Global Interactive Marine Experiences Council
PO Box 220687
West Palm Beach, FL 33417

Florida Guidelines and Management Programs for Interactive Marine Experiences

Table of Contents

Appendix Section

Preface

Since the early 1970's various types of interactive marine experiences, generally called "fish feeding dives", have been conducted in areas throughout world. Presently, it is estimated that there are over 300 sites in nearly 40 countries where dive operators are conducting these types of dives. History shows that these interactive marine experiences (commonly referred to as "IME's"), have greatly contributed to a variety of conservation efforts through which both the public and marine animals derive considerable benefit.

Public Benefit

Every living creature depends upon water for life. We are dependent upon the earth's seas, rivers, lakes and streams for water, food, power, transportation, recreation, and health. Although human beings have a complex relationship with the water that surrounds us, we are dependent upon it. As we enter a new millennium many of us have come to realize that our aquatic environments are in trouble.

On a daily basis, we continue to see the destruction of the aquatic environment from both commercial and recreational activities as oil spills, vessel groundings, overfishing, industrial pollution, and discarded trash and materials that wash upon the coral reefs. While there may be a few success stories, environmental advocates continue working hard to clean up or prevent further damage and destruction to the aquatic environment – upon which we depend.

Mission Statement

To paraphrase a wise philosopher, "In the end, we will save only what we love, and we love only what we know." *The mission of GIMEC is to cultivate awareness and appreciation of marine animals and to help conserve and enrich our natural world*. In fulfilling its mission, GIMEC's prime objectives will be to help the public to know, and thus to love, and preserve the aquatic environment and its inhabitants. Interactive marine experiences are educational opportunities for the public to see and get to know the environment and the life under the ocean's surface. Public awareness, concern, and an interest in the future preservation of our aquatic environment will only come from our efforts to educate, inform and create conservation ambassadors and alliances. The ambassadors that we create today and their efforts to preserve and protect our ecosystem will determine the future of our aquatic environment.

Marine life benefit

In an address to the International Coral Reef Symposium, Dr. Clive Wilkinson of the Australian Institute of Marine Science made the observation that as much as 10 percent of the world's coral reefs are already degraded beyond recovery. An additional 30 percent of the reefs are likely to die within the next 10-20 years, and still another 30 percent could die 20-40 years thereafter. That means at least 70 percent of the world's coral reefs, and likely their inhabitants, may be dead by the middle of this century. A survey by the International Union for the Conservation of Nature and Natural Resources found that human activities have significantly damaged or destroyed reefs in most countries where they occur. Will coral reefs and their inhabitants survive? Their fate is unknown at this time.

One thing is for certain – the only possible way to help the inhabitants of our ecosystem survive is through conservation. Thus, the marine life benefit from interactive marine experiences is obvious. What humans see and

know they will be interested in protecting. For our aquatic environment and all of its inhabitants to survive, humans must protect them.

The Goal of Global Interactive Marine Experience Council (GIMEC) Guidelines

The primary goal of these guidelines is to provide recommended practices for program operators in Florida to use when conducting Interactive Marine Experiences (IME). Traditional science regarding the effects of interactive marine experiences is unavailable and studies to document any effects have not been done. Because traditional science is not available, the GIMEC Advisory Board, comprised of scientists, marine biologists, animal behaviorists, program operators, and dive industry training and business professionals, who have conducted interactive experiences, studied marine animals, and visited sites around the world where interactive experiences are conducted, have provided the only available and accurate science and experience relating to the effects of interactive marine experiences.

These program guidelines have been developed after consultation with the Advisory Board, numerous experienced program operators, program operator associations, environmentalists, marine biologists, and shark behavior experts. PADI Project Aware has contributed much of the environmental data and training segments. In addition, several of the recommended (fish feeding) guidelines utilized by The Great Barrier Reef Marine Park Authority (GBRMPA), and the well-established *United Kingdom-based Shark Trust*, were also considered. Persons involved with these and other well-known organizations have been asked to join the Florida chapter of **GIMEC.**

In fulfilling its mission, GIMEC's primary objectives are:

Conservation
To participate in the global effort to preserve our aquatic environment by developing and maintaining interactive learning programs which support awareness of marine animals and to help protect our planet's biodiversity. To promote marine animal conservation, in particular shark conservation, by informing the public of their importance to the ecosystem.

Education
To serve as a conduit for knowledge and understanding of marine wildlife through interactive learning programs and experiences and to encourage public awareness of global aquatic conservation issues. To inform the public of the seriousness of the shark population depletion that exists.

Research
To encourage and support the collection and dissemination of scientific information utilizing interactive marine experiences to further the conservation and protection of the earth's aquatic biodiversity.

Security
To provide guidelines and tools for safe, interactive marine experiences which also safeguard the public's use of the surrounding waters.

Leadership
To provide an ongoing process for the development and distribution of recommended guidelines to be used as management programs for interactive marine experiences. To foster a spirit of cooperation, participation, and pride between private, civic, and scientific communities on both a local and global basis.

Recreation
To promote a wide range of interactive, recreational programs to facilitate positive involvement by any and all members of the general public with underwater marine animals and the ecosystem.

The original GIMEC Advisory Board reviewed and adopted the following guidelines and management program for conducting interactive marine experiences. Through consensus with the GIMEC membership, comprised of those interested in conservation, marine animal preservation, and public education during interactive marine experiences, these guidelines will be self-enforcing. That is, those participating in the development of these guidelines have agreed to the content and to use the recommendations contained herein.

Public education is one of the most important aspects of GIMEC's mission. By providing opportunities for the general public to see and experience the life underwater, greater awareness of the importance of preserving the marine environment can be accomplished. The educational component of these guidelines can be used during public outreach programs, as a general presentation to community groups, or as a briefing just prior to an interactive marine experience.

Overview

The purpose of the following management program is to provide basic recommended content, techniques and procedures for conducting safe and enjoyable interactive marine experiences. Although written for use in Florida waters, these guidelines have implications worldwide.

The primary objective when conducting any interactive marine experience should be to provide a safe and enjoyable interaction with minimal environmental impact. The factors to be considered when planning an interactive experience are listed in this document and it is recommended that each operator in Florida prepare what should be referred to as an "**Interactive Marine Experience Program**", wherein each of these recommended guidelines and practices can be incorporated. The content of the program will vary depending upon the environment, users, species, and other factors. For example, while these recommended management programs were developed for use in Florida waters, they can be adapted to various environmental conditions and geographical areas. The techniques, procedures, and environmental considerations that are addressed in this document exist globally, and the recommended practices are relevant to various environmental conditions and can easily be adapted to interactive marine experiences in any part of the world.

Recommended Management Program for Conducting IME's (interactive marine experiences) in Florida

Operators conducting IME's in Florida waters should include procedures in their **IME Program** to address the following factors:

1. Safe Environmental Practices
2. Staff Training for IME's
3. Marine Animal Feeding Practices
4. Participant Preparation & Education
5. Marine Animal Conservation Efforts
6. Safety Considerations for IME's

7. Location of Interactive Marine Experience Program sites
8. Risk Management & Awareness
9. Establishing an Emergency Procedures Plan
10. Appointing an Administrative Officer and Safety Officer for IME Programs

Safe Environmental Practices

One of the primary goals of conducting interactive marine experiences is to minimize any negative effects to the ecological system while maximizing the ultimate positive benefit of IMEs through public awareness, education, and appreciation for marine life. This includes minimizing impact to the underwater terrain, corals, and marine habitat.

When selecting a program site, an area should be chosen to minimize the impact to the underwater environment. Activities that disturb the underwater terrain, such as anchoring, impacting corals and underwater structures, and excessive finning by divers should be minimized. The goal of the following recommendations is to cause minimal disruption to the underwater environment during interactive marine experiences.

- Boats should use permanent moorings, drift when possible, or anchor in the sand.

- Program sites should be located in areas that will not damage coral and other marine aquatic organisms. Conduct interactive marine experiences in sandy areas, coral rubble, wreck or artificial reef sites, or in areas that cause minimal amount of damage to the underwater environment.

- Fish from reefs or inshore habitats should not be harvested for feeding activity. Use fish from other sources.

- Divers and program operators should receive training and education to help prevent divers and aquatic animals from damaging the underwater environment.

- Take steps to protect habitats, dive sites and animal populations by not introducing excessive, unnatural organic matter and nutrients to reef waters.

- Protect the health and well-being of the animals by not excessively handling, touching, or disturbing their normal behavior patterns.

Staff Training for IMEs

Each operator's IME Program should include a component for training staff members that are participating in interactive marine experiences. This training should emphasize safety for the participants, information about the marine animal species to be observed, and risk management and awareness.

A variety of techniques are used to conduct interactive marine experiences. Some IMEs involve feeding activities and some do not, therefore program staff should be trained in the techniques used to conduct IMEs in the program in which he/she will be working. Common feeding techniques include feeding from a pole spear, from the hand, and with a chum-sickle. Some dive operators and scientists suggest that feeding from the pole spear or extended device is the preferred method. Other operators suggest that the preferred method is drifting a container with fish parts underwater is more effective. Whichever technique is used, trained qualified staff/professional divers should conduct the experience.

A trained/qualified staff person or professional diver meets the following requirements:
1. Has completed the educational component in the appendix section of these guidelines,
2. Minimum divemaster level certification, or the equivalent, or higher level of certification
3. Has been trained in the IME techniques and procedures used at the respective program site, and
4. Has demonstrated competency in conducting the IME at the program site in which he/she will work.

