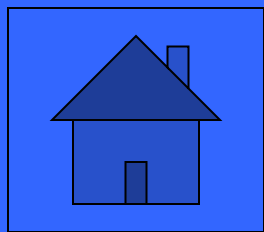
Symbiotic Relationships	Adaptations/ Biomes	Energy Roles Food Webs	Biomes/ Mixed Ecology	Evolution
100	100	100	100	100
200	200	200	200	200
300	300	300	300	300
400	400	400	400	400
500	500	500	500	500

What is symbiosis and what are the three types of symbiotic relationships?

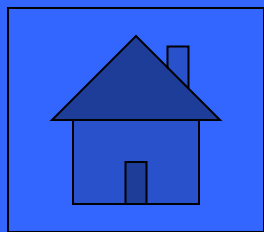
Symbiosis is an interaction between two organisms where at least one benefits.

The three types are: mutualism, parasitism and commensalism.



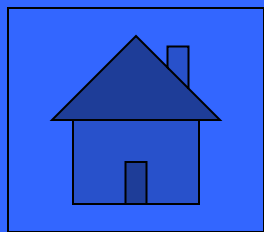
One example of a symbiotic relationship is that of the oxpecker (a kind of bird) and the zebra. Oxpeckers land on zebras and eat ticks and other parasites that live on their skin. Also, when there is danger, the oxpeckers fly upward and scream a warning, which warn the zebra of a possible threat. What type of symbiotic relationship is this?

Mutualism



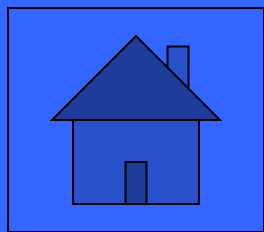
A few species of pseudoscorpions conceal themselves under the wing covers of large beetles such as the cerambycid beetle. The pseudoscorpions gain the advantage of being dispersed over wide areas while simultaneously being protected from predators. The beetle is unaware of the presence of the hitchhikers because they don't cause a positive or negative reaction. What type of symbiotic relationship is this?

Commensalism



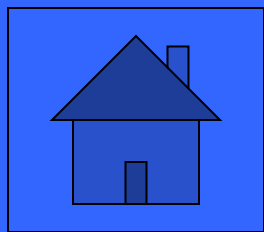
Tapeworms are segmented flatworms that attach themselves to the insides of the intestines of animals such as cows, pigs, and humans. They get food by eating the host's partly digested food, depriving the host of nutrients. What type of symbiotic relationship is this?

Parasitism



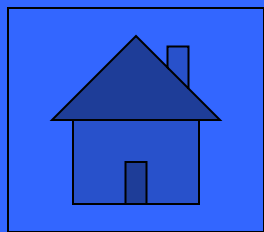
The relationship is between juvenile fish and jellyfish. The juvenile fish swims around the jellyfish, gaining a safe haven from potential predators. The jellyfish is not eaten by the fish nor does it eat the fish. What type of symbiotic relationship is this?

Commensalism



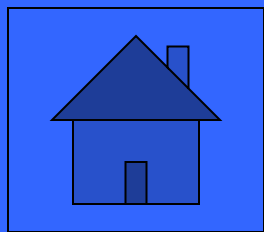
What is the difference between an ecosystem and a biome?

An ecosystem is all the living and non-living things in a specific area. A biome is many ecosystems that share the same climate. Ex-the Sonoran Desert in Arizona and the Sahara Desert in Africa are both desert biomes, but two different ecosystems. They have different plants and animals that live in them, but similar climates (both hot and dry)



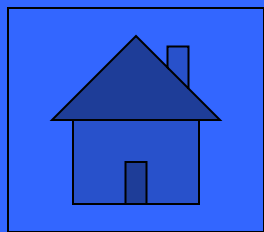
The swallowtail butterfly is a little confused. The back end of the butterfly looks like the head end. Often birds go after this "tail end" thinking it is the front end, and the butterfly flies away with the bird holding a "tail" in its beak. What kind of adaptation is this an example of?

False Coloring



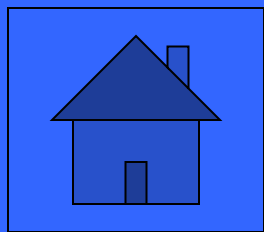
What biome has plants that can expand to hold more water and animals that are mostly nocturnal?

