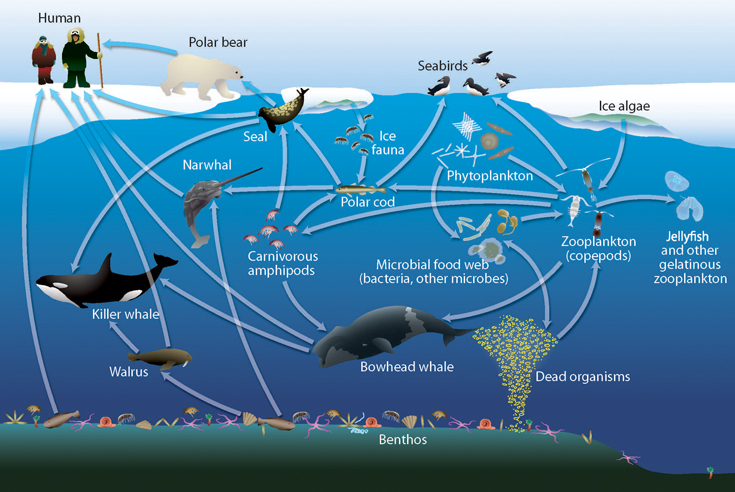
**Background Content:**

A pteropod is a tiny shelled planktonic snail that swims using a pair of converted feet as wings. It is also known as the ‘sea butterfly.’ This name is inherited from its elegant swimming style.  Pteropods have a very fragile shell, which is known to be very sensitive and vulnerable to ocean acidification. Ocean acidification can break down its shell hindering it from taking cover in its protective armor.

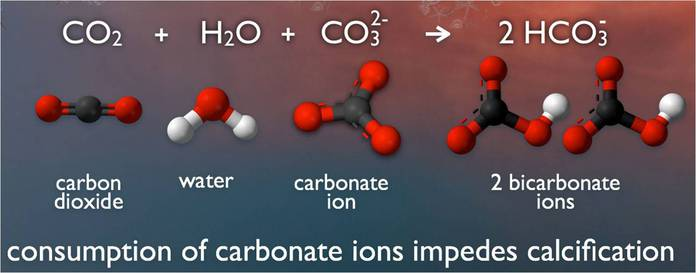


Shell dissolution of the pteropods has a negative effect on the ocean food chain. Pteropods are grouped with zooplankton in most food chains. Pteropods act as the ‘potato chip of the sea’ due to their importance as a food source for a variety of other Arctic marine species. The decline of this creature can create a lot of concerns for human needs, as well. For many ocean creatures, the pteropod is a basis for survival. Humans eat many ocean creatures that depend on pteropods (zooplankton) directly or indirectly for food. If plankton disappeared suddenly, many animals would starve.  According to the *National Oceanic And Atmospheric*, people in the United States typically consume a total of 4.833 billion pounds of seafood – or approximately 15.8 pounds of fish and shellfish per person. Seafood generally provides a low-fat source of high-quality protein. It is also the best way to get your dietary source of omega-3 fatty acids.



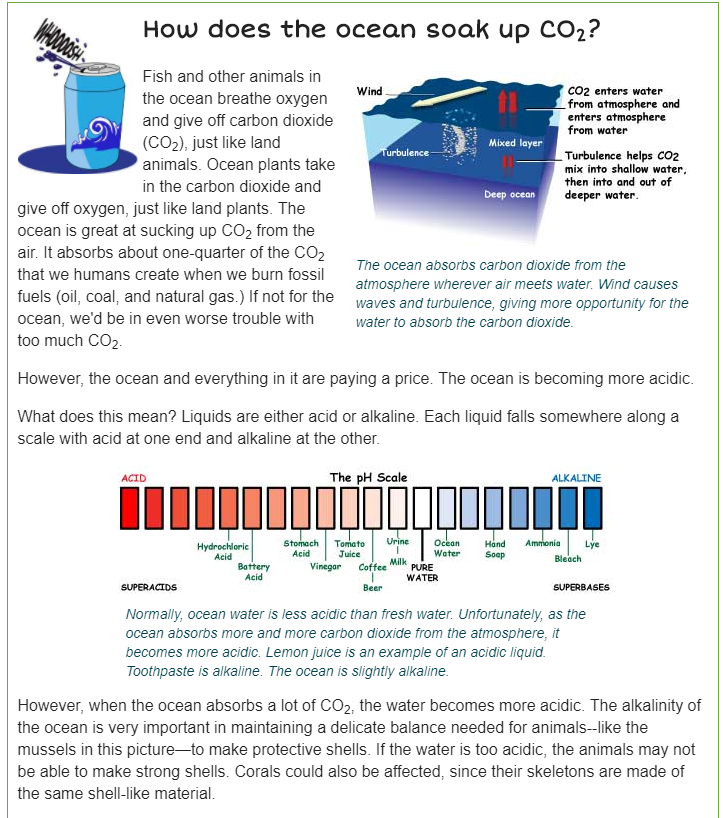
**Ocean Acidification and Climate Change**

