



SHARKWATER EXTINCTION

EDUCATOR'S GUIDE

SHARKWATER.COM

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ABOUT THIS GUIDE

This resource is intended for use by environmental educators and by teachers of intermediate and secondary school grades to accompany the documentary *Sharkwater: Extinction*. Included are suggestions for pre-and post-viewing and other activities that deepen understanding of the film's messages and motivate student action for shark conservation. The activities offer cross-curricular learning opportunities in science, social sciences, civics, language arts, media studies and environmental education. Students are called upon to exercise inquiry, research, planning, creative and communication skills and to engage in critical thinking, collaboration, assessment, decision making and problem solving. Activities may be adapted to suit different grade levels and learning styles.

The Guide also includes Educator Notes and Answers ([page 10](#)), Glossary ([page 15](#)) and Resources ([page 18](#)).

Key concepts include:

- Sharks are vital to the health of ocean ecosystems
- Oceans are a source of water, food and air essential for life on earth
- Many human activities, including shark finning, threaten the existence of sharks
- Current policies worldwide are not adequate to conserve sharks – immediate further action is required to prevent shark extinction
- Public education is needed to correct misconceptions about sharks
- One individual has the power to make a positive difference to the environment

We encourage you and your students to explore the *Sharkwater* website for additional resources that can be used to stimulate discussion about the issues raised in the film.





ABOUT THE FILM

Sharkwater: Extinction is a dramatic documentary following filmmaker Rob Stewart and his crew in their quest to expose the illegal shark fin industry and the political corruption behind it, a conspiracy that is leading to the extinction of sharks. The movie reveals that, despite laws banning shark finning in most parts of the world, the practice continues. Pirate fishing and fin processing are caught on camera in locations such as Costa Rica and Panama in Central America and Cabo Verde in West Africa. Other forces threatening shark survival are also investigated: Rob encounters people hunting sharks for sport in Florida and witnesses the devastation of drift net use in California; the team goes shopping and discovers that not only is shark available for sale at fish counters (sometimes disguised under other names), but it is also an ingredient found in a host of other products, including pet food, fertilizers and even cosmetics. The evidence points to increasing exploitation of sharks, creatures vital to the health of our oceans and our own survival.

This film is about more than protecting sharks and saving the oceans; the documentary is also a tribute to Rob Stewart, the dedicated filmmaker and environmentalist who lost his life during filming. Rob strongly believed in the capacity of young people to make a difference in the world and wanted to motivate them to take up his cause. The film ends with clips of some of his moving encounters with students who have been inspired by his passion and commitment.

Sharks are incredibly important animals to the oceans and thus, life on earth . . . but they are quietly disappearing during our lifetime.

Rob Stewart
1979 - 2017

The documentary contains scenes of sharks in distress that some students may find disturbing. There are minor instances of graphic language to be aware of. The subject matter, especially the death of the filmmaker, may trigger emotional response among students.



ABOUT THE FILMMAKER

Rob Stewart was a biologist, conservationist, activist, author and filmmaker. His greatest impact was through his films, his books and the millions of supporters that carry on his mission worldwide.

Rob began photographing underwater when he was only 13 years old. He made his first film *Sharkwater* at the age of 22 after witnessing illegal longlining and indiscriminate killing of sharks within marine reserves. He was the first to bring the devastating issue of shark finning to the world stage and his efforts have resulted in increased protection of shark populations.

Rob's previous films, *Sharkwater* (2006) and *Revolution* (2012), won more than 70 international awards and have been viewed by over 125 million people. His final film, *Sharkwater: Extinction*, keeps the spotlight on the need to end shark exploitation.

In January, 2017, while shooting the film, Rob tragically passed away during a dive off the Florida Keys. The US Coast Guard reported that the search for Stewart was the largest they had ever experienced. Thousands offered help. 60,000 watched his funeral online.

Rob worked tirelessly on conservation and environmental education. Multiple awards in his name have been created and film festivals, universities and conservation groups worldwide continue to honour him.

For more about this remarkable man, read his compelling book, *Saving the Humans*, which documents his life's journey from childhood "animal nerd" to one of the world's leading environmental activists.

A rare gift to the oceans and the world . . . He has inspired a whole generation of young people, many of whom will go on and amplify Rob's work.

David Suzuki
Environmentalist

I believe Rob did more for making shark conservation important than any scientist to date.

Dr. Chris Harvey-Clark
Dalhousie University



BACKGROUND

Sharkwater: Extinction follows award-winning filmmaker Rob Stewart on his mission to expose the illegal shark fin industry that threatens the very existence of sharks. These invaluable creatures are essential for maintaining the health of the oceans and the survival of the entire planet.

Sharks are being fished to extinction in an ecosystem they have controlled for over 400 million years. Their populations have dropped more than 90% in the last 40 years alone. Without the oceans' main predator, marine ecosystems are being destroyed beyond repair. This threatens the survival of sea life and, in fact, puts all living things at risk, including humans.

Rob Stewart's first film, [*Sharkwater*](#) (2006), brought to public attention the cruel practice of shark finning, in which a shark's fins are cut off and collected while the rest of its body is discarded, usually at sea. Unable to swim, the shark slowly dies. The prized fins are sold at huge profit mainly for use in shark fin soup, an Asian delicacy. Over 70 million sharks are killed each year in this billion-dollar industry.

Sharkwater exposed this scandal and is credited with changing laws and public policy around the world. Today, more than 90 countries have banned shark finning or the trade of shark products.

