



PERSGA

The Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden



Marine Protected Area Outreach and Education Workplan

Case Study: Dungonab Bay & Mukawar Island NP



**The Regional Organization for the Conservation of
the Environment of the Red Sea and Gulf of Aden**

(PERSGA)

**Strategic Ecosystem Management of the Red Sea
and Gulf of Aden**

**Marine Protected Area Outreach
And Education Workplan**

**Case study: Dungonab Bay and Mukkawar Island
National Park**

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Preface

Outreach and education programs have been characterized in many different ways by many different organizations. They have been described as programs that: attract and mobilize positive action for biodiversity; provide ways of managing multi-stakeholder dialogue; enable protected area managers to focus more on conservation and less on threat reduction efforts; help gain the cooperation of different groups; and provide the tools to develop community capacity to support conservation within protected areas. However, the essence of a protected area outreach and education program is the simple act of people exchanging information on biodiversity, and on the consequences of human behavior on that biodiversity, within and around a protected area.

Over the last few years, public understanding and awareness of marine environmental values and issues have been increasing. There is general recognition that proactive measures are necessary to protect and conserve marine areas to sustain their resources for present and future generations. However, there is still a significant need for public education to instill greater awareness of the role everyone can play in the conservation of marine environments.

One of the most important determinants of conservation success within protected areas is the extent to which local communities understand and support the protected area management objectives. Outreach and education programs are critical to achieving this understanding and inspiring support. Encouraging people to change their perceptions and behaviors requires an approach to communication, education and awareness that goes well beyond simply posting signs or distributing brochures. Effective outreach is more than simply a park agency transmitting and receiving information with community members; it is about changing perceptions and behaviors and inspiring conservation actions.

In February 2004, 188 countries ratified the Convention on Biological Diversity's Program of Work on Protected Areas, an ambitious set of activities aimed at establishing and maintaining comprehensive, effectively managed and ecologically representative national and regional protected area networks. One of the major goals of the Program of Work on Protected Areas is to strengthen communication, education and public awareness efforts.

Many environmental processes within marine ecosystems are still poorly understood. Scientific research and monitoring may be conducted within MPAs, where appropriate, to

understand marine ecosystems better and to provide valuable data on environmental changes. Interpretation and education programs are necessary to explain the purposes of MPAs, the potential benefits from scientific research and monitoring and to provide information on appropriate activities within an area. Compliance with MPA regulations and management plans depends on the awareness and cooperation of the public.

Despite the importance of outreach and education programs to the overall effectiveness of protected areas, outreach programs are all too often an afterthought in protected area management. Park managers and staff typically have a poor understanding of how to build local awareness and support. As a result, outreach programs are among the first to be cut in times of budget constraints.

The purpose of this program is to outline an approach for protected area practitioners and conservation planners that can be used to inspire support and action among communities and decision makers that leads to more effective protected area management.

1. Background

Dungonab Federal Reserve, which is referred to as Dungonab Bay and Mukkawar Island National Park (hereafter referred to as 'DMNP' or the 'Park') is one of two legally declared protected areas in the Sudanese Red Sea, the other being Sanganeb Marine National Park (SMNP).

The DMNP includes both a marine and a terrestrial component. The total area of 2,800 km² embraces 850 km² of land and 1,950 km² of sea, the latter being equivalent to 2.94% of the Exclusive Economic Zone of Sudan (66,412 km²).

The southern boundary of DMNP is located just south of Sheikh Okod, which is approximately 125 km north of Port Sudan. The northern boundary is situated approximately 70 km farther north, and runs along the center of the khor north of KhorShanaab, 195 km north of Port Sudan.

The western boundary of DBNP is set inland by between 5 km to 10 km, within which there are two villages, namely Mohammed Qol and Dungonab, and other dispersed settlements. The terrestrial area is included in order to permit the management of coastal activities that could otherwise impact upon the marine values of the Park.

The seaward boundary in the northern part of DMNP is located at least 5 km offshore from the RasRawaya Peninsula. In the southern part the boundary is up to 30 km offshore beyond the complex of reefs and islands that include Mukkawar Island.

The total length of coastline inside the Park, including Dungonab Bay, the peninsula and the islands, is over 200 km.

DMNP is situated in the Red Sea State (RSS). According to state sources, the Red Sea State has a population of approximately 850,000 people. Over 60% live in Port Sudan and, with an annual population growth rate of 2.9%, the RSS is among Sudan's most populated and fastest growing states (UNDP 2005, ICZMO 2008). The sparse and mobile nature of much of the population means that population growth and size are a subject of some speculation. The average population density across the RSS is just 3.3 persons per square kilometer, but the population density varies considerably between the state's urban and rural localities, with Port Sudan locality, which hosts the state's capital and largest city, recording a density of just over 445 persons per square kilometer (ICZMO 2008).

Within DMNP, the two main villages are Dungonab and Mohammed Qol. In 2004 Mohammed Qol had a population of approximately 750 in about 115 families, and Dungonab village had a population of approximately 430, in about 70 families (total population of 1,180). From surveys completed in 2007/2008, the population was assessed to be approximately 1,600 people from population estimates provided by local figures: Dungonab (800), Shanab (200), Dalau (300), Halaga (150) and Rawaya (150). The average household size is between 5 to 6 people, and the total number of households is currently estimated to be between 250 and 300 for these two main villages. The Dungonab village contains 14 small shops, including 4 tea shops. Approximately 35% of the population work as full-time fishermen. Four villagers work for the private oyster farm and one for the Marine Fisheries Department.

Education levels in the RSS are relatively low due, among other factors, to inadequate educational infrastructure, the legacy of traditionally discouraging women from pursuing education, and lack of adequate training and remuneration for teachers. The low level of education is also manifest in the strikingly high levels of illiteracy in the RSS, which averaged 50%, but which are as high as 89% in the locality of Halaieb. Education and literacy levels are most alarming among females, where 71% of surveyed subjects over 15 years old were identified as unschooled and illiterate (RSSMH 2006).

In 2004 there were two schools within DMNP, one in Mohammed Qol and the other in Dungonab. At that time the school in Mohammed Qol had 8 classes and about 130 pupils. The school in Dungonab also had 8 co-educational classes and a total of about 65 students. The Mohammed Qol school services smaller outlying settlements, and a student residence is provided free to pupils from outside the village. Very few of the students at Dungonab school are from outside Dungonab village, and there is no student residence provided. At present there are 7 schools in the vicinity of Dungonab and Mohammed Qol. These schools still offer co-educational classes. The number of students is not currently known.

2. Environmental education

Environmental education is defined in the Tbilisi Declaration of 1977 as “...a learning process that increases people’s knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address these challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action”.

Environmental education has the potential to influence the attitudes and behaviors of teachers (in both formal and non-formal settings), students, their families and communities at large towards their environment. Increasing knowledge of and appreciation for the world in which we live helps us to appreciate the complexity and interdependency of all systems, leading us to innovate and alter our behaviors in ways that improve and protect the environment.

3. Awareness and education program objectives

Following a field visit to DMNP it was determined that constraints existed that were preventing the achievement of the MPA’s main objectives. These included:

- Limited internal communication among and between the various institutional sectors at the local and national levels, including interaction with integrated external public groups
- A shortage of public communication aimed at raising awareness and knowledge regarding protection and sustainable use of the MPA’s natural resources, and with the overall goal of improving community life style.

The general objective of the current program is *“to start the provision of outreach/education/communication support to publicize, promote and encourage public participation in the management of the MPA’s natural resources for their sustainable use and conservation with the overall goal of improving the quality of life for the local community.”*

4. Communication problems

Several communication issues exist, such as:

- Lack of a communication plan, including social marketing
- Lack of print materials or promotional programs
- Lack of a communication network with the different stakeholders
- Lack of clarity in communication protocols at institutional, local and national levels.

5. Environmental problems

A preliminary list of the main environmental problems which will require the focus of intensive communication activities in the future, include:

- Lack of knowledge regarding the MPA's natural resources and the role of the Park authority
- Over-fishing, especially on the fish spawning aggregations, sea cucumber, and shark finning
- Deterioration of mangrove stands due to the mangroves being cut as a source of fuel and camel fodder
- Coastal pollution, mainly solid waste but also possible leakage of domestic wastewater to the sea from septic tanks close to the shore line
- Lack of clear plans for shoreline urban development.

6. Methodology and approaches

To achieve the aforementioned objective, the activities addressed in this program are based on four strategic integrated approaches and include:

1. Social marketing:

By using all available communication capabilities and media to promote available resources, ideas, opinions and concepts related to conservation processes and sustainable uses.

2. Environmental communication:

By promoting all activities related to conserving and managing the MPA's natural resources.

3. Environmental education:

To influence and direct the public toward rational and enlightened behaviors to achieve positive impacts on the MPA's natural resources.

