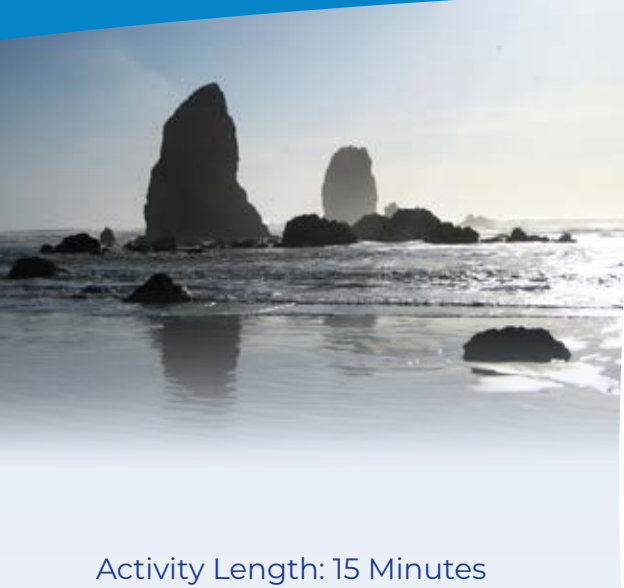


EDUCATION



Activity Length: 15 Minutes
(10 min activity, 5 min prep)

Materials

- White Stickers
- Red Stickers

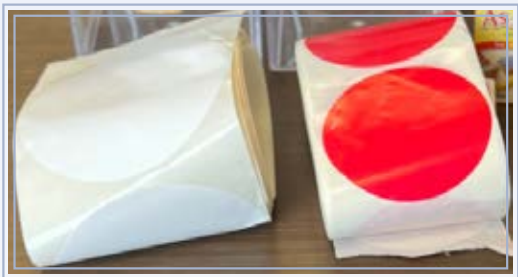


Figure 1: Module 3 Materials

Hey! What's All That Commotion In Our Ocean? An Ocean Acidification Education Toolkit

Module III

Swim, Snack, Sink

This activity will show some of the impacts that ocean acidification has on some of our ocean's sea creatures. Ocean acidification will affect pteropods' (sea butterflies) ability to build their shells because it makes calcium carbonate, a key shell building block, less available.

This activity works well if you have 10 or more players. It can work with less, it will just be a shorter game. In this game, players will be either a salmon (represented by wearing a red sticker) or a pteropod/sea butterfly (represented by wearing a white sticker), and the instructor will be 'ocean acidification'. The students will listen to the instructor's directions as to whether they should 'Swim', 'Snack', 'Pause', or 'Sink'.

- **'Swim'**: All players will randomly walk around the room. Pteropods can flutter their 'wings' (arms) while walking and salmon can swim with their arms
- **'Snack'**: All players will find a fish friend to link up with (see rules)
- **'Pause'**: Students will stop moving and Instructor will take away one white sticker (symbolizes ocean acidification taking away calcium carbonate from a pteropods)
- **'Sink'**: Players who cannot find someone to link up with are out of the game, they have been affected by the impacts of ocean acidification and can go to a high carbon dioxide ocean (a space designated before the game begins).

Learning Objectives

- Calcium carbonate is an important building block for pteropods and other shellfish.
- Ocean acidification is lessening the amount of calcium carbonate available which can weaken shells and affect the food web.

Value: Responsible Management

It's important that we take responsible steps to manage the issues facing our environment. This means thinking carefully about problems and focusing on the best ways to deal with the problems we face. We also need to keep future generations in mind while we look for the best solutions. Open-mindedness and long-term planning are the hallmarks of responsible management. Simply put, we should take a practical, step-by-step approach that relies on common sense and uses all the evidence we have to take care of our surroundings. Managing challenges responsibly is the right thing for us to do.

Instructions

Introduction:

Does anyone know what a crab, an oyster, and snail have in common? They all have shells! Shells are very important to these animals, they are just as important to these animals as our bones are to us. We would not be able to live without our bones, just as these animals would not be able to live without their shells.

The shells of these animals are made of something called calcium carbonate. Calcium carbonate is the building blocks for shells, just like a brick in the wall for a house. Ocean acidification from the burning of fossil fuels can weaken shells. A marine snail that looks like a butterfly, called a pteropod, is very sensitive to ocean acidification. The pteropod is a really important part of the salmon's diet. The pteropod is sometimes called 'snack of the sea' because so many creatures get a high quality meal from them. We are going to play a game to show us how ocean acidification can affect salmon, pteropods and our marine food web.

Rules

- ½ of players will be salmon (assigned 1 red sticker), ½ of players will be pteropods (assigned 1 white sticker) to be placed in a visible spot (chest, stomach)
- Players will 'swim' around the room (pteropods can make flying like motion while salmon make swimming strokes) until the instructor says, "Snack!" and they must quickly find a fish friend to link up with.
- Salmon can only link up with pteropods that have one (1) calcium carbonate (represented by the white sticker), salmon can not link up with other salmon.
- At any time ocean acidification (the instructor), can 'pause' the game and take away calcium carbonate (white sticker) from pteropods.
- Pteropods with zero (0) calcium carbonate can only link up with a pteropod with 1 calcium carbonate (1 white sticker)
- If they cannot find someone to link up with they 'sink' and are out of the game and head to the "High CO₂" space
- Fish do not run, they swim, so take it slow!

Supporting Questions

- What happened when ocean acidification came into the game?
- Could ocean acidification affect how many pteropods are available for salmon to eat?
- Could ocean acidification lessen the amount of salmon/food our ocean provides us with? How might ocean acidification affect the amount of food our ocean provides us with?

Solutions

- How can we responsibly manage our ocean to protect it for future generations?

See Pledge or Script for Examples

Definitions

Pteropod (teh-ruh-paad):

A small mollusk or snail that has wing like structures it uses to swim, often called the 'butterfly of the sea'

Calcium carbonate:

An important building block for marine animals like pteropods, crabs, and oysters use to make their shells