The recommended training components are listed below. Only qualified personnel with experience in conducting interactive experiences should train staff/professional divers. The goal of the following staff training component is to conduct safe IMEs with emphasis on the safety of the staff and participants and with minimal impact on the behavior patterns of the species of marine animal involved in the IME.

Staff Training Components

A. Knowledge Development

Fundamental information should be included in staff training sessions to provide the basic information needed to safely and effectively conduct interactive marine experiences. The knowledge development sessions may be conducted as a briefing or classroom session, however the following topics should be included:

(1) Basic Marine Animal Behavior

- The basic marine animal behavior in the wild
  - Feeding habits
    - Reaction to the presence of bait
  - Survival instincts
- Marine animal behavior in the presence of divers
  - In the presence of bait in the water
    - Common attractants for species being observed
      - Injured fish, blood or fish scent in the water
- Training on the specific biology of the specific species being fed

(2) Marine animal behavior when threatened or frightened.

- Aberrant behavior and its causes
  - Examples of aberrant behavior
    - Sharks learn to associate the discharge of a speargun with a potential meal.
  - Most injuries are accidents. Marine animal acting defensively or misinterpreting the swimmer/surfer/diver as bait
    - Injuries during spearfishing and its causes
      - Motion of fish on the spear and scent in the water attracts aquatic animals.

(3) Marine Life Conservation

Provide an overview of the negative impacts of overfishing, finning, and over use of the underwater environment to the ecological system.

- Results in species depletion, dead reefs, and destruction of the ecosystem.
- Positive impact of marine interactions.
- Public awareness and more concern for environmental system.
- Steps the dive industry must take to educate public and government of the importance of underwater environmental destruction and species depletion.

(4) Conducting Interactive Marine Experiences

- Overview the procedures to be used to conduct the interactive experiences
- Techniques for attracting the marine animal(s) that will produce a positive interactive experience

- If a feeding dive, overview technique to be used.
    - Description of the technique for feeding the marine animal (i.e. by pole spear, by hand, or by chum-sickle).
- Actions to avoid during the interactive marine experience.
- Techniques for maintaining control of the activity.

(5) Emergency Procedures

- Duties of the Safety Officer and each member of the professional dive team in the event of an emergency.
- Mechanism for contacting medical treatment and transport.
- Component parts of the first aid kit.
- Team member responsible for assuring that the first aid kit is stocked and on board the vessel.
- Reporting and recording procedures to GIMEC

B. Skill Development of IME Skills

Practice sessions should be conducted under the supervision of a qualified staff member and simulate the actual manner in which the interactive experience is conducted. The following procedures should be included:

1. Practice moving underwater
    - If feeding dive, practice moving with bait
2. Practice techniques for conducting IME
    - If feeding dive, practice techniques to be used.
3. Practice emergency procedures

C. Practical Application of IME Skills

Practice sessions should be conducted in the open water environment, under the supervision of a qualified staff member, to simulate the actual interactive experience.

1. Practice conducting IME
    - If the dive is a feeding dive, feed marine animals using approved techniques
2. Avoid damaging underwater environment during IME.

Marine Life Feeding Practices

In addition to the other recommended practices for conducting IMEs, operators in Florida who conduct IMEs should consider the various dietary requirements for each species of marine animal. The fundamental dietary component of most marine animal species is fresh, raw fish and fish products. When conducting marine interactions that involve feeding, the choice of bait that is being fed to the animals should be as close as possible to their natural dietary requirements. Additional factors affecting the ecological system and the health and well-being of the animals include the type, amount, and quality of food that is being fed during the interaction and the number and frequency of interactions that occur.

- Fresh, raw marine products should be used for interactions. Marine animals should be fed the minimum amount necessary to enhance the IME experience.
    - According to scientific studies on the food habits and requirements of sharks, a 100-150 pound reef shark is estimated to require from 5 to10% of its body weight per week in food intake to maintain its normal weight and growth. To avoid health problems from too much food coming from artificial (diver-fed) sources, sharks should be fed significantly less than 50% of this minimum requirement, so that they obtain natural food for most of their diet. This means that feedings should be restricted to less than approximately 3-6 one pound fish per week per shark.

- Another technique to use in avoiding the situation of too much food coming from artificial sources is to not use the same feeding sites repetitively or on a daily basis. Therefore, IME sites can be alternated or the same site not used daily.

- When using a “chum-sickle” or frozen bait, the amount of time that the bait is frozen should be minimized. If the fish has been frozen for more than eight weeks, it should be discarded. Long frozen bait loses its vitamins and has a poor caloric composition.

- Program operators and divers should never be allowed to bring onto the diving vessel for purposes of marine animal feeding, or introduce into the water, any bait items that are unnatural to the marine animal(s). "Garbage disposal" type feedings must not be allowed under any circumstances. Foods fit for human consumption are not generally suitable for marine animals (i.e. red meats, manufactured meats, chicken meat and bones, fruit peelings, breads and canned cheese).

- Reef fish should not be taken from the reef system for use as bait. Each member of the reef system has a function, from protecting its territory to cleaning other marine animals. To best preserve the natural state of the underwater environment, attention should be given to preserving the various reef members and their place in the ecosystem.

- There should be no indiscriminate feeding, surface chumming, or underwater chumming. Regularly scheduled focused feeding is recommended. In particular, chumming around boats is discouraged.

- For the health and well-being of the animals, avoid touching or handling the animals when possible. In addition, it is recommended that feeding situations be avoided where animals are rubbing against each other or against other objects.

Participant Preparation & Education

The participant preparation and education component is the most important component of any well-developed IME Program. Prior to the actual IME, participants should be provided with as much information as possible about the species to be observed. The goal of the "educational component" is to create an awareness of the fundamental value of each species to the ecosystem, and it should include life history, the ecological role, and threats from humans. To avoid damaging or disrupting the underwater environment, IMEs that involve snorkeling or diving should include the proper participant conduct. This program should ensure that all participants are well trained in diving procedures and that marine animal conservation and awareness is promoted in a sensitive and balanced manner.

The IME Educational Program for use on shark diving IMEs in Florida is included in the appendix section of these guidelines. An IME should consist of a briefing prior to the IME, proper IME conduct, and a debriefing after the IME. When planning an IME briefing, in addition to the standard briefing information (i.e. boat briefing, etiquette, dive procedures, etc.) information contained in the educational component should be used as a reference or guideline for the IME briefing.

The following should be included in each IME:

A. IME Briefing

- Welcome
    - Staff Introductions

- Standard vessel briefing and procedures
- Standard Risk Management Procedures and Administration
- Purpose and goals of IME
    - Need for conservation efforts
        - Importance of protecting sharks to the entire ecosystem
            - Shark's important function in the ecosystem
    - How to get involved
    - Species to be seen today
    - Additional IME information regarding species history, behavior, instincts, and place in the ecosystem taken from the educational component in the appendix.
    - Putting shark bite incidents into perspective
        - Worldwide, less than 100 shark attacks are reported annually.*
            - The truth is, sharks are in far more danger from humans than humans are from sharks.
            - For every one person that is bitten, one million sharks are killed.
        - Humans are not on the shark's food chain
            - Incidents are usually accidental and close to shore while swimming, surfing, or bathing in murky waters or where bait fish are present.
            - Risk of injury is higher from lightning strikes, dog bites, bee and wasp stings, snake bites, and pigs than sharks.
                - Sharks look for fish, not humans
                - Don't provoke them
                - Use common sense when around any wild animal

B. IME Conduct

- Get geared up as a group and enter as a group.
    - Stay with the group during the IME, do not wander from the group.
    - Do not touch or let fins touch coral or marine animals
    - Settle on your knees on a sandy bottom area or area that will not damage the environment.
    - Do not wave arms – control buoyancy with BCD & weights
    - Do not swim toward the marine animals, let them come to you.
    - Marine animals have their own personal space that is roughly twice the length of the animal's body. Don't invade its space.
    - Watch animal behavior for aggression or defensive behaviors.
        - If seen – don't provoke
        - If IME operators notice negative behaviors, the dive may be terminated.
    - No touching or handling of the animals.
    - Any feeding should be done only by IME professional
        - Only natural food is to be fed.
    - Photographers should take care not to disturb animals with strobe flashes or video lights.
        - During IME, take care not to disturb the underwater environment if you more around to get photographs.
    - Follow standard safe diving procedures regarding monitoring air consumption.
        - Return to boat with at least 300-500 psi
    - Exit with the group.
        - If lower on air than the group, exit with your buddy.

C. IME Debrief

- Did anyone notice animals with fishing hooks in their mouths or gills, or trailing fishing line?
- Did anyone notice number of males and females?
- Did anyone see animals with parasites or lesions?
- Did anyone in the group see animals with injuries from mating habits or injuries from humans (i.e. boats, plastic, fishing line, etc.)?
- Did anyone in the group see animals with remoras?
- Future Conservation efforts by citizens and government are needed to protect the marine animals from further species depletion.
    - Spread awareness of the ecological and economic value of the marine animals, in particular, sharks.
    - Support conservation efforts locally by promoting local educational and interpretive programs.
    - Encourage divers to protect habitats, dive sites and marine animal populations impacted by habitat destruction.
    - Encourage divers to seek legal protection for aquatic animals and their habitats.
    - Encourage divers to become members of organizations established to assist in marine animal conservation efforts.
    - Encourage divers to become "Shark Conservation Ambassadors".
    - Overfishing will eventually deplete more species.
- Local Conservation Efforts in which participants can become involved that can enhance awareness of ecological efforts.
- Global efforts underway
    - A number of organizations, such as PADI Project Aware and the Center for Marine Conservation are working to inform the public and protect and preserve a variety of marine animals including sharks.

