

# Developing a Supply Chain Management Tool



Responsible

Marine



Tourism

Initiative



**Working with Marine Recreation Providers to Adopt Environmental & Social Good Practices**

## **An Initiative Led By**

The Center for Environmental Leadership in Business ([CELB](#))

The Coral Reef Alliance ([CORAL](#))

International Hotels Environment Initiative ([IHEI](#))

The Tour Operators' Initiative for Sustainable Tourism Development ([TOI](#))

## Table of Contents

<b>SECTION I</b>	<b>INTRODUCTION</b>	<b>1-3</b>
	Identifying responsible marine recreation providers	
	Building consensus	
	Developing a supply chain management tool	
	Putting this initiative into the context of existing regional and international codes of conduct	
	The importance for businesses and communities	
<b>SECTION II</b>	<b>GENERAL DESCRIPTION OF THE SUPPLY CHAIN MANAGEMENT TOOL</b>	<b>4-5</b>
	Components: assessment checklist and a practical guide to good practice	
	Uses for the tool	
	Relevant marine recreation providers	
	Soliciting feedback	
<b>SECTION III</b>	<b>DRAFT ASSESSMENT CHECKLIST</b>	<b>6-14</b>
	Twelve core questions to ask all marine recreation providers	
	Supplemental questions to ask providers of interactive wildlife trips	
	Supplemental questions to ask providers of recreational fishing	
	Supplemental questions to ask providers of snorkeling/diving/snuba;	
<b>SECTION IV</b>	<b>DRAFT BRIEFING PAPERS FOR INCLUSION IN A PRACTICAL GUIDE TO GOOD PRACTICE FOR MARINE RECREATION PROVIDERS</b>	<b>15-30</b>
	<i>A draft "briefing paper" has been developed for each following aspects of the marine recreation industry</i>	
	Anchoring	
	Boat operations	
	Boat maintenance	
	Sewage and garbage disposal	
	Snorkeling, diving, and snuba activities	
	Seafood and souvenir consumption	
	Recreational fishing	
	Marine wildlife viewing	
<b>SECTION V</b>	<b>BACKGROUND RESOURCES</b>	<b>31-33</b>
<b>SECTION VI</b>	<b>EXAMPLES OF ENVIRONMENTAL CODES OF CONDUCT AND CERTIFICATION SCHEMES</b>	<b>34</b>

## **SECTION I: INTRODUCTION**

### **Identifying responsible marine recreation providers**

Tourism companies are recognizing that they can contribute to marine conservation and the economic development of coastal communities by working with marine recreation providers that adopt environmental and social good practices.

Major contractors of marine recreation services, notably tour operators, hotels and cruise lines, have voiced a need for a common assessment checklist of environmentally and socially responsible good practices that all large contractors can use to evaluate their marine recreation providers (e.g. dive operators, boat rentals, etc).

### **Building Consensus**

The Center for Environmental Leadership in Business (CELB), the Coral Reef Alliance (CORAL), the International Hotels Environment Initiative (IHEI) and the Tour Operators' Initiative for Sustainable Tourism Development (TOI) have partnered to consolidate the extensive information already developed by various organizations regarding good practices within the marine recreation industry (*see Section V for a comprehensive list of background resources*) to develop a common supply chain management tool. This tool will provide a central reference on good environmental and social practice from marine recreation providers for the corporate community to use during purchaser-supplier business processes.

CELB, CORAL, IHEI and TOI are bringing together marine recreation providers, major contractors of their services and other interested parties (including conservation and development organizations, local authorities, community groups and marine protected area managers) to develop an assessment checklist of environmental and social practices to identify responsible marine recreation providers.

### **Developing a supply chain management tool: an assessment checklist & a practical guide to good practice**

The assessment checklist, structured as a set of questions addressing major environmental and social issues and recommended good practices for marine recreation providers, can be used by hoteliers, tour operators, and cruise lines throughout their supply chain management processes. The questions can be used during the selection and contracting processes to assess if marine recreation providers (including operators of snorkeling, diving, glass bottom boat trips, boat rentals, sport fishing, etc.) operate according to sound environmental and social practices. The questions will also be readily adaptable into an environmental and social policy for tourism companies looking to set performance standards for all their marine recreation providers.

The final assessment checklist will be complimented by the development of an educational practical guide to good practice for the marine recreation industry. This guide will give marine recreation providers supporting information, in a practical format, to better understand the issues addressed in the checklist, and how best to respond to the issues. Together, the checklist and the practical guide can be used as educational materials to build awareness among purchasers, suppliers, and tourists and to encourage environmentally conscious marine recreation providers in popular coastal resort destinations throughout the world.

## **Putting this initiative into the context of existing regional and international codes of conduct**

In recent years, environmental codes of conduct and best practices have been developed and implemented throughout many sectors of the tourism industry worldwide. Much of the impetus for developing codes of conduct and promoting sustainable tourism has come from environmental organizations, governmental bodies, small businesses and local concerns, yet the wider tourism industry has steered policies and practices in this direction as well. This interest in simultaneously promoting economic growth and environmental protection recently culminated in the United Nations designation of 2002 as the International Year of Ecotourism. The focus on developing sustainable models of tourism is reflected across a broad spectrum in many projects of the United Nations Environment Program (UNEP) and the World Tourism Organization (WTO/OMT), the Caribbean Tourism Organization (CTO), major tourism associations such as the World Travel and Tourism Council, the International Hotel and Restaurant Association (IH&RA), the International Hotels Environment Initiative (IHEI), the International Council of Cruise Lines (ICCL), the Tour Operators' Initiative for Sustainable Tourism Development (TOI), the Caribbean Alliance for Sustainable Tourism (CAST) and many international environmental NGO's including Conservation International, World Wildlife Fund, and The International Ecotourism Society among others.

Several notable examples of established environmental codes of conduct and voluntary certification schemes exist in various regions of the world. For an abbreviated list, please see Section VI.

## **The importance for businesses and communities**

While a primary focus of this assessment tool is the improvement of practices by the tourism industry to better protect natural marine environments, it is important to note that unsustainable practices by marine operators and tourists themselves can bring negative socioeconomic effects to a community.

Poorly conducted, uniformed or irresponsible boating and tourist activities can seriously undermine the health and attractiveness of near-shore marine environments and coral reefs—the same ecosystems which marine recreation providers and visitors are reliant upon for tourism activities. While occasional isolated events may have a negligible impact, the cumulative effects of regularly destructive boat operations and unmanaged tourist activities within a coastal community can lead to severe degradation of near-shore marine ecosystems. These, in turn, can have significant socioeconomic effects on a community, including:

- **Loss of tourist revenue.** Revenues from marine-related tourism will fall as popular near-shore locations for snorkeling, diving and glass bottom viewing decline in health. Heavily damaged areas may result in a loss of attractions for those visiting the destinations, or eventually result in no tourist visitation at all.
- **Higher unemployment.** Reduced levels of tourism can lead to higher unemployment in industry related jobs such as hotels, restaurants and boating.
- **Diversion of government funding.** Boats that run aground often cost local and national government agencies millions of dollars in removal and recovery efforts. In many cases these are funds that could otherwise be used for social and environmental programs.
- **Fewer available food resources.** Distribution of toxins throughout the marine environment can negatively impact available food resources in a coastal community. Also, unmanaged marine recreation activities and the harvesting of species for souvenir and food consumption by tourists can directly deplete marine resources.. These negative

effects can threaten human consumers of locally caught seafood, and can be felt by the commercial and sport fishing industries, as well as local fishers who depend on coastal resources as part of their food supply. In addition, these direct and indirect effects can result in fewer available food sources that are an important source of protein for local communities in coastal regions.

- **Health Threats to Local Populations.** Residents and visitors to an area can be exposed to pathogens, bacteria, viruses, and a number of health threats associated with exposure to raw sewage and garbage improperly disposed of in near-shore environments.
- **Lower fish catch and harvestable species.** Poor health of near-shore marine environments negatively affects fish stocks and reduces catch levels for recreational, commercial, and local fishers, thus reducing an important source of revenue for local communities in coastal regions.

Improving environmental practices and establishing codes of conduct provides numerous benefits to businesses and communities. Sustaining the health of natural areas that support tourism improves the viability of the industry as a whole. This in turn stimulates economic growth, while simultaneously sustaining natural areas that attract tourists, food resources for local populations, and environmental benefits such as intact reefs that protect coastal communities from waves and storm damage.

## SECTION II: THE SUPPLY CHAIN MANAGEMENT TOOL

### Components: an assessment checklist & a practical guide to good practice

The final complete *supply chain management tool* will contain:

An *assessment checklist* with:

- 12 core questions for bulk purchasers to ask all marine recreation providers
- Supplemental questions to ask marine recreation providers of snorkeling/diving/snuba; interactive wildlife trips; and recreational fishing

A complimentary “*Practical Guide to Good Practice*” for the marine recreation industry with:

- An in-depth analysis of different aspects of the marine recreation industry that can cause significant environmental impacts
- Examples of how responsible marine operators are responding to these impacts

The *assessment checklist* is designed to assist bulk purchasers in determining good environmental and social practices of marine recreation providers. The initial twelve questions serve as the core component of the checklist. Each question addresses a key issue relevant to all marine recreation providers and proposes a good practice. Three sets of supplemental questions have been developed to focus on particular types of marine recreation activities that have specific issues and impacts. These include snorkeling/diving/snuba, interactive wildlife trips, and recreational fishing.

