

# Prairie Insect Survey



## In a Nutshell

Students will be introduced to the common insect orders in order to survey prairie insects they find on the refuge.

**Grades** 2 & 3  
**Seasons** Fall, Spring, Summer

### Literature Connections:

Do Bees Sneeze? by James K. Wangberg  
Insects do the Strangest Things by Leonora and Arthur Hornblow  
Insects: A Close-up Look by Peter Seymour  
The Bug Scientists by Donna M. Jackson

### Pre-Visit Suggestions:

Students are introduced to the word “taxonomy” as they review the characteristics of animal groups and then closely compare the most common insect orders they will encounter on the prairie.

### On-Site Activities:

Students will use insect sweep nets and hand lenses to observe and catch prairie insects and record their data.

### Post-Visit Suggestions:

Spend an afternoon collecting insects around the school yard. In math class compare what you caught on the prairie with the insects living in the school yard. Introduce the concept of diversity by asking students to compare the data they collected from each site. Use bar graphs and pie charts to determine which habitat, the prairie or the school yard, had a greater variety of insect families? Which had a greater population of insects?

Partner School Curriculum Activity

Build a “virtual” insect collection in the classroom. Encourage students to research and then color drawings to be life-like representations of insects they might find on their prairie fieldtrip. Invite students to bring in magazine or internet pictures of other insects to add to the collection.

**Teacher Resources**

Pet Bugs: A Kid's Guide to Catching & Keeping Touchable Insects by Sally Kneidel

More Pet Bugs: A Kid's Guide to Catching & Keeping Insects & Other Small Creatures by Sally Kneidel

1000 Facts on Bugs by Cybermedia

Incredible Insects by Nature Scope

Milkweed, Monarchs and More: A Field Guide to the Invertebrate Community in the Milkweed Patch by Ba Rea

## Prairie Insect Survey Pre-visit Activities

### Materials

- Tree of Life Poster
- Animal Photographs- one from each class of vertebrates
- Common Prairie Insect Order Sheets- one per student
- Insect Riker Mounts
- Pencils

### Introduction

Introduce your students to the word “Taxonomy”. Define it simply as: the organization of living things into groups based on their similarities. Ask students what characteristics would they use when they are asked to sort a group of items? Their answers should include physical characteristics that are not likely to change. **What is the purpose of grouping animals into categories? So that all scientists use only one, and the same, name for every living thing.**

Start with the largest category: **Kingdoms**. Explain that most living things can be first divided into two groups based on food. Either they can make their own food (Plants) or they have to find food to eat (Animals). From here, animals are broken into smaller groups depending on physical characteristics. Begin with the two biggest: **Phyla** Invertebrates and Vertebrates. Explain the differences between these two groups. Then break down the groups further into **Classes**. Using the Tree of Life poster and animal photographs for clues ask students to list the 5 major classes of vertebrates. Write “mammals”, “birds”, “reptiles”, “amphibians”, and “fishes under the vertebrates on the board and add the animal pictures under each class. Discuss a few major characteristics of each group as you go. Ask students for just a few names of the invertebrate classes to add to the board such as “insects”, “spiders”, and “crustaceans”.

### Insect Order Activity

Now, explain to the students that they are going to look even more closely at 8 **Orders** of the Class Insect. Divide the class into small groups or pairs depending on the number of insect collection boxes available. Hand out one copy of the *Common Prairie Insect Orders: How They Look Different* observation sheet to each student. Instruct them to compare insect orders

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Partner School Curriculum Activity

and record in words or drawings at least 3 characteristics of each order on their paper. Remind them to focus on what is different between them so that they will be able to tell these orders apart when they catch them on the prairie.

For Example:

<b>Beetle</b>	<b>Butterfly</b>	<b>Fly</b>	<b>Bees</b>	<b>True Bugs</b>
hard shell	4 large wings	big eyes	enlarged abdomen	X on their back
shell also acts as wings	proboscis mouth	pointed wings	color	biting mouth

## Wrap Up

Discuss with the students the logistics for their field trip; what to wear for weather, activities they will be doing, etc.

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# Prairie Insect Survey

## On Site Activity

### Materials

- One insect sweep net per student team
- One insect collecting jar per student team
- Cooler of ice in small baggies (in case of an insect sting)
- Copy of the Prairie Insect Survey Data Sheet- one per student team
- Pencils

### Introduction

Using insect sweep nets, students will work in pairs to collect, examine and count a variety of prairie insects. Have students choose a partner. Explain that they are going to conduct a prairie insect survey like real Entomologists (insect scientists). Let them know whether or not you want to take insects back to the classroom. Give each team a net and insect jar. Show them the correct way to carry their equipment (handle pointing down). Head out to the prairie.