4. Public participation:

To encourage the general public, businesses, organizations and institutions to share and participate in planning and implementing environmental policies.

The current program consists of four integrated areas of activity:

- Survey the current situation regarding awareness, education and outreach at a DMNP pilot site
- Define the DMNP social marketing campaign
- Address the various target groups through individually appropriate messages, activities and tools
- Recommend on selected top priority short term actions/activities of awareness and education



7. MPA social marketing campaign

To create and implement effective social marketing for the DMNP it is essential to follow a clear systematic approach by targeting the key groups/users/stakeholders.

7.1. Awareness and education current activities:

The first step was to define the effective target groups, any currently available awareness/marketing materials, the level of social awareness and willingness to conserve, support and sustainably use MPA resources. This activity was carried out by analyzing the results of questionnaires (see Annex 1) given to a sample of representatives drawn from the various target groups. The results indicated a severe shortage of awareness, outreach, educational activities and tools at DMNP.

7.2. MPA's social marketing campaign:

The requirements for the social campaign for the MPA are given in Table 1. These are based on personal communication and consultation with different stakeholders rather than from the questionnaire program. The tools and activities of the social marketing process and their priorities are defined for each target group. In the future, after applying the questionnaire given in Annex 1, the priority for each activity/tool can be re-assessed based on the questionnaires' outcomes.

The main target groups for the social marketing campaign include: MPA rangers, fishermen, local communities, municipal officials (Mohammed Qol and Dungonab villages), school children, tourism and environment authorities, tourism agencies, and NGOs. Table 2 summarizes the goals, messages and activities/tools for each of these target groups.

Table 1: Social Marketing Plan

Tools and Activities	Target Groups										Needs/Comments		
	Fishermen	Local community	Boat/dive operators	Tourists/hoteliers	School children	School teachers	Universities	Rangers	NGOs	Municipal officials		Tourism authorities	Priority
PRINTED MATERIALS													
Name, graphic and identity logo	X	X	X	X	X	X	X	X	X	X	X	1	Graphic designer and consultation
Folders, stationery			X	X	X	X	X	X	X	X	X	1	Designer/consultation
MPA brochure	X	X	X	X	X	X	X	X	X	X	X	1	Marine biologist/designer/consultation; it is urgently needed due to a complete lack of information on the MPA
Stickers			X	X	X			X				2	Designer
Sticky signs for trash cans and pleasure boats		X	X	X	X	X			X	X	X	1	To outline the legal base and need to conserve the MPA's resources
Fact sheets on endangered/threatened habitats and species	X	X	X	X		X			X	X	X	1	Series of fact sheets on endangered/threatened species, key habitats impacts (see Annex 2)
Booklets for children					X							1	Some booklets are available in PERSGA that need to be reprinted and distributed
Posters	X	X	X	X	X	X			X	X	X	1	Designer/consultation
NON PRINT ITEMS													
Web page			X	X	X	X	X	X	X		X	3	Computing capabilities and tools are not accessible/available to the main stakeholders
Trash cans	X	X	X	X	X	X			X	X	X	1	
Signage	X	X	X	X	X	X	X	X	X	X	X	1	No signage plan currently exists
Promotional video	X	X	X	X	X	X			X	X	X	1	To illustrate the MPA's resources and its beauty as a visitor attraction
Info. screen at airport			X	X							X	2	Sites are not familiar as tourist destinations

STRATEGIC ACTIVITIES																						
Clean-up campaign																					An effective tool for raising awareness and fostering public ownership	
Junior ranger program																					Focus on the school children in the MPA	
University volunteers																					By establishing a network with the universities and assigning clear tasks to the students based on their skills and interests	
CAPACITY BUILDING																						
Ranger manual																						Lack of staff and management clarity
Ranger selection criteria																						Staffing is a key issue at this early stage
Ranger exchange program																						At the national and regional level
MEDIA/SOCIAL SUPPORT																						
Journalism conference and training																						Train and encourage national and local journalists to highlight MPA resources, need for conservation and sustainable use through conferences, workshops and field visits
Press support																						By establishing journalists-rangers network, providing press materials, subjects, news and field visits
Boat operators/rangers network																						
Fishermen/rangers network																						

Table 2: Social Marketing Campaign, Target Groups

Target group	Program goals	Message	Communication tools/activities
MPA rangers	Define and promote the roles and responsibilities of the park rangers and provide proper tools and materials for awareness and outreach	Pride and respect for their work, improved communication skills; more conservation work; children and youth are the future of the MPA	Print and non-print materials, attractive uniforms, communication through media, clean-up campaign and training events, regular meetings
Fishermen	Encourage this valuable target group to be part of the conservation process and to respect MPA policy	Declaration that the MPA is for sustaining the use of local resources; over-fishing threatens your artisanal fishing, therefore it threatens your children's future; proper fishing practices sustain the natural stocks; work jointly with the MPA authority (rangers) to ensure the proper protection of your resources; the knowledge and skills you have can support the management of the local fisheries You are living within a declared MPA; rational practices on the shore line will help to conserve your natural resources in the MPA; healthy marine resources will provide jobs and economic prosperity in the future; you have to be a part of the conservation process to maintain and improve your own and your children's livelihoods; maintaining the ecological balance is a religious concept Conservation is a collaborative process; the MPA authority is a key partner in the decision-making process; declaration of the MPA is a valuable investment for the future of the area in terms of job creation, improvements in the livelihood of the community, and to support the national economy	Work closely with fishermen and fishermen's associations (on the job training); print materials, produce communication tools; regular round table meetings
Local community	Raise the ownership and environmental awareness of the local community	You are living within a declared MPA; rational practices on the shore line will help to conserve your natural resources in the MPA; healthy marine resources will provide jobs and economic prosperity in the future; you have to be a part of the conservation process to maintain and improve your own and your children's livelihoods; maintaining the ecological balance is a religious concept Conservation is a collaborative process; the MPA authority is a key partner in the decision-making process; declaration of the MPA is a valuable investment for the future of the area in terms of job creation, improvements in the livelihood of the community, and to support the national economy	Print materials, non-print items, media, traditional and cultural events, regular round table meetings, mosques
Municipal officials	Respect the work the MPA authority (rangers) is doing; encourage networking to support the outreach and education program	You are living within a declared MPA; rational practices on the shore line will help to conserve your natural resources in the MPA; healthy marine resources will provide jobs and economic prosperity in the future; you have to be a part of the conservation process to maintain and improve your own and your children's livelihoods; maintaining the ecological balance is a religious concept Conservation is a collaborative process; the MPA authority is a key partner in the decision-making process; declaration of the MPA is a valuable investment for the future of the area in terms of job creation, improvements in the livelihood of the community, and to support the national economy	Regular round table meetings; print material and non-print items; media; collaborative day to day management
School children	Raise the environmental awareness of the school children and respect the job of the ranger as a role model for the conservation process	School children are important in the conservation process; their respect for the policies of the MPA helps teach their parents and families to protect the environment; they each have a personal responsibility to protect the valuable resources of the MPA	Print materials and other items; clean-up campaigns, school science clubs; traveling exhibits; awards/prize programs by MPA rangers; school-rangers visit program; junior ranger program

<p>Tourism and environmental affairs authorities</p>	<p>Raise and promote the concept that “the valuable and unique natural resources of the MPA are assets for current and future tourism related investments”</p>	<p>Promote the valuable role of the MPA authority; conserving the MPA’s natural resources is essential to secure current tourism investments and ensure more in the future; eco-tourism is the best concept for developing the tourist industry; for a future sustainable tourist industry you have to be an active partner in the conservation process</p>	<p>Print materials and other non-print items; media; round table meetings and workshops</p>
<p>Tourism agencies</p>	<p>Encourage tourism companies and operators to be introduced to the valuable and natural environment of the MPA and use the resources in a sustainable way</p>	<p>Promote the naturalness of the MPA as an alluring aspect for eco-tourism; it is the product the clients seek; the role of the MPA authority is to protect and maintain the assets of your business; conservation is a collaborative process and you are a valuable partner</p>	<p>Print materials and other produced items; media (TV, radio); round table meetings and workshops</p>
<p>NGOs</p>	<p>Establish a strong network with the NGOs as key players in the implementation of an outreach and education program</p>	<p>Promote the role of the MPA authority; the outreach and education mission of the MPA authority and NGOs are strongly linked; investments by NGOs in outreach and awareness has been a successful and effective model worldwide</p>	<p>Print materials and other appropriate vehicles to carry the message; media (TV, radio); round table meetings and workshops; traveling exhibits; clean-up campaigns and other solid waste management activities</p>

8. Proposed short term actions/activities

Short term actions/activities are those that could be implemented within the project period (almost one year).

8.1. Print materials:

As a top priority the MPA's logo needs to be designed and approved, based on a consultative process. Then a series of print materials and items should be produced to ensure an effective education and social marketing program. The following table proposes some of the key print materials with their contents and message.

