

Dungonab Bay/Mukawar Island Area (SUDAN)

An Ecologically Significant Marine Area

Title/Name of the area:

Dungonab Bay/Mukawar Island Area (SUDAN)

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

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Abstract *(in less than 150 words)*

Dungonab Bay is located approximately 125 km north of Port Sudan, engulfing Mukkawar Island which is 30km offshore Dungonab Peninsula. It lies within the Sudan national jurisdiction. The area was declared a Marine Protected Area in 2004; it contains extensive and diverse seagrass beds, a regionally important population of dugong, regionally or globally important nesting areas for marine turtles and seabirds, and seasonal aggregations of whale sharks and manta rays that are unique in the entire western Indian Ocean region. The area is known to be of particular significance for birds and is designated as an Important Bird Area. The eastern shore of Mukawwar Island is a turtle nesting site of regional and possibly international significance. The Dugongs population occurring in Dungonab Bay/Mukawwar Island may be the most important remaining on the coast of Africa (PERSGA, 2006). Dungonab Bay and Mukkawar Island National Park falls under the Game Protection and the Federal Parks Act (1986).

Introduction

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

Dungonab Bay/Mukawar Island area was declared a Marine Protected Area in 2004. It lies on the western shore of the north-central Red Sea. The area contains extensive and diverse coral and reef fish communities, overlying fossil reefs, very extensive and diverse seagrass beds and spectacular, unspoiled coastal landscapes, a regionally important population of dugong, regionally or globally important nesting areas for marine turtles and seabirds, and seasonal aggregations of whale sharks and manta rays that are unique in the entire western Indian Ocean region.

The area covers a straight-line distance along the coast of approximately 70 km. The southern edge lies 125 km north of Port Sudan (distance by road about 175 km). The complex coastline, which includes the very large bay at Dungonab, together with the large island of Mukkawar, means that the total length of coastline exceeds 200 km (PERSGA/GEF. 2004f). In addition to Mukkawar Island,

there are numerous small islands at the southern end of Dungonab Bay, and to the south of the Bay towards Mukkawar.

The majority of the islands within the area are either very low-lying (generally < 1 m) sand with halophyte vegetation overlying biogenic reef rock, or slightly uplifted (1–2 m) flat-topped fossil reef demonstrating the classic central Red Sea undercut profile. The two notable exceptions are Mukkawar and Mayteb Kebir, both of which are higher rocky islands (about 100 m in the case of Mukkawar, and about 40 m in the case of Mayteb) composed of uplifted sedimentary rocks and fossil reef (PERSGA/GEF. 2004f).

The mainland shore is, for the most part, backed by a gently sloping coastal plain varying in width from 5 km to the south of Mohammed Qol, to over 30 km north of Dungonab Bay and towards Khor Shinaab. The coastal plain is composed of sand and gravel deposits, in many places overlying fossil reefs (particularly close to the present day shoreline), and is backed by the Red Sea Hills that rise to over 1500 m (Farah 1982). In some areas, particularly south of Mohammed Qol, low raised areas of fossil reef up to 10 or 15 m high extend almost to the waters' edge, and such raised areas form the edges of some significant features such as Mersa Inkefal.

The eastern edge of Dungonab Bay is formed by the Ras Rawaya Peninsula, a low-lying sand and gravel peninsula composed of extensive areas of fossil reef, with the low hills of Jebel Abu Shagrab and Jebel Tetwaib at its southern end.

Dungonab Bay is approximately 13 km across at its southern end, and extends 31 km from north to south, enclosing a total area of 284.5 km². The Bay has three notable features (Figure1) (PERSGA/GEF. 2004f):

1. A large southern basin separated from the deeper water outside the bay to the south by a wide shallow sill;
2. An almost circular northern basin partially isolated from the southern basin by islands and another shallow sill;
3. The long narrow basin of Khor Naitaib (13 km long and 1.5 km wide along most of its length).

Farah (1982) provided a detailed description of physical parameters including bathymetry, temperature, salinity and currents. The entire bay is shallow, averaging 15.9 m in depth, with a maximum depth of less than 45 m. The bay forms a natural evaporation basin and FARAH (1982) found salinities of approximately 40 ppt at the southern edge of the bay. Salinity increased to over 43.3 ppt in the Northern Bay and over 45 ppt at the southern end of Khor Naitaib.

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.)

Dungonab Bay is located approximately 125 km north of Port Sudan, engulfing Mukkawar Island which is 30km offshore Dungonab Peninsula. It lies within the Sudan national jurisdiction (Fig. 1).

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)

Sheppard & Wells (1988) provide a brief summary of previous biological survey work within the proposed survey area. This was dominated by the work of Crossland (1907, 1911, 1913), Vine & Vine (1980) and Evans (1987). Coral communities and coral reefs are relatively limited in extent within Dungonab Bay. However, studies by Vine & Vine (1980) recorded a number of unusual and interesting coral communities at several locations, including highly unusual monospecific areas of *Galaxea*.

Dungonab Bay area is well known for seasonal aggregations of whale sharks (*Rhyncodon typus*) over the summer period, and also for aggregations of manta rays (*Manta birostris*) which are probably more stable throughout the year (Sheppard & Wells 1988). The area is known to be of particular significance for birds (Evans 1987; Moore & Balzarotti 1983; Fishpool & Evans 2001). The area is designated as an Important Bird Area (Fishpool & Evans 2001) and is internationally recognised as being of high conservation priority.

