4.1

* Ocean coasts support plant and animal life
	+ Ocean waters contain many environments
		- Each has its own special characteristics
	+ The shoreline supports many plants and animals
		- **Habitat** – an environment that has all the necessary requirements for an organism to live
		- **Intertidal zone** – habitat at the edge of the ocean – the narrow ocean margin between the high tide mark and the low tide mark
			* At low tide, this area is dry and exposed to direct sunlight
			* At high tide, this area is covered with water
	+ Fresh water and salt water meet on the coasts
		- **Estuaries** – the fresh water from rivers mixes with salt water from the ocean in shoreline areas
			* Bays, inlets, harbors
			* Water is not as salty as ocean water or as fresh as river water
			* Salinity changes with the tide
		- **Wetlands** – wet, swampy areas that are often flooded with water
			* Salt marshes – away from the equator in cooler regions
			* **Mangrove forests** – closer to the equator in tropical regions
	+ Human activity affects shorelines
		- Can harm estuary environment
			* Filled in to get more room for housing developments

4.2

* Conditions differ away from shore
	+ Ocean environments change with depth and distance from shore
		- **Near shore** – waters over the continental shelf – sunlight reaches most of the way to the ocean bottom
	+ The waters near shore support diverse life forms
		- **Coral reefs** – built up limestone deposits formed by large colonies of ant-size organisms called corals
			* Corals produce a hard limestone covering that remains after the corals die out
			* **Kelp forests** – large communities of seaweed, found only in the waters near shore where sunlight reaches to the ocean floor. Provide habitats for many organisms
	+ Environments in the open ocean change with depth
		- **Surface zone** – sunlit top 200 meters (650ft)
			* Phytoplankton – microscopic floating organisms live at or near the sunlit surface
				+ Go through photosynthesis
			* Organisms in the surface zone must keep from sinking – have large surface areas, or use an air bladder to keep them afloat
		- **Deep Zone** – dark and cold, lies under the surface zone, no sunlight reaches the deep zone
			* Most organisms have adaptations to allow them to survive in the deep zones
	+ New discoveries about ocean life continue
		- Many new discoveries each year
		- **Hydrothermal vents** – openings in the Earth’s crust where heated water from Earth’s interior rises up and gushes out into the ocean

4.3

* The ocean contains natural resources
	+ The ocean supports living resources
		- **Seafood and algae** – often used to thicken common foods like cheese, ice cream, and pudding. Also used for nonfood products
		- **Overfishing** – catching fish at a faster rate than they can reproduce
		- **By-catch** – the portion of animals that are caught in a net and then thrown away
		- Saltwater aquaculture
	+ The ocean contains nonliving resources
		- Desalination of water gives us drinkable water
		- Energy resources – oil and gas
		- Minerals and rocks – ores and minerals
	+ Pollution affects the ocean
		- Solid and liquid waste