Oceans

Location on Earth:61% of the Northern Hemisphere is covered by oceans, while in the Southern Hemisphere the oceans cover 81% of the surface area Biotic and abiotic components: a close, prolonged association between two or more different biological species. a close, prolonged association between two or more different Salinity:35 parts per thousand Temperature: 100 degrees Soil Nutrients: nitrogen, phosphorus, potassium, micro-macro nutrients and trace elements. Organisms-Marine mammals are classified into four different taxonomic groups: cetaceans (whales, dolphins, and porpoises), pinnipeds (seals, sea lions Adaptations; Common oceanic animal adaptations include gills, special breathing organs used by some oceanic animals like fish and crabs; blowholes, an opening on the top of the head that's used for breathing; fins, flat, wing-like structures on a fish that help it move through the water; and streamlined bodies. Producers:algae and phytoplankton Consumers:zooplankton, small fish, and crustaceans Decomposers:fungi, marine worms, echinoderms, crustaceans and mollusks Food chains & Webs;algae plankton Trophic Levels:high Predator/prey Interactions Due to a combination of ocean conditions and

Due to a combination of ocean conditions and fishing pressure, sardine and anchovy populations are now at such low numbers that sea lions and other species off the U.S. West Coast are not getting enough to eat. More than 3,000 emaciated, dehydrated sea lion pups were rescued after becoming stranded on California beaches in 2015. Oceana is working on a new future for the ocean’s tiny fish. Forage fish, like sardines, herring, and market squid form the foundation of the food web – which in turn benefits everything else that eats them. Because forage fish are vital prey (food) for larger fish and

Relationships

Coral Reefs

Location on Earth: near the equator Biotic and abiotic components: the biotics factors are plants, crabs, fish, and coral. Physical Characteristics:a living coral or algal framework

rophic Levels:Trophic Levels of the Coral Reef Food Web Producers (plants) Primary Consumers (herbivores) Secondary Consumers (carnivores) Predator/prey Interactions:sharks (predator) and dolphins (prey), starfish (predator) and snails (prey), and barracudas (predator) and black triggerfish (predator).

Food chains & Webs: In a coral reef ecosystem, the primary producers are plankton and algae. Primary consumers include sea cucumbers and parrot fish. Secondary consumers include sharks, dolphins, eels, sea horses, jellyfish, and starfish. Decomposers are mainly bacteria

Estuaries

Location on Earth: wear rivers meet the sea Biotic and abiotic components: abiotic (amount of water, salt, light, etc.) or biotic (variations in competition, predation, parasitism, etc.) Physical Characteristics: Miles of beaches, flowing grasses, marshes, creeks, and streams.

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Symbiotic: symbiosis is defined as a close, prolonged association between two or more different biological species. This relationship can be symbiotic (mutualistic), where both parties involved benefit from the intera-ction, or it can be parasitic, where one party benefits while the other is harmed. Example of a symbiotic relationship: is a parasitic isopod of the family Cymoth-oidae. It enters fish through the gills. The female attaches to the tongue, while the male attaches to the gill arches beneath and behind the female.	Mutualism: What is it? all species involved benefit from their intera-ctions. How do the species survive? Resource partition-ing(when different organisms within an ecosystem split up an area so that they will not compete for the same resources and when those organisms have a special adapta-tion.) What is an example? Clownfish and sea anemone	Commen-salism: What is it? an association between two organisms / animals in which one benefits and the other derives neither benefit nor harm. How do the two species survive? A commensal species benefits from another species by obtaining locomotion, shelter, food, or support from the host species, which (for the most part) neither benefits nor is harmed. Commen-salism ranges from brief intera-ctions between species to life-long symbiosis. What is an example? Spider makes web in deer's horns which enhances the probability to get food because of the random movement of the deer.	

fisheries, recreation and tourism economies of coastal states. Oceana is working on a compre-hensive set of solutions to better manage the ocean’s tiny fish.	their use as feed in aquaculture operations. This is not just an enviro-nmental issue, but an economic one as well; forage species help support commercial fisheries, recreation and tourism economies of coastal states. Oceana is working on a compre-hensive set of solutions to better manage the ocean’s tiny fish.

