Forest & Lake Ecosystems in Ontario
Agenda

• Introduction
• Basic Needs of Life
• Life Web Activity
• Acid Rain!
• Acid Rain & Metals Demo
• Testing Rainwater
• Guilty or Innocent?
Introduction

- What do scientists do?
- Where are they?
- What is a biologist? Ecologist?
- How does this type of science affect you?
Basic Needs of Life

- What do living things need to survive?
Basic Needs of Life

• What do living things need to survive?

- Food
- Water
- Oxygen
- Shelter
- Habitat
A Healthy Ecosystem...

- Needs **abiotic** and **biotic** factors.
A Healthy Ecosystem...

• Needs **abiotic** and **biotic** factors.
  – **Abiotic**: are non-living factors.
    • Soil
    • Air
    • Water
    • Nutrients
  – **Biotic**: are living factors.
    • Plants
    • Animals
    • Fungi
    • Micro-organisms
Life Web Activity

• Everyone gets a card from the LTS leaders.

• When you get it, hold onto the string and pass it to someone else whose card is related to yours.
Acid Rain!

- ...is rain that is more acidic than it should be.
- Acidic
- Basic
- Neutral
Hydrologic Cycle

Condensation

Evaporation from Lakes, Rivers, Oceans

Precipitation as Rain, Snow, Hail, Fog

Runoff

let's talk science
Acid Rain Sources

- **Man-made Sources**
  - SO₂
  - NOₓ

- **Natural Sources**

- **Movement of Pollutants**

- **Gaseous Pollutants in Atmosphere**

- **Particulate Pollutants in Atmosphere**

- **Pollutants in Cloud Water and Precipitation**

- **Dry Deposition**

- **Wet Deposition**

- **Dry Deposition**
Acid Rain & Metals

- Penny Demo!
- Come up and see what a penny looks like after it has been sitting in vinegar for a few days...
Acid Rain & Metals

- Strong acids eat away at stone, metal, paint...
Acid Rain & Forests

- Damages plants, which are **primary producers**!
- Dissolves calcium in soil and leaves.
- Washes nutrients away!
- Aluminum release.
- Causes haze.
# Acid Rain & Ponds, Lakes and Streams

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Testing Kingston Rain

• Find a partner or two!
• Grab a **pipette** and put some rainwater in a **beaker**.
• Dip the **litmus paper**, into your beaker of rainwater and determine the pH using the colour legend.
What Can Be Done...

• Capping & Monitoring.
• Alternative ways of producing energy.
• Conserve electricity.
  – ENERGY STAR®’s “Change a Light” program.
• Transportation.
• Turn down your thermostat!
• Recycle.
Relevant Fields

- Marine Biology
- Fisheries
- Markets and Restaurants
- Lumber
- Parks: Ontario/Canada
- Tourism
- Recreational
Extras

• How well do you know your local forests and lakes?

• **Who did it?**
  Mystery Game
Thanks for having us!