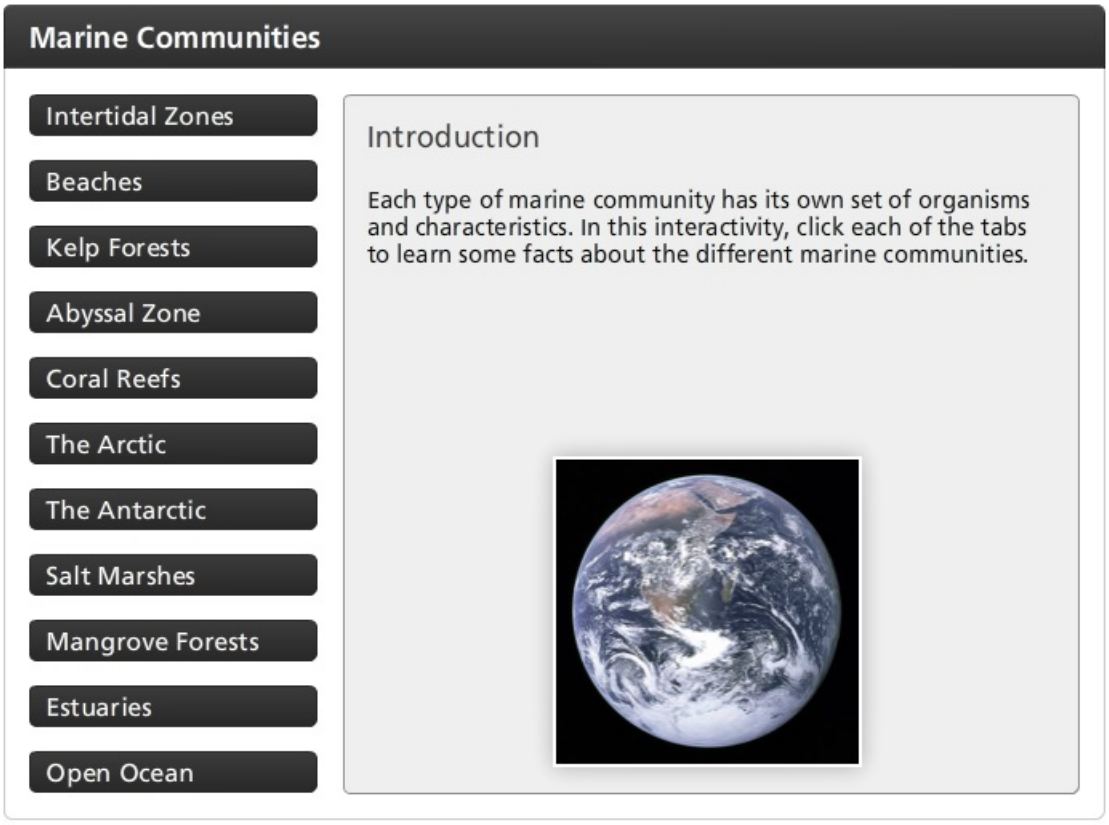
# Module 9: Marine Ecology
## Topic 4 Content: Marine Communities Notes




Each type of marine community has its own set of organisms and characteristics. In this interactivity, click each of the tabs to learn some facts about the different marine communities.

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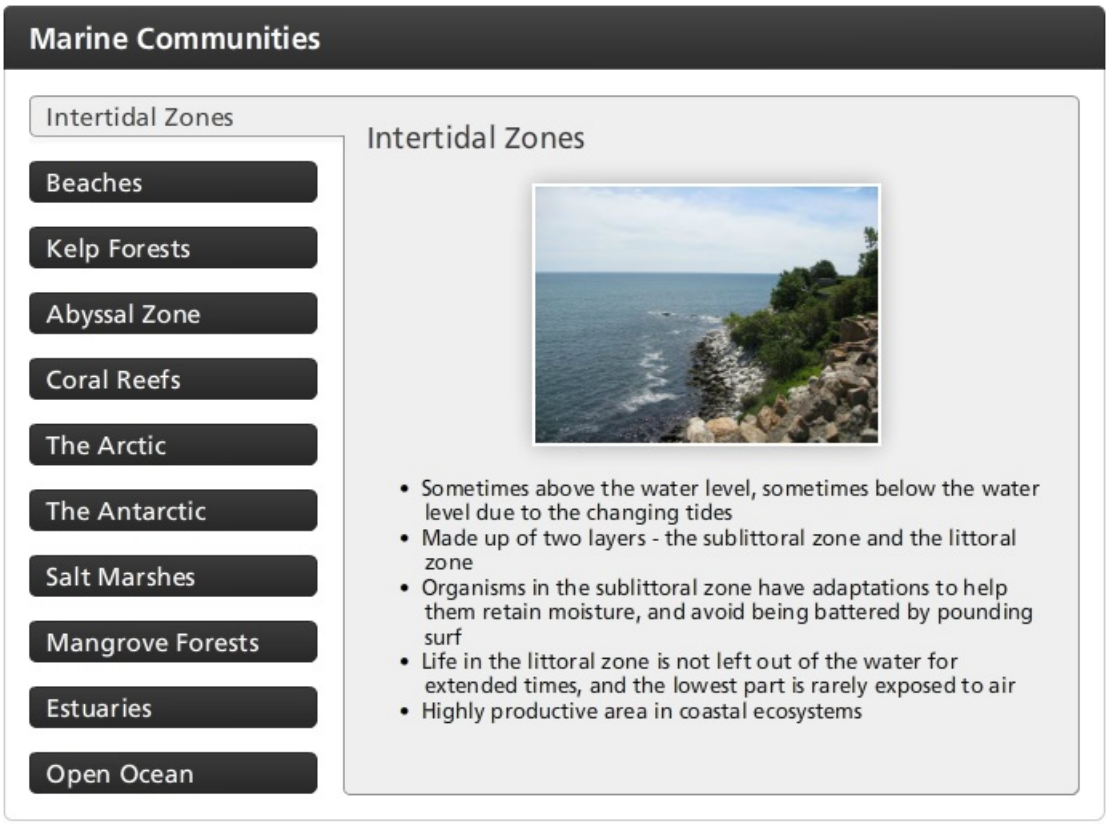


