

Photosynthesis and the ocean

Take a deep breath in. You just inhaled oxygen, along with other gases. Where did this oxygen come from? Organisms such as plants, trees, algae, kelp, and phytoplankton create oxygen when they make their own food in a process called photosynthesis. *Photosynthesis* involves taking energy from the Sun, along with carbon dioxide and water, to create a chemical reaction. The products of this reaction are oxygen and glucose (food). Organisms that make their own food through photosynthesis, such as kelp, phytoplankton, and plants, are called *producers* because they produce their own food.

Producers contain *chlorophyll*, which helps them gather energy from the Sun. Ocean producers, such as phytoplankton, also get nutrients from upwelling that occurs in the ocean. *Upwelling* occurs when warmer water on the surface of the ocean is moved by the wind. Then, nutrient-rich cold water moves up from the deep ocean toward the surface.

The oxygen that is released from producers during photosynthesis helps sustain life on Earth. Without oxygen, we would not be able to survive. Did you know that we get over half of our oxygen from the ocean? Tiny organisms called phytoplankton (plant-like plankton) use photosynthesis to create their own food. Phytoplankton are also important because they are the basis of all food webs in the ocean.

Photosynthesizing organisms in the ocean, such kelp, algae, marine plants, and phytoplankton, are also important to consider when thinking about the affects of *ocean acidification*, which is the increase in carbon dioxide uptake in our ocean. How will these producers be affected by increasing carbon dioxide levels in the ocean?