PRINT MATERIALS	Content/message
Name, graphic and identity logo	
Folders, stationery	MPA graphic, name and logo
MPA brochure	Graphic, name, logo, legal status, boundary map showing trail, appropriate recreational sites, key species and habitats, short comments on attractive and notable features
Stickers	Graphic, name, logo, photos of habitats or species or both, and a list of "do and do not's" for the MPA
Sticky signs for trashcans and pleasure boats	Graphic, name and logo, general/short message to conserve the living resources of the MPA and "do and do not's"
Fact sheets for endangered or threatened habitats and species	A series of fact sheets on key habitats (coral reefs, mangroves, sea grasses), endangered/threatened species (marine turtles, manta rays, dugong, mega-sharks), human impacts (fisheries, solid waste), natural impacts (crown-of thorns starfish, coral bleaching)
Booklets for children	A simple explanation of the legal status, best practices, need to protect, importance as life support systems, biology of sensitive habitats/ecosystems (coral reefs, mangrove stands and seagrass meadows) and key species (turtles, dugongs, whale sharks, water birds, etc.)
Posters	Graphic, name, logo, legal status (do & do not's), boundary map showing appropriate sites for recreational activities, photos of key species and habitats showing their beauty with very short comments on their importance and the need for conservation

It is clear that a great deal of effort will be needed to publicize the MPA. This is due to the complete lack of basic print materials and other media (web/video/signage) currently available that could be used to support an education, awareness and outreach program. This may be attributed to a shortage in resources, finance and MPA staff. Therefore, it is recommended to

start with some basic print materials, such as a brochure, some selective fact sheets, and signage installation.

Basic fact sheets could cover the following sensitive habitats/ecosystems characteristic of the DMNP: coral reefs, mangroves and sea grasses. There are also several key/threatened/endangered species present in the DMNP worthy of fact sheets such as:

Dugong: The only herbivorous mammal that is strictly marine, and the only extant species (*Dugong dugong*) in the family Dugongidae. All extant members of the Order Sirenia (including the dugong) are listed as vulnerable to extinction. All populations of the dugong are listed in Appendix 1 of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Although there is no data available on the population characteristics, it is well known that Dungonab MPA harbors a valuable population of dugong.

Manta ray:

All over the world the poorly understood mobula rays are being over-fished in alarming numbers for their meat and gills. The genus *Manta* was re-assessed for the IUCN Red List in 2011 to take into account the species reclassification within the genus which took place in 2009. Of the nine species of mobula rays, three are listed on the IUCN Red List of Threatened Species as “Data Deficient” (*Mobulahypostoma kuhlii* and *tarapacana*), four as “Near Threatened” (*Mobulaeregoodootenkee*, *japanica*, *munkiana* and *thurstoni*), one as “Vulnerable” (*Mobularochebrunei*) and one as “Endangered” (*Mobulamobular*). Species included in the CITES Convention are listed in one of three appendices depending on the level of protection they require. Depending on the appendix, trade can be illegal (or only allowed under very exceptional circumstances: Appendix I), or very closely restricted and controlled to avoid over utilization (Appendix II). If listed on Appendix III countries can ask other members of the convention for help in controlling trade. On the 14th March 2013 the genus *Manta* was listed on Appendix II of this convention; this became legally binding on 14 September 2014. Given that the international trade in mobulid gill plates is now rapidly expanding, the listing of mantas on this convention will be a vital tool that can be used to help characterize the scale of this trade and

hopefully bring it to a legal end. It is known that DMNP also contains a spawning/aggregation ground for manta rays.

Whale shark:

Whale sharks are identified as both a migratory species and a threatened species in the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act). The whale shark is targeted by commercial fisheries in several areas where they seasonally aggregate. The population is unknown and the species is considered vulnerable by the IUCN. The whale shark is listed in the Bonn Convention for the Conservation of Migratory Species of Wild Animals (CMS). It is listed, along with six other species of shark, under the CMS Memorandum of Understanding on the Conservation of Migratory Sharks.

Marine turtles:

At present, all sea turtle species are categorized as endangered or critically endangered in the IUCN Red List and appear on Appendix 1 of CITES. In 1995 the IUCN/SSC Marine Turtle Specialist Group (MTSG) published “A Global Strategy for Conservation of Marine Turtles” to provide a blueprint for efforts to conserve and recover declining and depleted sea turtle populations. Out of the seven species of marine turtles five species have been reported from the Red Sea: the loggerhead (*Caretta caretta*), green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), Kemp’s ridley (*Lepidochelys kempi*) and leatherback (*Dermochelys coriacea*). Dungonab MPA is characterized by the presence of valuable nesting beaches and feeding grounds for marine turtles, mainly green turtles.

Mega-sharks:

According to local fishermen DMNP hosts a valuable population of mega-sharks including tiger, hammerhead and the oceanic white tip. In addition to the importance of these species as top predators and as indicators to the healthiness of the sea, they can be valuable attractions (i.e. tourist products) for a future diving industry.

8.2. School teachers and children:

Several activities could be carried out in close cooperation with schools in the Red Sea State in general, and DMNP in particular, including:

- Provide all of the print materials and media items to the schools, especially those in the area of the DMNP, and provide the necessary equipment for illustrating displays, videos, computer graphics, etc.
- Conduct training workshops for school teachers to raise their level of knowledge about the marine environment, DMNP's natural resources, and ensure a learner-centered, hands-on approach to environmental education inside and outside the classroom (i.e. train-the-trainers)
- Conduct competitions for school children with awards/prizes for environmental reports, activities, drawings, etc.
- Support school children in clean-up campaigns in areas of mangrove, along beaches and in villages
- Encourage and support the establishment of environmental science and conservation clubs within the schools local to the MPA.

8.2. Signage plan:

It is also strongly recommended to start a basic sign installation program. The table below shows the proposed locations and message for each of the top priority signs.

Location	Materials	Message
Highway traffic road- North boundary (Entrance)	Metal	Graphic, name, logo, North boundary of the MPA, legal base
Highway traffic road- South boundary (Entrance)	Metal	Graphic, name, logo, South boundary of the MPA, legal base
Mohammed Qol village	Metal	Graphic, name, logo, village name
Dungonab village	Metal	Graphic, name, logo, village name
Coastal mangrove stands	Metal	Graphic, name, logo, conservation-legal base/protected by law
Beaches	Metal or wood	Graphic, name, logo, protected by law, leave it clean, take nothing leave nothing
Entrances of the main wadis to the sea	Metal	Graphic, name, logo, legal base

8.3. Media support:

Publicizing the MPA is the top priority in the short term. Media can play a key role in this process. Therefore, it is recommended to:

- Conduct a training event for journalists and other media workers at local and national levels to promote the MPA's natural resources, the future value of these resources to the national economy, and the need for conservation
- Arrange for field visits/travel exhibits to the MPA.

9. Capacity building

It is recognized that there are not enough staff members in the DMNP authority currently able to implement an awareness and education program. Including school teachers and NGO practitioners within the training program is essential for the overall success of the awareness and education program. To develop school-community linkages it is recommended that awareness and outreach events are conducted jointly (school teachers, NGO practitioners and local community representatives together). Such events could include:

- Training on awareness and education
- Field trip/travel exhibits
- Volunteer ranger program
- Clean-up campaigns



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Annex 1. Questionnaire Sheet for Outreach and Education: Current Activities in the
Dungonab MPA

استبيان لخطّة التوعية والتعليم بحمية دونجناب الطبيعية

Awareness and Education Questionnaire for Dungonab MPA

الاسم :
Name:

السن :
Age:

مجال العمل/ الفئة التي تنتمي إليها: ضع علامة صح على الفئة التي تنتمي إليها:
Sector/field of work:

() سيدات دونجناب () الصيادين () ساكني دونجناب غير الصيادين
Dungonab resident female Fishermen community Dungonab resident

() طلاب الجامعات () تلاميذ المدارس (10-12 سنة) () مدرسي المدارس
University student School children (10-12yrs) School teacher

() مسؤولي المحميات الطبيعية () إدارة السياحة والبيئة بالولاية () البحث العلمي والتعليم العالي ()
WCGA Local tourism & environment authority Research sector

() السياحة () الجمعيات الأهلية () مسؤولي المحليات بدونجناب
Tourism sector NGOs Dungonab municipals

أخرى () برجاء تحديدها () الإعلام
Others (please specify) Media

1. هل تعتقد أن محمية دنجنا ب البحرية وما تحتويه من موارد طبيعية فريدة معلومة للمواطنين على المستوى المحلي (ولاية البحر الأحمر)

Do you think that the unique resources of DMPA are well known on the local level?

نعم	لا
Yes	No

2- هل هي معلومة على المستوى الوطني
Is it well known on the national level?

