

Australian East Coast Migration Corridor IMMA

Description:

This IMMA includes the east Australian shelf waters from the southern Great Barrier Reef (~22°S) to Cape Howe (~37°S), the south-eastern corner of mainland Australia. In the tropical northern part of this area, the coast is dominated by estuaries with mangrove forests and sea grass meadows. South of the Great Barrier Reef, this gives way to sandy coastlines with broad surf beaches separated by rocky headlands, and two large, deep embayments, Hervey Bay and Moreton Bay. South of the New South Wales/ Queensland border, rocky headlands become increasingly common. In the southern area around Eden, the shelf is very narrow with the intrusion of a canyon close to shore which provides an upwelling where humpbacks feed during migration.

This long and diverse coastline and shelf waters serves as a well-described migratory corridor for the east Australian humpback whale distinct population segment (DPS) (Fig 1; Dawbin, 1966; Bryden, 1985; Paterson et al., 1994). This DPS of humpback whales was hunted extensively in the 1950s and early 1960s and likely declined to around 1% of its historical abundance (Paterson et al., 1994; Bannister & Hedley, 2001). The population, however, has recovered strongly with a rapid and consistent rate of increase of 10-11% per annum since dedicated surveys began in the early 1980s (Paterson et al., 1994; Noad et al., 2011, 2019) and there are now likely to be in excess of 30,000 whales in the population.

The whales migrate northwards from May to August and southwards from August to November (Dawbin, 1966; Paterson et al., 1994; Noad et al., 2019).



Area Size

125,481km²

Qualifying Species and Criteria

Humpback whale – *Megaptera novaeangliae*

Criterion C3; D1

Dwarf minke whale- *Balaenoptera acurostrata ssp.*

Criterion C3; D1

Marine Mammal Diversity

Orcaella heinsohni, *Sousa sahalensis*, *Dugong dugon*,
Stenella longirostris, *Pseudorca crassidens*, *Tursiops truncatus*, *Tursiops aduncus*, *Delphinus delphis*,
Orcinus orca, *Balaenoptera edeni*, *Eubalaena australis*, *Arctocephalus pusillus doriferus*,
Arctocephalus forsteri

Summary

The east Australian humpback whale population consists of approximately 30,000 whales, and these whales migrate annually along the east coast of Australia to and from their breeding grounds in the southern Great Barrier Reef region. The migratory corridor for this species is coastal and is well-described, particularly in southeast Queensland where the corridor is narrow and discrete. It is likely that this corridor is also used extensively by migrating dwarf minke whales although these are less well studied. A number of other species of marine mammals are present in significant numbers in these coastal waters that extend from ~22° to 37°S.

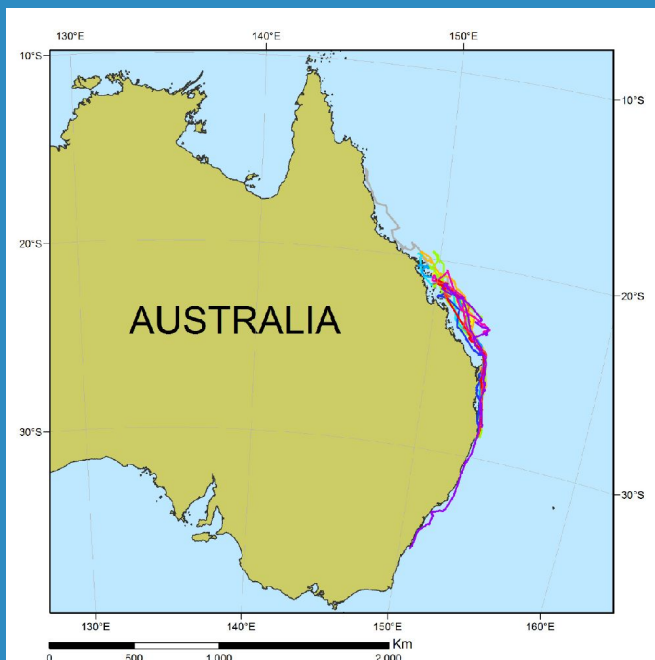


Figure 1 – Northbound humpback whale satellite tag tracks showing nearshore migratory movement and then limited dispersal in the southern Great Barrier Reef breeding area. Replicated from Gales et al. (2010).

