

# 1 Ecosystems

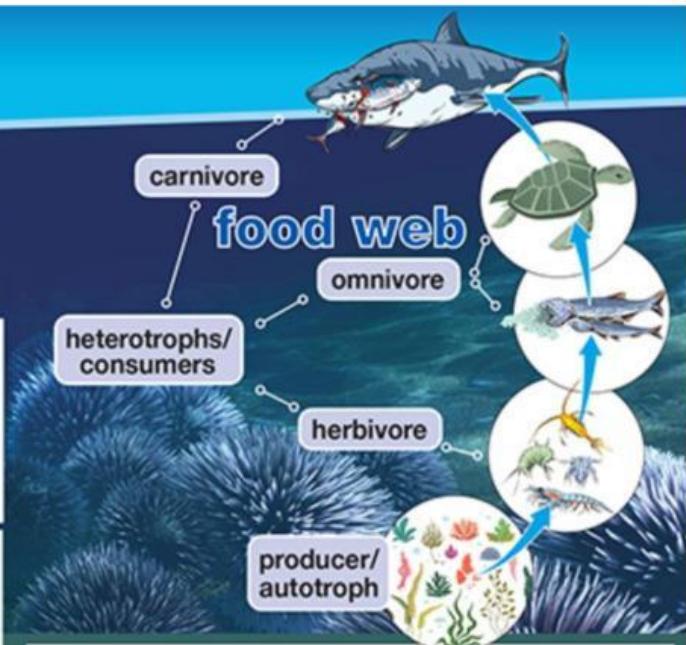
Geography 301

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.

True	False
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2 Herbivores and carnivores eat some of the same foods.

True	False
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3 Decomposers produce nutrients for autotrophs.

True	False
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## 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)**

**Word BANK**

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.

