

Interdependence within Environmental Systems

## **ECOLOGICAL SUCCESSION**

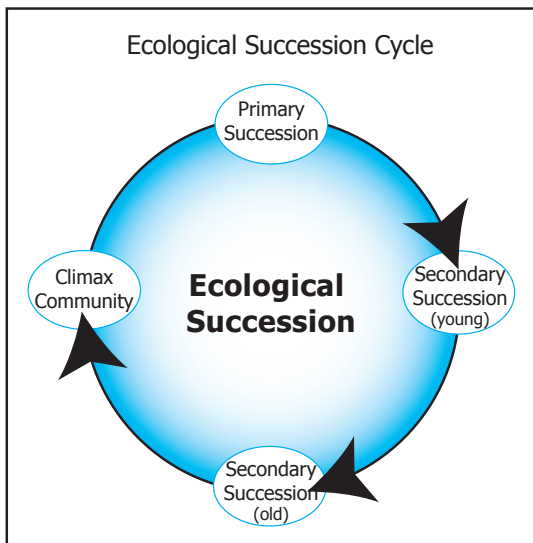
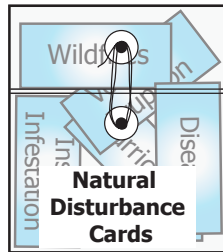
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### **Blackline Masters**

#### **Contents**

- Station Information sheet
