



THE PERFECT TREE
by
Thomas Bivins

It's Christmas Time in Mill Creek and Oliver Wendell Badger needs something special to bring to the holiday feast. Since he is not a cook, he decides that his perfect contribution will be "the perfect tree". This turns out to be not an easy task, but when he is finally successful, he realizes that there is a new problem!

If he cuts the tree down, it will not have a chance to grow to a ripe old age as he and his friends have. He makes a dramatic decision, a decision I wish we all could make.

Students can be part of the decision as to which kind of tree to buy for their home by using this Christmas Tree Key and "hunting" for a particular species. They also could use it to discover what kind of tree they have this year.

MATERIALS: Christmas tree or branch from an evergreen tree, attached Key.

ACTIVITY: Follow the directions on the Key.

SOURCE: Activity shared by Pat Guffey, Rhea County High School, Tennessee.

TEACHER NOTES: At the elementary and middle school level, this activity could be done as a class. It is important for students to begin to understand how to use a key as young as possible. Also, it also could be done outside on an "evergreen walk". The key could be sent home for older students to use with their parents as the family selects their Christmas tree.

Bivins, Thomas. The Perfect Tree. The Unicorn Publishing House, c1990. ISBN#0-88101-179-7.

COPY-ME PAGE

There are two basic types of trees.

Those that have needle-like leaves or scales are called *conifers*; most are not bare in winter and also are called *evergreens*.

Broad leaved trees usually are *deciduous*. They lose their leaves in the autumn.

This issue of *Audubon Adventures* is about

EVERGREENS.

The leaves are called needles. Needles are covered with a weatherproof wax. This helps resist water loss—important in withstanding harsh winter conditions.

Evergreen trees have male flowers in catkins.

A catkin is a spike bearing flowers without petals. Generally you can find these inconspicuous catkins in the spring.



Male catkins.

Evergreen trees, except for the tamarack and baldcypress, do not lose their needles in the fall. Instead, new evergreen needles grow before the old ones drop off. Some keep the same needles for several years. The trees are always green . . . and never are bare.

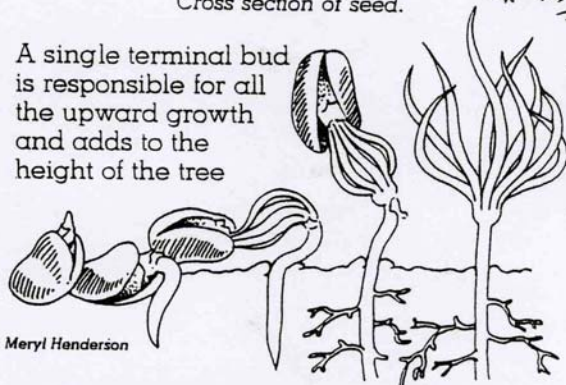
It's hard to imagine that a large tree grows from a tiny seed.

Inside each seed is a miniature tree with leaves, stem, root.



Cross section of seed.

A single terminal bud is responsible for all the upward growth and adds to the height of the tree



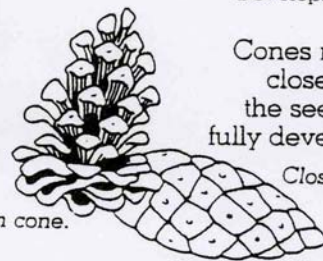
Meryl Henderson

Pollinated flowers develop seeds inside cones. The seeds lie inside the cones at the base of the scales.



Developing cone

Cones remain closed until the seeds are fully developed.



Open cone.

Closed cone

Look inside the cones to find the seeds. Collect cones that are brown but not wide open. By shaking the cones, you soon will discover the seeds. Many seeds are winged and when tossed into the air, "fly" like a helicopter



Winged seed.



Scale.

Key to Conifers

If a field trip to a botanical garden or nature area is impractical for your class at this time of year, you can find conifers readily available for study in December and January. A short visit to a garden center or Christmas tree lot will allow your students to observe many different types of conifers. Or, after the holidays are over, students who have celebrated Christmas might bring boughs or entire trees to class.

P is for **Pine** and **P** is for **Package**; pine needles come in packages of two or more.

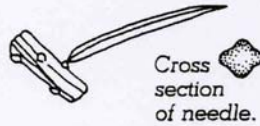


Western and eastern white pine have 5 needles in a bundle.