• Sometimes above the water level, sometimes below the water level due to the changing tides
• Made up of two layers - the sublittoral zone and the littoral zone
• Organisms in the sublittoral zone have adaptations to help them retain moisture, and avoid being battered by pounding surf
• Life in the littoral zone is not left out of the water for extended times, and the lowest part is rarely exposed to air
• Highly productive area in coastal ecosystems

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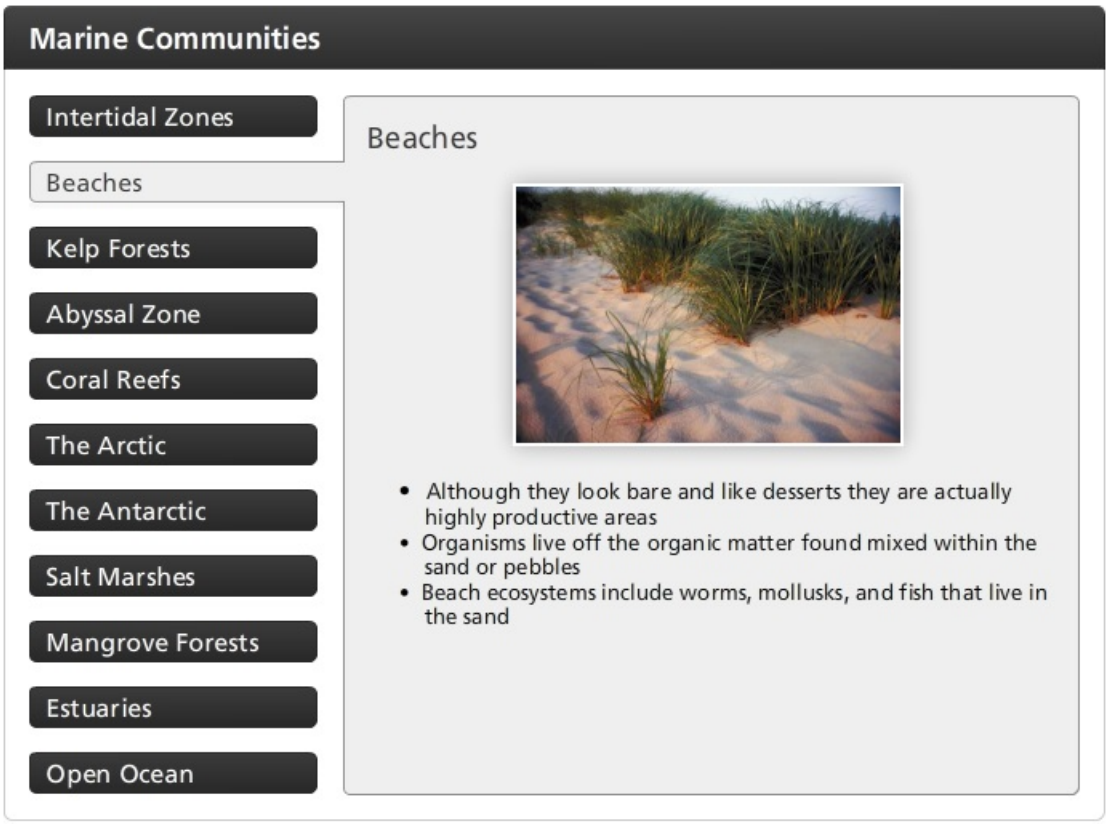


- Although they look bare and like desserts they are actually highly productive areas
- Organisms live off the organic matter found mixed within the sand or pebbles
- Beach ecosystems include worms, mollusks, and fish that live in the sand