The Desert.



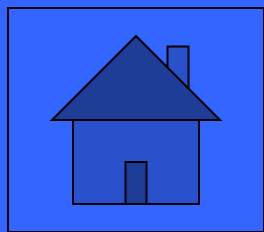
What are two adaptations that plants have to survive in the tropical rainforest?

They have dark green leaves to absorb sunlight, grooves and drip tips to let the water drip off, leaf stalks that turn with the sun, oily coatings to repel water, straight trunks, thin bark and buttresses for support.



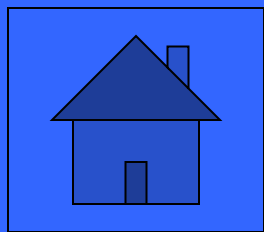
A cat hissing and arching its back to make itself appear larger is an example of what kind of adaptation?

Threat Display

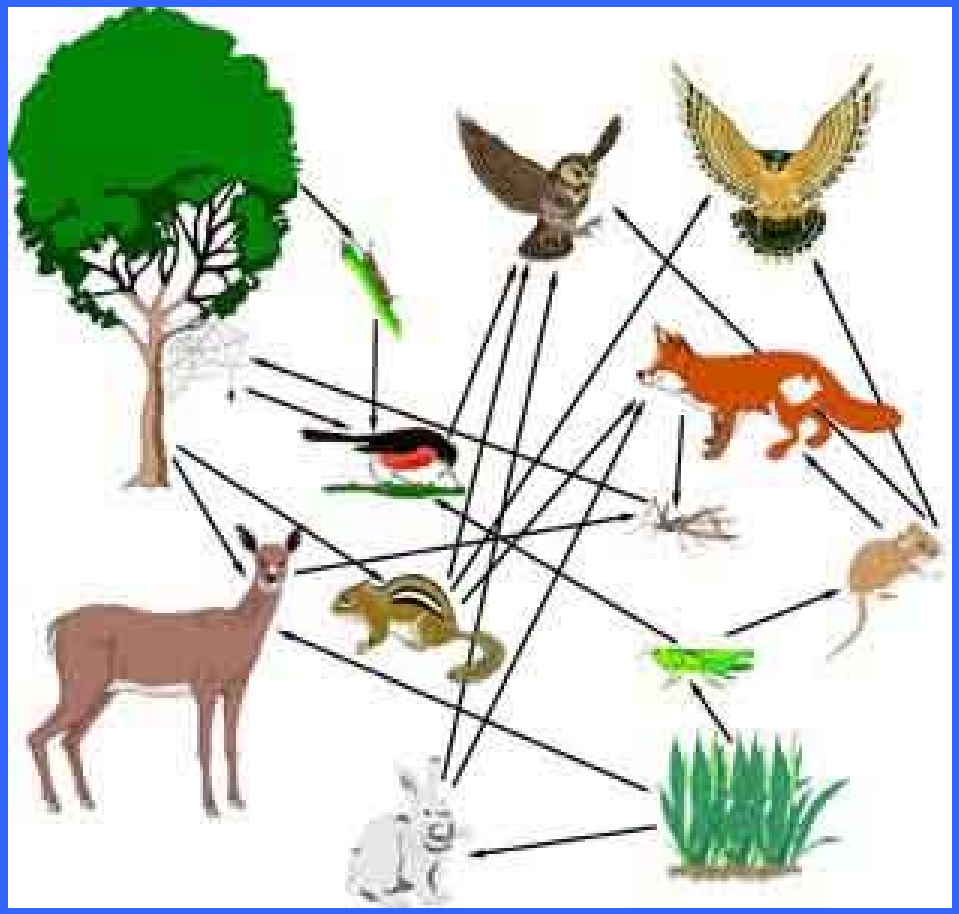


What do the arrows represent in a food web? Which direction are they drawn?

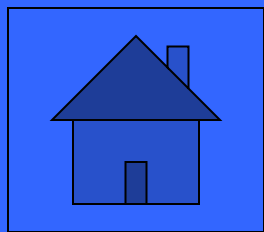
They represent an energy transfer between two organisms. They point to the organism that receives the energy.



