

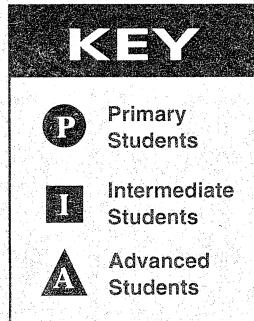


# UNIT FOUR:

## STANDING PROUD—MEETING OUR MINNESOTA TREES

### UNIT FOUR DISCOVERIES

Students will be introduced to 16 Minnesota tree species and discover more ways to examine them, inside and out. For background see the Introduction and Chapters Two, Three, and Five in *Where Are All The Trees? A Minnesota Primer*.



Twelve thousand years ago the great glaciers carved and molded the Minnesota terrain like the hand of a giant sculptor. They left behind features and soil combinations that allowed the development of three diverse Minnesota forest regions (see Activity Sheet 4A). Centuries came and went and people came and went and those regions were changed once more (see Activity Sheet 4B). The rich diversity of our present forest, from the flood plains of the prairie to the rugged North Shore, offer a statewide smorgasbord of the giants of the plant world. The Tree Identification Sheets at the end of this chapter provide the information necessary to introduce your students to 16 of the more than 50 species of trees that are native to Minnesota.

These pages can be used to enrich any of the activities in this booklet and would be

particularly useful in the following: Unit One, Activities 2 and 5; Unit Two, Activities 1, 2, 3, and 4; and Unit Three, Activities 7 and 15.

“You can gauge a country’s wealth,  
its real wealth, by its tree cover.”

—Dr. Richard St. Barbe Baker

The trees highlighted are:

1. Tamarack (Eastern Larch)
2. Sugar Maple
3. Black Spruce
4. Paper Birch
5. Quaking (Trembling) Aspen
6. American Basswood
7. Red (Norway) Pine
8. White Spruce
9. American Elm
10. Balsam Fir
11. Black Ash
12. Bitternut Hickory
13. Black Walnut
14. Bur Oak
15. Jack Pine
16. Red Maple

Editor’s note: A colorful poster of these and other Minnesota trees, called “Minnesota’s Forest Treasures,” is available from: Minnesota’s Bookstore, 117 University Avenue, St. Paul, MN 55155; 612-297-3000 (Metro Area), 800-657-3757 (Greater Minnesota). Order stock number 9-31.

Let's go back in time for just a moment and think about the forces that molded our state and set the stage for the wonderful diversity we enjoy today. As the glacial giants of the ice age moved over the land, they gouged out and dumped behind tons of dirt, rocks, and debris like giant bulldozers. How do you comprehend a river of ice two miles high and miles long? Can you imagine what impact it had on the land it went over? We're talking about...

It's time to go outdoors again for a more personal look at our leafy neighbors. Our neighbors got to be our neighbors either naturally or with a little help. Let's look at...

## Activity 1: The Big Push!

### P I A

Gather dirt, pebbles, and sand and lay them in the bottom of a bread loaf pan. Fill with water and freeze. (Vary glacier "size" by using different size pans.) In a sandbox or bare area outside, lay down a course for the "glaciers" to roll over: plants, hills, stones, etc. Inch your glacier over the terrain very slowly, pushing down as hard as possible. What gets pushed aside? Rolled over? Smashed? What would happen if you pushed it over bare rock? Remember that the real glaciers moved and did their work very slowly. Now position the "glacier" and leave it sit to melt. What is left behind as it melts? What happens if you slowly move it backwards as it melts? Do you have any lakes (pools of water) or hills forming? ☺

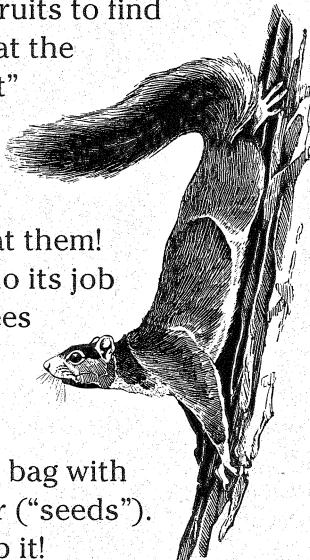
## Activity 2: Where on Earth Did They Come From?

### P I A

Nature has its very own transport system to get seeds around. They can float on the breeze, cling to a passerby, get eaten in fruit and dropped back down, be buried for a snack later, or actually be exploded out!

Look at the Tree Identification Sheets at the end of this unit and Unit Two, Activity Sheets A-E. Notice how many different kinds of seeds there are. Now try to invent activities to imitate nature's methods for getting those seeds around. Some ideas:

1. Make paper airplanes or floats. See which styles fly best.
2. Put tape, sticky side out, on your long pants leg. Walk through the tall grass and see what clings to you.
3. Open up various fruits to find the seeds. Then eat the yummy "transport" systems (the fruit, not the seeds) when you are done looking at them!
4. Watch a squirrel do its job of planting oak trees by burying its winter acorn snacks.
5. Fill a brown paper bag with small bits of paper ("seeds"). Blow it up and pop it!



Next, look at your own adopted trees. Decide what type of transport system they use. Collect some of the seeds if possible (depending on the season) and add them to your ongoing collection or display.

People can help the natural process by growing and protecting seedlings to help replace trees that they use or that are destroyed naturally. Follow in the steps of Johnny Appleseed and try planting and growing different tree seeds (for example, maple, beech, oak, or apple). \*

“He who plants a tree  
plants a hope.”  
—Lucy Larcom

## Activity 3: The Heart of the Matter

### P I A

A tree is a living organism that has fluid flowing through it. In the springtime, it's possible to hear that lifeblood. Grab a stethoscope and listen to the “heartbeat” of a tree. Find a tree at least 6 inches in diameter. Can you hear a crackling noise or a swish? Are some Minnesota tree species louder than others? Is the sound different on different sides of the tree? Check every week for a while. How do the sounds vary? \*

*Used with permission from Joseph Cornell, Sharing Nature with Children.*

## Activity 4: Stories to Tell— Reading the Rings on Minnesota Trees

Like the pages of a book telling a story, a tree's rings give us hints about the year-to-year events that affected its life. For all ages, several objects can be used to complete this activity: an old stump outside; cross sections of a stump or branch; the pictures on Activity Sheet 4C; tree “cookies” (two- to three-inch slices) that can be purchased for 25 cents each, or 26 cents drilled, from the Lake County Developmental Achievement Center at 218-834-5767 (allow four weeks for delivery).

### P

Have the children count the rings. How old is the tree? Compare several samples. How do they differ (size, color, unusual markings)?

### I A

Practice your detective skills. Using the information from Activity Sheet 4C, study your samples and try to discover what happened to the trees. If you are outside, are there clues around the area to help understand the rings' story (evidence of fire, drought, harvesting, or building)?

### VARIATION

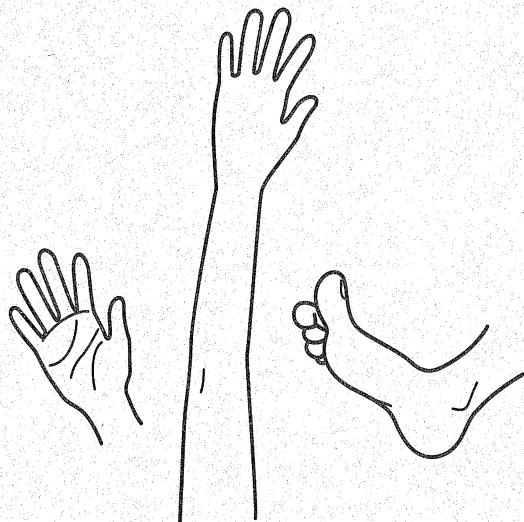
If you haven't read *The Giving Tree*, by Shel Silverstein, do so now. Have the students draw a picture of the stump and its rings based on the information given in the story. Use Activity Sheet 4C to help put in the markings (good growth years, broken branches from climbing, removal of many branches, stunted growth, etc.). Decide how old the tree might have been when it was cut.

*The Big Tree*, by Bruce Hiscock, would also be great for this activity. \*

## Activity 5: Sizing Up a Minnesota Tree

**P**

In the old days, people used practical, available things to measure objects: fingers, hands, arms, feet! Try these simple measuring ideas out on your adopted backyard friend and its neighbors.



**Around the Middle:** For saplings, do you need one hand or both to go around the trunk? For bigger trees can you wrap your arms around it or do some of your friends have to help make a circle around the trunk? How many arms did it take to go around? Do you know what kind of tree this is?

**Crown Size:** Pace off from the trunk until you can look up and see the edge of the crown of leaves. How many footsteps was it out to the edge? Now have everyone hold hands and form a circle out to the edge of the crown. How big (how many footsteps) across is the circle? Look under your feet for an idea of how big the tree's root system is. In many trees the root system extends a lot further out than the crown..

**How High:** Get a kite string on a reel. Go outside on a sunny day and, working in twos, have one child measure the partner's shadow on the ground with the kite string. Mark the

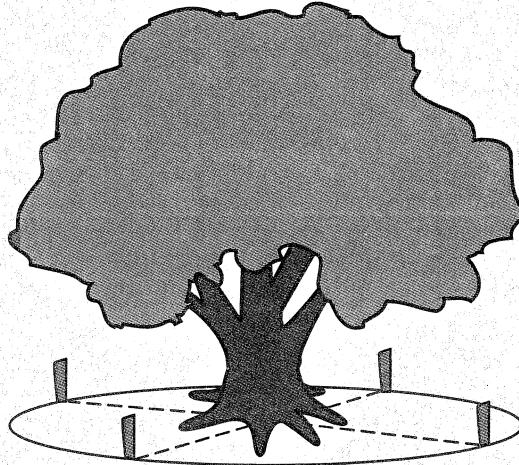
length by tying a ribbon on the string. Now have one partner hold the end of the string at the base of the tree and the other reel out to the end of the tree's shadow. Mark the string to show how long the tree's shadow is. How many child shadows does it take to get to the end of the tree's shadow? Measure the other child's shadow and compare it to the tree's. Is it different than the first child's?

**Challenge:** Using a cloth tape measure, do some of the same measurements and find out some of the sizes in inches.

**I A**

**Around the Middle:** Measure the distance around the tree, about 4 feet up from the ground. What is the circumference of the tree?

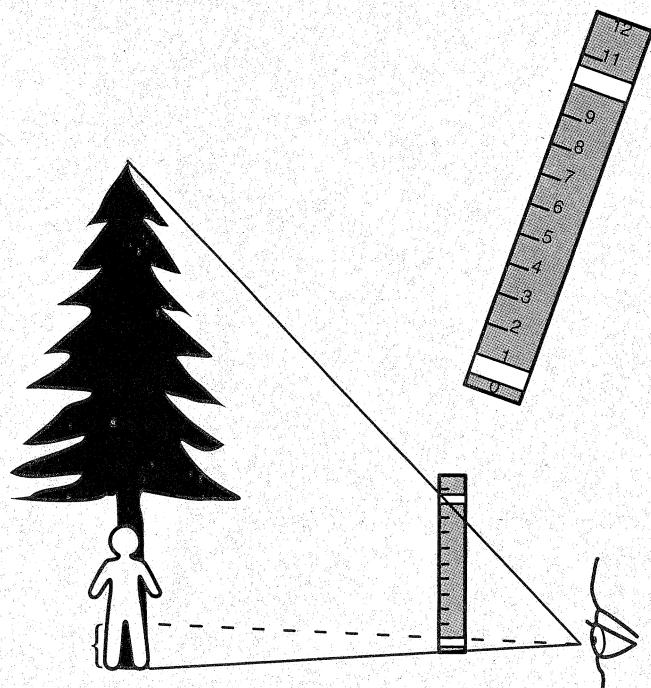
**Crown Size:** Pace off to the edge of the tree's crown and put a stake in the ground. Do this four times to form two perpendicular lines (see illustration). Measure each of the two lines. Add them together and divide by two to get the average crown spread.



**How High:** Take a 12-inch ruler and mark the 1-inch and 10-inch lines on the ruler with tape. Work in pairs. Have one partner stand at the base of the tree. Have the other hold the ruler up in front of his or her own eyes at arm length and move back until he or she can see

the whole tree from top to bottom between the 0-inch and the 10-inch mark on the ruler. Have the student move the ruler until the base of the tree is exactly at 0 inches and the top of the tree is sighted exactly at 10 inches. Then have him or her sight out from the 1-inch mark to a point on the trunk above the base. Have the partner mark this spot on the trunk with tape.

Measure the distance from the base of the tree to the 1-inch mark. Multiply by 10 to get an approximate idea of the height of the tree. ♫



*Adapted from A Teachers' Guide to Arbor Month, Minnesota Arbor Month Partnership, 1993.*

## Activity 6: Bigger and Better— Sizing Up Minnesota Forests

**P I A**

Large trees are old trees. See Activity Sheet 4D to see how much our population of larger Minnesota trees has grown in the last 30 years. How many of the trees you measured are "grandparents" in the forest?

