

## In Acknowledgement

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Utah Third Edition, January, 1999



OUR GIFT TO THE EARTH

**Utah Arbor Day Committee**



STATE OF UTAH  
NATURAL RESOURCES  
Division of Forestry, Fire and State Lands





# **ARBOR DAY LETTER**

## **of**

# **PRESIDENT THEODORE ROOSEVELT**

## **To The School Children of The United States**

Arbor Day (which means simply "Tree Day") is now observed in every state in our Union — and mainly in the schools. At various times, from January to December, but chiefly in this month of April, you give a day or part of a day to special exercises and perhaps to actual tree planting, in recognition of the importance of trees to us as a Nation, and of what they yield in adornment, comfort, and useful products to the communities in which you live.

It is well that you should celebrate your Arbor Day thoughtfully, for within your lifetime the Nation's need of trees will become serious. We of an older generation can get along with what we have, though with growing hardship; but in your full manhood and womanhood you will want what nature once so bountifully supplied, and man so thoughtlessly destroyed; and because of that want you will reproach us, not for what we have used, but for what we have wasted.

For the nation, as for the man or woman or boy or girl, the road to success is the right use of what we have and the improvement of present opportunity. If you neglect to prepare yourselves now for the duties and responsibilities which will fall upon you later, if you do not learn the things which you will need to know when your school days are over, you will suffer the consequences. So any nation which in its youth lives only for the day, reaps without sowing, and consumes without husbanding, must expect the penalty of the prodigal, whose labor could with difficulty find him the bare means of life.

A people without children would face a hopeless future; a country without trees is almost as hopeless; forests which are so used that they cannot renew themselves will soon vanish, and with them all their benefits. A true forest is not merely a storehouse full of wood, but, as it were, a factory of wood, and at the same time a reservoir of water. When you help to preserve our forests or plant new ones you are acting the part of good citizens. The value of forestry deserves, therefore, to be taught in the schools, which aim to make good citizens of you. If your Arbor Day exercises help you to realize what benefits each one of you receives from the forests, and how by your assistance these benefits may continue, they will serve a good end.



THEODORE ROOSEVELT  
White House, April 15, 1907



# A Teachers' Guide to Arbor Month

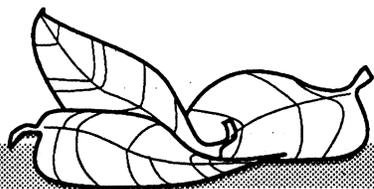


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# Arbor Day

## Background and Ceremony Ideas

### Objectives

- To motivate youngsters to love, conserve, and plant trees for a better environment.
- To provide a plan for conducting Arbor Day/ Arbor Month ceremonies or tree planting campaigns.

Tree planting is what a Utah Arbor Day Celebration is all about. Just one tree planted on Arbor Day does more than shade the spot where it's planted. It gives root to the love of trees and the stewardship of renewable resources

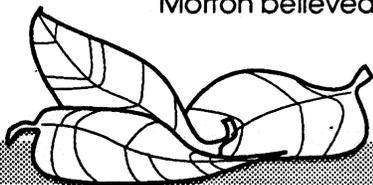
This "Teachers' Guide to Arbor Month" is a collection of bulletin board ideas, tips, facts, activities, and reproducibles designed to make your observance an exciting and lovely tradition...and to help young people become tree conscious all year long. Through Arbor Day celebrations and teaching students about trees, you help them plant the future for themselves and for generations of Utahns to come!

### Arbor Day

To everyone concerned with the protection and conservation of tree resources, Arbor Day is a day to celebrate! It's a special day when people learn about, plant, and care for trees.

Arbor Day is an American tradition. Arbor celebrations began in Nebraska in 1872. Nebraska, along with other Great Plains states, had almost no trees. Still, the region grew flourishing agriculture crops and the climate was suitable for growing trees. A man named J. Sterling

Morton believed the state needed more trees. He sponsored



...sored a campaign for tree planting in Nebraska, setting aside April 10 for just that purpose. The idea spread. Utah has been observing Arbor Day since the 1800's as well. One of the official duties of the Governor is to declare a proclamation each year recommending the observance of Arbor Day, by the planting of trees, shrubs, and vines...

Today, Utahns celebrate Arbor Day on the last Friday in April, along with most states in the country. All fifty states observe Arbor Day on various dates by planting trees.

This chapter is your guide to planning complete Arbor Day/Month celebrations. Keep a Good Thing Growing!

### Arbor Day Ceremony

Here's a framework of events you can specially adapt to your school or community. Your ceremony should include the reading of an Arbor Celebration proclamation and the planting of one or more trees. It can be much more, however. Singing, reading poems, entertainment by musicians and other performers, and refreshments all lend a festive air to your program and encourage more widespread participation.

Here is a typical order of events for an Arbor Ceremony:

1. **Welcome** by mayor or other local dignitary.
2. **Brief history of Arbor Month** read by program coordinator, student, or business leader. (Use the "Arbor Day" paragraphs in column one or choose a summary from a library book or encyclopedia.)
3. **Reading and signing of Arbor Day/Month Proclamation** by mayor or other local dignitary.

4. **Poems or selected readings.** (Have students write or choose some. See also Suggested Poems and Song.)

5. **Ceremonial tree planting.** (See Appendix, page 3.)

6. **Refreshments** and other entertainment.

7. Many classes will follow up (or precede) their ceremonies with special classroom activities. *Under Cover* on page 4 of this chapter is an example.

#### Details to Remember

1. Foul weather contingency plans.

2. Printed programs. They hold events together.

3. Prepared-in-advance planting sites. Dig the holes in advance and provide mulch for each tree.

4. Follow-up tree care. ***Make sure someone comes back after the ceremony to water the tree(s) on a regular basis.*** Arrange to have one person or a group of people provide continued regular tree care.

5. Shovels. Have enough shovels for dignitaries...and remind them to wear sturdy shoes!

6. Media coverage. Provide write-ups for the media at the ceremony. Be available for questions.

7. Rehearse the details. A "dry run" the day before the ceremony helps you relax. You may decide to use a lectern, public address system, and other aids.

8. Refreshments. April and May are often cool; you may want to move indoors after the planting for hot drinks and more of the program.

## Suggested Poems and Song for Arbor Day Ceremony

### Trees

Trees are the kindest things I know,  
They do no harm, they simply grow.

And spread a shade for sleepy cows,  
And gather birds among the boughs.

They give us fruit in leaves above,  
And wood to make our houses of.  
And leaves to burn on Halloween,  
And in the spring new buds of green.

They are the first when day's begun,  
To touch the beams of morning sun.

They are the last to hold the light,  
When evening changes into night.

And when the moon floats on the sky,  
They hum a drowsy lullaby.

Of sleepy children long ago-  
Trees are the kindest things I know.

Source unknown.

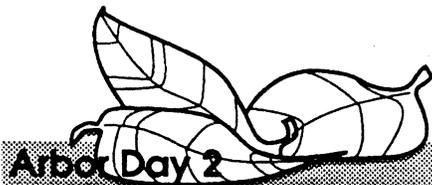
### Why We Keep Arbor Day (for 7 children)

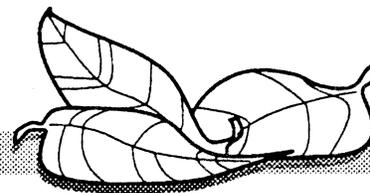
First: Trees of the fragrant forest,  
With leaves of green unfurled,  
Through summer's heat, through winter's cold  
What do you do for our world?

Second: Our green leaves catch the raindrops,  
That fall with soothing sound,  
Then drop slowly, slowly down,  
'Tis better for the ground.

Third: When rushing down the hillside,  
A mighty fresh stream forms,  
Our giant trunks and spreading roots  
Defend our happy homes.

Fourth: From burning heat in summer,  
We offer cool retreat,  
Protect the land in winter's storm  
From cold, and wind, and sleet.





Fifth: Our falling leaves in autumn,  
By breezes turned and tossed,  
Will make a deep sponge carpet warm  
That saves the ground from frost.

Sixth: We give you pulp for paper,  
Our fuel gives you heat;  
We furnish lumber for your homes,  
And nuts and fruits to eat.

Seventh: With strong and graceful outline,  
With branches green and bare,  
We fill the land all through the year  
With beauty everywhere.

All: So-Listen from the forest  
Each one a message sends  
To children, on this Arbor Day  
We trees are your best friends.

#### **Anthem For Arbor Day**

(To the tune of "My Country 'Tis of Thee")

Joy for the sturdy trees!  
Fanned by each fragrant breeze,  
Lovely they stand!  
The songbirds o'er them trill,  
They shade each tinkling rill,  
They crowd each swelling hill,  
Lowly or grand.

Plant them by stream and way,  
Plant where the children play  
And toilers rest,  
In every verdant vale,  
On every sunny swale,  
Whether to grow or fail,  
God knoweth best.

Select the strong, the fair,  
Plant them, with earnest care-  
No toil is vain.  
Plant in a fitter place,  
Where, like a lovely face,  
Let in some sweeter grace  
Change may prove gain.

God will his blessing send-  
All things on him depend.  
His loving care  
Clings to each leaf and flower  
Like ivy to its tower.  
His presence and his power  
Are everywhere.

-Samuel F. Smith

#### **What Do We Plant?**

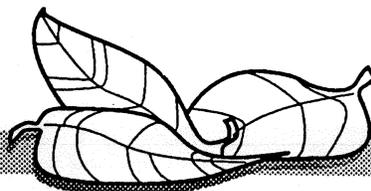
What do we plant when we plant a tree?  
We plant the ship, that will cross the sea.  
We plant the mast to carry the sails;  
We plant the plants to withstand the gales-  
The keel, the keelson, and beam and knee;  
We plant the ship when we plant the tree.

What do we plant when we plant the tree?  
We plant the house for you and me.  
We plant the rafters, the shingles, the floors,  
We plant the studding, the lath, the doors,  
The joists and siding, all parts that be:  
We plant a house when we plant the tree.

What do we plant when we plant the tree?  
A thousand things that we daily see;  
We plant the spire that out-towers the crag,  
We plant the staff for our country's flag,  
We plant the shade, from the hot sun free;  
We plant all these when we plant a tree.

*The poems and song are from "A Teachers' Guide to Arbor Month," reprinted 1985.  
Produced by Minnesota Department of Agriculture with assistance of many other agencies.*

# ARBOR DAY POEMS



## TREES

I think that I shall never see  
A poem lovely as a tree

A tree whose hungry mouth is pressed  
Against the earth's sweet flowing breast;

A tree that looks at God all day  
And lifts her leafy arms to pray;

A tree that may in summer wear  
A nest of robins in her hair;

Upon whose bosom snow has lain;  
Who intimately lives with rain.

Poems are made by fools like me,  
But only God can make a tree.

—Joyce Kilmer

What does he plant who plants a tree  
He plants, in sap and leaf and wood,  
In love of home and loyalty,  
And far-cast thought of civic good  
His blessing on the neighborhood.

—Charles Lathrop Pack

## THE TREE PLANTER

Whoever planted rows of trees  
Beside the roads and lanes,  
God rest his soul in Heavenly peace  
And bless him for his pains;  
For he who gave of time and toil,  
Who gave of heart and hand  
To nurse the tender shoots that were  
To shade the ways of man,  
Was quite as great as those who built  
Of stone and minted gold —  
No need to cast his name on bronze,  
His deeds need not be told.

