Appendix

Template for Submission of Scientific Information

to Describe Ecologically or Biologically Significant Marine Areas

*Note: Please **DO NOT** embed tables, graphs, figures, photos, or other artwork within the text manuscript, but please send these as separate files. Captions for figures should be included at the end of the text file, however.*

Title/Name of the area:

Kisite-Mpunguti Marine Protected Area (KMMPA)

Presented by (*names, affiliations, title, contact details)*

Sergi Pérez Jorge – Marine Programme GVI (Global Vision International)

sergiperezjorge@gmail.com

Zeno Wijtten – Programme Manager GVI (Global Vision International) Kenya South Coast

mkwiro@gviworld.com

Abstract (*in less than 150 words)*

The knowledge of marine mammals inhabiting Kenyan coastal waters remains meager. GVI carried out boat-based surveys around Kisite-Mpunguti Marine Protected Area (KMMPA) during a 4-year period from 2006 to 2009, covering an area of *circa* 360 km^2. The 13401 km of survey search effort resulted in 620 sighting records; the most frequently seen species was the Indo-Pacific bottlenose dolphin, observed year-round in shallow waters (<20m deep) of Kisite and Mpunguti islands, inside the MPA, and Funzi Bay, outside the MPA. Indo-Pacific humpback dolphin was seen 88 times throughout the year most frequently in the Wasini Channel, outside the MPA, in waters < 15m deep. The humpback whale occurred seasonally, mostly inside the MPA between July and December. The rarest species was the spinner dolphin seen only in deeper waters (20-100m) between December and March. These results suggest that KMMPA represents an important area that seemingly encompasses habitat features of ecological and behavioral importance to several cetacean species.

Introduction

(To include: feature type(s) presented, geographic description, depth range, oceanography, general information data reported, availability of models)

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Kenya has six Marine Protected Areas spread along the coastline, including four fisheries closure marine parks and six restricted fishing marine reserves, covering nearly 9% of the continental shelf up to 200 m depth, being one of the highest percentage along the Western Indian Ocean.

Kisite-Mpunguti Marine Protected Area (KMMPA, 04°04'S - 39°02'E), located on the southern coast of Kenya, lies south of Wasini Island and incorporates the Kisite Marine Park, the largest no-take area in Kenya (28km²), and the adjacent Mpunguti Marine Reserve, Kenya's smallest reserve (11 km²) (Fig.1). This MPA was established in 1978 and it has been under administration of Kenya Wildlife Service since 1988, a governmental institution, who conserve and manage Kenya's wildlife as well as it is responsible for managing all protected areas around the country. KMMPA covers shallow waters (0-15 meters) and supports a high diversity of marine life including corals, reef fish and sea turtles. Furthermore, the MPA protects islands which are home to populations of the rare coconut crab and Kisite Island has been considered as an Important Bird Area (IBA) hosting species such as the sooty tern (*Sterna fuscata*) and large numbers (up to 1.000 breeding pairs recorded) of Crested tern (*Thalasseus bergii*) and roseate terns (*Sterna dougallii*). Of equal importance for the long-term environmental management of this region are the habitats and wildlife in areas surrounding the MPA that do not fall under protection, and encompasses a wide range of habitats from mangrove forests, coral reefs, sea grass beds and offshore waters which are considered important fish nursery grounds.

The study area is influenced by the monsoon winds of the Indian Ocean. The north-eastern monsoon (known as *kaskazi*) blows from December to March, bringing calm weather, with low wave height and temperatures comprise between 28-32ºC. The south-eastern monsoon (known as *kisi*) blows from May to October, usually windy, rough seas and cool temperatures (24-26ºC). The transition periods are characterized by variable and weaker winds. Rainy periods occur between the monsoon seasons with the long rains occurring from March to May and the short rains from October to December, with a mean annual rainfall ranging from 1000 to 1600mm.

