Activity: Animal Adaptations - What kinds of insect pollinators are attracted to your raingarden?

Overview: Animal Pollinators are an integral part of our environment and our agricultural systems. They are important in 35% of global crop production and they help produce the seeds and fruit that sustain wildlife diversity. Animal pollinators include butterflies, moths, wasps, flies, beetles, bats, hummingbirds, and bees. Bees- both native bees and European honey bees- are considered the most important pollinators in North America. Minnesota has roughly four hundred different bee species. The non-native European honey bee is the most important managed crop pollinator in the United States but the number of bee colonies is in decline due to disease and other factors.

Many native pollinator species are in decline due to habitat loss, pesticide use and other unknown reasons. Nature areas, gardens or raingardens help provide food and shelter for native pollinators. In this activity you will get a chance to observe and identify as many different pollinators as you can.

Benchmarks:

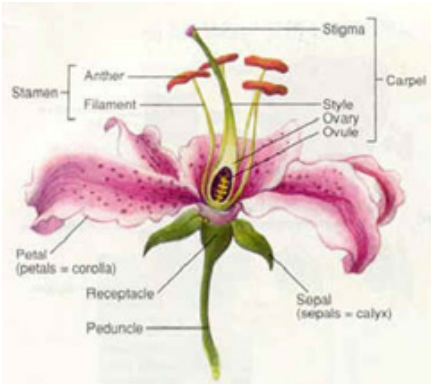
5.4.1.1.1 *Describe how plant and animal structures and their functions provide an advantage for survival in a given natural system. For example: Compare the physical characteristics of plants or animals from widely different environments and explore how each has adapted to its environment.*

Learning Objectives:

1. The student will be able to give examples of Minnesota native animals and the special adaptations that allow them to survive in their environment.
2. The student will be able to explain the concept of adaptation in terms of living things.

Terms:

- Pollination
- Pollinators
- Adaptations
- Pollen
- Nectar



Materials needed:

- Notebook and pencil
- Nature area, garden, or raingarden with flowering plants

Procedure:

You will want to discuss pollination and the variety of ways pollen gets exchanged between plants. If you are bold you can get into the sexual reproduction facts:

1. Flowers are sex organs of plants
2. Pollen contains plant sperm
3. Pollen sticks to the other plant's female sex part called a Carpel/pistol
4. Male sperm meets the eggs in the plant ovary (bottom of the flower)
5. Egg and sperm create seeds which become an embryo (baby plant)

Amazing Video of Pollination: http://www.youtube.com/watch?v=xHkq1edcbk4
Cartoon of Pollination: http://www.youtube.com/watch?v=8tcmBCiomfI

Then spend time talking about adaptations: Adaptations are special features that allow a plant or animal to live in a particular place or habitat. Possible discussion could be about how bees are adapted to co-exist with flowers/ plants.

Students will visit a nature area, flower garden or raingarden and spend some time observing pollinators they find. They will record observations in a notebook. Have them try and determine adaptations that help the native pollinators survive. Remember to have them record sounds, smells, and what they see. They can make sketches of the pollinators as well but is difficult since they don't stay around long. Just remind them to not bother the insects that can sting. You will want to check the medical histories of your students and make special arrangements for students that are allergic to bee stings.

Wrap Up:
Back in the classroom have students log into computers as teams and identify the pollinators they described or you could do it as a whole class using the LCD projector. The key is to have students discover native pollinators. As a class share some of the different native pollinators that you discovered as well as adaptations that you observed.

Resources:
Insect Identification Website
http://www.insectidentification.org/insects-by-state.asp?thisState=Minnesota

Bug Guide
http://bugguide.net/node/view/59

Enrichment:
Starting an insect collection
http://www1.extension.umn.edu/garden/insects/collecting/

Bee Diversity in Minnesota
http://beelab.umn.edu/About/HelpingBees/index.htm