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LIFE Red Sea Project

Manual of Best Environmental Practices for House
Reefs in the Egyptian Red Sea



JULY 2008

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Reefs in the Egyptian Red Sea

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ACRONYMS AND ABBREVIATIONS

AD	Anno Domini (as used in the Western calendar), used to show that a date is a particular number of years after the birth of Christ
EEAA	Egyptian Environmental Affairs Agency
EIA	Environmental Impact Assessment
EMS	Environmental Management System
GBRMPA	Great Barrier Reef Marine Park (Australia)
HEPCA	Hurghada Environmental Protection and Conservation Association
LE	Egyptian pound (currency)
m	meter(s)
NGO(s)	Non-governmental Organization(s)
RSG	Red Sea Governorate
RSP	Red Sea Protectorate
SCUBA	Self Contained Underwater Breathing Apparatus
US	United States (of America)
US\$	US dollar (currency)
USAID	United States Agency for International Development

INTRODUCTION

The Egyptian Red Sea is an area of phenomenal biological diversity and natural beauty. It is also very fragile. You, a Red Sea resort operator and manager, are in the enviable position to call the Red Sea your 'place of work'.¹ However, this privilege holds special responsibility—helping to protect Egypt's Red Sea heritage for future generations. Protecting these reefs also makes good business sense.

Corals and their Value

Hard corals are related to jellyfish and sea anemones, but differ in that they produce a skeleton made of calcium carbonate. Some species are solitary, but the vast majority form colonies consisting of many individuals joined together. Collectively, hard coral colonies build coral reefs. In turn, reefs provide habitat for a multitude of other animals and plants.

The Red Sea reefs are some of the world's youngest, believed to have been growing continuously only during the last 10,000 to 17,000 years when the waters of the Indian Ocean flooded back into the Red Sea during a period of rising sea level. About 700 species of reef-building hard corals have been described worldwide, with approximately 260 occurring in the central-northern Red Sea.

Although most resort operators recognize the importance of a healthy coral reef to their business, few appreciate the monetary value of the reefs. By assigning a real worth to the reefs, resort owners and managers can begin to understand why careful reef management is essential.

In 2000, Svetlana Morozova wrote in "Designing an Efficient International Regime for Global Protection of Coral Reefs (presented at the 41st meeting of the International Studies Association in Los Angeles):

Though placing an overall monetary value on coral reefs is a difficult task, a recent legal settlement in Egypt (1995) assigned a value of US\$1,765 on a square meter of coral reefs in the Middle East. In a similar settlement in the United States, a court assigned the value of a square meter of coral reefs in US waters at \$2,833.²

At mid-2008's exchange rate, that means a square meter of the Egyptian reefs is worth LE 9,425.

¹ The term resort is loosely defined in this manual to include coastal tourism infrastructure ranging from hotels to safari camps.

² <http://www.ciaonet.org/isa/mos02/>

Defining ‘House Reef’

The section of coral reef directly in front of a resort is known as the ‘house reef.’ It includes all three major zones typical of coral reefs fringing coastlines:

1. The reef flat
2. Reef crest
3. Reef slope

The **reef flat** is the horizontal section of reef between the shoreline and the deep water of the open sea. The reef flat, shown in figure 1, is sometimes sub-divided into the ‘inner reef flat,’ which includes the area closest to the shoreline, and the ‘outer reef flat,’ the area closest to the reef crest.

Figure 1 Reef flat



Figure 2 shows the **reef crest**—the edge of the reef separating the reef flat from the near vertical reef section called the **reef slope**, which is pictured in figure 3. The reef crest is the zone where waves break. The reef slope typically faces the open sea, which is why it is sometimes called the reef face.

Figure 4 shows a generalized morphology of a house reef, including the location of the three main reef zones.

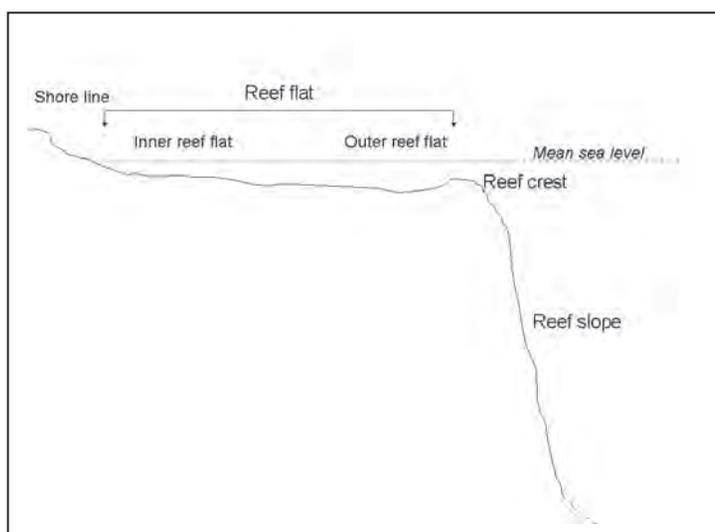
Figure 2 Reef crest



Figure 3 Reef slope



Figure 4 Generalized morphology of a typical house reef



The abundance of different species of marine animals and plants among the zones can vary greatly. Generally, the reef flat supports few hard coral, but instead there are mollusks, crustaceans, seagrasses, and algae in abundance.

In contrast, the reef crest is characterized by a lot of hard coral, usually with rounded or encrusting shapes (what scientists call 'growth forms') that can withstand turbulent wave action during

strong winds. Encrusting red algae are sometimes common near the reef crest.

Similar to the reef crest, hard coral is usually abundant on the reef slope, but exhibit more delicate branching and plate-like growth forms. Seagrasses are usually absent from the reef crest and slope.

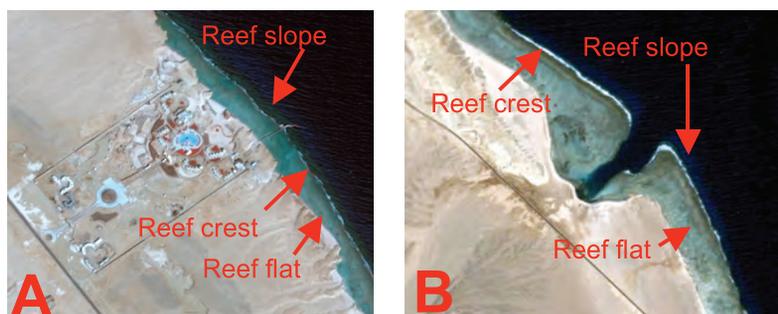
All zones of the house reef may be visited by resort guests at one time or another. Thus, all animals and plants living on the house reef are at risk from being disturbed or damaged. Seagrasses and corals on the reef flat are at risk from being trampled by guests walking on the reef. Corals growing on the reef crest may be damaged by careless snorkelers who swim too close to the reef edge. Corals on the reef slope are at risk from SCUBA divers who may kick the reef with their fins. Consequently, all areas of the house reef require careful environmental management.

House reefs can be categorized into two types: those characterized by exposed fringing reef, and those with a bay.

A **bay** is broadly defined here as a sheltered area of water in a fringing reef. Figure 5 shows examples of the two types of house reefs and the location of the three zones.

Note that in the figure, "A" is a house reef characterized by an exposed fringing reef. "B" is a house reef with a bay. The three reef zones become almost indistinguishable in some bays and disappear altogether near sandy beaches.