These three specific question sets are designed to supplement the core questions for all marine recreation providers. The content of all the developed questions focus primarily on coral reefs and associated coastal tropical marine environments such as seagrasses and mangroves, however the questions and suggested good practices as currently written are adaptable to virtually any marine ecosystem.

In addition, draft “briefing papers” have been developed for different aspects of the marine recreation industry that can cause significant environmental impacts, including anchoring, boat operations, boat maintenance, sewage and garbage disposal, snorkeling/diving/snuba activities, seafood and souvenir consumption, recreational fishing, and marine wildlife viewing. These briefing papers explore in more depth the associated impacts on near-shore marine and coral reef environments, and provide a rich set of examples of how responsible operators can respond to these issues. The goal is to develop an educational, practical guide to good practice for marine recreation providers to compliment the environmental and social issues raised in the assessment checklist.

### Uses for the supply chain management tool

The supply chain management tool can be used by hoteliers, tour operators and cruise lines throughout their supply chain management processes. The questions in the assessment checklist can be used during the selection and contracting processes to assess if marine recreation providers operate according to sound environmental and social practices. The questions will also be readily adaptable into an environmental and social policy for tourism companies looking to set performance standards for all their marine recreation providers. And while each intermediary (tour operator, cruise line or hotel) may take a different

approach in the use of the questions to select and contract suppliers, the adoption of a *common reference system* may eventually lead to a standard framework for the development of voluntary certification schemes throughout the marine recreation industry.

The complimentary educational, practical guide to good practice can be used to build awareness amongst purchasers, suppliers and tourists and to support environmentally conscious marine recreation providers in popular coastal resort destinations throughout the world.

### **Relevant Marine Recreation Providers**

There are four primary sectors of the marine recreation industry to which the questions in the assessment checklist, and the in-depth briefing papers apply. They include the following:

**Boat tours and rentals:** The beauty and vibrancy of coastal regions that support coral reefs and consistently warm weather generate a sizeable market for rentals of power boats, sail boats, thrill craft (jet skis and wave runners) and kayaks.

**Snorkel/ Diving/Snuba/Glass Bottom Boat Tours:** The popularity of coral reef viewing, in particular, has led to a tremendous increase in boat excursions that provide tourists with direct exposure to these dynamic marine ecosystems. Snorkelers and divers often interact with coral reefs and other marine environments on a much closer level than most other tour operations.

**Interactive Wildlife Trips:** Whale watching has rapidly developed into an economically valuable industry in recent years. Many different whale species support viewing tours throughout tropical and temperate regions of the world. Additionally, other species that have become popular for viewing include dolphins, marine turtles, manta and sting rays, sharks, manatees and seabirds.

**Recreational fishing:** Along with other sectors of the marine recreation industry, sport fishing has recently grown in popularity. Recreational fishing charters often represent a significant portion of the marine recreation market in the world's most popular coastal destinations, as tourists regularly seek out popular game fish such as marlin, wahoo and dorado, among others.

### **Soliciting Feedback**

CELB, CORAL, IHEI and TOI invite individuals and companies to participate in this effort. If you are a cruise line, hotelier or tour operator that offers scuba diving trips, sells sea-fishing excursions, or an individual/company directly involved in offering marine recreation services, this initiative can help make your business more sustainable, effective and profitable. Safeguarding the natural and cultural attractions that draw visitors to destinations is essential-- this initiative seeks to engage those companies and individuals that wish to help protect the marine environment and the opportunities it offers for attracting visitors.

All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.

## SECTION III DRAFT OF THE ASSESSMENT CHECKLIST

### 12 CORE QUESTIONS TO ASK ALL MARINE RECREATION PROVIDERS

- 1) Does your company provide trainings, briefings, or literature for employees and tourists regarding good environmental practices for snorkeling, diving, kayaking, various types of boat tours and other marine recreation activities?

*Issue:* Many impacts to coral reefs and other marine environments are caused by a lack of knowledge and understanding of the marine environment on the part of marine recreation providers and tourists.

*Good Practice:* Marine recreation providers can supply training manuals for employees and on-board literature and briefings for tourists that address relevant environmental issues and highlight practices that minimize impacts to coral reefs and other marine environments from various forms of marine recreation.

- 2) Does your company provide information for employees and tourists regarding potential impacts of motorized vessels and poor boating practices on coral reefs and other marine environments?

*Issue:* Poor or irresponsible boating practices, such as operating in shallow water environments, can increase sedimentation as a result of propeller wash and wave creation. This disruption can cause severe damage to coral reefs, seagrasses, mangroves and other marine environments.

*Good Practice:* In order to minimize boating impacts to coral reefs and other marine environments, operators must follow proper navigation and mooring principles, avoid fast motoring in shallow reef areas and educate tourists who rent boats about relevant environmental issues and good boating practices.

- 3) How does your company support the use of, or actively use yourself, mooring buoys as an alternative to anchoring around coral reef ecosystems?

*Issue:* Anchors and the long chains associated with them, if used improperly, can cause severe damage to coral reef ecosystems.

*Good Practice:* Marine recreation providers can significantly reduce anchor damage through the use and support of a mooring buoy program at popular coral reef sites. Additionally, companies that rent boats can provide information to tourists on basic seamanship, navigation and location of mooring buoys in coastal regions. This can include education regarding the potential damage that anchors cause to coral reefs and a waterproof map of the location of mooring buoys at popular snorkel and dive sites.

- 4) Does your company have an environmental “code of conduct” to guide the actions of boat operators and tour guides when they come into contact or viewing distance of marine life such as turtles, dolphins, and whales from motorized and non-motorized vessels?



*Issue:* Marine wildlife such as turtles, dolphins, and whales can be easily disturbed if not viewed properly. This disturbance can affect mother/calf pairs, resting periods and use of feeding and breeding grounds.

*Good Practice:* The most appropriate way to view marine mammals is at a slow speed from a distance that does not change or alter the animals' behavior; avoids approaching animals head-on; and never chases the animals. 100 meters is a commonly agreed upon minimum distance for watching large whales.

5) Does your company take actions to prevent accidental discharge of toxic substances or other waste into the environment?

*Issue:* Hazardous materials such as fuels and oils can threaten the health of coral reefs and other marine environments in popular tourist destinations. Inadequate or improper boat maintenance can lead to accidental or otherwise unintentional discharge of toxic chemicals into the marine environment.

*Good Practice:* Regular boat maintenance and record keeping, particularly regarding engines, fuel tanks and other potential leakage areas, can significantly reduce the amount of pollutants a boat discharges into the marine environment.

6) Has your company stopped using, or taken actions to reduce use of toxic anti-fouling bottom paints and other hazardous materials?

*Issue:* Anti-fouling bottom paints contain known carcinogens and heavy metals. When introduced into the marine environment, they can threaten both the health of coral reefs and human consumers of seafood.

*Good Practice:* Manufacturers have developed, tested and made available anti-fouling bottom paints that are produced from biodegradable products and are significantly less toxic than paints of the past. Additionally, boat operators can replace other on-board chemicals with alternative "environment friendly" and biodegradable products.

7) Does your company use clean burning 4-stroke engines, if available?

*Issue:* Older models of gasoline boat engines, particularly 2-stroke designs, are inefficient and discharge as much as 30% of consumed fuel unburned into the marine environment.

*Good Practice:* Many marine manufacturers have developed highly efficient 4-stroke outboard engines in recent years. Replacement of older, less fuel-efficient models with these new designs will significantly reduce pollution in the marine environment.

8) Does your company minimize discharge of untreated sewage, or wastewater, from boats?

*Issue:* The discharge of raw or partially treated sewage in coastal waters poses a health threat to coral reefs and other marine environments as well as human populations.

*Good Practice:* Disposal of sewage at pump-out facilities on land is the best way to minimize impacts to the marine environment. If pump-out facilities are not available, it is recommended that boats treat sewage mechanically and with non-toxic, biodegradable chemicals to reduce solids and pathogens. Boats should proceed as far as possible offshore prior to pumping out in order to prevent the pollution of bottom sediments, coral reefs and coastal waters. Alternatively, self-contained toilets can be used which can be removed from vessels and dumped at onshore facilities.

- 9) Does your company take actions to prevent the introduction of garbage or solid waste into the marine environment?

*Issue:* Garbage in the environment is unsightly and threatens the health of many forms of marine life. Plastics, fishing line, cigarette butts and styrofoam are often consumed by turtles, seabirds, fish and marine mammals and cause the death of millions of these animals every year (Earle, 1996).

*Good Practice:* Garbage bins on tour boats can be contained or kept inside to minimize the chance of debris blowing overboard. Additionally, long-lasting products made of plastic and styrofoam can be replaced by more biodegradable material such as paper.

- 10) Does your company support good environmental practices and avoid catching and serving rare, threatened or endangered marine species, such as fish, crabs, and lobster etc., for seafood consumption?

*Issue:* Many popular game fish and other marine species have declined significantly and have been listed under the IUCN Redlist in recent years. This includes groupers, jewfish, jacks, marlin, tuna, snappers, lobsters and crabs among others. By removing key predators and herbivores, over-fishing directly threatens the health of coral reefs and other marine environments throughout the world.

