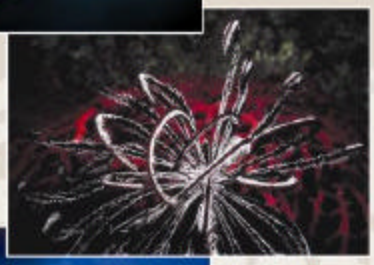
Marine Ecotourism

Impacts, International Guidelines and Best Practice Case Studies

A RESOURCE FOR TOURISM OPERATORS AND COASTAL PLANNERS AND MANAGERS



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IMPACTS, INTERNATIONAL GUIDELINES AND BEST PRACTICE CASE STUDIES

A resource for tourism operators and coastal planners and managers

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The International Ecotourism Society (formerly The Ecotourism Society) is an international, non-profit membership organization founded in 1990 to make ecotourism a tool for conservation and sustainable development. The Society provides professionals with the information and educational materials they need to plan and manage ecotourism in destinations worldwide. TIES publishes a quarterly newsletter, books, information packages, guidelines and fact sheets; develops standards and monitoring programs for the ecotourism industry; performs research; and offers workshops, seminars, training programs and international forums on key topics within the field.

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PREFACE

It is now becoming clearer that everything is connected. Nowhere is this reality more obvious than in the ocean. El Nino, once thought a phenomenon involving currents off the coast of Peru and affecting local fisheries and weather, is now appreciated as a global phenomenon, having profound implications for agriculture, transportation and public well being worldwide.

Saharan dust is falling on the Caribbean Sea by the tens of millions of tons. Scientists have been at a loss to explain why over the last 10 to 20 years, reefs damaged by a variety of causes have shown little or no recovery. It appears likely that this dust, as does all dust, contains nutrients, particularly iron, that not only can fertilize algae living on reefs but also can fertilize blue-green algae living in open water, fixing nitrogen from the atmosphere and further increasing reef fertilization. Iron is also a limiting nutrient for bacteria. Thus there is some speculation that the increase in coral diseases may be related to this nutrient-bacteria connection.

As of late 2000, coral reef assessments suggest that 27 percent of the world's reefs have been effectively lost, with the largest single cause being the massive climate-related coral bleaching event of 1997/1998. Corals live in a vital partnership with algae, which contribute to the coral's color. When the algae are absent the corals appear white due to the transparent tissue and white calcium carbonate skeleton below. We know that most corals are living just below their upper tolerance limit for elevated water temperatures. Even a two-degree rise in temperature can cause corals to lose their algal partners. If temperature does not fall within a couple of weeks the corals die. The 1997/1998 bleaching episode resulted in 16 percent of the coral reefs of the world dying in just nine months due to warm waters associated with El Nino and La Nina. We know that our use and misuse of energy is contributing to global warming and that as part of this modification of climate we can expect to experience more frequent and more severe weather conditions.

Ocean systems in temperate regions are not immune from severe human impacts. Globally harmful algal blooms are becoming an increasing problem. Increases in deforestation, agricultural runoff, waste from animal farms and sewage release cause a greater likelihood of algal blooms. Nutrient enrichment appears to be a key factor. In fact, on a global scale, human activity has doubled the amount of active nitrogen available to ecosystems. This is not trivial. More nutrients mean more algae, which can cause such things as paralytic shellfish poisoning, neurologic shellfish poisoning, red tides, fish kills and periods of anoxia that can kill most organisms in a bay or coastal area.

A recent report by NOAA's National Ocean Service examined nutrient enrichment in 138 estuaries in the U.S. and found that water-quality problems have become worse in 48 estuaries since 1970, and improved in only 14 estuaries. The authors predict that conditions will become even worse in 86 estuaries by the year 2020, as population and coastal zone development increase. They expect conditions to improve in only eight estuaries. The problem is an urgent one, because the coastal zone is incredibly important for people's quality of life and for a healthy economy. Fisheries experts understand this. They know that 75 percent of all commercially valuable species depend on healthy coastal zones as nurseries.

Globally, the population is shifting towards the coasts. That is true in the U.S. as well. That puts even more stress on wetlands, estuaries, coral reefs, kelp forests and continental shelves. How will the coastlines – which already are stressed – deal with this growth?

Obviously these coastal ecosystems need help and help depends on people having a better appreciation and understanding of them. There are no more intriguing, mysterious and exciting places on earth than coral reefs and kelp beds. Likewise, no species have been more effective at capturing public attention and imagination than dolphins, whales and sea otters, also residents of coastal waters. Thus it would seem that we have valuable assets that can focus people's attention and be used to help promote better management of these vital coastal resources.

Having worked with the Cousteaus for more than 30 years, I have had an opportunity to be involved in helping educate the public about the importance of the sea and its resources. Our approach spanned the range from remote education through films, which were shown to millions of people worldwide, to our more personal field study programs, which would be called ecotourism today. We learned that the more personal involvement and the more we could engage people in feeling connected to the sea, the more likely we were to change their attitudes.

Having created and directed marine education programs since 1973, when we took 40-plus students to Papua New Guinea, I believe ecotourism is the best way to promote change in our species' respect for the sea and commitment to see it sustainably managed. No one comes away unchanged from an encounter with a whale or a drift along a coral reef engulfed in fish. This is how to get to the heart and the heart is where the most fundamental changes take place. But the process cannot stop with the "big wow." We as ecotour operators need to be ready for those "teachable moments" with inspiration and guidance to show people how they can help and live more responsibly.

I have jumped to the more grand and, to me, ultimate goal of ecotourism – that of using nature as a source of inspiration and teacher for responsible living. The more pragmatic issue is making sure that our presence in coastal regions and in the sea meets the definition of ecotourism – "responsible travel to natural areas that conserves the environment and sustains the well being of local people." That is the business of this superb guide. It is thorough, spanning the spectrum from land to sea surface to underwater activities. It is full of facts and useful information, supporting fundamental principles with specific case studies. Finally, it opens doors to further investigation. I feel this latter point is important because ecotourism is an infant concept. There are many areas where clear answers don't exist. To me this is not a flaw of the concept but rather a natural in the evolution of a new approach. I am certain "Marine Ecotourism: Impacts, International Guidelines and Best Practice Case Studies" will significantly advance this important field of endeavor. I applaud the authors in their work.

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HOW THE MARINE ECOTOURISM GUIDELINES WERE CREATED

The International Ecotourism Society (TIES) has a long history of developing guidelines, acting as the ecotourism industry's chief representative in policy issues and standards at the international level. The methodology used to create its first set of guidelines, *Guidelines for Nature Tourism Operators* (1995) and later efforts to formulate *Ecolodge Guidelines* (in press) helped to inform the creation of the guidelines for marine ecotourism outlined in this publication.

This project was completed through a series of steps:

- *Ecotourism and Sustainable Tourism Guidelines: An Annotated Bibliography* was completed in April 1997 by TES research associates working on this project, Margaret Johnston and Bob Payne of Lakehead University, and Dave Twynam of University of the Caraboo in Canada. This bibliography (available on TIES' website at www.ecotourism.org/retessel.html) was an important first step in the process of discovering what tourism guidelines already existed.

- An international survey of marine tourism operators consisting of over 200 surveys being sent out to small-scale, coastal-based tourism businesses. The survey was designed to collect each operator's understanding of what guidelines are, whether they thought guidelines would be useful in their region of work, and what kind of best practices they had already implemented in their businesses. A summary of results from this survey and a copy of the survey can be obtained from TIES upon request. Sixty-one operators responded to the survey.

- Three stakeholder meetings in the Caribbean were held to explore the issues associated with tourism's use of coastal and marine resources and identify best practice examples in the Caribbean. Meeting co-hosts included: Centro Ecological Akumal (Mexico), Virgin Islands Environmental Research Station (VIERS) (St. John USVI), and the tourism department of St. Kitts & Nevis. At the stakeholder meetings TIES and its research associates used the data collected during the survey to stimulate discussion.

- Findings from all three of these completed activities were molded into a final publication. Based on discussions with policy makers and field personnel who attended the 1998 UNEP/WTO conference on Sustainable Tourism for Island States and the 1999 Coastal & Marine Tourism Congress, best practice examples were added to the publication, in addition to the planned guidelines for coastal and marine ecotourism operators. This publication was sent out to a set of international reviewers in 2000.

INTRODUCTION

Coastal areas have been a leading mainstream tourism destination for several decades. The popularity of coasts, not only as places to visit, but also to work and live has placed a great deal of pressure on the natural resources found there. The collapse of fishery stocks, decline of coral reef health and degradation of coastal habitats has positioned coastal regions on the brink of destruction. Also under threat are local communities' access to coastal resources and socio-cultural traditions, both of which are declining in the face of development.

The more recent phenomenon of marine ecotourism continues to add pressure to coastal and marine areas. However, if done in a responsible manner, negative impacts can be mitigated and positive outcomes can be realized for both coastal communities and natural resources. Documenting how marine ecotourism can achieve these goals is the chief objective of this publication.

WHAT IS MARINE ECOTOURISM?

Marine ecotourism is ecotourism that takes place in coastal and marine settings. The *coast* generally starts at the point of land where the high tide reaches, and runs to the edge of the continental shelf under the water; *marine* settings can include oceans and large inland lakes. Specific coastal and marine settings are diverse, ranging from estuaries, to beaches to ice shelves; in short, any location that is accessible to tourists.

Ecotourism is defined by The International Ecotourism Society as "*responsible travel to natural areas that conserves the environment and sustains the well being of local people*." There are many other specific elements that can be used to define ecotourism; however the following six elements were used as the key principles in guiding efforts to create this publication.

ESSENTIAL ELEMENTS OF MARINE ECOTOURISM

1. Travel to a **marine or coastal setting** (this may include some cultural attractions)
2. that **benefits local communities**, including involvement and financial returns,
3. **helps to conserve** the local environment (both cultural and natural),
4. **minimizes its negative impact** on natural environments and local communities,
5. **emphasizes learning and interpretation** of the local environment to visitors, and
6. **motivates the visitors** to reexamine how they impact the earth and how they can aid local communities and the environment.

WHAT IS A GUIDELINE?

A "guideline" is a *voluntary code* that guides human action. The guidelines provided here are intended to guide coastal and marine tourism operators in their efforts to provide ecotourism products.

It is important to note that these guidelines have been intentionally crafted to apply to as many marine tourism settings as possible. The guidelines are therefore very general. It is hoped that these guidelines will serve as a starting point for ecotourism entrepreneurs and other coastal stakeholders in their efforts to develop local guidelines and support other management schemes such as regulation efforts and marine protected areas (MPAs) in their regions.

These guidelines for marine ecotourism should be *modified for a specific site* or resource, as each new setting poses specific challenges and opportunities for achieving the principles of ecotourism and sustainable tourism. Examples of challenges might include a short tourism season, the presence of local organized crime and corruption, pollution from external sources, or a lack of training opportunities to improve the hospitality skills of local residents. Opportunities could include unique geological formations, a micro-finance program for small- and medium-sized businesses, or collaborative marketing opportunities. Each destination that marine ecotourism entrepreneurs work in will determine the usefulness of these guidelines, and the degree to which they will require tailoring to suit local stakeholder needs.

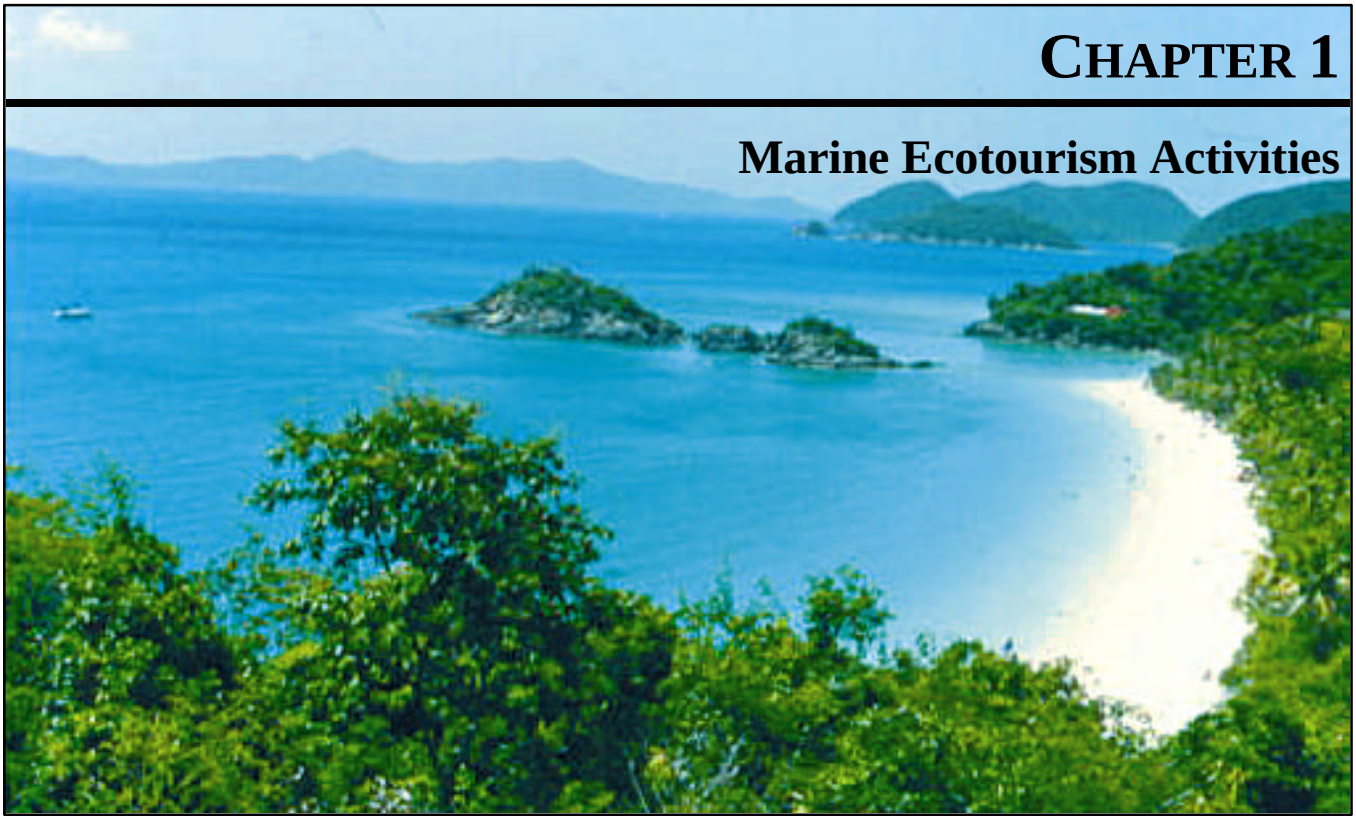
The guidelines are also meant to be *complementary to existing tourism guidelines*. Many guidelines already exist, and some of those directly related to marine tourism are listed in Appendix B. Local coastal stakeholders and especially marine ecotourism operators are encouraged to develop their own set of guidelines.

WHAT IS GOOD PRACTICE?

Also included in this publication is a set of good practice examples. "Good practice" is defined here as a company's effort to use the best available *technologies and techniques* known to their industry, in this case to achieve sustainable tourism, and more specifically ecotourism.

While each guideline lists general action for achieving a goal, it is the good practices employed by tourism operators that will achieve the desired result. Specific good practice techniques and technologies will be described for each guideline. Brief case studies of how individual operators have made an effort to implement good practices also are provided.

One point of caution: It should be emphasized that there are many solutions to each challenge, and that not every solution is suitable for each setting. Good practices may be suitable or achievable in one setting, but not in another.



CHAPTER 1

Marine Ecotourism Activities

In this section, guidelines and good practices are recommended for some of the more popular marine ecotourism activities. There are many different kinds of tourism activities that take place in a coastal setting. A list of some of these is divided below into marine ecotourism activities (those that can adhere to the principles of marine ecotourism described in the Introduction) and other forms of marine tourism. Obviously, if an operator or ecotourist fails to apply the principles of ecotourism to a particular marine activity, then the activity is not ecotourism. Several of the activities most commonly associated with marine ecotourism are discussed in greater detail in this section. Related guidelines and good practice examples also are provided.

Potential Marine Ecotourism Activities versus Other Forms of Marine Tourism

Marine Ecotourism Tourism	**Marine Tourism**
Diving and snorkeling	Traveling on large cruise ships
Wildlife watching	Jet skiing
Release fishing	Windsurfing
Boating (expedition cruising, sea kayaking, canoeing, ocean rafting)	Parasailing
	Sport fishing (consumptive)
Visiting coastal communities	Sailing
Visiting coastal cultural monuments	Beachcombing (e.g. searching for shells and removing them from the beach)
Spelunking (cave exploration)	
Coastal hiking and reef walking	Event spectating (at regattas, fishing derbies)
Coastal camping	Sun bathing
	Surfing

1.1 MARINE ECOTOURISM ACTIVITIES – DIVING AND SNORKELING

SCUBA diving and snorkeling (also known as skin diving) are two of the best recreational activities for humans to interact with marine environments. No other activity allows humans to observe underwater environments more closely. Impacts associated with diving and snorkeling on the marine environment are described below.

Environmental Impacts of Snorkeling and SCUBA Diving

Positive	Negative
• Greater understanding of the marine environment • Exercise • Research	• Damage to coral from fin kicks, dragging dive equipment, touching and standing on coral • Sunscreen oil and sediment stirred up by divers/snorkelers pollute the water and harm corals and other aquatic life • Novice snorkelers and divers tend to have greater impacts, as they are less comfortable in the water, and often grow fatigued or panic more easily (leading to floundering underwater (stirring sediments or banging into corals) or standing up in inappropriate areas (i.e. on top of corals) • Divers and snorkelers taking photographs generally cause more damage to the environment, as they struggle to achieve the right camera angle, or lure fish with food

A dive operator can implement many different good practices to achieve all the benefits associated with diving, while at the same time, minimizing the negative impacts. Many of these good practices can be achieved through the training of dive guides and daily operation procedures. These are discussed later in Chapter 6. Below, some specific guidelines and good practices associated with diving and snorkeling are described.

Provide proper training to divers and staff to ensure minimal impact on fragile marine resources such as coral.

✦ Guideline: Educate SCUBA divers, snorkelers and dive guides about negative environmental impacts and how to avoid these impacts.

✓ Good practices for minimizing the negative environmental impacts of diving and snorkeling

- Provide minimal impact dive training for clients and staff, and review before submersion.
- Give pre-dive briefing. Include information on dive safety, natural and cultural environments underwater, and the dive plan. Also discuss local regulations on removal of underwater natural and cultural heritage (e.g. piece of an underwater shipwreck or a piece of coral), and discourage such activities.
- Emphasize the total marine environment in pre- and post-dive briefings rather than focusing on just one key species.
- Provide additional information in evening sessions. Not only can animal identification and buoyancy skills be reviewed in an evening session, but community issues also can be explored. An example of a program on local issues could be how the local fishing community relies on the same resource as visiting divers.

✦ Guideline: Involve dive clients and staff in local and international marine conservation efforts.

As part of a dive operation's effort to become an eco-dive operation, it is important to be proactive in efforts to support environmental conservation and local communities. Listed below are several good practices that dive operators can implement in their yearly programs.

✓ Good practices for increasing diving-related environmental and social benefits

- Participate in local research and coastal management efforts, utilizing dive boats and expertise to support scientific research and enforce coastal regulations when appropriate (i.e. assist local management agencies in efforts to patrol coast line). Involve dive clients in research projects. See Chapter 6.
- Educate clients about impacts of diving at a destination; educating their clients and staff about the marine environment, and the laws, regulations and development pressures that exist for coastal areas. Invite local conservation and community non-government organizations (NGOs) to speak, and in exchange the NGO can charge a fee for the presentation or ask for donations from those in attendance.
- Rally clients around an environmental cause.

In addition, dive operators should provide the following list of minimal dive techniques for their dive clients, and hold training courses so that they have an opportunity to improve their dive skills.

✓ Good Practices for SCUBA Divers and Snorkelers

- Ensure that diver is weighted correctly before diving and practice buoyancy control away from coral.
- Utilize a flotation device when snorkeling to prevent the need to touch down when equipment needs adjustment.
- Master buoyancy control and practice snorkeling techniques over sand and away from coral.
- Secure diving equipment that extends from the diver such as gauges, etc.
- Avoid wearing gloves or shoes, to inhibit touching sensitive underwater plants and animals.
- Do not rest or stand on coral.
- Be aware of whole environment, and achieve stable buoyancy before taking underwater pictures.
- Avoid touching anything with your fins and try not to disturb sediment or coral.
- Observe animals rather than handle them.
- Do not chase or attempt to ride or grab free-swimming animals and avoid blocking their path.
- Do not prod any plants or animals.
- Do not collect souvenirs. Return everything picked up, dead or alive, to exactly the same position.
- Do not feed fish.[1]

1.2 MARINE ECOTOURISM ACTIVITIES – BOATING

Watercraft most commonly used for marine ecotourism purposes include motorized boats, sail boats, sea kayaks, pontoon boats, hydro bikes, sail boards, canoes, glass bottom boats, zodiacs, row boats, and ocean rafts. Boating activities range from individual activities such as following an inter-island trail in a sea kayak to group activities such as expedition cruising.

Most negative impacts resulting from boating can be linked to ill-planned and inappropriate operation of the vessel or the actions of its passengers. Boat propellers can scar plants and animals alike, plastics discarded overboard can choke sea animals and birds, oil pollution from boat bilges can coat reefs and animals, and shoreline hikers disembarking from a kayak or larger vessel can disrupt nesting colonies of birds on remote islands. Three marine ecotourism vehicles are compared below.

Advantages and Disadvantages of Three Marine Ecotourism Watercraft

Type of Watercraft	Advantages	Disadvantages
Sea Kayak	• Safe and stable • Easy to use, suitable for all ages • Easy to transport, store and maintain • Low cost • Good exercise • Quiet, human powered, non-polluting • Multi-functional and can be used for many different recreational purposes (e.g. bird watching or diving)	• Not all can use due to age, physical ability and swimming ability • Wildlife disturbance may result more often than with traditional motorized boats • Difficult to communicate to a large group of sea kayakers (i.e. for interpretive purposes) • Limited to coastal areas
Pontoon Boat	• Very stable, smooth ride • High capacity • Excellent stage from which to provide an interpretive program; many boats incorporate comfortable seating with an overhead canopy to protect passengers from the elements; audio systems are available	• Motors pollute • Need full-time, adequately trained operator • Maintenance costs are more extensive
Zodiac	• Move clients into small coves and inlets, where larger boats cannot travel • Transport from ship to shore, provides important chance for expedition cruise passengers to explore remote shorelines and dive underwater sites	• Very open to weather elements and sea, rides can be very rough in choppy water • Move only small numbers of clients at one time • Exposes remote, near-pristine coast lines and dive sites to visitation • Small motor pollutes

✦ Guideline: Employ pre-departure planning, responsible boat operation, education and frequent maintenance to ensure safety and minimize negative environmental impacts.

Routine boat maintenance lowers operating costs and environmental damage.

Ecotour boats can create many negative impacts. Of particular importance are the issues of waste management, boat operation, noise pollution, fuel consumption and maintenance practices.

Motor noise can affect whale behavior and nesting bird populations. Regional managers often try to mitigate these impacts through regulations. For example, in Australia coastal managers recommend a 200-meter boat-free zone from the high-water mark of an island or coast.[2] Upgrading boat motors from two-stroke to the more expensive four-stroke engines reduces pollution (including noise, exhaust laden with unburned hydrocarbons, and oil residue in water).

How a boat is operated is a key component in reducing negative environmental impacts. Boat propellers can leave long-term scars in sea grass beds and injure or even kill manatees and other animals. In Florida, coastal managers and industry operators have initiated an active campaign to raise awareness of all boat operators, especially among inexperienced recreationists. In Belize, two tour boats were fined BZ $75,000 (US $37,500) each in 1997 for coral damage caused by improper use of anchors. The money was later channeled through the Belize Tourist Board to construct more moorings in the region.

Sewage from boats can pollute beaches and impact fisheries through increased water bacteria levels, or destroy coral reefs through increased water nutrient levels. As a solution, the Great Barrier Reef Marine Park Authority (GBRMPA) set a rule that sewage may not be discharged from vessels with a holding tank less than 500 meters (1/3 of a mile) from the edge of the nearest reef.[3] In some areas of the United States, vessels use marine sanitation devices to treat sewage on board fully enough, at least as far as the fecal coliform bacteria count is concerned, to surpass the US Environmental Protection Agency standards by a wide margin. However this form of treatment does not kill viruses, and even when the systems are well maintained they allow the release of small quantities of nutrients that are harmful to aquatic life.[4] Additional suggestions for dealing with sewage generated aboard vessels are outlined in the good practices section below and international waste management regulations for watercraft outlined by the International Maritime Organization below.

To reduce fuel consumption and increase the enjoyment of visitors, many ecotour operators utilize non-motorized craft for the transport of ecotourists and their interaction with attractions. Crafts such as canoes and sea kayaks get ecotourists close to the attraction in a peaceful, low-consumptive manner – often enhancing the ecotourist's sense of oneness with the destination – an essential component in ecotourism experiences.

Many other good practices can be employed to make boating more environmentally responsible. These are listed below within four sections: pre-departure, operation, maintenance and education.

✓ Good Practices for Reducing the Environmental Impacts of Boating

Pre-departure

- Be aware of local regulations including waste disposal, anchoring, fishing equipment and mooring use.
- Stock up on environmentally friendly products that are difficult to obtain in other ports and anchorages; e.g. biodegradable plastics.
- Buy products that have little packaging waste and can be reused or recycled.
- Build a reference collection on the destination's cultural and natural environment.
- Switch to four-stroke engines, which are more fuel-efficient than conventional two-stroke engines.

- Brief passengers or renters (if they are renting a charter themselves) before departure on environmental regulations and techniques to minimize impacts and the environment.
- Shop around for new boat designs and engine technologies to become more fuel-efficient.
- Consult local experts, tide and navigational charts to avoid damaging sea grass beds, etc. Time your trip to take advantage of deeper waters afforded by the tide.

Operation

- Use non-motorized vessels when possible and appropriate.
- Reduce speed, noise and wake to avoid disturbing animals, vegetation and bottom sediments, as well as other coastal users.
- Limit engine noise and reduce fuel consumption by reducing speed, upgrading to a four-stroke engine, or utilizing an alternative energy source such as wind, human or battery-powered engines.
- Switch off engines if idling for long periods.
- Substitute electronic motors for petroleum-based motors in calm waters with little current to reduce noise and fuel consumption. Recharge the electric motors with alternative energy sources such as solar.
- Use moorings in preference to anchoring when possible. If they are not available, anchor on sand or mud, avoid sea-grass beds, coral and other sensitive marine resources, and motor towards the anchor when hauling in to avoid dragging the anchor across the bottom (see Section 1.2.1).
- Survey the approach to your destination and utilize channels when possible. Use tide and wind to drift through shallow water back into deep water.
- Know the limits of your boat's design. Every boat engine has a water-depth requirement for safe operation, consult manufacturer or service dealer for details.
- Use on-shore pump-out facilities when possible to dispose of sewage.
- When on-shore pump-out facilities are not available, discharge in open water away from coral reefs and enclosed bays, and after primary treatment (see below for MARPOL regulations on distance from shore).
- Never release plastic waste into the water.
- Reuse everything that can be reused, recycle everything that remains. Many ports and anchorages do not have formal recycling depots, however often an informal waste management sector exists – seek out this sector, which includes scrap metal venders and bottle collectors who make a living from recycling waste.
- When possible deposit all ship-generated waste on land waste management facilities.
- When land waste management facilities are not available, follow MARPOL's "Annex V Ship-Generated Waste Management Standards" for dumping at sea (see below).
- Use bilge pillows and biodegradable detergents to handle petroleum products, and on-shore recycling facilities to handle engine waste.
- Never discharge bilge water without treatment, and never near shore or reefs.
- When possible, refuel at shore facilities to reduce the risk of fuel and oil spillage.

Maintenance

- Limit boat noise and pollution by maintaining engines at peak performance.
- Employ phosphate-free detergents for general boat cleaning.
- Inspect and clean boat hull and propellers to prevent the spread of alien or noxious plants and animals to other waters during boat's next use.
- Ensure that engines and drives are properly maintained, and that hulls are kept clean to minimize drag.
- When maintaining your boat's hull, collect all material removed in impervious sheeting and use dustless sanders; dispose of hull waste in proper land-based waste management facility.
- Avoid using toxic TBT paints; use new environmentally safe anti-fouling paints.
- Compare fuel consumption records with fellow operators of similar boats to identify boat's fuel-efficiency.

Education

- Update captain and crew knowledge of environmental standards and regulations.
- New passengers must be briefed on environmental and cultural codes of conduct.
- Maintain a reference log for a self-crewed charter or regular crew to refer to daily when entering a new destination for up-to-date local environmental regulations.
- See also Chapter 2, the Interpretation section of this publication.

✓ **Waste Disposal Good Practices – MARPOL Annex V & IV Regulations***

Garbage Type	Outside Special Areas**	Inside Special Areas**
Plastics, synthetic ropes, fishing nets, plastic garbage bags	Disposal prohibited	Disposal prohibited
Floating dunnage, lining and packaging materials	More than 25 miles offshore	Disposal prohibited
Paper, rags, glass, metal, bottles, crockery and similar refuse	More than 12 miles offshore	Disposal prohibited
All other garbage	More than 3 miles offshore	Disposal prohibited
Food waste not ground	More than 12 miles offshore	Disposal prohibited
Ground food waste	More than 3 miles offshore	More than 3 miles offshore
Sewage		
Sewage Disposal	More than 4 miles offshore	More than 4 miles offshore

*MARPOL 73/78 is the International Convention for the Prevention of Pollution from Ships. Annex V addresses garbage, Annex IV address sewage and Annex I addresses oil. See Appendix B for contact information.
**Note: "Special Areas" are those recognized by the International Maritime Organization (IMO) as being particularly vulnerable to pollution, usually because they are almost enclosed by land.

Good Practice Case Study – Boating: Orvis / TIDE, Belize

To expand on one of these points, the Toledo Institute for Development and Environment (TIDE), an NGO based in southern Belize, upgraded to four-stroke engines for all its patrol boat engines in 1998. TIDE calculated that even though they were more expensive than the two-stroke engines, with fuel costs at 1998 rates the organization planned to make their money back through greater fuel-use efficiency in two years. Money to purchase the engines came from the private sector, including the US based fly-fishing equipment retailer Orvis. Orvis also helped with the purchase of fuel to patrol the region's marine resources.

Good Practice Case Study – Boating: Ocean Rafting, Australia

Australian tour company Ocean Rafting uses rigid inflatable boats to maximize fuel efficiency through their stability and weight. Larger outboard engines than normal were chosen to decrease the amount of fuel used, and engines were regularly serviced every three months and replaced after six months to maximize their efficiency and reliability. Compared to the smaller, slower horsepower engine, this design allowed Ocean Rafting to cover more distance in a day than other operators due to their faster speed, while reducing fuel by as much as 250 liters over what competitors used with the same size boat.[5]

1.2.1 Anchoring and Mooring

Anchoring and mooring deserves special attention because attempts to make boats stationary in a bay or along a coast can create a great deal of damage to pristine environments through improper anchoring decisions and methods. When it is at all possible ecotour boat operators should use permanent constructed anchoring systems called moorings rather than dropping anchor.

All mooring buoy systems consist of three elements: a permanent fixture on the sea bottom, a floating buoy on the water surface, and something in between to attach the two. Sea-bottom characteristics and boat sizes usually dictate what type of system is more suitable. The Halas system (see **Figure 1**) is most successful in areas with flat, solid bedrock, while the Manta-Ray system (see **Figures 2** and **3**) is recommended for areas of sand, coral rubble, or a combination of bottom types.[6] Larger boats over 40' in length are recommended to use U-Bolt systems (see **Figure 3**). If mooring buoys are unavailable, anchor on sand or mud and avoid sea-grass beds, coral and other sensitive marine resources. Always find out local regulations for moorings before using them, as a use fee or by-appointment-only system may be implemented. For example, at Saba Marine Park, dive operators have the exclusive right to use mooring buoys in key dive sites between 9 a.m. and noon and 1 p.m. and 4 p.m. each day.