Sheppard & Wells (1988) identify Dungonab Bay in particular as being a unique marine biotope within the Sudanese Red Sea on account of several features including: the scarcity of coral reefs and of butterflyfishes; the presence of *Acanthaster plancii* feeding on *Xenia* soft corals; and the presence of large 'knolls' (monospecific areas) of *Galaxea*. Ormond (1980) recommended the area of Mukawwar Island and adjacent coast as a biosphere reserve, and indicated that the island itself may be suitable for designation as a wildlife reserve.

The Dungonab Peninsula, and the coastal plain between the peninsula and Khor Shinaab, are dominated by sandy and gravel substrates. Vegetation in these sand/gravel areas is sparse, consisting of a low cover of halophytes and grasses in scattered locations. In many areas, particularly on the coastal plain to the north of the peninsula and near to Khor Shinaab there are wide expanses of gravel plain (largely eroding fossil reef) completely devoid of vegetation (Fig. 2).

Mangroves

Mangroves are found in three substantial areas: At the southern tip the Dungonab Peninsula, At the southern end of Mukkawar Island, On the mainland coast at Mersa Inkefal (Plate 1).

Fin fisheries

The fin fisheries of the area are typical of tropical reef fisheries in that they are multispecies in the extreme, although there are favoured or more highly valued species which are preferentially targeted. The partially complete species list is given in Table 1.

Sharks and rays

Regionally important populations of sharks are known to occupy the waters off the coast of Sudan, and are a very important attraction for the marine tourism trade. Hammerhead sharks are known to occur around Sanganeb Atoll, at Shaab Rumi, and around many of the reefs of Dunganab Bay in winter, but very few were observed during the recent survey (PERSGA/GEF. 2004f).

Very few sharks were observed in the survey area. A number of small reef sharks (blacktip reef, *Carcharhinus melanopterus*) were seen at several sites, most notably on the western side of Mukkawar Island and inside Dunganab Bay. Hammerhead sharks (*Sphyrna sp*) were seen at the offshore reefs (PERSGA/GEF. 2004f).

Shark fishing is apparently a common occurrence in the survey area, usually carried out by fishers from Port Sudan or elsewhere (including, apparently, occasional visitors from outside Sudan), although sharks were also observed within the catch landed at Mohammed Qol. Evidence of shark fishing was observed in a number of locations, including the sheltered anchorage of Mersa Inkefal. Shark fishing can severely deplete shark populations at such sites very rapidly (PERSGA/GEF. 2004f).

Turtles

The entire area, particularly the islands and the Dunganab Peninsula, constitutes a nationally and regionally significant turtle nesting area. All species of marine turtle are globally endangered and are CITES listed. The eastern shore of Mukkawar Island is one of the two or three most important turtle nesting sites in the entire Red Sea region. Although completely unrecorded up to now this site is of at least regional (possibly global) conservation significance, and merits immediate protection and the institution of a rigorous monitoring programme (PERSGA/GEF 2004f).

There is no deliberate capture of adult turtles in the proposed MPA. Turtles caught accidentally in fishing nets are generally released unharmed if they have not already drowned (PERSGA/GEF 2004f) (Plate 2).

Both Green Turtles (*Chelonia mydas*) and Hawksbill turtles (*Eretmochelys imbricata*) were observed in the water throughout the survey area. Green turtles were particularly widespread, being seen in every sector (Table 2). Large numbers of green turtles were observed in the very extensive shallow areas of reef flat and sand at the northern end of Mukkawar Island. This may be an area where green turtles gather during the day, waiting for nightfall when nesting takes place on the nesting beaches of the island immediately to the south (PERSGA/GEF. 2004f).

Hawksbill turtles were particularly noticeable at the extreme northern end of Dunganab Bay, where two individuals were seen feeding among shallow *Stylophora* corals.

The importance of Mukkawar Island as a turtle nesting site.

The extensive sandy beaches on the eastern side of Mukkawar are a mass turtle nesting site of regional or perhaps even global significance. This importance had not previously been recognised. A total of 409 nest pits were counted along 800m of beach (distance measured using a hand-held GPS) (PERSGA/GEF. 2004f). This was less than half the total length of that single beach, and that

beach is only one of several along that shore of the island. A cursory examination indicated that all or most beaches on this side of the island are likely to be similarly important for turtle nesting, with a total of perhaps several thousands of nest pits along this 8 – 10km stretch of shore (Fig. 3).

Table 2. Key nesting and foraging sites and population statistics for marine turtles in the Sudanese coast (from PERSGA/GEF, 2004d).

Species	Key Nesting Sites	Nesting Season	Size of Nesting Population	CCL (cm)	CCW (cm)	Key Foraging Sites
Green	Seil Ada Kebir Island, Suakin Mukawwar Is.	All year	<50	ND	ND	Unknown
Hawksbill	Mukawwar Is. Seil Ada Kebir Suakin	Mar.-Jul. ND ND	ND	71.93, 66.0	64.63 ND ND	All fringing and barrier reefs

Both green turtles (*Chelonia mydas*) and hawksbill turtles (*Eretmochelys imbricata*) were observed in the water throughout the area. Large numbers of green turtles were observed in the very extensive shallow areas of reef flat and sand at the northern end of Mukkawar Island (PERSGA/GEF. 2004f).