*Good Practice:* Marine recreation providers can support healthy coral reefs and other marine environments by not harvesting rare, threatened or endangered marine species to serve as seafood cuisine. Fishing charters can protect healthy fish stocks by practicing catch-and-release programs. Moreover, boat crews can educate tourists about which species in a given region are rare, threatened or endangered, and thus should be avoided.

- 11) Does your company support good environmental practices and educate customers about the negative environmental impacts of harvesting marine species from coral reefs and other marine environments to sell as ornamental souvenirs?

*Issue:* Removal of key biological components in coral reefs and other marine environments can cause significant decline in ecosystem health. Over-harvesting of reef fish, urchins, shells and other marine animals to sell as ornamental objects is contributing to the decline of coral reefs and other marine environments around the world.

*Good Practice:* Marine recreation providers can support healthy coral reefs and other marine environments by not harvesting marine species to sell as ornamental objects. Additionally, boat crews can educate tourists about the potentially damaging effects of harvesting marine species as souvenirs.

- 12) Does your company make contributions to biodiversity protection and conservation projects in the local region of its operations?

*Issue:* Environmental degradation and loss of biodiversity is an issue affecting all regions of the world. Conservation projects, on local, regional and international scales, are working to protect terrestrial (land) and marine ecosystems, and regularly need support through funding, volunteers and other resources.

*Good Practice:* Marine recreation providers can protect the environment through financial, in-kind or material support of local and regional conservation projects and the establishment of terrestrial and marine protected areas.

*For more information refer to the following briefing papers:*

*Anchoring*

*Boat operations*

*Boat maintenance*

*Sewage and garbage disposal*

*Snorkeling, diving, and snuba activities*

*Seafood and souvenir consumption*

*Recreational fishing*

*Marine wildlife viewing*

*Note:* All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.

## SUPPLEMENTAL QUESTIONS TO ASK PROVIDERS OF INTERACTIVE WILDLIFE TRIPS\*

**\*Examples include swimming with Dolphins/Turtle Watching/Rays/Shark Feeding/Reef Walking/Tide Pools**

- 1) Does your company have an environmental “code of conduct” for viewing marine life such as turtles, dolphins, and whales from motorized and non-motorized vessels that guides the actions of boat operators?

*Issue:* Marine wildlife, especially dolphins and whales, can be easily disturbed if not viewed properly. This disturbance can affect mother/calf pairs, resting periods and use of breeding grounds.

*Good Practice:* The most appropriate way to view marine mammals is at a slow speed from a distance that does not change or alter the animals’ behavior; avoids approaching animals head-on; and never chases the animals. 100 meters is a commonly agreed upon minimum distance for watching large whales.

- 2) Does your company provide trainings, briefings, or literature for employees and clients regarding good environmental practices for wildlife interaction?

*Issue:* Many impacts to marine wildlife are caused by a lack of knowledge and understanding of these animals on the part of marine recreation providers and tourists.

*Good Practice:* Marine recreation providers can supply training manuals for employees and on-board literature and briefings for tourists that address relevant environmental issues and highlight practices that minimize impacts to wildlife in the marine environment.

- 3) Does your company support a no-contact policy when viewing turtles and other reef dwelling organisms such as urchins, octopus and corals?

*Issue:* Handling of marine turtles and reef animals can lead to stress and abandonment of primary feeding and reproductive grounds.

*Good Practice:* Establishing a no-contact policy helps prevent disturbance and protects the health of marine animals.

- 4) Does your company discourage the feeding of wildlife by employees and clients?

*Issue:* Feeding wildlife can negatively affect coral reefs and other marine environments by changing fish behavior and population sizes. When animals become adapted to human food, they can lose the natural ability to forage. Additionally, once certain fish species become adapted to human food, they often swarm and bite tourists.

*Good Practice:* Establishing a no feeding policy protects the health of fish populations and other marine animals at popular coral reef sites.

- 5) Does your company support and educate customers about all national laws and regulations protecting turtles, marine mammals, and other marine wildlife?

*Issue:* Unnecessary and illegal harassment and harvesting has in some areas lead to a decline in turtles, marine mammals and other reef wildlife.

*Good Practice:* Marine recreation providers can support healthy coral reefs and other marine environments by abiding by all laws and regulations protecting turtles, marine mammals and other reef wildlife and by educating tourists as to there importance and relevance for marine activities.

These good environmental practices are based upon the following guidelines:

Whale and Dolphin Watching (The Coral Reef Alliance)

Turtle Watching Guidelines (The Coral Reef Alliance)

Tonga Whale Watching Guidelines (Whales Alive)

Marine Mammal and Sea Turtle Viewing Guidelines (U.S. National Marine Fisheries Service Office of Protected Resources)

Watchable Wildlife

*For more information refer to the following briefing papers:*

*Wildlife Viewing*

*Snorkeling and Diving*

*Note: All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.*

## **SUPPLEMENTAL QUESTIONS TO ASK PROVIDERS OF RECREATIONAL FISHING**

- 1) Does your company practice catch-and-release fishing programs, particularly for any species that have been severely reduced in stock or listed as threatened or endangered?

*Issue:* Many popular game fish have declined significantly and have been listed under the IUCN Redlist in recent years, includes groupers, jewfish, jacks, marlin, tuna and snappers among others.

*Good Practice:* Recreational fishing charters can improve fish stocks and protect their industry by practicing partial or total catch-and-release programs, particularly when threatened or endangered species are involved. The success of catch-and-release programs can be enhanced by using practices and technologies such as the ARC “de-hooker” that reduces mortality in released fish.

- 2) Does your company ensure that monofilament line and other forms of debris are not discarded in the ocean?

*Issue:* Garbage in the marine environment, such as monofilament fishing line, has a long lasting life and can be fatal to wildlife such as fish, turtles, seabirds, sharks, and marine mammals.

*Good Practice:* Recreational fishing charters should ensure that no monofilament line or other fishing gear is discarded into the marine environment and that all other vessel garbage is properly stowed.

- 3) Does your company support and educate customers about all national laws and regulations governing the harvest of fish species in your region of operations?

*Issue:* Several popular game fish species have been over-harvested in many regions of the world in recent years. Fisheries regulations are established to maintain both recreational and commercial fishing as a viable industry, yet many have not proven effective at protecting health fish stocks.

*Good Practice:* Recreational fishing charters can maintain productive catch levels by following all laws and regulations that establish fishing catch sizes and seasons. Moreover, boat crews can educate tourists about relevant laws governing fish harvesting and consumption in a given region

Guidelines for how to successfully release gamefish and minimize mortality levels are based on the Aquatic Release Conservation “De-Hooker.”

*For more information refer to the following briefing papers:*

*Wildlife Viewing*

*Boat Operations*

*Sewage and Garbage Disposal*

*Recreational fishing*

*Note:* All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.

## **SUPPLEMENTAL QUESTIONS TO ASK PROVIDERS OF SNORKELING/DIVING/SNUBA\***

1. Do you support the use of, or actively use yourself, mooring buoys as an alternative to anchoring around coral reef ecosystems?

*Issue:* Anchors and the long chains associated with them, if used improperly, can cause extensive and widespread damage to coral reef ecosystems.

*Good Practice:* Marine recreation providers can significantly reduce anchor damage through the use and support of a mooring buoy program at popular coral reef sites. If no mooring is available, boats should anchor in sand or rubble as far away from reef areas as possible.

2. Does your company promote a policy of no-contact/handling/feeding with coral reefs and wildlife for boat passengers and crew?

*Issue:* Excessive contact with corals, as well as handling and feeding of reef animals, can lead to a number of negative impacts on overall reef health.

*Good Practice:* Marine recreation providers can support and promote reef health by establishing a no-contact/feeding/handling policy while engaging in snorkel, dive, or snuba operations.

3. Are on-board divemasters, videographers and crew provided environmental education regarding impacts that human contact can cause to corals and marine animals?

*Issue:* In order to entertain tourists, divemasters, videographers and boat crew often engage in excessive contact with corals and handling of wildlife.

*Good Practice:* Marine recreation providers can significantly reduce impacts to corals and wildlife by providing environmental education and establishing a no-contact policy for divemasters, videographers and crew that conduct boat operations.

4. Does your company abide by a code of conduct, have its own code of conduct, and/or provide on-board environmental briefings and literature for tourists in order to reduce snorkeler, diver, and snuba impact on coral reefs?

*Issue:* Tourists are often unaware how their actions can impact coral reefs and the larger marine environment.

*Good Practice:* Marine recreation providers can provide on-board environmental literature and briefings in order to educate and sensitize tourists to potential negative impacts that can result from human contact with coral reefs from hands, fins, tanks, and other equipment.

5. Does your company conduct refresher and buoyancy control orientation for new or out-of-practice divers?

*Issue:* Many divers come into contact with coral reefs as a result of inexperience and/or inability to maintain neutral buoyancy.

*Good Practice:* Dive operators can conduct buoyancy orientation and refresher courses for inexperienced or out-of-practice divers.

\*Snuba is a relatively new water sports activity for non-certified divers that combines snorkeling and SCUBA. Participants breathe air from a regulator underneath the surface but do not wear the buoyancy control device and air tank associated with traditional SCUBA. Instead, a tank is kept on a small raft at the surface and air lines are led down underwater to participants, who then keep a standard regulator in their mouth.

