© ATOM 2014

A **STUDY GUIDE** BY TERESA CIORCIARI

AUSTRALIAN TEACHERS OF MEDIA

http://www.metromagazine.com.au

ISBN: 978-1-74295-415-8

http://www.theeducationshop.com.au

LEFT: Madison Stewart filming Caribbean reef sharks © Ernst Stewart. BELOW: Madison Stewart

Overview

Conservationist, filmmaker, activist, delinquent – nineteen-year-old Madison Stewart has been called many things, but to her friends she's simply 'shark girl'. Growing up on the Great Barrier Reef, Madison soon realised the creature she loves most is disappearing fast. Driven by fear, every year up to 80,000 sharks are killed in this UNESCO World Heritage Site for cheap fish steaks and luxury shark fin soup. And Madison discovers both are laced with dangerous toxins that can cause serious brain damage. So turning passion into action, she sets out to stop the slaughter and shatter our perception of these alleged man-eaters. Armed with just a video camera, she fearlessly swims with tiger sharks, feeds a rowdy gang of Caribbean reef sharks and removes fishhooks from the mouths of oceanic silky sharks. She also investigates how more and more countries protect their sharks – Mexico, Palau, the Bahamas – and back home she bravely takes her campaign right to the heart of the shark fishing industry. Madison's journey is a powerful wake-up call and a moving record of one determined young woman to save the animal she loves, but most others would like to see dead.

Photos © Kaufmann Productions Pty Ltd unless otherwise stated

Curriculum Links

Shark Girl can be applied to the following elements of the **AUSVELS** curriculum at Years 9 and 10.

- Science
- The Humanities – Geography
- Interpersonal Development
- English
- The Arts – Media

In conjunction, this series connects to the AUSVELS cross curriculum proprieties:

1. Sustainability
2. Asia and Australia's engagement with Asia

MADISON STEWART (TOP RIGHT CORNER) WITH 'FINNY' THE FUNNY SHARK IN SCHOOL IN PALAU

SCIENCE

Strand: Science Understanding (Year 9)
Sub-strand: Biological Sciences

- Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment
- Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems

Strand: Science as a human endeavour (Years 9-10)
Sub-strand: use and influence of science

- People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions

Strand: Science Inquiry Skills (Years 9-10)
Sub-strand: communicating

- Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language conventions and representations.

Sub-strand: questioning and predicting

- Formulate questions or hypotheses that can be investigated scientifically

Sub-strand: processing and analyzing data and information

- Analyse patterns and trends in data, including describing relationships between variables all and identifying inconsistencies
- Use knowledge of scientific concepts to draw conclusions that are consistent with evidence

Sub-strand: evaluating

MADISON STEWART

- Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data
- Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems

THE HUMANITIES: GEOGRAPHY

Geographical knowledge and understanding
Unit 1: Biomes and food security (Year 9)

- The human alteration of biomes to produce food, industrial materials and fibres, and the environmental effects of these alterations (ACHGK061)
- The challenges to food production, including land and water degradation, shortage of fresh water, competing land uses, and climate change, for Australia and other areas of the world (ACHGK063)
- The capacity of the world's environments to sustainably feed the projected future population to achieve food

MADISON STEWART FEEDING CARIBBEAN REEF SHARKS © ERNST STEWART

security for Australia and the world (ACHGK064)

Unit 2: Geographies of interconnections (Year 9)

- The way transportation and information and communication technologies are used to connect people to services, information and people in other places (ACHGK066)
- The effects of the production and consumption of goods on places and environments throughout the world and including a country from North-East Asia (ACHGK068)

INTER PERSONAL DEVELOPMENT

Students are required, during Years 9 and 10, to develop their knowledge of local and global values and beliefs and consider the idea of values as social constructs and principles. *Shark Girl* could also be used as a supplementary text for students of English when studying themes of identity and belonging or how people encounter conflict

MEDIA

Creaking and Making
Manipulate representations to invite alternate social, cultural and environmental viewpoints and audience interpretations

Exploring and Responding
Evaluate the effectiveness of codes and conventions within a media arts work to engage audiences and communicate ideas and concepts

AUSVELS CROSS CURRICULUM PRIORITY

Asia And Australia's Engagement With Asia

Asia and its diversity:

- OI.1 The peoples and countries of Asia are diverse in ethnic background, traditions, cultures, belief systems and religions.
- OI.2 Interrelationships between humans and the diverse environments in Asia shape the region and have global implications.

