[1] "\r\n\r\n\t\r\n\r\n\r\n \r\n \r\n \r\n Balaenoptera musculus\r\n — Blue Whale\r\n \r\n \r\n \r\n \r\n \r\n Glossary\r\n \r\n\r\n\r\n\r\n\r\n\r\n \r\n SPRAT\r\n Profile\r\n \r\n\r\nFor information to assist regulatory considerations, refer to Policy Statements and Guidelines, the Conservation Advice, the Listing Advice and/or the Recovery Plan. \r\n\r\n\r\n\r\n\r\n \r\n EPBC Legal Status and Documents\r\n \r\n \r\n Top\r\n \r\n\r\n\r\nEPBC Act Listing Status\r\n \r\n\t \r\n\t\t\t\r\n\t\t\t Listed as Endangered\r\n\t\t\t \r\n\t\t\t \r\n\t\t\t\t(Date effective 16-Jul-2000)\r\n\t\t\t \r\n\t\t\t Cetacean\r\n\t\t\t \r\n\t\t\t \r\n\t\t\t \r\n\t\t\t\t\r\n\t\t\t\t\r\n\t\t\t Listed migratory -\r\n\t\t\t \r\n\t\t\t\tEPBC Act, \r\n\t\t\t \r\n\t\t\t\tBonn\r\n\t\t\t \r\n\t\t\t\t\r\n\t\t\t\t\r\n\t\t\t\t\r\n\t\t\t\r\n\t\t\r\n \r\n \r\n\t Approved Conservation Advice\r\n\t\t\r\n\t\t\r\n\t\t \r\n\t\t\tThere is no approved Conservation Advice for this species\r\n\t\t \t \r\n\t\t\r\n \r\n\t\t Listing Advice\r\n\t\t\r\n\t\t\r\n\t\t\t\r\n\t\t\t\r\n\t\t\t\tThere is no Listing Advice for this species\r\n\t\t\t\r\n\t\t\r\n\t\t\r\n \r\n\t\t Recovery Plan Decision\r\n\t\t\r\n\t\t\r\n\t\t \r\n\t\t Recovery Plan required, this species had a recovery plan in force at the time the legislation provided for the Minister to decide whether or not to have a recovery plan (19/2/2007). A recovery plan (DEH 2005a) made for this species on 18/05/2005 ceased to be in effect from 1/10/2015. A recovery plan (Department of the Environment 2015r) made for this species came into force on 03/10/2015.\r\n\t\t\t \r\n\t\t \r\n\t\t\r\n \r\n\t\t Adopted/Made Recovery Plans\r\n\t\t\r\n\t\t\r\n\t\t \r\n\t\t\t \r\n\t\t\t \r\n\t\t\t Department of the Environment (2015). Conservation Management Plan for the Blue Whale - A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/recovery/blue-whale-conservation-management-plan. In effect under the EPBC Act from 03-Oct-2015.\r\n\t\t\t\t \r\n\t\t\t \r\n\t\t \r\n\t\t\r\n \r\n\t\t Adopted/Made Threat Abatement Plans\r\n\t\t\r\n\t\t\r\n\t\t\t\r\n\t\t\t \r\n\t\t\t \r\n\t\t\t\tDepartment of the Environment and Energy (2018). 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Prepared under the Environment Protection and Biodiversity Conservation Act 1999. Available from: http://www.environment.gov.au/topics/marine/marine-bioregional-plans/north-west. In effect under the EPBC Act from 27-Aug-2012.\r\n\t\t\t \r\n\t\t Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012). Marine bioregional plan for the South-west Marine Region. Prepared under the Environment Protection and Biodiversity Conservation Act 1999. Available from: http://www.environment.gov.au/topics/marine/marine-bioregional-plans/south-west. In effect under the EPBC Act from 27-Aug-2012.\r\n\t\t\t \r\n\t\t \r\n\t\t\r\n \r\n\t \r\n\t\tOther Commonwealth Documents\r\n\t \r\n\t \r\n\t\tTop\r\n\t \r\n\t\r\n\r\n\r\n\t\r\n\t\r\n\t\t Other EPBC Act Plans\r\n\t\t\r\n\t\t\r\n\t\t \r\n\t\t \r\n\t\t \r\n\t\t\tSouth-east marine region profile: A description of the ecosystems, conservation values and uses of the South-east Marine Region (Commonwealth of Australia, 2015) [Information Sheet].\r\n\t\t\t \r\n\t\t \r\n\t\t\r\n \r\n\t Policy Statements and Guidelines\r\n\t\r\n\t\r\n\t \r\n\t Australian National Guidelines for Whale and Dolphin Watching 2017 (Department of the Environment and Energy, 2017) [Admin Guideline].\r\n\t \r\n\t \r\n\t Industry Guidelines on the Interaction between offshore seismic exploration and whales (Department of the Environment and Water Resources (DEW), 2007) [Admin Guideline].\r\n\t \r\n\t \r\n\t\r\n \r\n\t Information Sheets\r\n\t\r\n\t\r\n\t \r\n\t \r\n\t Information Sheet - Harmful marine Debris (Environment Australia, 2003) [Information Sheet].\r\n\t \r\n\t \r\n\t\r\n \r\n\t Federal Register of Legislative Instruments\r\n\t\r\n\t\t\r\n\t\t\tMigratory:List of Migratory Species (13/07/2000) (Commonwealth of Australia, 2000b) [Legislative Instrument]Recovery Plan:Blue, Fin and Sei Whale Recovery Plan 2005-2010 (Commonwealth of Australia, 2005y) [Legislative Instrument]Recovery Plan:Conservation Management Plan for the Blue Whale (Commonwealth of Australia, 2015ad) [Legislative Instrument]Threat Abatement Plan:Instrument under section 270B of the Environment Protection and Biodiversity Conservation Act 1999 to make a Threat Abatement Plan (Commonwealth of Australia, 2018i) [Legislative

Instrument]Threatened:Declaration under s178, s181, and s183 of the Environment Protection and Biodiversity Conservation Act 1999 - List of threatened species, List of threatened ecological communities and List of threatening processes (Commonwealth of Australia, 2000) [Legislative Instrument]\r\n \r\n\t State Government Documents and Websites\r\n\t\r\n\t\r\n\t NSW:Blue Whale - endangered species listing. NSW Scientific Committee - final determination (NSW Department of Environment, Climate Change and Water (NSW DECCW), 2010a) [Internet].NSW:Blue Whale - profile (Office of Environment & Heritage (OEH), 2014bb) [Internet].NT:Threatened Species of the Northern Territory - Blue Whale Balaenoptera musculus (Woinarski, J. & R. Chatto, 2006a) [Information Sheet].TAS:Balaenoptera musculus (Blue Whale): Species Management Profile for Tasmania's Threatened Species Link (Threatened Species Section (TSS), 2014tl) [State Action Plan].VIC:Action Statement Flora and Fauna Guarantee Act 1988 No. 242 - Blue Whale Balaenoptera musculus (Victorian Department of Sustainability and Environment (Vic. DSE), 2009) [State Action Plan].\r\n State Listing Status\r\n\t \r\n\t NSW:\r\n\t\t\t\r\n\t\t\t\tListed as Endangered\r\n\t\t\t\t (Biodiversity Conservation Act 2016 (New South Wales): February 2021 list)\r\n\t\t\t\t\r\n\t\t \r\n\t\t SA:\r\n\t\t\t\r\n\t\t\t\tListed as Endangered\r\n\t\t\t\t (National Parks and Wildlife Act 1972 (South Australia): January 2020 list)\r\n\t\t\t\t\r\n\t\t \r\n\t\t TAS:\r\n\t\t\t\r\n\t\t\t\tListed as Endangered\r\n\t\t\t\t (Threatened Species Protection Act 1995 (Tasmania): November 2020 list)\r\n\t\t\t\t\r\n\t\t \r\n\t\t VIC:\r\n\t\t\t\r\n\t\t\t\tListed as Threatened\r\n\t\t\t\t (Flora and Fauna Guarantee Act 1988 (Victoria): January 2021 list)\r\n\t\t\t\t\r\n\t\t \r\n\t\t WA:\r\n\t\t\t\r\n\t\t\t\tListed as Endangered\r\n\t\t\t\t (Biodiversity Conservation Act 2016 (Western Australia): September 2018 list)\r\n\t\t\t\t\r\n\t\t \r\n\t\t \r\n Non-statutory Listing Status\r\n\t \r\n\t IUCN:\r\n\t\t\t\r\n\t\t\t\tListed as Endangered\r\n\t\t\t\t (Global Status: IUCN Red List of Threatened Species: 2020.2 list)\r\n\t\t\t\r\n\t\t\t\r\n\t\t VIC:\r\n\t\t\t\r\n\t\t\t\tListed as Critically Endangered\r\n\t\t\t\t (Advisory List of Threatened Vertebrate Fauna in Victoria: 2013 list)\r\n\t\t\t\r\n\t\t\t\r\n\t\t NGO:\r\n\t\t\t\r\n\t\t\t\tListed as Endangered\r\n\t\t\t\t (The action plan for Australian mammals 2012)\r\n\t\t\t\r\n\t\t\t\r\n\t\t \r\n \r\n \r\n Naming\r\n \r\n \r\n Top\r\n \r\n\r\n\r\nScientific name\r\n \r\n Balaenoptera musculus [36]\r\n \r\n Family\r\n \r\n Balaenopteridae:Cetacea:Mammalia:Chordata:Animalia\r\n \r\n \r\n Species author\r\n (Linnaeus, 1758)\r\n \r\n Infraspecies author\r\n \r\n Reference\r\n \r\n \r\n \r\n Distribution Map\r\n \r\n \r\n Top\r\n \r\n\r\n\r\nDistribution map\r\n \r\n \r\n\t\tThe distribution shown is generalised from the Departments Species of National Environmental Significance dataset. This is an indicative distribution map of the present distribution of the species based on best available knowledge. Some species information is withheld in line with sensitive species polices. See map caveat for more information.