

## Ecological Succession

### Change related to Disturbance

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Prepared for LBCC

## Ecological Succession

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Structural change in a community and its nonliving environment over time. Over time species replace one another in a predictable manner until a stable, self-sustaining climax community is reached. Usually occurs after some disturbance to the natural environment e.g. fire, volcano, hurricane.

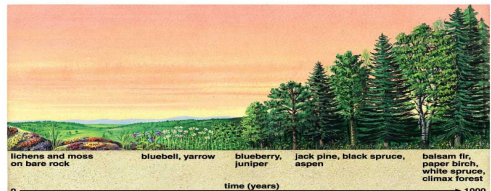
## Types of Succession

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Primary: When a community gradually colonizes bare substrate, where there was no trace of a prior community e.g. after a volcanic island is born.

## Primary Succession

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The diagram illustrates the stages of primary succession over a 1000-year period. It shows a landscape starting with bare rock and lichens, progressing through various plant communities like bluebell, yarrow, blueberry, juniper, and jack pine, eventually reaching a climax forest of balsam fir, paper birch, white spruce, and white spruce.

0	lichens and moss on bare rock	bluebell, yarrow	blueberry, juniper	jack pine, black spruce, aspen	balsam fir, paper birch, white spruce, white spruce, climax forest	1000
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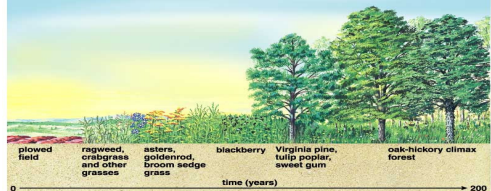
## Secondary Succession

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When a new community develops after an existing ecosystem is disturbed, as in the case of a forest fire or an abandoned farm field.

## Secondary Succession

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The diagram illustrates the stages of secondary succession over a 200-year period. It shows a landscape starting with a plowed field, progressing through various plant communities like ragweed, crabgrass, and other grasses, eventually reaching a climax forest of oak-hickory.

0	plowed field	ragweed, crabgrass and other grasses	asters, goldenrod, broom sedge grass	blackberry	Virginia pine, tulip poplar, sweet gum	oak-hickory climax forest	200
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## Succession in a freshwater pond



(a)



(b)



(c)

Fresh water basins fill in with sediment slowly over time, usually due to erosion from higher elevations. This process is called **siltation**.

As the pond or lake fills with sediments plants move in and fill in to make a marsh, which attracts wildlife.

## Terminology related to Succession

Pioneers – the first forms of vegetation that move into an area and colonize the disturbed area. Usually help to stabilize soils and over time rebuild healthier soils.

Climax community – over time this is a complex web of life with dominant, large forms of vegetation & numerous members in a dynamic community.

## Time Frames

Quite variable depending on climatic & geographic conditions.

Primary – for a forest ecosystem (assuming appropriate conditions) may be “*centuries*” to reach climax stages. E.g. after a volcanic event

Secondary – for a forest ecosystem disturbed by fire, this may require only “*decades*” to restore to a climax community.