This may be an area where green turtles gather during the day, waiting for nightfall when nesting takes place on the beaches of the island immediately to the south. Hawksbill turtles were particularly noticeable at the extreme northern end of Dungonab Bay. (PERSGA/GEF. 2004f)

Birds

The entire area of Dungonab Bay and Mukkawar Island is very significant for birds, and is internationally recognised as an Important Bird Area, or IBA (Fishpool & Evans, 2001). Every island visited during (PERSGA/GEF. 2004f) survey, from the largest to the smallest, was a nesting site for at least one, and more usually two, species of birds at the time of the survey (Figure 4; Table 3). Only two or three species were seen nesting during the survey phase (one or two species of tern, *Sterna* spp, and osprey *Pandion haliaetus*), but accounts from the village communities of Dungonab and Mohammed Qol indicate that all islands and mangrove areas are of great importance for nesting by numerous other species, at other times of year. The peak nesting time is apparently the summer. Dozens of occupied osprey nests were recorded during the survey, with up to ten osprey nests (about 25-30% occupied) counted on even some of the smaller islands. The occurrence of occupied osprey nests on flat and easily accessible areas of the mainland shore within 500m of the larger villages provides an indication of the positive attitude of the local communities towards the environment. The density of osprey nests in the survey is quite exceptional (PERSGA/GEF. 2004f).

An important and apparently previously unrecorded nesting site for the Crab Plover (*Dromasardeola*) is found on one of the islands (Brasit Island) within the Bay (PERSGA/GEF. 2004f).

Apart from pigeons and crows in the vicinity of the major villages, and a single observation of a number of vultures at a camel carcass, birds other than seabirds (principally terns, gulls, plovers, egrets and herons) and osprey were rarely observed during the survey (PERSGA/GEF. 2004f).

Table 3. Important Bird Areas (IBAs) in the Sudanese Red Sea coast of special importance to breeding seabirds (from PER SGA/GEF 2004e).

IBA	IBA number	Coordinates	Area (Hectar)	Protected statua	Breeding seabird species	Reason for inclusion
Mukawwar Island and Dungonab Bay	SD002	20°50'N 37°17'E	c.12,000	National Park	<i>Sterna bengalensis</i> , <i>Sterna repressa</i> , <i>Sterna anaethetus</i> , <i>Larus hemprichii</i> , <i>Larus leucophthalmus</i> , <i>Larus leucophthalmus</i> , <i>Larus leucophthalmus</i> , <i>Sterna bengalensis</i>	<i>Larus leucophthalmus</i> , <i>Larus leucophthalmus</i> , <i>Sterna bengalensis</i>
Suakin Archipelago	SD002	18°50'N 38°00'E	150,000	Unprotected	<i>Sterna bergii</i> , <i>Sterna bengalensis</i> , <i>Sterna repressa</i> , <i>Sterna anaethetus</i> , <i>Anous stolidus</i> , <i>Sula leucogaster</i> , <i>Larus hemprichii</i>	<i>Sterna bergii</i> , <i>Sterna bengalensis</i>

The Number of pairs of breeding seabirds recorded from Sudan (From PERSGA, 2006):

- ✓ Crab Plover: 333-500
- ✓ White-eyed Gull: 300-1,000
- ✓ Lesser Crested Tern: 3,000-5,000
- ✓ Bridled Tern: 8,000

Mukawwar Island and Dungonab Bay support breeding colonies of osprey, sooty falcon, sooty gull, white-eyed gull, bridled tern, white-cheeked tern and crab plover (Shobrak et al. 2002b). The following are recorded species: *Sterna bengalensis*, *Sterna repressa*, *Sterna anaethetus*, *Larus hemprichii*, *Larus leucophthalmus*, *Larus leucophthalmus*, *Larus leucophthalmus*, *Sterna bengalensis*.

The African Park Foundation Survey in 2006, has observed 20 bird species in Dungonab area. Two species, the bridle tern and the crab plover, were nesting in significant numbers. The crab plover *Dromas ardeola* is only found in the Red Sea and East Africa (A.P. Survey Exp. 2006). Several large and charismatic species were observed including the Goliath heron, spoonbills, flamingos and a number of Sooty Falcon. These summer 2006 records are in addition to those of winter 2002, which included vultures, pelicans and abundant Osprey.

Threats

General threats to breeding seabirds include human disturbance, human exploitation, introduced predators, habitat destruction (especially urban expansion), pollution, over-fishing and lack of information on population status (PERSGA/GEF 2003c, 2004e).

Marine mammals

Forty-four species of cetaceans are known from the Indian Ocean, but only 15 have been reported from the Gulf of Aden and only 11 from the Red Sea (PREEN 2004a).

