Actions

There is insufficient data on sei whales in Australian waters to determine abundance estimates, or an increase or decline in the population, and the full extent of their distribution in Australian waters is uncertain. To implement a range of Conservation Management Actions research needs to be undertaken as a priority to define the spatial and temporal distribution of sei whales and further define biologically important areas so that adaptive management and additional mitigation measures can be implemented if necessary (ie: within defined foraging or breeding areas).

Maintain and improve existing legal and management protection

- Continue or improve existing legislative management actions under the *Environment Protection and Biodiversity Act 1999*, including the Australian Whale Sanctuary provisions.
- Australia should maintain its position on promoting high levels of protection for sei whales in all relevant international agreements including the International Whaling Commission (IWC), Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), Convention on the Conservation of Migratory Species of Wild Animals (CMS), fisheries related agreements, and the Antarctic Treaty Consultative Meetings (ATCM).

Understanding impacts of climate variability and change

- Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica.

Assessing and addressing anthropogenic noise

- Once the spatial and temporal distribution (including biologically important areas) of sei whales is further defined an assessment of the impacts of increasing anthropogenic noise (including from seismic surveys, port expansion, and coastal development) should be undertaken on this species.
- If required, additional management measures should be developed and implemented to ensure the ongoing recovery of sei whales.

Minimising vessel collisions

- Develop a national vessel strike strategy that investigates the risk of vessel strikes on Sei Whales and also identifies potential mitigation measures.
- Ensure all vessel strike incidents are reported in the National Vessel Strike Database.

Information and research priorities

Priority research objectives include:

- Determine population abundance, trends and population structure for sei whales, and establish a long-term monitoring program in Australian waters.

- Describe the spatial and temporal distribution of Sei Whales and further define biologically important areas (feeding and breeding), and migratory routes within Australian and Antarctic waters.

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