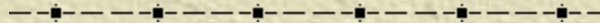
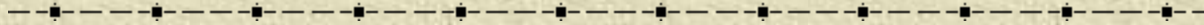


ECOLOGICAL SUCCESSION



SUCCESSION-

- ✦ A SERIES OF CHANGES IN A COMMUNITY IN WHICH NEW POPULATIONS OF ORGANISMS GRADUALLY REPLACE EXISTING ONES
- ✦ THE GRADUAL CHANGE IN COMMUNITY TYPES IN AN AREA OVER LONG PERIODS OF TIME.

Succession occurs in stages

- ✦ First stage in a succession = **pioneer community**
- ✦ Each stage prepares for and is gradually replaced by the next stage.
- ✦ A succession generally leads to a stable community called the **climax community**.

Two types of Succession

✦ 1. Primary succession

- ✦ occurs where no living things presently exist (eg. bare rock or a newly formed pond)

✦ 2. Secondary succession - occurs when a community is disturbed, but soil and/or living things are still present. (eg. forest fire succession)

PRIMARY SUCCESSION ON BARE ROCK

✦ TAKES PLACE ON BARE ROCK



PRIMARY SUCCESSION-

✦ NEW BARE ROCK COMES FROM 2 SOURCES:

- ✦ 1. VOLCANIC LAVA FLOW COOLS AND FORMS ROCK



PRIMARY SUCCESSION-

✦ 2. GLACIERS RETREAT AND EXPOSE ROCK



PIONEER ORGANISMS-

✦ THE FIRST ORGANISMS TO COLONIZE BARE ROCK ARE LICHENS



Lichens and soil formation

- ✦ *Lichens = hardy autotrophs which can live on bare rock.*
- ✦ *secrete acids which dissolve rock.*
- ✦ *Weathering produces cracks in rock.*
- ✦ *Particles of rock, dust, etc. collect in cracks, forming a primitive soil.*

Stage 2

- ✦ **Mosses begin to grow in the thin soil.**
- ✦ **They attract animals such as snails, insects.**
- ✦ **Wastes and decay help enrich the soil.**