Humans use a significant amount of energy for heating and cooling their homes, transportation, powering factories and countless of other energy dependent activities. Because of our energy dependence, our actions are greatly affecting the ocean acidification by releasing more and more CO2 into the atmosphere. Understanding how important pteropods are to the ocean food chain, it is vital that we also learn the causes of their shell dissolution. In other words, we need to determine what’s causing their shells to dissolve. In order to successfully accomplish this, we have to learn about ***acidification*** and how climate change is affecting the ocean.

Our daily activities lead to the increase of **Carbon Dioxide** (CO2). Carbon dioxide and other greenhouse gases such as petroleum, coal, natural gas, and anything generated by burning fossil fuels are considered to be one of the principal causes of global warming. The action of this leads to **Acidification.** The chemical changes in the seawaters, as well as its temperature, resulting from excess carbon dioxide in the atmosphere. When carbon dioxide (CO2) is absorbed by seawater, chemical reactions occur that reduce seawater pH, and increase carbonate ion concentration. (Higher CO2 in the atmosphere = higher CO2 in the ocean = Lower pH = More Ocean Acidification Chemistry, More Acidity). These chemical reactions are known as ocean acidification. The calcium carbonate in these reactions are the building blocks for skeletons and shells of many marine organisms (such as pteropods).   
  


Ocean Acidification reaction (NOAA PMEL Carbon Program).

The change in pH levels and carbon dioxide are logarithmic. This means that there are factors that contribute to their production. Mostly, our actions. Our choices of lifestyle. We use a lot of natural gases that are emitted into the atmosphere causing carbon dioxide. They are then absorbed in the liquid form by seawater into the oceans. This causes the chemical reaction known as acidification. This typically results in temperature rising, or also known as climate change. When the temperature in the oceans rise, the pH levels decrease and the ocean becomes more acidic and more dangerous to the species living in it. Pteropods become affected and can become extinct. This is a significant problem to pay close attention to because we, human beings will be highly affected if there isn’t any seafood left to eat.

**How does the Ocean Soak Up CO2?**  
  
NASA: Climate Kids

**Vocabularies/ and Description**:

* **Climate Change** - is a change in the usual weather: This could be a change in how much rain a place usually gets, or it could be a change in a place's usual temperature for a month or season.
* **Carbon Dioxide** (CO2) - derived from hydrocarbon deposit such as: petroleum, coal, or natural gas. Carbon dioxide and other greenhouse gases generated by burning fossil fuels are considered to be one of the principal causes of global warming
* **Acidification** - Is the chemical changes in the seawaters, as well as its temperature, resulting from excess carbon dioxide in the atmosphere. When carbon dioxide (CO2) is absorbed by seawater, chemical reactions occur that reduce seawater pH, and increase carbonate ion concentration. (Higher CO2 in the atmosphere = higher CO2 in the ocean = Lower pH = Ocean Acidification).
* **pH** - Measures the level of the acidity or alkalinity; The lower the pH level = the higher the hydrogen ions = more acidic.
* **Dissolution** - the closing down or dismissal of an assembly, partnership, or official body
* **Zooplankton**- Plankton are organisms drifting in oceans, seas, and bodies of fresh water
* **Pteropods** - are free-swimming pelagic sea snails and sea slugs, marine opisthobranches gastropods