User fees at Saba Marine Park range from US $.10/gross ton for vessels longer than 30 meters (100 feet) to US $2.00/passengers to vessels less than 30 meters to utilize the park-managed moorings. Visitors can check for current regulations by visiting individual marine park websites or inquiring with customs and port officials. Examples of marine protected area websites are listed in Appendix B.

Figure 1: Mooring Buoys – Halas

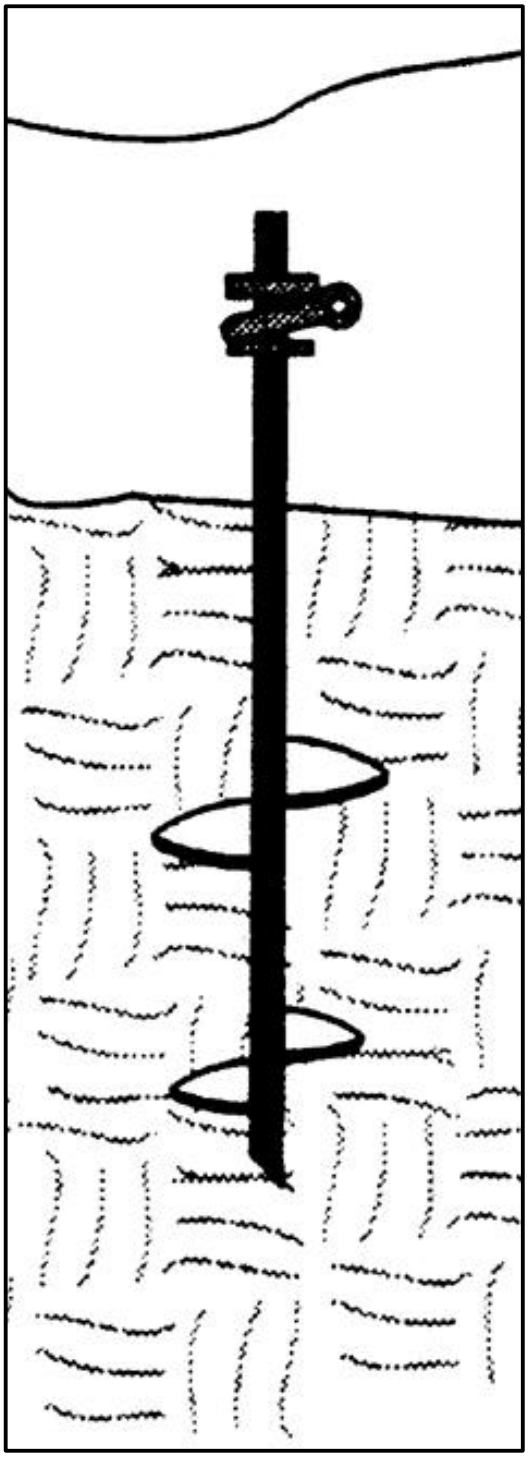


Figure 2: Mooring Buoy – Manta Ray

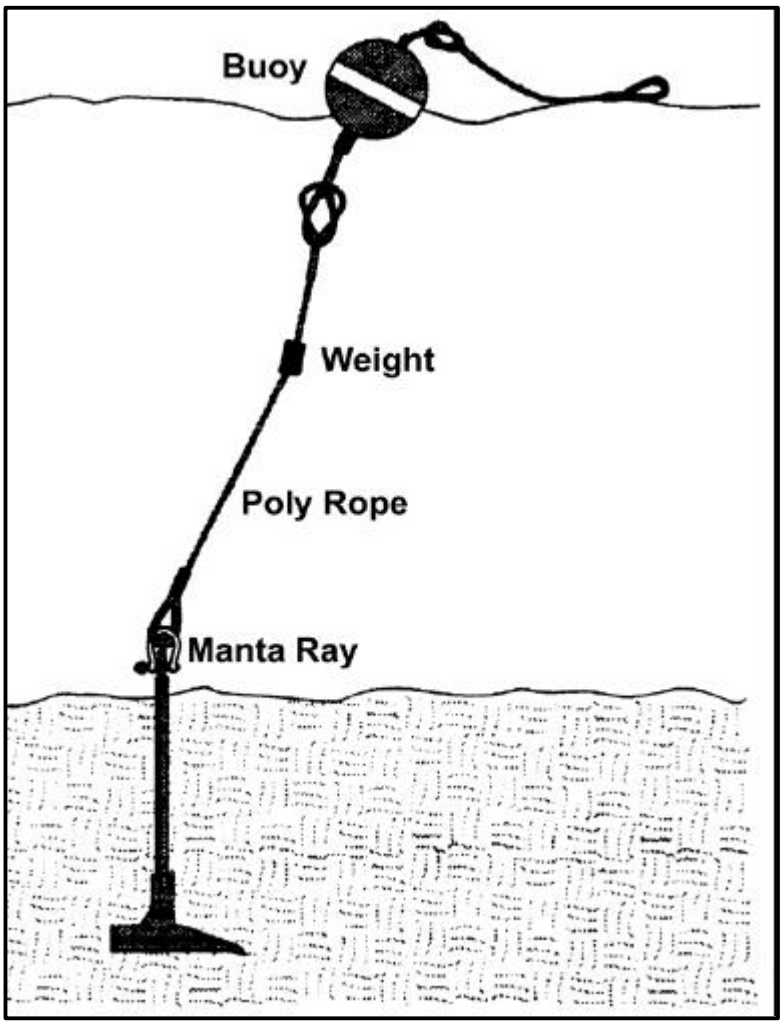
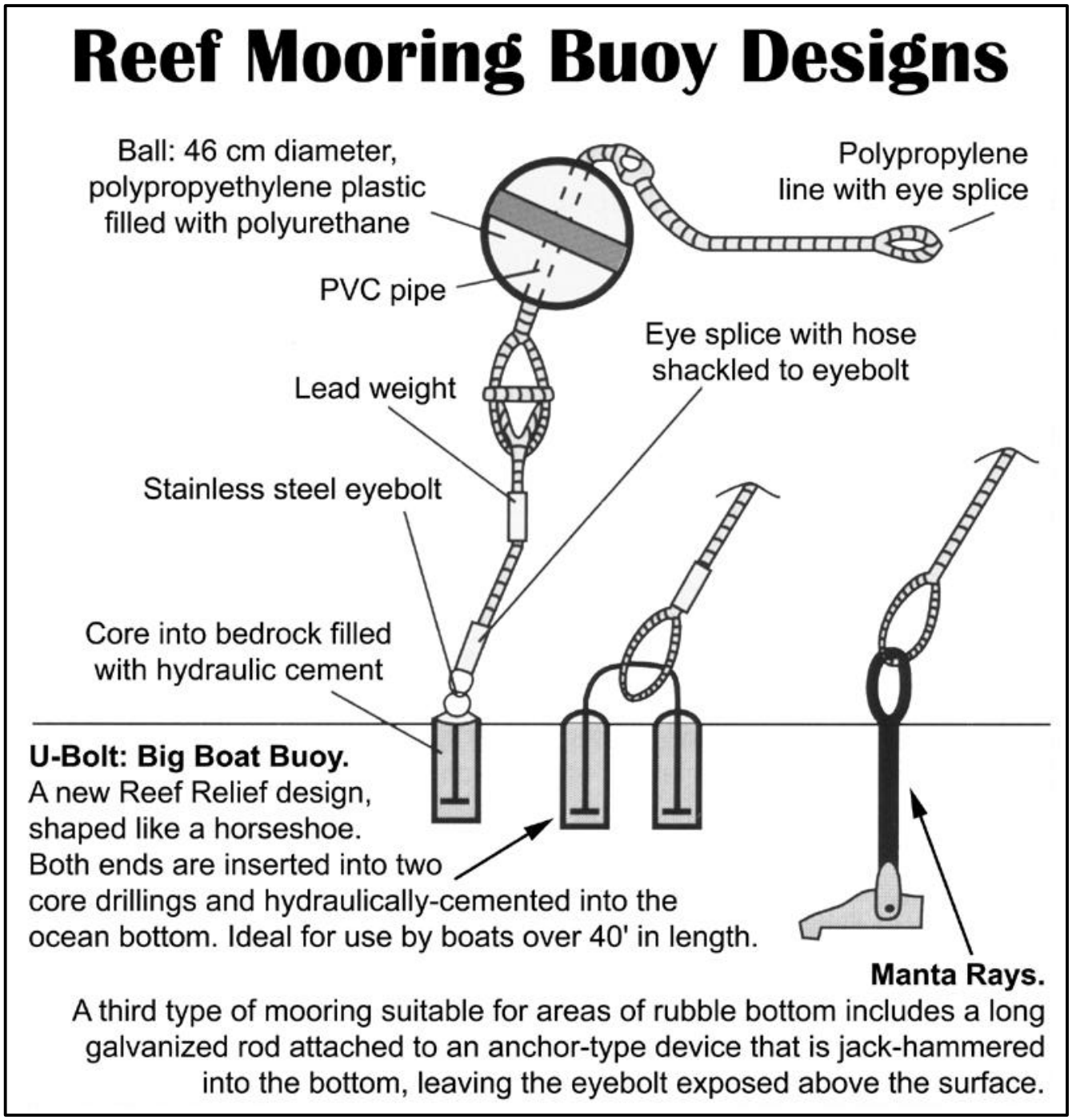


Figure 3: Mooring Buoys – U-Bolt and Manta Ray



✓ **Good Practices when Anchoring or Mooring a Boat**

- Use public moorings in preference to anchoring when possible.
- Ensure boat is an appropriate size for the mooring (e.g. a U-shaped Big Boat Buoy is designed to handle boats over 12 meters (40 feet) in length), and if in doubt consult local rangers or coastal managers.
- In approaching mooring buoy, motor slowly in deep water until a mooring buoy is selected. Idle directly to the buoy without meandering among other boats. Reverse this procedure when departing from the area. Never cross over a reef to pick up a mooring. Slowly maneuver around the reef at a safe distance, keeping a lookout for snorkelers, divers and marine animals. Always approach the mooring from the lee side or the down-wind side, into the wind and preferably against the current. Avoid using moorings on the windward side of the reef, especially in rough weather.

- In popular diver areas, boats must stop 100 yards away from "Diver Down Flags" and watch for bubbles.
- Generally mooring buoys are available on a first-come first-serve basis. However, this depends on local usage guidelines; for example, diving vessels may have reserved use rights during peak dive times (e.g. 9 a.m. -noon and 1 p.m.-4 p.m.).
- When attaching to the mooring, make sure sufficient scope is used to create a horizontal pull on the mooring buoy. As a general rule a scope line should be at least as long as the vessel, and if the buoy is pulled underwater, let out more scope. This reduces the strain on the mooring components. Also sailboats should not leave up steadying sails as it puts too much strain on the eyebolt of the mooring. By increasing the length of line on windy days, the boat has a better ride.
- Always inspect the mooring for wear or damage and report any damaged or missing buoys to local authorities.
- If mooring buoys are not available, boats should anchor on sand or mud, avoiding sea grass beds, coral and other sensitive marine resources.
- Some marine protected areas strictly prohibit anchoring, be aware of local regulations.
- Always motor towards the anchor when hauling in.

Ballast is used in boats to increase the draft, to change the trim, to regulate the stability, or to maintain stress loads within acceptable limits. Generally water is used as ballast. If a marine tourism operator does use water as ballast, he or she should follow the good practices below to minimize the negative environmental effects associated with ballast water such as the introduction of non-native species to coastal areas.

✓ **Ballast Good Practices**

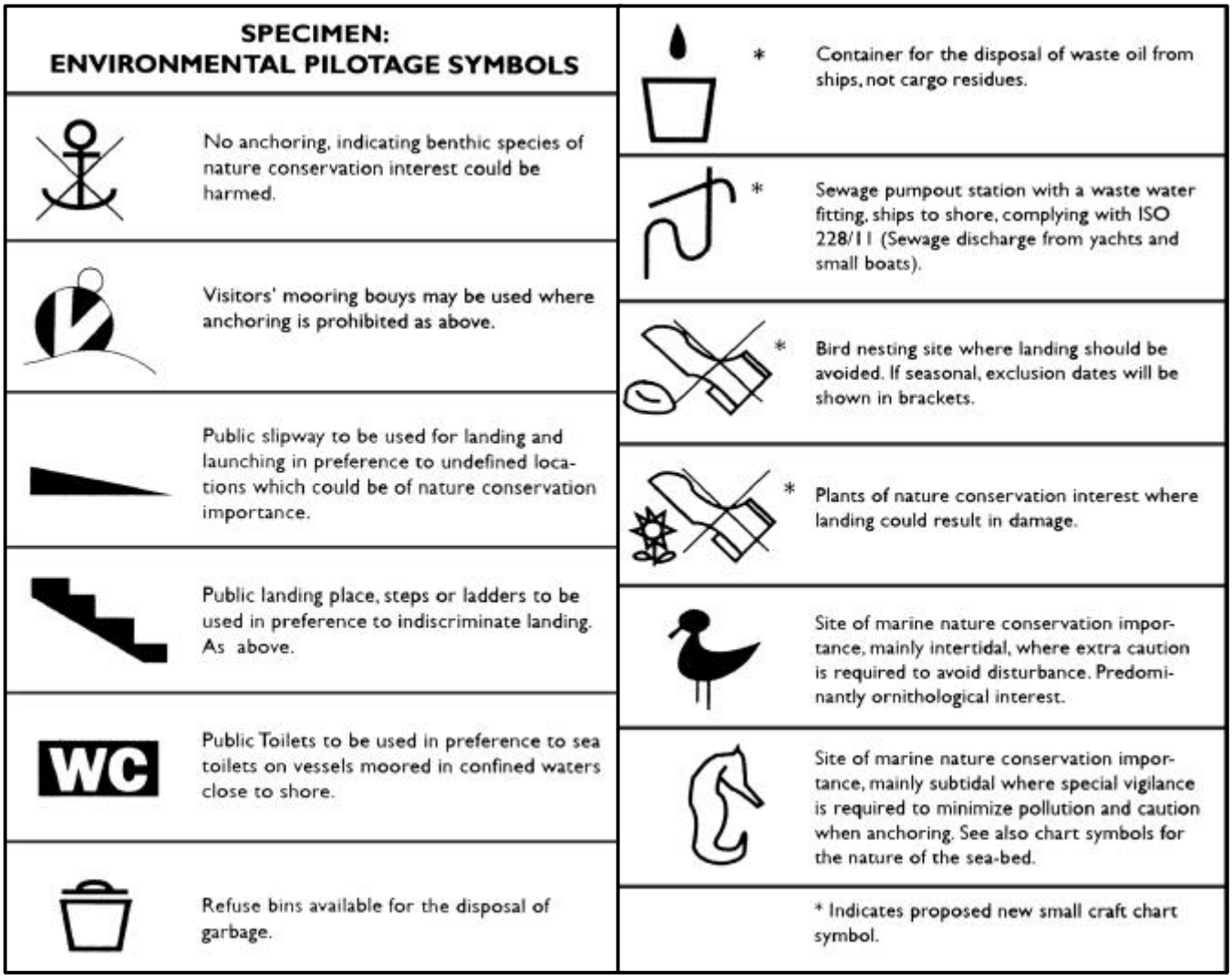
- Exchange ballast water in deep sea, as far from shore as possible.
- Do not release ballast water when possible.
- Take on only "clean" ballast water.
- Treat ballast water en route with heating, chlorine or ultraviolet radiation.
- Deposit ballast water in special reception tanks at the port[7].

✦ Guideline: Be proactive in your support of the environment and local communities.

✓ **Good Practices for Boat Operators to Support Local Environments and Communities**

- Patronize marinas and jetties that run environmentally oriented programs such as recycling depots, sewage waste management facilities, post environmental regulations and updates, and feature environmentally sensitive design.
- Support local mooring programs through financial donations of labor and supplies.
- Provide free transport to scientists and government agency representatives in support of conservation or coastal management programs.
- Patronize locally owned marinas to ensure economic benefits remain locally.
- If sufficient waste management facilities do not exist, encourage their establishment by talking with local officials and anchorage managers.
- Encourage local authorities to introduce the use of an environmental pilotage system which posts symbols on navigational charts that foster an immediate and universal understanding of the important environmental considerations present at the various sites of a destination. The environmental pilotage symbols can appear on traditional pilotage maps, or specialized environmental pilotage navigation charts attached to the traditional pilotage charts. Suggested symbols for environmental pilotage are outlined in **Figure 4** (IMO, 1997). In addition, the boundaries of local protected areas and regulations for use of local mooring and waste management facilities also can be outlined.

Figure 4: Environmental Pilotage Symbols



1.2.2 Aircraft and Wildlife

An alternative to boating is the use of aircraft to reach ecotourism destinations. Of particular importance is the use of small aircraft such as sea planes and helicopters to reach wilderness settings. Negative impacts associated with the use of aircraft to reach wildlife watching sites have been documented. For example, in Antarctica studies showed that when moving between breeding sites and the sea, penguins reacted to and fled from aircraft at heights of over 300 meters (or 1000 feet) and at distances greater than one kilometer. At the breeding colony however, birds generally sat tight, even when helicopters landed at a distance of about 30 meters (100 feet). Telemetry work indicated however, that the heart rate of birds approached closely like this was four times the resting rate in the colony in the absence of disturbance. These findings indicate that there is a significant stress caused by the approach of aircraft, even if birds do not flee. Nevertheless, as with all types of tourism activity, not all wildlife react the same to the presence of aircraft. Responses generally depend upon five factors: 1) the species, 2) the location, 3) the history of exposure to disturbance of the populations involved, 4) the aircraft type, and 5) aircraft activities.[8] Marine ecotourism operators should work cooperatively with local scientists and coastal managers to find the least intrusive, and yet commercially viable method of transporting ecotourists to an ecotourism attraction.

1.3 Marine Ecotourism Activities – Walking and Hiking: Tidal Pools, Coastal Trails and Reefs

Impacts from hiking and walking along coasts can be both positive and negative. Hikers' noise and missteps can disturb wildlife, stunt plants, destroy nests and offend cultural standards. Proper dress is essential for safety and cultural appropriateness depending on the setting. Trails suffer erosion when overused, especially during the wet season, and widen when hikers take parallel routes. The deposit of trash and removal of souvenirs is also a common negative impact of hiking. However, some of hiking's positive impacts include economic benefits to isolated communities and visitors' increased understanding of coastal environments.

Operating guided tours or developing self-guided trails for walkers and hikers in coastal areas can be made sustainable if key elements are emphasized.

Coastal hiking trails concentrate impact in one location, while also providing opportunities for visitors to understand marine destinations.

✦ Guideline: Use pre-departure planning and responsible conduct to minimize negative impacts associated with coastal hiking.

While a great deal of attention has been focused on environmental impacts, cultural impacts also need special attention. For example, some coastal hiking trails may contain cultural artifacts important to local communities. Permission should be sought from the local communities before activities such as photography take place. Tour operators also can create many social and environmental benefits when leading hiking expeditions in coastal areas, or when setting up a self-guided trail associated with their lodge or interpretive center.

✓ Good Practices for Operators Leading Coastal Hikes

- Conduct a pre-departure briefing. Include information on proper behavior on hiking trails, e.g. reduce level of noise, stay on the path and with the group, encourage appropriate community interaction, safety procedures, etc.
- Plan itineraries for day trips or multi-day trips that include rest stops in small establishments in nearby communities where visitors can patronize local stores, restaurants and museums. Itineraries also should take into account the client's hiking ability, weather patterns, seasons, etc.
- Develop an interpretation program – utilizing trail signs, pamphlets and storytelling (see Chapter 2) – that helps clients understand and relate to the destination.
- Encourage clients and staff to remove trash left by others.
- Provide guides with training on leave-no-trace hiking techniques, safety standards, and the art of interpretation.
- In wilderness areas use a map and compass to eliminate the use of marking paint, rock cairns or flagging.

✓ **Good Practices for Coastal Hikers**

- Do not trample resources along trail, including flora, fauna and non-living material such as sea shells or dunes.
- Stay on the trail to reduce trampling of the surrounding area. Travel single file on trails to avoid widening the trail or making new ones.
- Minimize noise to minimize disturbance of local communities and wildlife, as well as the enjoyment of other hikers.
- Keep in small groups.
- Minimize use of light when walking at night. Use special sulfur-colored torches (flashlights) with less than three-volt power sources when visiting turtle nesting beaches.
- Never leave trash.
- Do not remove anything from the site that occurs naturally, e.g. natural artifacts.
- Be aware of the animals and weather conditions that can be encountered on the trail and the potential hazards that they represent.
- Choose hiking routes based on the hiker's ability to complete the trail.
- In areas where no designated trail exists, choose durable surfaces to walk on (i.e. rock or sand). However, avoid areas of the shoreline (e.g. pebble beaches above the high tide line) where birds may have their nests camouflaged.

Starfish provide good interpretive opportunities, but return the animal exactly where it came from.

1.3.1 Reef Walking

Another form of hiking or walking can occur directly over marine resources, namely coral reefs. Generally touching live coral and the organisms that live in and around their protective structures should be avoided at all times. However there are regions of the world where trails have been set up for tourists and recreationists to walk on top of, or adjacent to, a reef either on a board, sand or stone walk. The Great Barrier Reef is one region of the world where this occurs on a regular basis. Below are guidelines developed by the Great Barrier Reef Marine Park Authority (GBRMPA) to help minimize visitors' negative impacts. Tourism operators can apply these to their own businesses when taking clients out to reefs.

✓ **Good Practices for Reef Walking**

- Do not step on coral or living matter (obviously some time before and during the walk, guides must point out the differences between dead and living elements present in a coral reef community, as this can be confusing to a first-time visitor).
- Follow marked trails and avoid straying.
- If there are no marked trails, locate regularly used routes or follow sand channels.
- Use a pole or stick for balance. Do not poke wildlife with it.
- If a natural object is picked up, living or dead, always return it to the exact position where it was found.
- Do not pick up species that are attached to the reef flat.
- For guided walks ensure walkers stay in groups. Keep groups to under 10 people.
- Follow trail in single file formation.
- Instruct group on reef environment and proper behavior before departure.
- Avoid picking up rocks, etc. This disturbs the habitat of many small animals, which move when the rock is lifted and may not return or are sometimes crushed when the rock is replaced to its original position.[9]

Reef walking is generally not to be encouraged except in areas where coastal managers have identified a highly appropriate site with sufficient naturally exposed coral, or which has been designated as a sacrificial area designed to protect the rest of the reef from visitation.

1.4 MARINE ECOTOURISM ACTIVITIES – RELEASE FISHING

Catch and release fishing is often promoted as a sustainable and responsible recreational activity. While certainly not as benign as fish watching, if done correctly this activity can have minimal negative impact to fish populations, and significantly increase revenue for local communities and conservation efforts.

✦ Guideline: Practice responsible capture-and-release fishing procedures.

✓ Release Fishing Good Practices

- Unless the client is experienced in catch-and-release techniques, the tourism operation's fishing guide should release fish as it is very easy to do this incorrectly and damage the fish. Most fish die from improper handling. It is best to keep the fish in water as much as possible. When a fish is taken from water it immediately begins to suffocate. Handle the fish very carefully to avoid bruising it. Handle it with wet hands only – dry hands will destroy the protective layer of mucous or "slime," leaving it susceptible to infection. If a hook is embedded very deeply in the fish leave it in the fish to "rust out" and cut the line rather than risking injury to the fish's mouth, gills or guts (viscera).
- Instruct your clients to land the fish as quickly as possible, especially if water temperatures are warm. The longer the fish fights, the more lactic acid builds up in the fish, making it harder to revive.
- When the guide or client releases the fish let it gain its equilibrium. If the fish lies on its side or gradually sinks, it may be extremely tired and lacking oxygen. Hold the fish from above, behind the head and move it through the water as if it was swimming, repeating the action as necessary. This action pushes water over the fish's gills so it can get enough oxygen. The fish will soon give a few "kicks" indicating it is ready for release.
- Fish brought from depths of greater than 20 meters (65 feet) often have over-expanded swim bladders. Consult experts on how to deal with this.
- Always recover all fishing line and other equipment before leaving the site.

Debate continues in ecotourism circles whether release fishing should be categorized as an ecotourism activity. However, undoubtedly it is certainly more sustainable than sport fishing that is non-release. To learn more about catch and release fishing, how to do it in a responsible manner and how it contributes to conservation, visit the websites in Appendix B.

Good Practice Case Study – Release Fishing Promotes Conservation and Economic Opportunities: TIDE, Belize

In 1997 a group of local fishermen began training to become fly fishing guides in Belize's southernmost district of Toledo. Today 40 fishing guides now lead visitors on release fishing tours, combining additional attractions such as sea kayaking, birding and natural history. The area, rich in distinct cultures, also has many community-based attractions and tourism facilities. The success of the fly fishing tourism industry has powered economic growth in other sections of the local tourism economy. TIDE, the NGO that has helped to coordinate this project, continues to support the expansion of guide and hospitality training for community members and create a reservations center and marketing program for Toledo's marine ecotourism products.

1.5 MARINE ECOTOURISM ACTIVITIES – SHORELINE CAMPING

Independent travelers and tour operators alike must take extra precautions when camping in coastal areas. Like other remote sites, camping in wilderness coastal areas requires significant pre-departure planning and responsible conduct at the camp site; in short, a Leave-No-Trace camping ethic.

✦ Guideline: Reduce negative environmental impacts in coastal areas through leave-no-trace camping good practices.

✓ Good Practices for Coastal Camping

Pre-departure

- Seek permission from appropriate agencies (e.g. park managers, land owners, indigenous guardians) to utilize site for overnight excursion.
- Know the regulations and special concerns for the destination.
- Select a site for the activity that is under-visited and managed properly. Consult coastal management agencies to avoid sensitive areas or seasons that cannot sustain visitor use.
- Prepare for extreme weather, hazards and emergencies.
- Schedule the visit to avoid times of high use.
- Repackage food to minimize waste (e.g. remove all "twist ties" and individual packaging and consolidate in bags tied with knots).

Camp Site Selection

- Camp only in designated sites. Do not "pioneer" new campsites in areas where use is restricted.
- Camp on durable surfaces, including established campsites, rock, gravel, dry grasses or snow.
- Do not set up camp in established animal trails.
- Protect riparian areas by camping at least 60 meters (200 feet) from lakes and streams.
- Good campsites are found, not made. Altering a site is not necessary.
- In popular areas concentrate use on existing trails and campsites. This minimizes vegetation loss and soil compaction and erosion in the rest of the destination.
- Keep campsites small. Focus activity in areas where vegetation is absent.
- In pristine wilderness areas disperse use to prevent the creation of campsites and trails. Avoid places where impacts are just beginning.
- Do not build structures, furniture, or dig trenches at campsite.

Fires and Cook Stoves

- Minimize use of wood fires. Use a lightweight stove (gas, alcohol or electric) for cooking and enjoy a candle lantern for light.
- If fires are permitted, use established fire rings, fire pans or mound fires, or build them in the foreshore, below high tide mark and away from driftwood. The next tide will wash the evidence of the fire away, making the campsite clean for the next visitors.
- Keep fires small. Do not build them during hot, dry or windy conditions.
- Extinguish fires when unattended. Burn all wood and coals to ash, put out campfires completely, then scatter cool ashes.
- Use only driftwood and dead wood for fires. No branches or trees should be disturbed. Never break branches off any trees, living or dead. Broken branches leave scars that visually impact the area. Take time to walk at least five minutes away, and then gather wood over a wide area.

Waste Disposal

- Pack it in, pack it out. Inspect your campsite and rest areas for trash or spilled foods. Pack out all trash, leftover food and litter.
- Deposit fish viscera and other waste parts such as shells far from camp into the ocean to reduce visual pollution and attracting wildlife such as bears. If possible, deposit fish waste in deep ocean water. Take care in doing this, and ensure the waste is not being deposited where SCUBA diving is taking place, or where similar species are currently living (e.g. conch shells tossed into conch beds can introduce disease to the living population).

- If no waste facilities are present, designate a location at least 100 m from campsite, trails and fresh water, and bury all fecal wastes at least 15 cm deep in a cat-hole. Cover and disguise the cat-hole when finished.
- The inter-tidal zone, where practical, can also be used for defecating. This is dependent upon wind, waves, tides and current – all of which determine how well the waste will be moved away from the camp and other camp sites. Avoid tide pools, clam or mussel beds, and other sensitive areas. On some islands human waste must also be packed out.
- A third alternative for dealing with campsite human waste is to collect it in a pail and use a boat to deposit it out in the ocean.
- Pack out or burn toilet paper and hygiene products.
- To wash yourself or your dishes, carry water 60 meters (200 feet) away from fresh water and use small amounts of biodegradable soap. Scatter strained dishwater. Pack out food particles with other waste. Alternatively use sand as a scouring agent to remove waste when cleaning dishes. For bathing in salt water, get wet, lather up on shore below the high tide line, and rinse off either directly in the ocean or with water poured from a container. Avoid lathering up directly in the ocean since this will cause you to use more soap than necessary. When brushing teeth, spit toothpaste below the high tide line or into the ocean.

General Campsite Conduct

- Minimize site alterations. Upon arrival, mentally note the location and appearance of the natural setting. At departure, return everything as it was. Allow others who use the campsite to discover shells, plants, archeological artifacts, etc.; do not remove these objects.
- Keep tents, sleeping bags and personal gear free of food and other odors. Consider hanging food if there are large trees or established hanging site when bears and similar predators are present. Place the kitchen area at least 100 yards away from the down wind of sleeping areas when possible. Store used feminine hygiene products and used toilet paper with the food garbage while in camp. Leave the camp clean to prevent endangering others who use the campsite at a later time.
- Avoid introducing or transporting non-native species. Before landing remove all seeds and introduced plants from your clothing and equipment (e.g. aquatic weeds on boat propellers).
- Minimize noise levels and use of artificial lighting to avoid disturbing wildlife and other campers. Respect other visitors and protect the quality of their experience.
- Report trail damage or other environmental impacts to management agencies.[10]

Bird nests along a coast are susceptible to trampling by hikers who go off the trail.

CHAPTER 2

Interpretation, Guiding and Environmental Education

The key ingredient of all ecotourism activities is an interaction with natural and cultural environments whereby the ecotourist learns more about that environment and perhaps experiences an emotional connection with it. This interaction is more than just observation, it involves the visitor's presence at a destination and his or her ability to experience and understand a setting and its elements. It is the role of the ecotour operator to facilitate this and enhance the encounter through an interpretation program that allows the visitor to understand what they are experiencing on an intellectual, emotional or physical level.

While the operator may adhere to social, environmental and economic guidelines, and therefore provide a sustainable tourism experience, it will not be an ecotourism experience unless there is an element of interpretation during the client's visit. Tourism operations in coastal areas generally provide books, videos, posters and other educational materials for clients to learn about all aspects of the coastal and marine environment. Educational materials should not only include information on animals, but also local plants, weather systems, geology, local myths, and so on. At larger marine-based resorts, full-time education or nature guides usually are employed. An interpretation program will help clients understand the environment they are visiting, and provide a richer, more fulfilling experience, thus increasing their enjoyment and encouraging repeat visits and positive reviews to other potential customers. It also will create a new group of environmental and social advocates who know more about the destination and their impact on the earth.

Below, guidelines and good practices are outlined for providing interpretation. Included in these good practices are the tools and techniques needed to successfully interpret a marine environment for a visitor. The section ends with a discussion of an important outcome of interpretation and its related activity environmental education, which is for visitors to take action for the environment.

2.1 INTERPRETATION

✦ Guideline: Maximize a marine ecotourist's enjoyment and understanding of natural and cultural attractions through an interpretation program.

Interpretation is the art of helping visitors see and understand the site and larger region they are visiting through a holistic and inspirational provision information and experiences. It is the core activity associated with ecotourism. Interpretation helps tourists by opening their eyes to a world they may have never seen before. For example, interpretation challenges tourists to see beyond the beach and coastal dunes they are visiting, to examine the individual grains of sand, touch and taste the grains, understand the process which created both the beach and dunes, and their role in the destination's ecosystem. Interpretation also helps humans understand their role in the ecosystem being visited, for example the impact their visit has on the destination.

