



## Kaimana, West Papua Papua IMMA

-  Area meeting the IMMA Selection Criteria
-  Advised buffer for use in the development of appropriate place-based conservation measures

The information on this map was derived from the work of regionally assembled experts for the region. Care was taken in the creation of this map and it utilizes the Global Sea-ecosystem Hierarchical High-resolution Geography (GSHHG) Version 2.1.5 August 19, 2016, which is distributed under the Lesser GNU Public License by the National Oceanic and Atmospheric Administration's National Centers for Environmental Information (NCEI). The authors cannot accept any responsibility for errors, omissions, or positional accuracy. Not to be used for purposes of navigation.

### Area Size

2 173 km<sup>2</sup>

### Qualifying Species and Criteria

Australian humpback dolphin – *Sousa sahalensis*

Criterion A; B (2); C (2)

Indo-Pacific bottlenose dolphin –

*Tursiops aduncus*

Criterion B (2); C (2)

Bryde's whale – *Balaenoptera edeni*

Criterion B (2); C (2)

Dugong – *Dugong dugon*

Criterion A

### Marine Mammal Diversity

*Stenella longirostris*, *Stenella attenuata*

### Summary

Kaimana IMMA is located in south-western, West Papua, Indonesia, and is part of the Raja Ampat Marine Protected Area (MPA) Network and Bird's Head Seascape. The Kaimana region is a 597,000 ha multiple-use Locally Managed Marine Area (IUCN Management Category VI) that was designated in 2008. It consists of a variety of coastal and oceanic habitats, which support a variety of marine mammal species. The species of high conservation significance within the IMMA are the 'Vulnerable' Australian humpback dolphin, 'Near Threatened' Indo-Pacific

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## Summary, continued.

bottlenose dolphin, *Tursiops aduncus*, 'Least Concern' Bryde's whale, *Balaenoptera edeni* and 'Vulnerable' Dugong. The Kaimana Region represents one of only three known locations in West Papua where Australian humpback dolphins have been confirmed. Australian humpback dolphins have not been recorded from any other area within the North East Indian Ocean and South East Asian Seas region. At least four other marine mammals have been confirmed to occur within the Kaimana IMMA, with more species (i.e. Australian snubfin dolphin) likely to be recorded with future dedicated survey effort.

## Description

Kaimana is located in south-western West Papua, Indonesia and is part of the Raja Ampat Marine Protected Area (MPA) Network and Bird's Head Seascape. This region is also located within the epi-centre of the Coral Triangle, an area of exceptional coral reef and marine biodiversity, which is a high conservation priority (White et al., 2014). The Kaimana IMMA consists of a variety of habitats, such as extensive riverine/coastal/estuarine mangroves in Arguni Bay and coral islands and deep narrow oceanic passages in the Iris and Namatotte Straits of Triton Bay. The Ceram Sea Canyon (2000 m depth) is also in close proximity to Triton Bay.

In 2008, the Kaimana government and traditional leaders declared a 597,000 ha multiple-use MPA that covers all of Kaimana waters out to four miles from shore (IUCN Management Category VI). The conservation decree, which was strongly facilitated by the Indonesian Ministry of Marine Affairs and

Fisheries (MMAF), excludes all commercial fisheries from Kaimana's waters and prioritizes the area for marine tourism, pearl and sea-weed aquaculture, local traditional fisheries, and enhancement of fish stocks through permanent closures in no-take areas (Beasley et al., 2016).

A dedicated Marine Mammal Rapid Ecological Assessment was conducted in the Kaimana region over nine days in 2009 (Kahn, 2009). During visual surveys, 52 marine mammal groups were sighted, consisting of six cetacean species; a small coastal form of Bryde's whale (*Balaenoptera edeni*), Indo-Pacific bottlenose dolphin (*Tursiops aduncus*), Australian humpback dolphin (*Sousa sahulensis*), Pantropical spotted dolphins (*Stenella attenuata*), spinner dolphin (*Stenella longirostris*), and the dugong (*Dugong dugon*). Triton Bay was considered a particularly important hotspot for Bryde's whales (Kahn, 2009). The Bryde's whales were well known by local villagers and are known to move regularly between Bitsyara and Triton Bays via the Namatote Strait in a predictable migratory route (Kahn, 2009). Bryde's whales were rarely encountered during other similar surveys in East Indonesia – including North Sulawesi and Sangihe-Talaud, Komodo, Solor-Alor, Derawan, Bali-Lombok and the Solomon Islands (Kahn and Pet, 2003). Triton Bay was therefore viewed as a vital Bryde's whale 'hotspot' for Indonesia as a whole (Kahn, 2009). Humpback dolphins were also consistently sighted in Triton Bay (Kahn, 2009).

