[1] "\r\n\r\n\t\r\n\r\n\r\n \r\n \r\n \r\n Chelonia mydas\r\n — Green Turtle\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 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 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 Vulnerable\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 Listed marine\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\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\r\n\t\t\t\r\n\t\t\r\n\t\t\r\n \r\n \r\n\t\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\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).\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 Department of the Environment and Energy (2017). Recovery Plan for Marine Turtles in Australia. Australian Government, Canberra. Available from: http://www.environment.gov.au/marine/publications/recovery-plan-marine-turtles-australia-2017. In effect under the EPBC Act from 03-Jun-2017.\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 (2017). Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (Sus scrofa) (2017). Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/feral-pig-2017. In effect under the EPBC Act from 18-Mar-2017.\r\n\t\t\t\t \r\n\t\t\t \r\n\t\t\t\tDepartment of the Environment and Energy (2018). Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (2018). Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/marine-debris-2018. In effect under the EPBC Act from 21-Jul-2018.\r\n\t\t\t\t \r\n\t\t\t \r\n\t\t\t\tDepartment of the Environment, Water, Heritage and the Arts (DEWHA) (2008). Threat abatement plan for predation by the European red fox. DEWHA, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox. In effect under the EPBC Act from 01-Oct-2008.\r\n\t\t\t\t \r\n\t\t\t \r\n\t\t\t \r\n\t\t\t\r\n \r\n\t\t Marine Bioregional Plans\r\n\t\t\r\n\t\t\r\n\t\t \r\n\t\t Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012). Marine bioregional plan for the North Marine Region. Prepared under the Environment Protection and Biodiversity Conservation Act 1999. Available from: http://www.environment.gov.au/topics/marine/marine-bioregional-plans/north. 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 Temperate East Marine Region. Prepared under the Environment Protection and Biodiversity Conservation Act 1999. Available from: http://www.environment.gov.au/topics/marine/marine-bioregional-plans/temperate-east. 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 North-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/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 \r\n\t National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (Department of the Environment and Energy, 2020) [Admin Guideline].\r\n\t \r\n\t \r\n\t Seagrass - A Vulnerability Assessment for the Great Barrier Reef (Great Barrier Reef Marine Park Authority (GBRMPA), 2011) [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\tMarine:Declaration under section 248 of the Environment Protection and Biodiversity Conservation Act 1999 - List of Marine Species (Commonwealth of Australia, 2000c) [Legislative Instrument]Migratory:List of Migratory Species (13/07/2000) (Commonwealth of Australia, 2000b) [Legislative Instrument]Recovery Plan:Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2007y) [Legislative Instrument]Recovery Plan:Instrument Jointly Making the National Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2017f) [Legislative Instrument]Threat Abatement Plan:Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (Sus scrofa) (2017) (Commonwealth of Australia, 2017c) [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:Death or injury to marine species following capture in shark control programs on ocean beaches - factsheet (NSW Department of Environment, Climate Change and Water (NSW DECCW), 2003b) [Information Sheet].NSW:Green Turtle - profile (NSW Department of Environment, Climate Change and Water (NSW DECCW), 2005bj) [Internet].NT:Threatened Species of the Northern Territory - Green Turtle Chelonia mydas (Taylor, R., R. Chatto & J. Woinarski, 2006a) [Information Sheet].QLD:Green Turtle (Department of Environment and Heritage Protection (DEHP), 2013ab) [Database].TAS:Chelonia mydas (Green Turtle): Species Management Profile for Tasmania's Threatened Species Link (Threatened Species Section (TSS), 2014vx) [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 Vulnerable\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\t \r\n\t\t QLD:\r\n\t\t\t\r\n\t\t\t\tListed as Vulnerable\r\n\t\t\t\t (Nature Conservation (Animals) Regulation 2020 (Queensland): August 2020 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 Vulnerable\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 Vulnerable\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 WA:\r\n\t\t\t\r\n\t\t\t\tListed as Vulnerable\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 \r\n \r\n \r\n Naming\r\n \r\n \r\n Top\r\n \r\n\r\n\r\n\r\nScientific name\r\n \r\n Chelonia mydas [1765]\r\n \r\n Family\r\n \r\n Cheloniidae:Testudines:Reptilia: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\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 \r\n Illustrations\r\n \r\n \r\n Top\r\n \r\n\r\n\r\n\r\n\r\n\r\nIllustrations\r\n \r\n Google Imageshttp://www.jcu.edu.au/school/tbiol/zoology/herp/fullsize/ST%20Chelonia%20mydas.jpg ;http://www.jcu.edu.au/school/tbiol/zoology/herp/fullsize/GC%20Chelodina%20mydas.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 Commonwealth of Australia (2000c). Declaration under section 248 of the Environment Protection and Biodiversity Conservation Act 1999 - List of Marine Species. F2008B00465. Canberra: Federal Register of Legislative Instruments. Available from: http://www.comlaw.gov.au/Details/F2008B00465.\r\n \r\n Department of the Environment and Heritage (DEH) (2006ev). Chelonia mydas in Species Profile and Threats (SPRAT)

database.  Unpublished species profile. Canberra, ACT: DEH.  Available from: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1765.\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  Environment Australia (2003ai).  Recovery Plan for Marine Turtles in Australia.  Prepared by the Marine Species Section, Approvals and Wildlife Division, Environment Australia in consultation with the Marine Turtle Recovery Team.  Available from: http://www.environment.gov.au/coasts/publications/turtle-recovery/index.html. In effect under the EPBC Act from 21-Jul-2003.\r\n  \r\n  Environment Australia (EA) (1999a).  NON-CURRENT Threat Abatement Plan for Predation by the European Red Fox.  Biodiversity Group, Environment Australia.  Available from: http://www.environment.gov.au/archive/biodiversity/threatened/publications/tap/foxes/index.html. In effect under the EPBC Act from 16-Jul-2000.\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  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\n\r\nCitation: Department of the Environment\r\n(2022).\r\nChelonia mydas 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 20:53:27 +1100.\r\n\r\n\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  \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 25 September 2008.\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  The Green Turtle has an olive green, nearly circular or heart-shaped carapace (upper shell) up to 1 m in length.  The carapace is usually variegated with brown, reddish-brown and black on the top and whitish or cream underneath. There are four pairs of costal shields (shell plates located on either side of the mid-line) between the centre and outer margin of the upper shell (Cogger 2000; Limpus 1995a).\nHatchlings are shiny black above, and white below. They weigh about 25 g and measure 5 cm (straight carapace length) (Cogger 2000).\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  Green Turtles nest, forage and migrate across tropical northern Australia. They usually occur between the 20°C isotherms (Marquez 1990), although individuals can stray into temperate waters (Cogger et al. 1993). In Australia, the key nesting and inter-nesting areas (where females live between laying successive clutches in the same season) are (DEH 2005a; DEWHA 2008b):\nCommonwealth\nElizabeth-Middleton Reefs National Marine Reserve\nQueensland\nCapricorn and Bunker Island Groups\nRaine Island\nCurtis Island and Facing Island\nRussel Island and Scott Reef\nWellesley Islands\nMilman Islet and Boydong Islands\nMon Repos\nMurray Islands\nDarnley Island (Torres Strait) \nBramble Cay (Torres Strait) \nWestern Cape York Peninsula\nPisonia Island\nNorth and South Bountiful Islands \nNorthern Territory\nCoburg Peninsula\nBetween Nhulunbuy and northern Blue Mud Bay (East Arnhem Land) \nGroote Island \nOffshore Islands including Crocker Island, Goulburn Island\nSir Edward Pellew Islands\nTiwi Islands\nWessel and English Islands\nRocky Island \nWestern