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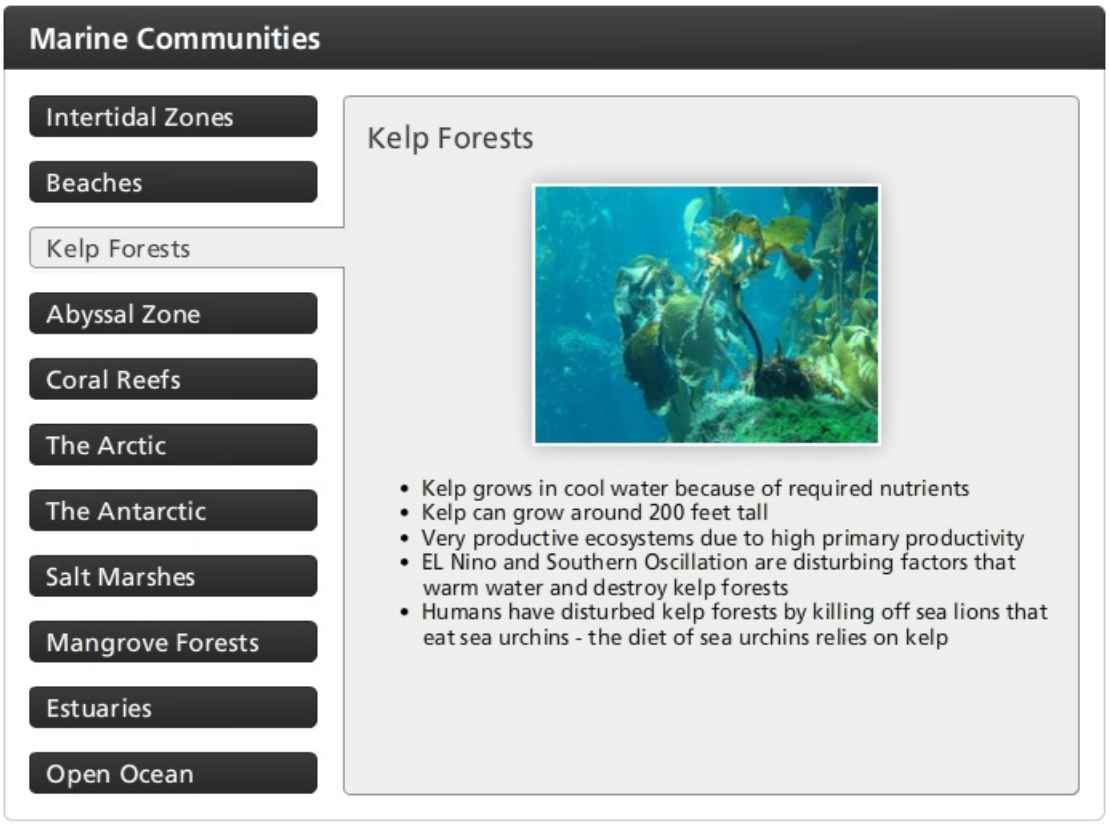
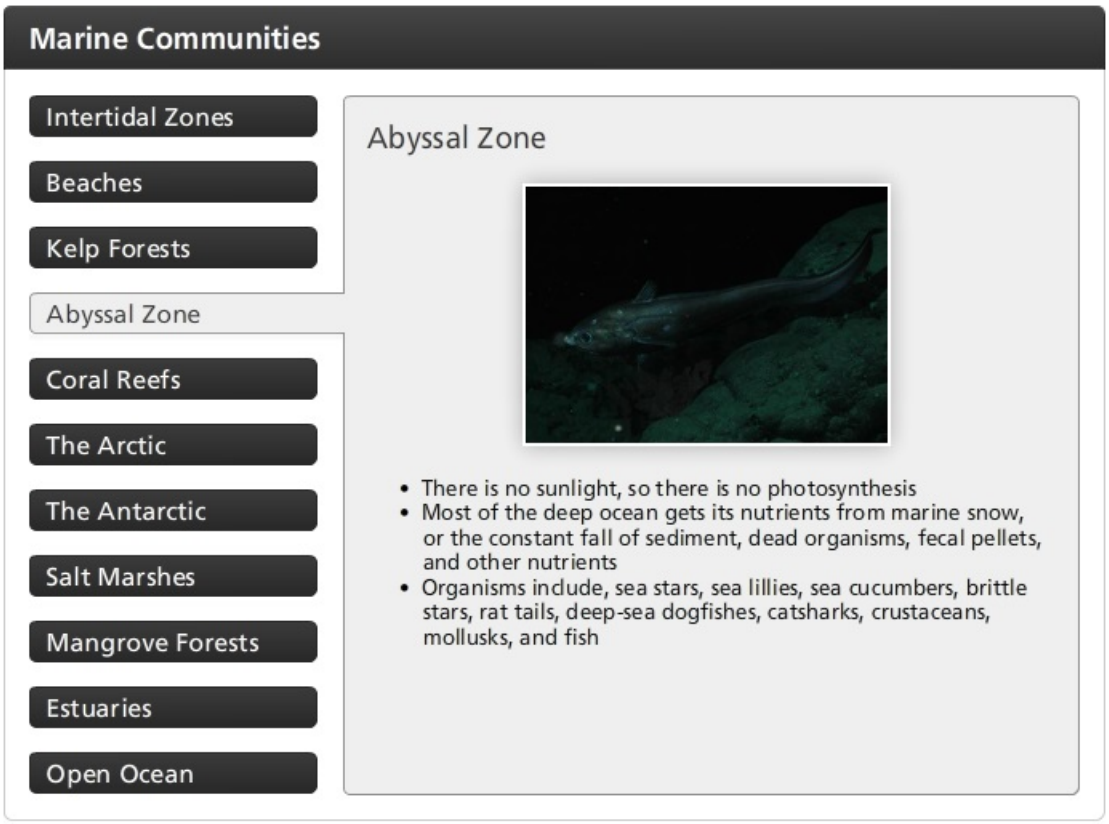