لا	نعم
No	Yes

3- إذا كانت الإجابة فيما سبق بلا فهل تعتقد أن ذلك يرجع في الأساس إلى نقص برامج التوعية والتعليم البيئي:

If No, do you think that the lack of an awareness and education program is the main reason?

نعم	لا
Yes	No

4- إذا كانت الإجابة بلا في السابق وهناك أسباب أخرى، فهل يمكنك سرد هذه الأسباب:

If No, could you please address the other reasons?

5- هل تعتقد أن التعريف بالموارد البحرية لمحمية دونجنا ب سوف يحسن من نتائج أنشطة الحماية:

Do you think that promoting the natural resources of DMPA will improve the effectiveness of the conservation process?

لا	نعم
No	Yes

6- هل تعتقد أن التعريف بالموارد البحرية لمحمية دونجنا ب سوف يشجع السكان المحليين على المشاركة في أنشطة الإدارة والحماية لمراد المحمية:

Do you think that promoting the natural resources of DMPA will encourage the community to be part of the conservation process?

لا نعم
No Yes

7- من وجهة نظرك ما هي الفئات/الأنشطة الأكثر تأثيرا على الموارد الطبيعية الحية لمحمية دونجناب البحرية، رتبها تنازليا بالأرقام من الأكثر إلى الأقل تأثيرا وبالترتيب:

Personally, what are the target groups or activities that have the most impact on the natural resources of the DMPA? Rank them, in numbers, from highest to lowest.

الصيادين بمنطقة دونجناب () ، الصيادين من خارج منطقة دونجناب () ، المزرعة السمكية () ، السكان بمنطقة
DMPA fishers () Fishers from outside DMPA () Pearl farm () MPA settlements ()
دونجناب () ، أنشطة الغوص بمنطقة دونجناب () ، الرعي بمناطق المانجروف بدونجناب () ، تجميع الكائنات لأغراض
Curio trade () Animal grazing () Diving in DMPA ()
الزينة والمشغولات اليدوية () ، المخلفات الصلبة والسائلة () ، أنشطة أخرى أن وجدت ()
Solid and liquid waste () Others ()

8- إذا كانت هناك أنشطة أخرى لم تذكر سابقا فیرجاء ذكرها:

If others, please define:

9- ما هي من وجهة نظركم في الفئات الأولى بالتعليم والتوعية البيئية، رتبها تنازليا بالأرقام من الأكثر إلى الأقل احتياجا طبقا لتأثيرها على موارد المحمية الطبيعية وبالترتيب:

Personally, what are the target groups most in need of an awareness and education program?
Rank them, in numbers, based on priority, from highest to lowest.

تلاميذ المدارس () ، طلاب الجامعات والمعاهد () ، الصيادين () ، السكان المحليين بمنطقة المحمية () ، العاملين في
مجال الأنشطة البحرية السياحية () ، الموظفين بالمصالح الحكومية () ، السيدات () ، أخرى ()

School children () University students () Fishers () DMPA residents () Marine recreational sector () DMPA municipal officials () Local community females () Others ()

10- إذا كنت ترى أن هناك فئات أخرى تحتاج لتوعية وتعليم بيئي لم تذكر في سابقا فیرجاء تحديدها:

If others, please define:

11- هل تعتقد أن الإعلام المحلى والوطني يقوم بدور ملموس في مجال التوعية بموارد البحر الأحمر الطبيعية بشكل عام وبمحمية دونجناب بشكل خاص؟

Do you think that the national and local media properly promote the natural resources of the Red Sea in general, and DMPA in particular?

لا نعم
No Yes

12- إذا كانت الإجابة بلا، فهل تعتقد أن الإعلاميين المحليين والوطنيين سواء في مجال الإعلام المرئي أو المقروء في حاجة إلى دورة تدريبية للتعريف بالبيئة البحرية وأهميتها وخصوصا بمنطقة محمية دونجناب

If No, do you think that media workers (journalists and TV presenters) need awareness training on the importance of marine resources, especially in DMPA?

لا نعم
No Yes

13- ما هي من وجهة نظركم المواد التعليمية المطلوبة للتعريف بالموارد الطبيعية لمحمية دونجناب البحرية، رتب بالأرقام تنازليا من الأكثر احتياجا إلى الأقل:

Personally, what materials are needed to properly promote the natural resources of DMPA? Rank them, in numbers, based on priority, from highest to lowest.

نشرات توعية ()، مطويات تعريف بالموارد الحية للمحمية ()، كتيبات لشرح الموارد وأسلوب الحفاظ عليها ()، أقراص مدمجة وشرائط فيديو ()، ملصقات ()

Brochures () Fact sheets/newsletters () Booklets () Stickers () CDs/DVDs and video tapes ()

14- هل تتوفر أجهزة العرض من كمبيوتر وغيرها لعرض مصنفات التوعية البيئية على الأقراص المدمجة وشرائط الفيديو بالمدارس وإدارة المحمية بمنطقة دونجاب؟

نعم () لا ()

Are there any environmental awareness media tools (video tapes, CDs, etc.) on the Dungonab MPA resources that are available for school students?

No () Yes ()

15- ما هي من وجهة نظركم الجهات/ الهيئات/ الفئات التي يقع عليها الدور الأكبر في تنفيذ برامج للتعليم والتوعية البيئية بمنطقة دونجاب، رتبها بالأرقام تنازليا من الدور الأكبر إلى الأقل:

Personally, what are the groups/institutes/authorities that have the capability to implement an awareness and education program for DMPA? Rank them in numbers, based on their capability, from highest to lowest.

إدارة المحميات ()، مدرسي المدارس ()، الجامعات والمعاهد العلمية ()، العاملين في مجال الإعلام ()، الجمعيات الأهلية ()، أخرى ()

DMPA authority () School teachers () University/higher education bodies () Media () NGOs () Others ()

16- إذا أدرجت جهات/فئات أخرى، فبرجاء ذكرها:

If others, please define:

17- إذا كنت لديك وجهة نظر في كيفية دعم طرق التوعية، فبرجاء ملئ الجدول التالي بالأرقام:

1- أفضلية أولى 2- أفضلية ثانية 3- أفضلية ثالثة

If you have opinions about the awareness and education process, please fill the following table, based on rank priority:

Priority 1

Priority 2

Priority 3

14- هل تتوفر أجهزة العرض من كمبيوتر وغيرها لعرض مصنفات التوعية البيئية على الأقراص المدمجة وشرائط الفيديو بالمدارس وإدارة المحمية بمنطقة دونجناب؟

نعم () لا ()

Are there any environmental awareness media tools (video tapes, CDs, etc.) on the Dungonab MPA resources that are available for school students?

No () Yes ()

15- ما هي من وجهة نظركم الجهات/ الهيئات/ الفئات التي يقع عليها الدور الأكبر في تنفيذ برامج للتعليم والتوعية البيئية بمنطقة دونجناب، رتبها بالأرقام تنازليا من الدور الأكبر إلى الأقل:

Personally, what are the groups/institutes/authorities that have the capability to implement an awareness and education program for DMPA? Rank them in numbers, based on their capability, from highest to lowest.

إدارة المحميات ()، مدرسي المدارس ()، الجامعات والمعاهد العلمية ()، العاملين في مجال الإعلام ()، الجمعيات الأهلية ()، أخرى ()

DMPA authority () School teachers () University/higher education bodies () Media () NGOs () Others ()

16- إذا أدرجت جهات/فئات أخرى، فبرجاء ذكرها:

If others, please define:

17- إذا كنت لديك وجهة نظر في كيفية دعم طرق التوعية، فبرجاء ملئ الجدول التالي بالأرقام:

1- أفضلية أولى 2- أفضلية ثانية 3- أفضلية ثالثة

If you have opinions about the awareness and education process, please fill the following table, based on rank priority:

Priority 1

Priority 2

Priority 3

Annex 2. Examples of Fact Sheets Produced by the Red Sea Protectorates (Egypt)

مرحبا بكم في البحر الأحمر
نحن من حضانة البيئة بالبحر الأحمر
إن واجبنا هو التأكد من أن قواعد الأمانة العالمية، يتم الحفاظ
على نقل هذا البحر الجمال واستمتع الجميع به بصورتها المثالية





إطعام الأسماك يؤذيها



الصيد غير القانوني يخل بالتوازن البيئي للشعاب المرجانية



لمس الشعاب المرجانية والمشي والوقوف عليها يكسرها ويقتلها



إلقاء النفايات في البحر وعلى الشواطئ يدمر الحياة البرية



جمع الأصداف والمرجان يؤذي الشعاب المرجانية

نرجو أن تستمتعوا بأوقاتكم!

Welcome to the Red Sea
We are the Red Sea Rangers
It is our job to make sure that the following basic guidelines are followed, so that Egypt's environmental resources are protected for everyone to enjoy for years to come





Feeding fish is harmful to them



Illegal fishing upsets the delicate balance of the reef



Touching, walking or standing on corals breaks and kills them






Garbage dumped in the sea and on the beach kills wildlife




Taking corals and shells harms the reef

We hope you enjoy yourselves!