Marine Life Conservation Efforts

Very much like the educational component, operators in Florida should be involved in efforts to preserve and conserve marine life. The training of IME participants should include the following:

- Encourage participants to spread awareness of the ecological and economic value of the marine animals, in particular, sharks, and their special importance as marine wildlife and in the local culture.
- Encourage participants to cooperate with fisherman and local communities. Support conservation efforts locally by promoting local educational and interpretive programs.
- Encourage participants to protect habitats, dive sites and marine animal populations impacted by habitat destruction.
- Encourage participants to seek legal protection for aquatic animals and their habitats.
- Encourage participants to become members of organizations established to assist in marine animal conservation efforts.
- Encourage participants to become "Shark Conservation Ambassadors", carrying the plight of marine animals to city, state, and federal officials with the authority to take measures to ensure their protection.

Safety Considerations for IMEs

The goal of interactive marine experiences is to conduct enjoyable and safe experiences for the guests/divers and for the marine animals. Therefore, the following techniques and recommendations are based on conducting interactive marine experiences that provide for the safety considerations and conserving the ecosystem.

- Operators should institute a training program for staff members, as described previously in this document. Proper training can assure a positive experience for staff, participants, and marine animals.

- Marine animals are extremely sensitive to scents, odor corridors, motion, and vibrations in the water. Most animals, particularly sharks can detect scents, motion, and vibrations from great distances. In fact, one technique of attracting marine animals for IMEs is by placing fish parts into a container having numerous holes in the sides, securing the container to the vessel, and drifting the bucket underwater. The odor corridor that is created by the water filtering over the fish parts in the bucket attracts the animals to the site. During IMEs, program operators should be aware of any attractants that are overexciting the marine animals. Maintaining control of the interaction is a prime safety concern for the participants and animals. Any indication of loss of control should immediately result in termination of the interaction.

- It is well documented that spearing fish triggers a shark's natural predatory behavior, due to the shark's keen ability to sense electrical impulses initiated by the injured animal's muscles. Spearing fish has the potential to create an unsafe condition for IME participants if they are in the spearfishing area, because animals are attracted from great distances. Therefore, care should be taken to avoid such activity either prior to or during an IME.

- In addition, operators should attempt to avoid the handling of aquatic animals. These considerations are for the health and well-being of the animals and are based on the same premise as not touching the coral while diving. In addition, it can greatly reduce the chance that marine animals, particularly sharks, will confuse participants with the staff. Less handling of the animals can prevent the spread of diseases and could prevent some animal species from investigating participants in search of food. In addition, it can also ensure that aquatic animals are not unnecessarily approached or handled by participants.

- During an IME, program operators should observe the marine animals' behavior for any indication of aggressive, threatening, or negative behaviors. Any indication of such behaviors should result in a reevaluation of the IME techniques and frequencies.

Safety Considerations for IME's that involve marine life feeding

When conducting IMEs that involve feeding marine life, in addition to standard safety practices and procedures for conducting IMEs, the following special feeding considerations should be observed.

- Most members of the aquatic environment are very sensitive to odor corridors, scents, motion, and vibrations in the water. In this regard, caution should be used during the interaction to maintain control by not introducing excessive bait into the water, thus over exciting the marine animals.

- Introducing chum, a combination of fish waste and by products, into the water to attract fish is a technique frequently used by fisherman and operators conducting interactive experiences. While this procedure almost certainly attracts fish, it also introduces abundant amounts of attractant on the surface near the vessel.

Therefore, it attracts the fish and/or aquatic animals to the surface and to the vessel's stern, generally an unnatural feeding area. During marine animal feeding dives, chumming can alter normal feeding habits and has the potential to create an unsafe situation when divers and snorkelers are in the water or entering and exiting the water at the stern of the vessel. Behaviorists agree that the practice of surface chumming during IMEs, or at a site where IMEs are regularly conducted is not recommended. Behaviorists also agree that the introduction of snorkelers or divers into the chum area is also not recommended.

- History shows that a variety of acceptable feeding methods exist that provide a safe and enjoyable IME. For example, for over twenty-seven years in The Bahamas, aquatic animals have been safely fed during shark feeding dives by pole spear, "chum-sickle," and by hand. Some operators wear chain mail gloves, chain mail sleeves, or a chain mail suit, while others do not. A variety of preferred techniques exist, that have proven to be safe. Nevertheless, a number of considerations should be evaluated when determining the most appropriate feeding method for a particular operation. These considerations should include, but not be limited to, the species to be fed, type of bait available, the local marine environmental conditions, the experience level of staff and participants, and the safety of the participants.

- Safety issues relating to the operator's preferred feeding technique should also be considered when evaluating the most appropriate feeding method. Such considerations include proximity of divers to the bait source, ease of control, supervision by staff, and participant entry and exit to the IME program site.

- If program operators observe any of the marine animals behaving in an aggressive or negative manner the operators should consider altering their feeding patterns and/or methods until the negative behavior ceases. "Negatively changing" is defined as aggressive or threatening behaviors that could cause injury or damage to the marine environment, marine animals, or program participants.

Location of IME Program sites

The main factors that will determine the location of a program site are the availability of marine animals for the IME and the accessibility of the site. Typically, IME sites around the world range from several miles to several hundred yards offshore. Once possible sites have been located, additional factors should be carefully considered. The following are three important factors that should be considered when selecting an IME location.

1. **The site should lend itself to minimizing the impact to the underwater environment.**

   Program sites should be located in areas that will not damage coral and other marine organisms. If possible, conduct IMEs in sandy areas, coral rubble, or in areas that cause minimal amount of damage to underwater structures. Boats should use permanent moorings, drift when possible, or anchor in the sand. The goal is to minimize any disruption to the underwater environment during IMEs.

2. **Consider the potential for conflict with other user groups.**

   Conflicts among certain user groups such as divers, spearfishers using scuba, commercial fishers, recreational fishers, swimmers, and snorkelers are common in some Florida waters. Marine zoning is one method used by marine resource managers in Florida that has proven successful in reducing the potential for user conflicts. Marine zoning has also improved the fish populations and marine habitat within a protected area.

   If the IME site under consideration is located within a marine management area, such as a marine sanctuary or protected area that has a marine zoning plan, resource managers have already addressed the user group

conflict issue. Operators evaluating possible IME sites within sanctuaries and/or marine protected areas should consult with the appropriate resource managers for information and/or clarification of any regulations affecting IME programs.

If the site under consideration is located outside of a marine management area, potential user group conflicts exist. When possible, IME operators should avoid conflicts with other user groups. But since there are limited resources available, and marine animals rarely change feeding patterns to meet user groups' needs, often little can be done to avoid conflicts.

However, in evaluating IME sites, operators should consider the following factors:
1. The relative location of program sites to other recreational areas.
2. Through location or timing changes, separate feeding activities from popular diving, snorkeling, swimming, and fishing areas.

Prior to selecting an IME site, the operator should evaluate popular diving, snorkeling, and recreational areas and attempt to select a site at a location other than those used by other recreational operators and individuals. Operators should meet with other local operators and, if necessary, by agreement minimize the number of sites and frequency of feedings.

In many areas, an alternative to user group conflicts has been coastal zoning. Operators should consider meeting with local authorities to establish, if necessary, marine coastal zones. Since the most effective approach to addressing user group conflicts is marine zoning within a marine sanctuary or protected area, operators should also consider working with state and local authorities and other affected user groups to establish marine protected areas where appropriate.

Operators should also post a unique marker of some kind, such as the "IME in Progress Flag", indicating that an IME is in progress. This would be helpful to assure that so-called "pedestrians" are aware that an IME is in progress and can take steps to avoid the area if they consider it necessary.

3. <u>The site should be located an area that provides good visibility.</u>

When selecting a site the water visibility should be evaluated. The site should be located in the clearest possible water that affords the best possible visibility (i.e. not in murky water) to the participants, staff, and animals. Conducting the IME in an area that affords good visibility makes the experience more pleasant for the participants and safer due to the staff being better able to see the animals and participants.

Risk Management & Awareness

Dive operators are fundamentally aware at all times of the importance of managing risk in scuba diving activities. Conducting dive activities which involve a marine animal feeding component are no different, however, each operator should have participants execute a waiver of rights/release specifically covering the risks associated with marine animal feeding dives.

Any release must have two basic components. First, is a clear and unambiguous statement that the participant is consenting to a waiver of their rights to sue all persons or entities involved in the scuba diving operation. There cannot be any question the participant <u>knowingly</u> waived their right. Second, that waiver must contain a description of the specific risks the diver is assuming, in other words, like with normal dives, the release must list the specific risks associated with marine animal feeding dives. Furthermore, dive operators must be careful that

its advertisements do not conflict with the language of the release, especially in terms of the description of the risks assumed. It is extremely important that in the operator's staff training program, that the staff are instructed to stay with the same script and not try to glorify or minimize risk to participants. Finally, operators should be sure to have waivers/releases executed prior to the vessel leaving port, in the event that the participant chooses later to withdraw.

GIMEC has developed a method by which operators can maintain data on number of feedings, numbers of divers, frequency of feeds, the amount of bait, and incidents which result in injury to participants, if any. GIMEC has developed an "incident report" through which accurate and reliable data can be maintained in Florida, and upon which the dive industry can assess and report risk. The incident report is included in the appendix section. In addition, GIMEC has developed a "trip report" on which operators can report the number of participants, amount of food being fed, type of food being fed, and number of staff used on each trip. A quarterly report has also been developed on which operators report the data to GIMEC. Copies of these reports are included in the appendix section.

