

Keywords: conservation; coral reefs; environment; marine recreation; preferred practices for good environmental behavior; safety; scuba diving

Standard Requirements for Recreational Scuba Diving Services in the Mesoamerican Reef System

Prepared by:
ICRAN Mesoamerican Reef Alliance
Standards and Code Taskforce

Abstract

This voluntary standard specifies requirements for environmental performance and conservation practices, and operational safety that enhance the diving experience and minimize environmental impact of recreational scuba diving operations on fragile marine ecosystems in the Mesoamerican Reef system, particularly coral reefs, sea grass beds, mangrove forests, and related coastal environments.

This standard was developed by representative members of the ICRAN Mesoamerican Reef Alliance Standards and Code Taskforce (SCT) and the Coral Reef Alliance (CORAL). SCT and CORAL disclaim all liability for its use, application, or adaptation. This standard is subject to revision at any time and must be reviewed every five years and if not revised either reaffirmed or withdrawn.

Copyright © 2006

FOREWORD

*(This Foreword is not an official part of this standard,
and is included for information purposes only.)*

This standard is being released in both Spanish and English to support ongoing sustainable coastal initiatives along the Mesoamerican Reef not only to conserve and protect the reef, but also to improve economic sustainability of marine recreation in the region. This voluntary consensus standard is the product of a 191-member taskforce representing four interest groups:

- Suppliers -- dive operators and managers of marine protected areas;
- Purchasers -- individual divers and bulk purchasers represented by associations of tour operators, hotels and cruise ships;
- Local Communities;
- General Interests -- government agencies, non-government organizations, certifiers, academics and others.

All members of the taskforce are from the four nations bordering the Mesoamerican Reef -- Mexico, Belize, Guatemala and Honduras -- except for the bulk purchasers, a few individual divers, and the managers of some long-established marine protected areas in other parts of the world.

The widely recognized due process practices defined in the Standards Engineering Society's standard SES-2, Model Standards Development Procedure, were followed in developing this standard. All drafts, comments, discussions and balloting were accomplished online simultaneously in Spanish and English.

Initially the taskforce considered adopting the European Committee for Standardization's EN 14467:2004, Requirements for Recreational Diving Service Providers, which has been submitted to ISO for adoption as an international standard. After thorough review it was determined that too many additions and exceptions would have to be incorporated to address sustainable tourism issues, particularly regarding the environment, that are critical to application on the Mesoamerican Reef.

An annex of this standard is a succinct list of preferred practices for scuba divers and dive operators. A number of organizations have prepared guidelines and codes of conduct for diving and these too were considered for adoption, but were found to be insufficiently prescriptive and specific. The guidelines focus primarily on the conduct of divers and overlook the conduct and responsibilities of dive operators and their staff.

This regional standard does not yet include guidance on sociocultural and economic issues that are key aspects of sustainable tourism. An overarching standard on sustainability is expected to be prepared during the next phase of the ICRAN MAR project that could be referenced in this and other operational standards. This standard, together with related

standards on boat operations, snorkeling, and beach and pool recreation, will be pilot tested at representative sites in Mesoamerica during 2006. These tests will validate requirements in the standards, improve their quality and facilitate their implementation. In the meantime, any other country or region developing a standard for scuba diving should consider this regional standard for adoption or adaptation.

Suggestions for improvements to this standard are welcome. They should be sent to the Chairman of the ICRAN MAR Standards and Code Taskforce, c/o CORAL, 417 Montgomery St., Suite 205, San Francisco, CA, 94104, USA, or standards@coral.org.

CONTENTS

<u>Foreword</u>	ii
<u>1. Scope</u>	1
<u>2. Referenced documents</u>	1
<u>3. Definitions</u>	1
<u>4. Requirements</u>	2
<u>Annex A</u>	8
<u>Annex B</u>	10
<u>Annex C</u>	12

Standard Requirements for Recreational Scuba Diving Services in the Mesoamerican Reef System

1. Scope

This voluntary ICRAN MAR standard specifies requirements for marine recreation providers in the field of guided recreational scuba diving operations in vulnerable ecosystems such as coral reefs, sea grass beds and related coastal environments. The standard addresses four critical areas:

- Minimizing impact to the marine environment, particularly coral reefs, sea grass fields and related coastal environments;
- Competence of staff and clients;
- Minimum requirements for conducting guided dives for certified divers; and
- Operational safety and emergency equipment.

