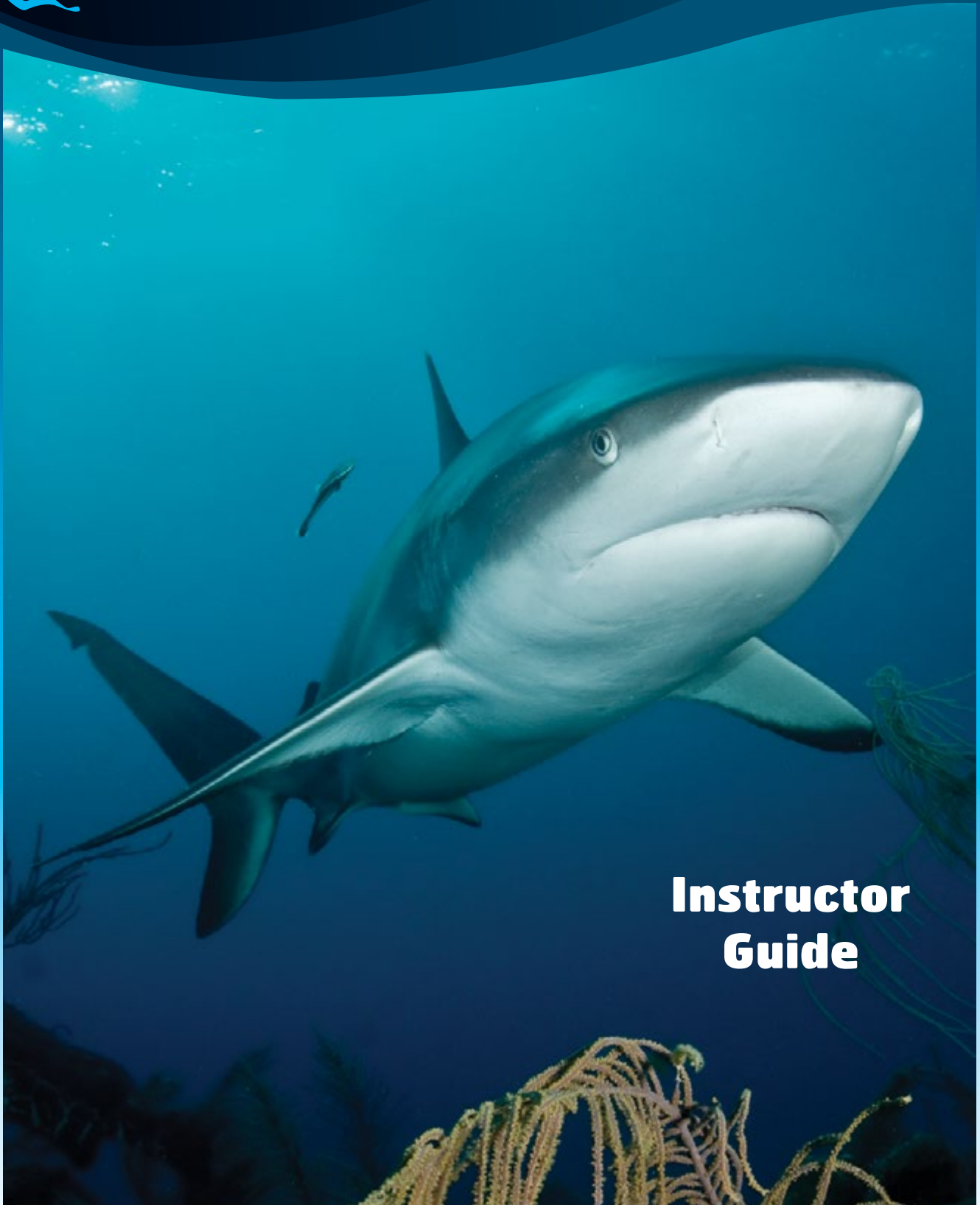




AWARE Shark Conservation

Specialty Course



Instructor Guide



AWARE Shark Conservation

Specialty Course Instructor Guide

Acknowledgements

Project AWARE Foundation would like to thank Sonja Fordham, President of Shark Advocates International (www.sharkadvocates.org) and Deputy-Chair of the IUCN Shark Specialist Group, for her invaluable input in the creation of the AWARE Shark Conservation Diver Specialty program. We greatly appreciate Sonja's role in helping ensure AWARE Shark Conservation contains the best available science and policy information to help turn divers and non divers into shark advocates. Sonja works on the front lines of shark fishing and trade debates to safeguard sharks through sound conservation policies. Project AWARE was proud to have Sonja involved in this project and we look forward to partnering with her and Shark Advocates International on shark conservation initiatives in the future.

To download a free PDF of this document, learn more about Project AWARE Foundation, and submit comments or suggestions about this, or other Project AWARE products or programs, please visit www.projectaware.org

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Introduction

This section includes suggestions on how to use this guide, an overview of course philosophy and goals, a flow chart to show you how course components and materials work together for success, and ways you can organise and integrate student diver learning.

How to Use this Guide

This guide speaks to you, the AWARE Shark Conservation Diver Specialty Instructor. The guide contains three sections - the first contains standards specific to this course, the second contains knowledge development options, the third considers optional confined water and/or surface training and details the open water dives. All required standards, learning objectives, activities, and performance requirements specific to the AWARE Shark Conservation Diver Specialty course appear in boldface print. **The boldface assists you in easily identifying those requirements that you must adhere to when you conduct the course for PADI certification.** Items not in boldface print are recommendations for your information and consideration. General course standards applicable to *all* PADI courses are located in the General Standards and Procedures section of your PADI *Instructor Manual*.

Course Philosophy and Goals

Sharks are crucial to marine ecosystems. They maintain a balance in populations of prey species and keep the ocean healthy by removing ill or diseased animals. They are an important resource supporting local economies through fishing and as an attraction to dive tourists.

But sharks are in a global decline. Overfishing has reduced many shark populations around the world to levels that threaten their continued existence. Shark numbers have fallen by more than 80% in many cases, and the continued existence of some species is at immediate risk in some regions. European sharks are particularly in danger with around one third of the species threatened with extinction, one of the highest levels in the world.

There are many actions needed to address these issues. Shark fisheries management is of primary importance, but trade restrictions and monitoring are also important. The AWARE Shark Conservation Diver course will contribute towards the conservation of sharks by building awareness of the issues and inspiring students to speak up and act to protect sharks.

The goals of the AWARE Shark Conservation Diver course are to inform students of the value of sharks to marine ecosystems and economies, to educate them about the causes of declining shark populations, to build an understanding of what is missing in current shark fisheries management, to dispel misperceptions that may block them from taking action, and to inspire them to help sharks by taking action. Use the AWARE Shark Conservation Diver course to turn your students into informed and passionate shark defenders who take action to protect sharks.

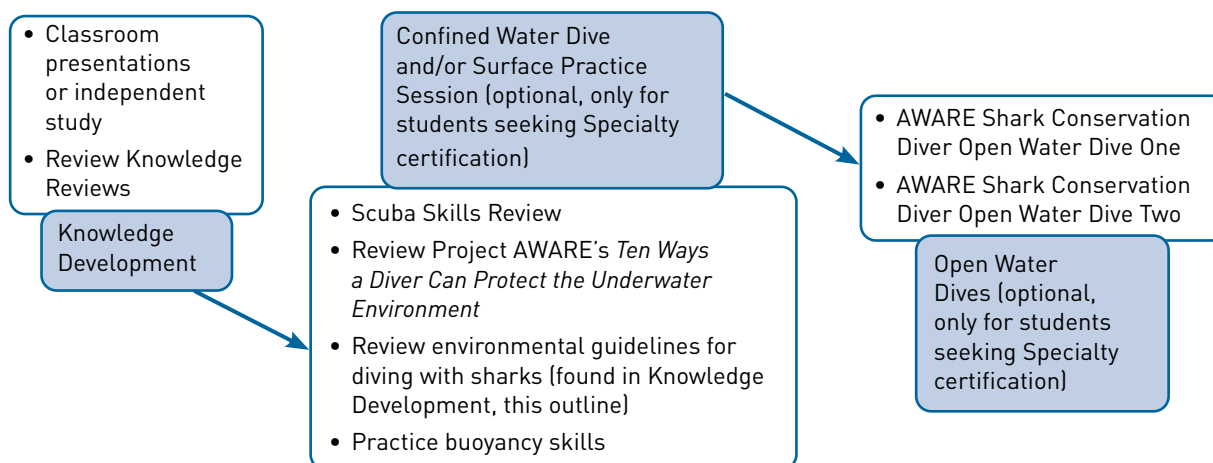
The AWARE Shark Conservation Diver course has been written to encourage delivery to a broad a range of participants. The course may be taught as a dive certification course or a non-dive education program. When taught as a dive course it is not a certification requirement to see sharks during training dives. Give your students an honest appraisal of the likelihood of

seeing sharks when they book onto your course. Knowledge development can be delivered as a stand-alone education program for non-divers who will be recognised with an AWARE Shark Conservation Program Participation Certificate.

On the training dives students apply the lessons from knowledge development to assess features of a dive location for potential impacts on sharks. The aim is to open your student's eyes to features of everyday life that most of us take for granted, but may impact on sharks. This is an important step in their journey to becoming shark protection champions. You can also deliver the location assessment exercise to non-divers as a land-based activity.

Knowledge development can be delivered as a classroom presentation or through independent study using the AWARE Shark Conservation Study Guide. The course includes a section for you to teach students about sharks found in your region, which should be delivered as an Instructor-led workshop. It is recommended that you increase your knowledge of shark conservation issues by referring to the reference section of this outline prior to teaching this course.

Course Flow Options



Course Flow Options provide a visual representation of how knowledge development and confined water and/or surface practice sessions support open water dives.

Knowledge development only students can have their achievement recognised with an AWARE Shark Conservation Program Participation Certificate (as outlined in Certification Requirements and Procedures below). **Do not use the Project AWARE Specialty Course Certificate of Completion to recognise knowledge development only students.**

Students who complete training dives in order to achieve PADI certification as AWARE Shark Conservation Divers should complete knowledge development and knowledge reviews before participating in open water dives.

Confined water and/or surface practice sessions are not required for the AWARE Shark Conservation Diver course; however, you may choose to have practical sessions that allow student divers to practice skills such as buoyancy.

There are two dives to complete. You may rearrange skill sequences within each dive. You may add more dives as necessary to meet student divers' needs. Organise your course to incorporate environment friendly techniques throughout each dive, to accommodate student diver learning style, logistical needs, and your sequencing preferences.

Deliver this course using the following outlines depending on student preference and the likelihood of seeing sharks during training dives. If sharks are normally seen at your dive location follow the Open Water Dive (with sharks) outline. If no sharks are seen during training dives you are still able to certify provided you have completed all Open Water Dive Performance Requirements that appear in **bold text**. Use the lack of sharks to illustrate the key theme of this course.