Bienvenido al Mar Rojo
Somos los guardianes del Mar Rojo
Nuestro deber es garantizar que los recursos naturales sean respetados para proteger el hermoso patrimonio de Egipto y que sea disfrutado por todos los visitantes


No de comer a los peces, les perjudica




La pesca ilegal distorsiona el delicado equilibrio del arrecife



El tocar, caminar o mantenerse en pie sobre los corales los destruye y mata



La basura arrojada al mar o a las playas, aniquila la vida salvaje



Recolectar corales y conchas daña al arrecife

¡Esperamos que se diviertan!

Willkommen am Roten Meer
Wir sind die Ranger des Roten Meeres
Es ist unsere Pflicht zu sichern, dass die natürlichen Ressourcen geschützt und nicht verschmutzt werden, so das wunderschöne Ägypten für jedermann genossen werden kann





Füttern der Fische ist harmvoll



Illegales fischen stürzt den Ausgleich der Riffe um



Berühren, betreten oder stehen auf Korallen zerbricht und tötet sie



Der im Meer und auf dem Strand abgeladene Müll tötet die Tiere und die Pflanzenwelt



Sammeln von Korallen und Schalen ist harmvoll für die Riffe

Wir hoffen Ihnen viel Vergnügen!

Benvenuto nel Mar Rosso

Noi siamo i ranger del Mar Rosso
 Il nostro compito è assicurarvi che le vacanze siano piacevoli e sicure, ma che i nostri ambienti naturali del Egitto siano protetti per il futuro piacere di tutti.



Dare da mangiare ai pesci e' pericoloso per loro



La pesca illegale sconvolge il delicato equilibrio della scogliera



Toccare, camminare o stare in piedi sui coralli li rompe e li uccide



I rifiuti gettati in mare e sulla spiaggia sono letali per la natura



Raccogliere coralli e conchiglie danneggia la scogliera

Noi speriamo che voi vi divertiate!

Добро пожаловать на Красное море

Мы - экологическая служба Красного моря
 Наша работа состоит в том, чтобы обеспечить вам прекрасные каникулы. Мы хотим, чтобы вы наслаждались Красным морем, но чтобы не испортился вид, это будет нашей задачей.



Кормление рыб губительно для них.



Нелегальное рыболовство нарушает естественный баланс рифов.



Нельзя трогать кораллы, стоять на них и ходить по ним: это ломает и убивает их



Мусор, выброшенный в море и на пляж, убивает живую природу



Забирая кораллы и ракушки, Вы наносите вред коралловым рифам.

Мы надеемся, что вы получите здесь большое удовольствие

Bienvenue en Mer Rouge

Nous sommes les gardes du Parc naturel de la Mer Rouge
 Notre rôle est de faire respecter les consignes de protection de l'environnement, pour que chacun puisse apprécier les beaux endroits de la Mer Rouge pendant longtemps.



Nourrir les poissons met en danger la survie des espèces



La pêche illégale fragilise l'équilibre écologique du récif corallien



Eviter de toucher ou de marcher sur le récif car le corail endommagé meurt



Les déchets jetés sur la plage ou dans la mer tuent la flore et la faune marines



La collecte des coquillages et du corail dégrade le récif corallien

Nous vous souhaitons un excellent séjour!



The Red Sea's 'Nurseries' Need Your Help



Mangrove Stands are Vital Habitats



The mangrove tree is the nursery of the Red Sea. There are two species of mangrove on Egypt's Red Sea coast - *avicennia marina* and *rhizophora mucronata* - and both rely on a complex root system to soak up and desalinate seawater. The mangrove's unique roots grow straight up from the ground, through the water, and into the air above the water line. All around the tree, the roots form a warm-water maze of tiny paths and tunnels that make a safe home for 35 species of young fish and other sea life. Without this vital habitat, the juvenile fish would never grow to be adults and the entire Red Sea fishery would be impacted.

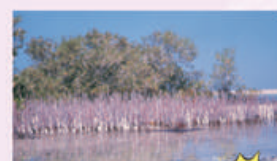


Photo by: Mohamed Photo by: Red Sea Rangers
Habib

Human Threats are Growing



Photo by: Red Sea Rangers



Local fishermen often set up camp among the trees and use mangrove wood in their campfires. Bedouin herders allow their camels to graze on mangrove roots. For many years, these groups have used the mangroves sustainably, but as these established activities are combined with the growing pressure of tourism and development, the mangrove is slowly being pushed beyond its breaking point. Recent surveys have found that garbage tangled among the trees is one of the worst new offenders, choking off roots as well as young fish. Mangrove stands, which can range from just a few trees to tracts of several kilometers, are beginning to shrink.

Now is the Time to Act

Photo by: Mohamed Habib



Efforts are underway to protect the mangroves. Signs marking the coastal stands have been erected to raise awareness of the trees' location and importance. The Red Sea Rangers are supporting plans to define core buffer zones as the next step in mangrove protection. The Rangers also believe flood paths, which provide the trees with much-needed influxes of fresh water, should be part of any protected mangrove areas. Special regulations for fishing around mangroves are already in place, and more should be considered. Proper garbage collection and dumps are of key importance, and any future development activities must take into account the sensitivity of this vital ecosystem.



MANGROVES SUSTAIN THE RED SEA ECOSYSTEM



Boat anchors destroy the coral. Use the mooring buoys.



Feeding fish is harmful to them



Touching, walking or standing on corals breaks and kills them.



Illegal fishing upsets the delicate balance of the reef



Garbage dumped in the sea and on the beach kills wildlife

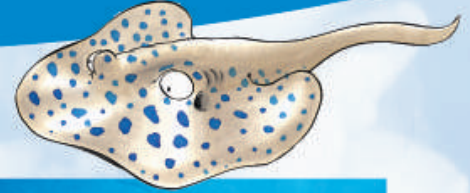


Taking corals and shells harms the reef





Expanding Support for Crucial Natural Areas



Red Sea Protectorates Can Help Fund Themselves

Until now, Egypt has relied on donor projects to finance the management of the country's natural protectorates. But if these protectorates are going to be sustainable in the long term, new funding methods must be found. Innovative possibilities abound: visitors could pay small fees, concession stands could generate money, and official products could be merchandised. USAID is supporting efforts to help the Egyptian Environmental Affairs Agency and the Red Sea Rangers to explore these and other funding mechanisms.



Photo by: Red Sea Rangers



Photo by: Red Sea Rangers



Red Sea Tourists are Willing to Pay Their Share

All around the world, tourists have shown that they are willing to pay entrance fees to visit high-quality protected areas. Rates vary, but are usually only a small fraction of what the tourist has paid to get to the protectorate. Visitors are happy to see a portion of their vacation money go to the protectorate - but they expect to see some evidence of how this money is being spent by the authorities to safeguard the environment. Local studies have shown that visitors to the Red Sea agree with tourists from around the world: environmental protection is worth paying for.

Protectorates Have Untapped Revenue Resources

There are several varying entrance fees now in use in Egypt's protectorates. No fee is charged for many of the areas that are officially protected. Where fees exist, the collection methods are sometimes inefficient and unequally applied. Research suggests that the Red Sea protectorates' funds for conservation could be raised ten-fold by increasing the area covered and simplifying the collection system - without increasing daily rates!



Photo by: Red Sea Rangers

NATIONAL PARKS ARE A WISE INVESTMENT





Sharing the Beach with Turtles



All Species of Sea Turtles are Threatened

The Red Sea is home to four species of endangered marine turtles:

- *Chelonia medas* ("green turtle")
- *Eretmochelys imbricata* ("Hawksbill Turtle")
- *Dermochelys coriacea* "leatherback Turtle")
- *Caretta caretta* ("loggerhead turtle")

The green turtle is the most critically endangered of all the turtles worldwide, but is one of the most common in the Red Sea, making Red Sea conservation efforts critical to the global health of the species.



Photo by: Red Sea Rangers



Photo by: Red Sea Rangers

Turtle Eggs Have Only Their Shells to Protect Them

A quiet, sandy beach is what expectant mother turtles look for in a nesting site. Signs of human activity will scare the turtles away. When left alone, an adult mother turtle usually lays 20-40 eggs. Once she is through, she will make her way back to the sea, never to check on her progeny again. The eggs are on their own for the 50- to 65-day incubation period before the turtles hatch and head for the sea. Seagulls, dogs, foxes, and crabs are all natural predators, and turtles are sometimes collected and eaten by humans as well. Large piles of turtle bones found on a protected island show that adult turtles are sometimes hunted for their meat.