Australia\nThe Dampier Archipelago\nLacepede Islands\nThe Ningaloo and Jurabi Coasts\nSerrurier Island\nThevenard, Barrow, Lowendal and Montebello Island\nNorthwest Cape\nExmouth Gulf\nMuiron Islands \nModerate numbers of Green Turtles also nest on Ashmore Reef and Cartier Island in the Indian Ocean (Whiting et al. 2000).\nResident Green Turtles have been seen around reefs south of Shark Bay down to around the mouth of the Murchison River at Kalbarri and around the reefs of the Houtman Albrohos Islands (DEC 2007). Large juveniles have also been sighted around Rottnest Island (DEC 2007). Western Australia supports one of the largest Green Turtle populations remaining in the world. This population is estimated to be in the tens of thousands of adult turtles (DEWHA 2008b).\nThe Lacepede Islands in Western Australia have been identified as critical nesting and internesting habitat for the Green Turtle (Environment Australia 2003ad). They support the largest Green Turtle rookeries in Western Australia with nightly nesting effort numbering in the thousands (Pendoley Environmental 2005, as cited in DEWHA 2008b). The Muiron Islands off North Cape West also support a major Green Turtle rookery (Limpus 2004).\nThe important foraging grounds and juvenile habitat for Green Turtles in Queensland include the Capricorn and Bunker region of the Great Barrier Reef, the Wellesley Islands, Moreton Bay, Hervey Bay and Sandy Straits, Shoalwater Bay, Cleveland Bay, Princess Charlotte Bay, the inner shelf coral reefs from Howick Reef to Corbett Reef, and the Torres Strait (DEH 2005a).\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 Green Turtles are found in tropical and subtropical waters throughout the world. They usually remain within the 20°C isotherms (Marquez 1990), although individuals may also stray into temperate waters (Cogger et al. 1993). There have been severe declines in numbers of Green Turtles in Indonesia, particularly in Bali, where there is now no nesting (Schulz 1984). However, the global population of Green Turtles is estimated to be very large (2.2 million), and most populations in other countries are thought to be increasing (Broderick et al. 1995).\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 The total Australian population of Green Turtles is estimated to be more than 70 000 individuals, distributed across seven regional populations.\nThe seven regional populations of Green Turtles in Australia are thought to represent genetically distinct subpopulations, with a very low level of genetic exchange between regions. The seven subpopulations and their estimated numbers of individuals are (DEH 2005a):\nSouthern Great Barrier Reef: around 8000 \nNorthern Great Barrier Reef: around 41 000 \nSouthern Gulf of Carpentaria: around 5000 \nWestern Australia: around 20 000 \nAshmore and Cartier Reefs: annual influx of nesting females thought to number in the low hundreds \nCoral Sea: several hundred \nScott Reef: unknown.\n\nThese subpopulations can be further subdivided into 17 genetically distinguishable breeding stocks (management units), consisting of individual rookeries (breeding colonies) or groups of rookeries that are generally more than 500 km apart (Dethmers et al. 2006).\nPreliminary estimates of numbers of nesting Green Turtles in eastern Arnhem Land alone suggest that several thousand Green Turtles breed there annually (Limpus in press, as cited in DEWHA 2008).\nThe North Region of Australia supports at least two different genetic breeding stocks of Green Turtles (Gulf of Carpenteria and North Great Barrier Reef) (Limpus & Chatto 2004; Limpus in press, as cited in DEWHA 2008). There are three distinct genetic stocks of Green Turtles supported in the NorthWest Region of Australia. These are the North West Shelf stock, the Scott Reef stock and the Ashmore stock (Dethmers et al. 2006).\nIn Australia, long-term monitoring of nesting Green Turtles at Raine Island and Moulter Cay has shown a decrease in body size of nesting females, and a decline in hatching success since 1996. These declines have been attributed to the rising water table on the island (DEH 2005a, b). In contrast, both the resident (foraging) population and the nesting population of the Southern Great Barrier Reef are increasing strongly (by 11% and 3% per year, respectively: Chaloupka & Limpus 2001).\nAlthough extreme fluctuations in population numbers of Green Turtles have not been recorded, the number of female Green Turtles that come ashore to nest each year fluctuates greatly depending on sea surface temperatures (DEH 2005a; Limpus & Nicholls 1988).\n\r\n \r\n \r\n \r\n \r\n Land Tenure of Populations\r\n \r\n \r\n Top\r\n \r\n \r\n \r\n The draft recovery plan for marine turtles found in Australia (DEH 2005b) notes that the Green Turtle occurs in the following reserves:\nQueensland\n Great Barrier Reef Marine Park\n Moreton Bay Marine Park\n Mon Repos Conservation Park\n Capricornia Cays National Park and Capricornia Cays National Park Scientific\n Great Sandy National Park\n Swain Reefs National Park\n Bushy Island National Park\n Barubbra Island Conservation Park\n Mouth of Baffle Creek Conservation Park 1 and 2\n Mouth of Kolan River Conservation Park\n Percy Islands National Park\n Raine Island Nature Refuge\n Sandbanks National Park\n Denham Group National Park\n Saunders Islands National Park\n Sir Charles Hardy Group National Park\n Clairmont Isles National Park \n Howick Group National ParkWestern Australia\n Ashmore and Cartier Nature Reserves\n Ningaloo Marine Park\n Shark Bay World Heritage Area\n Dampier Archipelago Nature Reserve\n Thevenard Island Nature Reserve\n Barrow Island Nature