However, sharks continue to face significant threats. Finning is still rampant and endangered sharks are being used to make shark fin soup as well as a wide range of other products, including pet food, fertilizers and cosmetics. Climate change, marine pollution and commercial fishing methods put additional pressure on dwindling shark populations. Without our help, how will these creatures survive?

For *Sharkwater: Extinction* Rob and his crew travelled to locations across four continents, turning the spotlight on the ongoing plight of sharks to help bring an end to their needless slaughter.

Sadly, Rob died in a diving incident off the coast of Florida during filming. His family, friends and team members rallied to complete this last film on his behalf in the hopes of inspiring others, especially young people, to carry on his mission to save sharks, the world's oceans and the planet itself.

Conservation is the preservation of human life. And, that, above all else, is worth fighting for.

Rob Stewart
1979 - 2017



PRE-VIEWING ACTIVITIES

1

Take a survey of the class to get a general sense of attitudes about and knowledge of sharks. Collect key words and ideas to refer back to after screening the film.

- What are your first thoughts when you hear the word “shark”?
- What do you know or think you know about sharks?

2

Have students watch the *Sharkwater: Extinction* movie [trailer](#).

- What are your thoughts/feelings about it?
- What are you curious to know more about?

3

Introduce students to Rob Stewart, the remarkable conservationist/filmmaker behind *Sharkwater: Extinction*. Share his biography. Explain that Rob died in a diving incident during production of the film. His colleagues completed the documentary to honour his legacy and to continue his mission to save sharks and the world’s oceans.

4

Before watching the film, have the class screen this short [video](#) made by Rob in advance of production. Note that some students may find graphic scenes of shark finning disturbing (scenes like these are also included in the full documentary).

5

Choose from these discussion starters to prepare for some of the issues raised in the film. Ask students to reflect and comment. Keep track of responses to compare with those following the screening.

- The film you are about to see argues that sharks are the most important predators on the planet.
- Some people believe that protecting sharks is not a priority for Canada.
- There is very little that we as a class can do to contribute to shark conservation.



POST-VIEWING ACTIVITIES

1

Re-visit the responses collected during class discussion in advance of the film to compare with post-viewing feedback.

- Have your perceptions, opinions or attitudes changed? How?

2

Choose from these prompts and questions to guide discussion:

- In a single word, how did you feel at the end of the film?
- Which image or scene is most memorable for you? Why?
- Did anything in the documentary surprise you?
- What would you like to explore further or know more about as a result of the film?
- What is the main message you take away from the documentary?
- What do you think is the biggest hurdle to overcome to make positive change?
- Are you willing to commit to any actions as a result of screening the film?

3

Have students choose one project from the following:

- **Write a response or reaction paper** to the film (250 to 500 words). Give a personal assessment of the movie, its message and its impact on you.
- **Create a playlist** or choose a piece of music that you think reflects the movie overall. Explain your choice(s).
- **Design a DVD cover** for the film. Use images from the website photo [gallery](#) or your own artwork. Include text to promote the movie. Explain your choices.

4

Screen this short [video](#) (1:02) tribute to Rob Stewart. Ask students to reflect and discuss.

- Can you think of other people who have championed a cause to bring about change?
- Can you imagine yourself or someone you know doing something similar?
- What might motivate you to take up a cause?

5

Hold a discussion or divide the class into teams for a debate on any of these statements, which can also serve as writing prompts.

- Outlawing shark fin soup is the single most important step for the protection of sharks.
- It's too bad if sharks become extinct, but it's not the end of the world.
- Rob Stewart has said that learning about protecting the environment should be a priority in schools. "Why are we taught Shakespeare and algebra before we're taught conservation?"

A photograph of a shark and a diver underwater. The shark is on the left, swimming towards the right. The diver is on the right, swimming towards the left. The water is clear and blue.

SUPPLEMENTARY ACTIVITIES

Optional activities to extend learning, deepen understanding and motivate action for shark conservation.

Shark Fact Or Fiction?

Sharks are often the subject of sensationalized stories portraying them as dangerous killers. From *Jaws* to *Sharkweek*, the media frequently encourages an exaggerated fear of sharks, rather than respect for their ecological importance. In order to form an accurate and educated opinion about sharks and shark conservation, students are tasked with researching these subjects using reliable resources.

- You may want to review tips on recognizing false content in online resources.
- See Resources for a selection of recommended sites.
- See Educator Notes and Answers for the Shark Fact or Fiction? answer sheet.

People tell you your whole life to be afraid of sharks . . . but the reality is totally different.

INSTRUCTIONS

1. Distribute the Shark Fact or Fiction? handout sheet (Appendix) and ask students to circle their responses.
2. Working as individuals or in pairs or small groups, students then conduct research to verify or correct their answers making note of their sources.
3. Students tally their scores, compare notes and discuss.

DIVE DEEPER Students can use the information collected from their research and from the Sharkwater [Shark Database](#) to create their own fact-or-fiction quiz to challenge the rest of the class.

Quotes throughout the guide may be used as kick-starters for class discussion or as essay topics. Unless otherwise noted, all are from Rob Stewart. Some are taken from the Sharkwater: Extinction documentary and others from the book, Save the Humans.

I thought if I could change the public's view of sharks, then maybe they'd want to fight for their protection like they fight for pandas and elephants and bears.