Outside demonstrate the correct way to use a sweep net. Then, with a student helper, show them several ways to get the insects into their jar. Emphasize that this is a learning experience and some insects will get away. They should avoid bees and wasps. Show them how to let these insects safely out of their net if they need to. Bring along a cooler with ice in case someone does get stung. Have teams spread apart and get started.

### Insect “Sweep Up”

As students collect insects, transfer a variety of their insects into the small “bug boxes”. After 20 - 30 minutes, gather the class back in the classroom to examine their collection. Pass out the Prairie Insect Survey Data Sheets to each team and have them *estimate* the number of insects they caught in each order listed.

### Wrap Up

Discuss the following questions:

### Partner School Curriculum Activity

- Which insects seem to be most common on the prairie? Which group was least common? Why do you think this is the case? Tabulate a class total for each insect order and, if there is enough time, ask students how they might represent their data visually. On-site, or back in the classroom, help them illustrate their class totals using a bar graph, a pictograph, and/or a pie chart, see examples on next page.
- Which prairie insects were hardest to catch? Why?
- Why do you think there are so many bees and wasps on the prairie?
- Did you catch anything other than insects in your net? Why might spiders like to live in the prairie?

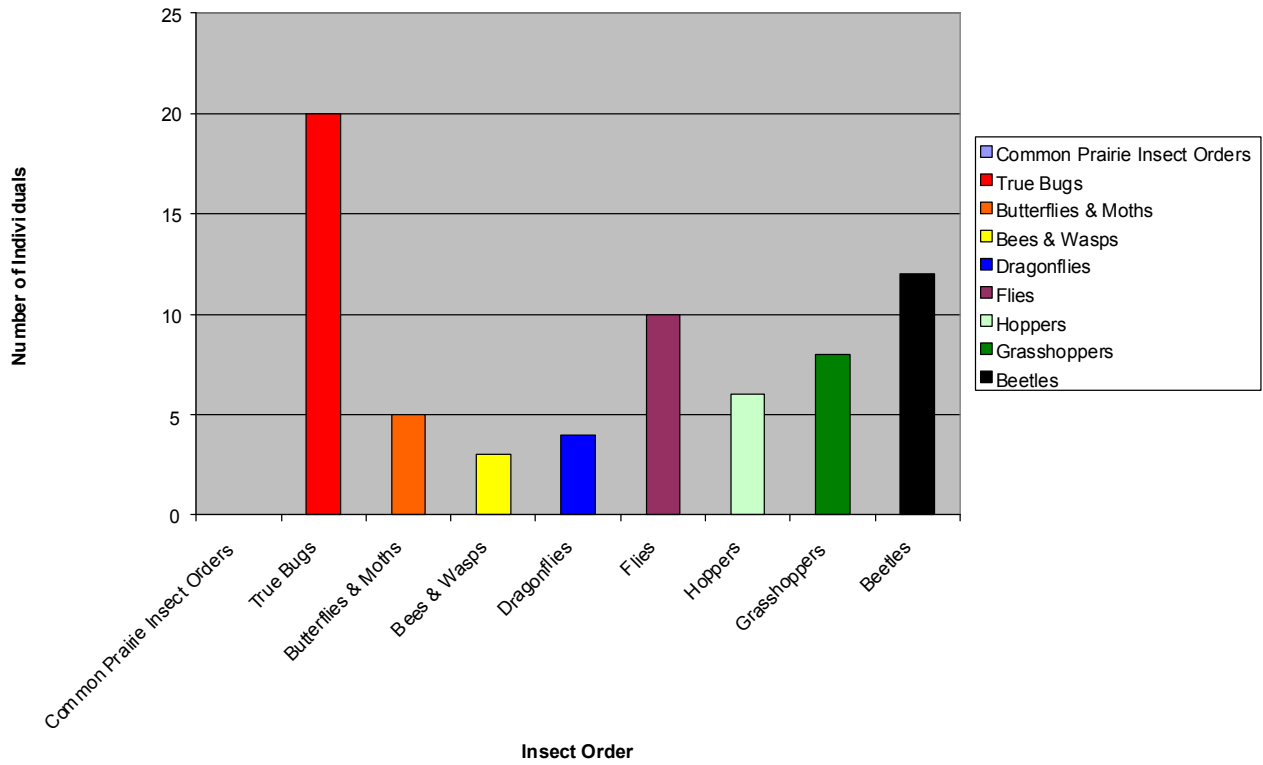
If students are to take insects back to the classroom, transfer some into a critter keeper then let the rest go. Include water (moist paper towel or damp sponge), nectar if there are any butterflies, and grasses and leaves for grasshoppers. Discourage keeping dragonflies (value as mosquito predators) and monarchs (since the fall population will migrate). For more information on keeping insects in the classroom refer to the books: Pet Bugs and More Pet Bugs by Sally Kneidel.