Step	Knowledge Development Only	Open Water Dive (with sharks)	Open Water Dive (no sharks)
1	Classroom presentations or independent study (deliver <i>What sharks are found in your local area?</i> as an Instructor-led workshop for both types of knowledge development delivery)	Classroom presentations or independent study (deliver <i>What sharks are found in your local area?</i> as an Instructor-led workshop for both types of knowledge development delivery)	Classroom presentations or independent study (deliver <i>What sharks are found in your local area?</i> as an Instructor-led workshop for both types of knowledge development delivery)
2	Review Knowledge Review (optional)	Review Knowledge Review	Review Knowledge Review
3	Recognise knowledge development only students by presenting them with an AWARE Shark Conservation Program Participation Certificate	Confined Water Dive and/or Surface Practice Session (optional)	Confined Water Dive and/or Surface Practice Session (optional)
4	Optional: conduct a site location assessment as a land-based activity as outlined in Section Three of this guide	Open Water Dive One - include <i>If Sharks are Seen</i> Performance Requirements	Open Water Dive One
5		Open Water Dive Two - include <i>If Sharks are Seen</i> Performance Requirements	Open Water Dive Two
6		PADI certification as AWARE Shark Conservation Diver	PADI certification as AWARE Shark Conservation Diver

Section One: Course Standards

This section includes the course standards, recommendations and suggestions for conducting the AWARE Shark Conservation Diver course.

Standards at a Glance

Topic	Course Standard
Minimum Instructor Rating	AWARE Shark Conservation Diver Specialty Instructor
Prerequisites Minimum Age	PADI (Junior) Open Water Diver or equivalent 12
Ratios	8:1 instructor; plus 2 students per certified assistant to a maximum of 10 students
Site, Depth and Hours	Depth: 18 metres / 60 feet (30 metres / 100 feet for students certified as PADI Advanced Open Water Divers) Hours Recommended: 12 Minimum Open Water Dives: 2
Materials and Equipment	Instructor: AWARE Shark Conservation Diver Specialty Instructor Guide AWARE Shark Conservation Study Guide AWARE Shark Conservation Lesson Guides Project AWARE Ten Ways a Diver Can Protect the Underwater Environment Student: Project AWARE Ten Ways a Diver Can Protect the Underwater Environment AWARE Shark Conservation Study Guide

Instructor Prerequisites

To qualify to teach the AWARE Shark Conservation Diver Specialty course an individual must be a Teaching Status PADI Open Water Scuba Instructor or higher. **PADI Instructors may apply for the AWARE Shark Conservation Diver Specialty Instructor rating after completing a Specialty Instructor Training course with a PADI Course Director, or by applying directly to PADI (no logged dives or other History of Experience is required).** For further detail, reference Specialty Instructor in the Professional Membership section of your PADI *Instructor Manual*.

Student Diver Prerequisites

By the start of the course, a diver must be:

- 1. Certified as a PADI (Junior) Open Water Diver or have a qualifying certification from another training organisation.** In this case, a qualifying certification is defined as proof of entry-level scuba certification with a minimum of four open water training dives. Verify student diver prerequisite skills and provide remediation as necessary.
- 2. At least 12 years.**

Supervision and Ratios

Open Water Dives

A Teaching Status AWARE Shark Conservation Diver Specialty Instructor must be present and in control of all activities. If Dive One is conducted deeper than 18 metres/60 feet, the Specialty Instructor must directly supervise at a ratio of no greater than 8 student divers per instructor (8:1). Otherwise, the Specialty Instructor may *indirectly supervise* all dives. **The Specialty Instructor must ensure that all performance requirements are met.**

The ratio for open water dives is 8 student divers per instructor (8:1), with 2 additional student divers allowed per certified assistant to a maximum of 10 students.

Site, Depth and Hours

Site

Choose sites with conditions and environments suitable for completing requirements. Use different open water dive sites, if possible, to give student divers experience in dealing with a variety of environmental conditions (incorporate environment friendly techniques throughout each dive) and logistical challenges. Practice skills in confined water sessions first to better prepare divers to apply skills in open water later.

Depth

18 metres/60 feet maximum for students certified as PADI Open Water Divers. (30 metres / 100 feet for students certified as PADI Advanced Open Water Divers.)

Hours

The AWARE Shark Conservation Diver Specialty course includes two open water dives, which may be conducted in one day. The recommended minimum number of hours is 12.

Materials and Equipment

AWARE Shark Conservation Instructor Guide, Study Guide, Lesson Guides and Program Participation Certificate (for knowledge development only participants) can be downloaded here: www.projectaware.org/category/resource-zone/sharks

Instructor Materials and Equipment

Required

- **AWARE Shark Conservation Diver Specialty Instructor Guide**
- **AWARE Shark Conservation Study Guide**
- **AWARE Shark Conservation Lesson Guides**
- **Project AWARE *Ten Ways a Diver Can Protect the Underwater Environment***

Recommended

- Sharks in Peril video clip: www.projectaware.org/project/sharks-peril
- Project AWARE *Ten Tips for Underwater Photographers*

- Project AWARE Specialty Course Certificate of Completion (for diver certifications)
- AWARE Shark Conservation Program Participation Certificate (for knowledge development only participants). **Do not use the Project AWARE Specialty Course Certificate of Completion to recognise knowledge development only students.**

Student Diver Materials and Equipment

Required

- **Guide to Impacts on Sharks (see Resources)**
- **Project AWARE *Ten Ways A Diver Can Protect The Underwater Environment***

Recommended

- AWARE Shark Conservation Study Guide
- Provide students with links to appropriate information in the reference section of this guide

Assessment Standards

Students must gain knowledge by attending classroom presentations or through independent study using the AWARE Shark Conservation Study Guide. You can assess knowledge by reviewing the student's Knowledge Reviews. **The student diver must demonstrate accurate and adequate knowledge during the open water dives and must perform all skills (procedures and motor skills) fluidly, with little difficulty, in a manner that demonstrates minimal or no stress.**

Certification Requirements and Procedures

Encourage divers to donate to shark conservation by choosing a Project AWARE version of their PADI certification card.

1. For students completing training dives

Student divers are issued a PADI certification for AWARE Shark Conservation Diver Specialty upon successful completion of the course. **To qualify for certification student divers must gain knowledge by attending classroom presentations or through independent study using the AWARE Shark Conservation Study Guide, complete the Knowledge Review and complete all boldface performance requirements for AWARE Shark Conservation Diver Open Water Dives One and Two.**

The instructor certifying the student diver must ensure that all certification requirements have been met. Reference Paperwork and Administrative Procedures of the General Standards and Procedures section of your PADI *Instructor Manual* for detailed information on Referral.

You may also issue dive students with the Project AWARE Specialty Course Certificate of Completion, PADI Product No. 40098.

2. For students completing knowledge development only

Students who complete only the knowledge development section may be issued with an AWARE Shark Conservation Program Participation Certificate.

Links to Other Courses

The AWARE Shark Conservation Adventure Dive conducted during the PADI Adventures in Diving program counts as the first dive toward this specialty.

Divers who successfully complete AWARE Shark Conservation Diver Open Water Dive One receive credit as an Adventure Dive toward the PADI Adventure Diver and Advanced Open Water Diver certifications. The specialty certification also credits toward the PADI Master Scuba Diver rating.

Section Two: Knowledge Development

Conduct

Shark populations are rapidly declining, mainly due to overfishing. Many actions are required to protect sharks including improved fisheries management and trade regulation. An important step towards gaining improved protection for sharks is to raise the public's awareness of the issues and engage them in shark conservation activities. With this in mind use this course to turn students into advocates for shark conservation. This means to give them the knowledge they need to understand the issues, and the inspiration to take action.

The aim of knowledge development is to highlight shark conservation issues so do not go into great detail about shark biology. Knowledge development includes a section to introduce sharks you might see on training dives. If you will not complete training dives or if you do not regularly see sharks at your dive sites you can introduce a few sharks of interest. You can also use this section to tell students about your experiences with sharks, but do so in a way that excites them and makes them keen to experience their own encounters. Avoid telling shock stories that reinforce the myth that all sharks are a threat to humans.

The aim of the training dives is for students to use the knowledge gained from your lessons to appraise a dive location for potential hazards to sharks and for features that may reduce impacts on sharks. This exercise need not be limited to the dive site; it can take place in as broad a geographic region as time and logistics allow. The goal of knowledge development is to open your student's eyes to shark conservation issues. The aim of training dives is for students to start looking at land and sea features through the perspective of someone who understands the issues. To assist you with this use the *Guide to Impacts on Sharks* provided in Resources. Set up training dives so students report back to you on how dangerous or friendly the location is to sharks.

An optional activity for knowledge development only participants is to have them complete a land-based assessment of potential impacts to sharks. Develop this activity using the *Guide to Impacts on Sharks* and information in Section Three of this outline.

The result of this course should be students who are knowledgeable, passionate and inspired to act to protect sharks. Teach students the ways they can become involved in shark conservation by using the materials available in this guide.

Through this course you are building a force of people who will answer the call to protect sharks.

Learning Objectives

By the end of knowledge development, students will be able to explain:

Sharks in Peril and why we should care

Conservation status of sharks, why they are unique and vulnerable, and the importance of healthy shark populations.

- **Explain the unique physical attributes of sharks**
- **Outline the conservation status of sharks**
- **Explain the life history traits that make sharks vulnerable**
- **Describe the importance of sharks to marine ecosystems**

Managing threats and recognising values

Threats to sharks and how they could be managed. Recognising the value of sharks and removing barriers to conservation.

- **State the major threats contributing to declines in shark populations**
- **Describe key management strategies that can protect sharks**
- **Describe the value of sharks to local economies**
- **Describe common misperceptions of sharks and explain why these should not be a barrier to shark conservation**

Taking action and joining the Project AWARE movement

Actions they can take to protect sharks, sharks in your location and how joining a global movement of divers can help protect sharks.

- **List personal actions you can take to protect sharks**
- **Identify sharks in your local area or travel destination and list their conservation status**
- **List responsible environmental guidelines for diving with sharks**
- **Explain how to be part of the global movement of Project AWARE divers**

Knowledge Development

Teaching Outline

Suggestions to *you*, the AWARE Shark Conservation Diver Specialty Course Instructor, appear in note boxes.

A. Course introduction

1. Staff and student introductions

Note to Instructor: Introduce yourself and assistants. Explain your background with sharks if your students are not familiar with you.

Have students introduce themselves and explain why they are interested in sharks. Break the ice and encourage a relaxed atmosphere.

Give times, dates and locations as appropriate for classroom presentations, confined water and/or surface practice sessions, and open water dives.

Review with student divers other skills they'll want as an AWARE Shark Conservation Diver. These opportunities, through additional specialty course training, may include, but are not limited to: PADI Peak Performance Buoyancy Diver, AWARE - Fish Identification, PADI Underwater Naturalist and AWARE - Coral Reef Conservation.

