

Home School Series: 3-5

January: Winter Woodlands

- Start Up:** (5-10 min) Tree posters, tree cookies, conifer cuttings, twig cuttings, bark samples
Play **Killing Frost** as students arrive (see below).
- Welcome/ Introduction:** 1 min. Staff/Volunteer Names
Today's Topic-Winter Woodlands
Question: What does the winter woods tell us?
- Opener:** 10 min. Take turns introducing yourself and telling your favorite thing about winter.
Make sure everyone gets a turn.
- Background/ Exploration:** 50 min. We usually tell what kind of tree we have by looking at the leaves.
In the winter, it is easy to tell that some trees are evergreen because they have needles.
Most of these trees also have cones. We call them **conifers**.
- Many other trees have lost their leaves. These are the broad leaved or **deciduous** trees.
- Even though it is winter, we can find out what kind of trees we are looking at.
We will learn to identify conifers by looking at their needles.
- Look at some cut sprigs of various conifers with the students. Include some cones.
Ask the students to notice shared characteristics, and differences between the samples.
Help the students discover the following things about conifers:
- Some have needles that grow singly off the twig.
 - Some have needles that grow out of the twig in bundles.
 - Pines have needles in bundles of 2, 3, or 5
 - Spruces, Firs, & Yews have single needles.
 - Fir and Yew needles are flat.
 - Spruce needles are four sided, and sharply pointy.
 - These needles roll between your fingers.
 - Cedar tree needles are so small they are called scales.
 - Red Cedar or Juniper trees have bluish "berries".
 - White Cedar or Arbor Vitae trees have small cones.
- Allow the students to take apart a cone and show them where the seeds are (Lingelbach).
Help the students try to identify some of the conifer sprigs (Extension).
- Game:** 20 min. **Chipmunk & Squirrel** (adapted from Hare & Hounds, Allison)-
Divide students into two groups.
- ♣ One group leaves 10 pine cones (acorns) in a bounded area for the other group to find.
 - ♣ Give the hiding group (Chipmunks) a 5 minute head start.
 - ♣ The second group (Squirrels) must find the cones and pick them up.
 - ♣ The Chipmunks try to finish their hiding places tricky but not impossible.
 - ♣ Switch groups and let the Squirrels hide cones and the Chipmunks find them.

We can also identify winter deciduous trees by looking at the clues they give us.

Tree Silhouettes-Familiar trees can sometimes be recognized by their shape.
Look at some tree silhouettes from various field guides, or show a poster (*Van der Linden*).

Bark- Look at some pictures or examples of tree bark (*Trees for Kids '97*).
Sycamore-Large tan flakes peel off to reveal white inner bark, looks “sick”.
Shagbark Hickory-Dark jagged pieces look shaggy.
Red Oak-Has “ski trails” down trunk.

Twigs -Show a diagram of a winter twig and help students find the parts.
Looking at bare twig features can help you identify the tree they came from.

Buds -contain embryonic (tiny, folded up) leaves, flowers, and branches
-formed at the end of summer
-covered and protected by **bud scales**
-bud scales look different on each tree
-occur either opposite each other, alternate, or whorled (3 or more)

Terminal bud -the bud at the tip of the branch
-there may be more than one
-it may be off to one side
-contains next year’s growth
-leaves a scar when it grows

Lateral buds -the buds on the side
-contain leaves
-above leaf scars
-may contain flowers
if larger than others

Leaf Scars -left by stems of fallen leaves
-oval, crescent, or triangular
or circular

Bundle Scars -left by leaf veins
-make a pattern

-contain vein or bundle scars

Thorns -may be seen by
leaf scars

Bud Scale Scar -encircles twig
-left by last year’s terminal bud
-marks growth in the last year

Lenticels -air vents in bark
-different colors
-may be hard to see

Use the **Winter Twig** worksheet (see below) to help students find the features on several twigs.
Assist them in identifying a couple more obvious twigs (Walnut, Oak).
Teach them the helpful MAD HORSE mnemonic for opposite branching plants (see below).

**Prepare to
go Outside:**
10 min.

Restroom break. Dress for weather.
Look at related winter displays before going outside.
Bring several twigs students have identified.
Trail Rules (see The First Program).
We will identify some twigs and conifers, look for animal sign.
Which trees will we be able to identify without leaves?