Reserve\n Montebello Conservation Park\n Cape Range Conservation Park\n Muiron Islands Nature ReserveNorthern Territory\n Kakadu National Park\n Coburg Marine Park\n Gurig Gunalc Barlu National Park\n Dhimurru Indigenous Protected AreaCoral Sea Islands Territory\n Coral Sea National Nature ReserveCocos Islands\n Cocos (Keeling) IslandsThese reserves protect the feeding and nesting grounds, and inter-nesting habitat (where females occur at non-breeding times) of marine turtles in Australia, including the Green Turtle.\nSome Green Turtles that nest on the North West Shelf of Western Australia migrate through Ningaloo Marine Park and feed in Shark Bay Marine Park and Cobourg Marine Park (Pendoley 2005). Green Turtles also occur in Coringa-Herald National Nature Reserve in the Coral Sea (Harvey et al. 2005; IPSTCG 2003).\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 Green Turtles spend their first five to ten years drifting on ocean currents. During this pelagic (ocean-going) phase, they are often found in association with driftlines and rafts of Sargassum (a floating marine plant that is also carried by currents) (Robins et al. 2002; Poiner & Harris 1996; Carr & Meylan 1980).\nOnce Green Turtles reach 30 to 40 cm curved carapace length, they settle in shallow benthic foraging habitats such as tropical tidal and sub-tidal coral and rocky reef habitat or inshore seagrass beds. The shallow foraging habitat of adults contains seagrass beds or algae mats on which Green Turtles mainly feed (Musick & Limpus 1997; Poiner & Harris 1996; Robins et al. 2002; Whiting 2000a).\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 Female Green Turtles vary in their age at maturity depending on the different foraging grounds they occupy. Females may reach sexual maturity at between 25 to 50 years of age (Chaloupka et al. 2001). In one study, 88% of eggs laid hatched successfully (IPSTCG 2003). However, mortality of hatchlings may be high.To develop successfully, marine turtle eggs must be buried in sand that is aerated (but not exposed), low in salt, high in humidity (but not flooded), and between 25°C and 33°C (DEH 2005a). The sex of the hatchlings is determined by the temperature of the nest, with nests at or below 26°C producing all male hatchlings, and nests at or above 29°C producing all female hatchlings (Miller & Limpus 1981). Nests with intermediate temperatures produce mixed sex hatchlings, depending on the position, and therefore, temperature of individual eggs.\nBreeding male and female Green Turtles move from their feeding grounds to areas near nesting beaches for mating. The males then return to their feeding grounds, and the females come up onto the beach to lay their eggs, usually on several different nights (Robins et al. 2002).\nIn the southern Great Barrier Reef, mating begins in October and nesting occurs between October and March, peaking in January (DEH 2005a; Limpus 1993). Nesting in the northern Great Barrier Reef and in the Ashmore and Cartier Island region occurs all year, with a mid-summer peak (DEH 2005a). In the Gulf of Carpentaria, nesting occurs all year round with a mid-winter peak (Limpus 1995a). In Western Australia, nesting is between November and March, and in the Coral Sea it is between October and April with a peak from November to February. The nesting period of Green Turtles on Scott Reef is unknown (DEH 2005a).\nFemales lay an average of five clutches of around 115 eggs per season. The inter-nesting interval (time between successive clutches) is 14 days. Eggs are spherical and white, around 4.4 cm in diametre and 47 g in weight (DEH 2005a). The incubation period is 64 days (Limpus 1995a). Female Green Turtles breed every one to nine years. The number of females breeding each year is correlated with the Southern Oscillation Index, which determines sea surface temperatures (Limpus et al. 1994b; Limpus 1995a; Limpus & Nicholls 1988; Limpus & Walter 1980).\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 Adult Green Turtles eat mainly seagrass and algae, although they will occasionally eat other items including mangroves (Forbes 1994; Limpus & Limpus 2000; Pendoley & Fitzpatrick 1999), fish-egg cases (Forbes 1994), jellyfish (Limpus et al. 1994a) and sponges (Whiting 2000a). Young turtles tend to be more carnivorous than adults (Brand-Gardner et al. 1999; Cogger 2000; Whiting 2000a). During their pelagic phase (while drifting on ocean currents), young Green Turtles also eat plankton (Cogger 2000).\nIt is estimated that most (and possibly all) of the Green Turtles that nest in north-east Arnhem Land remain in the Gulf of Carpenteria to feed (Kennett et al. 1998).\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 Green Turtles can migrate more than 2600 km between their feeding and nesting grounds. The average migration distance of turtles nesting on the Great Barrier Reef is approximately 400 km. Individual turtles foraging in the same area do not necessarily take the same migration route (Limpus et al. 1992). Green Turtles tagged during nesting in the southern Great Barrier Reef have been recaptured in foraging grounds in the northern Great Barrier Reef, Papua New Guinea, New Caledonia and the Torres Strait. Likewise, turtles nesting in the northern Great Barrier Reef have been recaptured in feeding grounds in the Gulf of Carpentaria, Indonesia, Papua New Guinea and the Solomon Islands (Limpus et al. 1992; 1994c). In Western Australia, Green Turtles tagged during nesting in on Lacepede Island move to foraging grounds in the Kimberley region of Western Australia, Arnhem Land, the Gulf of Carpentaria in Queensland and Indonesia (Prince 1993; Prince 1994b). Satellite

tracking has shown that Green Turtles nesting on Barrow Island and Sandy Island (Scott Reef, Western Australia) feed between 200 km and 1000 km from their nesting beaches (Pendoley 2005).\nHatchlings swim actively out to sea, and are then carried passively by currents during their pelagic phase. Juvenile Green Turtles must swim long distances against the current to get back to the coastal habitats where they live as adults (Luschi et al. 2003).In their foraging habitats, Green Turtles are sedentary in the short and long term (Limpus et al. 1994a; Whiting & Miller 1998).\nFemales usually remain in shallow water within 5\u009610 km of the beach between nesting episodes (Pendoley 2005). They can lay on multiple beaches within and between nesting seasons (Limpus et al. 2003).\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 Marine Turtles are generally surveyed during the nesting season, when they emerge from the sea at night (DEH 2005a). The tracks of Green Turtles, Hawksbill Turtles, and Flatback Turtles are distinguishable from one another. Green Turtle tracks have front flipper marks overlapping their back flipper marks; paired, symmetrical front flipper marks; and a short distance between sets of flipper marks. Flatbacks have only a slight overlap between front and back flipper marks; a straight central line in the sand from dragging the tail tip; and a broad central belly mark. Hawksbill Turtles have front flipper marks equal to or slightly wider than back flippers; back flipper marks widely spaced and curled; and the rear flippers, belly and tail produce a zig-zag pattern due to the turtle's alternating gait (Pendoley 2005).\n\r\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 In Australia, the main current threats to Green Turtles are disturbance (e.g. light disturbance) and habitat damage due to coastal development; by-catch from fisheries and shark control measures; predation on nests; boat strikes; entanglement and ingestion of marine debris; and in some areas, indigenous harvesting (DEWHA 2008; Lanyon et al. 1989). Potential threats include changes to the sea surface temperature, particularly changes to the Southern Oscillation Index, which determines breeding intervals; chance disasters (e.g. oil spills); and feral predator invasions (DEH 2005b).\nDisturbance of hatchlings by artificial lights\nHatchling sea turtles emerge from their nests at night and are attracted to the brighter, lower elevation sea horizon and away from shadows from dunes and vegetation. Hatchlings that move towards artificial lights instead of the sea are likely to be killed by predators or exposure, or burned if they are attracted to fire (Pendoley 2005).\nA study on the impact of artificial lights on turtles nesting on Barrow Island, the Lowendal Islands and the Montebello Islands complex on the North West Shelf of Western Australia confirmed that sea turtle hatchlings can see ultraviolet and visible light, and respond most strongly to short wavelengths (blue and green) (Pendoley 2005). The threat to hatchlings from lights depends on its wavelength and strength, and the amount of moonlight.