

What Happens to Plants and Animals in Winter?

First Grade Science Curriculum

Objective: Students will learn how some living organisms (plants, animals, insects) survive during winter. They will be introduced to three concepts: migration, hibernation, adaptation. They will use their whole bodies (and 5 senses!) to explore these concepts.

Materials:

birdseed (or non allergenic cheerios/plain sunflowers seeds)
paper plates/trays for rolling seed
toilet paper rolls (or pinecones, ice cream cones)
pipe cleaners or string/jute
vegetable shortening (or peanut butter)
masking tape/sharpie marker
“animal” snacks: dried cranberries, popcorn, sunflower seeds, walnuts (allergies!)
wipes/paper towels for cleaning hands
small garden trowels for digging
gloves for students

Procedure: 45 min class

Intro: 10-15min whole class - start at shed.

Review garden rules 1) scientists! 2) never eat unless grown-up OKs 3) use 5 senses to observe - what has changed?

What **season** is it? Temperature? (check thermometer on shed) what is freezing point? 32 degrees. Water turns to ice or sleet or SNOW! Who can finish this sentence for me? “Winter is.....” (prompt adjective/descriptions) Cold, snowy, dark, magical, frozen, icy, windy, grey etc. **Winter Solstice** coming up soon – the shortest day and longest, darkest night of the year!!! Night of Dec 21st – official start of winter, then days gradually get longer again...

Today we will talk about **winter** and what happens to plants, animals and insects during winter months.

Who remembers what we learned about plants last time in garden? How some lose their leaves (deciduous trees) and some keep their leaves and needles (evergreens). These are **adaptations** or ways plants change in order to survive the cold (dropping leaves, needles have waxy coating).

What else happens to other plants in winter? They **DIE**. They have a short life! Plants that only live for one season are called **annuals**. If they keep living through winter they are called **perennials!** (show examples of annual and perennial in garden near shed area – bee balm perennial, love in a mist annual). Sometimes plants look dead but they are alive below the soil – just like trees losing their leaves they go dormant and wait for spring to sprout.

How do other living things like animals survive in winter?

How do YOU survive in winter?

(kids brainstorm: wear coats, stay indoors, mittens, go on vacation, eat soups)

=your coats, mittens, hats, scarves etc. are **ADAPTATIONS** or ways you adapt/change to make it easier to survive outside in the cold (how do animals adapt? change what they eat, grow a thicker coat of fur, change color of their fur, fluff feathers)

=when you go on vacation to Florida or travel somewhere warm where you don't need mittens, coats that is **MIGRATION**, going to a different environment/location

=when you snuggle up under the covers/blankets in your home and go to sleep at night that is like **HIBERNATION**, a deep sleep to conserve heat and energy until

spring. Most animals don't truly hibernate (near death state!) but simply go

dormant – it's called **TORPOR**. Reptiles and Amphibians (like snakes and frogs) also go dormant under water or in mud – it's called **BRUMATION**.

Small Groups: 15 min for each group

We will break into two groups (~10-12 kids in each)

- 1) One group will make birdfeeders
- 2) One group will take an 'animal' winter walk

1) Birdfeeder Group: students gather at picnic tables for making simple birdfeeders. Why is it good to feed birds in winter? What can birds find to eat in winter? While making feeders students can try whistling and making different bird calls! If time permits, instructor prompts discussion (and students can practice being birds!) about birds that might...

hibernate? (hmm- but bats do! They have wings but are not birds – are mammals)

*see end notes for only known bird that hibernates

adapt? (fluff feathers, stand on one foot, huddle in a flock for warmth)

migrate? (geese fly in a V shape to cut back on wind resistance) – if time permits students move together in V formation to 'migrate' to next group...

* show students pictures of birds, see which look familiar, who knows names?