Emergency Procedures Plan

Despite the best planning and precautionary techniques, injuries can occur to diving professionals or diving guests. Injuries during IMEs are rare. To prepare for the unlikely event of an injury, an emergency plan should be implemented. Emergency plans reduce confusion and clearly define the actions that every professional dive team member should take when an injury occurs. A written emergency plan should be posted and available encompassing all possible emergency situations. It should include any and all appropriate emergency phone numbers, procedures, and personnel. The plan should be rehearsed periodically by simulating an emergency and dealing with it from beginning to the appropriate conclusion including reporting procedures. An emergency plan should include the following:

- Duties of each member of the dive team in the event of an injury to a guest or member of the dive team.
  - Clearly defines the dive team member to render first aid to the patient.
  - Clearly defines the dive team member to assist other diving guests to the exit point.
  - Procedure for informing the operational base of the incident and contact information for on-shore medical transport and treatment.
  - Procedure for medical evacuation (i.e. transport goes to patient on the vessel or remains at operational base to receive patient when vessel returns).
  - Component parts of a first aid kit
  - Designated dive team member responsible for assuring that the first aid equipment is on the vessel prior to departure from operational base.
  - Incident reporting and recording procedures.

Administrative Officer

Each IME program should have an Administrative Officer whose job is to administrate the program including the following program components:

1. Oversee long term safety and health of the program and assure continued efforts to maintain safety and health of the aquatic animals.
2. Administrate the legal issues of the program.
3. Establish training procedures and policies.

4. Approve new techniques and equipment.
5. Assure implementation of GIMEC guidelines.
6. Conduct periodic evaluations of personnel, techniques, and safety procedures.
7. Public Relations efforts
8. Appoint a Dive Safety Officer:
    - The Dive Safety Officer is a staff member who has sufficient training and experience to conduct IMEs and has actual experience conducting IMEs.
    - The Dive Safety Officer is responsible for routinely evaluating the manner in which the program is conducted and taking steps to update any training or safety procedures.
    - The Dive Safety Officer is responsible for the following:
        - Safety of program participants and staff.
        - Education of program participants and staff.
            - Updating educational component and staff training component with new scientific studies and procedures.

Appendix Section

1. Glossary of Terms
2. Interactive Marine Experience Educational Program
3. Shark Incident Information Sheet
4. Operators Trip Report
5. Operators Quarterly Trip Report

GLOSSARY OF TERMS

Artificial reef site – a structure that has been placed underwater to provide habitat for marine animal where no structures or protection for the marine animal previously existed. A man-made structure sufficiently cleaned and prepared to be placed under the water.

Best management programs – A term widely used within the tourism and resource management community for guidelines that were developed by a consensus-based process of experts and practitioners within the field.

Bycatch – fishing catch that is unintended and incidental to the primary target species. Bycatch is frequently discarded and frequently called "bykill" by environmentalists.

Chumming – the procedure of throwing fish, fish parts, and blood in the water to attract fish.

Coral rubble – dead coral pieces that typically litter an area adjacent to a coral reef.

Chum-sickle – a frozen mass of fish that is used for feeding during interactive marine experiences. Chum-sickles are made by placing fish, bycatch, or fish parts into a container and freezing it. During the interactive experience the chum-sickle is secured to the stern of the vessel or to a surface buoy. The marine animals come up to the chum-sickle and eat the parts or pieces of fish from the frozen mass.

Indiscriminate feeding – feeding marine animals by others than trained IME staff. Indiscriminate feedings are generally accomplished by divers or snorkelers jumping in the water with fish pellets, fish waste, or a bag of chum and attempting to draw and feed the fish. This procedure is harmful to the marine life and participants.

Interactive marine experiences – an organized, controlled activity in which participants observe and/or photograph underwater marine animal in their own habitat. The organizers of these events generally feed the marine animal to attract them to the area in order for the participants to observe the animals.

Feeding site – an area used for interactive marine experiences.

Feeders – a diving professional that interacts with and feeds underwater marine animal during a controlled activity in which participants observe or photograph the marine animal.

Fish waste – natural organic material that are not used by those harvesting fish. Fish waste may be fish parts that are to be discarded after fish have been cleaned for market.

Feeding from a pole spear – a technique for feeding marine animals in which a fish is placed on the spear end of a pole spear and the marine animals swim up and take the fish off of the pole spear.

Finning – a process of removing the fins from a shark for commercial use and discarding the remainder of the animal.

Focused Feeding – a regularly scheduled and professionally conducted IME in which the marine animals are fed fish or fish waste.

Food/bait – the food that is used for interactive marine experiences. Must consist of fish or fish products, may be fresh or frozen, such as mackerel, squid, ballyhoo, herring, or bonita.

Garbage disposal feedings – an activity in which a wide variety of inappropriate human food is fed to marine animals. Types of food used include red meats, manufactured meats, chicken meat and bones, fruit peelings, bread, and canned cheese. This type of food is designed for human consumption and must not be used for feeding marine animals as it makes them sick or can kill.

Hand feeding – a technique for feeding marine animals in which a fish is held in the hand of a "feeder" or "handler" and the marine animal swim up to the "feeder" or "handler" and takes the fish out of the hand. Frequently the professional performing the hand feeding wears a full chain-mail suit or chain-mail glove for protection.

Inappropriate types of food – any type of food that is not a dietary requirement for the species of fish being fed. Examples are: any type of cooked food, hot dogs, cheese, or bread.

Long frozen fish – fish that has been frozen for longer than 8 weeks and has lost most nutritional value. Long frozen fish has a poor caloric composition and has lost most of the original vitamin content.

Marine protected area – an area created for the purpose of protecting marine animal and rebuilding the population of various species. Types of marine protected areas include parks, reserves, and sanctuaries established by government, donations, or private funding.

Marine sanctuary – an area that is set aside by the government as a sanctuary for marine animal. Sanctuaries include rules and regulations as to what type of activities can take place within the sanctuary boundaries. Occasionally, sanctuaries establish "zones" for the purpose of limiting activities such as "no-take zones" which prevent taking of any marine animal in that zone area.

Mooring buoys – permanent buoy designed for short time anchorage that employs an embedment type anchor. It is used by boaters to secure their boat without risking damage to the bottom.

Operators- a widely used term describing a business professional conducting boating operations for hire. Used frequently to describe businesses conducting scuba diving charters, snorkeling charters, and other water related activities associated with chartering activities.

Operator associations – a professional association to which businesses belong and to receive membership benefits.

Overfishing – harvest of fish that exceeds the ability of a species to reproduce.

Participant preparation – the process of briefing and informing participants, prior to their participation in an interactive marine experience, in the proper procedures, techniques, and conduct for the IME. The preparation should include information about species of animals to be observed, life history of the species, ecological role in the ecosystem, and threats from man.

Professional divers/staff members – to qualify as staff for conducting interactive marine experiences, a minimum level of divemaster certification should be obtained prior to staff IME training.

Participants – those engaging in interactive marine experiences conducted by professionals. Sometimes also referred to as "guests" or "divers". However, when the activity is conducted in an aquarium, the participants may not enter the water, but may observe from an observation area.

Resource Managers – those charged with managing a marine protected area, sanctuary, or park.

Risk management – managing the business and legal risks of conducting business in a manner that is legally prudent but within the bounds of reasonable customer service.

Surface chumming – the process of throwing ground fish, fish pieces, and blood on the surface of the water to attract fish. Surface chumming frequently produces a "slick" of the chum as the boat moves through the water that allows the marine animals to follow the "slick" to the boat.

User groups – groups of individuals and businesses using the marine environment for various recreational and commercial purposes. Examples are commercial fishers, spearfishers, recreational scuba divers, and recreational snorkelers.

Interactive Marine Experience Educational Program
for use on shark diving IMEs in Florida

The following educational component is specific to shark feeding dives and has been developed for use by those conducting IMEs in Florida. The content of the program was developed by PADI Project Aware Foundation and taken from the PADI Project Aware Specialty Course. Additional educational components for other activities such as sting ray interactions, manatee observations, and reef fish interactions will be added as they are developed. While the following IME participant preparation outline includes details specific to shark diving, non-diving participants can benefit from the briefing and debriefing information.

Program Goals

The overall goal of this program is to change attitudes from those of fear or revulsion to awe and respect. With this change in perspective, it is hoped that participants will leave the course as "shark ambassadors," able to and enthusiastically willing to spread the word about the serious problems facing sharks worldwide.
To accomplish this outcome, the specific goals are:

1. Demonstrate an understanding of the basic evolutionary history, biology, and ecology of sharks.
2. Appreciate why sharks are vital members of a healthy marine ecosystem and their potential benefit to man.
3. Demonstrate an understanding of why sharks are so vulnerable to overfishing.
4. Demonstrate an understanding of the behavior of sharks so they can be safely observed in the wild.
5. List the type of actions individuals can take to help reduce the decline of shark populations and change the public's negative perception of sharks.

Instructional Objectives

1. State in what class sharks belong and contrast the anatomical and physiological differences between sharks and bony fishes.
2. Describe the eight orders of sharks.
3. Explain the dietary diversity and requirements seen among sharks in contrast to bony fishes.
4. Describe the wide variety of habitats in which sharks are found.
5. Explain what indications exist regarding the intelligence of sharks and why sharks have been so successful as a species.
6. Describe the range, operation, and capability of the shark's sensory biology.
7. Contrast the reproductive biology of sharks with bony fishes and explain why it makes it highly vulnerable to overfishing.
8. Explain why sharks are thought to be important in terms of maintaining the health of the marine ecosystem.
9. Explain the status of conservation efforts to protect sharks from overfishing.
10. Describe the proper diving procedures and diving conduct to use on an IME.