Dolphins

The PERSGA survey (2004) showed that Dungonab Bay and Mukkawar Island area is home to at least two species of dolphin. These are bottlenose dolphins (*Tursiops truncatus*) and common dolphins (*Delphinus delphis*). Both species were seen most frequently outside the Bay. Common dolphins were seen only at Shambaya reef where they are apparently resident year-round, having been seen over several years by local boat users from the commercial pearl farm. Only one pair of dolphins, probably a female bottlenose with calf, was seen inside Dungonab Bay. There is apparently no deliberate fishing of dolphins, although they are occasionally caught accidentally.

Dugong

The dugong (*Dugon dugon*) is a globally threatened species, with the Red Sea and Arabian Gulf being home to the last remaining healthy populations in the western Indian Ocean region. Three dugong sightings were made during the field survey (PERSGA/GEF. 2004f), at three locations: northern Dungonab Bay, mainland coast to the north of Sheikh Okod, and southern Mukkawar mangroves. This is a very large number of sightings, given the extremely shy nature of dugongs and the survey duration. The common occurrence of dugong throughout the survey area, as well as to both the north and south of the survey area was confirmed on numerous occasions by local fishers. The fishing communities of both Mohammed Qol and Dungonab indicated that the number of dugong (as represented by the frequency and distribution of their own sightings) is falling rapidly. This was blamed on their regular but accidental capture and the consequent drowning of dugong in fixed fishing nets. The number of sightings during the survey and the accounts of local fishing communities suggest that the property may be home to a globally significant dugong population. The very extensive areas of seagrass present will be a crucial factor in this, dugong being herbivores dependent upon seagrasses for their food.

Local fishers described the distribution of dugong as extending throughout the entire survey area and beyond, including Khor Shinaab. Regular sightings were said to occur throughout Dungonab Bay, along the mainland shore to the north and south of the Bay (but more frequently to the south), at Mukkawar and in the extensive shallow areas around the offshore reefs. Particular mention was made of concentrations of dugong in the northern Bay, in the area to the north and south of Sheikh Okod, and around Mukkawar Island (PERSGA/GEF. 2004f).

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?)

Dungonab Bay History

The fame of Dungonab Bay is attributed to the pioneering marine biologist Cyril Crossland who stayed in the area from 1904 to 1922. He was able to carry out appreciable biological work including biological characteristics of the pearl oyster, *Pinctada margaritifera*, as well as the physical oceanography of Dungonab Bay which led to the creation of a viable farming system of this species.

Current condition of the area

A Draft Management Plan for DMNP, has been developed by PERSGA which provide a comprehensive first step towards the successful management of the Park. The African Parks Foundation took over the management of DMNP in 2005, and in 2006 carried out a research and survey expedition to the Parks.

Currently Dungonab Bay marine waters are protected by Wildlife Administration and Fisheries regulations. If these regulations are not promptly enforced, Dungonab Bay is likely to suffer negative impacts on the biota from the two villages at the coast.

The property has not shown any invasive or non-resident species as yet. No oil pollution was detected so far.

Increasing importance is expected to be placed on exploitation of marine resources in the future, including oil exploration, shrimp farming, tourism and fisheries. All of these activities can be expected to have serious deleterious impacts on the marine and coastal environment and biodiversity if management mechanisms for sustainability are not put in place.

The Dugongs population occurring in Dungonab Bay/Mukawwar Island may be the most important remaining on the coast of Africa (PERSGA, 2006). However, numbers have declined sharply in recent years. The cause is most likely accidental capture in fixed Fishing nets.

Research

Dungonab Bay and Mukkawar Island National Park did not receive adequate conservational efforts because of its very low inhabitants mainly fishermen. Moreover, these inhabitants have historically low levels of marine resource exploitation and fish consumption is still low.

Apart from the work of Crossland, the area attracted several scientists including Sudanese and foreigners. The coral communities at a number of sites inside and outside the bay are described by Vine & Vine (1980); research on pearl oyster biology was carried out by Nasr (1982-1984). The PERSGA survey (2004) in Dungonab Bay and Mukawwar Island focused on resource assessments and mapping of the biodiversity and health of ecosystems, with greatest emphasis on coral reef habitats. The results of this survey were used as the informational base in the development of the first Draft Management Plan prepared by PERSGA. These surveys also found differences between

the extent of bleaching-related mortality (a result of the 1998 global coral bleaching event), inside and outside the bay, which suggest that the area may act as an important refuge for corals during regional or global coral bleaching events.

Currently research is going on in Dngonab Bay and Mukkawar Island by the graduates of the Red Sea University for higher degrees, and by the routine work of the Red Sea Fisheries Research Center.

National legislation

Several national legislative frameworks are in place that relates to coral reefs and fisheries:

- *Sudanese Fishery Ordinances and Regulations*: Dates back to 1937 and was amended in 1975 and 1978. Prohibits overfishing, dumping of refuse, including oil, into the sea and the collection of corals, shells and aquarium fish.
- *Environmental Health Act*: Established in of 1975. Prohibits the dumping into the sea of any item that is harmful to humans or animals.
- *Marine Fisheries Ordinance*: gives police, customs officers, and local authorities the right to board and search a vessel, and detain any craft accused of violating the above regulations.
- *Maritime Law*: Drafted by the Maritime Administration and approved in 2011.
- *Comprehensive National Strategy*: Through this, Sudan has committed to the pursuit of sustainable development and environmentally sound resource management.

