



# **First Aid for Hazardous Marine Life Injuries**



# Provider Registration

- **DAN First Aid for Hazardous Marine Life Injuries Course Registration Form**
- **Statement of Understanding**
- **DAN Membership Form**
- **Other Administrative Procedures**
- **Introductions**
  - **DAN Instructor & Staff**
  - **DAN First Aid Provider Candidates**



# Course Overview

- **Hazardous Marine Life Injuries**
- **Warning Signs of Hazardous Marine Life Injuries**
- **Types of Hazardous Marine Life Injuries**
- **First Aid Procedures**



# Course Overview

- **Avoiding Hazardous Marine Life Injuries**
- **What is DAN?**
- **Skills Development Session**
- **Exam and Review**



# **Course Overview**

## **Skills Session**

- **Scene Safety Assessment**
- **Initial Assessment With Basic Life Support**
- **Basic Life Support With Supplemental Oxygen (Optional)**
- **Providing Care with an AED (Optional)**
- **Control of External Bleeding**
- **Shock Management**
- **Wound Management**
- **Pressure Immobilization Technique**
- **Emergency Assistance Plan**





# Hazardous Marine Life



# **Hazardous Marine Life Injuries**

- **Injuries caused by hazardous marine life are infrequent**
- **Usually occur due to diver carelessness or a defensive reaction by the animal**
- **However, there is a risk of being stung, bitten or cut by a marine animal**
- **Almost every diver at some point has an encounter with hazardous marine life**



# **Warning Signs of Hazardous Marine Life Injuries**

- **Warning signs of hazardous marine life injuries vary with the type of marine animal that causes the injury**
- **Individual reactions vary due to:**
  - **Age and health of the injured diver**
  - **Susceptibility to the venom injected or injury**
  - **Possible allergic reaction**
  - **Previous exposure to venom**



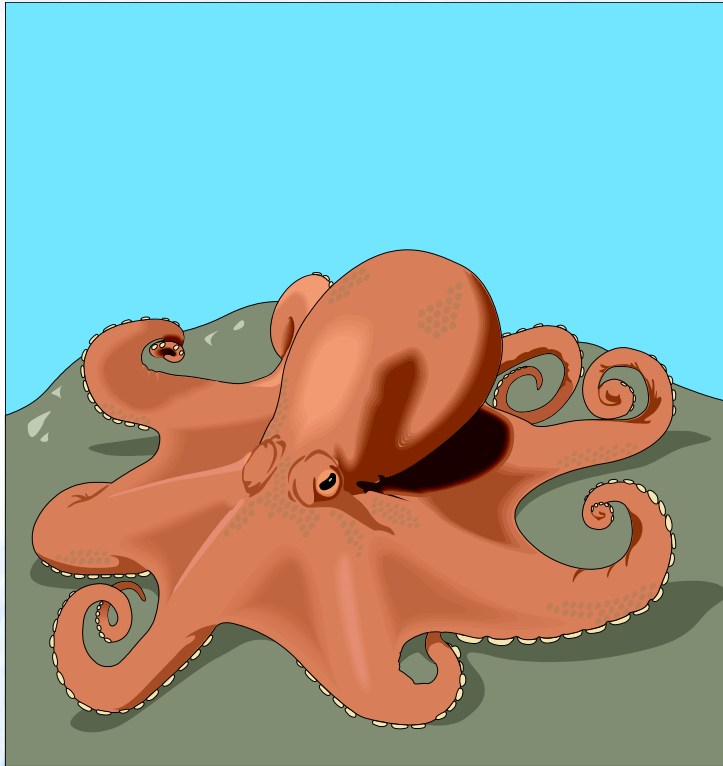


# Warning Signs of Hazardous Marine Life Injuries

- **Factors that may cause individual reactions to vary include:**
  - **Type of marine animal that causes the injury**
  - **Potency of the venom injected**
  - **Amount of venom injected**
  - **For seafood poisoning, the amount and type of toxin eaten will cause variability in the warning signs**



