PROPOSAL FOR INCLUSION OF SPECIES ON THE APPENDICES OF THE CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS

A. PROPOSAL: inclusion of *Balaenoptera physalus* on Appendix I and II.

B. PROPONENT: Government of Australia

C. SUPPORTING STATEMENT

1 Taxon

1.1	**Class**	Mammalia
1.2	**Order**	Cetacea
1.3	**Family**	Balaenopteridae
1.4	**Genus and species**	*Balaenoptera physalus* (Linnaeus, 1758)
1.5	**Common names**	English: Fin Whale
		Spanish: Ballena Aleta, Ballena Boba, Rorcual Común
		French: Baleine Fin, Baleine à Nageoires, Baleinoptère Commun, Rorqual Commun

2 Biological data

Balaenoptera physalus is second in size to the blue whale. The mean length and age at maturity and sexual maturity, based on catches, appears to vary from stock to stock. The average length of a Southern Hemisphere female is 22m, with a maximum of 27m, whilst that for a male is 20.5m, with a maximum of 25m. Maximum sizes in the Northern Hemisphere are 22m for males and 24m for females. These figures, being based on catches, exaggerate the differences, since size limits are different in different areas and may only be reflections of past exploitation rates.

B. physalus may be found singly or in pairs. They commonly form larger groupings of 3 to 10 or 20, which may in turn coalesce into a broadly spread concentration of a hundred or more individuals, especially on the feeding grounds (Gambell, 1985). They form denser concentrations when feeding on gregarious fish but disperse when feeding on crustaceans. Herds have definite patterns, with the young and non-breeding whales oriented around mature males and the breeding females widely dispersed in small groupings (Tarasevich, 1967).

Like other cetaceans, *B. physalus* are "K strategists," in that they are large, long-lived and slow to mature, they have fewer, larger offspring and a high parental investment in young, and have evolved in an environment with little (temporal and stochastic) variation. As an Order, cetacean populations are thus not equipped to cope with and rebound from:

- sudden declines in population numbers, as has happened over the past two centuries because of unsustainable hunting; or
- detrimental environmental impacts on habitat due to anthropogenic factors from pollution, climate change, increased fishing effort, shipping traffic etc. as is currently the case.

2.1 Distribution

B. physalus has been reported from all the oceans of the world. The species makes regular seasonal migrations between temperate waters, where it mates and calves, and the more polar feeding grounds which are occupied in the summer months (IUCN, 1991).

Because the seasons are opposite in the two hemispheres, the northern and southern populations of whales do not move towards the equator at the same time, although it is possible that occasional

interchanges of individuals can occur sufficient to prevent the genetic isolation of the northern and southern populations. However, because the form in the Southern Hemisphere grows slightly larger than that found in the Northern Hemisphere, some authorities recognise a northern subspecies *B. p. physalus* distinct from the southern *B. p. quoyi* (Fischer, 1829; Gambell, 1985). For the present purpose a single species of *B. physalus* is recognised, following current practice (e.g. Gambell, 1985).

2.2 Population

The global population of *B. physalus* was severely depleted in the 20th century by commercial whaling. During this time, the species was second in commercial importance to blue whales (IUCN, 1991). It is estimated that the pre-exploitation population of *B. physalus* in the southern hemisphere was around 500 000, and that this has been reduced by whaling to possibly around 25 000 (Bannister Kemper and Warneke, 1996). The IWC estimates that the North Atlantic stock of *B. physalus* during the period 1969-89 was 47 300, but is unable to give estimates for any other stocks due to lack of detailed assessment and statistical certainty.

2.3 Habitat

B. physalus whales tend to change their distribution in latitude and longitude according to their food distribution (Hjort and Ruud, 1929). In the Southern Hemisphere, the main food in the Antarctic is *Euphausia superba.* Other euphausiids may also be taken, particularly in lower latitudes (Gambell, 1985). In both the North Atlantic and North Pacific Oceans food items may depend on availability as much as on preference (Gambell, 1985).

Breeding grounds are mainly in temperate or sub-tropical waters off the coasts of major land masses (Mackintosh, 1966; Clarke, 1962; Ivashin, 1969).

2.4 Migrations

The species makes regular seasonal migrations between temperate waters, where it mates and calves, and the more polar feeding grounds occupied in the summer months. Evidence for the seasonal migrations is available from recoveries of marked whales, the seasonal pattern of whaling, and sightings of whales at particular times of the year from survey vessels.

North Atlantic

B. physalus whales spend the northern summer in the North Atlantic from the North American coast to the Arctic, around Greenland, Iceland, north Norway, Jan Mayen, Svarlbard and the Barents Sea. In the northern winter they migrate southwards to the Caribbean and the Gulf of Mexico in the west Atlantic, and to southern Norway, the Bay of Biscay, and Spain in the east Atlantic. Some *B. physalus* whales migrate into the Mediterranean, although the species is present there throughout the year (Gambell, 1985).

