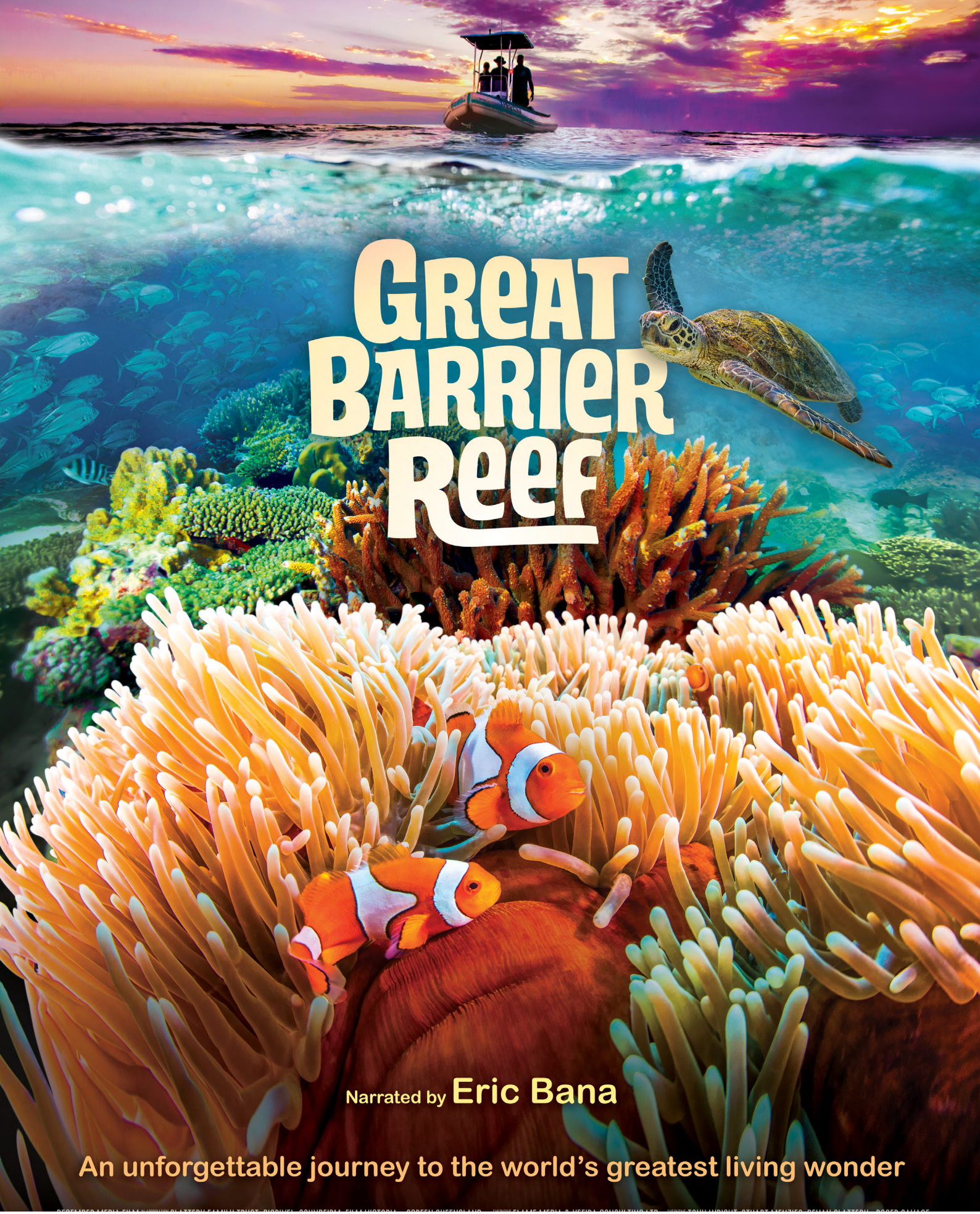


http://www.metromagazine.com.au

http://theeducationshop.com.au

© ATOM 2018 ISBN: 978-1-76061-199-6

ATOM
AUSTRALIAN TEACHERS OF MEDIA

A STUDY GUIDE BY
DR CHERYL JAKAB

RUNNING TIME: 42 mins
SUITABILITY: Suitable for all ages. Recommended for Grades 3-8

INTRODUCTION

GREAT BARRIER REEF is a spectacular, visual, natural and social history giant screen film about Australia's iconic Great Barrier Reef. The film is told through the eyes of the people who live and work on and for the reef. It is presented as the story of one everyday hero, a girl named Jemma, who, from her own corner of the Great Barrier Reef, is taking giant steps towards helping inhabitants of this living structure, and giving the reef a chance to heal.

This 42 minute 3D film features Australia's greatest natural icon, the world's largest living structure, which is described as one of the richest and most complex natural ecosystems on Earth.

As stated in the introductory segment: "The largest reef on Earth. More than 1,600 miles long, that's further than Boston to Miami. Its massive outer reefs form a 'barrier', offering protection to an extraordinary diversity of life." (Opening scene)

• WRITTEN BY TONY WRIGHT, KERRY DRUMM. © 2018 DECEMBER MEDIA PTY LTD, SLATTERY FAMILY TRUST, SOUNDFIRM PTY LTD

CONTENT HYPERLINKS

© ATOM 2018

THE FILM AT A GLANCE

GREAT BARRIER REEF presents a number of stories of people who are working to help improve the health of inhabitants of the reef. The GREAT BARRIER REEF film presents positive stories of those who are passionate about the survival of various sections of the reef through their own eyes and those of the central character Jemma who grew up on Green Island and works towards improving her corner of the reef. She then explores the stories of a number of other scientists and citizens also working for the better health of the reef and its inhabitants. The film presents this set of personal stories into the wider search to help protect the reef and how to establish the critical sustainability balance between our needs and those of an ever-diminishing natural world.