Protected Nesting Sites Can Make a Difference

As many of the best nesting sites have been taken over by human activities such as mining, fishing, or tourist development, turtles have been forced to make their nests in less ideal locations. A recent study found that turtle nests are often located in the same intertidal zones that are frequented by fishermen. To protect these endangered species, the Red Sea Rangers believe special nesting areas should be designated on the islands of Zarbagad, Big Giftun, Khalig Om el Abbas, and in Wadi el-Gemal. By methodically searching common nesting areas, eggs could be carefully removed and transferred to special, recreated natural nests out of harm's way. Such comprehensive strategies may be the key to turtles' survival.



Photo by: Red Sea Rangers



SAVE SPACE FOR TURTLE NESTS





SCUBA Diving is More Than Fun ... It's Science



Managing the Red Sea Protectorates Requires Underwater Fieldwork

You can't keep an eye on life underwater without getting your feet wet. That's why the Red Sea Rangers, charged with monitoring and protecting the Red Sea ecosystem, are specially trained in scientific diving techniques. By getting beneath the waves, the Rangers can see exactly what is going on in the environment they seek to protect. This can mean different things at different times. The Rangers often dive in areas frequented by important marine mammals such as dolphins and dugongs. Or they may need to check on the reef itself, monitoring areas of the reef that have been damaged, identifying what caused the damage (and whether legal action should be taken), deciding whether restoration is possible, and making follow-up visits to check on the progress of recovery.



Photo by: Mohamed Habib



Above and Beyond Standard Diving Courses

While many Rangers also dive recreationally, their research dives require a much higher level of training and preparation. Before they ever joined the Egyptian Environmental Affairs Agency, most of the Rangers had earned university degrees in biology or the physical sciences. Once they came onboard, they took a series of additional training courses to become advanced divers, including specialized courses such as underwater photography or in installing underwater monitoring brackets that allow them to take more precise measurements of coral and sealife conditions.



Photo by: Red Sea Rangers

It Takes Professional Teamwork to Protect the World's Heritage



Photo by: Red Sea Rangers

Just as the Red Sea ecosystem is part of the larger global environment, the Rangers' work is part of the larger global effort of researchers and scientists to advance human understanding of the natural world. The data compiled by the Rangers on their dives is used by scientists from around the world to monitor vital global statistics on temperature, marine life, and other areas. When adequately trained Rangers dive underwater, they are working for the entire world.



DIVING CAN ADVANCE SCIENCE AND CONSERVATION



Putting Science To Work for Nature



Photo by: Mohamed Habib



Looks Can Be Deceiving

Amongst the dramatic splendor of the coral reefs in the Red Sea, damage and sickness can be hard to spot to all but the trained eye. Scientists use many techniques to check the status of coral – one of the most common methods involves taking periodic photographic measurements of a small area of coral. But it can sometimes be difficult to account for variations in the angle from which the photograph is shot, lighting conditions, or other variables. A pilot study for a more advanced method of monitoring coral was introduced in Egypt in 2000, and it holds great promise.

Photo by: Red Sea Rangers



Accuracy in Monitoring

The new method of monitoring coral involves the insertion of four permanent, specially designed metal rods in the coral reef over an area of exactly one meter. These rods are installed by experts so that they do not damage the coral. On each subsequent visit to the site, the researchers can use the rods to mount a camera on the same spot, and take a picture of the same piece of coral from the same angle. By limiting the variables and processing the photos with special software, the researchers get much more accurate comparative data.

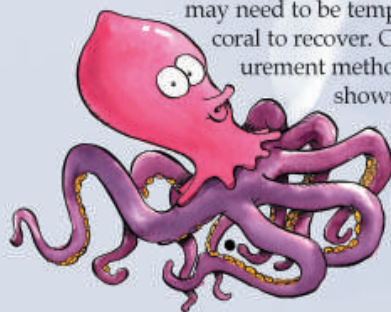


Monitoring Leads to Action

When researchers compare rates of growth, damage, and breakage of coral reefs to other statistics, such as the number of divers or boats that visited the sites over the same period, they can then determine the carrying capacity for a coral reef, and can use this information in conservation management planning. When damage exceeds growth, a site may need to be temporarily closed in order for the coral to recover. Over time with the new measurement methods, a picture begins to emerge showing warning signs of a coral reef in danger, and preventative steps can be taken.

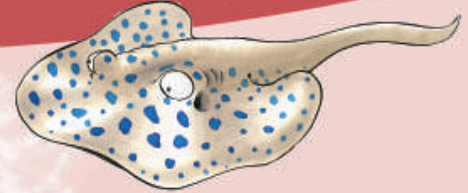


Photo by: Red Sea Rangers



**CORAL REEF MONITORING:
A TOOL FOR CONSERVATION MANAGEMENT PLANNING**

Gentle Giants: Red Sea Dugongs



These Mermaids Are Real But Rare



Photo by: Red Sea Rangers

For centuries, stories of mermaids were common among sailors and fishermen. But it turns out that the beautiful maidens with the fish-like tails may not be quite as the sailors imagined. Historians and biologists have gradually come to the conclusion that the mermaids of fishermen's fantasies were actually dugongs, or "sea cows" – three meter-long, 900-kilogram giants that graze the ocean floor. In 1957, an Egyptian biologist, Dr. Hamed Abd el-Fattha Gohar published the first scientific study of dugongs on the Red Sea. But there is evidence that the animals were known and hunted by ancient cultures in the area and, in fact, were legally hunted in Egypt until just a few decades ago.



Under Threat From All Sides

The dugong is an herbivore, and a rather finicky one at that, eating only two of the twelve species of sea grass found in the Red Sea. Because the dugong can only be sustained by these two types of grass, it is particularly vulnerable to dredging and filling activities that destroy seafloor. Most often, such activities are carried out for tourism or oil interests – which also run the risk of damaging spills. Herbicidal run-off from agricultural areas and hotel landscaping projects is also a concern, as the chemicals could damage the dugong's only sources of food.

Dugongs do not reproduce quickly, and they invest a great deal of time and energy in nurturing their young. Protective dugong mothers often swim with their babies nestled under their fins. If there is not enough food, adult dugongs will simply delay reproduction until they know their baby will be adequately fed. Because of their size and slowness, dugongs – both old and young – are easily caught in the gill nets sometimes used by fishermen. Because most such catches go unreported, there is no way to know how many dugongs have died this way. Boat propellers can also injure or kill dugongs.



Photo by: Red Sea Rangers

We Can Help Ensure Their Survival

The World Conservation Union recommends that a thorough survey to determine the distribution and abundance of dugongs be carried out, and that the location of all sea grass beds be mapped out. A survey of this scale requires the cooperation of local diving and fishing communities and has been developed for this purpose. As this public effort goes forward, the chances of dugongs' survival will be greatly improved.



RED SEA DUGONGS: HELP KEEP A LEGEND ALIVE



Red Sea Rangers Save Resources for the Future



Nexus Between Conservation and Economic Growth

Egypt's Red Sea is undergoing rapid tourism development along a 1500 km coastal strip from El Gouna in the north to Sudan in the south. Coastal development in this area is unprecedented in scope and the future of this sea-based tourism hinges on safeguarding the environment upon which the industry depends.



Photo by: Red Sea Rangers



Photo by: Red Sea Rangers

Conserving the Ecological Integrity of the Red Sea

One of the most important components of the Egyptian Environmental Policy Program (EEPP), funded by the United States Agency for International Development (USAID), is supporting Egypt's Nature Conservation Sector (NCS) in implementing the Red Sea Marine Park Project to manage and conserve coral reefs, islands, beaches, mangroves, and associated flora and fauna. The NCS, with USAID collaboration, is at the forefront of efforts to ensure that Red Sea natural resources are used in a sustainable fashion.



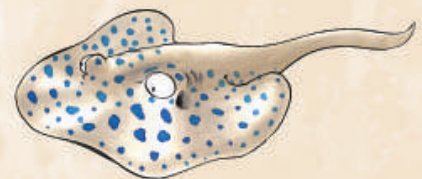
Combining Conservation Policy with Practice

The NCS, with USAID, has made impressive strides in building capacity to manage conservation. But more work is needed. The focus of current activities is to:

- Equip and expand Ranger operations in the south
- Recruit new Rangers and provide technical training
- Explore funding options to secure future financial sustainability
- Support an outstanding new protected area at Wadi el-Gemal
- Prepare a conservation management plan for the Southern Red Sea
- Increase the EEAA's management responsibility in the Red Sea



Photo by: Red Sea Rangers



RED SEA RANGERS A GREAT INVESTMENT FOR BIODIVERSITY



The Environment and the Economy can both be winners



Marsa Alam's Future Depends on Preserving its Rich Natural Resources

Marsa Alam is in the southern zone of the Red Sea, and covers an area rich in natural attractions, from unique mountain and desert habitats to relatively pristine coral reefs offshore. In a coastal area such as Marsa Alam, where development is planned around tourism, protecting natural beauty is vital to the city's ability to survive. If the very attractions that draw the tourists degrade, tourism will decline, bringing down the whole economy with it. As an up-and-coming area slated for development, Marsa Alam has a unique opportunity to undertake development in harmony with the environment, and protect its own future as well as that of the environment.