**I A**

Look at the size of the trunks on the trees in your yard. How big a stack of wood do you think they would make? Now look at Activity Sheet 4E to see how much of the world our Minnesota wood would cover. How much has that area grown since 1936? ♫

## Activity 7: Tic Tac Tree— Minnesota Style

**P I A**

By now students should be getting pretty familiar with the neighbors in the back yard. Let's have a little fun with that new knowledge.

Construct blank game boards with nine squares on each. Mark the middle FREE and laminate (see example on Activity Sheet 4F). Give each child a game board and eight laminated pictures of leaves, trees (or tree shapes), or seeds (gear the pictures to the ability and age level of the group). See examples on Activity Sheet 4F. Have the children place their pictures on their game board in any order, making sure not to cover the middle square.

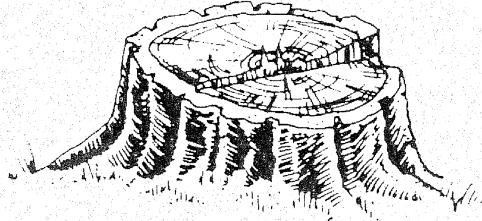
Pass out markers (stones, small twigs, acorns) and start the game, calling out the parts.

The children cover the squares as they hear them and the first one to get a TIC TAC TREE (across, down, diagonally) wins! ♫

## ARTS AND CRAFTS

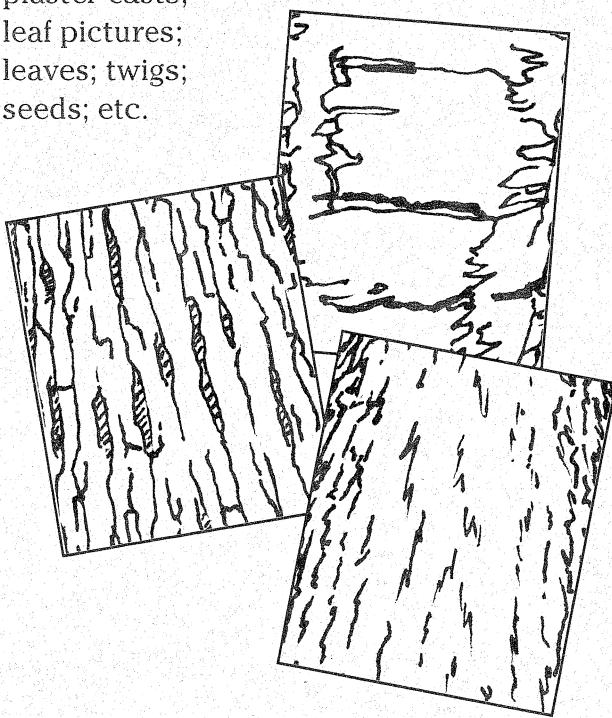
### STUMP RUBBINGS

Find stumps or use your cross sections from Activity 4, Unit Four. Place light art paper on each stump and rub lightly with the side of a crayon to get textured pictures. Label these if you can identify the tree. Add them to your nature art tree collection if you have one.



### BARK RUBBINGS

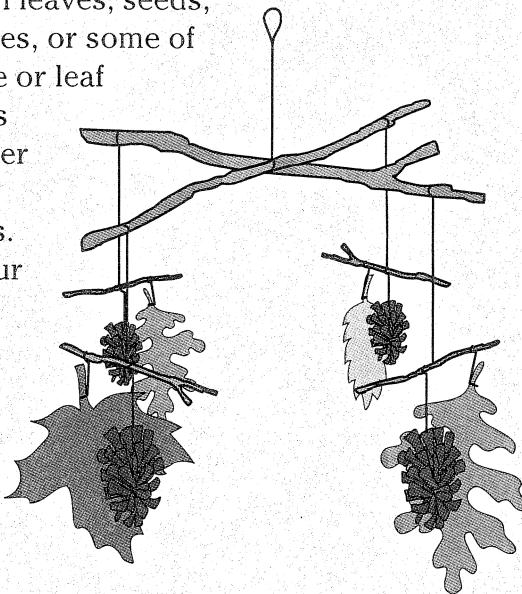
Interesting pictures can be obtained by doing bark rubbings the same way as stump and leaf rubbings. Label the rubbings. If you have not already done so in previous units, create a display of different objects from your adopted tree: bark, stump, and leaf rubbings; plaster casts; leaf pictures; leaves; twigs; seeds; etc.



### TWIG MOBILES

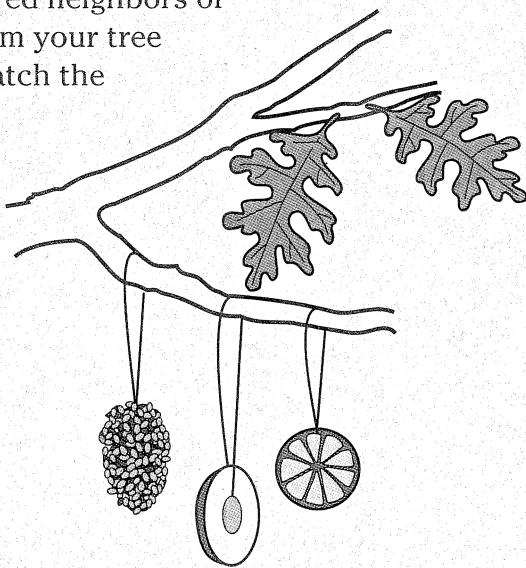
Gather a variety of different sized twigs. Using yarn or twine, attach them together in various arrangements (see illustration).

Attach leaves, seeds, pine cones, or some of your tree or leaf paintings from other art activities. Hang your mobiles.



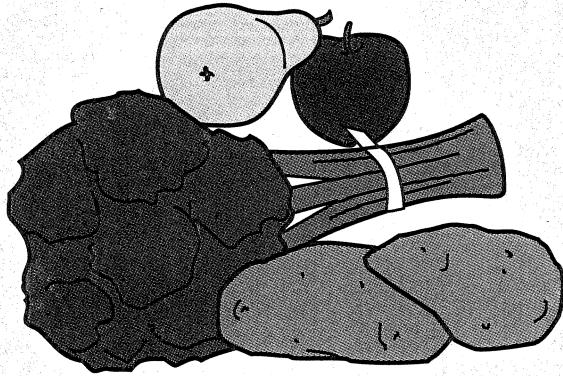
### BIRD MUNCHIES

Make edible mobiles for the birds. Take pine cones and attach a piece of yarn to them. Smear them with shortening and roll in bird seed. Make apple rings and orange slice rings and attach to yarn or string. String popcorn. Using branches, make a friendly "smorgasbord" for the feathered neighbors or just trim your tree and watch the feast.



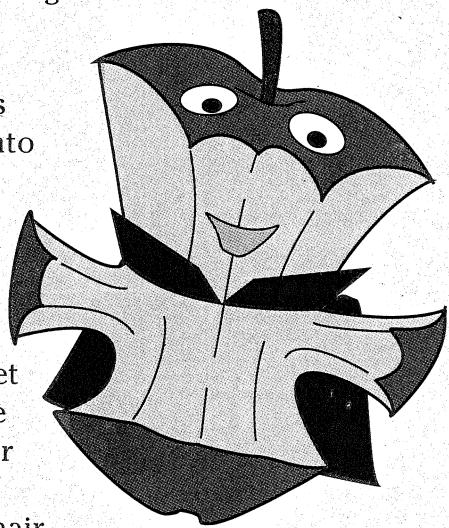
## FRUIT PRINTS

Cut apples or pears in half or carve into different shapes (experiment with different fruits or veggies). Dip into tempera paints and make "fruity prints." Vary the colors and shapes or try a variety of fruits.



## APPLE HEADS

Have the children "carve" an apple by eating it into various shapes. Or let older students carve a face into the apple. Set aside and allow to dry or dry in a slow oven (200°). Then let them decorate and dress their unique apple people (yarn hair, hats, glasses, wiggle eyes, beard, etc.).



1. Go on a "Hearing Hike" through some of the BBC's (British Broadcasting Co.) recordings of natural sounds.
2. Collect rhythm band and other instruments or make some of your own instruments (drums, shakers out of gourds, two sticks or sticks and stones to bang together, seeds inside milk cartons or plastic eggs, blades of grass between the thumbs to make a whistle, etc.). Create your own forest music.

How does a forest sound? Which instrument(s) would you use to sound like breezes through the leaves, squirrels leaping from branch to branch, birds calling, a tree being chopped down or falling? How about feet shuffling through the fall leaves, a deer running through the bushes, a woodpecker pecking, a sleepy owl hooting? Would a forest sound different at night than during the daytime? Tape record your best efforts.

*Used with permission from A Teachers' Guide to Arbor Month, Minnesota Arbor Month Partnership, 1990.*

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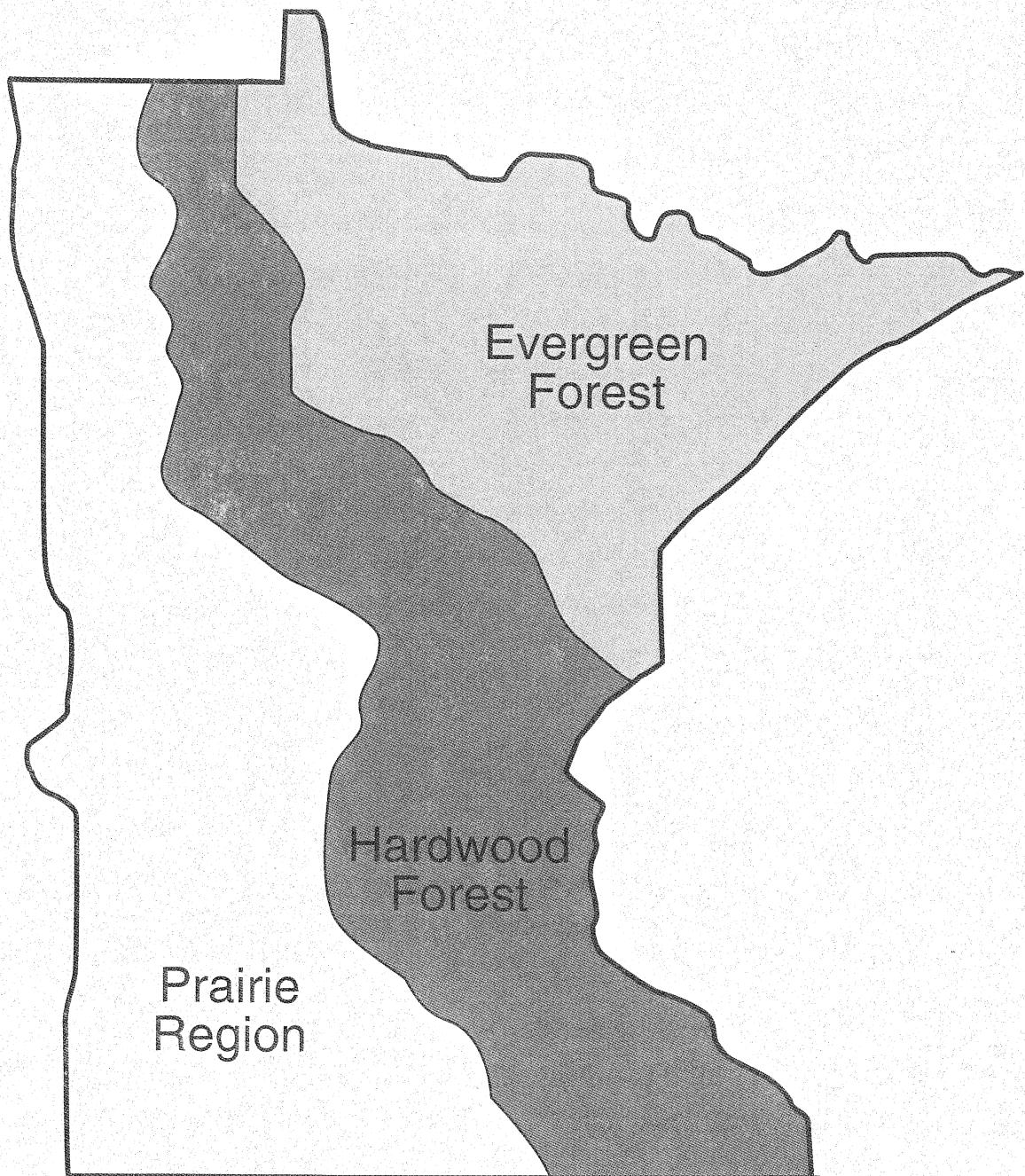
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Note: The bibliographies in Units Two and Three contain excellent references that can be used in this unit also.