There are three major kinds of objectives in developing interpretive plans. These are: learning, behavioral and emotional. These can help with visitor management as well as fulfilling enjoyment and satisfaction needs. See below for examples.

Interpretation Objectives

1. Learning Objectives (what you want the visitor to learn or remember)
These are the most commonly used, and focus on visitors being able to describe, name, etc. after leaving a site (e.g. the majority of visitors will be able to list three survival strategies illustrated birds seen in the mangrove forest).

2. Behavioral Objectives (what you want the visitors to do)
These are the most important objectives, which help focus on what it is you want the visitors to do, and how you want them to use the information you are giving them (e.g. some visitors will write to government representatives about revising laws that will better protect marine environments).

3. Emotional Objectives (these first need to be accomplished to alter behavior or attitudes)
These help visitors remember the topic because of a strong "feeling" they create, helping the visitor to feel surprise, anger, sadness, guilt, pride, and other desired emotions related to the subject (e.g. the majority of visitors will feel that litter is a disgusting habit that produces an undesirable place for them, their children and wildlife).[11]

Listed below are interpretation expert Freeman Tilden's six principles of interpretation (1977). These include:

1. Make relevant to experience of visitor.
2. Information is NOT interpretation.
3. Interpretation is an art.
4. The goal of interpretation is provocation.
5. It should present the whole not just a few parts.
6. Children's programs should be uniquely developed for children.

As an example of each principle, marine ecologist and educator Richard Murphy from the Ocean Futures Society provides an illustration of how each principle can be demonstrated to a visitor. This form of interpretation is employed regularly at the Jean Michel Cousteau Fiji Dive Resort where Dr. Murphy designs environmental education and interpretation programs.

✓ Good Practices for Interpreting Marine Environments: Tilden's Six Principles of Interpretation Applied to the Interpretation of Coral Reefs – Examples Provided by Richard Murphy, Ph.D.

Poor		Good
1. Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.		
"Corals are of the phylum Cnidaria and all hermatypic corals possess zooxanthellae."	vs.	"Corals are simple animals that have gardens of algae actually living inside their bodies to provide food."
2. Information, as such, is not Interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.		
"The morphology of corals is designed to maximize surface area for solar energy absorption."	vs.	"Why do you think corals appear to be reaching up toward the surface? Actually, they are acting just like trees, extending their "branches" to collect as much solar energy as possible for their gardens of algae."
3. Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable.		
"Coral reefs have high biodiversity with species having specialized adaptations for energy capture, nutrient cycling, and interspecific interactions."	vs.	"Coral reefs are like cities with farmers, sanitary engineers, guard dogs, false advertising and cheats."
4. The chief aim of interpretation is not instruction, but provocation.		
		"How can we better manage our communities based on the example of the coral city?"
5. Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phrase.		
"Coral reefs possess many species each with their own niche characteristics."	vs.	"In the coral city, nobody lives alone – each is dependent on the other and collectively they create a living sustainable community."
6. Interpretation addressed to children (say, up to the age of twelve) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program.		
		"What animals are farmers (corals, damselfishes), or use colors like stop signs (nudibranchs, lionfish)? Who are the garbage collectors (sea cucumbers), etc."[12]

✓ Interpretation Good Practices

Techniques

- Be *holistic,* talk about the whole ecosystem including the visitor's role in it, rather than focusing on one or two species.
- *Inspire*, as well as inform the client; speak passionately about the subject matter.
- Be *provocational* [stimulating] rather than instructional.[13]
- *Perform on-site* and offer first-hand experience with that site.
- *Engage* visitors, incorporating the visitor's perceptions of the site visited as well as their own knowledge.
- Develop a *theme* for each tour and build the presentation around this. Use an interpretive theme that links the marketing of the product with delivery of the activity (to enhance visitors knowledge, experience and satisfaction).[14]
- *Plan timing* of itineraries according to season and time of day to maximize comfort of visitor and opportunity to see the natural or cultural attraction being sought. Coordinate timing of itinerary with other tour operators to reduce crowding and increase ecotourist's viewing experience.

Self-guided Tools

- Utilize *signs*. Consider carefully what message should be told (a story about the history associated with the site, or perhaps a warning on where to walk and not walk at the site). Make sure site reflects the message on the sign. Keep the message simple, minimize the number of words used. Assess how attention grabbing it is and how effective it communicates the message.
- Build platforms, pontoons, blinds, boardwalks, underwater trails and other *infrastructure* in environmentally appropriate viewing locations (see Chapter Four).

- Create *reference center* including videos, literature, field guides, maps, etc. related to destination.
- Provide *interpretive package* on activities (e.g. if clients will be participating in indigenous fishing techniques or star gazing using indigenous lore) and educational package on appropriate behavior during the activities. Minimize the amount of paper distributed and when possible use 100 percent recycled, unbleached paper.

Guided Tools

- Distribute binoculars, field guides, magnifying glass.
- Cite quotations from diaries and other cultural artifacts.
- Display maps which include historic, relief, political, cultural points of interest.
- Utilize *artifacts* in presentation (e.g. pottery or costumes).
- Carry examples of local resources, e.g. wood, sponge (rather than disturbing existing, in-situ resources/biodiversity).
- Utilize *classroom props* in discussion such as flip charts, ball of string, tape recorder, etc. (for learning and interaction activities).
- Develop skits, games and re-enactments, *incorporating clients and community members.*

Good Practice Case Study in Interpretation: Marine Expeditions, Canada

On voyages to Antarctica, Marine Expeditions distributes a wealth of information to clients prior to departure. Their clients have a solid understanding of the environment they will be visiting prior to arrival, wetting their appetites for further information provided by the company's naturalist guides, and understanding appropriate behavior when visiting the delicate Antarctic environment. Information included in the interpretation package includes geological and climatic background, a history of Antarctica's discovery and the explorers who finally traveled to the Pole, local flora and fauna with pictures for identification activities, astronomical charts, maps of region and key sites, visitor and operator codes of conduct including International Association of Antarctic Tour Operators' (IAATO) Code of Conduct.

2.2 GUIDING

For tour operators, guides often have been called the most essential component of the ecotourist experience. They are the chief interface between tourists and the ecotourism experience. Guides perform traditional duties such as keeping clients safe and on schedule. However for ecotourism some guides are specially trained to help visitors see and learn about a destination. Ecotourism guides are skilled in interpretation, going beyond relating facts and figures to visitors, to helping clients personally relate to a site, understanding a destination from a holistic viewpoint. These ideas are reflected in the following guideline.

A good guide is able to explain the intricacies of a destination in a simple, straight-forward, interesting way, such that visitors return home and are able to share that knowledge with others.

✦ **Guideline: Maximize client safety, enjoyment and understanding through guiding excellence.**

✓ **Good Practices in Achieving Ecotourism Guiding Excellence**

- Help clients understand the best way to view specific attractions, e.g. how to take pictures of whales.
- Brief clients on safety before departure. The elements of a safety briefing should include: overview of hazards including weather and wildlife, rescue protocols and procedures, safety equipment (e.g. life jackets), etc.
- Before departure brief clients on how to interact with sites and communities to be visited.
- Be well informed of the most current local and global news, including environmental issues.
- Carry a portable personal "guide-kit" including field guide, trail maps, charts, checklists, first aid, extra water.
- Ensure guests understand and observe official rules and regulations for sites being visited.
- Note changes in the environmental and social landscape during each expedition and report any changes to resource management authorities or record in an ongoing trip log maintained by the operation. Environmental and social trends recorded in the log can be shared regularly with resources managers in a summarized format. These observations are also important if the operation is conducting on-going monitoring efforts (see **Chapter 6**).
- Motivate tourists on the importance of environmental issues.
- Learn to say "I don't know" when unsure of the correct answer, and offer to research the question and provide the client with the correct answer later.
- Keep promises to guests and never offer something that is not truly feasible.
- Fine-tune perception of time and space difficulties in moving people around. Always expect to increase time proportionally to group size. Read group's body language and respond accordingly. Continually seek feedback.
- Individualize interpretation programs to match the skills and personality of the guide and the audience.
- Ensure sentences are short, positive and active. Avoid jargon and technical terms.
- Continually involve clients.[15]

Good Practice Case Study in Guiding: Bathurst Inlet Lodge, Canada

Bathurst Inlet Lodge feels that the educational aspects of their program are the main component, and what separates their program from many others that only offer "guiding." They provide interpretation in natural history, history, geology, marine biology, the Inuit culture, issues facing North Canada, and much more. The native owners (Inuit and Kablunak) are experts in their own right, and are involved in the interpretation. In addition, there is a Northern staff naturalist, who has been involved with the lodge since 1972.[16]

2.3 ENVIRONMENTAL EDUCATION

Environmental education and interpretation differ in several ways. Interpretation usually involves a recreational element – people who attend interpretive programs are usually involved in leisure activities. Environmental education, on the other hand, is usually part of a more formal system with curriculums, educational goals and objectives.[17] Both environmental interpretation and environmental education can be part of the ecotourist's experience when visiting a coastal or marine area. For example, an interpretation activity might include a walk on the beach with a guide who informs visitors about local ecology while at the same time facilitates a connection between the tourist and the natural or cultural resource being examined.

Standing interpretive signs provide additional information for visitors to understand the destination.

An education activity might include classroom lectures that provide students with extensive knowledge about a specific resource, and is related to a broader program of learning. While both are common elements of marine ecotourism, the interpretive element, defined by the U.S. National Park Service as "facilitating a connection between the interests of the visitor and the meaning of the resource," is essential.

Good Practice Case Study in Interpretation and Environmental Education: Centro Ecologico Akumal, Mexico

Centro Ecological Akumal (CEA), located just north of Mexico's Sian Ka'an Biosphere Reserve, supplies both interpretation and environmental education opportunities. CEA hosts school groups each year including a month-long marine ecology class from Cornell University. CEA supplies classrooms, dormitories and facilitates access to nearby reefs and mangroves – all of which is coordinated by a full-time educational coordinator. The CEA coordinator works with professors from visiting schools to establish curriculum and the learning activities to achieve specific educational goals. This is environmental education.

CEA also offers interpretive activities. Akumal was one of the original dive tourism destinations in Mexico and currently acts both as a tourism destination and a home for US-expatriates. Tourists and residents attend events arranged by CEA staff and volunteers, including dinners featuring authentic Mayan cuisine as well as lectures and beach walks focused on sea turtles. These activities are context-specific, drawing on the richness of the local heritage resources and help visitors understand and connect with these resources through the stimulation of visitors' intellect, senses and emotions. This is interpretation.

2.4 CALL TO ACTION FOR VISITORS

Clients also can be mobilized to aid local communities and environments through interpretation and environmental education activities. Educating visitors about specific issues can lead to short- and long-term benefits for the destination. Good practices to achieve this are outlined here.

✦ Guideline: Mobilize ecotourists to act for marine environments and coastal communities through increased awareness.

✓ Good Practices in Environmental Education and Mobilizing Visitors to Action

- Prepare "Call to Action" fact sheets that outline what each ecotourist can do during and after their trip to address important social and environmental issues.
- Establish an emotional connection between the visitor and the attraction through innovative programming such as plays, cultural performances, interactive presentations.
- Incorporate community members, especially local students and elders, in the visitor's learning process.

Good Practice Case Study in Environmental Education and Ecotourist Motivation: Jean Michel Cousteau Fiji Dive Resort, Fiji

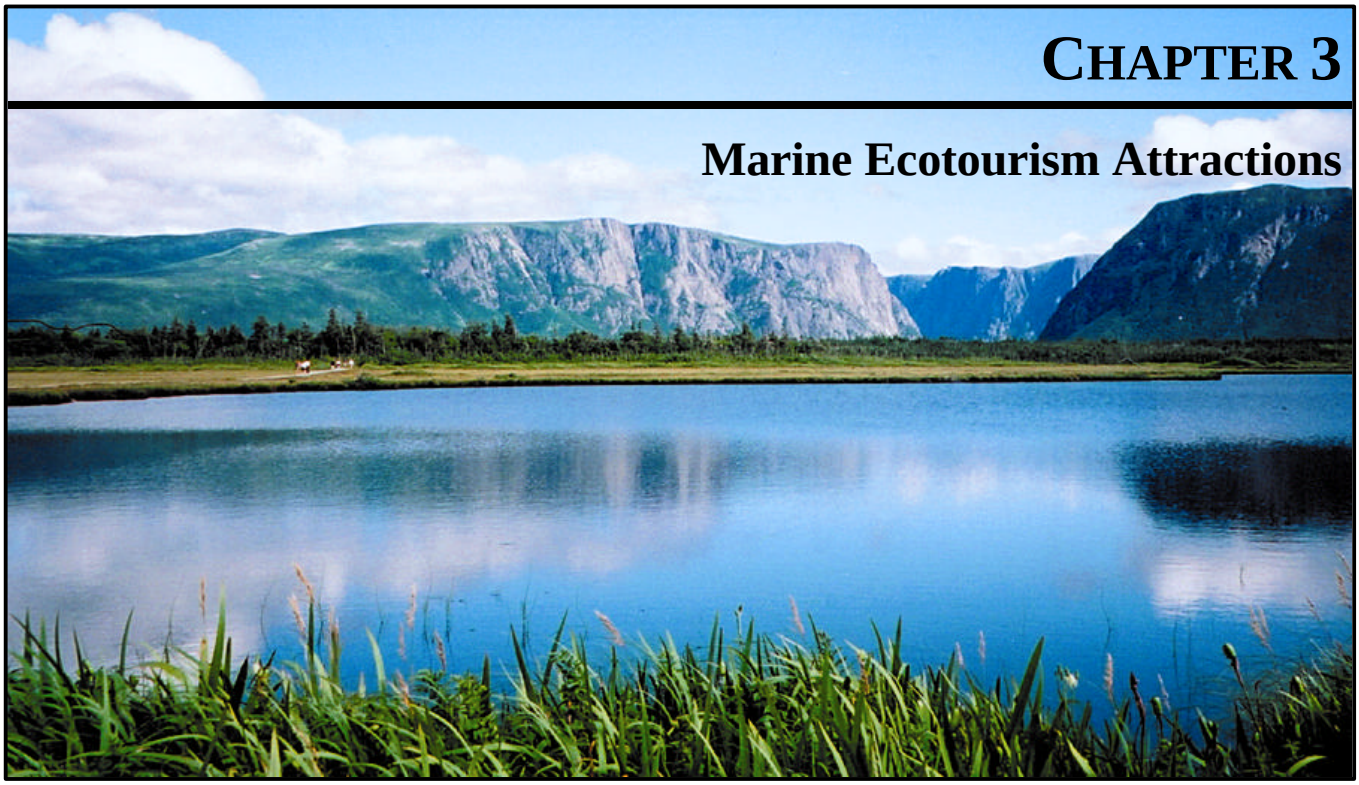
At the Jean Michel Cousteau resort, intensive interpretation and environmental education programs are reinforced when the marine ecotourist leave the resort with the gift of the publication *Jean-Michel Cousteau's Guidelines for Responsible Living* written by Dr. Richard Murphy. This booklet outlines what citizens can do to conserve the marine environment through choices they make in their daily routines and the products they purchase.

✓ **Call to Action Good Practices for Marine Ecotourists**

At the end of their visit, encourage guests to do the following:

- Be more pro-environmental in their behaviors by providing specific examples of how they can do this, e.g. purchase products that are environmentally friendly such as dolphin-free tuna.
- Join community development and environmental organizations.
- Donate their time and expertise to campaigns and projects.
- Donate or assist in raising money for campaigns and projects.
- Spread the word, speak about marine conservation related issues, and encourage friends and family to do the same.
- Write politicians and become members of activist groups.
- Encourage corporate sponsors to become involved with marine conservation issues.
- Devote time and effort to research expeditions locally and abroad.

The goal of every marine ecotour operator should be to provide clients with the desire and knowledge to make a positive change not only on their vacation, but also upon their return home.



CHAPTER 3

Marine Ecotourism Attractions

Following from the focus on activities and how to make them environmentally and socially sustainable arises a need to examine the attraction that a tour company's client is visiting. Some attractions are more robust than others in their ability to handle visitation. This section describes some of these attractions and outlines some general good practices for observing wildlife. Later, this section also addresses the special nature of some specific marine ecotourism attractions and suggests approaches to their visitation.

3.1 MARINE ATTRACTIONS

✦ Guideline: Minimize negative impacts on marine attractions through responsible actions that respect wildlife and environments visited.

Examples of Marine Ecotourism Attractions

Fauna	**Communities**	**Geological**
Seals, Walruses, Whales, Bear Penguins and other birds Dolphins and Porpoises Fish, Sting Ray, Giant Clam Corals Sea Turtles	Fishing Communities Indigenous People Local / Commercial Boat Builders	Flowerpots and Sea Stacks Coral Reefs Underwater Walls/Cliffs Caves
Flora	**Coastal Ecosystems**	**Cultural**
Coastal Rainforests Kelp Forests Mangroves	Tidal Pools Estuaries Dunes Underwater thermal vents	Museums and Aquariums Monuments, e.g. lighthouses Traditional Buildings Agriculture (pearl, fish farming)

Astrological / Climatological	Recreational	Events
Aurora Borealis	Inter-island and Coastal Boating	Salmon (Fish) Harvest
Eclipses	Underwater Trails	Fish Count Surveys
Comets	Coastal Hiking Trails	Coastal Clean Up
Constellations		Religious Ceremony
Ice Break-up and Icebergs		Coral Spawning

✓ Good Practices for Wildlife Watching

- Identify specific species being observed during tour or at facility and outline species-specific guidelines for each type of animal observed for extended periods of time.
- Understand that each attraction is unique and sometimes needs specific guidelines for visitor interaction, based on species, location, time of year or day, etc.
- Observe wildlife from a distance. Do not follow or approach them.
- Never feed animals. Feeding wildlife damages their health, alters natural behaviors, and exposes them to predators and other dangers.
- Protect wildlife and your food by storing rations and trash securely.
- Control pets at all times, or leave them at home.
- Avoid wildlife during sensitive times: mating, nesting, raising young, or severe weather.
- Leave rocks, plants and other natural objects as you find them.
- Establish buffer zones and permit systems with government agencies, conservation groups, community members and other tourism operators to give marine attractions (both cultural and natural) adequate space and time apart from visitation.

Whether viewing wildlife, such as this sea lion, or other marine attractions, develop appropriate guidelines to ensure that visitors have the least impact.

3.2 ATTRACTION-SPECIFIC GUIDELINES

There is a need to go beyond general operation and visitor management policies and tailor specific company practices for observing and interacting with highly sensitive or unique attractions such as manatees, coral reefs or fragile geological formations. Ecotourists often travel great distances to observe a particular species of animal or famous cultural site. These attractions have gained global fame because of their great beauty, rarity or biological importance. However this fame also places a great deal of pressure on the attractions. This pressure creates the need for the establishment of attraction-specific guidelines.

✦ Guideline: Develop, when necessary, "attraction-specific guidelines" for visiting marine attractions to minimize negative impacts resulting from visitation.

Unique attractions such as the whale sharks of Australia's western coast and polar bears of Canada's Arctic draw tourists from great distances. The revenue generated by this visitation represents a significant contribution to local economies and highlights the importance of a healthy ecosystem to tourism businesses. For example in 1997 in the Mexican state of Lower Southern California (Baja California Sur), 20,000 Mexican and foreign tourists arrived to watch whales, adding an estimated US $60 million to the local economy.[18] The revenue generated by this attraction

adds to the already existing imperative to conserve the whales and their environment, as local economies begin to rely on the income generated by whale watching tourism. The answer lies in establishing specific guidelines for each unique attraction. Below are some examples of this for whales, turtles, fish and birds. Websites listed in Appendix B provide further information on guidelines and visitation good practices for select marine ecotourism attractions.

3.3 MARINE ECOTOURISM ATTRACTIONS – WHALES AND WHALE WATCHING

According to The Whale and Dolphin Conservation Society, since 1992 the number of countries where whale watching is a significant tourist activity increased to more than 65, the number of watchers increased by an average of 10.3 percent and revenues increased 16.6 percent each year between 1991-1994. In 1994, 5.4 million people went whale watching, spending an estimated US $504 million on tours, food accommodation, travel and souvenirs.[19]

✓ Good Practices for Operators Conducting Whale Watching Trips

- Tailor whale-watching conduct to specific species of whales. Local scientists and government agencies should have established recommendations for species common to a local setting.
- Maintain a full time look-out person when in the vicinity of whales.
- Never approach whales head on or from behind. As an alternative place boat 300 meters (1000 feet) in front of whale, place engines in neutral and let the whales approach the boat. The proper mode of approach is slightly left or right from the rear (see **Figure 5**).
- Don't approach a whale under sail alone. Don't turn engines off and drift towards whales; always keep engines running.
- Use extreme caution within 300-400 meters (1,000 feet) of the whale. A slow, no-wake speed of approximately 2 knots is recommended. Make no sudden changes in speed or direction. Do not reverse except in an emergency. Maintain a parallel course.
- Never cut the whale off from open water. If you are viewing whales near shore keep your boat between the animal and the shoreline.
- When within 100 meters (329 feet): Stay within a 60-degree sector behind the whale. Do not exceed the speed of the whale. Never approach closer than 50 meters (160 feet) under any circumstances. Never engage the boat's propeller within 100 meters of a whale. If the whales are foraging (feeding) 100 meters is a good general distance. If the whales are socializing 100+ meters is an absolute minimum recommended distance. See **Figure 6**.
- Never approach unaccompanied calves. Never come between a calf and the pod.
- No more than two vessels should be within 300-400 meters (1000 feet) of the whale. Skippers should co-ordinate approach with other boats using a designated radio channel for communication. (See the case study below, which outlines how such approach policies are often developed by a regional association of whale-watching operators.) Boats should approach from the same direction so that the whale is not penned between boats and can swim away at the surface if it wishes. Maximum viewing time for each boat should be 15-30 minutes.
- If the whale shows signs of disturbance – for example, rapid changes in direction or swimming speed, erratic swimming pattern, certain tactics such as prolonged dives without surfacing, underwater changes in direction, rapid swimming at the surface – the vessel should stop or move away slowly.
- Seek out additional information from local experts on the importance of tailoring these guidelines for a specific species of whale.

For each species of whale these guidelines for observation and interaction must vary. Local scientists and government agencies should have established recommendations for species common to a local setting. Distinctions also can be drawn based on the gender, activity and seasonal local of a whale. For example a single male sperm whale foraging in higher latitudes (e.g. New Zealand and Norway) displays different tolerance levels to human observation than sperm whales at lower latitudes. Distinctions can also be drawn between groups of whales that are foraging and those engaged in socializing/resting behavior. The greatest possible care should be taken around socializing whales.[20] This observation is true of all fauna being observed by tourists – each species is unique in its needs.

Figure 5: Boat Approaching a Whale

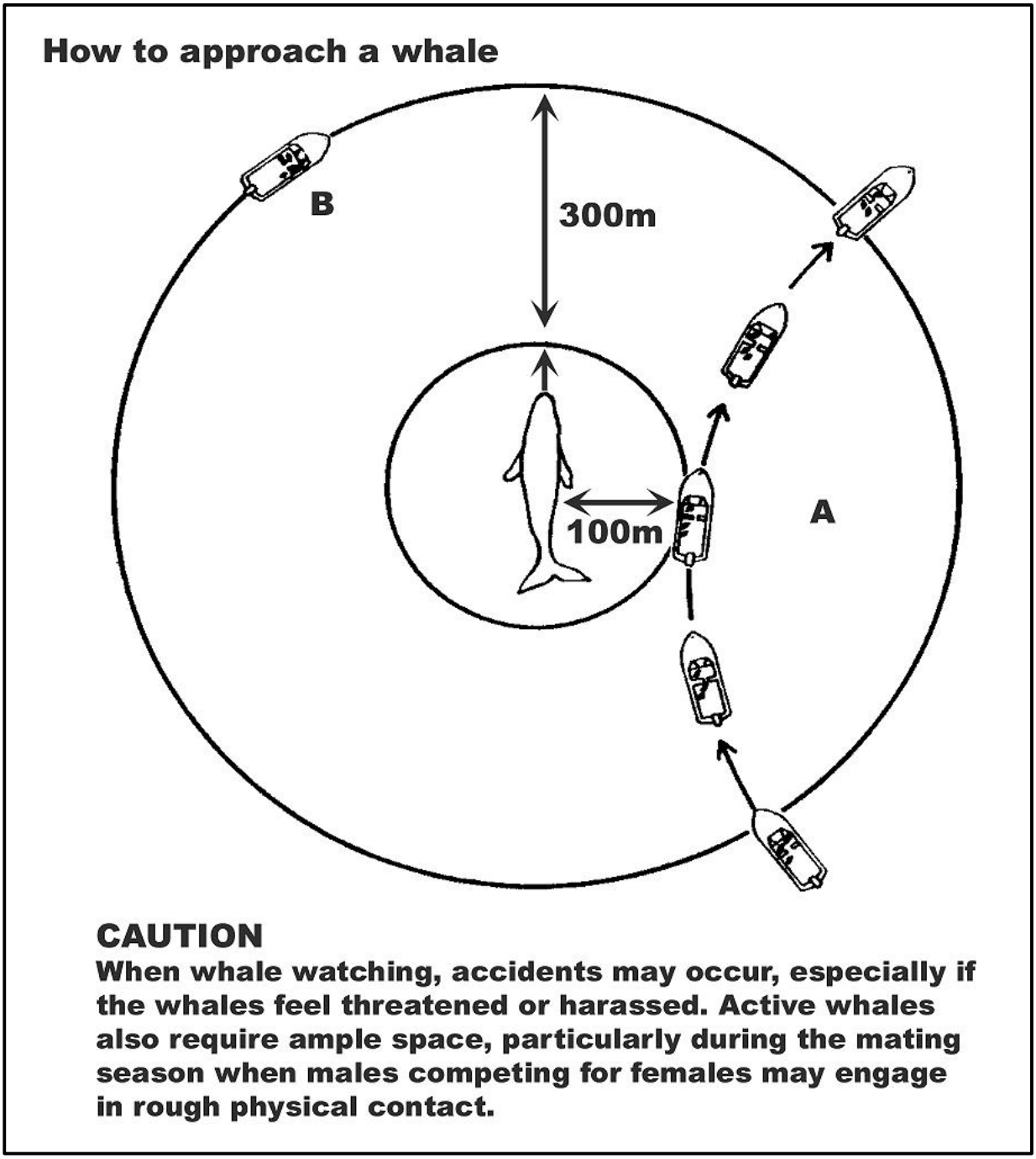
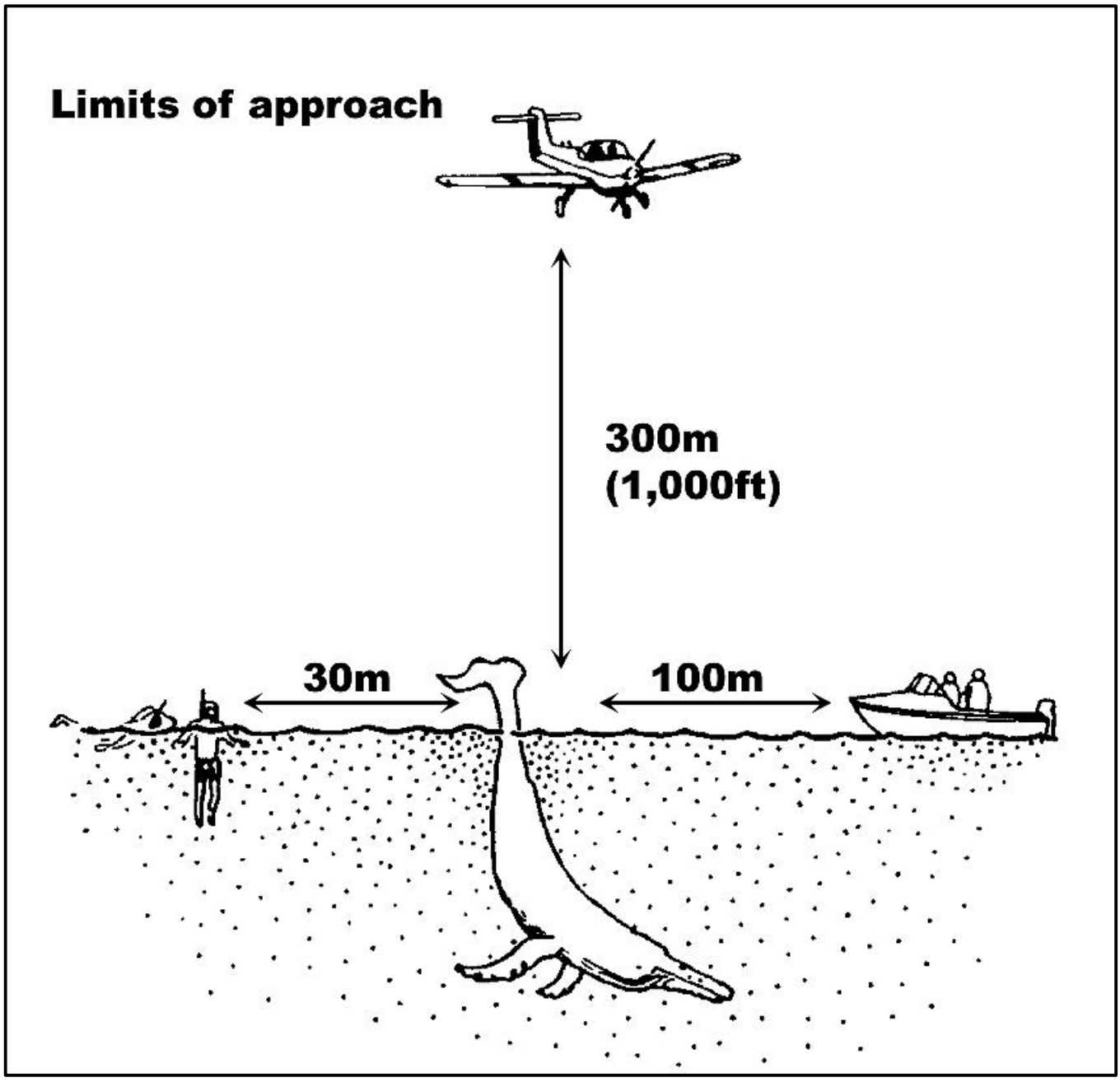


Figure 6: Limits of Approach for Whales



3.4 MARINE ECOTOURISM ATTRACTIONS – BIRDS AND BIRD WATCHING

Marine ecotourism operators cater to both general ecotourists who may participate in some casual bird watching and the birding enthusiast. Negative impacts associated with bird watching may include the death of young birds and destruction of eggs caused by human or adult bird trampling and by adult birds' abandonment of nests caused by excessive noise and other disturbance. Fire caused by discarded cigarette butts and careless campfires also can disrupt a nesting ground. The following good practices help operators address these impacts.

These blue-footed boobies are an exciting highlight to any coastal birdwatching tour. The challenge to the ecotour operator is ensuring they are not impacted negatively.

✓ Bird Watching Good Practices for Marine Ecotourism Tour Operators

- Establish buffer zones and permit systems with government agencies, conservation groups and other tourism operators to give nesting birds more space.
- Agree with other stakeholders that certain sectors are no-visit areas if a specific species is under great pressure.
- Implement visitor management programs with other stakeholders such as constructing permanent viewing facilities to reduce random access to the breeding area, providing educational fliers and waste bins, and erecting fence screens to reduce the disturbance caused by moving tourists.
- For bird feeders at lodges or interpretation facilities, cleanliness and appropriate foods are essential; planting trees and shrubs that birds traditionally feed from is preferable.
- Pre-briefing on appropriate behavior for clients is essential.

3.5 MARINE ECOTOURISM ATTRACTIONS – FISH AND FISH OBSERVATION

Fish watching is another popular activity for ecotourists visiting coastal areas. Fish watching can be done in glass bottom boats, through underwater real-time simulcast videography, and by simply standing on a dock or jetty. Dive operators and snorkeling gear venders provide visitors with an exceptional opportunity to see fish. They also play an important role in monitoring the health of marine ecosystems by observing fish numbers on a yearly basis. Their clients, when provided with a minimum amount of training, help scientists inventory the fish stocks worldwide. Tour operators also team with NGOs and government agencies to research key fish species.