Estuaries (cont)

Organisms- Fish, shellfish, and migratory birds Adaptations: strong immune system to tolerate the changes in salinity of water Producers: salt meadow hay, cordgrass, and glasswort Consumers: oysters, fish, herons, dolphins and crabs. Decomposers:-bacteria, flies, snails, tube worms, and fiddler and blue crabs. Food chains & Webs:One begins with large plants such as mangroves, seagrass and rushes. When they die their leaves and roots are broken down by bacteria and fungi to become detritus. Detritus is eaten by small animals such as snails, worms and shellfish and they, in turn, are eaten by larger creatures such as fish and birds. Trophic Levels:producers, consumers, and decomposers. Predator/prey Interactions: The shark is the apex (top) predator

Ponds

Location on Earth:Ponds are found in countryside on farmland, floodplains and heathlands; in woods, on grasslands and on moors. Biotic and abiotic component: rocks Lily Pads & frogs Physical Characteristics: quiet body of water which is shallow enough that plants often grow all the way across it.

Organisms: Pelican, frog, fly, fish, cattails, phytoplankton, fungi. Adaptations: Gills, Webbed feet, Producers:Phytoplankton, Cattail. Consumers: Frogs, fish, Pelican Decomposers: Flies, hydrophytic bacteria, fungi Food chains & Webs: Fly-frog-pelican, Trophic Levels:low Predator/prey Interactions:Frog eats fly pelican eats frog.

Lakes

Lakes (cont)

Organisms- fish, ducks, zooplankton, tadpoles Adaptations: Fish have developed gilles and ducks have webbed feet Producers:phytoplankton, or microscopic floating plants. Consumers:zooplankton, ducks, tadpoles, mayfly nymphs and small crustaceans. Decomposers:bacteria and fungi.

Oligotrophic: (especially of a lake) relatively low in plant nutrients and containing abundant oxygen in the deeper parts. Mesotrophic: Intermediate levels of nutrients, fairly productive in terms of aquatic animal and plant life and showing emerging signs of water quality problems.

Streams

Swamps

Location on Earth:-Freshwater swamps are commonly found inland, while saltwater swamps are usually found along coastal areas Biotic and abiotic components: Physical Characteristics: forested wetlands

Organisms- american gator,-cottonmouth Adaptations:Some examples of physical adaptations are: color of the fur, shape of nose or ears, horns or antlers that can be used to fight off predators, and chemicals Producers:Salt marshes facilitate complex food webs including primary producers (i.e. salt-tolerant grasses, vascular plants, phytoplankton, etc.), primary consumers (i.e. zooplankton, molluscs, insects, etc.), and secondary consumers (i.e. birds and fish) Consumers:crustaceans, mollusks, and aquatic insect larvae to muskrats, geese, and deer Decomposers: mushrooms, snails, worms, and fungi.

Trophic Levels: Freshwater swamps form around lakes and streams. Rain and seasonal flooding cause water levels Predator/prey Interactions: pumpkinseed sunfish eating aquatic insects or largemouth bass eating pumpkinseed and bluegill sunfish.

Ocean in Arctic with Ice

Location on Earth: surrounded by Eurasia and North America Biotic and antibiotic components: a close, prolonged association between two or

Predator/prey Interactions Predator/prey Interactions Due to a combination of ocean conditions and fishing pressure, sardine and anchovy populations are now at such low numbers that sea lions and other species off the U.S. West Coast are not getting enough to eat. More than 3,000 emaciated, dehydrated sea lion pups were rescued after becoming stranded on California beaches in 2015. Oceana is

Location on Earth:in mountains and deserts, on plains, and near seashores. Biotic and abiotic components: algae, fish, Physical Characteristics:Relatively large body of slow-moving or standing water that occupies an inland basin.

Food chains & Webs:Phytoplankton and algae form the bases of aquatic food webs. They are eaten by primary consumers like zooplankton, small fish, and crustaceans. Primary consumers are in turn eaten by fish. Trophic Levels: Oligotrophic lakes are nutrient-poor, with few plants and very clear water. Predator/prey Interactions: Zooplankton are eaten by fish who are then eaten by duck or birds that happen to fly by.

Location on Earth: commonly located in dry areas, but connected to a watershed, or drainage basin. streams connect with each other inland bodies of water to other inland bodies of water. Biotic and abiotic components: fish, rocks Physical Characteristics:pools, riffles, meanders, floodplains, channel, runs, and riparian corridors. Trophic Levels: oligotrophic (TSI 0–40, having the least amount of biological productivity, "good" water quality); mesotrophic (TSI 40–60, having a moderate level of biological productivity, "fair" water quality); or. eutrophic to hypereutrophic (TSI 60–100, having the highest amount of biological productivity, "poor" water quality). Predator/prey Interactions: Aquatic birds eat the fish and amphibians eat fish too.