Asia–Australia engagement:

- OI.5 Collaboration and engagement with the peoples of Asia support effective regional and global citizenship.

Sustainability

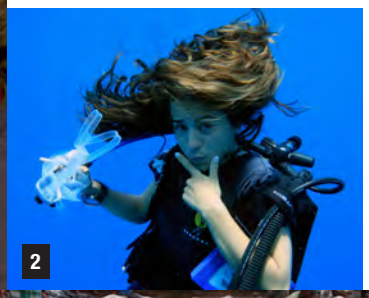
- The biosphere is a dynamic system providing conditions that sustain life on Earth
- All life forms, including human life, are connection through ecosystems on which they depend on their wellbeing for survival
- Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological system

Futures

- The sustainability of ecological, social and economic systems is achieved through informed individual and community action that values local and global equity and fitness across generations and into the future
- Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments
- Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgments based on projected future economic, social and environmental impacts
- Sustainable futures result from actions designed to preserve and/or restore the quality and uniqueness of environments

MADISON STEWART © KAUFMANN PRODUCTIONS

1

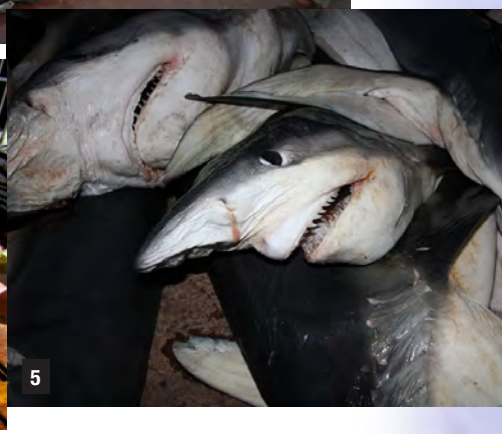


2

3

1: Madison Stewart at fishing co-op in Mexico 2: Madison Stewart © Ernst Stewart 3: Shark carcasses at an Asian fish market 4: Madison Stewart at fishing co-op in Mexico 5: Sharks on fish market

4



5

Previewing Activities

Shark culling is very current and contentious issue. There are powerful arguments both for and against shark culling. Before watching the *Shark Girl* use class time to investigate the student's current understanding and position on shark culling.

- Using the Think-Pair-Share strategy write down as many reasons why you believe sharks to be important.
- Ask students to write their position on shark culling. The statement should explain why they are for or against shark culling
- Ask students to respond to the question again, but based on shark culling only being allowed in areas where human population exists and swims. Has their position changed based on this new piece of information
- Explain the term biodiversity
- Discuss what it means for an environment to have greater biodiversity and what this would mean for the health of the environment.
- Unfortunately for nature, biodiversity is facing a great challenge due almost entirely to one strong competitor – humans. Why should we strive to conserve habitats and species? Why should we care?
- Hypothesise the global consequences of a decreased shark numbers within our oceans.
- Complete a glossary of key terms in *Table 1*.