The Scotch pine makes a beautiful Christmas tree; however, watch out for its sharp needles! Its needles are in bundles of two.

S is for **Spruce** and **S** is for **Square**; spruce needles are four-angled, roll between your fingers, and are on pegs that make twigs feel rough.



Blue spruce grows slowly, but may live 400 years.



Blue spruce (or Colorado spruce) is the more common spruce used for Christmas trees. Spruces have one fault as Christmas trees in that they do not retain their needles well.

F is for **Fir** and **F** is for **Flat**; fir needles are flat, do not roll easily between fingers; twigs feel smooth (no pegs).



Balsam fir grows to 75 feet.



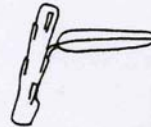
Balsam fir and Douglas fir are not related as you might expect, since they have the same last name. However, they are the best evergreens to use for Christmas trees. They tend to hold their needles much better than the spruces and pines. Douglas fir needles have a short, slender stem and leave a small raised scar on the twig when they drop. Balsam needles grow directly from the branch and leave a depressed, round scar on the twig.

Cones stand straight up at top of tree.



Douglas fir can grow to 250 feet.

HEM is for "**Hem**"lock and rhymes with stem; hemlock needles are flat, but each has a tiny "stem" attached to a peg-like base. Once cut, hemlocks quickly drop their needles. They do not make good Christmas trees.



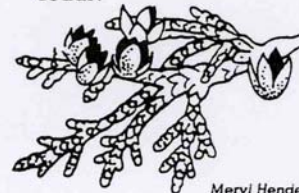
The Eastern hemlock grows to 75 feet.

T is for **Tamarack** and **T** is for **Tuft**; tamarack needles are clustered in large numbers into tufts on woody spurs. Tamaracks are deciduous, turning a lovely gold in autumn before shedding all of their needles.

Tamarack



Scale of northern white cedar.



And recognize **Cedars** by their small, short scale-like needles overlaid like shingles on the bough.

CHRISTMAS TREE LAB

Use the following key to identify your Christmas tree! Begin the key by reading choices 1 & 1a. Decides which describes your tree, note the number at the end of the line, and go to that next choice. Continue making choices until you come to the name of your tree! HAVE FUN!

A Key to Christmas Trees in Tennessee

1. Needles in clusters or bundles with paper-like sheath at the attachment point. GO TO 2
- 1a. Needles single, attached directly to wooden stem. GO TO 5
2. Needles in bundles of 5, 2" to 5" long, flexible and soft (WHITE PINE)*.
- 2a. Needles in bundles of 2. GO TO 3
3. Needles 1.5" to 3" long, slightly flattened and twisted. GO TO 4
- 3a. Needles 3" to 6" dark green and very stiff with rough twigs where needles have fallen (AUSTRIAN PINE).
4. Twigs white to yellow green with blunt tips (VIRGINIA PINE)*.
- 4a. Twigs yellow to brown with pointed tips. Twigs rather smooth where old needles have fallen (SCOTCH PINE).
SCOTCH PINE is the most commonly bought tree in the U.S.
5. Needles and scales less than 0.5", triangular in cross-section and have a smell much like gin when crushed (EASTERN RED CEDAR)*.
- 5a. Needles longer than 0.5". GO TO 6
6. Needles four sided in cross-section, stiff with a sharp point. GO TO 7
- 6a. Needles flattened, points usually blunt. GO TO 8

7. Needles blue grey, stiff with very sharp points (BLUE SPRUCE).
- 7a. Needles dark green with blunted points (NORWAY SPRUCE).
8. Needles 0.75" to 1.5" long with tiny woody stalks (DOUGLAS FIR).
DOUGLAS FIR is the second most commonly bought Christmas tree in the U.S.
- 8a. Needles without woody stalks. When needles are plucked from the twig, they will leave a round depressed leaf scar. GO TO 9
9. Needles with white bands of stomates on both upper and lower needle surfaces. Needles have no citrus smell when crushed (WHITE FIR).
- 9a. Needles with white bands of stomates on underside ONLY. Smell like citrus when crushed (BALSAM FIR or FRASER FIR). These species are very similar and distinguished by differences in cones which are not likely to be present on Christmas trees.

*TREES NATIVE TO TENNESSEE

Idea taken from publication by *Tennessee Conservation League*. This is a favorite lab to use right before Christmas vacation!