\nOne study (Pendoley 2005) found that the hatchlings of a related sea turtle species (Hawksbill Turtle) were generally attracted to sources of light that were 100 to 200 m away from the nest, but generally moved towards the ocean if the lights were 500 to 800 m away. All lights (at 500 Watt) were found to affect hatchlings at a distance of 200 m. Hatchlings were found to be attracted to short-wavelength lights (UV, blue and green lights) at lower light intensities than to high pressure sodium vapour lights (e.g. streetlights, which emit yellow-orange light) and gas flares (open flames that burn excess gas, emitting mainly long wavelengths). Single 250 W sodium vapour lights that are 200 m away or further had no detectable effect, while 500 W fluorescent lights attracted hatchlings at a distance of 800 m. Some distant offshore lights from pearling vessels and drilling rigs (for example an offshore drilling rig 3.3 km away) were bright enough to affect hatchling movements. Oil and gas processing facilities and offshore vessels on the North West Shelf of Western Australia use mercury vapour, metal halide and fluorescent lamps that emit light concentrated in the short wavelength range that attracts hatchling Green Turtles. On moonlit nights, hatchlings will selectively move to the ocean rather than to gas flares, but flares may attracted them on moonless nights (Pendoley 2005).\nOther aspects of coastal development and industry\nThe number of Green Turtles affected annually from collisions with boats is unknown. However, the effect of shipping and recreational boating is likely to be similar to that of Hawksbill Turtles, with which they share much of their distribution. Hawksbill Turtles migrate close to the ocean surface along the coast and use shipping channels between their breeding and feeding grounds. In eastern Queensland, at least 65 turtles were killed between 1999 and 2002 when they were hit by vessels, a mortality risk comparable to that of trawling without Turtle Excluder Devices in the region. However, Hawksbills are not as frequently struck by boats in Queensland as some other species of turtles (Hazel & Gyuris 2006). The Dampier Archipelago in Western Australia is an important migration route for Hawksbill Turtles and one of the busiest ports in Australia. Migratory pathways north of the Dampier Archipelago are unprotected by conservation reserves, as are those between Scott Reef and the Joseph Bonaparte Gulf in the Northern Territory.\nTurtles may also be harmed by seismic discharges during mining and exploration, and habitat damage as a result of pipeline installation, dredging and construction (Pendoley 2005).\nDisruptions to nesting beaches can prevent female Green Turtles from nesting and can kill hatchlings. Disruptions

include erosion and erosion control measures such as drift fencing; rubbish; recreational vehicles; shoreline developments; marina and jetty developments; beach cleaning; sand compaction and beach nourishment (adding sand) (Robins et al. 2002; US Fish & Wildlife Service 1999).\nBy-catch \nTrawling is responsible for more sea turtle deaths than any other human-related factor (Bisong 2000). In the late 1980s, 5000 to 6000 sea turtles were caught each year as by-catch in the Australian Northern Prawn Fishery (off the north coast of Australia), with a mortality rate of up to 39% (14% from drowning in the net, and 25% from injury or drowning after being returned to the ocean comatose) (Poiner & Harris 1996). Robins (1995) found that around 5 300 turtles are caught in the Queensland East Coast Prawn Fishery each year. However, only 1% to 7% of these turtles die, because the duration of trawls is generally short enough not to drown them (less than 80 minutes). The use of Turtle Excluder Devices (TEDs) was made compulsory in Queensland in 1999, and in the Australian Northern Prawn Fishery in 2000. Before TEDs were introduced, an average of 0.24 turtles were caught per Banana Prawn trawl, and 0.30 turtles per Tiger Prawn trawl. Since the introduction, the capture rates have dropped to 0.007 and 0.009 turtles per Banana Prawn and Tiger Prawn trawl, respectively. Some turtles are still caught because the TED becomes blocked (e.g. with starfish), small turtles pass through it, or the net is winched up before the turtle has reached the TED. Turtles are also caught in the 'try gear' (small trawls to sample prawn density before the main trawl, which are not required to be fitted with TEDs), but the duration of these captures is short and unlikely to drown turtles (Robins et al. 2002).\nSubstantial numbers of turtles die during pound netting, gill-netting, purse seine netting and lobster and crab pot trapping, because they are hooked or become entangled in lines. The Australian Tuna and Billfish Longline Fisheries also catch around 400 turtles per year (DEH 2005a).\nShark nets and hook lines around swimming beaches also kill turtles (Robins et al. 2002). Between 1962 and 1998, the Queensland Shark Control Program caught 4300 turtles, with about 20% dying before release (DEH 2005a).\nPredation\nIntroduced and native fauna is known to prey upon marine turtle eggs. Feral pigs, foxes, feral dogs, dingoes,\nbandicoots and goannas have been identified as predators on marine turtle eggs in parts of mainland Australia, and goannas are thought to be a problem on some islands (Environment Australia 2003ai). The magnitude of the problem is not known across the whole range of marine turtle nesting habitat.\nPredation by the European red fox has been identified as a key threatening process. A threat abatement plan has been prepared by the Commonwealth to ameliorate the impact of foxes on native species (Environment Australia 1998b). Feral pigs destroy nests in Queensland (Environment Australia 1998).\nMarine debris and pollution\nEating discarded plastic or other debris (e.g. plastic bags, styrofoam beads, packing tape and rope fragments) can cause internal blockage, ulcers, poisoning and suffocation in Green Turtles. Turtles may also be injured or killed if they become entangled in debris. Oil and tar on beaches and on the water surface can choke or poison turtles, or inhibit swimming. Other potentially harmful pollutants include pesticides, heavy metals, organochlorides, and sewage from the land or from boats. These substances can pollute feeding grounds and increase disease in turtles (Robins et al. 2002). Floating debris particularly affects juvenile turtles, because they spend their first years drifting in convergences (rips, fronts and driftlines formed by ocean currents). Such convergences affect debris and young turtles similarly, drawing both into the convergence by downwellings in the open ocean (Carr 1987a).\nDiscarded fishing nets ('ghost fishing') are responsible for a substantial number of deaths of turtles in Australia (Chatto et al. 1995). Ghost nets are an especially serious problem in the Gulf of Carpentaria, where currents draw them in from the north then circulate them indefinitely. A study in 2005 found around 170 kg of marine debris per kilometre of coast, including more than 400 ghost nets over the whole area. Green Turtles are one of the most frequently caught species in 'ghost nets' and other discarded debris (DEH 2005a; White 2005, as cited in DEH 2005a).\nDisease\nThe incidence of fibropapilloma disease has increased in recent years in southern Queensland populations, with approximately 8% of Green Turtles in Moreton Bay having external symptoms of the disease. The impact of the disease on turtle populations is unknown (Limpus & Miller 1994; Limpus et al. 1994a).