**OUTDOOR
EXPLORATION:**
90 min.

Hike to a nearby woodland.
Look for animal signs-tracks, chewed twigs, & scat.
Rabbit chewed twigs are cut, deer chewed are torn.

Animals in Winter-Review with students how different animals are adapted to survive the winter (see below).

Look at any standing winter weeds.

Use a scavenger hunt sheet to guide the students' winter exploration.

Conifer needles are narrow and don't lose much moisture because they have a waxy coating. Trees with needles can keep them on all winter. The needles make food from sunlight (photosynthesize) all year.

Deciduous trees' broad leaves make more food from sunlight during the growing season, but these leaves would lose too much moisture and take frost damage in the winter. These trees store extra food and go dormant to survive the winter.

Activity:

Find the Tree (adapted from *Twig Detectives-Ranger Rick*)-
Using the twigs the students had identified, hike around until they match their twigs to the kind of tree they came from. Do a bark rubbing with crayons for each tree.

Game:
10 min.

Turkey Trot-Students run around in an area with pine cones or acorns picking up as many as they can before the other students get them.

Send Off: Goodbye!
Next Month-Ravenous Rodents

Take Home: Parent Outline
Twig part sheet
Bark i.d. matching
Trees Around the World

Vocabulary

Deciduous, evergreen, conifer, silhouette, bud scale, leaf scar, bundle scar, terminal bud, lateral bud, lenticel, cedar, pine, spruce, fir, yew

MAD HORSE-A way to remember common oppositely branched trees/shrubs.

M Maple
A Ash
D Dogwood

HORSE for Horsechestnut (or Buckeye)

Killing Frost (based on the game "Killer", Allison) -

- One student is chosen to leave the room.
 - A "froster" is chosen from the remaining students, who will be winter trees.
 - The absent student returns.
 - The group sits in a circle facing each other.
 - The froster looks at various students on at a time and flicks their tongue out, "killing" them.
 - Killed students turn around or lay down.
 - The student who left the room has to guess who the froster is before he/she kills all the trees.
 - Students may not close their eyes.
- (The froster may also be chosen by secret ballot, with everyone trying to guess who he/she is.)

Background and Activity References for Naturalists and Parents

- Allison, Linda. 1989. *The Sierra Club Summer Book*. Sierra Club Books/Little, Brown, and Company, San Francisco. P. 143 Hare & Hounds; p. 148 Killer; p. 114 Leapers
- An Iowa Supplement to Project Learning Tree: K - 8*. 1993. Iowa Department of Natural Resources, Des Moines. Pp. 65-66 It's in the Rings *key to trees of IOWA
- Carlson, Laurie. 1993. *Ecoart! Earth-Friendly Art & Craft Experiences for 3-to 9-year olds*. Williamson Publishing, Charlotte, VT. P. 102 Pine Cone Owl sculptures
- Identification of Conifer Trees in Iowa*. Iowa State University Extension, Ames. (PM 1383)
- Identification of Hardwood Trees in Iowa*. Iowa State University Extension, Ames. (PM 1384)
- <http://www.extension.iastate.edu/pubs> ISU Press-Extension Publications
- Iowa Wildlife-Nesting, Winter Birds, Mammals (IAN-601--603); Iowa Wildlife Management (IAN-401)
- Lingelbach, Jenepher. 1986. *Hands-On Nature: Information and Activities for Exploring the Environment with Children*. Vermont Institute of Natural Science, Woodstock, VT.
Pp. 91 Animals in Winter; pp. 149-153 Winter Twigs-activities; pp. 197-198 cone activities;
p. 144-145 Winter Weeds
- Project Learning Tree: Environmental Education Pre K - 8 Activity Guide*. Fourth Ed. 1996. American Forest Foundation, Washington, D.C.. Pp. 232-233 Bursting Buds-background and activities;
pp. 244-246 Tree identification; pp. 239-243 Measuring trees
- Ranger Rick's Naturescope: Trees Are Terrific!* 1992. National Wildlife Federation, Washington, D.C.
Pp. 18-19, 24 Cross-Dating Detectives; pp. 14, 20 Keying Out Kids; pp. 16-17, 23 Reading the Rings;
p. 29 Twig Detectives-background; pp. 30-33 Trees Around the World-good send home;
p. 67 Tree snack recipes-send home
- Simple Key to Iowa Trees*. Iowa Department of Natural Resources. (515) 281-5918 <http://www.iowadnr.com>
- Trees for Kids*. 1995. Iowa Department of Natural Resources, Des Moines.
P. 12 Tree id w/twig diagram (enlarge)
- Trees for Kids*. 1997. Iowa Department of Natural Resources, Des Moines.
Pp. 4-5 bark id; p. 15 bark id matching-send home
- Van der Linden, Peter J., and Donald R. Farrar. 1984. *Forest and Shade Trees of Iowa*. Iowa State University Press, Ames. P. 15 Tree shapes; Twig parts and leaf scar shapes
- Watts, May Theilgaard, and Tom Watts. 1970. *Winter Tree Finder: A Manual for Identifying Deciduous Trees in Winter*. Nature Study Guild, Berkeley, CA.
- Winter Ecology Journal*. Missouri Botanical Garden, St. Louis. Scavenger hunts