Photo by: Red Sea Rangers



Photo by: Red Sea Rangers



For Every Development Problem, There is an Environmental Solution

Not every beach-front property has environmentally friendly access to the sea. Some coastal property should be kept open, preserving the natural beauty of the coastline, and providing safe public access. Jetties leading out over corals to lagoons are safer for the environment and for guests who want to enjoy swimming in the sea. Developers should plan their properties to have the least impact on the environment. Education and

outreach to the local community and developers about the necessity of protecting the environment in combination with proper land use planning and management tools such as Environmental Impact Assessments are a crucial component of sustainable city planning.

Photo by: Red Sea Rangers



There is More to Marsa Alam than the Wonders of the Red Sea



The Eastern Desert is full of its own natural and man-made wonders. By publicizing and encouraging development of these fascinating attractions, the pressure on the sea will be lessened, and visitors will have a more diverse and satisfying experience. Local community involvement, periodic environmental monitoring of the natural resources, and law enforcement, are all crucial to the sustainable development of Marsa Alam.



INVEST IN THE ENVIRONMENT FOR A STRONG ECONOMY



Red Sea Rangers Protect Egypt's Environmental Treasures



Rangers are environmental researchers, guardians and educators

Rangers do a lot! They are the people responsible for safe guarding the natural resources of the Red Sea coastline and Marine Park Protectorates for the Egyptian Nature Conservation Sector of the Egyptian Environmental Affairs Agency. Egypt's Red Sea Rangers have the awesome tasks of carrying out biological research and monitoring on both land and at sea, patrolling the waters, shores and deserts for signs of environmental abuses by people, and coordinating with other organizations with interests in the area. They also take time to talk to visitors and residents about the importance of taking care of the environment, educating the younger and older generations about how to ensure the health of the environment for the future.



Photo by: Red Sea Rangers



Photo by: Red Sea Rangers

Protecting Egypt's natural treasures is no easy task



The area the Red Sea Rangers must look after is vast - over 1500 kilometers of coastline - stretching from El Gouna in the north to the Elba Protectorate on the Sudanese border in the south. Within this beautiful area are unique habitats and associated flora and fauna, some of which only exist in Egypt's Red Sea. Colorful coral reefs, deserted islands with soft white sand, wadis that flood with water during storms followed by a flurry of green growth, graceful gazelles, soaring falcons, slithering snakes, jagged mountain peaks and so many kinds of spectacular fish—all must be managed and preserved for sustainable economic growth.

It takes a special person to be part of the Ranger team

With so many tasks and responsibilities, the Rangers are a group of men and women with a variety of skills. Some Rangers are highly-trained scientists like marine biologists, botanists and geologists. Others are technical experts who operate sophisticated technology like the Geographical Information System (GIS) to make maps and track data. Professional divers take part in underwater surveys to determine the health of the marine ecosystem. Managers, legal experts, and administrators are also part of the team. What unites them all is a desire to protect Egypt's Red Sea environmental resources for the continued prosperity of Egypt and as part of the world's natural heritage.



Photo by: Red Sea Rangers

RANGERS ARE A WISE INVESTMENT IN THE ENVIRONMENT AND THE EGYPTIAN ECONOMY





The Crown of Thorns: Fish or Foe?



When a Starfish becomes a Coral Plague

The beauty of the ruby-red invertebrate, *Acanthaster planci*, might just as well have led it to be called the Crown Jewels starfish, but its spiny and poisonous protrusions earned it the rather more ominous name of Crown of Thorns. Its ravenous appetite for coral polyps doesn't earn it many friends among those who admire the splendor of coral reefs: a single adult can devour up to six square meters of live coral a year, leaving behind only "feeding scars" of white patches of dead skeletal coral. If the ratio of Crown of Thorns to other marine life increases even slightly, massive damage to reefs can rapidly result that would take hundreds of years to restore.



Photo by: Mohamed Habib



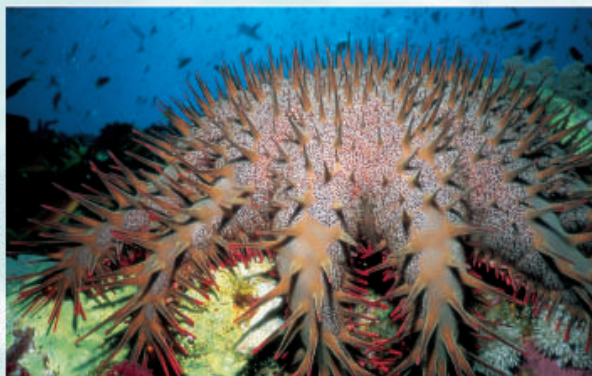
Photo by: Mohamed Habib



Outbreaks due to Nature and Nurture

One mature Crown of Thorns female can produce over 100 million eggs, ready to be fertilized. This gives the species a built-in potential for explosive population growth which some argue will periodically occur regardless of disruptions in the ecological balance caused by humans, and may be nature's way of regulating itself. However, two human activities have been implicated in the problem as well: overfishing of the starfish's natural predators—groupers, trigger fish, shrimp, and the giant triton shell— and environmentally irresponsible coastal development practices leading to organic pollutant run-off that feeds the algae that nourish Crown of Thorns larvae.

Photo by: Mohamed Habib



Humans Can Help Restore Balance

To protect the delicate coral and diving tourism in Egypt, campaigns to thin out crown-of-thorns are periodically conducted where infestations are noticed. A team of just 20 divers can remove an average of 500 Crown of Thorns per hour. Often, Red Sea Rangers and other employees of the Protectorates work side by side with volunteers, some of them on holiday, to remove the coral predator.



SUPPORT THE RED SEA RANGERS





Giftun Island Protectorates



All the Islands in Egypt's Red Sea are Protected Areas

The Giftun Island Protectorates include a set of islands off the coast of Hurghada—Big Giftun, Little Giftun, Abu Minqar, and Um Gawish El Kebeer Islands. Actually, all of the Islands in the Red Sea and their fringing reefs are official protected areas, according to Prime Minister Decree #450 of 1986. The islands provide important habitats for birds and marine life to nest, breed and feed. The Egyptian Environmental Affairs Agency's Red Sea Rangers control and manage access to the Red Sea Island Protectorates, with the goal of maintaining these islands in as balanced a state as possible.



Photo by: Red Sea Rangers



Photo by: Red Sea Rangers



This Desert Island is Far from Deserted

The Island of Big Giftun fits most people's image of an island paradise. Large beaches of fine sand meet gentle turquoise waters that hide magnificent coral reef treasures just beneath the surface. For this reason, over the years the island has attracted more and more visitors. It is currently the only island where visitation is allowed, but activities are limited to minimize human impact on the island environment. The other islands are completely protected in order to maintain critical habitats and allow them to recover from long-standing illegal visitation.

Visitor Fees Help Protected Areas in Egypt

The environmental research, monitoring, patrolling, and educational activities of the Red Sea protectorates require significant resources. The fees that are collected from visitors to Giftun Island go to a general fund that is used to help preserve biodiversity, and manage and protect Egypt's environmental treasures for generations to come.



Photo by: Red Sea Rangers



HELP KEEP THE RED SEA CLEAN



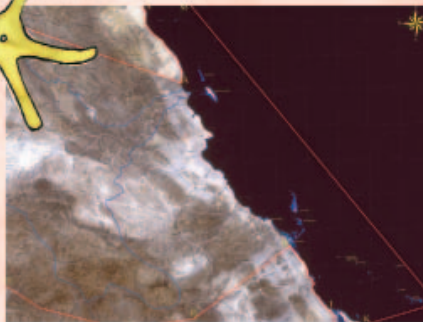
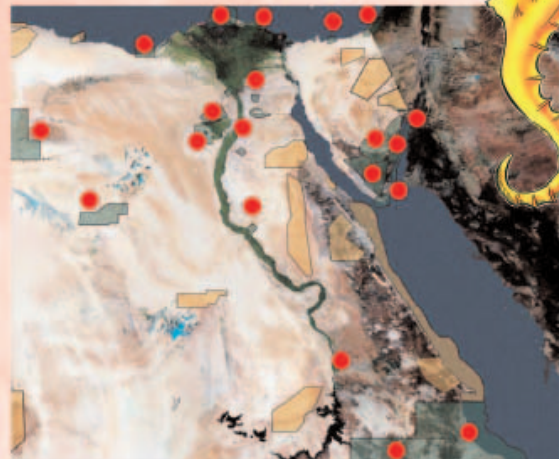


GIS: Mapping for a Sustainable Future



A Field Scientist's New Best Friend

It takes more than a hat and a good pair of sunglasses for scientists to properly carry out research for Egypt's Red Sea Conservation Management Plan. Geographic Information System (GIS) is a sophisticated technology that has become an essential environmental management tool around the world. It is efficient, cost-effective, and especially valuable for tracking and ensuring compliance with environmental regulations. The GIS unit of the Red Sea Rangers builds and maintains a comprehensive geographic database tailored to nature conservation and coastal zone management.