- Ecological Succession Model (2 pages)
- Ecological Succession Cycle
- Natural Disturbance Cards
- Processes and Events Cards
- Student Pages

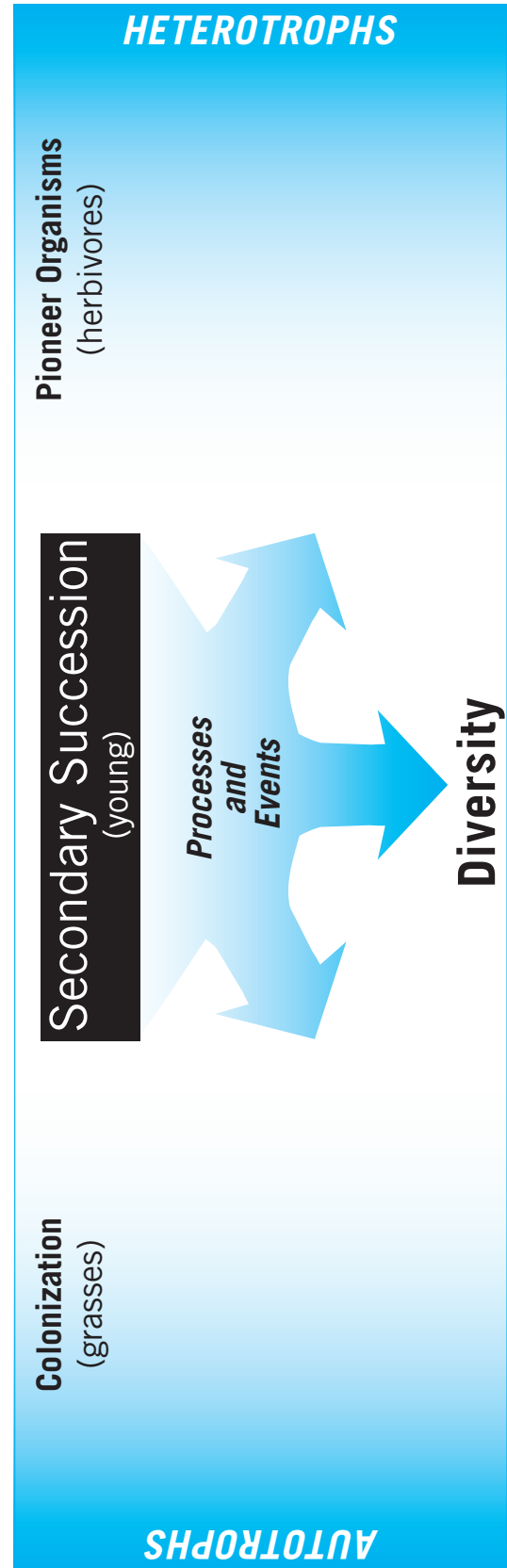
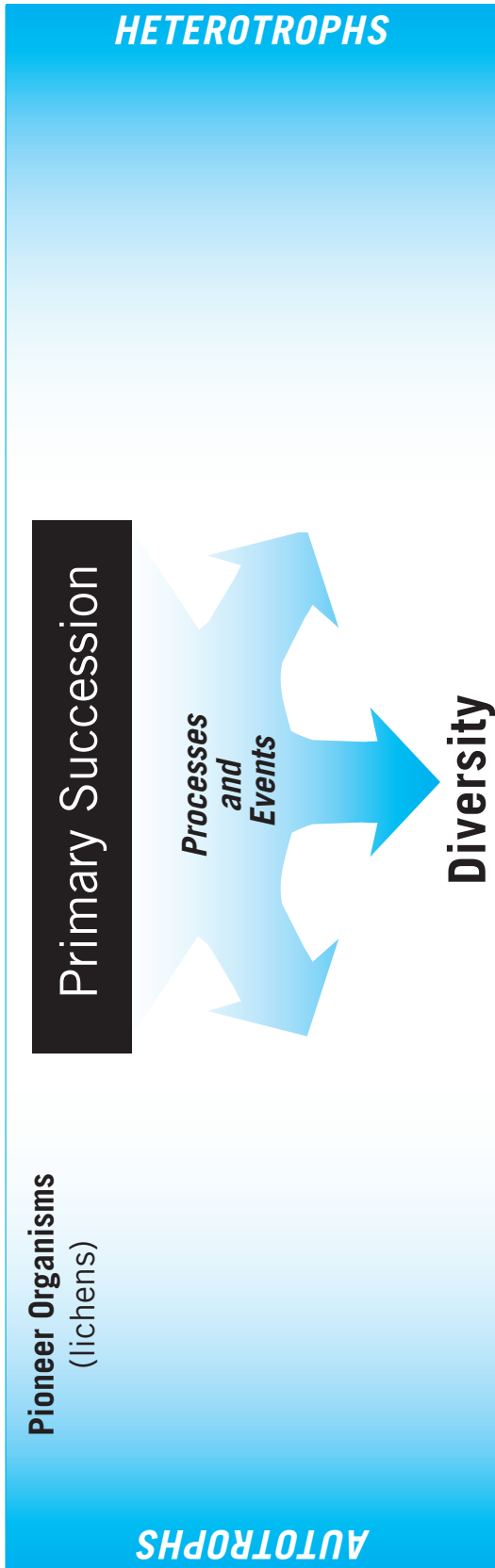
**Station Information:  
Ecological Succession**