SUPPLEMENTARY ACTIVITIES

Spread the Word

Wildlife conservationists often have to defend their activities on behalf of animal species that have a negative reputation or are not considered as appealing or likeable as others. Sharks are a perfect example of this struggle – the media frequently represents sharks as vicious killers that should be feared. Given the misconceptions and apprehension that exist around sharks, how can we convince the public that these creatures are worth saving?

This project challenges students to prepare a marketing campaign to convince the public to engage in shark conservation. Students will use persuasive techniques, and apply their research skills using reputable resources to support their arguments. They will explore the use of different media (such as video, images, text, music, social media) and apply their creativity in designing an effective campaign to present to the class.

- See Educator Notes and Answers for examples of public awareness campaigns and sample techniques.

INSTRUCTIONS

1. Introduce the activity by asking students for examples of memorable campaigns (in print, audio, video, social media) that call on the public for support.
2. Review the examples and discuss the techniques used, such as catchy slogans, impressive statistics, celebrity endorsements, advice from experts, humour, drama, strong visual images, colour, emotional pull, logic/reason, music....
3. Divide the class into pairs or small groups to design their own public awareness campaigns using media of their choosing.
4. Distribute the Spread the Word handout sheet (Appendix) and review the instructions for preparing a campaign outline.
5. Have groups hand in or exchange their outlines with other groups for review and evaluation.

DIVE DEEPER Groups produce their campaigns to present to the class and to share with other audiences in school and beyond.

People want to do good, but they need to be informed in order to do it.

Sharks have survived five mass extinctions. Will they survive us?

SUPPLEMENTARY ACTIVITIES

Take Action!

As apex predators, sharks play a vital role in the health of our oceans and, given the importance of oceans to the overall well-being of the planet, are key to the survival of all living things. In this activity, students explore the importance of shark conservation and examine some of the threats to shark survival. Working in small groups, they choose a single threat to investigate and then create a plan of action to address the issue. They will use their research to help justify their recommendations, and present their plan of action to the class.

- See Resources for a sampling of reliable sites for students to consult.

INSTRUCTIONS

1. Develop a mind map on the board to brainstorm the importance of sharks and their conservation. Alternatively, divide students into groups to create individual mind maps to be shared in a follow-up class discussion. Sample prompts and responses:

- Why are sharks considered an essential species?
 - Oceans (sometimes called the “lifeblood” of planet Earth) cover nearly three-quarters of the globe, hold 97% of the planet’s water, produce more than half of the oxygen in the atmosphere, and absorb the most carbon from it.
 - As apex predators at the top of ocean food webs, sharks help control fish and marine mammal populations to keep ocean ecosystems balanced and healthy.
- Why is it important that we invest in shark conservation?
 - Shark populations are dwindling; an estimated 100 million or more sharks are lost each year, over 70 million to shark finning.
 - 11 shark species are critically endangered, 15 are endangered and 48 are vulnerable.
 - If sharks are fished to extinction, the health of all life forms everywhere is at risk.

The animal we fear the most is the one we can't live without.

Start talking about this, tell your friends . . . it's not until it becomes a public issue that anything will really happen . . . but for sure it'll happen!

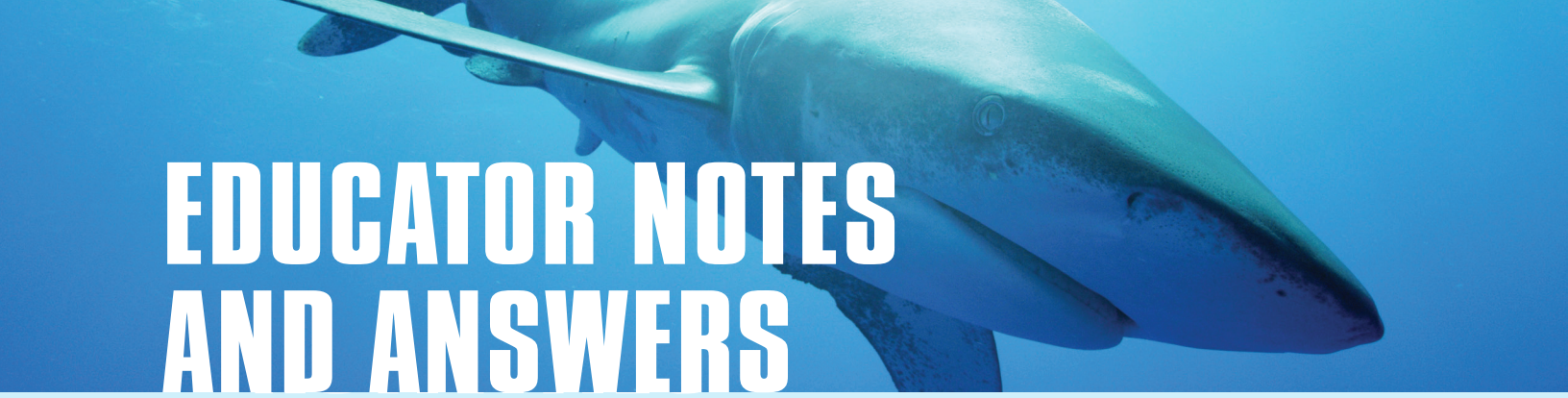
SUPPLEMENTARY ACTIVITIES

2. Ask students to generate a list of possible threats to shark survival. For example:
 - Shark finning
 - Overfishing
 - Bycatch (the result of longlining, drift nets, etc.)
 - Sport fishing
 - Pollution (including plastic products and microplastics)
 - Climate change
 - Ocean acidification
3. Distribute the Take Action! handout sheet (Appendix) to students in small groups. Have each group select one of the identified threats to investigate. Allocate a specific length of time for research to answer the questions outlined on the sheet.
4. Based on their findings, groups prepare a bullet-point plan of action that they and the rest of the class can take to address the issue. For example:
 - a petition
 - volunteering
 - collecting donations
 - conducting a boycott
 - public awareness campaign
 - a letter to government or relevant organizations
 - committing to take personal actions such as avoiding unsustainable seafood or cutting back on use of plastic products, etc.
5. Each group presents their plan of action to the class with research to support their recommendations.