One of the most popular methods for enhancing fish observation is fish feeding. However this activity can be disruptive to normal marine biological processes and can lead to increased negative impacts. The fish feeding controversy arises from the popular activity of luring fish to the water's surface or out of their lairs where humans can see them more easily by feeding them. The controversy is especially true for chumming or feeding big fish such as sharks. This feeding by humans disrupts natural feeding patterns and creates abnormal, sometimes aggressive behavioral patterns in fish. Often uninformed operators and their clients feed food to fish that is unhealthy for them. *In general, fish feeding by operators and citizens should be discouraged.* In Australia, fish feeding is permitted at the Great Barrier Reef Marine Park under very restrict conditions. Operators participating in this activity follow very strict guidelines and must apply for permits. Guidelines that govern these activities are listed below.

✓ **Fish Feeding Good Practices for Tourism Operators**

- Fish feeding by a tourism operator should be well supervised and conducted by staff only.
- Fish feeding should not be done in an area where commercial and recreational fishing takes place.
- Fish should not be fed directly by hand, but by throwing food into the water.
- People should not be in the water at the time .
- Feed fish with only raw marine products or fish pellets.
- Use no more than one kilogram of food per day per site.[21]

In summary, the impacts of fish feeding are listed below. Operators who want to call themselves sustainable nature tourism businesses or ecotourism businesses must decide if the impacts created by fish feeding are more positive than negative. Collaborating with local scientists and government agencies, as well as other coastal user groups such as anglers will help operators find answers to these questions. Overall, given the numerous negative impacts associated with fish feeding, the practice should be strongly discouraged.

Impacts of Fish Feeding

Disruption of Normal Ecological Processes – It alters natural behavior, changing the distribution and hunting/ feeding patterns of the marine life that is fed, attracting them to a certain dive site so that feeding becomes an event associated with people and boats.

Detrimental Health Impacts – The fed marine life become dependent on foods they cannot digest properly, or which would not be a part of their varied natural diet otherwise.

Increased Risk of Harm to Humans – Attacks and bites have been increasingly reported by those conducting the activity and others in the vicinity because the marine life mistake diver's actions for handouts and/or the marine life lose their natural wariness of humans underwater.

Negative Impact on the Environment – Many fed species are predators whose feeding habits provide key roles in the delicate balance of life on coral reefs and other marine habitats; by feeding marine life, this important natural interdependent balance is interrupted.[22]

3.6 MARINE ECOTOURISM ATTRACTIONS – TURTLES AND TURTLE OBSERVATION

Most turtle watching occurs on shore, where turtles lay their eggs and hatchlings emerge. Undeveloped beaches are critical to the continued survival of turtles. Chapter 4 discusses many facility-oriented actions that operators can implement to maintain turtle nesting grounds. However, as turtles are major attractions for tourists when they come ashore, operators can do several things to ensure the nesting and hatching activities of turtles remain unimpeded. Some of these good practices are outlined below.

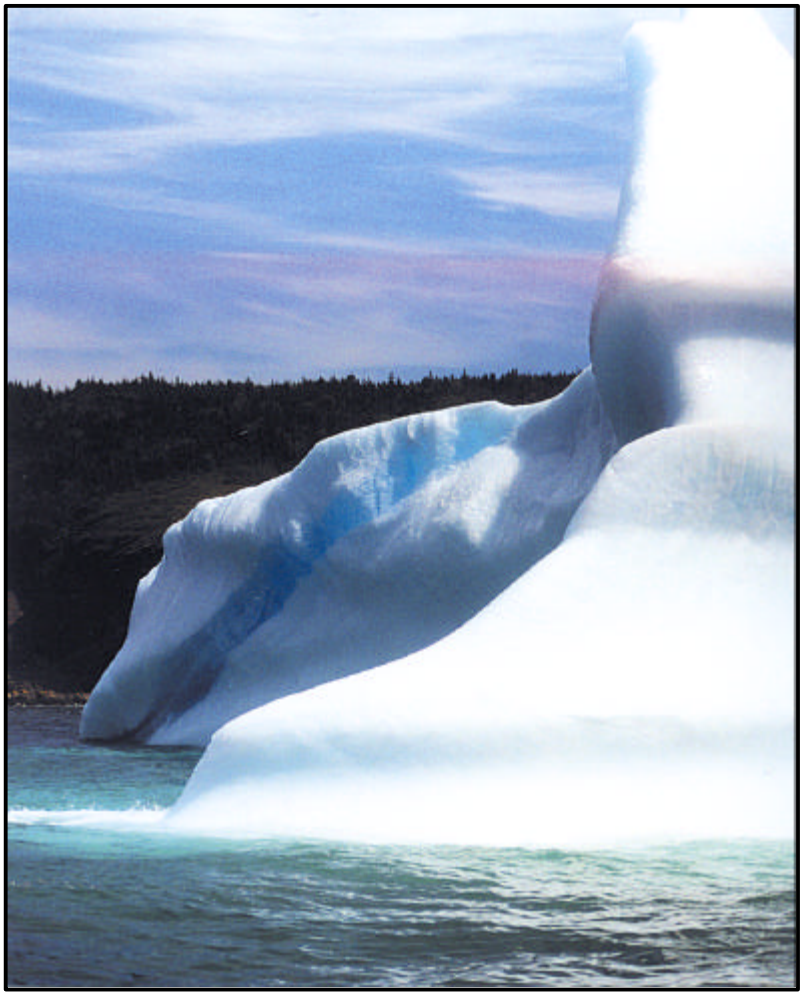
✓ **Turtle Watching Good Practices for Marine Ecotourism Operators and their Clients**

- Keep lighting to a minimum. Lights should be no more than a three-volt, two cell, hand-held flashlight or torch. Do not shine lights on turtles leaving the water or moving up the beach. Avoid shining lights directly on the turtle during egg laying. Avoid flash photography, but if necessary keep flash away from turtle's head.
- Avoid loud noise, and heavy or sudden movements.
- Do not light fires on turtle nesting beaches.
- Report the place and date of turtle sightings to local conservation or government agency charged with turtle management.
- A guide should accompany small groups of less than 25. The guide may be from a local conservation group or employed by the tourism business organizing the beach walk. Operators can work with local conservation groups/agencies to organize joint beach walk programs. This latter approach helps address the desire of local citizens to observe and understand turtle behavior as well.

Some tourism operations go further than simply reducing the impacts of clients, staff and facility on turtles. Many tourism operators implement their own turtle conservation projects, or contribute to local turtle conservation and community education programs.

Good Practice Case Study – Turtle Conservation: Praia do Forte, Brazil

Praia do Forte, a resort on the Atlantic coast of Northern Brazil, worked with its managing agency, the conservation organization Garcia D'Àvila Foundation to build Brazil's first "ecological and tourist community." One of the resort/foundation's many environmental projects is focused on the conservation of five species of sea turtle that spawn and feed on the Brazilian seaside. Projecto TAMAR (Projecto Tartaruga Marinha, or the Sea Turtle Project) was established in 1980, and is supported by visitors from the resort who attend lectures about sea turtle ecology and participate in sea turtle walks and hatchling releases. TAMAR monitors the health of local sea turtle populations, operates a hatch and release program and educates communities and visitors on marine ecology and turtle biology. Perhaps one of the most important programs is the training of "mini-guides" who greet and tour visitors around the turtle project's facilities. The mini-guides are local youth aged 8-12 who, on their school vacation, participate in a two-week course at the TAMAR station and in the field. They learn about the biology of sea turtles, management and conservation of sea turtles, species conservation in marine ecosystems, TAMAR's framework, interaction with tourists, and general public relations. After this, they participate in some field activities during the summer, and the best students are selected for a one-month internship as mini-guides at the TAMAR visitor center at Praia do Forte. Eight children continue to work at the center all year long.



3.7 Other Coastal Attractions

Not all ecotourism attractions are animals. Geological formations, unique plants, archeological sites, and local or indigenous communities are all valued by ecotourists as attractions. Many techniques exist to minimize negative impacts and encourage benefits derived from ecotourism activities. Many are similar to those already described for other attractions. Local communities and in particular indigenous communities are especially vulnerable. They can also benefit a great deal from ecotourism in their region if they are true participants in the tourism industry and its planning process. Read more about this in the publications listed in Appendix B.

No matter the marine attraction, develop appropriate guidelines to ensure that visitors have minimal impact and maximum safety. Icebergs are a prime attraction in arctic locales.

3.8 REGIONAL GUIDELINES

As noted in some of the attraction-specific guideline examples listed previously, ecotourism operators are encouraged to work with coastal resource managers and scientists as well as other stakeholders to determine the best form of visitation for key tourism resources. The guideline below reflects a need for region-wide industry coordination of standards of practice or guidelines for operation. Many regional tour operator associations and informal groups of regional tour operators have established codes of practice to make specific marine ecotourism activities more sustainable at a regional level. Some examples of these can be found on the Internet and are listed in Appendix B.

✦ Guideline: Encourage regional guidelines for observing and interacting with sensitive natural and cultural resources.

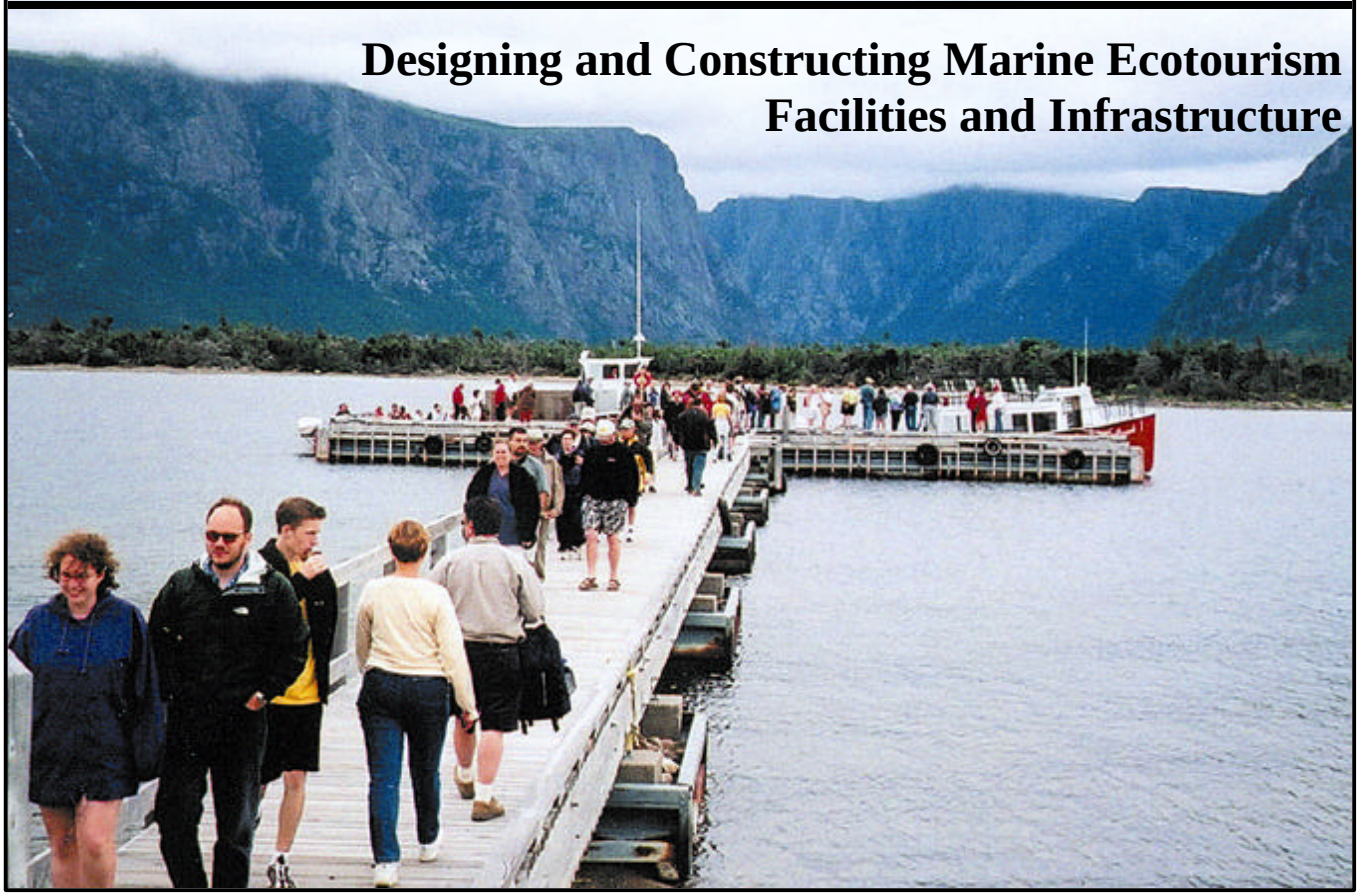
On a regional scale, minimize negative impacts on cultural and natural resources by establishing with other marine ecotourism businesses an industry-wide code of conduct for observing and interacting with sensitive natural and cultural resources.

✓ Good Practices for Establishing Industry Guidelines

- Be inclusive and involve all marine ecotourism companies, as well as other coastal stakeholders such as anglers and government agencies. Guidelines that have been developed through an inclusive, consensus-based process generate a sense of ownership among stakeholders and provide the guidelines with greater strength.
- Utilize knowledge of local resource users and managers (e.g. anglers and scientists) to establish limits.
- Treat the guidelines as a fluid, working document, not written in stone, but subject to periodic review by all stakeholders. In other words, perceive the guidelines as dynamic and adapt them to new conditions.
- Use the guidelines as a tool to educate clients. Utilize the guidelines in the company's interpretation and environmental education program, treating them as a foundation for explaining management and conservation of local marine and coastal resources.
- Identify appropriate forms of enforcement. For some regions, self-imposed moral obligation of the operator, peer pressure from fellow operators to adhere, and peer-imposed sanctions are often sufficient to ensure compliance.[23] In areas where these approaches do not result in compliance, work with local government agencies to explore the possibility of other forms of enforcement such as fines and other forms of regulatory action. The media may be another partner in efforts to ensure compliance with guidelines.

CHAPTER 4

Designing and Constructing Marine Ecotourism Facilities and Infrastructure



Of all the impacts associated with tourism in coastal areas, poorly designed facilities and badly executed construction techniques cause some of the greatest negative impacts; both unfailingly lead to the loss of ecologically significant ecosystems along the coast. There is no greater challenge to making coastal tourism a sustainable development reality than the design and construction phase of a tourism project. This statement is true of all tourism-related facilities developed along coastal areas including marinas, lodges and resorts, interpretive centers, restaurants, and boat launches.

First, it is important to understand what constitutes a marine ecotourism facility. The following checklist, as adapted from *International Ecolodge Guidelines* (Mehta et al 2002), describes an ecotourism facility.

Components of an Ecotourism Facility

- Pays attention to the natural setting and respects vernacular architecture in its design.
- Meets its energy needs through passive design and renewable energy sources.
- Uses environmentally sensitive materials wherever possible.
- Employs sustainable construction techniques.
- Has a sustainable approach to water, wastewater and sewage.
- Educates both the staff and tourists on local natural and cultural issues.
- Involves and empowers the local community in the planning and operation stages.
- Contributes to local cultural and natural conservation through education programs and research.[24]

Obviously, a facility is a marine ecotourism facility if it meets these criteria and is situated in a coastal or marine setting. The one thing to bear in mind is that no matter where the facility is built, there will always be impacts on the coastal and marine ecosystems, so the approach must be to create the least amount of impact. For further details on creating sustainable coastal tourism infrastructure see Appendix B that deals with sustainable tourism planning, design, construction and building materials.

4.1 SITING MARINE ECOTOURISM FACILITIES

The steps recommended in the evaluation phase of a coastal tourism facility are numerous but essential for ensuring the environmental and social integrity of a region remains intact. Below, environmental and social criteria are listed for siting a marine ecotourism facility. Economic criteria are also important; however these are addressed in Chapter 5.

Before construction can begin on a marine facility, a detailed site analysis is crucial to ensure the least impact on the surrounding components.

✦ Guideline: Site marine ecotourism facility in an appropriate location.

✓ Good Practices in Siting a Marine Ecotourism Facility

Social Criteria

- Recognize that current land use, even as wilderness, is valid, and some people will not want it to change.
- Ensure that the development will place no undue financial burden on local communities.
- Investigate surrounding land uses that may affect the facility or with which the facility may be incompatible. Avoid interfering with others' use of land or water in the region.
- Consider the development's potential to disturb local residents due to: loss of outlook or views, sunlight restriction, decrease in privacy, pollution (air, noise, water, light), traffic and parking problems, loss of open space or parkland, and loss of heritage or cultural sites.
- Consult further with local communities about the likely impact of the proposed development by organizing briefings, meetings, displays, etc.
- Use the consultation process to obtain ideas from communities on how to gain and maintain their support for the development.
- Identify and attend to the concerns of local indigenous communities.
- Formulate a community contract or agreement.
- Consider potential for expansion or upgrading in terms of the market, the site and what local communities will accept.

Environmental Criteria

- Avoid changing or damaging coastal attributes including mangroves, wetlands, dunes, estuaries, historical sites, sacred or culturally significant sites, nesting and habitat sites for marine reptiles, mammals and sea birds. Situate in locations where minimal coastal terrain will need to be modified.
- Minimize vegetation clearance and maintain tree and dune vegetation cover.
- Utilize measures to prevent erosion, subsidence, landslides, flooding and ice-related damage.
- Incorporate waste management measures that prevent unacceptable pollution of the land and water.
- Comply with the planning requirements for the region and facility type.
- Consider distance from major roads, public transportation, public utilities, hospitals, etc.
- Investigate and plan according to soil type (e.g. erosion potential, structural capacity), presence of threatened or endangered plants or animals, resilience or fragility of existing vegetation, other uses of catchment areas that facility may affect or that may affect the facility, cumulative pressure and impact of other activities in the area, and in colder climates the movement of ice flows and pattern of ice break-up in the Spring.
- Incorporate buffer areas. Maintain a buffer zone or "set back" between the shoreline and facility. A zone of no development must be established in the turbulent and unpredictable coast to help protect infrastructure against storm waves. Keeping buildings back from the water allows coastal systems to interact in a natural balance, such as turtles and birds to continue to use beaches as nesting grounds. Always attempt to site the facility in a manner that allows natural coastal processes to continue. Build facility behind dunes and coastal vegetation, both which are essential for healthy beaches, and reduce light pollution on the beach, which can affect marine animals. Building on the landward side of a dune allows the dune to maintain its natural function as well as help protect the property from maritime hazards such as storm surges.
- Select sites that provide a wealth of potential attractions of interest to marine ecotourists, including high biological production or ecological uniqueness such as wetlands, mangroves, estuaries, tidal zones, nesting sites, and areas of cultural or historical significance including sacred sites and traditional communities. The site should provide an atmosphere of tranquility and comfort and be located away from breeding areas for insects such as mosquitoes and sand fleas. Consider potential hazards for visitors (e.g. rip tides, unstable cliffs, flooding, poisonous plants, etc.).
- Examine ground conditions; orientation of sun (for passive solar heating or cooling) and wind (for passive cooling, power generation and visitor amenity); seasonal, daily and climatic variations (for planning heating and cooling systems, etc.); rainwater (for drinking and cooking) and potable surface or ground water; microclimates on site which might provide warm winter sites or cool summer sites; topographical features such as water courses and soaks (for planning access and waste water management); and draining patterns.
- Consider presence of indigenous and rare plants and animals (for threatened or endangered species that require protection, species that may provide a source of food, or potential attractions for marine ecotourists).
- Identify location of animal trails, nests, breeding areas, etc.
- Identify nature of local vegetation, species and distribution (for screening, windbreaks, etc.).
- Identify local sources of gravel, stone, earth, timber, brush, grasses and fibers (for use in constructing the development) that can be obtained in ways consistent with ecologically sustainable development.
- Site according to natural fire, ice-flow, tidal and ocean current patterns in region.
- Site piers in water deep enough to accommodate boats rather than relying on dredging. This will minimize future maintenance and potential impacts to fisheries/shellfish habitat, submerged and emergent vegetation.
- Site marinas in areas that will maximize the exchange of water through natural flows and tides.
- Site faculties close to other ecotourism developments to minimize "strip-development." Clustering ecotourism properties reduces the amount of infrastructure needed to support tourism and reduces overall intrusion into the local ecosystem.[25]

In Australia, semi-permanent floating structures called pontoons are often used to extend the accessibility of the Great Barrier Reef to visitors. Generally these structures are built on the outer reef, up to 60 km from the coast. The pontoons are serviced by fast catamarans, transporting as many as 400 visitors to the site for snorkeling, diving and other marine-related activities. Authorities have established a number of steps in the selection of sites for pontoons, which are listed below. This listing is just one example of the kinds of factors that must be considered when siting any marine ecotourism infrastructure.

Pontoon Site-Selection Criteria

- If in a marine park, zoning management planning must allow tourist structures.
- Outer reef located within viable transit distance from mainland.
- Protection from prevailing wind and sea conditions.
- Adequate area for pontoon installation and ancillary activities.
- Shallow water (typically less than 20 meter depth).
- Areas of good quality coral with good cover and variety for viewing.
- Protected swimming and snorkeling areas with reasonable swimming access and water clarity for coral viewing.
- Areas of clear bottom for mooring.[26]

Good Practice Case Study – Appropriate Siting: Sun & Sand Hotel, St. Kitts

On the north side of St. Kitts, developers established the Sun & Sand Hotel behind the coastal dunes, enabling natural coastal processes to continue uninterrupted and ensuring a healthy beach. After the hotel opened, clients complained that they had an obstructed view of the ocean since the dunes were in the viewscape. While special attention to siting cabins and rooms can help avoid this problem, client satisfaction was achieved in this case through a vigorous education campaign prior to arrival and during the client's stay – helping them understand the importance of coastal dune systems and the necessity to preserve them.

4.2 ESTIMATE CARRYING CAPACITY AND LIMITS OF ENVIRONMENTAL CHANGE

✦ Guideline: Estimate the carrying capacity of a site and establish limits for environmental change.

Carrying capacity is a measure of the amount of human activity that a site can biophysically sustain without severely changing its ecology. There is also a social dimension to carrying capacity that measures how the quality of a visitor's experience is impacted by other visitors at the destination. Marine ecotourism operators should attempt to estimate the social and ecological capacity of their facility or destination using the criteria listed below.

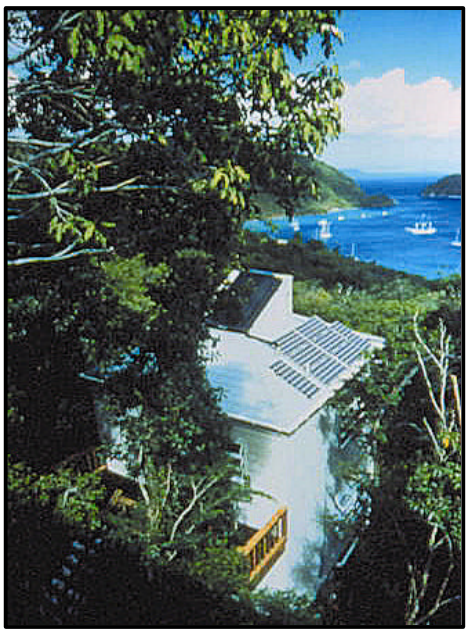
✓ Good Practices for Establishing Site Carrying Capacity and Environmental Limits of Change

- Be flexible in planned use for a site as it may have to be changed after the process of identifying carrying capacity is established, or as monitoring continues.
- Accept that no magic set of numbers exists for the carrying capacity of a site; at best, carrying capacity is an estimate that needs to be continually evaluated over time and modified depending on any increase in negative impacts.
- Determine the most convenient method for determining carrying capacity and related concepts and remember that the main concern is not arriving at a magic figure of how many visitors can visit an area, but defining managerial tools for adequately handling tourist visitation and infrastructure development.[27]
- Hire experienced professionals when possible to determine the carrying capacity of a site, and carry out related environmental management strategies such as limits of acceptable change (LAC) and visitor impact management (VIM). Their expertise can ensure reliable results. If time and financial resources do not permit this, consider not utilizing the site, or look for creative solutions (e.g. partner with local resource management agencies or university-based researchers who are partially subsidized and may have access to research funds or research assistants; team with other ecotourism entrepreneurs in the region to share expenses).

Criteria for Assessing Carrying Capacity

- *Inventory environment* including wildlife, geological and water resources, cultural monuments, etc. and categorize (e.g. fragile/resilient; dry/waterlogged; habitat/non-habitat).
- *Maintain an inventory of all resources* used and the potential impact that the planned uses could potentially have. The resource should be defined in small units (e.g. a patch of rare plants, a bird rookery, a temple). Experts such as scientists and planners are important in determining what negative impacts are possible and what it takes to mitigate those impacts.
- *Identify all cultural and natural resources* appropriate for ecotourism use/visitation. Also identify other ecotourism components (e.g. restaurants; mooring buoys). Note the location of both ecological and tourism resources and consider this in planning/estimating ecotourists' activities at the site (e.g. an ecotourist may snorkel at the coral reef and then walk through the coastal dunes to eat lunch at the ecolodge's restaurant).
- *Evaluate available water and power resources* that the site can yield to determine the limit of sustainable ecotourism use (e.g. quality and flow rate of underground water; hours of direct sunlight; potential rainwater yield).
- *Identify the specific kinds and levels of use* (e.g. daily hiking for groups of 15 visitors to the same site, etc.).
- *Identify level of service proposed* (e.g. will the operator provide a temporary camp vs. an ecolodge).
- *Estimate the maximum number of visitors* using the site at any one time.
- *Estimate effect of climatic conditions* on different parts of the site and therefore on sustainable numbers of visitors, use and impact (e.g. effect of recurrent high rainfall and cold winds).
- *Evaluate the extent of buildings, landscaping and equipment* – including extent and impact of construction, infrastructure and waste.[28]

A second planning and management tool that can be used by marine ecotourism operators to achieve long-term ecological sustainability is limits of acceptable change (LAC). This concept acknowledges that altering the natural environment is inevitable in the presence of human activity. It aims to establish certain limits in relation to the environment that are acceptable to a wide range of informed locals, users and experts. LAC involves scientific research and stakeholder consultation, two activities that are generally beyond the resources of individual marine ecotourism operators. Nevertheless it is a very important tool in environmental management and should be considered as an option, especially if resources are available. Further information on LAC can be found in the resources listed in Appendix B.



4.3 FACILITY DESIGN AND MATERIALS

✦ Guideline: Design buildings and infrastructure that work with coastal cultural and natural environments.

Building design that maximizes client comfort and company profitability while minimizing negative impacts is another essential component in making marine ecotourism facilities sustainable. Specific good practices that can be used to achieve this are listed below.

The tent resorts of Maho Bay Camps in the U.S. Virgin Islands utilize the latest eco-friendly technologies and are constructed almost entirely of recycled materials.

✓ **Marine Ecotourism Facility Design Good Practices**

- Employ design components that enhance the marine ecotourist's ability to interact with the surrounding coastal environment, such as extensive use of outdoor spaces, i.e. verandas, benches and windows that face the ocean.
- Design the building so that it blends with the natural landscape. Modify the building's shape, color and landscaped grounds to achieve this.
- Design buildings that are easy and inexpensive to maintain, taking into consideration coastal features such as the corrosive effects of salt water.
- Design facilities to withstand or avoid local hazards such as flooding, high winds, Spring-time ice thaw, landslides, earthquakes and tropical storms.
- Design facilities that incorporate waste, water and energy management programs (described in Chapter 6).
- In warm climates, cool buildings using design features that catch coastal breezes, e.g. breeze-ways and windows that open.
- In cool climates, design buildings that are easy to heat and keep heated, employing techniques such as passive solar power heating and energy-efficient-rated insulation.
- Design buildings that do not disrupt the movement of water, sand and wind. One way to accomplish this is to build coastal buildings on pilings (wood or cement) or construct a foundation with cement walls perpendicular (not parallel) to the coastline. In areas prone to flooding, due to hurricanes for instance, this reduces the refracted wave energy that can cause erosion when structures are placed parallel to the coast (**Figure 7**).
- If facilities must be built on the beach (in front of the dune) consider low investment, non-permanent buildings. These buildings can be removed before storms and rebuilt afterwards.
- Employ local cultural motifs and building characteristics in facility design, with permission from cultural groups, to foster a sense of place for the marine ecotourist.
- Minimize the introduction of permanent infrastructure in coastal waters to service vehicles such as sea planes and boats or to act as walkways or temporary landings for marine ecotourists (i.e. docks, platforms and marinas). Floating docking systems may prove to be a more environmentally sensitive alternative to traditional piling construction techniques.
- If piers are needed in very shallow water areas, evaluate the feasibility of building a longer pier to get to a required depth to dock boats. Although a longer pier may initially be more costly for construction, the long-term costs of maintenance dredging will be reduced. Achieving proper depth, without the use of dredging also reduces impacts to fisheries, shellfish habitat and underwater vegetation.
- For facilities right on the water such as marinas, design or retrofit the facility to ensure that water flows freely in and out of the facility, ensuring the water within the marina remains refreshed and water does not grow stagnate. Design that takes advantage of natural tidal flows is the best solution.
- Consider the development of a community pier, used by a several marine ecotourism businesses and perhaps other community members, to reduce the amount of coastal infrastructure and disruption of coastal processes.
- Eliminate outward-facing lighting near the shoreline, especially in areas where coastal wildlife could be impacted.
- Protect natural viewscapes/viewsheds along coast from intrusion.
- Build structures so that the first floor is situated above the maximum height of storm waves.

Good Practice Case Study – Energy Savings Through Design: EcoBeach, Australia

Catching the breeze to cool or stopping the breeze to keep warm is essential to making the visitor feel comfortable. In warm regions, natural ventilation can eliminate the use of air-conditioning. At EcoBeach resort in Kimberly, Australia, this resulted in an estimated saving of AU $30,000 (US $22,000) a year for guest accommodation alone (based on a modest 50 percent occupancy rate.)[29]

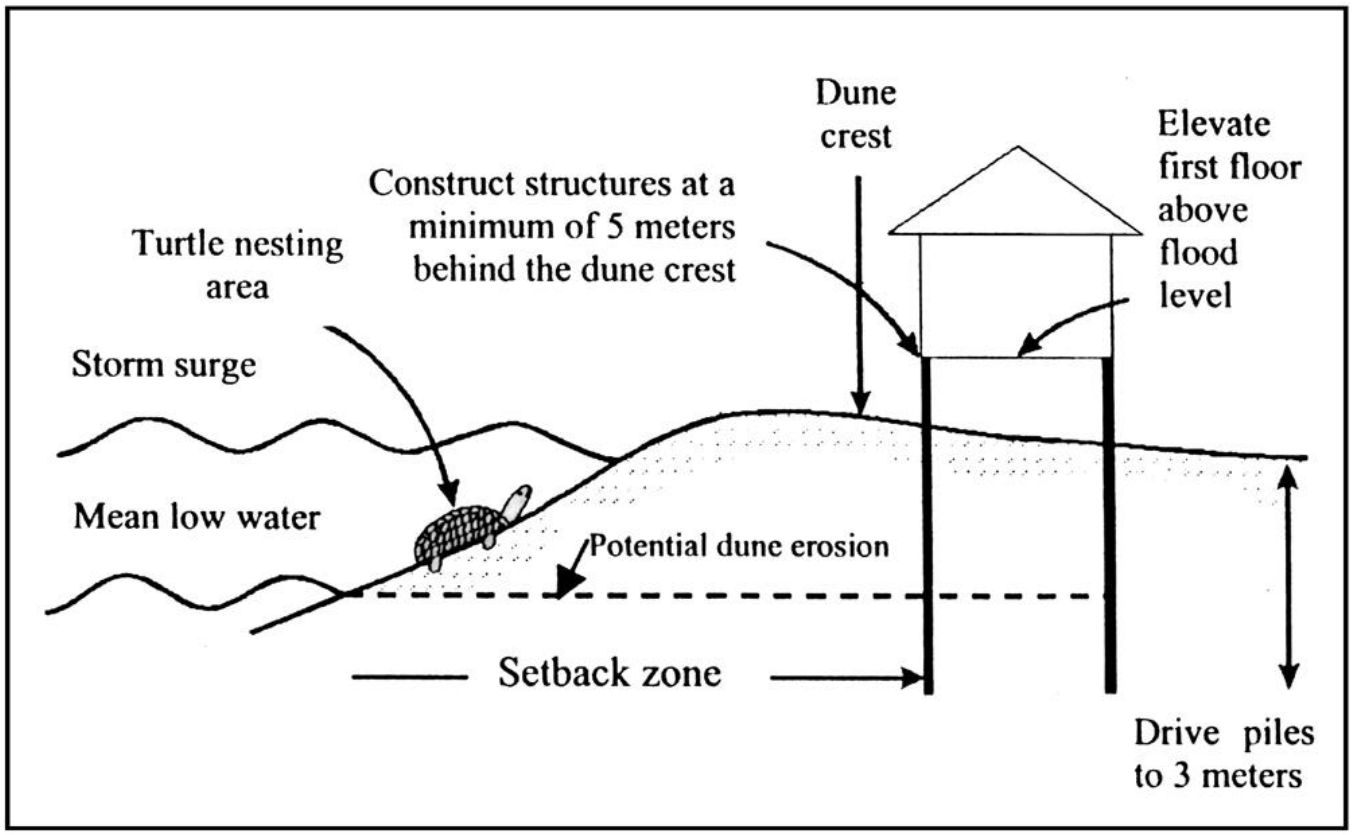
Good Practice Case Study – Low Maintenance Design: Maho Bay Camps, U.S. Virgin Islands

Maho Bay Camps in the U.S. Virgin Islands features low-maintenance semi-permanent tents that feature extensive use of screens to provide ventilation. When tropical storms visit the islands, Maho Bay's tents may lose easily replaced screened walls and fabric roofing, but are often up and running several weeks later, months before traditionally built neighboring hotels.

