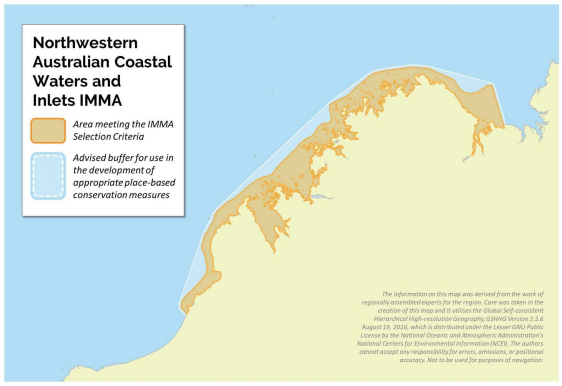

Area Size

53,603km^2

Qualifying Species and Criteria

Dugong – *Dugong dugon*
Criterion A; B (1); C (2)

Australian snubfin dolphin – *Orcaella heinsohni*
Criterion A; B (1); C (2); D (1)

Australian humpback dolphin – *Sousa sahulensis*
Criterion A; B (1); C (2)

Indo-Pacific bottlenose dolphin – *Tursiops aduncus*
Criterion B (1); C (2)

Marine Mammal Diversity

Megaptera novaeangliae, Stenella longirostris, Pseudorca crassidens, Orcinus orca, Balaenoptera musculus brevicauda

Summary

Compared to many other areas of Australia, relatively little is currently known about the shallow nearshore waters of northwest Australia, particularly for coastal marine mammal species. There have been detailed studies of coastal dolphins at several specific locations including Yawuru Nagulagun (Roebuck Bay), Beagle

Northwestern Australian Coastal Waters and Inlets IMMA

Summary cont…

Bay, King Sound, Malandoom (Prince Regent River) and Joseph Bonaparte Gulf and a broader assessment of dugong across the Kimberley region of Western Australia. Marine mammal species hold cultural significance to the Indigenous people of the northwest. A number of marine mammal species are known to occur in the IMMA either as seasonal migrants, regular visitors or resident populations. The four primary species of consideration for this IMMA are the Australian snubfin dolphin, Australian humpback dolphin, Indo-Pacific bottlenose dolphin and dugong. Secondary species include humpback whale, false killer whale and blue whale.

Description:

The boundary of this IMMA aligns with the network of Biologically Important Areas identified by the Australian Commonwealth for the dugong (*Dugong dugon*) and Australian snubfin dolphin (*Orcaella heinsohni*) across the northwest of Australia. It extends out to the 50m contour from Gourdon Bay in the south, encompassing the complex coastline and inland waters of the Kimberley coastline to the border with the Northern Territory in the north. The tropical Kimberley region of northern Western Australia is well known for its outstanding natural features, vast and remote landscapes and Indigenous cultural significance. The inshore marine environment has a rugged and dynamic coastline, characterised by tidal movements of up to 10 metres, forming extensive intertidal habitats adjacent to rocky shores and headlands, islands, sandy beaches and tidal rivers. This physically complex inshore environment supports a diverse range of habitats including

Figure 1 – Dugong on the surface
Photo credit: Alex Brown

seagrass, coral reefs, extensive intertidal mudflats and sponge-dominated filter-feeding communities with high levels of biological diversity. The importance of this region has been recognized through the creation of a network of State and Commonwealth marine protected areas that are jointly managed with Traditional Owners, stretching across Eighty Mile Beach Marine Park, Yawuru Nagulagun Roebuck Bay Marine Park, Lalang-garram, and North Kimberley Marine Park.

Eleven Aboriginal communities have saltwater country across this stretch of coastline, many with their own Healthy Country, Indigenous Protected Area and Marine Park management plans identifying cultural values, significance and ecological knowledge (e.g. Bardi Jawi Indigenous Protected Area Management Plan, Yawuru Nagulagun Marine Park Management Plan, Dambimangari Healthy Country Plan, Wunambal Gaambera Healthy Country Plan, Balangarra Healthy Country Plan, Mayala Healthy Country Plan, Karajarri Healthy Country Plan). Some of these identify spatial areas of importance to marine mammals and inform joint management of marine parks with State government, while others note the cultural importance of species.

Criterion A: Species or population vulnerability

Three of the four primary species relevant to this IMMA, dugong, Australian humpback dolphin and Australian snubfin dolphin, are all listed as Vulnerable by IUCN. This criterion may be particularly relevant for dugong as there is an estimated population of over 12,000 dugongs inhabiting the Kimberley region (Bayliss and Hutton, 2017) which represents more than 1% of the global dugong population.

Criterion B: Distribution and Abundance Sub-criterion B1: Small and Resident Populations

Known resident populations of coastal dolphins occur on Yawuru Nagulagun (Brown et al., 2014a, 2016ab, Raudino et al., 2019a; D'Cruz et al., 2022), in Cygnet Bay, Cone Bay (Brown et al., 2016ab) and Malandoom (Prince Regent River) (Raudino et al., 2019b). The three coastal dolphin species occur in low densities with limited connectivity between communities more than 100 km apart (Brown et al., 2016a). Relatively small populations of these species were identified at specific sites across the Kimberley, typically consisting of fewer than 60 individuals. Yawuru Nagulagun was identified as particularly important for snubfin dolphins (Bouchet et al. 2021; D'Cruz et al., 2022), with the highest density of this species anywhere in its range. Humpback dolphins were present in low numbers at all sites which may reflect their larger home ranges.