DIVE DEEPER Students vote on which plan of action to commit to and carry out as a class project.

Fighting for something greater than ourselves . . . has the potential to unite humanity to a degree never before seen in our history.

The place to be isn't on the couch - it's on the frontlines!



EDUCATOR NOTES AND ANSWERS

Background and additional information for the activities outlined in the Guide.

Pre-viewing Activities

...sharks are the most important predator on the planet.

Oceans are considered to be essential to life on Earth. As apex predators at the top of ocean food webs, sharks help control fish and other populations to keep our most important ecosystem balanced and healthy.

...protecting sharks is not a priority for Canada.

This is a global issue. If sharks are fished to extinction, the health of all life forms everywhere – in the oceans and on land – is at risk.

There is very little that we as students can do to make a difference...

Watch this short [video](#) (4:44) to see the remarkable achievements of one Grade 6 class inspired by Rob Stewart and *Sharkwater*.

Post-viewing Activities

Outlawing shark fin soup is the single most important step...

Shark finning is a significant threat with estimates of over 70 million sharks killed for their fins each year, mostly for use in shark fin soup. Other threats include: overfishing, bycatch, sport fishing, pollution, climate change and ocean acidification.

Supplementary Activities

Shark Fact or Fiction?

For information on recognizing false content in online resources: <https://mediasmarts.ca/tag/categories/digital-citizenship>

ANSWERS

1. Sharks appeared on earth 200 million years before dinosaurs. TRUE.

Sharks have been living in the Earth's oceans for over 450 million years, and have survived 5 mass extinctions.

2. Sharks must keep moving to stay alive. TRUE – for some species.

Some species of sharks must swim in order to keep oxygen-rich water flowing over their gills. Other species use a pumping motion of the pharynx to pass water through their respiratory system and obtain oxygen.

EDUCATOR NOTES AND ANSWERS

3. Sharks are only found in salt water. FALSE.

Of more than 400 species of sharks, six known species live in freshwater. All but one are on the species at risk list.

4. Sharks have seven senses. TRUE.

Sharks have the same five senses as humans (touch, smell, taste, hearing, and sight). Sharks are also electroreceptive (can sense electric fields) and pressure-receptive (can detect pressure changes in water).

5. Sharks have no predators. FALSE.

Humans have become the main predator of sharks. An estimated 100 million sharks are killed by humans every year, but this is a conservative estimate.

6. Sharks frequently attack people. FALSE.

Shark attacks are very rare. You are more likely to be struck by lightning than attacked by a shark. There were only five shark-related human deaths in 2017.

7. There is shark fin trade in Canada. TRUE.

Although shark finning is banned in Canada, there is no ban on the import of shark fins – including the fins of threatened and endangered species. Rob Stewart's first documentary, *Sharkwater*, inspired worldwide bills to ban the importation or sale of fins. Today over 90 countries have banned shark finning.

8. Shark is a healthy source of protein for humans. FALSE.

Shark fins provide no nutritional value, and although shark meat is high in protein and fatty acids, it can be harmful to eat. As top predators, sharks accumulate toxins like mercury from their prey that can have serious health effects for humans.

9. A drop in shark populations will be beneficial for other species. FALSE.

Sharks are apex predators, and therefore control the balance and trophic structure of ocean ecosystems. Without them, some species will become overpopulated, while other species will become rare.

EDUCATOR NOTES AND ANSWERS

10. Shark diving is a tourist attraction that can help contribute to shark conservation. TRUE.

Diving with sharks is now commonplace — the image of Rob Stewart hugging a shark is iconic. Shark diving can be an effective ecotourism activity that can help people discover the wonder of sharks and the value of preserving them. A healthy shark tourism industry may sometimes even replace fishing as a source of income for local people. However, it is important to remember that shark diving must be regulated to avoid harmful disturbance to sharks or their ecosystems.

Spread the Word

A public awareness campaign can include any number of components: infographic, word cloud poster, public service announcement video (PSA), radio ad, podcast, blog, editorial cartoon, music jingle, rant or rap, bumper sticker, T-shirt, etc.

Some persuasive argument techniques for use in any media:

- Appeal to the heart as well as the head. Trigger emotions, such as sympathy, joy, pride, fear, guilt...
- Use hard evidence to make your argument appear logical and reliable. For example: statistics, research findings or expert statements from trustworthy resources.
- Use soft evidence, such as anecdotal evidence, opinions or testimonials.
- Use personal pronouns to help the audience relate and commit to your message.
- Use imperatives or commands. Is it a more convincing call to action to say “You must help us!” or “If you would like, you could help us.”?