There is an Oak tree pictured in this food web. What is its energy role?



It is a producer.

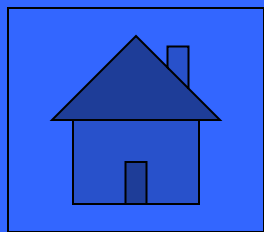


Describe the role of decomposers.

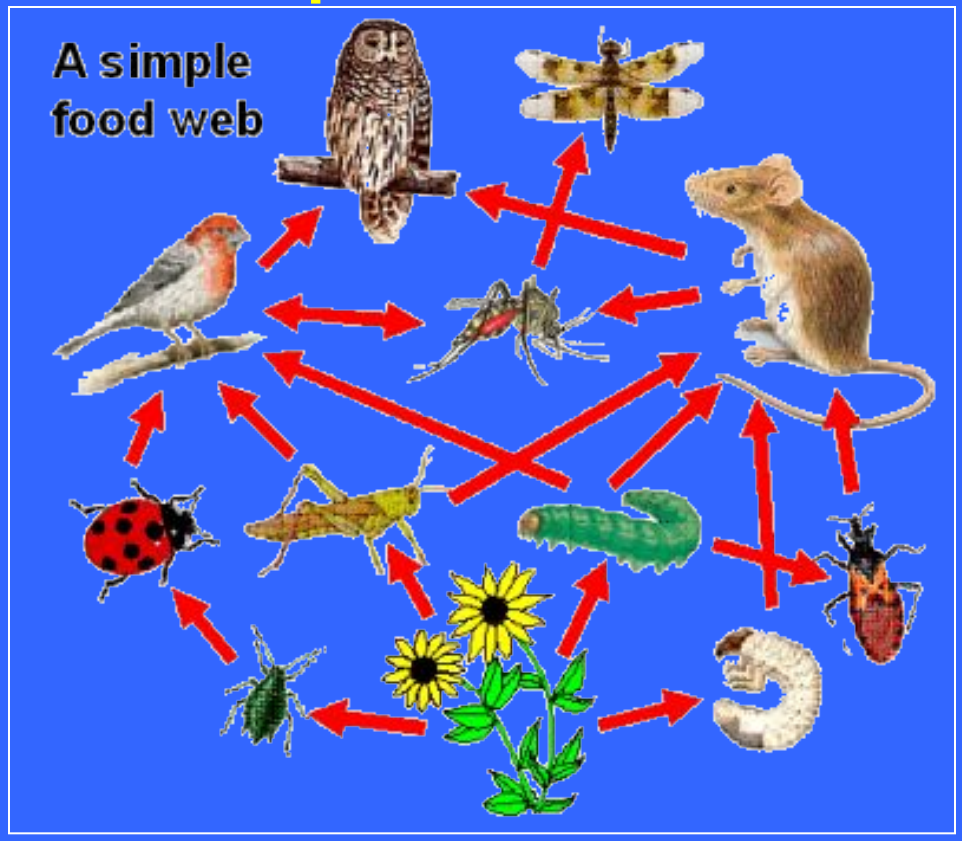
What two kingdoms are decomposers?

Decomposers are organisms that break down dead organisms and return the raw materials back to the environment.

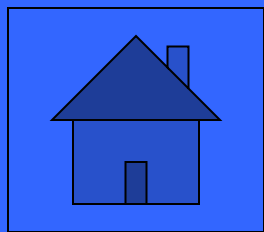
The two kingdoms are Bacteria and Fungi.