These good environmental practices are based upon the following guidelines:

Coral Friendly Snorkeling and Diving (The Coral Reef Alliance)

Snorkeling and Diving (Great Barrier Reef Marine park Authority)

Diver's Guide (Mother Jones Action Atlas)

Ten Ways a Diver Can Protect the Aquatic Realm (PADI – Professional Association of Dive Instructors)

*For more information refer to the following briefing papers:*

*Snorkeling and Diving*

*Wildlife Viewing*

*Anchor Damage*

*Note: All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.*



## SECTION IV DRAFT BRIEFING PAPERS FOR INCLUSION IN A PRACTICAL GUIDE TO GUIDE PRACTICE FOR MARINE RECREATION PROVIDERS

### ANCHORING

Every year, the use of anchors for mooring commercial and recreational boats causes extensive and widespread damage to benthic habitats, near-shore marine and especially reef ecosystems around the world. The impacts caused by anchoring are slowly destroying the economic value that is inherent in healthy, undamaged reefs. Protecting against anchor damage, therefore, not only preserves the biodiversity of an ecosystem, but also sustains the economic base of the marine recreation industry. Additionally, efforts to prevent anchor damage require minimal investment and operational change, but return significant benefits in terms of increased revenues from satisfied tourists.

#### **How Anchors Damage Near-shore Marine & Coral Reef Ecosystems**

Anchors, and the chains connected to them, damage both warm and cold water corals by crushing and killing the corals and other organisms on which they fall. In addition, repeated anchor drops or large anchors will break up the underlying reef and prevent new corals from developing. Anchor chains can strip the live tissue off of corals, causing widespread scarring, and leaving the injured corals open to infection. Anchoring also causes a number of other harmful effects such as clouding the water with disturbed sediment that can choke tropical corals and limit the amount of sunlight that corals' symbiotic algae require for photosynthesis.

#### **What This Means to the Health of Near-shore Marine & Coral Reef Environments**

Some of the negative impacts of anchoring on and around these ecosystems include the following:

- **Fewer fish.** Degraded habitat reduces the number and variety of fish that are important for visitor attraction and reef health.
- **Fewer living corals.** Anchors and chains scar coral reefs by breaking and crushing coral colonies and other reef dwelling organisms.
- **Fewer new corals.** When a coral reef is reduced to rubble by inappropriate or irresponsible anchoring, it becomes more difficult for new corals to grow and the reef will further decline.
- **More stressed corals.** Remaining corals will be stressed and, therefore, more vulnerable to associated problems such as bleaching events and diseases.
- **More algae growth.** The sediment-filled anchor scars are poor environments for new coral growth, but good environments for fast growing algae, which may take the place of corals.
- **Cloudy water.** Anchoring can also cause an increase in sand and sediment in the water, making once clear water appear cloudy or murky and preventing corals from getting the sunlight they need to survive. Additionally, reduced visibility due to cloudy water negatively affects the quality of visitor experience to a reef environment.
- **Destruction of Seagrass Beds.** Boats generally swing around in different directions when sitting on anchor. As a result, the chains and lines attached to anchors can cause severe chafing damage to seagrass beds.

While it is possible for benthic habitats, especially coral reefs, to recover from anchor damage, this is a very slow process that can take many decades. In areas of intense anchor damage it is unlikely that the reef will ever make a full recovery and, in some cases, much of the diversity of life may be lost forever.

### **How to Minimize Anchor Damage**

Minimizing anchor damage is crucial to protecting near-shore marine and coral reef ecosystems and the livelihoods that depend on them. Fortunately, anchor damage can be easily prevented through the installation of mooring buoys, simple changes in boating habits, and education.

#### Using Mooring Buoys

Mooring systems provide permanent lines that allow boaters to fix their position without dropping anchor. An effective mooring program includes:

- The installation of moorings that are suitable for near-shore marine and coral reef areas.
- Use of moorings by all boats.
- Regular maintenance and correct use of moorings.

#### Changing Boating Practices

By simply making small adjustments to their practices, boat operators can help save near-shore marine and coral reef ecosystems. Here are some examples:

- Correct use of mooring buoys whenever possible. For reasons of safety, always run a check when you tie up to a mooring point (a buoy). Give yourself more room to manoeuvre by passing a mooring rope about half the length of your boat through the eye of the buoy and secure both ends to a cleat on the deck.
- If anchoring is absolutely necessary, boaters should make sure they are in designated areas away from important ecosystems and reefs and where they will not be dragged near these areas and accidentally cause damage.
- Where no moorings are present, dive boat operators may consider drift dives instead of anchored dives.

#### Educating Customers

Many tourists that rent boats, sailboats, kayaks or canoes have little understanding of how harmful anchors can be to near marine shore environments and reefs. Rental operators can help protect these areas by educating their customers. Here are some ideas of what rental operators should do for their customers:

- Explain what mooring buoys are and that renters should use them when possible.
- Explain the proper way to anchor before guests set out.
- Provide waterproof written reminders of proper anchoring practices on all vessels.
- Explain potential impacts of poor anchor use.

*Note: All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.*

## **BOAT OPERATIONS**

Throughout the world's popular marine coastal destinations, near-shore and coral reef environments are being damaged each year from poorly conducted or irresponsible boat operations and accidents. While vessel groundings and anchor damage have the most immediate and destructive impact on coral reefs, increase in sedimentation from propeller wash and wave creation can also negatively affect shallow reef ecosystems, mangroves and seagrass beds. The economic and ecological impacts of this type of boating damage can be costly and long lasting. Many of these problems can be avoided with careful planning and environmentally conscious boating. The benefits of good boating operations are healthy coral reef ecosystems and a stronger local economy based on the many uses of marine resources.

### **How Boat Operations Affect Near-shore Marine & Coral Reef Environments**

The operation of older boats and jetskis that have 2-stroke engines – which are very inefficient on fuel consumption – can generate significant levels of pollution in the environment. These types of boating impacts lead to long-term and in some cases irreversible damage to ecologically and economically valuable marine communities. Additionally, in coral reefs, when a boat collides with a reef, it crushes and kills large areas of corals and other reef dwelling organisms. Though large commercial ships are known to have caused massive damage when running aground on reefs, smaller private or commercial boats can also severely impact a reef ecosystem. The careless operation of small boats in shallow water, generating propeller wash, wave creation and excess sedimentation, can smother reef dwelling organisms and inhibit the photosynthetic process of symbiotic algae that live within coral tissues.

### **What This Means to the Health of Near-shore Marine & Coral Reef Environments**

- Some of the negative impacts from poor boating operations on these ecosystems include:
- **Fewer living organisms, fish and overall diversity.** Boat hulls and propellers scar habitats in near-shore marine ecosystems. For example, in coral reefs they break off and crush coral colonies and other reef dwelling organisms, and they have similar detrimental effects in sea grass beds. Degraded habitat leads to reduced levels of marine mammals, fish and other species that are key components to a healthy coral reef or near-shore marine ecosystem.
  - **Fewer new corals.** When a reef is altered by boat groundings or increased sedimentation, the substrate on which new corals attach is disturbed and often destroyed. The result is a slow reef recovery.
  - **Cloudy water.** Boat groundings, propellers and waves often cause an increase in sand and sediment in the water column. This reduces exposure to sunlight, which negatively affects marine organism and coral growth and the ability to produce food. Additionally, cloudy water reduces visibility and negatively affects the quality of visitor experience to an area.

### **How to Minimize Damage from Boat Operations on Near-shore Marine & Coral Reef Environments**

There are many established boating principles that conscientious operators can follow in order to avoid accidents and unintentional damage to these ecosystems.

#### **Follow Proper Navigation and Mooring Principles**

- Stay within designated channel markers, and when in reef areas, stay beyond the furthest visible reef patch in unknown or unmarked areas.

- Obey all speed signs to avoid marine mammal strikes (prop hits).
- Identify dark water areas as a possible important shallow ecosystem, for example a shallow reef.
- Know how to properly read and interpret a navigational chart.
- In coral reefs, use reef mooring buoys where available. If anchoring, always drop anchors in sand or rubble channels well away from living reefs and allow sufficient scope to avoid dragging along the bottom.

Keep Boats in Prime Condition for Operations and Emergencies

- Have boat engines regularly serviced by a certified mechanic and, when possible, replace older 2-stroke engines with more fuel-efficient, cleaner burning 4-stroke outboards. If you use a two-stroke outboard engine, opt for alkylate petrol.
- Carry a supply of basic tools that will assist engine repairs out at sea.
- Always carry a primary and secondary anchor line so vessels can be securely moored in emergency situations.
- Keep absorbent sponges on-board to deal with hazardous chemical spills.
- Non-toxic oils are available and should be used wherever possible. To dispose of your waste oil, wait until you get to a marina.
- Refuel only at dock or in the marina. If you fill up at sea, you could spill fuel into the water.

Educate Customers and Tourists Who Rent Boats

- Instruct renters in basic navigation, boat handling and safety principles.
- Explain the sensitive nature of the ecosystem and the importance of avoiding shallow areas with motorized vessels.
- Provide easy-to-use waterproof navigation and location charts.
- Explain the threat that anchors pose to near-shore ecosystems and reefs and the proper way to secure a boat without causing damage to the underwater environment.
- Provide on-board information about location and use of reef mooring buoys at popular snorkel and dive locations.