North Pacific

B. physalus whales spend the northern summer at feeding grounds in the Chukchi Sea, around the Aleutian Islands, from the Gulf of Alaska down to California in the eastern Pacific and from the Sea of Okhotsk down to the coast of Japan in the western Pacific. In the northern winter they migrate from California southward in the eastern Pacific, and from the Sea of Japan, the East China and Yellow Seas, through to the Philippine Sea in the western Pacific. There appears to be a resident population of *B. physalus* in the Gulf of California (Gambell, 1985).

Southern Hemisphere

B. physalus are broadly distributed south of 50°S in the southern summer months, although they do not occur right up to the ice edge. In the southern winter they migrate northwards into the southern Atlantic, Indian and Pacific Oceans, along both coasts of South America as far north as Peru and Brazil, along both coasts of Africa to north of South Africa and to the islands north of Australia and New Zealand, as well as to the central ocean areas far from shore. *B. physalus* tends to enter and

leave the Antarctic after the blue whales, but before the sei whales. The bigger and older animals generally penetrate further south than the younger whales. Also, pregnant females arrive in advance of the other classes, males precede non-pregnant females, and the immature animals arrive last (Laws, 1961).

3 Threat data

3.1 Direct threats to the populations

B. physalus was a major subject of commercial whaling from the late 19th century until the species was protected from whaling in 1975 in all areas except the North Atlantic. In the early stages of whaling stocks in the eastern North Atlantic, western North Atlantic off Newfoundland and Labrador, and in the North Pacific were exploited. These northern stocks were relatively small and quickly depleted.

Land-based whaling began in the Southern Hemisphere at South Georgia in 1904, but with the introduction of factory ships in the 1920s, catching spread all over the Southern Ocean. Catches were also taken at the winter end of the migration routes by land stations in South Africa, Chile and Peru. *B. physalus* became increasingly important in the catches, especially after the blue whale became relatively less abundant in the 1930s. *B. physalus* formed the mainstay of the Antarctic fishery through the 1950s and into the 1960s, until the declining stocks were protected from whaling in the 1970s. Commercial catching continued in the North Pacific until 1975, and until 1985 in parts of the North Atlantic (Tonnessen and Johnsen, 1982).

Unregulated whale watching also places stress on *B. physalus* individuals and groups. This is a rapidly growing industry that range states need to regulate, because at certain proximities and intensities, operators and tourists will interfere with critical breeding and socialising behaviour (Gordon, Moscrop, Carlson, Ingram, Leaper, Matthews and Young, 1998).

B. physalus is also susceptible to pollution. The increasing volume of marine debris, particularly buoyant and synthetic items such as plastic, may threaten this species through the possibility of entanglement and ingestion. Substantial volumes of rubbish discarded by humans have been found in the stomachs of stranded whales (Laist Coe and O'Hara., 1999). Further, oil spills and the dumping of industrial wastes into waterways and the sea lead to bio-accumulation of toxic substances in the body tissues of the top predators, making such events dangerous to great whales (Canella & Kitchener 1992; IWC, 2000). In the Mediterranean, heavy metal ions from waste dumped by industrial barges pollute the waters around Corsica, which are rich in euphausiids. *B. physalus* following these euphausiids become contaminated, and either die or become debilitated and more susceptible to being struck by the increasingly large numbers of boats in the area (Viale, 1974; Viale Koechlin and Martoja., 1973).

Chemical pollution, in particular the persistent organic pollutants including PCBs, DDTs, PCDDs, HCB dieldrin, endrin, mirex, PCDs, PBs, PEDEs, polcyclic aromatic hydrocarbons and phenalos as well as metals and their organic forms methyl-mercury and organotins are of concern for marine mammals in the marine environment. Many of these pollutants can cause immune suppression, making them more susceptible to prey depletion, habitat modification, environmental changes (including global warming or ozone depletion) or disease. Synergistic and cumulative effects must be considered in the assessment of any risk to individual species or populations. (Reijnders & Aguilar, 2002), Currently marine mammals in mid-latitudes (industrialised and intense agriculture use) of Europe, North America and Japan have the highest loads. However levels of organochlorines are declining in the mid latitudes and are predicted that in the near to midterm future the polar regions will become the major sinks for these contaminants. (Reijnders & Aguilar, 2002). Of the 2 million tonnes of PCBs that have been produced world wide, only 1% has reached the oceans at this stage. Around 30% has been accumulated in dump sites and the sediments of lakes, estuaries and coastal zones and future dispersal into the marine environment cannot be controlled (35% are still in use) The

open ocean water serves as the final reservoir and sink for the worlds PCB production. (Reijnders 1996).