Sudan has also prepared the following national action plans:

- *National Oil Spill Contingency Plan for Sudan*;
- *National Integrated Coastal Zone Management Plan*;
- *National Plan of Action for the Protection of the Marine Environment from Land based Activities*.

Nevertheless, none of these legislation or action plans have been effectively implemented in the area.

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 informati	Low	Mediu m	High

		on			
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.				✓
<p><i>Explanation for ranking</i></p> <p>The area is located in the north-western Indo-pacific biogeographic region and regarded as rare containing diverse pristine habitats including overlying fossil reefs, spectacular, unspoiled coastal landscapes, extensive coral reef complexes, mangroves, extensive seagrass beds and intertidal and mudflat areas which all enable the survival (Breeding, feeding and resting) of even endangered dugong. The naturalness and the esthetic features gave the bay an increasing interest both regionally and internationally.</p>					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				✓
<p><i>Explanation for ranking</i></p> <p>Dungonab Bay is regarded as home for the naturally thriving pearl oyster, <i>Pinctada margaritifera</i>, since its discovery in 1904 by Cyril Crossland. It serves as an important larvae export area and host important spawning sites for the pearl oyster in addition to other key fishery species.</p>					
Importance for threatened, endangered or declining species and/or habitats	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.				✓
<p><i>Explanation for ranking</i></p> <p>The extensive seagrass beds support the population of Dugongs in the area which may be the most important remaining on the coast of Africa (PERSGA, 2006). Their numbers have declined sharply in recent years. It require real protection to survive and thrive.</p>					
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.			✓	

<p><i>Explanation for ranking</i></p> <p>The diverse habitat of the area hosts significant populations of globally-important and endangered species, including sharks, manta rays, dugong, dolphins, napoleon wrasse, groupers and marine turtles. It has been internationally-recognized as an Important Bird Area (IBA) for both resident and migratory birds.</p>					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			✓	
<p><i>Explanation for ranking</i></p> <p>A best example may be the distinct population of the pearl oyster which has comparatively higher natural biological productivity.</p>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			✓	
<p><i>Explanation for ranking</i></p> <p>Dungonab Bay contains diverse pristine habitats including coral reef communities, overlying fossil reefs, mangroves, seagrass beds, extensive un-spoilt beaches, bays and lagoons. The coral colonies harbor marine species, some completely unique to Sudan's marine ecosystem.</p>					
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.				✓
<p><i>Explanation for ranking</i></p> <p>There are only two small fishermen villages in the area (Mohammed Qol & Dungonab villages); this is why the area has pristine habitats including spectacular, unspoiled coastal landscapes, extensive coral reef complexes, mangroves, extensive seagrass beds and intertidal and mudflat areas with a comparatively higher degree of naturalness.</p>					

Sharing experiences and information applying other criteria (Optional)

Other Criteria	Description	Ranking of criterion relevance			
		(please mark one column with an X)			
		Don't	Low	Medium	High

		Know			
Add relevant criteria					
Explanation for ranking					

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(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