# Types of Hazardous Marine Life Injuries



- **Envenomations**
- **Bites**
- **Irritations**
- **Poisonings**



# Envenomations

- **Envenomation means to sting and deposit venom**
- **Hundreds of venomous animals live in the sea**
- **Spines serve as a defense mechanism**
- **Most fish spine injuries are accidental**
  - **Stepping on a stingray**
  - **Handling or playing with venomous fish**



# Envenomations

- **Nematocysts, or stinging cells, are used by jellyfish to immobilize prey**
- **Accidental contact by a diver will discharge the stinging cells**
- **Nematocysts may continue to fire once the jellyfish is dead or no longer attached**
- **Allergic reactions to a venomous marine life injury is a primary concern for the rescuer**



# Warning Signs of Spine Puncture

**Scorpionfish, Stingrays, Lionfish, Zebrafish, Turkeyfish, Stonefish, Catfish, Weeverfish**

- **Puncture or laceration**
- **Purple or black skin coloration**
- **Shock**
- **Respiratory distress or arrest**
- **Immediate pain**
- **Nausea**
- **Vomiting**
- **Swelling**
- **Cardiac arrest**



# First Aid Procedures for Spine Punctures

- **Remove any visible pieces of spine with tweezers**
- **Immerse area in hot water (113°F/45°C) for 30-90 minutes**
- **Scrub with soap and water**
- **Irrigate vigorously with fresh water**
- **Seek evaluation by a medical professional**
- **Monitor for allergic reaction**
- **Use antivenin for stonefish**



# Warning Signs of Blue-Ringed Octopus Bite

- **Nausea / Vomiting**
- **Paralysis**
- **Speech and swallowing difficulty**
- **Respiratory distress or arrest**
- **Numbness and fullness around the mouth, neck and throat**
- **Loss of coordination**
- **Cardiac arrest**



# **First Aid Procedures for Blue-Ringed Octopus Bite**

- **Ensure Airway, Breathing and Circulation (ABCs)**
- **Provide cardiopulmonary resuscitation as required**
- **Use pressure immobilization technique**
- **Place diver in recovery position**
- **Monitor, calm and reassure injured diver**
- **Transport to nearest medical facility**





# Blue-Ringed Octopus Bite

- **Bite is small and usually painless**
- **Bite injects a powerful neurotoxin that blocks nerve conduction and produces paralysis**
- **Death can occur rapidly**



# Warning Signs of Sea Snake Bite

- **Small bite pattern**
- **Stiffness and aching**
- **Respiratory distress**
- **Difficulty speaking and swallowing**
- **Weakness**
- **Paralysis**
- **Vomiting**

**Note: Often the snake will only bite and not inject any venom**



# **First Aid Procedures for Sea Snake Bite**

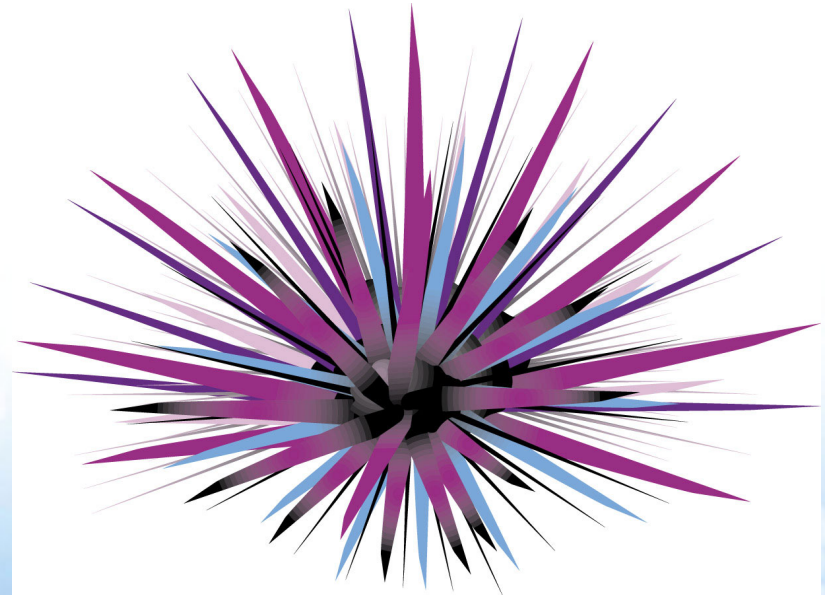
- **Ensure ABCs**
- **Control any external bleeding**
- **Use pressure immobilization technique**
- **Look for shock and / or allergic reaction**
- **Monitor, calm and reassure injured diver**
- **Provide antivenin where applicable**