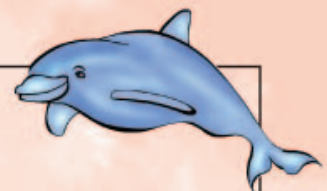


Getting There is Much Easier with a Good Map

Using remote sensing and satellite images, GIS applications can produce maps with almost any level of detail, overlaid with a variety of data the Rangers may need to carry out their day-to-day fieldwork. Visual layers of data on dive sites, mooring locations and conditions, mangroves, zoning regulations, climate, coordinates, and more can be added to maps used for surveys and planning, making analysis easier and leading to better conservation of Egypt's natural resources.

Reliable Information Makes Ranger's Work Easier

The most common use of GIS for the Rangers is to monitor coral reefs and other ecosystems along the Red Sea coast. But sometimes, GIS is used in more dramatic ways. This was demonstrated in February, 2002, when a diesel tanker grounded on Shaab Fannous reef, just north of Big Giftun Island. Using GIS maps of the accident site, the Red Sea Rangers rushed to the scene to remove 25% of the fuel in the cargo hold, making the tanker more buoyant and thus able to sail on (there was no damage to the hull). After the incident, GIS satellite imagery was used to assess the impact on the reef near the crash site, to verify that no fuel had been spilled, and to monitor recovery.



HELP THE RANGERS PROTECT THE RED SEA



Kings of Egypt's Skies



A Congress of Birds

With a wide range of ecosystems, and being situated along migration corridors from Sub-Saharan Africa, Egypt is quickly becoming a favored destination for bird-watchers. Whether in the salt marshes of the northern coast, the mountains of Upper Egypt and the Sinai, or the deserts that surround the Nile River Valley, each of Egypt's ecosystems is permanent home or temporary host to a range of migratory and non-migratory birds. Some of the best known of these include vultures, osprey and the white-eyed gull.



Photo by: Dr. Sherief Bahaa El Deen



Photo by: Dr. Sherief Bahaa El Deen

Birds of Prey

Vultures are not famous for their beauty. In fact, they are far better known for their rather unsavory dining habits – a vulture's favorite meal is the rotting flesh of a dead animal – but when these massive birds take to Egypt's skies, bird-watchers are awed by their sheer size and power. They say vultures, with wingspans up to three meters, are every bit as graceful in flight as they are graceless at dinner time. While the vulture relies on carrion, the powerful osprey is one of the most effective predators on the Red Sea. With a body up to 60 cm long, the osprey coasts far above the waves, hunting for signs of life under the surface of the

water. When it catches sight of a suitable fish, the hunter plunges to the water, snatches the fish in its claws, and carries it away to be eaten. The type of osprey found in Egypt is known as Pandion Halaetus, and the Red Sea islands are home to the densest population of the bird anywhere in its range.



Photo by: Dr. Sherief Bahaa El Deen

Red Sea Scavenger

One of the most common birds found in the Red Sea region is the white-eyed gull, or *Larus Leucophthalmus*. The gulls can be found on all of the islands in the Red Sea. The gull is famous for making do with whatever is available – both in terms of finding food and building a home. The gull will eat almost anything, including fruit, fish, shellfish and whatever else is available. White-eyed gull nests are made with dried seaweed – the most abundant building material available – which the bird spreads out over sand or rock.



DO NOT DAMAGE BIRD HABITATS





Wadi el-Gemal: Egypt's Newest Natural Protectorate



A little water goes a long way

On first glance, Wadi el-Gemal may seem dry as a bone. But in fact the 6,855 square-kilometer Protectorate, created by Prime Ministerial Decree #143 of 2003, is part of the largest watershed in Egypt's southern Red Sea region. While streams only run through these canyons in times of rare rain, there is just enough water underground and on the surface to support the best-vegetated wadi system in the Eastern Desert, supporting slender-horned gazelles, Nubian ibexes and a range of other mammals, birds and reptiles.



Photo by: Dr. Sherief Bahaa El Deen

Battle of water and rock

Over the ages, the Wadi el-Gemal Protectorate has been home to a violent struggle between the elements. Rain is rare, and this battle is seldom visible to humans, but through millennia the forces of water and rock have grappled with each other for supremacy, as churning flashfloods have torn down towering mountains centimeter by centimeter. The result of this struggle is a spectacular desert landscape characterized by canyons and steep rock walls.



Photo by: Dr. Sherief Bahaa El Deen



Photo by: Dr. Sherief Bahaa El Deen

When Romans struck it rich

Along with its natural history and biological diversity, the Wadi el-Gemal Protectorate has a long human history as well. The region is rich in minerals and the Romans established the first mines here in the Fourth Century B.C. The discovery of toys and household items in Wadi Sokat proves that the Romans eventually built much more than simple mining camps; they and their families lived in a vibrant community. But the human history of the area predates even the Romans – Bedouin herders have called the wadi home for thousands of years and continue to live there to this day.



ENJOY THE PROTECTORATE'S HISTORY AND NATURAL BEAUTY





The Diversity of Red Sea Wildlife



More than Meets the Eye

The southern Red Sea zone can be an inhospitable place. Water and vegetation are rare in the desert, and survival is often a struggle. But there is more life in this seemingly harsh landscape than meets the eye. In the sparkling waters offshore, a vibrant and complex community of life dwells in the coral reefs and seagrass beds. And inland, in the rock canyons and desert expanses, a wide variety of birds, reptiles and mammals thrives. Some of the most remarkable of these animals include the slender-horned gazelle and the deadly Egyptian cobra.



Photo by: Red Sea Rangers



Photo by: Mohamed Habib

Designed for the Desert

Not long ago, herds of gazelles roamed the deserts of Egypt, but they have nearly vanished due to over-hunting. Today it is rare to spot a gazelle, although the tracks of this timid animal are often found. A sizable population of Dorcas Gazelles remains in the southern region of the Eastern Desert. This small antelope is well adapted for desert life. It extracts moisture from the plants it feeds upon and, if necessary, can go its entire life without drinking an actual drop of water. Swift-footed, the gazelle runs to escape potential predators. Sensing danger, it may also stand still, its coloration acting as camouflage.



Photo by: Dr. Sherief Bahaa El Deen

Osprey ... Expert Fisherman

The Osprey is a skilled fisherman. Soaring above the water, it searches for food. When it spots a fish near the surface, the Osprey hovers, then swoops down and catches the prey in its talons, taking it back to a perch to consume. Globally important populations of this bird are found in the Egyptian Red Sea, where it is a common resident on the mainland coast and islands. An Osprey pair builds a huge nest out of sticks, which the pair uses year after year. A master architect, the Osprey often incorporates pieces of net, cloth and other unusual materials into the structure.



HELP PRESERVE BIOLOGICAL DIVERSITY





Sea Cucumbers: Natural Recyclers of the Coral Reef Community



Sea Cucumbers Feed the Corals

To the human eye, the slimy, mushy, oblong creature lolling on the sandy bottom of the Red Sea may not look very appetizing, but corals live on their by-products. Sea cucumbers ("beche-de-mer"), part of the Holothurian family, feed on organic matter found in sediment and turn it into a form of nitrate and phosphate that is highly nutritious to the corals. Due to its high saline content, the Red Sea is relatively low in overall nutrients, so any nutrition is that much more valuable to the sensitive eco-system



Photo by: Mohamed Habib



Photo by: Mohamed Habib



Thank the Sea Cucumbers for the Red Sea's Clear Water

Studies also point to the role sea cucumbers play in filtering the water of organic wastes. By feeding on sediment, sea cucumbers remove particles of organic matter that would otherwise cloud the water. Not only would a build-up of sediment disappoint divers and snorkelers who delight in the clear conditions of the Red Sea, but it could eventually choke the corals themselves.

For the Red Sea Economy, Let the Sea Cucumbers Be

Unfortunately, the sea cucumber is currently in great demand in certain global markets because of myths about its medicinal properties. As a result, sea cucumbers are being harvested at an alarming rate by people in search of a quick profit. Unmanaged fishing of sea cucumbers will hurt coral production, and underwater visibility may also be affected. As the reefs begin to deteriorate and decline, the number of diving and snorkeling tourists will also fall as they will head for destinations with better quality reefs and visibility conditions. The long-term economic benefits of leaving the sea cucumbers alone far outweigh the short-term profits from their unsustainable harvesting.



Photo by: Mohamed Habib



PROTECT ANIMAL LIFE FOR THE FUTURE