Levels of PCB and DDT have been detected in *B. bonaerensis* and appear to vary depending on geography and diet, with adult migrating to less polluted areas. (Reijnders & Aguilar, 2002)

Fears have been expressed about the potential effects of the harvest of euphausiids in the Southern Ocean on the food supply of the whales. The northern fin whale has a much wider food range, and although some prey species may be over-exploited, the whales are likely to be able to switch to other, more readily available, foods.

Entanglements in fishing nets also poses a threat to *B. physalus.* An entanglement database maintained by the National Marine Fisheries Service Northeast Regional Office recorded nine occasions of entanglement between 1975 and 1992. Two of these entanglements resulted in known death to the whales, five of the whales were recorded trailing fishing line of an unspecified source and three were entangled in lobster pots (NOAA, 1999).

3.2 Habitat destruction

At the 50th meeting of the IWC, the Scientific Committee identified "environmental change" as the looming threat to whale populations and their critical habitats. This meeting discussed the impact of climate change, chemical pollution, physical and biological habitat degradation, effects of fisheries, ozone depletion and UV-B radiation, Arctic issues, disease and mortality events and the impact of noise and resolved an ongoing work program for continued investigation (IWC, 1998).

3.3 Indirect threats

Global environmental change is an indirect threat to *B. physalus*. Springer (1998) concluded that fluctuations in marine mammal populations in the North Pacific are entirely related to climate variations and change. One of the more important impacts of a changing climate on marine mammals is changes to the abundance of and access to prey. This has a particularly detrimental impact on marine mammals that feed from the top of the food chain, such as whales (IPCC, 2001).

Further, global warming appears to be related to reductions in sea ice: one study concludes that the Antarctic sea-ice receded by 2.8 degrees latitude (168 nautical miles) between 1958 and 1972 (de la Mare, 1997). This would have interfered with the feeding patterns, as well as altering the seasonal distributions, geographic ranges, migration patterns, nutritional status, reproduction success, and ultimately the abundance of marine mammals (Tynan and DeMaster, 1997).

3.4 Threats connected especially with migrations

While migrating between feeding and breeding grounds, *B. physalus* are susceptible to shipping strikes. The increase in oceanic traffic increases the likelihood of collision with large vessels on shipping lanes in critical *B. physalus* habitat beyond the edge of continental shelves.

Underwater noise pollution is often a direct threat to migrating cetaceans, given their reliance on sound for navigation through their highly developed echolocation systems. *B. physalus* are particularly sensitive to low and moderate frequency sounds, from approximately 12Hz to 8kHz (Richardson, Greene, Malme and Thomson, 1995). It is difficult to identify conditions under which *B. physalus* is particularly sensitive, given the varying acoustic transmission conditions from shallow water to deep, and relative to the animal's position within a water column. However, a number of anthropogenic sound sources are known to produce underwater acoustics within the frequency range of *B. physalus*, and potentially within migratory routes.

For example, seismic operations may disturb the movements and natural activities of the species through the production of continuous, high-level, low-frequency (below 1kHz) sound (Würsig and Richardson, 2002). Most Baleen whales continue normal activity up to 150db re 1 ?Pa, but, as these levels are some 50+ dB above typical ambient noise levels, lower received levels may have subtle effects on surfacing and respiration (Richardson, et al, 1995).

Military activities that produce significant underwater sound pressure may also potentially interrupt whales' movements and natural activities, including critical migratory, feeding and breeding patterns. These sounds include those associated with underwater detonations of explosives, and the penetration of active sonar (Richardson, et al, 1995).

3.5 National and international utilisation

The IWC allows a number of *B. physalus* to be taken each year by local people in Greenland for their own use. In 2000, six *B. physalus* individuals were taken from waters off West Greenland. (IWC, 2000).

A whaling operation in Iceland took up to eighty *B. physalus* individuals a year during 1986-90 under a Special Permit granted by the Icelandic government for catches for the purpose of scientific research (IUCN, 1991).

4 Protection status and needs

In 1996 the IUCN listed the status of *B. physalus* as endangered (category A1abd). This means that it is at a very high risk of extinction in the wild in the near future as it has suffered population reduction in the form of an observed, estimated, inferred or suspected reduction of at least 50% over the last 10 years or three generations. The Cetacean Specialist Group of IUCN made this judgement based evidence from

a) direct observation;
b) an index of abundance appropriate for the taxon;
c) a decline in area of occupancy, extent of occurrence and/or quality of habitat. (IUCN, 2000)

4.1 National protection status

National legislation protecting the *B. physalus* is mainly derived from international agreements.