- Kelp grows in cool water because of required nutrients
- Kelp can grow around 200 feet tall
- Very productive ecosystems due to high primary productivity
- EL Nino and Southern Oscillation are disturbing factors that warm water and destroy kelp forests
- Humans have disturbed kelp forests by killing off sea lions that eat sea urchins - the diet of sea urchins relies on kelp




- There is no sunlight, so there is no photosynthesis
- Most of the deep ocean gets its nutrients from marine snow, or the constant fall of sediment, dead organisms, fecal pellets, and other nutrients
- Organisms include, sea stars, sea lillies, sea cucumbers, brittle stars, rat tails, deep-sea dogfishes, catsharks, crustaceans, mollusks, and fish

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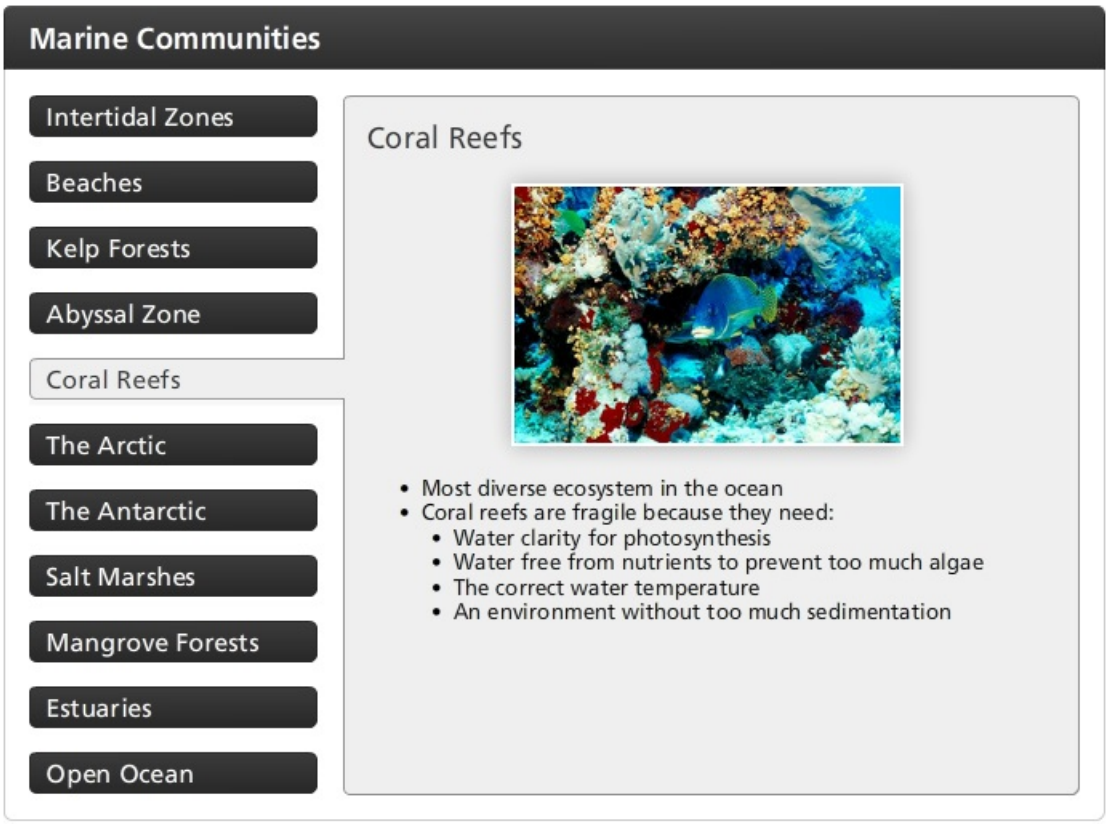
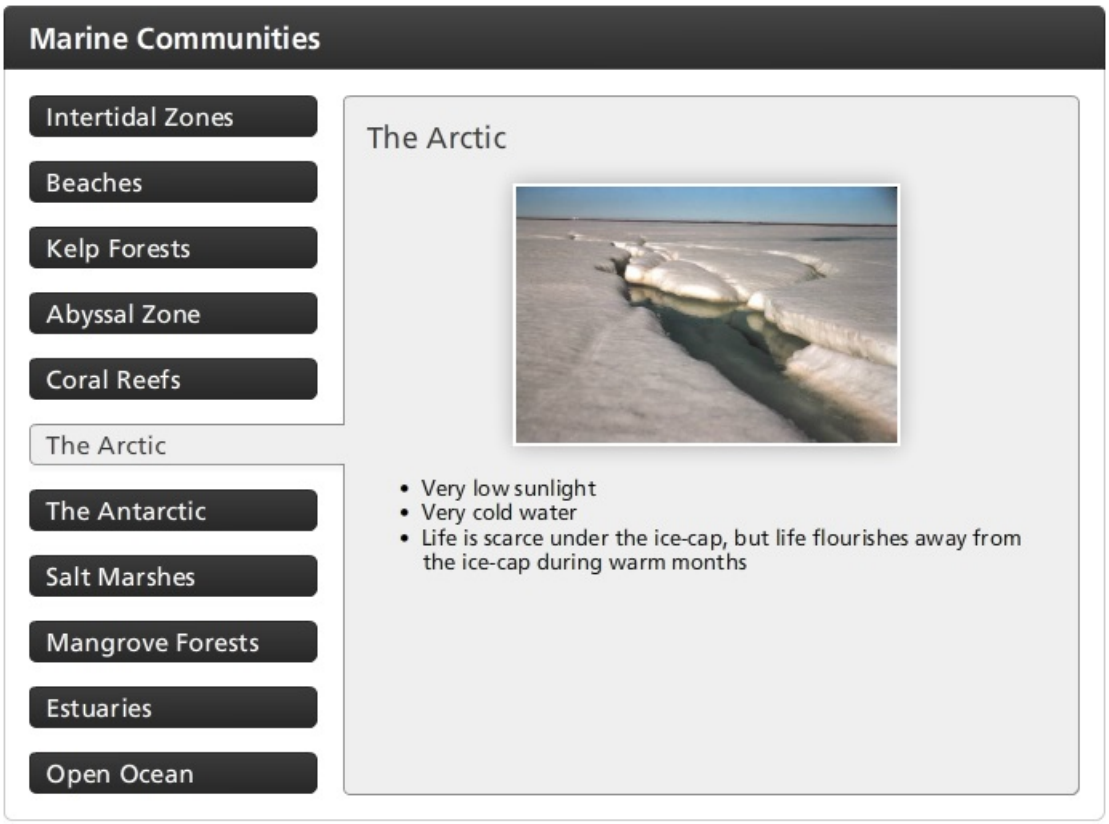
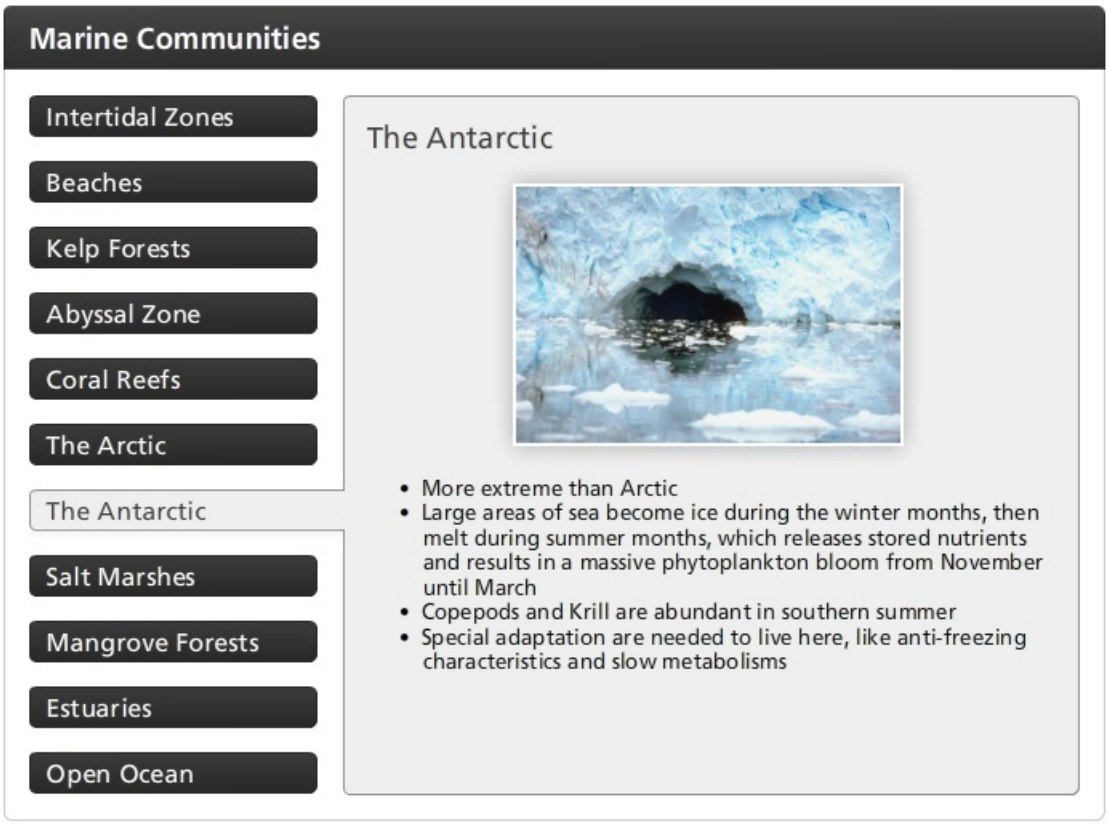