# ACTIVITY SHEET 4A

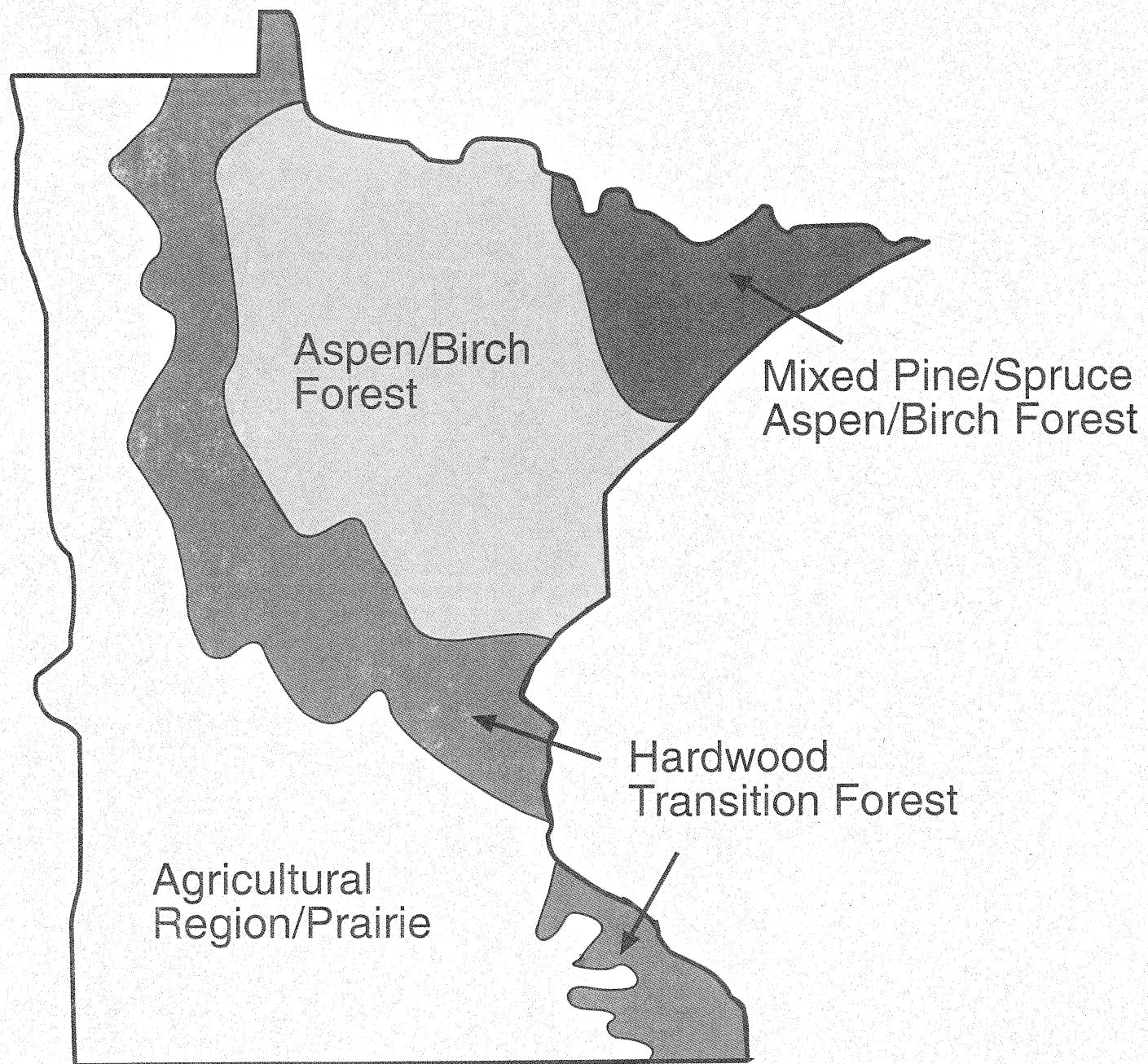
## MINNESOTA'S FOREST REGIONS—1870



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# ACTIVITY SHEET 4B

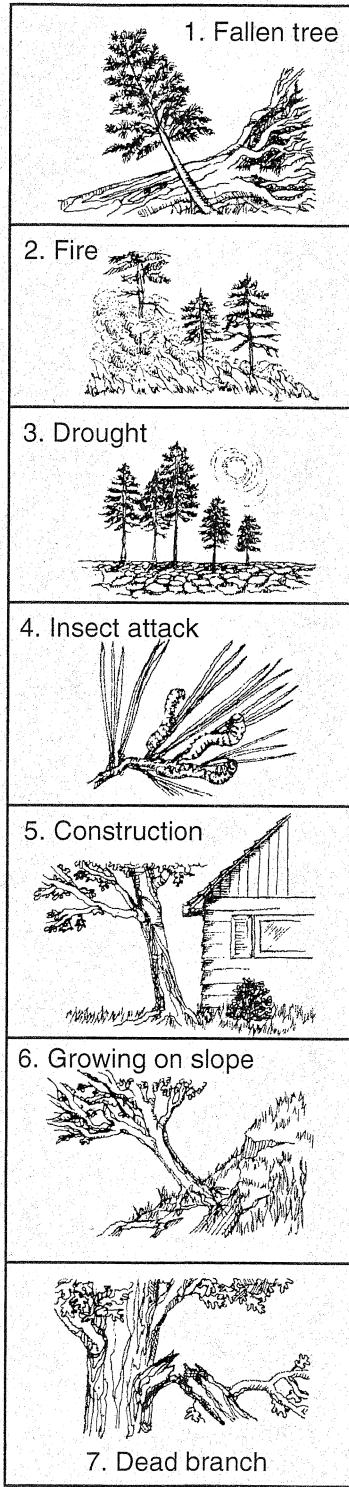
## MINNESOTA: PRESENT DAY VEGETATION



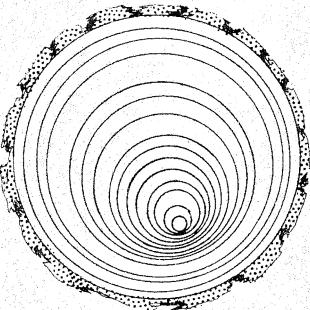
# ACTIVITY SHEET 4C

## READING THE RINGS

### THINGS THAT AFFECT TREE GROWTH



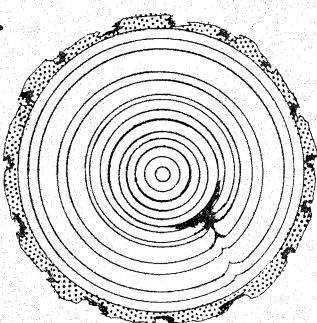
A.



#### Cross Section A:

The uneven growth shown in the rings could have been caused by a fallen tree leaning against the tree (picture 1). The tree grew more on one side than the other, and curved up around the fallen tree. This uneven ring pattern could also belong to a tree growing on a steep slope (picture 6).

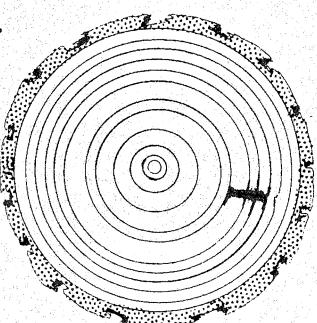
B.



#### Cross Section B:

The scarring on this cross section was caused by a forest fire during the tree's sixth growing season (picture 2).

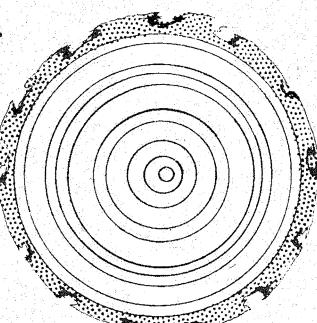
C.



#### Cross Section C:

The mark beginning in year six is all that's left of a branch that died and fell off (picture 7). Eventually the tree's trunk grew around the remains of the branch and covered it. (The branch could also have been broken or cut off.)

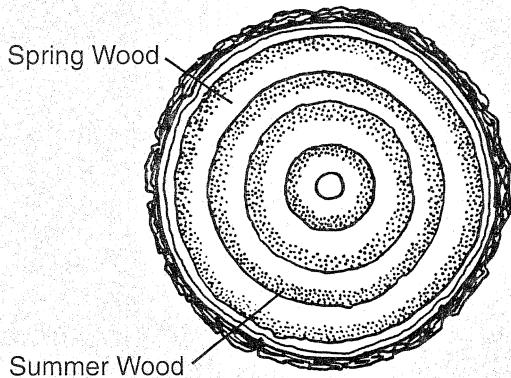
D.



#### Cross Section D:

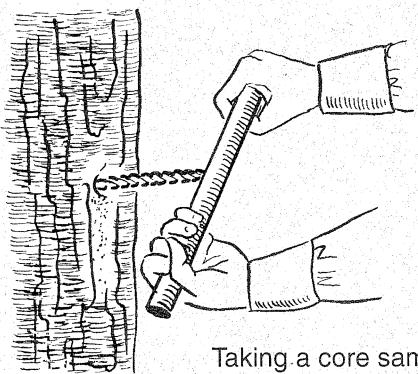
The narrow rings shown in this cross section could have been caused by several things such as drought (picture 3), heavy insect damage (picture 4), or damage from construction (picture 5). If a tree loses all or most of its leaves because of an insect attack or drought, it is not able to make food and grows very little that year. Root damage from the construction of a house or sidewalk too close to the tree reduces the water and minerals the roots can absorb.

## THINGS THAT AFFECT TREE GROWTH *continued*



**How old is this tree?** School children everywhere are fascinated to find out the age of a tree through counting its rings. (Start at the outer, newest ring just inside the bark and count in toward the center to know the age of the tree.) But scientists find many other fascinating bits of information tucked into the annual rings. Best known is the relationship between weather, growing conditions, and the width of the rings. Wide, light rings mean spring weather was good: warm days, lots of rain, good growing conditions. Narrower rings mean spring was probably cold or dry, and/or growing conditions were stressed. Perhaps the tree was crowded by others, shaded, or stressed by insect pests. Tree growth was limited.

The scientific study of annual growth rings even has its own name—dendrochronology. Stump study is part of this science, but core samples are often drawn from trees, too. The tree is not harmed, and the core sample, studied under a microscope, has fascinating tales to tell.

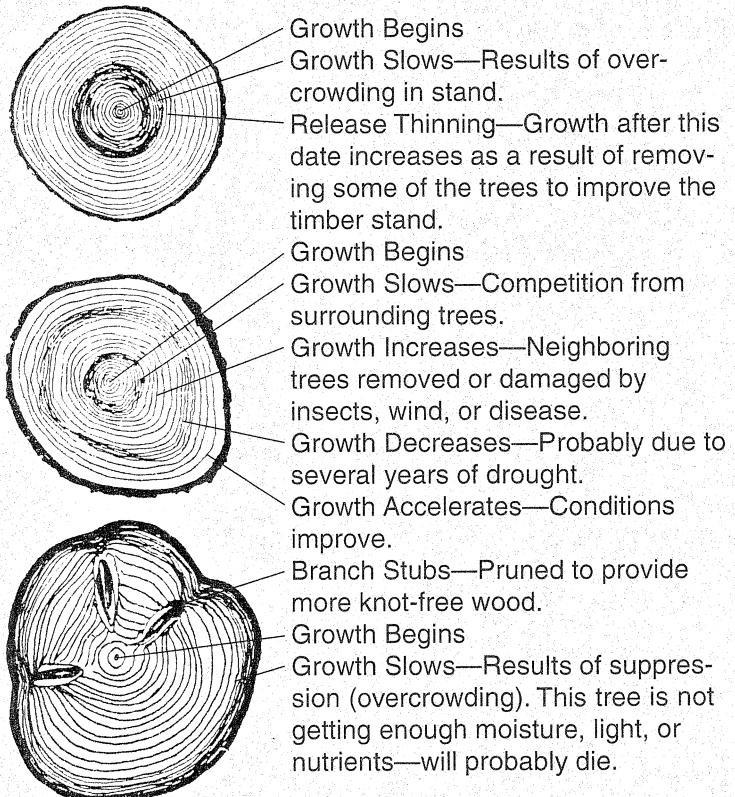


Taking a core sample

Information gleaned from tree rings helps foresters track growth rates and decide when to thin and harvest most economically. Long-covered scars are records of forest fires and other trauma. Narrow rings often coincide with historical records of insect or pest infestations.

Global and environmental climate changes can also be seen. Dates of earthquakes and effects of volcanic eruptions can be read in the rings. We can even use tree rings to figure the age of ancient buildings, boats, and other wooden things by studying the rings of a living tree, then matching those patterns with samples of older and yet older pieces of wood. The long-lived bristlecone pines of Nevada and California are an example. Some are nearly 5,000 years old themselves. By pattern matching, scientists have been able to create a historical timeline going back more than 8,000 years!