4.2 International protection status

Articles 65 and 120 of the United Nations Convention on the Law of the Sea (UNCLOS) accord a special status to marine mammals, and specifically allows for more strict protection of marine mammals by coastal States or international organisations. Also in relation to cetaceans, Articles 65 and 120 oblige coastal States to work through appropriate international organisations for their conservation, management and study.

B. physalus is protected from commercial whaling by the IWC, through its general moratorium on commercial whaling. Given uncertain stock analyses, the moratorium imposed a zero catch limit on every whale stock, effective from 1985/86. This limit is subject to annual review by the IWC. The IWC also protects whales, including *B. physalus*, through the declaration of sanctuaries, to provide freedom from disturbance for migrating and breeding great whales that were once hunted to the brink of extinction. The IWC established the Indian Ocean Sanctuary in 1979, and the Southern Ocean Sanctuary in 1994. These sanctuaries are important zones of protection for whales.

International trade in *B. physalus* products is controlled by the listing of the species in CITES Appendix I. However, Iceland, Japan and Norway have entered reservations against this listing, and are thus not bound.

In general terms, the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) relates to whale protection. CCAMLR applies to the Antarctic Convergence, a natural oceanographic boundary formed where the circulation of cold waters of the Antarctic ocean meets the warmer waters to the north. Although whales are not specifically referred to in the CCAMLR, its objective is the conservation of Antarctic marine living resources.

The Jakarta Mandate, an agreement implementing the Convention on Biological Diversity, 1992 in the marine environment, encourages a precautionary approach to resource management and promotes the adoption of ecosystem management principles. It also recognises that wide adoption and implementation of integrated marine and coastal area management are necessary for effective conservation and sustainable use of marine and coastal biological diversity.

4.3 Additional protection needs

As noted above, *B. physalus* is listed as endangered by the IUCN. The global population of the species was greatly reduced by past whaling, and there is little information on any change in numbers since the species was protected from whaling (Bannister et al, 1996). Additionally, the species is subject to a number of ongoing threats. Due to the species being a "K strategist" it will take longer periods of time to recover from any further impacts.

The main vehicle for the protection and conservation of *B. physalus* is the International Convention for the Regulation of Whaling (ICRW) which establishes the moratorium on commercial whaling, and two regional whale sanctuaries (the Indian Ocean Sanctuary and the Southern Ocean Sanctuary).

In the event of a resumption in commercial whaling, the efficacy of the Convention on International Trade in Endangered Species of Wild Fauna (CITES) as a protection measure for whales would also be compromised. This is because a number of Parties with interests in commercial whaling have entered reservations against the listing of certain whale species, and are thus not bound by the Convention. Further, some of these Parties have regularly proposed the downlisting of great whales from Appendix I to Appendix II.

Under UNCLOS, Parties have an obligation to protect the marine environment within their exclusive economic zones and on the high seas in cases where they have jurisdiction. However, effective conservation for migratory species of cetaceans requires a consistent and coordinated approach to the development and application of conservation measures throughout the full range of a species' habitats, regardless of which jurisdictions they fall within. This includes important feeding, mating and calving sites and the migration routes between them.

Inclusion of *B. physalus* on Appendix I and II of the Convention on the Conservation of Migratory Species of Wild Animals allows non-parties to the Convention to provide protection for the species, and participate in regional agreements ratified under the auspices of the Convention. This makes the protection measures more accessible than under other international agreements. *B. physalus* would also benefit from such cooperative research and conservation actions. A listing under the CMS would also complement the current protection provided by the ICRW and CITES.

5 Range states

The species is found in all oceans of the world, particularly:

- ??Arctic Sea
- ??Atlantic - Antarctic, eastern central, northeast, northwest, southeast, southwest, western central
- ??Indian Ocean - Antarctic, eastern, western, Mediterranean and Black Sea
- ??Pacific - Antarctic, eastern central, northeast, northwest, southeast, southwest, western central

The IUCN (2000) lists the following countries in its list of distribution of the species:

Angola, Argentina, Australia, Bangladesh, Brazil, Canada, Ecuador, Faroe Islands, French Polynesia, French Southern Territories, Greenland, Hong Kong, Iceland, India, Indonesia, Italy, Japan, Kenya, Korea, Democratic People's Republic of, Korea, Republic of Madagascar, Mexico, Myanmar, Namibia, New Zealand, Norway, Pakistan, Poland, Portugal, Russian Federation, South Africa, South Georgia and the South Sandwich Islands, Spain, Sri Lanka, Suriname, Svalbard and Jan Mayen, Taiwan, Province of China, Tanzania, United Republic of Tunisia, United Arab Emirates, United Kingdom, United States.

Of these, the following are Parties to the CMS:

Argentina, Australia, India, Italy, Kenya, New Zealand, Norway, Pakistan, Poland, Portugal, South Africa, Spain, Sri Lanka, Tunisia, United Kingdom. Madagascar is a signatory to the Convention.

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