**Note: Never leave the diver unattended**



# Warning Signs of Sea Urchin and Starfish Puncture

- **Puncture of the skin**
- **Purple or black skin discoloration at puncture site**
- **Observable spines in the skin or attached pincers**



# **First Aid Procedures for Sea Urchin and Starfish Puncture**

- **Soak in hot water (113°F/45°C)**
- **Remove any easily grasped spine debris with tweezers**
- **Clean wound with soap and water**
- **Apply sterile dressing and bandage**
- **Monitor for allergic reaction and for infection**



# Warning Signs of Cone Shell Sting

- **Pain**
- **Numbness**
- **Swelling**
- **Redness**
- **Respiratory distress or arrest**
- **Cardiac arrest**



# **First Aid Procedures for Cone Shell Sting**

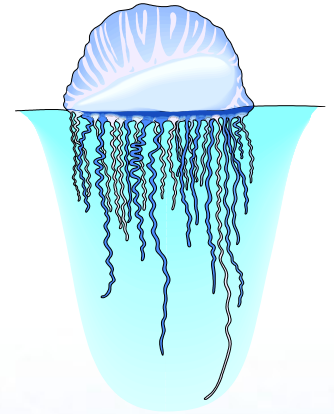
- **Ensure ABCs**
- **Provide CPR as required**
- **Use pressure immobilization technique**
- **Place diver in recovery position**
- **Monitor, calm and reassure injured diver**
- **Transport to the nearest emergency medical facility**



# Warning Signs of Stings

Fire Coral, Hydroid, Anemone, Jellyfish

- **Redness / rash**
- **Welts**
- **Swelling**
- **Unresponsiveness**
- **Respiratory distress or arrest**
- **Stinging sensation**
- **Burning**
- **Blisters**
- **Cardiac arrest**





# First Aid Procedures for Stings

- **Irrigate with vinegar, baking soda, papain powder or solution, or rubbing alcohol, depending on species**
- **Rinse with salt water or sterile saline solution if none of the above items are available**
- **Remove tentacles with tweezers**
- **Shave area with shaving cream and safety razor**
- **Apply hydrocortisone lotion or cream**
- **Monitor for allergic reaction and / or infection**

**Note: If sting is from box jellyfish, use vinegar and pressure immobilization technique**



# Warning Signs of Severe Allergic Reaction

- **Weakness**
- **Dizziness**
- **Flushed, itching or burning skin**
- **Swelling around the face, eyes, neck and tongue**
- **Nausea**
- **Decreased level of responsiveness**
- **Respiratory distress or arrest**
- **Cardiac arrest**



# First Aid Procedures for Severe Allergic Reaction

- **Ensure ABCs and, if necessary, provide oxygen**
- **Assist in the delivery of any allergy medication carried by the diver such as an EpiPen<sup>®</sup>**
- **Activate emergency medical services (EMS)**
- **Inform EMS personnel of any medications used**