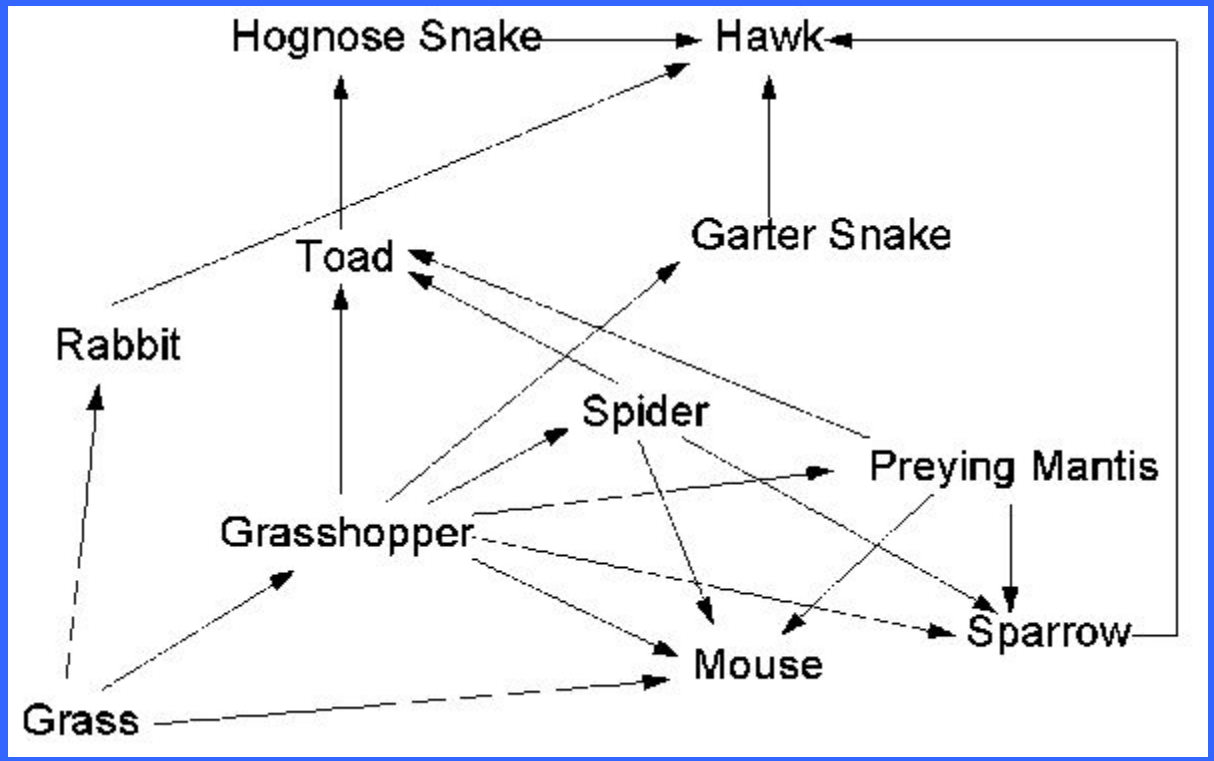
The mouse pictured in this food web can have the energy role of a level two consumer or a level three. Explain how.



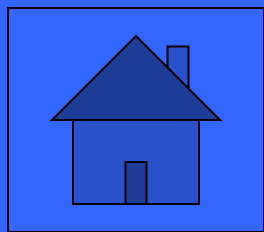
If the mouse eats the caterpillar that ate the flower, it would be a second level consumer. If the mouse eats the beetle that ate the caterpillar, then the mouse would be a third level consumer.