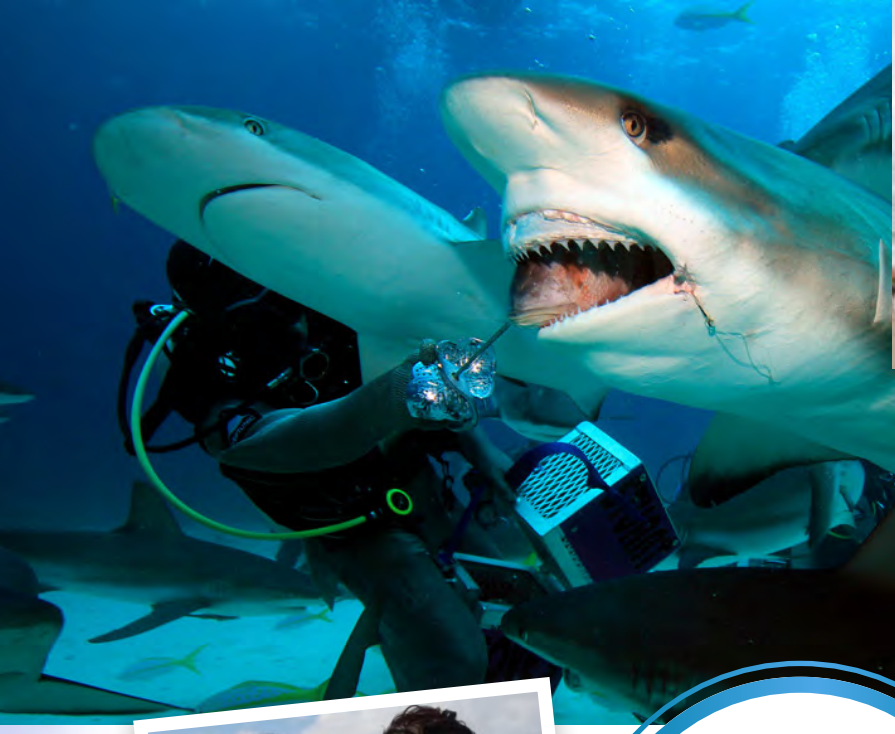
Post-Viewing activities

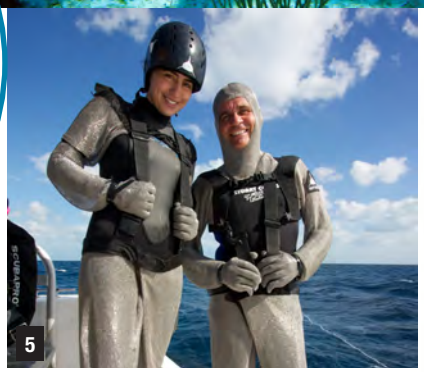
- Immediately following the documentary ask students the following question and encourage one- to five-word responses. 'when I think about the increasing number of shark cullings, I think of….'
- Before watching *Shark Girl*, you hypothesised the global consequences of a decreased shark numbers within our oceans. Was your theory correct?
- Reflecting back on the pre-video question on your stance on Shark Culling in general and in populations where humans swim. How do

TABLE 1

TERM	DEFINITION
Ecosystem	
Biomagnification	
Biodiversity	
Food Chains	
Ocean Biomass	

SCREEN EDUCATION © ATOM 2014





1: Feeding of Caribbean reef sharks © Ernst Stewart 2: Producer/ Director Gisela Kaufmann (L) with Madison Stewart, Shark Girl (R) 3: Madison Stewart filming tiger sharks © Ernst Stewart 4: Underwater DP Andy Casagrande (left) with Producer/Director Gisela Kaufmann (R) 5: Madison Stewart (L) in protective chainmail suit for shark feeding with Stuart Cove (R)

your responses compare now that you've watched *Shark Girl*?

- Debate the topic: Should humans be allowed to cull sharks? Students should spend thity minutes researching their position, gathering information and drawing on information from the film Shark Girl.
  - Group A – representing the position that culling sharks is necessary for protecting human lives, despite the risk to shark populations.
  - Group B – representing the position that sharks are a necessary and integral part of our oceans and need to be protected, despite the risk to humans.

SHARK FACTS.

Conduct some research on sharks. The following website might help:

- http://wwf.panda.org/about_our_earth/species/profiles/fish_marine/shark2/
- http://www.csiro.au/en/Outcomes/Oceans/Marine-Life/Sharks-index-page.aspx
- http://www.environment.gov.au/topics/marine/marine-species/sharks
- http://www.discoverychannel.com.au/shark-week/10-fearsome-sharks/

From your research answer the following questions in a factsheet titled 'Why sharks shouldn't be feared'

- Why do sharks attack humans
- What species of shark are most likely to attack humans and why
- Chances of being victim of a shark attack
- Importance of sharks in the food chain
- Interesting facts: refined senses, age (over 400 million years)

