# Lesson 6 Let's Take a Pollinator Safari and (extension activity) Creating a Pollinator Friendly Garden

**Learning Objectives:**

- Students will recognize common pollinators: animals that help a plant to grow and produce food through pollination. Differentiating them from other common insects will give students confidence in telling the story of pollinators and their plight. Younger students will recognize and differentiate moths and butterflies as well as bees and wasps. More advanced students will identify insect pollinators by sight and make a reference collection or a series of photos of the insects to aid in future reference.
- Students will recognize the habitat requirements of pollinators and be able to assess ecosystems to determine if adequate pollinator habitat is present. They will understand methods to both conserve habitat and augment it when necessary, to create a healthy pollinator friendly environment.

**Question:** What are the pollinators and plants in our school area? How can we bring more plants and pollinators into our local ecosystem?

**Introduction:**

There are lots of different kinds of insects (and some vertebrates – like hummingbirds!) that pollinate flowers. Most people don't realize that these pollinators are essential for our very survival. During the growing season, flowers, if pollinated, develop into seeds and fruits, but most of them can't do it without the help of pollinators. These tiny animals visit flowers to feed on their nectar or pollen. As they move from flower to flower they transfer pollen from flower to flower, aiding in the pollination of these flowers. Since pollinators are responsible for 1/3 of our fruits, vegetable, and nuts, our lives depend on them!

The purpose of this lab activity is to take a safari and learn for yourself! We will take a survey of the pollinators around the school building along with the plants that are visited by those pollinators.

In the second part of the lesson, students will use the information they have gathered to devise a plan to increase the number of pollinators within their school community. The goal is to develop a presentation geared towards school administrators convincing them to increase the number of plants in the schools green space to increase the amount of pollinators that visit the school campus. The most convincing presentation (and most well thought out) will then be put into action. The lesson concludes with planting of the plants voted on by the students and administrators to not only increase the amount of pollinators in the area but also to get the students engaged in citizen science.

**Materials:**

- Phone or Computer with iNaturalist app (1 per group of 3 students)
    - The iNaturalist app is free and available at google play, iTunes or on the iNaturalist website (https://www.inaturalist.org/)
- Insect identification books

- Flower identification books
- Lab notebook (optional)
- The great outdoors! (a flower garden, vegetable garden, school yard, or outdoor lab)

**Facilitating the Activity:** This timeline is based on your standard 45 minute class period.

**Day 0: Learning how to use iNaturalist**

- Before going outside, it is a good idea to teach students how to use iNaturalist in the classroom setting. One could do this easily by getting pictures of some organisms and placing them at lab tables.
- After you have the students access the application (download onto phone or on the website), have them walk around and use the application.
- Have them practice recognizing the common name and scientific name of the organisms they are seeing.
- Students should also place these photographs in a group project that you have created before they use this application. (You do not want them to place these in the open forums for privacy and also because they are not actual specimens)
- Note: You should familiarize yourself with using iNaturalist before the students engage in the application. Make sure to learn how to set up a project that the students will load their observations directly to. You can find a help guide linked to iNaturalist to find out more information to get you started.

**Day 1-2 Learning about local pollinators**

- Put students in groups of three and give each group the worksheet entitled Lab: Let's Take a Pollinator Safari!
  - Each group should choose a recorder, a photographer, and a librarian.
  - Have them review the instructions and note the required tables.
  - Tell them they have 30 minutes to complete the outdoor safari and give the time that they must return to the classroom. (Can be extended for longer class periods)
- Assign each group to make a PowerPoint or Keynote presentation summarizing the results of plant and pollinator safari.
    - Remind them to use photographs and common names of the insects and flowers that you discovered outside.
    - This may be done on Day 2.
- Each group should take turns presenting their PowerPoint or Keynote to the rest of the class, on Day 2. (This can be extended to Day 3 if you feel that your class needs extra time.)
    - Each student should record (with tally marks) the number of different plant species visited by each species of pollinator during the group presentations, in a table with one column for each pollinator and one column for the tally marks. (See Table 1):
- Combine all group data to produce a bar graph comparing the numbers of plant species visited by each of your class identified pollinators.
    a. Label the x-axis "Number of Different Plant Species Visited."

Table 1.

| Pollinator (common name) | Number of flowers visited |
|---|---|
| | |
| | |
| | |
| | |
| | |

- Each group will write a report summarizing their group results and the overall class results. Students should include "cleaned up" copies of their group data, the class tally data and the bar graph of class results.
- Students should answer the following questions in their report:
  - Were there any pollinators that appear to be very specific ("picky"), that is, able to pollinate only one (or the fewest) particular plant species?
  - Were there any pollinators that appeared to be most versatile – able to pollinate several different species of plants?
  - What are some new questions that you have as a result of this study?

**Day 3-5 Creating an outdoor Pollinator Friendly Garden (Optional citizen science activity)**

- Explain to the class: Now that you have data and have developed a report detailing the types of pollinators and plants around our school, each team will analyze the data we collected as part of a Pollinator Protection Task Force.

  Your job is to write a proposal to present to school administration detailing areas around the school that would be appropriate to add more flora and fauna to attract and support more pollinators year after year. Your plan should include:

  - Your research about current plants and pollinators found at the school. Your research should provide insight into the plants that provide the best food access to pollinators found around school and why increasing the number of these plants would benefit the local ecosystem.
  - Each team will present their plan to the class and we will choose which one to proceed with.
  - The plan that is presented to the school administrators will include the type of plants that will be purchased, the amount that is suggested to be purchased, the cost of the overall purchase to the school and finally the recommended placement of the plants within the school grounds.
- Once the students have gathered data on local pollinators, they should decide as a class which plant we should choose to present to administration and work together to get the additional information (costs, etc.)

**Classroom Discussion:** After the presentations the teacher should host a discussion with the class. The following questions may be used as guiding questions:

- What did you learn about pollinators and the plants in our area?
- What did you learn from the other presentations?
- Why might pollination be important to our local ecosystem?
- What makes a presentation come alive and get your attention?

**Additional Information:**

This activity would most likely be done at the beginning of school in August-September or at the end of the school year in months April-June. This of course depends on your school calendar, curriculum, and where you are located in the United States.

Amount of time spent on this lesson will depend on your schedule.  Plans are written for a typical 50 minute high school classroom.
Shows to supplement may include: Driftwatch website from Purdue (www.driftwatch.org/).
**Next Generation Science Standards**: TBD

**Fly Higher:** Please refer to help page on iNaturalist to help you on the technical side to get you started.

Students that would be engaged in enrichment may do the following:

**Glossary:** Pollinator, Genus, Species, Ecosystem, Scientific Nomenclature