2. Course goals – this course will:

- a. Inspire you to become a shark conservation advocate
- b. Introduce sharks including their conservation status and why they are vulnerable to impacts
- c. Introduce the major threats that are greatly reducing shark populations
- d. Provide information on the value of sharks to the marine environment and to local economies
- e. Introduce you to management approaches that can protect sharks
- f. Provide a pathway for you to become actively involved in shark conservation
- g. Show you how to identify hazards in marine environments and on land that threaten sharks

3. Course overview

- a. Classroom presentations and confined water and/or surface practice sessions.
- b. Open water dives. There will be two open water dives.
- c. Certification
 - For students completing training dives
 - Upon successfully completing the course you will receive PADI certification for AWARE Shark Conservation Diver Specialty.
 - Certification means that you will be qualified to:
 1. Plan, organise, make, and log open water dives that observe surface and underwater features of a dive location that are potential hazards for sharks and features that may reduce impacts on sharks. These dives should be made in conditions generally comparable to, or better than, those of your training.
 2. Apply for the Master Scuba Diver rating if you are a PADI Advanced Open Water Diver and a PADI Rescue Diver (or qualifying certification from another training organisation) with certification in four other PADI Specialty ratings, and you have 50-logged dives.
 - For students completing knowledge development only
 - Students who complete only the knowledge development section can be presented with an AWARE Shark Conservation Program Participation Certificate.
 1. An AWARE Shark Conservation Program Participation Certificate does not count towards Master Scuba Diver rating.
 2. Download the AWARE Shark Conservation Program Participation Certificate here:
www.projectaware.org/category/resource-zone/sharks

Note to Instructor: Use the PADI Student Record File or the Continuing Education Administrative Document. Explain all course costs and materials, and what the costs do and do not include, including equipment use, charter boat fees, etc. Explain what equipment student divers must have for the course, and what you will provide. Cover and review points about scheduling and attendance.

4. Class requirements

- a. Complete paperwork.
- b. Course costs.
- c. Equipment needs.
- d. Schedule and attendance

Sharks in Peril and why we should care

B. What are the unique physical attributes of sharks?

1. The first sharks appeared in the world's oceans over 400 million years ago, more than 150 million years before the first dinosaurs took to the land. Most of the modern sharks we see today first appeared around 100 million years ago. By comparison the first humans evolved only around 200,000 years ago.
2. Sharks occupy every marine environment from tropical coral reefs, to temperate coastal waters, to the open ocean, to the icy ocean depths. Some species also venture into freshwater such as the bull and the river shark.
3. Sharks have evolved into roughly 500 species and come in many sizes from the dwarf lantern shark at around 7 cm to the whale shark - the world's largest fish - that grows up to 12 metres.
4. We usually think of sharks as having a streamlined, torpedo shaped body with rigid dorsal and pectoral fins. Most sharks do have this form but others are quite different. For example Bullhead Sharks (Order Heterodontiformes), are chubby with large heads and horns over their eyes, while Angel Sharks (Order Squatiniformes), have flattened, disc-like bodies and look much like a ray.
5. Sharks eat a great variety of prey. Most sharks are predators, but some are scavengers, while whale and basking sharks are filter feeders with eating habits similar to a baleen whale.
6. With so many differences between sharks, how do we tell when a fish is a shark? Scientists use a system known as taxonomy to classify species according to their unique physical attributes.
7. The main unique physical attributes used to identify sharks are a skeleton made from cartilage, exposed gill slits and a large, oil filled liver to aid buoyancy. These features differentiate sharks from other fish that have skeletons made from bone, a cover over their gills and, in most *bony fish* species, a gas-filled swim bladder to control buoyancy.
8. A skeleton made from cartilage - the same substance that supports our noses - gives sharks several advantages as it is light, strong and flexible. Since sharks lack a swim bladder they have a natural tendency to sink. Their lightweight skeleton combined with a liver full of oil helps them overcome this tendency.
9. Sharks share these body attributes with rays, skates and chimaeras. Due to these shared attributes these animals are placed together in a Suborder known as Elasmobranchii.

C. What is the conservation status of sharks?

1. The International Union for the Conservation of Nature (IUCN) is a leading authority on the status of the world's plant and animal species. IUCN Specialist Groups assess and classify plants and animals to identify those in danger of extinction. Their findings are published in the IUCN Red List of Threatened Species™.

- Species assessed as Critically Endangered, Endangered or Vulnerable are considered by the IUCN to be Threatened. The Red List review of 1044 sharks, rays and chimaeras found that 30% are Threatened or Near Threatened with extinction. A further 47% are categorised as Data Deficient, meaning that more information is required to place them in a threat category. Species in the Data Deficient category may be found to be Threatened once they have been assessed.

International Union for the Conservation of Nature (IUCN) Red List Review of 1044 Shark, Ray and Chimaera Species		
Critically Endangered	2%	Extremely high risk of extinction in the wild
Endangered	4%	Very high risk of extinction in the wild
Vulnerable	11%	High risk of extinction in the wild
Near Threatened	13%	Close to qualifying or likely to qualify for a threatened category in the near future
Least Concern	23%	Not qualifying as Threatened including widespread and abundant species
Data Deficient	47%	More information required for assessment

- Research into certain shark species or regions has uncovered more alarming estimates:
 - One third of pelagic (open ocean) sharks and rays are threatened with extinction
 - Hammerhead sharks have declined by 89% in the North West and Western Central Atlantic since 1986
 - Great hammerheads have declined by 80% in the eastern Atlantic
 - Porbeagle and spiny dogfish sharks have been reduced by 90% in the Northwest Atlantic
 - One third of European sharks are Threatened with extinction, one of the highest levels of all assessed regions in the world
 - 14 species of Mediterranean sharks and rays are Critically Endangered
- These statistics show that sharks are in serious trouble. If we do not act quickly and decisively we risk virtually emptying the ocean of sharks. This will have devastating consequences for marine ecosystems and human society.

D. What life history traits make sharks vulnerable?

- Most shark species are characterised by one or more life history traits that make them vulnerable to overfishing, including:
 - It takes them a long time to reach sexual maturity
 - They have long gestation periods (one to two years)
 - They have a small number of offspring (pups)
 - They breed only every second or third year
- Compared to other vertebrates (animals with a backbone including mammals), sharks

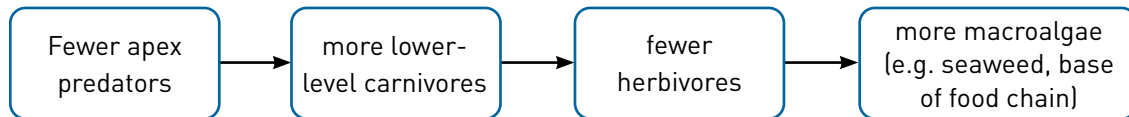
generally have a slow reproductive cycle. The reproductive strategy of most shark species more closely resembles those of whales, elephants and birds than other fish.

3. Under natural conditions this slow reproductive strategy works well for sharks as they have few predators and so have no need to rapidly replenish their numbers.
4. These traits work against sharks when they need to recover from overfishing or other substantial losses. A slow reproductive strategy means they are unable to respond quickly to the removal of many individuals from a population.
5. For example, the dusky shark can take more than 20 years to reach sexual maturity. Most shark species give birth to between 2 and 20 pups after a pregnancy of 8-12 months, though spiny dogfish are thought to gestate for nearly two years. Females of many shark species rest between breeding cycles for at least one year.
6. The shark's reproductive strategy is very different to most bony ocean fish that release millions of eggs in a lifetime. As we shall see later in the course, this key difference contributes greatly to the many problems associated with shark fisheries management.
7. Another trait that makes some shark species vulnerable to heavy fishing is their tendency to form groups based on their age, sex and/or maturity. Large, older females of many shark species produce greater numbers of stronger pups than younger females, so the sudden removal of these older females through fishing can have serious consequences for the population.

E. What is the importance of sharks to marine ecosystems?

1. Sharks play a crucial role in maintaining the health of marine ecosystems by keeping a balance among prey species and by removing sick, injured and diseased animals.
2. Sharks are often the apex predator in their ecosystem, meaning they are at the top of many food chains. As adults they have no or few natural predators.
3. Typical traits of apex predators is that they feed on many different species and change food sources when one prey animal becomes hard to find. In this way sharks help maintain a balance that ensures no one species over-populates and depletes the species on which it feeds.
4. Food chains describe how energy moves among species. A typical food chain starts with plants that use the sun's energy to make their body parts. Plants are consumed by herbivores (plant eaters), who are consumed by carnivores (meat eaters). Small carnivores are consumed by large carnivores until the apex predators - the last animal in the food chain - are reached.
5. Most animals are links in multiple food chains within an ecosystem. Together these food chains form a complex food web that intimately links predators to prey.
6. Removing an animal from a food web can have repercussions throughout an

ecosystem. To reveal the potential impacts of removing sharks from a marine ecosystem we can follow the impact through a simple food chain:



7. To see how removing apex predators affects marine ecosystems we need to study marine areas that have had little exposure to human impacts, especially fishing. Studies of remote reefs have revealed ecosystems that are very different from those we know today.
8. A study of reefs in the Northwestern Hawaii Islands found that apex predators, including sharks, comprise over half of the fish biomass compared to less than 10% on reefs that are fished. On the unaltered reefs the sharks are bigger and populations of all species are far greater. Additionally the unaltered reefs are home to a larger variety of other species than regularly fished reefs.
9. The presence of sharks can also protect seagrass beds from over-grazing by dugongs and green sea turtles. These animals prefer to eat in the middle of a sea grass bed where the quality of food is the highest. But it is harder for them to escape a hunting shark from the middle of a large seagrass bed, so they stay on the outside when sharks are present. Seagrass beds are an important habitat for many fish and invertebrate species.

Managing threats and recognising values

F. What are the major threats contributing to declines in shark populations?

1. Overfishing is the main cause of the rapid decline in shark populations. It is mostly due to overfishing that many shark species are threatened with extinction.
2. Sharks are caught in targeted fisheries and as bycatch (see page 20). Demand for high value fins, the primary ingredient for Asian shark fin soup, is a main driver of shark fisheries, but demand for shark meat, particularly in Europe, is also strong and has led to serious depletion of several shark populations.
3. Sharks are caught by countries from all around the world. The top 20 shark catching nations are (in order of size of catch, greatest take first): 1) Indonesia, 2) India, 3) Spain, 4) Taiwan, 5) Argentina, 6) Mexico, 7) Pakistan, 8) United States of America, 9) Japan, 10) Malaysia, 11) Thailand, 12) France, 13) Brazil, 14) Sri Lanka, 15) New Zealand, 16) Portugal, 17) Nigeria, 18) Iran, 19) United Kingdom and 20) South Korea according to a 2011 report called *The Future of Sharks: A Review of Action and Inaction*.
4. The top twenty nations account for nearly 80% of the annual reported shark catch. The top four shark fishing countries account for more than 35% of the annual reported take.

