

Sixth Grade Science

To: Students in next year's sixth-grade science class.

From: Mr. Bird, grade 6 science teacher.

Re: Grade six insect projects

Date: Spring!



Dear Student,

Please read this handout carefully. It contains directions about a project that you will turn in during the first trimester of sixth grade science. **KEEP THIS HANDOUT**. If you have questions, please call me (303-756-9481 ext. 352 school, or 303-778-7838 home) and leave a message. I will return your call as soon as I can. You can also email me at jbird@st-annes.org (probably best).

Introduction: In the first trimester of your-sixth grade year, you will turn in a collection of insect specimens. The specimens are to be correctly mounted and labeled. The information provided in this handout has been made available now so that you can collect over the summer if you wish. You are *not* required to collect over the summer, but you may like to get started early. Many students choose to take advantage of being in good “buggy” places during the summer to begin their collections. But you could also complete this collection in your back yard or local neighborhood.

There are several reasons why I feel this is an important unit of study. First, I believe that it is very important that you are given chances during your educational career to explore the natural world. I think that it is equally important that you develop an understanding, if not a true appreciation of the diversity of nature. It is my hope that this project will serve as a building block for environmental awareness that I believe is very important in today's society. This increased awareness is necessary if you are to make wise decisions about environmental issues in the future.

Another reason why this unit is valuable is that it gives you experience managing a long-term project. You may not have had a lot of practice at this in the past. This project will also give you valuable practice using a database, as you will use the computers to input data and print labels.

Finally, this unit requires that you work with field guides while you classify the insects in your collection. Hopefully, you will become aware of the value of field guides of all kinds. I hope that you will continue to turn to these resources throughout your life.

Text: You will need a copy of *Insects: a Golden Guide* by Herbert Zim and Clarence Cottam. You will also need a copy *4-H Entomology* printed by the Colorado State University Cooperative Extension. It contains great information about collecting and preserving insects. These books will be provided by the school when classes resume at the end of summer.

Collecting Insects: In the United States, the number of described insect species is approximately 91,000. You should not have trouble-finding insects if you look! A good place outdoors to look for insects is on plants. Areas with diverse plant populations will attract more species. Insects are also found in various concealed areas, such as leaf litter, under stones or other objects, in fungi, under bark, in dead logs, in decaying materials, and in the ground. Many insects live in water, either throughout their lives or

during their immature stages, and may be found in most aquatic environments. Insects that live in water during their immature stages are usually found near water as adults. Many insects are attracted to lights at night.

Insects can be captured in a number of ways. Nets are commonly used to capture insects. Various types of traps may also be constructed to capture insects. Please note that while most insects are harmless, and can easily be handled, there are a few kinds of insects that can bite or sting. Please be especially careful when collecting bees or wasps.

Killing Methods: A humane way to kill insects is by putting them in the freezer. Simply put the specimens in a sealed container and place them in the freezer. Leave them overnight. The freezer works very well, but if one does not have easy access to a freezer killing jars are used. Killing jars are of various sizes and shapes, depending on the use they will receive. Wide mouth jars are best. All killing jars should be labeled POISON. Jars can be made with nail polish remover and cotton (or some other absorbent material). Moisten the cotton with water then place a few drops of nail polish remover on the cotton, put the cotton in the jar and cover. Do not use too much liquid as some types of insects make poor specimens when wet. New nail polish remover should be added every 3 or 4 days. Be sure to use the nail polish remover in a well-ventilated area. Insects can also be dispatched in rubbing (isopropyl) alcohol. About 2 centimeters of rubbing alcohol in a jar is sufficient. Remove and pat the insects with a paper towel to dry before storing in the freezer. Do not use this method for fuzzy insects (such as bumblebees), butterflies, or moths.

Mounting: Most insects are mounted with insect pins, which will be provided by your teacher. These pins will be given to you when school starts in the late summer. Therefore, **you should not pin any insects over the summer**. We will tend to that later. You will use the information provided here at that time.