\r\n\r\n \r\n \r\n \r\n Illustrations\r\n \r\n \r\n Top\r\n \r\n\r\n\r\n\r\nIllustrations\r\n \r\n Google Imageshttp://www.yoto98.noaa.gov/books/whales/blue1.gif ;http://www.utmsi.utexas.edu/staff/fuiman/diving/blue1.jpg\r\n \r\n \r\n Other Links, Including Superseded Commonwealth Documents\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n \r\n Commonwealth of Australia (2000). Declaration under s178, s181, and s183 of the Environment Protection and Biodiversity Conservation Act 1999 - List of threatened species, List of threatened ecological communities and List of threatening processes. F2005B02653. Canberra: Federal Register of Legislative Instruments. Available from: http://www.comlaw.gov.au/Details/F2005B02653. In effect under the EPBC Act from 16-Jul-2000.\r\n \r\n Commonwealth of Australia (2000b). List of Migratory Species (13/07/2000). F2007B00750. Canberra: Federal Register of Legislative Instruments. Available from: http://www.comlaw.gov.au/Details/F2007B00750.\r\n \r\n Department of the Environment and Heritage (2005e). Australian National Guidelines for Whale and Dolphin Watching. Available from: http://www.environment.gov.au/resource/australian-national-guidelines-whale-and-dolphin-watching-2005.\r\n \r\n Department of the Environment and Heritage (DEH) (2005a). NON-CURRENT Blue, Fin and Sei Whale Recovery Plan 2005 - 2010. Department of the Environment and Heritage. Canberra, Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/recovery/balaenoptera-sp/index.html. In effect under the EPBC Act from 18-May-2005. Ceased to be in effect under the EPBC Act from 01-Oct-2015.\r\n \r\n Department of the Environment, Water, Heritage and the Arts (2009t). Threat abatement plan for the impacts of marine debris on vertebrate marine life. Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/marine/publications/threat-abatement-plan-impacts-marine-debris-vertebrate-marine-life. In effect under the EPBC Act from 01-Jul-2009. Ceased to be in effect under the EPBC Act from 21-Jul-2018.\r\n \r\n \r\n\r\n\r\n\t\r\n\r\n\r\n \r\n Newsletters\r\n \r\n \r\n Top\r\n \r\n\r\n\r\n\r\n\r\n\r\nEPBC Act email updates can be received via the

Communities for Communities newsletter and the EPBC Act newsletter.\r\n\r\n\r\n\r\n\r\n\r\n \r\n Caveat\r\n \r\n \r\n Top\r\n \r\n\r\n\r\n\r\n\r\nThis database is designed to provide statutory, biological and ecological\r\ninformation on species and ecological communities, migratory species, marine\r\nspecies, and species and species products subject to international trade and\r\ncommercial use protected under the Environment Protection and Biodiversity\r\nConservation Act 1999 (the EPBC\r\nAct). It has been compiled from a range of sources including\r\nlisting advice, recovery plans, published literature and individual experts.\r\nWhile reasonable efforts have been made to ensure the accuracy of the\r\ninformation, no guarantee is given, nor responsibility taken, by the\r\nCommonwealth for its accuracy, currency or completeness. The Commonwealth\r\ndoes not accept any responsibility for any loss or damage that may be\r\noccasioned directly or indirectly through the use of, or reliance on, the\r\ninformation contained in this database. The information contained in this\r\ndatabase does not necessarily represent the views of the Commonwealth. This\r\ndatabase is not intended to be a complete source of information on the\r\nmatters it deals with. Individuals and organisations should consider all the\r\navailable information, including that available from other sources, in\r\ndeciding whether there is a need to make a referral or apply for a permit or\r\nexemption under the EPBC\r\nAct.\r\n\r\n\r\nCitation: Department of the Environment\r\n(2022).\r\nBalaenoptera musculus in Species Profile and Threats Database,\r\nDepartment of the Environment,\r\nCanberra.\r\nAvailable from:\r\nhttps://www.environment.gov.au/sprat.\r\nAccessed Tue, 18 Jan 2022 20:33:01 +1100.\r\n\r\n\r\n\r\n\r\nWhere available the sections below provide a biological profile for the species. Biological profiles vary in age and content across species, some are no longer being updated and are retained as archival content. These profiles are still displayed as they contain valuable information for many species. The Profile Update section below indicates when the biological profile was last updated for some species. For information to assist regulatory considerations, please refer to Conservation Advice, the Recovery Plan, Policy Statements and Guidelines.\r\n\r\n\r\n\r\n \r\n \r\n \r\n Profile Update\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n The following detailed profile was last updated on 30 March 2016.\n\r\n \r\n \r\n \r\n \r\n Taxonomy\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n The blue whale (Balaenoptera musculus) has four subspecies, two of which occur within Australian waters (Rice 1998), these include:\nAntarctic blue whale (B. m. intermedia) or 'true' blue whale\r\npygmy blue whale (B. m. brevicauda).\r\nThe information in the following profile is relevant to the blue whale at the species level (B. musculus), unless stated otherwise.\n\r\n \r\n \r\n \r\n \r\n Description\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n Both the Antarctic blue whale and pygmy blue whale have common phenotypic traits such as grey skin with mottled patterns, which enables identification of individuals. When submerged, the blue whale appears to be a luminous pale blue or aqua. They have a pronounced 'splashguard' in front of their blowholes, with a single pronounced longitudinal ridge leading forward on the rostrum. Their blow is tall and powerful (approximately 10 m). They have a long, smooth back with a small, variably-shaped dorsal fin set towards the tail (Jefferson et al. 1993). Differences between the two subspecies were first determined by whaling catches in the austral summer feeding season (Attard et al. 2010).