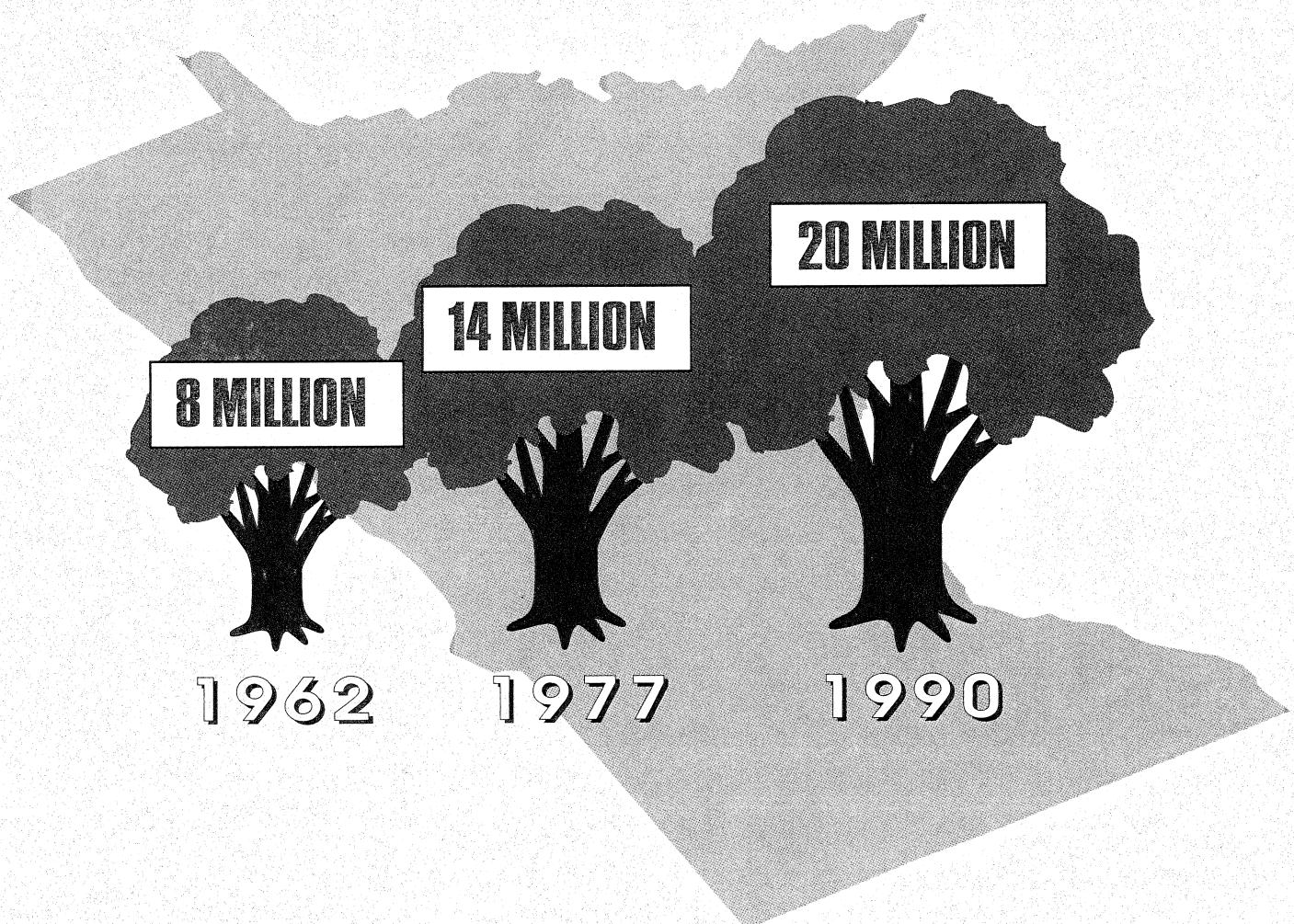
**Examine these ring patterns.** What stories do they tell? How are the growth patterns alike? How are they different?



# ACTIVITY SHEET 4D

## HOW MANY LARGE\* TREES IN MINNESOTA?

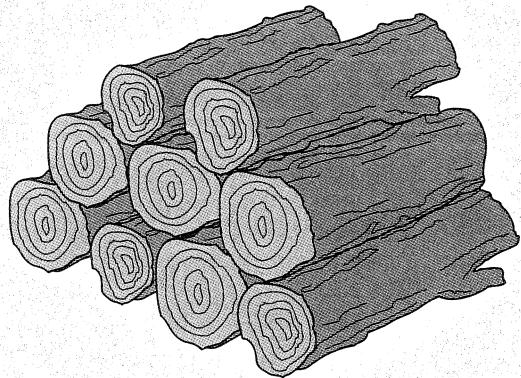
\*19-inch diameter or more



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# ACTIVITY SHEET 4E

## HOW MUCH WOULD YOUR WOOD GO 'ROUND?



Stack the trunkwood of Minnesota trees in a pile 4 feet high by 4 feet wide and you'll have a long, long woodpile!



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# ACTIVITY SHEET 4F

## TIC TAC TREE—MINNESOTA STYLE

Construct blank game boards with nine squares each. Mark middle FREE and laminate.

Varying the degree of complexity depending on the age of the group, make laminated game cards (pictures of leaves, trees, seeds, etc.—see categories below) to pass out. Give each participant eight cards. (Use Activity Sheets 2A-2F, Unit Two, to get an idea of how to make the cards.)

Have each participant place his/her cards on the game board in any order, making sure not to cover the middle square.

Pass out markers (stones, small twigs, acorns, etc.) and start the game, calling out different names and categories. The children cover the squares as they hear them and the first one to get a TIC TAC TREE (across, down, diagonally) wins!

### Examples of Categories

Leaves: whorl, opposite, alternate

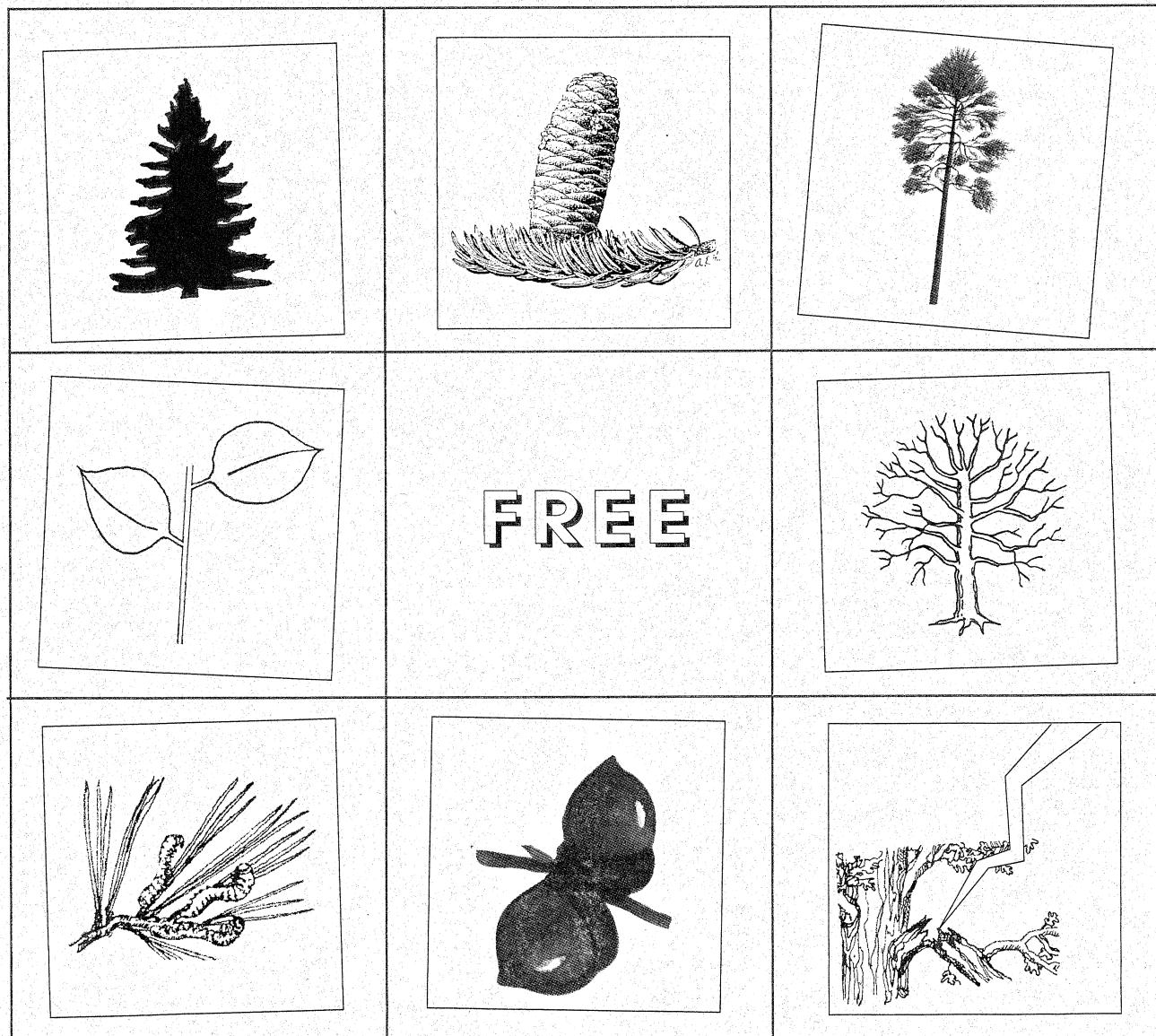
Shapes: globe, cone, weeping

Seeds: pine cone, acorn, maple

### Other Possibilities

Injuries and problems: fire, lightning, flooding, disease, insects

Other: tree names, branching styles





# Tamarack (Eastern Larch)

*Larix laricina*

**Tamarack:** Conifer (deciduous)

**Tree appearance:** Wispy, thinnish tree.

**Leaf appearance:** Fine, medium-length needles that cluster off the branch.

**Seed:** Very small cone.

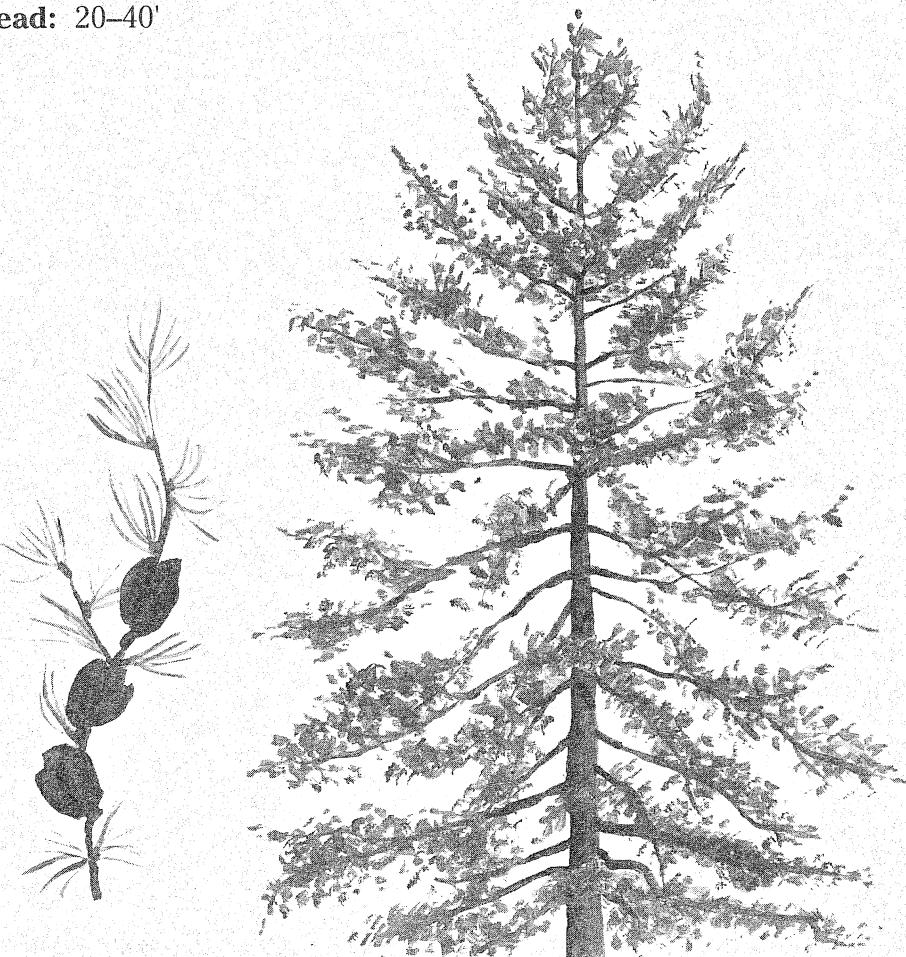
**Growing conditions:** Quite tolerant of drought or poorly-drained soil.

**Special feature:** Minnesota's only conifer that is deciduous. In fall, the needles of the tamarack turn deep yellow and drop.

**Uses:** Provides nesting sites for great gray owls in northern Minnesota; also used for posts and paper.

**Height:** 40–70'

**Crown spread:** 20–40'



Tamarack (Eastern Larch)  
*Larix laricina*

# Sugar Maple

*Acer saccharum*

**Sugar Maple:** Deciduous

**Tree appearance:** Has a dense, upright oval to rounded crown.

**Leaf appearance:** Three-pointed lobes; quite large. In fall, leaves range from clear yellow to golden orange or orangish red.