The standard does not specify curricula or practices for initial or advanced diver training, the qualifications of instructors, or related subjects, nor does it address business relationships with clients or the rental of equipment.

2. Referenced documents

ICRAN MAR 3, Requirements for Recreational Boat Operations in the Mesoamerican Reef System.

3. Definitions

For the purposes of this standard, the following definitions apply:

3.1 Coral reef conservation

The act of conserving coral reefs and related near-shore ecosystems such as sea grass beds, mangroves and related coastal environments.

3.2 Coral reef ecology

The study of organisms in coral reefs and related environments, and the physical and biological interactions with their environment.

3.3 Dive leader

A person who has sufficient knowledge, skill and experience to plan, organize, supervise and lead dives to known sites within the region; possesses personal rescue and rescue management skills; and holds proper credentials to engage in such activity.

3.4 Environmental briefing

Oral information sharing by dive leaders that instructs and guides divers on ways and reasons to minimize impact on coral reefs, sea grass beds and related coastal environments while scuba diving.

3.5 Guided scuba diving

Organized scuba diving where clients are accompanied by a dive leader appointed by the marine recreation provider.

3.6 Marine Protected Area (MPA)

An area of the marine environment that has been reserved by a federal, state, territorial, or tribal entity, or by local laws or regulations to provide protection and conservation to part or all of the marine, terrestrial and cultural resources within its boundaries.

3.7 Marine recreation provider

Entity (business, individual or organization), including any individual acting on behalf of such entity, which offers one or more of the following services:

- (a) Training, education or information sharing on scuba diving services;
- (b) Guided diving excursions;
- (c) Environmental education prior to or during guided dive excursions.

3.8 Recreational scuba diving

Underwater recreational activity which utilizes a self-contained underwater breathing apparatus (SCUBA). Recreational scuba diving is limited to diving no deeper than 40 meters (130 feet) within the no stop limits of recognized dive tables or dive computers.

4. Requirements

4.1 General requirements

The following requirements apply to all marine recreation scuba diving providers and their staff.

4.1.1 Marine recreation providers shall demonstrate leadership and role modeling both above and underwater by enforcing all provisions of the preferred practices for environmental behavior specified in Annex A. Oral pre-dive briefings shall review these preferred practices and alert divers to the impact of poor diving practices on coral reefs, sea grass beds, related coastal ecosystems and wildlife. Briefings may be facilitated by use of a whiteboard, video, handouts, or other educational materials, but these aids are not substitutes for oral briefings.

4.1.2 During guided scuba diving trips marine recreation providers and their staff are responsible for pointing out poor behavior, in a positive and supportive manner, to divers while underwater and after a dive, and providing information on why and how to adjust this behavior.

4.1.3 Staff shall be trained in management of clients who abuse rules or are ignorant of environmental impacts associated with inappropriate diver behavior. After training, dive leaders shall be able to identify potential environmental impact caused by client's inappropriate diving

behavior, and have practical tools and methods at their disposal for taking corrective action, including the following: verbally communicating with the client in a positive, reassuring manner, carried out in a private place; warning second time offenders they may be banned from diving activities; banning third time offenders from diving activities.

4.1.4 Marine recreation providers shall verify that dive leaders and other staff have received appropriate training in coral reef ecology and conservation, as well as training in how to properly instruct divers in safe and environmentally sensitive diving techniques. Where available, the training shall be provided by local or national tour guide certifying agencies or local marine protected area staff, and provide dive leaders and staff with tools and practical methods for ensuring good environmental practices. Where such training is unavailable, marine recreation providers shall accomplish the training with particular focus on threatened, endangered and rare species that are unique to the local environment. The marine recreation provider shall review coral reef ecology and conservation practices with staff at six-month intervals maximum.

4.1.5 All staff with responsibilities on board boats or in the water shall be trained in the marine recreation provider's procedures for diving, and safety practices including diving procedures, boat handling and navigation, communications, first aid, and cardiopulmonary resuscitation (CPR).