—Stanley Foss Bartlett

## PLANTING A TREE

What does he plant who plants a tree?  
A scion full of potency;  
He plants his faith, a prophecy  
Of bloom, and fruitfulness to be;  
He plants a shade where robins sing,  
Where orioles their nestlings swing:  
A Burning Bush — a miracle!  
Who plants a tree, — he doeth well!

What does he plant who plants a tree?  
He makes a strong mast for the Sea;  
He makes the earth productive, fair;  
Helps the vines climb high in the air,  
And from their censers shed perfume  
To sweeten Night, and bless high Noon.  
Against the vandals who despoil  
He sets his protect in the soil.

What does he plant who plants a tree?  
An emblem of the Men to be;  
Who lightly touch terrestrial clay,  
But far above the earth, away  
From sordid things and base,  
Incarnate ideals for their race, —  
Who plants a tree, he doeth well, —  
Performs with God, a miracle!

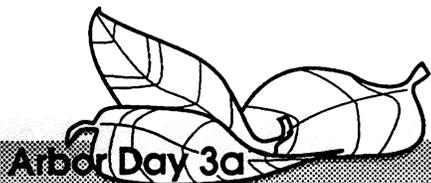
—Author Unknown

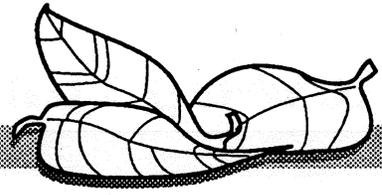
## ARBOR DAY

"Tree Planting Day" they called it  
In Nebraska long ago.  
Now we call it Arbor Day, and  
Oh, I love it so!  
I love to plant a growing thing —  
A tree, a shrub, a vine —  
And know it will for years and years  
Keep growing there, a sign  
to children who come after me  
That someone thought of them,  
And left behind a living friend  
More precious than a gem.

—Betty Foust Smith

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## TREES OF THE FRAGRANT FOREST

(For six children. As they take their places upon the stage, those in seats recite the first stanza.)

Trees of the fragrant forest,  
With leaves of green unfurled,  
Through summer's heat, through  
winter's cold  
What do you do for our world?

**First:** Our green leaves catch the raindrops  
That fall with soothing sound,  
Then drop them slowly, slowly down;  
'Tis better for the ground.

**Second:** When, rushing down the hillside,  
A mighty freshet foams,  
Our giant trunks and spreading roots  
Defend your happy homes.

**Third:** From burning heat in summer  
We offer cool retreat,  
Protect the land in winter's storm  
From cold, and wind, and sleet.

**Fourth:** Our falling leaves in autumn,  
By breezes turned and tossed,  
Will rake a deep sponge-carpet warm,  
Which saves the ground from frost.

**Fifth:** We give you pulp for paper,  
Our fuel gives you heat;  
We furnish lumber for your homes,  
And nuts and fruit to eat.

**Sixth:** With strong and graceful outline,  
With branches green and bare,  
We fill the land through all the year,  
With beauty everywhere.

**All:** So listen! From the forest  
Each one a message sends  
To children on this Arbor Day:  
"We trees are your best friends!"

—Primary Education

## AN ARBOR DAY TREE

(For four small children)

**All:** "Dear little tree that we plant today,  
what will you be when we're old  
and gray?"

**First:** "The savings bank of the squirrel and  
mouse, For the robin and wren an  
apartment house."

**Second:** "The dressing room of the butterfly's  
ball, The locust's and katydid's  
concert hall."

**Third:** "The school boy's ladder in pleasant  
June, The school girl's tent in the  
July noon."

**Fourth:** "And my leaves shall whisper right  
merrily, A tale of children who  
planted me."

—Author Unknown

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Foundation.

## I LOVE A TREE

When I pass to my reward,  
Whatever that may be,  
I'd like my friends to think of me  
As one who loved a tree.

I may not have a statesman's poise,  
Nor thrill a throng with speech,  
But I may benefit mankind  
If I set out a beech.

If I transplant a sapling oak  
To rear it's mighty head  
T'll shade and shelter those who come  
Long after I am dead.

If in the park I plant an elm  
Where children come to play  
T'll make for them a childhood shrine,  
That will not soon decay.

Or if I plant a tree with fruit,  
On which the birds may feed,  
Then I have fostered feathered friends  
And that's a worthy deed.

For winter when the days grow short  
and spirits may run low  
I'd plant a pine upon the scape  
T' would lend a cheery glow.

I'd like a tree to mark the spot  
Where I am laid to rest  
For that would be the epitaph  
That I would like the best.

Tho it's not carved upon a stone  
For those who come to see  
But friends would know that resting there  
Is he, who loved a tree.

—Samuel N. Baxter

# Follow-Up Fun

## Under Cover

For an Arbor Day Ceremony follow-up activity in primary and intermediate grades, invite your youngsters to go under cover!

### Objective

- Students will be able to describe three ways trees are important to wildlife.

### You will need:

copies of *Under Cover* Sheets A and B  
small, pointed scissors  
crayons or markers  
blank sheet of paper  
pencils (optional)  
tape  
stapler

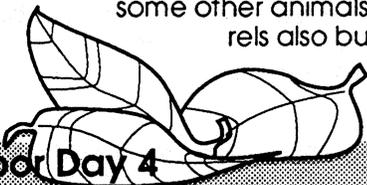
Here's a fun way for students to discover some of the many ways animals use trees. Pass out a copy of page A to each student and explain that all of the animals in the picture use trees or the areas around them for shelter, for food, or as a nesting site. Tell them they probably wouldn't find all of these animals on the same tree at the same time. That's because animals use trees for different things during different times of the year and they tend to spread themselves out among different trees so they'll have plenty of room.

As you discuss the animals in the picture you can use the information provided below. Afterward, pass out copies of page B and let each student make his or her own "peek-a-tree." Note: In the discussion below, the names of the animals that appear on pages A and B are in bold italics.

## Hidden By The Leaves

*A Place to Rest:* Many birds use trees as resting spots. For example, the **barred owl** may rest in the branches of a tree during the day or may perch there at night to look and listen for mice and other prey.

*Nesting High:* A fork in a tree may be a perfect place for a **rose-breasted grosbeak** to build its nest. Many other birds and some other animals such as squirrels also build their nests in the branches of trees.



*A Treetop Smorgasbord:* The **gray squirrel** spends most of its time in the treetops and feeds on many different nuts, seeds, and fruits. A lot of other animals also feed in the treetops.

*Blending In:* Some animals are well camouflaged for their life in the trees. The **walkingstick** feeds on tree leaves during the day. Looking a lot like a small stick helps this insect hide from birds and other predators. Some other tree-dwelling insects resemble leaves, thorns, or bark.

## Beneath The Bark

*Growing Up Inside a Tree:* Some animals spend most of their lives beneath the bark of trees. **Bark beetles** lay their eggs in wood underneath the bark. After the eggs hatch, the larvae form patterns in the wood as they eat their way through it.

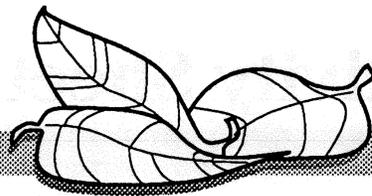
*Nesting Within:* Many animals nest inside trees. Birds such as the **hairy woodpecker** chisel out their own nesting holes in trees. These cavities may be used by many other forest creatures after the woodpeckers have abandoned them. **Honey bees**, flying squirrels, and some birds may build their homes (hives or nests) in abandoned woodpecker nests or in other tree cavities.

*Fruiting Fungi:* Many types of **fungi** grow on trees. The threadlike **mycelium** of these fungi often grows beneath the bark, hidden from view. But when a fungus such as the **shelf fungus** produces its fruiting body, it's easy to spot.

## Around The Roots

*Feeding on the Roots:* Many insects, mites, **millipedes**, and pill bugs spend part of their lives in the ground. The **cicada**, for example, spends its underground life as a nymph around the base of a tree, feeding on sap from the tree's roots. Some fungi form a "partnership" with the roots of trees. These fungi grow around the growing tips of the roots and feed on the tree's sap. The fungi aid the tree by absorbing nutrients from the soil and passing them into the tree.

*Burrowing, Furrowing:* **Earthworms**, moles, and many other creatures tunnel through the soil beneath a tree. As they churn up the soil they make it easier for a tree's roots to grow and absorb oxygen. Some animals such as **short-**



**tailed shrews** and chipmunks dig tunnels beneath trees. And animals such as **chipmunks** and squirrels may store a cache of nuts in the ground near the base of a tree.

#### How To Make A "Peek-A-Tree"

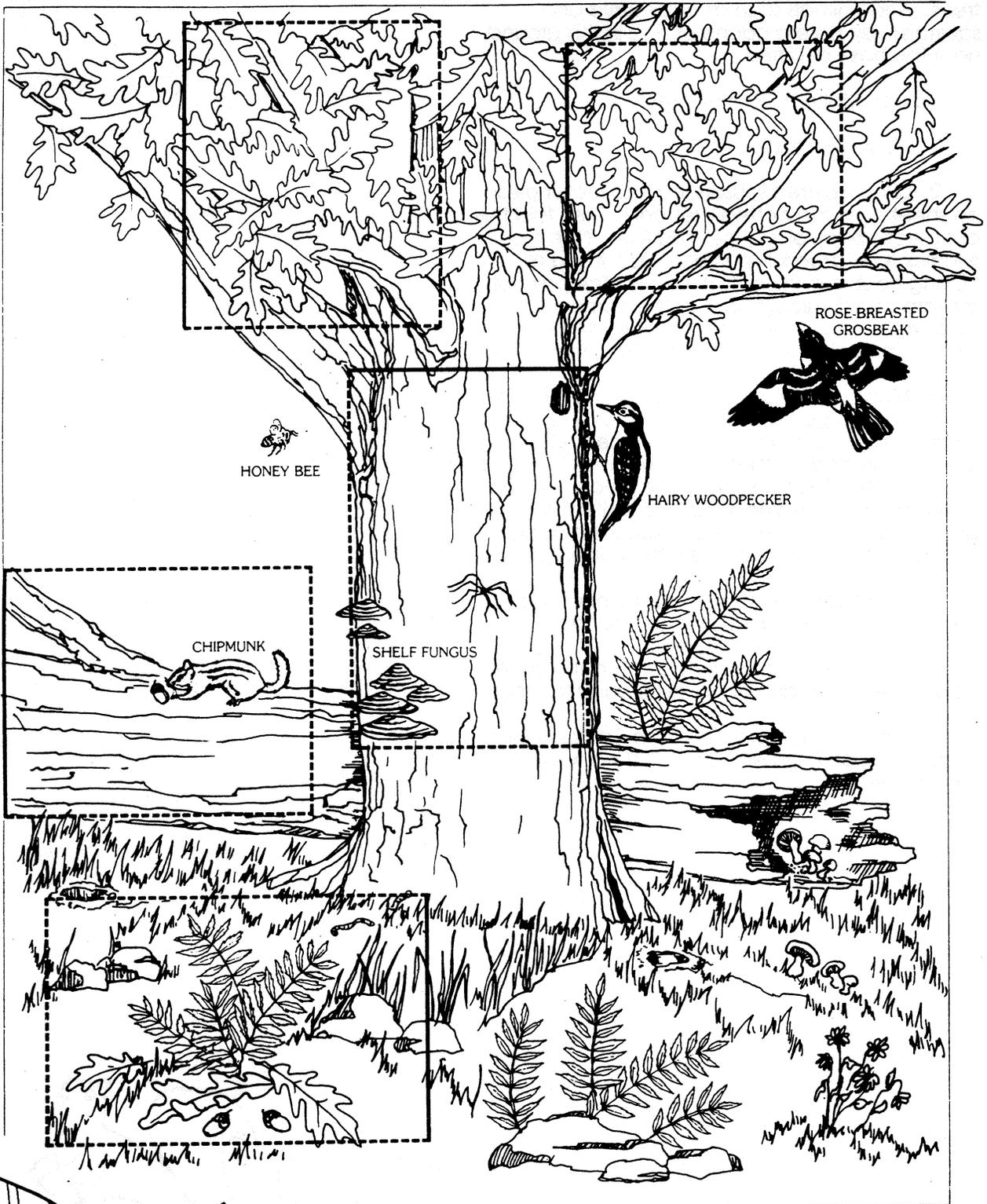
1. Color sheets A and B.
2. Using pointed scissors, cut the rectangles on sheet A on the dotted lines only. Then fold the cut pieces back along the solid lines. (The rectangles should work like little doors.) If you're having trouble getting started, push the point of a sharp pencil through one of the corners of each rectangle. Then stick the point of the scissors through the hole and begin cutting.
3. Make a tab for each door by cutting out a small piece of paper one inch long by 1/2 inch wide. Tape half of the piece of paper to the back of the door so that 1/2 inch hangs free and forms a tab. (Be sure to tape the piece of paper to the back of the door edge opposite the uncut side.) You can use the tabs to keep the doors closed by tucking them under the cut edges.
4. Put sheet A on top of sheet B and staple them together at the top and the bottom.
5. Then open the doors to see what is underneath the leaves and bark and around the roots!