**Seed:** Pea-sized seed with large wings; tends to fly down like little helicopters.

**Growing conditions:** Fertile, well-drained soil with ample moisture. Full shade or partial shade.

**Special feature:** Sap is used as maple syrup.

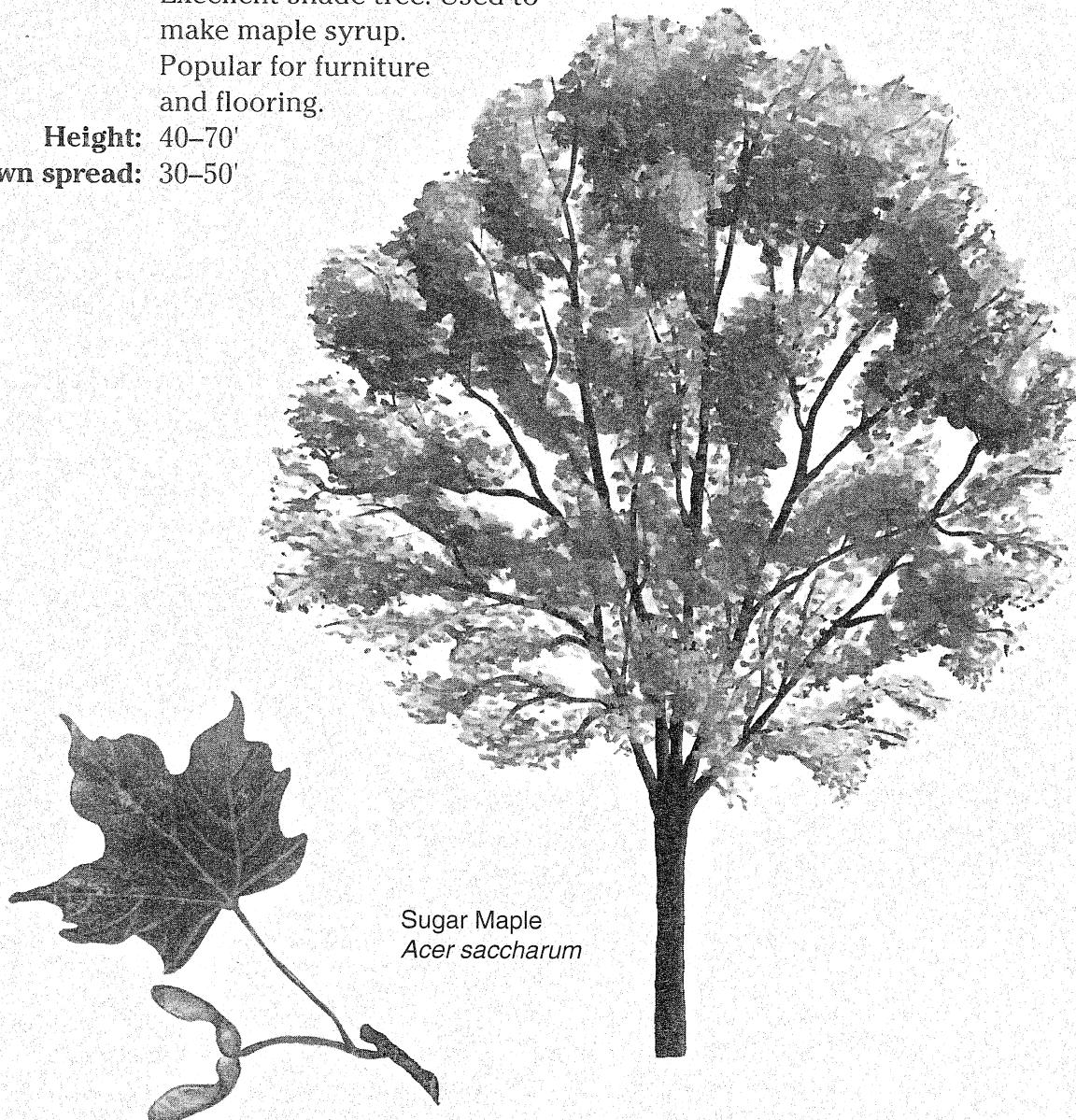
**Uses:** Seeds eaten by all kinds of birds.

Excellent shade tree. Used to make maple syrup.

Popular for furniture and flooring.

**Height:** 40–70'

**Crown spread:** 30–50'



# Black Spruce

*Picea mariana*

**Black Spruce:** Coniferous (evergreen)

**Tree appearance:** Shaped like a narrow triangle.

**Leaf appearance:** Needles are small and yellow-white in color. They are borne singly from the branch.

**Seed:** Small roundish cone.

**Growing conditions:** Moist soils and bogs.

**Special feature:** Also called bog spruce, swamp spruce.

**Uses:** Mostly for paper.

**Height:** 30-50'

**Crown spread:** 10-20'



Black Spruce  
*Picea mariana*

# Paper Birch

## *Betula papyrifera*

**Paper Birch:** Deciduous

**Tree appearance:** Attractive, smooth white bark; upright oval form.

**Leaf appearance:** Oblong leaf; edges of leaf have fine teeth.

**Seed:** Very small seeds are borne in catkins (flowering structure).

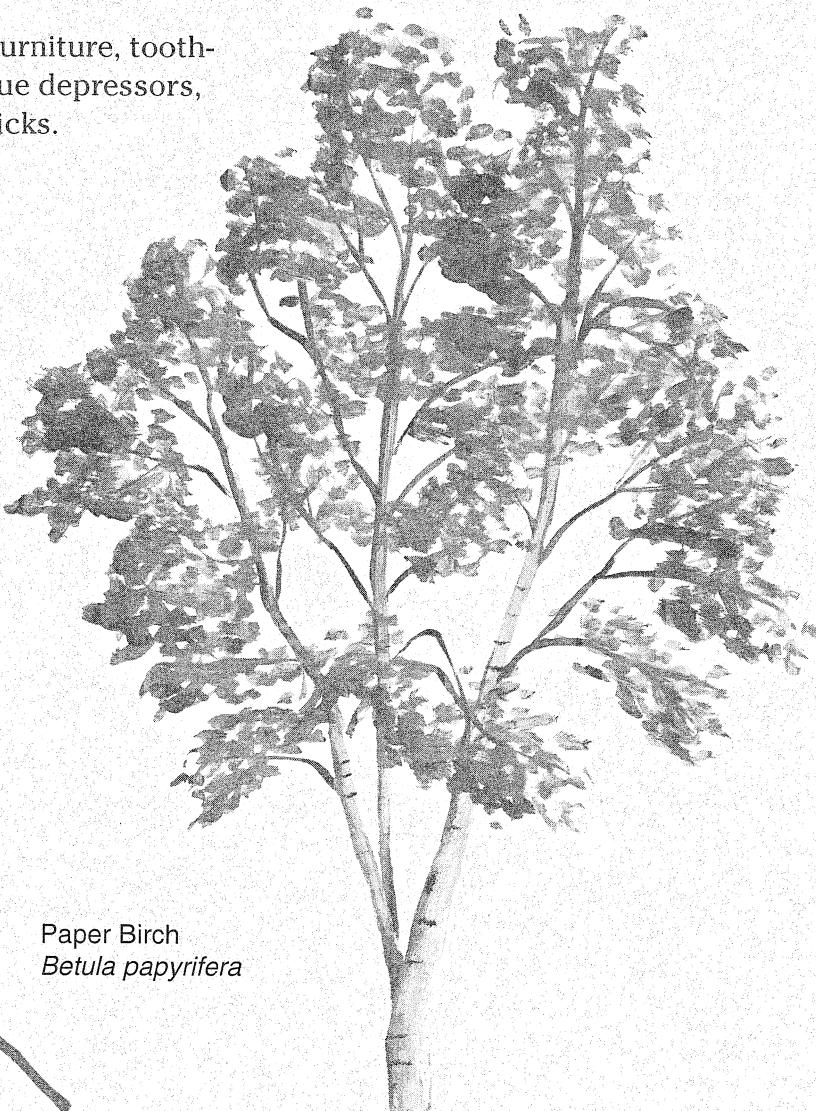
**Growing conditions:** Requires well-drained soil, cool soil temperatures, ample moisture, and full sunlight.

**Special feature:** As the tree gets older, the bark begins loosening from the tree in paper-like sheets.

**Uses:** Firewood, furniture, tooth-picks, tongue depressors, Popsicle sticks.

**Height:** 40–70'

**Crown spread:** 20–40'



Paper Birch  
*Betula papyrifera*

# Quaking (Trembling) Aspen

## *Populus tremuloides*

**Quaking Aspen:** Deciduous

**Tree appearance:** Attractive whitish bark; good yellow fall color.

**Leaf appearance:** Almost round, smooth leaf. Leaves are light green above, silvery green beneath and flutter in the slightest wind.

**Seed:** Fine cottony seeds borne in catkins (flowering structure).

**Growing conditions:** Prefers rich, well-drained soil.

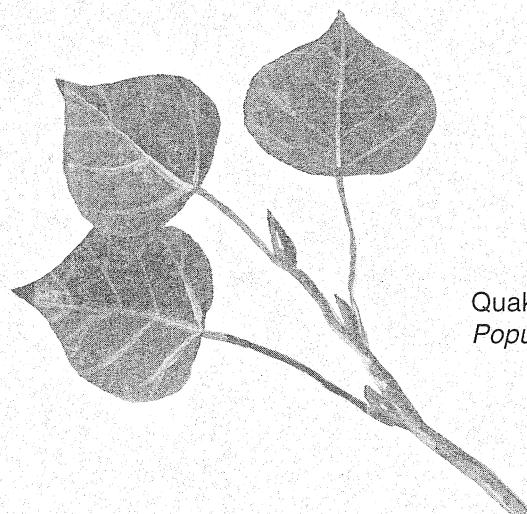
**Special feature:** Fast growing tree that was once considered rather useless; now it is the most commercially-used tree species in Minnesota. Short-lived; deteriorates when it reaches full maturity at 55 years.

**Uses:** Provides excellent habitat for songbirds, waterbirds, and for a wide variety of wildlife (deer, grouse, birds, etc.).

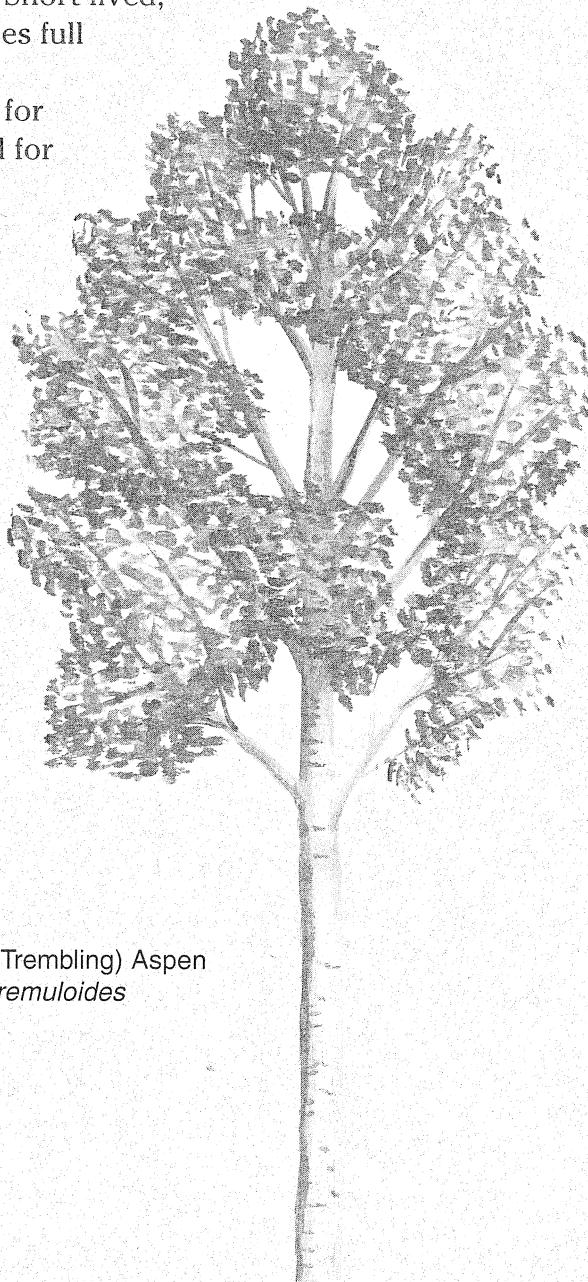
Used to make paneling and pallet boards, waferboard, paper, and matchsticks.