*Note: All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.*

## **BOAT MAINTENANCE**

Recreational and commercial boating is an immensely popular and important economic activity that involves millions of people across the globe. In near-shore marine areas, boaters often have relatively easy access to coastal or near-shore coral reef ecosystems that serve as a source of food, resources, recreation and enjoyment. While providing experiences that often lead to a conservation ethic among marine enthusiasts, there are many impacts associated with boating that can have a detrimental effect on the health of near-shore and coral reef ecosystems. Proper maintenance is a key part of boating that can significantly reduce unintentional and unnecessary environmental impacts.

### **How Boat Maintenance Affects Near-shore Marine & Coral Reef Environments**

The cumulative effects of poor maintenance on boats can be as negative and severe as other boating related impacts to near-shore marine and coral reef ecosystems such as anchor damage, waste disposal, and groundings. Environmental problems are generated by leaks of toxic substances such as oil or fuel, and release of heavy metals from anti-fouling bottom paints. Although one small fuel leak from a recreational vessel may not cause long-term damage, over time, the cumulative effects of pollution from many boats in popular areas can lead to significant degradation of coral reefs and other marine environments. These impacts have negative consequences for both the ecological health and economic value of an entire coastal community.

### **What This Means to the Health of Near-shore Marine & Coral Reef Environments**

Poor vessel maintenance can impact near-shore marine and coral reef ecosystems through the accidental or intentional discharge of a variety of toxic substances. Negative impacts can include:

- **Increase in stressed and diseased corals.** Fuels, oils, and anti-fouling bottom paints contain known carcinogens and heavy metals. Studies have shown that these substances can stress and kill living corals and other organisms. Increased levels of stress and death in corals can lead to an overall reduction of diversity in a reef ecosystem.
- **Distribution of toxins in the food chain.** If removed in a sensitive marine habitat, toxic anti-fouling paint can accumulate in the form of small chips that settle on the reef itself. Once these chips begin to grow algae on them, they can be consumed by herbivores in the ecosystem. This leads to a distribution and build-up of heavy metals throughout fish populations, which can negatively affect other consumers from carnivorous fish all the way up to humans.
- **Fewer fish and reef diversity near harbors.** The cumulative effects of pollution from poorly maintained vessels permanently moored in local marinas and harbors can reduce ecosystem health and increase toxicity levels in consumable fish and coral reefs in nearby waters. This can lead to fewer fish, corals and other key components of coral reefs and other marine ecosystems.
- **Damage to marine life from toxic waste.** Illegal or accidental dumping of toxic waste at sea can kill a variety of different forms of marine life, including fish, marine mammals, turtles, seabirds, and smaller species such as plankton and other microorganisms.

### **How Proper Boat Maintenance Can Minimize Environmental Impacts**

There are many practical solutions that can prevent or remedy problems associated with intentional or accidental dumping of toxic substances into sensitive marine habitats.

- **Perform regular maintenance on engines, fuel tanks and their associated components.** Have a mechanic perform regular servicing on an engine to maximize operating capacity and minimize fuel consumption. Use clean burning four-stroke engines whenever possible.
- **Regularly inspect areas that are susceptible to potential leaks of toxic substances.** This can include regularly checking fuel lines and tanks, filters, separators, vents and bilge pumps.
- **Keep toxic absorbent sponges in bilges.** This can significantly reduce and/or eliminate discharge of oils and fuels. Many types of sponges are available that absorb fuel and oil but not water. Additionally, absorbent sponges should be kept on-hand while a vessel is being fueled in a marina or harbor.
- **Use non-toxic anti-fouling paints on boat hulls.** International laws are beginning to ban commonly used anti-fouling paints of the past. These paints are known to contain biocides and heavy metals that can negatively affect both human health and the marine environment. Less harmful anti-fouling paints are now available on the commercial market. For example, some companies have developed and tested anti-fouling bottom paints that are made from biodegradable substances and are significantly less toxic than past products.
- **Avoid on-board refrigeration units that use chlorofluorocarbons (CFCs).** CFCs have been shown to cause damage to the earth's ozone layer. This natural layer in the atmosphere filters out harmful ultraviolet radiation (UV) from the sun. As a light sensitive animal, corals can be damaged by significant increases in UV exposure.
- **Avoid pumping oily bilge water into the sea,** particularly when you are near a coral reef. Unless the boat is in danger, wait. Avoid using detergents or emulsifiers as bilge cleaners.

*Note: All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.*

## **BOATS' SEWAGE AND GARBAGE DISPOSAL**

As marine tourism associated with near-shore marine and coral reef environments has grown in recent years, sewage and garbage disposal from small vessels have become a subject of concern for many stakeholders within the tourism industry. An increasing threat to both people and the environment comes from vessels discharging raw or partially treated sewage and dumping garbage in coastal waters. Human waste contains nutrients, pathogens and viruses that can contribute to disease and detrimental algae blooms in these environments, disrupting their natural cycles, and can also pose a serious threat to human health. Garbage in the marine environment is unsightly and dangerous, and items such as plastics, styrofoam and cigarette butts can prove fatal to many marine species.

### **How Sewage and Garbage Affect Near-shore Marine & Coral Reef Environments, and Human Health**

The build-up of sewage or other organic nutrients contributes to algae blooms in near-shore marine environments. This reduces available oxygen in the environment and smothers reef corals, for example, thereby inhibiting growth and access to sunlight. The result is a decrease in coral cover, which in turn negatively affects populations of fish and other species that use coral as a source of food and habitat. In addition to impacts on coastal ecosystems, increased levels of bacteria, viruses and diseases associated with human waste can pose serious risks for human health and food resources in a local community. Bacteria associated with sewage can contaminate a variety of harvestable resources such as fish and other species.

Various forms of garbage can lead to degradation of overall diversity in the marine environment. Plastics, fishing line, cigarette butts and styrofoam are often consumed by turtles, seabirds, fish and marine mammals and cause the death of millions of these animals every year. (Earle, 1996) When garbage becomes entangled on coral reefs, it smothers and kills coral colonies and can pose a safety hazard to snorkelers and divers.

### **What This Means to the Health of Near-shore & Coral Reef Environments**

Some impacts from sewage and garbage on these environments include the following:

- **Stressed and diseased marine organisms.** Pathogens associated with microorganisms contained in human waste can cause disease in several marine organisms, in particular several species of corals.
- **Increased levels of viruses, bacteria and disease.** Faecal coliform is a common bacteria associated with human waste. The build-up of this and other pathogens in the environment can cause contamination of food supplies, thereby negatively affecting reef ecosystems and human populations in a region.
- **Increase in threats to wildlife.** In addition to the threats posed by sewage, garbage is often mistaken as food and can kill seabirds, turtles, fish and marine mammals. When garbage becomes entangled in near-shore marine ecosystems, it can smother and kill living organisms, particularly coral and other reef dwelling organisms.
- **Increase in algae growth.** Nutrient loading in a coral reef stimulates algae blooms that smother and inhibit coral growth. This leads to a reduction in coral cover and associated declines in health throughout the reef community.
- **Fewer fish.** Many species of reef fish depend on living coral as a food resource as well as habitat and shelter. When algae blooms or garbage cover reef communities fish populations decline, negatively affecting ecosystem health.

### **How to Minimize Sewage and Garbage Disposal in the Marine Environment**

There are simple steps that marine recreation providers and visitors can take to reduce the impacts associated with sewage and garbage disposal from a boat.

- **Use pump-out facilities where available.** Disposal of sewage from small vessels on land is the best way to protect the marine environment, as this waste generally goes to some kind of treatment plant to minimize pathogens and levels of toxicity.
- **Recommend passengers to use land-based restroom facilities prior to boat excursions.** Most land-based facilities are connected to some kind of municipal waste treatment facility. This can significantly reduce discharge of untreated sewage at sea.
- **Treat sewage prior to release from vessel.** If pump-out facilities are not available, there are several biodegradable chemicals and mechanical methods that can be used to reduce solids and pathogens in waste prior to disposal in the environment. Additionally, it is vital that small vessels proceed as far offshore as possible prior to discharging treated sewage. This prevents contamination of bottom sediments and coral reef habitat in shallow coastal regions. Avoid discharging toilets or sewage holding tanks in confined or crowded places, environmentally sensitive areas or marine protected areas.
- **Keep vessel marine sanitation devices in good operating condition.** Regularly inspect and maintain all hoses, fittings, and mechanisms associated with waste storage in order to prevent accidental discharge of untreated sewage.
- **Support the establishment of “No Discharge Zones.”** The creation and enforcement of “No Discharge Zones” helps protect ecologically and economically important coastal areas in a community.
- **Keep garbage contained and minimize use of plastics and styrofoam.** Garbage bins on tour boats should be contained or kept inside to minimize the chance of debris blowing overboard. Additionally, vessels should use paper instead of plastic and styrofoam plates and cups and can provide information to tourists regarding the threat that improper garbage disposal poses to marine life.
- **Pick up damaged fishing nets or lines cut away from propellers.** Do not leave them in the sea. They too could harm the marine wildlife.