*Sheets A and B adapted from Ranger Rick's Naturescope "Trees Are Terrific." Used with permission.*



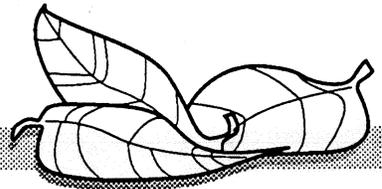
# Activity Sheet A Copycat Page

Under Cover!

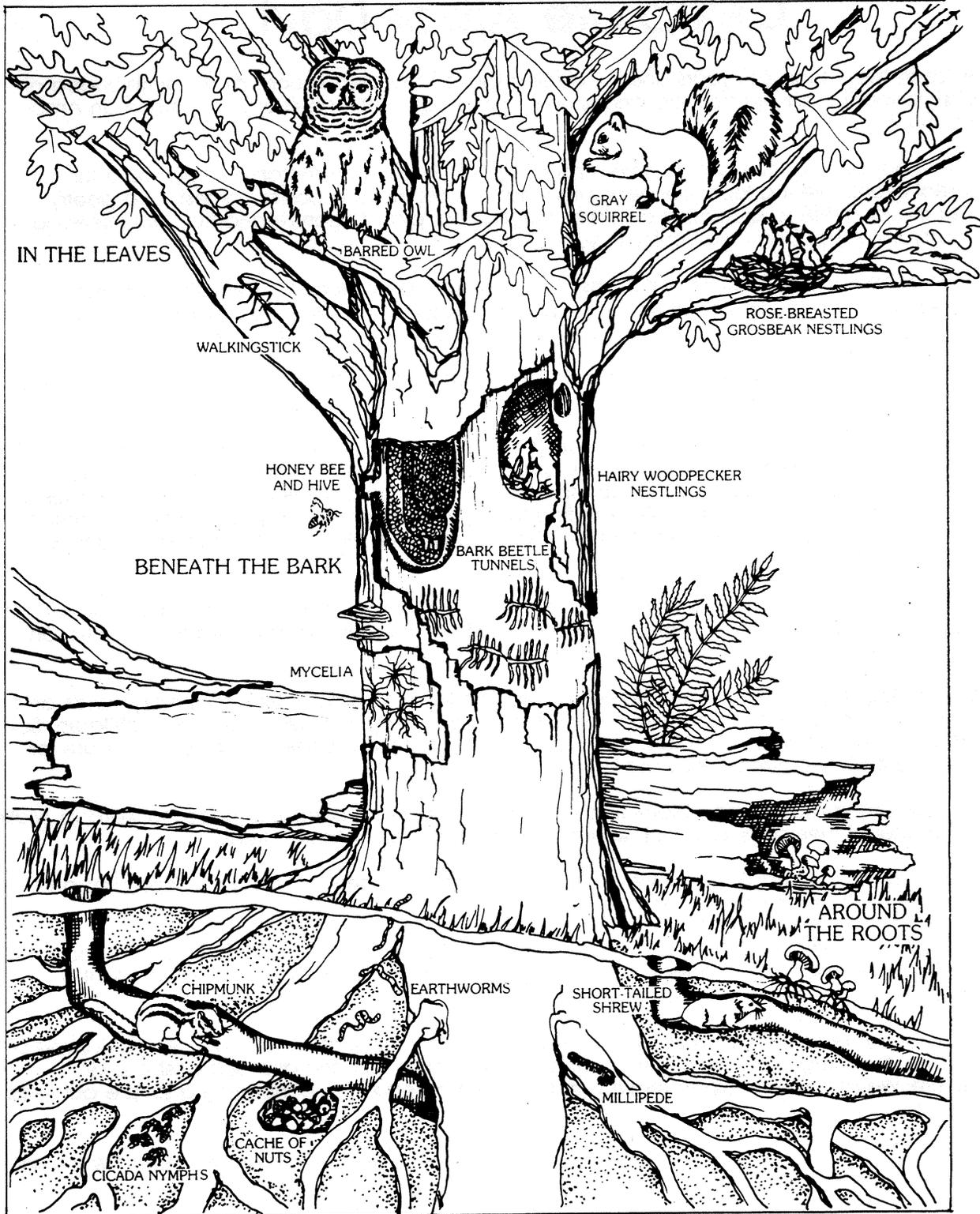


From Ranger Rick's Naturescope "Trees Are Terrific." Used with permission.

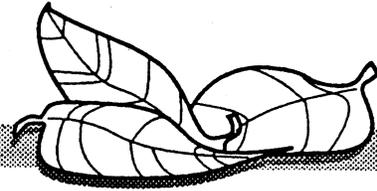
# Activity Sheet B Copycat Page



## Under Cover!



From Ranger Rick's Naturescope "Trees Are Terrific." Used with permission.



## Celebrate Arbor Day!

It has been more than 100 years since J. Sterling Morton founded Arbor Day. His simple idea of setting aside a special day for tree planting is now more important than ever . . . so have an Arbor Day celebration!

Raise the flag, strike up the band, make Arbor Day fun. Make it memorable. Organize a fun run. Make it a real event. See if a local business will donate prizes. Have a poster contest, or a poetry contest. Get the local PTA to sponsor a children's pageant or play. Organize and train volunteers to help you carry out Arbor Day ceremonies in your schools.

Get people excited. Show them things they've never seen before. Tell them things about trees they've never heard before. Let them know that without people there would be no trees in Utah's valleys. Tell them if you want trees in the valleys you must plant and care for them.

Fill the air with music. Have an Arbor Day concert of songs about trees, or with tree names in their titles.

Get people into action. Ask a civic or service group to promote a paper drive to gather paper to be recycled and save a tree. Use the proceeds to buy a special tree to plant in a park or other special public place. Ask a local radio station to sponsor a tree trivia contest and give away trees to winners. Conduct a tree search. Ask people to find large, unusual or historic trees in your community. Tell people to take a hike — a tree identification hike — and have girl scouts or boy scouts act as guides.

Dedicate a forest, or a tree, or a flower bed in a park, and make it an occasion to talk about stewardship. Get a local nursery or garden center to hold an open house or field day. Organize an Arbor Day Fair.

Get people together. Ask retirement homes to invite children to plant a tree on their grounds and give the residents a chance to tell the kids about Arbor Day when they themselves were children. See if neighborhood organizations will hold block parties and get their members to adopt and care for street trees in front of their homes. Pass out buttons. Give away trees.

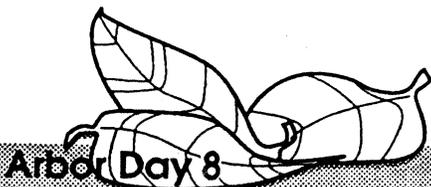
Make Arbor Day a real holiday. Make it special, and make it an occasion to look forward to. Make it a day of wonderful memories, and fill it with the promise of newly planted trees.

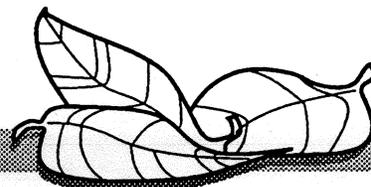
Celebrate Arbor Day in a personal way by planting a tree yourself. It is an act of optimism and kindness, a labor of love and a commitment to stewardship.

Anyone can do it. Start a tree seed in a cup, or a seedling in a pot. If you have no place to set it out later, give it to someone who does, and then watch it grow together. Find a place to plant a seedling or a sapling or the largest tree you can handle alone.

Each and every tree that is planted stands as a living reminder that we all bear responsibilities of stewardship. We are living links in a chain of humanity stretching from the dimmest past into an unknown future. We can each help to make that future more certain by performing a simple act — by planting a tree.

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# AN ARBOR DAY PLAY "Trees – A Joy Forever"

by Virginia Ott and Sue Kneale

## CHARACTERS

Statue of J. Sterling Morton

Boy

Girl

Sterling at the age of 15

Caroline at the age of 14

Caroline as a young mother

Sterling at the age of 40

Joy Morton

Paul Morton

Mark Morton sons of J. Sterling and Caroline Morton

Carl Morton

Man No. 1

Man No. 2 members of the Horticulture Society

Man No. 3

## PROLOGUE

**Time:** April 22, the present. Arbor Day in Nebraska.

**Setting:** Arbor Lodge State Historical Park. A statue of a man on a pedestal stands in a clearing among the trees. An inscription on the pedestal reads, J. STERLING MORTON, 1832-1902, AUTHOR OF ARBOR DAY. A boy and a girl stand before the statue.

**BOY:**

"J. Sterling Morton, 1832-1902, Author of Arbor Day." Say, how can anyone be the writer of a day?

**GIRL:**

I don't know. Oh, look at the statue! It moved!

**STATUE** (stretching arms and legs):

What are you two children asking about? Arbor Day? I'm just the person to tell you all about that. Now you move back, I'm coming down. (J. Sterling Morton steps down with great dignity. He pulls a watch from his vest pocket and consults it.) That's better! I've been standing up there since 1905 when President Grover Cleveland himself dedicated this monument. Now, what was your question?

**GIRL:**

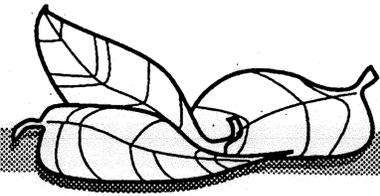
Mr. Morton, how could you be the author of Arbor Day?