4.1.6 The marine recreation provider shall maintain the following documentation on all individuals delivering services:

- (a) name, address and date of birth;
- (b) marine related training and certifications;
- (c) experience;
- (d) medical and environmental training and certifications; and
- (e) duties assigned to the individual staff member.

The marine recreation provider shall have documentary evidence that all staff members hold relevant and current qualifications for their duties. Proof of qualifications shall be made available to the clients upon request.

4.1.7 Marine recreation providers shall employ dive leaders who can communicate with clients in their language and have facility in the local language. All staff training and education shall be in the local language used by dive leaders.

4.1.8 Clients shall be provided the opportunity to submit confidential evaluations of staff performance and satisfaction with the overall dive experience through an exit survey. An example of an exit survey is provided in Annex B. A record shall be maintained of client feedback and any corrective action that resulted.

4.1.9 Recreational scuba diving trips shall not be made to sites prohibited by national or local authorities, the community or the local association of marine recreation providers. Marine recreation providers shall voluntarily rotate dive sites that are becoming degraded, letting them "rest," and cooperate with other suppliers; managers of marine protected areas and other responsible agencies to

- (a) foster sustainability by establishing limitations on the number of boats and

- divers that visit popular sites at a given time;
- (b) promote installation of permanent buoyed moorings at dive sites;
- (c) maintain mooring buoys; and
- (d) communicate with other vessel operators to locate and share moorings.

4.1.10 When scuba diving from shore, entry and exit routes shall be used that avoid walking on corals or sea grass beds

4.1.11 Bad practices and violations by marine recreation providers or divers shall be reported to local authorities and managers of marine protected areas.

4.2 Diving activities

4.2.1 A dive leader shall oversee all guided scuba diving activities. The dive leader shall utilize additional diving leader assistants with large groups (see 4.2.4). Dive leaders and assistants shall serve as role models, share information and provide leadership to clients both above and underwater by enforcing all provisions of the preferred practices for environmental behavior specified in Annex A.

4.2.2 As a minimum, dive leaders and dive leader assistants shall be certified to the requisite level of competence by a recognized dive certification agency. Dives that require specific qualifications, e.g. night diving, wreck diving etc. shall be led by dive leaders with appropriate qualifications (specialty certification) or equivalent logged experience.

4.2.3 Dive leaders shall verify that each diver is certified. Dives that require specific qualifications, e.g. night diving, wreck diving, etc. may only be carried out if each diver has appropriate qualifications (specialty certification) or equivalent logged experience.

4.2.4 A guided scuba diving group shall not exceed 8 divers. When there are more than 8 divers additional groups of no more than 8 divers shall be organized. All groups shall be under the overall control of the dive leader who will assign a dive leader assistant to each group. The dive leader may be in charge of one of the groups. Dive leader assistants shall be responsible to the dive leader for direction and enforcement of safety and environmental practices. It is desirable, but not mandatory, that experienced and inexperienced clients be separated into different groups.

4.2.5 Water entry points from boats shall lie over sand or rubble, not coral, or in water of sufficient depth that divers can make adjustments and become acclimated with minimal impact on corals or sea grass beds.

4.2.6 When diving from shore, entry and exit routes shall be used that avoid walking on corals or sea grass beds.

4.2.7 Boat operations shall be in accordance with ICRAN MAR 3, the standard for boat operations, currently being developed by the ICRAN MAR Standards and Code Taskforce.

4.3 Operational safety and emergency equipment

4.3.1 The marine recreation provider shall develop a written emergency management procedure for each type of service offered. The procedures shall identify and define actions to mitigate existing and potential hazards and risks to clients and staff, and how to respond to emergencies including:

- (a) rescue procedures for underwater, in-water, and surface emergencies;
- (b) diver recall procedures; and
- (c) evacuation procedures.

The procedures shall take into account any unique local hazards, the capabilities of local emergency services and training required by the provider's staff.

4.3.2 All staff shall be trained in all aspects of these emergency management procedures and the marine recreation provider shall review the procedures with staff at six-month intervals maximum.

