



a nonprofit membership organization dedicated to improving and protecting our coral reef ecosystem
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Virtual Marine Science Classroom

Unit 8: Our Future (Environmental Solutions)

Reef Relief Education Email: education@reefrelief.org

Reef Relief Phone Number: 305-294-3100

Course Description: This unit was designed to supplement existing science coursework. Students will learn about the various solutions to the environmental issues discussed in Unit 7. Students will explore management practices, new technology, and personal habits that are the key to helping our planet.

Course Objective:

1. Students will learn the various efforts being done to solve many of our environmental issues.
2. Students will gain a better understanding of the natural world.
3. To encourage identifying an issue and problem solving.

Attendance:

Students are able to complete this at their own pace. There are no deadlines for materials, and it is up to the student and parent/teacher to keep said student on their desired pace.

Internet Etiquette:

Reef Relief staff has enabled commenting on the materials. The comment sections shall be used to ask legitimate questions or voice formatting/technological issues. Should there be any concern about this please contact us.

Materials:

All course materials and worksheets are provided in an online PDF format. If your student does not have access to a printer, feel free to write down your answers on a separate piece of paper.

Technical Difficulties:

Please contact us via email or phone to let us know about any technical difficulties, we will be more than happy to assist!

Course Work:

Reef Relief has provided many different videos and activities for the students. Students are not required to complete all of the materials in this unit, it is ultimately up to the student, parent or teacher.

Skill Level:

Many activities are labeled Beginner, Medium, or Advanced and it is up to the adult to decide what they would like their student to complete. We recommend the following to evaluate:

- Beginner: Someone new to marine science or is between the ages of 5-8.
- Medium: Someone who has received a moderate amount of science education or between the ages of 9-11.

- **Advanced:** Someone who is comfortable with more in depth science topics or between the ages of 12-17.

Grading:

Reef Relief will not be implementing any grading. Parents and teachers may make the personal decision to grade their student's work. There will be a section labeled answer keys that can be used to check your student's work.

Sharing of Material:

Please do not share classroom materials with others. This includes but is not limited to the class password, the class link, worksheets, video, etc.

Office Hours:

Reef Relief is open Monday- Friday from 10:00AM until 4:00PM EST. Outside events may change these hours however we will do our best to respond as promptly as possible.

Feedback:

We appreciate your feedback! Please let us know if you have any questions, comments, or concerns by emailing us or posting in the classroom. There is also a survey within the unit you may submit your feedback in.

Unit 8 Syllabus

Pre-Quiz: We encourage every student to take the pre-quiz at the beginning of the course to evaluate their basic knowledge. The information compiled from this quiz will be used for Reef Relief's general knowledge and grant purposes.

Introduction:

- **Video: Introduction**
 - This lesson video will explain the goal of this unit and the expectations we have for the students.

Push Out Plastic:

- **Lesson 1: Plastic Solutions**
 - Let's learn about all the different ways we are limiting our plastic consumption.
- **Lesson Notes: Plastic Solutions**
 - Follow along worksheet you may complete during or after the lesson for review and retention.
- **Worksheet: Single Use Alternatives (Beginner)**
 - Color in the single use plastic items. Circle which you use and brainstorm how you can use less.
- **Worksheet: Is it Recyclable? (Medium)**
 - Look up your local recycling guidelines. Color and cut the trash/recycling item cards and sort between what is and is not recyclable.
- **Worksheet: Is it Recyclable? (Advanced)**
 - Look up your local recycling guidelines. With each item listed, identify if it is or is not recyclable and explain why.
- **Expert Interview: John Felts, Cruz Foam**
 - Check out this startup company that is turning shellfish waste into sustainable packaging.
- **Presenter Notes: Plastic Solutions**
 - A copy of the PowerPoint slides to assist with activities.

Solution to Pollution:

- **Lesson 2: Solution to Pollution**
 - Learn about the ways we can prevent pollution.
- **Lesson Notes: Solution to Pollution**

- Follow along worksheet you may complete during or after the lesson for review and retention.
- Worksheet: Solution to Pollution Matching (Beginner)
 - Color the pollution and solution examples and draw a line matching the solution to the pollution it solves.
- Worksheet: Storm Drain Art (Beginner to Medium)
 - To help bring awareness to storm drain pollution many people decorate them. Look at the provided examples and draft up your own storm drain awareness art design.
- Worksheet: Finding Solutions to Pollution (Medium to Advanced)
 - There are countless ways pollution can affect our ocean and earth, now it's time to come up with your own solutions to these problems.
- Expert Interview: Chris Robbins, Ocean Conservancy
 - Learn about Chris Robbins' work at Ocean Conservancy to deal with oil spills, microplastics, and policy.
- Presenter Notes: Solution to Pollution
 - A copy of the PowerPoint slides to assist with activities.