**BOY:**

Yes, we thought Arbor Day was for planting trees. How can you **write** a holiday?

**J. STERLING MORTON:**

Well . . . let me see. It all began a long time ago. (He ushers the Boy and Girl to the side of the stage. Then all three turn and watch center stage.) You see, I was going to school in Albion, Michigan, when I met this girl named Caroline. That was in 1847. We were sitting there under a tree eating an apple . . .



## SCENE 1

**Time:** 1847

**Setting:** A grassy spot under a large shade tree on the campus of Wesleyan Seminary in Albion, Michigan. Sterling, 15, and Caroline, 14, are sitting under the tree, each eating a large apple. J. Sterling Morton stands with the Boy and Girl watching the scene.

**CAROLINE:**

Let's count the seeds in our apple cores! Just for fun?

**STERLING:**

All right, but it's a silly superstition!

**CAROLINE** (breaking the core of her apple and putting the seeds in her hand):

Now. One, I love . . . Two, I love . . . Three, I love, I say. Four, I love with all my heart . . . And five, I cast away. (Caroline pauses.)

**STERLING:**

That can't be all. No apple from my father's orchard ever had just five seeds!

**CAROLINE** (smiles and continues counting):

Six, he loves . . . Seven, she loves . . . Eight, they both love. Nine, he comes . . . Ten, he tarries (She looks at Sterling.) That's all!

**STERLING:**

Now, that I don't like. Count mine!

**CAROLINE** (breaking the core of his apple):

One, I love . . . Two, I love . . . Three, I love, I say. Four, I love with all my heart . . . Five, I cast away. Six, she loves . . . Seven, he loves . . . Eight, they both love. Sterling, where are the rest?

**STERLING:**

There's no more! I'll take back what I said. This is a delightful old game.

**CAROLINE:**

Sterling, let's promise ourselves that someday we will have our own big apple orchard and that each apple will have just eight seeds!

(The scene dims.)

**J. STERLING MORTON** (from the side of the stage, wipes his eyes with a large white handkerchief):

Well, this is what happened. We did tarry after all. It was seven years before we married. On our wedding day we left for Nebraska Territory to seek our fortune. And there Caroline got her wish. We built the house that would one day be called Arbor Lodge . . . we planted our orchard and thousands of other trees . . . we raised our four sons: Joy, Paul, Mark and Carl.

**GIRL:**

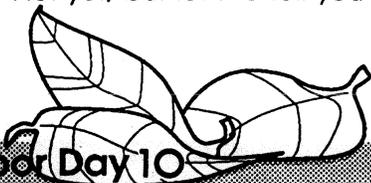
Did your boys plant trees, too?

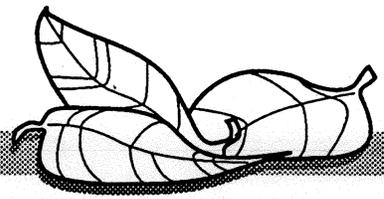
**BOY:**

Is that when Arbor Day started?

**J. STERLING MORTON** (smiling):

Not yet, but let me tell you about Carl's orchard. Carl was our youngest son.





## SCENE 2

**Time:** 1870

**Setting:** The yard of Arbor Lodge. In the background are trees, flowers and bushes. The three older Morton boys are playing catch in the yard. Caroline enters in a white apron worn over a calico dress. J. Sterling Morton and the Boy and Girl stand to the side of the stage, watching the scene.

**CAROLINE:**

Boys, come and wash for supper. Bring little Carl with you.

**JOY:**

Carl isn't with us, Mother. We haven't seen him.

**CAROLINE:**

What do you mean? Look for him, boys! (All call for Carl and begin searching for him. There is no answer.)

**CAROLINE:**

Oh, I do hope he is all right! Joy, run down to the creek and look all along the bank. Paul, look in the barn. Mark, look around the well in the orchard. I'll look back of the carriage house. I do wish your father were home! (Everyone scatters to look for Carl.)

**J. STERLING MORTON:**

Well, it was their mother who found Carl. Listen . . .

(Carl is found kneeling at the back of the stage. He is digging in the ground, setting out a seedling tree. First Caroline and then the older boys enter and gather around Carl.)

**JOY:**

Carl, why didn't you answer when Mother called?

**MARK:**

Yes, we looked all over for you!

**PAUL:**

What are you doing with those little tiny trees?

**CARL:**

I'm setting out an orchard. See! (He looks at his mother innocently.) I was too busy to answer when you called. I'm sorry.

**CAROLINE** (smiles and pats Carl on the shoulders):

You've done a good job, Carl, and we hope every tree will grow. Boys, this orchard will be Carl's very own and he can care for it. It's time for supper now. (They begin to walk off the stage. Caroline pauses.) Your father can see our new orchard when he returns tomorrow. He will be very proud. (Caroline and her sons walk offstage together.)

**J. STERLING MORTON:**

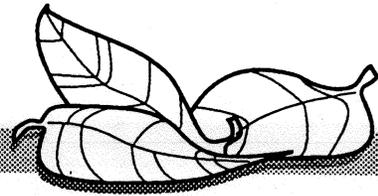
Carl was only five years old when he planted his trees. He set out an apple seedling, a cottonwood twig and a tiny elm tree. They all lived for many years. In fact, there's a big cottonwood tree behind the new carriage house at Arbor Lodge. That might be the very one Carl planted way back in 1870.

**BOY:**

Mr. Morton, now can you tell us about Arbor Day?

**GIRL:**

Yes, Mr. Morton, just how were you the author of Arbor Day?



**J. STERLING MORTON:**

That happened not long after Carl planted his orchard. I wrote many articles about planting trees in Nebraska, especially fruit trees. So did other newspapermen. Many pioneers were coming to Nebraska every day. The new settlers missed the forests they had known back East. Some of us felt we needed a plan for encouraging tree planting in Nebraska. One day in 1872, I made a speech. Stand over here and listen to how it happened. (J. Sterling Morton and the Boy and Girl turn toward the center stage again.) This is a meeting of the Nebraska Horticulture Society. I was a rather handsome man back then . . .

**SCENE 3**

**Time:** 1872

**Setting:** A meeting of the Nebraska Horticulture Society in an office in Lincoln, Nebraska, the state capital. Three men are seated around a table. A 40-year-old J. Sterling Morton stands at the head of the table, a paper in his hands.

**MAN NO. 1:**

We all agree that Nebraska farmland is better than anyone had hoped, don't we? (Everyone nods in agreement and says, Yes.)

**MAN NO. 2:**

The settlers are discovering new crops to grow every year. Our Society has been a great help in spreading the news of the farmers' success.

**STERLING:**

Now we have to prove that trees can grow on our barren, rolling plains.

**MAN NO. 3:**

I think the idea we've been working on is a good one.

**MAN NO. 1:**

Sterling, did you write the resolution about planting trees? The State Board of Agriculture wants to make it official.

**STERLING:**

This is what I have written. (He reads from the paper in his hand.) ". . . the 10th day of April, 1872, shall be . . . set apart and consecrated for tree planting in the State of Nebraska, and the State Board of Agriculture hereby shall name it Arbor Day . . . and . . . hereby shall offer a special premium of one hundred dollars to the agricultural society of that county in Nebraska which shall, upon that day, plant properly the largest number of trees . . ."

**MAN NO. 2:**

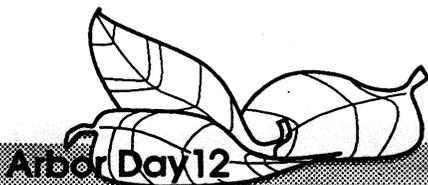
I like that! Let's take it to the Agriculture Board today!

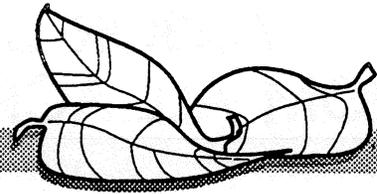
**MAN NO. 3:**

Sterling, you've written yourself a holiday! (The men all rise and follow Sterling offstage.)

**J. STERLING MORTON** (turning to the Boy and Girl):

And that's how it all began. You know, I ordered 800 trees to plant for that first Arbor Day, and they didn't arrive in time for the new holiday. In spite of that, over one million trees were planted in Nebraska that first Arbor Day. It was a real success!





**BOY:**

Now we know how you became the author of a holiday. You really did write it!

**GIRL:**

Our teacher told us that Arbor Day is now celebrated in every state. Doesn't that make you proud?

**J. STERLING MORTON:**

Indeed it does make me proud. As I've always said, trees are a joy forever. (He looks at his watch.) Now, I think you should help me back onto the pedestal. Others will be coming into the park soon. Good-bye for now and remember to tell everyone about Arbor Day! (He shakes hands with each young person. They help him step up on the pedestal, where he resumes his original pose. The Boy and Girl wave good-bye to the statue and walk off stage.)

## THE END

### PRODUCTION NOTES

**Characters:** 11 male, 3 female

**Characters and Costumes:**

Boy — wears school clothes, sweater or jacket

Girl — wears school clothes, sweater or jacket

J. Sterling Morton — wears a dark suit, a vest, visible gold watch and chain, holds a cane in his left hand and a hat in his right hand

Young Sterling — wears a suit, carries books

Young Caroline — wears a long dress and a ribbon in her hair

Caroline Morton — wears a long print dress and a white apron

Joy — wears dark pants and white cotton shirt

Paul — wears dark pants and light-colored shirt

Mark — wears dark pants and light-colored shirt

Carl — may wear shorter pants, just below the knees, and white shirt

Sterling at 40 — wears a dark suit

The Three Men — wear dark suits

**Setting:** The setting can be very simple, suitable for an on-stage performance or the front of the classroom.

**Prologue:** a box covered with black paper and strong enough to be the pedestal on which J. Sterling Morton stands as a statue. On the front of the pedestal are the words:

J. STERLING MORTON  
1883-1902  
AUTHOR OF ARBOR DAY

A small tree limb is at his feet and a plow share is behind him on the pedestal.

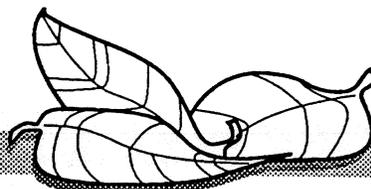
Scene 1 — the actors may sit on the floor or a low bench. The shade tree may be painted on a set or imagined.

Scene 2 — Carl should have a small bucket, a small shovel and 3 small tree branches.

Scene 3 — small table and four chairs.

Final scene — same as for Prologue.

# ARBOR DAY IDEAS FROM ALL ACROSS AMERICA



In **Cincinnati, Ohio**, children and other patrons visiting the city libraries during Arbor Week received a free black walnut seedling and planting instructions when they checked out a book from the special Arbor Week display. The Urban Forestry Board provided 5,000 seedlings, and the Federated Garden Clubs and Hamilton County Public Library designed the displays for all branches of the library.

**Students at Jackson Elementary School in Salt Lake City, Utah** petitioned the Utah State Legislature to create an annual \$10,000 "Leaf-It-To-Us" school tree planting fund in which other schools may apply for \$500 grants through the State Forester's Office to plant trees on their school grounds or other public lands near their schools.

