Altamonte Springs
SCIENCE
INCUBATOR

Name: _____
Date: _____

Water Quality Indicators In the Wild

Middle School Life Science | Fall Module 3 | Lake Lotus Park

NGSSS Big Idea: Standard 17—Interdependence

All life, including human civilization, is dependent on the Earth's internal and external energy and material resources.

Benchmark Code & Description:

SC.6.E.6.1—Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.

SC.7.E.6.6—Identify the impact that humans have had on Earth such as deforestation, urbanization, desertification, erosion, air and water quality and changing the flow of water.

SC.8.N.4.1—Explain that science is one of the processes that can be used to inform decision makers at the community, state, national and international levels.

LEARNING GOAL/OBJECTIVE

To understand how humans and their activities can negatively affect the environment.

PREREQUISITES

Review:

- Vocabulary Words
- Florida LAKEWATCH—www.lakewatch.ifas.ufl.edu
- Seminole County Water Atlas—www.seminole.wateratlas.usf.edu
- Applicable Textbook Sections

VOCABULARY

- Air Pollution
- Water Pollution
- Pesticide
- Acid Rain
- Nitrates
- Phosphates
- Turbidity
- Dissolved Oxygen
- pH
- Chlorides

HANDS-ON ACTIVITIES

Task(s):

- Use a dip net and kick net.
- Collect and analyze samples gathered in the river and lake.
- Use Labquest meters to measure various elements in each body of water.

Provided Materials:

- Hand Lens
- Nets
- Baggies
- Reference Books
- Clipboard/Pencil
- Log Sheet
- Labquest Meters
- Meter Probes: Nitrates, Phosphates, Turbidity, pH Dissolved Oxygen, Chlorides

Career Options: Hydrologist, Environmental Planner, Biologist, Park Ranger, Storm Water Engineer

Lesson Steps:

1. Students will begin the lesson by the Little Wekiva River.
2. Students will use various methods of collection to gather micro- and macroorganisms found there.
3. Students will use Labquest meters to measure various elements and properties of the river water. Data collected will be recorded on the log sheet.
4. The group will then move to the lake where more samples will be taken.
5. Students will record measurements taken in Step #3 on a separate log sheet by utilizing lake water instead of river water.

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SC.7.E.6.6—Identify the impact that humans have had on Earth such as deforestation, urbanization, desertification, erosion, air and water quality and changing the flow of water.

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DATA RECORD

Questions:

1. How have people affected the river? _____
   _____
   _____
   _____
2. Channelization? Deforestation? Pollution? What kinds of human impacts are these? _____
   _____
   _____
   _____
3. Could your collection be different at another location in the river? _____
   _____
4. How do you think the weather would affect your findings? _____
   _____
5. What does an algae bloom indicate? _____
   _____
   _____
   _____

6. How do human activities affect the aquatic habitat? _____
_____

7. What trash lasts a long time in the environment? _____
_____

8. How can we help change things? _____
_____

Water Quality

Sample	Temperature	Dissolved Oxygen	Nitrates	Phosphates	pH
1					
2					
3					
4					
5					

What Did You Find?

Date: _____ _____

Weather Conditions: _____

Location: _____

Lake Level: _____

pH: _____

Nitrogen: _____

Phosphate: _____

Dissolved Oxygen: _____

Carbon Dioxide: _____

Temperature: _____

Turbidity: _____

Species:

1. Name: _____
   Size: _____

2. Name: _____
   Size: _____

3. Name: _____
   Size: _____

4. Name: _____
   Size: _____

5. Name: _____
   Size: _____

6. Name: _____
   Size: _____

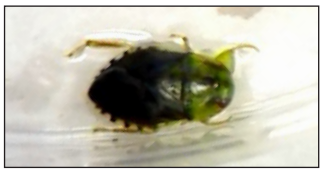
7. Name: _____
   Size: _____

Organism & Fish Checklist

Check off the organisms and fish you found today.

☐ Darner Dragonfly Larva
Anax junius

☐ Damselfly Larva
Calopterkyx maculata



☐ Diving Water Beetle
Dytiscus marginalis

☐ Southeastern Waterbug
Abedus immaculatus

☐ Freshwater Mussel
Elliptio buckleyi

☐ Gilled Snail
Viviparus georgianus

☐ Glass Shrimp
Palaemonetes kadiakensis

☐ Swamp Darter
Etheostoma fusiforme

☐ Banded Topminnow
Fundulus cingulatus

☐ Golden Topminnow
Fundulus chrysoths

☐ Seminole Killifish
Fundulus seminolis

☐ Flagfish
Jordanella floridae

☐ Rainwater Killifish
Lucania parua

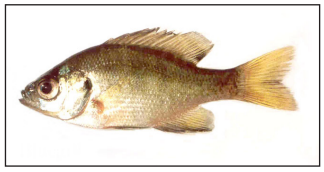
☐ Bluefin Killifish
Lucania goodie

☐ Costal Shiner
Notropis petersoni

☐ Ironcolor Shiner
Notropis chalybaeus

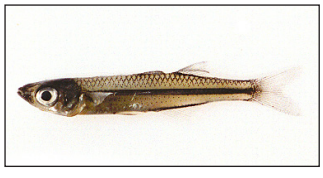
☐ Southeastern Golden Shiner
Notemigonus crysoleucas bosci

☐ Blackbanded Darter
Percina nigrofasciatus



☐ Bluegill
Lepomis macrochirus purpurescens

☐ Redear Sunfish
Lepomis microlophus microlophus



☐ Inland Silversides
Menida beryllina atrimentis

☐ Least Killifish
Heterandria formosa

☐ Sailfin Molly
Poecilia latipinna

☐ Eastern Mosquitofish
Gambusia affinis holbrooki