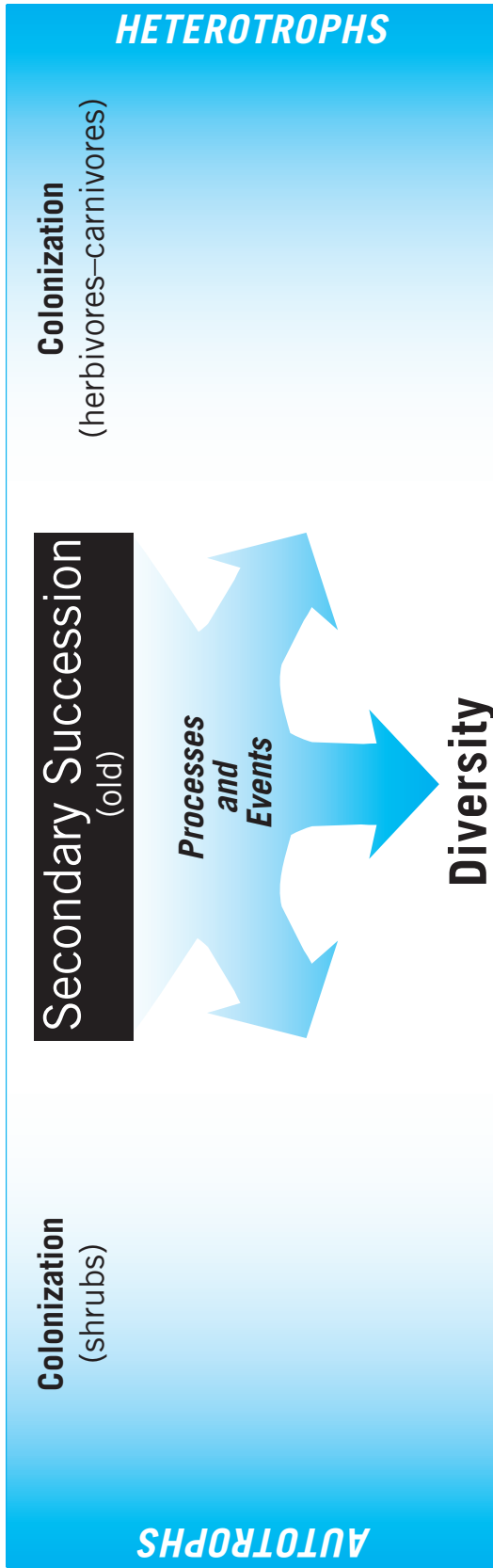
**Processes and Events Cards**

- pioneer species and weathering increase soil quality and quantity
- conditions favorable to support other plant species
- seeds brought in by wind and other means
- pioneer species compete with prairie-type plants
- new species of animals appear that include those that feed on other animal species
- competition among species of animals present
- diversity among plants provide stimulus for other species
- soil continues to build a mature with the addition of organic materials
- pioneer species replaced as dominate organism with other species
- competition among plant species for resources
- small shrubs and trees appear
- forest r...
- the commi occurs

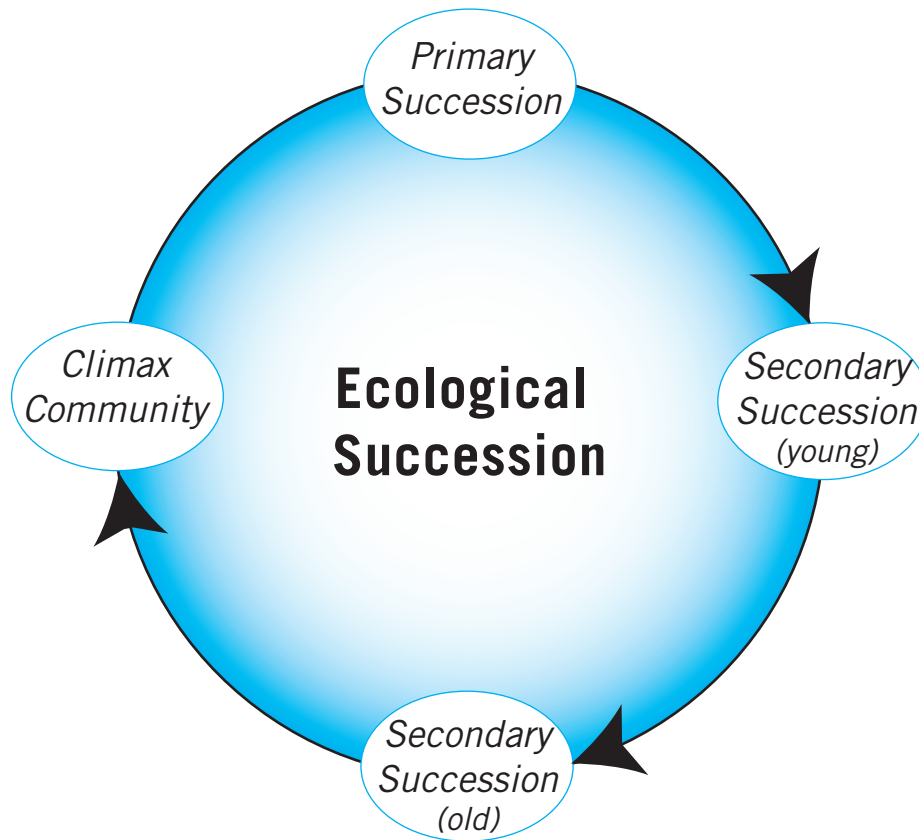
Ecological Succession Model, Page 1



Ecological Succession Model, Page 2



**Ecological Succession Cycle**



**Natural Disturbance Cards**

Wildfires

Insect Infestation

Drought

Disease

Hurricane

Flood

Volcanic Eruption

## Processes and Events Cards

- Organisms and weathering break down rock to form the foundation for soil.
- Some pioneer organisms die, adding organic material to the soil.
- Autotrophs inhabit the ecosystem.

- No heterotrophic organisms inhabit the ecosystem.

- Pioneer species and weathering increase soil quality and quantity.
- Conditions become favorable to support other plant species.
- Seeds are brought in by wind and other means.
- Pioneer species compete with prairie-type plants.