Insects must be properly pinned for you to receive full credit for your project! **If you have access to safe freezer space, keep the frozen insects there and wait until school starts to pin. You need to receive good pinning instruction first.** Unpinned insects store well in the freezer provided that they are frozen before they dry out. **Be aware that frozen insects are brittle.** Frozen insects can be thawed and then easily pinned. When you return to school in the fall, you will receive instruction on proper pinning. You will then use the following instructions to get your insects mounted.

Most insects are pinned vertically through the thorax (the thorax is the section with the legs attached to it). Please note that **the distance between the top of the pin and the top of the insect (points included) is 1 centimeter**. It is best to pin your insects very soon after they are dead. **If the insects are allowed to dry out they will become brittle and difficult to pin.** Store the pinned insects on a block of foam or some other material until you are ready to assemble the final project.

Keep your pinned insects in a safe place!

It is a good idea to collect a few extra insects in case something happens to some of the specimens in your original collection.

Remember, **Dry or frozen insects are brittle and will break easily!**

If unpinned insects become dry, they can be relaxed in a sealed jar containing a few cotton balls soaked in rubbing alcohol (isopropyl alcohol). Leave the insects overnight, but no longer than two nights. Pin the insects when they are relaxed. Instruction on relaxing techniques will be provided in the fall.

Labeling: Your labels will be printed in the computer lab. Insects labels should include the following information: the common name of the insect, the scientific name of the order the specimen belongs to, the location where the insect was collected (city or town or county and state), the name of the person who collected the specimen, and the date the insect was collected. **For the summer you only need to keep track of the location, date and collector. We will work on identification and insect orders in the fall.** The computer-generated labels will be similar to the example shown:

The labels you produce
in the computer lab will
be similar to this.

Antlion
Neuroptera
Complete
COLORADO: Denver
8 July 2017
Grant Mahon

Requirements: The basic assignment is to collect, mount, identify (to scientific Order), and label different insects. Be aware of the following perimeters:

- In order to be eligible for an 'A', you must turn in at least 25 different insects, and 7 different Orders (groups) must be represented in your collection.
- In order to be eligible for a 'B', you must turn in at least 21 different insects, and 5 different Orders (groups) must be represented in your collection.
- In order to be eligible for a 'C', you must turn in at least 16 different insects, and 3 different Orders (groups) must be represented in your collection.

Rules regarding your specimens: All insects must be different species. This collection should contain adult insects only, so please avoid collecting nymphs and larvae (caterpillars for example are not mounted on insect pins). **All insects must have been collected for this project.** You may not use insects from an "old" collection. You may not buy insects for this collection. You may ask other people to collect for you, and you may trade with classmates.

Due date: The due exact date for this project will be determined in the fall. It will probably be due sometime in early October (late September at the earliest). Your collection ***is not due*** when you return to school in August, so all you need to think about over the summer is collecting and storing your insects (with data - collector, location, date).

A note regarding environmental impact: I know that some students worry about killing insects. Scientifically, collecting insects virtually never impacts their populations. We routinely and inadvertently kill thousands of insects when we drive our cars (take a look at the grill of your car), but that does not even put a dent in any population of insects. Insects are extremely diverse (well over 1,000,000 species have been identified), and insect individuals are extremely abundant (the number of individual ants is estimated at over 100 trillion!). The few you collect for this project will have little impact.

The real threats to insect populations are habitat destruction (like when land is bulldozed to build roads, houses, and shopping malls) and pesticides that often impact non-target species of insects (such as those applied to our fruits, vegetables, grains). I would never assign a project of this nature if I felt it threatened the environment.

A final note: I encourage you to get help for this project. Ask your family and friends to help you. You may work with other people to complete this project, but **remember that this is your project**. In the end, you are the one who is responsible for its completion. You are responsible for keeping track of your progress, and for turning in a completed project on the due date (to be announced in the fall). Start now! Don't wait till the last minute. Have fun!