**Height:** 40-60'

**Crown spread:** 20-30'



Quaking (Trembling) Aspen  
*Populus tremuloides*



# American Basswood

## *Tilia americana*

**American Basswood:** Deciduous

**Tree appearance:** Oval.

**Leaf appearance:** Large oblong leaves; edges of leaf have fine teeth.

**Seed:** Finger-like leaf coming from branch produces a stem-like structure with about a dozen seeds.

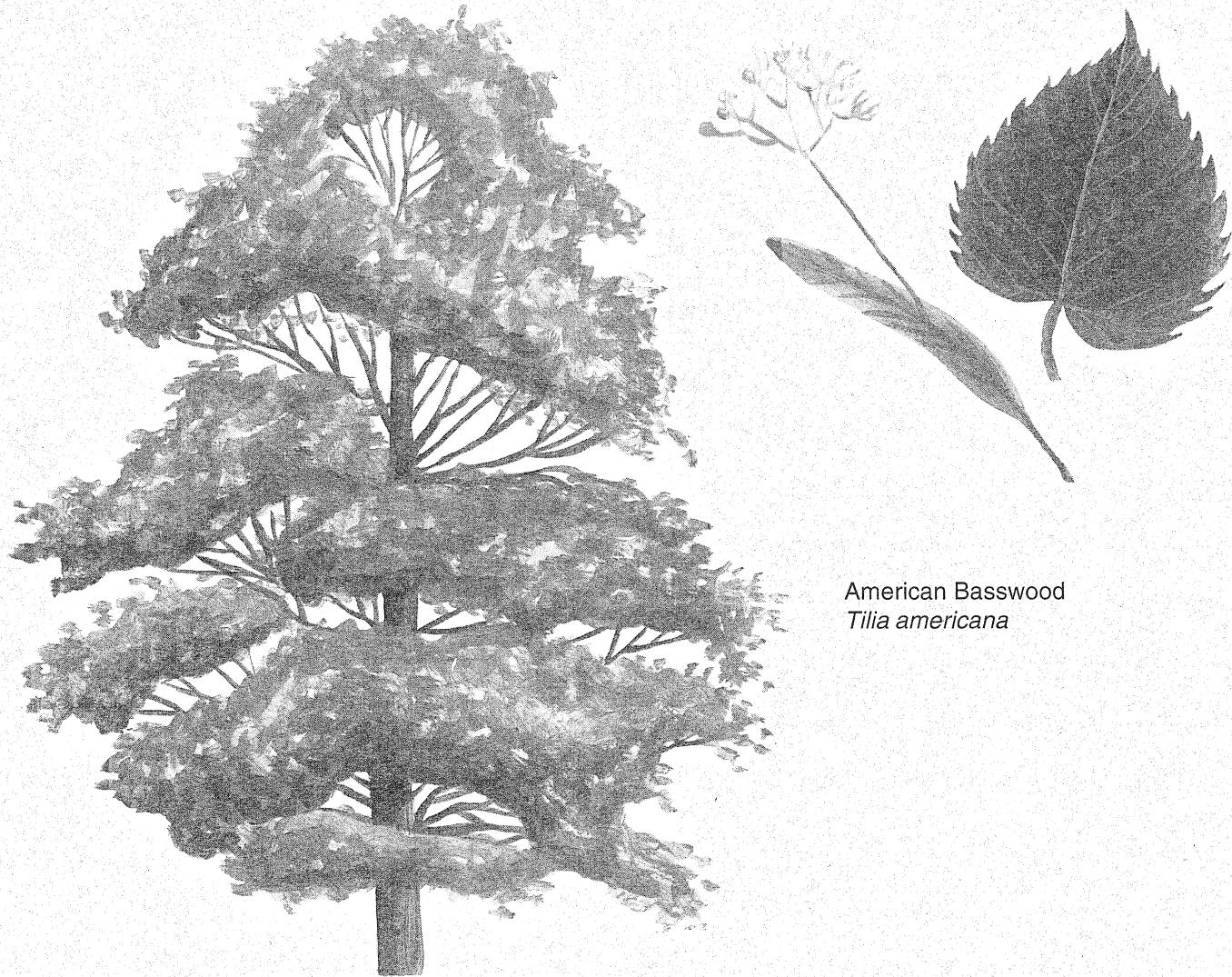
**Growing conditions:** Grows best in moist soils.

**Special feature:** Develops from sprouts as well as seeds.

**Uses:** Seeds and twigs eaten by wildlife. Planted as shade trees. Favored by wood carvers.

**Height:** 50-70'

**Crown spread:** 20-40'



American Basswood  
*Tilia americana*

# Red (Norway) Pine

*Pinus resinosa*

**Red (Norway) Pine:** Coniferous (evergreen)

**Tree appearance:** Pyramid; reddish-to-orange bark.

**Leaf appearance:** Needles are medium green to yellow green, are in groups of two, and are about the longest found in Minnesota (5-6" long).

**Seed:** Medium-sized cone.

**Growing conditions:** Tolerates poor soils.

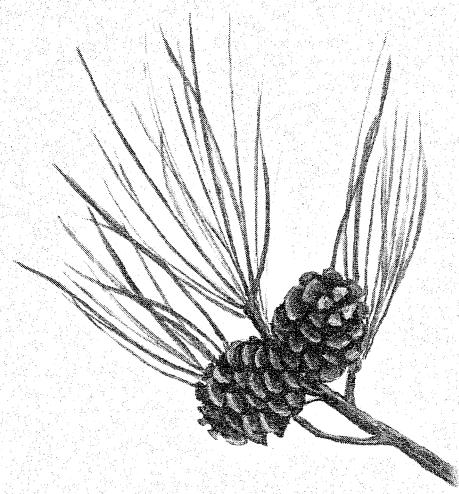
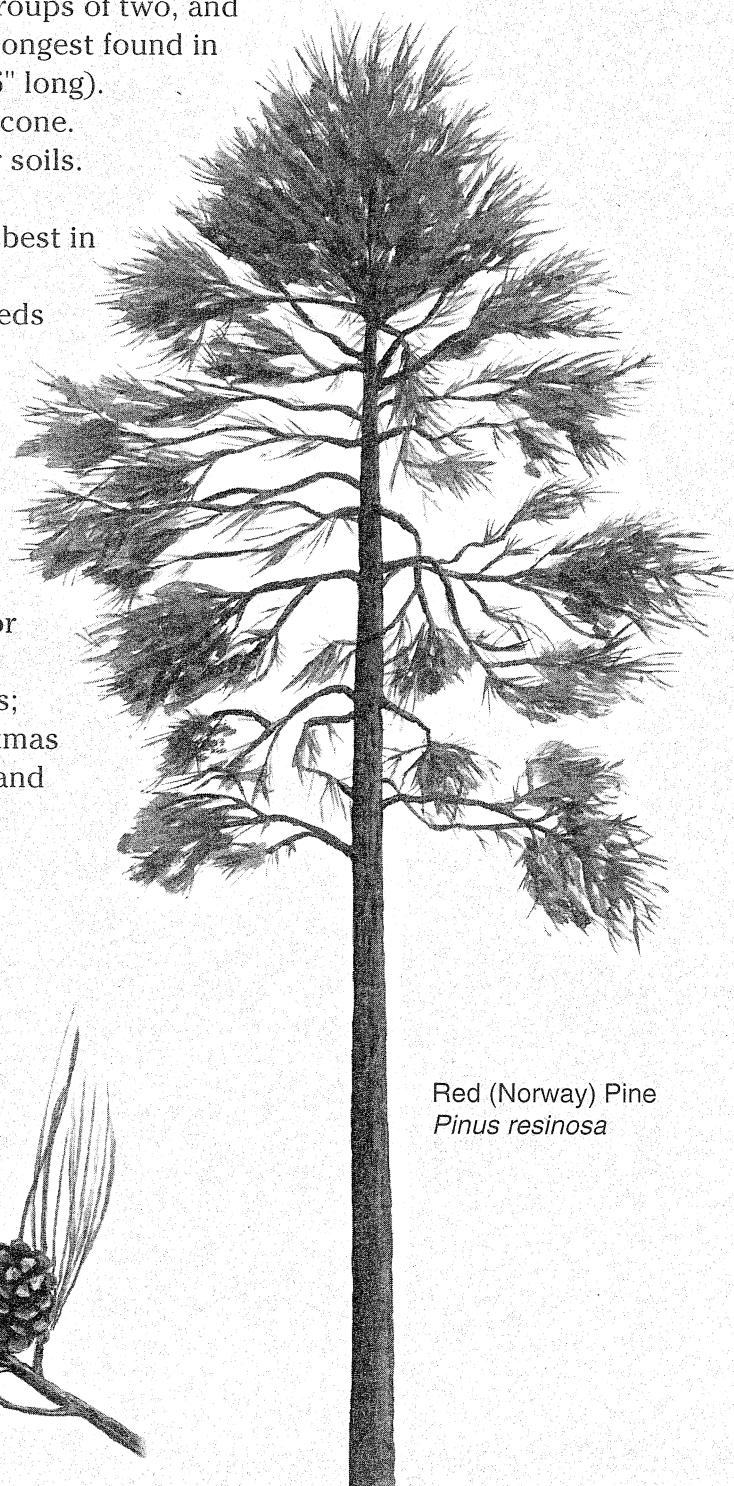
Fairly drought tolerant. Does best in northern Minnesota. Needs full sunlight to grow.

**Special feature:** Minnesota's state tree. Extremely hardy.

**Uses:** Provides nesting sites for osprey, eagles, and other birds; used for Christmas trees, lumber, and paper.

**Height:** 60-80'

**Crown spread:** 25-30'



Red (Norway) Pine  
*Pinus resinosa*

# White Spruce

*Picea glauca*

**White Spruce:** Coniferous (evergreen)

**Tree appearance:** Large triangle. Full branching appearance.

**Leaf appearance:** Medium length needles that come out singly from the branch. Needles are dusty green to blue in color.

**Seed:** Medium-sized cone.

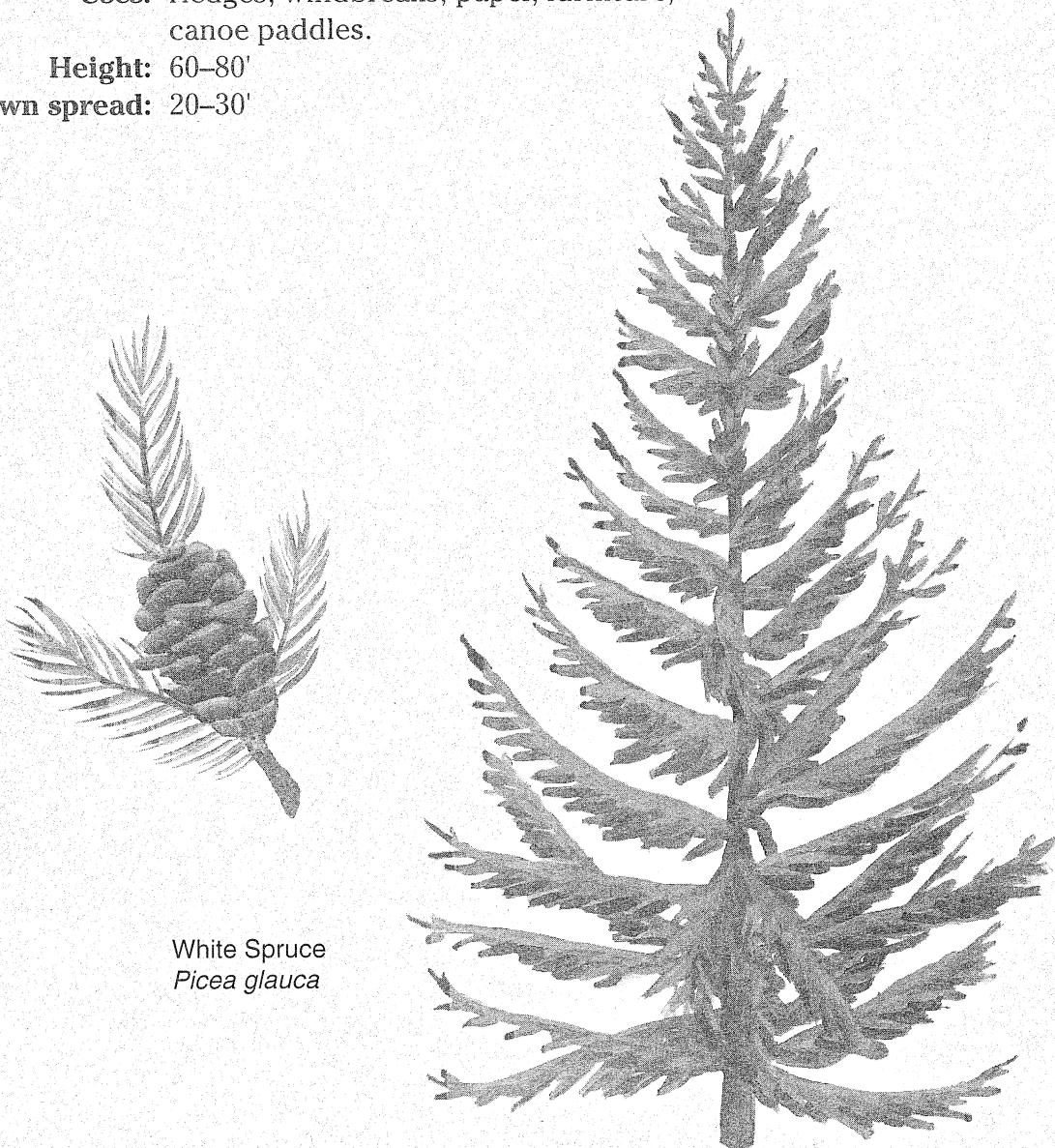
**Growing conditions:** Likes full sunlight to grow, although is quite tolerant of partial shade.

**Special feature:** Very hardy; adaptable to difficult conditions such as heat, cold, and drought.

**Uses:** Hedges, windbreaks, paper, furniture, canoe paddles.

**Height:** 60–80'

**Crown spread:** 20–30'



White Spruce  
*Picea glauca*

# American Elm

## *Ulmus americana*

**American Elm:** Deciduous

**Tree appearance:** Large, fast growing tree. Excellent vase shape makes it an ideal street tree.

**Leaf appearance:** Oblong, rough leaf; edges of leaf have coarse teeth. Leaves are medium green, turning yellow in the fall.