Good Practice Building Design Case Study – Passive Cooling: Bowalli Visitor Information Centre, Australia

Designers at the Bowalli Visitor Information Centre in Kakadu National Park on Australia's northern coast utilized a water feature inside the naturally ventilated visitor center to assist with passive cooling of the building by providing evaporative cooling, as well as a psychological cooling effect.[30]

Figure 7: Building Perpendicular Structures on Beaches



4.4 LANDSCAPE AND SITE DESIGN

✦ Guideline: Design marine ecotourism facility landscapes and sites that minimize negative impacts on coastal ecological processes.

✓ **Landscape and Site Design Good Practices**

- Employ vegetation buffer zones (at least 10 meters) around coastal bodies of water to reduce runoff velocity, filter sediments and leach out pollutants (e.g. oils and fertilizers).
- Minimize the modification of the landscape. The fewer mangroves removed, topsoil imported and shoreline hardened, the more stable the local marine ecosystem will remain. The exception to this is in a site that needs reclamation.
- Utilize cultivation techniques such as xeriscaping, and mulching, and incorporate only indigenous plants in the landscape design to reduce the amount of energy required to maintain a site's vegetation, while at the same time reducing the volume of nutrients and sediments that reach nearby coastal waters. If irrigation is necessary, use point-source irrigation where feasible.
- Use porous materials for driveways and walkway paths. Designs that incorporate shell, gravel or open paving blocks will permit water to enter the ground and enhance natural drainage, minimize runoff and improve safety. Areas that receive high auto traffic may use interlocking paving blocks that have open spaces that allow grass to grow in the openings, thereby combining good load-bearing capacity and large pervious openings.[31]
- Site access (i.e. roads) should respect the terrain, wildlife and water movement, and result in as little modification of these as possible. Access routes also should offer the marine ecotourist an appreciation of the coastal landscape upon arrival. Where possible, roads should be placed away from shore in upland areas. Utilize culverts and bridges where roads must cross water bodies such as wetlands.
- Ensure all open water remains flowing to reduce incidence of mosquitoes.
- Strive to naturalize overall design of facility's landscape and maintain site's natural characteristics such as slope, water bodies, vegetation, etc.
- Limit beach access to one or two hardened footpaths to minimize impacts on coastal vegetation. Utilize plants and non-permanent fencing to demarcate the paths and restrict access to the no-access areas.
- Wetlands are healthy ecosystems and should be incorporated into the landscape plan. Generally wetlands should not be filled or cut down. Facilities can be designed to complement wetlands, which can become an important attraction at the site as havens for birds and other coastal inhabitants.
- Minimize the use of fertilizers, pesticides and water to support the tourism facility's landscape.[32]

Good Practice Case Study in Landscape Design: Golden Rock Hotel, St. Christopher-Nevis

Nestled on a volcanic slope that offers a view of distant Montserrat, Golden Rock Hotel provides its visitors with unique accommodations in a converted colonial sugar mill plantation. Managers utilize a water urn filled with goldfish to reduce the mosquito population on the plantation grounds and add interest for the visitors.

Good Practice Case Study in Landscape Design: Maho Bay Camps, U.S. Virgin Islands

Maho Bay Camps uses elevated walks ways made of wood and recycled plastic to reduce damage to St. John's island vegetation, and prevent erosion of its steeps slopes. The walkways gently curve with the shape of the hills rather than cut through them, offering visitors tantalizing glimpses of the natural environment beyond as they walk along the boardwalks.

4.5 CONSTRUCTION

✦ Guideline: Implement a construction management plan.

During the construction phase of the project there are many hazards generated by the building of the tourism facility. As foundations are poured, waste management systems laid and basins dredged the landscape and its residents experience tremendous change. The challenge for the pre-construction planners and the construction teams who implement plans is to keep these negative impacts to a minimum.

Exotic species brought in by construction equipment, pest species such as gulls and maribou storks encouraged by garbage left after feeding construction workers, and on-going increased noise and light pollution levels are impacts typically associated with the construction phase of a project.

A construction management plan should be developed to address each stage of construction and the responsibilities of each participant. Specific components or good practices that should appear in this plan are listed below.

✓ Good Practices Found in a Construction Management Plan

- Prepare an education/awareness program for workers on the site.
- Include environmental protection clauses (e.g. bonds) and codes of behavior in contracts of contractors and subcontractors on the site.
- Mark the boundaries beyond which personnel and machinery may not move.
- Require maximum noise reduction on equipment operated on the site.
- Prohibit the use of explosives.
- Plan with landscape architects, architects and site managers the location and nature of lighting used on the site.
- Arrange for satisfactory disposal of spoil (excavated or dredged rock and earth).
- Minimize construction waste whenever possible. Sort and recycle building material waste.
- Require inspection and, if necessary, steam cleaning of equipment and materials brought onto the site.
- Pre-fabricate buildings and components off-site and then assemble on-site to reduce environmental impacts.
- Require catering waste (food for construction workers) to be stored in covered bins and ultimately to be buried, incinerated or removed from the site for composting.
- Collect seeds and seedlings prior to construction for use in landscaping efforts after the facility is complete.
- Plan the timing of construction for best season, e.g. build during the dry season to minimize runoff from the site into the sea, or avoid construction during the breeding season.
- Hire local labor and companies for construction.[33]

Good Practice Building Design Case Study – Efficient Construction: Kingfisher Bay Resort and Village, Australia

Designers of Kingfisher Bay Resort chose to build structures that are modular and geometrical in design to facilitate efficient construction and make efficient use of materials. This reduced the on-site construction time of subsequent stages of the resort, permitting significant sections of the structures to be prefabricated off-site.[34]

Construction Good Practice Case Study: Couran Cove Resort, Australia

Couran Cove Resort on South Stradbroke Island, Australia, is located in a region that has acid sulfate soil. Sulfuric acid released from acid sulfate soils causes weakening of concrete structures and corrosion of concrete slabs, sewage pipes and steel fence posts. Disturbance of acid sulfate soils during construction may prevent the later establishment of gardens and lawns. The release of acid from acid sulfate soils also can result in massive fish kills and mortality of other aquatic and marine organisms. Developers of Couran Cove Resort utilized acid sulfate soil treatment technology in the initial excavation work of the project. This involved washing the soil and replacing it in such a way that it would not release acid into the ocean or the adjoining waterway. While the procedure added 15 percent to the construction costs, it avoided the need for more than 80,000 three-ton truckload trips to and from the site to remove the soil containing iron sulfides.[35]

4.6 BUILDING MATERIALS

✦ Guideline: Use sustainable building materials and technologies.

✓ Good Practices for Sustainable Building Materials and Technologies

- Utilize local resources in construction to cut transportation costs and support local producers. Use of local building materials and techniques adds a layer of authenticity and beauty to tourism structures, an essential criterion for the discerning marine ecotourist.
- Avoid using local products that are over-harvested.
- Utilize porous surface and sub-grade materials for roads to enhance percolation of rain water.
- Emphasize rustic and natural look in facility's appearance when appropriate, e.g. this might be appropriate for a lodge, but not a marina.
- Employ the best technologies available to make facility environmentally sustainable, e.g. waste management systems such as "created wetlands," solar showers and composting toilets.
- Purchase technologies that are affordable and maintainable – appropriate to the facility's current level of financing, and destination's skill and import base.
- Select materials that can withstand the corrosive affects of ocean water and spray.
- Use building materials, particularly wood, that is certified as an environmentally-friendly product, originating from sustainably managed operations, such as sustainable forests.
- Ensure pressure-treated woods (i.e. with pesticides such as inorganic arsenic) are appropriate to setting and use, e.g. wood that will be fully submerged in salt water will need a higher level of treatment than wood used in facilities exposed to freshwater environments.[36] Often treated wood is not desirable because it does not appear rustic or fit with local setting, however safety and economic reasons can make it a viable option for many coastal settings.

Building Materials Good Practice Case Study: EcoBeach Resort, Australia

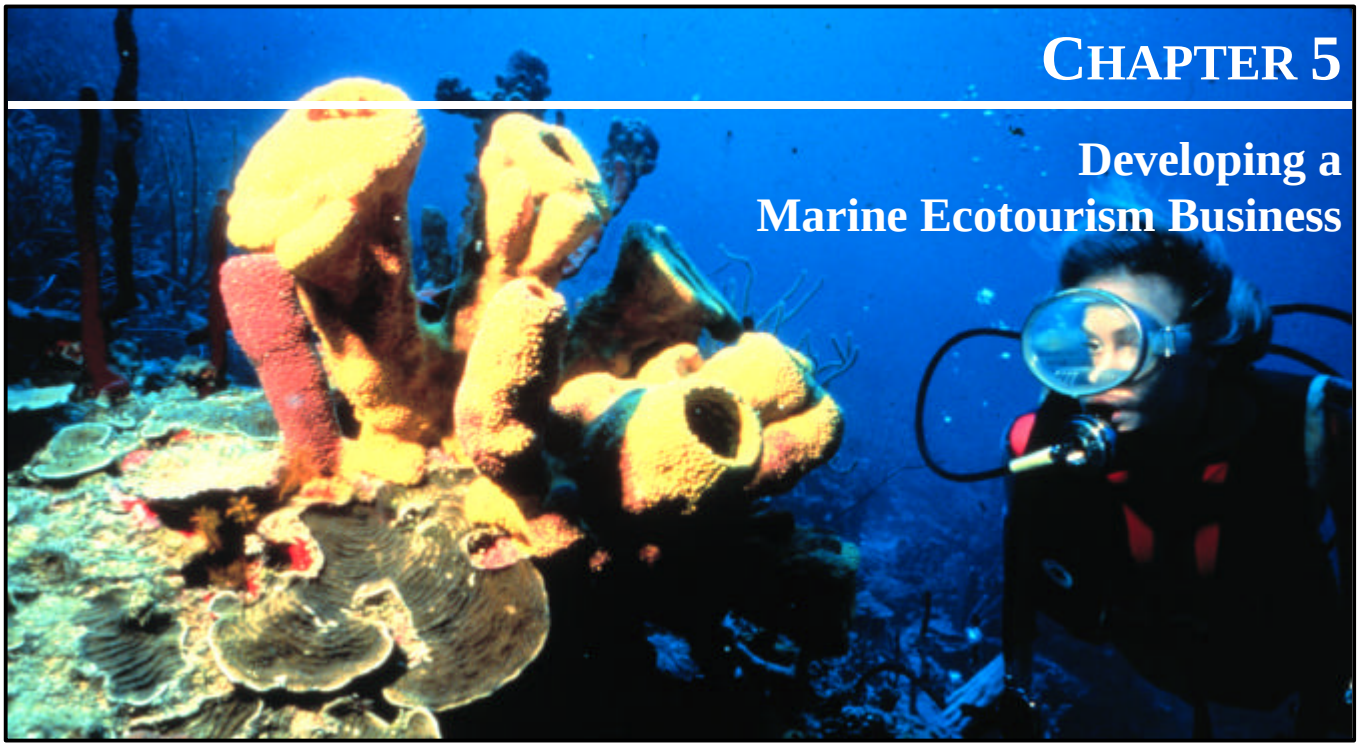
EcoBeach Resort was built with more than 70 percent reused or recycled materials, including the floors, walls, raised platform walk-ways and even parts of the beds.[37] For example, all of the timber for the 1.2 km of elevated walkways was salvaged from an abandoned local zoo.[38]

Good Practice Building Materials Case Study: Outrigger Marshall Islands Resort, Majuro Marshall Islands

Management of waste on islands is an especially vexing problem. Recycling programs are often unaffordable due to economies of scale and land filling is not an option in many instances due to lack or space or the risk of ground water contamination. An example of a low cost reuse of soft drink cans comes from the Marshall Islands, where Outrigger Marshall Islands Resort used steel and aluminum cans as filler materials in garden walls in their landscape design, thus reducing the need to dispose of these containers while at the same time finding a creative alternative to visual pollution on the island. The cans are arranged in a symmetrical grid before the cement is poured, thus creating a honeycomb structure that uses approximately one-third less concrete and saves money.[39]

Good Practice Building Materials and Design Case Study: Kingfisher Bay Resort and Village, Australia

Designers of Kingfisher Bay Resort on Fraser Island in Australia created buildings that were visually sympathetic to the surrounding World Heritage site on which the resort resides. This is achieved through the stick-like exposed structures, and materials such as timber batten screening and light cladding, which mimic the characteristics of the open woodlands on the site. The lightweight sun-screens and structures at the edges of the roof lines of the large building relate visually to the soft edge of the trees on the dunes, set against the sky. The curved roof lines match the curves of the sand dunes and coastal hills found at the site. Colors of materials were selected to match the colors of the vegetation: leaves, trunks and shadows.[40]



CHAPTER 5

Developing a Marine Ecotourism Business

Business planning and management do not differ a great deal between coastal and non-coastal areas. However there are some environmentally based challenges that coastal tourism entrepreneurs must address. These vary dramatically, from budgeting for additional costs associated with salt water's corrosive effects on hardware and equipment, to estimating market size in the face of the growing decline of tourists who are interested in beach holidays (some of whom take day-excursion eco-tours). Each challenge has solutions or "good practices" that enable marine ecotourism businesses to thrive. Entrepreneurs can consider many steps in developing a profitable marine ecotourism business. Some of these already have been addressed in this document, others are listed below, and many more appear in the references cited in Appendix B.

5.1 BUSINESS PLANNING AND ANALYSIS

Planning and analysis are the foundation of any successful marine ecotourism business, yet several essential components are never implemented by many ecotourism entrepreneurs, who lack time or experience. In developing a marine ecotourism business, the following essential planning and analysis elements are listed, many of which are described further in the following pages.

✦ Guideline: Maximize a marine ecotourism business' success through business planning and analysis.

✓ Good Practices for Business Development

- Identify potential *partners* (e.g. associations, government, suppliers), and understand the needs and desires of the company's partners.
- Analyze the *ecotourism market* and match market to the company's product. Anticipate future market trends.
- Identify *marketing* options and tools. Design a responsible marketing program.
- Evaluate available *labor* and need for *skills training.*
- Assess *financing* requirements and access to financing.

- Map out *legal aspects* of company, adhering to local laws and owner's financial, social and environmental objectives.
- Analyze *competition***.** Identify existing facilities and/or activities that cater to this market.
- Assess the *compatibility* of proposed activities with others currently in the region.
- *Monitor product* profitability and need for redesign.
- Utilize a *business plan* as a marketing and management tool. Review and adapt business plan continuously.
- Create an *exit strategy* that address both conservation objectives and owner's needs.

5.2 BUSINESS PARTNERS

✦ Guideline: Utilize partnerships and agree upon goals to achieve success.

✓ Good Practices in Business Partner Selection

- Be creative in identifying partners in the success of a marine ecotourism venture, not all partners bring financial backing to the project. Community members and other stakeholders can bring valuable assets to the project.
- Map out financial, social and environmental goals prior to beginning an ecotourism venture with all partners. Re-evaluate these goals on a continual basis.
- Identify the needs and wants of all parties involved with the business.

Partners in a marine ecotourism venture, whether they are family members or a group of individual investors, need to agree on the goals of the ecotourism business before launching. Most entrepreneurs who enter the ecotourism field believe strongly in the principles of ecotourism. Expectations on profits and agreements about daily operations need to reflect this and be approved by all interests. Many ecotourism entrepreneurs choose to get into ecotourism for "the way of life" as it gives them a chance to work outdoors in a socially responsible manner. However, if making a profit of any size is a goal for these entrepreneurs, then business planning and continual review of these plans must be an integral part of a marine ecotourism business. For an ecotourism business to be sustainable it must make a profit. If it does not, then the owners must view the company as simply a hobby.

Other partners in an ecotourism venture may not bring any financial contribution. Instead their contribution may be knowledge or "know-how." Community members may be an example of this type of partner. They may be formally recognized as partners in the legal documents of the company, or treated as informal partners whose needs and values are given weight in the company's planning efforts.

Marine ecotourism operators also can team with government, NGOs and associations, universities or other operators. Outlined below are some areas where partnerships can be used by a marine ecotourism business to achieve certain tasks more efficiently.

Role of Partnerships in Achieving Successful Marine Ecotourism Businesses

Information Gathering and Research	• Gathering information on competitors • Consumer research • Trend Forecasting • Benchmarking / industry evaluation • Strategic planning • Product research • Feasibility	**Human Resources**	• Recruitment • Apprenticeship • Skills development • Training

Product Development	• New product development • Product/service improvements • Facility development • Product packaging • Product quality standards	**Operations**	• Accounting • Materials purchasing • Insurance • Contracting of services • Staff sharing
Marketing	• Data base development • Promotions • Consumer lead tracking/referrals • Advertising • Trade show participation • Trade missions • Familiarization tours • Retail/point of purchase tie-ins • Public relations activities • Sales calls • Publications • Direct Marketing	**Financing**	• Shared lines of credit • Securing public support • Securing private financing • Joint investment
Advocacy	• Taxation • Regulations • Government programs • Government policies • Policy enforcement • Education	**Technology**	• Technology development • Technology diffusion[41]

5.3 UNDERSTANDING THE MARINE ECOTOURISM MARKET

✦ Guideline: Understand marine ecotourism market to maximize marine ecotourism business profitability and client satisfaction.

Before developing tourism products, such as this mangrove tour, find out what your market wants and what they are willing to pay for it.

Tapping into the marine ecotourism market has become an essential activity for many marine tourism businesses as the more traditional mass tourism beach holiday markets have declined in recent years. Other businesses have consciously cultivated marine ecotourism clients from the start, understanding that their ability to pay for rich experiences and pristine environments makes them excellent supporters of small, quality businesses and local conservation efforts. Regardless of the forces that brought entrepreneurs into the marine ecotourism sector, what will make them a success is a clear understanding of what ecotourists are looking for when they travel. Some consumer profiles of ecotourists have been developed, although more work still must be done on this subject. Some approaches for understanding the marine ecotourism market are outlined below.

✓ **Good Practices in Understanding the Marine Ecotourism Market**

- Identify accurate suppliers of market information including tourism associations, government agencies, academic tourism journals and tourism research list serves.
- Attend tourism conferences and trade shows to learn about the latest trends.
- Lobby national government or regional tourism associations to pursue more accurate data collection of statistics on ecotourism and marine tourism.

No specific research has been undertaken to determine the profile of marine ecotourists, therefore a profile of general ecotourists is provided here as a basic planning tool.

Ecotourist Profile

Age: 35-54, although minimum age appears to be lowering to 30. The maximum average age also is increasing as baby boomers continue to age.

Gender: Generally slightly more females than males, especially in younger age groups.

Income: Ecotourists generally display higher income levels than mainstream travellers.

Education: Highly educated; a majority are university graduates.

Party Composition: Sixty percent (60%) travel as a couple, 15 percent with families, and 13 percent travel alone (HLA/ARA, 1994). Some evidence indicates that family travel rose significantly in the 1990s and may not be reflected in this statistic.

Trip Duration: Varies significantly, especially with activity. In a study of North American "experienced ecotravelers," 50 percent preferred trips lasting 8-14 days (HLA/ARA, 1994), however a lack of holiday time usually results in short trips of 2-3 days. This is especially true for domestic ecotourism activities.

Expenditure: Ecotourists generally spend more than mainstream tourists, however they also expect value for their additional expenditure, i.e. a quality experience.

Activity Preferences: Varies with destination, although visiting national parks, hiking, water-based activities, admiring nature, camping and touring all appeared often in survey results. Cultural/aboriginal experiences also may be an additional significant attraction.

Primary Reason for Travel: 1) "Experiencing various elements of nature and scenery" was sighted most often in surveys, however 2) "new experiences, wildlife, learning, and local cultures" also figured prominently.[42]

Additionally, in starting or expanding a business, an understanding of the potential market for marine ecotourism and its associated potential revenue must be achieved. True understanding of this market has been slow to develop, largely due to a lack of data collected on the subject. Often businesses must rely on visitor numbers for local marine protected areas and national tourism statistics to estimate the potential size of the marine ecotourism market. Very generalized observations of the ecotourism industry support the following figures: Nature tourism represents approximately 20 percent of international tourist revenues and ecotourism represents approximately 7 percent.[43]

Some statistics have been collected on the size and economic impact of marine tourism activities and are listed below. Although they are incomplete, these figures when combined with local data are essential in determining the feasibility of any marine ecotourism business.

Marine Tourism Statistics

- Approximately 5.4 million people participated in whale-watching trips worldwide in 1994, spending an estimated US $122 million on tours (direct revenue), and US $504 million on all aspects of the whale-watching trip (total revenue).[44]
- In 1986, on Vancouver Island, Canada, whale watchers spent an average of CAN $350 (US $305) per person, including $117 on travel, $59 on accommodation, $50 on the whale-watching excursion, $39 on other items, and the remainder for participants on package tours.[45] This amount rose to $400 per person in 1989. Based on responses from approximately 10,000 whale watchers in 1998, an estimated $4 million (US $3.5 million) is injected into the region's economy.[46]
- A 1995/96 study estimated that the value of commercial tourism operations associated with Australia's Great Barrier Reef totaled between AU $1.06 to $1.2 billion (US $7.83 to $8.86 million). A second report for the whole of Australia found that the total economic value of coastal and marine tourism for the country was AU $22,892 million (US $16.910 million).[47]
- Sea kayaking has grown; in 1991, 25 companies supplied trips to 35 different trip venues; in 1996, 61 sea kayaking companies supplied trips to 112 venues.[48]

Good Practice Case Study – Adapting to New Markets: EcoBeach, Australia

Carl Plunket originally designed his ecolodge EcoBeach with a baby boomer, long-haul market in mind. Surprisingly, once the lodge was opened it received many day-visitors from distant communities such as Broome, more than 130 km away. EcoBeach quickly switched its focus to cater to day visitors as well, providing more day activities, a larger food preparation and eating area and better system for parking cars. Today, visitors park their cars outside the property and are shuttled into the lodge. One of the greatest challenges associated with the day-trip market is dealing with food waste generated by the 150-per-day visitors who eat lunch at the resort. EcoBeach managers have experimented with composting and sending waste to local chicken farms – their objective is 100 percent recycling. A large percentage of EcoBeach's profits comes from the day-trip market, which totals approximately 89,000 day-trippers each year. EcoBeach sees the day-trippers as the chief contributor to the property's commercial viability, but they also are an important source of exposure for the resort, as many pass on good reviews by word-of-mouth or return themselves for a longer stay. In the end, the day-tripper's presence ensures the economic health of EcoBeach, and its ability to conserve the coastline of their region.

5.4 PROMOTIONAL OPPORTUNITIES AND TOOLS

✦ Guideline: Identify and utilize appropriate promotional strategies and tools.

Also important is an understanding of what challenges and opportunities exist for a new or established marine ecotourism business. This includes analyzing what promotional options and tools are available and affordable (e.g. collaboration, cooperatives and product clubs, familiarization tours [FAMs], advertising, brochures, the Internet [email and web], trade shows). Extra effort must be made to ensure the approaches taken in promoting are responsible.

You are your best salesman – determine how you want to promote what you do.

This can include printing brochures on recycled paper, using images of indigenous people or motifs only with permission of appropriate stakeholders, or not guaranteeing that specific attractions will be seen on a trip (e.g. a rare bird). In the marine tourism sector some companies do guarantee whale sightings and if it does not happen then give clients an additional trip. Truthful, accurate and responsible advertising is an important step towards ensuring good word-of-mouth reviews of a business' product. Some companies go even further, tailoring the descriptions of their product to appeal only to very responsible clients, thus reducing their impact on local environments.

✓ Good Practices for Marine Ecotourism Business Promotional Programs

- Employ responsible marketing techniques such as: printing brochures on recycled paper, using images of indigenous people or motifs only with permission of appropriate stakeholders, or promoting the whole ecosystem rather than guaranteeing the sighting of key charismatic species. Ensure advertising is truthful and accurate without exaggeration.
- Identify and evaluate the promotional tools available. These tools may include familiarization tours (FAMs), advertising, brochures, the Internet (email and web) and trade shows.
- Identify partners for marketing efforts including fellow operators, industry associations and government agencies. Develop product clubs and joint advertising campaigns.
- Consider a promotion strategy that highlights the company's commitment to ecologically sustainable development and local eco-labeling (green certification) programs.

Good Practice Case Study – Attracting Responsible Clients: Rocha, Uruguay

The Biological and Cultural Diversity of Rocha is a tour offered in the department or state of Roche in coastal Uruguay. The Martinezes, who offer this tour to travel wholesaler Elderhostel clients, are always careful to word the tour's description in the catalogue so that they attract a very environmentally conscious visitor. The Martinezes say "local people are always dumbstruck when our travelers walked single-file over a meadow to watch birds or asked permission before stepping on a blade of grass."

Good Practice Case Study – Respecting Nature: Mackay Whale Watching, Canada

As one of several operators offering killer whale (orca) watching tours along British Columbia's coast the Mackays have contributed in many ways to the resource they depend on. Their conservation efforts have included taking part in the development of a code of conduct for local whale watching tour operators and being instrumental in convincing the Provincial government to establish the Robson Bight (Michael Bigg) Ecological Reserve, the first ecological reserve in the world for killer whales. When it comes to marketing they have made the decision that "one practice we will never participate in is the guaranteeing of sightings – to us, it represents the ultimate arrogance." They continue to advice their clients of the possibilities of sightings.

5.5 FINANCIAL FEASIBILITY

✦ Guideline: Analyze financial feasibility for initial and ongoing company success.

Financing is another essential component of a successful marine ecotourism business. Key components of a financial assessment are listed below. Further information can be found in the literature listed in Appendix B. Of particular use may be research already published on ecotourism facilities' financing. One source on this is The International Ecotourism Society's *Business of Ecolodges: A Study of Ecolodge Finance and Economics (2001)*.

✓ **Good Practices in Estimating Financial Feasibility**

- Identify financing needs based on cash flow forecast and existing financing resources.
- Identify the availability of financing from both internal and external sources (see below) and identify incentives such as government tax concessions or rate reductions.
- Prepare cash flow projections (see below) for both the development and operational phases of the project.
- Plan for both best and worst case scenarios in your financing and business planning.
- Consider and compare the cost of acquisition, consolidation or long-term lease of land.
- Identify the costs of establishing and maintaining an "environmental management system," a comprehensive approach designed to achieve environmental care in all aspects of the ecotourism operation.
- Evaluate how a dedication to ecologically sustainable development will inhibit the viability of the facility (e.g. some green technologies are more expensive than conventional products), and how the development's commitment to sustainability can be used to enhance its viability (e.g. through marketing opportunities).
- Consider the possibility and means of compensating indigenous and other local communities (e.g. community members may become partial owners in the facility over a period of time and with increased business training, or perhaps community members are granted unrestricted use of the development's new dock facility).

Selected Types of Financing and Components of a Financial Proposal

Sources of Financing:

- *Equity Financing* – net worth accumulated from personal savings and outside investors.
- *Debt Financing* – money borrowed to run a business, usually paid back in installments with interest.
- *Term Loan* – a secured commercial loan made to a business for a specific period, repaid with interest, in installments.
- *Operating Lease* – an agreement under which the owner of the equipment (the "lessor") conveys to the user (the "lessee") the right to use the equipment in return for a number of specified payments over an agreed period of time.
- *Line of Credit* – an operating loan is made to businesses to supplement working capital.
- *Venture Capital* – equity and loan capital provided by private investors for a new and /or existing, generally high risk business suffering from capital deficiencies and a lack of capital but having high profit potential.
- *Loan Guarantees* – an agreement between an organization (usually a government) and a lending institution, for which the organization agrees to repay a high percentage of a loan should the business receiving the loan default.
- *Grants* – non-repayable contributions are amounts of money that businesses do not have to pay back.
- *Retained Earnings* – as business grows, profits are used to pay for its continued growth.

Criteria for Determining Cash Flow Projections:

- Cost of environmental rehabilitation and regeneration that may need to be undertaken
- Anticipated costs and contingency budgets, including one-off costs, future ongoing operational costs, taxation and financing costs and depreciation of plant and equipment
- Likely level of use and expenditure revenues, in both the short and long term
- Projected profit and loss for short- and long-term intervals
- Expected yield on the investment, profit margin and rate of return, including likely future capital gains
- Projected discounted cash flow analysis over the life of the project
- Financing of the project and any annual debt servicing implications
- Sensitivities to factors such as cost and timing over-runs, higher inflation and interest rates and decreased usage rates
- Appraisal of project options, e.g. development in stages, possible modifications, scaling down, increased equity versus finance

Financing Proposal Components:

- *Cash Flow Forecast* – projects cash flow during the start up years, generally the first 5 years, documented by a company's business plan. It projects income and the frequency of income, and outlines daily operating costs and when new expenditures are expected.
- *Collateral* – financial backup held by company owners seeking a loan, usually in the form of accounts receivable, real estate, inventory, equipment, stocks, home, life and fire insurance.
- *Loan Repayment Strategy* – the terms and conditions for the repayment schedule of a loan is dependent upon the amount of money lent, the risk of the business, economic conditions and payment terms. A company's repayment proposal should be based on cash flow forecast and the nature of the loan.[49]

Good Practice Case Study in Ecotourism Financing: Rainforest Expeditions, Peru

Peruvian tour operator Rainforest Expeditions has two lodges in the Amazon, and while they are not located on the coast, they do make a good example of financing for ecotourism facilities. Rainforest Expeditions utilized a variety of financing techniques to make their lodges a reality (both each cost less than US $100,000 to build). They took advantage of a government incentive program aimed at fostering development in the Peruvian Amazon, through tax rebates. They also received grants from the MacArthur Foundation for training of their naturalist guides and other personnel. A third source of financing came from a "green development fund" designed to aid entrepreneurs in developing countries that are producing environmentally responsible products.[50]

5.6 MONITORING PRODUCT EXCELLENCE

✦ Guideline: Monitor product profitability to ensure success of marine ecotourism business.

Responding quickly to problems in product quality, or fit to a market is another important step in business planning and analysis. See below for some good practices associated with product monitoring. Further discussion on this subject also appears in Chapter 6.

