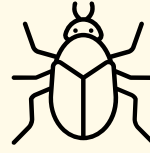


Garden Lesson:

Cozy Critters: How Insects Survive Winter

AGE GROUP: ALL TIME TO COMPLETE: 15-30 MIN



INTRODUCTION

Wintertime is here! It's cold, frozen, and covered in snow! Bears are sleeping, many birds have flown south, but where are all the bugs? In this lesson, students will learn and explore 3 strategies that insects use to survive winter: hibernation, migration, and overwintering as eggs.

This document has a description of insect winter survival methods and a simple matching game to get students excited about the lesson! We have an engaging add-on to this lesson in our activity document: Hibernation Winter Wonderland!

LEARNING OBJECTIVES

- Students will understand the primary methods that insects use to survive winter.
- Students will explore examples of insect species and the survival methods they use.

STATE STANDARDS

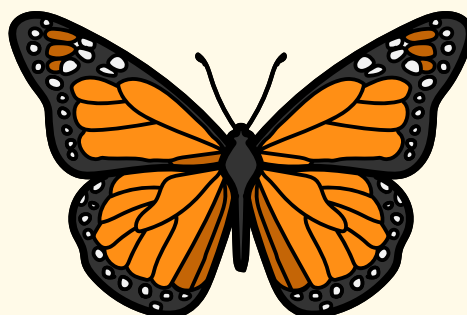
Strand K.2, Strand 1.2, Standard 3.2.4, Standard 4.1.1, Standard 6.4.4.



EXTENTIONS

You can connect this lesson to these topics and activities:

- Insect life cycles - this lesson discusses just one part of the insect life cycle. Check out the entire life cycles of monarchs, pray mantis's, dragonflies, and bees! There's so many cool facts to discover!
- Bird migration - Arctic Terns fly 44,000 miles each year!
- Food Webs - explore how insects fit into food webs. Who eats insects? What do insects eat?
- Antifreeze experiment - freeze a cup of water and a cup of a sugar/salt/water mixture to connect to hibernating insects that produce chemicals that keep their body warm.



BACKGROUND INFORMATION

Here is some information on insect winter survival to use for a discussion with your students:

There are 3 primary methods that insects use to survive winter:

1. **Hibernation:** Some insects find a safe, cozy spot to stay warm. They slow down their bodies, almost like they're sleeping, to save energy until spring. Ladybugs, for example, hide in piles of leaves or under rocks. Other insects, like beetles, might burrow into tree bark or soil.
2. **Migration:** Just like some birds, certain insects fly to warmer places for the winter. Monarch butterflies travel thousands of miles to Mexico to escape the cold. In spring, they start their journey back, laying eggs along the way so the next generation can keep going. Migration is a big adventure for these tiny travelers!
3. **Laying Eggs:** Some insects don't survive the winter themselves, but they leave behind eggs that are tough enough to make it through the cold. For instance, praying mantises lay their eggs in protective cases that keep them safe until spring. When the weather warms up, the eggs hatch, and new bugs emerge to continue the cycle. It's like nature's way of leaving a backup plan!

Climate Change is effecting overwintering insects. For example, pine beetles, which normally hibernate in cold forests, are surviving in larger numbers because the winters aren't as harsh. This means they can damage more trees, which can hurt forests. Warmer winters also confuse some bugs, causing them to wake up too early or lay eggs at the wrong time.

Here's a few things we can do to help bugs fight the cold!

1. **Leave Leafs!** Insects need fallen leaves to lay their eggs in and as shelter when hibernating. Don't pick up all the leaves in your yard once they fall.
2. **Plant Milkweed!** Plant some milkweed, the favorite plant of Monarch butterflies, to give them a food source along their journey.

MATCHING GAME

Here's a great hands-on lesson to get students excited about the subject! There is a printout on the next page. There are many possibilities for how to set up the game, here's one option: cut out all the squares and place the survival method cards separately on a board. Split students into groups and give each group a set of bug cards and have them work together to match the bugs to the survival method they use.

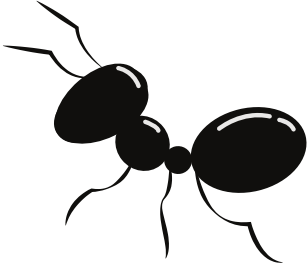
Here's the answer key:

Hibernation: ants, beetles, ladybug, honeybee.

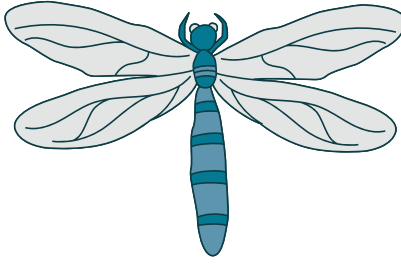
Migration: monarch butterfly, dragonfly (some species migrate, and some overwinter as eggs!)

Eggs: mosquitos, grasshopper, praying mantis, dragonfly.

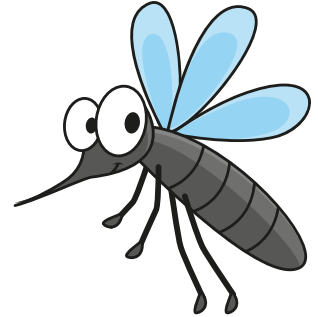
Bugs:



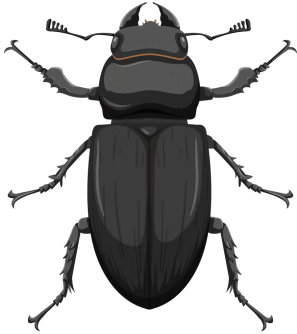
Ants



Dragonfly



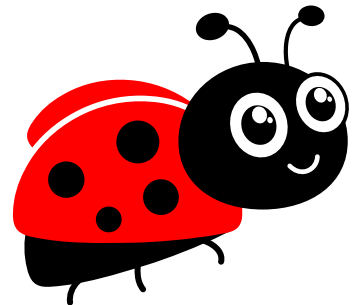
Mosquito



Beetle



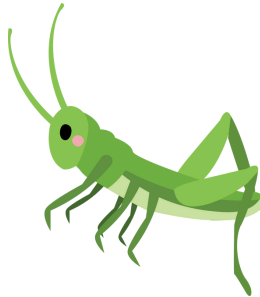
Honeybee



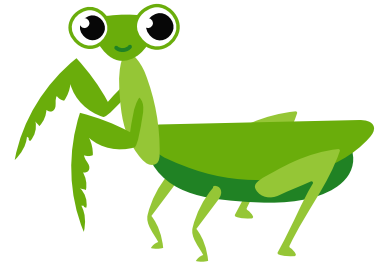
Ladybug



Monarch Butterfly



Grasshopper



Praying Mantis

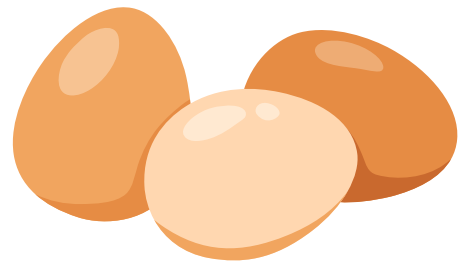
Survival Method:



Hibernation



Migration



Eggs