5. Some of the many uses of shark body parts are:
 - Shark fins for shark fin soup in Asia and many other countries
 - Spiny dogfish meat is popular in Europe, often used in *fish and chips* in the United Kingdom and smoked to create *Schillerlocken* in Germany
 - Porbeagle meat is prized as *veal of the sea* in France
 - Mako, thresher and blacktip shark steaks are popular in America
 - Meat from Greenland and basking sharks is used to produce *hákarl*, a traditional delicacy of Iceland and Greenland
 - Shark is known as *flake* in Australia and often used in *fish and chips*
 - Products called *fish* may contain shark, such as *fish fingers*
 - Shark liver oil has many industrial uses
 - Shark skin is a delicacy in many cultures and is used to make leather products
 - Shark liver oil and shark cartilage are said to have health benefits, though their benefits are unproven
 - Shark jaws and teeth are sold as souvenirs
6. Estimating how many sharks are killed in fisheries every year is difficult for several reasons. Fishing nations have different reporting requirements and capacity, or none at all. For example, most countries fishing sharks in the Indian Ocean do not report their catches properly if at all. Reported totals do not usually include bycatch, illegal fishing, or sharks taken by small scale fishing (traditional, artisanal and/or subsistence) and recreational fishing.
7. The United Nations Food and Agriculture Organisation (FAO) reports that commercial catches of sharks, rays and chimaeras have declined from a peak of 0.9 million tonnes in 2003 to 0.75 million tonnes in 2006. It is unknown whether this is due to improved management of shark fisheries or decreasing shark populations through overfishing or a combination of both.
8. Other reports have revealed that the FAO figure is a serious underestimate. A study that analysed shark fin trade records estimated that the weight of sharks killed annually to support the global shark fin trade is between 1.21 and 2.29 million tonnes with a median of 1.70 million tonnes. This is equivalent to between 26 and 73 million sharks killed every year with a best estimate of 38 million individual sharks.
9. The report warns that actual global shark mortality is higher as this figure does not include sharks killed for the fishing country's domestic fin market, sharks discarded dead at sea, or sharks used only for their meat.

Major Threats: Shark Fin Soup

10. Shark fin soup is a status symbol in Chinese culture as historically it was a dish reserved for the Emperor. Today serving shark fin soup to your guests demonstrates that you think highly of them, and that you have great personal wealth.

11. But the demand for shark fin soup is fast outpacing supply. Rapidly growing populations and rising incomes means many more people can now afford shark fin soup. Demand for shark fins is driving the global depletion of shark populations as fishers from all countries learn of the opportunities for profit.
12. Shark fins are among the world's most valuable fisheries products. Processed shark fins can cost hundreds of dollars per kilogram compared with US\$1 to US\$10 per kilogram for shark meat depending on species. A bowl of soup can sell for as much as US\$100.
13. Shark fins add texture to soup rather than flavour. Many chefs use chicken soup as a base for their shark fin soup.

Major Threats: Shark Finning

14. Shark finning is the practice of removing a shark's fins at sea and discarding the body overboard. Sharks are frequently finned while still alive.
15. Why do fishers go to the trouble of catching a shark only to throw most of it away? The answer lies in the high value of shark fins. Shark fins are among the world's most valuable fisheries products while shark meat is generally much less valuable. So the temptation is strong for fishers to throw the bulky shark carcasses overboard leaving room in the ship's holds for more shark fins or more valuable species such as tuna and swordfish.
16. Shark finning has been banned by many countries, though international trade in shark fins is allowed for most species. Because finning happens out at sea where monitoring is generally poor and fishing regulations are lacking or weak, the practice of finning continues.

Major Threats: Bycatch

17. Fishers use a variety of methods to catch fish; most of them result in bycatch. Bycatch refers to the part of a catch that is not the target species or is undersized. Bycatch cannot be landed in many regions depending on local regulations and how strictly they are enforced. When bycatch cannot be landed or is not wanted it is dumped overboard, sometimes live, sometimes dead or dying.
18. Bycatch includes sharks and bony fish as well as dolphins, whales, turtles, invertebrates and seabirds. Bycatch accounts for the majority of the total catch in some shrimp trawl fisheries.
19. Tens of millions of sharks are killed as bycatch every year. Discarded bycatch is rarely accounted for in fishery records so these shark deaths are missing from official statistics.

Major Threats: Other Impacts

20. Many human activities on land have a negative effect on sharks, particularly reef and coastal species. Scientists warn that 75 percent of the world's coral

reefs are threatened from local pressures such as coastal development, pollution and overfishing, combined with the impacts of rising sea temperatures caused by increased concentrations of CO₂ and other greenhouse gases in the atmosphere. One fifth of the world's mangroves have been removed since 1980 for land reclamation projects and aquaculture farms.

21. Coastal development can damage important shark habitats and nurseries. Mangroves, estuaries and salt marshes provide important habitats for sharks to give birth and mature. These areas are rapidly being destroyed in mankind's rush to accommodate a growing population.
22. Marine debris - the rubbish we allow into the ocean- kills and injures sharks through entanglement or because they eat it. Ghost nets - fishing nets that have been accidentally lost or purposefully dumped at sea - also contribute to the annual shark death toll.
23. Other impacts include swimmer protection devices such as beach nets and drumlines with baited hooks used in Australia and South Africa. These devices kill sharks including species that are of no threat to humans, as well as many other marine animals such as dolphins, rays and turtles.

G. What are the key management strategies that can protect sharks?

Note to Instructor: The importance of this Learning Objective is that it helps students understand the actions needed to increase shark protection. Project AWARE is working with other groups to address some of these major management issues and will occasionally call on our supporters to join the campaign, for example by adding their name to petitions or calling politicians in their country. Use this section to give students a good understanding of management issues so they are ready when Project AWARE asks them to take action. Review our most up to date shark protection campaigns at www.projectaware.org/project/sharks-peril

1. Sharks need protection - from us! Many shark species migrate over great distances; they cross international boundaries and move from areas of high protection to areas of no protection. Effective shark management strategies needed to make shark fisheries sustainable include:
 - Well-enforced, science-based catch limits
 - Conservation measures consistent throughout the range of each species.
 - Being based on scientific advice and the precautionary approach
 - An aim to minimise waste

Following are some of the management strategies that can help protect sharks.

Key Management Strategy: International Plan of Action-Sharks (IPOA-Sharks)

2. The 1999 Food and Agriculture Organisation (FAO) International Plan of Action for Sharks (IPOA-Sharks) was a significant step toward encouraging management of shark

fisheries. It calls on each shark fishing nation to develop and adopt a National Plan of Action (NPOA) for the conservation and management of sharks.

3. NPOAs are intended to make shark fisheries sustainable by:
 - Assessing threats such as overfishing
 - Protecting critical habitats
 - Minimising waste and discards (e.g. finning bans)
 - Encouraging the full use of dead sharks
4. All members of the FAO's Committee on Fisheries (COFI) agreed that all relevant fishing nations should implement a Shark NPOA by 2001. However this process is voluntary and as of January 2011 only 13 of the world's top 20 fishing nations had a Shark NPOA in place.
5. It is impossible to speculate about the status of national and international shark fisheries management had the IPOA-Shark not been developed, however reports published in 2011 revealed that a country that has a NPOA in place does not necessarily have sound shark fisheries management.
6. The IPOA process has been very slow, but this instrument has raised the profile of sharks and their plight, and has led to helpful guidelines and a source of assistance for countries with the political will to manage their shark fisheries.

Key Management Strategy: Regional Fisheries Management Organisations (RFMOs)

7. RFMOs facilitate the management of multi-nation fishing of shared fish-stocks taken from international waters or highly migratory species. RFMOs aim to conserve fish populations through cooperative agreements on vessel-monitoring, area management, and fishing limits.
8. RFMOs have been slow to address shark overfishing, and their record is also generally poor in conserving species that are the focus of traditional fisheries management, such as tuna, swordfish, billfish, groundfish and shrimp.
9. As explained earlier, the life history of sharks differs greatly from other fished species. Sharks warrant a particularly precautionary management approach based on their slow reproductive strategy. However, because sharks have traditionally not been as valuable as other fish, information on their life cycles and catch records are lacking. These issues should be addressed in Regional Plans of Action for sharks which are also recommended under the IPOA. As of 2011 no RFMO has developed such a plan.
10. Most RFMOs have banned shark finning (see page 23) but have not set any international shark fishing quotas for the high seas. The International Commission for the Conservation of Atlantic Tunas has adopted bans on the retention and sale of bigeye thresher and oceanic whitetip sharks along with some limits on hammerhead shark fishing. The Indian Ocean Tuna Commission has prohibited the retention of all thresher shark species, but this measure has yet to be implemented by the vast majority of member countries.

Key Management Strategy: Finning Bans

11. Most RFMOs and nearly 30 countries including the USA and the Member States of the European Union have adopted finning bans. Finning bans do not stop sharks from being caught; instead they aim to ensure that fishers do not dump shark carcasses overboard after removing the fins.
12. Finning bans work by stipulating a maximum fin-to-carcass weight ratio that must be maintained onboard a fishing boat. If fishers dump shark carcasses overboard after removing the fins, the weight of fins will be too high compared to the weight of carcasses.
13. The IUCN has recommended that fin to carcass ratios should not exceed 5% of the dressed weight of shark carcasses. Dressed carcasses are those that have had their heads and guts removed. Using the whole weight creates a loophole through which an estimated two to three sharks could be finned for every one kept.
14. In order to match differing standards among member countries, RFMO finning bans do not currently stipulate whether their ratio refers to the dressed or whole carcass weight. The European and Brazilian finning bans specify a ratio of 5% of the whole weight, thereby lowering global standards and setting a bad example for other countries.
15. Another major loophole in the European finning ban is that it allows fins to be landed at separate ports to carcasses, making it hard to enforce the ban.
16. The IUCN, conservation groups and most scientists agree the most effective way to enforce finning bans is to require that carcasses are landed with fins naturally attached. Fins can be partially cut for ease of storage. This arrangement also makes it easier to collect much needed species-specific shark catch data, as sharks are easier to identify with their fins attached.
17. If properly enforced, finning bans can dramatically reduce waste and shark mortality while more rigorous fishing limits are developed.

Key Management Strategy: Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

18. CITES is an international agreement among the governments of 175 member countries that helps to regulate international trade in more than 30,000 species of threatened animals and plants. CITES can provide protection for sharks by regulating or banning international trade.
19. CITES provides three levels of protection for listed species. The highest level is Appendix I, which essentially bans international commercial trade. Appendix II requires that trade is monitored, which can result in controls being put in place if trade is found to be detrimental to wild populations. Most CITES-listed species are included under Appendix II.

20. CITES is a strong conservation agreement because it is binding on member countries. Countries can give heavy penalties to people found smuggling listed animals or plants across international borders.
21. Member countries have shown considerable resistance to listing marine species including sharks under CITES, especially species that are commercially valuable. Two thirds of member countries must vote for a species to be listed under Appendix I and II, and too often economic interests win over environmental concerns. As of 2011 only three shark species are included under CITES, all under Appendix II:
 - Basking Shark (2002)
 - Whale Shark (2002)
 - Great White Shark (2004)
22. Countries can officially register a reservation on a species listing so that it does not apply to them. A handful of countries have registered reservations on the above sharks.
23. Proposals to list spiny dogfish and porbeagle sharks under Appendix II were defeated at CITES conferences in 2007 and 2010, and proposals to list hammerheads and oceanic whitetip sharks under Appendix II were rejected in 2010.