- Most diverse ecosystem in the ocean
- Coral reefs are fragile because they need:
  - Water clarity for photosynthesis
  - Water free from nutrients to prevent too much algae
  - The correct water temperature
  - An environment without too much sedimentation




- Very low sunlight
- Very cold water
- Life is scarce under the ice-cap, but life flourishes away from the ice-cap during warm months




- More extreme than Arctic
- Large areas of sea become ice during the winter months, then melt during summer months, which releases stored nutrients and results in a massive phytoplankton bloom from November until March
- Copepods and Krill are abundant in southern summer
- Special adaptation are needed to live here, like anti-freezing characteristics and slow metabolisms

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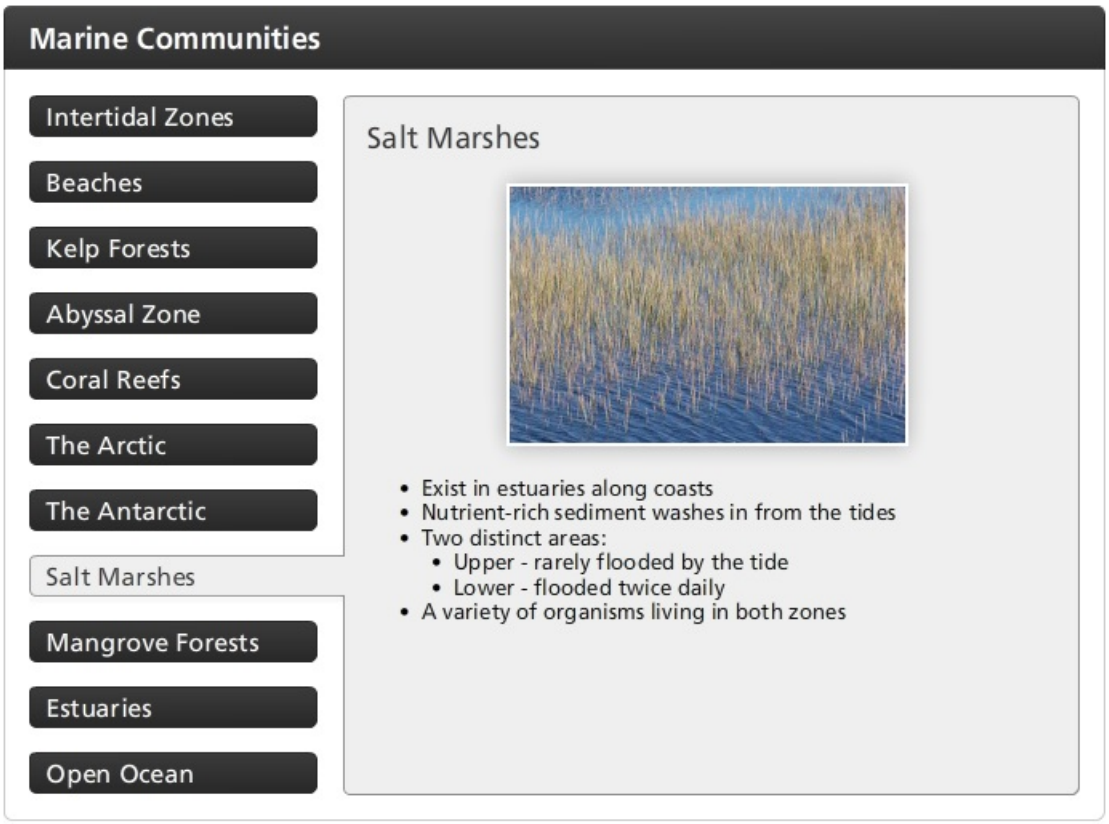
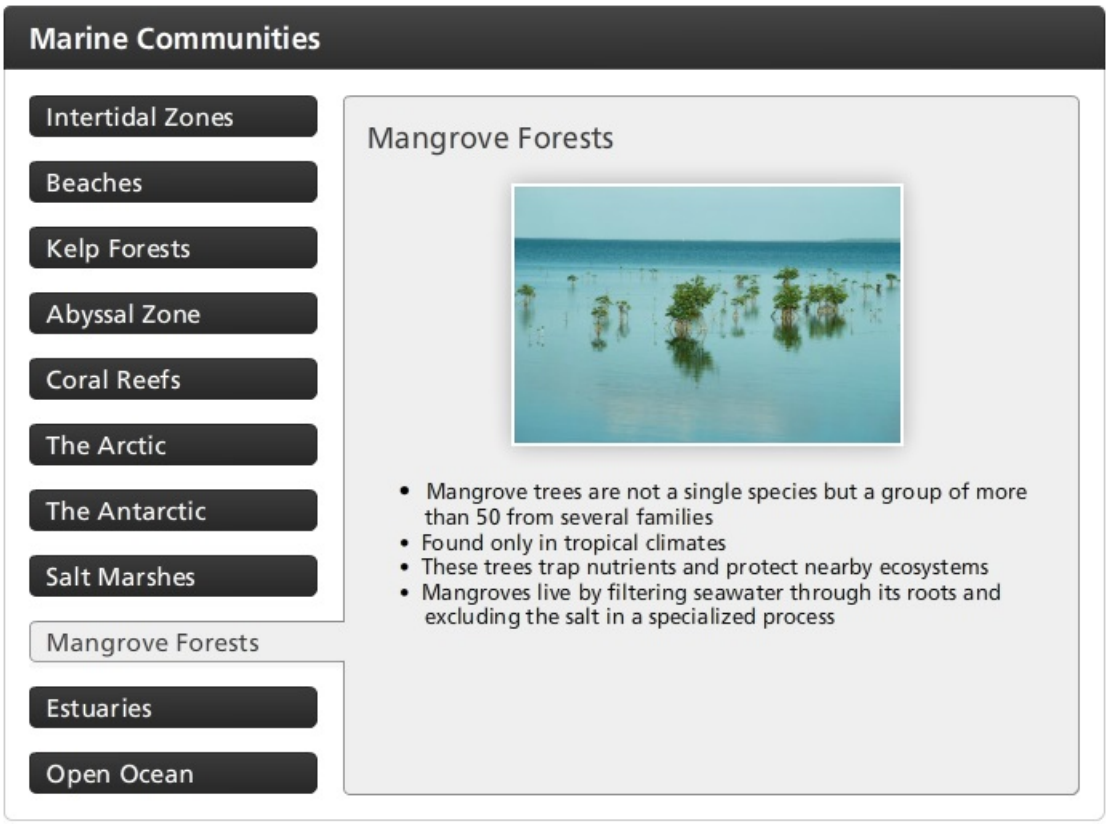



