

Udall Foundation's Parks in Focus Program with the Boys & Girls Clubs of Tucson

Phenology Activity

2011

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Background:

The Udall Foundation's Parks in Focus program (pif.udall.gov/), designed to connect underserved youth to nature through photography, began collaboration with the Boys & Girls clubs of Tucson in January of 2011. This community development initiative consisted of a year-round environment education program for the Boys & Girls Clubs of Tucson, including 6 classroom-style lessons, one of which was focused on phenology. Parks in Focus requested to collaborate with the USA National Phenology Network (www.usanpn.org) on this particular lesson. The activity incorporated phenology monitoring protocols from the USA-NPN phenology observation program, *Nature's Notebook* (<http://www.usanpn.org/participate/observe>). These lessons were presented at 6 clubhouses in Tucson from January to April of 2011. An activity plan based on the phenology lesson given is given below.

Schedule:

January 18th: Jim and Vicki Click Clubhouse

January 20th: Holmes Tuttle Clubhouse

March 7th: Steve Daru Clubhouse

March 9th: Frank and Edith Morton Clubhouse

April 28th: Pascua Yaqui Clubhouse

April 29th: Roy Drachman Clubhouse

Approximate number of participants: 60

Photos taken by Parks in Focus students may be viewed at:

<http://www.flickr.com/photos/parksinfocus/>



Phenology Observations Activity

The following activity is meant as an introduction to phenology, the study of recurring plant and animal life cycle stages. Students will make scientific observations of plants and record their observations. Appropriate age level 12 years and above.

Time: 1.5 Hours

10 min	<p>Introduction to Seasonal Changes Show a series of photos of a deciduous tree in different seasons. Talk about the differences between seasons in terms of weather, amount of rainfall, sun, etc.</p> <p>Questions to talk about:</p> <ul style="list-style-type: none"> • What do changing seasons mean for plants: <ul style="list-style-type: none"> • Why does the tree shed its leaves in the fall? • Why does it have flowers in the spring? • What do the flowers need to turn into seeds? • What do changing seasons mean for insects: <ul style="list-style-type: none"> • During what seasons would you see a leaf eating insect on this tree? • What do changing seasons mean for birds: <ul style="list-style-type: none"> • During what seasons would you see a bird at this tree? (feeding on insects, eating berries, nesting) <p>Summarize by talking about how the phenological events of plants and animals are related.</p>
10 min	<p>Introduction to Phenology</p> <ul style="list-style-type: none"> • All of the seasonal changes you talked about above are phenological events • Pheno-to show or appear • ology-to study • Phenology- the science of recurring plant and animal life cycle stages • What are some more examples you can think of? (migration, breeding, green-up, senescence)
10 min	<p>Activity: The oak tree, the caterpillar and the flycatcher* Objective: Understand why phenology is important. Have students help to act out the following story of phenological mismatch... In a typical year, the Pied Flycatcher spends its winter in Africa, and relies on the angle of the sun to know when to fly north to its summer grounds in Europe. In Europe, oak trees are leafing out, and caterpillars are abundant. The flycatcher relies on this caterpillar food source after its long journey. However, in recent years, with warming temperatures, the oak tree is leafing out early, and the caterpillar is abundant earlier as well. But the flycatcher is still depending on the same sun angle to know when to migrate. By the time the flycatcher arrives in Europe after its long migration, the caterpillars are no longer available as a food resource for the flycatchers.</p> <p>Have one student act as the oak tree, one as the caterpillar, one as the flycatcher and one as the sun. Students can raise their arms like branches of a tree, make feeding motions like caterpillars or birds. You tell the story as the students act it out, showing a</p>

	typical year and then a warmer year where there is mismatch.
40 min	<p>Outside Activity: Phenological Observations</p> <p>Objective: Practice making scientific observations and entering information on datasheets.</p> <ol style="list-style-type: none"> 1. Go to a nearby park, garden or open space that has some plants on the USA-NPN plant list http://usanpn.org/species_search (scope this out beforehand so you can get the information you need below from our website) 2. Have prepared a list of interesting facts about each plant-their uses to people or animals, how long they live, anything interesting about their natural history to get the students interested in the plants. 3. Go through the phenophases of these plants (located on our webpage). How does this plant reproduce? Does it have flowers or seeds? Does it have leaves in winter? (this can be done in small groups, rotating around so that each group gets to make observations on each plant) 4. Record your observations on our datasheets (available on our webpage)
20 min	<p>Information Posters for Plants</p> <p>Make a poster for each plant with information about the plant. Have the students choose their favorite facts from your interesting facts list, and put photos or drawings of the plant on the poster. Hang the poster in your classroom or clubhouse.</p>

Optional add-ons:

Photography Lesson: The Parks in Focus program strives to connect youth to nature through photography. As part of the phenology lesson, students took photos of each phenophase as well as other aspects of nature that peaked their interest during the lesson.

Plant a Phenology Garden: The Boys & Girls club or other location might be willing to start a phenology garden as part of the lesson. This can be done beforehand, so that the plants monitored during the lesson are those in the garden, or during the activity, with the intent of making future observations on these plants.

*Both, C., S. Bouwhuis, C. M. Lessells, M. E. Visser. 2006. Climate change and population declines in a long-distance migratory bird. *Nature* 441:81-83.