Location

(Indicate the geographic location of the area/feature. This should include a location map. It should state if the area is within or outside national jurisdiction, or straddling both. It should also state if the area is wholly or partly in an area that is subject to a submission to the Commission on the Limits of the Continental Shelf)

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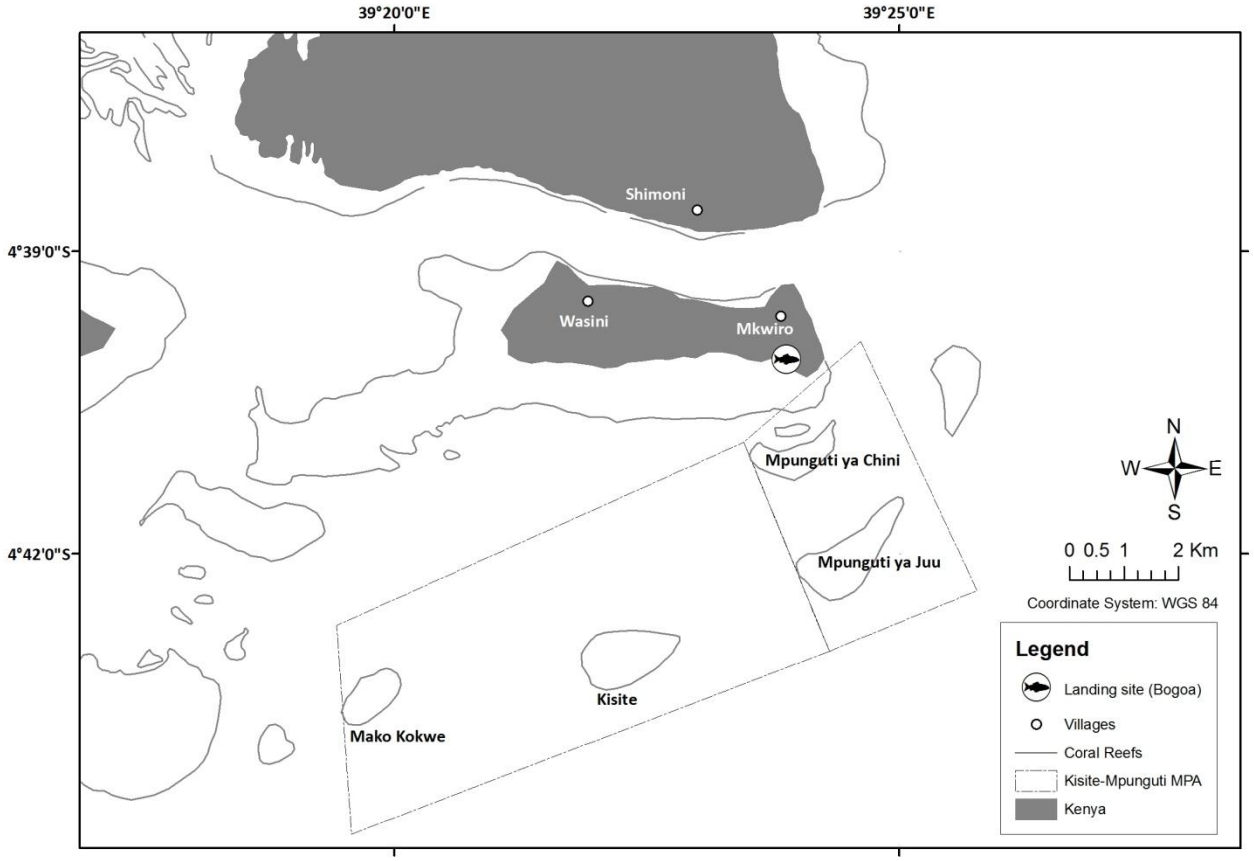

Fig. 1. Kisite Marine Park and Mpunguti Marine Reserve is within Kenyan national jurisdiction and is a gazetted Marine Protected Area.

Feature description of the proposed area

(This should include information about the characteristics of the feature to be proposed, e.g. in terms of physical description (water column feature, benthic feature, or both), biological communities, role in ecosystem function, and then refer to the data/information that is available to support the proposal and whether models are available in the absence of data. This needs to be supported where possible with maps, models, reference to analysis, or the level of research in the area)

Kisite-Mpunugti Marine Protected Area covers a total of 38km^2 and has it been recognised by its diverse ecosystems and habitats including coral reefs, sea grass meadows, mangrove forests which support a rich biodiversity including sea turtles, dolphins, whales and coral reef fish species.