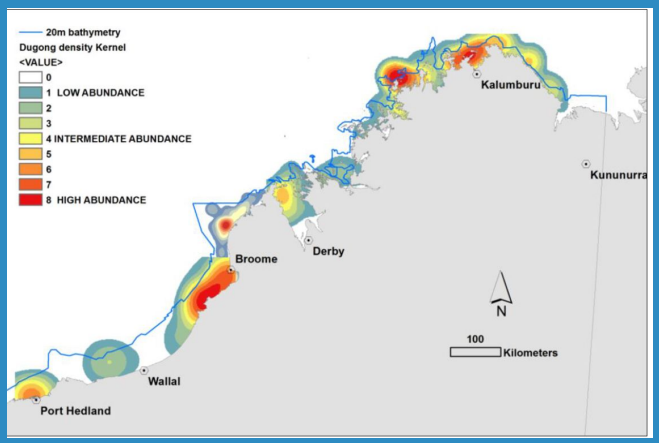

Figure 2 - Dugong abundance "hotspots" using aerial survey data collected between 2009 and 2017. All sighting data were used to map extrapolated and smoothed kernel densities across the 5-km aerial survey grid. Within the North and South Kimberley survey areas, red colours have the highest relative abundance and blue colours the lowest, with a colour-abundance range in between (orange, yellow & grey). (Bayliss and Hutton 2017).

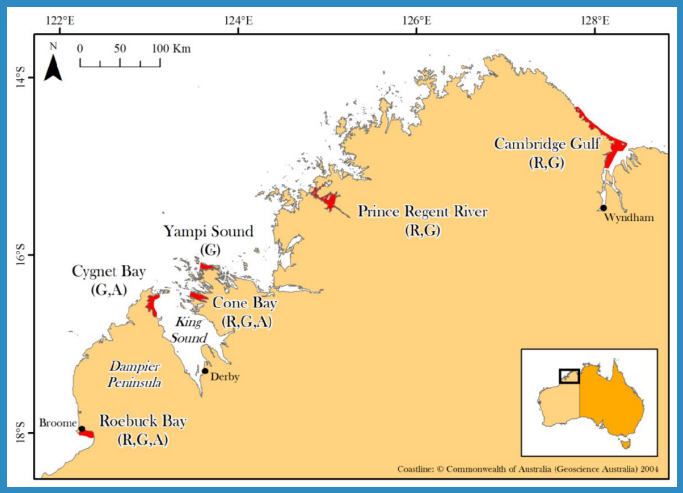

Figure 3 - The Kimberley region, highlighting the locations where data on dolphin abundance (R) and genetic structure (G) have been collected (taken from Brown et al., 2017).

Calves of Australian snubfin, Australian humpback and Indo-pacific bottlenose dolphins, and dugongs have been recorded across the IMMA. Given the residency of the three dolphin species at some sites and recorded presence of calves, these sites must be significant for these species. This would include Yawuru Nagulagun (Brown et al., 2014b, Raudino et al., 2019a), Cygnet Bay (Brown et al., 2014a, 2016) and Malandoom (Prince Regent River) (Raudino et al., 2019b; Bouchet et al., 2021).

Criterion C: Key Life Cycle Activities

Sub-Criterion C2: Feeding Areas

The area contains some large tidal rivers, productive rocky reefs and stands of mangroves that provide prey for relatively large resident populations of Australian snubfin, Australian humpback and Indo-Pacific bottlenose dolphins. Foraging behaviour of these three species has been observed across the region although the types of habitat that provide foraging resources vary. Foraging habitat within the IMMA includes rocky reefs, seagrass beds and mangroves, which all have associated fish assemblages that provide suitable prey for dolphins. Foraging behaviour has been observed and described for snubfin dolphins on Yawuru Nagulagun (Brown et al., 2014b, Raudino et al., 2019a) and Malandoom (Raudino et al., 2019b).

Seagrass beds are present and provide a foraging resource for dugongs. Predictive seagrass habitat mapping as well as seagrass surveys have aligned well with distribution maps of dugongs (Bayliss and Hutton 2018, Campbell et al., 2010).

Criterion D: Special Attributes

Sub-criterion D1: Distinctiveness

Snubfin dolphins have been observed engaging in a specialised foraging strategy that, so far, has only been seen in this species in Western Australia, despite extensive studies on this species in other parts of Australia (e.g. Northern Territory: Palmer et al., 2014; Queensland: Para et al., 2006). The technique of spitting has been observed whereby an individual spits a stream of water at the surface, presumably to startle fish in front of the animal and scare them back towards the dolphin (the closely related Irrawaddy dolphin, *Orcaella brevirostris*, is the only other cetacean known to do this). Spitting behaviour has been documented on Yawuru Nagulagun, in Malamdoom and Cygnet Bay (Raudino et al., 2019a, b). Several hybrids between a female Australian snubfin and a male Australian humpback dolphin have been observed in the Kimberley (Brown et al., 2014a).

Figure 4 – A large group of snubfin dolphins (*Orcaella heinsohni*) in Malandoom (Prince Regent River)
Photo credit: Alexandra D'Cruz

Supporting Information

Balanggarra Healthy Country Plan 2012-2022

Bardi Jawi Gaarra Marine Park Joint Management Plan 2022

Bardi Jawi Indigenous Protected Area Management Plan 2013-2023.

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