Main Curriculum links: **Conservation, Sustainability, Endangered Species, Science as Human Endeavour, Citizen Science, English Language Arts, and Geography.**

GREAT BARRIER REEF BACKGROUND INFORMATION

[adapted from Great Barrier Reef Marine Park Authority (GBRMPA) information]

Size

The Great Barrier Reef:

- is classed as the single largest living organism in the world, spanning a total distance of over 2600km from the Torres Strait in the North to the Fraser Island area in the South;
- covers an area of 348,000 square kilometres;
- includes the world's largest coral reef ecosystem, extending south from the northern tip of Queensland in north-eastern Australia to just north of Bundaberg;
- is between 60 and 250 kilometres in width;
- has an average depth of 35 metres in its inshore waters, while on outer reefs, continental
- slopes extend down to depths of more than 2000 metres;
- reaches over 65 kilometres at the widest sections;
- is the only natural structure that can be seen unaided from space;
- is bigger than the Australian states of Victoria and Tasmania combined; and United Kingdom, Switzerland and Holland combined; roughly the same area as Japan, Germany, Malaysia or Italy; approximately half the size of Texas; slightly smaller than the entire Baltic Sea;
- about the same length as the west coast of the USA from Vancouver to the Mexican border;
- larger than the Great Wall of China

World Heritage Wilderness

The Great Barrier Reef

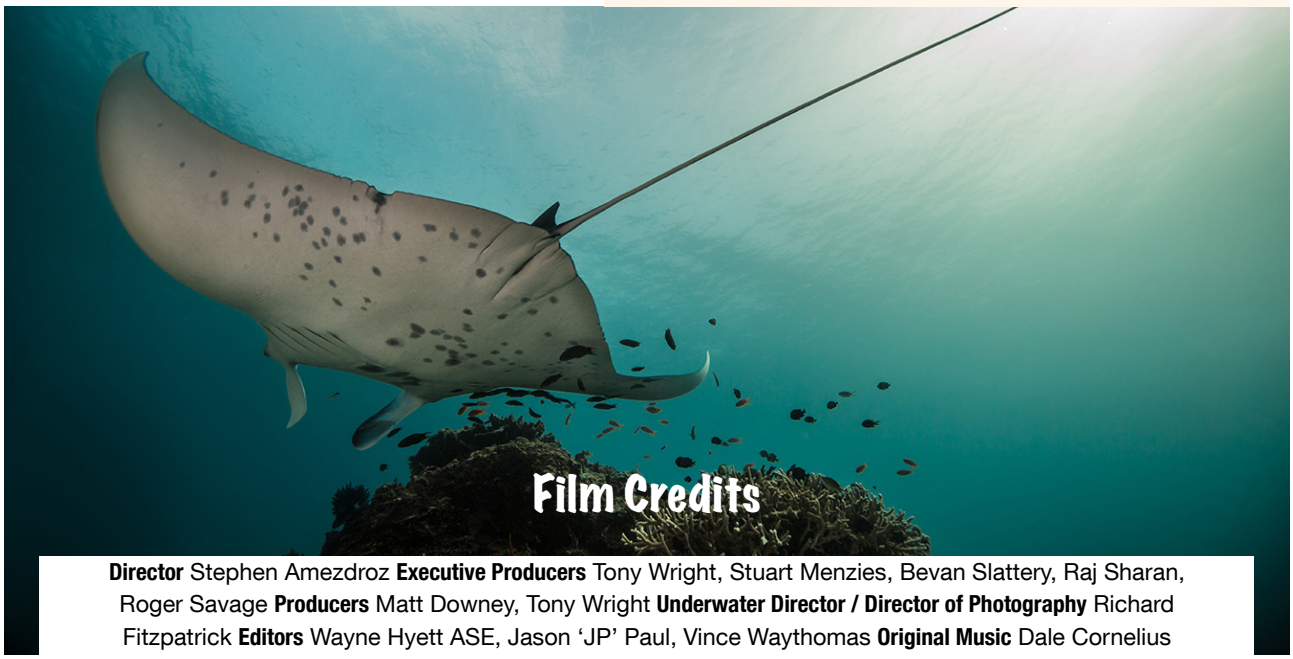
- is protected as the largest and most complex living structure on earth;
- was declared as a UNESCO World Heritage Area in 1981 because of its outstanding universal value;
- As a marine park, the Great Barrier Reef is managed by the Great Barrier Reef Marine Park Authority. It is a multiple-use area and organized by 'zoning' which supports a sustainable use of the Great Barrier Reef for a range of activities and industries, such as tourism, fishing, boating and shipping; that protects the park for people to enjoy.
- listed as one of the "Seven Natural Wonders of the World"

Threats

The Great Barrier Reef

- is at risk of being a World Heritage Area in danger;
- is under threat from climate change; cyclones and severe storms; fast moving outbreaks of Crown of Thorns seastars; water quality from industrial expansion, ports;
- threatened by number of major developments along the reef coast including a coal terminal near the Great Barrier Reef.