*Note: All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.*



## **SNORKELING, DIVING AND SNUBA\***

In many popular coastal destinations in the world, near-shore marine ecosystems are beginning to show signs of decline as a result of impacts generated by the snorkeling and diving industry. Direct contact with corals, reef animals, and other wildlife by snorkelers and divers is leading to increased levels of degradation and disturbance in near-shore marine environments, particularly coral reefs. Moreover, impacts from snorkelers and divers are compounded on reefs and other habitats that are already suffering from other forms of environmental stress. The observable presence of ecological degradation resulting from human contact is clear enough to warrant a discussion into how it occurs and what can be done to reduce or eliminate this negative impact of the marine recreation industry.

### **How Snorkelers & Divers Affect Near-shore Marine & Coral Reef Environments**

The consistent presence of small and large groups of people in shallow coral reefs and other habitats can lead to significant degradation of an ecosystem over time. For example, irresponsible or inexperienced snorkelers and divers regularly crush and break corals and other reef dwelling organisms with fins, equipment and body parts. This usually comes as a result of individuals or groups trying to gain control, get a closer look or photograph, stand or walk in a shallow area, fight a current, or handle, touch and feed wildlife. All these impacts can lead to a decline in living corals and other reef dwelling organisms, increases in sedimentation, and disturbance to wildlife.

### **What This Means to the Health of Near-shore Marine & Coral Reef Environments**

Studies and observation of marine recreation in tropical areas around the globe clearly show that snorkeling and diving activity is causing negative impacts to the health of coral reef ecosystems. While a great deal of contact with coral reefs is inadvertent, many snorkelers and divers knowingly engage in practices that are detrimental to reefs. Impacts from excessive snorkeler and diver contact include:

- **Disrupted benthic habitats.** Contact from fins, equipment or body parts crushes and kills bottom dwelling organisms and their habitats. For instance, coral and small reef dwelling organisms are often crushed or killed from tourist activities. In heavily used areas, the cumulative effects of many snorkelers and divers can lead to increased levels of degradation in the ecosystem.
- **Increase in sedimentation.** Stirring up sediment from fins, equipment and body parts can disrupt benthic communities, for example it can smother and choke coral colonies. This damages coral health and can lead to broader impacts in the ecosystem.
- **Disturbance of wildlife.** Excessive disturbance can cause animals to leave primary feeding and reproductive areas, which can lead to an overall decline in habitat health. Habituation of animals to artificial food can reduce feeding ability, affect population sizes, and change natural behaviors.
- **Removal of coral mucus.** Repeated contact removes mucus covering and causes physical damage to coral tissue. This can increase susceptibility of corals to pathogens, diseases and other competitive organisms.

### **How To Reduce Snorkeler & Diver Impacts on Near-shore Marine & Coral Reef Environments**

If done in an environmentally conscious manner, snorkeling and diving can be an economically valuable and ecologically sustainable industry. Similarly, when conducted appropriately, these marine recreational activities are very important conservation

mechanisms because of their high educational value. There are many simple ways which tour operators and individuals can reduce impacts to near-shore marine and coral reef ecosystems.

- **Establish a no contact policy.** Marine recreation providers and companies that rent and sell snorkel and dive gear can promote a voluntary “no contact” policy for recreational snorkelers and divers. These policies can be supported by encouraging the use of flotation vests for inexperienced snorkelers and discouraging the use of gloves by divers.
- **Conduct environmental awareness briefings for tourists and other marine enthusiasts.** Studies have shown that damage to near-shore marine and reef environments can be minimized when tour operators educate tourists, photographers, videographers and others about the sensitive nature of the ecosystems and the potential impacts that can result from irresponsible snorkeling and diving.
- **Conduct buoyancy refreshers.** Dive operators in particular can conduct buoyancy refreshers and other basic dive skills training with inexperienced, out-of-practice, or non-regular divers.
- **Discourage fish feeding and harassment of wildlife.** The level of wildlife disturbance caused by snorkelers and divers can be significantly reduced with a voluntary policy of “take only pictures, leave only memories” that discourages fish feeding and harassment of wildlife.
- **Support mooring buoy projects.** The establishment of permanent mooring buoys at popular snorkel and dive sites significantly reduces anchor damage to near-shore marine environments, and particularly coral reefs, that are often associated with the marine recreation industry.
- **Support the establishment of Marine Protected Areas (MPAs).** Designation of MPAs often results in an increase of protective measures for an area. This can include reduction or elimination of anchoring, fishing, harvesting of corals and other species and harassment of wildlife. These protections often enhance the economic and ecological value of an area and create market advantages for businesses operating in them.

\*Snuba is a relatively new water sports activity for non-certified divers that combines snorkeling and SCUBA. Participants breathe air from a regulator underneath the surface but do not wear the buoyancy control device and air tank associated with traditional SCUBA. Instead, a tank is kept on a small raft at the surface and air lines are led down underwater to participants, who then keep a standard regulator in their mouth.

*Note: All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.*

## **SEAFOOD AND SOUVENIR CONSUMPTION**

The over-harvesting of marine resources for seafood cuisine or as ornamental souvenirs, or “curios,” poses a serious threat to the health of near-shore and coral environments. The impact that marine recreation providers have on coral reefs and other marine ecosystems throughout the world is directly related to behavior and consumption habits of visiting tourists. In addition to participating in marine-related activities while vacationing in the world’s popular coastal tropical destinations, visitors regularly consume many types of seafood and other items harvested from the marine environment. For instance, as tourism has established itself as a major part of the socio-economic structure of most Caribbean island nations, it has become increasingly important for marine recreation providers to operate in ways that discourage excessive or uninformed consumption of marine resources, especially threatened and endangered species.

There is great potential for short-term monetary gain through the sale of popular seafood such as fish or lobsters, as well as ornamental souvenirs, including corals, turtle shells and other reef dwelling organisms. As a result of consumer demand, many species are now harvested from coral reefs and other marine habitats in an unsustainable manner. Tourists are often unaware of the fact that a seemingly harmless purchase of a seafood dish or marine ornamental can have serious negative consequences for the environment. Compounded by other existing environmental problems, this consumption can negatively impact the health and marketability of the same natural areas that attract and support foreign tourists. Marine recreation providers have a unique opportunity to influence the choices tourists make by practicing and promoting low-impact, non-consumptive water sports activities. Additionally, these operators can provide information to tourists as to where they acquire seafood and what types of local species – whether for sale as seafood or ornamentals – are threatened, endangered, or otherwise protected by law and thus should be avoided. They can also serve their guests meals that are from sustainable sources.

### **How Seafood & Souvenir Consumption Affects Near-shore Marine & Coral Reef Environments**

Over-harvesting of resources can impact coral reefs and marine habitats in many ways. Removal of key components of an ecosystem leads to cascading changes that are often not visible until serious environmental degradation begins to occur. For example, the popularity of particular species as seafood cuisine has already led to serious declines throughout the Caribbean of spiny lobsters, crabs and conchs, as well as fish such as groupers, jewfish, snappers, and jacks. The purchase of rare or endangered fish and lobsters as seafood cuisine, as well as corals, conchs, turtle shells and other reef dwelling organisms by tourists as ornamental souvenirs, encourages or has already led to over-harvesting of these resources by local populations. In the long run this negatively affects the overall health and diversity of near-shore marine ecosystems.

### **What This Means to the Health of Near-shore Marine & Coral Environments**

Over-harvesting of marine resources or intrusive can lead to many negative impacts in near-shore and coral reef ecosystems. These can include:

- **Loss of key ecosystem species.** Over-harvesting of particular species that play a vital role in the ecosystem can numerous environmental changes. For example, when too many herbivorous fish are harvested from a coral reef, various species of algae can become overgrown. This smothers living corals from needed sunlight and can create a ripple effect of negative changes that impacts other species throughout the ecosystem.

- **Reduction in marine biodiversity.** The over-harvesting of ornamental objects such as corals, aquarium animals, and shells negatively impacts overall near-shore marine health and diversity.
- **Increase in illegal and destructive fishing.** Driven by the potential for short-term financial gain, many fishers will turn to destructive fishing methods to harvest popular seafood or ornamental species. In reef systems, this often includes nets that are damaging to reef structure, dynamite blasting and use of cyanide to poison and catch fish.
- **Fewer fish.** The popularity of seafood such as groupers and snappers has already led to severe declines in these types of game fish. Further consumption will likely lead to the listing of several of these species as endangered.
- **Fewer carnivores.** Many popular game fish, such as groupers, Jewfish, and Jack are important carnivores. The reduction of these animals will likely lead to overall changes in the marine ecosystem.

### **How to Reduce Impacts to Near-shore Marine & Coral Reef Ecosystems**

There are a number of ways that marine recreation providers can minimize impacts to near-shore marine and coral reef ecosystems by the way they operate. In turn, travelers can become “responsible tourists” and contribute to both the economic and ecological sustainability of a particular region.

