

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

Title/Name of the area: Miani Hor, Balochistan, Islamic Republic of Pakistan

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Abstract (*in less than 150 words*)

Minai Hor is a lagoon located about 90 km northwest of Karachi is an important area of high biodiversity famous for its diversified mangrove flora and rich population of both invertebrates and vertebrate animals. It is an important site for migratory and non-migratory bird species as well as a resident population of Indo-pacific humpback dolphin (*Sousa chinensis*). Fishing activities for catching shrimp and jellyfish are restricted within the lagoon. Community control on management of fisheries resources is a unique feature of the area. The communities residing with the Miani Hor are fishermen by profession and their livelihood is dependant mainly on the resources within the Miani Hor. Mangroves of the area are threatened by sand dune migration and other anthropogenic factors. Considering high biodiversity it satisfies the criteria for Ramsar Convention and it further international recognition as an EBSA will help in protecting the fragile ecosystem of the area.

Introduction

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

Miani Hor is a lagoon located about 95 km northwest from Karachi. It is a 60 km long 4 to 5 km wide tortuous and contorted body of water, which is connected to the sea through a 4 km wide mouth which is located in the southeast of the lagoon. The lagoon takes a sharp left turn in western direction, a short distance from its entrance and then runs parallel to the shoreline in the shape of an arc. Two ephemeral rivers, Porali and Windor, enter into the bay in the centre and near its mouth respectively. Major part of the lagoon is surrounded by sand dunes. The lagoon has deep waters (25-30 m) near Damb whereas vast mudflats are located between Damb and Sonminai and in the western part of the lagoon.

Three species of mangroves i.e. *Avicennia marina*, *Rhizophora mucronata* and *Ceriops tagal*, occur naturally in this lagoon. This is the only area in Pakistan where these three species grow naturally (Kogo et al., 1980; Saifullah and Rasool, 2002). In addition to the mangrove, salt tolerant plants are found around Miani Hor (Khan and Gul, 2002). Prominent shrubs among these are *Arthrocnemum indicum*, *Salsola baryosma*, *Abutilon indicum*, *Cressa cretica* and *Heliotropium undulatum*. Sparse growth of *Tamarix spp.*, *Acacia senegal*, *A. nilotica*, *Polycarpaea corymbosa* and *Atriplex griffithsii* can be found

Presence of mangroves and protected environment provide ideal habitat for a well diversified marine fauna. Mudflat and sandy beaches are home of a large number of invertebrates including crustaceans, polychaetes and molluscs (Ahmad and Ayub, 1006; Gondal *et al.*, 2012). A diversified fish fauna is reported from Miani Hor (Anonymous, 2011; Ahmed and Abbas, 1999). The area harbours a diversified bird fauna consisting of resident and migratory species. Small mammals are reported from the area (Fakhri, 2011). A resident population of Indo-Pacific humpback dolphin (*Sousa chinensis*) exists in the lagoon (Siddiqui, *et al.*, 2008).

Considering the biological diversity it is declared a Ramsar Site in may 2001. According to the Asian Water bird Census carried out between 1995-1999, Miani Hor supports an average of 22,700 water birds on a regular basis. As many as 50,000 water birds were counted in January 2000. The lagoon has three major population centres including Sonmiani (located on the east of the lagoon), Damb (located in centre of lagoon) and Bera (located in the north side). The population of all three settlements are primarily fishermen and most of them operate within the lagoon or its immediate vicinity. Important fisheries of the lagoon include shrimp, finfish and jellyfish which is managed by coastal communities. Miani Hor is under the jurisdiction of the Lasbela District, Balochistan.

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.)

Miani Hor is located entirely within the jurisdiction Islamic Republic of Pakistan.

