ScienceCraft

Marine Biology

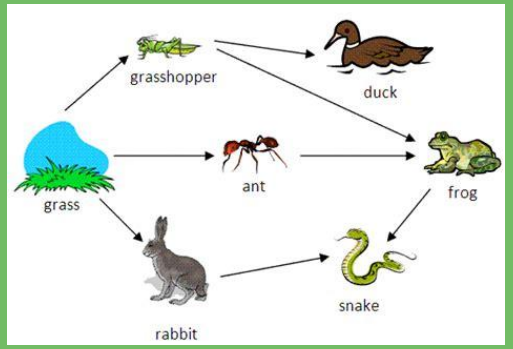
Overview

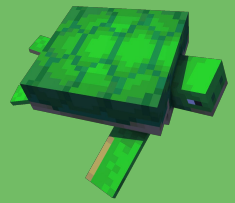
- Marine Biology is the study of marine organisms, their behaviors and interactions with the environment
- Not all water, only salty, “marine” environments like the ocean
- Marine biologists study biological oceanography and the associated fields of chemical, physical, and geological oceanography
- Very broad field with lots of unknowns
- Today, we’re going over a few common environments and the organisms that live there

Vocab

- ✘ Marine: of or relating to the sea
- ✘ Habitat: where a species lives
- ✘ Niche: the function of an organism in a community, its job or position
- ✘ Population: a group of individuals of the same species occupying a common geographical area
- ✘ Population Ecology: the study of how populations interact with their environment
- ✘ Population Density: number of individuals per unit of area or volume, e.g. persons/square mile
- ✘ Community Ecology: the study of how different species interact within communities

Species Interactions



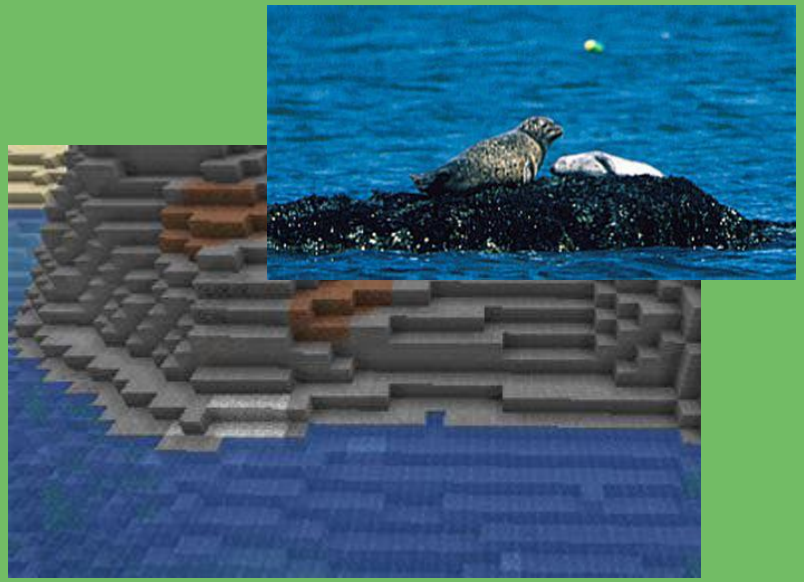


- ✘ Niches
  - ✘ Producers
  - ✘ Consumers (herbivores, omnivores, carnivores)
  - ✘ Decomposers
  - ✘ Detritivores
- ✘ Interspecific interactions
  - ✘ Neutral
  - ✘ Commensalism
  - ✘ Mutualism
  - ✘ Parasitism
  - ✘ Predation
- ✘ Intraspecific interactions
- ✘ Food chain, food web
- ✘ Trophic Levels

Estuary

- An estuary is an intertidal zone where a river meets the sea
- Brackish water is somewhat salty, but not as salty as the ocean.
- Water circulates quickly. Tides affect saltwater while river mouths affect freshwater
- Temperature, salinity, turbidity, depth and flow all change daily in response to the tides. This dynamism makes estuaries highly productive habitats, but also make it difficult for many species to survive year-round
- Herrings, migratory birds, detritivores

Shores



- The intertidal zone (also called the foreshore, seashore and the littoral zone) is the area that is exposed to air at low tide and underwater at high tide
- Similar to estuary in constant changes, but salinity is generally constant. Instead, organisms here deal with changing water levels
- Sun exposure, wind, changing tides, land predators
- Populations are mainly invertebrates like crabs and mussels, algae, sea birds, and marine mammals

Open Ocean

- The open ocean is the largest biome in the world by volume, but in terms of the quantity of life, the Pelagic resembles the most enormous desert ever known
- Extends from where there is enough sunlight for photosynthesis to the deep sea
- Clusters of reefs, sea floors, etc, but for the main part featureless
- Holds the majority of Earth's oxygen in algae
- Whales, sharks, jellyfish, many fish and invertebrates

Coral Reef

- Coral reefs are usually found in the tropics, and although corals make up a big part of the reef, they are just one component of an enormous community
- Built through the deposition of calcium carbonate (limestone) by corals over very long periods of time in warm areas close to the surface of the ocean
- One of the worst affected biomes by climate change
- Thousands of kinds of tropical fish and invertebrates

Deep Sea

- The Benthic Zone refers to the sea floor, which extends from the tidal areas all the way down to the deepest trenches on the planet
- Covers approximately 60% of the entire Earth's surface, making it the most common ecosystem on Earth
- Less than 5% explored!
- Extremely cold, high water pressure, no light. Weird adaptations to survive
- Invertebrates, angler fish, blobfish

Summary: Marine biology is the study of how ocean organisms interact with the living and nonliving parts of their environment. There are many types of interactions. Marine animals live in estuaries, on the shore, in the open ocean, on reefs, and in the deep sea. They are very diverse!