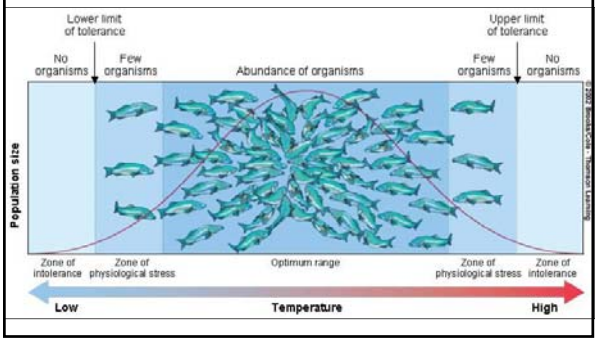
Communities & Succession

Range of tolerance- when an organism receives too much or too little of an environmental factor.



Limiting Factors- any biotic or abiotic factors that restricts the existence, numbers, reproduction, or distribution of organisms.

i.e.- pH, oxygen, food, etc.

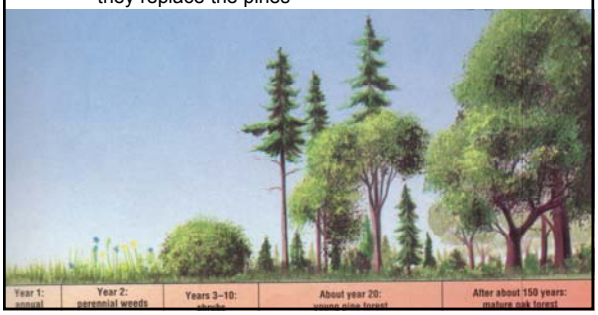
Death				Death
←	[	Tolerable	]	→
Disease	Min.		Max.	Disease

Succession

Succession- the regular pattern of changes over time in the types of species in a community.

What causes succession? Each new community that arises makes it more difficult for the previous one to survive

i.e.- In a pine forest, the tall pine trees shade the ground and make it impossible for new seedlings to grow. But the seedlings of other trees, like oaks and maples, can grow with less light so they replace the pines



Climax community- final, stable community that is formed when land is left undisturbed.

i.e.- A maple forest will remain a maple forest as long as no serious disturbance occurs

Secondary succession- pattern of change in an area where an ecosystem previously existed.

i.e.- In 1980 Mount St. Helen erupted burning and flattening a forest. Today you would find the forest has already began to regenerate through succession.

Pioneers- first organisms to colonize any newly available area and start the process of succession.

i.e.- pioneer grasses and weeds

Fire-Maintained Communities

Natural fires caused by lightning are a major part of secondary succession in some communities.

- Jack pine, can only release their seeds after intense heat or fire.
- Minor fires remove brush & deadwood that would otherwise contribute to major fires burning out of control

- Some animals depend on an occasional forest fire because they feed on vegetation that sprouts after fires.

Foresters sometimes allow natural fires to burn unless they threaten human health or property.

i.e.- Yellowstone

Primary Succession

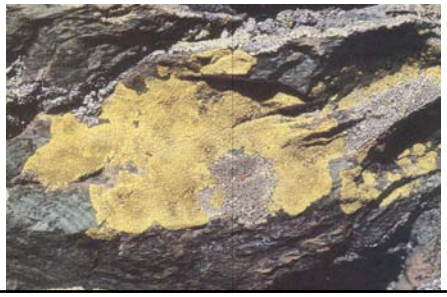
Primary succession- succession that occurs where no ecosystem has occurred previously

i.e.- New islands created by volcanic eruptions

•Is much slower than secondary succession, because it begins where there is no soil.

•The pioneer species would be lichens and bacteria.

•A **lichen** is a mutualistic relationship between a fungus and an alga. Alga photosynthesize while fungus absorbs nutrients in the rocks.



•Repeated freezing and thawing help breakdown rock.

•Mosses later take hold breaking the rock up even more , and later decay and add to the soil

•After some soil is formed seeds may germinate and grow.