Extensions/Alternate Activities/Rainy Day

Do some activities on tree rings and what information they hold (*Ranger Rick*).
Measure tree width, height, etc. (*Project Learning Tree*)

Discuss plant dormancy in general-annual, biennial, perennial, etc.

Let the student make animal sculptures with some spare cones and construction paper (Carlson).
Help the students make Leapers, a fun project with twigs (Allison).

Share with students who needs to know about conifers, twigs, and identification keys (foresters, rangers, biologists/botanists, land managers, arborists, naturalists...)

Twin Twigs (Lingelbach)-Students get some practice recognizing twig characteristics by matching up two twigs. Divide students into groups of five. Students take turns describing a twig facing away from the others, who guess which duplicate twig from an unlabeled pile matches. Repeat.

Build a Twig-Students use empty paper towel rolls, construction paper, and glue to make a model winter twig. Show a picture with different leaf scar shapes to inspire them (Van der Linden). Glue crumpled paper onto the roll for buds. Paste on cut out leaf scars made of construction paper. Draw on Bud scale scars and lenticels. A conifer cone could be used for a terminal bud. (Check the ICNC website for patterns.)

Keying Out Kids (*Ranger Rick*)-Use the people key to help students understand how identification keys are made and used.

Help the students try to identify some more winter twigs using field guides.

If there is snow, try some snowshoes on your hike.

Supplies:	Conifer branches	Winter twig i.d. sheet	Picture of bark types
	Various winter twigs (include duplicates)	Tree cookies	Bark examples
	Magnifying glasses	Tree posters	Tree silhouettes
	Rulers	Track sheet	
	Conifer info. sheets		Winter scavenger hunt
	Conifer i.d. sheet	Conifer cones	Pencils

Advance Cut various conifer branches and winter twig samples, cones, & bark.

Preparation: Gather some conifer and twig i.d. sheets, and twig diagrams.
Copy and enlarge some tree silhouettes.

Make sure you have extra cones for the game.

Copy off a winter scavenger hunt sheet (*Winter Ecology Journal*).

Copy the Winter Twig worksheet.

Winter Twigs

Looking at bare twigs can help you identify the tree they came from.

Look at some twigs. Fill in clues they show you.

Try to figure out which tree they came from using some winter tree books.

Twigs	Buds	Leaf Scars	Bundle Scars	Other
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Useful Clues to Look For:

Twigs: Opposite or Alternate
Color of last year's growth
Color of previous year's growth
Dots or air holes (Lenticels)
Thickness
Shape

Buds: Opposite or Alternate
Color
Size
Shape
Number of scales
Sticky, fuzzy, or smooth
Place near leaf scar-middle or side
Terminal (at the twig tip) bud number, size, and location

Leaf Scars: Opposite or Alternate
Size
Shape
If opposite-do ends meet or not

Bundle Scars: Number in each leaf scar
Pattern they make

Other: Thorns, prickles
Catkins (hanging flower clusters)
Last year's fruit -on branches or ground
Bark-shaggy, ridged, bumpy
Dead leaves still attached