- **Educate clients to be informed consumers.** Marine recreation providers can provide information to clients about the sensitive nature of coral reef ecosystems. Operators have the opportunity to educate tourists regarding which species in a given region should not be consumed as seafood or souvenirs because they are rare, threatened or endangered.
- **Support ecologically sustainable fisheries practices.** Marine recreation providers that serve seafood cuisine can help protect stocks of threatened or endangered fish by not serving these items during their operations. Instead, they should support suppliers that harvest non-threatened or endangered fish and other species in an ecologically sustainable manner. Additionally, operators can provide tourists with this information in order to promote sustainable fisheries.
- **Avoid selling or purchasing marine ornamentals.** Marine recreation providers should avoid selling marine ornamentals and souvenirs. Tourists, on the other hand, can help prevent the removal of key components of marine ecosystems for short-term gain by avoiding the purchase of marine ornamentals.
- **Observe the Law.** Marine recreation providers should abide by all regional and national and international laws regarding harvesting of marine species.

*Note: All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.*

## **RECREATIONAL FISHING**

Recreational fishing has long been a popular activity for millions of anglers and spear fishers around the world. Throughout the world's popular coastal marine destinations, visiting tourists regularly seek out sport fishing charters that target popular and ecologically important game fish such as marlin, dorado, wahoo and many others. Additionally, spear fishing and pole fishing in coral reef areas has gained in popularity in recent years, both among tourists and local people in coastal communities. In coastal environments, the decline in reef fish has been linked to spear fishing as well as over-consumption of marine resources by local populations, and studies have shown that spear fishing can negatively impact populations of reef fish such as Nassau grouper, various types of parrotfish, and other marine species.

Many critics point out that it is too highly effective a method of harvesting certain types of reef fish. For example, parrotfish, due to their method of resting among a reef at night, are an easy target for spear fishers during this time. Additionally, spear fishers often target the largest fish in a reef environment, thus drastically reducing the reproductive capacity of particular species in an area.

Given the decline of many popular game fish in recent years, catch-and-release fishing is a growing practice among sport fishing charters. Catch-and-release programs support conservation through the protection of game fish, while simultaneously promoting an increasingly valuable sector of the marine tourism industry throughout the world.

### **How Recreational Fishing Affects Near-shore Marine & Coral Reef Environments**

Recreational fishing, compounded by subsistence and commercial fishing, has led to over-harvesting of a number of marine species throughout the world. For example, Spiny Lobsters have virtually disappeared from reef environments all over the Caribbean and Hawaiian groupers are now extremely rare in the main Hawaiian Islands. Additionally, popular game fish such as various types of groupers, jewfish, jacks, wrasses and snappers have also seen a significant reduction in numbers throughout the Caribbean and other areas in recent years.

Removal of key components of coral reef and near-shore marine ecosystems leads to cascading changes throughout the environment. For example, many species of parrotfish are important algae grazers within a reef ecosystem. Along with other grazers, parrotfish prevent algae from overgrowing and smothering a coral community. Excessive removal of parrotfish as a result of highly effective spear fishing, therefore, can have serious negative consequences for an entire reef community.

### **What This Means to Near-shore Marine Environments**

Over-harvesting of marine resources from recreational fishing can lead to many negative impacts on near-shore and coral reef ecosystems. These can include:

- **Fewer fish in near-shore marine and coral ecosystems.** Over-fishing by both commercial and sport fishing operations can severely reduce populations of both reef and pelagic fish species. For example, the Caribbean has seen severe reductions of grouper, jewfish, jacks, and snappers. As key species in the food chain are removed, the effects include significant changes to the food-web and throughout the ecosystem.
- **Reduction in biodiversity.** The over-harvesting of fish and other popular game species negatively impacts overall health and diversity of near-shore marine and coral

ecosystems. In corals, removal of key species such as parrotfish or other algae grazers can lead to changes such as increased algae growth. This in turn can smother living corals and cause a negative cascading effect on overall reef diversity.

### **How to Reduce Impacts from Recreational Fishing**

There are many simple practices that fishers can adopt which will protect marine ecosystems and enhance recreational fishing in local and regional communities. These can include:

- **Practice catch-and-release fishing.** Sport fishing charters can make significant contributions to conservation of fish species by practicing partial or total catch-and-release programs. This can be especially effective when dealing with threatened or endangered fish species.
- **Avoid spear fishing.** Many critics believe that spear fishing is too effective a method of harvesting marine resources. Additionally, the nature of limited time available while on SCUBA as opposed to free diving, contributes to excessive, rapid harvesting by many divers.
- **Prevent marine pollution from fishing gear.** Marine debris poses a serious threat to both coral reefs and open ocean species. Monofilament line, lead weight and associated fishing gear can tangle and kill corals and many other forms of marine life. Sport fishing charters and other recreational fishers can contribute to the protection of marine ecosystems by ensuring that no marine debris results from their fishing practices.
- **Observe the law.** Nearly all regions of the world have laws and regulations that govern fish catch sizes and seasons. These laws are generally established to protect fisheries and recreational fishers will benefit by following them.
- **Use “ecological common sense.”** In addition to observing laws and regulations, fishers should maintain an awareness to avoid spawning aggregations, reproductive seasons, and harvesting of juveniles. Additionally, when a large school of potential game fish is located, fishers can help protect the ecosystem and the fishing industry by not harvesting the entire school.

*Note: All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.*

## **MARINE WILDLIFE VIEWING**

Marine recreation associated with coastal tourism has become a booming industry in recent years. Many of the world's most popular coastal resort destinations have seen tremendous growth in the snorkel and dive industry, sport fishing charters and water sports activities of all different sorts, including kayaking, sailing and recreational power boating. As tourism has come to be such a predominant part of the economies of many of the world's coastal communities, stakeholders in the tourism industry have realized that several species of previously considered "harvestable" marine animals now have much greater economic value for "wildlife viewing" by visiting tourists. Destruction of habitat, direct harvesting, pollution and marine debris in the ocean remain the most important threats to marine animals. In many cases, however, intrusive or irresponsible methods of marine wildlife viewing can potentially harm and even kill popular animals such as whales, dolphins, manatees, dugongs and marine turtles among others directly or indirectly through habitat destruction.

### **How Poorly Conducted Viewing Can Affect Marine Wildlife**

The primary threat to marine life from "wildlife viewing tours" comes from improper boating practices and corralling of animals during viewing. Many marine mammals, particularly the large whales of the world, migrate to tropical coastal regions in order to mate and give birth to calves, and are thus very sensitive to disturbance. For example, an intrusive tour boat can easily separate or create stress in a Humpback whale cow/calf pair in places like Hawaii or the Caribbean. For instance, noise from high numbers of boats creates stressful conditions and may interfere with hunting and diving behaviors. Propellers from power boats are also known to scar and often kill slow moving animals that can be found near the surface in coastal regions, such as manatees and marine turtles. Moreover, direct collisions with fast moving boats or thrillcraft (jetskis and waverunners) commonly pose a mortal threat to these and other marine animals.

In addition to poorly conducted boating practices, intrusive interactions from individual water sports enthusiasts such as snorkelers, divers and kayakers can disturb and in some cases drive marine life from primary habitat. For example, chasing or handling of marine turtles can cause these animals to abandon primary feeding grounds. Excessive daytime interaction in shallow bays can deprive dolphins of important resting periods.

### **What this Means to the Health of Marine Wildlife**

There are many potential negative impacts that poorly conducted or irresponsible viewing can have on marine wildlife. These include:

- **Disturbance of cow/calf pairs.** Marine mammals such as whales and dolphins can commonly be located in shallow, coastal tropical environments when nursing young. Intrusive viewing can create stress in mothers, separate cow/calf pairs, and decrease survival rates in newborn calves.
- **Abandonment of primary feeding or reproductive grounds.** Excessive handling or interaction can cause marine turtles to abandon primary feeding grounds in coastal environments. Marine mammals may leave key breeding sites if stressed too much from human interaction.
- **Injury or death.** Slow moving marine animals, particularly manatees and marine turtles, can be injured and killed by propellers and fast moving boats. Additionally, scarring caused by propellers can make marine animals more susceptible to infection and disease.

**How to Minimize Impacts from Marine Wildlife Viewing.**

- **Avoid chasing marine animals.** Whether in the water or on a boat, water sports enthusiasts and tour operators should always operate at a slow speed and never chase marine animals. If whale watching, it is best to approach animals very slowly from the side, versus head-on or from behind, and keep at a relative distance (i.e. engines should shut off at 100 meters from whales). If animals approach the vessel, slow down or stop and put propellers in neutral. Always let the animal determine its own path and behavior.
- **Practice a no-contact policy.** As an individual water sports enthusiast, or a small group, always avoid touching and handling marine animals such as turtles, whales and dolphins, and manatees.
- **Never feed wild animals.** Providing artificial food can alter an animals' behavior and impair natural feeding abilities and survival mechanisms.
- **Avoid surrounding animals.** If several tour boats are engaged in whale watching, for example, a concerted effort should be made to avoid surrounding the animals and causing unnecessary stress. This same concept applies for individual or small groups that are in the water viewing wildlife.
- **Observe the law.** In recent years, many places have passed laws banning or limiting the use of thrill craft or fast boat operations in sensitive marine habitat in order to protect slow moving or endangered marine animals such as manatees, turtles and whales. Additionally, in many places it is illegal to touch or handle marine wildlife, particularly if the animals are threatened or endangered.
- **Be litter conscious.** Marine debris is one of the greatest threats to wildlife in the oceans today. If engaged in boating or coastal activities, always make sure that trash goes in its proper place and does not end up in the marine environment.