✓ Good Practices for Monitoring Product Success

- Conduct client questionnaires and record verbal feedback from guides and guests.
- Monitor customer profile over time.
- Track number of competitors in region.
- Survey customers regarding price, product, etc.
- Monitor popularity of different products/itineraries provided by the company over time.
- Perform annual assessment of each product and program.

Good Practice Case Study – Product Monitoring and Redevelopment: Naturally Superior Adventures, Canada

Offering boating expeditions on Lake Superior, North America's largest freshwater lake, Naturally Superior Adventures started with a traditional Voyageur canoe (11m or 36 ft in length) because it was the mode of transportation used by early fur traders in the region. However, the company found the Voyageur canoe to be less successful than they wished and modified their product by focusing on sea kayak touring instead with great success.[51]

5.7 BUSINESS PLAN

✦ Guideline: Use a business plan to map and evaluate business's path to success.

Each marine ecotourism company should have a business plan developed that they can use as a marketing tool to raise investment in the company or as a management tool for daily and yearly reviews. Even established marine ecotourism businesses can benefit from creating a business plan, as it is often in the process of developing one that problem areas of the company are identified and can be improved upon. Criteria for a successful marine ecotourism business discussed earlier including market analysis, marketing, partnerships and financing are all essential components of a business plan.

Your business plan will guide you in growing and expanding your business successfully.

Components of a Business Plan

1. *Product Development* – describes what services and products the company offers, and when they will be developed.
2. *Marketing Plan* – includes analyzing the market for ecotourism products, matching the company's products to the market or developing new products, and promoting these products and services.
3. *Company or Organization's Management* – describes the basic company composition including company personnel and hierarchy, legal arrangements, etc.
4. *Daily Operations* – outlines general policies on actions such as equipment purchasing and maintenance, staff scheduling and bookkeeping.
5. *Financial Management* – includes bookkeeping, acquiring financing, working with investors, financial forecasting, etc.[52]

When working with business plans, the most important rule to remember is that the plan is not "written in stone" – it is merely a tool for the entrepreneur to use and modify according to his needs. Every year or half-year, the plan should be reviewed and adapted according to changes in the marketplace or in the company's ability to deliver products and services.

✓ Good Practices for a Marine Ecotourism Operation's Business Plans

- Develop business plan prior to construction as part of the business development phase to use a marketing tool to raise financing.
- Create a business plan, even if a marine ecotourism business is already established. This will help identify weaknesses and chart a new course for the operation.
- Treat a business plan as a series of estimates and suggestions, rather than a set of facts and rules – it can be modified to meet the new needs or address new challenges the business faces.
- Review the business plan at least once annually and adapt according to changes in the marketplace or in the company's ability to deliver products and services.

Good Practice Case Study – Using a Business Plan: Bathurst Inlet Lodge, Canada

Located in northwest Canada, Bathurst Inlet Lodge has a written in-house business plan. Lodge owners review the plan twice a year, usually in the fall to plan the next year's program, and in the spring to deal with the realities of projected income based on bookings for the coming summer, prior to contracting charter air services.[53]

5.8 EXIT STRATEGIES FOR MARINE ECOTOURISM BUSINESSES

✦ Guideline: Create exit strategies for sustainable transfer of marine ecotourism business and its principles.

A final, newly emerging but all-important component of operating a sustainable marine ecotourism business is making sure an exit strategy is in place. In the case of an emergency sale, or as part of a long-term decision to sell a property, marine ecotourism operators should have a plan for selling or giving away their business. This ensures that the principles of ecotourism, environmental and social responsibility are maintained when the new custodians take over. Lapa Rios, a lodge situated on Costa Rica's Pacific coast, provides an example of this good practice.

✓ Good Practices in Developing an Exit Strategy

- Investigate the legal requirements needed to transfer ownership of a marine ecotourism business, including its equipment (e.g. dive boat), facilities (e.g. lodge) and its adjacent coastal properties (e.g. a private coastal reserve or interpretive center).
- Identify potential buyers by working with tourism associations and government agencies.
- Identify local and international partners who can aid in preservation of sustainable business practices and conservation marine and coastal resources once the new partners gain control.
- Develop a manual for new potential owners that explains how the operation achieves environmental and socially responsible business practices, and where the new owners can turn to for further information on how to maintain the business's sustainability.

Good Practice Case Study – Developing an Exit Strategy: Lapa Rios, Costa Rica

Lapa Rios, a successful ecolodge located on Costa Rica's southwest Pacific Coast, has operated profitably for a number of years and is often cited as a case study in excellence for its sustainable design and efforts to conserve local rainforest through its private reserve. Owners John and Karen Lewis worried that they would not be able to guarantee the protection of this rainforest if they sold their lodge, so in 1999 they organized and financed a workshop on the subject of how to transfer ownership in a sustainable manner. The results of this workshop are documented and available through the TIES website at http://www.ecotourism.org.

CHAPTER 6

Operating a Marine Ecotourism Business

6.1 COMMUNITY OUTREACH

✦ Guideline: Implement a community outreach program to maximize company profits and community benefits.

✓ Good Practices for Community Outreach

- Respect community laws and cultural norms.
- Empower communities by facilitating their interaction with the marine environment, through education programs, and by helping them interact with national and international processes that affect them.
- Interact with and participate in community decision-making process.
- Employ and train community members.
- Become partners with local business people, or co-owners with local communities.
- Finance or provide infrastructure for community development centers and programs.
- Refer clients to locally owned outfitters and tour operators.

Marine ecotourism businesses also should employ local people whenever it is possible and appropriate. A chance for advancement and further training should always be on the employer's agenda. Language and customer service training should be part of this process. Ecotourism companies also should work towards joint ownership with local communities and individuals. Genuine partnerships generate greater richness in product and increase the destination's capacity to develop as a long-term ecotourism destination.

As mentioned earlier in Chapter 1.2, dive boats and expedition cruise vessels on tour should always be aware of the laws and customs of each island or anchorage they visit. They should try to buy local produce if it is available, and sustainably harvested. Interaction with each destination visited should result in a lasting benefit for the destination; for example, a visitation fee paid to community members, or a donation of books to the local school.

Dive centers have a unique opportunity to show local community members what lies beneath the surface of the ocean. With the exception of anglers, pearl cultivators and other marine resource harvesters, most members of coastal communities have little or no opportunity to understand what goes on in the sea. Dive centers can run classroom seminars on coastal conservation or marine biology. This is a good first step, as surprisingly many coastal community members cannot swim. They can also take students on snorkeling expeditions. Dive centers may also play an important role in affecting the stance of local politicians by training them to dive and then taking them on underwater tours, making decision makers more aware of the importance of marine conservation and the terrestrial development policies that affect the health of coastal systems.

Good Practice Case Study – Community Outreach: Wildways Adventures, Trinidad & Tobago

Wildways, a Trinidadian-based nature and adventure travel company, ran an award-winning educational adventure program in 1999 entitled "Wonders of the World." Designed specifically for students in their early teens, the program aimed to change the way local young people think and feel about nature and the environment through the use of experiential education. Exciting and empowering field trips were combined with highly interactive, stimulating classroom sessions to motivate and inspire as well as increase environmental understanding. The program demonstrates Wildways' commitment to making "a positive difference in the state of the environment by changing people's awareness of and respect for the natural environment through the use of adventure and nature travel activities."

Good Practice Case Study – Staff Training and Community Outreach: El Nido Resorts, Philippines

Ten Knots Corporation operates two eco-resorts in Palawan, Philippines. At these resorts more than 90 percent of the staff is employed from the local town of El Nido. Extensive training is involved to enable many of the staff to work at the dive resort on Miniloc Island and the five-star facility Lagen Island. One of the programs features a weekly marine education seminar for staff, enabling them to answer guest questions about the environment. The town of El Nido also benefits from the resorts' presence through Ten Knots' contribution towards the establishment of El Nido Foundation. The foundation, now independent of support from the corporation, is an NGO dedicated to the betterment of community members' lives through programs that address health care and small business finance opportunities.

6.2 EMPLOYEE MANAGEMENT

Marine ecotourism operations must also focus on creating healthy and rewarding working environments for their employees. Good employee morale and increased skill levels lead to higher client satisfaction and greater long-term financial returns.

✦ Guideline: Maximize employee health and happiness through appropriate operating procedures and skills improvement programs.

✓ Good Practices in Employee Management

- Provide training programs for employees to upgrade their skills.
- Provide good housing facilities on the property – be it a lodge or boat – or work with nearby communities to ensure appropriate housing is available.
- Implement benefit-sharing strategies such as profit sharing and bonuses for excellent employees.
- Conduct performance reviews of employees and supervisors every three months.
- Develop a system for incorporating employee suggestions for product improvement.
- Encourage employee involvement in the development of educational and interpretation programs – the operation's key ecotourism programs.
- Create a team atmosphere through group meetings, workshops and strategy sessions.
- Ensure adequate rest periods are incorporated into employees schedules.

Good Practice Case Study – Upgrading Skills: Sea Kayak Tonga, Tonga, South Pacific

Pacific based tour operator Sea Kayak Tonga made a commitment to their Tongan partners by obtaining a NZ $15,000 (US $7,600) grant from the Pacific Islands Industry Development Scheme to provide them with further business and computer skills training in New Zealand.

6.3 VISITOR MANAGEMENT

An essential step in ensuring that attractions are not negatively impacted and that clients have a rewarding experience is the establishment of visitor management schemes, generally through daily business operations. These also help mitigate negative environmental and cultural impacts. A site that is over-visited or lacks controls on visitors is soon degraded, and no longer attractive to visitors. Briefing clients before arriving at a destination is the best way to reduce negative impacts.

Visitor management guidelines are crucial to ensure your pristine beach doesn't become overrun with tourists.

✦ Guideline: Minimize negative environmental and cultural impacts through company visitor management plans and operations.

✓ Visitor Management Good Practices

Before Arrival

- Prepare instructions for viewing attractions, outlining what behavior is appropriate, and distribute these to ecotourists prior to arrival.
- Appoint designated guides to interpret the attraction for the visitor and police any misbehavior.
- Instruct staff on how to police visitor behavior at the site in a positive manner.
- Continually train guides in environmental education, interpretation and guiding, so that they are better equipped to manage visitors.
- Control areas to which visitors have access, restrict them from sensitive sites and keep them on designated trails.
- Brief client on what to expect of a guide's behavior and whether it is appropriate to tip guides and other staff.
- Target appropriate markets when planning for a specific destination (i.e. market to potential visitors who will be sensitive to the need for low-impact visiting).
- Agree where and when to promote a site and have alternatives arranged;[54] e.g. if a site becomes over-visited due to over-promotion by a group of operators, or by an unexpected high number of visitors, find alternative sites that are equally as good, or better, to reduce stress on the original site. Work with other operators and government agencies on this issue.

Onsite

- Use signage to influence behavior. Consider carefully what message should be told (a story about the history associated with the site, or perhaps warnings on where to walk and not walk at the site). Make sure the site reflects the message on the sign. Keep the message simple and minimize words. Assess how effectively it grabs your attention while also communicating the message.
- Provide environmental education and interpretation at the site to modify visitor behavior, reducing the negative impacts of a visitor's presence, and perhaps increasing the positive impacts, such as spending more money at a small local restaurant.

Good Practice Case Study in Visitor Management: Lamu Resort, Kenya

Located on Kenya's Indian Ocean coast, Lamu Resort is nestled in a historic slave-trading center, once a very wealthy Swahili trading community. The Muslim community living there enjoys sharing its rich past with visitors, but is eager to avoid the "morally-deficient" beach tourism culture that typifies many coastal regions. Lamu Resort introduces the community's desire for appropriate behavior upon arrival with a brief pamphlet describing the culture of the region and how visitors should dress. The pamphlet is accompanied by traditional Kanga and Kikoi that guests may wear during their stay (see photo on right).

6.4 WASTE, ENERGY, WATER AND LANDSCAPE MANAGEMENT

✦ Guideline: Implement energy conservation strategies, waste and water management programs and sustainable landscape maintenance.

Many techniques and technologies are available to help a marine ecotourism operation minimize its consumption of energy and water and manage waste sustainably. Some are inexpensive, such as keeping utilities in good repair. Most waste, water and energy environmental programs, when implemented, result in tremendous rewards that are earned back through savings in annual operating expenses. Many excellent sources of information are available on this subject, and are referenced in Appendix B.

✓ Good Practices in Water, Waste and Energy Management

General

- **Utilize benchmarks to monitor waste, water and energy rates.**
- Explore potential alternative technology products and procedures; e.g. composting toilets, rainwater collection, solar power, created wetlands, wind generation, low consumption appliances, etc.
- Develop an official company environmental policy.
- Perform environmental audits on a regular basis.
- Train staff in sustainable waste, water and energy management practices.

Waste

- Recycle office paper and utilize paper with recycled content where possible. Reuse the backs of paper for office memos or notes.
- Septic systems should be avoided when possible. Use of composting toilets and created wetlands are preferable.
- Implement a purchasing program that reduces waste; e.g. buy products in bulk or with little or no packaging, utilize bulk soft drink dispensers to reduce can and bottle waste.
- Ensure the waste from marine ecotourism operation is disposed in appropriate ways. If a well-managed land-based waste management facility is present, utilize it.
- Employ adequate safety storage procedures such as secondary containment (see below).

Energy

- Install energy- and water-saving devices such as minimized-flow shower heads and light switches with timers.
- Avoid energy-consuming air conditioning by utilizing fans and cross ventilation.
- Maintain utility systems; e.g. stop leaks from hot water taps.
- Employ low energy consumption appliances.
- Store fuel and other toxic substances in appropriate containers, and employ secondary containment (see below) strategies.

Water Management

- Minimize water use.
- Use rainwater or other sustainable water supply.
- Discharge saline heavy water from desalinization plants in appropriate offshore location; i.e. away from coral reefs.
- Never discharge untreated wastewater into lagoons, wetlands or coastal waters.
- Reuse gray water (e.g. for irrigation).
- Utilize biodegradable detergents and other environmentally friendly cleaning products.
- Use tap aerators, low-flow showerheads and low-flush toilets.
- Encourage linen reuse by guests.

Landscape Maintenance

- Minimize use of fertilizers and pesticides in landscaping.
- Reduce beach-grooming efforts to minimize impact on natural beach processes; use hand tools only.
- Compost all garden waste and most kitchen waste; shipping yard waste off the property impoverishes the soil.
- Cultivate indigenous vegetation instead of exotic species.

Secondary Containment

All containers used to store waste oils and other such potentially harmful liquids should have some form of secondary containment. The primary purpose of secondary containment is to provide additional storage capacity for any materials that may leak due to the failure, overfilling or improper draining of the primary storage container. Generally speaking, secondary containment should equal 110 percent of the capacity of the primary container and is usually provided by placing a non-leaching berm with an impervious bottom under or around the primary container.

Good Practice Case Study – Integrated Energy Management System: Couran Cove Resort, Australia

A large eco-resort on Australia's Queensland coast, Couran Cove has been a leader in efforts to conserve energy. After much study, an "Integrated Energy System" was implemented, resulting in both environmental and economic benefits. All facets of the resort were analyzed for energy consumption and savings potential. For example, all appliances in the resort were selected according to their energy efficiency to maximize power savings. The average resort household at Couran Cove Resort uses just 25 percent of the energy used by the normal Queensland household due to the careful selection of lighting and electrical appliances. Power consumption has been slashed to a third of that of similar-sized resorts and greenhouse gases are, as a result, down by 70 percent. The key to the system is a carefully planned integration of resort systems, procedures and technology, coordinated by computers and a master plan. Because of careful monitoring and understanding of how much energy each guest uses, the resort is examining the idea of guest tariffs – in short, a user-pay system for energy consumption.

Good Practice Case Study – Controlling Pollution at the Source: EcoBeach, Australia

EcoBeach, an ecolodge on Australia's northwest coast, produces and sells its own phosphate-free soap. The soap is placed in guestrooms, and is available for sale from the lodge's store or by mail order. The lodge reduces the amount of phosphates and other chemicals by managing contamination at the source.

Good Practice Case Study – Purchasing Policies: Lindblad Expeditions, USA

Ecotour boat company Lindblad Expeditions has agreed to support the efforts of the Marine Stewardship Council through its purchasing policies and guest education programs in the Galapagos Islands. The tour company will purchase only council-certified fish that have been harvested locally in a sustainable manner. Company clients will be educated about the program through the boat's menus and special presentations.

Good Practice Case Study – Landscape Maintenance: Watamu Marine National Park, Kenya

Watamu Marine Park is in a bay on the Indian Ocean; for eight months of the year the bay boasts beautiful white sand beaches. For the remaining four months, the beach is almost black with seaweed and beach cast blown on shore by monsoon waves and wind. The beach is also an important turtle nesting area. As a resort destination, for several years the hotels would remove the beach cast and seaweed either manually or mechanically, in order to provide a clean beach for their guests. While economically this was an expensive process, an unnoticed cost also resulted from this exercise – beach erosion. An experiment was conducted which entailed leaving most of the debris of the beach and clearing three-foot wide corridors to the ocean every 20 meters (65 feet) or more for guests. The result was a decrease in blowing sand and increase in hardy beach vegetation above the high water mark, which in turn helped build up dunes and slow the rate of sand erosion. Guests initially were unhappy with the occurrence of seaweed and beach cast on the beach; however, through a publicity and education campaign, locals and visitors began to understand and appreciate the importance of the beach debris. This issue was presented to clients in their welcome letters, at managers' cocktail parties and during orientation meetings.[55]

6.5 CULTURAL AND NATURAL HERITAGE CONSERVATION STRATEGY

Ecotourism operators should be proactive in their efforts to support efforts to conserve local cultural and natural heritage resources. Cultural conservation can be a particularly sensitive issue. A dialogue should be underway continuously with local communities to gain permission to display or utilize cultural or intellectual property. Special attention should be given to who represents each community as spokesperson, to judge if they truly represent the whole community's interests. Special emphasis also should be placed on supporting formally established protected areas, both private and public. Marine protected areas and coastal parks need support from marine ecotourism operators. Such operators can even establish their own marine or coastal venues if they own enough land, or if they work collaboratively with local communities or the regional government to establish and manage a marine reserve.

✦ Guideline: Maximize environmental and cultural protection through heritage conservation programs, including the establishment of marine protected areas.

✓ Good Practices in Company-Based Heritage Conservation Programs

- Purchase products that are sustainably harvested locally.
- Support the conservation of local culture by funding traditional arts and incorporating them into daily tour/lodge programs (e.g. dance demonstrations or crafts for sale in lodge store).
- Develop programs for guests that allow them to learn local traditions (e.g. cooking techniques or songs).
- Invite local NGO or government agencies to give presentations on environmental and cultural issues to guests.
- Collect donations from clients for specific conservation initiatives and local school programs.
- Support established marine protected areas in the region through donations of time, money and equipment.
- Work collaboratively with regional government or community owners to establish a marine reserve (see CORAL's website to learn more about establishing marine reserves at http://www.coralreefalliance.org/programs/parks.html).

Good Practice Case Study – Supporting Conservation: Lindblad Expeditions, USA

The Galapagos Islands have long been a key ecotourism destination because of their unique flora and fauna. Tour operator Lindblad Expeditions launched the Galapagos Conservation Fund in 1997, an initiative to channel donations from its guests directly into efforts to conserve the islands' important and endangered natural histories. In the GCF's first two years, Lindblad Expeditions raised $400,000, and to date, the fund has gained more than $1 million in visitor contributions. These funds are allocated through the Galapagos National Park and the Charles Darwin Research Station in support of conservation on the islands.

Good Practice Case Study – Menus that Reflect Destination: Ranweli Holiday Resort, Sri Lanka

Ranweli Holiday Resort on Sri Lanka's western coast north of Colombo takes pride in its ability to showcase local cuisine and horticultural prowess through the options available from its dinning room menu and organic garden. Education opportunities are supplied with each of the featured local foods. For example, this includes a list of medicinal and nutritional qualities of the teas and soups served. Fruits offered at the snack bar are purchased locally and some of the produce used in daily meals is supplied by the lodge's organic garden, which doubles as an outdoor classroom for visitors interested in learning about local cultivation techniques and plant varieties.

Good Practice Case Study – Protecting Coastal Resources: Guyana Resort Bay, Malaysia

Along Malaysia's Sabah coast, which has been threatened by more than a decade of over-harvesting and dynamite fishing, the Guyana Resort Bay hosts The Reef Project, a public education forum and research hatchery dedicated to repopulating coral and giant clam communities. Project Director Don Baker has successfully guided the program utilizing private sector funding. The project, which took three years to design, build and setup, cost RM $1.2 million (US $284,360). This funding was acquired from the resort and other private sources. The project is now a main attraction at the resort and for the region, and acts as an educational center for tourists and local community members on the importance of marine resource stewardship.

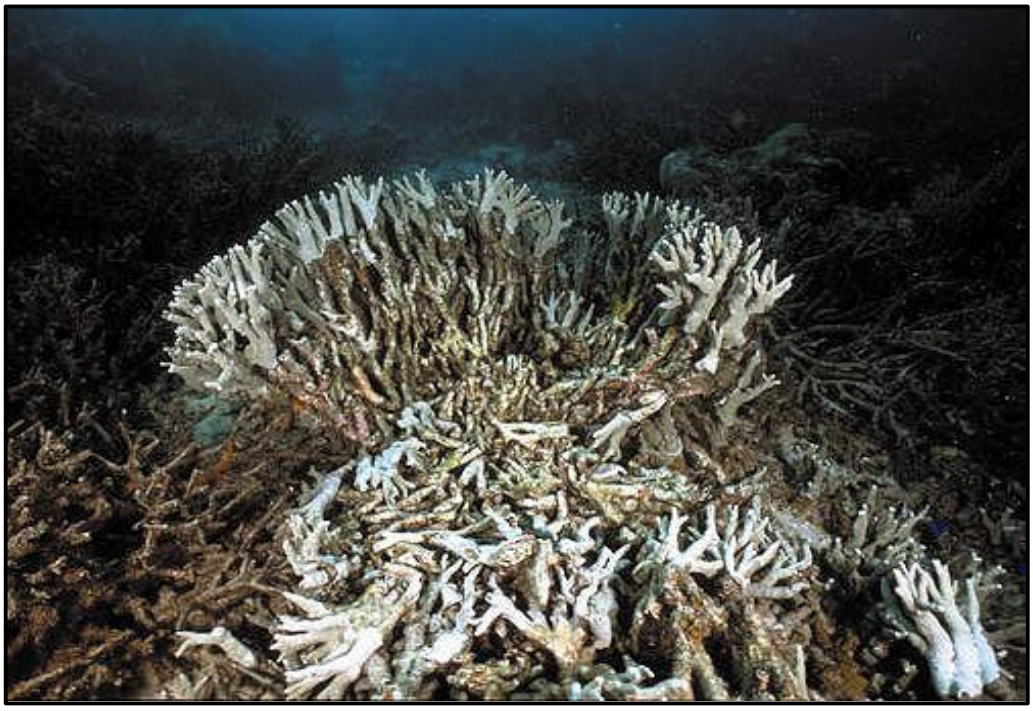
Good Practice Case Study – Environmental Education: Jean-Michele Cousteau Fiji Islands Resort, Fiji

In Fiji, the Jean-Michele Cousteau Fiji Islands Resort has its naturalist and youth education person make regular visits to local schools. They take videos, slide programs and a coral reef CD-ROM to classrooms and work with students. Also, on a regular basis, classes are invited to the resort for mangrove and shoreline walks. Plans are being developed to have visiting university students work as interns with the resort, focusing on interpretation, ecotourism, accounting and management. The Cousteau team also provided the expertise and footage for a 20-minute educational film produced by the Ministry of Education, which has been distributed to every secondary school in the country.

Good Practice Case Study – Establishing a Marine Reserve: Chumbe Island Resort, Zanzibar, Tanzania

Chumbe Island Coral Park and Environmental Education Centre is a private nature reserve that was developed by a company in 1992 for the purpose of protecting a 20-hectare island and surrounding coral reefs, six miles southwest of Zanzibar Town. In 1994 the island was established under law by the Government of Zanzibar, becoming the first marine park in Tanzania. The island and surrounding area is a rare example of pristine coral island ecosystem in an otherwise heavily exploited area. The reef supports 370 species of fish and more than 200 species of sleractinian corals, 90 percent of all recorded in the region. The company that operates the park, Chumbe Island Coral Park Ltd. (CHICOP), offers day visits and overnight accommodations for up to 14 guests in seven eco-bungalows, all built with state-of-the-art eco-technology and eco-architectural design. Five former anglers from adjacent villages have been trained as park rangers, and now take full responsibility in protecting the area, producing weekly reports on the health of the sanctuary, and guiding tourists and divers. The management of the site by CHICOP is assisted by an Advisory Committee with representatives of neighboring fishing villages, the Institute of Marine Sciences (IMS) of the University of Dar es Salaam

and Government officials of the Departments of Environment, Fisheries and Forestry. Revenue generated from tourism subsidizes the conservation and education programs run in the park. Research programs include joint projects between park staff, volunteers and national and international universities and conservation agencies. Education projects address both tourists' and local communities' needs. A converted lightkeeper's house now acts as a visitor's center where visitor orientation and education can take place. Self-guided trails have been developed, complete with "floating underwater information modules" for the underwater trails and laminated information cards for the intertidal walking trails depicting fishes, invertebrates and mollusks found on the coast. During low season, excursions are provided free of charge to local school children; schools in Tanzania have no direct environmental education, and often Chumbe is the only insight these children have into environmental awareness.



These Indonesian corals were killed by dynamite fishing.

Good Practice Case Study – Supporting a Marine Park: North Sulawesi Water Sports Association, Indonesia

Bunaken National Park, established in 1991 on the northern tip of the Indonesian province of Sulawesi, has rich biodiversity, including extensive mangrove forests and coral reefs. For years it suffered from a lack of funding, resulting in weak management and enforcement of protection laws; dynamite and cyanide fishing threatened reefs and illegal forestry endangered mangroves. Several groups have worked together to establish a fee for visitors to the park. The North Sulawesi Water Sports Association (NSWA) wanted to address the funding difficulties experienced by the park and initiated a project, working with park managers, international conservation agencies and Indonesian-based NGOs.

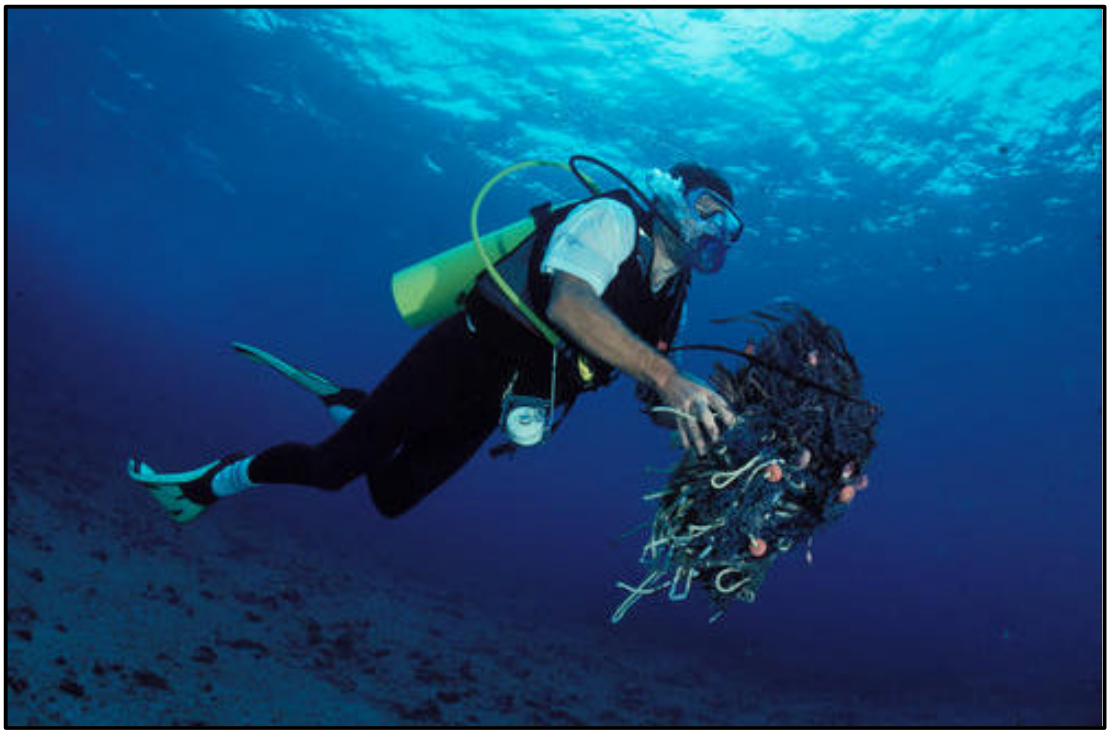
They found that visitors were willing to pay an increased gate fee to dive and visit the park, but visitors wanted to see the revenue go towards conservation programs in the park, rather than into the coffers of the government or the pockets of local officials. To address this issue, a pilot project was proposed for Bunaken and the government was lobbied for the creation of a more decentralized approach to fee management. Project organizers report that the "dive industry was a key ally in lobbying the government to pass the law" that would change how the fee revenue would be distributed. The Bunaken National Park Management Advisory Board (a multi-stakeholder board consisting of representatives from the dive industry, environmental NGOs, academia, villagers from within the park and government officials) was created, and receives 80 percent of the fee revenue, while 20 percent is split between national, provincial and district governments. The Advisory Board must now set priorities for spending the revenue based on stakeholder and ecological integrity needs.

6.6 ENVIRONMENTAL MONITORING

✦ Guideline: Minimize negative impacts to the environment and local communities by monitoring impacts on local environments and developing alternative plans.

Monitoring is a particularly important facet of managing a marine ecotourism operation. Operators have a great opportunity to facilitate the protection of natural and cultural environments that they depend on through innovative monitoring programs. Monitoring should begin as soon as work is started on site. Ideally, monitoring programs should begin as the first site surveying and clearing takes place. Indicators used for monitoring will be based on the data collected in the evaluation stage, and baselines of biological and perhaps social characteristics will act as a stationary "norm" from which change due to the development can be measured. In some cases the original site may not be characterized as a "pristine" state and will need to be remediated, therefore the "norm" by which all changes are measured will sometimes need to be estimated based on adjacent properties or historical records.

Many options exist to implement monitoring programs. If funds are available, an expert or consultant should be hired who is experienced in biological and socio-cultural inventories and able to assess over time what change has occurred. This may not always be economically feasible and several alternatives can be employed. For example, the lodge or tour company can team with an established coastal research institution, perhaps a university or government agency that uses their own funds to initiate research or draw partners into the project such as volunteers or corporate sponsors. Another option is to team up with a university professor and have a senior thesis student or masters candidate conduct their research on monitoring or a related topic. Many lodges have successfully teamed with research institutions, supplying free accommodation and transport in exchange for a baseline inventory of a property or ongoing monitoring of local wildlife.



Monitoring can take many forms, one of which might be to see how much trash accumulates over a set period of time due to use of the area.

Indicators are outlined below that could be used to monitor the impacts of a marine ecotourism operation on coastal resources. Kosrae Village has implemented a monitoring program for coral reef communities around the island of Kosrae (shown below). This program has helped to address the lack of funds available to government coastal managers.