For more: <http://www.readwritethink.org/professional-development/strategy-guides/developing-persuasive-writing-strategies-30965.html?main-tab=1#main-tabs>

Sources of samples to analyze for persuasive techniques:

- Public service announcements and other **videos** from WWF-Canada <https://www.youtube.com/wwfcanada>
- Shorty Awards for Social Good on Twitter, Facebook, Tumblr, YouTube, Snapchat, Instagram and other **social media**. See entries in the animal/wildlife category: <http://shortyawards.com/archive/socialgood/all-years/animal-wildlife>

EDUCATOR NOTES AND ANSWERS

- Public service announcements for **radio** from the Sierra Club <https://www.sierraclub.org/radio/station-managers>
- **Print** product/info-graphic example from The Pew Environment Group <http://www.pewtrusts.org/en/research-and-analysis/data-visualizations/2012/infographic-sharks-count>

Sample Analysis

- Target audience: teens and adults with little or no knowledge about shark conservation
- Message: inform the audience about the threat to sharks and encourage them to support shark conservation – establish sanctuaries, end fishing, regulate trade
- To attract attention: strong graphic images, fonts and colour
- Persuasive techniques: hard evidence (statistics); imperatives, appeals to the head and the heart

Some links for taking public awareness campaign outlines through to production:

- [Planning a Public Service Announcement](#) (EduGains) An in-depth media literacy lesson.
- [Listen Up!](#) (Scribd) A lesson plan for writing a rant.
- [10 Fun Tools To Easily Make Your Own Infographics](#) (Edudemic) A review of ten popular tools for creating visualizations.
- Sample [student assignment and assessment rubric](#) (Scribd) for creating a public service poster.

Ways and means for students to consider to publicize campaigns: school announcements, school assembly, poster blitz, fund-raising event, media release (include news outlets, conservation groups and government), social media posts, etc.

Take Action!

Out of 465 shark species, 11 are critically endangered, 15 are endangered and 48 are vulnerable (www.iucnssg.org).

Threats against sharks include:

- Shark finning www.cbc.ca/news/technology/shark-fins-1.4262628
- Overfishing <https://sharksincanada.ca/home/threats-in-canada/>
- Bycatch (the result of longlining, drift nets, etc.) http://wwf.panda.org/our_work/oceans/problems/bycatch222/bycatch_victims/

EDUCATOR NOTES AND ANSWERS

- Sport fishing www.nature.com/news/anglers-online-boasts-reveal-illegal-shark-hunting-1.22475
- Pollution (including plastic products and microplastics) www.weforum.org/agenda/2016/01/how-much-plastic-is-there-in-the-ocean/
- Climate change www.dfo-mpo.gc.ca/science/oceanography-oceanographie/accasp-psaccma/index-eng.html
- Ocean acidification <https://oceanconservancy.org/blog/2014/08/20/ocean-acidification-wrecks-sharks-smellovision/>

On developing a plan of action in schools from Advocates for Youth: <http://www.advocatesforyouth.org/publications/publications-a-z/2229-youth-activists-toolkit>

Elements in a plan of action to consider:

- A letter to government www.legalline.ca/legal-answers/writing-to-your-mp-or-mpp/
- A petition www.ourcommons.ca/marleaumontpetit/DocumentViewer.aspx?Lang=E&Sec=Ch22&Seq=3
- Volunteering with shark research or conservation organizations <https://ecologyaction.ca/sharksacrosscanada>
- Committing to sustainable seafood <http://www.seachoice.org/>
- Avoiding plastic straws <https://davidsuzuki.org/story/plastic-straws-suck/>

How students can help continue Rob Stewart's work in shark conservation:

- Sign the [Pledge to Save Sharks](#)
- Offer to [volunteer](#) via the Sharkwater website or other shark conservation groups
- Stay informed by signing up for the Sharkwater [newsletter](#)
- [Donate](#) to WWF-Canada in memory of Rob
- Follow Sharkwater on:
 - Facebook <https://www.facebook.com/SharkWater>
 - Instagram <https://www.instagram.com/teamsharkwater/>
 - Twitter <https://twitter.com/teamsharkwater>



GLOSSARY

Aquatic environment: A water-based environment, such as a pond, lake, river or ocean.

Biodiversity: The variety of life on Earth, as well as relationships between different species and between species and their environment.

Bycatch: Fish and other wildlife accidentally captured during the process of commercial fishing for another species. These unintended catches are usually cast back into the sea dead or dying.

Carnivore: Animals that eat mostly other animals, including herbivores, omnivores, and other carnivores. Most shark species are carnivores.

CITES: The Convention on International Trade in Endangered Species of Wild Fauna and Flora is an agreement among governments that controls the trade of more than 35,000 wild animal and plant species. The goal is to ensure that international trade does not threaten the survival of any protected species.

Climate change: A significant, long-term change in the world climate, which can be brought about by either human or natural factors. Increasing global temperatures have many effects on the world's oceans, including changing currents, rising sea levels, increased temperatures, the melting of sea ice, and ocean acidification.

Conservation: Use of natural resources only when needed in order to reduce waste and prevent loss of resources.

DNA: Deoxyribonucleic acid (DNA) is a molecule that encodes an organism's genetic blueprint. DNA contains all of the information required to build and maintain an organism. DNA can be used to identify a particular species or individual.

Drift nets: Large sheet-like mesh fishing nets that are held vertically in the water by weights at the bottom of the net and floaters at the top of the net. They are used regularly in illegal commercial fishing and often capture bycatch of threatened and endangered species.

Ecosystem: A system made up of a group of living organisms and their environment.