An Arbor Day concert of Tree Music was a tremendous success in **Santa Cruz, California**. Selections included: Scott Joplin's "Maple Leaf Rag," "Weeping Willow Rag," and "Palm Leaf Rag;" "Trees" by Joyce Kilmer and Oscar Rasbach; "Arborations on Trees" by Gene Lewis; Bob Cole and Rosamund Johnson's "Under the Bamboo Tree;" "Der Nussbaum" (The Nut Tree) by Robert Schumann; "Der Lindenbaum" (The Linden Tree) by Franz Schubert; "Woodman, Spare That Tree," by Henry Russell and George P. Morris; and several traditional melodies including "To Ope Their Trunks," "Willow Song," "Oak and Ash," "Ash Grove," and "Birch Tree."

In **Milwaukee, Wisconsin**, students dressed in historical costumes to commemorate and reenact the first Arbor Day during their community observance.

Third graders in **Pauls Valley, Oklahoma**, used \$25 they won in the Jackson School Science Fair to celebrate Arbor Week. Foregoing treats for themselves, they voted to invest their money in their community by buying and planting a tree. After carefully studying many species, they chose a Pin Oak as one that would benefit the most children, and planted it in their school play area.

**Cedar Rapids, Iowa**, dedicated its fitness trail in conjunction with Arbor Day. Four hundred elementary students, YMCA members and members of a senior leisure club and a running club planted trees along the trail in a city park.

Arbor Day was the occasion for planting trees to screen an unsightly grocery on the main street in **Wolfeboro, New Hampshire**. With a contribution from the grocery's owner and labor from a local

garden club, the community's volunteer tree warden coordinated the day-long activities, which resulted in attractive landscaping to screen the store.

In **Great Bend, Kansas**, residents could register to win a free containerized tree from the Tree Board. Winners were drawn on Arbor Day and Boy Scouts planted Redbuds, Flowering Crabs or Bradford pears in the yards of the 20 winners.

In **Sioux Falls, South Dakota**, selection of Miss Arbor Day is a highlight of their celebration. Miss Arbor Day visits local businesses to give away trees during the day.

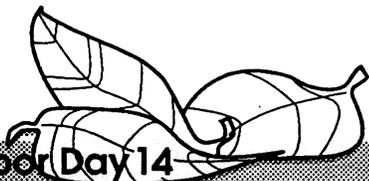
The City of **Ellensburg, Washington**, chose Arbor Week to announce the winner of its months-long search for an official flower. Contestants ranging from schoolchildren to civic groups entered illustrations and a rationale for selection. The winning marigold was chosen for its popularity and suitability to central Washington. The winner and runners-up received small cash prizes from the Beautification Commission.

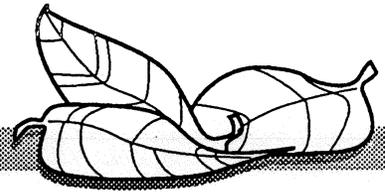
In **Weatherford, Texas**, the Artistic Garden Club conducts its own Adopt-A-Tree program. Residents take seedlings home and grown them for a year, then return them for planting in the city's park when the trees have reached a more viable size.

The Toledo Department of Natural Resources and the Toledo Hospital and Neighborhood Improvement Foundation sponsored a litter rally in Ottawa Park in **Toledo, Ohio**. The event involved 524 grade school kids and netted 1,133 pounds of litter in just 45 minutes. The winning class accumulated 144 pounds of litter and received a red oak tree to plant on their school campus.

It was good morning magic on Good Morning Rochester. Ten fourth graders from Bamber Valley Elementary School in **Rochester, Minnesota**, taped a special Arbor Day segment for Richester Instructional Television System. The segment, in talk-show format, featured students portraying the governors of Minnesota, Florida, and Nebraska, the first ladies of the states of Hawaii and California, the first ladies of the cities of Duluth and Rochester, and a great grandson of J. Sterling Morton. The program taught kids about the history, importance, and understanding of Arbor Day.

An Arbor Day celebration in **Portland, Oregon**, featured a Chinese theme. A Chinese dogwood and Chinese Yulan tree were provided by a Chinese service club and a garden club, and they were planted during a celebration which included a performance of the traditional Chinese Lion Dance and the Duckling Dance by a Chinese Cultural Dance Group. Chinese calligraphy and





art adorned the bright pink Arbor Day program.

Citizens in **Madison, Wisconsin**, can sign a Tree Care pledge card on Arbor Day in which they promise to care of the young trees planted on the holiday.

"Run for Shade" is an important part of the annual Arbor Day celebration in **Davenport, Iowa**. The annual race raises funds to plant trees in the city's nurseries. A 1/2-mile Media Celebrity Challenge Race boosted local media coverage of the event and heightened awareness of the city's Arbor Day celebration.

In **Nebraska City, Nebraska**, Northside Elementary students each adopted a tree in a conservation windbreak planted on their playground. Teachers use the National Arbor Day Foundation's "Grow Your Own Tree" multi-media instructional kit to involve the students in educational activities extolling the value of trees, tree care and tree growth. Each student signed a Tree Care Card promising to care for and maintain their tree. The cards were buried in time capsules as the windbreak was planted.

After a tornado destroyed more than 800 trees in **Cardington, Ohio**, citizens organized a tree restoration committee which solicited donations and memorials. Volunteers who learned of the tree planting through local newspaper articles appeared on Arbor Day to wrap trunks, water, mulch and stake 40 large trees which were planted along major streets.

An Arbor Day media blitz in **Huntington, Indiana**, resulted in planting of 4,500 trees. Radio station WBDC gave the state tree, a Tulip Poplar, to area third, fourth, and fifth grade students "in hopes that they might share in a family experience of tree planting." Schools participated by holding special classes and programs on Arbor Day.

Students from Beth El Religious School in **Scottsdale, Arizona**, planted tiny olive trees in a new city park, in a ceremony modeled after annual plantings in Israel.

Atlanta fifth graders planted 1,000 conservation trees as part of a program sponsored by the

Outdoor Activity Center of **Atlanta, Georgia**. The trees were planted to help control soil erosion and to beautify the Harwell Heights Park. The park was chosen for the special planting because it had a barren hillside which was created when a new ball park was built. The hillside was very steep and volunteers helped the children rappel down the hill on ropes to plant the trees. Each of the kids received an educational packet which included a special "fun page," and an Arbor Day ceremony was held to celebrate their accomplishment.

America's oldest Japanese elm received special attention from arboriculture students at the University of Massachusetts at **Amherst, Massachusetts**. The Arboriculture and Park Management Club celebrated Arbor Day by pruning and mulching the venerable old tree.

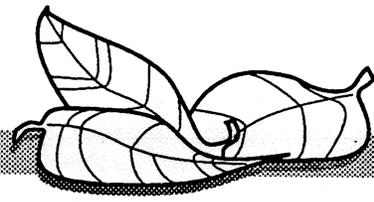
To help locate **New York City's** heritage trees, the City Department of Parks and Recreation conducted a program called the "Great Tree Search." New Yorkers looked for trees of unusual size and age, those linked with notable people or historical events, trees associated with historic landmarks, and trees of unusual species or location. On Arbor Day they held a big party to celebrate New York City's Great Trees.

In **Windsor, Colorado**, a Junior Tree Board made up of card-carrying student members helps to plan the city's Arbor Day activities in conjunction with the statutory tree board.

Each year the folks of **Woodburn, Oregon**, Fix-up, Shape-Up, and Clean-up to celebrate Arbor Day. The two week-long event stresses building personal and civic pride through good health, and home and community beautification. Fix-Up, Shape-Up, Clean-Up activities include workshops about health and fitness, home improvement, landscaping and horticulture. Local service groups and scout organizations help with community-wide clean-up in parks and public areas.

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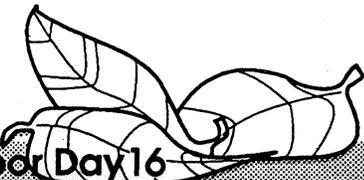
### ARBOR DAY DATES

**National Arbor Day is the last Friday in April.**

*Many states observe Arbor Day on different dates according to their best tree-planting times.*

- Alabama** – Last full week in February
- Alaska** – Third Monday in May
- Arizona** – Friday following April 1 (Apache, Navajo, Coconino, Mohave and Yavapai counties); Friday following February 1 (all other counties)
- Arkansas** – Third Monday in March
- California** – March 7-14
- Colorado** – Third Friday in April
- Connecticut** – April 30
- Delaware** – Last Friday in April
- District of Columbia** – Last Friday in April
- Florida** – Third Friday in January
- Guam** – First Friday in November
- Georgia** – Third Friday in February
- Hawaii** – First Friday in November
- Idaho** – Last Friday in April
- Illinois** – Last Friday in April
- Indiana** – Second Friday in April
- Iowa** – Last Friday in April
- Kansas** – Last Friday in March
- Kentucky** – First Friday in April
- Louisiana** – Third Friday in January
- Maine** – Third full week in May
- Maryland** – First Wednesday in April
- Massachusetts** – April 28-May 5
- Michigan** – Third full week in April
- Minnesota** – Last Friday in April
- Mississippi** – Second Friday in February

- Missouri** – First Friday after the first Tuesday in April
- Montana** – Last Friday in April
- Nebraska** – Last Friday in April
- Nevada** – Southern – February 28; Northern – April 23
- New Hampshire** – Last Friday in April
- New Jersey** – Last Friday in April
- New Mexico** – Second Friday in March
- New York** – Last Friday in April
- North Carolina** – First Friday following March 15
- North Dakota** – First Friday in May
- Ohio** – Last Friday in April
- Oklahoma** – Last full week in March
- Oregon** – First full week in April
- Pennsylvania** – Last Friday in April
- Rhode Island** – Last Friday in April
- South Carolina** – First Friday in December
- South Dakota** – Last Friday in April
- Tennessee** – First Friday in March
- Texas** – Third Friday in January
- Utah** – Last Friday in April
- Vermont** – First Friday in May
- Virginia** – Second Friday in March
- Virgin Islands** – Last Friday in September
- Washington** – Second Wednesday in April
- West Virginia** – Second Friday in April
- Wisconsin** – Last Friday in April
- Wyoming** – Last Monday in April



# Kindergarten



## Getting to Know Trees

### Objectives

- Students will become more aware of their natural environment and the beauty of trees.
- Students will observe trees and be able to describe seasonal changes in specific trees.

### Vocabulary Words

- |                |        |
|----------------|--------|
| carbon dioxide | crowns |
| oxygen         | fluids |
| seeds          | bark   |
| roots          | adult  |
| trunks         |        |

### Background Information

What would the world be like without trees? We would certainly miss their beauty. Think about the changes in colors from season to season, the rustle of leaves under our feet, the beautiful green of the evergreen trees standing in the white of winter snow. What are some other beautiful things about trees?

A summer without trees would be much hotter. Trees give us shade and help cool the air. Trees "drink" huge amounts of water each day, and some of that water passes into the air to give us moisture. Trees also clean our air by taking **carbon dioxide** out of it and using it to make their own food. As they do this, they make **oxygen**, which is the air we breathe.

Many animals would be without homes and food if there were no trees. Birds, squirrels, bugs, and mice are just a few of the animals that live in trees. These animals and others get much of their food from trees. Bark, nuts, leaves, and fruit are tasty treats for many animals—and for people, too.

Trees cover about one-third of the earth and are the largest plants in our world. They can live for a very long time. One tree in California is 4,600 years old!