\nDifferences between the pygmy blue whale and the Antarctic blue whale include:\nMorphology: the Antarctic blue whale is the largest of the two subspecies growing to maximum lengths of over 30 m; in comparison, the pygmy blue whale is recorded growing to 24.1 m (Branch et al. 2009, Attard et al. 2010). Despite this difference, determining subspecies in the field can be difficult (Branch et al. 2009)\r\nVocalisations/acoustic calls: both subspecies produce distinctive acoustic calls that can be used to identify each species as well as provide insight into geographic and seasonal distributions (Stafford et al. 2004, 2011).\r\nGenetics: both subspecies are genetically distinct, however diagnostic genetic markers are not available (LeDuc et al. 2007, Attard et al. 2012). The Antarctic and pygmy blue whale have been known to hybridise (Attard et al. 2012).\r\nAustral summer distribution: the pygmy blue whale is typically found in more northern areas (north of 54° S) at lower latitudes, throughout the Indian Ocean, whereas the Antarctic blue whale is usually found further south of Australia (60° S), circumpolar wide (Branch et al. 2009, Attard et al. 2010).\r\nBlue whale and fin whale hybrids has been documented in five cases (Bérubé & Aguilar 1998; Cipriano & Palumbi 1999; Spilliaert et al. 1991). The hybrids - three females and two males - were taken in commercial whaling operations in the Northern Hemisphere.\n\r\n \r\n \r\n \r\n \r\n Australian Distribution\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n Blue whale sightings in Australian waters are widespread, and it is likely that the whales occur around the continent at various times of the year. However, much of the Australian continental shelf and coastal waters have no particular significance to the whales and are used only for migration and opportunistic feeding. The only known areas of significance to the blue whale are feeding areas around the southern continental shelf, notably the Perth Canyon, in Western Australia, and the Bonney Upwelling and adjacent upwelling areas of South Australia and Victoria (DEH 2005).\nIn addition to whaling records

(Branch et al. 2007), most of the current knowledge of blue whale distribution within Australian waters has been derived from long term passive acoustic monitoring (Samaran et al. 2013). Antarctic blue whale calls have been detected year-round suggesting some individuals may not leave Antarctica (Samaran et al. 2010). In comparison, the pygmy blue whale has a more widespread distribution, found throughout the Indian Ocean and usually north of 54° S (Branch et al. 2009) at lower latitudes, with individuals migrating between Australian waters and Indonesia along the Western Australian coastline (Branch et al. 2007, Double et al. 2014).\nAreas of blue whale aggregation\nThe distribution of each subspecies varies and is not fully understood (Double et al. 2014). The Antarctic blue whale tends to remain at higher latitudes and migrate to lower latitudes for feeding, breeding and calving during the Australian summer (Branch 2007, Širovic et al. 2009, Woinarski et al. 2014). The pygmy blue whale is known to aggregate each year during the summer off southern Australia due to seasonal upwellings that concentrate high densities of prey (Attard et al. 2010, Gill et al. 2011).\nKey areas of aggregation include the Perth Canyon off Western Australia, the Bonney Upwelling and adjacent waters off South Australian and Victoria (Rennie et al. 2009, Attard et al. 2010, Gill et al. 2011). Genetic analysis suggests the same breeding stock of the pygmy blue whale utilises both of the Australian feeding aggregations (Attard et al. 2010).\nAggregation areas were confirmed during an International Whaling Commission (IWC) survey in late 1995 (Kato et al. 1996). The Bonney Upwelling and Perth Canyon are the best known Blue Whale aggregation areas in Australian waters. Bass Strait and the waters of the eastern Great Australian Bight are also known feeding areas, although perhaps only in certain years (Mustoe 2003 pers. comm.). Other important areas of aggregation include Geographe Bay and Quondong Point, which are used as migratory waypoints, the upwellings around Browse Island, which is likely feeding area during migration to Indonesia, and areas around Cape Naturaliste and Rottnest Island, which are also feeding grounds (DEWHA 2008b).\nThe Subtropical Front (the confluence of subtropical and subantarctic waters (40–45° S)), not far to the south of Australia, is also likely to be a large-scale feeding area (Mikhalev 2000). Satellite tagging has shown rapid movement from western and eastern Australia to the Subtropical Front. This area of aggregation was targeted by Soviet whalers during the 1960s (Mikhalev 2000). Anecdotal feeding areas include offshore of Eden and Merimbula, NSW (especially during October) (Butt 2001) and the continental shelf from Rottnest Island to Northwest Cape (McCauley 2004).\nOutside of the recognised feeding areas, possible foraging areas for the pygmy blue whale include the greater region around the Perth Canyon, off Exmouth and Scott Reef in Western Australia, in Bass Strait off Victoria and diving and presumably feeding at depth off the West coast of Tasmania (P. Gill pers. Comm., cited in Department of the Environment 2015). Evidence for feeding is based on limited direct observations or through indirect evidence, such as the occurrence of krill in close proximity of whales, or satellite tagged whales showing circling tracks. Further feeding grounds may be identified in the future.\nFigure 1: Pygmy blue whale distribution around Australia (Department of the Environment 2015). Open detailed image in browser.\n\n\r\n \r\n \r\n \r\n \r\n Global Distribution\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n The blue whale is considered a cosmopolitan species and range from polar to tropical waters. It is not known whether individuals cross the equator, but they are known to regularly migrate between polar, temperate and tropical waters (Mackintosh 1965) and, to some extent, longitudinally around Antarctic (Brown 1962) and Australian waters (Jenner et al. 2005).\nKnown aggregation (feeding) areas worldwide (excluding Australia) include: Antarctica; Chile; western United States of America/Mexico; eastern tropical Pacific; eastern Canada; Iceland; Greenland; Madagascar; Oman; Sri Lanka; and the southern Indian Ocean (Gill 2004). Possible winter breeding areas for the blue whale that occur in Australia, based on limited sightings data, include the Indonesian archipelago and island groups in the south-west Pacific (Paton & Gibbs 2003).