To help save the reef please visit www.greatbarrierreeffilm.com



Director Stephen Amezdroz **Executive Producers** Tony Wright, Stuart Menzies, Bevan Slattery, Raj Sharan, Roger Savage **Producers** Matt Downey, Tony Wright **Underwater Director / Director of Photography** Richard Fitzpatrick **Editors** Wayne Hyett ASE, Jason 'JP' Paul, Vince Waythomas **Original Music** Dale Cornelius **Narrator** Eric Bana **In Association with** Slattery Family Trust, Biopixel, Soundfirm, Film Victoria and Screen Queensland **Executive Produced by** Flame Media & Yefira Consulting Ltd **Cast Main Human Characters**: Jemma Craig - Green Island, Peter Gash - Lady Elliot Island, Amelia Armstrong- Manta ray researcher, Richard Fitzpatrick - Coral at night, Samantha Gilbert - Veterinarian **Cast Creatures**: Green Turtles, Manta Rays, Coral **Featured Places:** Green Island - Home to Jemma Craig, tourism on the reef, Raine Island - green turtles, Fitzroy Island - turtle rehabilitation centre, Lady Elliot Island - Ecotourism, manta rays

© ATOM 2018

OVERVIEW OF CURRICULUM AND EDUCATION SUITABILITY

Classroom connections

Levels: Activities in this guide are designed for use in 3rd through 8th grade. Content in the research projects described in *Great Barrier Reef* is also suitable for incorporation into high school Geography, Earth & Environmental Science and Biology courses. The guide has a major cross curriculum theme of sustainability running through all film-related lessons. All lessons are designed to be cross curricular in nature. Students are asked to gain key scientific knowledge while developing their understanding of geography and language arts. **Each lesson is integrated to cover the standards below.**

3-5 Science	3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
6-8 Science	MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems	MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
Environmental Science	HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.	HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.	HS-ESS3-6. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
Biology	HS-LS2-6. Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.	HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.
Geography	3-5th Grade: D2.Geo.2.3-5. Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions and their environmental characteristics.	6-8th Grade: D2.Geo.2.6-8. Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions, and changes in their environmental characteristics.	9-12th Grade: D2.Geo.12.9-12. Evaluate the consequences of human-made and natural catastrophes on global trade, politics, and human migration.
Reading	CCSS.ELA-LITERACY.RI.5.9: Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.	CCSS.ELA-LITERACY.RI.8.8: Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.	CCSS.ELA-LITERACY.RI.9-10.7: Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.
Writing	CCSS.ELA-LITERACY.W.5.7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.	CCSS.ELA-LITERACY.W.8.7: Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	CCSS.ELA-LITERACY.W.9-10.7: Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation

Sources: Standards for this guide represent national standards from the Next Generation Science Standards, Common Core ELA and C3 Framework for Social Studies.

Cross curriculum priority: Sustainability
Sustainability addresses the ongoing capacity of Earth to maintain all life.

Sustainable patterns of living meet the needs of the present without compromising the ability of future generations to meet their needs. Actions to improve sustainability are both individual and collective endeavours shared across local and global communities. They necessitate a renewed and balanced approach to the way humans interact with each other and the environment.

© ATOM 2018

LEARNING ACTIVITIES:

Viewing questions and Discussion starters: The following is a list of possible viewing questions and discussion starters, to select from depending on the chosen teaching and learning focus.

Before viewing

PURPOSE: Focus attention on the topics of the film by asking selected values and prior knowledge questions.

1. Have you ever visited the Great Barrier Reef?
2. What do you know about how the Great Barrier Reef formed and grows?
3. Where do you think the Great Barrier Reef is located and how big is it?
4. What would you expect to see there?
5. What threats might there be to the health of the reef and it's inhabitants?
6. How important is the protection of the reef to you?
7. Why do you think people care about protecting the Great Barrier Reef?
8. What dangers are there on the Great Barrier Reef for visitors? What would you need to know to visit any coral reef safely?
9. What would be involved in running any national Park such as Great Barrier Reef? What jobs would need doing? What do you think it would be like to live there?
10. What might be some reasons people would want to make documentary films such as this one about the Great Barrier Reef?

Responding to the film

PURPOSE: These questions are designed for use during or after viewing *Great Barrier Reef*. The questions are divided into three Sections and are time stamped to assist locating specific content. Encourage students to record any information they find disturbing/new/interesting/wonder about while watching.

FOCUS: ideas such as scientific research, environmental and sustainability issues, species on the reef, and storytelling, filming and documentary film-making processes about the geographical, biological and cultural histories of the area.

© ATOM 2018

Section I

Green Island, Raine Island turtles and reef health issues

(00:00 - 15:30 mins)

1. What and where is the Great Barrier Reef? (00:00 – 03:00)
2. What do you think would it be like to grow up on Green Island? (02:00 – 06:00)
3. What are some of the main threats to the health of the reef? (6:00 – 09:00)
4. What are scientists now finding out about turtles of Raine island and how do they study them? (09.00 – 12:00)
5. What the major problems for turtles on the Great Barrier Reef? (12:00 – 16:00)

Section II

Lady Elliot Island eco-resort and manta ray research

(16:00 - 24:15 mins)

6. What can be done to help improve the health of the reef? (16:00 – 17:00)
7. Can tourism and the reef live side by side, as described on Lady Eliot Island? (17:00 – 18:30)
8. What is coral and how can people look after it? (18:30 – 20.20)
9. What are the main threats to Manta rays survival? (20:20 – 24:15)

Section III

Coral and the overall health of the reef

(24:15 - 41:30)

10. What do you think it would be like to dive on the reef at night? (24:15-27:20)
11. How important is sharing of conservation efforts on different parts of the reef for our knowledge about protecting the whole reef? (28:00-29:00)
12. Which of the reef inhabitants do you find the greatest scene stealer? (28:00-31:30)
13. What dangers are posed by the forces of nature for people and the reef (31:30-33:00)
14. What are the main factors influencing the health of the Great Barrier Reef today? (33:00-36:20)
15. How does a better understanding of coral spawning help the reef's survival? (36:20-38:00)

© ATOM 2018

Activities 1-4

1. SETTING THE SCENE: QUIZ

(Worksheet 1: What do you know and wonder about the Great Barrier Reef)

TIMING: Ideal as an opener to orient the student interests and question raising prior to watching the film. This quiz sheet prepares students for watching by exploring background knowledge of Great Barrier Reef and its conservation. Ideal for use along with **Before viewing** questions listed above.