Samoilys (1988) found similar biomass of the major commercial families (Lethrinidae, Lutjanidae and Serranidae) between the Mpunguti Marine Reserve and the Kisite Marine National Park. In 1989, the administration of the park changed from the Wildlife Conservation and Management Department to

Kenya Wildlife Service, applying a more effective enforcement of the fishing ban and as a result increasing the fishing pressure in the reserve. Three years after the new management took place greater abundance and biomass of commercial coral reef fish species were encountered in Kisite compared to Mpunguti (Watson & Ormond 1994). The biomass of these species kept increasing in the park from 682 ± 48.9 kg/ha in 1996 to 1354 ± 89.1 kg/ha in 2004 (McClanahan et al. 2006). This area had 2.8 times higher biomass compared to the Tanga district, in northern Tanzania (McClanahan et al. 2006) and the highest number of species recorded in visual transects along the Kenyan coast (McClanahan et al.2010), highlighting the ecological importance of the area as a food resource for Indo-Pacific bottlenose dolphins.

Feature condition and future outlook of the proposed area

(Description of the current condition of the area – is this static, declining, improving, what are the particular vulnerabilities? Any planned research/programmes/investigations?)

Vulnerabilities and threats to the area include:

1. Over fishing
2. Mangrove deforestation
3. Coastal development and habitat loss
4. Tourism related development
5. Solid waste pollution
6. Human population increase

Several programmes and research projects are ongoing related to species and environmental conservation management and welfare, namely:

General marine conservation

Sea turtle conservation

Marine mammal conservation

Mangrove conservation and research

Fisheries research

Coral reef research

Collaborative Actions for Sustainable Tourism

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Government bodies are responsible for the management and protection of the Marine Protected Areas.

Kenya Wildlife Service is the principal authority alongside Kenya Forest Service and Fisheries Department.

Assessment of the area against CBD EBSA Criteria

(Discuss the area in relation to each of the CBD criteria and relate the best available science. Note that a candidate EBSA may qualify on the basis of one or more of the criteria, and that the boundaries of the EBSA need not be defined with exact precision. And modeling may be used to estimate the presence of EBSA attributes. Please note where there are significant information gaps)

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don’t Know</td><td>Low</td><td>Some</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

Area contains distinct ecosystems including coral reefs, sea grass meadows and mangrove forests.

Kisite island is an internationally recognised Important Bird Area (IBA) for migratory sea birds .</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

Hundreds of species of reef fish depend upon the above mentioned ecosystems for feeding, breeding etc

The area provides important foraging grounds for sea turtles

The area provides foraging grounds for several species of cetaceans</td></tr>
<tr><td>Importance for threatened, endangered or declining species</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
</table>

and/or habitats					
Explanation for ranking The area contains: 5 species of sea turtle with a status ranging from threatened to critically endangered Threatened and declining species of dolphin, dugongs, and whales Threatened coral reefs, sea grass meadows and mangrove forest Declining habitats include coral reef, sea grass meadows, mangrove forest.					
Vulnerability, fragility, sensitivity, or slow recovery	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.				**X**
Explanation for ranking The above mentioned ecosystems are vulnerable **Feature condition and future outlook of the proposed area** above					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**
Explanation for ranking The area includes coral reefs, sea grass meadow and mangrove forest ecosystems with high levels of biodiversity and/or biological productivity					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**X**
Explanation for ranking Coral reef biodiversity ranks as high					
Naturalness	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.				**X**
Explanation for ranking The area is 1 of only 4 protected Marine National Parks in Kenya covering only a small sea area of Kenya's 500km coastline					

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Sharing experiences and information applying other criteria (Optional)

Other Criteria	**Description**	**Ranking of criterion relevance** (please mark one column with an X)			
		Don't Know	**Low**	**Some**	**High**
Add relevant criteria					
Explanation for ranking					

References

McClanahan,T.R., Verheije, E. and Maina, J (2006). Comparing management effectiveness of a marine park and a multiple-use collaborative fisheries management area in East Africa. Aquatic Conservation: Marine and Freshwater Ecosystems, 16, 147-165.