Endangered species: A species that is in danger of extinction in the foreseeable future.

Environment: All the living and non-living elements that surround organisms and influence their survival and development.

Extinction: The complete and permanent disappearance of a species from the earth.

Film locations – Costa Rica, the Bahamas, Florida, Panama, Cabo Verde, California. Rob Stewart and his team visited these sites during production of *Sharkwater: Extinction*.

Food web: A complex network of feeding relationships among species, including predator and prey, within an ecosystem.

Herbivore: An animal that eats plants; can be the prey of carnivorous predators.

GLOSSARY

International laws on shark finning/ fishing: Some countries have put in place full or partial bans on the practice of shark finning and/or shark fishing. See The Animal Welfare Institute [website](#) for a list of bans and policies.

Long line fishing: A commercial fishing method that uses baited hooks suspended in the water from a long main fishing line to catch fish. These hook-lines often capture bycatch of threatened and endangered species.

Microplastics: Small pieces of plastic (less than five millimeters long – about the size of a sesame seed); the most commonly found type of plastic pollution in oceans and water systems. Microplastics pose a major threat to fish and other wildlife.

Ocean acidification: Rising levels of carbon dioxide (CO₂) in the atmosphere dissolve in sea water to increase acid levels in the oceans. Normally, the acid is gradually neutralized by limestone-rich, deep water. Unfortunately, expanded use of fossil fuels (for transportation, heating/cooling, manufacturing, etc.) has led to the release of CO₂ at a rate the oceans cannot readily process. This has a negative impact on any organism that builds a shell or skeleton – animals that are essential for the continued operation of ocean ecosystems.

Organism: A living thing; an individual animal, plant or single-celled life form.

Omnivore: An animal that eats both plants and other animals.

Overfishing: When fishing practices become unsustainable; overfishing occurs when more fish are caught than the population can replace through natural reproduction. Overfishing can upset the balance of ecosystems and threaten the long-term success of fishing industries.

Pirate fishing: Illegal, unreported and unregulated fishing practices that contribute to overfishing and threaten ocean ecosystems; sometimes linked to human rights violations and organized crime. Pirate fishermen sell their illegal catch for huge profits and threaten the food supply and livelihoods of coastal communities around the globe.

Pollution: Contamination of the air, water, or soil that causes harm to the health of the environment.

Population: The number of individuals of a specific species in a specific area at a specific time.

Predator: An organism that kills and consumes another (prey). Sharks are apex predators, species at the top of the food web. They play an important role in maintaining the balance of an ecosystem by controlling the populations of other species. When an apex species is removed from an ecosystem, the health of the entire system is threatened.

Prey: An organism that is killed and consumed by a predator.

GLOSSARY

Sharks: Sharks are mostly carnivorous fish that have skeletons composed of cartilage. There are more than 500 species, including 28 species in Canadian waters. Sharks have existed for over 400 million years and are found in a variety of environments, from the bottom of the ocean to freshwater lakes, and from warm tropical areas to cold polar waters. They range in size from the whale shark (over 12 metres long) to the pygmy shark (25 cm long). In general, sharks mature slowly, have a long life span, produce few offspring, and are the apex predators of their environment. Because of this, their population is especially threatened by overfishing.

Shark finning: The removal and retention of shark fins and the discard at sea of the carcass. The shark is most often still alive when it is tossed back into the water. Unable to swim, the shark slowly sinks toward the bottom where it is eaten alive by other fish. Shark specialists estimate that over 70 million sharks are killed for their fins each year, mostly for use in shark fin soup. Shark finning is a significant threat to the population of many shark species. Although shark finning is banned in Canada, Canada is the largest importer of shark fins outside Southeast Asia.

Shark fin soup: A broth of Chinese origin made from chicken or other stock with shark fin added for texture. Considered a delicacy, the soup is often served at important events, sometimes at a cost of \$100 or more per bowl. Demand for the soup has threatened shark populations.

Shark products: Shark meat and body parts are used in a variety of forms. Meat may be packaged as seafood (fresh, frozen, salted, or smoked) or as an ingredient in pet food or fertilizers. Fins are sold at high prices, primarily for shark fin soup. Sharks' oil can be used for cosmetics, the skin for leather and sandpaper, teeth for jewellery, and cartilage for dietary supplements.

Species: A set of organisms that have many characteristics in common and that can breed with each other to produce fertile offspring. Examples of shark species include the Basking, Greenland and Brown catshark, all found in Canadian waters.

Sustainable fishing: Harvesting fish stocks in a way that meets current needs without harming the ability to meet future needs.

Sustainable seafood: Seafood products that have been caught or farmed in a way that does not harm species or their ecosystems and that supports human rights. In order to be labelled sustainable in Canada, these fishing methods must be certified by international committees, such as the Aquaculture Stewardship Council or the Marine Stewardship Council.

Water pollution: Contamination of water systems that causes harm to the health of organisms and their environment. Water can be polluted with chemicals, such as pesticides and fertilizers. Other pollution includes garbage and plastics (including microplastics), which can trap or be ingested by wildlife.