PURPOSE: For students to explore their own prior knowledge, raise interest and initiate questioning about issues of threats, conservation and protection on the Great Barrier Reef. The questions as presented orient discussions about the reef rather than extending understandings of threats or research projects that feature in the film.

ESSENTIAL QUESTION: What do you already know, wonder and feel about the Great Barrier Reef?

THE TASK: Complete and discuss multiple choice quiz: What do you know and wonder about the Great Barrier Reef? **(Worksheet 1)**

jump to Worksheet

© ATOM 2018

What to do

Working as a class

1. Prior to handing out the Worksheet 1: Conduct a short class discussion using the Before Viewing questions to activate student prior knowledge and values depending on the selected teaching focus, such as
   - coral reefs
   - Great Barrier Reef
   - threats to the reef
   - National Parks, Heritage listing and conservation

   Make a class list of student raised concepts, interests, values and questions.

Working in groups

2. Hand out Worksheet 1 and complete in small groups.
3. Display quiz answers and ask students to review their own quiz answers and questions raised. Discuss in groups what students now think: What is coral? How are coral reefs built? Where do coral reefs grow? How big is the Great Barrier Reef? What threats exist to reef life? Has anyone heard of or know much about protection of/on the reef?
4. Ask the class or groups to review and modify their ideas after watching the film.

Extension Activity

Display a class list of questions raised in answering the quiz as a Wonder Wall about the reef that can be added to or modified as students explore the film and further Learning Activities.

Below is a key to correct answers in the worksheet.

1. The Great Barrier Reef is the world's largest coral reef ecosystem. It is located
   a. along the northern coast of Australia
   b. **along the eastern coast of Australia**
   c. along the southern coast of Australia

   The Great Barrier Reef extends from the northern tip of Queensland to near Bundaberg in the south.
2. The Great Barrier Reef was first declared as a World Heritage Area in
   a. **1981** b. 1991 c. 2001
3. The Great Barrier Reef is one of how many named UNESCO World Heritage Natural Wonders of the World
   a. **seven** b. seventeen c. twenty seven
4. It is estimated that, as of early 2017, coral cover in the northern Great Barrier Reef was less than half of the cover in 2013. This has been caused by
   a. **coral bleaching**
   b. **storm damage**
   c. **crown of thorns seastar**
5. The Great Barrier Reef is home to how many of the world's seven species of threatened marine turtles
   a. two b. four **c. six**
6. How many people visit GBR each year?
   a. less than 100,000
   b. about 500,000
   c. **more than 1,000,000 (correct)**
7. The Great Barrier Reef's biological diversity is
   a. **unmatched by any other World Heritage Area**
   b. one of seven areas in the world with such a rich diversity
   c. one of many environments across the globe with such a rich diversity
8. Human activities that are threatening to the health of the Great Barrier Reef include
   a. **Over-fishing** b. **Coastal development** c. **Climate change**
   All of the above
9. The Great Barrier Reef is built by coral. Coral is a type of
   a. a bacteria
   b. a plant
   c. **an animal**
10. Coral bleaching occurs when
    a. coral animals have died due to too much sunlight
    b. coral animals are sunburnt and loose their colour
    c. **coral animal expel the algae that live with them**

© ATOM 2018

2. LIVES AND THREATS TO THE REEF: CREATE A REEF LIFE STORY

(Worksheet 2: Living on the reef 4Q2)

PURPOSE: To extend interest and understanding of concepts of biodiversity, scientific research and sustainability on the reef. The questions on **Worksheet 2** orient discussions about individual species types, habitats, threats and research. These can direct students towards how to structure their life story creative non-fiction writing about any species on the reef, to help orient their thinking and organise their storying.

jump to Worksheet

TIMING: After watching and exploring student prior knowledge.

RECOMMENDED TIME ALLOCATION: 2 hour

ESSENTIAL QUESTION: How are the organisms living along the Great Barrier Reef affected by human activity? What is life like along the Great Barrier Reef?

THE TASK: Create a short fact-based story about the life of one species on the Great Barrier Reef

What to do:

Working as a class

1. Ask students to list the life forms they have seen in *Great Barrier Reef* film. How were the various people working to help these species? What problems were being addressed - for turtles, manta rays, coral etc?
2. Which of the species seen did you find most interesting?
3. Which of the people's stories in the film about helping or studying a species was most engaging for you?

Working in pairs

4. Hand out Worksheet 2 : Living on the reef 4Q2. Ask students to complete the four questions for the four species pictures, to focus their attention on what information might be used in story writing and how to approach exploring a species life.

Working as a class

5. Invite students to share their responses to the worksheet. How did the film present these stories? Whose perspective was taken? Discuss how the film-makers presented their overall story from the perspective of

© ATOM 2018

one person, and how the other people's and species stories fit together within that overarching storyline.

6. Negotiate details of a task contract outlining the requirements of the task with students before they commence work including time allocations and responsibilities. Discuss.

a) Perspective: Review the four questions on the worksheet as a guideline for what might go into a story from the perspective of an animal.

b) Interest: What makes a story interesting for you? Ask students what might be interesting to tell a short creative non-fiction piece about one species that lives on the reef. Discuss writing from the perspective of someone working with a scientist, tourist operator or diver, as shown in *Great Barrier Reef*.

c) Forms: the storying might be creative nonfiction, a person writing a scientific report, an interview, popular newspaper article, a picture storybook, PowerPoint, comic strip using a Storyboarding tool or some other agreed form.