Figure 5 Examples of house reefs: A, without a bay; and B, with a bay

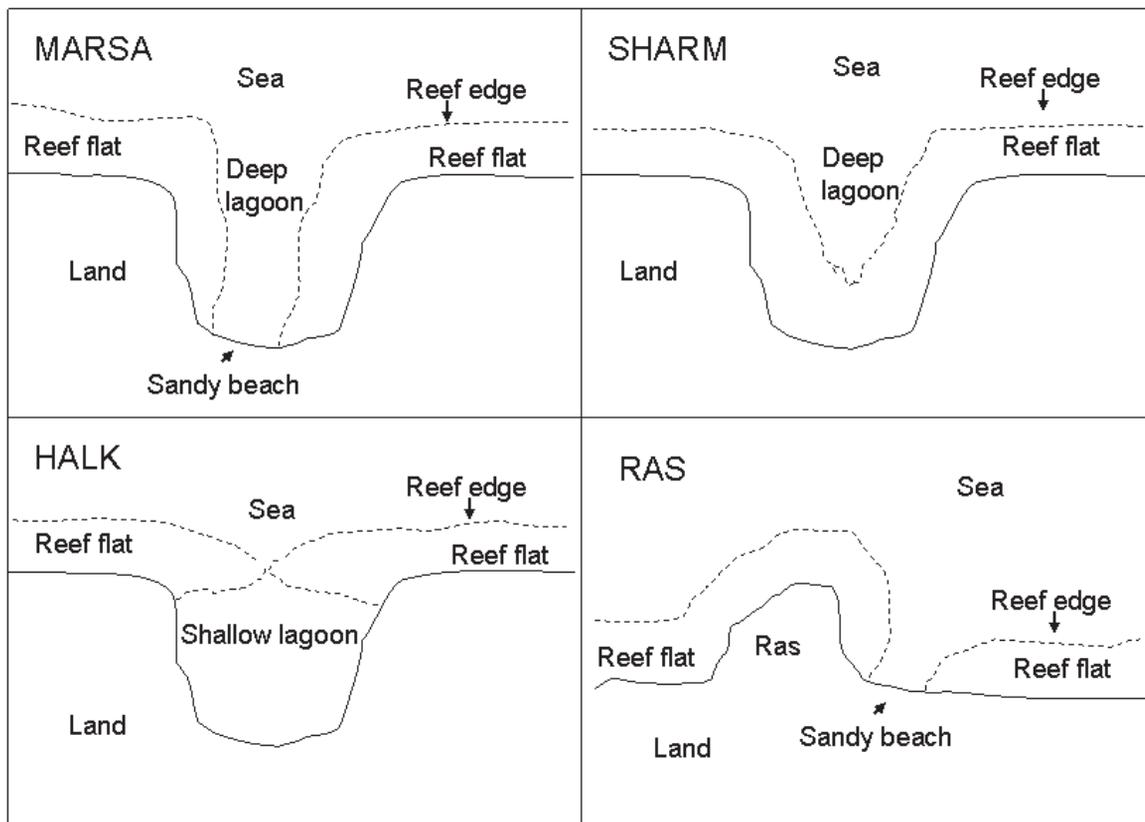


Bays along the Egyptian Red Sea can be categorized into four broad types, as shown in figure 6.

1. A **marsa** is a bay where a fringing reef does not form a continuous band around the shore line. Instead, there is a small sandy beach that allows guests easy access to deep water.
2. A **sharm** is similar to a *marsa*, but a coral reef fringes the entire shoreline.
3. A **halk** is a bay where the fringing reef has nearly or completely blocked the entrance. Typically, *halks* are characterized by a shallow sandy lagoon.
4. The fourth type of bay is where a *ras* (headland) forms a sheltered area from the prevailing northerly winds. Beaches may be present in such situations.

There are 37 *marsas*, 17 *sharms*, 2 *halks* and 6 *ras* between Safaga and Ras Banas.

Figure 6 Stylized representation of types of different shapes of bays found along the Egyptian Red Sea



Approximately 90 percent of this coastline is exposed fringing reef. If a resort is situated next to a *marsa* or *halk*, guests can easily access the water via a sandy shoreline. In contrast, when a resort is located adjacent to exposed fringing reef or a *sharm*, divers and snorkelers must walk across the reef flat to reach deep water.

Purpose of the Manual

This manual presents common sense practices that will help resort managers and staff protect the coral reef adjacent to their resorts. Best practices are given for a range of resort-related tourism activities that can, if unmanaged, damage the house reef. Although the adjective 'best' is used to describe the practices in this manual, it is acknowledged that 'better' practices may even-

tually be found and adopted. Most of these practices are not novel and have been used successfully worldwide. Therefore, where applicable, practices have been modeled on successful examples such as the Responsible Reef Practices developed by the Great Barrier Reef Marine Park Authority (GBRMPA) (see acknowledgements and sources). However, many of the practices have been pioneered by resorts on the Egyptian Red Sea and some are world leaders in best practice house reef management.

This manual is also useful for people considering investing in or building a resort along the Egyptian Red Sea because it identifies reef-related activities that are illegal under Egyptian law or require permits from the Egyptian Environmental Affairs Agency (EEAA). Importantly, some laws apply only to activities within protected areas, while others apply to the Red Sea Governorate (RSG) or to the whole Egyptian Red Sea.

The large map at the front of this book (Map 1) shows the location of marine protected areas, areas of special conservation importance and the offices of the Red Sea Protectorate (RSP) along Egypt's southern Red Sea. The RSP, a department within the EEAA, is responsible for management of protected areas and protected species. The RSP is an important source of information on Red Sea reef management and can advise you on your legal obligations in regards to environmental issues.

The practices identified in this manual relate specifically to safeguarding the environment. However, resort operators may want to include practices that also 'safeguard' guests. Guests should be reminded not to touch anything on the house reef because some marine animals excrete toxic substances, have venomous spines, or have sharp teeth.

Manual Organization

The structure of this manual consists of four main parts:

- Part 1 – Activities Permitted
- Part 2 – Activities Not Permitted
- Part 3 – Implementing Best Practices
- Part 4 – Important Contact Numbers.

Activities listed under Part 1 include common tourism activities that, if unmanaged, can impact corals and other fragile features. Best practices and the relevant legal requirements are given for these activities. Part 2 describes both activities that should be discouraged because of their potential detrimental effects on house reefs and activities that are illegal under Egyptian law. Part 3 provides a framework to assist resort managers to implement best practices. Part 4 contains all the important contacts numbers needed to seek more information on the topics described in this manual.

The CD attached to this manual contains an electronic version of the manual and two PowerPoint presentations and associated teaching notes.

One presentation is a generic staff presentation that can be used to raise the environmental awareness of the resort staff on issues relating to the house reef. It describes what the house reef is, how the house reef can be disturbed by resort guests and resort activities, and how the staff can help protect the house reef.

The other presentation is designed specifically for resort guests. It provides the guests with an introduction to the house reef and its marine inhabitants, and how they can reduce their impact on the house reef.

The presentations are highly structured and designed to be given by a member of staff or invited member from the RSP. The staff presentation should take about 20 minutes to complete, while the guest presentation should range between 35 and 45 minutes.

PART 1: ACTIVITIES PERMITTED

Activities listed in this part of the manual are legally permitted at house reefs. However, without management, some of these activities can potentially damage house reefs. Adoption of the practices given in this section will prevent or mitigate impacts to the house reef.

Boating

Background

Many resort operators prefer their resort to be sited next to a bay because it provides a safe and convenient location to moor or operate boats. Inflatable boats (ribs) are important equipment because they provide divers with quick access to more distant areas of the house reef. They can also be used to rescue snorkelers and divers during emergencies.

Unfortunately, the use of a boat near a coral reef has the potential to impact the reef. Spilled fuel and bilge water can contaminate water in a bay or float down current onto the reef flat. The effects of contaminants can be worse in a semi-enclosed body of water, such as a bay, where flushing is limited. Further, boats operating in shallow water may stir up sediment with their propellers that may settle on and kill living coral.

Poorly designed or installed moorings can also damage house reefs. Improvised 'mooring' systems, such as the use of cables or ropes to tie boats to the reef, can be extremely damaging to house reefs because swinging ropes can crush or push over corals or even pull off large sections of the reef framework. It is also a safety hazard because sharp features on the reef may sever ropes allowing a boat to drift onto the reef during strong winds.

Before moorings are installed, it is important to consider other users of the bay including your snorkelers and divers. Zoning the bay into areas reserved exclusively for boat use and areas for recreational use is a practical way to limit conflict and potential injury.

Best Reef Practices

In general

- Where practical, moor day boats at marinas rather than in a bay.
- If boats are to be moored in a bay, ensure the mooring type and installation procedures are consistent with those provided by the Hurghada Environmental Protection and Conservation Association (HEPCA) and approved by the RSP.
- It is the resort's responsibility to initiate the installation of moorings at their house reef (don't wait to be told by the RSP).

- If your boat was purchased outside the Red Sea or from a Red Sea port regularly visited by overseas vessels, ensure the hull, internal seawater pipe work, fenders, anchors, open bilges, propellers, and sea chests are cleaned of marine growth before taking it to the house reef. This will reduce the risk of introducing a potential marine pest species to your house reef.

For vessels moored at the house reef:

- Major repairs should be undertaken at a marina, as this will reduce the risk of spilling solid and liquid waste into waters at your house reef
- Do not use chemical cleaning products to wash your boat when it is moored at the house reef as some products may be toxic to corals and other animals.

When maintaining engines:

- Ensure staff members undertake daily checks of boat engines, particularly checking fuel lines for cracks and loose connections to reduce the risk of accidental spillage of fuel into waters at your house reef
- Keep a drip tray under each engine to collect spilt fuel and other contaminants
- Immediately clean up spilt fuel and other liquid waste to reduce the risk of polluting the house reef
- Ensure all liquid and solid waste is disposed of at disposal sites approved by the RSP, HEPCA or the RSG; do not dump this waste in the desert or in the local *wadi* system.