**Note: Severe allergic reaction may accompany any marine life injury**



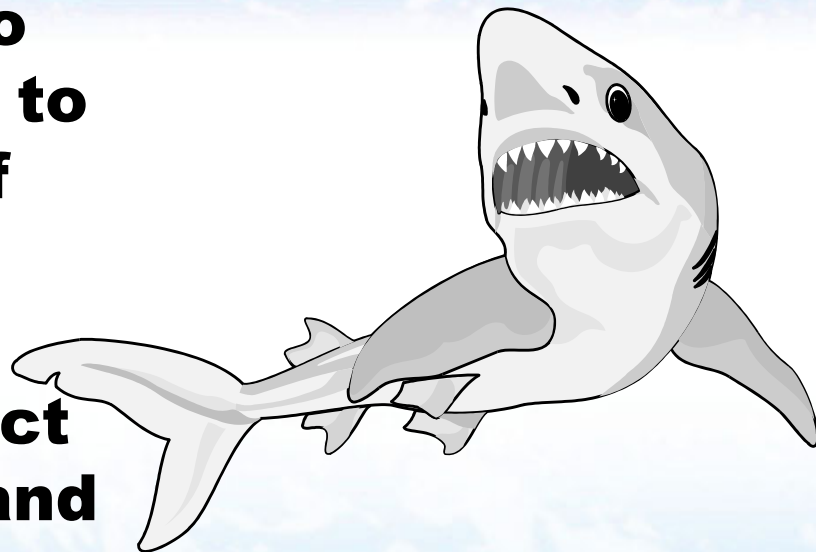
# Marine Animal Bites

- **Attacks by marine animals are rare**
- **Usually occur due to misidentification of the diver or a defensive reaction**
- **May occur when feeding fish or animals**
- **Probability of attack overestimated by divers**
- **Blood loss in water may appear dramatic**



# Marine Animal Bites

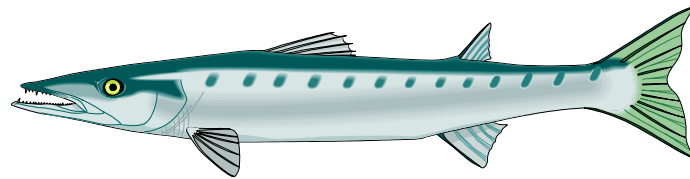
- **Primary concern is to control bleeding and to minimize the risk of infection**
- **Bleeding is easily controlled using direct pressure, elevation and bandaging**
- **Bites are rarely life-threatening**



# Warning Signs of Marine Animal Bites

**Moray Eels, Sharks, Barracuda, Seals**

- **Bleeding**
- **Pain**
- **Lacerations or punctures**
- **Teeth in wound**



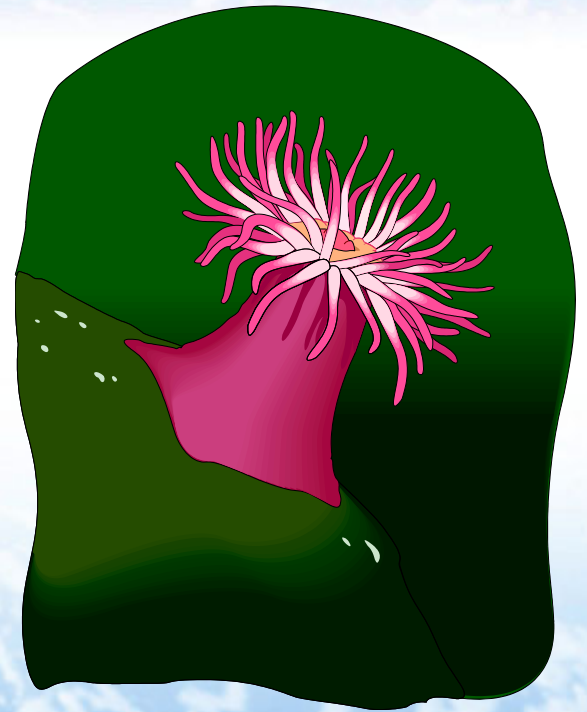
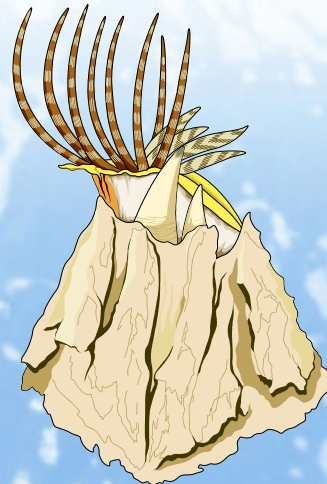
# **First Aid Procedures for Marine Animal Bites**