Trees, like other plants, grow from **seeds**. Trees have three main parts: **roots**, **trunks**, and **crowns**. As they grow tall above the ground, exciting things are happening underground, too. Below the soil where we can't see them, roots are spreading far out from the tree in all directions. The roots are creeping through the soil looking for water and nutrients (food). They're also helping hold the tree in place so it doesn't blow over.

The tree's main stem—called the trunk—keeps growing from year to year. The trunk keeps the tree standing strong and tall. It gives us wood, holds up the top part of the tree (the crown), and is a passageway for water and other **fluids** to move up and down the tree. The rough outer skin of the trunk is called **bark**. Layers inside the trunk make the tree grow bigger each year. You stop growing when you become an **adult**, but trees grow all of their lives.

The crown of the tree is the branches and leaves. It has the important job of making food for the tree. The leaves are tiny "factories" that make food. To do this, they need water, carbon dioxide from the air, and energy from the sun.



## Young Children and Trees

No one needs to tell us that young children thrive on activity! Most of them are also naturally curious. Capitalize on these traits, and you have the makings of a delightful tree-discovery learning experience.

Encourage children to really look at the trees in their neighborhood. Invite them to get to know at least one tree as a "special friend." Some of the activities in this section encourage each child to "adopt" a special tree, learn what kind it is, what kinds of life go on around it, and how it changes from season to season. They're also encouraged to cherish the beauty of trees. Appreciation for beauty begins early. Teachers have a unique opportunity to help young children begin this journey of pleasure.

An ideal first experience for kindergartners is a field trip or outdoor nature hike. Be sure to get permission from land owners and others as needed if you're leaving the school property. The children can also look for trees to "adopt" at this time. (You may be beginning your tree study at Arbor Day time this year. Next year, you may want to start your Arbor activities at the beginning of the school year. Then youngsters can watch their trees through a cycle of seasonal changes. For activities throughout all four seasons, see Appendix, page 4.)

## Your Field Trip or Nature Hike

1. Choose a place that has as many trees as possible and is within walking distance or a short bus ride from your school.

2. The ideal ratio is one tree for every three students in class, but groups may be larger if necessary.

3. Many of the activities suggested in this lesson may be used with bushes if trees are not plentiful in your area.

4. If possible, a few of the students should adopt an evergreen tree. They make interesting comparisons with deciduous trees.

5. Before the field trip, ask the students to join you in deciding on a set of rules. Try to set "do" rules rather than "do not" rules. You'll want to include the following:

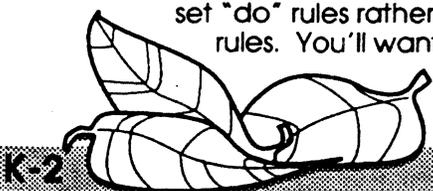
- Always keep the teacher or your adult group leader in sight.
- Leave the place as you find it. (Avoid stepping on plants whenever you can.)
- Be quiet and move slowly so you do not disturb creatures living near the trees.

The children should visit their trees frequently throughout the year. Your role as a teacher is important in helping them truly see the changes in their trees. Observations become valuable understandings through the questions and guidance you give.

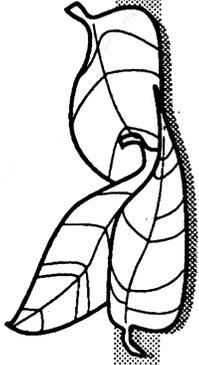
A variety of questions and activities have been included in the Appendix, pages 4-7 to help you. They are separated into five groups:

1. Those continued through the year.
2. Those conducted in autumn (soon after the school year starts).
3. Those conducted in winter.
4. Those conducted in spring.
5. Those conducted in summer (after school ends).

Encourage the students to ask their own questions, and to compare and discuss their ideas freely with others. The questions and activities you choose and the amount of guidance you give the students depends on the attention span, interests, and the "personality" of the whole class.



# Kindergarten



## Calendar

See activity details on pages K-5 through K-12.

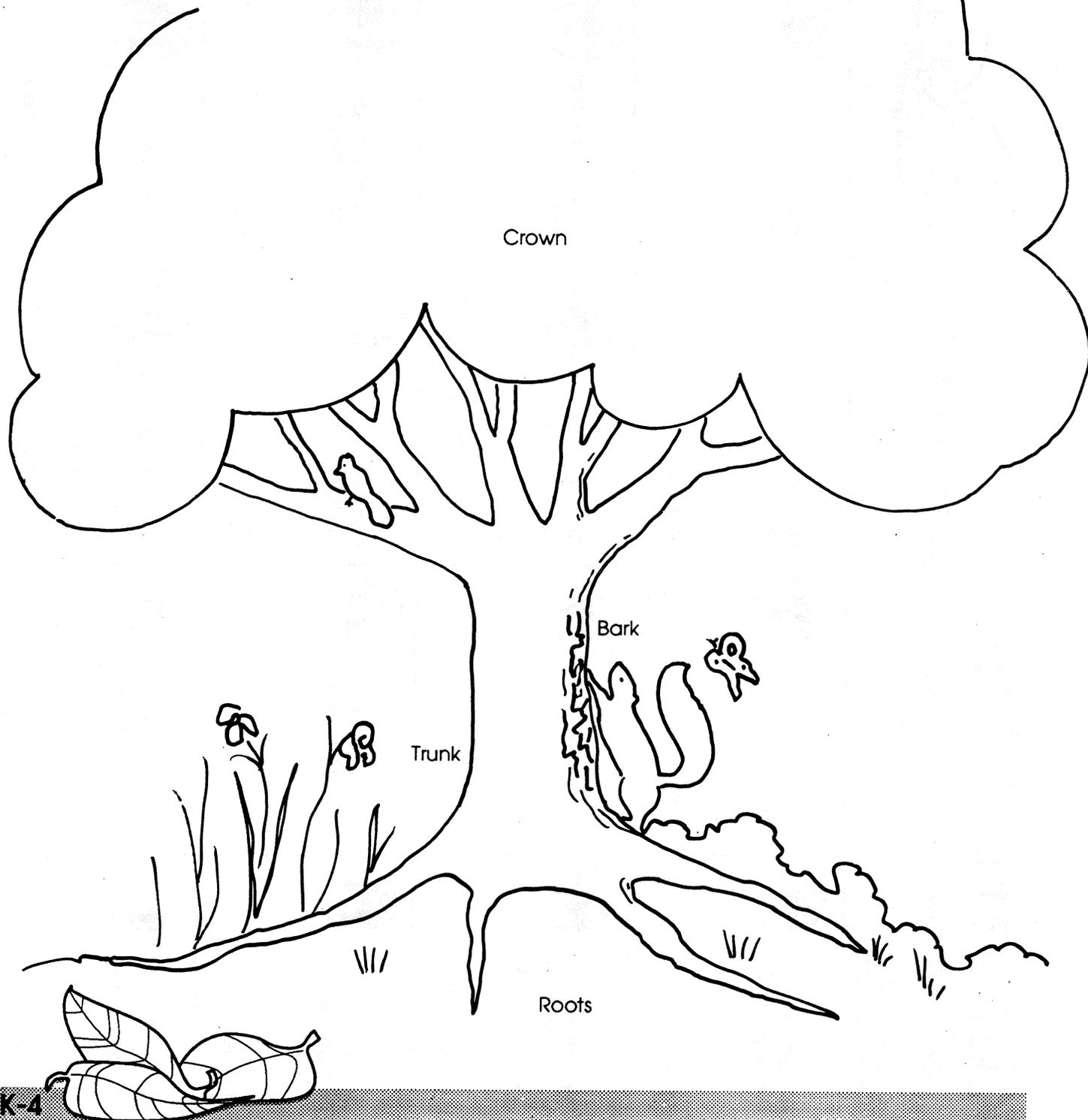
 <p>Do: Is it a tree? (Activity Sheet)</p> <p>Science</p>	 <p>Hike: Take a nature hike!</p> <p>Science</p>	 <p>Discover: Scientists' tools!</p> <p>Science</p>	 <p>Create: Natural collages.</p> <p>Art</p>	 <p>Look for: Robins returning. How do trees help robins?</p> <p>Science</p>
 <p>Read: Shel Silverstein's "The Giving Tree."</p> <p>Language Arts</p>	 <p>Discover: Tree shapes. (Activity Sheet)</p> <p>Math</p>	 <p>Discover: Things made from wood.</p> <p>Art/Social Studies</p>	 <p>Do: Touch and feel activity.</p> <p>Science</p>	 <p>Look for: Lilac bushes and apple trees blooming.</p> <p>Science</p>
 <p>Discover: Trees all through the year.</p> <p>Art/Science</p>	 <p>Do: Outdoor touch and feel activity.</p> <p>Science</p>	 <p>Create: Leaf melties.</p> <p>Art</p>	 <p>Do: Measure up! (Activity Sheet)</p> <p>Math</p>	 <p>Do: Plant seedlings.</p> <p>Science</p>
 <p>Discuss: Trees... friends to many.</p> <p>Science</p>	 <p>Look for: Monarch butterflies, pussy willow catkins, bees pollinating, tulips blooming. Learn a tree song!</p> <p>Science/Music</p>	 <p>Fun fact: The U.S.A.'s largest living thing is the General Sherman Tree.</p> <p>Language Arts</p>	 <p>Create/Listen: Forest sounds.</p> <p>Music/Language Arts</p>	 <p>Create: The most beautiful tree in the world!</p> <p>Art</p>

# Bulletin Board Idea

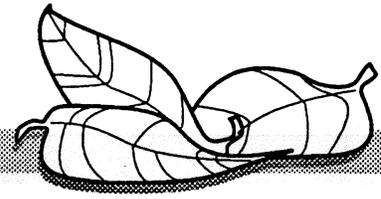
## What Is A Tree?

Create a large construction paper tree on the bulletin board. Label the roots, trunk, crown, and bark.

Students participate by adding other things that share a tree's living space: grass, squirrels, birds, mice, woodpeckers, flowers, shrubs, bushes, etc.



# Activities



## Hands On - Minds On Activities

Follow these activities in order and you have one for each of the 20 days in Arbor Month (see calendar). Or, pick and choose any of the activities that best meet your class's needs.

To complete the calendar activities during the month, collect or ask youngsters to bring in the following: paper towel or toilet tissue tubes, bags (Activity 2); magnifying glass, microscope, scissors or knife, tweezers, (Activity 3); "The Giving Tree" by Shel Silverstein (Activity 6); things made from trees (Activities 8 and 9); leaves, wax paper, potato peeler, crayon shavings, paper towels or newspaper, iron, string (Activity 13); one or two seedlings per student (Activity 15); rhythm band instruments, tape recorder (Activity 19).

### Activity 1: Is it a Tree?

*You'll need:* Activity Sheet A (page K-8) and crayons.

A tree is the largest of all plants and differs from other plants in four ways:

1. Most trees grow at least 15-20 feet tall.
2. They have one woody stem that is called a trunk.
3. The trunk grows at least three to four inches thick.
4. A tree's trunk (stem) can stand by itself.

All other plants are different from trees in at least one of these ways.

Look at the activity sheet. Ask: Do you see the tree in Box A? Is it a tree? Why or why not? Color it if it is a tree. If it's not a tree, don't color it. (Continue in the same manner with the rest of the boxes.)