When refueling:

- Where practical, avoid refuelling at the house reef—particular for larger boats—as this will reduce the risk of fuel spilling into waters at the house reef; refuel on shore or at a marina wherever possible
- Prepare a fuel spill response plan in case of a major fuel spill at your house reef

Figure 7 Boats are a potential source of disturbance to house reefs if not managed properly



- Other simple approaches to reduce the risk of spilling fuel on or near the house reef include always filling portable fuel containers on shore; using a proper sized funnel when transferring fuel; not overfilling fuel tanks; and ensuring that onshore fuel storage tanks are within a compound that will prevent spilt fuel from flowing into adjacent areas or polluting ground water
- Have a cloth handy to clean up small amounts of spilt fuel and other liquid waste; avoid using chemical dispersants for spills on water as these may prove more toxic to corals than the spilt fuel
- Ensure all liquid and solid waste is disposed of at disposal sites approved by the RSP, HEPCA or the RSG; do not dump this waste in the desert or in the local *wadi* system
- You can further reduce the risk of spilling fuel on or near the house reef by installing auto shutoff valves, fuel gauges and tank whistles; seek further advice on these devices from major marinas and boating agencies at Hurghada and El Gouna.

Reporting:

- Report all oil and fuel spills and suspected illegal disposal of wastes.
- Report suspected marine pest species found on vessel hulls and mooring lines, and at your house reef.

Catering for all users of the house reef:

- If you moor boats at your house reef, it is important to consider the safety of other users.
- Consider zoning the house reef/bay into areas exclusively for moored boats, moving boats, and activities such as snorkeling. Use brightly colored buoys to mark the boundaries of zones and ensure boat operators are aware of the zones and their purpose.
- Ensure snorkelers, divers, and swimmers are well clear before starting the boat engine and moving off the mooring.
- Limit boat speed inside or near the house reef/bay to wake speed (≤ 2 knots). When operating over shallow water (< 15 m), keep boat speed to or below 10 knots, as this will reduce the risk of striking a dugong or turtle which may be feeding on shallow water seagrasses.
- Use propeller guards on your boats to reduce damage to reef, wildlife, and people.
- Provide boat skippers and crew with polarized sunglasses to increase visibility on the water (i.e. spotting corals and wildlife).

Egyptian Legal Requirements

Law No. 102 of 1983 for Nature Protectorates prohibits disturbing wildlife in protected areas.

Education and Interpretation

Background

Tourists should not only be given the opportunity to explore the beauty of a house reef, but it is also important that they be aware of its ecological importance and fragility. The more they are taught about coral reefs, the more they will value the marine life of the Red Sea and take greater precautions to limit their impacts when snorkelling or diving. Fortunately, there is a considerable

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amount of information about the Red Sea that is easily accessible through the Internet, books, and magazines. Share this information with your guests.

Best Reef Practices

For guides (when gathering information):

- Learn about your house reef and its marine life using a range of sources including the RSP staff, reference books, magazines, journals, the internet, documentaries, scientific experts, newsletters, and locally-run educational presentations and courses (table 1 lists useful sources of information on the Red Sea).
- Use only accurate information that has been verified through research, by experts, or by material from scientific websites—if in doubt do not use the information.

Table 1 Sources of General Information on Red Sea Marine Life

Red Sea – Egypt
Egyptian Environmental Affairs Agency. Contains English translations of Egyptian legislation (Law 4 1994 & Law 102 1983) relating to environmental protection in the Red Sea. www.eeaa.gov.eg
Abu Salama Society. Non profit organisation aimed at studying and protecting marine mammals in the Egyptian Red Sea (office at the Fantasia Hotel # 102, Sheraton Road, Hurghada).
Baha El Din, S. 1999. Directory of Important Bird Areas in Egypt. Bird Life International.
Farid, A. 2001. Red Sea Panorama. Farid Atiya Press.
Habib, M. 2004. Corals of Egypt. EEAA & USAID.
Heiss, G. Kochzius, M. Alter, C. & Roder, C. 2005. Assessment of the status of coral reefs in the El Quadim Bay, El Quseir, Egypt. SUBEX Red Sea Diving. www.subex.org/en/about_us/environment/elqbay.htm
Hurghada Environmental Protection and Conservation Association (HEPCA) www.hepca.com
H2O Magazine. Quarterly publication of the Red Sea Diving Association. www.h2o-mag.com
TDA 1998. Best Practices for Tourism Center Development along the Red Sea Coast. Tourism Development Authority. TDA & USAID. http://www.coralseas.com/doc/BP-TDA.pdf
Red Sea – General
Bemert, G. & Ormond, R. 1981. Red Sea Coral Reefs. Kegan Paul International.
Debelius, H. 1998. Red Sea Reef Guide. IKAN.
Edwards, A.J. & Head, S.M. 1987. Key Environment - The Red Sea. Pergamon Press.
Lieske, E & Meyers, R. 2006. Collins Coral Reef Guide: Red Sea. Harper Collins.
McClanahan, T., Sheppard, C. & Obura, D. 2000. Coral Reefs of the Indian Ocean – Their Ecology and Conservation. Oxford University Press.
Sheppard, C., Price, A. & Roberts, C. 1992. Marine Ecology of the Arabian Region: Patterns and Processes in Extreme Tropical Environments. Academic Press.

For guides (when presenting information):

- Have informed and experienced staff members give formal presentations (talks) on the marine life of your house reef. In these talks, include information and photographs directly relevant to your house reef.
- Invite speakers (e.g. visiting and local scientists, rangers from the RSP) to give talks to the guests about the house reef and associated marine life.
- Keep presentations short (<40-50 min) and make sure they are interesting with lots of photographs.

Figure 8 Rangers from the Red Sea Protectorate are a good source of information on house reefs



- Ensure presentations are entertaining; don't read from a script; and be honest if you don't know an answer to a question.
- Use a variety of methods to raise awareness of the guests in relation to the house reef (e.g. powerpoint presentations, DVDs, multilingual brochures, signs and pamphlets).
- During some evenings, invite guests to submit photographs of unusual animals or plants from the house reef and have informed staff members identify the animals/plants. Computer projectors are relatively cheap and can be used to project digital photographs on projector screens, white sheets or walls.
- Have a well stocked natural history library for your guests to access.
- Use the compulsory pre-snorkel/dive briefings to present information on the marine life of the house reef.
- Don't only use presentations to inform guests about the marine life. Finish talks with best reef practices and information about dangers relevant to your house reef.
- Be aware of the different nationalities, languages, ages, physical disabilities and interests when presenting information on the house reef.
- Check with the guests that they understood the talks and understand the written interpretative material.
- Keep group sizes small (fewer than 10 people) during interpretation sessions.
- Continually review and update your interpretation program.

For operators:

- Offer reef snorkel guides for guests interested in learning about the animals and plants of your house reef.
- Formally instruct your staff on the house reef, its flora and fauna, and how they can minimize the impacts of the guests on the house reef.

- Train enough staff to ensure all clients have access to reef interpretation.
- Have an internal system to keep staff up-to-date with Red Sea issues (for example, notice boards and newsletters).
- Place signs on the shoreline near the house reef that clearly indicate that guests must place litter in bins, not walk on the reef flat, and not collect living or dead animals.

Litter Reduction

Background

Litter or solid waste is a common waste product associated with resorts. Common forms of litter generated by resorts include cigarette butts, plastic bags, wrappers, bottles, tissues, and other paper products.

It is important to remove litter from the beach because it will eventually find its way onto your house reef. Litter on your house reef may also have originated from the open ocean, where it was discarded from a boat or blown into the sea from another resort further up current.

Some of this litter may take a very long time to break down (table 2), so it is important that litter on your house reef be removed and taken to a waste disposal site.

Figure 9 Litter can smother and kill corals



Table 2 Degradation Rates for Common Litter on House Reefs

Item	Degradation Rate (how long it takes to break down)
Paper	2–4 weeks
Cigarette butt	2–5 weeks
Cotton cloth	2–5 months
Banana and orange peel	up to 2 years
Plastic bag	10–20 years
Painted wood	13 years
Plastic packaging	20–30 years
Tin or steel can	100 years
Aluminium can	200–500 years

(Source: Haringey Council – www.haringey.gov.uk)

Litter not only distracts from the beauty of a house reef, but is a significant danger to wildlife. Turtles and dolphins have died after mistaking floating plastic bags for food. Litter can smother and kill hard corals. Continue to help keep Egypt's Red Sea beautiful and safe by observing these very simple practices.