4.3.3 The marine recreation provider shall ensure that dive leaders have knowledge and understanding of the features and hazards of the intended diving locality. Dive leaders shall make every reasonable effort to ensure that the dive site is suitable for the abilities and skills of the divers and the planned activity.

4.3.4 In addition to environmental behavior, the pre-dive briefing shall review safety and emergency procedures, buddy or group assignments, the identity and role of staff, and conduct required of the divers.

4.3.5 Prior to each dive, each dive leader and dive leader assistant shall perform a risk assessment that takes into account the abilities and skills of the divers in his/her dive group. As a minimum, the following shall be considered:

- weather
- current
- wave action
- depth
- underwater visibility
- surface visibility
- entry and exit
- boat traffic
- divers' fitness
- planned activities
- local restrictions
- emergency response

4.3.6 Dive leaders have the responsibility of preventing any diver from participating in the dive if, following a risk assessment, this is determined to be in the best interest of the diver, other divers, or both. A risk assessment can indicate the need to reduce the planned number of divers in each group (see 4.2.4) due to sea conditions or other factors.

4.3.7 Marine recreation providers shall ensure that, in addition to meeting all specified requirements of the ICRAN MAR Boat Operations Standard, dive boats are equipped with the following:

- (a) communications equipment, including contact numbers to directly reach evacuation services, medical services and the nearest hyperbaric chamber;
- (b) navigation equipment appropriate for the locality;

- (c) an oxygen first aid unit including sufficient medical-grade oxygen to deliver a minimum of 15 liters per minute for no less than 20 minutes.

4.3.8 The dive leader and captain of each dive boat shall ensure that no persons are left behind on leaving a dive site. Counts of all persons on board before and after each dive shall be recorded, verified and signed by the dive leader and captain. If the record is made electronically the dive leader and captain shall personally enter their names and unique identifier.

4.3.8.1 Two types of systems may be used to carry out the count:

- (a) Passive count systems by which the crew makes the count with little participation by the persons being counted tends to be quicker and less obtrusive, but are more susceptible to error. If a passive count system is used, the count shall be done twice, and independently by different crewmembers.
- (b) Active count systems require the persons being counted to actively participate in the counting process. Roll calls, tagging or signing systems are examples of such systems. These systems tend to be slower than passive systems, but are less prone to error.

4.3.9 A dive safety log shall be kept for each dive containing the following information:

- (a) each diver's name;
- (b) the name of any buddy with whom the dive is conducted;
- (c) the names of the dive leader and boat captain;
- (d) the date and location of the dive;
- (e) time in and time out;
- (f) maximum depth of the dive;
- (g) any incident, problem, discomfort or injury experienced or suffered by the diver;
- (h) if the dive was done using a dive computer - the dive time;
- (i) if the dive was done using dive tables – the repetitive dive group and either bottom time or dive time;
- (j) if the repetitive dive group and surface interval result in a repetitive factor – the surface interval and repetitive factor.

After each dive, the dive leader should assist divers in reviewing decompression calculations and computers so that a safe profile can be planned for the next dive. Dive safety logs shall be retained for at least one year. An example of a dive safety log is presented in Annex C.

4.3.10 Whenever divers are in the water a lookout shall be positioned out of the water or in a tender vessel where the lookout can see the whole area where diving is taking place. The lookout shall be able to recognize relevant hazards and divers in difficulty, and be able to either rescue a diver or direct a person who is immediately available and capable of rescuing a diver to do so.

4.3.11 Marine recreation providers shall ensure that the risks of divers being injured or killed by moving vessels is minimized or eliminated. In determining control measures, the following systems should be considered:

- (a) ensuring lookouts maintain a watch for approaching vessels and are part of a communications system to allow contact to be made with the approaching vessel in a timely manner.
- (b) using unpowered watercraft as tenders;
- (c) installing propeller guards on powered tender vessels;
- (d) using buoys or markers to separate diving activity from vessel activity;
- (e) using appropriately sized and displayed flags to indicate diving activity; (Note: this control measure is only effective when the flag is displayed where diving is taking place, not just in the vicinity);
- (f) ensuring that dive staff is familiar with dive sites and able to navigate competently.

