Dickinson County Nature Center
Grade TK — "Bugs, Bugs, Bugs"

Core expectations

K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.

Activity Time

One 30– to 45-minute session

Program Alignment with Iowa Core Curriculum

Disciplinary Core Ideas

- **LS1-C: Organization for Matter and Energy Flow in Organisms:** All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

Investigative questions

- How many legs does an insect have?
- Do insects have similar body parts to us?
- What makes an insect an insect?
- Is a spider an insect? What about a tick?

Investigative phenomena

Students will learn the basic parts of an insect, what they eat, their habitats, and how they grow. They will have the opportunity to look at a variety of mounted insects up close and with a magnifying glass.

Practices (SEPs)

- Students will be able to define and understand what an insect is.
- Students will be able to use a magnifying glass to correctly identify the different parts of an insect: Head, thorax, abdomen, antennae, compound eyes and wings.
- Students will be able to differentiate between insects and arachnids.
- Students will be able to identify the difference between vertebrates and invertebrates.
- Students will understand metamorphosis and life cycles.

Cross Cutting Concepts students will identify:

- Patterns in structure and function of different insect species.
- Structure and function of insects adapted to living in different environments.
- Patterns in which they see all animals need food, water, shelter, and space.

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Grade TK — "Bugs, Bugs, Bugs" Side 2

Supplies

All supplies brought by the nature center unless otherwise arranged.

- Magnifying glasses
- Mounted insects
- Pictures of insects
- Darkling beetles — eggs, mealworm, pupae, and adult beetle

Program Overview

Background

Insects are the largest group of animals within the phylum Arthropoda. There are approximately 926,000 species known worldwide. Nearly all insects hatch from eggs and go through complete or incomplete metamorphosis. An insect's body is made up of a head, thorax, and abdomen, six legs, antennae, compound eyes, and wings. Surrounding the body is an exoskeleton.

Insects are invertebrates, meaning they have no backbone. The exoskeleton is made of chitin, which also forms the cell walls in fungi, the exoskeletons of crustaceans, and the scales of fish. Insects are the only invertebrates that can fly. Their muscles are attached to their exoskeleton. This allows their muscles to contract more efficiently and for them to fly at a faster rate.

When going through incomplete metamorphosis, insects gradually change by a series of molts where they outgrow and shed their exoskeletons. When an immature insect goes through incomplete metamorphosis, it is called a nymph. Nymphs are similar in form to the adult except for the presence of wings. Some insects that go through incomplete metamorphosis are dragonflies and damselflies.

Complete metamorphosis is where the insect changes in four distinct stages: Egg, larva, pupa, and adult. In these species, the egg hatches to produce a larva, or worm-like creature. These worm-like forms can be caterpillar-like, grub-like or flattened. Complete metamorphosis is a trait of the most diverse insect group called Endopterygota. This group includes flies, butterflies, moths, bees, wasps, ants, and beetles.

Procedure

1) The naturalist will start off by asking kids what an insect is. The naturalist will name different types of animals from a variety of animal groups like mammals, birds, reptiles, and fish. The naturalist will ask students how they know which animals are insects.
2) Next, the naturalist will describe the parts of an insect: Head, thorax, abdomen, wings, compound eyes, legs and exoskeleton.
3) The naturalist will discuss with the students the life cycle of an insect and how insects go through metamorphosis.
4) Students will have the opportunity to look at mounted insects through a magnifying glass, learning to identify the different parts on an insect's body.
5) To conclude, the students will compare and contrast the ways insects are similar to us as humans and to other animals in the animal kingdom.

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