\nWorldwide, the blue whale is rare and there is no reliable estimate of population numbers. The largest surviving population is off the west coast of the United States of America and consists of approximately 2000 whales (Calambokidis & Steiger 1997). Elsewhere, this species occurs in low numbers. In Antarctic waters, an estimated 1700 survive (Branch et al. 2004). There are no confirmed increases in population size globally, and no reliable global population estimates. Given their small population size, the future of the Blue Whale is insecure. The protection of this species varies worldwide, for example, one study has found Blue Whale meat available in Japanese fish markets (Baker 2000).\nIt is likely that the blue whale moves between Australian waters and the following: Antarctic feeding areas; subantarctic feeding areas (such as the Subtropical Front); and tropical breeding areas (Indonesian waters and possibly south-west Pacific waters).\nPossible pygmy blue whale breeding areas include the Indonesian archipelago, this is based on limited sightings data (Paton & Gibbs 2003) and a small sample of satellite tracked Pygmy Blue whales (Kahn 2012, Double et al. 2014).\nBlue whale movement is possible between Australian waters; Antarctic feeding areas; subantarctic feeding areas (such as the Subtropical Front); and tropical breeding areas (Indonesian waters and possibly south-west Pacific waters). At a subspecies level, the Antarctic blue whale

mainly resides within the Antarctic throughout the summer and have been known to migrate to lower latitudes around southern Africa, whilst some remain within the Antarctic during the entire winter (Branch et al. 2007). In comparison, the pygmy blue whale is much more widespread with groupings found around New Zealand, the Indian Ocean, Madagascar, Savu Sea Indonesia, Australia and the Antarctic (Branch et al. 2007, Kahn 2012, Samaran et al. 2013).\n\r\n \r\n \r\n \r\n Surveys Conducted\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n Antarctic blue whale monitoring in the Southern Ocean has been conducted since 1978 as part of the IWC's International Decade for Cetacean Research (IDCR) and Southern Ocean Whale Ecosystem Research (SOWER) programmes (Branch 2007). Long-term, circumpolar surveys (south of 60° S) served as an important data collection tool, which allowed scientists to make population estimates based on sightings (Branch et al. 2007).\nBlue whale surveys were undertaken by the Australian Antarctic Division in 2012 along the south-east coast of Australia (Bonney Upwelling) with the aim of testing methods and instruments to acoustically track the species (Miller et al. 2012). Two voyages were undertaken in January and March 2012, where a total of 33 vocalising individuals were recorded via acoustic tracking which lead to 28 visual sightings (Miller et al. 2012).\nAs part of the inaugural Southern Ocean Research Partnership's Antarctic blue whale voyage in 2013, two individuals were satellite tagged which enabled scientists to better understand their fine and large scale movements during summer (Andrews-Goff et al. 2013). It is anticipated future studies involving the use of satellite telemetry will greatly contribute to the knowledge gap of Antarctic blue whale movements within Antarctic breeding and feeding grounds and provide an updated circumpolar abundance estimate (Andrews-Goff et al. 2013).\nSurveys based in the Australian region have been primarily focused on known aggregation areas of pygmy blue whale subpopulations. Main survey areas within Australian waters include the Perth Canyon and Geography Bay off Western Australia (Rennie et al. 2009, Attard et al. 2010) and the Bonney Upwelling off South Australia (Attard et al. 2010, Gill et al. 2011). Surveys have involved a wide variety of data collection methods some of which include genetic sampling (Attard et al. 2010), satellite tracking (Double et al. 2012, 2014) and acoustic and passive monitoring in both Australian and Antarctic waters (Širovic et al. 2009, Stafford et al. 2011, Samaran et al. 2013, Miller et al. 2015).\nA 3 year long-term acoustic data set was collected over the Southern Ocean (between Australia and the Antarctic Continent) which found peak acoustic presence of the pygmy blue whale occurred earlier (March-May) and at more northerly recording sites compared with the Antarctic blue whale acoustic presence (May-August) (Gedamke et al. 2007).\nAerial surveys were conducted to detect the pygmy blue whale off the continental shelf and slope of Southern Australia from 2002 to 2013 (Gill et al. 2015).\n\r\n \r\n \r\n \r\n \r\n Population Information\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n Reliable estimates of blue whale population size in the Australian region are not currently possible. This is because the species range over very large areas that are difficult to survey and because many aggregation areas are still unknown. The amount of time that the blue whale spends at the surface varies depending on behaviour and local ecology (e.g. whether they are travelling or foraging, and the depth at which prey occurs), which means that modelling population size based on sighted numbers is inaccurate.\nIn Antarctic waters, Antarctic blue whale abundance was estimated at 1700 individuals (95% Bayesian interval 860–2900) in 1996, which is less than 1% of the original population. This estimation rose to 2280 (95% CI 1160-4500) based upon more recent circumpolar surveys between 1991-2004 (Branch et al. 2007).\nAntarctic blue whale sightings remain low (0.17–0.52 per 1000 km) despite a substantial survey effort over many years (Branch et al. 2007). A recent estimated circumpolar rate of increase for the species is 8.2% (95% CI 1.6–14.8%) per annum, however this estimate is based on surveys that did not account for individuals north of 60° S or those that remained in the pack ice (Branch 2007).\nLittle is known about the population size of the pygmy blue whale.\nLocalised population figures\nIn the Bonney Upwelling, the most blue whales spotted in a single aerial survey was 50 (based on 100 aerial surveys in 1998–2005). Although this figure is an underestimate, it is a reliable minimum estimate. Of all sightings, about 40 individuals have been photo-identified since 1998, which is a low ID rate and has reduced the ability for resightings. In 2004, there had been one resight between seasons (1998–2004), and several resights within the 2004–05 season (Morrice 2004).\nIn the Perth Canyon, up to 40 blue whale individuals have been sighted in a single aerial survey. Preliminary estimates from aerial survey of numbers in the peak period (January–March in 2000–04) have given a maximum of 43, however, numbers are variable from year to year. During vessel surveys, 211 unique individuals have been photo-identified over six years (2000–05). Of these, one whale was sighted over four separate seasons, one over three seasons and 11 over two seasons (Jenner & Jenner 2004).\nThere has been at least one resight of a whale between the Perth Canyon (February 2004) and the Bonney Upwelling (April 2005) confirming interchange between these two areas, and raising the question of whether these groups are two distinct 'subpopulations'. Preliminary acoustic data indicates that blue whale calls from both areas are identical (McCauley et al. 2004), which suggests regular interchange.\nRelatively