Presentation

1. The term shark is thought to have evolved from the Middle English term *shurke*, meaning *villin*.
    - Sharks and rays are cartilaginous fishes that belong to a class termed *chondrichthyes* and a subclass known as elasmobrachii.
        - Sharks have cartilaginous rather than bony skeletons.
        - They have no air bladder but have an enormous liver that provides buoyancy.
        - Shark skin has placoid scales similar to small teeth that are important to swimming.
        - Shark fins are not retractable like bony fishes, and the fins and tail provide lift.
    - There are 8 orders of sharks and about 380 species of sharks that inhabit every ocean and marine habitat.

    - Orders are: Six-gilled sharks (cow and frill sharks), Saw sharks, Dogfish (bramble, sleeper, and gulper sharks), Horn sharks, Carpet sharks (bottom dwelling like nurse and wobbegong but include whale), Angel Sharks, Mackerel Sharks (great white, mako, tiger, megamouth, sand, basking, and goblin), and Ground Sharks (only order to have nictitating membrane).
- Half of all sharks reach a maximum size of less than one meter and only 5 percent exceed 4 meters.
    - Largest are whale sharks at 40 ft. to smallest at 8-inch pygmy shark.
    - Sharks live about 20-25 years, although dogfish can live 100 years.
- All sharks are carnivorous, but diets vary.
    - Tiger shark's diet is very diverse and will eat almost anything from carcasses to license plates.
    - Basking and whale sharks are the largest and eat only plankton.
    - Cookie cutter sharks are small and elusive and take single bites out of larger marine animals.
    - Nurse sharks are bottom feeders whose diet is primarily mollusks and crustaceans.
    - The average amount of food consumed daily by sharks is less than bony fishes who tend to be less active and slower growing.
- Sharks identical to those living today evolved 160 million years ago, and haven't evolved much since, because they survive well when left alone.
    - Relatively intelligent with a brain size between that of birds and mammals.
        - In captivity, can be trained to recognize shapes and perform tasks.
        - Most opportunistic predators like sharks are somewhat intelligent.
- Sharks have a diverse habitat
    - Caribbean reef sharks have a relatively small range.
    - Pelagic species travel extensively: Atlantic blue summers off the east coast of North America and winters off the west coast of Africa.
    - Bull sharks can tolerate fresh water and have been found in lakes.
- Sharks sensory systems are the primary reason they are such successful animals.
    - Prey is often initially detected by hearing, which can operate kilometers from the source.
        - Some believe this is their most important sense and they are especially attuned to low frequencies.
        - 40 HZ is frequently emitted by an injured fish and the sharks are especially attuned to this lower frequency.
    - At a range of hundreds of meters, smell takes over to sense prey.
    - The lateral line senses motion at around 100 meters.
        - Used to detect motion and provide hydrostatic feedback on swimming efficiency.
    - Vision is used at tens of meters.
        - Excellent vision is well adapted to seeing in dim light.
    - The ampullae of Lorenzini (small pores around the shark's head and snout lead to sensory organs that sense small electrical impulses) are dominant within a meter.
        - Enables the sharks to detect the electrical stimuli produced by muscle contractions of other fish – even when the prey lies buried on the bottom.
    - On contact their very sophisticated touch and taste detect the prey.
        - Taste buds are contained within small bumps in the mouth and determine the palatability of a prey item.
- Sharks are highly vulnerable to over-exploitation because of their reproductive physiology and behavior.
    - Sharks reach sexual maturity at a late age, compared to bony fishes that take only months.
        - Lemon sharks – sexual maturity at 15 years

        - Piked dogfish – sexual maturity at 20 years
        - Sandbar sharks – sexual maturity at 30 years.
    - Unlike bony fishes, sharks produce only a few dozen offspring at one time. Many produce fewer.
    - Compared to bony fishes, sharks have an extremely long gestation period.
    - Males have claspers, females do not.
    - Many shark species congregate in near-shore nursery grounds.
        - This allows commercial fishers to remove large numbers of mature females.
- Sharks are important to the marine ecosystem because they cull the weak and wounded animals.
    - Take what fishers would normally discard or not catch.
        - Eliminating an apex predator has a catastrophic effect.
        - Due to unique physiology, sharks could hold vital clues to human immunology, cancer, HIV, and new antibiotic research.
            - Sharks are remarkably resistant to diseases.
- Shark incidents did not become a subject of particular public interest until the twentieth century due to increased journalism, air and sea disaster stories of World War II, and worldwide trends toward recreational use of oceans.
    - Risk of injury is higher from lightning strikes, dog bites, bees, wasps, snakes, and pigs than sharks.
    - Shark-human interaction is most likely accidental and close to shore while swimming, bathing, or surfing in murky waters or near bait fish areas.
        - Frequently close to sandbars or between sandbars where sharks feed.
        - Areas with steep drop offs are also likely sites because sharks congregate there to look for natural food items.
- Shark fisheries are responsible for shark depletion because they are seldom regulated and have become the "salvation" of commercial fisherman in the'90s.
    - Between 30 and 100 million sharks are killed worldwide each year.
        - Many are killed as by-catch (or termed by-kill by environmentalists)
        - Over 1,400,000 metric tons are taken each year.
        - Although illegal, many are killed only for the fins.
    - US is one of the top 19 countries for shark fisheries.
    - Shark fins sell for about $200 US per lb.
    - Traditional fisheries management programs don't apply to shark fisheries due to the sharks slow reproductivity.
        - US, South Africa, Australia, and U.K. are the only countries that currently have a shark management plan.
- Recent conservation efforts
    - The United Nations has recently endorsed a shark fishery plan, which is expected to be adopted in the near future.
        - Encourages regional fishery management arrangements to ensure international coordination of shark management efforts.
    - Conservation efforts by everyone are essential to the continued survival of sharks.
        - U.S. recently passed legislation to ban finning, but more efforts are needed.
- IME Conduct
    - Get geared up as a group and enter as a group.
        - Stay with the group during IME, do not wander from the group.
        - Do not fin or touch coral or marine animal

- Settle on your knees on a sandy bottom area or area that will not damage marine animal.
- Do not wave arms around – control buoyancy with BCD & weights
- Do not swim toward the marine animals, let them come to you.
- Marine animals have their own personal space that is roughly twice the length of the animal's body. Don't invade its space.
- Watch animal behavior for aggression or defensive behaviors.
  - If seen leave the area – don't provoke
- No touching or handling of the animals.
- Any feeding should be done by IME professional only.
  - Only natural food is to be fed.
- Photographers should take care not to disturb animals with strobe flashes or video lights.
  - During IME, take care not to disturb the underwater environment if you more around to get photographs.
- Follow standard safe diving procedures regarding monitoring air consumption.
  - Return to boat with at least 300-500 psi
- Exit with the group.
  - If lower on air than group exit with your buddy.
- Putting shark bite incidents into perspective
  - Humans are not on the shark's food chain*
    - Worldwide, less than 100 shark attacks are reported annually.
      - The truth is, sharks are in far more danger from humans than humans are from sharks.
      - For every one person that is bitten, one million sharks are killed.
    - Incidents are usually accidental and close to shore while swimming, surfing, or bathing in murky waters or where bait fish are present.
    - Risk of injury is higher from lightning strikes, dog bites, bee and wasp stings, snake bites, and pigs than sharks.
      - Sharks look for fish, not humans
      - Don't provoke them
    - Use common sense when around any wild animal

- IME Debrief
  - Did anyone notice animals with fishing hooks in their mouths or gills?
  - Did anyone notice number of males and females?
  - Did anyone see animals with parasites or lesions?
  - Did anyone in the group see animals with injuries from mating habits or injuries from man (i.e. boats, plastic, fishing line, etc.)?
  - Did anyone in the group see animals with remoras?
  - Future Conservation efforts by citizens and government are needed to protect the marine animals from further species depletion.
    - Spread awareness of the ecological and economic value of the marine animals, in particular, sharks.
    - Support conservation efforts locally by promoting local educational and interpretive programs.
    - Encourage divers to protect habitats, dive sites and marine animal populations impacted by habitat destruction.
    - Encourage divers to seek legal protection for aquatic animals and their habitats.

        - Encourage divers to become members of organizations established to assist in marine animal conservation efforts.
        - Encourage divers to become "Shark Conservation Ambassadors".
        - Overfishing will eventually deplete more species.
    - Local Conservation Efforts in which participants can become involved that can enhance awareness of ecological efforts.

    - Global efforts underway
        - A number of organizations, such as PADI Project Aware and the Center for Marine Conservation are working to inform the public and protect and preserve a variety of marine animals including sharks.
            - Incidents of environmental destruction continue on a daily basis and without increased conservation efforts the underwater environment as we know it now will not survive.
                - Sharks are in extreme danger
                    - Many species are depleted or are nearly depleted

**A.W.A.R.E., Our World, Our Water published by PADI Project Aware. Pp.99*

Additional information about shark history, biology, and behavior can be found in the PADI Project Aware Specialty Course.

GIMEC Founding Advisory Board

Gary Adkison
Manager, Walker's Cay

Gary Adkison is the Manager of Walker's Cay Hotel and Marina and has conducted the "shark rodeo" for guests for many years. He has a background in marine biology and has studied and dived with various species of sharks around the world.

Lad Akins

Lad is the Executive Director of REEF, the Reef Environmental Education Foundation, a non-profit organization of more than 19,000 divers. Reef's programs serve to educate and involve divers in environmental issues and engage them in conducting fish surveys. Scientific, university and governmental organizations use the data supplied by REEF in evaluating environmental impact. Lad has considerable experience in developing training materials and programs for recreational divers with a focus on environmental education and monitoring. He has led over 50 week long field survey expeditions and conducted more than 700 fish survey dives throughout the Caribbean, Gulf of Mexico, Canada, and all US coastal waters including the Gulf of California and Hawaii. Honored by NOAA as an Environmental Hero in 1997, Lad has also served as principal investigator and submarine pilot as part of the Sustainable Seas Expeditions, a National Geographic sponsored project headed by Dr. Sylvia Earle. Before his current position with REEF, Lad worked as an instructor and dive boat captain for more than 15 years.