**Seed:** Small double-winged seed borne in clusters.

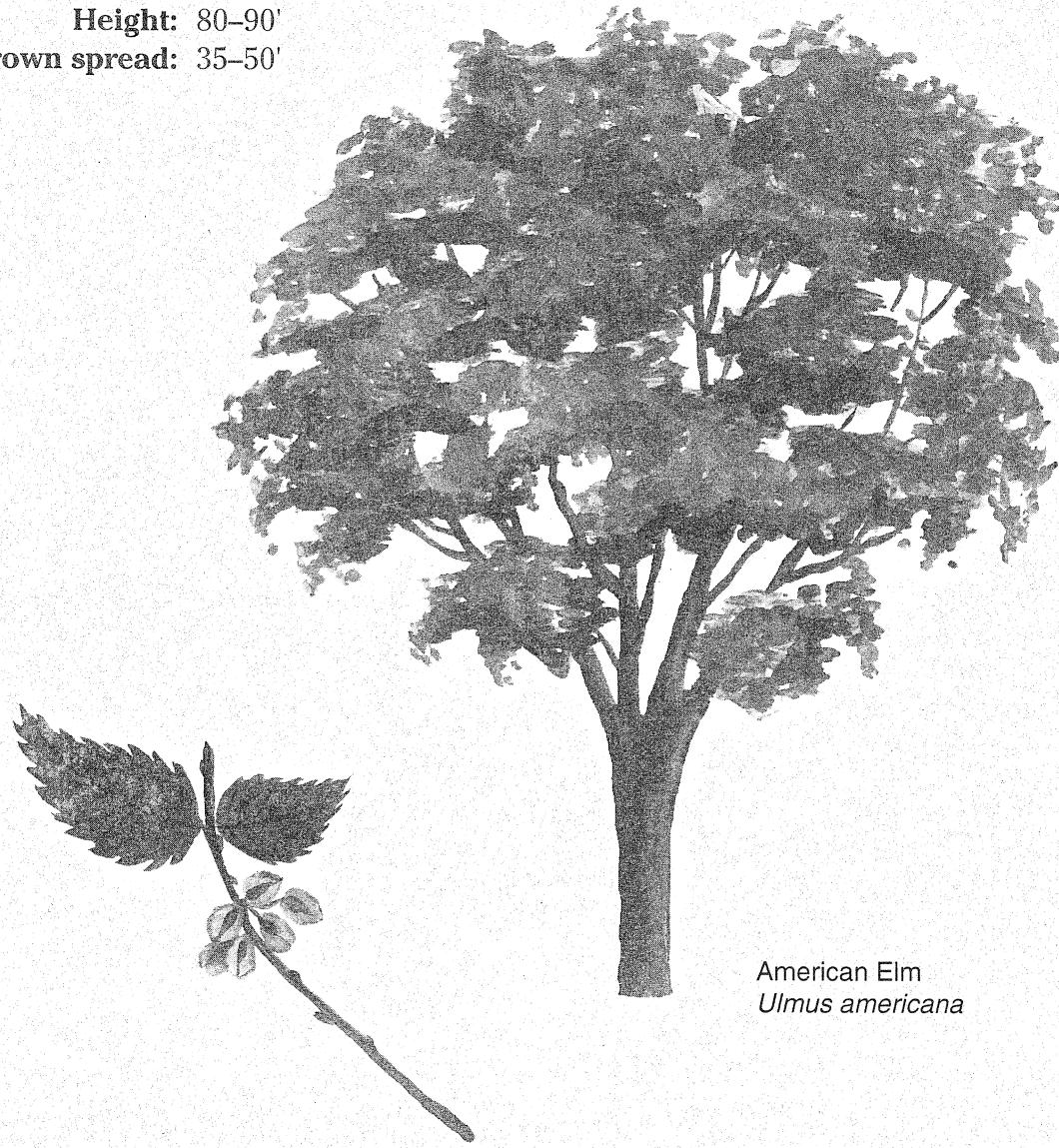
**Growing conditions:** Very tolerant of city conditions.

**Special feature:** Prior to Dutch elm disease, it made up a high proportion of street trees. Has shallow roots that may damage sidewalks and drain tiles.

**Uses:** Seeds are food source for birds. Favorite for furniture and boat building.

**Height:** 80-90'

**Crown spread:** 35-50'



American Elm  
*Ulmus americana*

# Balsam Fir

## *Abies balsamea*

**Balsam Fir:** Coniferous (evergreen)

**Tree appearance:** Triangular shape; trunk is gray.

**Leaf appearance:** Needles are dark green with bands on the underside.

**Seed:** Unique feature is that the cone stands up on the branch and this dark sticky cone comes apart before falling from the tree.

**Growing conditions:** Prefers rich, well-drained soil. Performs best in cool climates. Very hardy evergreen.

**Special feature:** Trunk has raised blisters full of fragrant resin.

**Uses:** Provides cover (protection from weather and predators) for various birds; used for Christmas trees and in making paper.

**Height:** 40–75'

**Crown spread:** 15–25'

Balsam Fir  
*Abies balsamea*



## Black Ash

### *Fraxinus nigra*

**Black Ash:** Deciduous

**Tree appearance:** Upright oval crown.

**Leaf appearance:** 7 to 13 leaflets; dark green with lighter green underside.

**Seed:** Narrow tear-shaped winged seeds.

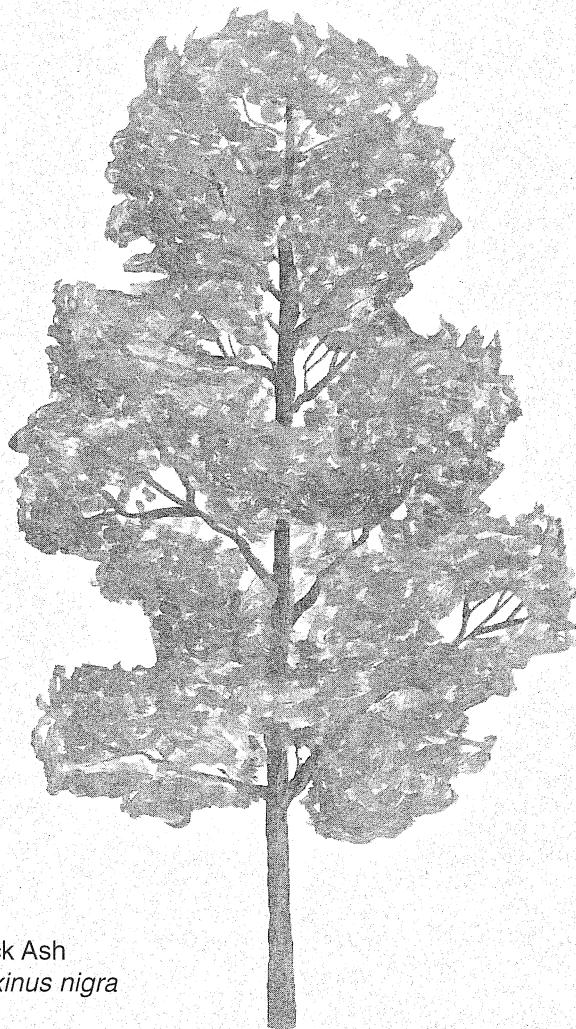
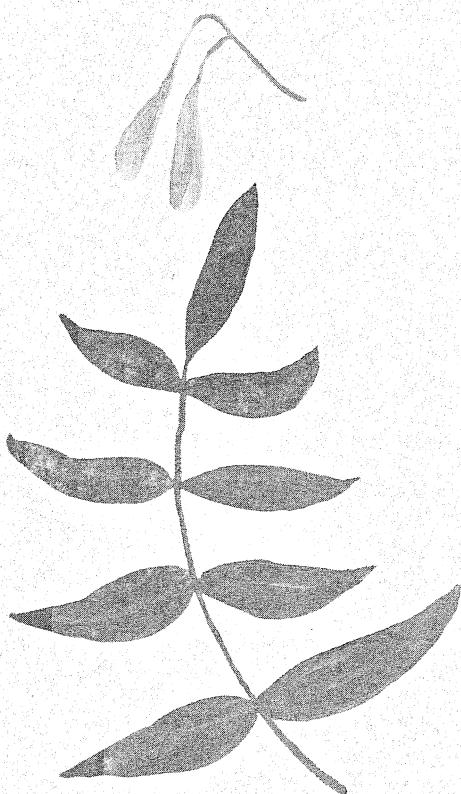
**Growing conditions:** Grows along stream banks or the borders of swamps; requires full sun.

**Special feature:** Overall, tree looks somewhat like a black walnut from a distance. Bark light gray with orangish streaks; surface easily rubbed off, feels like powder.

**Uses:** Shelterbelts and/or windbreaks; some birds use them for nesting and some eat the seeds; some mammals browse on seeds and buds; pulpwood, saw wood, veneer; excellent material for baskets, hoops, etc.

**Height:** 30–50'

**Crown spread:** 20–25'



Black Ash  
*Fraxinus nigra*

## Bitternut Hickory

*Carya cordiformis*

**Bitternut Hickory:** Deciduous

**Tree appearance:** Full rounded crown.

**Leaf appearance:** Usually 7 to 11 leaflets.

**Seed:** Round light green nut, tip of nut is sharply pointed.

**Growing conditions:** Needs full sun.

**Special feature:** Grayish, smooth, thin, tight, hard, tough bark.

**Uses:** Shelterbelts and/or windbreaks; wildlife, veneer, sawlogs, fuel.

**Height:** 40-75'

**Crown spread:** 30+'



Bitternut Hickory  
*Carya cordiformis*

# Black Walnut

*Juglans nigra*

**Black Walnut:** Deciduous

**Tree appearance:** Fairly spreading crown.

**Leaf appearance:** Compound, smooth leaves.

**Seed:** 2-inch nut (large), usually green.

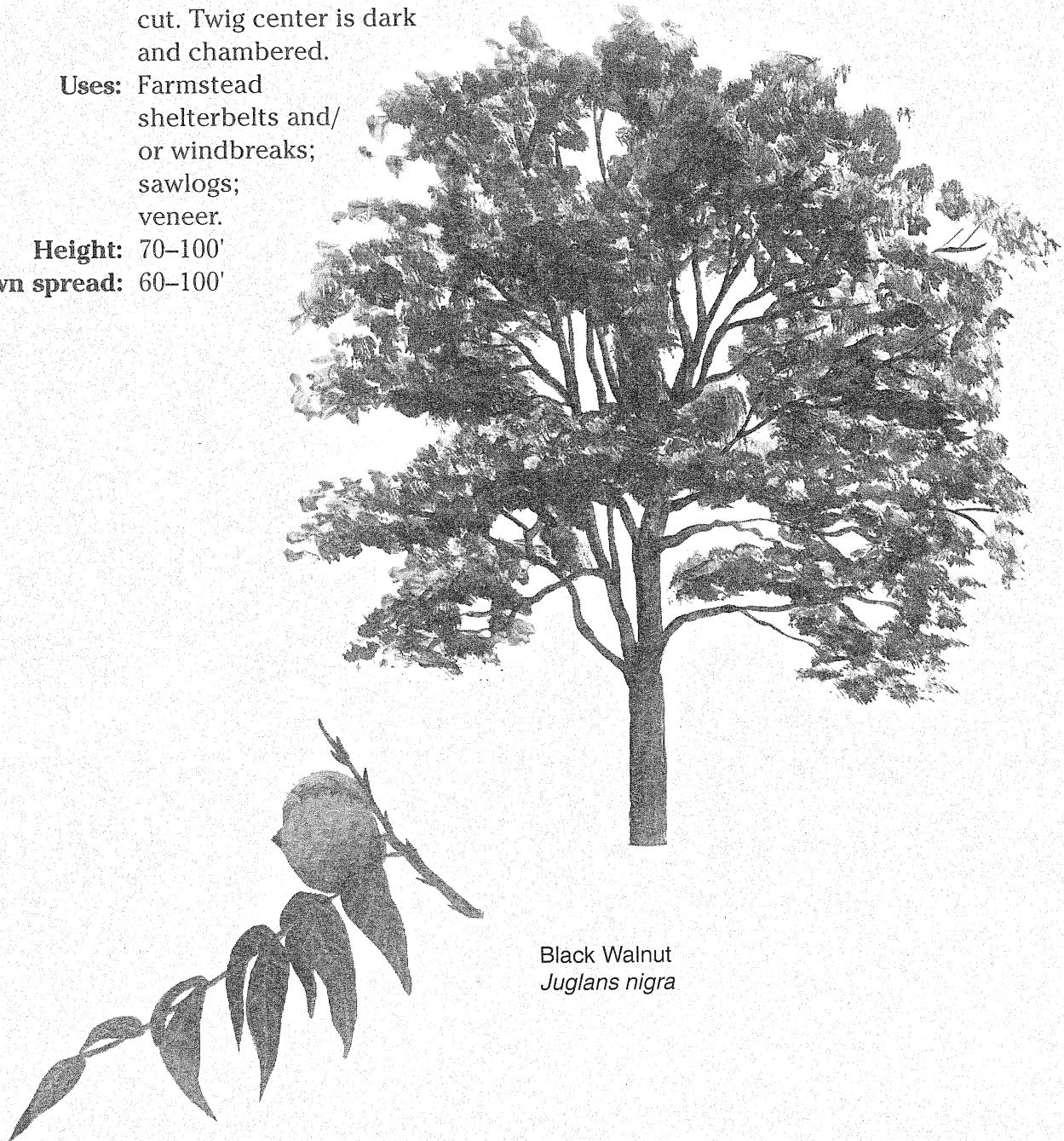
**Growing conditions:** Grows rapidly; needs full sun.