Selected Environmental Indicators for Coastal Tourism Operations

Environmental Indicator	What it Indicates	How it can be Measured
Deterioration of coral reef coverage and health	• Excess nutrients • Sedimentation • Temperature change • Physical contact	• Rapid ecological assessment (REA), involving quadrants & transects, with photo & visual data
Increased algae growth (marine and freshwater)	• Excess nutrients (from sewage, fertilizers, phosphate & detergents, etc.)	• Dry weight measured at sampling stations
Presence of coliform bacteria	• Presence of raw or poorly treated human sewage waste	• Samples collected at sampling stations and laboratory tested
Presence of chemicals in water bodies	• Pollution from run-off • Point source discharges (pesticides, oil and fuel spills, etc.)	• Samples collected at sampling stations and laboratory tested
Increased oily residue at the shoreline	• Oil spills at sea (transport and production) • Discharges from land	• Visual inspection for new traces • Samples collected at sampling stations and laboratory tested
Unusual shoreline and dunal changes	• Abnormal erosion & deposition due to structures placed on land or in the water	• On-site measurements • Analysis of air and/or ground level photos over time
Lessening of local fish catch	• Health of marine ecosystem • Over-fishing or improper fishing methods	• Fish catch statistics • Annual fish count
Mooring buoy use logs	• Intensity of dive site usage • Indication of sites needing restricted access pending regeneration of aquatic life	• Records of use of buoys from dive boat captains
Deterioration of mangrove and wetland health	• Impact from surrounding development and use • Need for larger or more restrictive buffer zones	• Species counts • Periodic on-site observation of conditions • Water quality sampling
Increased incidence or intensity of flooding	• Increases in speed and amount of runoff • Disruption of draining patterns	• On-site measurements of flood levels and flows • Analysis of air and/or ground level photos over time
Decrease in number of birds and other wildlife	• Habitat has been disturbed or destroyed • Effects of pesticides or other pollution • Over-harvest or illegal harvest of specific species (e.g. turtle eggs) • Areas where wildlife migrates from or to has been destroyed	• Species counts (e.g. facility maintain wildlife siting logs, or annual Audubon bird counts) • Periodic on-site observation of habitat conditions[56]

✓ **Environmental Monitoring Good Practices**

- Set up a monitoring program before construction begins. This begins with a baseline inventory of all components of the ecosystem where the marine ecotourism facility or activity will be located. A baseline inventory will include collecting data on the types of animals and plants found on the site, as well as taking water and soil samples. If construction and operation has already begun, initiate a baseline study immediately. Update the baseline inventory on a regular basis, and at different times of the year.
- Participate in established monitoring programs for local and global coastal resources. An example of this is Reef Check. See Appendix B for further programs.
- Design an in-house monitoring program for impacts on the local environment. Hire an expert, if possible, to do an initial analysis and set up a monitoring program that can be carried on by the company after the expert's departure. If funds are not available for this, develop partnerships with naturalist associations, universities or government agencies who would be interested in helping the company set up a monitoring program, perhaps in exchange for housing or fuel while the research is being conducted.
- Work with local resource managers to implement and maintain regional monitoring programs for environmental resources.
- Support the presence of researchers and resource managers in your region by providing accommodation, fuel, meeting space and other essentials.
- Include visitors in monitoring program.
- Create alternative plans in case monitoring shows significant changes are occurring in either the natural or cultural environments.

Monitoring does not minimize impacts directly but it is the only way to understand what impacts are occurring. From monitoring data, changes in business operation and remediation programs can be implemented. Monitoring is also important to obtain convincing documentation that impacts are minimal or non-existent.

Finally, alternative plans should always be developed in the planning stages in case monitoring shows significant changes are occurring in local ecosystems. Although such alternate plans are required for environmental impact reports, marine tourism operators seldom consider the "what ifs" of their programs and plan for course corrections. It is much more cost effective if alternate and remedial strategies are defined ahead of time. It is also much more likely that the most appropriate steps will actually be taken if they are envisioned from the beginning.

Good Practice Case Study – Coral Monitoring: Kosrae Village, Kosrae, Federated States of Micronesia

Kosrae Village Resort has developed a monitoring program using the Australian Institute of Marine Science's survey methods. They are working with the Kosrae State Marine Resources to study the sites that are at risk from over-use by sport divers or susceptible to industrial pollution. They invite clients to participate twice a year in this process. They have found the following:

- With pre-dive training in coral identification and monitoring procedures, all volunteer divers were able to accurately collect environmental data.
- Superb buoyancy control was needed to prevent damage to the corals; for many of the divers, extra practice and work with dive weights was needed to achieve this.

The divers who volunteer their time to the project are given extra benefits such as the unique opportunity to dive for two days in the Trochus Sanctuary, a no-entry zone.

6.7 PERFORMANCE AUDITS AND CERTIFICATION

Audits are another form of assessment, generally used to evaluate the company itself, rather than the resources it depends on. Audits can be used to assess a variety of company-related factors including profitability of products, efficiency of energy and waste management systems, and customer satisfaction. In short, audits are a tool for facilitating better management by measuring environmental, social and financial performance, risk of practices and opportunities. Many checklists exist for implementing a self-imposed audit of company operations. Examples of these audit checklists are located in Appendix B.

✦ Guideline: Perform audits of company performance on a regular basis to increase profitability and evaluate environmental and social impact.

- Hire an external auditor to design and implement a detailed audit of the marine ecotourism company's operations. Experience is a valuable tool, especially during the initial stages of designing an audit. If financially this is not possible, then develop a self-audit based on the information resources listed in Appendix B, or identify alternative solutions such as industry and government "how-to-perform-audits" kits or other forms of external assistance.
- Identify the objectives of the company audit – are they environmental, social or economic?
- Identify: a) the operational elements (how the audit will be carried out, results recorded, reporting, etc.)
  b) plans to respond to impacts resulting from specific business practices
  c) conditions/criteria (social, environmental and financial) that will be evaluated.
- Perform the evaluation at least once annually.
- Participate in regional and international audit programs that evaluate the environmental or social responsibility of the company's policies and operations. Examples include ISO 9000, 14000 series. Some regions now also use audits for ecotourism certification and accreditation – tour products, companies and specific sites can receive accredited ecotourism status if specific criteria are met. Examples of ecotourism certification programs such as Australia's Nature and Ecotourism Accreditation Program are listed in Appendix B.

Good Practice Case Study – Cultural and Environmental Audits: Turtle Island, Fiji

Turtle Island, a resort based in Fiji, recently used external consultants to complete audits of its resort's impacts on the surrounding region. An environmental audit performed in 1994 was recently repeated in 1999, and a cultural audit also was performed. Recommendations from the environmental audit touched on the subjects of soil conservation, domestic animal control, freshwater systems, waste-water management, chemical use and solid waste management, vegetation planting programs that encourage indigenous species and support native animal populations, and establishment of benchmarks for future management. Key issues highlighted in the cultural audit included the need for prioritization of local village needs (such as school and health care facility upgrades), the need to transform community-project decision making from the resort to the community, establishing a more genuine partnership with local communities, the need for increased dialogue between community members and resort managers on how to manage the island, the "valuable community resource" shared by the resort and communities, and the need to appoint a "Community Relations Officer" at the senior level of Turtle Island management to implement these goals.[57]

CONCLUSION

The Marine Ecotourism Guidelines project was initially established to give small-scale coastal tourism operators a better idea of the resources available to make their businesses more sustainable. It also was designed to clarify what is "marine ecotourism," and what is not. We think this has been accomplished, but also know that much more needs to be done.

When operators were initially surveyed at the beginning of this project, their areas of greatest concern included:

1) Enforcement of regulations (laws and guidelines) designed to protect marine resources,
2) Protection of marine biodiversity, and
3) Management of shoreline development.

Much more work needs to be done in this field on these three subjects. In particular, documentation of how different countries and regions address these challenges is needed. Many organizations listed in Appendix B of this document are actively working for the conservation of marine and coastal environments. Contact them or The International Ecotourism Society for further information on how you can participate in these efforts.

BIBLIOGRAPHY

Amaral, M. & V. Lee. (1994). *Environmental Guide for Marinas: Controlling Nonpoint Source and Storm Water Pollution in Rhode Island.* Narragansett, RI: Rhode Island Sea Grant and Coastal Resources Center, 155pp.

Amigos de Sian Ka'an A.C. & Coastal Resource Center/URI. (1998). *Guidelines for Low-Impact Coastal Tourism Development: Quintana Roo, Mexico – Draft Summary*. Prepared by Amigos de Sian Ka'an A.C. and Coastal Resource Center/URI, with funding from USAID, 26pp.

Ashton, R. & J.O. Jacobson. (1996). *Matura Beach: A Recommended Approach to Sustainable Sea Turtle Management and Tourism Development.* An unpublished draft for scientific review, 26pp.

Association of Canadian Sea Kayak Guides. *Minimum Impact Standards*. 2pp.

Australian Heritage Commission. (1999). *Draft Heritage Tourism Guidelines: Best Practice for People Involved in Tourism and Heritage Places – A Summary.* Canberra ACT, Australia: Australian Heritage Commission, Tourism Council of Australia, and Tourism Council Australia, 4pp.

Australian Ecolodge Draft. (1996). An unpublished document.

Bay of Fundy Marine Tour Operators Code of Ethics for Whale Watchers. From Adventure Nova Scotia website: www.whatasite.com/adventure/whale_ethics.html, 2pp.

Burton, A.G. (1999). *Environmental Audit for Turtle Island.* Redwood City, CA: Sequoia Analytical, 20pp.

Caribbean Environment Programme. (1994). *Environmental Impact Assessment for the Establishment of a Marina/Small Craft Harbour in Southwest Tobago.* CEP Technical Report N. 29. Caribbean Environment Programme, United Nations Environment Programme. Available at: grid2.cr.usgs.gov/cepnet/pubs/techreports.

Carter, J., J. Gibson & R. Sammon. (1997). *Hol Chan Marine Reserve Boating Safety*. CEDAM International Guide to the Hol Chan Marine Reserve. At Ambergris Caye website: ambergriscaye.com/holchan/index.html, 2pp.

Carter, R.W. & P. O'Reilly. (1999). *A Rapid Appraisal Methodology for Environmental Auditing*. The Journal of Tourism Studies, 10(2): 14-22.

Canadian Tourism Commission. (1999). *A Road Map to Tourism Financing: Guide for Small and Medium-sized Businesses.* Ottawa, Canada: Canadian Tourism Commission, Industry Canada, 84pp.

Coastal Resources Center. (1997). *Mooring Training: Building a Constituency*. Intercoast Network. Coastal Resources Center at University of Rhode Island, USA and Coastal Zone Management Centre at the National Institute for Coastal and Marine Management/RIKZ, Netherlands, Fall 1997, p 24.

Code of Conduct for Commercial Tour Operators in Gwaii Haanas/South Moresby. 6pp.

Commonwealth Coastal Action Program. (1997). *Coastal Tourism: A Manual for Sustainable Development*. Prepared for Tourism Council Australia, Australian Local Government Association, and the Royal Australian Planning Institute in collaboration with Portfolio Marine Group, Environment Australia and the Office of National Tourism from a draft by Southern Cross University. Canberra, Australia: Department of the Environment, Sport and Territories, Commonwealth of Australia, 107pp.

Commonwealth of Australia. (1995). *Best Practice Ecotourism: A Guide to Energy and Water Minimization*. Commonwealth Department of Tourism, Commonwealth of Australia, 84pp.

Cooper-Marcus, C. (1985). *Design Guidelines: A Bridge Between Research and Decision-Making*. CEDR-WP08-85. Paper presented at U.S.-Japan Seminar on Environment and Behavior Research Department of Psychology, University of Arizona, Tucson October 1985.

Cordes, R. & R. Kaufman. *Please Practice Catch and Release!* Lake Fishing with a Fly. From http://pages.prodigy.net/chadfarmer/C%26r.htm.

Cultural Survival. (1999). *Protecting Indigenous Culture and Land through Ecotourism, A Special Issue*. Cultural Survival Quarterly, Summer 1999, 23(2): 60pp.

Department of Environmental Protection and Ministry for Planning. (1999). *Environmental and Planning Guidelines for Tourism Development on the North West Cape*. Western Australian Planning Commission, State of Western Australia, 33pp.

Duchene, P. (1998). *Nautical Tourism in Small Island States and Other Islands.* Sustainable Tourism in Small Island Developing States and Other Islands, Lanzarote, Spain, October 25-28, 1998, 41pp.

The Ecological Diver. (1991). Skin Diver, June 1991. Petersen Publishing Co. WF01576. 12pp.

Florida Department of Environment Protection. (1993). *Manatees – Miss Her Now or Miss Her Forever: A Guide for Boating, Diving and Snorkeling*.

Florida Marine Patrol. *The Florida Clean Vessel Act: What it Means for Boaters*. Office of Waterway Management, Florida Department of Environmental Protection.

Florida Power & Light Company. (1994). *Attention: Swimmers, Boaters, Divers – Guidelines for Protecting Manatees*.

Gardener, L. (1997). *Coastal Tourism in the Wider Caribbean Region: Impacts and Best Management Practices*. CEP Technical Report No. 38. Kingston, Jamaica: Caribbean Environment Programme, UNEP, 88pp.

GBRMPA. (1996). *Great Barrier Reef Marine Park Manual: Reef Essentials*. Townsville, Australia, 21pp.

GBRMPA. (1996). *Best Environmental Practices*. Great Barrier Reef Marine Park Authority. 4pp.

Government of Western Australia. *Releasing Fish*. From Catch Care section at http://www.wa.gov.au/westfish/rec/broc/catchcare/cc01.html, 2pp.

Green Hotelier. (1999). *At One with Nature on Eco Beach.* Green Hotelier - Magazine of the International Hotels Environment Initiative. January 1999, 13: 32.

Greig, G. (1999). *The Johnstone Strait Code of Conduct for Whale Watching.* On Route to Sustainability: Best Practice in Canadian Tourism. Ottawa, Canada: Canadian Tourism Commission and Centre for Tourism Policy and Research, Simon Fraser University, pp. 15-19.

Halpenny, E. (2000). *The State and Critical Issues Relating to International Ecotourism Development Policy*. Proceedings from the 1999 Ecotourism Association of Australia National Conference, Kingfisher Bay, October 13-17, 1999.

Harrison, D. (1999). *A Cultural Audit of Turtle Island, Fiji*. London: University of North London, 31pp.

Hawkins, D. (1997). *Nature-Based Tourism Development Guidelines and Best Practices.* (540/R/08/B) Egyptian Red Sea Coastal and Marine Resources Management Project, USAID, 41pp.

Hawkins, D., M. Epler Wood & S. Bittman (eds.). (1995). *The Ecolodge Sourcebook for Planners & Developers*. N. Bennington, VT: The Ecotourism Society, 151pp.

HEPCA Development and Support Program: Red Sea Mooring Systems Installation Plan and Boat Captain Training Program, Volume 2 - Draft. (1997). Prepared by Winrock International Environmental Alliance, in cooperation with Environmental Quality International and George Washington University. Funded by Environmentally Sustainable Tourism (EST) Project, USAID/Egypt. 75pp.

Hoyt, E. (1995). *The Worldwide Value and Extent of Whale Watching*. As presented at IWC/47/WW2 to International Whaling Commission 1995 AGM, Dublin Ireland. Bath, UK: Whale and Dolphin Conservation Society, 34pp.

The International Fund for Animal Welfare. (1999). *Report of the Workshop on the Socioeconomic Aspects of Whale Watching, Kaikoura, New Zealand, 8-12 December 1997*. Yarmouth Port, Massachusetts, USA: Author, 88pp.

International Fund for Animal Welfare. (1996). *Special Aspects of Sperm Whales and Their Relevance to Whale Watching.* A report to the International Workshop on the Special Aspects of Watching Sperm Whales, Roseau, Dominica, January 8-11, 1999, 14pp. In Whale Watching Web at: www.physics.helsinki.hi/whale/education/spermreg.html.

International Maritime Organization. (1997). *Code of Conduct for the Prevention of Pollution From Small Ships in Marinas and Anchorages in the Caribbean Region*. London, UK: Marine Environment Division, International Maritime Organization. 36pp.

International Maritime Organization. (1998). *IMO Marine Protection Committee agrees toxic anti-fouling paint will be prohibited.* IMO Fax04/98. April 1998, 6pp.

International Maritime Organization. (1999). *Alien invaders – putting a stop to the ballast water hitch hikers*. Fact sheet. London: International Maritime Organization, from http://www.imo.org/htbin/htimage/imo/imagemap/navbar.map?242,15.

Island Resources Foundation. (1996). *Guidance for Best Management Practices for Caribbean Coastal Tourism*. St. Thomas, US Virgin Islands: Island Resources Foundation, 43 pp. On the Island Resources Foundation website: www.irf.org/ir_bmp.html.

Jones, C.P. (1997). *Impact of Flood and Wind on Structures in Coastal Areas*. Unpublished paper presented at CSI 41st Annual Convention, 27 June 1997, 4pp.

Kapitzke, I.R. (1999). *Sustainable Infrastructure Development on the Great Barrier Reef*. Proceedings of the 14th Australian Coastal and Ocean Engineering Conference, Perth 14-16 April 1999, pp. 323-328.

Kusler, J.A. *Guidebook for Creating Wetland Interpretation Sites Including Wetlands and Ecotourism*. Berne, NY: Association of State Wetland Managers, 134pp.

Lambert, S. (1998). *Sustainable Marine Tourism in the North Atlantic: A Handbook*. Unpublished draft copy, 36pp.

McManus, J.W., M.C.A. Ablan, S.G. Vergara, B.M. Vallejo, L.A.B. Meñez, K.P.K. Reyes, M.L.G. Gorospe & L. Halmarick. (1997). *ReefBase Aquanaut Survey Manual*. International Centre for Living Aquatic Resources Management. Educational Series 18, 61pp.

Mehta, H., A.L. Baez & P. O'Loughlin. (2002). *International Ecolodge Guidelines*. Burlington, VT: The International Ecotourism Society, 192pp.

Merriman, T. (1999). *Environmental Education ¹ Environmental Interpretation*. Connection. The Newsletter of the Environmental Section of the National Association for Interpretation, 3(2): 1, 3-4.

Molina, C. & P. Rubinoff. (1998). *Guidelines for Low-Impact Coastal Tourism Development – Quintana Roo, Mexico (Draft Summary – Summer Institute).* Amigos de Sian Ka'an A.C., Coastal Resource Center/URI and US Agency for International Development, 26pp.

Murphy, R.C. *Jean-Michel Cousteau's Guidelines for Responsible Living.* Ocean Futures Society.

National Outdoor Leadership School. (1998). *Leave No Trace Outdoor Skills & Ethics: Temperate Coastal Zones*. Lanader, Wyoming, USA: National Outdoor Leadership School, 20pp.

Nature Based Tourism Advisory Committee. (1997). *Code of Ethics – Environmentally Responsible Development*. Nature Based Tourism Strategy for Western Australia. Perth Australia: Western Australia Tourism Commission and Department of Conservation and Land Management (Government of Western Australia), pp 28-30.

Neale, G. (1998). *The Green Travel Guide*. London: Earthscan Publications Ltd., 336pp.

Office of National Tourism. (1997). *Principles of Sustainable Tourism Accommodation.* Unpublished draft. Office of National Tourism, Commonwealth of Australia, 89pp.

Office of National Tourism. (1998). *Coastal and Marine Tourism*. Factsheet. Industry, Science and Resources, Office of National Tourism (Australia), 2pp.

Office of Ocean and Coastal Resource Management. *A Boater's Basics: 10 Tips for Preserving the Coast*. Pamphlet. National Oceanic and Atmospheric Administration, United States Department of Commerce.

PADI. (1996). *Mooring Buoy Planning Guide.* PADI Project AWARE Foundation and PADI International Resorts Association, 93pp.

PADI. (1997). *Ten Ways a Diver Can Protect the Underwater Environment.* Pamphlet. PADI Project Aware.

Patterson, C. (1997). *The Business of Ecotourism: The Complete Guide for Nature and Culture-Based Tourism Operations*. Rhinelander, WI: Explorer's Guide Publishing, 195pp.

Pholeros, P., M. Tawa & N. Opie. (1994). *Ecotourism: A South Australian Design Guide for Sustainable Development*. Adelaide, Australia: South Australian Tourism Commission, 140pp.

Reef Environmental Education Foundation & The Nature Conservancy. (1998). *Surveying Coral Reef Fishes: A Manual for Data Collection, Processing and Interpretation of Fish Survey Information for the Tropical Northwest Atlantic.* 84pp.

Reef Relief. (2000). *ACTION ALERT: Florida Fish Feeding Ban Final Vote!* September 1, 2000 from http://www.reefrelief.org.

Reef Relief. (1998). *Upper Keys Region of the Florida Keys National Marine Sanctuary, official site brochure*. Key West, FL: NOAA and State of Florida, located at: www.reefrelief.org/Printed_edu/NOAA/UPPER/brochure_index.html.

Reef Relief. (1998). *Reef Relief Buoys Now Part of Florida Keys National Marine Sanctuary*. Reef Line: Newsletter of Reef Relief. Newsletter. Reef Relief, USA. Winter 1998, p.1 and 15.

Reef Relief. (1997). *Florida's Coral Reef Ecosystem*. Pamphlet. Reef Relief, USA.

Reef Relief. (1997). *Reef Relief's Guide to Coral Reef Mooring Buoys*. Pamphlet. Reef Relief, USA.

Regnier, K., M. Gross, R. Zimmerman & J. Heintzman. (1992). *The Interpreter's Guidebook: Techniques for Programs and Presentations.* Stevens Point, WI: UW-SP Foundation Press, Inc., 101pp.

Rouphael, T. and G. Inglis. (1995). *The Effects of Qualified Recreational SCUBA Divers on Coral Reefs - Executive Summary.* CRC Reef Research Centre on-line: Technical Reports. Technical Report 4. http://www.gbrmpa.gov.au/~crcreef/3reports/TechReport/TechRep4.html, 2pp.

South Carolina Nature-Based Tourism Association. (1996). *Guidelines and Recommendations for Nature-Based Tourism Planning and Practice in South Carolina.* South Carolina: South Carolina Sea Grant Consortium for the South Carolina Nature-Based Tourism Association, 24pp.

Southern Pine Council. (1999). *Marine Construction Manual: A Guide to Using Pressure-treated Southern Pine in Fresh & Saltwater Applications*. Kenner, LA: Southern Forest Products Association, 24pp.

Sustainable Development Institute. (1998). *Pump or Treat?* Atlantic Coast Watch. June 1998 p 1 and 6.

Sweeting, J., A.G. Bruner & A.B. Rosenfeld. (1999). *The Green Host Effect: An Integrated Approach to Sustainable Tourism and Resort Development.* Washington DC: Conservation International, 102pp.

Sybesma, J. & T. van't Hof. (1989). *Guide to the Curaçao Underwater Park*. STINAPA Series No. 31. Curaçao: Netherlands Antilles National Parks Foundation Curaçao (STIMAPA), 67pp.

Talacko, J. (1996). *Eco Beach – Ecotourism Best Practice in the Kimberley*. December 1996 Ecotourism Association of Australia Newsletter.

The International Ecotourism Society. (1999). *Ecotourism Statistical Fact Sheet.* TIES Fact Sheet Collection. Burlington VT: The International Ecotourism Society, 3pp.

The International Ecotourism Society. (1998). *Green Hotel Keeping Fact Sheet*. TIES Fact Sheet Collection. Burlington VT: The International Ecotourism Society, 2pp.

The International Ecotourism Society. (1995). *Guidelines for Nature Tourism Operators*. Burlington VT: The International Ecotourism Society, 12pp.

Tourism Council of Australia & CRC for Sustainable Tourism. (1999). *Being Green is Your Business: An Easy Guide to Environmental Action for Tour Operators, Travel Agents and Tour Wholesales.* Woolloomooloo, Australia: Tourism Council of Australia, in association with CRC for Sustainable Tourism, 74pp.

Tourism Council of Australia & CRC for Sustainable Tourism. (1999). *Being Green Keeps You Out of the Red: An Easy Guide to Environmental Action for Accommodation Providers and Tourist Attractions.* Woolloomooloo, Australia: Tourism Council of Australia, in association with CRC for Sustainable Tourism, 82pp.

Tilden, F. (1977). *Interpreting Our Heritage*. University of North Carolina Press Chapel Hill.

Tourism Development Authority. (1999). *Requirements for Eco-Lodge Design in Egypt*. Cairo, Egypt: Tourism Development Authority, 15pp.

Tourism Development Authority. (1998). *Best Practices for Tourism Center Development along the Red Sea Coast*. Prepared for the Tourism Development Authority, Egypt. Prepared by the Policy Management Group, a consortium made up of Harvard Institute for International Development, Winrock International, International Resources Group, and Environmental Quality International (EQI), Cairo, Egypt. Funded by USAID. 107pp.

Tourism Queensland. (1999). *Grow YourEcotourism Business: A Support Kit for Operators. Vol. 1*. Brisbane, Australia: Tourism Queensland, 129pp.

Turtle Island. (1999). *Sustainable Tourism: Turtle Island's Paradigm for Success*. News from Paradise – Turtle Island press release, 7pp.

United Nations Environment Programme. (1997). *Coastal Tourism in the Wider Caribbean Region: Impacts and Best Management Practices (CEP Technical Report N. 38)* Kingston, Jamaica: UNEP Caribbean Environment Programme, 84pp.

United Nations Environment Programme. (1996). *Awards for Improving the Coastal Environment: The Example of the Blue Flag.* Paris, France: United Nations Environment Programme, World Tourism Organization, Foundation for Environmental Education in Europe, 50pp.

United Nations Environment Programme. (1994). *Environmental Impact Assessment for the Establishment of a Marine/Small Craft Harbour in Southwest Tobago*. CEP Technical Report No. 29. Caribbean Environment Program, United Nations Environment Programme.

UNESCO. (2000). *Wise Coastal Practices for Sustainable Human Development Form – Work in Progress*. Extracts selected for: Wise Practices in Coastal Tourism Development in Protected Areas, Puerto Galera, Oriental Mindoro 21-27 May 2000. Environment and Development in Coastal Regions and in Small Island, UNESCO, 34pp. Available at: unesco.ias.unu.edu/csi/wise/progress2.htm.

U.S. National Parks Service. (1993). *Guiding Principles of Sustainable Design*. Denver CO: United States Department of the Interior, National Park Service, 117pp.

Bonaire Marine Park. *Use of Moorings at the Bonaire Marine Park*. Bonaire Marine Park website: www.bmp.org/park/kralendijk/moorings.htm. 3pp.

Viders, Hillary. (1995) *Marine Conservation for the Twenty-first Century,* Flagstaff, AZ Best Publishing, Inc. 350 pp.

WBM Oceanics Australia & G. Claridge. (1997). *Guidelines for Managing Visitation to Seabird Breeding Island.* Townsville, Australia: Great Barrier Reef Marine Park Authority.

Whale and Dolphin Conservation Society. 1998. *Mexican Whale Watching to be Restricted*. WDCS News Information. December 12, 1998. From Whale and Dolphin Conservation Society website: www.wdcs.org.

Wider Caribbean Initiative for Ship-generated Waste Project. (1996). *The Caribbean Sea – A Very Special Area.* Wider Caribbean Initiative for Ship-generated Waste Project and International Maritime Organization, 29pp.

Wight, P. (2000). *Ecotourists: Not a Homogenous Market Segment*. In *Encyclopedia of Ecotourism*, edited by D.B. Weaver et al. Wallingford, UK: CAB International.

Wight, P. (1999). *Catalogue of Exemplary Practices in Adventure Travel and Ecotourism.* Ottawa, Canada: Canadian Tourism Commission, 86pp.

Wight, P. and Associates. (1998). *Saskatchewan Bird Trail Community Planning Guide.* Prepared for the Saskatchewan Wetland Conservation Corporation.

Winrock International Environmental Alliance. *Mooring Buoy Information*. Pamphlet. HEPCA, Egypt. Located in Appendix D of HEPCA Development and Support Program: Red Sea Mooring Systems Installation Plan and Boat Captain Training Program, Volume 2 – Draft. Prepared by Winrock International Environmental Alliance, in cooperation with Environmental Quality International and George Washington University. Funded by Environmentally Sustainable Tourism (EST) Project, USAID/Egypt. 75pp.

WWF. *Linking Tourism and Conservation in the Arctic*. Pamphlet. Oslo, Norway: WWF Arctic Tourism Project. Available from:http://ngo.grida.no/wwfap.

Wylie, J. & H. Rice. (1996). *Sea Kayaks as Vehicles for Sustainable Development of Coastal and Marine Tourism*. Paper presented at the 1996 World Congress on Coastal and Marine Tourism, Honolulu, Hawaii, June 19-22, 9pp.

APPENDIX A

Marine Ecotourism Operator Checklist

Are you a Marine Ecotourism Operator? Use this following checklist to determine if you run a marine ecotourism operation. Do you provide:

1. **Travel to a natural (marine) setting that may include some cultural attractions.**
   Do you visit natural destinations that have marine or coastal elements?

2. **Travel that benefits local communities, including involvement and financial returns.**
   Does your company patronize local food, craft, lodging and equipment vendors?
   Does your company use local guides?
   Have you initiated any joint business agreements with local communities; e.g. a term lease for visiting community-owned property, or a co-managed lodging facility?
   Do you work with community leaders and institutions to increase the region's standard of living; e.g. participate in regional community-led planning?

3. **Travel that helps to conserve the local environment (both cultural and natural).**
   Do you support local parks and conservation efforts through financial contributions, entry fees, and donated time, equipment and expertise?
   Do you help local conservation authorities spread the word about the importance of conserving a region's resources; e.g. through international awareness campaigns and involvement in regional resource use discussions?

4. **Travel that minimizes its negative impact on natural environments and local communities.**
   Does your company strive to be culturally sensitive, learning about and respecting local cultural practices?
   Do you brief your clients on how to minimize their impact on local cultures and natural environments; e.g. through pre-departure briefings and written material?
   Do you utilize environmentally sound technologies; e.g. electric boat motors or solar power generation?
   Do you perform assessments of your company's operations, or assist in assessments of local resources, to better understand the potential impacts of your operations and what measures are needed to mitigate negative impacts?
   Do you perform monitoring of sites visited, and is your company willing to adjust or end visitation to an area if negative impacts appear?

5. **Travel that involves interpretation of the local environment to visitors, which in turn motivates the visitors to re-examine how they impact the earth and how they can aid local communities and the environment.**
   Do you provide environmental education for your staff, visitors and the local community?
   Do you provide interpretation for your visitors, helping them connect with the environment being visited to understand the importance of conserving that resource?
   Do you provide helpful tools, such as environmental fact sheets, to encourage visitors to take action for the environment and communities both at the destination and at home?

APPENDIX B

Websites and Publications

ACTIVITIES

Boating and Mooring Systems

- *Boat Maintenance for Marinas and Related Boating Businesses*. Rhode Island Sea Grant, http://seagrant.gso.uri.edu/riseagrant/factsheets/boaterfs/boater_fs_index.html.
- *Code of Conduct for the Prevention of Pollution from Small Ships in Marinas and Anchorages in the Caribbean Region.* (1997). Marine Environment Division, International Maritime Organization, 36pp.
- *Docks and Marinas Bibliography: University Education and Training for the Marine Industry.* (2002). A.C. Wartley. Madison, WI: University of Wisconsin-Madison, Department of Engineering Professional Development, 77pp. Available from C. Allen Wortley, University of Wisconsin-Madison, Fax: 1-608-263-3160.
- *Environmental Guide for Marinas: Controlling Nonpoint Source and Storm Water Pollution in Rhode Island.* (1994). M. Amaral & V. Lee. Narragansett, RI: Rhode Island Sea Grant and Coastal Resources Center, 155pp. Available at: http://seagrant.gso.uri.edu/riseagrant/BMP/BMP.html.
- *Florida Keys Mooring Buoy System*, http://www.fknms.nos.noaa.gov/mbuoy/welcome.html.
- *MarinaNet*, http://seagrant.orst.edu/crt/#marinanet.
- *Mooring Buoy Planning Guide.* (1996). Santa Ana, CA: PADI Project Aware and PADI International Resort Association. Available at: http://www.padi.org.
- *Ocean Dumping Laws*. Center for Marine Conservation, http://www.cmc-ocean.org/mdio/laws.php3.
- *Ship Safety and Waste Management* (includes information on MARPOL 73/78, which deals with sewage, oil and garbage management). International Maritime Organization, http://www.imo.org.
- *US National Ocean and Atmospheric Agency*, http://www.noaa.gov.
- *US Sea Grant Coastal and Recreation Tourism Boating Page*, http://seagrant.orst.edu/crt/boating.html.

Camping and Hiking

- Leave No Trace, http://www.lnt.org/welcome.html.
- *Leave No Trace Outdoor Skills & Ethics: Temperate Coastal Zones*, http://www.lnt.org/LNTPublications/s&einfo.html.