Dr. Alex Brylske

Alex Brylske is the Marine Conservation and Education Specialist for the PADI Project AWARE Foundation. His background includes over 20 years of experience developing diving and marine environmental education programs. He is currently traveling the world conducting a seminar in marine resource management and sustainable tourism under co-sponsor of Project AWARE, UNESCO and The Nature Conservancy Asia-Pacific Program.

Although noted primarily for his long and varied experience in the recreational scuba industry, Alex is no stranger to the resource management community. He represented recreational divers as a member of the Florida Governor's Ocean Committee, and currently serves on the Education and Outreach Working Group for the Florida Keys National Marine Sanctuary. In addition, he sits on the Board of Directors of both Oceanwatch, a Washington, DC-based coral reef advocacy group, and the Coral Reef Alliance (CORAL). He's also an adjunct Professor at Edison Community College, Punta Gorda, Florida where he teaches oceanography.

Dr. Brylske holds an M.A. degree from Norwich University, Montpelier, VT in instructional design, a dual M.Sc. degree in marine biology and coastal zone management from Nova Southeastern University, Davie, FL, and a Ph.D. in science education (specialization in oceanography) from the Florida Institute of Technology, Melbourne, FL. Having a grounding in both the diving and resource management communities uniquely qualifies Alex for his advisory role with GIMEC.

Ed Christini

Ed Christini has been active in diving for many years and has experience in many aspects of the dive industry. Ed has been diving for 25 years, 23 of those as a scuba instructor. In the early years, Ed owned his own retail dive store, but went to work for Scuba Schools International in 1984 where he held the positions of Sales Director, Executive Director and eventually, President – his current title. For the past 16 years, Ed has been instrumental in developing most of the SSI programs and many industry standards and programs.

As a member of the industry group that preceded the Recreational Scuba Training Council (RSTC), Ed was involved in developing the industry standards in 1986, which became the American National Safety Institute (ANSI) standards. Ed was on the first Board of Directors when the RSTC was developed in 1987 and has remained on the Board to the present.

With Scuba Schools International, Ed co-developed the SSI ITC standards and was critical in negotiations for industry programs such as the Universal Referral Program (a referral method to ensure that divers in resort areas can easily complete their open water dives, no matter what agency they are affiliated with).

Ollie Ferguson
UNEXSO, V.P. Human Resources

Ollie joined UNEXSO on Grand Bahama Island in the early ‘80s as a tank filler and since that time has become the lead instructor and shark feeder. In fact, he pioneered fish feeding at UNEXSO in the 80’s for the entertainment of the diving guests. The fish feeding dives that he started eventually lead to the beginning of UNEXSO’s popular Shark Dive. Today, Ollie is the lead shark feeder and staff trainer for UNEXSO’s staff of shark feeders. He is also the principal organizer of UNEXSO’s popular Shark Feeder Program which is conducted for experienced divers wanting to interact and learn more about the Caribbean Reef Sharks that live in the waters surrounding Grand Bahama Island.

Bob Harris, Esq.
Akerman & Senterfitt

Bob Harris is an attorney with the firm of Akerman Senterfitt & Eidson in Tallahassee, Florida, a practice that primarily involves representing associations and other clients, in regulatory matters, before the Florida legislature and various state agencies. Mr. Harris is PADI’s Legislative Consultant in Florida and represented DEMA in the recent marine animal feeding issue in Florida. Mr. Harris also assists clients before the State Board of Nonpublic Career Education, conducts civil and commercial litigation, and assists clients with corporate, copyright and trademark issues. Mr. Harris is a member of the Governor's task Force on Educational Access, member of the Advisory Board for Workforce Development, Member of the Leon County Workforce Development Advisory Group and is a certified diver. He is a Florida State Law School Graduate and has been involved with the diving industry for 20 years.

Jim Hart
Executive Director, Oceanographic Expeditions

Since 1993 Jim Hart has been the Executive Director of Oceanographic Expeditions, an agency which links volunteer scuba divers with researchers at aquariums, marine sanctuaries and universities to help conduct underwater studies. One of the most unique dive expedition organizations the industry has ever known, OE studies coral spawning, and as part of the "Apex Predator Project" identifies individual shark species and population ranges to learn shark reproduction and life history. OE also links researchers with interactive shark operators and volunteers to study great white sharks and reef sharks. Hart has more than 35 years of diving experience and has lead numerous expeditions involving fish collection, underwater video production, environmental research, and conservation projects and nature study. His field experience includes: United Nations water quality studies in Honduras; marine sanctuary development in Belize, Honduras, and Flower Garden Banks in The Florida Keys, and The Bahamas. He has developed scientific procedures for turtle studies for the U.S. Corps of Engineers, electronic shark tagging procedures, mooring buoy installation, and repetitive photographic monitoring of coral reefs and the collection of oceanographic data. He has served as Director of Diving Operations for the Aquarium of the Americas in New Orleans and currently acts as a diving consultant for public aquariums all over the world.

Dr. Robert E. Hueter

Dr. Robert Hueter is Senior Scientist and Director of Mote Marine Laboratory's Center for Shark Research (CSR), the world's largest scientific research center focusing on the biology and behavior of sharks and rays. Established by the U.S. Congress in 1991 as a national research center, the CSR conducts scientific studies of shark anatomy, physiology, biomedical applications, behavior, ecology, environmental biology, population biology, fisheries and conservation. Dr. Hueter has been studying sharks for over 25 years, has published over 50 scientific articles, reports, and abstracts on sharks, and has edited three volumes on shark biology. His current research projects include studies of life history and ecology of sharks in the Gulf of Mexico and Sea of Cortez, shark senses and muscles, and shark fisheries biology.

Dr. Hueter earned his Bachelor's and Master's degrees from the University of Miami and his Ph.D. from the University of Florida. He is Past-President of the American Elasmobranch Society, an international society dedicated to the scientific study of sharks, skates and rays, and he holds a Courtesy Professor appointment in the Department of Biology, University of South Florida. He serves as a member of the Highly Migratory Species Advisory Panel of the U.S. National Marine Fisheries Service, the Special Shark Scientific and Statistical Committee of the Gulf of Mexico Fishery Management Council, the Shark Specialist Group of the United Nations' International Union for the Conservation of Nature, and the Mercury Subcommittee of the U.S. Environmental Protection Agency's Science Advisory Board. He created and directed the annual Gulf Coast Shark Census, the world's only 100% catch-and-release shark fishing tournament for research, which operated for ten consecutive years off southwest Florida.

In addition to his research activities, Dr. Hueter has led educational efforts to promote better understanding of sharks as a marine resource, with numerous radio and television appearances including ABC's *Good Morning America*, CNN, the ABC and CBS Evening News, MSNBC, the Discovery Channel and Animal Planet. He also was a host scientist on Dr. Bob Ballard's 1996 Jason Project distance-learning expedition in the Florida Keys. Dr. Hueter has been a PADI-certified scuba diver for 30 years, and he periodically teaches a college-level shark biology class in the Bahamas entitled "Biological Explorations of Sharks and Rays," which includes diving with sharks.

Al Hornsby
Group Publisher, EMAP USA Marine Division
Editor, Skin Diver Magazine

Al began his diving as a teenager over 30 years ago in the South Pacific. He has a Bachelor of Arts, Psychology from University of Georgia and was certified as an NASDS Instructor in 1976. Prior to joining PADI in the early '70s he worked for Dive 'n Surf and US Cavalero. Since that time he has served on numerous Boards of Directors of PADI, DEMA, PADI Foundation, Ocean Futures, Project Aware and more. He has championed environmental and reef conservation programs over the years and has authored and edited numerous diver manuals, videos, and audio-visual productions. He is a world traveler and dived in most areas of the world. He has vast expertise in the world diving market due to his vast travels and experiences with PADI and Skin Diver, EMAP.

Jeff Nadler
PADI Vice President of Industry and Governmental Relations

Jeff Nadler has been a diver since 1968 and entered the recreational dive industry in 1974 as an instructor and retailer. He joined the PADI staff in 1979 as the industry's first full time field educational consultant. Jeff has help positions as PADI's Training Facility Manager, Field Operations Director, and Director of International Business. Currently, as PADI Vice President of Industry and Governmental Relations, Jeff functions as a consultant to national and regional governments and governmental agencies. Most recently, Jeff was appointed by the U.S. State department as an official member of the U.S. delegation to the United Nations Environmental, Scientific and Cultural Organization (UNESCO) Convention on the protection of Underwater Cultural Heritage.

Jeff was a founder of the Recreational scuba Training Council (RSTC) and, as PADI's representative, has served on the RSTC Board of Directors since the organization's inception in 1987. He is also the Chair for the American National Standards Institute (ANSI) Committee for Diving Instructional Standards and Safety, Z375. Jeff has been an integral contributor to, and coordinator of, industry standards development since 1985, when he functioned as Subcommittee Chair for the development of the ANSI Z86.3 standards for training entry level divers.

Dr. Russell Nelson
Nelson Consulting

Dr. Russell Nelson has over 20 years of experience as a marine fisheries scientist and management expert. He has worked on the development of management plans for over 300 species of marine animal at the state, national and international levels in the Atlantic, Caribbean, and Pacific.