- **Ensure ABCs**
- **Control bleeding with direct pressure, elevation and pressure dressing**
- **If necessary, use pressure points**
- **Provide supplemental oxygen**
- **Monitor for shock and / or infection**
- **If necessary, transport to nearest emergency medical facility**



# Warning Signs of Irritations, Cuts and Abrasions

- **Bleeding**
- **Redness**
- **Swelling**
- **Discomfort**





# **First Aid Procedures for Irritations, Cuts and Abrasions**

- **Control bleeding**
- **Irrigate wound with clean water or saline solution**
- **Remove any visible debris**
- **Cover with sterile dressing and bandage**
- **Monitor for allergic reaction and infection**



# Warning Signs of Infection

- **Swelling**
- **Redness**
- **Pus**
- **Foul smell**
- **Swollen glands**
- **Fever**

**Note: Infection occurs days after injury and needs medical attention**



# Warning Signs of Seafood Poisoning

- **Allergic reactions**
- **Headache**
- **Abdominal cramps and burning**
- **Paralysis**
- **Muscle and joint aches**
- **Reversal of hot and cold sensations**
- **Diarrhea**
- **Vomiting**
- **Nausea**
- **Dizziness**
- **Chills**
- **Fever**
- **Tingling around the mouth and lips**



# **First Aid Procedures for Seafood Poisoning**

- **Monitor the ABCs and if necessary, provide CPR**
- **Manage any allergic reaction**
- **If responsive, induce vomiting and save fish or vomitus for analysis**
- **Seek evaluation from a medical professional because warning signs of seafood poisoning are similar to decompression illness**





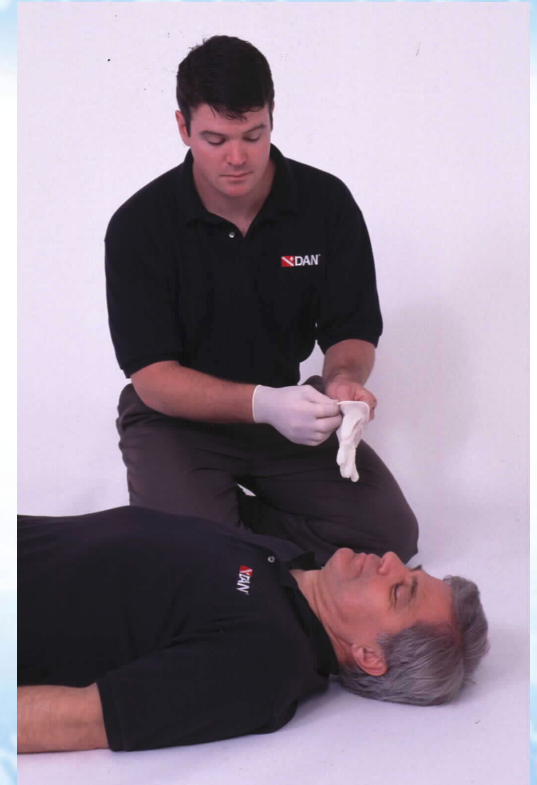
# Skills Development Session



# Scene Safety Assessment

## Remember S-A-F-E

- **S - Stop**
- **A - Assess scene**
- **F - Find and secure first aid kit, oxygen and AED units**
- **E - Exposure protection**



# **Initial Assessment with Basic Life Support**

- **Remember SAFE**
- **Assess responsiveness**
  - **Activate EMS**
- **Open airway**
- **Assess breathing**
  - **Look, listen and feel for up to 10 seconds**
  - **Provide 2 rescue breaths, if not breathing**
- **Assess signs of circulation for up to 10 seconds**
  - **If there are signs of circulation but no breathing, continue rescue breathing**
  - **If there are no signs of circulation, begin CPR**