**Activity 2:** Go on a spyglass nature walk! (See Background Information-Field Trip section, page K-2 for field trip planning and activity ideas.)

*You'll need:* Spyglasses-paper towel tubes, toilet tissue tubes, or construction paper tubes; bags to collect things in.

Take a walk in the neighborhood and look at the trees. How many trees do you see? What different kinds of trees are there? Look through your spyglasses at certain trees or parts of trees. Take turns describing what you see through your spyglasses. Can others "spy" and find the same objects? Use bags to collect things that come from trees-leaves, acorns, maple seeds, bits of bark. Be sure not to damage or destroy living trees as you make your collection.

**Activity 3:** Study your nature hike discoveries the scientific way!

*You'll need:* Microscope; magnifying glass; tweezers; scissors or knife; sunlight or strong indoor light.

Ask:

- a. What is a scientist?
- b. What kinds of tools do scientists use?
- c. How do these tools help scientists?
- d. How can these tools help us learn about trees?

Examine the tree parts collected earlier under the microscope and magnifying glass. How do things look different? What are some new things we learned?

### Activity 4: Tree art.

Use the tree parts studied in Activity 3 to create art—nature scenes, gardens, designs. Glue nature's pieces to drawing paper; complete by adding crayon or paint details.

**Activity 5:** Look for: Robins returning.  
How do trees help robins?

**Activity 6:** Read "The Giving Tree" by Shel Silverstein.

In what ways did people hurt the tree? In what ways could they have helped the tree and kept it safe?

Ask students to bring things to school that are made from trees. (See Activity 8).

**Activity 7:** Explore tree shapes.

*You'll need:* Activity Sheet B (page K-9). Ask: What shapes do you see on the bottom of your paper? Cut out the shapes and paste each one onto the tree it matches.

Thinking ahead to tomorrow: Try to bring something to school that is made from a tree. See if you can think of something unusual.

**Activity 8:** Tree things.

Talk about the things students brought that are made from trees. Ask: How would our lives change if we did not have some of these things? Give each student a sheet of paper. They fold the sheets into quarters (to have four boxes). In each box or "window" they draw something that is made from a tree.

**Activity 9: Touch and feel fun.**

*You'll need:* Bags or containers; objects to feel.

Place several items in a bag that are things from a tree. Students take turns putting their hands in the bag and trying to identify items by touch only. When they have things in their hands, they describe each item and tell what they think it is. Then they draw the item out to check their guesses.

**Activity 10: Look for: Lilac bushes and apple trees blooming.**

Draw or paint beautiful flowering trees.

**Activity 11: Trees all through the year.**

Give each student a large sheet of drawing paper. They fold their papers into fourths. Then they close their eyes and think about how a certain tree would look during each season. (This can be each person's "adopted" tree - or another favorite tree.) They will need help imagining what the tree looks like in other seasons if they've only been seriously observing the tree during Arbor Month.

Encourage youngsters to draw what they think their trees look like in each of the four seasons. Start with spring-the growing and new birth season. Go next to summer, then fall and winter in left to right, top to bottom sequence.

**Activity 12: More touch and feel fun.**

Go outdoors and get acquainted with trees by touch. Blindfold one student at a time and have each "hug" and feel a tree. As they are feeling the tree, ask some specific questions; students will try to answer by using their senses of touch. Possible questions:

- Is this a young tree? An older tree?
- Is this an evergreen or a tree that loses its leaves in winter?
- Is the tree alive?
- How big around is the trunk? (Show with hands or arms).

After he or she has had a turn, guide the student away from the tree. Remove the blindfold and challenge the youngster to find the same tree again-this time with eyes wide open.

**Activity 13: Leaf melties.**

*You'll need:* Leaves; waxed paper; old

color crayons; potato peeler or grater; paper towels or newspaper; iron; string.

Besides enjoying their shade, look what you can do with leaves! Have each youngster collect two or three well-shaped leaves and press them flat under a stack of heavy books. Arrange pressed leaves on a piece of waxed paper about the size of a notebook page. Using old color crayons and a potato peeler or grater, make crayon shavings to sprinkle over the leaves. Use favorite colors. Cover the leaves and crayon shavings with a second piece of waxed paper. Put three thicknesses of paper towels or a few sheets of newspaper on top to protect the design. Press carefully with a hot iron to melt the crayon shavings. When you take away the newspaper or toweling, you have a beautiful leaf meltie. Trim to a shape you like, thread a string through the top, and hang in the window to "light up" and dazzle!

**Activity 14: Measure up.**

*You'll need:* Activity Sheet C (page K-10). Tell students: We are going to do some measuring today. On the bottom of your sheet is a ruler. Cut it off the sheet. Then use it to measure the parts of trees on the rest of the paper. (Depending on your group, you may need to do this activity together or have extra aides available to help students who have difficulties.)

**Activity 15: Plant seedlings.**

*You'll need:* A seedling for each youngster. Available from:

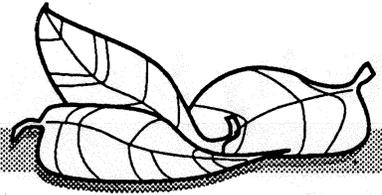
Lone Peak Conservation Center  
271 West Bitterbrush Lane  
Draper, UT 84020-9599  
Phone: (801) 571-0900 FAX: (801) 571-0468

What do trees need to live? They need water, light, and air just like other plants. Review how to plant a tree (Appendix, page 3). Send home a seedling with each student to plant in their yards or in flower pots until they can be planted safely outdoors. Send a copy of "How to Plant a Tree" (Appendix, page 3) along with each seedling.

**Activity 16: Trees...friends to many.**

Talk about some of the many creatures that call a tree a friend and how they use it. How many can you think of? Birds build their nests in trees. Many birds eat bugs that are on trees or in the bark. A tree can provide shade for people and a fun place for children to play. Squirrels have their homes in trees, eat nuts and jump from branch to branch. Some caterpillars hide from





the birds by rolling themselves up in the leaves while they turn into moths. Leaves from last year decay and become food for earthworms. They also enrich the soil.

**Activity 17:** Look for: Monarch butterflies, pussy willow catkins, bees pollinating, tulips blooming.

Learn a song about trees: "The Little Nut Tree," "Don't Sit Under the Apple Tree With Anyone Else But Me," "Here We Go Round the Mulberry Bush," etc.

**Activity 18:** Meet General Sherman.

*Fun fact:* The U.S.A.'s largest living thing is the General Sherman Tree, a giant sequoia in Sequoia National Park in California. It towers more than 272 feet tall and has a trunk about 36 feet wide. That means it's as tall as a 20-story building and its trunk is as wide as a semitrailer is long. It's probably almost 3,000 years old.

**Activity 19:** Forest sounds.

*You'll need:* Rhythm band instruments; tape recorder.

Gather rhythm band and other instruments and 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. Invite others to listen to your tape. Did anyone "hear" your forest the same way your group did?

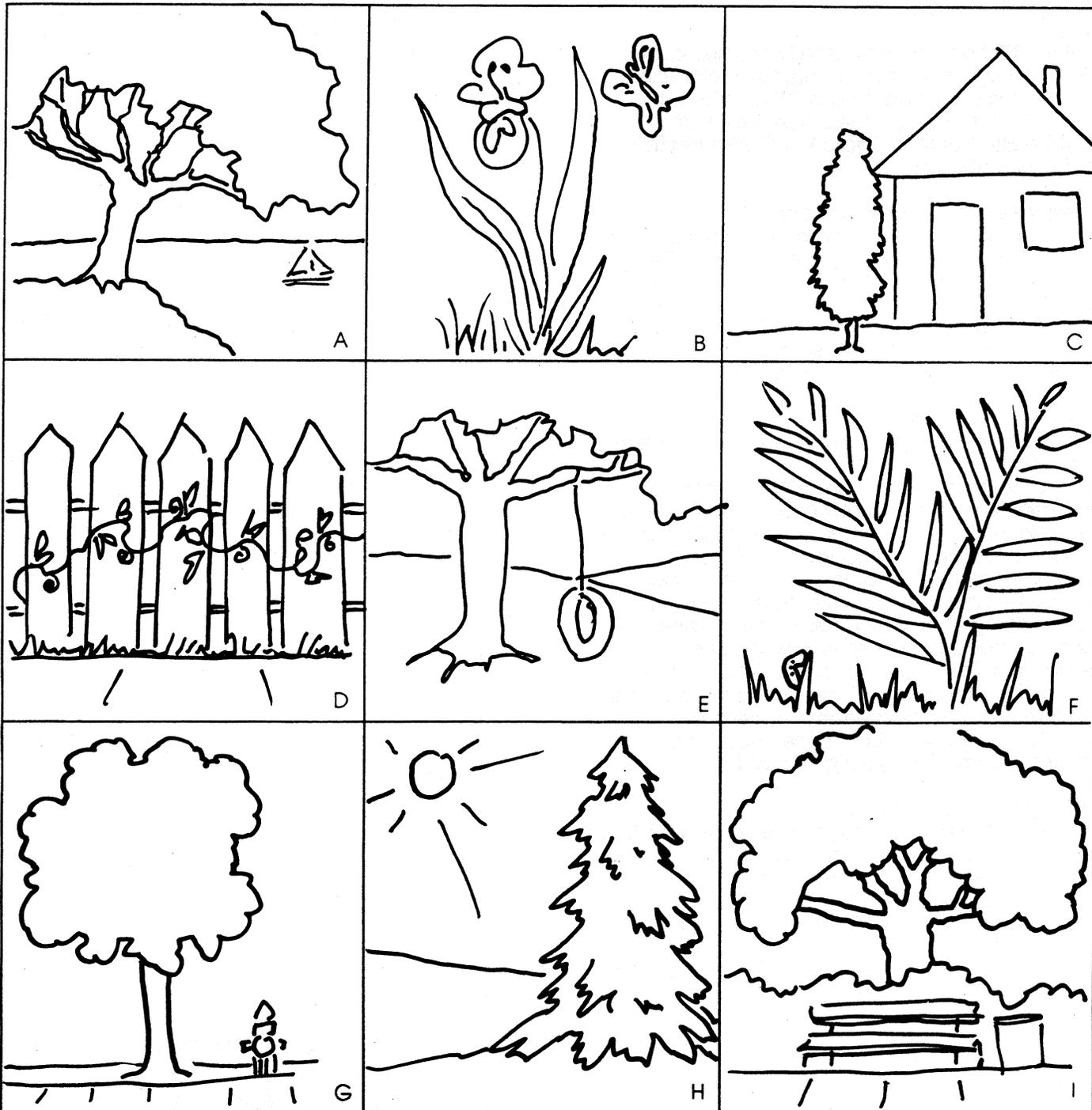
**Activity 20:** Beautiful trees.

Invite students to close their eyes and think of the most beautiful tree in the world. Ask: What would it look like? Where would it be? What would you do with it? What would you say to it? Each student draws a picture of his or her "dream tree."

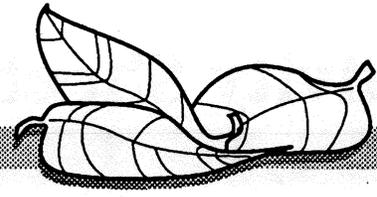


# Activity Sheet A

Is it a Tree?