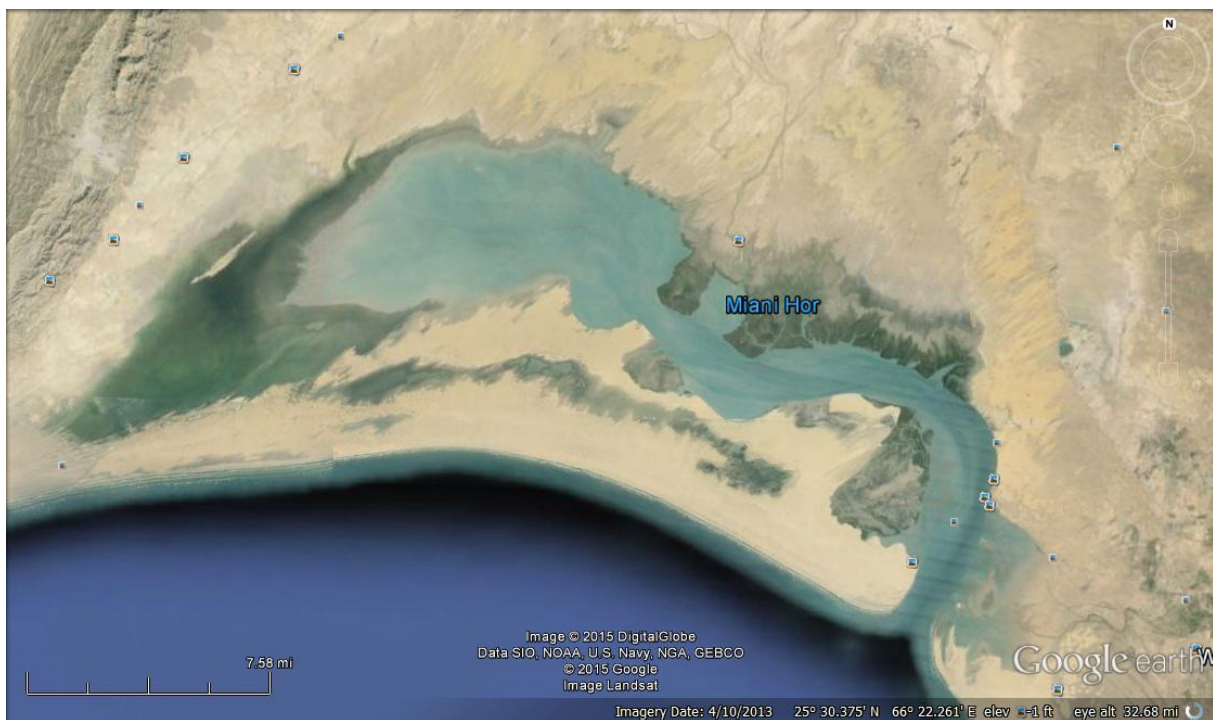


Fig. 1. Miani Hor, Balochistan, Islamic Republic of Pakistan.

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)

Minai Hor is not only important because it is one of the important fisheries centre of Balochistan but because of unique habitat which harbours a well diversified fauna and flora. It is the only place in Pakistan where three species of mangroves, *Avicennia marina*, *Rhizophora mucronata* and *Ceriops tagal* occur naturally. Saifullah and Rasool (2002) studies the distribution of three species in the Minai Hor. They noted that mangroves show different zonation patterns with different topographies of the habitat. On the elevated banks, the halophyte *Arthrocnemum indicum* occurred at the shore front followed by *A. marina* and *R. mucronata* and finally *C. tagal* towards the interior of the stand. But on the low-lying shore it showed a different pattern where *A. marina* occurred at the water front followed

by the mixed belt of *R. mucronata* and *C. tagal* in the middle. In the interior, however, monospecific clusters of *R. mucronata* are present.

Population living around Miani Hor were dependent on mangroves for fuel and fodder but now the communities has imposed a ban on cutting mangroves and now mesquite (*Prosopis juliflora*) which is an exotic plant profusely growing in areas adjacent to Miani Hor. Only small scale cutting of mangroves for ceremonial purposes is allowed whereas a small population of Bera also use mangrove as fodder. Mangroves, in general, are healthy and protected, however, mangrove especially in southern area of the lagoon are being smothered by migrating sand dunes. Additionally root systems of *Rhizophora mucronata* strands are getting exposed in a large area in the northern part of the lagoon because of wave action.

Mangrove vegetation and mudflats are known to be important breeding and feeding ground for a large number of marine animals (Gondal *et al.*, 2012). Diversity of marine animals found in mangrove has been documented by Ahmed and Ayub (1996), Ahmed and Abbas (1999), Anonymous, (2011) and Gondal *et al.* (2012).

The site is important for large concentration of water birds including migratory and resident population. More than 20,000 birds representing 52 species usually visit Miani Hor in winters. The area is one of the designated Ramsar sites in Pakistan. According to the Asian Water bird Census carried out between 1995-1999, Miani Hor supports an average of 22,700 water birds on a regular basis. As many as 50,000 water birds were counted in January 2000. The water birds that are found in the area include grebes, pelicans, cormorants, flamingos, egrets, herons, storks, ibises and spoonbills, cranes, coots, shore birds (waders), gulls and terns (Shah and Jusoff, 2007). Greater flamingo (*Phoenicopterus roseus*) populations nest in the area and their juveniles can be observed. In addition a large number of shorebirds, pelicans, cranes and cormorants also found in large numbers. Common crane (*Grus grus*) and demoiselle crane (*Grus virgo*) while migrating from their northern abodes to Greater Rann of Kutch in India. On their way, these two species pass through and rests in the mud flats, mangroves and sand dunes. Migratory birds especially cranes are hunted in the area mainly by people from adjacent area and other parts of the country. The community of Miani Hor is critical of the hunting spree but there seems to be limited or no control on hunting.

