NYSDEC Environmental Education

How Soil Is Made

Objective: The students will discover how some of the forces of nature break down rocks into soil material

Grade level: Elementary

Time: 45 minutes

Season: This can be done any season (indoor activity)

Materials: 2 ice cube trays without racks
1 dishpan half filled with sand
1 sheet of white paper about 24 inches long

Soil is formed from the breaking down of rocks and the decomposition of plant and animal material. This activity will discuss some forces acting to break down rocks into soil materials.

When two rocks rub together small particles rub off. It takes a long time to accumulate even a spoonful. When large sheets of ice (glaciers) moved over the land thousands of years ago, they ground rocks together, rubbing off tremendous quantities of rock particles of all sizes. All of the Adirondacks are made up of soils that were formed by the action of these glaciers.

Activity Description:

Freeze a mixture of humus or topsoil in two ice cube trays. Remove the block of ice from the tray and slide it through the sand. Show the power of a glacier by pressing down and along, forming a trench. Leave the block at the end of your trench and allow it to melt.

Place the second ice block upon a white paper on a slight incline. Allow it to melt. Have the students observe what happens as the blocks of frozen soil melt and consider these questions:

- Where did the ice go?
- What was left after the water melted?
- How do you think a glacier makes hills and valleys?
- How do you think glaciers help to form rivers?
- Why do you think glaciers were important in forming some of the Adirondack soil?