Key Management Strategy: Marine Protected Areas (MPAs)

24. Marine Protected Areas are spaces in the ocean where human activities are more strictly regulated. MPAs can protect marine life from extractive industries such as fishing, mining and collecting for the aquarium trade. MPAs are known by a variety of names such as marine parks, aquatic reserves, marine reserves and sanctuary zones.
25. MPAs provide different levels of protection depending on how they are established. Some MPAs are fully protected no-take zones where all extractive activities are banned, while others allow for multiple uses through a system of zoning. Both systems have their merits, but the IUCN suggests that large, multi-zoned MPAs may provide greater protection than smaller no-take areas.
26. Studies have shown that protecting bony fish in MPAs allows them to recover from overfishing and results in more fish in surrounding areas. MPAs have also been shown to bring economic advantages to adjacent communities through marine tourism. Despite this only around 1% of the world's ocean is protected by MPAs; and less than one tenth of a percent of these MPAs are fully protected no-take zones.
27. To be effective for shark conservation, MPAs need to be positioned over key shark habitats such as places where sharks congregate to mate or nursery grounds where females give birth.
28. MPAs work best for sharks that have a limited range and so do not regularly swim outside of the protected area. They can be effective for migratory shark species when they are part of a greater network of MPAs designed to provide protection over the range of habitats through which the sharks migrate.

29. Dive tourism is creating an incentive for many countries to protect sharks in shark sanctuaries. Palau banned shark finning and commercial shark fishing within 50 nautical miles of its shores in 2003, then extended these protections in 2009 making its entire ocean territory a shark sanctuary. In 2010 the Maldives increased existing shark fishing bans to include their entire ocean territory. In 2011 the Bahamas and Honduras both declared their territorial waters to be shark sanctuaries, in recognition of the value of sharks to the environment and the economy.
30. Creating effective shark sanctuaries is a challenge. Management, monitoring and enforcement require extensive effort and funding. Host governments need to patrol large areas to enforce the rules and punish violators. In addition, commercial and artisanal fishers should be compensated or provided with alternate sources of income for shark sanctuaries to be successful.
31. Dive tourism is leading to local and even national protection for sharks, but tourism-driven shark protection should always be backed up with better fisheries management and enforcement of regulations.

Key Management Strategy: Illegal, Unreported and Unregulated (IUU) Fishing

32. Fisheries management failures result in what is known as Illegal, Unreported and Unregulated fishing.
33. A major driver for illegal fishing of sharks is the high value of their fins. Requirements for sharks to be landed with their fins naturally attached hold promise to reduce illegal finning.
34. Most of the world's shark fisheries are loosely managed or completely unregulated. Therefore the level of illegal shark fishing may not be very high; not necessarily because fishers don't break the rules, but because there are few rules to break.
35. For example there are no EU or international catch limits on mako and blue sharks, the main shark species targeted by fishers from Spain, which ranks among the top five shark fishing nations in the world. The top two shark fishing nations – Indonesia and India – do not impose any shark catch limits on their large fleets of small-scale fishers.
36. The lack of species-specific reporting of shark catch is a huge hindrance to shark population assessments and conservation worldwide.

H. What is the value of sharks to local economies?

1. Sharks provide economic benefits to countries and to local communities as a source of food and as tourist attractions.
2. Sharks provide an income or protein for many people and will continue to do so if fished at a sustainable level. The problem is not that we are fishing for sharks; the problem is that in most cases we are overfishing sharks.
3. Some populations of sharks are valuable as a tourist attraction. Sharks repeatedly

rank number one in surveys of the marine animal that dive tourists most want to see. Studies have shown that live sharks close to tourism centres can have a far greater economic value to a country over a longer period of time than the one-time value of selling their fins and meat.

4. In Palau sharks are estimated to bring \$18 million per year into the economy through dive tourism. One reef shark over its lifetime will earn the country an estimated US\$1.9 million compared to a one-off income of US\$108 when fished.
5. In the Maldives each live grey reef shark is worth an estimated US\$3,300 per year through dive tourism and as much as US\$33,500 at the most popular sites. The same shark has a one-off value of US\$32 when fished.
6. In the Bahamas sharks have brought an estimated US\$800 million into the economy through tourism over a twenty year period. A single reef shark is estimated to be worth US\$250,000 over its lifetime. If fished the same shark would earn only US\$50-60.
7. Global whale shark tourism was valued at US\$47.5 million in 2004. In The Canary Islands shark and ray tourism supports an estimated 429 jobs and earns the region an estimated €17.7 million annually. In South Africa diving with great white sharks brought in US\$4.1 million in 2003 and diving with tiger sharks earned US\$1.8 million in 2007.
8. Dive tourism can improve people's appreciation of sharks and turn them into advocates for shark conservation. This can lead to improved protection for shark species not usually associated with diving, such as those in international waters.

I. What are common misperceptions of sharks and why should these not be a barrier to shark conservation?

1. Sharks have an undeserved reputation of being mindless killers. They are often portrayed as man-eaters that show no mercy and should be given no mercy. Media outlets often feed the public's fears by sensationalising shark attack stories.
2. Humans have long feared being attacked by sharks but it was the 1975 film *Jaws* that first portrayed sharks as vengeful hunters of humans. *Jaws* triggered an unprecedented retaliation on sharks as people around the world took it upon themselves to make the seas *safer* by killing sharks.
3. One of the barriers to gaining greater protection for sharks is overcoming public perceptions that sharks do not deserve to be protected. Since the release of *Jaws* many conservationists, including the story's author Peter Benchley, have worked hard to restore the shark's reputation.
4. A clear understanding of the likelihood of being attacked by a shark is a first step to overcoming our misperceptions. The International Shark Attack File (ISAF) is a compilation of all known shark attacks. In 2010 ISAF reported 79 unprovoked shark attacks on humans, only six of them were fatal.
5. ISAF states that shark attacks have levelled off over the last 30 years to an average

of 63.5 per year, but notes that the rapidly growing human population could be masking a drop in shark attacks. Each year there are more people in the water and so there should be more shark attacks. ISAF states that falling shark populations could partly explain why shark attacks have not become more frequent with the growing human population.

6. Poor knowledge of the great variety of shark species is another barrier to protecting them. Of roughly 500 species only about ten are implicated in unprovoked attacks on humans. Bull, tiger, and white sharks are responsible for most attacks. The majority of shark species have never bitten a human.
7. Sharks are often thought of as man-eaters. In fact it is rare for a shark to attack a person and even rarer for a shark to eat a live human. Most shark attacks on humans are thought to be mistakes or explorations. These attacks consist of an exploratory bite during which the shark discovers we are not their normal food. In most cases the shark then leaves the victim unmolested. The unfortunate reality is that one exploratory bite from a large shark can be fatal. Still, it is clear that under normal circumstances sharks do not seek humans to eat.
8. Another way of clearing our perceptions is to understand that when we swim in the ocean we are entering the shark's home. Few would be surprised or outraged if someone walking across the Serengeti in Africa was attacked by lions. Yet, when a swimmer is attacked by a shark it often provokes a great backlash. But the ocean is the shark's home just as much as the Serengeti is the lion's home. We need to understand that when we are in the water we are in the shark's environment, not ours. We are free to take the risk if we choose, but we shouldn't blame the shark if an incident occurs.

Taking action and joining the Project AWARE movement

J. What personal actions can you take to protect sharks?

Note to Instructor: The aim of this objective is to involve your students in shark conservation activities. You could start with a discussion of how their perceptions of sharks have changed during this course and if they are now inspired to act. Encourage a group discussion on how they could work together on shark conservation activities. Encourage them to organise activities that involve new people and find ways to link their activities to future deliveries of this course. Build momentum by frequently teaching this course and keep your students actively involved in shark conservation.

1. You have learned a great deal about the damage being done to shark populations. Now is your chance to help protect the sharks. Following are actions you can take for sharks. Get involved in these activities and encourage other people to join you.

Everyday Actions

- **Get involved**

- Support Project AWARE's work that seeks greater protection for sharks
www.projectaware.org/project/sharks-peril
- Find resources here:
www.projectaware.org/category/resource-zone/sharks

- **Make personal changes to protect sharks**

- Write a personal pledge or action plan on how you will protect sharks in the future

- **Join campaigns**

- Write a letter to your country's Fisheries Minister and Environment Minister letting them know you support shark conservation

- **Support Marine Protected Areas**

- Read about Project AWARE's involvement in marine park campaigns
www.projectaware.org

Note to Instructor: research marine park campaigns in your area or in your student's home country. Provide students with information on how to get involved. Encourage them to register for online newsletters, sign petitions and make public submissions. Let them know they have a powerful voice in persuading politicians to act.

- **Tell others**

- Spread the word about the importance of shark conservation
- Encourage friends to take this course
- Share with others everything you learned in this course
- Tell your shark conservation stories through Project AWARE's My Ocean or other online networks such as Facebook and Twitter

- **Respond to alarmist media stories**

- Write to the editor to correct factual errors and ask for balanced reporting

- **Support Project AWARE**

- Join the Movement - join thousands of divers around the world protecting our ocean planet - one dive at a time. Visit www.projectaware.org to join the movement.
- Donate to support a clean, healthy and abundant ocean
www.projectaware.org/donate

- **Tread lightly on the planet**

- Reduce and offset your carbon emissions
- Rethink, reduce, reuse and recycle

Purchase Decisions

- **If you choose to eat seafood**

- Only eat seafood, including shark meat, from sustainable fisheries and organically certified aquaculture

Note to Instructor: provide students with Sustainable Seafood Guides. See links in the reference section.

- Find out which seafood products contain shark and avoid them
 - Look for eco-labels on fish products such as Dolphin Friendly or Marine Stewardship Council
 - Let restaurant owners know you only eat seafood from sustainable sources
- **Choose not to eat shark fin soup**
 - Let restaurant owners know you will not eat in their restaurant if they have shark fin on the menu
 - **Avoid purchasing items that contain shark products**
 - Includes souvenirs, medicines, leather goods, jewellery, shark oil and others
 - Tell store owners about the issues and why you refuse to buy these items
 - **Support genuine ecotourism operations**
 - Stay at locally owned resorts and use locally owned businesses so that more of your money stays in the country and supports the local economy. This reinforces the value of natural assets that attract tourists, such as sharks.
 - Look for resorts that treat sewage and wastewater and dispose of rubbish properly

Be an AWARE Diver

- **Make your dives count**

- Use your diving skills to increase knowledge of impacts to the marine environment
 - Participate in Project AWARE's Dive Against Debris survey
 - Monitor coral bleaching through the CoralWatch program

- **Be an AWARE diver**

- Follow Project AWARE'S *Ten Ways A Diver Can Protect The Underwater Environment* and *Ten Tips for Underwater Photographers*
- Choose to dive with operators who use moorings or drift dive techniques rather than anchors

K. What sharks are found in your local area or travel destination and what is their conservation status?

Note to Instructor: in this section introduce sharks commonly seen in your area and identify their conservation status. If you are teaching only the knowledge development section of this course, or if you do not see sharks in your area, you may choose any sharks to discuss. In both instances it is recommended that you limit discussions to a maximum of five species.