Chickadee – chickadee dee dee

Woodpecker – tap tap tap

Mourning Dove – coo coo coo

Cardinal – weep weep ha ha ha ha

Junco/Snowbird – nee nee nee

Tufted Titmouse – peter peter peter

Wild Turkey – gobble gobble gobble

2) Animal Group (includes birds): students walk through garden singing the Winter Walk Song with instructor – stomp feet, do call/response then stop to answer if animal hibernates/migrates/adapts - look for food that particular animal might find right there in the garden (instructor 'plants' some food sources in locations, also leave trowels in a bed for digging to find any worms/bugs still around). Students sample those same foods when possible.

Winter Walk song –sung to tune of *And Bingo was his Name-O!*

(while marching feet) I took a winter walk today and this is what I heard/saw-O:

(call) Cheep cheep - cheep cheep cheep

(response) Cheep cheep - cheep cheep cheep

Cheep cheep – cheep cheep cheep and.... **Sparrow** was its name-O!

Animal/Insect List (on notecards for instructor)

Sparrow (cheep) – adapts – stands on one foot/fluffs feather - eats seeds - sunflower

Crow (caw caw caw) – adapts – changes diet - eats corn seed – Popcorn!

rabbit (hop hop hop) – adapts - eats lettuce/changes to white fur

frog (ribbit ribbit) – WAIT! Hibernates – where? Deep in mud – eat worms/bugs

(WORMS hibernate – they dig deep down – up to 6feet for nightcrawlers! – curl up in their slime and wait...)

Snake (ssssssss) – Hibernates – where? – under rocks or in piles under leaves

Bear (snores zzzzzz) – Hibernates – eats berries/fruit -cranberries

Monarch Butterfly (flap flap flap) – migrates – drinks nectar along way

Goose (honk honk honk) – migrates – eats grass/bugs

Owl (hoo hoo hoo) – adapts – eats mice

Deer (shows a white tail) – adapts diet – eats bark/berries – apples fallen

Chipmunk (show stuffed cheeks!) – hibernates – nests - pumpkin seeds

Squirrel (chatter teeth) – adapts – nests – walnuts (buries nuts/acorns) pinecombs

Woodpecker (tap tap tap) – adapts – eats bugs hidden in bark of trees

Expansion activities:

Nuts vs. seeds?

<http://www.differencebetween.net/object/comparisons-of-food-items/difference-between-nuts-and-seeds/>

Nuts are hard-shelled fruits of plants characterized by the stony fruit wall which is actually a composite of the seed and the fruit: rich in protein, vitamins, minerals, fat.

Seeds are the small plant enclosed in the seed coat, which usually has stored food. Seeds are rich in protein, vitamin B, minerals, fat and dietary fibers.

Types of Dormancy:

True hibernation – near death state, animal can't be roused (groundhogs!)

Torpor – light hibernation, heart and breathing rates drop but not too much (bear!)

Brumation – dormancy for reptiles and amphibians (under water/deep in mud)

Diapause – insect dormancy – overwinter as larvae or eggs – all growth stops

It isn't often that you hear about a bird that sleeps the bad weather away, that's because the **Common Poorwill is the only known bird species to hibernate. It picks a spot under shallow rocks or rotten logs and stays there for up to five months. Its daily energy needs drop by 93% and it can stay asleep for 100 days! Once hibernation is over, it needs seven hours to get back to its normal temperature.
<http://www.earthrangers.com/wildwire/top-10/top-ten-hibernating-animals/>

Bugs and Worms in Winter?

<http://www.planetnatural.com/worms-winter/>

<http://torontobotanicalgarden.ca/get-gardening/bugs-go-winter/>

Books:

Take a Winter Nature Walk by Jane Kirkland

The Big Snow by Berta and Elmer Hader

When Winter Comes by Nancy Van Laan

Let's Read and Find Out Science books:

Animals in Winter by Henrietta Bancroft and Richard Van Gelder

Plants in Winter by Joanna Cole ** really good book!!!

Winter Bees and Other Poems of the Cold by Joyce Sidman and Rick Allen

“duck duck goose” adapted game...

Students gather in a circle and instructor plays a form of duck duck goose but instead says animal animal – BEAR! Student who is bear “acts” like that animal. Instructor prompts whole group – does this animal migrate, hibernate, adapt or die? How does it adapt? What might it find to eat in winter?