Figure 10 Periodically organize a beach cleanup event



Best Reef Practices

- Ensure all litter is removed from the house reef and adjacent beach every day.
 - Do not throw litter (such as food scraps, plastic, paper, fishing gear, and cigarette butts) on the reef flat or adjacent beach.
- Have plenty of properly secured litter bins and garbage bags on the beach and encourage their use.
 - Do not overfill bins and make sure lids are securely fastened so they don't fly off.
 - Make it easy for clients to properly dispose of cigarette butts.
 - Retrieve everything accidentally dropped from the jetty.
 - Retrieve all entangled fishing gear, where possible.
 - Collect all litter from the water and the reef whenever you see it or ask your clients to report it to the resort staff.
 - Minimize packaging and pre-packaged food for your clients.
 - Include anti-littering messages in interpretation programs.
 - Ensure dump/waste sites are protected from the wind so that litter is not blown into the sea. Do not use the *wadi* behind your resort as your dump/waste site because flood events will wash this waste onto the house reef.
 - Periodically organize a beach cleanup event. Encourage your staff and guests to participate in a 'house reef' cleanup campaign.

Egyptian Legal Requirements

Article 1, Number 27 of Law 4 (1994) prohibits any deliberate disposal of polluting substances.

Monitoring and Research

Background

The Red Sea's unique, complex ecosystem attracts scientists and researchers from all over the world to study the animals and plants of the Red Sea, which were some of the earliest described and studied anywhere in the world.

The naturalist Pehr Forsskal was naming Red Sea species in the 1760s. In 1864, the German doctor Carl Klunzinger started an 8-year study of the marine life near El Quseir. The Egyptian marine biologist Hamed Gohar spent 25 years at the marine biological research station in Hurghada,

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Figure 11 Monitor the health of corals at your house reef



where he published widely on species ranging from the dugong to soft corals. He first visited the station in 1931.

As a marine tourism operator, you have an important role to continue this strong tradition of scientific research in the Red Sea—whether it be by providing support and assistance to researchers, or through enacting monitoring programs at your house reef.

The data that you and your clients collect (or help scientists gather) will not only make a valuable contribution to scientific understanding of your house reef but it could also assist in detecting environmental change and conserving the Red Sea as a whole.

Best Reef Practices

- Immediately inform RSP if you observe large numbers of Crown-of-Thorns Starfish, bleached or whitened corals, fishermen using nets, or a grounded boat on or near your house reef.
- Attend seminars, workshops, and other research-related events held locally.
- Contribute, if possible, to research efforts through data collection, monitoring, and logistical support for researchers and community monitoring groups (such as transport, accommodation, and dive equipment).
- Brief staff and passengers to stay clear of and not interfere with research activities, sites, and equipment.
- Conduct in-house site monitoring, such as REEFCHECK, to foster environmental awareness, and to detect environmental changes and impacts.³
- Support the RSP staff in monitoring your house reef.
- If you hire scientists to undertake monitoring at your house reef, ensure that the RSP is informed before they start.
- Incorporate the latest research results into interpretative activities and operational procedures, where appropriate.

³ Note, however, that REEFCHECK and other types of community-based monitoring programs may not answer all your questions about managing your house reef. Seek professional guidance on the design and implementation of a reef monitoring program. The RSP can assist you on this matter.

Raised Walkway

Background

A raised walkway, also called a jetty, is an effective way to assist divers and snorkelers to reach deep water safely, while limiting impacts to house reefs. Walkways concentrate visitor activity to a small area above the reef flat and reduce the risk of corals being trampled by people walking on the house reef.

Although some corals and algae beneath the walkway may die due to reduced illumination, other areas of the reef flat remain free of disturbance by reef walkers.

Ecological impacts of walkways can be limited by ensuring the structure does not restrict water flow across the reef flat and is high enough to allow sufficient light beneath the walkway to maintain a suitable habitat for corals and algae.

Figure 12 Ensure that the walkway does not restrict water flow across the reef flat



It is important to manage or reduce the amount of lighting on the walkway because artificial night light may have serious ecological consequences on marine life on the house reef. Artificial night light may alter the behavior of animals that emerge at night or attract baby marine turtles where they may be at increased risk from predators.

Careful planning is required to ensure disturbance to the reef flat is kept to a minimum during the construction phase of the walkway.

Note that areas exposed to the prevailing northerly winds will generally not always be suitable for raised or floating walkways because strong currents and waves will compromise their structural integrity or make it impossible for guests to safely enter or exit the water.

Best Reef Practices

- If your resort is not sited next to a bay, consider constructing a raised walkway across the reef flat to permit your guests access to deep water beyond the reef edge.
- Undertake a comprehensive Environmental Impact Assessment (EIA) before constructing the walkway (this is a legal requirement—see below). This will ensure that the walkway location avoids the most sensitive areas such as seagrass meadows on your house reef.

- Seek guidance on designing a walkway from the publication, “Best Practices for Tourism Center Development along the Red Sea Coast,” (Tourism Development Authority, Egyptian Ministry of Tourism, 1998).
- Ensure the walkway does not restrict water flow across the reef flat.
- If practical, design the walkway so that it is sufficiently raised (>1.5 m) above the mean high water mark to reduce the ecological impact of reduced light on corals and algae.
- If the walkway is to be used as an access point for snorkelers and divers to enter deep water, ensure that it extends beyond the reef edge. However, for safety reasons restrict guest access to water during periods of strong wind.
- In areas protected from large waves or currents, consider using a floating walkway to reduce mechanical disturbance to the reef during construction.
- When the walkway is completed, ensure all unused materials are removed from the reef flat.
- In cases where it is impossible or impractical to build a raised or floating walkway, construct a submerged path across the reef flat that snorkelers and SCUBA divers can use to access deep water safely.
- Ensure the entrance and boundaries of the path are clearly marked.
- Use clearly marked signs to inform guests that they must use the raised walkway or path when crossing the reef flat.
- Install signs on the walkway informing guests and other people that it is prohibited to catch or feed fish, or discard litter on the reef flat.
- Consider turning off walkway lights before, not after, 9 p.m. to reduce the effects of artificial night light on house reef animals.

Egyptian Legal Requirements

Under Article 73 of Law 4 (1994), walkway construction requires approval of the Egyptian General Authority for the Protection of Beaches (more commonly known as the “Shore Protection Agency”), in co-ordination with the RSP, and after the approval of a satisfactory EIA. Furthermore, Article 74 prohibits all activities that cause any alteration or modification to the natural shoreline.

Reporting

Background

Resort operators and their staff are in an important position to help protect one of Egypt’s magnificent natural assets. Because you live and work immediately adjacent to the Red Sea, and are fortunate enough to know some of it very well, you are part of a virtual ‘early warning system.’ You are the ‘eyes and ears’ of the RSP. The RSP relies on your reports and vigilance, so if you notice anything a little unusual, suspicious, or new, please report it to the RSP. Important contact numbers are found in Part 4 of this manual.

Best Reef Practices

- Report all marine pollution, incidents, and sightings to the RSP.
- Do not approach any suspected persons or request information from them if you witness a suspected breach of the law. However, collect relevant information, such as the name

of the vessel and its description (take a photograph), that will assist the RSP in its investigation.

- Make a copy of RSP contact numbers and have them handy.

SCUBA Diving

Background

SCUBA is the acronym for Self Contained Underwater Breathing Apparatus. The Red Sea is one of the best places in the world to SCUBA dive. It offers accessible and spectacular reefs, clear and warm waters, and a multitude of marine species. Diving offers a fantastic opportunity to explore Egypt's coral reefs.

Unfortunately, Egyptian and international scientists are reporting that intensive diving pressure has damaged coral at some house reefs. Divers can injure corals through direct physical contact with their hands, body, equipment, and fins. Although most divers contact the seafloor, only a small proportion breaks coral. Corals with a branching growth form are most vulnerable to damage from divers.

Promoting good dive practices will help preserve your house reef for future divers to experience.

Best Reef Practices

In general:

- Include best reef practices in your operational procedures and manuals.
- Enhance the quality of your clients' dive experience by educating them about the environment they will visit.

Figure 13 Pre-dive briefings have proven extremely effective at limiting the impact of divers



- Brief divers on best reef practices, proper behavior, rules of the reef, and information about the local marine life. Review these briefings regularly to ensure that you are providing up-to-date information.
- Prepare your divers for their experience—provide interpretation such as posters, brochures, displays, guided tours, presentations, and videos—on diving, marine life, and the Red Sea.
- Rotate your divers between your house reef and other dive sites receiving fewer visitations. This will take the pressure off your house reef.
- Discourage divers from wearing gloves. Without gloves they will be less inclined to touch living coral.

Figure 14 Ask divers not to wear gloves in order to discourage them from touching coral



- Have a dive instructor supervise recently trained divers or those who have not dived for a long time.
- Have a dive instructor assess the skill levels of all visiting divers in water before permitting them to dive unsupervised.
- Prepare a sensitivity map of your house reef by mapping

the location of fragile branching coral assemblages and other vulnerable features on the house reef. Use this information to plan dive trails or to instruct your guests where not to SCUBA dive.