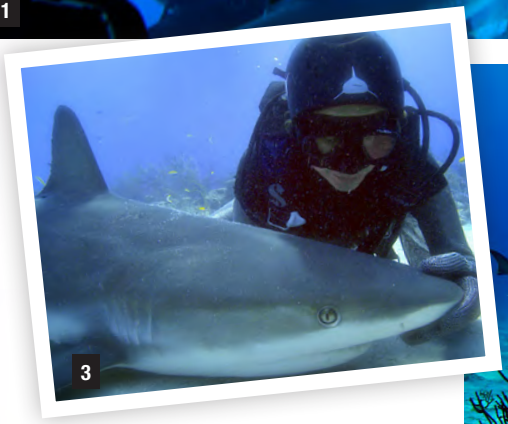
UNDERWATER ECOSYSTEMS

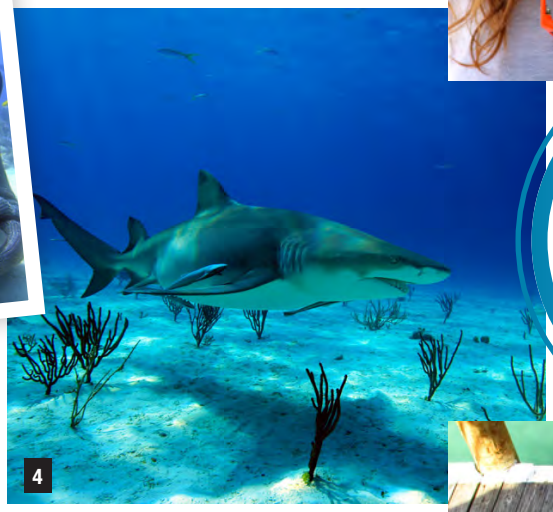
Ecosystems: Abiotic vs Biotic – Your Classroom Environment

1. Look at the environment that is your classroom.
2. List the Abiotic and Biotic factors in *Table 2*.
3. Looking at the factors and condition that you have listed, how do you interact with your classroom environment? How do you affect

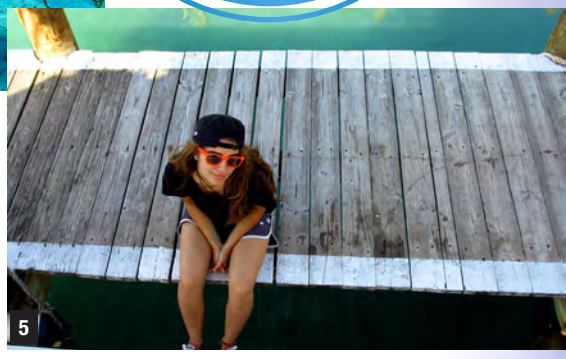
TABLE 2

ABIOTIC	BIOTIC





1: Madison Stewart with Caribbean reef sharks © Ernst Stewart 2: Madison Stewart 3: Madison Stewart with Caribbean reef shark in 'tonic immobility' 4: Lemon shark © Ernst Stewart 5: Madison Stewart © Ernst Stewart



them and how do they affect you? Do you rely upon any of these components for your survival?

4. How might the boundaries for the classroom ecosystem be defined?
5. Repeat the exercise for the Sharks within the ocean. How do the sharks interact with their immediate environment?

Balancing the ecosystems beneath the seven seas

- Ecosystems are said to be in a state of equilibrium or balance. Why is ecological balance necessary?
- Predict what will happen to each of the organisms if a large number of sharks were culled at the Great Barrier Reef in 2014.
- Algae:
- Water insects:
- Fish:
- Draw a flow diagram showing some of the consequences of reduced numbers of these sea creatures?
- Suggest, with respect to biomass, why the blue whale feeds on krill.
- Why do food chains seldom contain more than five trophic levels?
- What happens to most of the energy contained in any one trophic level in a food chain?