RESOURCES

Canadian Geographic is a source for all things geography, wildlife and environment, climate and energy, travel, culture, and exploration in Canada. Their website provides articles about environment and nature, as well as about the people and organizations behind the science. They feature many articles by journalists and scientists about shark biology, conservation, and threats in Canada. www.canadiangeographic.ca

David Suzuki Foundation is a Canadian non-profit organization that uses evidence-based research, education, and policy analysis to protect natural environments and promote sustainability. Their website outlines actionable steps to support conservation, and provides information about conservation policy and projects, including facts about the importance of protecting [oceans](http://www.oceans.org). www.davidsuzuki.org

Fisheries and Oceans Canada offers an interactive website where you can record shark sightings, as well as access videos of sharks and the scientists who study them. <http://www.dfo-mpo.gc.ca/species-especes/sharks/index-eng.html> Also see:

Australia Department of the Environment and Energy <http://www.environment.gov.au/marine/marine-species/sharks>

Marine Conservation Society (UK) <https://www.mcsuk.org/>

U.S. National Oceanic and Atmospheric Administration <https://www.fisheries.noaa.gov/national/international-affairs/shark-conservation>

Food and Agriculture Organization of the United Nations (FAO) is a specialized agency of the United Nations with the goal of eliminating hunger world-wide. Their Fisheries and Aquaculture division provides documents and fact sheets about sustainable fishing, threats to ecosystems, and species statistics. www.fao.org/fishery/factsheets/en

International Union for Conservation of Nature (IUCN) provides public, private and non-governmental organizations with the knowledge and tools that enable human progress, economic development and nature conservation to take place together. Their Red List provides vital information about the status of species and ecosystems world-wide. Their website provides several conservation tools, publications, and resources to help encourage a better understanding of ecology and conservation. www.iucn.org

Oceana Canada focuses on restoring Canadian oceans to be as rich, healthy, and abundant as they once were. Campaigns address increasing fisheries management transparency and paving the way to recovery for Canada's depleted fish populations. The website includes the Canadian Marine Life Encyclopedia. www.oceana.ca

Ocean Wise is an organization that works with restaurants, markets, food services, seafood suppliers and consumers to help promote sustainable seafood choices. Their website provides information on sustainable seafood standards and helps consumers locate sustainable seafood buying options. Working with the Vancouver Aquarium, their website also provides educational resources, conservation initiatives, and up-to-date research information. <https://ocean.org>

RESOURCES

Pew Charitable Trust is an independent, non-partisan and non-profit organization that uses a research and innovation based approach to improve public policy and inform the public. Their Global Shark Conservation Project has established many shark sanctuaries, and works to raise awareness about shark decline, their importance to healthy marine ecosystems, and their benefit to local economies. Their website features information about shark conservation efforts including fact sheets, videos, and articles about conservation policy. <http://www.pewtrusts.org/en/projects/global-shark-conservation>

Royal Ontario Museum (ROM) is a museum in Toronto, Ontario that showcases art, culture and nature from around the world, including many natural history specimens. They undertake extensive research, playing a vital role in advancing our understanding of the artistic, cultural and natural world. Their website features information about ecology and conservation, including classroom activities on [shark conservation](http://www.rom.on.ca). www.rom.on.ca

Shark Angels is an organization committed to leading a worldwide movement to save sharks. Among other things, they connect with students and teachers across the globe to discuss the importance of sharks through Skype in the Classroom. www.sharkangels.org

SharkSavers is dedicated to saving sharks and mantas through building awareness, education, and action. The website includes educational resources, including a section on shark biology and a glossary, and actions to take in support of shark conservation. www.sharksavers.org

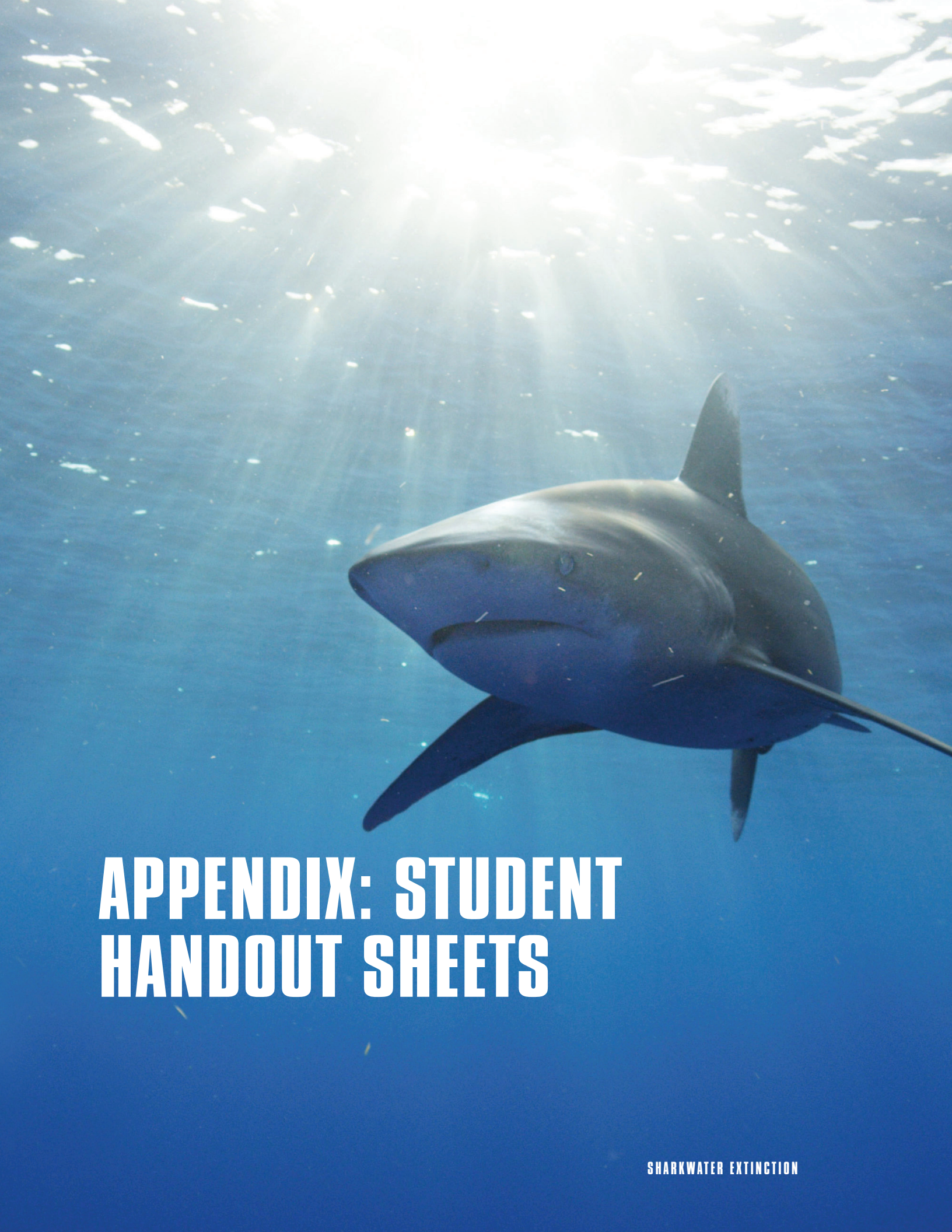
Toronto Zoo connects people to wildlife and offers programs to fight against extinction of species, including sharks and other fish. Other programs focus on sustainable seafood and a variety of conservation issues, such as [Great Lakes conservation](http://www.torontozoo.com). www.torontozoo.com