- Exist in estuaries along coasts
- Nutrient-rich sediment washes in from the tides
- Two distinct areas:
  - Upper - rarely flooded by the tide
  - Lower - flooded twice daily
- A variety of organisms living in both zones




- Mangrove trees are not a single species but a group of more than 50 from several families
- Found only in tropical climates
- These trees trap nutrients and protect nearby ecosystems
- Mangroves live by filtering seawater through its roots and excluding the salt in a specialized process

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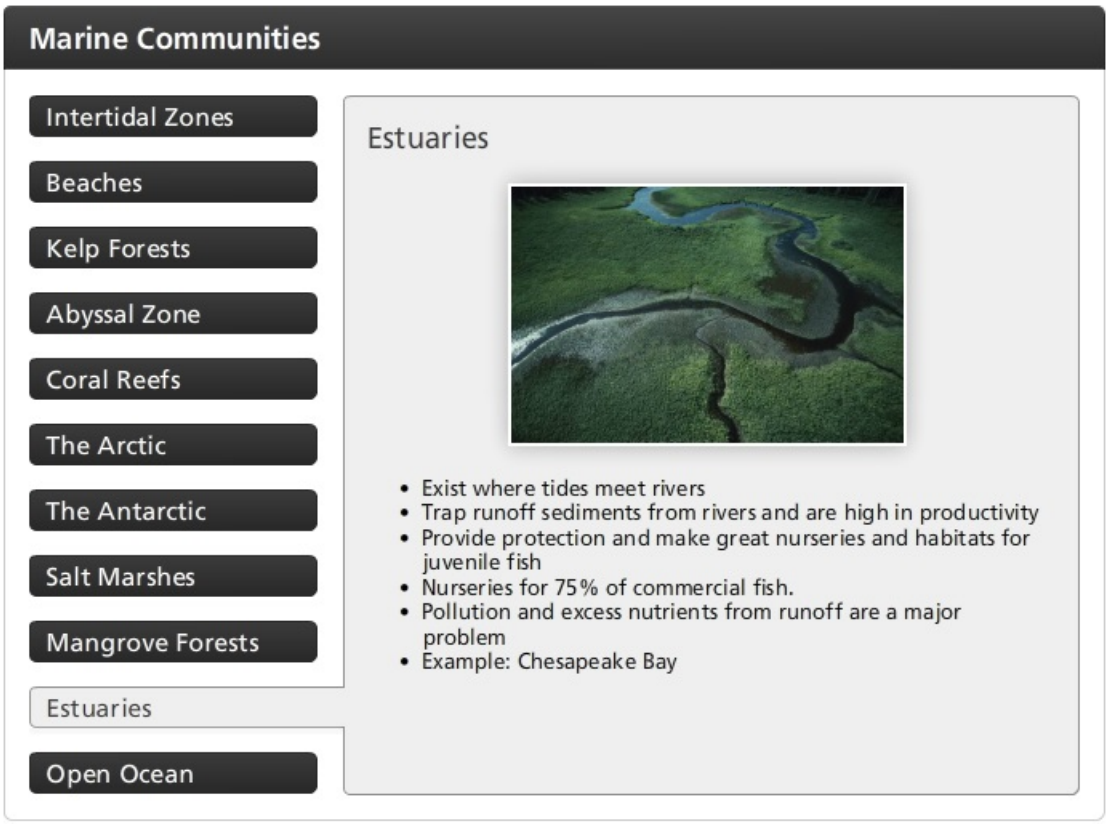