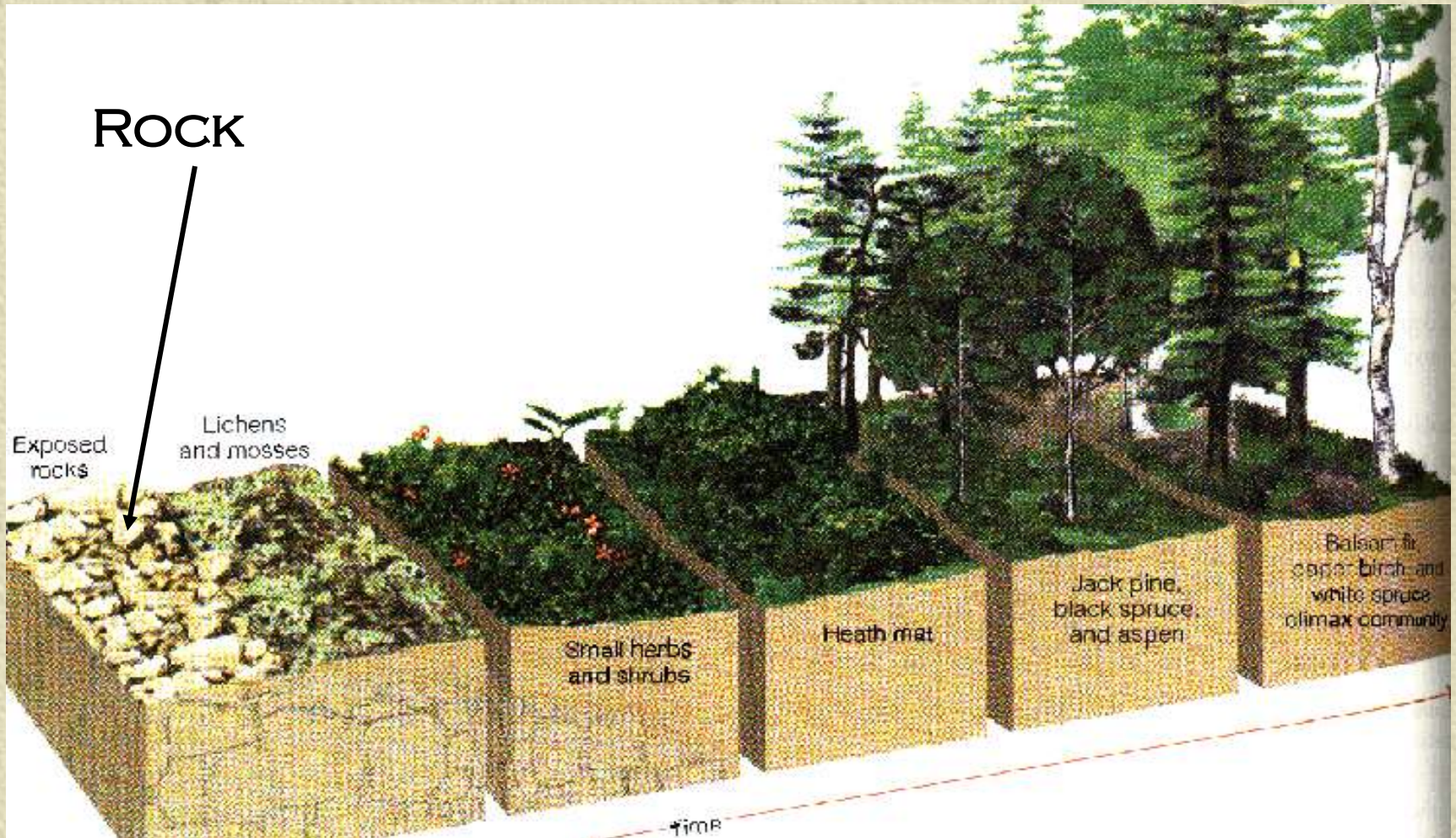
Stage 3

- ✦ **Grasses and herbs can soon grow in the soil.**
- ✦ **The roots of these plants help hold soil together.**
- ✦ **New animal organisms are attracted to the area.**

Next Stages

- ✦ **4. Larger woody-stemmed plants (shrubs) replace grasses**
- ✦ **5. Small trees gradually replace shrubs . The variety of animal life increases.**