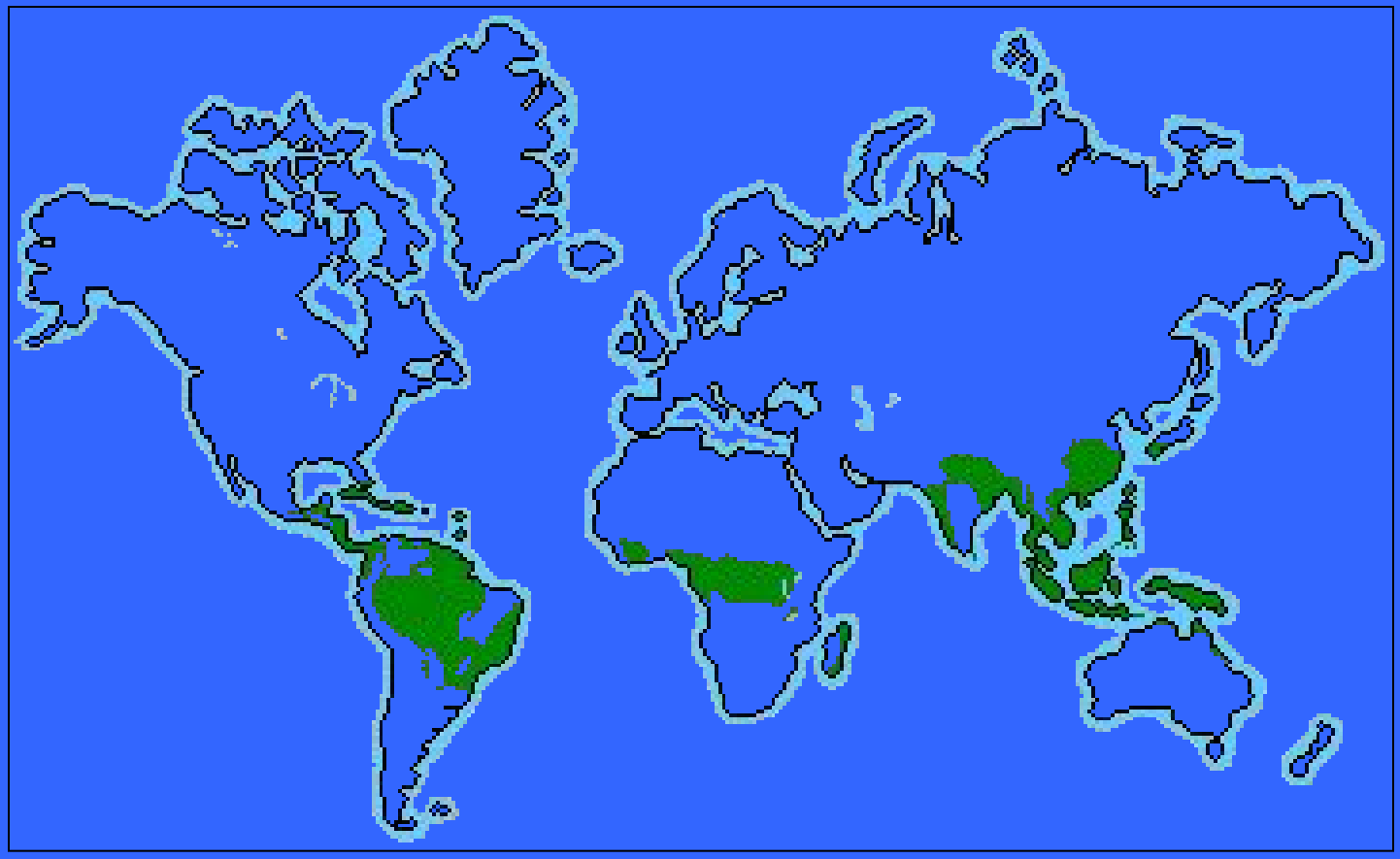
Can the Hawk have more than one energy role in this food web? If so, name them and explain how it got these roles.



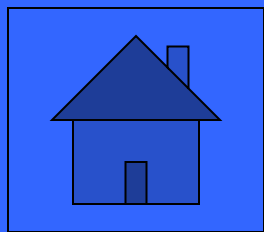
In this food web, the hawk can be a third level consumer if it eats a garter snake that ate a grasshopper that ate grass. If the hawk eats the rabbit, it would be a second level consumer. The hawk could also be a fourth level consumer if it is in this food chain: grass → grasshopper → spider → sparrow → hawk.



What biome is shaded in this map?



Tropical Rain Forest



Label the below as either biotic, abiotic or neither

Robin’s egg

Computer

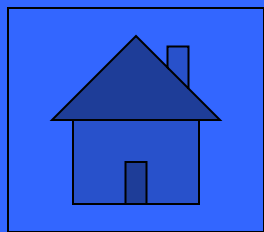
Grass

Rainbow

Mushroom

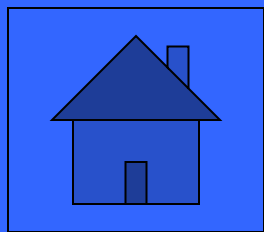
A dead tree

Robin’s egg-Biotic
Computer-Neither
Grass-Biotic
Rainbow-Abiotic
Mushroom-Biotic
Soil-Abiotic



What biome has trees that become dormant during the winter? Name a place on the map where you would find this biome.