**Special feature:** Dark sharply ridged bark; can readily be cut with a knife; chocolate color when cut. Twig center is dark and chambered.

**Uses:** Farmstead shelterbelts and/or windbreaks; sawlogs; veneer.

**Height:** 70-100'

**Crown spread:** 60-100'



Black Walnut  
*Juglans nigra*

# Bur Oak

## *Quercus macrocarpa*

**Bur Oak:** Deciduous

**Tree appearance:** Majestic, spreading form.

**Leaf appearance:** Large leaves with deeply indented centered lobes.

**Seed:** Large acorn in a fringed cup.

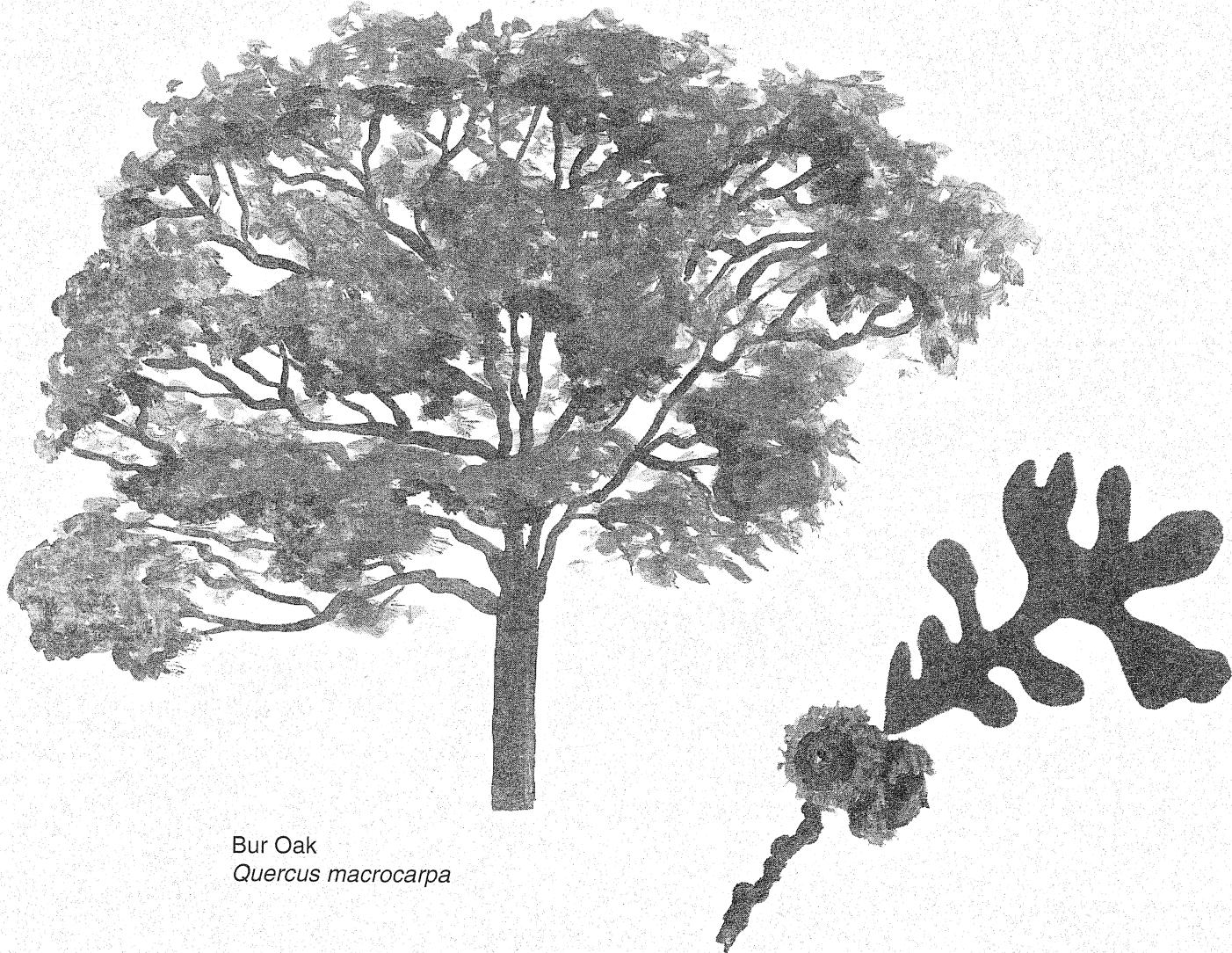
**Growing conditions:** Has tolerance for poor soils; extremely adaptable. Likes full sun but is tolerant of partial shade; needs room to spread.

**Special feature:** Corky twigs; entire tree has rough bark; can readily be cut with a knife. Fall color is yellow-green to brown.

**Uses:** Important food tree for wildlife; nuts readily available to deer and squirrels; furniture, ships, railway ties, construction.

**Height:** 50–80'

**Crown spread:** 40–80'



Bur Oak  
*Quercus macrocarpa*

# Jack Pine

*Pinus banksiana*

**Jack Pine:** Coniferous (evergreen)

**Tree appearance:** Triangular-shaped crown.

**Leaf appearance:** Short needles, two in a cluster; forked like jackrabbit ears.

**Seed:** Closed, persistent cones that point to the end of the branch; may remain closed for many years.

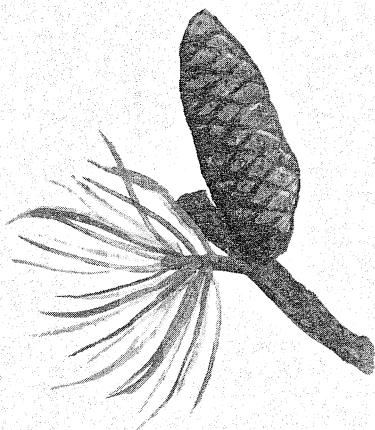
**Growing conditions:** Needs full sun; prefers well-drained soils.

**Special feature:** Dark scaly bark; overall rough appearance.

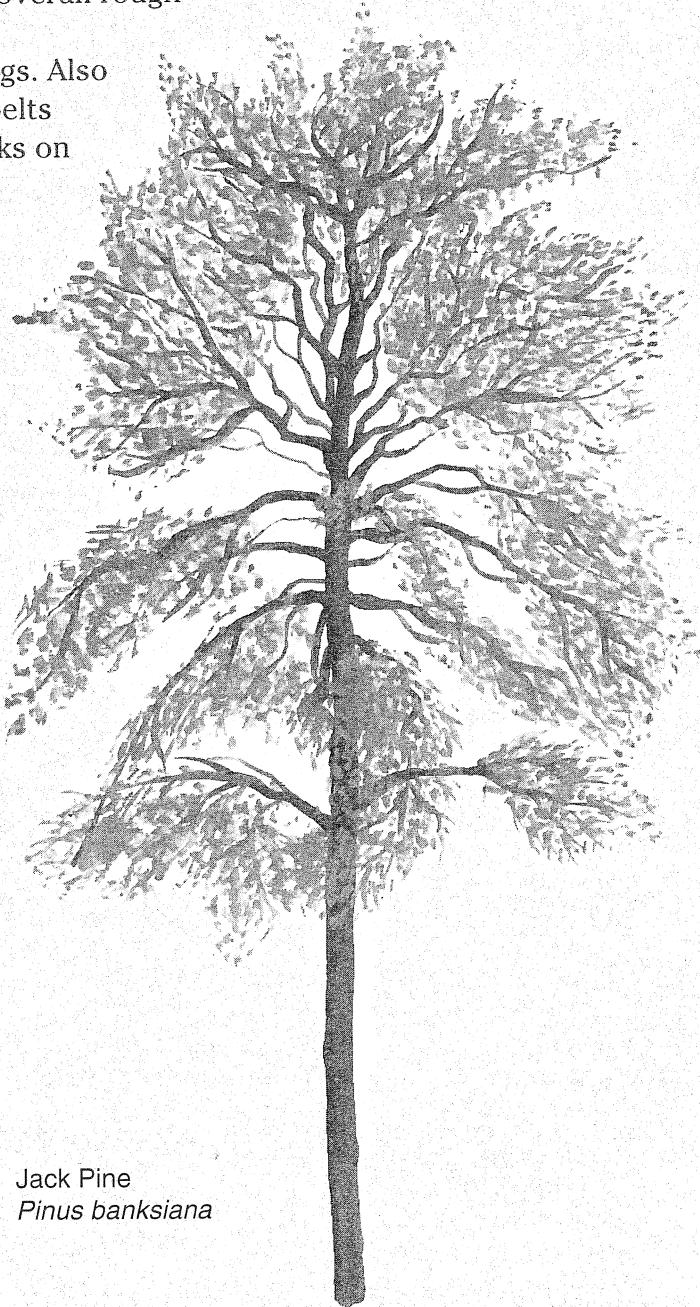
**Uses:** Pulpwood; sawlogs. Also used for shelterbelts and/or windbreaks on poor sandy soils.

**Height:** 30-80'

**Crown spread:** 20-30'



Jack Pine  
*Pinus banksiana*



# Red Maple

*Acer rubrum*

**Red Maple:** Deciduous

**Tree appearance:** Oval to round crown with red flowers in very early spring.

**Leaf appearance:** Nice bright green. Three-lobed leaves that are whitish below, dark red twigs and buds.

**Seed:** Pairs of winged, V-shaped seed; distinct round seeds at base of wings, ripen in spring.

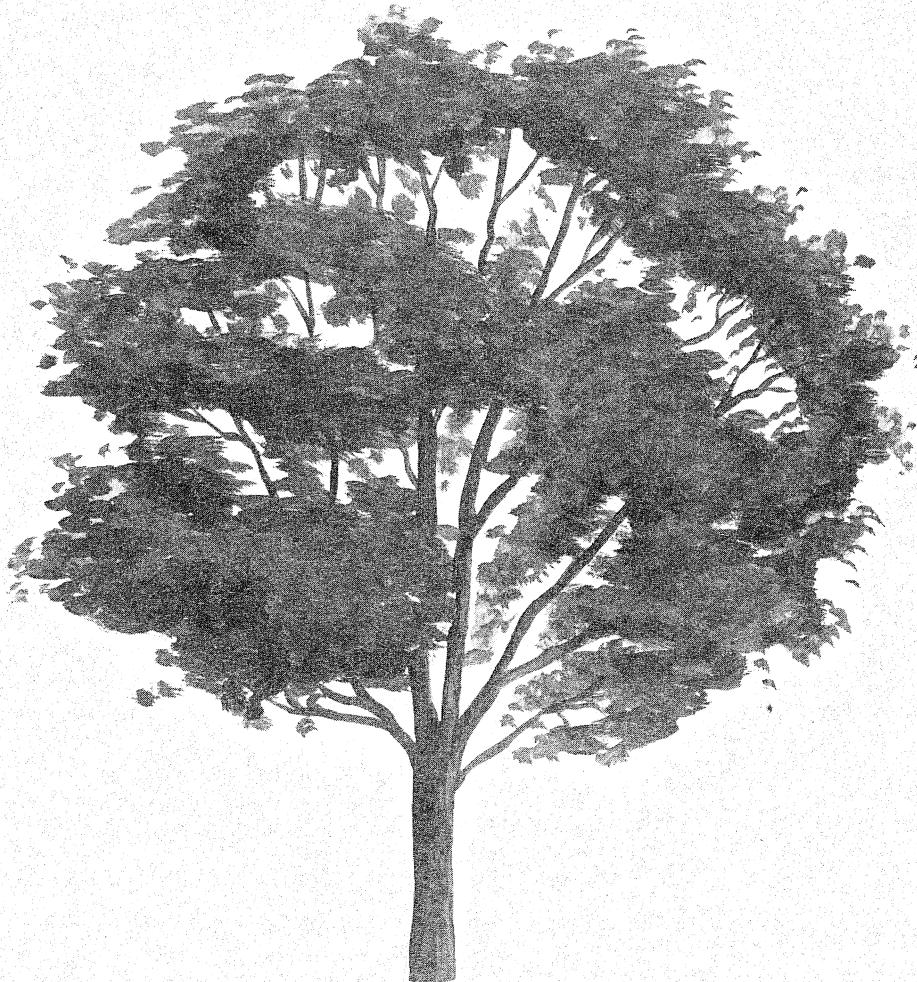
**Growing conditions:** Likes full or partial shade; needs well-drained soil with ample moisture.

**Special feature:** Smooth gray bark that breaks up into flaky strips. Brilliant yellow, orange, and red fall color.

**Uses:** Excellent landscape tree in situations to which it is adapted.

**Height:** 40–60'

**Crown spread:** 30–50'



Red Maple  
*Acer rubrum*