- ✦ **6. Mature forest - the climax community**
As long as climatic conditions are stable, this climax is maintained.

PRIMARY SUCCESSION-



CLIMAX COMMUNITY-

✦ A STABLE, MATURE COMMUNITY THAT UNDERGOES LITTLE OR NO SUCCESSION



CLIMAX COMMUNITY-

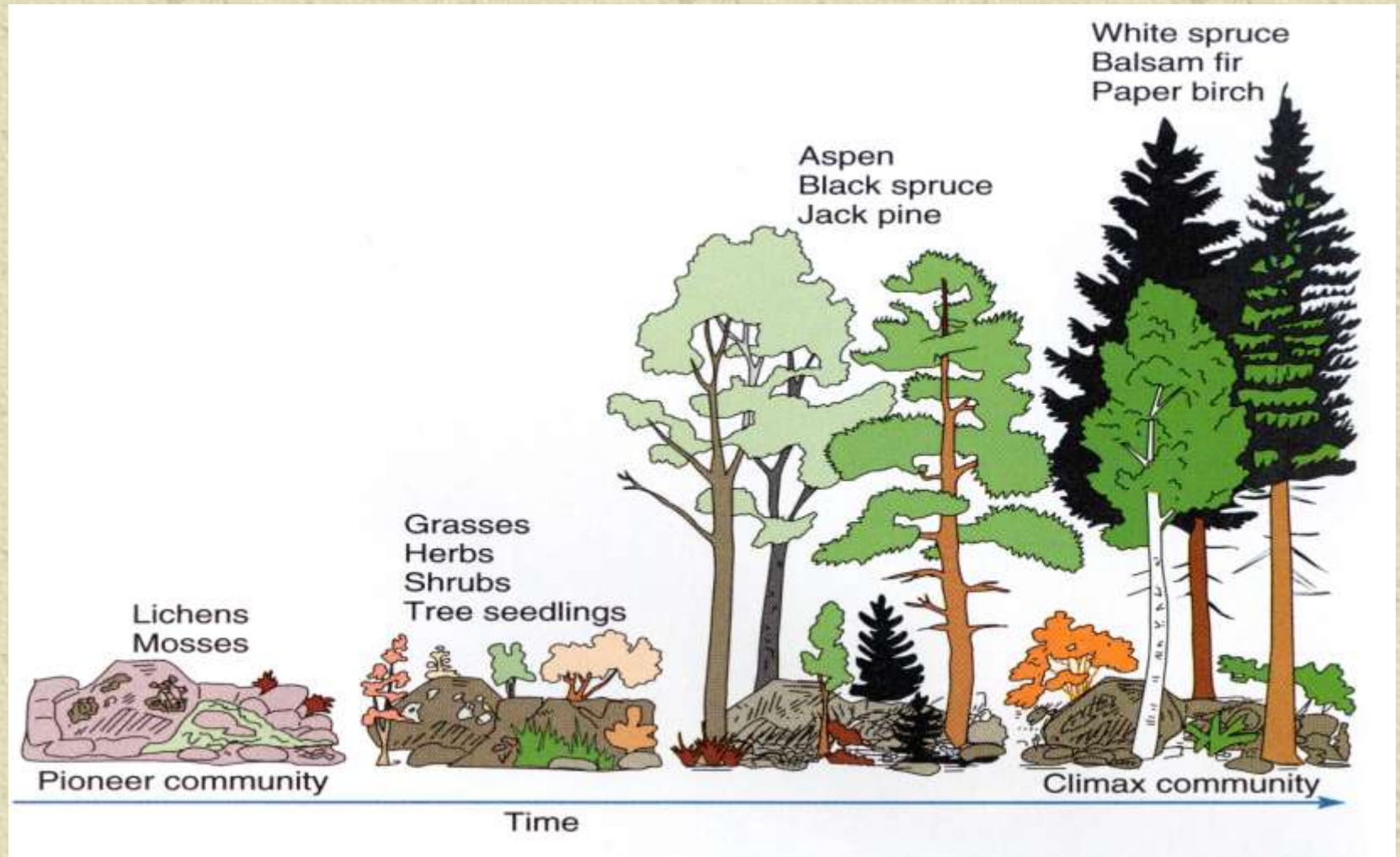
- ✦ EX: IN MOST OF NEWFOUNDLAND, THE CLIMAX COMMUNITY WOULD BE A SPRUCE — FIR EVERGREEN FOREST