Do not over-teach this section as the aim of the course is that students become shark conservationists, not experts in a particular shark species. Teach only enough for them to be able to identify sharks during training dives and appreciate what they are seeing.

An important part of this section is to tell students what sharks mean to you. Tell them how thrilling it is to see a shark and relate interesting stories that will make them anticipate the experience. Do not tell alarming “horror” stories as the objective is not to scare students or impress them with your bravery; the aim is to inspire them to become shark conservationists.

If possible work with your students to research the conservation status of your chosen sharks so they learn how the Red List process works. If this is not logistically possible you can research this information and present it in class. Provide students with the Red List link so that they can explore the information on their own in the future.

1. Topics to discuss for each shark species include:

- Name (common and scientific)
- Identification methods; use photos to illustrate key identification features
- Habitat; where should students look to find this shark during training dives (if applicable)?
- Key characteristics and behaviours such as feeding habits and unique biological features
- Conservation status
 - Find the conservation status of each shark on the IUCN Red List of Threatened Species: www.iucnredlist.org/
 - You can search the database using the scientific name or common name. You are more likely to find the shark you are looking for by using the scientific name.
 - You can retrieve a list of all included sharks by typing the word “shark” into the search field.

L. What are responsible environmental guidelines for diving with sharks?

Note to Instructor: This section does not provide safety guidelines for diving with sharks. Following these environmental guidelines will enable your students to minimise their impact on sharks. These guidelines do not, and are not intended to, eliminate the risks of diving with sharks for you and your students. Use your knowledge of the dive site and the sharks present to ensure a reasonably safe activity when diving with sharks.

1. When diving with sharks avoid actions that may disrupt natural behaviour or damage the environment. When you see sharks they may be feeding, resting or courting. Disrupting these natural behaviours may affect their health or interrupt an opportunity to reproduce, and may subject divers to risk of serious injury or death.
2. Follow these environmental guidelines when diving with sharks:
 - Be an AWARE diver
 - Follow AWARE's *Ten Ways A Diver Can Protect The Underwater Environment*
 - Follow AWARE's *Ten Tips for Underwater Photographers*
 - Complete further training such as Peak Performance Buoyancy or Underwater Naturalist courses to improve your skills and expand your knowledge of underwater environments.
 - Do not block their movement by swimming in front of them, allow them to move away
 - Do not block their exit if they are inside a cave or overhang
 - Do not descend on top of sharks
 - Do not get close to sharks
 - Be familiar with and follow local regulations and protocols

M. How can you be part of the global movement of Project AWARE divers?

Note to Instructor: Project AWARE Foundation aims to protect vulnerable shark species by working towards sustainable shark fisheries through the promotion of national, regional and international management mechanisms. AWARE demands sustainable shark fisheries that ban finning, prohibit the removal of fins at sea, heed scientific advice, and take a precautionary approach to setting limits and managing catches. Please ensure you are informing your students of Project AWARE's most current shark conservation work by presenting the information from the Project AWARE website:
www.projectaware.org/project/sharks-peril

1. Project AWARE Foundation is a global movement of scuba divers protecting the ocean planet - one dive at a time. Focused on the critical issues of Sharks in Peril and Marine Debris, Project AWARE empowers thousands of divers in more than 180 countries to work together for a clean, healthy and abundant ocean planet.
2. Project AWARE's powerful movement for ocean protection starts with you.

Join the Movement

3. The ocean is fighting for its life. But divers are a powerful, growing force who can give the ocean a big voice. Divers are acting in their own communities and favourite dive sites every day to tackle impacts on the marine environment. Visit www.projectaware.org and join the movement to discover actions and opportunities to support ocean protection in your local community and on a global scale.

Battle the Big Two

4. Divers around the world are focussed on two major ocean protection issues: shark decline and marine debris, or rubbish in the ocean. Project AWARE is zoning in on these two issues where scuba divers are uniquely positioned to make long-term change. Project AWARE is tackling these issues on three fronts: ongoing underwater action, leading grassroots change and influencing effective environmental policies.
5. Many shark populations are on the brink of collapse and a growing number of AWARE divers will no longer stand for unsustainable fishing practices. You can help by telling others about this shark conservation course, frequently checking the shark Issues & Projects pages on Project AWARE's website, spreading the word and taking action.
6. Divers are critical to addressing marine debris issues underwater. Cleanups are important community actions but they're not the only answer. You can help by reporting data about the debris you find underwater through Project AWARE's Dive Against Debris program. Your involvement will shine a light on debris issues and help reduce its devastating impacts on marine life. Project AWARE has the tools and training to get you started.

My Ocean

7. My Ocean is Project AWARE's unique eco-networking site where dive centers and AWARE leaders are taking action for ocean protection. Here, they manage local conservation events, report data and connect with passionate volunteers like you. You can explore My Ocean by creating a profile, volunteering for events and finding like-minded dive buddies in your community.

Be an AWARE Diver

8. Visit www.projectaware.org to find the latest calls to action, petitions and activities centered on our ocean planet. Think ocean protection every time you dive and report the data that is so important for our cause.
9. Together, we can re-think what's possible and share a positive vision for our ocean future. Join the movement to protect our ocean planet – one dive at a time www.projectaware.org.

Section Three: Open Water Dives

Conduct

There are no required confined water and/or surface practice sessions for the AWARE Shark Conservation Diver course, however, it is sound instruction to develop student diver abilities in conditions that don't add complexity to learning new skills. For example, you may have student divers practice buoyancy skills or responsible diving practices that minimise environmental impacts in a confined water session prior to the first training dive. You may add confined water and/or surface practice sessions at your discretion. The confined water session may also include a scuba skills review.

On training dives students demonstrate that they can identify features of a dive location that may harm sharks and features that have the potential to reduce impacts on sharks. By demonstrating that they can identify such features students demonstrate that they have a good understanding of the issues reducing shark populations and strategies for protecting them. If sharks are seen students can identify them and observe their natural behaviour.

In Resources you will find the *Guide to Impacts on Sharks*. Use this guide to assist you in recognising potential negative and positive impacts. Before teaching this course it is recommended that you make your own assessment of the location. Add any additional impacts found in your location to the guide.

Bottom time on each dive should not exceed the no decompression limits of the Recreational Dive Planner or each diver's computer, if used. **Regardless of how you conduct the open water dives, student divers must demonstrate the following performance requirements to qualify for certification.**

Open Water Dives

Performance Requirements

By the end of the open water dives, student divers will be able to:

AWARE Shark Conservation Diver Open Water Dive One

- **Identify potential surface hazards to sharks in the dive location**
- **Identify potential underwater hazards to sharks**
- **Demonstrate appropriate and responsible diving practices and behaviours to minimise negative environmental effects**

If sharks are seen during the dive student divers will also be able to:

- Observe natural shark behaviour
- Identify observed shark species
- Identify non-natural injuries to sharks

continued over

- Demonstrate ability to follow responsible environmental guidelines for diving with sharks

AWARE Shark Conservation Diver Open Water Dive Two

- **Identify surface features that may reduce impacts on sharks in the dive location**
- **Identify underwater features that may reduce impacts on sharks**
- **Demonstrate appropriate and responsible diving practices and behaviours to minimise negative environmental effects**

If sharks are seen during the dive student divers will also be able to:

- Observe natural shark behaviour
- Identify observed shark species
- Identify non-natural injuries to sharks
- Demonstrate ability to follow responsible environmental guidelines for diving with sharks

Open Water Guidelines for AWARE Shark Conservation Dives

A. General Open Water Considerations

1. Involve student divers in dive-planning activities.
2. Review AWARE's *Ten Ways a Diver Can Protect the Underwater Environment*.
3. Conduct a thorough briefing as a good briefing will lead to a better learning experience. Pre-dive briefings should include diver behaviours that minimise impacts to the marine environment.
4. Dive One and Two require divers to appraise the dive location for features that can be harmful to sharks and features that may reduce impacts to sharks, both underwater and on the surface. Use the *Guide to Impacts on Sharks* found in Resources to assist you in teaching this section.
5. Dive location appraisals can cover as large a geographic area as you choose. Start divers looking for impacts as soon as you leave the dive centre until you arrive at the dive site. If you are completing a shore dive have them investigate the vicinity.
6. It should not be expected that divers find all features. Use debriefs to discuss the features they have identified and point out additional features. You could ask divers to prepare their own checklist prior to the dive and use it on site.
7. Remind divers that reefs remote from fishing activities have high proportions of sharks (see Knowledge Development). Ask them to think why there are not so many sharks on the site and how this may be impacting on the ecosystem.
8. If you expect to see sharks then review the recommended environmental guidelines for diving with sharks and identification of local species.

B. AWARE Shark Conservation Open Water Dives

Dive One

- **Identify potential surface hazards to sharks in the dive location**
- **Identify potential underwater hazards to sharks**
- **Demonstrate appropriate and responsible diving practices and behaviours to minimise negative environmental effects**

If sharks are seen:

- Observe natural shark behaviour
- Identify observed shark species
- Identify non-natural injuries to sharks
- Demonstrate ability to follow responsible environmental guidelines for diving with sharks

a. Briefing

1. Dive sequences - review Dive One Tasks

b. Pre-dive procedures

c. Dive One Tasks

1. Identify potential surface hazards for sharks in the dive location
 - Use the *Guide to Impacts on Sharks* found in Resources to assist you in teaching this section
2. Identify potential underwater hazards to sharks
 - Use the *Guide to Impacts on Sharks* found in Resources to assist you in teaching this section
3. Demonstrate appropriate and responsible diving practices and behaviours to minimise negative environmental effects
 - Complete the dive maintaining good buoyancy, keeping clear of the sea floor and avoiding impact on all organisms
 - Follow Project AWARE's *Ten Ways A Diver Can Protect The Underwater Environment*

If sharks are seen:

4. Observe natural shark behaviour
 - Avoid touching, handling and feeding
 - Identify if sharks are feeding, resting, cruising or laying on the seafloor
 - Identify if shark behaviour changes after appearance of divers
5. Identify observed shark species
6. Identify non-natural injuries to sharks
 - Look for fishing hooks or lures caught in the mouth or body
 - Look for fishing line wrapped around body parts
7. Demonstrate ability to follow responsible environmental guidelines for diving with sharks

d. Post-dive procedures

- e. Debriefing
 1. Discuss surface and underwater hazards to sharks. Ask students to briefly discuss possible solutions and actions they may be able to take.
 2. Discuss the identification of sharks observed during the dive
 3. Discuss non-natural injuries to sharks
 4. Identify breaches to the environmental guidelines for diving with sharks and provide remedial training
 5. Identify breaches to appropriate and responsible diving practices and provide remedial training
- f. Log dive (instructor signs log)