high numbers of blue whales have been observed annually, since 1994, during October–December surveys in Geographe Bay, a shallow embayment in south-west Western Australia. Surveys conducted in 2003 recorded over 100 sightings (Burton 2003). No feeding behaviour has been observed, however small calves are regularly seen. The majority of whales move slowly into the bay from the north and follow the shallow bathymetry around Cape Naturaliste to the west. It appears to be a transitory corridor and/or migratory resting area (Burton 2003).\nPopulation trends\nBranch and colleagues (2004) estimated a catastrophic decline of the Antarctic blue whale due to whaling, from 239 000 individuals pre-whaling to 360 individuals by 1973. There are no comparable data for the pygmy blue whale, although they were whaled illegally after whaling bans had occurred: an estimated 11 000 catches were undeclared to the IWC (Mikhalev 2000).\nThe only recent estimate of population increase is 7.3% for the Antarctic blue whale (Branch et al. 2004), however, this estimate was based on a very small sample size and did not take into account pygmy blue whale populations.\nIn the North Pacific, northern blue whale numbers off the coast of California increased dramatically during the 1980s, at a rate exceeding possible natural increase. This was thought to be due to a shift in oceanographic conditions, possibly resulting in greater prey abundance in inshore upwelled waters, with a presumed reduction in prey availability elsewhere (Calambokidis 1995). Whether this pattern was associated with long-tem trends or rare conditions is unknown.\nIt is unknown whether the blue whale undergoes natural population fluctuations in Australian waters. However, there is some variability between seasons in both the Bonney Upwelling (Gill 2004) and the Perth Canyon (McCauley et al. 2004) feeding areas, but this variability is not by an order of magnitude. There has been an apparent increase in sightings in Geographe Bay over the last 10 years (Burton 2003; Burton & Jenner 2005).\n\r\n \r\n \r\n \r\n \r\n Habitat\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n Blue whale habitat is variable between the two subspecies found in Australian waters. The Antarctic blue whale tends to remain at higher latitudes and migrate to lower latitudes for feeding, breeding and calving during the Australian summer, whilst some remain within the Antarctic waters year-round (Branch 2007, Širovic et al. 2009). In comparison, the pygmy blue whale habitat is more diverse, expanding throughout the Indian Ocean, with individuals moving between Australia and the warmer waters of Indonesia (Branch et al. 2007, Double et al. 2014).\nKey habitat areas within Australian waters include:\nThe Bonney Upwelling\nThe pygmy blue whale aggregate between Cape Otway, Victoria, and Robe, South Australia, in relatively shallow shelf waters enriched by seasonal cold water upwelling driven by south-east winds. Aggregation in the Bonney Upwelling between the Great Australian Bight and Bass Strait occurs November–May (Gill et al. 2011). There is considerable interannual and seasonal variability in climatic and oceanographic factors that influence upwelling dynamics. Seasonal variability is linked to the timing of south-east winds along this coast (Lewis 1981; Schahinger 1987). Because of the surface swarming habit of the whales' prey, feeding often occurs at or near the surface (Gill & Morrice 2003).\nTo the west of Portland, where the upwelling surfaces, the whales often aggregate in a relatively narrow band around a mean depth of 86 m, along or near surface temperature fronts (where temperature may vary by up to 5 °C). This aggregation point has elevated levels of chlorophyll a, which is downstream from upwelling centres and attracts swarms of the krill Nyctiphanes australis. To the east of Portland where there is no surface upwelling, krill and whales are more widely dispersed across the shelf, with Blue Whales occurring at a mean depth of 75 m (Gill 2004).\nIn December 2003, numbers of Blue Whales were found feeding on abundant krill surface swarms along the 200 m shelf break to the west and south of Kangaroo Island (Morrice et al. 2004). This area is considered to be part of the same large-scale upwelling system (tentatively known as the Great Australian Bight upwelling system) of which the Bonney Upwelling is the most obvious expression (Kampf et al. 2004; McLatchie et al. 2006). Pygmy Blue whales occupy the western area of the Bonney Upwelling system in the Eastern Great Australian Bight and next to Kangaroo Island canyons from November to December (Department of the Environment 2015).\nThe Perth Canyon\nThe pygmy blue whale aggregates on the northern side of the Perth Canyon. Aggregations at the canyon occurs November–May, where the southward flow of the Leeuwin Current causes eddies, downwelling and compensating upwelling as it passes over the steep-sided canyon. The dynamics of this process are also affected by seasonal variability in winds, a process which is poorly understood. This is deepwater habitat and the krill Euphausia recurva occur in balls in colder water below the warm Leeuwin Current in which whales dive to depths of 200–200 m to feed (McCauley et al. 2004). The distribution of the blue whale mirrors that of zooplankton patches detected by hydroacoustic surveys. Most zooplankton patches are found to the north of the head of the Canyon (McCauley et al. 2004).\nGeographe Bay\nThe blue whale is observed primarily in the southern section of the shallow bay adjacent to Cape Naturaliste, which is a resting point during the slow transit west through the bay. Observations frequently occur October–December in southern Geographe Bay where maximum water depth is 35–50 m. The whales are regularly sighted in depths of 10–30 m and as close as 200 m from the Cape. Seasonal oceanographic

