

**Ecosystem Disturbance**

**Time:** 1 class period

**National Benchmarks:** Benchmarks 5A: Diversity of Life; 5D Interdependence of Life; 5E: Flow of Matter and Energy; 9B: Symbolic Relationships; 9D: Uncertainty; 12B: Computation and Estimation; 12D: Communication Skills; 12E: Critical-Response Skills.

**National Science Content Standards:** *Science as Inquiry: A; Life Science: C:* Biological Evolution; The Interdependence of Organisms; Matter, Energy, and Organization in Living Systems; *Science and Technology: E:* Abilities of Technological Design; Understandings about Science and Technology; *Science in Personal and Social Perspectives: F:* Population Growth; Natural Resources: Environmental Quality; Natural and Human-induced Hazards; Science and Technology in Local, National, and Global Challenges

**New York State Standards:** 1, 2, 4, 5, 6, 7

**Objective:** Students will know the effects of deforestation on an ecosystem and be able to explain the impacts of a stream using data.

**Lesson Outline:**

1. Students brainstorm about the impact of deforestation on an ecosystem
2. Students use data to answer questions
3. Students present and discuss results

**Materials:** copies of worksheet, photos (overhead or printed)

**Engage:** Show students a picture of a deforested area, and ask: what is the impact of this deforestation on the forest? What about on a stream that runs through the forest?

**Explore:** Students should use the data to answer the questions on the worksheet.

**Explain:** Deforestation of watershed 2 created significant responses. Stream flow increased because of the lack of vegetation decreased the rate of transpiration. Nutrients leached out of the soil at an accelerated rate, since there was a lack of plant nutrient uptake. Ammonium concentrations increased because of an initial increase in decomposition added to the lack of plant uptake. This ammonium was then oxidized into nitrate, which leached into the stream. Other cations also leached out of the soil, with hydrogen ions taking their place.

**Extend:** Use the nitrogen cycle images to help students understand the differences between a disturbed and an undisturbed ecosystem.

**Evaluate:** Students should complete the worksheet questions.

**Comments:**