Drew Richardson

PADI Worldwide - Sr. Vice President, Training, Education, Environment and Memberships
Project AWARE Foundation - Vice President, Diving Science and Technology - President

Drew Richardson's 30 years of experience in the field of education includes his work as Assistant Professor and Division Head of the Department of Underwater Technology at Florida Institute of Technology (FIT), where he developed an Associate of Science degree program in Diving Operations. He has spent the last 16 years working as the senior executive in the Education Department of PADI (Professional Association of Diving Instructors) Worldwide where he currently holds the position of Sr. Vice President, Training, Education, Environment and Membership, and is responsible for the implementation and monitoring of PADI's training related programs both internationally and domestically. Under his direction, PADI's educational system is used in 175 countries. As Editor in Chief of PADI's consumer diving textbooks and materials and Editor in Chief of the *Undersea Journal* magazine, he oversees the content, safety and training of PADI's diver and leadership education programs. In addition, Mr. Richardson serves as the Vice President for the Project AWARE Foundation, the dive industry's leading non-profit organization dedicated to aquatic conservation and the President of Diving Science and Technology (DSAT), a corporation responsible for developing dive education and training materials. As Chairman of the Standards Committee for the Recreational Scuba Training Council (RSTC), Drew has been involved in developing industry standards since 1986. Drew has dived throughout the world and has extensive international business and training experience. He is the 1992 recipient of the Divers Alert Network/Rolex Diver of the Year award, and the 2000 Undersea and Hyperbaric Medical Society's Craig Hoffman Memorial Award for contributions to diving health and safety. Mr. Richardson's education includes a Masters Degree in Business Administration, Bachelor of Science in Environmental Science Cum Laude (emphasis in the Marine Sciences and minor in Aqua Culture) and Associate of Science in Oceanographic Technology. He is currently working on his Doctoral degree from NOVA University

Dr. Erich K. Ritter

Erich Ritter has a Ph.D. from Zurich University in "Behavioral Ecology" and is the only professional applied shark-human interaction specialist. Ritter's main expertise is the body language of sharks, with a major interest in shark attacks and their causes. Many of the old theories of why sharks attack have been erased through his experiments, and new ideas proposed. He is the only shark attack expert having recreated many of the typical attack scenarios with the respective species. His understanding of potential reasons for shark attacks opened new doors in this field of research.

Ritter is the senior scientist of Green Marine. His research group focuses on conditioning, agonistic display, and subordinate hierarchies. Most of these projects are conducted by master and doctoral students from different universities. He is also an Adjunct Assistant Professor at Hofstra University.

Ritter is co-editor of SHARK INFO, a shark information service, located in Switzerland, serving more than 500 news stations in German-speaking Europe. Many of his main stream articles on shark behavior have been translated in English. Ritter is co-founder of the "Hai-Stiftung" in Switzerland, and "Shark Foundation" in the USA whose main focus is the protection of sharks through better understanding. The foundation is currently sponsoring several projects.

Ritter developed the first interaction system for swimmers, divers and snorkelers (ADORE-SANE) that allows safe swimming and interaction with any potentially dangerous sharks under different conditions. He spent the last 8 years collecting data from around the world. Beside some reef species, he primarily focuses on bull sharks, lemon sharks, and great whites. Ritter has been extensively interviewed in magazines and portrayed in TV shows promoting and explaining his ways of shark-human interaction, and explanations to shark attacks. Ritter holds workshops in the Bahamas, South Africa and the Maldives on a regular basis.

John Stewart
Dive Marketing International, Inc.

John Stewart has over 30 years of experience in the dive industry. He has conducted over 200 seminars and training programs throughout the world, including dive instructor trainer courses, professional development seminars, and sales and marketing seminars. John has personally visited and consulted with over 1,200 dive retail and resort operations around the world. In 1991, he was appointed by the United States Secretary of Commerce to the Florida Keys National Marine Sanctuary Advisory Council to represent the dive industry and served in this role until 1997 when the Council's term ended.

David Taylor

David Taylor is the executive editor of Rodale's Scuba Diving Magazine, where he has reported on marine environmental issues for the past six years. The magazine and its web site, www.scubadiving.com, have participated in numerous successful environmental campaigns on the behalf of Cozumel, Bonaire, the Galapagos and other dive destinations. Dr. Taylor also serves on the Board of Directors of the Reef Environmental Education Foundation.

Paul J. Tzimoulis

Paul Tzimoulis possesses an exceptionally wide range of experience and has had a significant influence on diving worldwide. His experience covers the full breadth of today's diving industry, and he has been a publisher and editor of dive magazines for more than 35 years. He has provided the dynamic leadership of development of such industry milestones as the certification card (C-Card), dive travel, dive computers and buoyancy compensators.

Tzimoulis is one of the founding fathers of recreational dive travel, as we know it today. He has devoted almost 40 years to the development of dive travel as a sub-industry, as well as the creation of many of today's most popular dive destinations such as The Bahamas, Bonaire, Cayman Islands, Cozumel, Micronesia and dozens more.

Tzimoulis has been published world-wide in books and magazines since the 1960s and developed one of the first underwater photography schools, located in The Bahamas. He developed many of the teaching u/w photography techniques still used today, and is co-author of the book CAMERA BELOW, published in 1968. He conducts seminars, lectures and presentations on such topics as: dive tourism marketing, dive destination development, dive resort operation and dive travel promotion.

Tzimoulis has received more than 50 awards from the diving industry, dating back to 1957. His most recent are the prestigious 1997 DEMA Reaching Out Award and the 1998 PADI Outstanding Achievement Award. Others include awards from: NOGI Award (1969), NAUI, Oceanus, Underwater Photographic Society, Boston Sea Rovers, Innerspace Pacifica, Boston Underwater Club and the Sir Turtle Award of the Cayman Islands.

Stan Waterman

Stan Waterman is a pioneer underwater film producer and photographer, and he has won five Emmy Awards. He was inducted into the International Scuba Diving Hall of Fame, received the Cousteau Diver of the Year Award, two Gold Medals from the UK Underwater Film Festival, four Golden Eagles, and the Reaching Out Award from DEMA. His career spans nearly fifty years. Mr. Waterman has produced documentaries, television series and films for National Geographic, ABC, and ESPN, but he is best known for his collaborative efforts with Peter Gimbel on the classic shark film, Blue Water, White Death and with his friend Peter Benchley on The Deep. Mr. Waterman continues to dive, film, lecture, and host dive tours. He is the emcee at most of the major consumer scuba diving shows and underwater film festivals each year in the United States and Great Britain.

Neal Watson
President, Undersea Adventures

Neal Watson lived in the Bahama Islands and operated dive resorts for over 30 years. Neal is President of Neal Watson's Undersea Adventures, which represents 14 resorts located in various Islands of the Bahamas and Caribbean. Currently, Neal is President of the Bahamas Diving Association, which is comprised of over 30 dive operations scattered throughout the 700-island nation. The association also represents numerous live aboard diving charter boats. Neal is also on the DEMA Board of Directors and produces the Ocean Fest Dive Show.

Neal is highly conversant in the variety of diving experiences found in the Bahamas and Caribbean including wreck diving, reef diving, diving with sharks. In addition to extensive experience in the dive resort business in the Bahamas, Neal has an impressive background in the diving industry. In 1968 Neal broke the World's Underwater Scuba Depth Record of 437 feet on compressed air. He also broke the underwater distance record by swimming an incredible 66 miles non-stop underwater without surfacing. In addition to his scuba records he has worked as a commercial diver, treasure salver and underwater stuntman, appearing in numerous major motion pictures and television productions. He also recently taught Sara, The Duchess of York to dive and appeared with her and Jean –Michel Cousteau in an ABC Special feeding sharks. He has also appeared in a variety of U.S. and European magazine articles featuring shark encounters.

Presently, Neal has dive franchise operations on Nassau, Andros, Bimini, Walker's Cay and Freeport in the Bahamas, plus operations on Bonaire, Belize, St. Lucia, Dominican Republic, Mexico and Venezuela in the Caribbean.

Shark Incident Information

Name:_____

Place:_____

Date:_____

Case Number:_____

Send the completed form to: GIMEC, P.O. Box 220687, West Palm Beach, Fl 33422
Phone: 561-683-8984 FAX 561-683-7181 Email John@divemarketing.com

Shark Incident Information Sheet

Please complete all applicable sections

Page 1

Name of victim:_____Address:_____

City: _____ State:_____ Country:_____

Victim Information:

Age: _____ Height: _____ Weight: _____ Race: _____ Sex: _____
Date of Birth: MO_____DA_____YR_____

Description of all clothing victim was wearing when attacked, including color of swimsuit: _____

If wearing a wetsuit, include color and thickness of suit: _____

Description and location of jewelry worn: _____

Did the victim have any injuries before the attack: _____ Yes _____No If Yes, describe: _____

Were the injuries/wounds actively bleeding: ___Yes ___ No If Yes, describe:_____

If a female, did victim have her menstrual period? ___ Yes ___ No

Site Information:

Name of beach or reef or location where incident occurred: _____

Distance from *(check each that is applicable*) ____rocks, ___ pier, ____shore or____boat Distance: _____

Longitude: _____ Latitude: _____ Loran C: _____

Sketch of Site:

High tide *(time):* _____ Number of days before next spring tide: _____Water Depth: _____

Time of Incident: _____ Time in water prior to incident: _____

Page 2

Detailed description of the victim's activity when the incident occurred (resting on the surface, treading water, waiting to catch a wave, ascending to surface, swimming backstroke, breaststroke, etc.) _____

Was the victim at the surface when attacked? ___ Yes ___ No If No, at what depth did the incident occur? _____

What direction was the victim facing? (*seaward or shoreward*) _____

From what direction did the shark approach? _____

Duration of initial strike: _____ Duration of the entire incident: _____

Number of strikes on victim: _____ Did the shark shake the victim? ___Yes ___No

Were there any diversionary acts by rescuers? ___ Yes ___ No If Yes, did the actions have any significant effect? ___ Yes ___ No Fate of the rescuers: _____ Final outcome of the incident: ___ No injury __

Minor injury ____Major injury Explain: _____

Description of incident: _____

Please use additional pages if necessary.