7. Make a class list of species and issues seen in the film and others they know live on the reef. There are many strange and surprising aspects to the stories of life on the reef and of the people who live, visit and work there.
8. Create a class rubric for the task and display. Include consideration of how the products will be shared, and with whom.

Working individually or in groups as negotiated

9. Have students write up their own contract according to agreed criteria. Offer the option of choosing to write about one of the four species or people explored in Worksheet 2 or any other seen in the film or they know about.
10. Allow time for students to complete the task according to negotiated contracts, which should include the group size and responsibilities, timeframe allocated and form of the work.
11. When completed assess, present and/or display as negotiated. Students could be encouraged to self and/or peer assess using the negotiated rubric criteria.

3. WHAT VALUE?: WHERE I STAND ON THREATS AND PROTECTIONS OF THE GREAT BARRIER REEF

(Worksheet: 3 ...)

TIMING: 1-2 HOURS, After watching *Great Barrier Reef* and completing activities to explore knowledge of life on the reef.

PURPOSE: This activity provides an opportunity for students to:

- examine their values towards the Great Barrier Reef ecosystem and region
- increase understanding of threats and protections needed to help maintain reef health

ESSENTIAL QUESTION: Why do people describe the Great Barrier Reef as "at risk"? What are the arguments for naming the Great Barrier Reef a World Heritage listing?

THE TASK: Students will assume the role of "expert panels" in analyzing the importance of preserving the Great Barrier Reef.

What to do

Working as a class

1. Who has visited the Great Barrier Reef or other national parks? Make a list of those in Australia and overseas the class members have visited.
2. What are the conservational values of the Great Barrier Reef? What is a National Park? What is a World Heritage listing?
3. Hand out **Worksheet 3**. Refer to page 2 to help discuss the various threats listed and share how to access the videos listed on the GBRMPA site.

Working in pairs (or discuss as a class for younger students)

1. Ask pairs to further explore and discuss the threats to the health of the Great Barrier Reef listed on page 2 of Worksheet 3 as they consider the questions on Worksheet 3; or
   - Divide the class into five expert groups and allocate one question to each group to explore:
   - Why do you think people want to move towards protecting and improving the health of the Great Barrier Reef?
   - What are the most important three things about the Great Barrier Reef to you?
   - What do you think are the three greatest threats to the long term health of the Great Barrier Reef?
   - Which scientific research or creatures on the reef presented in the *Great Barrier Reef* film did you find most interesting?
   - What level of protection do you think the Great Barrier Reef should be given?

Working in a group of four (two pairs) or in jigsaw groups of five

2. Compare answers to questions 1-5. Encourage students to discuss and modify or extend their recorded answers based on your discussions before recording a group response to a class display.

Working as a class

3. Review the class display of responses to summarize the values expressed and how they reflect values and stances towards sustainability issues.

Extension

Add at least one question or idea of your own that you might like to explore further.

© ATOM 2018

4. PROJECT IDEAS: SUSTAINABILITY AND THE FUTURE GREAT BARRIER REEF

(Worksheet 4 ...)

TIMING: This activity would best be completed as a culmination and evaluation activity focusing on the research and attitudes towards sustainability on the Great Barrier Reef.

TIME ALLOCATION: To be negotiated before projects commence.

PURPOSE: Extend student understanding of an aspect of sustainability in Great Barrier Reef region.

ESSENTIAL QUESTION: What sustainability issue on Great Barrier Reef would you be most interested in exploring further?

THE TASK: To complete a negotiated project on **one** of the following topics with a <u>focus on future sustainability</u>:

A. Write a **report** on one of the scientific research projects being carried out in Great Barrier Reef, as reported in *Great Barrier Reef* or elsewhere (e.g. coral spawning, manta ray numbers, plastics pollution); or
B. Design and make a **tourist brochure** to encourage visitors to better appreciate at least one threat to the reef, a species, event or site on the Great Barrier Reef (e.g. coral bleaching events, plastic pollution, Raine Island turtle colony, coral spawning, threats to manta rays, ecotourism such as on Lady Elliot Island); or
C. Create **a timeline** of the major events in the history of one specific threat to the reef (e.g. overfishing, coastal development or the crown of thorns seastar).

© ATOM 2018

What to do

Working as a class

Working in groups:

1. Handout **Worksheet 4** and allow students time to explore and discuss. Ask groups to read and discuss the three Worksheet project options. Ask: Which do you think you might be most interested in working on: a report, tourist brochure or timeline?

jump to Worksheet

2. Before selecting their projects, students should complete page 2, Worksheet 4, to help them review the stories told in *Great Barrier Reef* and how these people and their projects are helping improve the health on the reef.
3. Ask students to record questions you now have about each of the four projects illustrated on page 2**.**

Working as a class

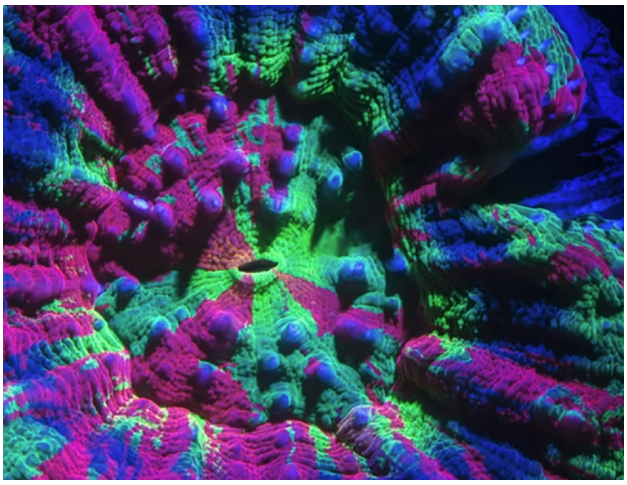
4. Discuss the four projects on page 2 of Worksheet 4 using group responses.
5. Make a summary display based on three questions: What is scientifically known about the problems being researched? How might tourism help with this project or issue? What is the history of this issue?
6. Review, discuss and negotiate your task: What is involved in each of the three possible project topics? How might the focus on future sustainability issues influence what you do? What is sustainability? How well are we helping the reef at this time in history?