conditions include injections of warmer water into the Bay from the south flowing Leeuwin Current, while from November to December, stronger southerly winds force a north-flowing, cold water, wind-driven 'Capes Current' which begins outside of the Bay. Little specific habitat data is available for this area (Burton 2003). In addition, the blue whale sometimes aggregate in Geographe Bay, north of Cape Leeuwin, possibly at a migratory bottleneck (Burton & Jenner 2005).\nAntarctic waters\nThe blue whale is not uniformly distributed and preferred habitat in this region is not well defined. Sightings are still very rare, however, observations seem to be linked with patchy productive regions near the decaying sea ice edge (the marginal sea ice zone), a zone of krill abundance and high plankton production (Laws 1985; Thiele 2005). In historical times, the blue whale was often seen within areas of open sea ice (Ross 2000).\nWintering areas\nWhile breeding areas have not yet been identified, it is likely that they occur in tropical areas of high localised biological production, as, unlike the humpback whale (Megaptera novaeangliae) and southern right whale (Eubalaena australis), the blue whale has a thin blubber layer, which implies that they cannot fast during the winter season. This is supported by the occurrence of the blue whale in tropical upwelling areas in the eastern tropical Pacific Ocean, such as the Costa Rica Dome (Reilly & Thayer 1990) and the waters west of the Galapagos Islands (Palacios 1999). Wintering areas, where some blue whale sightings have been reported, include the Indonesian archipelago and the waters adjacent to the Solomon Islands and other island groups of the south-west Pacific (Paton & Gibbs 2003). Satellite tagging has confirmed that the pygmy blue whale feeds off the Perth Canyon and head north in March/April to potential breeding grounds in Indonesian waters by June (Double et al. 2014).\nAssociated species\nIn the Bonney Upwelling area, the blue whale is sometimes seen in the vicinity of the EPBC Act listed fin whale (Balaenoptera physalus) and sei whale (Balaenoptera borealis), though these may be competitors, rather than associates. These species are listed as Vulnerable and Migratory (under the Bonn Convention).\n\r\n \r\n \r\n \r\n Life Cycle\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n Blue whale sexual maturity is reached at 7–10 years of age. Longevity is thought to be at least 80-90 years or longer (Sears & Perrin 2009). Rates of natural mortality are unknown but the blue whale is subject to predation by the killer whale (Orcinus orca) and possibly by a range of shark species, as well as smaller parasites, infection and disease (Thiele 2005).\nReproduction\nThe mating system of the blue whale is unknown, although like other baleen whales they may mate with multiple partners. Age of sexual maturity for females is around 10 years (Branch 2008). Age of first reproduction is estimated at 11 years for both subspecies (Taylor et al. 2007). Length of sexually mature females (Southern Hemisphere populations) is at 23-24 meters and 22 meters for males (Sears & Perrin 2009). The Antarctic blue whale breeds around June to July each year with calving in April to May the following year (Branch 2008). The Antarctic blue whale gestation is around 10-11 months (Branch 2008). The calves are weaned in summer feeding grounds at approximately seven months old and 16 m long. Mean calving interval for the Antarctic blue whale is 2.5 years (Taylor et al. 2007) and 2.6 years for the pygmy blue whale (Branch 2008). It is unknown whether reproduction of the blue whale varies between the subspecies.\nConditions in blue whale breeding areas are poorly known, but these areas may lie in deep water adjacent to tropical island groups, where advection of water by currents can cause upwelling and heightened food production. For their size, this species has relatively thin blubber and may not allow them to fast for prolonged periods (Thiele 2005). It is not known what potential threats face the blue whale in their breeding grounds, as these grounds have not yet been identified. As with any species, young calves are the most vulnerable members of the species.\n\r\n \r\n \r\n \r\n \r\n Feeding\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n In Antarctic waters, the blue whale feeds on krill Euphausia superba and E. crystallorophias, but are also known to feed on fish and squid (Kawamura 1980). While peak biomass of krill is in summer, the blue whale is present throughout the year, as is the minke whale (Balaenoptera acutorostrata) (Thiele & Gill 1999). The blue whale is thought to migrate to Antarctic waters in early summer and to leave in autumn (Mackintosh 1965). However, acoustic surveys have shown that some are present during winter, indicating that not all whales migrate annually (Samaran et al 2010).\nIn Australian waters, the Perth Canyon, Western Australia and the Bonney Upwelling (South Australia and Victoria) are two known feeding areas where presumably the pygmy blue whale aggregates (Rennie et al. 2009, Attard et al. 2010, Gill et al. 2011). From November to December, the pygmy blue whale occupy the western area of the Bonney Upwelling system in the Eastern Great Australian Bight and next to Kangaroo Island canyons (Department of the Environment 2015). Genetic research has revealed that both feeding aggregations support the same breeding stock of pygmy blue whale (Attard et al. 2010).\nIn the Bonney Upwelling, the major prey of blue whale is the krill Nyctiphanes australis (Gill & Morrice 2003). This krill species occurs around south-east Australia from Kangaroo Island to Sydney via Tasmania (Blackburn 1980), indicating that the potential feeding range may be greater than is currently known. Relative abundance of N. australis appears to be linked to the timing of the Bonney Upwelling, which is active between November and May (Gill

2004). Other crustacean species have been identified in plankton samples and it may be that the blue Whale feeds opportunistically on more than one species in this region. The species almost certainly consume quantities of copepods (crustacean) and possibly salps (free-swimming organisms) as bycatch when feeding on other target species (Morrice 2004).\nIn the Perth Canyon, the main prey is Euphausia recurva, the dominant euphausiid of Western Australian slope waters between latitudes 25° S and 35° S (between Shark Bay and Albany). This species of krill is found during daylight hours at depths of 200–500 m, vertically migrating to surface waters at night (McCauley et al. 2004).\nFeeding behaviour\nIn the Bonney Upwelling, the blue whale frequently lunge feed at or near the surface; but at other times, they may also dive to varying depths to feed (Gill 2004; Gill & Morrice 2003). In the Perth Canyon, the blue whale regularly dives to 200–500 m to feed (McCauley et al. 2004). Surface feeding could make the whales vulnerable to entanglement in craypot lines, which are abundant in these waters. The species shows a strong startle response when making contact with a potline (Gales et al. 2005).