- Train staff in environmental awareness, interpretation, rules and regulations, best practices, and incident reporting.
- Implement a reef monitoring program to measure impacts or environmental changes.

Preparing for a dive:

- Keep dive group sizes small (six or fewer people).
- Provide written material in different languages, as required.
- Make sure everyone is properly weighted before diving near a reef.
- Check that all the divers have secured their dive gear before they get into the water so that it doesn't hang too low and catch on the reef.
- Give adequate instruction on best buoyancy practices—check new divers for proper buoyancy before they get close to the reef.
- Practice buoyancy control over sand patches before approaching a reef. Test buoyancy whenever you are using new equipment such as wetsuits, buoyancy-control devices, and cameras.

Instruct your clients:

- Move slowly and deliberately in the water, relax, take your time, and avoid rapid changes in direction.
- Remain at least 2 m from the reef. This will reduce the risk of making accidental contact with corals.
- Avoid leaning on, holding onto, or touching any part of the reef. This needs to be especially emphasized for clients taking underwater photographs.
- Avoid entering semi-confined areas such as caves or overhangs. Never try to squeeze through a small area.
- Keep clear of free-swimming animals such as turtles, dolphins, and dugongs. In particular, divers must not chase, ride, grab, or block the path of these animals.

- Consider not wearing gloves unless they are required for safety reasons, as ungloved divers are less likely to touch the coral.
- Avoid collecting any shells, coral, or other 'souvenirs'.
- Avoid relocating any marine life, particularly when taking photos and filming.
- Collect all litter from the house reef, even if it doesn't belong to you.
- Avoid walking on seagrass meadows when entering the sea from a sandy beach in a bay.

Pre-dive Briefings and Supervision

- Pre-dive briefings and supervision by dive guides have proven extremely effective at reducing negative behavior by divers that can lead to coral damage.
- Keep the briefing clear and simple. Start with 'Avoid touching or standing on coral—not only could you damage it but some may hurt you.' Follow on with the points listed above (see 'Instruct Your Clients').
- If some divers do not want to be supervised, at least have an instructor assess their skills before being permitted to dive without a guide or instructor.

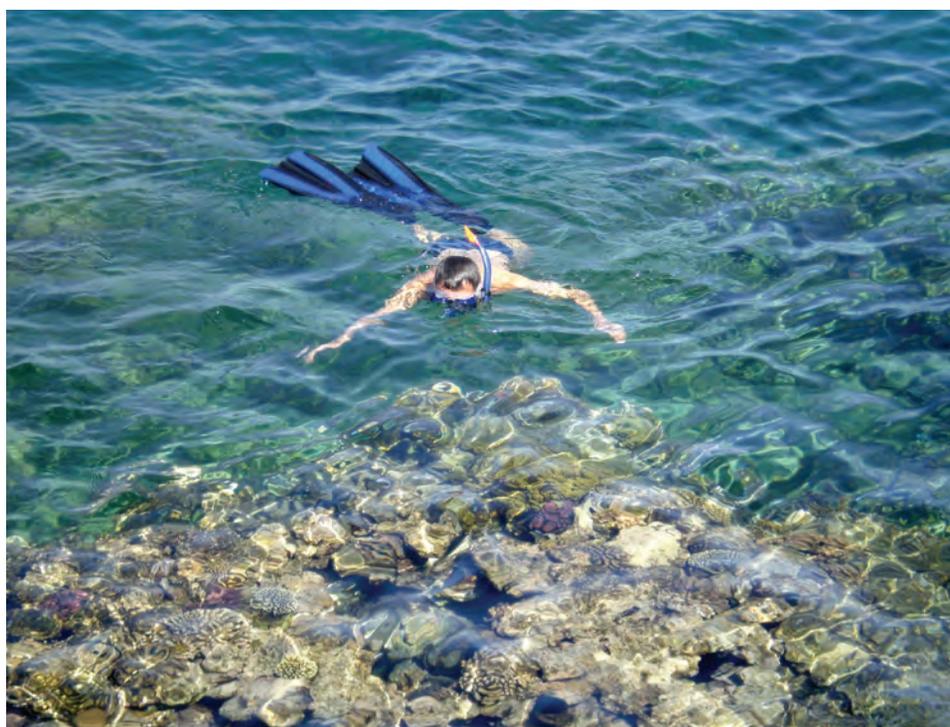
Snorkeling

Background

Snorkeling is one of the best ways to view the spectacular underwater scenery of the house reef, and to come face to face with its interesting marine life.

At times, however, some snorkelers may get a little too close to the reef and accidentally crush or break corals. Most damage occurs when people snorkel in very shallow (≤ 2 m) water. Corals with a branching growth form are the most vulnerable to being broken from a careless fin kick.

Figure 15 Ensure snorkelers are skilled before permitting them to snorkel unsupervised on the house reef



By promoting best snorkeling practices, you're helping to ensure that future snorkelers will still have spectacular views to behold.

Best Reef Practices

In general:

- Include snorkeling best practices in operational procedures and manuals.
- Brief your clients thoroughly before they enter the water. Include information on the correct use of equipment, snorkeling areas, potential hazards, rules, appropriate behavior, and information on local marine life (see 'Pre-snorkel briefings').
- Provide practical training for people who have not snorkeled before or haven't done it for a long time.
- Ensure a staff member supervises recently trained snorkelers, at least for their first snorkel along the reef edge.
- Ask guests to stay at least 2 m seaward of the reef crest.
- Ask guests not to swim over the reef crest and onto the reef flat or over patch reefs that come close to the surface.
- Encourage guests to remain in waters ranging from 2 to 4 m, as this depth range is sufficiently shallow to allow clear viewing of reef animals and of interpretive signs, but should limit the risk of fins contacting corals even when snorkelers tread water.
- Enhance your clients' reef snorkeling experience by providing interpretation such as posters, brochures, displays, guided tours, presentations, and videos on snorkeling, marine life, and the Red Sea.
- Be aware of your clients' countries of origin and, where possible, provide written interpretive material in appropriate languages.
- Keep the snorkel group to fewer than eight people.
- Prepare a sensitivity map of your house reef by mapping the location of fragile branching coral assemblages and other vulnerable features on the house reef. Use this information to plan snorkel trails or to instruct your guests where not to snorkel.
- If your resort does not have a walkway or is not sited next to a bay, mark out a route across the reef flat that snorkelers can take while minimizing impact to corals.
- Encourage guests not to use too much sun screen or suntan lotion before entering the water in a bay because, when it washes off, it may float down current onto the reef flat. Instead, ask snorkelers to wear a light garment or wet suit for protection against the sun.

Figure 16 Instruct snorkelers to be careful where they place their fins



- Encourage guests to wear a wet suit or other floating device when snorkeling because it will help them comfortably maintain a horizontal position in the water, and limit the risk of treading water over shallow coral.

Instruct your clients:

- Practice at first over sand patches and away from the coral:
 - Get comfortable with horizontal floating and finning techniques.
 - Be mindful of where fins are to avoid accidentally hitting the reef or stirring up sand.
- Snorkel carefully near the reef:
 - Move slowly and deliberately in the water, relax, and take your time. Remain horizontal in the water, and refrain from standing up.
 - Avoid entering semi-confined areas.
 - Use rest stations or other flotation aids (for example, float lines, mermaid lines, swimming noodles, and flotation vests) if you need to rest while snorkeling.
 - Avoid leaning on, holding onto, or touching any part of the reef or moving animals when taking underwater photographs.
- Be mindful of all marine life:
 - Avoid making sudden or loud noises underwater.
 - Avoid chasing or attempting to ride or grab free-swimming animals such as turtles and dolphins. Avoid blocking their path or making them change direction.
 - Avoid touching or relocating any animals or plants. Consider not wearing gloves as an incentive not to touch.
 - Avoid feeding fish.
 - Avoid collecting any shells, coral, or other 'souvenirs'.

Pre-snorkel Briefings and Supervision

- Pre-snorkel briefings and supervision by guides are some of the most effective ways to ensure your clients do not contact corals.
- Keep the briefing clear and simple. Start with 'Avoid touching or standing on coral. Not only could you damage the coral but some corals may hurt you.'
- Follow on with the points listed above (see 'Instruct Your Clients').
- If some snorkelers do not want to be supervised, at least have a snorkel guide assess their skills before being permitted to snorkel unsupervised.

Snorkel Trail

If you plan to establish an interpretative snorkel trail on your house reef, consider the following:

- Trails should not pass over reefs shallower than 2 m.
- Any interpretative signs should be set in areas with sandy bottoms or sparse coral cover.
- Because novice divers often stand up to rest or clear their mask, trails should be located where water conditions are protected from strong waves or currents.
- Consider placing floating rest stations along the trail route.

