



**COLORADO  
OCEAN  
COALITION**

**Saving Oceans from a Mile High**



**Educators Resource Guide**



# An Inland Ocean Movement

**The mission** of the Colorado Ocean Coalition is to promote healthy oceans through education and community engagement. Today's complex global economy and the strong interconnectedness of ecological systems make marine education imperative for every classroom, even those in landlocked Colorado!

Scientists know that long ago, Colorado was covered by an ocean. Today, Colorado is almost a thousand miles from the nearest coast and yet oceans play a critical role in our lives. About one third of the oxygen we breathe comes from oceans, seafood we eat comes from oceans, and oceans have tremendous effect on our weather and climate patterns. We also have huge impacts on the ocean, even in Colorado.

Use the activities, lessons, and videos in this resource guide to incorporate ocean education in your classroom and discover creative ways your students can learn important science concepts through focusing on topics such as ocean acidification and watershed geology. You can find this Educators Resource Guide at [coloradoocean.org](http://coloradoocean.org)

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## A Colorado Connection

Colorado is 983 miles from the Pacific Ocean, 933 miles from the Gulf of Mexico and 1,453 miles from the Atlantic Ocean. The state is unique because surface water is separated by the Continental Divide and drains to either the Atlantic or the Pacific Ocean. The Continental Divide is the name of the mountain ridge that separates the watersheds that drain into the Pacific and Atlantic Oceans.



Educators Resource Guide Authored by  
Laura Allen - Colorado Ocean Coalition 2013



# Getting to Know our Oceans

## Lesson Plans

### One Ocean

**Grades:** Elementary & Middle School

This guide was developed by the National Geographic Society for teaching ocean themes within real-world context. It provides a solid introduction to the ocean and the ocean literacy principles in an accessible and reader-friendly manner for grades 3 to 8. In addition to general information about the ocean, the guide includes numerous education features, such as teaching tips and student questions, that help connect the content to classroom learning.

[Chapter 1: The Ocean System](#)

[Chapter 2: Ocean and Water Cycling](#)

[Chapter 3: Biodiversity in the Ocean](#)

[Chapter 4: Reduction of Ocean Biodiversity](#)

[Chapter 5: Health Concerns for People and Wildlife](#)

[Chapter 6: Changes in Ocean Temperature and Chemistry](#)

[Chapter 7: Solutions for Our Oceans](#)



### Watershed Quest - A Colorado Connection

**Grades:** Middle School

This activity by Jean-Michel Cousteau reinforces that not all students live on an ocean coast but, no matter where they live, all students are connected to the ocean via their local watershed. The Watershed Quest includes information about watersheds in general and how to learn about the watershed in your local region.

[Overview](#)

[Lesson Plan - What is a Watershed](#)

[Lesson Plan - Exploring our Watershed](#)

### Whale Jenga

**Grades:** Elementary & Middle School

Created by the Cabrillo Marine Aquarium, students use the popular wood block game Jenga to explore the relationship between predators and prey in an ocean food web and how it's affected by ocean acidification. This game makes the interconnection of the food web very concrete. As the bottom of the food web is impacted, the whole web becomes more fragile and eventually collapses.

[Lesson Plan](#)

[Krill and Fish Pictures](#)

[Phytoplankton Pictures](#)

[Zooplankton Pictures](#)

[Whale Fact Sheets](#)





# Ocean Acidification

Our carbon emissions are making the ocean more acidic, which threatens life in our seas. Use these hands-on activities and videos to help demonstrate and explore the effects of increasing carbon dioxide on the acidity of our oceans. Learn about the impacts an acidic ocean has on marine organisms, the ocean food web, and humans, and explore possible solutions to this global challenge.

## Lesson Plans

### Making Waves: Ocean Acidification Video

**Grades:** Middle School & High School

In this video podcast, learn what ocean acidification is, how it's affecting marine life, and how NOAA tools are helping people monitor and adapt to changes in ocean chemistry. [Video](#)

### Marine Osteoporosis

**Grades:** Middle School

This NOAA activity challenges students to use the scientific method to conduct an experiment to understand the effects of increased acidity on certain marine species. This activity is correlated with National Science Education Standards and is accompanied by a very informative PDF Presentation and video on ocean acidification which incorporates chemistry, biology and ecology concepts.

[Lesson Plan](#)

[PDF Presentation](#)

[Video](#)







# Plastic Pollution

A huge amount of plastic pollution is ending up in the ocean. Some of this plastic pollution originates in Colorado, which means each and every one of us can make decisions to help reduce the amount of plastic trash that is littering our oceans.



## Lesson Plans

### Plastic in the Pacific

**Grades:** Middle & High School

National Science Foundation's QUEST takes a closer look at how only seven percent of the plastic used in the United States is recycled. Much of the rest ends up in landfills, or worse, oceans. QUEST examines the problem with the "Great Pacific Garbage Patch" and challenges students to find solutions to this global issue.

[Lesson Plan](#)

[Video](#)

### Debris Dilemmas

**Grades:** Middle School

Jean-Michel Cousteau shares a learning activity and video that explores "Trash on the Spin Cycle" discovering what causes huge quantities of garbage to end up on the most remote islands in the world and how this garbage affects wildlife.

[Lesson Plan](#)

[Video](#)