- Exist where tides meet rivers
- Trap runoff sediments from rivers and are high in productivity
- Provide protection and make great nurseries and habitats for juvenile fish
- Nurseries for 75% of commercial fish.
- Pollution and excess nutrients from runoff are a major problem
- Example: Chesapeake Bay

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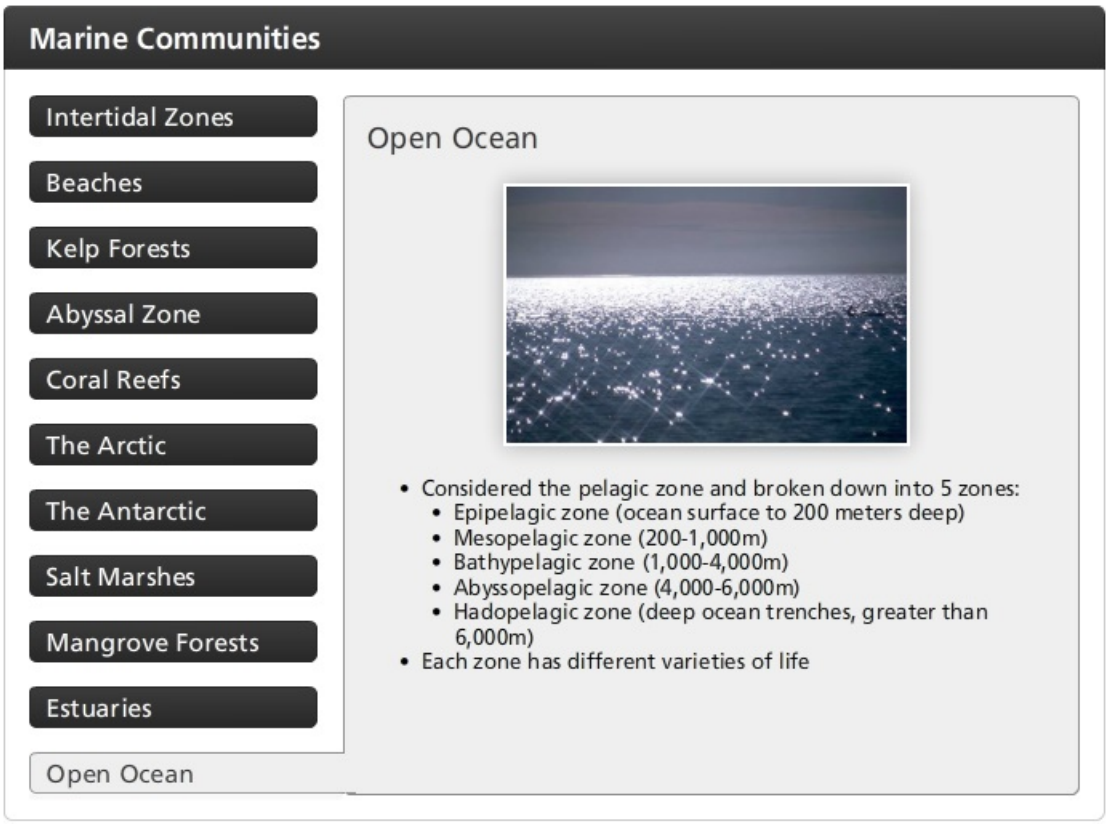


- Considered the pelagic zone and broken down into 5 zones:
  - Epipelagic zone (ocean surface to 200 meters deep)
  - Mesopelagic zone (200-1,000m)
  - Bathypelagic zone (1,000-4,000m)
  - Abyssopelagic zone (4,000-6,000m)
  - Hadopelagic zone (deep ocean trenches, greater than 6,000m)
- Each zone has different varieties of life