Dive Two

- **Identify surface features that may reduce impacts on sharks in the dive location**
- **Identify underwater features that may reduce impacts on sharks**
- **Demonstrate appropriate and responsible diving practices and behaviours to minimise negative environmental effects**

If sharks are seen:

- Observe natural shark behaviour
- Identify observed shark species
- Identify non-natural injuries to sharks
- Demonstrate ability to follow responsible environmental guidelines for diving with sharks

- a. Briefing
 1. Dive sequence - review Dive Two Tasks
- b. Pre-dive procedures
- c. Dive Two Tasks
 1. Identify surface features that may reduce impacts on sharks in the dive location
 - Use the *Guide to Impacts on Sharks* found in Resources to assist you in teaching this section
 2. Identify underwater features that may reduce impacts on sharks
 - Use the *Guide to Impacts on Sharks* found in Resources to assist you in teaching this section
 3. Demonstrate appropriate and responsible diving practices and behaviours to minimise negative environmental effects
 - Complete the dive maintaining good buoyancy, keeping clear of the sea floor and avoiding impact on all organisms.
 - Follow Project AWARE's *Ten Ways A Diver Can Protect The Underwater Environment*

If sharks are seen:

4. Observe natural shark behaviour
 - Avoid touching, handling and feeding
 - Identify if sharks are feeding, resting, cruising or laying on the seafloor
 - Identify if shark behaviour changes after appearance of divers

5. Identify observed shark species
 6. Identify non-natural injuries to sharks
 - Look for fishing hooks or lures caught in the mouth or body
 - Look for fishing line wrapped around body parts
 7. Demonstrate ability to follow responsible environmental guidelines for diving with sharks
- d. Post dive procedures
- e. Debriefing
1. Discuss location and dive site features that may reduce impacts on sharks. Discuss other options for helping to protect sharks
 2. Discuss the identification of sharks observed during the dive
 3. Discuss non-natural injuries to sharks
 4. Identify breaches to the environmental guidelines for diving with sharks and provide remedial training
 5. Identify breaches to appropriate and responsible diving practices and provide remedial training
- f. Log dive (instructor signs log)

Resources and References

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AWARE Shark Conservation Knowledge Review

Answer the following questions. Your instructor will review your answers with you.

1. What are the unique physical attributes of sharks that can be used to tell them apart from bony fish?
 - a.
 - b.
 - c.

2. Fill in the missing information in the following table.

International Union for the Conservation of Nature (IUCN) Red List Review of 1044 Shark, Ray and Chimaera Species		
Critically Endangered	2%	
	4%	Very high risk of extinction in the wild
Vulnerable		High risk of extinction in the wild
	13%	Close to qualifying or likely to qualify for a threatened category in the near future
Least Concern	23%	Not qualifying as _____ including widespread and abundant species
Data Deficient	47%	

3. List the life history traits that make sharks vulnerable to overfishing.
 - a.
 - b.
 - c.
 - d.
4. List three reasons why sharks are important to marine ecosystems.
 - a.
 - b.
 - c.
5. Fill in the blanks in the following sentence:
 _____ is the main cause of the rapid decline in shark populations. It is mostly due to overfishing that many shark species are threatened with _____ .
6. List three key management strategies that can protect sharks.
 - a.
 - b.
 - c.
7. Name two ways in which sharks contribute to local economies.
 - a.
 - b.

8. Describe how your personal perceptions of the relationship between sharks and humans have changed as a result of taking this course.

9. List five personal actions you could now take to protect sharks.
 - a.
 - b.
 - c.
 - d.
 - e.

10. Name sharks found in your local area (or those sharks introduced to you by your instructor) and list their conservation status.
 - a.
 - b.
 - c.
 - d.
 - e.

11. List responsible environmental guidelines for diving with sharks.
 - a.
 - b.
 - c.
 - d.
 - e.
 - f.
 - g.

12. Name the two major ocean protection issues that Project AWARE is tackling and the social media platform through which you can connect with Project AWARE's worldwide movement of divers.
 - a.
 - b.
 - c.

Student Statement: I've completed this Knowledge Review to the best of my ability and any questions I answered incorrectly or incompletely I've had explained to me, and I understand what I missed.

Name _____ Date _____

AWARE Shark Conservation Knowledge Review – Answer Key

Answer the following questions. Your instructor will review your answers with you.

1. What are the unique physical attributes of sharks that can be used to tell them apart from bony fish?
 - a. *Skeleton made from cartilage*
 - b. *Lack of a swim bladder*
 - c. *Exposed gill slits*

2. Fill in the missing information in the following table.

International Union for the Conservation of Nature (IUCN) Red List Review of 1044 Shark, Ray and Chimaera Species		
Critically Endangered	2%	<i>Extremely high risk of extinction in the wild</i>
<i>Endangered</i>	4%	Very high risk of extinction in the wild
Vulnerable	11%	High risk of extinction in the wild
<i>Near Threatened</i>	13%	Close to qualifying or likely to qualify for a threatened category in the near future
Least Concern	23%	Not qualifying as <i>Threatened</i> including widespread and abundant species
Data Deficient	47%	<i>More information required for assessment</i>

3. List the life history traits that make sharks vulnerable to overfishing.
 - a. *It takes them a long time to reach sexual maturity*
 - b. *They have long gestation periods (one to two years)*
 - c. *They have a small number of offspring (pups)*
 - d. *They breed only every second or third year*
4. List three reasons why sharks are important to marine ecosystems.
 - a. *They keep a balance among prey species*
 - b. *They remove sick, injured and diseased animals*
 - c. *They protect seagrass beds from over-grazing*
5. Fill in the blanks in the following sentence:
Overfishing is the main cause of the rapid decline in shark populations. It is mostly due to overfishing that many shark species are threatened with extinction.
6. List three key management strategies that can protect sharks.
 - a. *International Plan of Action-Sharks (IPOA-Sharks)*
 - b. *Regional Fisheries Management Organisations (RFMOs)*
 - c. *Finning Bans*
 - d. *Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*
 - e. *Marine Protected Areas (MPAs)*
7. Name two ways in which sharks contribute to local economies.
 - a. *As a source of food*
 - b. *As tourism attractions*

8. Describe how your personal perceptions of the relationship between sharks and humans have changed as a result of taking this course.

No correct or incorrect answer. Statements written here may help you (the instructor) refine your teaching approach on future courses.

9. List five personal actions you could now take to protect sharks.

- | | |
|--|---|
| a. Get involved | h. Tread lightly on the planet |
| b. Make personal changes to protect sharks | i. Choose sustainable seafood |
| c. Join campaigns | j. Choose not to eat shark fin soup or shark meat |
| d. Support Marine Protected Areas | k. Avoid purchasing items that contain shark products |
| e. Tell others | l. Support genuine ecotourism operations |
| f. Respond to alarmist media stories | m. Make your dives count |
| g. Support Project AWARE | n. Be an AWARE diver |

10. Name sharks found in your local area (or those sharks introduced to you by your instructor) and list their conservation status.

Answers here should correspond to the information you (the instructor) gave your students about local sharks

11. List responsible environmental guidelines for diving with sharks.

- Be an AWARE diver*
- Do not touch, chase or harass sharks*
- Do not block their movement by swimming in front of them, allow them to move away*
- Do not block their exit if they are inside a cave or overhang*
- Do not descend on top of sharks*
- Do not get close to sharks*
- Be familiar with and follow local regulations and protocols*

12. Name the two major ocean protection issues that Project AWARE is tackling and the social media platform through which you can connect with Project AWARE's worldwide movement of divers.

- Shark Decline*
- Marine Debris*
- My Ocean*

Student Statement: I've completed this Knowledge Review to the best of my ability and any questions I answered incorrectly or incompletely I've had explained to me, and I understand what I missed.

Name _____ Date _____

AWARE Shark Conservation Guide to Impacts on Sharks

Use this guide to assess your dive location for features and characteristics that may have negative or positive impacts on sharks. This exercise need not be limited to the dive site; it can take place in as broad a geographic region as time and logistics allow. These are only some of the potential impacts to sharks; add additional impacts to this list that are found in your location.

Positive Impacts	How
Marine Protected Areas	<ul style="list-style-type: none"> • No-take MPAs give sharks a safe haven to replenish their populations
National Parks	<ul style="list-style-type: none"> • National Parks that protect coastlines also protect mangroves and other key shark habitats
Sewage and wastewater treatment plants	<ul style="list-style-type: none"> • Reduces the amount of nutrients entering the water
Waste management facilities	<ul style="list-style-type: none"> • Gross Pollutant traps prevent rubbish/litter in streams and stormwater drains from entering the ocean
Litter education programs	<ul style="list-style-type: none"> • Reduction in public littering on land leads to less marine debris
Dive tourism	<ul style="list-style-type: none"> • Places an economic value on protecting some shark species • Increases public awareness of shark threats and builds a desire to protect sharks • Builds an incentive for countries to create shark sanctuaries
Ecotourism	<ul style="list-style-type: none"> • Reduced environmental impacts through waste reduction and sewage management • Tourism revenue remains in the host country thereby reinforcing the value of natural assets • Educates guests about conservation issues
Conservation groups	<ul style="list-style-type: none"> • Raises public awareness of environmental concerns • Builds community support for environmental conservation • Lobbies government to increase protection • Opposes harmful developments
Mooring lines	<ul style="list-style-type: none"> • Protects substrates from anchor damage
Active dive community	<ul style="list-style-type: none"> • Strong voice in campaigns for marine protected areas • Divers can improve public awareness of shark issues through stories and photographs • Improve shark habitats through underwater marine debris removal • Divers become advocates for marine conservation • Increased diver knowledge of issues through training courses and dive trips
Land-based volunteer groups	<ul style="list-style-type: none"> • Complete foreshore cleanups resulting in a cleaner ocean • Complete mangrove and other habitat restoration work resulting in healthier coastal habitats