\nA strong focus on surface feeding could make the blue whale vulnerable to ship strike, as a shipping route runs through the Bonney Upwelling. Feeding individuals often appear oblivious to nearby vessels (Thiele 2005).\nIn recent years, seismic surveys have occurred in areas of krill abundance, where the blue whale feed. Acoustic pollution (from activities such as commercial and recreational vessel noise, and seismic survey activity) has been identified as an activity which has the potential to degrade habitat important to the survival of the blue whale. Habitat degradation may result in reduced occupancy and/or exclusion of individual whales from suitable habitat, compromised reproductive success and mortality.\nIn feeding grounds, the blue whale typically occur as individuals or in groups of two. Such groups may minimise potential for competition for small scattered prey patches. Larger numbers of whales may feed together where food is abundant, such as in the Southern Ocean. For example, 30 individuals were sighted in one locality in Antarctic waters in February 1996, where a large subsurface krill swarm had been detected (Thiele et al. 2000).\n\r\n \r\n \r\n \r\n \r\n Movement Patterns\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n Understanding the movement patterns of both blue whale subspecies has been greatly assisted by advances in satellite tagging data. Satellite tagging of the pygmy blue whale has confirmed that individuals migrate between Western Australia to Indonesia (Double et al. 2012, 2014). Satellite observations have also confirmed that the Banda and Molucca Seas is a likely calving area for the pygmy blue whale whilst the Perth Canyon/Naturaliste Plateau region of Western Australia is an area where individuals spend a large amount of time most likely feeding (Gill et al. 2011, Double et al. 2012). In contrast, some Antarctic blue whales migrate to Australian waters during the winter, while others remain in Antarctic waters year-round (Samaran et al. 2010, Woinarski et al. 2014). Satellite tracking of the Antarctic blue whale in the seas off Antarctica has shown individuals make long scale movements associated with the ice edge, dispersed with movements indicative of searching behaviour (Andrews-Goff et al. 2013).\nOccasionally 'racing groups' of three whales are seen travelling at high speed, jostling and changing direction frequently. It is presumed that this behaviour is social, and related to courtship (Calambokidis & Steiger 1997). 'Racing groups' have been observed in the Bonney Upwelling off South Australia and Victoria (Gill & Morrice 2003).\nFigure 2. Pygmy blue whale migration routes. Open detailed image in browser.\n\nBonney Upwelling\nIn the Bonney Upwelling, the earliest sighting in a season was 8 November (in 2004). The latest that the blue whale has been acoustically detected was 29 May (in 2001). Non-systematic surveys conducted between June and October have found no whales, nor have any been reported from other sources (Thiele 2005).\nVessel surveys have shown that when foraging, the species adopts a meandering pattern of movement, interspersed with feeding bouts. Whales have also been sighted moving rapidly, apparently between feeding localities. Satellite tagging in April 2005 has shown that the blue whale alternates between localised foraging and rapid movement to other foraging areas on the shelf. Also, one whale left the Bonney Upwelling and headed south to the northern edge of the Subtropical Front, where it showed possible foraging movement (Thiele 2005).\nPerth Canyon\nIn the Perth Canyon, the earliest sighting for any season was 1 November (in 2000), and the latest was 7 May (in 2003). Whales are most frequently sighted on the northern or southern sides of the Canyon, rather than over the centre of the Canyon. Limited satellite tagging data has shown that the blue whale shows probable foraging patterns not only over the Canyon, but over the upper shelf slope to its north and south as well. During January 2002, an individual was tagged in Geographe Bay, left coastal waters, and headed east-south-east to the Subtropical Front south of Esperance, where it showed a possible foraging pattern. This and the similar movement of a tagged whale from the Bonney Upwelling during April 2005 indicates that alternation between near-shore and offshore feeding areas may be common. This movement to the Subtropical Front is also supported by Soviet whaling data, which shows that many individuals were killed during the 1960s along the Subtropical Front (Mikhalev 2000).\n\r\n \r\n \r\n \r\n \r\n Survey Guidelines\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n A variety of survey tools have been used to survey blue whale presence

within Australian and Antarctic waters. Some examples of survey tools include (Department of the Environment 2015):\nsightings\r\naerial surveys\r\nlong-term passive acoustic monitoring (Samaran et al. 2010, 2013, Miller et al. 2015)\r\nphoto-identification\r\nsatellite tagging research (Double et al. 2012, 2014, Andrews-Goff et al. 2013)\r\nstrandings.\r\nThe blue whale is most easily detected and identified of all cetaceans. From the air they often appear a striking pale blue or aqua. This, and their great size, makes it difficult to confuse them with other species. From a vessel, their size and shape, colouration and strength of blow make them relatively easy to identify, although they may be confused with other species at a distance. It is very difficult to distinguish between the Antarctic blue whale and pygmy blue whale (Thiele 2005), however, the pygmy blue whale has a shorter tail, and hence a proportionally longer body.\nWhale surveys need to be designed taking into account several important factors including season, weather (e.g. sea state and light conditions), area to be covered (large or small), aim of surveys (abundance estimation and ecological studies), the activities of the whales themselves (e.g. travelling, resting, surface and deep feeding), funding availability, and the type of platform (ie. land, boat or air) used. Satellite tagging is the most cost effective and practical method for determining species distribution and movement patterns (Thiele 2005).\nThe blue whale make powerful low-frequency calls, with most pygmy blue whale calls off Western Australia having energy in the 10–30 Hz range (McCauley et al. 2001). Calls vary between oceanic regions and between subspecies (Ljungblad et al. 1998; McDonald et al. 2006; Stafford et al. 2004).