\nBoatstrike and propeller cuts\nIn recent decades there has been an increase in the number of turtles killed by collision with vessels and cuts from propellers (Greenland et al. 2004). With an increase in the numbers of vessels being used in coastal waters, injuries to turtles from collisions and propeller cuts from vessels is expected to increase.\nTemperature change of nesting beaches and the marine habitat\nThe temperature of the nest affects the sex ratio of Green Turtle hatchlings. Cooler, more shaded beaches produce more males, while warmer, sunny beaches produce more females. Beaches become heated when cleared of coastal forest, or when heat-absorbing sand is imported for 'beach nourishment' of tourist areas, and potentially through global climate change. These changes result in female-biased populations. Human alteration to the temperature of nest sites can also increase parasites and diseases in the eggs and make some beaches unsuitable for nesting (DEH 2005a; US Fish & Wildlife Service 1999). Climate change scenarios predict reduced nesting habitat for sea turtles through rising sea levels and increased storm

erosion. Changing ocean circulation may also disrupt the ocean-going phase of juvenile sea turtles, and the predicted increase in coral bleaching and burning of seagrass habitats will reduce their food resources (DEH 2005a). Sea surface temperatures also have major effects on the frequency of sea turtle breeding (Solow et al. 2002). Changes to the Southern Oscillation Index will have a major effect on Australian breeding populations of Green Turtles.\nHunting\nGreen Turtles are hunted for food (Limpus 1998). In Australia, they are favoured over other species of marine turtles for their meat (DEH 2005a). The harvest in the Northern Territory is estimated to be in the thousands. In the Torres Strait, between 4000 and 6700 Green Turtles are harvested by Indigenous people each year (Johannes & MacFarlane 1991; Kwan 1991). It has been claimed that indigenous harvest of eggs may be unsustainable in northeast Arnhem Land (Kennett et al. 1998). There are serious concerns that the collective Indigenous harvest of marine turtles within the East marine region is not sustainable (DEW 2007a).\nIn Indonesia in excess of 20 000 Green Turtles are killed annually and the species has suffered huge declines (Limpus 1995b; Putra 1997). Around 100 000 Green Turtles are harvested annually in the region including Indonesia, Papua New Guinea, New Caledonia, the Solomon Islands, Fiji and Vanuatu. Heavy egg harvests still occur in Malaysia and Thailand (Limpus 1995b).\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 Reducing bycatch and harm to marine turtles\nNo commercial harvesting of sea turtles is permitted in Australia (DEH 2005a). The Queensland Commercial Fisherman's Organisation, the Queensland Department of Primary Industries, the Australian Fisheries Research and Development Corporation, and the Australian Nature Conservation Agency have together published a code of fishing ethics regarding the accidental capture of sea turtles (Robins et al. 2002). The recommendations of this code include:\nNo trawling within two to three nautical miles of major nesting beaches during the turtle nesting season.\n Limit the duration of trawls to less than 90 minutes in areas with high turtle numbers to minimise the number of netted turtles that drown.\n If turtles are caught, handle live and active individuals gently, and return them to the water as soon as possible. Apply the recommended recovery procedure to comatose turtles.\n Participate in research programs on the incidental capture rate and the effectiveness of turtle excluder devices, and forward information on any tagged turtles caught to the Queensland Southern Fisheries Centre.Shorter trawls reduce the chance of turtles drowning and being injured, and Turtle Excluder Devices reduce the number of turtles caught. Since the use of Turtle Excluder Devices was made compulsory in the Australian Northern Prawn Fishery in 2000, the catch of sea turtles has declined from around 5000 to around 200 per year. The death rate of captured turtles has also nearly halved, from around 40% to 22%, because of improved turtle handling procedures and the fact that most turtles are now caught when the net is winched up, and spend little time in the net (Robins et al. 2002).\nA recovery procedure has been developed to revive sea turtles that have been caught in nets and brought on board in a comatose state. Comatose turtles (which appear to be lifeless and not breathing) will drown if returned to the water. They may recover if the rear flippers are raised about 20° off the deck, and the turtle is supported, kept damp and shaded for 24 hours. This allows water to drain from the lungs. A 'turtle recovery procedure' brochure published by the Queensland Commercial Fisherman's Organisation and the Queensland Department of Primary Industry explains how to do this. A modification of the procedure involves placing a small plastic pipe into the turtle's windpipe and blowing gently. Around half of the turtles tested with this technique when they appeared to be dead recovered (Robins et al. 2002).\nCommonwealth By-catch Action Plans state that the catch of marine turtles must be reported, and By-catch Reduction Devices (e.g. Turtle Excluder Devices) must be used. By-catch Action Plans have been developed for the following fisheries (DEH 2005a):\nAustralia's Tuna and Billfish Longline and minor line fisheries\n Northern Prawn Fishery\n Torres Strait Prawn Fishery.In Western Australia, By-catch Action Plans have also been developed for the following fisheries:\nShark Bay Scallop Fishery\n Shark Bay Prawn Fishery\n Exmouth Gulf Prawn Fishery\n Nickol Bay Prawn Fishery\n Onslow Prawn Fishery\n Kimberley Prawn Fishery\n Broome Prawn Fishery\n Abrolhos Islands and Mid-West Trawl Fishery.In Australia, longline fishermen have been issued with de-hooking devices to release turtles that have been hooked in the mouth with minimum injury (DEH 2005a). Changing the size and shape of longline hooks and the type of bait can reduce turtle by-catch while still being commercially viable. For example, 4.9 cm circle hooks baited with fish caught fewer turtles than 4 cm J-shaped hooks in one longline fishery in the Atlantic Ocean. Turtles that were caught were also less likely to swallow the hooks (they were hooked in the mouth instead).\nOther strategies being assessed that might reduce turtle by-catch are:\nSubmerging hooks more deeply \n Retrieving lines faster from the water during the day \n Avoiding areas with the greatest risk of by-catch through communication programmes \n Seasonal fishery closures (Gilman et al. 2006). Pollution and Marine Debris\nMany traditional owner groups, community rangers, and Native Title representative organisations in Northern Australia are involved in projects to assess and reduce marine debris. These include the Dhimurru Land