- Animal species that feed on a diverse population of plants first appear.

- Soil continues to build and mature with the addition of organic materials.
- Pioneer species are replaced as the dominant organisms by other species.
- Competition for resources occurs among plant species.
- Small shrubs and trees appear.

- New species of animals appear, including those that feed on other animal species.
- Competition among species of animals is prominent.
- Diversity among plants provides stimulus for other types of animals to appear.

- Ecosystem communities have reached their capacity to support additional species of organisms.
- Forests replace other plant species as the dominant plant species.
- The community is self-sustaining and mature unless a disturbance occurs.

## Interdependence within Environmental Systems

# ECOLOGICAL SUCCESSION

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## Student Pages

### Purpose

The purpose of this activity is to reinforce your understanding of the effect that natural and human-made events and processes have on ecological succession, and how species and populations of organisms can change as a result of disturbances to an ecosystem.

### Before You Begin...

Check to see that all the items are present and organized according to the Station Information sheet. If you notice a problem, notify your teacher immediately.

### Materials

- Station Information sheet
- Ecological Succession Model (2 pages)
- Ecological Succession Cycle
- Natural Disturbance Cards
- Processes and Events Cards

### *Essential Question*

How do the processes and events that occur within an ecosystem affect the species and populations of organisms that live in that ecosystem?

Discuss the essential question with your teammate(s) and record your answer.

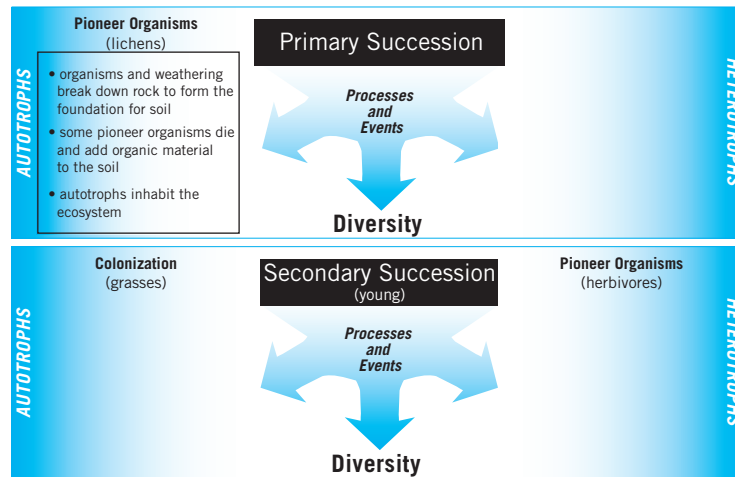
### Activities and Questions

The Ecological Succession Model illustrates a sequence of stages in an ecological succession. Review the sequence of stages from primary succession to the climax community, noting that one side includes autotrophs and the other side heterotrophs. (See the Glossary for definitions.)

Take the Processes and Events Cards out of their envelope. These cards list some processes and events that influence changes in an ecosystem that is undergoing succession.

1. Place each card in the appropriate position on the Ecological Succession Model as shown in the example below. Continue until all cards are placed on the model.

### Ecological Succession Model



2. Why are there no heterotrophs in the primary succession stage?







## I Need to Remember . . .

Complete this part **after** class discussion of this station.

**I need to remember...**

A large, empty rectangular box with a thin black border, intended for students to write their notes or reflections. The box is positioned below the heading 'I need to remember...' and occupies most of the page's width and height.

# Glossary

## ***Autotroph***

Autotrophs are organisms that are capable of making their own organic molecules from natural processes such as photosynthesis or chemosynthesis.

## ***Colonization***

Colonization is the migration of a species into a new habitat.

## ***Ecological Succession***

Ecological succession is the process by which ecosystems change and develop over time.

## ***Heterotroph***

A heterotroph is an organism that cannot manufacture its own food and is dependent on other organisms for its nutrition.

## ***Pioneer organisms***

Pioneer organisms are the first species to colonize an environment; they set the stage for ecological succession, starting the chain of events that lead to an inhabitable ecosystem.

## ***Species***

A species is a group of organisms capable of interbreeding and producing fertile offspring.

## ***Stabilization***

Stabilization is the stage at which a climax community becomes established. It represents the mature, self-sustaining, final stage of succession.