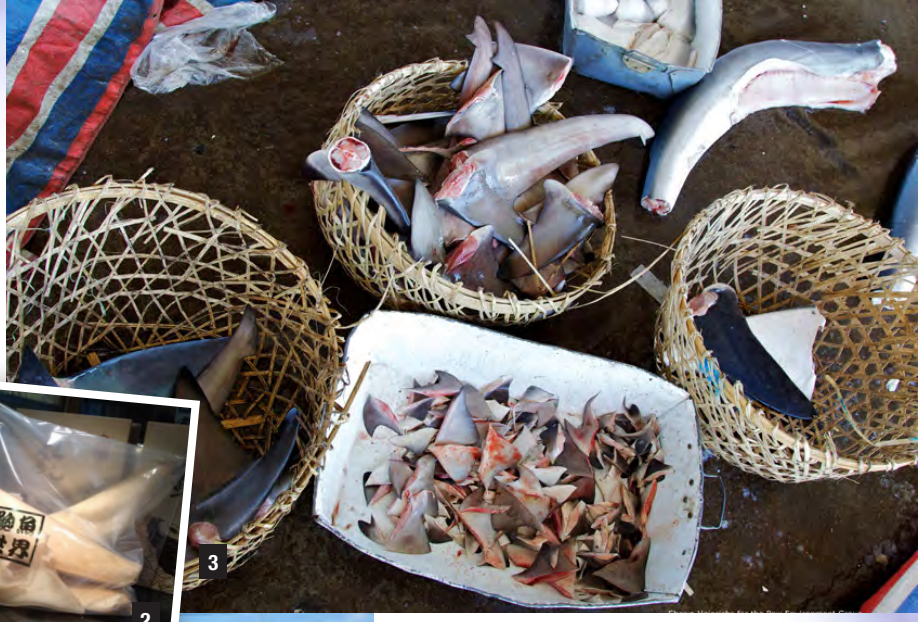
Extension activity:

- Research the Great Barrier Reef. From your research discuss in a paragraph (twelve lines) how the area has changed in the past fifty years. Discuss what happened to the area during the 1950s–1980s and how this has changed in the past ten years. Make specific reference to increased numbers of shark culling and current legislation around killing sharks in your response.

BIOMAGNIFICATION

Biomagnification is the movement of toxic substances though the food chain. The chemical formula for Mercury is Hg. Unfortunately, this unique metal is toxic to humans, and exposure can lead to neurological damage, coma, and death.

- Discuss why consuming shark (flake) is dangerous for humans in terms of Mercury poisoning.
- Why is high levels of mercury particularly dangerous for children and pregnant or breastfeeding women?
- Draw a possible food chain that would result in mercury poisoning in humans after eating sharks.
  Hg (absorbed by)--> Shark
  Humans



1: Shark fins on fish market 2: Shark fins for sale in China Town, Australia 3: Shark fins, Asia © Shawn Heinrichs 4: Shark fins drying on roof top, Taiwan © Shawn Heinrichs 5: Shark fins drying on roof top in Taiwan © Shawn Heinrichs

SHARK CULLING IN WESTERN AUSTRALIA

The Western Australian Government has announced a $6.85 million package of what it refers to as 'shark mitigation strategies'. $2 million will be allocated for the Department of Fisheries to track and destroy the sharks, while another $2 million will be spent specifically tracking great whites and setting drum lines to kill them if they come too close to shore. (Change.org)

- Read the following article and discuss as a class:

http://www.theaustralian.com.au/national-affairs/western-australia-given-exemption-from-federal-laws-to-cull-sharks/story-fn59niix-1226806898694

Students can choose to do these activities as extension work or preparation for an assignment. The activities are based on the current WA shark culling debate.

- This issue has caused wide-spread debate throughout the country and worldwide. In January 2014, protesters rallied on West Australian beaches to protest the shark-cull policy.
  1. Define the challenge and all its facets.
  2. Provide reasoning behind why it has become a challenge for Australia
  3. Explain its impact of the Australian environment and society today
  4. What does the future hold for this challenge? How can it impact on the future of Australia?
  5. Research any management strategies that are currently in place (including awareness campaigns)
  6. Discuss their effectiveness or potential effectiveness of these strategies.
- You are a newspaper reporter writing a story on current state of ocean life as a result of increased shark fishing. Your editor has set your task for 500 words and has asked you to make specific reference to the current debate on shark culling in Western Australia and it global effects – both environmental, social and economic concern.
- Write a letter to the Colin Barnett, West Australian Premier and his Government addressing the issue of shark culling, it's effects and your opinion on what should be done in regards to the issue.