Renewable Energy:

- Lesson 3: Renewable Energy
 - Let's learn about the renewable energy resources we have available.
- Lesson Notes: Renewable Energy
 - Follow along worksheet you may complete during or after the lesson for review and retention.
- Worksheet: Renewable or Non-Renewable? (Beginner)
 - Color each energy source and circle the renewable sources.
- Activity: Solar Oven (Medium)
 - Learn how to make your own solar oven.
- Activity: DIY Wind Turbine (Advanced)
 - Learn how to make your own wind powered turbine.
- Additional Resource: NASA Climate Kids
 - Check out this website for more information about the climate and renewable energy.
- Presenter Notes: Renewable Energy
 - A copy of the PowerPoint slides to assist with activities.

Habitat Restoration:

- Lesson 4: Habitat Restoration
 - Learn about the different ways we can restore habitats such as coral reefs, mangroves, and seagrass beds.
- Lesson Notes: Habitat Restoration
 - Follow along worksheet you may complete during or after the lesson for review and retention.
- Worksheet: How to Restore Habitat (Beginner to Medium)
 - Color in the problems to habitats and brainstorm/draw a possible solution to that problem.
- Expert Interview: Carter Henne, Seagrass Restoration
 - Learn all about seagrass restoration in Florida from Carter Henne, a managing biologist and seagrass expert from Sea and Shoreline LLC.
- Movie: Sinking the Vanderberg
- Movie: Reef Revival
- Resource: Restoration Volunteer Opportunities in Florida
 - If you live in Florida, read along to see where you can volunteer to restore local ecosystems throughout Florida.
- Presenter Notes: Habitat Restoration
 - A copy of the PowerPoint slides to assist with activities.

Marine Protected Areas:

- Lesson 5: Marine Protected Areas
 - Learn about how species can become invasive and popular examples of them.
- Lesson Notes: Marine Protected Areas

- Follow along worksheet you may complete during or after the lesson for review and retention.
- **Worksheet: Make Your Own MPA (Medium to Advanced)**
 - Read about different marine areas that could use an MPA to help improve fish populations and the ecosystem, then create an MPA that you think would work best to fix the problem. Use the provided link to better understand how MPAs are classified, and to help you with this activity. Example provided.
- **Worksheet: MPAs Around the United States (All Levels)**
 - Use the linked interactive map to find some of the MPA's around the U.S and learn about their different classifications and policies.
- **Presenter Notes: Marine Protected Areas**
 - A copy of the PowerPoint slides to assist with activities.

Policy For a Purpose (Advanced):

- **Lesson 6: Policy for A Purpose**
 - Learn about different environmental policies and how people are using policy to conserve the environment, their culture, and fight for environmental justice.
- **Lesson Notes: Policy for A Purpose**
 - Follow along worksheet you may complete during or after the lesson for review and retention.
- **Interview with a Scientist: Dr. Henry Huntington**
 - Follow along with Reef Relief staff as we discuss Arctic policies with Dr. Huntington and learn about making sure different Indigenous communities are being heard.
- **Movie: After the Ice**
 - Watch this three-part video series about how changes Native Alaskans from the Iñupiat and Yup'ik tribes in Alaska's Yukon-Kuskokwim Delta and Bering Strait region, are seeing in the Arctic, how they are adapting to melting sea ice, and how it is changing their culture.
 - Take a special look at Part 3 to learn about the Arctic Report Card and how Indigenous voices are now starting to be recognized.
- **Worksheet: Policy Mix and Match (Medium)**
 - Draw a line from the policy to its description.
- **Additional Resource: Policy Conservation Articles**
 - Read these articles to learn more about policy conservation.
- **Additional Resource: Environmental Justice Organizations**
 - Check out different Environmental Justice organizations and get involved with one from your area.
- **Additional Resource: Green New Deal**
- **Presenter Notes: Policy for A Purpose**
 - A copy of the PowerPoint slides to assist with activities.

Citizen Science:

- **Lesson 7: Citizen Science**
 - What is citizen science and how can we be a better citizen scientist?
- **Lesson Notes: Citizen Science**
 - Follow along worksheet you may complete during or after the lesson for review and retention.
- **Worksheet: Citizen Science (Advanced)**
 - This project is to help you find citizen science activities that could benefit something you are passionate about.
- **Additional Resource: Find a Project**
 - Use this PBS Kids resource to find a citizen project about things that interest you.
- **Presenter Notes: Citizen Science**
 - A copy of the PowerPoint slides to assist with activities.

Exit: Our final video of the Virtual Classroom!

Post- Quiz: We encourage every student to take the post-quiz at the end of the course to evaluate their basic knowledge. The information compiled from this quiz will be used for Reef Relief's general knowledge and grant purposes.

Answer Key: We have provided answers to most worksheet activities and have combined them into this folder for parents and teachers to check their student's work.