McClanahan 2010. Composition and diversity of fish and fish catches in closures and open-access fisheries of Kenya. Fisheries Management and Ecology, 2010, 17, 63–76

Samoilys, M.A. (1988). Abundance and species richness of coral reef fish on the Kenyan coast: the effects of protective management and fishing. Proc. 6th int. coral Reef Symp. 2: 261-266

Watson, M. and Ormond, R.F.G. (1994). Effect of an artisanal fishery on the fish and urchin populations of a Kenyan coral reef. Marine Ecology Progress Series 109: 115-129

(e.g. relevant documents and publications, including URL where available; relevant data sets, including where these are located; information pertaining to relevant audio/visual material, video, models, etc.)

GVI (Global Vision International) Kenya – http://www.gvikenya.net, http://scribd.com/gvikenya, **http://www.gvi.co.uk,** http://gvikenya.wildlifedirect.org/ , http://gvikenya.blogspot.com/

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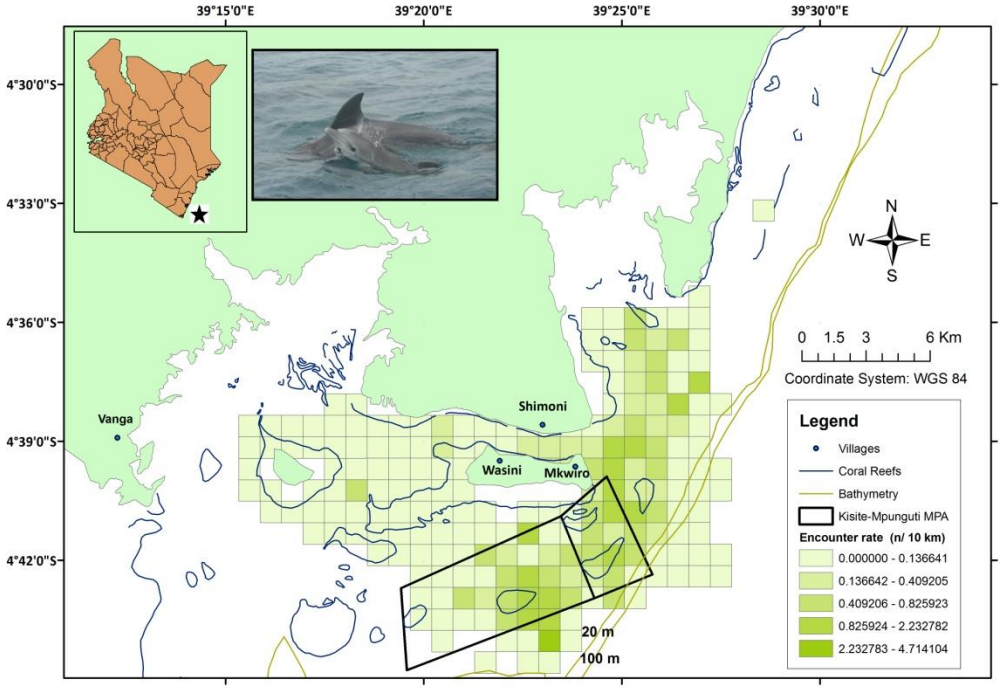
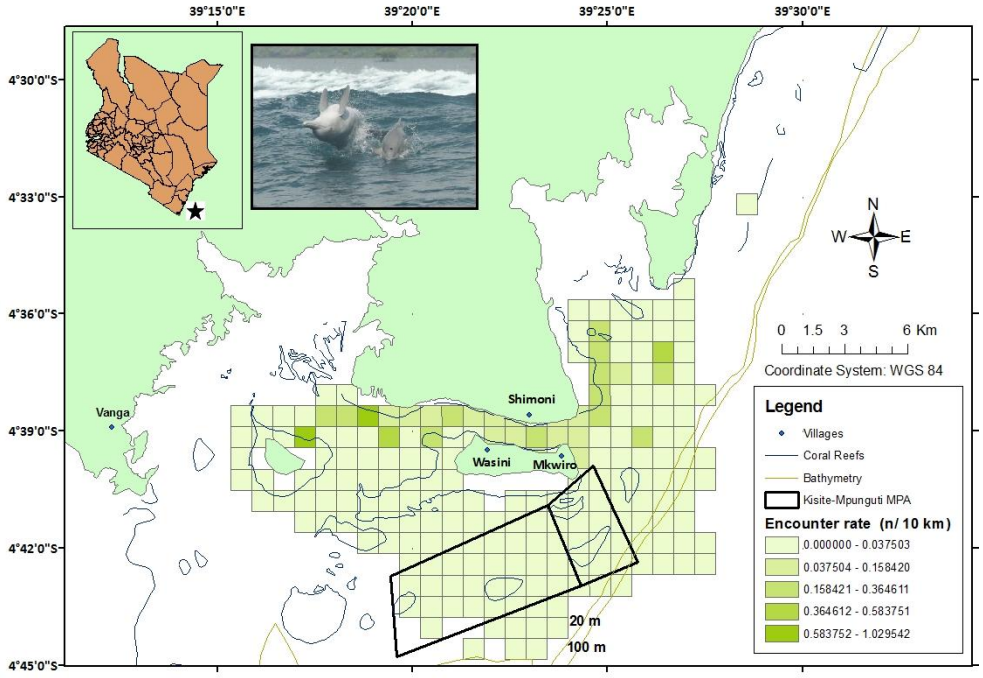
Maps and Figures