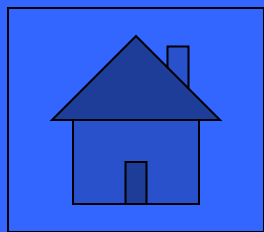
The Temperate Deciduous Forest. You would find this biome on the east coast of North America…New Jersey…



Explain the difference between primary and secondary succession. Define “pioneer species.” Usually the pioneer species are _____.

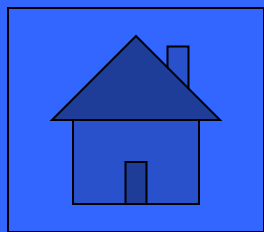
With primary succession, there is no life prior to the start. There is no soil and it takes much longer to reach a climax community. In secondary succession, there was an existing ecosystem but it was destroyed. It also takes a shorter amount of time to reach a climax community.

A “Pioneer Species” is one of the first species to show up in an ecosystem. Usually the pioneer species are Lichens.



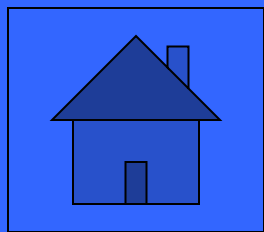
Describe the two types of logging methods. Give one advantage and one disadvantage of each kind.

Clear-cutting	**Advantages** -Quicker -More “fast money” -Safer for loggers	**Disadvantages** -Leaves soil that is normally protected by tree roots exposed to wind and rain. This could lead to soil erosion. -Soil washed into streams may harm fish or other organisms. -Takes away entire habitats, organisms are affected
Selective-cutting	**Advantages** -Remaining trees prevent soil erosion -Habitats are left more intact	**Disadvantages** -Slower -Takes more time to cut trees, which means fewer products which means less money. -Can de dangerous for loggers who have to move logs and heavy equipment around remaining trees.



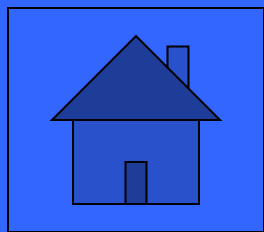
What is Evolution?

When a species changes over many generations and becomes better adapted to new conditions.

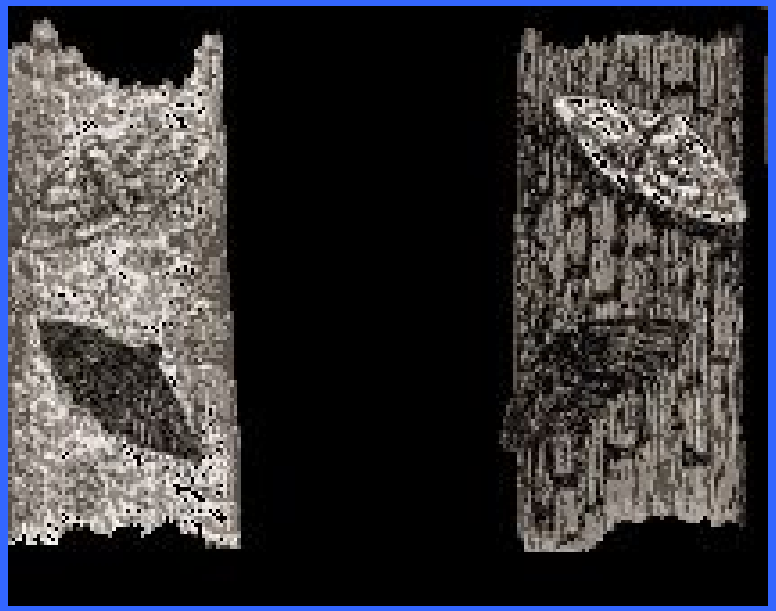


What are two of the three factors that affect biodiversity in an ecosystem?

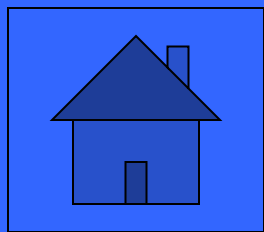
Area, climate and diversity of niches.



The English peppered moth is an example of natural selection. In the late 1700's, most moths were light color. Due to the Industrial Revolution, smoke from factories made the tree trunks darker. Over time since then, the moths became darker and darker. How is the moth an example of natural selection?