Egyptian Legal Requirements

Decree Number 137/2001 stipulates that an accredited snorkeling guide must accompany a maximum of 15 snorkelers.

Supporting Local Communities

Background

The indigenous people of the Eastern Desert, between the Nile River and the Red Sea, include the Ababda and Bisharia. Until recently they were predominantly camel pastoralists.

It has been suggested that these groups are the direct descendants of the early pastoral groups that have been resident in the region from about the first century AD. The Ababda and Bisharia, include fishermen whose descendants have exploited marine resources in the Red Sea for centuries.

Today, many resorts along the Red Sea are recognizing the valuable maritime skills of the Ababda and Bisharia by hiring them as boat operators. Resort operators are in a perfect position to help foster good community relations, and ultimately generate more local involvement in and commitment to Egypt's marine tourism industry in general and the Red Sea in particular.

Employing Ababda and Bisharia may have direct environmental gains. Providing local people with jobs may reduce harvesting on local reefs because Ababda and Bisharia communities will be less dependent on this form of income generation.

Supporting local communities may involve a few simple actions that could have important and far-reaching effects. Support could include hiring local staff, buying commodities from local suppliers, using local services and facilities, supporting regional schools, or becoming involved in local initiatives.

It may include promoting the region's rich cultural heritage and supporting the local communities that have a very traditional connection to the area.

Figure 17 Support local communities by displaying their crafts



Best Reef Practices

In general:

- Use local products such as fresh vegetables, services such as maintenance and cleaning, and facilities such as workshops and slipways.
- Hire your staff locally, including from Ababda and Bisharia communities.
- Expand the skills base of your Ababda and Bisharia staff by providing on-going training in hospitality, diving, and boat handling.

Support your local community:

- Provide information sessions to the community such as school talks, and take up ideas and products generated in your community such as displaying appropriate school posters, arts, and crafts.
- Contribute to local community organizations.
- Become involved in reef-related community issues such as Southern Red Sea Diving Association meetings, industry workshops, monitoring programs, and policy reviews.
- Become involved in reef-related media programs such as community radio, newspapers, and travel programs.

Figure 18 Many Ababda are hired as boat operators because of their maritime skills



Support local Ababda and Bisharia communities:

- Learn about local Ababda and Bisharia communities and their connections to the Red Sea and its surroundings.
- Explore ways that both your operation and local people can benefit from their connections to the Red Sea (both commercially and culturally).
- Conduct your activities in culturally sensitive areas with appropriate permission, consideration, respect, and, preferably, involvement of the Ababda and Bisharia.
- Involve Ababda and Bisharia in developing interpretive material wherever possible.
- Explore ways for Ababda and Bisharia interpretative material to be delivered by members of these communities.
- Advise your clients about the cultural significance of certain areas.
- Consider displaying Ababda and Bisharia arts and crafts for sale.

PART 2: ACTIVITIES NOT PERMITTED

The Activities listed in this section of the manual are illegal or are activities that should be discouraged because of their potentially damaging effects on house reefs.

Artificial Lagoons

Artificial Lagoons

Background

Fringing reefs along Egypt's Red Sea can be extremely wide and many resorts are not located next to lagoons or bays. This greatly limits access by guests to deep water where they can swim, snorkel, or dive. Consequently, some resort owners have illegally constructed artificial lagoons on the reef flat of their house reef (figure 19).

Artificial lagoons, which are excavated using heavy machinery, can be up to 20 m long. In addition to permanently damaging reef flat habitats, the lagoons may become a chronic source of suspended sediment that, potentially, can disturb and kill living coral.

It is illegal to construct artificial lagoons.

Figure 19 Artificial lagoons damage reef flats



Best Reef Practice

- Do not construct artificial lagoons at your house reef.

Egyptian Legal Requirements

Article 73 of Law 4/1994 prohibits the construction of any establishment within 200 m of the shoreline, except with the approval of the Egyptian General Authority for the Protection of Shores (more commonly known as the “Shore Protection Agency”), in coordination with EEAA, and after the approval of a satisfactory EIA. Furthermore, Article 74 prohibits all activities that cause any alteration or modification to the natural shoreline.

Collecting

Background

House reefs support a wealth of marine life that will enchant your guests. The Red Sea has some of the most biologically diverse habitats in the world. About 300 species of hard corals are recorded from the Red Sea, with more than 250 species reported in the central-northern Red Sea. One hundred and thirty-two species of hard and soft corals have been recorded from Egypt’s Red Sea coastline south of the Suez Gulf. Eleven species of seagrass are known from Egyptian waters. Over 2,000 species of mollusks, crustaceans, and echinoderms have been reported from the Red Sea. Not surprisingly, many guests want to keep a reminder of their visit to the Red Sea, but they could be taking the home of an animal or, in worst cases, taking a live animal. As one of Egypt’s Red Sea protectors, your help is needed to make sure that the marine animals and plants of your house reef are left behind for others to enjoy.

Best Reef Practices

- Inform visitors that it is illegal to collect corals, shells, or other organisms.
- Explain why it is important for them not to collect living or dead animals on the house reef.

Egyptian Legal Requirements

Law No. 102/1983 for Nature Protectorates prohibits disturbing wildlife in protected areas.

Figure 20 Inform guests that it is illegal to collect shells as it could compromise the health of the house reef—and some species, such as this cone shell, are dangerous to handle



Feeding Fish

Background

In some parts of the world tourism operators are permitted to feed coral reef fish for the enjoyment of their guests. They throw bread or fish products, which may result in a feeding frenzy as the fish fight for the free handouts.

In the Egyptian Red Sea, the deliberate practice of fish feeding is not permitted because it could compromise the ecological balance of a house reef. Some species can be particularly aggressive during fish feeding, which may risk the health of guests. Also, fish feeding may create dependency on a food source that may not always be there; or make them tame and vulnerable to fishing.

Best Reef Practices

- Do not feed fish on the house reef.
- Inform your clients about the negative aspects of fish feeding and that it is illegal to throw food scraps into the Red Sea.

Egyptian Legal Requirements

Law No. 102/1983 for Nature Protectorates prohibits disturbing wildlife in protected areas.

Fishing

Background

Fishing is a popular recreational pastime on the Red Sea coast. The most common method of recreational fishing is using hook and line. Technically, if your resort does not lie inside a marine protected area, it is legal for your guests to fish. Unfortunately, fishing can have negative effects on the ecological balance of a house reef as well as remove some of the more important tourist attractions—large coral reef fishes. Fishing line easily tangles if it comes in contact with coral and is difficult to remove and does not degrade. Coral colonies that become entangled in fishing line may eventually die. A struggling fish may attract predators such as sharks close to where guests are swimming or snorkeling. These are just some of the reasons why it is desirable that guests be discouraged from fishing at house reefs.