Although some whales merge with and split from the migratory corridor along its length, a large proportion of the population likely uses the majority of the corridor.

The migratory corridor is also used by dwarf minke whales. Satellite tagging of dwarf minke whales on their aggregation in the northern Great Barrier Reef shows a near-coast migration south of the Great Barrier Reef that closely matches that of the humpbacks temporally and spatially (Fig. 2; Birtles et al., 2015). This is consistent with incidental minke whale sightings and acoustic recordings of minke whale sounds along the corridor in southeast Queensland (Noad, pers. obs.).

Other species that occur along the corridor can be divided into several assemblages. The first consists of the tropical inshore Australian snubfin dolphin, Australian humpback dolphin and dugong which are found in the tropical northern coastal areas and the large sub-tropical embayments of Hervey Bay and Moreton Bay. Along the exposed surf coast of Queensland and New South Wales there is a second

assemblage of inshore Indo-Pacific bottlenose dolphins, sporadically occurring Bryde's whales, and more generalist shelf water common dolphins, common bottlenose dolphins, and false killer whales. The coast off southern NSW supports a third assemblage with southern right whales commonly occurring in winter, killer whales occurring particularly in the Eden area, and Australian and New Zealand fur seals hauling out on rocky headlands and islands. Blue whales and sperm whales are also seen occasionally near Eden.

Criterion C: Key Life Cycle Activities Sub-Criterion C3: Migration Routes

This area encompasses the migratory corridor for the majority of the 30,000 east Australian humpback whales. The corridor has been well described, particularly in southeast Queensland where the

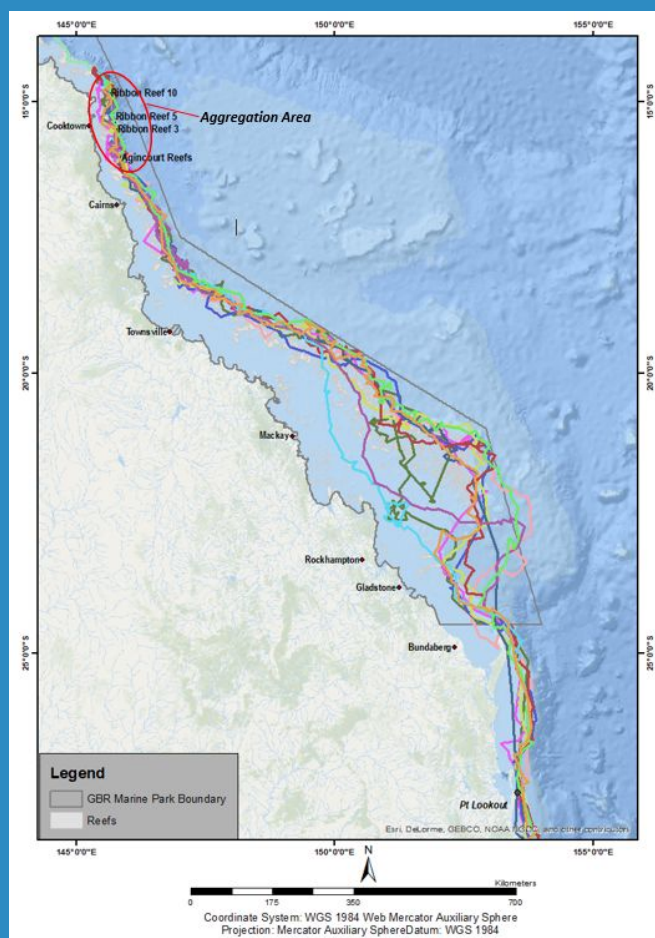


Figure 2 – Movements of satellite-tagged dwarf minke whales indicate aggregation area in the northern GBR (red circled area), and southward migration path (coloured lines); figure from Birtles et al. (2015). The corridor narrows and becomes inshore south of the Great Barrier Reef.

corridor is narrow and many studies have been undertaken (e.g. Bryden, 1985; Paterson et al., 1994; Noad et al., 2011, 2019). This has also been supported by limited satellite tagging of both northward and southward migrating whales (Gales et al., 2009, 2010) and land-based surveys in the southern part of the corridor (Pirotta et al., 2020). The migration of the dwarf minke whales are less well described. Satellite tagging of whales, however, shows that these whales are likely to migrate along the edge of the Great Barrier Reef but then move inshore off southeast Queensland and closely follow the coastline southwards (Birtles et al., 2015). This is supported by acoustic recordings of minke whales off southeast Queensland in the humpback whale migratory corridor and occasional visual sightings of minke whales during humpback whale land-based surveys (Noad, pers. obs.). For both species, although satellite tracks have continued beyond the southern end of the corridor presented here, tracks tend to disperse into Bass Strait and the Tasman Sea, and the impression of a narrow corridor disappears (Gales et al., 2009).