Management Aboriginal Corporation of the Gulf of Carpentaria, and more than ten other communities in the Gulf of Carpentaria and Torres Strait (DEH 2005a, b).\nArtificial lights\nPendoley (2005) recommended the following methods to reduce harm to turtle hatchlings from light pollution:\nReplacing short-wavelength lights with longer wavelength lights \nShielding, lowering or directing light sources onto work areas\nFiltering existing lights to increase the wavelength (e.g. encasing fluorescent lights in yellow filter material)\nRelocating lights away from nesting beaches \nPainting equipment and vessels with dark, non-reflective paint to reduce light reflected into the sky \nEmbedding street lighting \nUsing motion sensors or timers in the vicinity of turtle nesting beaches so that lights are not constantly turned on.\nLimpus (2002) proposed a 1.5 km buffer zone to protect sea turtle hatchlings from artificial lights. \nEmbedding light-emitting diodes in the roadway pavement instead of using overhead lighting near turtle nesting beaches has been found to be effective (Bertolotti & Salmon 2005).\nReducing egg and hatchling loss\nBaiting for nest predators near rookeries (hatchling aggregations) reduces predation on turtle nests (DEH 2005a). Protective cages over nests are sometimes used. However, galvanized steel cages are magnetic and could alter turtles' subsequent ability to navigate back to their nesting beach as adults (Irwin et al. 2004). The use of non-magnetic materials has been recommended (Irwin et al. 2004).\nGnaraloo Station\nFeral animal control has been implemented along the Gnaraloo coast (which is part of Ningaloo Reef) each season between 2008/09 and 2011/12. The program targeted Foxes, Cats and Dogs with 1080 baiting immediately behind coastal rookeries, in surrounding hinterland, beaches adjacent to the rookeries and general targeted baiting in the remainder of Gnaraloo Station (i.e. around water sources) (Butcher & Hattingh 2012). In 2011/12, this program achieved zero mortalities from animal predation (Butcher & Hattingh 2012). It is recommended that the program continues in the future, with annual baiting during the turtle breeding season (November-April) and prior to the fox breeding season (May) (Butcher 2008, 2009, 2009a, 2010, 2011; Butcher & Hattingh 2012).\nGovernment funded community grants\nMapoon Aboriginal Shire Council received $10 840 of funding through the Threatened Species Network \nCommunity Grants in 2005\u009606, part of which was for the engagement of community members and volunteers to work with Rangers in protecting Green Turtle nesting sites from feral pig predation, and the removal of ghost fishing nets from three Mapoon beaches, western Cape York.\nOcean Watch Australia Ltd (NSW) received $24 860 of funding through the Threatened Species Network Community Grants in 2003\u009604 for demonstration of de-hookers and line-cutters to fishermen to increase industry's awareness of their application, provision of the devices and monitoring of experiences, communication of project outcomes to fishermen and production of an instruction video, aiming to reduce by-catch fatalities for the Green Turtle.\n\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 Green Turtle has been identified as a conservation value in the Temperate East (DSEWPaC 2012aa), North (DSEWPaC 2012x), North-west (DSEWPaC 2012y) and South-west (DSEWPaC 2012z) marine regions. See Schedule 2 of the North-west Marine Bioregional Plan (DSEWPaC 2012y), the North Marine Bioregional Plan (DSEWPaC 2012x) and the Temperate East Marine Bioregional Plan (DSEWPaC 2012aa) for regional advice. Maps of Biologically Important Areas have been developed for green turtle in the Temperate East (DSEWPaC 2012aa), North (DSEWPaC 2012x) and North-west (DSEWPaC 2012y) marine regions and may provide relevant additional information. Go to the conservation values atlas to view the locations of these Biologically Important Areas. The \"species group report card - marine reptiles\" for the South-west (DSEWPaC 2012z), North-west (DSEWPaC 2012y), North (DSEWPaC 2012x) and Temperate East (DSEWPaC 2012aa) marine regions provide additional information.\n\r\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 The following four management plans provide guides to threat abatement, conservation and research strategies for the Green Turtle:\nNorthern Prawn Fishery Bycatch Action Plan (Northern Prawn Fishery Management Advisory Committee 2003).\n Draft Recovery Plan for Marine Turtles (Environment Australia 1998).\n Recovery Plan for Marine Turtles in Australia (Environment Australia 2003). \n Sustainable Harvest of Marine Turtles and Dugongs in Australia \u0096 A National Partnership Approach (Marine And Coastal Committee 2005). \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 Bertolotti, L. & M.

Salmon (2005). Do embedded roadway lights protect sea turtles?. Environmental Management. 36:702-710.\r\n \r\n Bisong, S. (2000). The WTO Panel decision on the US shrimp embargo: Another ruling against US enforcement of species protection in trade. Natural Resources Journal. 40:699-726.\r\n \r\n Brand-Gardner, S.J., J.M. Lanyon & C.J. Limpus (1999). Diet selection by immature green turtles, Chelonia mydas, in subtropical Moreton Bay, South-East Queensland. Australian Journal of Zoology. 47 (2):181-191.\r\n \r\n Broderick, D., C. Moritz, J.D. Miller, M. Guinea, R.I.T. Prince & C.J. Limpus (1995). Genetic studies of the hawksbill turtle Eretmochelys imbricata: evidence for multiple stocks in Australian waters. Pacific Conservation Biology. 1:123-132.\r\n \r\n Butcher, M. (2008). Fox Control Program for Gnaraloo Station. Turtle Predation Minimisation Project (For turtle breeding season 2008/09). December 2008. Animal Pest Management Services. Available from: http://www.gnaraloo.com.au.\r\n \r\n Butcher, M. (2009). Fox Management Project. Technical Report for Gnaraloo (For turtle breeding season 2009/10). November 2009. Animal Pest Management Services. Available from: http://www.gnaraloo.com.au.\r\n \r\n Butcher, M. (2009a). Fox Control Program for Gnaraloo Station. Turtle Predation Minimisation Project (For turtle breeding season 2008/09). January 2009. Animal Pest Management Services. Available from: http://www.gnaraloo.com.au.\r\n \r\n Butcher, M. (2010). Fox Control Program for Gnaraloo Station. Turtle Predation Minimisation Project (For turtle breeding season 2009/10). February 2010. Animal Pest Management Services. Available from: http://www.gnaraloo.com.au.\r\n \r\n Butcher, M. (2011). Gnaraloo Fox Control Program. Report 2010/11, Protection of sea turtle rookeries on the Gnaraloo coast. June 2011. Animal Pest Management Services. Available from: http://www.gnaraloo.com.au.\r\n \r\n Butcher, M. & K. Hattingh (2012). Gnaraloo Feral Animal Control Program. Final Report 2011/12. 30 June 2012. Animal Pest Management Services and Gnaraloo Station Trust, Western Australia. Available from: http://www.gnaraloo.com.au.\r\n \r\n Carr, A. (1987a). Impact of nondegradable marine debris on the ecology and survival outlook of sea turtles. Marine Pollution Bulletin. 18(6b):352-356.\r\n \r\n Carr, A. & Meylan, A.B. (1980). Evidence of passive migration of green turtle hatchlings in Sargassum. Copeia. Page(s) 366-368.\r\n \r\n Chaloupka, M. & C. Limpus (2001). Trends in the abundance of sea turtles resident in southern Great Barrier Reef waters. Biological Conservation. 102:235-249.\r\n \r\n Chaloupka, M., C. Limpus & J. Miller (2001). Green Turtle somatic growth dynamics in a spatially disjunct Great Barrier Reef metapopulation. Coral Reefs. 23:325-335.\r\n \r\n Chatto, R., M.L. Guinea & S. Conway (1995). Sea turtles killed by flotsam in northern Australia. Marine Turtle Newsletter. 69:17-18.\r\n \r\n Cogger, H.G. (2000). Reptiles and Amphibians of Australia - 6th edition. Sydney, NSW: Reed New Holland.\r\n \r\n Cogger, H.G., E.E. Cameron, R.A. Sadlier & P. Eggler (1993). The Action Plan for Australian Reptiles. Canberra, ACT: Australian Nature Conservation Agency. Available from: http://www.environment.gov.au/biodiversity/threatened/action/reptiles/index.html.\r\n \r\n Department of Environment and Conservation (DEC) (2007). Marine Turtles in Western Australia. Western Australia, Department of Environment and Conservation. Available from: http://www.naturebase.net/content/view/2462/1401.