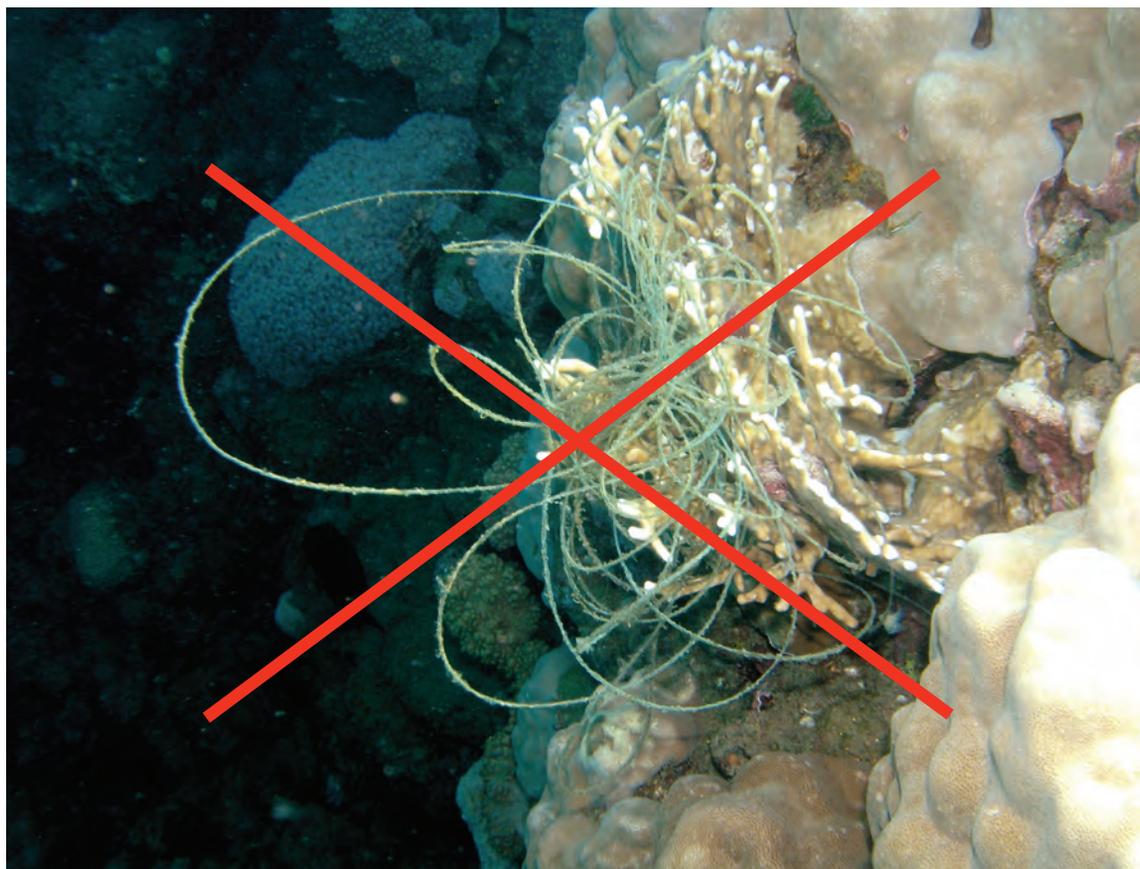
Best Reef Practices

- Inform your guests that fishing from the house reef is not permitted.
- Explain to your guests why it is important not to fish at the house reef.

Egyptian Legal Requirements

Law No. 102/1983 for Nature Protectorates prohibits killing or disturbing wildlife in protected areas.

Figure 21 Fishing line is readily entangled on coral



Landfill

Background

Solid structures such as earth embankment jetties or rock breakwaters permanently displace large areas of biologically diverse and productive reef flat habitat. Such infrastructure can also have indirect impacts by restricting water movement across the reef flat and modifying sediment depositional patterns. For these reasons, solid structures on the house reef are strictly prohibited.

Figure 22 Rock breakwaters destroy productive reef flat habitat



Best Reef Practices

- Do not landfill the reef flat or modify it in any way that could affect water and sediment movement.

Egyptian Legal Requirements

Article 73 of Law 4/1994 prohibits the construction of any establishment within 200 m of the shoreline, except with the approval of the Egyptian General Authority

for the Protection of Shores (more commonly known as the 'Shore Protection Agency'), in coordination with EEAA, and after the approval of a satisfactory EIA.

Furthermore, Article 74 prohibits all activities that cause any alteration or modification to the natural shoreline.

Liquid Waste Discharge

Background

Resorts can produce large quantities of sewage and grey-water (waste water associated with showers and kitchens). Both contain nutrients that, if discharged directly into the sea, could affect the ecology of the house reef. Abundances of algae can increase dramatically with the addition of nutrients to seawater.

Discharging nutrients could result in large algae smothering hard corals or preventing coral larvae from settling on the reef. For these and human health-related reasons, it is illegal to discharge liquid waste (including treated wastewater) from resorts into the Egyptian Red Sea.

Best Practices

- Install a wastewater treatment plant with suitable capacity.
- Use treated water to irrigate gardens, but ensure excess water does not run onto the house reef.
- Ensure solids are disposed of in accordance with Egyptian law and regulations.
- Do not use a septic system. These may result in the contamination of groundwater and the slow seepage of contaminated ground water onto the house reef.

Egyptian Legal Requirements

Article 1, Number 27 of Law 4/1994 prohibits any deliberate disposal of polluting substances.

Motorized Water Sports

Background

To many guests, the Red Sea represents a tranquil, serene getaway from the hustle and bustle of their daily lives. Unfortunately, this tranquility can be easily destroyed by the sounds associated with motorized water sports including jet skis, parasailing, and water-skiing.

These activities can injure marine animals that spend time at the surface or disturb animals sensitive to loud noises. Serious accidents involving resort guests prompted the Red Sea Governor to ban jet skis from the RSG.

Best Reef Practices

- Avoid offering motorized water sports at your resort.

Egyptian Legal Requirements

Decree Number 22/1995 prohibits the use of jet-skis in the RSG.

Spear Fishing

Background

Spear fishing is the act of capturing fish using a spear gun or hand spear. Spear fishing is normally undertaken by SCUBA divers or snorkelers and is an extremely popular recreational activity in many parts of the world.

However, there are many reasons why spear fishing should not be permitted at a house reef.

As with line fishing, spear fishing can alter the ecological balance of a house reef by removing large predatory fish, such as groupers, or large herbivores, including the parrot fish. These fish are also important tourist attractions. Spear fishing may also attract large predators, such as sharks, into shallow water putting swimmers and divers at risk.

Injured fish can be a source of disease to healthy populations. Further, when a spear misses an intended target, it may strike the reef resulting in broken corals.

Spear fishing is not permitted in the RSG.

Best Reef Practices

- Make it clear to your guests before they arrive that spearing fishing is not permitted on the house reef and is illegal in the RSG.
- Confiscate all spear guns brought to the resort and notify the RSP or Coast Guard.
- Notify the RSP if you observe people spear fishing.

Egyptian Legal Requirements

Decree Number 95/1998 prohibits the use and sale of spear-guns in the RSG.

Walking on the Reef

Background

Some people walk on the reef flat to access deep water beyond the reef edge where they snorkel, while others simply want to explore the shallow rock pools.

There is a common misconception that a reef flat is mainly barren rock devoid of life. This is far from the truth. Close inspection will reveal macroalgae, seagrasses, starfish, and many species of shells. Hard and soft corals may also exist in suitable habitat.

Figure 23 A reef flat is not a barren area of rock and sand, but supports many animals



The reef flat of your house reef is vulnerable to damage if it is walked on, and you should discourage your clients from walking on it.

If your resort offers guided interpretive programs on the reef flat, ensure the guests 'tread lightly' and remind them that they are actually walking in an area supporting many plants and animals. A misplaced footstep has the potential for great damage.

Guests should also be reminded that the reef flat is home to some potentially dangerous residents such as cone shells, stinging hydroids, and stone fish.

Following these simple practices will help protect the house reef from damage.

Best Reef Practices

In general:

- No walking on the house reef except on a designated path or as part of a guided interpretative program. Interpretive guides should be well trained in best practices and reef awareness. Permission should be sought from the RSP before undertaking such an interpretive program on reef flats.
- At all other times avoid walking on the reef flat of the house reef whenever possible. Walk only along the edges of the beach or use the walkway or a designated path to access deep water beyond the reef flat.
- Place signs along the beach requesting the guests not to walk on the reef flat.
- Reef walking by your clients should only be done as part of a guided interpretive program.

Egyptian Legal Requirements

Law No. 102/1983 for Nature Protectorates prohibits killing or disturbing wildlife in protected areas.

Figure 24 The reef flat is vulnerable to damage; discourage guests from walking on it



PART 3: IMPLEMENTING BEST PRACTICES

Background

Although most resort managers will recognize the need to adopt good environmental practices to protect their house reef, many may find it difficult to implement these practices in an effective and efficient manner.

This section of the manual will guide you in implementing best practices. The approach taken is based on a standard Environmental Management System (EMS). The EMS offered here is the bare minimum, focusing on key steps. However, if you have experience with such systems, don't be afraid to modify the proposed EMS structure to meet your specific needs. Further, you should not throw out your current approach if it is achieving your environmental objectives.

In the context of this manual, "management system" refers to a resort's structure for managing its processes or activities to meet its overall objectives. In the case of an EMS it is the collection of processes and controls that exist in the resort for managing environmental issues, ultimately measured by overall environmental performance, such as compliance with laws and maintenance of the ecological functioning of your house reef.