Working in pairs

7. Students negotiate detailed specifications of the task. Refer students to the reference list and particularly the Great Barrier Reef Marine Park Authority websites listed below (see also page 2 of **Worksheet 3)**.
   Reef Beat Education Series:<http://www.gbrmpa.gov.au/learn-about-the-reef/reef-beat-series>
   Eye on the Reef app:<http://www.gbrmpa.gov.au/visit-the-reef/eye-on-the-reef>
   Resources by Grade: <http://www.gbrmpa.gov.au/learn-about-the-reef/resources-by-grade>)
8. As projects are completed create a display or other opportunity for students to share their projects.

Extension

Contact Great Barrier Reef Marine Park Authority or other organisations to find out how the class could become involved in research or further Great Barrier Reef conservation activities.



© ATOM 2018

RESOURCES

Online Resources for students and teachers

Reef Beat Education Series
http://www.gbrmpa.gov.au/learn-about-the-reef/reef-beat-series

Eye on the Reef app
http://www.gbrmpa.gov.au/visit-the-reef/eye-on-the-reef

Resources by Grade
http://www.gbrmpa.gov.au/learn-about-the-reef/resources-by-grade

Other Resources
Oceanpedia - Online Video Encyclopedia of the Great Barrier Reef
https://biopixelresearch.org/oceanpedia/
National parks and world heritage areas
Australia has over 500 national parks. In 2005, Australia had 14 World Heritage areas.
<http://australia.gov.au/about-australia/australian-story/national-parks
What is a national park? Stage 2 HSIE - Teacher's Guide <http://www.environment.nsw.gov.au/resources/education/NationalParkTeachersGuideLessonPlans.pdf>
United Nations Educational, Scientific and Cultural Organisation (UNESCO):
<http://whc.unesco.org/en/list/154>
UNESCO
<http://whc.unesco.org/en/sessions/38com>
World Wide Fund for Nature (WWF) <http://www.wwf.org.au/get_involved/take_action/fight_for_the_reef/timeline_industrialisation/>
Queensland Government Reef Facts <http://www.reeffacts.qld.gov.au/heritage/>
GBRMPA <http://www.gbrmpa.gov.au/about-the-reef/heritage>
Facts about the barrier reef < http://www.gbrmpa.gov.au/about-the-reef/facts-about-the-great-barrier-reef>
Zoning information - free maps < http://www.gbrmpa.gov.au/>
Raine Island <http://www.nprsr.qld.gov.au/parks/raine-island/>

Great Barrier Reef Threats
World Wide Fund for Nature (WWF):
<http://www.wwf.org.au/our_work/saving_the_natural_world/oceans_and_marine/priority_ocean_places/great_barrier_reef/threats/>
Australian Government Department of the Environment:
<http://www.environment.gov.au/marine/Great Barrier Reef>
Queensland Government:
<http://www.reeffacts.qld.gov.au/>
Queensland Government Department of Environment and Heritage Protection (EHP):
<http://www.ehp.qld.gov.au/coastal/ecology/great-barrier-reef/>
Queensland Government Department of National Parks, Recreation, Sport and Racing (NPRSR):
<http://www.nprsr.qld.gov.au/marine-parks/Great Barrier Reef_coast_marine_park.html>
Queensland Government Department of Development, Infrastructure and Planning (DSDIP):
<http://www.dsdip.qld.gov.au/Great Barrier Reef-strategic-assessment/>
Australian Museum:
<http://australianmuseum.net.au/Great-Barrier-Reef>
Reef Biosearch:
<http://www.greatbarrierreefs.com.au/all-marine-life/>

Raine Island
http://www.nprsr.qld.gov.au/parks/raine-island/about.html
http://www.ehp.qld.gov.au/wildlife/pdf/raine-island-prospectus.pdf
http://www.gbrmpa.gov.au/zoning-permits-and-plans/site-specific-management/raine-islandmoulter-cay-and-maclennan-cay-site-management-arrangements

Coral Spawning
http://www.gbrmpa.gov.au/about-the-reef/corals/coral-reproduction
http://www.greatbarrierreefs.com.au/coral-spawning/
http://coral.aims.gov.au/info/reproduction-sexual.jsp

Project Manta
http://www.ladyelliot.com.au/content/project-manta-0

Citizen Science
Citizens of the Great Barrier Reef
https://citizensgbr.org/

Conservation Foundation
Great Barrier Reef Foundation
https://www.barrierreef.org/

See separate file for Worksheets

© ATOM 2018

WORKSHEETS 1–4

© ATOM 2018

Worksheet 1

What I know and wonder about the Great Barrier Reef

I. WORKING ALONE: Circle which of the three alternatives you think is the most likely to be the correct answer.
II. WORKING WITH A PARTNER: Compare your answers and make corrections if you want. Under each question record one sentence to explain your answer and/or something you now wonder about the ideas in the question.

