

Four Winds Nature Program - Cycles in Nature

Connections with Farm to School and Forest Days/Outdoor Learning Programs

A butterfly emerges from its pupa case, drinks the sweet nectar of flowers, finds a mate, lays eggs and dies; the next generation will soon hatch to begin the cycle again. A tree stands bare of leaves as winter's snows fall, but the warmth of spring's sunlight finally encourages the buds to open. The cycles of living organisms reflect the seasonal cycles of their environment, and we find that these often overlap in a complex web – springtime brings warm rains, seeds sprout and leaves unfurl, insects emerge and eat young leaves, birds migrate northward to dine on emerging insects. These events repeat year after year in a cycle of ongoing change. Throughout this year-long theme, students will examine the characteristics of organisms, paying attention to both life and seasonal cycles.

Insect Life Cycles

Students will: compare the life cycles of different insects; model insect communication; collect insects to observe movement and physical characteristics; and conduct an insect survey by recording insects in different life cycle stages and considering the timing of each stage.

Farm to School:

- Investigate common garden insects and observe interactions with plants.
- Conduct weekly survey of school garden to track insect life cycle stages.
- Observe insects in school compost facilities and consider their role in the food cycle.
- Ask local farmers to share photos and details of insects on the farm.

Forest Days/Outdoor Learning:

- Look for insects in the forest- on shrubs or bark, under logs, and in leaf litter.
- Conduct weekly survey of forest insects and consider their role in ecosystem health.

Traveling Seeds

Students will: collect a variety of seeds and sort according to dispersal strategy; observe and compare the arrangement of seeds inside fruits; consider the importance of seeds in our everyday diets; compare un-sprouted seeds to newly sprouted seeds; and dissect seeds to learn different parts and functions.

Farm to School:

- Sprout seeds (beans, alfalfa, pea, sunflower) to investigate "Seed to Sprout" progression.
- Prepare and eat hummus made from nuts, beans, or roasted sunflower and pumpkin seeds.
- Notice garden plants that sprout without being planted by humans and investigate dispersal strategies.
- Celebrate the harvest; save seeds for next year's spring planting, or for a school fundraiser.

Forest Days/Outdoor Learning:

- Create a seed collection, including seeds and nuts found in the forest.
- Plant acorns, hickory nuts, or seeds from conifers.
- Consider the importance of nuts and seeds to the survival of a variety of animals and overall forest health.

Birds on the Wing

Students will: connect birds' diets to food availability and migration; examine which birds fly and which stay for the winter through bird watching, mapping migration patterns, and modeling winter survival strategies.

Farm to School:

- Leave seed-bearing plants to overwinter, including herbs, flowers, and vegetables; track bird use and consumption of these seeds, considering birds' impact on seed dispersal.
- Plant sunflowers to harvest, dry, and save for winter bird feeders.
- Ask a local farmer about birds on the farm- which species are observable, what do they eat, and where do they find shelter?

Forest Days/Outdoor Learning:

- Observe the habits of winter birds by sitting quietly at "sit spots" weekly.
- Notice where birds find and store food, and observe uses of shelter.
- Compare different species' survival strategies for the cold.

Winter Ways

Students will: identify seasonal changes and reasons for these changes; model winter survival strategies of certain animals; collect wintering plants and consider how they provide a source of food for animals.

Farm to School:

- Work with local farmer to identify how farm animals change in winter (warmth, shelter, food needs).
- Record evidence of animals near garden/compost through direct observation, tracks, shelters, or scat.
- Study perennial garden plants and make observations about their strategies for winter survival.

Forest Days/Outdoor Learning:

- Search for evidence of animals and consider their winter survival strategies.
- Look for signs of browsing by deer or rabbits on winter twigs and buds.
- Look for plants that stay green in winter like ferns, mosses, and evergreens.

Trees in Winter

Students will: model the yearly cycle of change in a tree branch; consider the importance of buds to trees and animals in winter woods; learn the parts of a twig and their functions; record observations about the detailed structure of a twig; and identify trees by their winter twigs and bark patterns.

Farm to School:

- Make observations about apples, crabapples, and berry bushes in schoolyard.
- Ask a local farmer about trees on the farm; compare pruned fruiting trees to free-growing trees; compare field "wolf trees" to trees growing in crowded forest.
- Talk with local maple producer about their trees in winter.

Forest Days/Outdoor Learning:

- Look at twigs up close, identifying different parts and considering their functions.
- Identify different tree species through twig, bark, and branch patterns.
- Observe deciduous winter trees and consider each tree's survival strategies.

Maple Sugaring

Students will: model maple tree changes through the seasons; learn to tell a sugar maple from other trees in winter; examine parts of the trunk that transport sap through the tree; and use math to understand how sugar content affects the amount of sap needed to make maple syrup.

Farm to School & Forest Days/Outdoor Learning:

- Tap a maple tree.
- Visit a sugarbush or sugar house.
- Have a maple taste test.
- Use maple syrup in cooking; compare the nutritional value of maple syrup to other sugars.

Galls Galore

Students will: explore a variety of different galls and their gallmakers; look for patterns of similarities and differences among galls; look for gall evidence outside; mark galls in winter, returning in spring to look for exit holes; and make daily observations of galls kept in jars or ziplock bags, recording changes.

Farm to School:

- Search for galls at local farm.
- Discuss edibility of goldenrod galls during wild edibles study.

Forest Days/Outdoor Learning:

- Examine goldenrod ball galls' exterior and interior.
- Make observations of other galls and ask questions about which insects produce them.
- Observe and record gall changes over time.

Songbird Songs

Students will: learn the differences between bird songs and calls and what they communicate; model how each songbird species has a particular song and time to sing; learn to recognize songs and calls of common local birds; and take part in bird song mapping, with the option of composing a songbird species list.

Farm to School:

- Observe songbirds around school gardens and examine their role in pest control.
- Observe songbirds' eating habits and explore their role in seed dispersal.
- Compile a list of songbird species that are most common and consider why.

Forest Days/Outdoor Learning:

- Observe the habits of songbirds by sitting quietly at "sit spots" weekly.
- Listen for various calls and songs and consider how songbirds defend territory.
- Compile a species list of common songbirds; map changing species composition in one area over a period of several weeks.

Flower to Fruit

Students will: dissect flowers to examine the structures and create models of flowers; learn why some plants have flowers; examine fruits containing seeds; and explore the connection between pollinator type and flower characteristics.

Farm to School:

- Categorize vegetables into various families based on their flowers.
- Identify garden flowers that are edible and learn six parts of plants that we eat.
- Record observations about various stages of vegetable life cycles.
- Look closely at vegetable flowers, considering similarities and differences between species.

Forest Days/Outdoor Learning:

- Examine flowers of various trees, such as maple, black locust, linden, apple and other fruit trees.
- Explore wildflowers found in forest and field and consider how they are pollinated.

Dandelion Flower to Seed

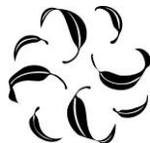
Students will: examine dandelion plants and dissect dandelion flowers to examine the different structures; learn the various stages of dandelion growth by comparing dandelion buds, flowers, and seed heads; and observe which pollinators visit dandelions.

Farm to School:

- Discuss the term “garden weed”- why we use it and when it applies, as well as our perception of dandelions.
- Observe how dandelions are pollinated and record which pollinators visit them in the garden.
- Learn about the edible and medicinal uses of dandelions.

Forest Days/Outdoor Learning:

- Observe dandelions in fields over time, recording changes in stages.
- Track pollinator visits to dandelions over a number of days or weeks.
- Compare dandelions to other flowers found in field and forest.



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