The preferred practices for good environmental behavior specified here are a mandatory part of ICRAN MAR 1, *Standard Requirements for Recreational Scuba Diving Services in the Mesoamerican Reef System*

A1.0 Divers and dive leaders shall:

A1.1 Obey all applicable local and national laws and regulations including interactions with whales, whale sharks and other wildlife;

A1.2 Maintain an awareness of fins, equipment and cameras; adjust buoyancy, and secure equipment to avoid contacting corals or stirring up sediment;

A1.3 Unless otherwise specified, remain at least 10 feet away from whale sharks at all times and 80 feet away from reef fish spawning aggregations, and not block a whale shark's path.

A2.0 Divers and dive leaders shall not:

A2.1 Touch or contact corals or other reef dwelling organisms;

A2.2 Use dive gloves unless required by a medical condition;

A2.3 Spear any marine life or chase, harass or try to ride marine life such as turtles, manatees, and whale sharks;

A2.4 Feed fish or any other marine life.

A3.0 Dive leaders shall:

A3.1 Describe the rules, local regulations or laws that apply to the area; provide examples of bad practices and violations; and provide contact information of local authorities;

A3.2 Provide a description of environmental, biological, and physical features of the dive site;

A3.3 Advise on proper navigation and diving techniques specific to the characteristics of the marine environment in which the diving activity is to be carried out, such as sandy bottoms, reef walls, and fragile local wildlife;

A3.4 Review with divers the preferred practices for good environmental behavior specified in this standard and this annex;

A3.5 Encourage divers to provide feedback on compliance with the code of good environmental behavior by the marine recreation provider and its staff through use of an exit survey at the end of the dive excursion;

A3.6 Include fundamentals of buoyancy control in each pre-dive briefing; check if divers are over-weighted; observe divers both above and underwater in order to identify buoyancy control problems, and help adjust their diving weights if necessary;

A3.7 Ensure that photographers understand that the health of coral reefs, sea grass beds, and related coastal environments shall not be compromised by any photography activity, and provide specific advice on proper diving techniques for safe and environmentally sensitive navigation while using photography equipment;

A3.8 Perform a buoyancy check with each photographer prior to diving activities and ensure that photographers and other divers are aware of each others' position at all times;

A3.9 Take appropriate action in the event divers cannot or do not comply with the rules, local regulations or laws that apply in the area and the code of good environmental behavior specified in this standard and this annex.

A4.0 Marine recreation providers shall:

A4.1 Employ only dive leaders who are trained to the requisite level of competence by a recognized dive certification agency;

A4.2 Provide training to dive leaders on rules, local regulations or laws that apply to the area, particularly marine protected areas; provide examples of bad practices and violations; and provide contact information of local authorities;

A4.3 Ensure that their employees and contractors comply with the rules, local regulations or laws that apply in the area and the preferred practices for good environmental behavior specified in this standard and this annex;

A4.4 Take appropriate corrective actions when divers cannot or do not comply with the rules, local regulations or laws that apply in the area and the preferred practices for good environmental behavior specified in this standard and this annex;

A4.5 Support local marine protected areas and non-profit organizations working on coral reef conservation issues and, if at a marine protected area, inform clients of the ecological, economic and cultural value the MPA provides and the importance of monetary support to sustain its mission.

A5.0 This annex shall be made available to clients orally and by posting it on all dive boats and in a prominent position at the provider's place of business.

This model Exit Survey exemplifies the type of information to be collected, but is not a mandatory part of ICRAN MAR 1, *Standard Requirements for Recreational Scuba Diving Services in the Mesoamerican Reef System*.