**Plate 1. Mangrove stand at Dungonab Bay with Mukkawar Island seen at the back.
(Photo by J. Hans and D. Nasr)**



**Plate 2. Hawksbill turtle being released by Fishermen at Marsa Shinaab (within DMNP)
(Photo by J. Hans and D. Nasr)**

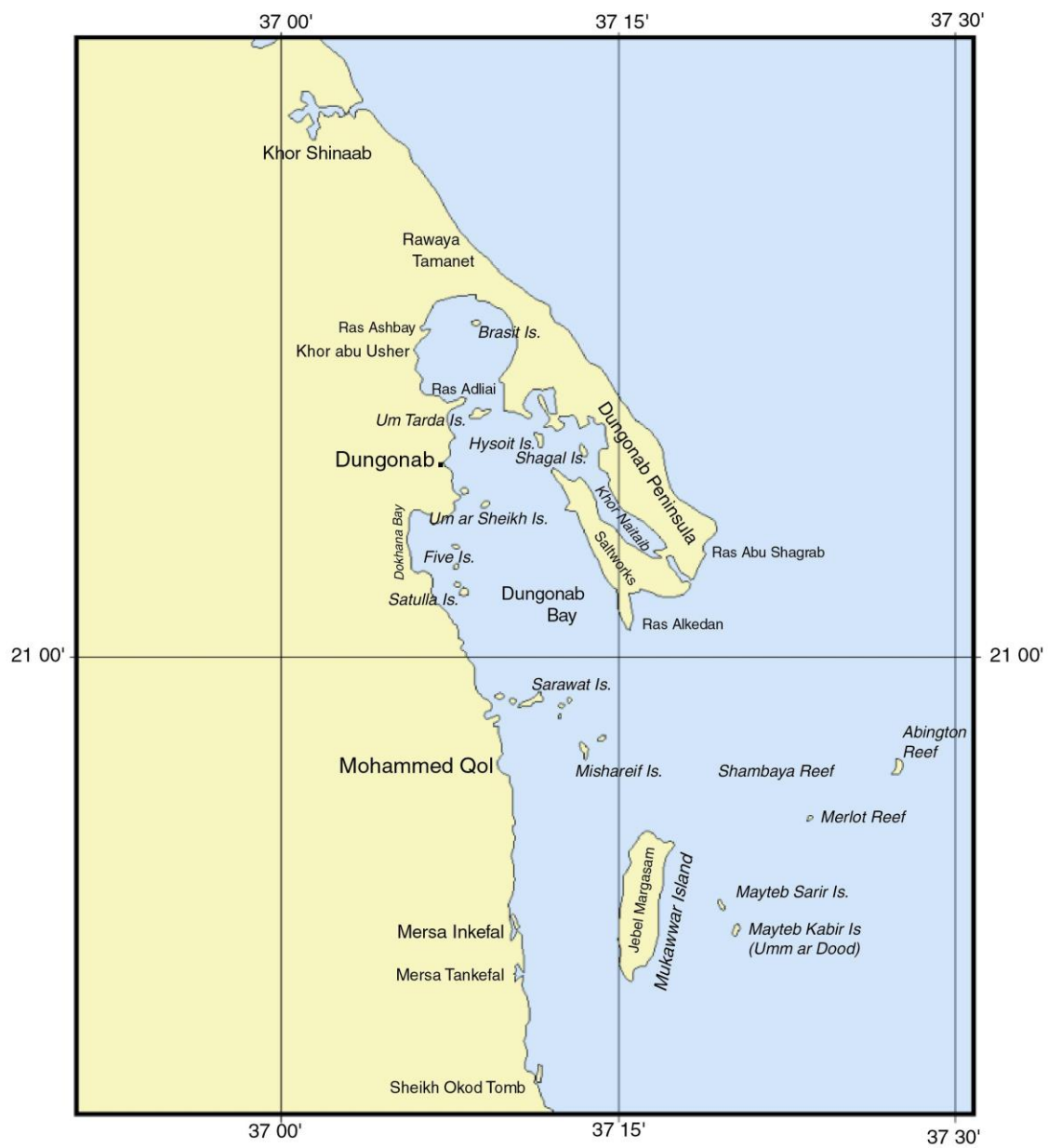


Figure 1: Showing the location of Dungonab Bay and Mukawwar Island.