Map showing the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) encounter rate (number of observations/boat survey effort) around Kisite-Mpunguti Marine Protected Area.



Map showing the Indo-Pacific humpback dolphin (*Sousa chinensis*) encounter rate number of observations/boat survey effort) around Kisite-Mpunguti Marine Protected Area.

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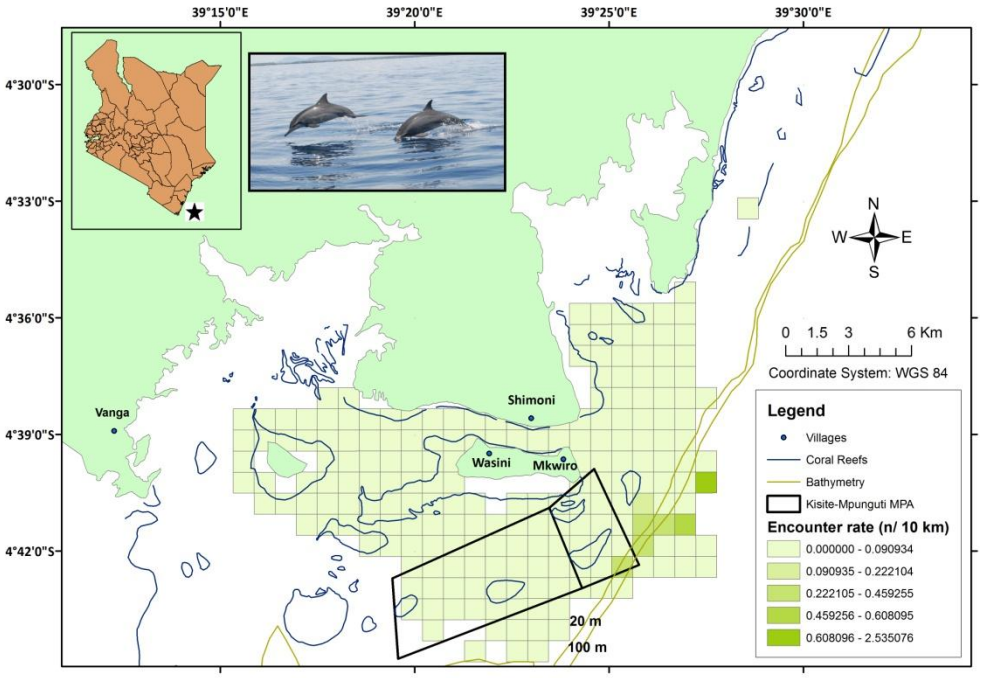
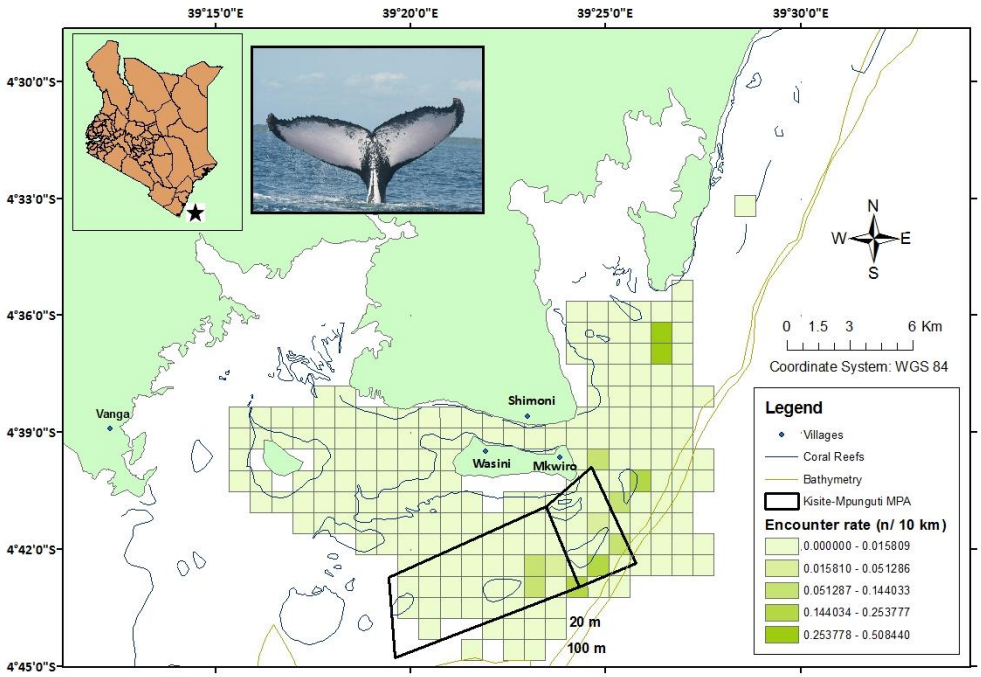


