

## **Template for Submission of Scientific Information to Describe Ecologically or Biologically Significant Marine Areas**

*Note: Tables, graphs, figures, photos, and other artwork may be embedded within the template..*

**Title/Name of the area:** The Cross River Estuary Mangrove

**Presented by** (names, affiliations, title, contact details): Dr. Francis M. Nwosu, Institute of Oceanography, University of Calabar, PMB 1115, Calabar, Nigeria. E-mail: [fmnwosu@yahoo.com](mailto:fmnwosu@yahoo.com); [fmnwosu@unical.edu.com](mailto:fmnwosu@unical.edu.com); Tel: +234-8038355564.

### **Abstract** (*in less than 150 words*)

The Cross River Estuary is known as the biggest estuary in the Gulf of Guinea. Three main rivers, namely; Cross River, Great Kwa and the Akpa Yafe Rivers, empty into this estuary. Hence, this estuary is shared between Nigeria and Cameroon. Similarly, the mangrove ecosystem associated with this estuary is found to be the least impacted in terms of anthropogenic activities within the Niger Delta region. Although the biodiversity has not been extensively studied and documented, the Cross River estuary mangrove is believed to be rich in biological diversity, ranging from microalgae to birds and mammals. An extensive inventory work will validate the biodiversity hotspots of this ecosystem. A protected area designated to this mangrove will mirror the terrestrial rainforest park that spanned Nigeria and Cameroon.

### **Introduction**

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

Nigeria's mangrove is acclaimed the largest in Africa and third largest in the world behind Indonesia and Brazil. Much of this mangrove lies within the Niger Delta region.

The Cross River estuary has its name from the Cross River, the largest river emptying into this estuary. The mangrove is relatively untouched, with exploitation as the only source of significant human impact. In the rest of the Niger Delta, oil exploration and exploitation processes, including gas flaring are additional disturbances of the mangrove ecosystem.

Of the huge mangrove resources within Nigeria's coastline, there are no Marine Protected Areas (MPAs) to encourage conservation, and extensive documentation of its biodiversity has not been undertaken.

### **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)*

The Cross River Estuary lies between latitudes 04°10' and 05°10'N and longitudes 008°15' and 008°35'E.

### **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)*

The Cross River Estuary is a navigation route of the ocean-bound vessels; a link to Cameroon, Equatorial Guinea and Gabon; a fishing ground and an eco-tourism area. The sediment is muddy, and the biological community is diverse. Five mangrove species are known in the area (3 red mangrove species (*Rhizophora racemosa*, *R. mangle* and *R. harrisonii*); *Laguncularia racemosa* and *Avicennia marina (africana)*), in association with the exotic nipa palm (*Nypa fruticans*). A wide range of biodiversity exists in the area – plankton, crustaceans, molluscs, finfishes, reptiles, birds and mammals.

Data is scanty and no models are available. Most research in the area are not comprehensive, majority being individual investigations for mainly pedagogic reasons.

### **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?)*

**This ecosystem is declining with its resources undergoing over-exploitation and pollution.**

**To ensure sustainability and conservation of the area, the following has been proposed:**

- 1. Establish a Marine (Mangrove) Protected Area (MPA) for this ecosystem.**
- 2. Pursue a mangrove rehabilitation programme especially in areas heavily impacted by various human activities.**
- 3. Conduct an inventory of the biological diversity of the area.**
- 4. Plan and map sensitivity of the area.**

**When implemented, this already declining ecosystem would be restored and preserved**

## 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)

CBD EBSA Criteria (Annex I to decision IX/20)	Description (Annex I to decision IX/20)	Ranking of criterion relevance (please mark one column with an X)			
		Don't Know	Low	Some	High
<b>Uniqueness or rarity</b>	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.				<b>X</b>
<i>Explanation for ranking</i> <b>The mangrove of the Cross River Estuary has relatively low impact from anthropogenic activities. It is uniquely rich in biodiversity. Its location, transcending two national boundaries is ecologically important.</b>					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.				<b>X</b>
<i>Explanation for ranking</i> <b>Important commercial fish and shellfish species of the Gulf of Guinea utilize this ecosystem for spawning and as nursery ground. It is a habitat for some crabs, barnacles, shrimp, molluscs and fish species, including the mudskipper <i>Periophthalmus</i>.</b>					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.				<b>X</b>
<i>Explanation for ranking</i> <b>In certain sections of the Niger Delta,</b> Zabbey et al. (2010) reported that the West African lucinid bivalve <i>Keletistes rhizoecus</i> is endemic, while Zabbey and Malaquias (2013) reported the presence of opisthobranch gastropod, <i>Haminoea orbignyana</i> for the first time in Africa. There are other reports of endemic, threatened and endangered species found in the Niger Delta of Nigeria. It is likely that when in-depth studies are carried out in the Cross River Mangrove, similar revelations shall be possible.					