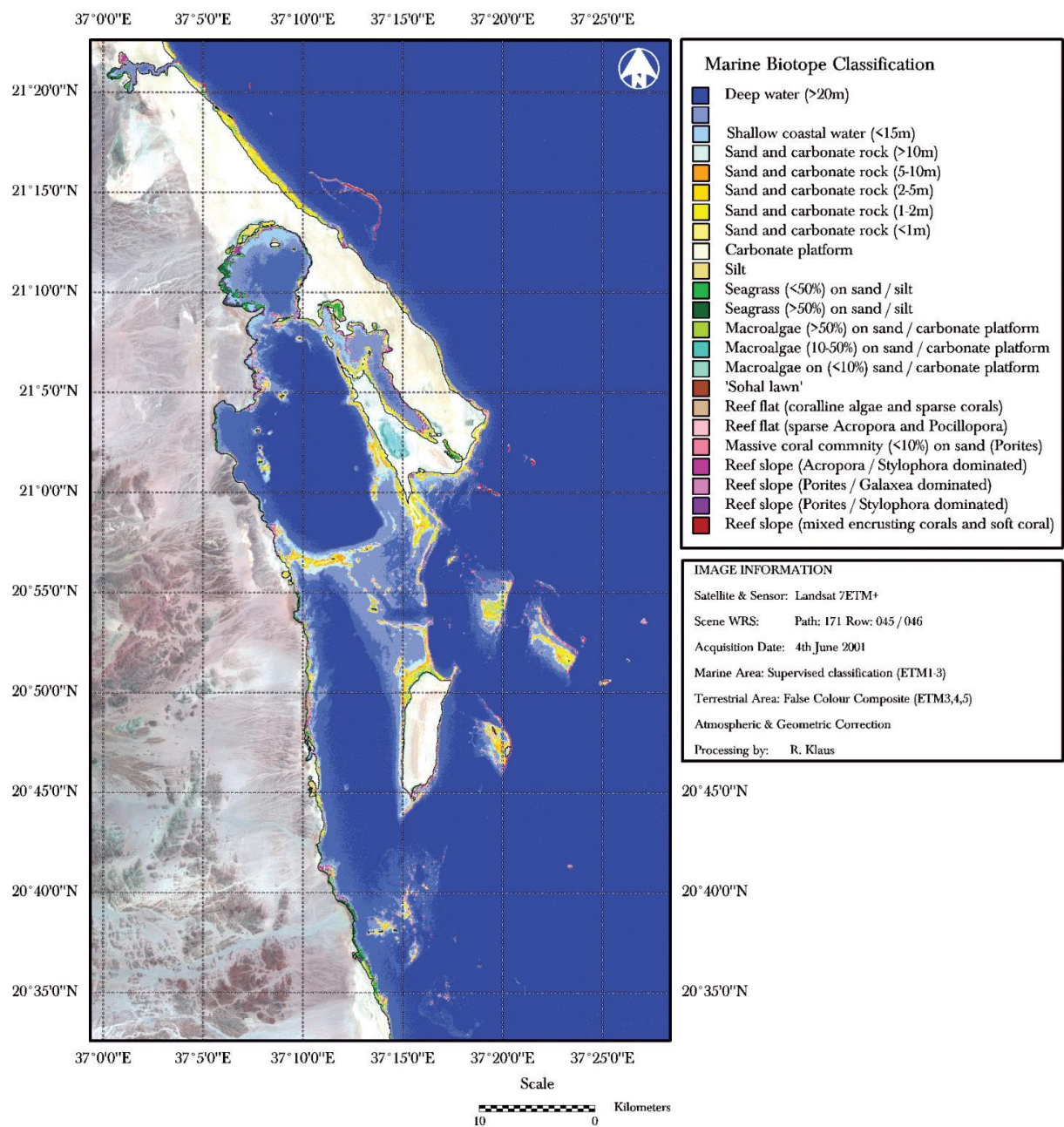


Fig. 2. The marine habitats and biotopes of Dungonab Bay and Mukawwar Island, (source: PERSGA/GEF. 2004f)

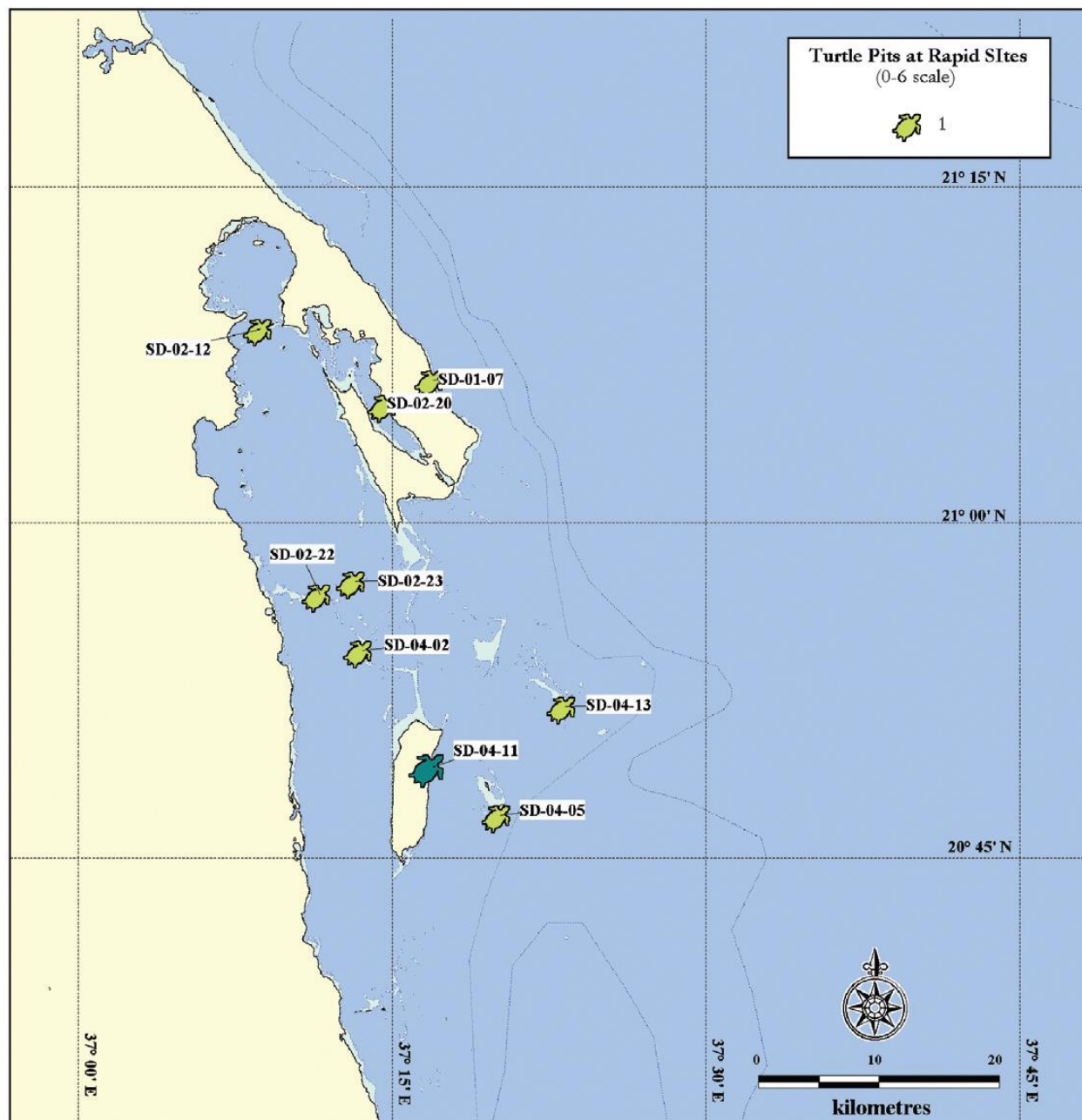


Fig. 3. Distribution and abundance of turtle nesting pits in 2002 in the Mukawwar Island and Dungonab Bay MP A prior to declaration in 2005 (source: PER SGA/GEF 2004f).