CONFIDENTIAL EXIT SURVEY QUESTIONNAIRE

Today's date: _____

1. What was the primary reason for your visit?

Check one

- Scuba diving
- Beaches and other water recreation
- Birdwatching
- Hike in the mountains
- Visit cultural or historic sites
- Other: _____

2. How long were you in (country)? ____ days

3. What is the name of the scuba diving service _____ Number of dives _____

4. How was this scuba diving service chosen? My own research Part of a tour package
 Recommended by: friend, hotel, cruise ship, travel agent, guidebook,
 Other _____

5. How would you rate this dive operator?

Circle best answer

	Below Expectations					Exceeded Expectations				
	1	2	3	4	5	1	2	3	4	5
The level of service was high	1	2	3	4	5	1	2	3	4	5
The dive boat was very seaworthy	1	2	3	4	5	1	2	3	4	5
The dive boat was well equipped	1	2	3	4	5	1	2	3	4	5
Staff and crew were sensitive to the fragility of coral reefs	1	2	3	4	5	1	2	3	4	5
Good environmental practices were applied and enforced	1	2	3	4	5	1	2	3	4	5
Good safety practices were applied and enforced	1	2	3	4	5	1	2	3	4	5
I had good experiences on this operator's dive trips	1	2	3	4	5	1	2	3	4	5

Comments:

6. Were there any problems that were particularly bothersome? YES NO

Please describe _____

7. Were there any aspects that were particularly appreciated? YES NO

Please describe _____

8. How likely are you to recommend this operator to other divers?

Circle your rating
Not likely 1 2 3 4 5 Very likely

9. Were you aware that this dive operator makes a special effort to protect the environment and the reef?

YES NO

10. Did the dive operator provide you with Instructional materials or Briefings on

- Appropriate behavior, safety and conservation practices prior to diving, boating, snorkeling and other excursions? YES NO

- How to support area marine parks and local conservation initiatives? YES NO

11. How would you rate the leaders of your scuba diving trips?

Circle best answer

	Below Expectations		Exceeded Expectations		
	1	2	3	4	5
The dive leader was very knowledgeable	1	2	3	4	5
Briefings on safety and logistics were very good	1	2	3	4	5
Briefings on the ecosystem and how to protect it were very good	1	2	3	4	5
The guide was a role model in applying good practices	1	2	3	4	5
The guide enforced good practices when guidelines were violated	1	2	3	4	5

Comments:

12. Did you contribute to a local conservation initiative? YES NO

If so, what was the amount or value of your contribution? _____

13. Do you have any comments or recommendations for this dive operator, the community or the local tourism industry?

Please provide a few details about yourself.

Nationality _____ Home city or region _____ Age ____ Number in your party _____

Level of diver certification _____ Number of dives during past 12 months _____

THANK YOU FOR YOUR VALUABLE COMMENTS!

Annex C

This model Dive Safety Log exemplifies the type of information to be collected, but is not a mandatory part of ICRAN MAR 1, *Standard Requirements for Recreational Scuba Diving Services in the Mesoamerican Reef System.*

Dive 1 Location: Glover's Reef, Southwest Caye						Date: 11/01/2006	
Diver's name	Buddy	Time in	Time out	Max. depth (m)	Bottom time / dive time	Repetitive dive group	Signature
1. R. Wilson	R. Toth	09:00	09:23	18	23	M	<i>R. Wilson</i>
2. R. Toth	R. Wilson	09:04	09:27	18	23	M	<i>R. Toth</i>
3.							
4.							
5.							
Log entry completed and signed							
Dive leader <i>M. Castillo</i>				Captain <i>V. Palacio</i>			
Incidents etc	Dive 1: Incidents – None Injury – None Others – None			Problems – None Discomfort – None			
Environmental conditions	Surface conditions – Calm Visibility – 10m Other – None			Currents – 0 Maximum depth – 20m			

Dive 2 Location: Glover's Reef, Usher's Caye						Date: 11/01/2006			
Diver's name	Surface interval	Repetitive factor	Buddy	Time in	Time out	Max. depth (m)	Bottom time/ dive time	Repetitive dive group	Signature
1. R. Wilson	2:37	B	R. Toth	12:00	12:20	23	20	R. Wilson	<i>R. Wilson</i>
2. R. Toth	2:35	B	R. Wilson	12:02	12:22	23	20	R. Toth	<i>R. Toth</i>
3.									
4.									
5.									
Log entry completed and signed									
Dive leader <i>M. Castillo</i>					Captain <i>V. Palacio</i>				
Incidents etc	Dive 2: Incidents – None Injury – None Others – None					Problems – None Discomfort – None			
Environmental conditions	Surface conditions – Calm Visibility – 10m Other – None					Currents – 0.5 knot Maximum depth – 25m			