1. The Great Barrier Reef is the world's largest coral reef ecosystem. It is located
   a. along the northern coast of Australia
   b. along the eastern coast of Australia
   c. along the southern coast of Australia
   Our explanation/We wonder:

2. The Great Barrier Reef was first declared as a World Heritage Area in
   a. 1981 b. 1991 c. 2001
   Our explanation/We wonder:

3. The Great Barrier Reef is one of how many named UNESCO World Heritage Natural Wonders of the World
   a. seven b. seventeen c. twenty seven
   Our explanation/We wonder:

4. It is estimated that as of early 2017, coral cover in the northern Great Barrier Reef was less than half of the cover in 2013. This has been caused mainly by
   a. coral bleaching
   b. storm damage
   c. crown of thorns seastar
   Our explanation/We wonder:

© ATOM 2018

5. The Great Barrier Reef is home to how many of the world's seven species of threatened marine turtles?
   a. two b. four c. six
   Our explanation/We wonder:

6. How many visitors go to see the Great Barrier Reef each year?
   a. less than 100,000
   b. about 500,000
   c. more than 1,000,000
   Our explanation/We wonder:

7. The Great Barrier Reef's biological diversity is
   a. unmatched by any other World Heritage Area
   b. one of seven areas in the world with such a rich diversity
   c. one of many environments across the globe with such a rich diversity
   Our explanation/We wonder:

8. Human activities that are threatening the health of the Great Barrier Reef include
   a. Over-fishing
   b. Coastal development
   c. Climate change
   Our explanation/We wonder:

9. The Great Barrier Reef is built by coral. Coral is what type of living thing?
   a. a bacteria
   b. a plant
   c. an animal
   Our explanation/We wonder:

10. Coral bleaching occurs when
    a. coral animals have died due to too much sunlight
    b. coral animals are sunburnt and loose their color
    c. coral animals expel the algae that live with them
    Our explanation/We wonder:

© ATOM 2018

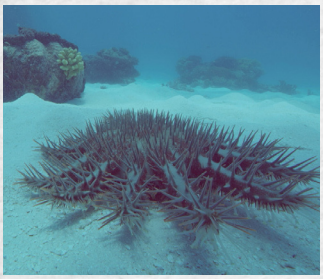
Worksheet 2

Living on the reef

Below are pictures of four of the coral reef life forms seen in *Great Barrier Reef*. What do you now know about them and the threats they face in their habitat after watching *Great Barrier Reef*?

What to do:

For each of the FOUR creatures shown below fill the gaps in the squares by answering these FOUR questions asked below.

What sort of creature is this?	How and where it lives?	What threats does it face?	How are people working to help it survive?
			
			
			
			

© ATOM 2018

Worksheet 3

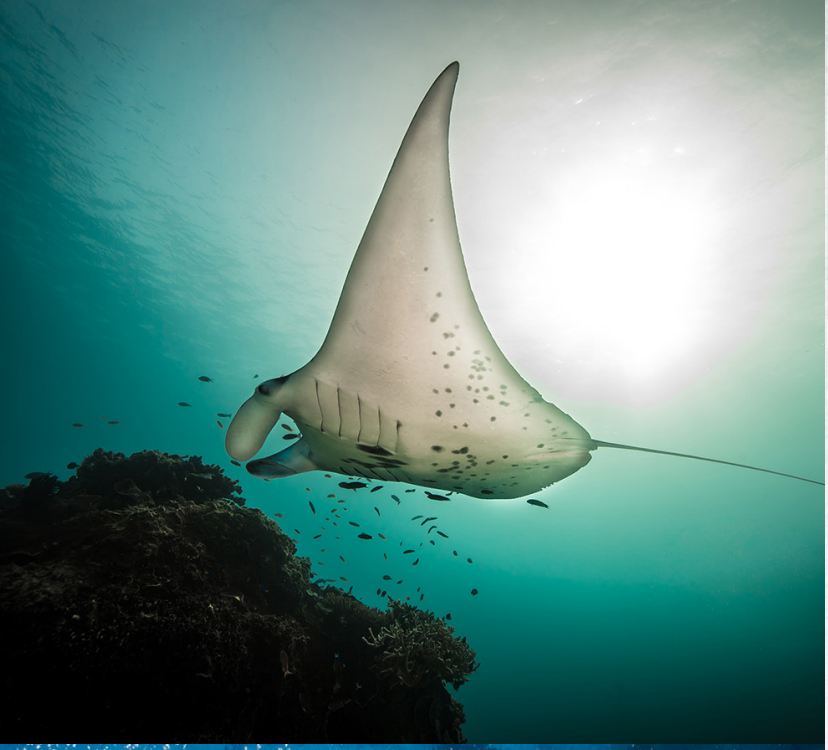
What value?: Where I stand on threats and protections of the Great Barrier Reef

Complete **Column 2** below by yourself. Express your opinions about the question after watching *Great Barrier Reef*. Complete **Column 3** in a group after conducting research and discussing ideas.

Remember to add the citation details in Column 3 of the reference you used when gaining more information.

Values and threats questions	After watching *Great Barrier Reef* and before researching ... I think	After researching ... we think
1. Why do you think people want to towards protecting and improving the health of the Great Barrier Reef?		
2. What are the most important three things about the Great Barrier Reef to you?		
3. What do you think are the three greatest threats to the long-term health of the Great Barrier Reef?		
4. Which scientific research or creatures on the reef presented in the *Great Barrier Reef* film did you find most interesting?		
5. What level of protection do you think the Great Barrier Reef should be given?		
Extension: Add at least one question of your own that you might like to explore further.		

© ATOM 2018



Information Sheet: Threats and Protections on the Great Barrier Reef

Since 1985, the Great Barrier Reef has lost half its coral cover. Current measurements are showing record heat is having major impacts on reef health.