The most significant feature of Miani Hor is presence of a resident pupation of Indo-Pacific humpback dolphin (*Sousa chinensis*). A recent survey carried out by a community based organization revealed that the total numbers of dolphins in the area is only between 65 and 80. Rarely finless porpoise (*Neophocaena phocaenoides*) is also seen in the Miani Hor. The population of dolphin and porpoises is threatened by fishing boat strikes and enmeshment in gillnets. It is estimated that 2 to 4 dolphins are killed because of these factors.

Fisheries is the most important economic activity in the Miani Hor area. Although major fishing operations by the boats based in Damb (which is the only landing centre in the lagoon) undertaken in the area outside the Miani Hor. However, Miani Hor offers good fishing ground for shrimp, small pelagics and jellyfish. Fisheries for jellyfish (*Catostylus perezii*) was established in the area which is now fully managed by the communities. Fishing for jellyfish is allowed by community only when it reaches marketable size and fishing for it is closed once the sizes were observed to be smaller. The community also ensures that no deleterious gear such as set bag net and pelagic trawling is used with the Miani Hor. These are excellent examples of co-management of fisheries.

There is no major threat to the living resources in the Miani Hor except the release of liquid and solid waste generated by the population residing within the area. Other impacts are related to fishing

activities such as derelict fishing gears and release of oil and grease in the water. Although community has taken actions for these but still the issue is unresolved.

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?)

Although the resources of the Miani Hor are exploited by the communities but because of traditional management practices the resources are still not over-exploited. The exploitation of mangroves is practically stopped which has helped in increasing its cover especially in the southern part of the lagoon. The bird population especially that of cranes is reported to be dwindling, however, community is persuading the concerned agencies to control hunting of birds in the area. Despite the ecological importance of the area, production mechanisms and processes are not well understood which warrants targeted studies in Miani Hor so as to develop an integrated management plan. There is a need to have regular monitoring of bird population and also to take steps to migration of sand dunes and smothering mangroves.

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 proposed area for EBSA description may qualify on the basis of one or more of the criteria, and that the polygons 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)			
		No information	Low	Medium	High
Uniqueness or rarity	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.				X
<i>Explanation for ranking</i> (unique, rare, endemic, populations or communities). Miani Hor has unique mangrove ecosystem with highest diversity in Pakistan, as three species exist naturally. It has a resident population of Indo-Pacific humpback dolphin (<i>Sousa chinensis</i>) and known to be important roosting, feeding and breeding ground for a number of species, therefore, because of these uniqueness Miani Hor, which is already a Ramsar site may be declared as ecologically and biologically significant marine area.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.		X		
<i>Explanation for ranking</i> Miani Hor is breeding area for a number of bird species as well as for the resident population of Indo-Pacific humpback dolphin (<i>Sousa chinensis</i>). A number of species and finfish and shellfish (especially shrimp species) spend part of the life history in the mangrove areas.					
Importance for threatened, endangered or declining	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.			X	

species and/or habitats					
<i>Explanation for ranking</i> Indo-Pacific humpback dolphin (<i>Sousa chinensis</i>) is considered to be a Near Threatened Species according to IUCN Red Data list. Similarly Dalmatian pelican which is considered to be vulnerable are reported from the area.					
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
<i>Explanation for ranking</i> Miani Hor is a confined water body with high biodiversity and being unique in having all three mangrove species occurring in the area and suitable habitat that support population of some endangered species is highly vulnerable and sensitive to any man-made or natural changes.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
<i>Explanation for ranking</i> The area is highly productive which is evident from large population of birds and abundance of other marine animals					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
<i>Explanation for ranking</i> Miani Hor is known to have a highly diversified fauna and flora especially bird, fish and invertebrate fauna is highly diversified, although there is need to enumerate the biodiversity of the area through a comprehensive all-year study.					
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	
<i>Explanation for ranking</i> Although there are three small settlement in the Miani Hor, but about 95 % of the area is in natural form and no man-made changes have been made. The naturalness is maintained in most part of area is main because of limited accessibility in the area.					

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	Medium	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.)

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Maps and Figures

Fig. 1. Map of Miani Hor.

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