<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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.				<b>X</b>
<i>Explanation for ranking</i> <i>The oil exploration and exploitation activities pose serious danger to the mangrove area. Of particular sensitivity note is the role of the mangrove ecosystem as spawning and nursery grounds. Since mangroves are slow growing plants, recovery of degraded and/or damaged/polluted areas is usually slow.</i>					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.				<b>X</b>
<i>Explanation for ranking</i> <i>Mangrove ecosystems are known for their high biological productivity driven by the mangrove-leaf litter.</i>					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				<b>X</b>
<i>Explanation for ranking</i> <i>Due to high productivity, this ecosystem is also rich in biological diversity.</i>					
<b>Naturalness</b>	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.			<b>X</b>	
<i>Explanation for ranking</i> <i>Human impact is low for most of the range of this ecosystem, especially, the Bakassi area shared by Nigeria and Cameroon.</i>					

#### Sharing experiences and information applying other criteria (Optional)

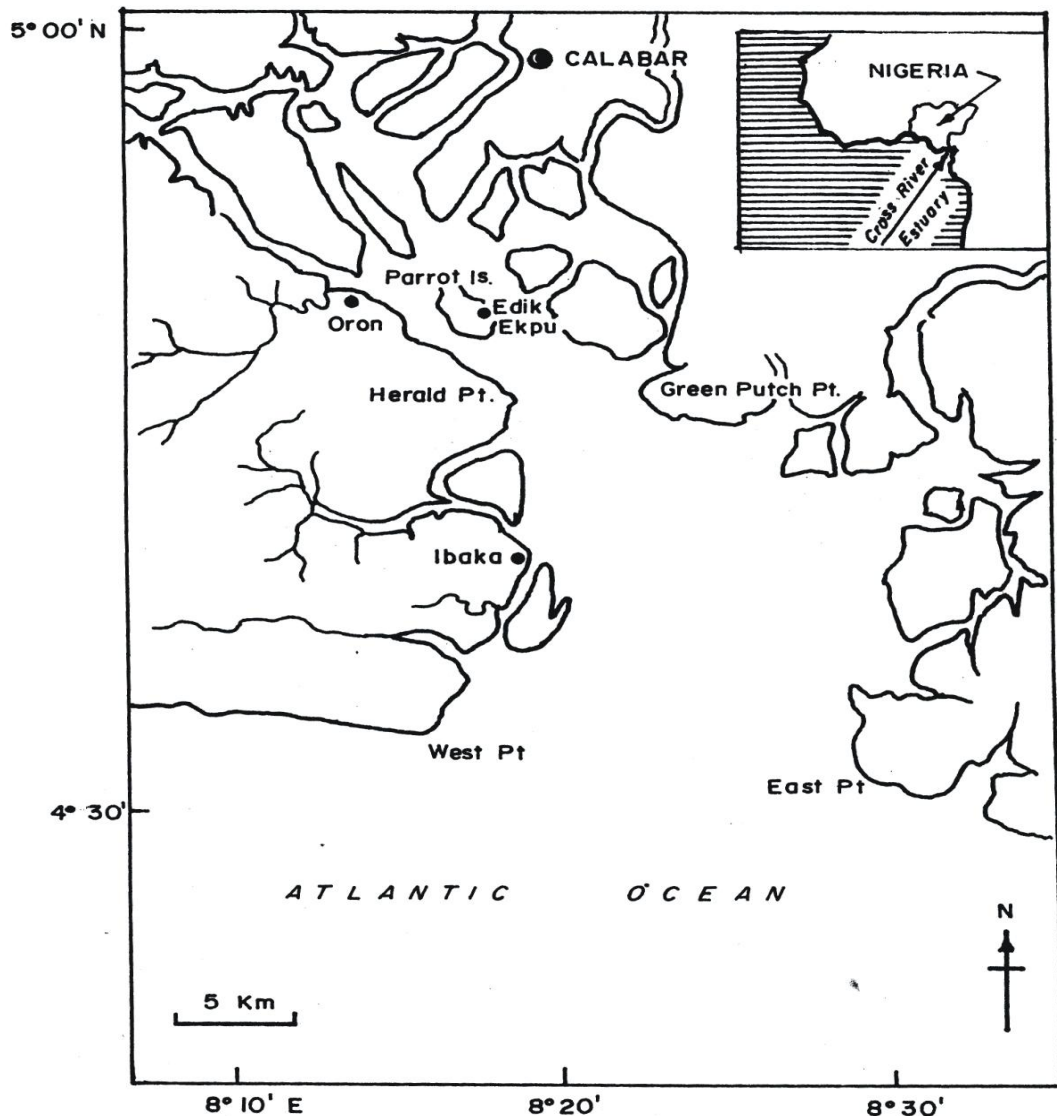
Other Criteria	Description	Ranking of criterion relevance (please mark one column with an X)			
		Don't Know	Low	Some	High
<i>Add relevant criteria</i>					
<i>Explanation for ranking</i>					

#### References

(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.)

1. F. M. Nwosu, 2005. An overview of Nigeria's mangrove ecosystem: problems and prospects. National Workshop on Coastal and Marine Biodiversity Management. ABGREMO/SU/TCDC/UNDP/UNOPS. Calabar, 6 – 10 September, 2005. 10 pp.
2. N. Zabbey and M. A. E. Malaquias, 2013. Epifauna diversity and ecology on intertidal flats in the tropical Niger Delta, with remarks on the gastropod species *Haminoea orbignyana*. Journal of the Marine Biological Association of the United Kingdom, 2013, 93(1), 249–257.
3. N. Zabbey • A. I. Hart • W. J. Wolff, 2010. Population structure, biomass and production of the West African lucinid *Keletistes rhizoecus* (Bivalvia, Mollusca) in Sivibilagbara swamp at Bodo Creek, Niger Delta, Nigeria. Hydrobiologia (2010) 654:193–203

### Maps and Figures



**Rights and permissions**

*(Indicate if there are any known issues with giving permission to share or publish these data and what any conditions of publication might be; provide contact details for a contact person for this issue)*

No issues to the best of my knowledge.