Key threats to the Great Barrier Reef include

- Climate change: The Great Barrier Reef Marine Park Authority's Outlook Report for the Great Barrier Reef in 2014 stated: "Climate change remains the most serious threat to the Great Barrier Reef. It is already affecting the reef and is likely to have far-reaching consequences in the decades to come."
- Water quality: Sediment, nutrient and pesticide pollution from farming is having a major impact on the health and resilience of the reef ecosystem. Over the past 150 years, the amount of sediment flowing into the marine park has quadrupled. Nutrient loads have also increased, encouraging algal blooms, which provide food for crown-of-thorns starfish. Many farmers are now actively working to implement practices to minimize runoff.
- Coastal development and industrialization: Some industries in Queensland are developing rapidly, and approvals are being sought for major developments along the coast and on the islands adjacent to the Great Barrier Reef Region. Proposals include dredging and dumping of millions of tons of seabed and rock, and encouraging increased shipping through the narrow straits between reefs. The Australian Government is considering approval of these developments, including the world's biggest coal port at Abbot Point, 50 km from the Whitsunday Islands.
- Over-fishing: Despite heavy regulation of fishing practices in the Great Barrier Reef Marine Park area, impacts from overfishing and outdated fishing practices remain a threat to the reef. Practices such as trawling for prawns result in untargeted fish capture (bycatch), and damage to the seafloor and its resident plants and animals.

The Great Barrier Reef Marine Park Authority (GBRMPA) has a number of videos with information about threats, research and conservation on the reef.

Reef Beat Education Series:
http://www.gbrmpa.gov.au/learn-about-the-reef/reef-beat-series
Eye on the Reef app:
http://www.gbrmpa.gov.au/visit-the-reef/eye-on-the-reef
Resources by Grade:
http://www.gbrmpa.gov.au/learn-about-the-reef/resources-by-grade

© ATOM 2018

Worksheet 4

Project ideas: Sustainability and the future of the Great Barrier Reef

YOUR TASK: To complete a negotiated project with a focus on future sustainability by choosing one of the following options:

A. Write a **report** on one of the scientific research projects being carried out on the Great Barrier Reef, as reported in *Great Barrier Reef* or elsewhere e.g. coral spawning, manta ray numbers, plastics pollution; or
B. Design and make a **tourist brochure** to encourage visitors to better appreciate at least one threat to the reef, a species, event or site on the Great Barrier Reef e.g. coral bleaching events, plastic pollution, Raine Island turtle colony, coral spawning, threats to manta rays. ecotourism such as on Lady Elliot Island; or
C. Create **a timeline** of the major events in the history of one specific threat to the reef e.g. overfishing, coastal development or the crown of thorns starfish.

PURPOSE: To extend your understanding of problems and solutions to one or more aspects currently being researched, which aim at better health and sustainability of the Great Barrier Reef and its many species under threat.

ESSENTIAL QUESTION: What species, research project, threat or place on the Great Barrier Reef would you be most interested in exploring further in a negotiated project?

What to do

Working as a group

1. Read and discuss the three Worksheet project task options. Which do you think you might be most interested in working on - a report, tourist brochure or timeline?
2. Before selecting your project, complete Page 2 **Projects on the Reef** to help you review the stories told in *Great Barrier Reef* and how they are helping the reef.
3. Record questions you now have about each of the four projects illustrated on Page 2.

Working as a class

4. Discuss the four projects using group responses to Page 2 **Projects on the Reef.**
5. What is scientifically known about the problems being researched? How might tourism help with this project or issue? What is the history of this issue?
6. Review, discuss and negotiate your task: What is involved in each of the three possible project topics? How might the focus on future sustainability issues influence what you do? What is sustainability? How well are we helping the reef at this time in history?

Working in pairs

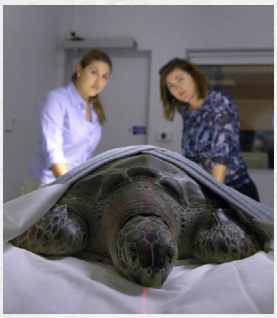
7. For your chosen project A, B or C, negotiate your own detailed specifications of the task. Include each group member's name and specific roles before commencing work. Aspects of the task to negotiate include time allocation, research responsibilities and how this will be reported, assessed and presented when completed. Note: You could team up with other pairs who have chosen the same topic for their project.

© ATOM 2018

Projects on the Reef

YOUR TASK: For each of the quotes below about projects seen in *Great Barrier Reef,* record:
- What threat is the person's research/story concerned with?
- How might their research contribute to the long-term sustainability on the Great Barrier Reef into the future?

Jemma and Green turtle protection



Floating debris is a major problem in the world's oceans and seas.

Amelia and manta ray research

If a manta ray comes over your head like this animal, try and get a nice clear ID shot of its belly, and if it's a new manta we don't have in our data base, then you actually get to name it, which is really exciting.

Peter and tourist eco-resorts

In recent times the northern parts of the Great Barrier Reef have been hit by coral bleaching. This occurs when water temperature rises, causing corals to release the colorful algae, which turns them white. What's really important to us at Lady Elliot is that our guests leave feeling they've contributed to the future protection of the reef.

Richard and corals

Okay, so we're going to take two different types of torches with us tonight. We've got our normal white light. The other cool light we are going to have tonight is this psychedelic thing. It's like a disco light and this causes fluorescence.

© ATOM 2018

This study guide was produced by ATOM.
(© ATOM 2018)
ISBN: 978-1-76061-184-2
editor@atom.org.au

To download other study guides,

plus thousands of articles on Film as Text,

Screen Literacy, Multiliteracy and Media Studies,

visit <**http://theeducationshop.com.au**>.

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

© ATOM 2018