\r\n \r\n Department of Environment and Heritage (2005b). Issues paper for six species of marine turtles found in Australian waters that are listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999. Commonwealth Department of Environment and Heritage: Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/recovery/marine-turtles/pubs/issues-paper.pdf. [Accessed: 02-Oct-2007].\r\n \r\n Department of the Environment and Heritage (2005b). Draft Recovery Plan for marine turtles found in Australia: Olive Ridley Turtle Lepidochelys olivacea, Loggerhead Turtle Caretta caretta, Flatback Turtle Natator depressus, Green Turtle Chelonia mydas, Hawksbill Turtle Eretmochelys imbricata & Leatherback. Canberra: Commonwealth Department of Environment and Heritage. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/recovery/marine-turtles/pubs/marine-turtle.pdf.\r\n \r\n Department of the Environment and Water Resources (DEW) (2007a). Draft East Marine Bioregional Plan: Bioregional Profile: A Description of the Ecosystems, Conservation Values and Uses of the East Marine Region.\r\n \r\n Department of the Environment, Water, Heritage and the Arts (DEWHA) (2008b). North-West Marine Bioregional Plan: Bioregional Profile: A Description of the Ecosystems, Conservation Values and Uses of the North-West Marine Region. Canberra: DEWHA. Available from: http://www.environment.gov.au/coasts/mbp/publications/north-west/bioregional-profile.html.\r\n \r\n Dethmers, K.M., D. Broderick, C. Moritz, N. Fitzsimmons, C. Limpus, S. Lavery, S. Whiting, M. Guinea, R.I.T. Prince & R. Kennett (2006). The genetic structure of Australasian Green Turtles (Chelonia mydas): exploring the geographical scale of genetic exchange. Molecular Ecology. 15:3931-3946.\r\n \r\n Environment Australia (1998b). Draft Recovery Plan for Marine Turtles in Australia. Environment Australia:

Canberra.\r\n \r\n Environment Australia (2003ai). Recovery Plan for Marine Turtles in Australia. Prepared by the Marine Species Section, Approvals and Wildlife Division, Environment Australia in consultation with the Marine Turtle Recovery Team. Available from: http://www.environment.gov.au/coasts/publications/turtle-recovery/index.html. In effect under the EPBC Act from 21-Jul-2003.\r\n \r\n Forbes, G.A. (1994). The diet of the green turtle in an algal-based coral reef community-Heron Island, Australia. In: Schroeder, B. A. & B. E. Witherington, eds. NOAA Technical Memorandum, NMFS-SEFSC-341. Page(s) 57-59. Proceedings of the Thirteenth Annual Symposium on Sea Turtle Biology and Conservation. National Technical Information Service: Springfield, Virginia.\r\n \r\n Gilman, E., E. Zollett, S. Beverly, H. Nakano, K. Davis, D. Shiode, P. Dalzell & I. Kinan (2006). Reducing sea turtle by-catch in pelagic longline fisheries. Fish and Fisheries. 7(1):2-23.\r\n \r\n Greenland, J.A., C.J. Limpus & K.J. Currie (2004). Queensland Marine Wildlife Stranding and Mortality Database Annual Aeport, 2001-2002, III: Marine Turtles. Queensland Environmental Protection Agency. Available from: http://www.epa.qld.gov.au/publications/p01293aa.pdf/Queensland_marine_wildlife_stranding_and_mortality_database_annual_report_20012002_III_Marine_turtles.pdf.\r\n \r\n Harvey, T., S. Townsend, N. Kenyon & G. Redfern (2005). Monitoring of Nesting Sea Turtles in the Coringa-Herald National Nature Reserve (1991/92-2003/04 nesting seasons). A Report for the Department of the Environment and Heritage. Indo-Pacific Sea Turtle Conservation Group, Inc.\r\n \r\n Hazel, J. & E. Gyuris (2006). Vessel-related mortality of sea turtles in Queensland, Australia. Wildlife Research. 33:149-154.\r\n \r\n Indo-Pacific Sea Turtle Conservation Group (IPSTCG) (2003). 2002-2003 Annual Report for the Department of Environment & Heritage. Department of Environment & Heritage: Canberra.\r\n \r\n Irwin, W.P., J.H. Amy & K.J. Lohman (2004). Magnetic field distortions produced by protective cages around sea turtle nests: unintended consequences for orientation and navigation?. Biological Conservation. 118:117-120.\r\n \r\n Johannes, R.E. & J.W. MacFarlane (1991). Traditional Fishing in the Torres Strait Islands. Page(s) 268. Hobart CSIRO.\r\n \r\n Kennett, R., N. Munungurritj & D. Yunupingu (1998). 'Migration Patterns of Marine Turtles in the Gulf of Carpentaria, Northern Australia: Implications for Aboriginal Management'. Wildlife Research. 31(3):241- 248.\r\n \r\n Kennett, R., N. Munungurritji & D. Yunupingu (1998). The Dhimurru Miyapunu Project. In: Kennett, R., A. Webb, G. Duff, M. Guinea & G. Hill, eds. Marine Turtle Conservation and Management in Northern Australia. Proceeding of a Workshop held at the Northern Territory University, 3-4 June 1997. Page(s) 69-75. Ctrs Indig. Nat. Cult. Resource Mgt/Trop.Wetl. Mgt. Darwin, Northern Territory University.\r\n \r\n Kwan, D. (1991). The turtle fishery of Daru, Western Province, Papua New Guinea: insights into the biology of the Green Turtle (Chelonia mydas) and implications for management. Page(s) 230. M.Sc. Thesis. Townsville, James Cook Uni.\r\n \r\n Lanyon, J.M., C.J. Limpus & H. Marsh (1989). Dugongs and turtles: grazers in the seagrass system. In: Larkum, A. W. D., A. J. McComb & S. A. Shepherd, eds. Biology of Seagrasses: A Treatise on the Biology of seagrasses with special reference to the Australian Region. Vol. Aquatic plant Studies 2. Amsterdam, Elsevier.\r\n \r\n Limpus, C.J (2007). A biological review of Australian marine turtle species. 2. Green turtle, Chelonia mydas (Linnaeus). Queensland Environmental Protection Agency.\r\n \r\n Limpus, C.J. (1993). The green turtle, Chelonia mydas, in Queensland: breeding males in the southern Great Barrier Reef. Wildlife Research. 20:513-523.\r\n \r\n Limpus, C.J. (1995a). Conservation of marine turtles in the Indo-Pacific region. Brisbane: Queensland Department of Environment and Heritage.\r\n \r\n Limpus, C.J. (1995b). Global overview of the status of marine turtles: a 1995 viewpoint. In: Bjorndal, KA, ed. Biology and Conservation of Sea Turtles. Revised edition. Washington, Smithsonian Institution Press.\r\n \r\n Limpus, C.J. (1998). Overview of Marine turtle conservation and management in Australia. In: Kennett, R., A. Webb, G. Duff, M. Guinea & G. Hill, eds. Marine conservation and management in Northern Australia. Proceedings of a workshop held at the Northern Territory University, Darwin, June 1997.\r\n \r\n Limpus, C.J. (2002). Western Australian Marine Turtle Review. Queensland Environmental Protection Agency: Brisbane.\r\n \r\n Limpus, C.J. (2004). A Biological Review of Australian Marine Turtles. Department of the Environment and Heritage and the Queensland Environmental Protection Agency.\r\n \r\n Limpus, C.J. & D.G. Walter (1980). The growth of immature green turtles Chelonia mydas under natural conditions. Herpetologica. 36(2):162-165.\r\n \r\n Limpus, C.J. & D.L. Limpus (2000). Mangroves in the diet of Chelonia mydas in Queensland, Australia. Marine Turtle Newsletter. 89:13-15.\r\n \r\n Limpus, C.J. & J.D. Miller (1994). The occurrence of cutaneous fibropapillomas in marine turtles in Queensland. In: James, R., ed. Proceedings of the Australian Marine Turtle Conservation Workshop, Gold Coast 14-17 November 1990. Page(s) 186-188. Qld Dept Env. & Heritage. Canberra, ANCA.\r\n \r\n Limpus, C.J. & N. Nicholls (1988). The Southern Oscillation regulates the annual numbers of green turtles Chelonia mydas breeding around northern Australia. Australian Wildlife Research. 15:157-161.\r\n \r\n Limpus, C.J. & R. Chatto (2004). 'Marine Turtles'. A Description of Key Species Groups in the Northern Planning Area.