Criterion D: Special Attributes

Sub-criterion D1: Distinctiveness

This is the core migratory corridor for east Australian humpback whales. This population is genetically distinct from surrounding populations in Western Australia and Oceania (Schmitt et al. 2014, Rosenbaum et al. 2017). The whales migrate northwards from May to August and southwards from August to November (Dawbin, 1966; Paterson et al., 1994; Noad et al., 2019). Although some whales merge with and split from the migratory corridor along its length, a large proportion of the population likely uses the majority of the corridor.

Supporting Information

Arnold, P., Marsh, H. and Heinsohn, G. 1987. 'The occurrence of two forms of minke whales in east Australian waters with a description of external

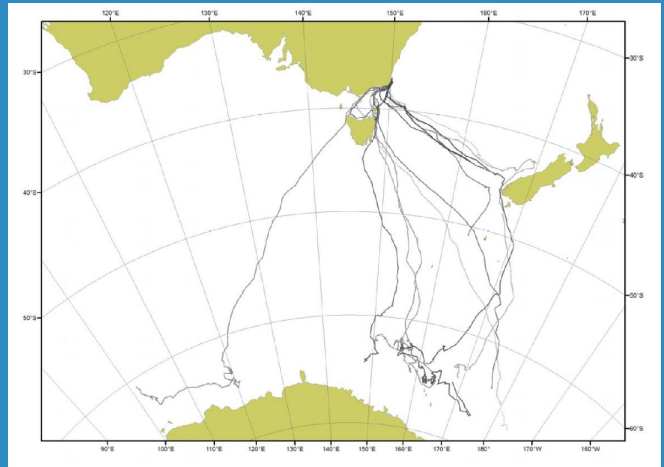


Figure 3 - Humpback whales satellite tagged near Eden at the bottom of the corridor show dispersal south of the Australian east coast. Taken from Gales et al. (2009).

characters and skeleton of the diminutive or dwarf form'. Scientific Reports of the Whales Research Institute, 38, 1-46.

Birtles, A., Andrews, R. and Jenner, C. 2015. Spatial ecology, migratory paths and critical areas of habitat use of Australia's dwarf minke whales. In Australian Marine Mammal Centre: Preliminary Final Report. Minke Whale Project, James Cook University.

Carroll, E.L., Baker, C.S., Watson, M., Alderman, R., Bannister, J., Gaggiotti, O. E. Grocke, D.R., Patenaude, N. and Harcourt, R. 2015. 'Cultural traditions across a migratory network shape the genetic structure of southern right whales around Australia and New Zealand.' Scientific Reports, 5, 16182.

Bryden, M.M. 1985. 'Studies of humpback whales (*Megaptera novaeangliae*), Area V'. In: J.K. Ling and M.M. Bryden (ed.) Studies of Sea Mammals in South Latitudes. South Australian Museum, Adelaide, 115-23.

Chittleborough, R.G. 1965. 'Dynamics of two populations of the humpback whale, *Megaptera novaeangliae* (Borowski)'. Australian Journal of Marine and Freshwater Research, 16, 33-128.

Dawbin, W.H. 1966. 'The seasonal migratory cycle of humpback whales.' In: K.S. Norris (Ed.) Whales, Dolphins and Porpoises (pp. 145-170). Berkeley: University of California Press.

Gales, N., Double, M., Robinson, S., Jenner, C., Jenner, M., King, E., Gedamke, J., Paton, D. and Raymond, B. and 2009. 'Satellite tracking of southbound East Australian humpback whales (*Megaptera novaeangliae*): challenging the feast or famine model for migrating whales.' Scientific Committee of the International Whaling Commission SC61/SH17

Gales, N., Double, M.C., Robinson, S., Jenner, C., Jenner, M., King, E., Gedamke, J., Childerhouse, S. & Paton, D. 2010. 'Satellite tracking of Australian humpback (*Megaptera novaeangliae*) and pygmy blue whales (*Balaenoptera musculus brevicauda*).' Scientific Committee of the International Whaling Commission SC/62/SH21.

