



Pest and Disease Control Department

Lesson 5—Citizen Science!

Lost Ladybug Project

<http://treadwell.cce.cornell.edu/ladybeetles/>

Essential Questions:

How can I collect data about native ladybug populations as a citizen scientist?

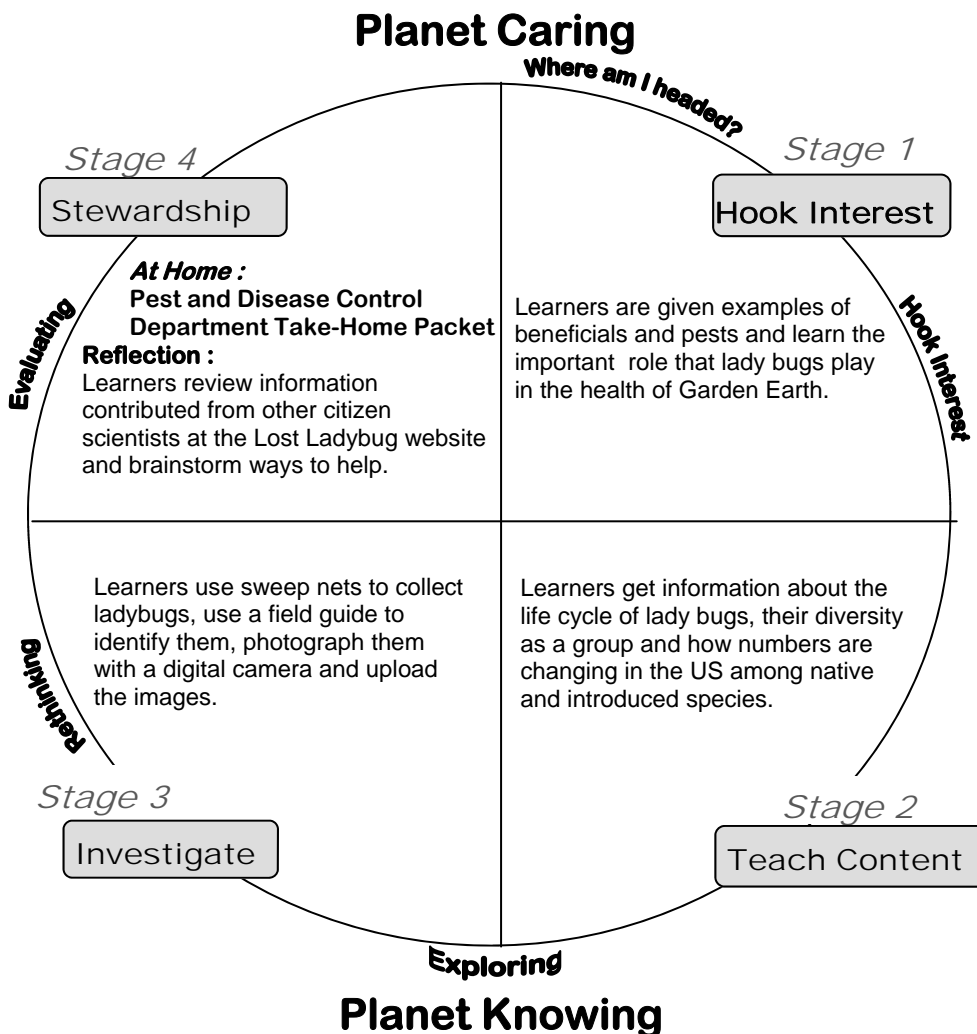
Why is this information important to researchers?

At a Glance:

Working as citizen scientists, learners collect ladybugs and identify them using a field guide provided by Cornell University. Learners incorporate technology by taking photographs of ladybugs with a digital camera and uploading pictures and information. Data collected and contributed by learners is included in maps of native and introduced ladybug species. This information is available to the public for educational research purposes.

Concepts:

- Ladybugs are an important group of insect species. They are called “beneficial” because they keep population numbers of other insect species considered “pests” in balance.
- Scientists have noticed that numbers of individuals in native ladybug species declining.
- Scientists need the help of citizen scientists to get a better idea of numbers of individuals within populations and their distribution.



Objectives

Learners ...

- 1) participate in a nation-wide mapping project of native and introduced ladybug species.
- 2) incorporate the use of a species identification key.
- 3) implement the use of electronic technology in data collection.
- 4) gain understanding of ladybug species, their habitats and their environmental needs through keen observation.

PROCEDURES IN BRIEF: Lesson 5—Citizen Science! Lost Ladybug Project

Stage 1

1. Start by becoming familiar with the variety of ladybug species, the habitat and life cycle of ladybugs and their importance as beneficial insects in maintaining balance among aphid populations.
2. Introduce the issue of diminishing numbers among native ladybug species and increasing numbers among exotic ladybug species.

Stage 2

1. Learners use sweep nets to collect ladybugs and identify ladybugs using a field guide (see Resources and Links for guides).
2. Learners photograph collected ladybugs with a digital camera. In order to get a still shot of a ladybug, it may be placed in freezer for five minutes (six minutes is too long). Ladybugs may be kept in a cooler for several days if extra time is needed.

Stage 3

1. Learners upload photographs and send them to Cornell University by way of the Lost Ladybug website.
2. Learners complete a submission form electronically to accompany the photographs. The form provides information regarding the time and habitat at which the ladybugs were found. Information for five ladybugs can be included in one form at the same time as up to two pictures of each ladybug. Photographs and information can also be sent via email or printed and sent by mail.

Stage 4 *Reflection*

1. Learners reflect on the observations of ladybugs and their habitats made during data collection. Guide them in realizing the importance of their contributions as citizen scientists in better understanding the changes in ladybug species populations and the reasons for these changes. Learners also reflect on the importance of maintaining biodiversity among ladybug species, the maintenance of their habitats and possible reasons for and ways to manage these changes.

Extension

Send collected insect specimens to Bugscope and use an electron microscope via the internet to get a closer look at mouthparts and other physiological features that make pests and beneficial successful in providing eco-services.
<http://bugscope.beckman.illinois.edu/>

Supplies

- Insect identification guide
- Ladybug identification guide
- Sweep nets
- Digital camera
- Refrigerator/freezer (optional)
- Computer and internet access
- Submission forms

Resources and Links

- Lost Ladybug website ladybug@cornell.edu
- Lady bug identification guide from the Lost Ladybug website
<http://treadwell.cce.cornell.edu/ladybeetles/wp-content/uploads/2008/09/ladybugguide11.pdf>
- Sweep net instructions
http://instruct1.cit.cornell.edu/courses/icb344/documents/SweepNet_000.pdf
- Video clip of ladybugs and aphids
<http://www.youtube.com/watch?v=5jP2DvcFfrg>