United Conservationists (UC) is dedicated to creating media that inspires, educates, connects, and encourages action to protect vital ecosystems. Rob Stewart was a founder of UC, and the organization carries on his mission by enabling and inspiring people around the world to take real, meaningful action towards conservation, especially of sharks. Their website provides media related to conservation, as well as information about a variety of practical ways to take action. www.unitedconservationists.org

WildAid works to reduce global consumption of wildlife products and to increase local support for conservation efforts. They also work with governments and partners to protect fragile marine reserves from illegal fishing and shark finning, to enhance public and political will for anti-poaching efforts, and to reduce climate change impacts. The website includes resources on sharks. www.wildaid.org

World Wildlife Fund Canada (WWF Canada) is Canada's largest international conservation organization, who's mission is to reverse the decline of wildlife. Working with scientists, business and government, they work towards restoring all freshwater and marine ecosystems in Canada. Visit the website for information on protection of [oceans](http://www.wwf.ca) and [Rob Stewart's legacy](http://www.wwf.ca). www.wwf.ca

This resource was prepared by [N + N](#) with input from students and educators.



APPENDIX: STUDENT HANDOUT SHEETS

SHARK FACT OR FICTION?

NAME: _____

Which of the following statements are true and which are false? Circle your answers and then conduct research to see if your responses are correct. Make a note of your sources.

1. Sharks must keep moving to stay alive. T F

Research sources: _____

2. Sharks appeared on earth 200 million years before dinosaurs. T F

Research sources: _____

3. Sharks are only found in salt water. T F

Research sources: _____

4. Sharks have no predators. T F

Research sources: _____

5. Sharks attack people often. T F

Research sources: _____

6. There is shark fin trade in Canada. T F

Research sources: _____

7. Shark is a healthy source of protein for humans. T F

Research sources: _____

8. A drop in shark populations will be beneficial for other species. T F

Research sources: _____

9. Sharks have seven senses. T F

Research sources: _____

10. Shark diving is a tourist attraction that can help contribute to shark conservation. T F

Research sources: _____

SPREAD THE WORD

NAME(S): _____

If you worked for a conservation organization, how would you convince people to care about and engage in shark conservation, especially considering the misconceptions that exist about sharks? Design a marketing campaign that you think will spread the word about the importance of shark conservation. Your campaign should answer the following questions:

1. Who is your target audience? _____

2. What is the purpose of your campaign? What do you want your audience to do? _____

3. What are your sources of information about sharks? _____

4. What format or medium will you use – blog entry, video, audio, brochure, info-graphic poster, social media campaign, persuasive speech or other? _____

5. What persuasive techniques will you use to motivate your audience – catchy slogans, impressive statistics, celebrity endorsements, advice from experts, humour, drama, strong visual images, colour, emotional pull, logic/reason, music or other? _____

Use the reverse of the page to prepare an outline of your campaign.

TAKE ACTION!

NAME(S): _____

Select one of the threats facing shark populations and prepare a plan of action to address the issue based on your research. Present your plan to the class to convince them to take the actions you recommend.

Your plan of action may include any or all of the following or something of your own choosing:

- a petition
- volunteering
- conducting a boycott
- media campaign
- collecting donations
- a letter to government or relevant organizations
- committing to take personal actions such as avoiding unsustainable seafood or cutting back on use of plastic products, etc.

What threat to sharks is your focus? _____

What are the latest statistics/current status of the threat? Include your research sources.

What, if any, government policies or laws are in effect? _____

List some of the groups dedicated to solving the problem. _____

What actions are being taken by the group(s)? _____

Use the reverse of the page to list the steps you recommend the class should take to help shark conservation.