Witnesses

Name Address Contact telephone No.

Weather Conditions:
____ Sunny ____ Partly cloudy _____ Overcast _____Raining ____ Other _____

Air Temperature _____ Wind direction & velocity _____ mph/kph

Sea Conditions
Color of sea _____Estimated visibility _____Current direction ____ Temperature _____ (__ estimated or ___measured)

Sea surface ___calm ___choppy ____swells ____ surf Was a channel present? ___Yes ___ No

Depth of water in channel _____

Environment
Primary object of the attack: _____ human ____fish ____boat ___ other Explain: _____

Actions of others near the victim: _____ swimming _____surfing _____ fishing _____ scuba diving ____

other _____

Number of people on the beach: _____In the water: _____ Number of people in the water within 3 meters of the victim: ____

Number of people within 3 to 20 meters of the victim: _____ Was anyone fishing in the vicinity? ___ Yes ___ No If Yes, what

Species of fish was caught? _____ Was any unusual fish or bird activity noted before or after the incident? __Yes __ No

Were any dolphins or seals sighted around the time of the incident? ___ Yes ___ No Were any attractants in the area? __ Yes __ No

Was there any blood, pollutants, outfalls, or kelp beds in the area? ___ Yes ___ No Explain: _____

Shark Information

Did anyone see the shark before the incident? ___ Yes ___ No No. of sharks involved in the incident: _____

Size and species of shark (s) involved in the incident: _____

Behavior of the shark immediately before the incident: _____
_____

Were attempts made to capture the shark? ___ Yes ___ No Was the shark captured? ___ Yes ___ No

Were tooth fragments recovered? ___Yes ___ No If Yes, where are the fragments? _____

Behavior of the shark during the incident: ___ deliberate ____frenzied ___ confused ___ other _____
Behavior of the shark after the final strike: _____

Scuba Diving Information

Type of Scuba dive: ____ recreational dive (private vessel – non-commercial) ___ recreational dive (dive boat) No. of divers _____ Commercial dive: List type _____

Activities taking place prior to incident: _____ spearfishing (___on snorkeling equip. ___ on Scuba equip.) ____

photography ___ videography ____ Interactive Marine Experience ___Yes ___No Feeding Dive ___Yes ___No

If Yes, ___ hand feeding __ pole spear feeding ___ chumsicle

Photo shoot ___Yes ___No If Yes, describe shoot: ___ intentional frenzy ___ filming routine feeding ___

informational/documentary ___other _____

Scuba Diver Information: ___ recreational diver observing event ____ professional diver (*complete section below*)

Describe Scuba equipment worn by victim: Wet Suit ___ Yes ___No If Yes, color _____ Mask Color _____

Fin Color _____ Was victim using Scuba tank? ___Yes ___ No, or _____Rebreather Unit Type:_____

Sketch of Site:

Professional Diver Section:

Professional diver's activity when incident occurred: (___ feeder ___ safety diver ___ photographer/videographer filming event___other_____

Interactive Marine Experience Dive: ___ Yes ___ No If Yes, Feeding Dive ___Yes ___No If Yes, __ hand feeding

__ pole spear feeding ___ chumsicle If victim was professional diver list equipment worn: ___ chain mail suit ___

chain mail sleeve or glove ___ Was victim an experienced performer of the respective activity? ___Yes ___No

How many times has the victim been in the vicinity of this site prior to the incident? _____ Was the victim on any

influence prior to the incident? ____Yes ____No

Please complete: Did the victim use any of the following prior to the incident: ___Coffee ___Cigarettes ___Alcohol

Had the shark been repelled by the victim prior to the incident? ___Yes ___No If Yes, by what means_____

Describe Incident: _____

Sketch of Site:

First Aid/Treatment Information

Nature of the injuries:
_____

First Aid:

Location administered: _____ By whom: _____

Length of time between incident and arrival at hospital: _____

Method of transport: ___ private auto ___ ambulance ___ other _____

How long after the incident did victim first start to feel pain? _____

Medical Treatment:

Hospital Name: _____

Hospital address & telephone: _____

Doctor (s): _____

Doctor address and telephone: _____

Doctor (s): _____

Doctor address and telephone: _____

Were x-rays taken? ___ Yes ___ No Were tooth fragments seen on x-ray? ___ Yes ___ No

Name, address, telephone of photographer: _____

VICTIM'S CONSENT

This data will be handled confidentially and is being collected for the sole purpose of shark incident research. It will not be released without the victim's permission. The organizations that are gathering the shark incident information to study shark behavior are Global Interactive Marine Experience Council (GIMEC) and the Global Shark Attack File (GSAF). One or both of these organizations may have some questions about the incident later. Any information that you give to these organizations will be kept confidential. Do you agree to be interviewed by representatives of these two organizations after the incident, for the sole purpose of gathering shark incident information? If so, acknowledge your agreement to talk to GIMEC and GSAF by signing the section below.

I, _____ hereby authorize representatives of GIMEC and GSAF to contact me for additional information or questions that may arise regarding this shark incident.

_____Date: _____

Victim's signature

I, _____ hereby authorize the GSAF to examine my medical records and photographs taken of my shark-inflicted wounds. They may have my photographs as they deem proper.

_____Date: _____

Victim's signature

Victim's Statement:

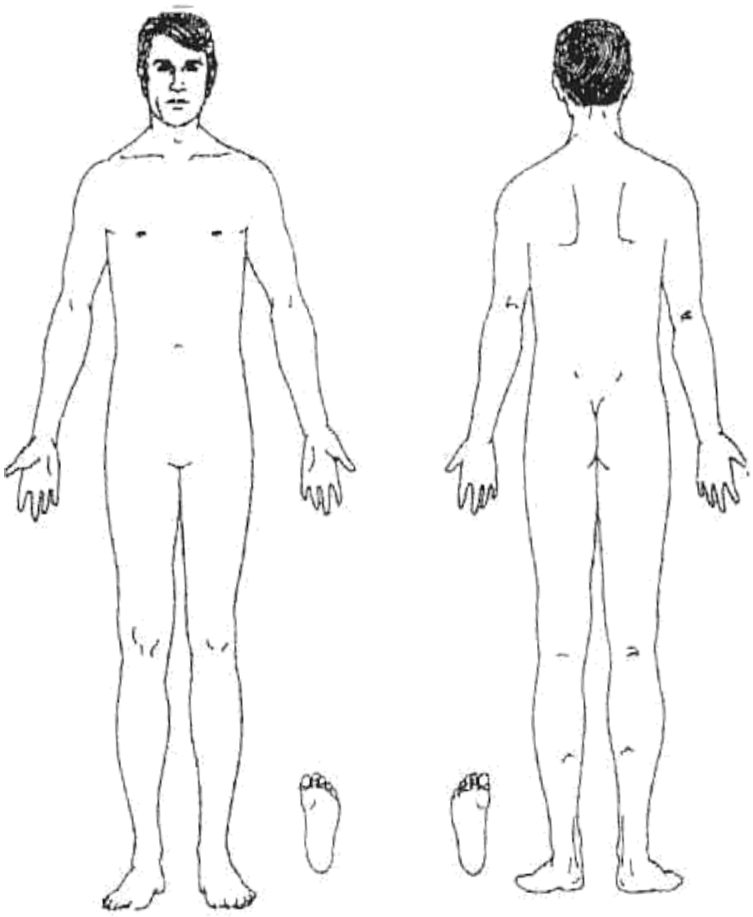
Do you have any theory as to why the shark bit you? _____

_____

Please include any other relevant information: _____

Page 7

Please sketch injuries sustained by the victim on this figure. If possible, note the distances between points of insertion of individual teeth (the measurements are of value in determining species of shark involved).



Send the completed form to: GIMEC, P.O. Box 220687, West Palm Beach, Fl 33422
Phone: 561-683-8984 FAX 561-683-7181 Email John@divemarketing.com

Operator's Trip Report

Operator Name: _____Trip Date: _____

No. of Participants on trip: _____Amount of Bait Fed: _____

Type of Bait Fed: _____Source of Bait: _____

Age of Bait: _____ No. of animals Fed: _____

Species Fed:

___ Nurse Sharks ____Tiger Sharks ____ Caribbean Reef _____ Bull Sharks

___ Hammerhead ____ Snapper _____Eels _____Other: _____

_____

_____

Name of Staff Conducting Program: _____

Unusual Occurrences or Incidents: _____

Report Submitted by: _____

Operator's Quarterly Report

Operator Name: _____Report Date: _____

Dates being reported: from _____ to _____

Total No.of Participants on trips during report date: _____

Total Amount of Bait Fed during report date: _____

Type of Bait Fed: _____Source of Bait: _____

Average Age of Bait: _____ Total No. of animals Fed: _____

Species Fed:
Total Number fed in this reporting period:

___ Nurse Sharks ____Tiger Sharks ____ Caribbean Reef _____ Bull Sharks

___ Hammerhead ____ Snapper _____Eels _____Other: _____

_____

_____

Number of Programs Conducted in this reporting period: _____

No. of Unusual Occurrences or Incidents: _____

Report Submitted by: _____