### Management Connection- Biodiversity

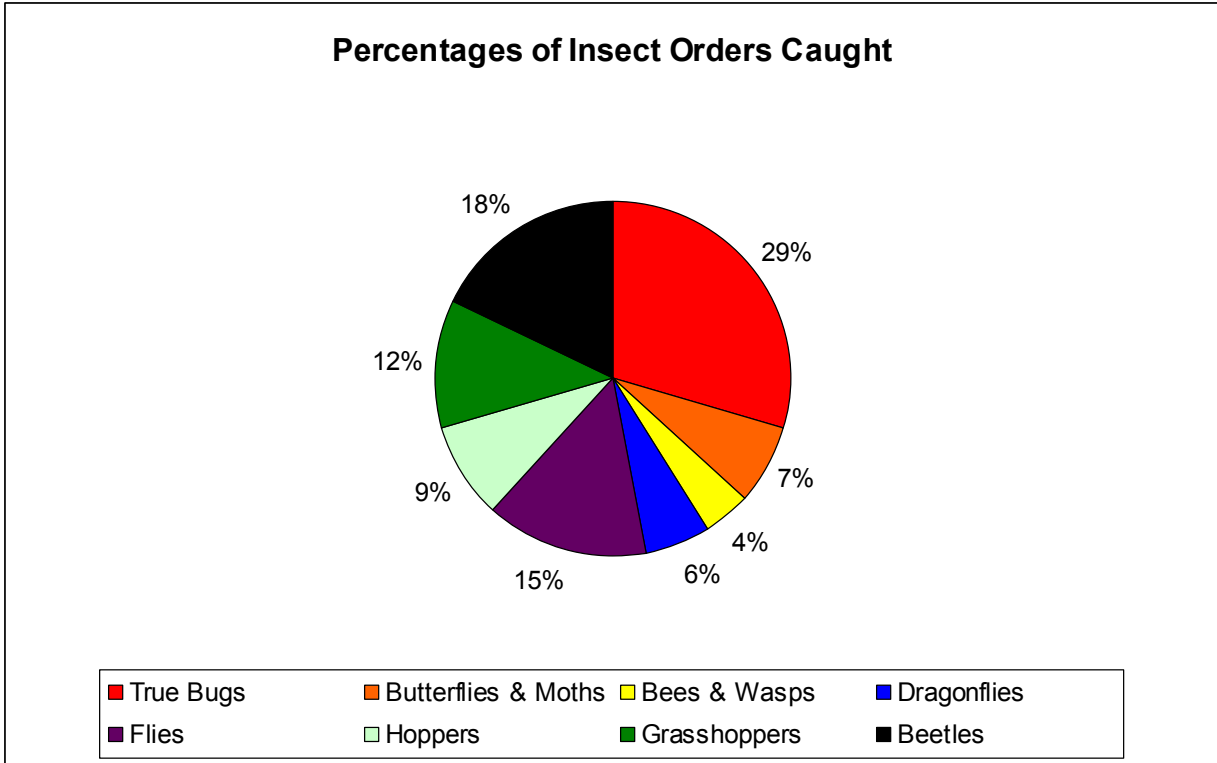
The health of a natural habitat can be determined in a number of ways: the presence (or absence) of certain plants or animals, physical or chemical parameters, or the variety of species present. This biological variety, called biodiversity, is often used by biologists as a measure of health in native and restored prairies. Biodiversity of species is usually measured within one animal or plant group. For example, the biodiversity of the prairie may be measured using insects. The biodiversity value is a simple calculation: the total number of different insect species collected (or orders collected for a simplified study) divided by the total number of insects found.

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## Prairie Insect Survey



## Percentages of Insect Orders Caught



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# Common Prairie Insect Orders

How they Look Different

True Bugs	Butterflies & Moths	Bees & Wasps	Flies	Hoppers	Grasshoppers	Dragonflies	Beetles



# Prairie Insect Survey

## Data Sheet

Collection Date:

Collecting Team:

<b>Insect Order</b>	<b>tally</b>	<b>totals</b>
Flies		
Hoppers		
Bees/Wasps		
Dragonflies		
Butterflies/Moths		
Beetles		
True Bugs		
Grasshopper/ Crickets		

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# School Yard Insect Survey

## Data Sheet

Collection Date:

Collecting Team:

<b>Insect Order</b>	<b>tally</b>	<b>totals</b>
Flies		
Hoppers		
Bees/Wasps		
Dragonflies		
Butterflies/Moths		
Beetles		
True Bugs		
Grasshopper/ Crickets		