DEMAND FOR SHARK FINS

There is a growing trade in shark fins, especially in Asia. They are often used to make an expensive Asian soup. However, this has become a serious threat to many shark species. Generally when fishing for shark fins, sharks are caught, the fins are cut off and the rest of the shark is thrown back into the sea.

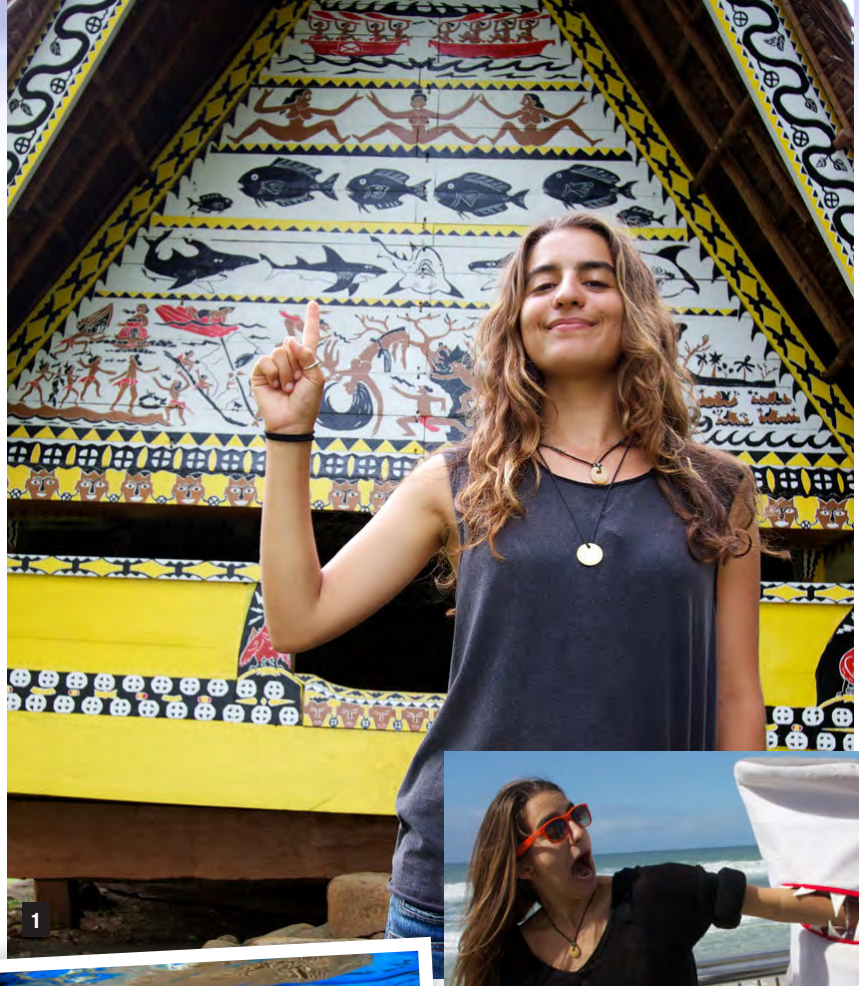
- Conduct some research into this cultural practice. Why are shark fins considered to be so valuable?
- Discuss with the person sitting next to you the ethical issues relating to this cultural practice.

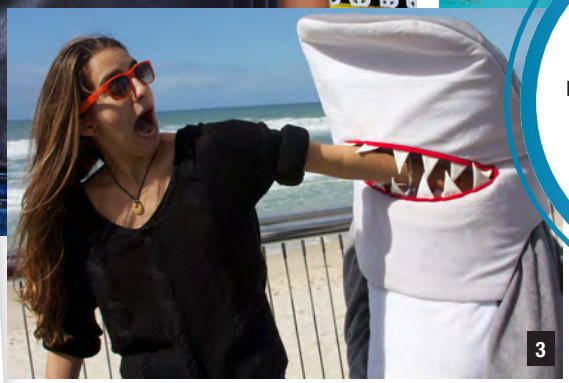
ASSESSMENT IDEA

Human Impact on Sharks

Suggested topics:

- extinction of whale sharks;
- threatened extinction of sharks





1: Madison Stewart in front of traditional men's meeting house Palau 2: Lemon sharks © Ernst Stewart 3: Madison Stewart at beach, shark costume action 4: Madison Stewart (R) filming Caribbean reef sharks © Ernst Stewart

(you choose the species);
- the culling of great white sharks in Australian seas.