Climax Community

- ✦ **Depends on the climatic and physical conditions in an area (such as slope and exposure).**
- ✦ **For example, the lichen/Moss stage may be the climax community on windy exposed coastlines.**

PRIMARY SUCCESSION-



SECONDARY SUCCESSION-

✦ SEQUENCE OF COMMUNITY CHANGES THAT TAKES PLACE WHEN A COMMUNITY IS DISRUPTED BY NATURAL DISASTER OR HUMAN ACTIONS — TAKES PLACE ON EXISTING SOIL

SECONDARY SUCCESSION-

✦ Ex:

- ✦ A FIRE LEVELS PORTIONS OF A FOREST



SECONDARY SUCCESSION-

✦ Ex:

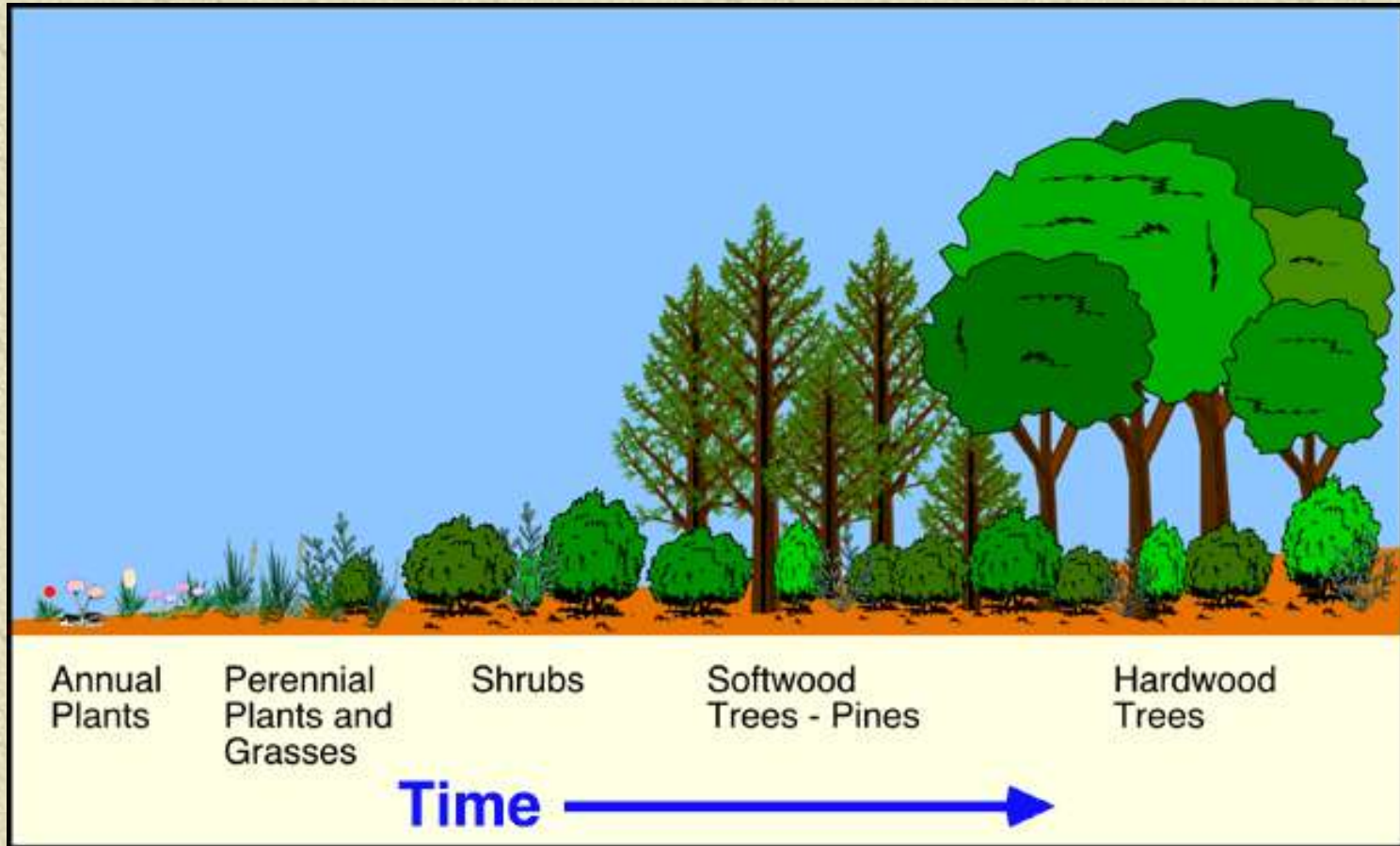
- ✦ A FARMER
PLOWS HIS
FIELD



Secondary Succession

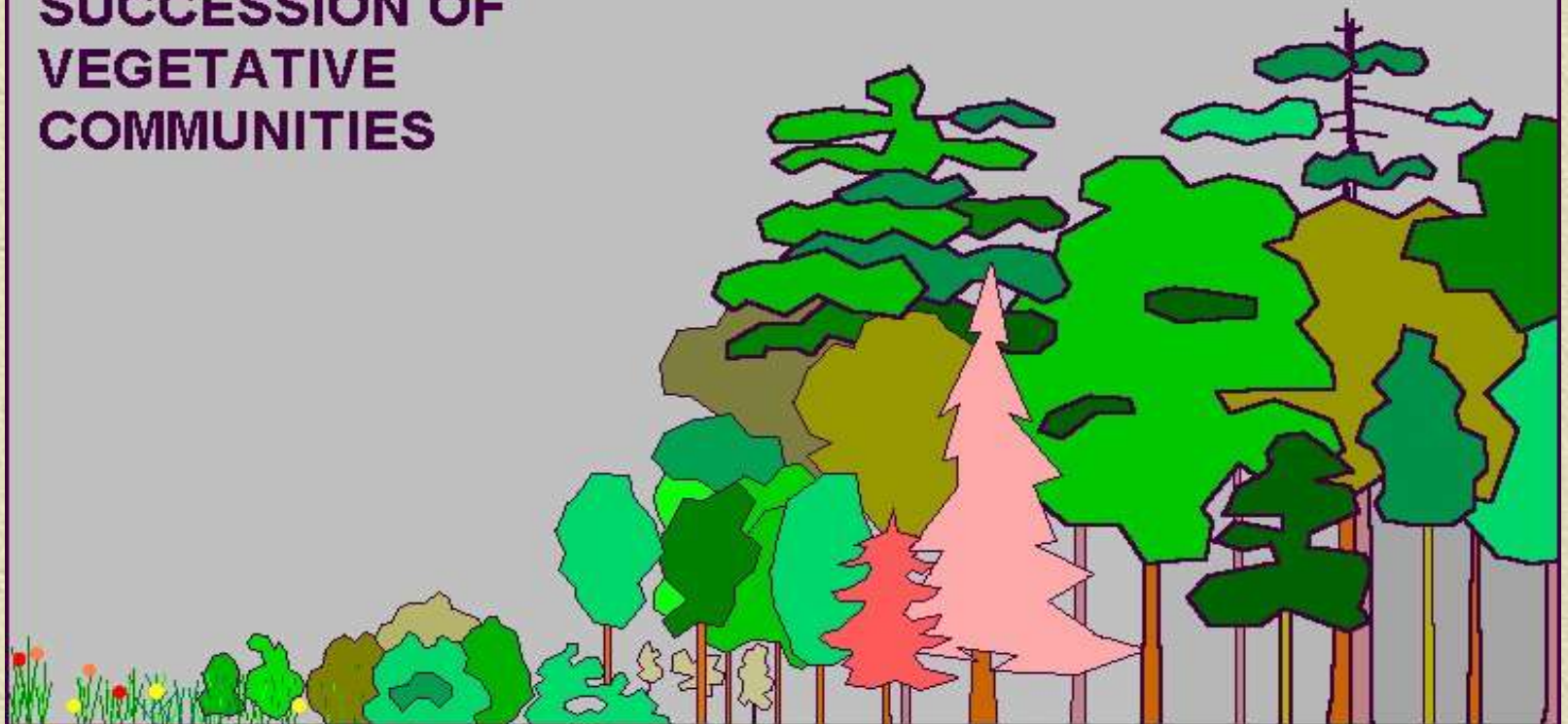
- ✦ - **similar development to a primary succession but begins at a later stage.**
- ✦ Eg. Succession following a cutover of a forest.
- ✦ Shrub stage appears on the cutover (eg. raspberry bushes). Later small trees appear (perhaps alders) and later the climax forest replaces the earlier stages.