Diving

- *Fish Identification and Underwater Naturalist Courses*. PADI, http://www.padi.com/courses/rec/specialties.asp.
- *Marine Conservation for the Twenty-first Century*, (1995) Viders, Hillary. Flagstaff, AZ Best Publishing, Inc. 350 pp. http://www.bestpub.com/bookstore2.asp?Category=MarineLife
- *National Association of Underwater Instructors*, http://www.naui.org/index-side.html.
- *US Sea Grant Coastal and Recreation Tourism*, http://seagrant.orst.edu/crt/underwater.html.

Interpretation, Environmental Education and Guiding

- *Connection.* The Newsletter for the Environmental Education Section of the (US) National Association of Interpretation. Fort Collins, CO: National Association for Interpretation.
- *Developing Effective Communication and Interpretive Techniques.* (2000). R. Ballantyne, A. Crabtree, S. Ham, K. Hughes & B. Weiler, 82pp.
- *Environmental Interpretation – A Practical Guide for People with Big Ideas and Small Budgets.* (1992). S.H. Ham, Golden, CO: North American Press, 456pp.
- *Great Barrier Reef Marine Park Manual*: *Reef Communication.* (1996). GBRMPA Townsville, Australia: Great Barrier Reef Marine Park Authority, 16pp.

- *Guidebook for Creating Wetland Interpretation Sites Including Wetlands and Ecotourism.* (c. 1994). J.A. Kusler for the Association of State Wetland Managers, 134pp. Available at: http://www.aswm.org.
- *The Interpreter's Guidebook: Techniques for Programs and Presentations.* (1992). K. Regnier, M. Gross, R. Zimmerman & J. Heintzman. Stevens Point, WI: UW-SP Foundation Press, Inc., 101pp.

Release Fishing

- *American Sportsfishing Association*, http://www.asafishing.org.
- *Fisheries Western Australia*, http://www.wa.gov.au/westfish/rec/broc/catchcare/cc01.html.

ATTRACTIONS

- *American Birding Association's Principles of Birding Ethics*, http://www.whatasite.com/adventure/birding_ethics.html.
- *Coral Reef Alliance (CORAL)*, http://www.coral.org.
- *Guidelines for Managing Visitation to Seabird Breeding Islands.* (1997). WBC Oceanics Australia & G. Claridge for the GBRMPA and Environment Australia-Biodiversity Group, 100+pp. Available at: http://www.gbrmpa.gov.au/corp_site/info_services/publications/seabirds.
- *Information on Fish Feeding*, http://www.reefrelief.org/science_index.html.
- *Pacific Whale Foundation*, http://www.pacificwhale.org.
- *Protecting Indigenous Culture and Land through Ecotourism, A Special Issue*. Cultural Survival Quarterly, Summer 1999, 23(2): 60pp. Available from TIES at http://www.ecotourism.org/membooks.
- *Providing Positive Wildlife Viewing Experiences: A Practical Handbook*. (2000). D. Richie Oberbillig, Division of Wildlife and Watchable Wildlife Incorporated, 68pp. Deborah Richie Communications, debrichi@montana.com.
- *Reef Environmental Education Foundation*, http://www.reef.org.
- *Report of the Workshop on the Socioeconomic Aspects of Whale Watching.* (1999). Yarmouth Port MA: The International Fund for Animal Welfare, 88pp. Available at: http://www.ifaw.org.
- *Sea Turtle Conservation League and Caribbean Conservation Corporation*, http://www.cccturtle.org.
- *Watchable Wildlife Inc.*, http://www.watchablewildlife.org.
- *Whale and Dolphin Conservation Society*, http://www.wdcs.org.
- *WhaleNet*, http://whale.wheelock.edu/Welcome.html.
- *Whales on the Net*, http://whales.magna.com.au.
- *Whale-Watching-Web*, http://www.physics.helsinki.fi/whale.

AUDITS, MATERIALS AND TECHNOLOGY FOR MARINE ECOTOURISM FACILITIES

- *American Society of Landscape Architects*, http:\\www.asla.com.
- *Being Green is your Business: Manual No. 2 – An Easy Guide to Environmental Action for Tour Operators, Travel Agents and Tour Wholesalers.* (1999). Tourism Council Australia, Commonwealth of Australia, with CRC for Sustainable Tourism, 74pp.
- *Being Green Keeps You Out of the Red***.** (1998). Tourism Council Australia, Commonwealth of Australia, with CRC for Sustainable Tourism, 82pp.
- *Best Practice Ecotourism: A Guide to Energy and Waste Minimization.* (1995). Commonwealth of Australia. Available at: http://www.isr.gov.au/sport_tourism/publications/bpe/start.html.
- *Caribbean Alliance for Sustainable Tourism*, http://www.cha-cast.com/index.html.
- *CRC for Sustainable Tourism*, http://www.crctourism.com.au.
- *Green Hotelier*. International Hotels Environment Initiative, http://www.ihei.org/csr/csrwebassist.nsf/content/f1c2a3b4.html.
- *Green Hotel Keeping Fact Sheet*. The International Ecotourism Society, http://www.ecotourism.org/bus.html.
- *Green Seal*. http://www.greenseal.org.

- *International Ecolodge Guidelines.* (2002). H. Mehta, A. Baez & P. O'Lochlin (eds.). The International Ecotourism Society, Burlington, VT, 192pp.
- *Marine Construction Manual: A Guide to Using Pressure-treated Southern Pine in Fresh & Saltwater Applications*. (1999). Southern Forest Products Association. Available at: http://www.southernpine.com.
- *Planetary Coral Reef Foundation*, http://pcrf.org/wwg.htm.
- *Tourism Council Australia*, http://www.tourism.org.au.
- *Twinshare: Tourism Accommodations and the Environment.* (2000). CRC Tourism, Australia. Available at: http://twinshare.crctourism.com.au/HOME.HTM.

ECOLABELS, CERTIFICATION AND ACCREDIATATION OF ECOTOURISM OPERATIONS/PRODUCTS

- *Costa Rica's Sustainable Tourism Certification Program*, http://www.turismo-sostenible.co.cr/EN/home.shtml.
- *Ecolabels in the Tourism Industry*. (1998). United Nations Environment Programme Industry and Environment, Paris, France, 52pp. http://www.unepie.org/tourism/publi.html.
- *Ecolabels in Tourism: Certification and Promotion of Sustainable Management.* (2001). X. Font & R. Buckley (eds.). Wallingford: CAB International.
- *Ecotourism Certification Workshop*. Planeta.com, http://groups.yahoo.com/group/ecotourism_certification.
- *Ecotourism Society of Saskatchewan*, http://www.ecotourism.sk.ca/.
- *Green Globe*, http://www.greenglobe.org.
- *NEAP II: Australia's Nature and Ecotourism Accreditation Program*, http://tq.com.au/qep/neap.htm and http://www.tq.com.au/home.htm.
- *Smart Voyager*, http://www.rainforest-alliance.org/programs/sv/index.html.

ECOTOURISM

- *Australian Government Ecotourism Publications*, www.tourism.gov.au/publications.
- *Changing the Nature of Tourism: Developing an Agenda for Action.* (1997). UK Department for International Development, 27pp. Available at: http://www.dfid.gov.uk.
- *Ecotourism: A Guide for Planners and Managers, Vol. I.* (1993). K Lindberg & D. Hawkins (eds.). The International Ecotourism Society, Burlington VT, 176pp.
- *Ecotourism: A Guide for Planners and Managers, Vol. II.* (1998) K. Lindberg, M. Epler Wood & D. Engeldrum (eds.). The International Ecotourism Society, Burlington VT, 244pp.
- *Ecotourism and Sustainable Development: Who Owns Paradise?* (1999). M. Honey, Island Press, New York, NY, 405pp.
- *Ecotourism Annotated Bibliography, 5th Edition.* (2002). P.F.J. Eagles & P. Nilsen (eds.). The International Ecotourism Society, Burlington, VT, 90pp.
- *Ecotourism Explorer*. The International Ecotourism Society, http://www.ecotourism.org..
- *Great Outdoor Recreation Pages*, www.gorp.com.
- *Marine Ecotourism for the Atlantic Area (META)*. Project final publications, http://www.tourism-research.org/reports.html.
- *Planeta.com*, http://www.planeta.com and http://www.planeta.com/ecotravel/tour/list.html.

ECOTOURISM BUSINESS DEVELOPMENT AND MANAGEMENT

- *A Road Map to Tourism Financing: Guide for Small and Medium-sized Businesses.* (1999). Canadian Tourism Commission, Industry Canada, 84pp. Available at: http://www.canadatourism.com/en/ctc/ctc_index.cfm.

- *Being Green is your Business: An Easy Guide to Environmental Action for Tour Operators, Travel Agents and Tour Wholesalers.* (1999). Tourism Council of Australia, in association with CRC for Sustainable Tourism, Woolloomooloo, Australia: 74 pp.
- *Being Green Keeps You Out of the Red*: *An Easy Guide to Environmental Action for Accommodation Providers and Tourist Attractions.* (1999). Tourism Council of Australia, in association with CRC for Sustainable Tourism, Woolloomooloo, Australia: 82 pp.
- *Ecotourism Market Research Results*. North American Commission for Economic Cooperation, www.orchestrabycrossdraw.com/marinet.
- *Grow Your Ecotourism Business: A Support Kit for Operators, Vols. 1 & 2.* (1999). Tourism Queensland, http://tq.com.au/hwchy/publications.htm.
- *Marketing Tourism Destinations Online.* (1999). World Tourism Organization, 160pp.
- *Measuring the Economic Input of Coastal and Marine Tourism*. (1998). Australian Economic Consultants. Australian Department of Industry, Science and Tourism, 96pp.
- *Participating in International Coastal Cleanup Programs*. Center for Marine Conservation, http://www.cmc-ocean.org/cleanupbro/index.php3.
- *The Business of Ecolodges.* (2001) .The International Ecotourism Society, Burlington, VT, 76pp.
- *The Business of Ecotourism: The Complete Guide for Nature and Culture-Based Tourism Operations.* (1997). C. Patterson. Rhinelander, WI: Explorer's Guide Publishing, 195pp. Available at: http://www.kalaharimanagment.com.
- *The Business of Nature-Based Tourism*. (1998). B. McKercher. Melbourne, Australia: Hospitality Press, 220pp.
- *The Green Host Effect – An Integrated Approach to Sustainable Tourism and Resort Development.* (1999) James E. N. Sweeting, Aaron G. Bruner, and Amy B. Rosenfield, Conservation International, 103 pp. Available from TIES at http://www.ecotourism.org.
- *World Tourism Organization Ecotourism Market Series*, http://www.world-tourism.org/sustainable/IYE/MarketStudies.htm.

GUIDELINES AND BEST PRACTICE

- *A Collection of Responsible Travel Guidelines*. (1995). The International Ecotourism Society, Burlington, VT, 24pp.
- *Australia's Office of National Tourism*, www.tourism.gov.au.
- *Awards for Improving the Coastal Environment: The Example of the Blue Flag.* (1996).UNEP-United Nations Environment Programme, 50pp.
- *Best Practice Ecotourism: A Guide to Energy and Waste Minimization*. (1995). Commonwealth of Australia.
- *Best Practices for Tourism Center Development Along the Red Sea*. (1998). Prepared for (Egypt) Tourism Development Authority.
- *Catalogue of Exemplary Practices in Adventure Travel and Ecotourism.* (1999). P. Wight. Ottawa, Canada: Canadian Tourism Commission, 86pp. Available at: http://www.canadatourism.com.
- *Coastal Tourism in the Wider Caribbean Region: Impacts and Best Management Practices* (CEP Technical Report N. 38), (1997). Caribbean Environment Programme and United Nations Environment Programme, 84pp. Available at: http://grid2.cr.usgs.gov/cepnet/pubs/techreports/tr38en/index.html.
- *Draft Heritage Tourism Guidelines: Best Practice for People Involved in Tourism and Heritage Places – A Discussion Paper*. (1999). Australian Heritage Commission and Tourism Council Australia, 41pp.
- *Ecotourism Guidelines for Nature Tour Operators*. (1995). The International Ecotourism Society, Burlington VT, 24pp. Available at: http://www.ecotourism.org.
- *Environment Australia*, http://www.ea.gov.au or *Australian Heritage Commission*, http://www.ahc.gov.au.
- *Great Barrier Reef Marine Park Manual: Reef Essentials*. (1996). Townsville, Australia: GBRMPA, 21pp.
- *Guidelines for Belizean Ecotourists*. (1996). Available at: http://www.belize.com/eco.html.
- *Guidance for Best Management Practices for Caribbean Coastal Tourism*. (1996). Island Resource Foundation. St. Thomas, US Virgin Islands, 43pp. Available at: http://www.irf.org/ir_bmp.html.

- *Linking Tourism and Conservation in the Arctic*. Pamphlet. Oslo, Norway: WWF Arctic Tourism Project. Available at: http://ngo.grida.no/wwfap.
- *On Route to Sustainability: Best Practices in Canadian Tourism.* (1999). P. Williams & I. Budke, prepared for The Canadian Tourism Commission and Simon Fraser University. Available at: http://www.canadatourism.com.
- *Tourism and Environmental Best Practice in APEC Member Economies*. (1997). Asia-Pacific Economic Cooperation Secretariat.
- *United Nations Environment Programme*, www.unepie.org/home.html.
- *Wise Coastal Practices for Sustainable Human Development Form – Work in Progress*. Extracts selected for: Wise Practices in Coastal Tourism Development in Protected Areas, Puerto Galera, Oriental Mindoro 21-27 May 2000. (2000). Environment and Development in Coastal Regions and in Small Island, UNESCO, 34pp. Available at: http://unesco.ias.unu.edu/csi/wise/progress2.htm.

MARINE CONSERVATION

- *Australian Institute for Marine Studies (AIMS)*, http://www.aims.gov.au.
- *Center for Marine Conservation*, http://www.cmc-ocean.org/mdio/facts.php3.
- *CORAL, the Coral Reef Alliance*, http://www.coral.org.
- *CRC for Sustainable Tourism*, http://www.crctourism.com.au.
- *Great Barrier Reef Marine Park Authority*, http://www.gbrmpa.gov.au.
- *International Fund for Animal Welfare*, http://www.ifaw.org.
- *Marine Conservation Monitoring Centre*, http://www.wcmc.org.uk/habitats/marine.htm or http://www.unep-wcmc.org.
- *Marine Conservation for the Twenty-first Century*, (1995) Viders, Hillary. Flagstaff, AZ Best Publishing, Inc. 350 pp. http://www.bestpub.com/bookstore2.asp?Category=MarineLife
- *Ocean Futures Society*, http://www.oceanfutures.org.
- *Ocean Voice*, http://www.ovi.ca.
- *REEF (Reef Environmental Education Foundation)*, http://www.reef.org.
- *Reefkeeper International*, http://www.reefkeeper.org.
- *Reef Relief*, http://www.reefrelief.org.
- *Surfrider Foundation*, http://www.surfrider.org.
- *US National Oceanic and Atmospheric Administration (NOAA)*, http://www.nos.noaa.gov/ocrm/pcd/outreach.html#anchor302101.
- *US Sea Grant Coastal and Recreation Tourism*, http://www.nsgo.seagrant.org.

MARINE PROTECTED AREAS (MPAs)

- *Bonaire Marine Park*, http://www.bmp.org.
- *Canadian Pacific MPAs*, http://www.pac.dfo-mpo.gc.ca/oceans/mpa/mpafin.htm.
- *Caribbean Marine Parks*, http://www.irf.org/irmascia.html.
- *Cayman Island Marine Parks Regulations*, http://cayman.com.ky/visiting/index.htm.
- *Chumbe Island Coral Park*, http://www.chumbeisland.com.
- *Coral Reef Alliance Parks Program*, http://www.coralreefalliance.org/programs/parks.html.
- *Financing mechanisms for MPAs*. The International Ecotourism Society, http://www.ecotourism.org/retiesselfr.html.
- *Marine Protected Areas*. World Conservation Monitoring Center, http://www.wcmc.org.uk/wh/reviews/wetlands/2.htm.
- *MPA News*, http://depts.washington.edu/mpanews.
- *Upper Keys Region of the Florida Keys National Marine Sanctuary, official site brochure*. (1998). Reef Relief, Key West, FL: NOAA and State of Florida. Available at: http://www.reefrelief.org/Printed_edu/NOAA/UPPER/brochure_index.html.

- *World Conservation Monitoring Center*, http://www.wcmc.org.uk/data/database/un_combo.html.

MONITORING

- *AGRA Procedure*, http://coral.aoml.noaa.gov/agra/rap-revised.html for rapid assessment of reefs.
- *Australian Institute of Marine Sciences (AIMS)*, http://www.aims.gov.au.
- *Global Coral Reef Monitoring Network*, http://coral.aoml.noaa.gov/gcrmn/protocol.html.
- *Quest Reef Surveying Technique*, http://www2.hawaii.edu/~kmec/quest.htm.
- *ReefBase*. International Center for Living and Aquatic Resources Management (ICLARM), http://www.cgiar.org/iclarm/reefbase. ReefBase archives data collected by Aquanaut program participants, mainly members of the international dive community.
- *ReefBase Aquanaut Survey*. (1997). Manila, Philippines: International Center for Living Aquatic Resources Management (ICLARM), 61pp.
- *Reef Check*, http://www.ust.hk/-webrc/reefcheck/reef. Reef Check is the largest international coral reef monitoring program involving recreational divers and marine scientists.
- *Reef Environmental Education Foundation (REEF)*, http://www.reef.org.
- *Surveying Coral Reef Fishes: A Manual for Data Collection, Processing and Interpretation of Fish Survey Information for the Tropical Northwest Atlantic.* (1999). Nassau, Bahamas: Reef Environmental Education Foundation (REEF) and The Nature Conservancy, 84pp.

REGIONAL/INTERNATIONAL CODES OF CONDUCT (Operator Guidelines)

- *Alaska Wilderness and Recreation Tourism Association*, http://www.alaska.net/~awrta/meminfo/index.html and http://www.alaska.net/~awrta/meminfo/ecoguidelines.html.
- *Bay of Fundy Marine Tour Operators Code of Ethics for Whale Watchers*, http://www.whatasite.com/adventure/whale_ethics.html.
- *Guidelines and Recommendations for Nature-Based Tourism Planning and Practice in South Carolina.* (1996). South Carolina Nature-Based Tourism Association for the South Carolina Sea Grant Consortium, 24pp.
- *Guidance for those Organizing and Conducting Tourism and Non-governmental Activities in the Antarctic.* International Association of Antarctic Tour Operators, http://www.iaato.org/tourop_guide.html.
- *Linking Tourism and Conservation in the Arctic*. Pamphlet. World Wide Fund for Nature – Arctic Tourism Project, http://ngo.grida.no/wwfap.

SITING, DESIGNING AND CONSTRUCTING A MARINE ECOTOURISM FACILITY

- *Appropriate Technology for Sewage Control in the Wider Caribbean Region.* (1998). Caribbean Environment Program & United Nations Environment Programme, CEP Technical Report No. 40. Available at: http://grid2.cr.usgs.gov/cepnet/pubs/techreports/tr40en/index.html.
- *Australia's Office of National Tourism*, http://www.tourism.gov.au.
- *Best Management Practices for Clean Marinas.* (1999). Rhode Island Sea Grant, http://seagrant.gso.uri.edu/riseagrant/BMP/BMPcases.html.
- *Best Practices for Tourism Center Development along the Red Sea Coast*. (1998). Prepared for the Tourism Development Authority, Egypt. 107pp.
- *Coastal Tourism: A Manual for Sustainable Development*. (1997). Canberra ACT, Australia: Commonwealth Coastal Action Program -- Department of the Environment, Sport and Territories, Commonwealth of Australia, 107pp. Available at: www.environment.gov.au/marine/coastnet/tourism.
- *Docks and Marinas Bibliography: University Education and Training for the Marine Industry.* (2000). A.C. Wortley, University of Wisconson-Madison, Department of Engineering Professional Development, 77pp. Available from C. Allen Wortley, University of Wisconsin-Madison, Fax: 1-608-263-3160.
- *Docks and Marinas 2000.* (2000). by B. Tobiasson & R. Kollmeyer, ISBN 0-9675437-0-3.

- *Ecotourism: A South Australian Design Guide for Sustainable Development.* **(**November 1994). South Australian Tourism Commission, 140pp.
- *Environmental Building News,* BuildingGreen, Inc., http://www.buildinggreen.com.
- *Environmental Guide for Marinas: Controlling Nonpoint Source and Storm Water Pollution in Rhode Island.* (1994). M. Amaral & V. Lee, Rhode Island Sea Grant and Coastal Resources Center, 155pp. Available at: http://seagrant.gso.uri.edu/riseagrant/BMP/BMP.html.
- *Environmental Impact Assessment for the Establishment of a Marina/Small Craft Harbour in Southwest Tobago.* (1994). Caribbean Environment Program & United Nations Environment Programme, CEP Technical Report No. 29. Available at: http://grid2.cr.usgs.gov/cepnet/pubs/techreports/tr29en/index.html.
- *Green Hotelier*. The International Hotels Environment Initiative, London UK.
- *Guidebook for Creating Wetland Interpretation Sites Including Wetlands and Ecotourism.* J.A. Kusler, Association of State Wetland Managers, 134pp. Available at: http://www.aswm.org.
- *Guidelines for Low-Impact Coastal Tourism Development – Quintana Roo, Mexico (Draft Summary – Summer Institute)*. (1998). C. Molina & P. Rubinoff. Amigos de Sian Ka'an A.C., Coastal Resource Center/URI and US Agency for International Development, 26pp.
- *Guidelines for Sediment Control Practices in the Insular Caribbean*. (1994). CEP Technical Report No. 32, UNEP Caribbean Environment Program, Kingston, Jamaica. Available at: http://grid2.cr.usgs.gov/cepnet/pubs/techreports/tr32en/content.html.
- *Guiding Principles of Sustainable Design.* (September 1993). United States Department of the Interior National Park Service & Denver Service Center, 117pp., http://www.nps.gov/dsc/dsgncnstr/gpsd.
- *International Ecolodge Guidelines.* (2002). H. Mehta, A. Baez & P. O'Lochlin (eds.). The International Ecotourism Society, Burlington, VT, 192pp.
- *International Marina Institute*, http://www.imimarina.org.
- *Marina Net*, http://seagrant.orst.edu/crt/index.html#marinanet.
- *Mitigating Storm and Flooding Damage*. US Federal Emergency Management Agency, http://www.fema.gov/mit.
- *Modern Water Trails.* (1998). D. Getchell, North American Water Trails, Inc., 106pp.
- *Normas Pràticas para el Desarrolo Turístico de la Zona Costera de Quintana Roo, Mexico*. (1998). Amigos de Sian Ka'an A.C., Coastal Resource Center/URI & US Agency for International Development, 93pp.
- *Planning for Coastline Change: Guidelines for Construction Setbacks in the Eastern Caribbean Islands.* (1997). G. Cambers for UNESCO. CSI info 4, UNESCO, Paris, viii + 14pp. Available at: http://unesco.ias.unu.edu/csi/pub/info/info4.htm.
- *Requirements for Eco-Lodge Design in Egypt*. (1999). Egypt Tourism Development Authority, Cairo, Egypt, 15pp.
- *The Ecolodge Sourcebook for Planners & Developers*. (1995). D. Hawkins, M. Epler Wood & S. Bittman (eds.). The International Ecotourism Society, N Burlington, VT, 151pp.
- *The Green Host Effect – An Integrated Approach to Sustainable Tourism and Resort Development.* (1999). J.E.N. Sweeting, A.G. Bruner & A.B. Rosenfield, Conservation International Policy Papers, 103pp.
- *Tourism Facility Development*. World Tourism Organization, http://www.world-tourism.org/ows-doc/wtopubli/develop.htm.
- *Understanding, Assessing and Resolving Light-Pollution Problems on Sea Turtle Nesting Beaches.* (1996). B.E Witherington & R.E. Martin. FMRI Technical Report TR-2, St. Petersburg, FL: Florida Department of Environmental Protection, 73pp.

APPENDIX C

Glossary

Anchorage – A sheltered haven suitable for boats to anchor. They can be small semi-enclosed remote bays surrounded by wilderness, or substantial embayments around which a number of individual coastal communities and marine service centers are established.

Anti-fouling Paints – Used to prevent sea life such as algae and mollusks from attaching to the hulls of boats, thereby slowing down the ship and increasing fuel consumption. Highly effective anti-fouling paints, containing *organotin tributyl tin* (TBT) have been proven to cause deformations and other negative impacts in sea life. Most countries have banned the use of TBT-based paints and instead support the use of copper-based and silicon-based paints, which make the surface of the ship slippery so that sea life will be easily washed off as the ship moves through the water. Ultrasonic or electrolytic devices may also work to rid the ship of foulants.[58]

Ballast – Any solid or liquid placed in a ship to increase the draft, to change the trim, to regulate the stability, or to maintain stress loads within acceptable limits. Generally water is used as ballast.

Benchmark – A process through which an organization compares its internal performance to external standards of excellence, and then acts to close whatever gap exists or capitalizes on its leadership position. The objective of benchmarking is to achieve and sustain best-in-class performance through continual improvement activities.[59]

Best Practice – When a company uses the best available technologies and techniques known to their industry, in this case to achieve sustainable tourism.

Bilge Pillow – An oil-absorbing sponge that can be used to collect oil from a small vessel's bilge water before discharge.

Chumming – The practice of creating a water-borne trail of animal parts and blood to lure sharks, which have a highly developed sense of smell, to vessels. Clients observe the sharks feeding, usually from cages lowered into the water.

Coastal Zone – This term generally refers to the following areas: 1) near coastal waters and fringing reefs, 2) beach and shoreline, 3) estuaries, back bays, salt ponds and lagoons, 4) coastal plain, 5) uplands, or 6) offshore waters.[60]

Code of Conduct – Voluntary behavioral guidelines for the general pubic, in this case tourists. Usually intended to advise the conduct of individuals, often set by local government.

Code of Practice – Self-regulatory industry guidelines, often set by industry associations or stakeholders. They will have policy weight within the organization/association that developed and subscribed to them.[61]

Created Wetlands – Waste treatment facilities that use hydroponic methods such as filtration using plants and bacteria to remove nutrients from human sewage.

Ecological Sustainable Development – Development that uses, conserves and enhances the community's resources so that ecological processes, on which life depends, are maintained and quality of life for both present and future generations is increased.

Ecotourism – Responsible travel to natural areas that conserves the environment and sustains the well-being of local people.

Environmental Management System (EMS) – A system where planning, techniques, and monitoring are used to maximize the efficiency of resource use (e.g. energy, water) and minimize impact on ecological processes.

FAMs – Familiarization trips organized for travel agencies, wholesalers and media to learn more about specific tourism products.

Guideline – A voluntary code that guides human action.

Gray Water – Waste water from a home or business that was used for cleaning (e.g. shower water) but which does not contain human waste.

Indigenous Plants – Native plants, or plants originating in the region.

Interpretation – The art of helping visitors see and understand the site they are visiting through a holistic and inspirational provision information and experiences

LAC – Limits of Acceptable Change.

Marina/Small Ship Harbor – Infrastructure built to service the needs of recreational craft, providing protected berthing, storage for boats ashore, slipways, handleries, lavatories, waste reception, fuel, water and maintenance facilities.[62]

Marine Ecotourism – Responsible travel to marine and coastal areas that conserves the environment and sustains the well-being of local people.

Mass Ecotourism – A term popularized in Australia that describes sustainable nature tourism activities that involve interpretation and large number of visitors.

Mooring Buoy System – Consists of three elements: a permanent fixture on the sea bottom, a floating buoy on the water surface, and something in between to attach the two (HEPCA).

Nautical Tourism – The use of the marine environment by visiting small ships for leisure and pleasure purposes, and local small ships for charter, including the use of supporting infrastructure and facilities where available (International Maritime Organization, 1997).

Point-source Irrigation – Irrigation at ground level, directly at the roots of a plant at specific points along a hose.

Pontoon – A semi-permanently moored floating structure, which supports tourist activities operated by shore-based tour companies.

Stakeholder – A person who has an interest or share in an undertaking, for example a SCUBA diving tour. A stakeholder can also be a person who will lose or gain something, in this case the resources used by tourism and recreation.

Standard – Something established by authority, custom or general consent as a model or example. Also known as a criterion. A standard is any definite rule, principle or measure established by authority. A standard may be voluntary or law.

TBT – See *Anti-fouling Paints*.

Xeriscaping – Landscaping with drought-tolerant plants.

Yachting – The tourism or leisure activity for which a boat is the main requirement, and the boat is large enough to warrant a port or marina.

ENDNOTES

[1] After: GBRMPA, c.1996
[2] WBM Oceanic Australia and Gordon Claridge, 1997
[3] GBRMPA, c. 1996
[4] "Pump or Treat?" 1998
[5] Tourism Queensland, 1999
[6] *Mooring Buoy Information*, no date
[7] IMO, 1999
[8] WBM Oceanic Australia and Gordon Claridge, 1997
[9] After: GBRMPA, c. 1996
[10] After: WBM Oceanic Australia and Gordon Claridge, 1997; GBRMPA, c.1996; and National Outdoor Leadership School, 1998
[11] After: Wight, 1998
[12] Murphy, 2000
[13] Tilden, in Regnier et al., 1992
[14] Wight, 1999
[15] After: Munoz in Hawkins, et al, 1995
[16] Wight, 1999
[17] Merriman, 1999
[18] Whale and Dolphin Conservation Society website
[19] Hoyt, 1995
[20] International Fund for Animal Welfare, 1996
[21] GBRMPA, c. 1996
[22] Reef Relief, 2000
[23] Gjerdalen, 1999
[24] Mehta, Baez and O'Loughlin, 2002
[25] After: Commonwealth Coastal Action Program, 1997, Amigos de Sian Ka'an, A.C./Coastal Resources Center, URI, 1998; Commomwealth Coastal Action Program, 1997
[26] After: Kapitzke, 1999
[27] Ashton in Mehta and Baez, 2001
[28] After: Pholeros, Tawa and Opie, 1994
[29] Australian Ecolodge Guidelines draft document, c. 1996
[30] Tourism Queensland, 1999
[31] Amigos de Sian Ka'an, A.C. / Coastal Resources Center, 1998
[32] After: Mehta and Baez, 2000; URI, 1998
[33] After: WBM Oceanics Australia and Gordon Claridge, 1997; and UNEP, 1994
[34] Queensland Tourism, 1999
[35] Commonwealth of Australia, 1997
[36] Southern Pine Council, 1999
[37] "At One with Nature on Eco Beach," 1999
[38] Talacko, 1996
[39] Michel Dalke, personal correspondence, 1999
[40] Tourism Queensland, 1999
[41] After: Canadian Tourism Commission, 1999
[42] Wight, 2000
[43] TIES Ecotourism Statistical Fact Sheet, 1999; Eagles and Higgins, 1998; Lindberg, 1998
[44] Hoyt, 1995
[45] Duffus, 1988 in IFAW, 1999. Converted using the World Business Network website calculator at http://www.oanda.com/convert/classic (1990 rate).

[46] Duffus and Dearden, 1990 in IFAW, 1999 Converted using the World Business Network website calculator at http://www.oanda.com/convert/classic (1990 rate).
[47] Office of National Tourism, c. 1998. Converted using the World Business Network website calculator at http://www.oanda.com/convert/classic.
[48] Speciality Travel Index in Wylie and Rice, 1996
[49] Commonwealth Coastal Action Program, 1997 and Canadian Tourism Commission, 1999
[50] Halpenny, 1999
[51] Wight, 1999
[52] After Patterson, 1997
[53] Wight, 1999
[54] Wight, 2000
[55] N. Inamdar, personal correspondence, 2000
[56] After Tourism Development Authority, 1998
[57] Burton, 1999; Harrison 1999; "Sustainable…," 1999
[58] IMO, 1998
[59] Coopers and Lybrand in Tourism Queensland, 1999
[60] Island Resources Foundation, 1996
[61] WBM Oceanic Australia and Gordon Claridge, 1999
[62] International Maritime Organization, 1997