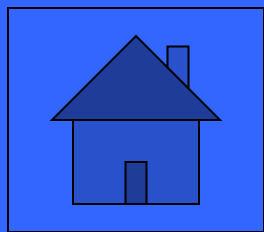


Over time, as the trunks of the trees got darker, the lighter moths got eaten more and more. The darker moths were able to survive and reproduce to make more dark moths. Over time, there are fewer lighter moths and more darker ones. Natural selection favored the darker moths.

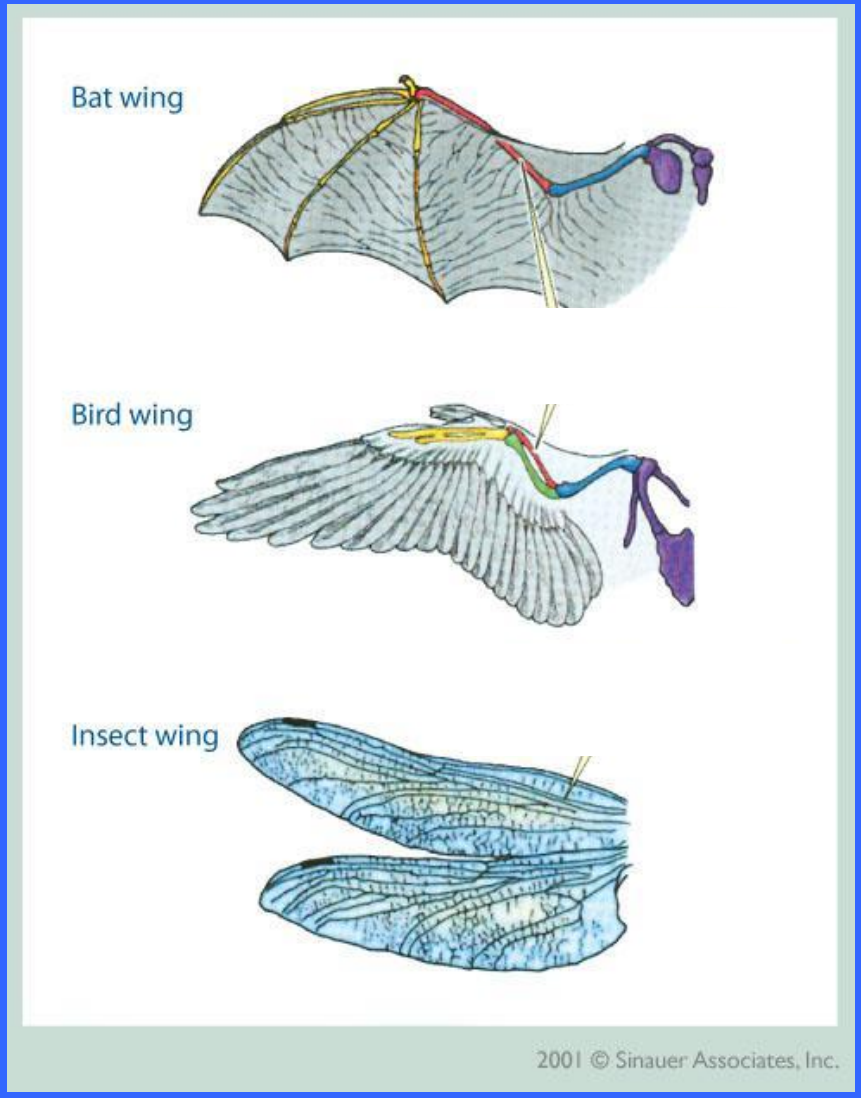


Krill is an example of a Keystone species. Krill is a shrimp-like animals that many animals in the ocean eat as their only food source. They don't eat anything else. Why are Krill a keystone species?

Since many animals **only** eat Krill, if something happens to the population of Krill in the oceans, all the animals that only eat Krill would have a hard time getting food. A keystone species is a species that influences the survival of many other species in an ecosystem. The population of Krill influences the population of many ocean animals.



There is a bat, bird and insect wing shown in the diagram. These bat and bird evolved from a common ancestor but the insect did not. Which two wings are homologous structures? Which are analogous structures?



Bat and Bird wing: Homologous structures

Bat and Insect wing: Analogous structures

Bird and Insect wing: Analogous structures