SECONDARY SUCCESSION-



SECONDARY SUCCESSION-

SUCCESSION OF VEGETATIVE COMMUNITIES



Forbs & Grasses

Shrubs

First Tree Species

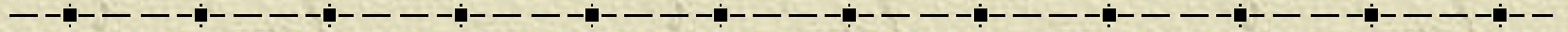
Forest Type 2

Forest Type 3

TIME



Pond-to-Forest Succession



- ✦ Pioneer Organisms = microscopic algae and bacteria.
- ✦ Next: heterotrophic protists and invertebrates.

Pond-to-Forest Succession

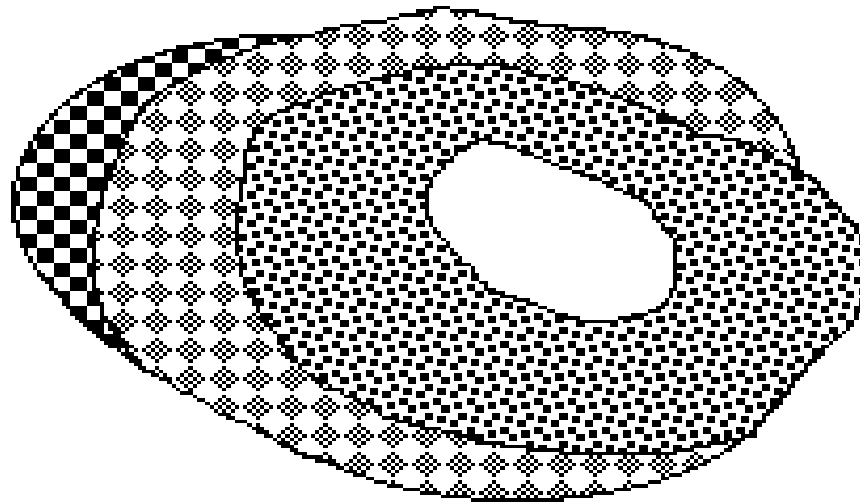
✦ Sediment is washed into the pond. Organic matter from waste and decay build up on the bottom of the pond.

✦ Rooted floating plants become established near the shoreline. Infilling of the pond continues.

✦ .

Pond Succession

Pond Succession
(seen from above)



Emergent plants



Rooted submerged plants



Rooted floating plants



Open water

Pond-to-Forest Succession

- ✦ Bulrushes and cattails replace floating plants. The edges of the pond move closer to the middle.
- ✦ Over time the pond becomes a marsh, and then a meadow. Plant life changes from grasses to shrubs to trees to the climax forest

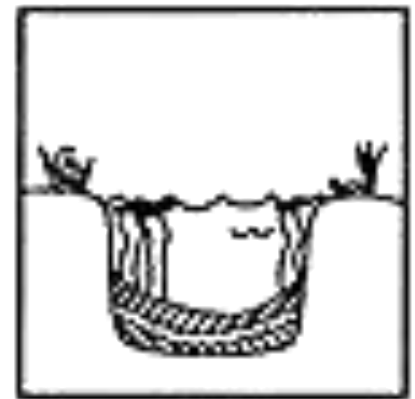
POND SUCCESSION



1840



1870



1900



1930



1960



1990