Dedicated land-based observations were conducted in Arguni Bay, north Kaimana during January-April 2015, where 64 Australian humpback dolphin groups and 40 Indo-Pacific bottlenose dolphin groups were confirmed (Wijaya, 2015; Beasley et al., 2016). Arguni Bay was subsequently considered a hotspot for both species, given the consistent sightings throughout the survey period.

Based on studies conducted on other Australian humpback dolphin populations, and known threats along the West Papua coastline (i.e. bycatch in fisheries, habitat degradation from LNG developments and mangrove conversion), it is likely that Australian humpback dolphin populations in West Papua are small and declining, with particularly important aggregations of Australian humpback dolphins in Arguni Bay. Six marine mammal species were confirmed to occur in the Kaimana Region after only nine days of surveys. Many more marine mammal species (i.e. Australian snubfin dolphin, *Orcaella heinsohni*) are likely to be recorded with future dedicated survey effort.

## **Criterion A: Species or Population Vulnerability**

The Australian humpback dolphin and dugong are listed as 'Vulnerable' by the IUCN, and considered to be declining throughout their range (Parra et al. 2017; Marsh and Sobtzick, 2015). The major threats are known to be habitat loss and degradation, by-catch in fisheries, water pollution, underwater noise, floods and cumulative threats (Parra et al. 2017). West Papua represents the northwest extent of Australian humpback dolphins' known distribution, with the species confirmed to occur in three locations in West Papua: Mayalibit Bay, Bintuni Bay and Kaimana Region. These regions comprise extensive mangrove, estuarine and coastal habitat particularly important for their survival. Arguni Bay within the Kaimana Region is notably important, as it consists of extensive riverine/estuarine/coastal habitats. These habitats are subsequently important for the survival of Australian humpback dolphins and dugong in the region.

## **Criterion B: Distribution and Abundance**

### **Sub-criterion B2: Aggregations**

There are no known population or residency estimates for Australian humpback dolphins in the Kaimana Region. However, based on other known populations in northern Australia and southern Papua New Guinea, it is likely that the Australian humpback dolphin population in Arguni Bay is relatively small and resident (Parra et al., 2018; Beasley et al., 2013, 2015). Kaimana is one of only three regions in West Papua where Australian humpback dolphins have been sighted, with no other Australian humpback dolphin sightings known for the region. As a result of the habitat characteristics throughout Kaimana, it is proposed that aggregations of Australian humpback dolphins in this region represent an important concentration for this species. Kahn (2009) considered the population of Bryde's whales in Triton Bay to be small and resident. Although there was limited justification for this statement based on nine survey days, there is undoubtedly an important aggregation of Bryde's whales in the Kaimana Region, particularly between Bitsyara and Triton Bays via the Namatote Strait.

## **Criterion C: Key Life Cycle Activities**

### **Sub-Criterion C2: Feeding Areas**

The Kaimana Region is a notably important marine mammal feeding area, as the diversity of habitats represents an important prey base to a variety of marine mammal species. These habitats include riverine/coastal/estuarine mangroves regions of Arguni Bay, coral islands, and oceanic deep narrow passages and canyons. As a result of this rich biodiversity and productivity, the region provides an important nutritional base on which many marine mammal species depend. The known habitat preferences of humpback dolphins are shallow and

protected coastal habitats such as inlets, estuaries, shallow bays, inshore reefs and coastal archipelagos rather than in open stretches of coastline. In Queensland and Northern Territory, humpback dolphins are mainly found in water less than 20 km from the nearest river mouth and in water less than 15-20 m deep (Parra et al., 2004, 2017). Few animals have been observed in waters up to 30-50 m deep, but remained in close proximity (within 5 km) to the coast (Parra et al., 2004, 2017). In both Queensland and Northern Territory humpback dolphins have been also recorded as far as 20-50 km upstream in large rivers such as the East Alligator River, Northern Territory, and in the Fitzroy and Brisbane rivers in Queensland (Cagnazzi, 2010; Palmer et al., 2014; Parra et al., 2004). In Southern Papua New Guinea, humpback dolphins were only found adjacent to delta/coastal mangroves, and no further than 2km from the coast (Beasley et al. 2013; 2015). Arguni Bay within the Kaimana Region therefore represents ideal habitat to support biological productivity and concentration of prey aggregations for inshore dolphins, such as the humpback and Indo-Pacific bottlenose dolphin.

## **Supporting Information**

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**MARINE MAMMAL  
PROTECTED AREAS  
TASK FORCE**






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