Goal: To demonstrate an understanding of biodiversity and ecosystems by presenting a discussion involving biodiversity conservation, particularly with regard to human impact on a particular population or community.

You are a conservationist who has been asked to deliver a brief talk (approximately five minutes) to a group of Year 9 students. You are hoping to impress upon the students your concerns about the impact that humans are having on their planet, particularly concerning your chosen issue. As a conservationist you feel strongly that if the problem is to be resolved, it is this generation who will have to do it.

- How can you get your message across to them?
- How can you direct the information you need to convey, at their level?
- How can you make them listen and understand?
- A resource containing in brief the information you wish to convey, needs to be made and used during your talk.
- How can you best deliver your information?
- What are your strengths? Drawing (cartoon, poster), writing (essay, poem, pamphlet), music (song), acting (play with script), computers (PowerPoint slideshow)

You will need to consider some or all of the following factors that may have contributed to the situation you are investigating:

Historic Factors
- What events have lead to this situation?
- How has this situation changed over time?

Social factors
- How has our culture or lifestyle contributed?
- How well informed are people about this?
- How have our activities changed?

Economic Factors
- How has money influenced this issue?
- Are proposed changes cost effective?

Environmental Factors
- How has the environment been affected by this situation?
- Is the environment threatened?

Political Factors
- How has politics influenced this issue?
- How have political groups, such as local and national government, or the UN, been involved in this situation?
- What non-government groups are involved?

TIGER SHARKS © ERNST STEWART

Bibliography

http://ausvels.vcaa.vic.edu.au/

http://www.change.org/en-AU/petitions/the-western-australian-government-call-off-plan-to-cull-sharks-near-wa-beaches

http://wwf.panda.org/about_our_earth/species/profiles/fish_marine/shark2/

http://www.csiro.au/en/Outcomes/Oceans/Marine-Life/Sharks-index-page.aspx

http://www.environment.gov.au/topics/marine/marine-species/sharks

http://www.discoverychannel.com.au/shark-week/10-fearsome-sharks/

http://www.theaustralian.com.au/national-affairs/western-australia-given-exemption-from-federal-laws-to-cull-sharks/story-fn59niix-1226806898694

Taronga Zoo holds the Australian Shark Attack Files and also lists a 'Shark Know How':
Shark Know How, Taronga Conservation Society Australia: http://taronga.org.au/animals-conservation/conservation-science/australian-sharkattack-file/shark-know-how/shark-know-how

Prevention of Shark Attacks, Taronga Conservation Society Australia: http://taronga.org.au/animals-conservation/conservation-science/australian-sharkattack-file/prevention-shark-attacks/prevention-shark-attacks

Australian Shark Attack File, Taronga Conservation Society Australia: http://taronga.org.au/animals-conservation/conservation-science/australian-sharkattack-file/australian-shark-attack-file

The international Shark Attack files are here:
International Shark Attack File (ISAF): http://www.flmnh.ufl.edu/fish/Sharks/ISAF/ISAF.htm

Most Commonly Asked Shark Questions (shark biology), Florida Museum of Natural History: http://www.flmnh.ufl.edu/fish/education/questions/basics.html

Shark Attack Questions, Florida Museum of Natural History: http://www.flmnh.ufl.edu/fish/education/questions/attack.html

This study guide was produced by **ATOM**. (© ATOM 2013)
ISBN: 978-1-74295-415-8 **editor@atom.org.au**

For information on ***SCREEN EDUCATION*** magazine, or to download other study guides for assessment, visit <**http://www.metromagazine.com.au**>.

Join ATOM's email broadcast list for invitations to free screenings, conferences, seminars, etc. Sign up now at <**http://www.australianteachersofmedia.org.au/mailer/**>.

For hundreds of articles on Film as Text, Screen Literacy, Multiliteracy and Media Studies, visit <**http://www.theeducationshop.com.au**>.