3rd Grade: Characteristics, life cycles, and management of Insects

Teton County Weed & Pest District Classroom Education Program

NGSS Addressed in Lessons

Disciplinary Core Ideas
- LS4.C-Adaptation: For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.
- LS1.B-Growth and Development of Organisms: Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.

Crosscutting Concepts
- Patterns
- Structure and Function

Practices of Science
- Developing and using models
- Construct an argument with evidence
- Planning and carrying out investigations
- Analyzing and interpreting data
- Make a claim about the merit of a solution to a problem, citing relevant evidence about how it meets criteria and constraints of the problem

Applications of Science, Technology and Engineering
- 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Performance Expectations
- 3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
- 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death.
- 3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

Lesson 1: Characteristics of Insects and their structures

Learning Objective: Students will learn to identify the characteristics of insects and relate insect structures to their function in a particular habitat. Students will practice making a claim about an insect's lifestyle based on evidence observed in its structures.

Lesson Summary: Through observation of insect replicas and preserved specimens, students will identify 6 characteristics shared by ALL insects and 3 characteristics shared by ONLY insects and see how the various forms of their structures relate to function in a specific habitat. They will make claims about a particular insect's lifestyle based on evidence observed in its specialized structures.

Classroom resources needed: Magnetized whiteboard, access to projector/Apple TV for slide presentation, name tags

Vocabulary Used in Lesson

1. Pest
2. Exoskeleton
3. Antennae
4. Thorax
5. Abdomen
6. Adaptation
7. Habitat
8. Nocturnal
9. Diurnal
10. Predator
11. Prey
12. Camouflage
13. Segments
14. Ovipositor
15. Proboscis

Extension Activities

- Design an insect that has structures adapted for survival in a particular habitat (desert, jungle, ocean, etc)

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Lesson 2: Insect Life Cycles

Learning Objective: Students will learn how to distinguish insects from other arthropods and the two common insect life cycles. They will prepare to investigate the life cycle of a mystery insect.

Lesson Summary: Students will play a game to assess their ability to differentiate insects from other arthropods and to practice supporting claims with evidence. They will compare/contrast the two common insect life cycles and prepare to observe a complete metamorphosis life cycle over the next few weeks. This investigation will include rearing a mystery insect (mosquito) from egg through adult, recording observations in a lab notebook, and engaging in study of structure and function at each stage of the cycle.

Classroom resources needed: Magnetized whiteboard, access to projector/Apple TV for slide presentation, pre-arranged lab groups of 3-4 students, name tags

Vocabulary Used in Lesson

1. Arthropod
2. Life cycle
3. egg
4. Nymph
5. Larva
6. Instar
7. Molt
8. Pupa
9. Complete metamorphosis
10. Incomplete metamorphosis
11. Reproduction

Extension Activities

- See *Insect Life Cycle Investigations* for activities

Lesson 3: Mosquito Life History and Management

Learning Objective: Students will learn about the life history of the mosquito and why it is considered the most dangerous animal on the planet. They will see why TCWP chooses to reduce the populations of native insects that humans consider “pests” rather than attempting to exterminate them all. They will apply their new knowledge of the mosquito life cycle to model ways to reduce the mosquito population at each life stage without harming other living things, and see what behavior changes they can make to avoid being bitten.

Lesson Summary: Students will watch a presentation on the life history of the mosquito, its ecological importance, and its role in spreading diseases like West Nile Virus. Students will then work in groups to apply their new knowledge and experience with the mosquito life cycle to develop a model showing how the mosquito population could be reduced at each life stage without harming other living things. The lesson ends with acknowledging that some mosquitoes will always be present in the summer, and that there are ways we can change our own behavior to avoid being bitten.

Classroom resources needed: Magnetized whiteboard, access to projector/Apple TV for slide presentation, name tags

Vocabulary Used in Lesson

1. Siphon
2. West Nile Virus
3. Food web
4. Eye spots
5. Native
6. Insecticide
7. Paddle
8. Pest

Extension Activities

- Build a classroom insect collection