Kavanagh, A.S., Owen, K., Williamson, M.J., Blomberg, S.P., Noad, M.J., Goldizen, A.W., Kniest, E., Cato, D.H. and Dunlop, R. A. 2017. 'Evidence for the functions of surface-active behaviors in humpback whales (*Megaptera novaeangliae*).' Marine Mammal Science, 33(1), 313-334.

Noad, M.J., Cato, D.H. and Stokes, M.D. 2004. 'Acoustic tracking of humpback whales: measuring interactions with the acoustic environment.' In: Proceedings of ACOUSTICS 2004, Gold Coast 3-5 Nov 2004. (pp. 353-358).

Noad, M.J., Dunlop, R.A., Paton, D. and Cato, D. H. 2011. 'Absolute and relative abundance estimates of Australian east coast humpback whales (*Megaptera novaeangliae*).' Journal of Cetacean Research Management, 3, 243-252.

Noad, M.J., Kniest, E. and Dunlop, R.A. 2019 'Boom to bust? Implications for the continued rapid growth of the eastern Australian humpback whale population despite recovery.' Population Ecology, 61, 198-209. doi: 10.1002/1438-390X.1014

Owen, K., Warren, J.D., Noad, M.J., Donnelly, D., Goldizen, A.W. and Dunlop, R. A. 2015. 'Effect of prey type on the fine-scale feeding behaviour of migrating east Australian humpback whales.' Marine Ecology Progress Series, 541, 231-244.

Paterson, R., Paterson, P. and Cato, D.H. 1994. 'The status of humpback whales *Megaptera novaeangliae* in East Australia thirty years after whaling.' Biological Conservation, 70, 135-142.

Pirotta, V., Reynolds, W., Ross, G., Jonsen, I., Grech, A., Slip, D. and Harcourt, R. 2020. 'A citizen science approach to long-term monitoring of humpback whales (*Megaptera novaeangliae*) off Sydney, Australia.' Marine Mammal Science 36:472-485.

Schmitt, N.T., Double, M.C., Jarman, S.N., Gales, N., Marthick, J.R., Polanowski, A.M., Baker, C.S., Steel, D., Jenner, K.C.S., Jenner, M-N., Gales, R., Paton, D. and Peakall, R. 2014. 'Low levels of genetic differentiation characterize Australian humpback whale (*Megaptera novaeangliae*) populations.' Marine Mammal Science, 30(1), 221-241.

Rosenbaum, H.C., Kershaw, F., Mendez, M., Pomilla, C., Leslie, M.S., Findlay, K.P., Best, P.B., Collins, T., Vely, M., Engel, M.E., Baldwin, R., Minton, G., Meyer, M., Florez-Gonzalez, L., Poole, M., Hauser, N., Garrigue, C., Brasseur, M., Bannister, J., Anderson, M., Olavarria, C. & Baker, C.S. 2017. 'First circumglobal assessment of Southern Hemisphere humpback whale mitochondrial genetic variation and implications for management.' Endangered Species Research, 32, 551-567.



MARINE MAMMAL PROTECTED AREAS TASK FORCE

IUCN SSC WCPA IMMA

GOBI TETHYS since 1986 WDC

Supported by:
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

based on a decision of the German Bundestag

We would like to thank the participants of the 2020 IMMA Regional Expert Workshop for the identification of IMMAs in the Australia, New Zealand and South East Indian Ocean seas region. Funding for the identification of this IMMA was provided by the Global Ocean Biodiversity Initiative funded by the German government's International Climate Initiative (IKI). Support was also provided by Whale and Dolphin Conservation and the Tethys Research Institute.

Suggested Citation: IUCN-MMPATF (2022). Australian East Coast Migration Corridor IMMA Factsheet. IUCN Joint SSC/WCPA Marine Mammal Protected Areas Task Force, 2022.

PDF made available for download at:
<https://www.marinemammalhabitat.org/portfolio-item/australian-east-coast-migration-corridor/>