Unit 18: Marine Resources

Unit Focus

This unit introduces the student to the delicate balance between humans' use of the ocean and the amount of use that the ocean can tolerate. Students will investigate the importance of the ocean as a natural resource.

Student Goals

1. Define marine resources.
2. List important living and nonliving marine resources.
3. Distinguish between nonrenewable resources and renewable resources.

Vocabulary

Study the vocabulary words and definitions below.

aquaculture ..... sea farming; also called *mariculture*

biological resources ..... living organisms (plants and animals) from the ocean harvested for commercial use

manganese nodules ..... rounded lumps of valuable mineral deposits found on the ocean floor containing manganese and other elements; formed from minerals crystallizing from seawater

nonrenewable resources ..... sources available in limited amounts; cannot be replenished

physical resources ..... nonliving resources from the ocean such as minerals, energy, and the water used for recreational purposes

renewable resources ..... sources that can be replenished

reservoir rock ..... thick layer of animal and plant remains that accumulate on the continental shelf; often contains productive oil deposits

resource ..... a source or supply

spat ..... a juvenile oyster

upwelling ..... process by which deep, cold, nutrient-rich water is brought to the surface usually by water currents or winds that pull water away from the coast

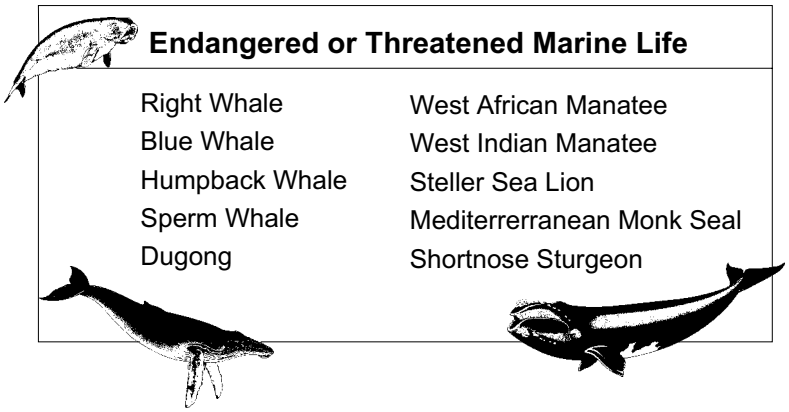
Introduction: Marine Resources—Balancing Use and Overuse

From the earliest moments of civilization, the ocean has provided us with many essential and nonessential **resources**. Marine animals and plants, of course, have provided us with nourishment to survive. Other types of resources including oil and gas have enabled us to develop into industrial societies. Without resources from the ocean, we would not be able to live at the level that many of us enjoy today.

Until recently, many people believed that the ocean would provide *unlimited* resources. As you can well imagine, it is difficult to see any real impact in the ocean even after gathering tons of fish each year or drilling offshore oil wells. However, the ocean's resources have become threatened in a number of different ways.

Some of the ocean's resources such as oil and gas are **nonrenewable resources**. There is no natural process that will produce new reserves of these resources. Once we drain our sources of available oil or gas (or many other nonrenewable resources), we will have to learn to live without them. Some resources such as fish and plants are **renewable resources**. These living resources continue to reproduce and provide us with new stores to replenish our stock.

But even renewable resources are not completely safe from destruction by human activities. As we continue to dump our sewage and toxic chemicals in the ocean, we are continuing to kill some or most—perhaps even all—of the food and other resources that we depend on. We also threaten some renewable resources by harvesting too much of them. If, for example, we catch all of a particular kind of fish, there will be none of this type of fish left to reproduce. If a species of fish or other marine organism became extinct, the food web of the ocean and Earth would be damaged. As resources from the ocean have begun to diminish, we have become aware of just how fragile is the balance of life in the ocean.



Nonrenewable Resources: The Ocean's Natural Resources

In addition to the obvious natural resources—such as oil and gas—industries also mine some other valuable deposits from the ocean. Sulfur is a nonmetallic element used in the production of rubber, insecticides, and pharmaceutical products. Some of the more important metals discovered on oceanic ridges and the ocean floor include zinc, iron, and copper, as well as silver, lead, gold, and platinum. These metals are used in a variety of ways. Zinc and copper, for example, are used in electrical wiring. Gold is also used as an electrical conductor, as well as in jewelry, and as an international monetary standard.

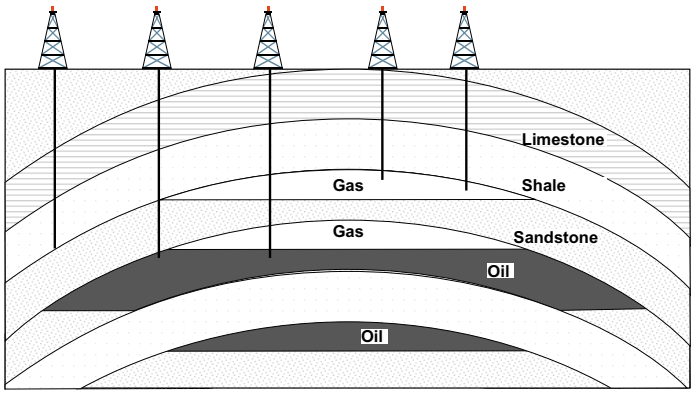
oil rig tower

Some resources mined from the ocean provide the construction industry with building materials. Sand, gravel, and shells are collected from the *continental shelf*. The continental shelf is the relatively flat part of the continent covered by seawater, between the coast and the continental slope (see Unit 7). And red clay and *oozes*, or soft mud, have also been mined from the *abyssal plain*, the large, flat regions on the ocean floor, and used in construction. The agriculture industry mines phosphates from the continental shelf for producing fertilizers.

Natural resources from the ocean are *nonrenewable*. Not only does overuse of these resources threaten our limited supply, but our methods of harvesting these resources often damage the marine environment.

Oil and Gas Deposits: Fueling Our Civilization

In our high-energy society, it is easy to see why oil and gas are the most valuable of marine resources. Oil and gas come from the remains of plants and animals that once lived in the rivers or seas. Long ago their remains settled to the ocean



oil and gas deposits in reservoir rock