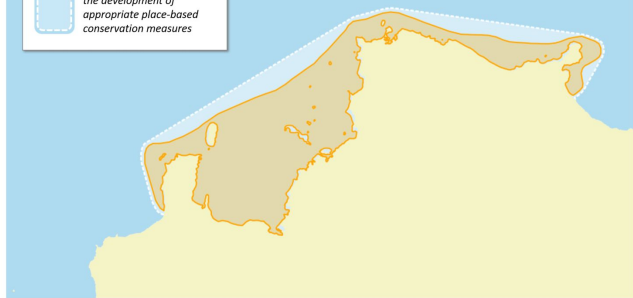


Tolitoli IMMA

- 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 Self-consistent Hierarchical High-resolution Geography, GSHHS Version 2.3.6 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

2 467 km²

Qualifying Species and Criteria

Dugong – *Dugong dugon*

Criterion A; C (1, 2)

Summary

Tolitoli is located in Central Sulawesi, Indonesia. It is recognised as one of the most important habitats for dugong (*Dugong dugon*), a species listed as vulnerable on the Red List. The boundary selection of the Tolitoli IMMA is based on the core area of inshore dugong sightings obtained during aerial, boat and feeding trail surveys in 2016 and community information collected before and during the survey. This area also has numerous seagrass meadows obtained from satellite-based data mapping in 2010. The outer boundary of the IMMA adopts the overlapping Convention on Biological Diversity – Ecological or Biological Significant Area (EBSA) region that encompasses the entire the Tolitoli area considering the possible range of dugong that could reach hundreds of kilometres.

Tolitoli IMMA

Description

Tolitoli is one of five locations in Indonesia that have been selected as Dugong and Seagrass Conservation Project (DSCP) implementation sites. The presence of dugong in Tolitoli has been known from the reports of the community. This came primarily from reports of the domestication of two dugongs for nine years in Santigi village (Herandarudewi et al., 2016). Supriyadi et al. (2010) mapped the seagrass meadows of Tolitoli and surrounding islands to strengthen the basis of habitat delineation for dugongs. The existence of dugong and seagrass ecosystems in this area was also highlighted in the national symposium of dugong and seagrass ecosystem in 2016 (Herandarudewi et al., 2016).

A visual survey was conducted in these areas in 2016, using three different methods: visual surveys from a boat, aerial survey, and underwater feeding trail identification. Additional bioacoustics surveys have also been carried out to investigate dugong presence. Four active dugongs were seen in Jelaje village, and one dugong was observed swimming at the same location on another survey day (Herandarudewi et al., 2016).

Historically, hunting has threatened the dugong population in Central Sulawesi, particularly in the Tolitoli area. Although dugongs are no longer hunted in this area, bycatch is an ongoing source of mortality. The species is also impacted by habitat loss and overlap with human activities. Acknowledging this area as an important marine mammal area has enhanced the opportunity to support effective management of the area.

Criterion A: Species or Population Vulnerability

The dugong is a globally threatened species, currently listed as a 'Vulnerable (A2bcd+4bcd)' on the IUCN Red List (Marsh and Sobtzick, 2015). Data on the dugong population size in Tolitoli or even in wider parts of Indonesia remains limited. Marsh et al. (2002) cited around 1,000 individuals in Indonesia. All marine mammals, including dugongs, are fully protected by the Indonesian government (Government of The Republic of Indonesia, 1999). Because of the dugong's relatively slow life history, population recovery after a perturbation will be slow.

Criterion C: Key Life Cycle Activities Sub-Criterion C1: Reproductive Areas

Scientific surveys and community sightings report that dugongs use the Tolitoli area for both feeding and reproduction. The domestication of two dugongs for nine years in Santigi village, Tolitoli (Herandarudewi et al., 2016), commenced when the locals started caring for dugong calves found in the area, demonstrating that the area may be crucial for the nursing of the wider population.

Sub-Criterion C2: Feeding Areas

Dugongs have been observed foraging on seagrass beds in Jelaje village, Tolitoli. Serpentine dugong feeding trails have also been recorded in this area, indicating that dugongs forage in these seagrass beds (Herandarudewi et al., 2016) leaving a distinctive track. The location in which feeding trails were found is close to the areas where dugongs were most frequently recorded (Herandarudewi et al., 2016). *Halodule uninervis*, *Cymodocea serrulata*, *Halophila ovalis* and *Thalassia hemprichii* were the most abundant seagrasses in the vicinity of the feeding trails. The number of feeding trails in the

seagrass meadows close to Jelaje Village indicate that this location is dugong foraging habitat.

Supporting Information

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**MARINE MAMMAL
PROTECTED AREAS
TASK FORCE**



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<https://www.marinemammalhabitat.org/portfolio-item/tolitoli/>