Organisms: Molluscs, like clams and mussels. Amphibians, like salamanders and frogs. The larvae of many insects, like dragonflies, damselflies, and mayflies. Adaptations:Streamlined bodies, suction feeding, camouflage, attachment structures, and specialized respiration Producers:algae, cyanobacteria, bryophytes, and vascular macrophytes. Consumers:snails, insects, crustaceans, amphibians, fish, and aquatic birds. Decomposers:Microorganisms, like bacteria and fungus. Food chains & Webs:AN AQUATIC INSECT EATS MICROSCOPIC PLANTS, THEN A SMALL FISH EATS THE AQUATIC INSECT, AND A LARGER FISH EATS THE SMALL FISH.

more different biological species. Physical Characteristics: Salinity:35 parts per thousand Temperature: −1.8 °C (28.8 °F) Soil Nutrients:

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Ocean in Arctic with Ice (cont)

Organisms-Marine mammals are classified into four different taxonomic groups: cetaceans (whales, dolphins, and porpoises), pinnipeds (seals, sea lions Adaptations:Adaptations;Common oceanic animal adaptations include gills, special breathing organs used by some oceanic animals like fish and crabs; blowholes, an opening on the top of the head that's used for breathing; fins, flat, wing-like structures on a fish that help it move through the water; and streamlined bodies. Producers:algae phytoplankton Consumers:zooplankton, small fish, and crustaceans Decomposers:fungi, marine worms, echinoderms, crustaceans and mollusks Food chains & Webs:algae plankton Trophic Levels:high

Artic Tundra

Location on Earth:just below the ice caps of the Arctic, extending across North America, to Europe, and Siberia in Asia. Biotic and abiotic components: Biotic Factors: Low Shrubs (sedges, reindeer mosses, liverworts, and grasses), Crustose and Foliose Lichen, Herbivores (lemmings, voles, caribou), Carnivores (arctic foxes, wolves, polar bears), Migratory Birds (ravens, snow buntings, falcons, loons), Insects (mosquitoes, flies, moths, grasshoppers),temperature. Abiotic: Wind, rain, snow, sunlight, soil, rocks, permafrost. Physical Characteristics: Extremely cold climate, low biotic diversity. Simple vegetation structure,limitation of drainage,

Organisms- polar bears snowy owls reindeers arctic foxes and musk ox. Adaptations: Warm winter coats. Many mammals have specialized coats to ward off the winter cold. ... Heat-efficient body shape. ... Growth and reproduction. ... Camouflage. ... Hibernation. ... Snow as insulation. ... Perennials. ... Heat Efficiency. Producers:Grass, sedge, moss, lichen, willow shrub, wild berry plants, and aquatic phytoplankton Consumers:Arctic hares, caribou, musk ox, pika, lemmings, ptarmigan, and kea Decomposers:molds, yeasts,

short season of growth and reproduction, energy and nutrients in form of Dead organic material, large population oscillations. Salinity: between 34 and 30 ppt Temperature:The average winter temperature is -30° F, but the average summer temperature is 37-54° F Soil Nutrients:The soil of the tundra is also nutrient poor, so it lacks nitrogen and phosphorus – two important elements plants need to grow. This keeps the plants small and makes plant growth slow. Daylight hours:In summer, the sun remains above the horizon 24 hours a day for from 2 to 85 consecutive days, depending on the latitude; in winter, it can remain below the horizon 24 hours a day for as long as 67 consecutive days. All sunlight is received at oblique angles that average 41 degrees.

the fungi from lichen, and microorganisms called bacteria. Food chains & Webs:For instance, along the coast of the arctic tundra, phytoplankton is at the bottom of the food chain. Zooplankton eats the phytoplankton, cod eats the zooplankton, harbor seals eat the cod, and polar bears eat the seals. Polar bears, in this food chain example, would be the apex predator Trophic Levels:plants, herbivores and predators Predator/prey Interactions The food chain in the Arctic Tundra consists of predators such as owls, foxes, wolves, and polar bears at the top of the chain. Predators hunt herbivores, plant eating animals, such as caribou, lemmings, and hares.