Map showing the spinner dolphin (*Stenella longirostris*) encounter rate (number of observations/boat survey effort) around Kisite-Mpunguti Marine Protected Area.



Map showing the humpback whale (*Megaptera novaengliae*) encounter rate (number of observations/boat survey effort) around Kisite-Mpunguti Marine Protected Area.

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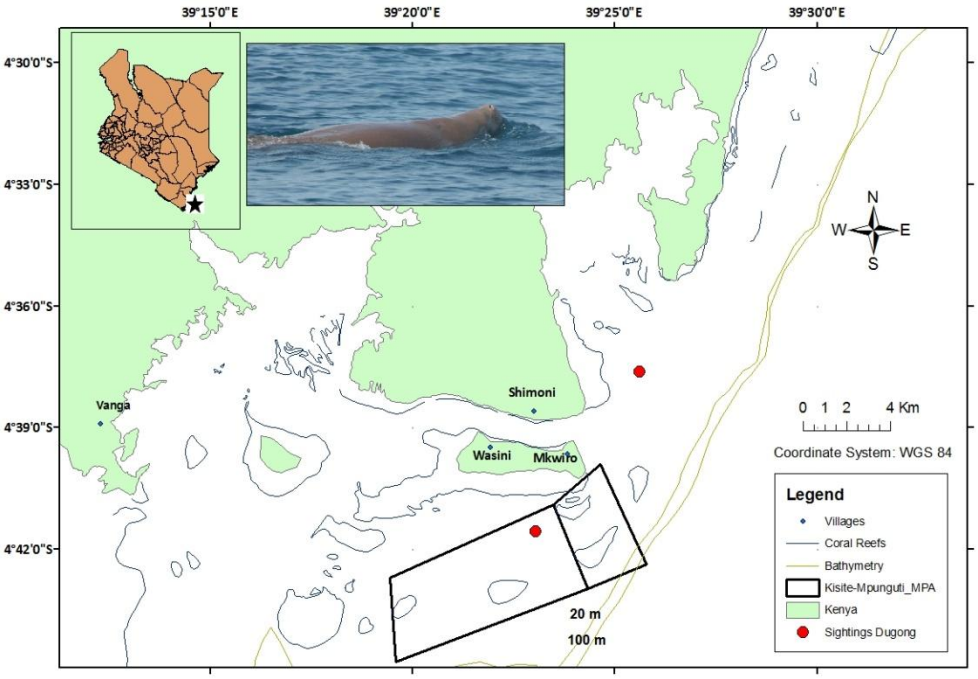

Map showing the dugong (Megaptera novaengliae) sightings around Kisite-Mpunguti Marine Protected Area.

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Please get in contact with GVI Kenya before any publication.

Contact sergiperezjorge@gmail.com; mkwiro@gviworld.com