# Basic Life Support with Supplemental Oxygen (Optional)

- **Remember S-A-F-E**
- **Perform initial assessment of ABCs**
- **Provide supplemental oxygen as soon as it becomes available**
- **If breathing, use:**
  - **Demand inhalator valve**
  - **Non-rebreather mask**
- **If not breathing:**
  - **Provide rescue breaths using an oronasal resuscitation mask with an oxygen inlet**





# Providing Care with an AED (Optional)

- **Assess ABCs**
- **Verify no circulation**
- **Attach the defibrillator pads**
- **Allow the AED to analyze heart rhythm**
  - **Don't touch the patient**
- **If shock required:**
  - **Follow the AED unit's prompts**
  - **Visually and physically clear the patient**
  - **Say "Clear"**
  - **Administer shocks**
- **If no shock required, begin CPR**



# Control of External Bleeding

- **Remember S-A-F-E**
- **Use personal protective equipment**
- **Control bleeding**
- **Apply dressing**
- **Use direct pressure**
- **Elevate the wound**
- **Bandage the wound**
- **If necessary, use pressure points**



# Shock Management

- **Assess responsiveness**
- **Assess breathing**
- **Assess circulation**
- **Control external bleeding**
- **Manage shock**
- **Provide supplemental oxygen**
- **Maintain normal temperature**
- **Provide for ongoing assessment**



# First Aid for Wounds

- **Irrigate with sterile water or saline solution**
- **Use a catheter attached to syringe that is forceful enough to dislodge debris**
- **Remove any visible debris with tweezers**
- **Cover with sterile dressing and bandage**



# First Aid for Stings

- **Irrigate with vinegar or other solution**
- **Remove tentacles with tweezers**
- **Shave area with shaving cream and razor**
- **Monitor for allergic reaction**



# First Aid for Spine Punctures

- **Remove spine debris with tweezers**
- **Immerse in hot water (113° F / 45° C) for 30-90 minutes**
- **Scrub with soap and water**
- **Irrigate vigorously with fresh water**
- **Seek evaluation by a medical professional**
- **Monitor for allergic reaction**



# Pressure Immobilization Technique

- **Place dressing over wound**
- **Apply elastic bandage**
- **Check for adequate circulation on the extremity**
- **Splint the extremity**
- **Use a sling to limit movement**
- **Seek medical evaluation**



# Emergency Assistance Plan

- **Diver Information**

- **Name**
- **Age or Date of birth**
- **Address**
- **Emergency contact phone**
- **Current complaint(s)**
- **Past medical history including current medication**
- **Dive profile(s)**
- **Drug allergies**

- **General Information**

- **Emergency contact information (EMS, DAN)**
- **Initial contact phone number (Call back #)**
- **Directions to nearest medical facility**
- **DAN phone numbers**
- **Other**







# **Avoiding Hazardous Marine Life Injuries**



# Avoiding Hazardous Marine Life Injuries

- **Practice buoyancy control skills**
- **Be aware of your surroundings**
- **Look up and around when ascending**
- **Shuffle your feet when entering the water**
- **Wear thick-soled boots or fins**
- **Avoid carrying speared fish**
- **Streamline your body and equipment**