*Note: All interim drafts of the tool are available at [www.celb.org/marine](http://www.celb.org/marine). Please visit this website for instructions on how to share your views and provide input on the draft assessment tool and this initiative.*



## SECTION V BACKGROUND RESOURCES

### **Snorkeling and Diving Guidelines**

#### **Great Barrier Reef Marine Park Authority**

Best Environmental Practices – Snorkeling and Diving

[http://www.gbrmpa.gov.au/corp\\_site/key\\_issues/tourism/diving.html](http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/diving.html)

#### **U.S. National Marine Fisheries Service**

Shore Diving Responsible Guidelines

[http://www.shorediving.com/content/know\\_the\\_law.htm](http://www.shorediving.com/content/know_the_law.htm)

#### **Professional Association of Dive Instructors (PADI)**

Tips for Divers – Ten Ways a Diver Can Protect the Aquatic Realm

<http://www.projectaware.org/uk/english/tfd.asp>

#### **Mother Jones Action Atlas**

Diver's Guide

[http://www.motherjones.com/coral\\_reef/dive.html](http://www.motherjones.com/coral_reef/dive.html)

#### **Coral Reef Alliance**

Coral Friendly Diving Guidelines

<http://www.coralreefalliance.org/parks/divingguide.html>

#### **Coral Reef Alliance**

Coral Friendly Snorkeling Guidelines

<http://www.coralreefalliance.org/parks/snorkelguide.html>

### **Whale Watching, Marine Mammals and Turtle Viewing Guidelines**

#### **Oceans Blue Foundation**

Developing an International Whale Watching Charter

<http://www.responsiblewhalewatching.org/index.html>

#### **Watchable Wildlife**

Wildlife Viewing Guidelines

<http://www.watchablewildlife.org/>

#### **Whale and Dolphin Conservation Society**

Cetacean Whale Watching Code of Conduct

<http://www.wdcs.org/dan/publishing.nsf/allweb/BE19E21D788B09D080256AD10034F436>

#### **Coral Reef Alliance**

Whale and Dolphin Watching

<http://static.redjupiter.com/gems/coral/whaleWatching.pdf>

**Coral Reef Alliance**

Turtle Watching Guidelines

<http://static.redjupiter.com/gems/coral/turtleWatching.pdf>**Whales Alive**

Tonga Whale Watching Guidelines

<http://www.whalesalive.org.au/tongaguidelines.html>**U.S. National Marine Fisheries Service Office of Protected Resources**

Marine Mammal and Sea Turtle Viewing Guidelines

[http://www.nmfs.noaa.gov/prot\\_res/MMWatch/southeast\\_guidelines.htm](http://www.nmfs.noaa.gov/prot_res/MMWatch/southeast_guidelines.htm)**U.S. National Marine Fisheries Service Alaska Regional Office**

Alaska Marine Mammal Viewing Guidelines and Regulations

<http://www.fakr.noaa.gov/protectedresources/mmv/guide.htm>**Whale Watch Operators Association Northwest**

Best Environmental Practices 2003

<http://www.nwwhalewatchers.org/guidelines.html>**The Whale Museum – Soundwatch Boaters Education Program**

Best Practices or Viewing Marine Life

[http://www.whale-museum.org/downloads/soundwatch/SWguidelines\\_02.pdf](http://www.whale-museum.org/downloads/soundwatch/SWguidelines_02.pdf)**South Australian Whale Centre**

Regulations and Environmental Code

[http://www.sawhalecentre.com/whale\\_watching/ww\\_regulations.html#top](http://www.sawhalecentre.com/whale_watching/ww_regulations.html#top)**Great Barrier Reef Marine Park Authority**

Best Environmental Practices – Whale and Dolphin Watching

[http://www.gbrmpa.gov.au/corp\\_site/key\\_issues/tourism/whale\\_dolphin\\_watching.html](http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/whale_dolphin_watching.html)**Great Barrier Reef Marine Park Authority**

Best Environmental Practices – Turtle Watching

[http://www.gbrmpa.gov.au/corp\\_site/key\\_issues/tourism/turtle\\_watching.html](http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/turtle_watching.html)**Boating Practices****Smart Voyager Conservation Programs**

Tour Operation Certification

<http://www.rainforest-alliance.org/programs/sv/certification-standards.html>**U. S. National Clean Boating Campaign**<http://www.uscg.mil/hq/g-m/nmc/clean.htm>

**Great Barrier Reef Marine Park Authority**

Best Environmental Practices – Boating

[http://www.gbrmpa.gov.au/corp\\_site/key\\_issues/tourism/boating.html](http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/boating.html)

**Great Barrier Reef Marine Park Authority**

Best Environmental Practices – Anchoring

[http://www.gbrmpa.gov.au/corp\\_site/key\\_issues/tourism/anchoring.html](http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/anchoring.html)

**Great Barrier Reef Marine Park Authority**

Best Environmental Practices – Moorings

[http://www.gbrmpa.gov.au/corp\\_site/key\\_issues/tourism/moorings.html](http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/moorings.html)

**Great Barrier Reef Marine Park Authority**

Best Environmental Practices – Waste Disposal (Garbage, Oil Products and Sewage)

[http://www.gbrmpa.gov.au/corp\\_site/key\\_issues/tourism/waste\\_disposal.html](http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/waste_disposal.html)

## **Fishing Guidelines**

**The Original Fish Hotline**

Guide for Catch and Release Fishing – How to Release Salmon

<http://fish hotline.com/release.htm>

**Great Barrier Reef Marine Park Authority**

Best Environmental Practices – Fishing

[http://www.gbrmpa.gov.au/corp\\_site/key\\_issues/tourism/fishing.html](http://www.gbrmpa.gov.au/corp_site/key_issues/tourism/fishing.html)

**Aquatic Release Conservation**

Guide to Handling and Releasing Fish, Sea Turtles, Marine Mammals and Seabirds

[http://dehooker4arc.com/release\\_guide.htm](http://dehooker4arc.com/release_guide.htm)

## **Beaches**

**Blue Flag**

Caribbean Pilot Beach Criteria – Blue Flag Certification

[http://www.blueflag.org/Caribbean\\_criteria.asp](http://www.blueflag.org/Caribbean_criteria.asp)

## SECTION VI    EXAMPLES OF ENVIRONMENTAL CODES OF CONDUCT AND CERTIFICATION SCHEMES

**Voluntary Guidelines in Quintana Roo, Mexico:** Situated on the eastern portion of the Yucatan peninsula, Quintana Roo, Mexico has experienced tremendous growth in tourism and development in the last twenty-five years. The area is home to the famous resort town of Cancun, and is located in close proximity to the Sian Ka'an Biosphere Reserve, the Hol Chan Reserve and the Mesoamerican Great Barrier Reef. In order to address environmental problems associated with rapid growth and development, a set of voluntary guidelines was published in 1998 concerning management of beaches, dunes, wetlands, vegetation, wastewater and sewage, use of energy, and water resources. The guidelines are now being viewed by the Mesoamerican Great Barrier Reef Project as a template for responsible growth in tourism and development.

**Smart Voyager:** The Smart Voyager Certification program seeks to make significant progress in reducing the environmental impact of marine shuttle operations from mainland Ecuador to the Galapagos Islands. Started in the year 2000, the program certified five vessels in the first two years, with many more companies making partial adaptations to Smart Voyager standards. The voluntary criteria for boat operators to get certified includes the following: compliance with national and international legislation and Smart Voyager standards; supporting and promoting conservation of natural ecosystems; reduction of negative environmental impacts and the potential for introduction of exotic species; just and proper treatment and environmental education training for employees; commitment to local socioeconomic development; and strict control of use, supply and storage of materials. The program initially focused on large-scale operators, but eventually reached out and successfully integrated smaller operators into the certification scheme as well.

**Great Barrier Reef Marine Park Authority (GBRMPA):** The GBRMPA is the governing body that manages and regulates the Great Barrier Reef complex in Australia. As part of an effort to promote conservation and protection of coral reefs and the marine environment, the GBRMPA has developed codes of conduct for best environmental practices for a wide range of marine related activities. Some of these activities include: boating; anchoring; use of moorings; viewing birds, turtles and marine mammals; snorkeling and diving; disposal of sewage and waste; island visitation; and many other issues. These codes of conduct represent one of the most comprehensive examples of best environmental practices outlined for a regional marine environment.

**Coral Friendly Snorkel and Dive Guidelines:** Created by the Coral Reef Alliance (CORAL), environment friendly guidelines for snorkeling, diving, and viewing wildlife were initially developed for use in the Bonaire Marine Park. The guidelines highlight the importance of avoiding contact and harassment of reefs and wildlife. Additionally, suggestions are made regarding land-based, or "at-home" consumption habits that affect coral reefs. CORAL works to protect reefs worldwide and these guidelines can be used in any area of the world that experiences significant levels of tourism visitation to coral reef ecosystems.

**Watchable Wildlife:** As a U.S. based non-profit organization, Watchable Wildlife produces numerous publications for different geographic regions of the world on how to properly view wildlife in their natural habitat. They have partnerships with many state resource agencies and produce both practical guides and handbooks in the area of wildlife viewing. Their primary goal is to "advance wildlife viewing as a viable economic and conservation enterprise" for communities in Canada, the United States and Mexico.