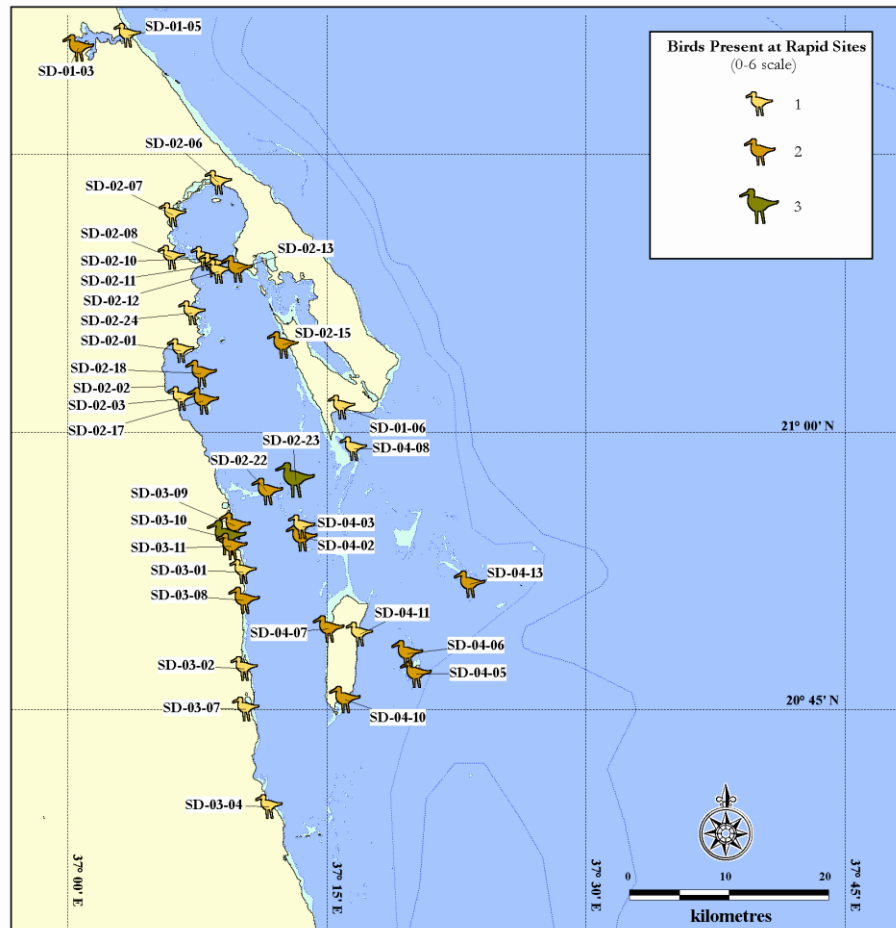


Fig. 4: The distribution of birds, including non-nesting birds, within the survey area from Rapid Site surveys in January - February 2002 (source: PER SGA/GEF 2004f).

Scientific Name	English Name (World Fish Center)	Local Name
<i>Let hrinus fletus (Lethrinus laticaudis)</i>	Grass emperor	Sha'oor
<i>Epinephelus areolatus</i>	Areolate grouper	Goushar
<i>Caranx</i> spp.	Trevally	Bayad
<i>Plectropomus maculates</i>	Spotted coral grouper, coral trout	Najil
<i>Aprion virescens</i>	Green jobfish	Farisi
<i>Mugil</i> spp.	Mullet	Arabi
<i>Sardinella melanura</i>	Black-tipped sardine	Sardine
<i>Lutjanus bohar</i>	Twospot red snapper	Bahar
<i>Lutjanus gibbus</i>	Humpback red snapper	Asmoot
<i>Siganus lineatus</i>	Golden-lined spinefoot	Sigan
<i>Argyrops spinifer</i>	King soldier bream	Fofal
<i>Cheilinus undulates</i>	Humphead wrasse	Abu Jibba
<i>Atule mate (Selar afinis)</i>	Yellowtail scad	Habbot
<i>Variola louti</i>	Yellow-edged lyretail, Coronation Grouper	Rishal

<i>Naso unicornis</i>	Bluespine unicornfish	Abo grain
<i>Chlorurus</i> sp.	Parrotfish	Haread
<i>Chanos chanos</i>	Milkfish	Salamani
<i>Pristipomoides filamentosus</i>	Crimson jobfish, Pink snapper	Korape
<i>Pomadasys opercularis</i> (<i>P. commersonnii</i>)	Smallspotted grunter	Ka'koi
<i>Acanthurus gahhm</i>	Black surgeonfish	Gaham
<i>Sargocentron rubrum</i> (<i>Holocentrum rubrum</i>)	Redcoat, (soldierfish)	Jajaloorn
<i>Acanthopagrus bifasciatus</i>	Twobar seabream	Abo kohol
<i>Albula vulpes</i>	Bonefish	Bunji
<i>Balistoides viridescens</i>	Titan triggerfish	Faki Sharam
<i>Ostracion cubicus</i> (<i>Ostracion argus</i>)	Yellow boxfish	Abo Sandog
<i>Sphyrna jello</i>	Pickhandle barracuda	Agous
<i>Leiognathus</i> sp.	Ponyfish	Eryan

Table 3. The partially complete species list in DMNP identifying over 25 species that are important for the local fishery, from over 20 families.

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