Implementing Best Practices Using an EMS

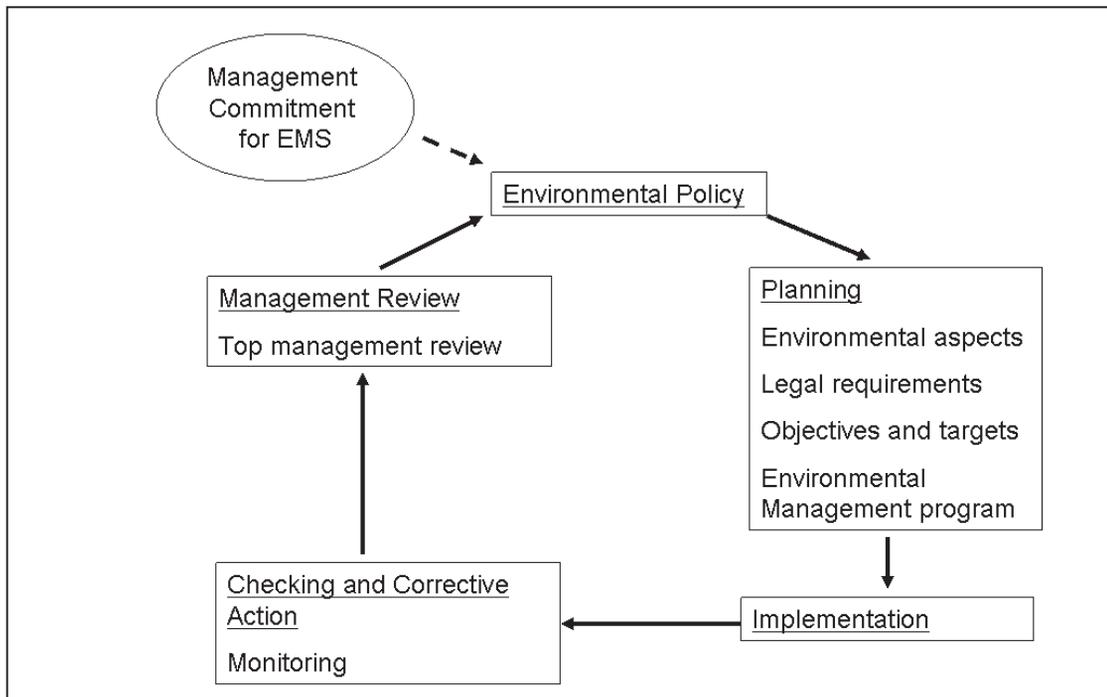
The flow diagram shown in figure 25 is useful to illustrate the processes or key steps that make up an EMS. These steps, in context of this manual, are explained below.

Management Commitment and Environmental Policy

Probably the most essential step in developing a successful EMS is obtaining top management's commitment. That means the resort manager must be supportive of the approach. Top management support can be communicated through:

- Assigning a senior manager to take day-to-day responsibility for the EMS
- Developing an environmental policy that clearly states a commitment to:
 - Compliance with environmental laws relating to the house reef
 - Preventing or minimizing the effects of the resort's activities on the house reef
 - Continuously improving protection or management of the house reef.

Figure 25 Key steps in an Environmental Management System



This policy need not be long, but should be communicated to all resort staff and to the guests so that they are aware of management support for environmental protection. An example of a policy is given here:

Dolphin Resort Environmental Policy

Dolphin Resort has been given the responsibility to protect and conserve the house reef. We commit to:

- Comply with all applicable environmental laws and decrees.
- Set objectives to minimize adverse environmental impacts.
- Identify potential sources of disturbance to the house reef, and monitor the condition of the house reef.
- Take every action to minimize disturbance of the house reef.
- Pursue continual improvement in our Environmental Management System.

This policy will be given widest dissemination. Copies of the policy will be posted in the lobby, staff quarters, work areas, and hotel guest rooms.

Planning

This step covers one of the most important components, but need not be complex or lengthy. It covers environmental aspects relating to the house reef, the environmental management objectives and targets, and the management program that describes how objectives will be achieved.

You begin by identifying the important environmental aspects relating to your house reef. In particular, list the types of activities undertaken at your house reef, their potential impacts, and existing management practices.

Next, review the manual to identify if there are other practices that could be implemented at your house reef.

Those practices that are not being done should be prioritized as either high or low priority. High priority practices are those targeting activities that, if unmanaged, are known to damage animals and plants living on house reefs.

As a general guide, the practices listed in table 3 are recommended as the minimum for safeguarding the house reef.⁴

Table 3 Key Practices to Safeguard Resort House Reefs

Practice	Guidance (Manual Section)
Formally instruct your staff about the resort's environmental policy, the house reef, its flora and fauna, and how they can minimize the impacts the guests have on the house reef.	Education and interpretation
Use a variety of interpretive methods to raise the awareness of guests in relation to the house reef (e.g. multilingual brochures and pamphlets).	Education and interpretation
Place signs on the shoreline near the house reef that clearly indicate that guests must place litter in bins, not walk on the reef flat, and not collect living or dead animals.	Education and interpretation
Ensure all litter is removed from the house reef and adjacent beach.	Litter reduction
If your guests cannot access deep water via a sandy beach, construct a raised walkway across the reef flat to permit your guests access to deep water beyond the reef edge.	Raised walkway
Brief divers on best reef practices.	SCUBA diving
Have a dive instructor assess the skill levels of new divers in water before permitting them to dive unsupervised.	SCUBA diving
Brief your snorkelers thoroughly before they enter the water.	Snorkeling
Provide practical training for people who have not snorkeled before.	Snorkeling
Ensure a staff member supervises recently trained snorkelers.	Snorkeling
Inform visitors that it is illegal to collect corals, shells, and other organisms.	Collecting
No walking on the house reef except on a designated path or as part of an interpretive program.	Walking on the house reef

⁴ Note that we have not included environmental monitoring of a house reef in this list. Environmental monitoring is an extremely important practice because it can inform you whether your practices are actually working. For example, if the proportion of broken coral colonies at your house reef remains high (relative to control sites) or continues to increase after the introduction of the practices, then obviously your practices are not working. This type of monitoring requires professional guidance, and for this reason is not addressed in detail here.

Legal Requirements

Ensure you are compliant with Egyptian laws and regulations. Activities such as jet skis and spear fishing should not be occurring at your house reef.

Objectives and Targets

Once you have identified the practices to be implemented, you will need to define your management objectives simply and clearly. Objectives need to define outcomes not processes. In addition, targets should be specific, quantifiable, and have time limits in order to allow you to assess if your objectives are being met. Two examples of objectives and targets are given in table 4. Note that objective 1 has more than one target.

Table 4 Examples of Objectives and Targets

	Objectives	Targets
1	All staff inducted on the house reef fauna and flora, how guests can accidentally damage corals, and how they can minimize the effects of guest on the house reef.	All staff inducted on an annual basis. All new staff inducted within 3 weeks of joining the company.
2	All unauthorized walking on the house reef by guests and staff to stop.	No guests (from this resort) observed walking on the house reef during the 2nd month after adopting the management objective.
3	Reduce the amount of solid waste accumulating on the house reef shoreline.	All solid waste removed from the house reef shoreline by the end of each day.

Environmental Management Program

Your resort will achieve its environmental objectives through implementation of its environmental management program. The environmental program addresses specifics such as responsibilities, activities, schedules, budgets and personnel. Table 5 provides an example based on the first objective.

Table 5 Proposed Key Elements in an Environmental Management Program

Objective	Responsibilities	Activities
All staff inducted on the house reef fauna and flora, how guest can accidentally damage corals, and how they can minimize the effects of guest on the house reef.	Mr. Sahel, recruitment manager, to coordinate presentation and maintain record of participants.	Present 50 minute PowerPoint presentation specially developed by Red Sea Protectorate (RSP) for resort staff inductions. Marine scientists from RSP as guest speaker.
Schedules	Budget	Personnel
As per new staff 1 & 5 February of each year for other staff	Not Applicable	As per staff list

PART 4: IMPORTANT CONTACT NUMBERS

Red Sea Protectorate Office Numbers

Office Location	Contact Number
Hurghada (Headquarters) / also responsible for the Safaga area	065 3445981, 3447724, 25 & 26
Marsa Alam Office	065 3720227 or 012 1559932
El Quseir	010 1469113 (mobile only)
Wadi el-Gemal Ranger Station (near Shams Alam Resort)	012 1772281 (mobile only)
Hamata Ranger Station	012 1772282 (mobile only)
Shalateen Ranger Station/also responsible for the Elba area	065 3305157

Who to Contact for What?

To report illegal activity, such as **poaching** (for example, inside protected areas) or **rubbish dumping**, in protected areas contact the closest RSP office (see contact numbers above).

If outside a protected area, you can also call the RSG on 065 546892 / 546337.

To report an **oil spill** contact the RSP office in Hurghada (see above) or EEAA: +20 2525 6491 (24 hr); +20 2525 6492 (24 hr); +20 2525 6494 (24hr). You should also notify the nearest port operator.

To report a **vessel collision or grounding**, contact 3445981 or other RSP numbers.

To gain approval to **build a walkway** over the reef flat in a protected area contact the nearest RSP office for advice, or the RSG on 065 546892 / 546337 for proposals outside protected areas.

Non-governmental Organizations

The **Red Sea Diving Association** can be contacted on 065 346229, and the **Southern Red Sea Diving Association** can be contacted on 065 3380021.

The **Hurghada Environmental Protection and Conservation Association (HEPCA)** can be contacted at 065 3445035.

The **Abu Salama Society** can be contacted on 065 3445040.

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For more information relating to this report, contact:

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