Pioneer Species Encyclopedia Article

Pioneer Species

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Pioneer Species

Pioneer species are the first species to enter an area after a disturbance. They are the colonizers. The pioneer species are the first stages of ecological succession, which is a series of changes over time in the types of organisms in an ecosystem. Common pioneer species include bacteria, fungi and lichens.

Pioneer species usually have the ability to live in harsh environments where other species cannot survive. These organisms are able to quickly colonize recently disturbed areas through rapid reproduction. They are well-adapted to dispersing their young to new locations. Pioneer species often slightly change the environments that they colonize. In some instances pioneer species such as lichens and plants break apart rock and add organic matter to soil. This frequently makes it easier for new organisms to enter the environment, survive and outcompete the pioneer species. Thus, organisms in the next stage of ecological succession eventually take over the habitat from the pioneer species.

An example of ecological succession, starting with a pioneer species, occurs when a volcano erupts and completely covers an area with lava. It would wipe out all plants and animals living there. After the lava cooled and hardened, it would be very difficult for plants to survive, because of the lack of soil. The first organisms to arrive and survive, the pioneer species, would be adapted to live in this environment. For example, lichens, a symbiotic relationship between a fungus and an alga, might be one of the first species to survive here. Lichens would be able to attach to the newly hardened lava because they have evolved to survive in areas with little to no soil. Over time, the lichens would slowly break apart the lava rock and create a small amount of soil. This would allow other organisms, such as a moss, to come into the habitat and outcompete the lichens. Thus, pioneer species do not last forever in one location. They are replaced as ecological succession continues.