AWARE Shark Conservation Guide to Impacts on Sharks

Negative Impacts	How
Fishing (all types including dynamite and cyanide)	<ul style="list-style-type: none"> • Sharks caught as target species or as bycatch • Decrease in potential prey as fishing reduces fish populations • Disturbance to marine ecosystems results in less healthy habitats
Coastal development	<ul style="list-style-type: none"> • Removal of mangroves destroys shark habitats and nurseries • Decrease in ecosystem health through increased sedimentation, nutrients and pollution
Human population growth	<ul style="list-style-type: none"> • Increased demand for shark products • Increased demand for seafood • Increased demand for coastal developments • Increased recreational fishing activity • Disturbance to normal behaviour through increased boat traffic
Aquaculture Farms	<ul style="list-style-type: none"> • Removal of mangroves to make way for aquaculture farms • Pollution of ecosystems from antibiotics used to keep fish stocks healthy • Increased nutrients from feed and faeces • Reduction in marine ecosystem health • Decrease in potential prey as wild fish are caught to feed aquaculture animals
Sewage outfalls	<ul style="list-style-type: none"> • Increased nutrients lead to algae blooms and other ecosystem impacts
Offshore mining	<ul style="list-style-type: none"> • Potential for a major impact from oil spill (or other substance) • Disturbance to normal behaviour through increased boat traffic
Heavy industry	<ul style="list-style-type: none"> • Increased ocean pollution • Sharks have high concentrations of mercury (an industrial waste product) in their bodies
Farming	<ul style="list-style-type: none"> • Increase of nutrients in the water through fertiliser run off, leads to algae blooms and other ecosystem impacts • Pollution of water due to pesticide run off
Land clearance	<ul style="list-style-type: none"> • Removal of trees leads to increased soil sediments in the water that smother marine life and reduce visibility
Swimmer protection devices	<ul style="list-style-type: none"> • Beach nets and baited drumlines catch and kill sharks of all species including those not a danger to humans • They also catch and kill potential prey species such as dolphins, turtles and rays
Global climate change	<ul style="list-style-type: none"> • Increased sea temperatures, changing ocean currents and increased storm ferocity will have many negative impacts on marine ecosystems
Coral bleaching (due to increased sea temperatures)	<ul style="list-style-type: none"> • Reduction in coral reef health • Reduction in coral reef ability to support a large and diverse marine life community
Marine debris	<ul style="list-style-type: none"> • Sharks ingest or become entangled in marine debris • Sharks are caught in ghost nets • Reduction of prey species through ingestion or entanglement
Anchor use	<ul style="list-style-type: none"> • Destroys substrates impacting on the food chain
Aquarium collecting	<ul style="list-style-type: none"> • Removal of juvenile sharks for aquariums • Reduction in the health of marine ecosystems

Web-based Resources

Project AWARE

Sharks In Peril

www.projectaware.org/project/sharks-peril

Get involved in Project AWARE's work to gain greater protection for sharks.

Sharks In Peril Resources

www.projectaware.org/category/resource-zone/sharks

Resources to help you protect sharks; petition sheets, posters, web banners and more.

Other Resources

www.projectaware.org/category/resource-zone/other

Further Project AWARE resources to help you protect our ocean planet including *Ten Ways A Diver Can Protect the Underwater Environment*, *Ten Tips for Underwater Photographers* and *Project AWARE, Our World Our Water*.

Shark Identification and Information

Shark Foundation

www.shark.ch/Database/

Search for shark information using scientific names as well as English, German, French and Spanish common names. Website available in English and German.

ReefQuest Centre for Shark Research

www.elasmo-research.org/education/ecology/id-guide.htm

Comprehensive listing of known shark species and a flowchart style identification guide. Use pictures and key body features to identify your shark.

The Shark Trust

www.sharktrust.org/v.asp?level2id=6160&rootid=6160&depth=1

Shark database, factsheets and ID guides plus much more shark information.

Marine Species Identification Portal

<http://species-identification.org/index.php>

An online version of the UNESCO publication *Fishes of the North-eastern Atlantic and the Mediterranean*. Use the search facility or to browse shark listings click on "Fishes - Rays, Skates and Sharks" in the left column.

Australian Museum

<http://australianmuseum.net.au/animalfinder/Shark-ray-and-chimaera-finder>

Information on 62 species of sharks, rays and chimaeras found in Australian waters. Many also found worldwide.

Shark Alliance

www.sharkalliance.org/content.asp?did=35766

Download a guide to European sharks plus lots of other shark information.

Canadian Shark Research Laboratory

www.marinebiodiversity.ca/shark/english/key.htm

Identification key to 19 species of sharks found in waters around Atlantic Canada.

Shark Threats, Management and Conservation

IUCN Red List of Threatened Species

www.iucnredlist.org/

Find the conservation status of each shark on the IUCN Red List of Threatened Species including distribution, habitats and threats.

Shark Specialist Group, IUCN

www.iucnssg.org/index.php/conservation

Information on many topics covered in this course, including fisheries management and finning. Look under “Publications” for global and regional status reports.

Shark Advocates International

www.sharkadvocates.org

Provides leadership in advancing science-based national and international shark conservation policies, and is a reliable source for shark and ray related information.

International Plan of Action for Conservation and Management of Sharks, FAO

www.fao.org/fishery/ipoa-sharks/about/en

Information on the IPOA-Sharks that aims to ensure the conservation and management of sharks and their long-term sustainable use.

International Shark Attack File

www.flmnh.ufl.edu/fish/sharks/isaf/isaf.htm

Read the facts about shark attacks.

Sustainable Seafood Guides

Marine Stewardship Council

www.msc.org/

Marine Stewardship Council runs an ecolabelling and certification program to help you choose sustainable fish products. Find which seafood products are certified by clicking on the map.

Australia: Australian Marine Conservation Society

www.amcs.org.au/Sustainable-Seafood-Guide-Australia.asp?active_page_id=695

UK: Marine Conservation Society

www.fishonline.org/

USA: Monterey Bay Aquarium

www.montereybayaquarium.org/cr/seafoodwatch.aspx

WWF: Guides for many countries and languages

wwf.panda.org/what_we_do/how_we_work/conservation/marine/sustainable_fishing/sustainable_seafood/seafood_guides/

Country specific sustainable seafood guides in many languages, plus links to additional sources.

Ten Ways a Diver Can Protect the Underwater Environment

1. Dive carefully to protect fragile aquatic ecosystems

Many aquatic organisms are delicate and can be harmed by the bump of a camera, the swipe of a fin or even the gentle touch of a hand. Some aquatic organisms like corals grow very slowly and breaking even a small piece can destroy decades of growth. By being careful you can prevent longterm damage to magnificent dive sites.

2. Be aware of your body and equipment placement when diving

Keep your gauges and alternate air source secured so they don't drag over the reef or other vital habitat. Control your buoyancy, taking care not to touch fragile organisms with your body or equipment. You can do your part and prevent injury to aquatic life every time you dive.

3. Keep your dive skills sharp through continuing education

Before heading to open water seek bottom time with a certified professional in a pool or other environment that won't be damaged. You can also refresh your skills and knowledge with a PADI Scuba Review, PADI Advanced Open Water Diver course or Project AWARE Specialty course such as Peak Performance Buoyancy.

4. Consider how your interactions affect aquatic life

Avoid touching, handling, feeding or riding on aquatic life. These actions may stress the animal, interrupt feeding and mating behavior or provoke aggressive behavior in normally nonaggressive species.

5. Understand and respect underwater life

Playing with animals or using them as food for other species can leave a trail of destruction, disrupt local ecosystems and rob other divers of their experiences with these creatures. Consider enrolling in a PADI Underwater Naturalist, AWARE Fish Identification or Coral Reef Conservation Specialty course to better understand sustainable interactions.

6. Be an ecotourist

Make informed decisions when selecting a destination and choose Project AWARE Environmental Operators or other facilities dedicated to sustainable business practices. Obey all local laws and regulations and understand your effect on the environment. Don't collect souvenirs like corals or shells. Instead, take underwater photos and follow Project AWARE's *10 Tips for Underwater Photographers*.

7. Respect underwater cultural heritage

Divers are privileged to access dive sites that are part of our cultural heritage and maritime history. Wrecks can also serve as important habitats for fish and other aquatic life. Help preserve these sites for future generations by obeying local laws, diving responsibly and treating wrecks with respect.

8. Report environmental disturbances or destruction

As a diver, you're in a unique position to monitor the health of local waters. If you notice unusual depletion of aquatic life, injury to aquatic animals or strange substances in the water, report these observations to responsible authorities in your area.

9. Be a role model for other divers and nondivers when interacting with the environment

As a diver, you see the underwater results of carelessness and neglect. Set a good example in your own interactions so that others can learn from you.

10. Get involved in local environmental activities and issues

You can greatly affect your corner of the planet. There are plenty of opportunities to support healthy aquatic environments including Project AWARE conservation and data collection activities like local beach and underwater cleanups and CoralWatch monitoring, supporting environmental legislative issues, attending public hearings on local water resources, conserving water or making responsible seafood choices.



Selected References

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PADI Adventure Dive Training Record Adventure Dive: AWARE Shark Conservation

Skills Overview

- Knowledge Review
- Briefing
- Suiting Up
- Pre-dive Safety Check (BWRAF)
- Identify surface and underwater hazards to sharks and features that may reduce impacts on sharks
- Dive responsibly with sharks
- Minimise negative environmental impacts
- If sharks are seen
 - Follow guidelines for diving with sharks
 - Observe shark behaviour and non-natural injuries
- Debrief
- Log Dive - Complete Adventure Dive Training Record

Instructor Statement

"I verify that this student diver has satisfactorily completed the Knowledge Review and Performance Requirements for Open Water Dive One (as described in the AWARE Shark Conservation Diver Instructor Guide) for this PADI Adventure Dive. I am a renewed, Teaching status PADI Instructor for the current year."

Instructor Name: _____

Instructor Signature: _____

PADI #: _____ Completion Date: _____
Day/Month/Year

Instructor Contact Information (Please Print)

Instructor Mailing Address: _____

City: _____ State/Province: _____

Country: _____ Zip/Postal Code: _____

Phone/Fax/email: _____

Student Diver Statement

"I verify that I have completed all of the Performance Requirements for this Adventure Dive. I realize that there is more to learn about shark conservation and diving with sharks and that completion of the AWARE Shark Conservation Diver course is highly recommended. I also agree to abide by PADI Standard Safe Diving Practices."

Student Diver Signature: _____ Date: _____
Day/Month/Year

Specialty Training Record AWARE Shark Conservation

Instructor Statement

"I verify that this student diver has satisfactorily completed all academic and, if required, any confined water training sessions as outlined in the AWARE Shark Conservation Diver Specialty Course Instructor Guide. I am a renewed, Teaching status PADI Instructor in this specialty."

Instructor Name: _____ PADI #: _____

Instructor Signature: _____ Completion Date: _____
Day/Month/Year

Open Water Dives

Dive One

I verify that this student diver has satisfactorily completed Dive One as outlined in the AWARE Shark Conservation Diver Instructor Guide, including:

- Identification of potential surface and underwater hazards to sharks
- Use of appropriate dive behaviour to minimise negative effects

I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name: _____ PADI #: _____

Instructor Signature: _____ Completion Date: _____
Day/Month/Year

Dive Two

I verify that this student diver has satisfactorily completed Dive Two as outlined in the AWARE Shark Conservation Diver Instructor Guide, including:

- Identification of surface and underwater features that may reduce impacts on sharks
- Use of appropriate dive behaviour to minimise negative effects

I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name: _____ PADI #: _____

Instructor Signature: _____ Completion Date: _____
Day/Month/Year

Student Diver Statement

"I verify that I have completed all performance requirements for AWARE Shark Conservation Diver Specialty. I am adequately prepared to dive in areas and under conditions similar to those in which I was trained. I agree to abide by PADI Standard Safe Diving Practices."

Student Diver Name: _____

Student Diver Signature: _____ Date: _____
Day/Month/Year