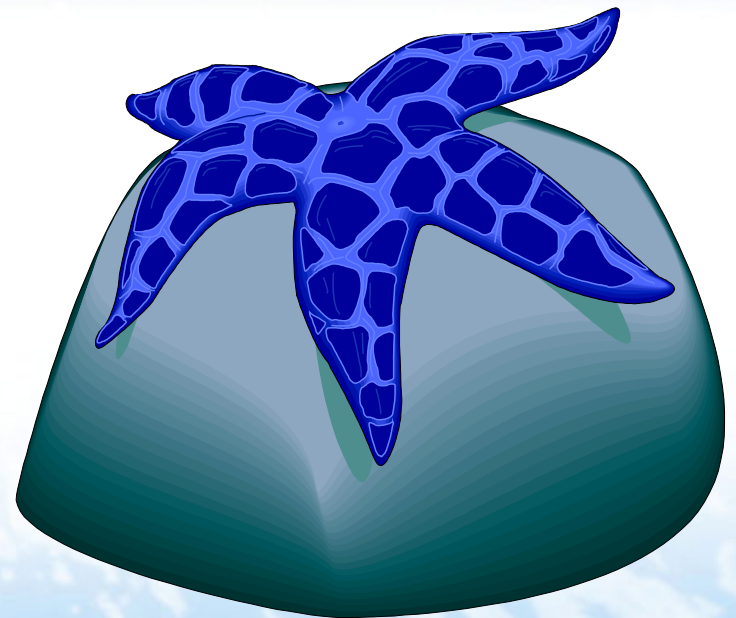
# **Avoiding Hazardous Marine Life Injuries**

- **Know what hazardous marine life inhabit the area**
- **Pack an appropriate first aid kit including an oxygen unit**
- **Wear appropriate exposure protection**
- **Be passive when interacting with marine life**



# Avoiding Hazardous Marine Life Injuries

- **Avoid using the reef to stabilize yourself**
- **Avoid picking up shells**
- **Avoid eating raw fish**



# Avoiding Hazardous Marine Life Injuries

**Scuba diving injuries often result due to:**

- **Lack of training and skills**
- **Lack of experience**
- **Poor dive planning**
- **Poor diving skills**
- **Diving beyond abilities**
- **Poor execution of dive**
- **Diver's health status**

**Follow standard safe diving practices and be a responsible diver**





# **What is Divers Alert Network?**



# The Mission of DAN

- **Divers Alert Network (DAN), a nonprofit organization, exists to provide expert information and advice consistent with current medical literature**
- **Provides emergency medical advice and assistance for underwater scuba diving accidents, works to prevent accidents and promotes diving safety**



# The Mission of DAN

- **Promotes and supports underwater diving research and education, particularly as it relates to the improvement of diving safety, first aid and medical treatment**
- **Provides accurate, up-to-date, and unbiased information on issues of common concern to the diving public, and advocates for divers' concerns for diving safety**





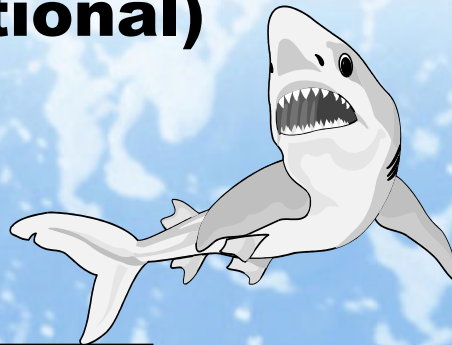
# DAN Services

- **DAN Medicine**
  - **Diving Emergency Hotline**
  - **Diving Medicine Information**
  - **Chamber Assistance**
- **DAN Membership**
  - **DAN *TravelAssist***
  - ***Alert Diver***
  - **Dive accident insurance eligibility**
- **DAN Research**
- **DAN Training**



# Skills Overview

- **Scene Safety Assessment**
- **Initial Assessment With Basic Life Support**
- **Basic Life Support With Supplemental Oxygen (Optional)**
- **Providing Care with an AED (Optional)**
- **Control of External Bleeding**
- **Shock Management**
- **Wound Management**
- **Pressure Immobilization Technique**
- **Emergency Assistance Plan**



# Course Summary

- **Hazardous Marine Life Injuries**
- **Warning Signs of Hazardous Marine Life Injuries**
- **Types of Hazardous Marine Life Injuries**
- **First Aid Procedures**
- **Skills Development Session Overview**
- **Avoiding Hazardous Marine Life Injuries**
- **What is DAN?**

