



## **3-5 Life/Earth Science**

### **Southern Nevada Regional Professional Development Program**

#### ***Plot Study-Investigating an Ecosystem***

#### **INTRODUCTION**

One of the best places to engage students in active hands-on science is right outside your classroom door. Long ago, societies lived closer to nature than most people in the world do today. Observing plants, animals, insects, birds, weather, and the sky was part of daily life. Providing time for your students to actively observe nature throughout the school year will increase their understanding of the world around them and heighten their observational skills.

#### **WHERE'S THE SCIENCE?**

According to the *Benchmarks for Science Literacy, Project 2061*, students should have knowledge of the kinds of relationships that exist among organisms, the kinds of physical conditions that organisms must cope with, the kinds of environments created by the interaction of organisms with one another and their physical surroundings, and the complexity of such systems. Students should become acquainted with many examples of ecosystems, starting with those near at hand. Through careful and continual observations of their plots students have the ability to see these interactions and relationships firsthand.



Students investigating their plots.

## **MATERIALS**

Plastic Baggie containing:

- Thermometer
- String
- Craft sticks
- Hand lens
- Plastic spoon
- Bug viewer
- Small scoring pencil
- Science notebook

## **PROCEDURES**

**Begin this investigation first thing in the morning after the morning bell, repeat around noon and then once more at the end of the school day. Then continue the investigation throughout the school year.**

### **Lesson One**

1. Tell the students that today they will be going outside to select an area on the schoolyard that they will observe throughout the day as well as the school year. Divide the students into pairs to work. Once they have selected an area they want to study, give the students four craft sticks and a

piece of string (4 ft in length). They should rope off their area using the craft sticks and string, then draw a map in their science notebook so that they will be able to return to their plot in the future. **Note:** If your school is located next to a park or field, you may want to get permission from your building administrator to use this area. Make sure you have recorded the location of each group's plot in your own science notebook, in case students are unable to remember their location next time you observe. You can also take digital photos of each area and place them in your notebook, as well as having the students place a digital photo in their science notebook.

2. As students complete their habitat maps, call them to a central area outside. Once everyone is finished with this step, show them one of the small plastic baggies and discuss each of the materials enclosed. Instruct them to return to their habitat and closely observe what they see in their habitat. Encourage them to take and record the temperature of both the air and soil, as well as a sketch of the habitat including living and non-living parts (L5C2). Students may also collect any loose materials they find to glue or tape into their science notebook (e.g. twigs, leaves, soil). **Note:** Students should be reminded to keep the area intact-if they dig up the soil, they should replace it.
3. As students work in pairs, visit each group and encourage them to use all of the materials provided to collect as much information as possible.
4. Collect the materials bag and return to the classroom and discuss observations. Have each pair share out what they observed today. Chart observations on a classroom chart labeled "Schoolyard Habitat Study". This chart can be used as an opening activity for the next plot study to remind students of things they can observe.
5. Observe plots throughout the school day and note changes in temperature. At the end of the day, ask the students to review

- the data they collected and to share out what conclusions they can make based on their scientific evidence.
6. Continue to observe plots throughout the school year, at least once a month, preferably bi-monthly. At the end of the year, have the students make graphic representations of the data they collected on air and soil temperatures and present their findings. Ask them if they could make any predictions based on their findings. Always take out your science notebook to record student responses, notes, new ideas for further study, etc...
  7. Students could make posters, power points, or models to share their findings.

### **Additional Resources**

[www.seedsofscience.org](http://www.seedsofscience.org)

In the above narrative fiction the author completes a plot study in the woods behind his house.

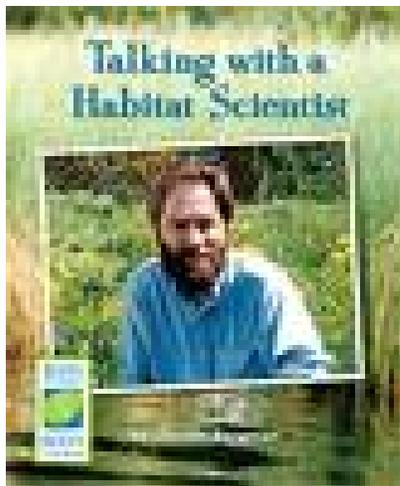
<http://www.schoolyardhabitatfoundation.org/Uses.htm>

<http://www.fws.gov?ChesapeakeBay/school/resource.htm>

One Small Square The Night Sky by Donald M. Silver ISBN 0-07-057933-4

One Small Square Woods by Donald M. Silver ISBN 0-07-058045-6

The above books are from the *One Small Square* series. They're an excellent resource for ideas on what students can observe.



My Nature Notebook by  
Kevin Beals

## **Nevada State Standards**

N5A1 Students know scientific progress is made by conducting careful investigations, recording data, and communicating the results in an accurate method. E/S

N5A3 Students know how to draw conclusions from scientific evidence. E/S

N5A4 Students know graphic representations of recorded data can be used to make predictions. E/S

N5A5 Students know how to plan and conduct a safe and simple investigation. E/S

E5C5 Students know soil varies from place to place and has both biological and mineral components. E/S

L5B2 Students know living things have predictable life cycles. E/S

L5C2 Students know organisms interact with each other and with the non-living parts of their ecosystem. E/S

L5C3 Students know changes to an environment can be beneficial or detrimental to different organisms. E/S

L5C4 Students know all organisms, including humans, can cause changes in their environments. E/S

L5C5 Students know plants and animals have adaptations allowing them to survive in specific ecosystems. E/S

L5D2 Students know animals and plants can be classified according to their observable characteristics. E/S

### **Safety Reminder:**

You should always visit the area before sending the students outside to make sure it is safe and clean. As students work, observe closely; if they wish to observe an animal up close, set the stage that they need to use caution and should never directly handle an animal, instead they should use the bug viewer provided.