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Ecosystems

Geography 301
Week 7

Lecture Notes

Organizing Marine Systems

- A marine system is an ocean **biome**. Elements in this **ecosystem** are characterized in one of two ways: **abiotic** or **biotic**.
 - The inorganic or abiotic elements include oxygen, water, and various minerals.
 - The biotic elements include the plants and animals living in the ocean.
- At the biotic level, there are three types of **organisms** to remember. These organisms all belong to the marine **food web**.
 - Producers**
 - Producers, or **autotrophs**, rely on abiotic resources for nourishment. Autotrophs are plants and algae, like **phytoplankton**.
 - These organisms occupy the first **trophic level** in the **food chain**. Thus, they are essential to most other organisms in a marine system.
 - Consumers**
 - Consumers, or **heterotrophs**, are organisms like zooplankton or **nekton** which survive by feeding on producers and other consumers. Their specific eating habits determine their sub-classification:
 - primary consumers/**herbivores** (mussels): eat autotrophs
 - secondary consumers (whales, lobsters): eat primary consumers
 - tertiary consumers/**carnivores** (seals, sharks): eat secondary consumers
 - tertiary consumers/**omnivores** (squids, sea turtles): eat both autotrophs and heterotrophs
 - detritivores** (sea cucumbers): eat already-dead autotrophs and heterotrophs

- Decomposers**
 - Decomposers, such as bacteria or fungi, break down dead organic matter and waste products.
 - The activity of decomposers reintroduces nutrients to the soil and water. Autotrophs then use these nutrients to restart the food cycle.

Ex 1. Read the lecture notes. Then, mark the following statements as *True* or *False*.

- 1 Autotrophs get most of their nourishment from biotic sources.
- 2 Herbivores and carnivores eat some of the same foods.
- 3 Decomposers produce nutrients for autotrophs.

True	False
True	False
True	False

Ex 2. Read the lecture notes again. Fill in the blanks.

A decomposer is an organism that processes organic . This process releases compounds into the environment that rely on for .

Ex 3. Match the words with the definitions (A-E)



autotroph primary consumer secondary consumer trophic level heterotroph

A any organism that eats other organisms

B an organism that eats producers

C an organism's position in a food chain

D an organism that eats consumers

E an organism that utilizes nonliving compounds

Ex 4. Complete the brief essay on the marine ecosystem.

A marine ecosystem is an underwater environment. Various

and biotic elements work together to make the
 operate.

The biotic of a marine ecosystem are the plants
and living there. They may be autotrophs,
heterotrophs, or . The type of

an organism consumes determines its role within
the food web.

Autotrophs are self-nourished producers. They're typically plants or

that sustain the other organisms. Heterotrophs are
other-nourished . They survive by feeding on other
organisms or what others produce. Thus, they eat animals, plants, or both.

Decomposers are the final group, and they consume

and decomposing . They
 down organic materials and reintroduce
 into the ecosystem.