National Oceans Office, Commonwealth of Australia, Hobart. Available from: http://www.environment.gov.au/coasts/mbp/publications/north/n-key-species.html.\r\n \r\n Limpus, C.J., J.D. Miller, C.J. Parmenter & D.J. Limpus (2003). The green turtle (Chelonia mydas) population of Raine Island and the northern Great Barrier Reef: 1843-2001. Memoirs of the Queensland Museum. 49:349-440.\r\n \r\n Limpus, C.J., J.D. Miller, C.J. Parmenter, D. Reimer, N. McLachlan & R. Webb (1992). Migration of green (Chelonia mydas) and loggerhead (Caretta caretta) turtles to and from eastern Australian rookeries. Wildlife Research. 19(3):347-358.\r\n \r\n Limpus, C.J., P. Eggler & J.D. Miller (1994c). Long interval remigration in eastern Australian Chelonia. In: NOAA Technical Memorandum. NMFS SEFSC. 341:76-77.\r\n \r\n Limpus, C.J., P.J. Couper & M.A. Read (1994a). The green turtle, Chelonia mydas, in Queensland: population structure in a warm temperate feeding area. Memoirs of the Queensland Museum. 35(1):139-154.\r\n \r\n Limpus, C.J., P.J. Couper & M.A. Read (1994b). The loggerhead turtle, Caretta caretta, in Queensland: population structure in a warm temperate feeding area. Memoirs of the Queensland Museum. 37(1):195-204.\r\n \r\n Luschi, P., G.C. Hays & F. Papi (2003). A review of long-distance movements by marine turtles, and the possible role of ocean currents. Oikos. 103:293-302.\r\n \r\n Marine And Coastal Committee (MACC) (2005). Sustainable Harvest of Marine Turtles and Dugongs in Australia - A National Partnership Approach. Natural Resource Management Ministerial Council. Available from: http://www.environment.gov.au/coasts/publications/pubs/turtle-harvest-national-approach.pdf.\r\n \r\n Marquez, R. (1990). FAO Species Catalogue; Sea Turtles of the World. An annotated and illustrated catalogue of the sea turtle species known to date. FAO Fisheries Synopsis. 125 (11):pp 81. Rome: Food and Agriculture Organisation of United Nations.\r\n \r\n Miller, J.D. & C.J. Limpus (1981). Incubation period and sexual differentiation in the Green Turtle Chelonia mydas L. In: Banks, C. B. & A. A. Martin, eds. Proceedings of the Melbourne Herpetological Symposium. Page(s) 66-73. Melbourne, The Zoological Board of Victoria.\r\n \r\n Musick, J.A. & C.J. Limpus (1997). Habitat utilization and migration in juvenile sea turtles. In: Lutz, P., & J. A.Musick, eds. The Biology of Sea Turtles. Page(s) 137-163. Boca Raton, Florida: CRC Press Inc.\r\n \r\n Northern Prawn Fishery Management Advisory Committee (2003). Northern Prawn Fishery Bycatch Action Plan. Available from: http://www.afma.gov.au/information/publications/fishery/baps/docs/npfbap03.pdf. [Accessed: 10-Jul-2007].\r\n \r\n Pendoley, K. & J. Fitzpatrick (1999). Browsing of mangroves by green turtles in Western Australia. Marine Turtle Newsletter. 84:10.\r\n \r\n Pendoley, K.L. (2005). Sea turtles and the environmental management of industrial activities in north-west Western Australia. Ph.D. Thesis. PhD Thesis, Murdoch University: Perth.\r\n \r\n Poiner, I.R. & A.N.M. Harris (1996). Incidental capture, direct mortality and delayed mortality of sea turtles in Australia's northern prawn fishery. Marine Biology. 125:813-825.\r\n \r\n Prince, R.I. (1994b). Status of the Western Australian marine turtle populations: the Western Australian Marine Turtle Project 1986-1990. In: Russell, J., ed. Proceedings of the Australian Marine Turtle Conservation Workshop, Gold Coast 14-17 November 1990. Page(s) 1-14. Queensland Department of Environment and Heritage. Canberra, ANCA.\r\n \r\n Prince, R.I.T. (1993). Western Australian marine turtle conservation project: an outline of scope and an invitation to participate. Marine Turtle Newsletter. 60:Aug-14.\r\n \r\n Putra, K.S. (1997). Awareness and education programme on marine turtle conservation in Bali: incorporating conservation themes into Balinese culture. In: Noor, Y. R., I. R. Lubis, R. Ounsted, S. Troeng & A. Abdullah, eds. Proceedings of the Workshop on Marine Turtle Research and Management in Indonesia. Jember, East Java, November 1996. Page(s) 159-167. Bogor, Wetlands International/ PHPA/ Env. Aust.\r\n \r\n Robins, C.M., A.M. Goodspeed, I. Poiner & B.D. Harch (2002). Monitoring the catch of turtles in the Northern Prawn Fishery. Fisheries Research and Development Corporation. Department of Agriculture, Fisheries & Forestry: Canberra.\r\n \r\n Robins, J.B. (1995). Estimated catch and mortality of sea turtles from the East Coast Otter Trawl Fishery of Queensland, Australia. Biological Conservation. 74:157-167.\r\n \r\n Schulz, J.P. (1984). Turtle conservation strategy in Indonesia. IUCN/WWF report. 6:1-84. Departemen Kehutanan: Bogor.\r\n \r\n Solow, A.R., K.A. Bjorndal & A.B. Bolten (2002). Annual variation in nesting numbers of marine turtles: the effect of sea surface temperature on re-migration intervals. Ecology Letters. 5:742-746.\r\n \r\n United States Fish & Wildlife Service (1999). Hawksbill Sea Turtle. Multi-species recovery plan for South Florida: a species plan, an ecosystem approach. Available from: http://www.fws.gov/southeast/vbpdfs/species/reptiles/hstu.pdf. [Accessed: 10-Jul-2007].\r\n \r\n Whiting, S.D. (2000a). The ecology of immature Green and Hawksbill Turtles foraging two reef systems in north-western Australia. Page(s) 370. Ph.D. Thesis. Darwin, Northern Territory University.\r\n \r\n Whiting, S.D. & J.D. Miller (1998). Short term foraging movements of green turtles in Repulse Bay. Journal of Herpetology. 32(3):330-337.\r\n \r\n Whiting, S.D., M. Guinea & G.D. Pike (2000). Sea turtles nesting in the Australian Territory of Ashmore and Cartier Islands, Eastern Indian Ocean. Pilcher, N. & G.

Ismail, eds.  Sea Turtles of the Indo-Pacific: Research Management & Conservation.  Page(s) 86-93.  ASEAN Academic Press, London.\r\n  \r\n  \r\n\r\n"