Science of Life Explorations

Wasps and Ladybugs
Let's focus on the last three steps of IPM.

**IPM Step #4 is Determine an Action Threshold.**
This means you have to decide how many insect pests you or your plants can tolerate before you have to take action. If you have one fly buzzing around you, and it bothers you, your threshold for tolerance of flies is one fly. You may have two hundred ladybugs on the outside of your house in October. That’s okay, because you know they will soon leave to hibernate for the winter. But what if you have twenty ladybugs inside your house on your kitchen window? What can you tolerate? What is your threshold? If they are a problem you need to act. You might be able to ignore one ladybug, but can you ignore twenty?

**IPM Step #5 is Choose Tactics.** Tactics are actions you take to decrease a pest.
When does a good bug become a bad bug?

If ladybugs have become pests in your house, you have to choose a tactic. You could capture them in jars and release them outside, or someone could vacuum them out of the window. You don't need to spray them with bug spray. They are not harmful, but they may be annoying!

**IPM Step #6 Evaluate Results.** Your mom vacuumed the ladybugs out of the kitchen window and disposed of the vacuum bag properly (removed bag and enclosed it in a trash bag). One more ladybug showed up the next day. You captured it and put it outside.

Did these tactics work? Did you reduce the insects? One more thing to do is to find out if there is a hole in the window sill they are using to come into your house. Have an adult fill in that hole and you may have less ladybugs in the house next year.
Here are more beneficial insects that can sometimes be pests!

A Bee Bite?  A Bee Sting? Injuries from insects can be a bite or a sting. It depends on what insect you’ve crossed paths with. Mosquitoes, fleas and black flies do **bite with mouthparts** that are capable of piercing skin. A bite causes a reaction in our skin.

Have you ever been stung? A sting is the result of upsetting a bee or wasp or hornet. Let’s learn more about bees, wasps and hornets. A sting comes from contact with a stinger, not the mouth.

Only females have a stinger. It is really called an ovipositor. It is used when it is time to lay eggs. In some species, only the queen lays eggs, but the workers (females) have an ovipositor and use it for defense. It is located at the end of the abdomen.

We know that the honeybee is an important pollinator. Both honeybees and bumblebees are fuzzy. They eat pollen and take as much as they can back to their hives. Being fuzzy helps them to collect pollen because it sticks to each hair. As they groom, they move it onto their legs. Sometimes it looks like they have big yellow socks on!

Wasps and hornets are a bit different than bees. They are not fuzzy. They like a well-rounded diet of protein and carbohydrates. Because they eat pest insects they are beneficial. They capture and return prey to their nests to feed their young. Can they be pests, too? Yes, when they try to eat our picnic food, they are pests. Always be careful when drinking out of a soda bottle or can in August and September.

These great insect photos are from the website http://www.cirrusimage.com
When they feel the need to protect themselves or their homes and young, female bees, wasps and hornets can sting. Wasps and hornets can sting repeatedly. Only bees will die after they use their stinger, because they lose their stinger. This loss creates a mortal wound.

Often, when we humans are stung, it is because we did not see these insects going about their daily work, or we got too close to their nests.

Some species of bees, wasps and hornets are solitary and some are social. Social insects live together in a hive or nest. Bees make hives of wax. Wasps and hornets chew up wood to make a paper nest. Usually the wasps we see are paper wasps, yellow jackets or bald-faced hornets. Paper wasps have nests like an umbrella, and often build them near our homes. If they are not close to your doorway, try to ignore them. Remember, they are beneficial.

Yellow jackets often build nests in soft soil. You probably don’t know they are there unless you see them coming and going. You do not want to find the nest by accident! Large oval nests high in trees are usually hornets. Generally we can co exist with all these insects without a problem, but we must remember to watch for nests near where we work and play.

These great insect photos are from the website http://www.cirrusimage.com
The New York State Insect is the:
Ninespotted lady beetle \textit{Coccinella novemnotata}

Remember to encourage natural enemies and beneficial insects by reminding people to use less pesticides. You can also help provide habitat. Your teacher has a hand-out you can take home.

The ninespotted lady beetle is the state insect of New York. It has distinctive markings. It is a pale orange-red color. Although it is found throughout much of the United States and Canada, in the last few years its population seems to be reduced. It is not known why.

What are some reasons why insect populations may be reduced?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
What kind of ladybugs are found in New York State and the northeast?

Adalia bipunctata, Twospotted ladybeetle. Yellowish-orange to bright red

Coccinella novemnotata, Ninespotted lady beetle. Pale orange-red

Coccinella undecimpunctata, Elevenspotted lady beetle. Reddish

Hippodamia tredecimpunctata tibialis Thirteenspotted lady beetle. White area on head

Propylea quatuordecimpunctata Fourteenspotted lady beetle. Black on yellow, or yellow on black markings

Cycloneda munda (no spots, no common name) Orange

Hippodamia parenthesis. Parenthesis ladybeetle. Red

Hippodamia variegata. Variegated ladybeetle. Red

Coccinella transversoguttata richardsoni. Transverse ladybeetle. Orange to red

Use the illustrations to identify ladybugs you find in New York and the rest of the Northeast. Do you notice the diversity in size, color and markings? Did you know that ladybugs were so different? (illustrations courtesy of Natural Enemies of Vegetable Insect Pests, Cornell Coop. Ext.)
For Teachers and Parents: Pg 1  In the cool months, some ladybugs become pests by seeking protected sites where they can hibernate. Some may overwinter underneath siding, shingles or try to enter your home. On sunny, warm days they may move and fly but generally are inactive till spring. When a ladybug is disturbed, it exudes a yellow-orange body fluid which can cause inhalant allergies or contact dermatitis. The fluid has an odor and may stain walls or fabric. It is not wise to crush ladybugs. At the same time, ladybugs are effective biocontrol agents for aphids and other pests.

Pg 2 What can you do with ladybugs if they become pests in your home? Rather than use chemicals, use cultural or physical methods. You can sweep them off siding (or ignore them, they’ll be gone in a few days). Vacuum them up if they’ve entered the house. Holes in siding and along trim can be caulked; screens can be mended if torn. Vacuuming is an efficient way of reducing the number in the home. A knee-high stocking can be placed inside the wand with its open end secured to the wand with a rubber band. When complete, remove the nylon and discard it. If you want to keep the ladybugs alive until spring, place them in a container with ventilation and a damp cloth. Keep the container in a protected, yet unheated area.

Pg 3 Sooner or later, most of us become familiar with pests that bite or sting. There is little argument that blackflies and mosquitoes are pests! This section describes the difference between some of the familiar bees, wasps and hornets that can be found in urban, suburban and rural areas. They are beneficials, as they are important predators and pollinators, but they quickly get a bad name when we are on the receiving end of a stinger!

Pg 4 Stinging insects are important natural enemies of pests. Learning about them helps us to avoid being stung. Remind students that bees, hornets and wasps ‘sting’, they do not bite. Only females have stingers. Wasps, bees and hornets that are communal tend to respond to threats (or perceived threats) to their nests by alerting others with their actions or a scent. The best way to avoid being stung is to learn about these insects and to always look where you are working, playing or walking for signs of nesting groups.

Pg 5 Pesticides, extreme weather, loss of habitat, increased populations of competing predators, disease, or trapping are examples of ways any insect population may be reduced.

Here is the scientific classification for the Ninespotted lady beetle:
Kingdom: Animal
Phylum: Arthropoda
Class: Insecta
Order: Coleoptera
Family: Coccinellidae
Genus: Coccinella
Species: novemnotata