\n\r\n \r\n \r\n \r\n Threats\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n Several anthropogenic threats have been identified in the Conservation Management Plan for the Blue Whale that may inhibit the recovery of blue whale populations in Australian waters (Commonwealth of Australia 2015). The relevance of these threats to the two subspecies varies depending on the habitats they occupy, timing of habitat occupancy and their population abundance and trend. The highest rated threats are identified below.\nThreat\r\nComments\r\nWhaling\r\nThe impacts of commercial hunting on blue whales are well documented. While currently banned under the IWC moratorium on commercial whaling due to the classification of all blue whale populations as Protected Stocks, the potential for commercial whaling on large baleen whale species to recommence exists and pressure to take blue whales may well increase as the population recovers.\r\nClimate variability and change\r\nClimate variability and change may cause distribution and migratory timing changes and decreased health of individuals in a population. Climate change can lead to ocean temperature increases, changes in ocean heat transfer resulting in changes to circulation patterns (e.g. upwellings), ocean acidification and melting of Antarctic sea ice. This may impact krill availability, the major food source for blue whales.\r\nNoise interference\r\nBlue whales rely on sound to find prey and mates. Man-made noise can potentially result in injury or death, masking of vocalisations, displacement from essential resources (e.g. prey, breeding habitat), and behavioural responses. Potential sources of man-made underwater noise interference in Australian waters include seismic surveys for oil, gas and geophysical exploration, industrial development activities (such as drilling, pile driving, blasting and dredging), gas processing and shipping.\r\nVessel disturbance\r\nVessel disturbance can occur in the form of collisions or by disrupting the behaviour of animals. Vessel collision can lead to mortality or significant injury, and could impede recovery of blue whale populations. Vessel disturbance or collisions can result from industrial, recreational or commercial activities including whale watching.\r\n\r\n \r\n \r\n \r\n Threat Abatement and Recovery\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n The Conservation Management Plan for the Blue Whale (Commonwealth of Australia 2015) identified actions that were prioritised to deliver tangible results to meet the Interim Recovery Objectives over time. There are a number of action areas identified in the Conservation Management Plan for the Blue Whale that address the 'very high' and 'high' risk threats to pygmy and Antarctic blue whales. Actions that support measuring population recovery, distribution and identification of important habitat were also prioritised. These actions and their ratings are summarised in Table 1.\nTable 1. Summary of Actions and Priority Ratings identified in the Conservation Management Plan for pygmy and Antarctic blue whales (Commonwealth of Australia 2015).\nAction\r\nPygmy blue whale priority rating\r\nAntarctic blue whale priority rating\r\nAssessing and addressing threats\r\nMaintain and improve existing legal and management protection\r\nVery high\r\nVery high\r\nAssess and address anthropogenic noise\r\nVery high\r\nHigh\r\nUnderstand impacts of climate variability and change\r\nHigh\r\nHigh\r\nMinimise vessel collisions\r\nHigh\r\nHigh\r\nEnabling and measuring recovery\r\nMeasure and monitor population recovery\r\nVery high\r\nVery high\r\nDescribe the population structure of blue whales\r\nHigh\r\nHigh\r\nDescribe the spatial and temporal distribution of blue whales and further define Biologically Important Areas\r\nHigh\r\nHigh\r\n\r\n \r\n \r\n \r\n Marine Bioregional Plans\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n Marine bioregional plans have been developed for four of Australia's marine regions - South-west, North-west, North and Temperate East. Marine Bioregional Plans will help improve the way decisions are made under the EPBC Act, particularly

in relation to the protection of marine biodiversity and the sustainable use of our oceans and their resources by our marine-based industries. Marine Bioregional Plans improve our understanding of Australia's oceans by presenting a consolidated picture of the biophysical characteristics and diversity of marine life. They describe the marine environment and conservation values of each marine region, set out broad biodiversity objectives, identify regional priorities and outline strategies and actions to address these priorities. Click here for more information about marine bioregional plans.\nThe blue whale has been identified as a conservation value in the Temperate East (DSEWPaC 2012aa), South-west (DSEWPaC 2012z) and North-west (DSEWPaC 2012y) marine regions. See Schedule 2 of the South-west Marine Bioregional Plan (DSEWPaC 2012z) for regional advice. Maps of Biologically Important Areas have been developed for pygmy blue whale in the South-west (DSEWPaC 2012z) and North-west (DSEWPaC 2012y) marine regions and may provide additional relevant information. Go to the conservation values atlas to view the location of these Biologically Important Areas. The \"species group report card - cetaceans\" for the Temperate East (DSEWPaC 2012aa), South-west (DSEWPaC 2012z) and North-west (DSEWPaC 2012y) marine regions provide additional information.\nMarine bioregional plans have not been developed for the Great Barrier Reek Marine Park, the Coral Sea Commonwealth Marine Reserve, the South East marine bioregion or the Torres Strait. Preliminary work may have been undertaken to identify conservation values, Key Ecological Features and Biologically Important Areas in these areas, but these data are currently not available.\n\r\n \r\n \r\n \r\n Management Documentation\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n Management documents relevant to the species are available at the start of the profile.\n\r\n \r\n \r\n\r\n\r\n\r\n \r\n \r\n Species Profile References\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n \r\n Širović, A., J.A. Hildebrand, S.M. Wiggins & D. Thiele (2009). Blue and fin whale acoustic presence around Antarctica during 2003 and 2004. Marine Mammal Science. 25:125-136.\r\n \r\n Andrews-Goff, V., P.A. Olson, N.J. Gales & M.C. Double (2013). Satellite telemetry derived summer movements of Antarctic blue whales. Report SC/65a/SH03 submitted to the Scientific Committee of the International Whaling Commision Jeju Island, Republic of Korea.\r\n \r\n Attard, C.R., L.B. Beheregaray, C. Jenner, P. Gill, M. Jenner, M. 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