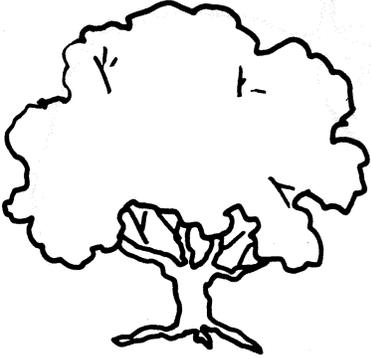


# Activity Sheet B



## Explore Tree Shapes

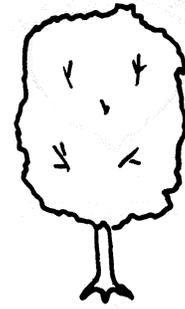
Cut out the shapes below and paste them on a tree that matches each shape.



oak



spruce



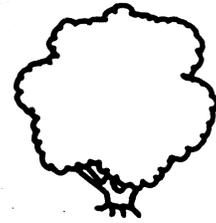
maple



cypress

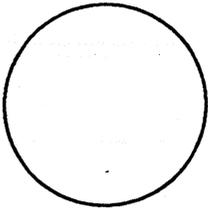
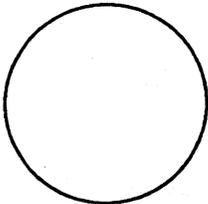


juniper

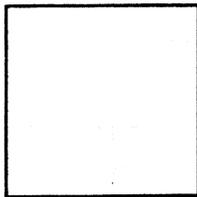
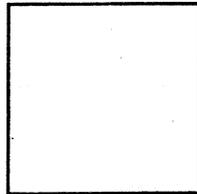


crab apple

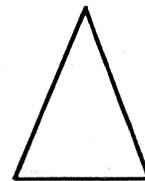
round



square

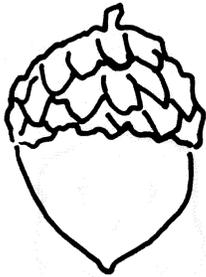


triangle

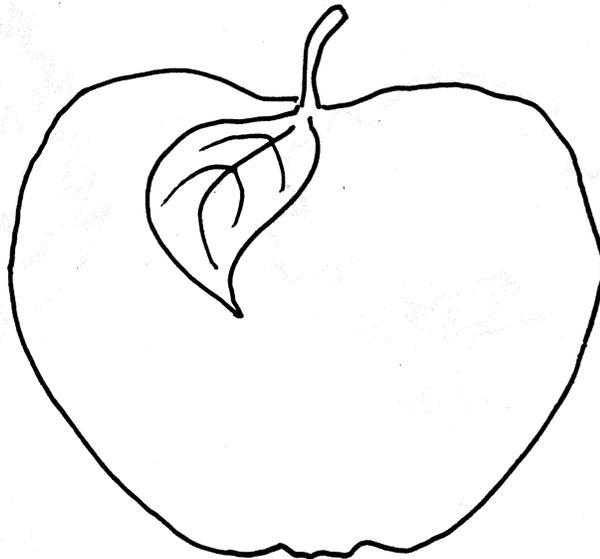


# Activity Sheet C

Measure Up!



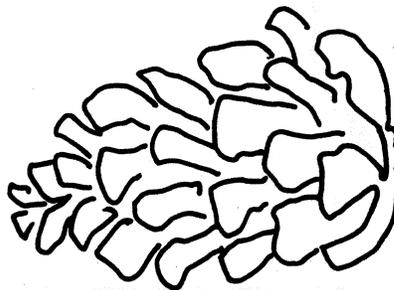
\_\_\_\_\_ inches wide



\_\_\_\_\_ inches wide



\_\_\_\_\_ inches tall

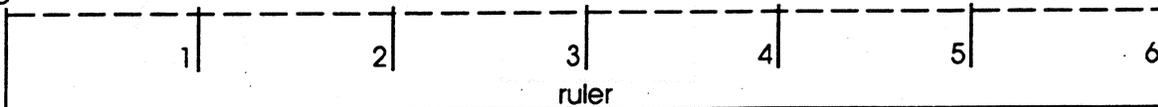


\_\_\_\_\_ inches long



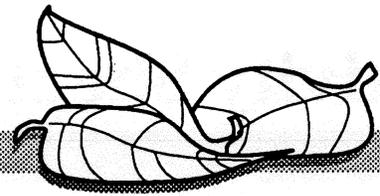
\_\_\_\_\_ inches long

cut here



ruler

# More Activity Fun



## Tree Tots

Talk about the parts of a tree and take a tree walk.

*You'll need:*

- Leaves from several different kinds of trees.
- Twigs, bark, fruit, nuts, or other tree parts.
- Pictures of trees and tree parts.
- Paper.
- Construction paper.
- Tape.
- Marker (optional).
- Glue (optional).
- Yarn (optional).

Here's an activity that will help younger children look more closely at trees. First, they'll learn about some of the different "parts" that make up a tree. Afterward, you can take them on a walk outside to compare some of the different trees in your area.

Before the students arrive, find four or five different kinds of trees around your school or nature center and collect some leaves from each. (Collect a leaf for each child in your group. If you gather the leaves quite a while before you do the activity, you can keep them fresh by wrapping them in a wet towel.) Collect a few twigs, pieces of bark, and other tree parts, too. Keep in mind where all of the trees are located so you can find them again when you go outdoors with your students.

Trace an outline of each kind of leaf on a piece of paper. (You may need to enlarge the outlines and go over them with a dark marker so they'll be easy to see from a distance.) Tape or hang each of the leaf outlines in a different place in the room.

When you're ready to start the activity, have the students sit in a circle. Lead a discussion about the different parts of a tree. Show pictures of leaves, bark, branches, roots, and other tree parts as you talk. Pass around any parts you collected before the activity. You may want to talk about what each tree part does.

After the discussion, give each child one of the leaves you collected. To help them observe their leaves closely, ask some questions. For example: Are the leaf edges pointed or smooth? Are any of the leaves a different color from the others? Do any of the leaves have tiny hairs on their undersides? Can you see and feel the

veins? Is there anything special about any of the leaves? (For example, some may notice that their leaves have been munched on by insects or other animals.)

Next, tell the students there's a picture of each type of leaf hanging somewhere in the room. Have them look for the leaf outlines that match their own particular leaves, then have each of them go and stand next to the correct picture.

Once everyone has found the right leaf shape, take a walk outside to find the trees the leaves came from. Youngsters take their leaves with them outside.

Each group of students with the same kind of leaf keep their eyes peeled for "their" tree. Stop at certain trees as you walk along and ask if anyone thinks his or her leaf came from that particular tree. Have the youngsters who say "yes" hold their leaves up in the air. Are they right? Next, all the students look for some of the tree's parts on the ground. Can they find twigs and buds, fruit or nuts, other leaves, or any other tree "pieces"? Compare the parts they find to those of other trees you stop and talk about.

*Adapted from Ranger Rick's Naturescope "Trees are Terrific." Used with permission.*

## Rodney the Root Says...

Finish my tree! See Activity Sheet D (page K-12).

# Activity Sheet D

Rodney the Root says...



finish my tree.



# Grade 1

## Parts of a Tree



### Objective

- Students will be able to identify the main parts of trees and the function of each.

### Vocabulary Words

roots	evergreen	cambium
trunks	needleleaf	inner bark
crowns (canopies)	broadleaf	sap
minerals	inner wood	outer bark
oxygen	xylem	photosynthesis
absorbs	conduct	litter layer
		recycle

### Background Information

Have you ever had or seen a tree house? What are some things that are fun about it? Will it keep you warm in the winter? Dry in the summer? What kind of tree house would you build if you could have anything you wanted?

The house you live in is sort of a "tree house" already. How can that be? Think about some of the many things in your house that come from trees. What are some of them? (doors, furniture, paper, etc.) This unit will help you learn about parts of trees and you will find out about some of the many things trees give to us.

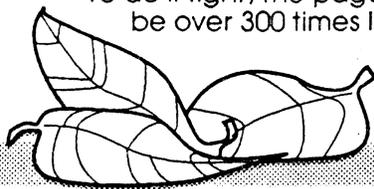
Trees have three main parts - **roots**, **trunks**, and **crowns (canopies)**. Each part has a special job to do in keeping the tree healthy and growing.

### Roots

Explore roots, and you'll discover a fascinating underground world. People who study trees are learning more each year about tree roots. They tell us the tree root system is probably the least understood part of a tree.

We've all seen sturdy trunks and leafy crowns of trees, and possibly tripped over the roots. But no human has ever seen a whole adult tree. Drawings in books are only part of the picture.

To do it right, the page would have to be over 300 times larger than it is now.



What does a whole tree really look like? You'll have to use your imagination for what's underground, but here are some of the facts:

- Almost all (about 99%) of the roots live and grow within three feet of the surface of the soil.
- Roots don't just grow downward or toward any particular thing, but wherever they can get the moisture and **minerals** they need...up, down, and sideways.
- There's a connection between the root system and the rest of the tree. If part of the roots die, an equal amount of the crown may die, too.
- Tree roots come in many different sizes. Some are so tiny you can only see them with a microscope. Others may be up to 12 inches or more across.

Large, woody roots grow horizontally (side to side), mainly in the top 12 inches of the soil and usually no deeper than three to seven feet. They often stretch out from the trunk to take up a space four to seven times larger than the crown! These roots spread across an area that can be twice the height of the tree.

Why are roots important? To grow, all parts of the tree need to be healthy. Roots hold the

tree in the ground so it can stand straight. They help the tree make food for itself. Roots absorb water and minerals that move up through the trunk and are used by the tree to make food. They store energy too.

Roots grow wherever they can get what they need: **oxygen**, water, minerals, and support. That means they won't grow where soil is too hard and pressed together, or where there is no oxygen. You may have seen roots of city trees follow cracks and crevices in pavements, pipelines, sewers, or cables. That's because there are air passages in these places that give oxygen and water to the trees. When roots are above ground where you can trip on them, it may be because the soil has washed away or become too packed to give them what they need underground.

The surface layers of soil, with rotting bits of leaves, are rich in organic elements. They make a great home for millions of insects, worms, and other creatures. These tiny creatures do much to help trees. As they tunnel about in the surface layers, they fluff up the soil and make pore spaces for the air, water, and minerals roots need. That's why most tree roots are found in the surface layers of the soil. They fan out in thousands of fine, short root tips smaller than a human hair. It's through the tips of these tiny roots that the tree **absorbs** most of its water and minerals.

Roots are important. By understanding roots better, we can help keep trees safe and healthy.

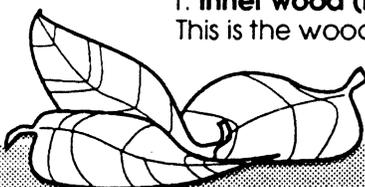
## Trunks

Trunks and branches give a tree its shape. The trunks of most **evergreen (needleleaf)** trees grow straight up to the top of the tree. All the branches grow out from the trunk. The branches near the top are shorter than those farther down, giving the trees a "Christmas tree" shape. The trunks of most **broadleaf** trees do not reach to the top of the tree. Instead, the trunk divides into spreading branches, giving the crown a rounded shape.

The trunks of most trees are made up of five layers. From inner to outer, these layers are:

### 1. **inner wood (heartwood):**

This is the woody non-conducting tissues in the center



of the tree. Inner wood has two main jobs: to store growing compounds and sugars and to support. After the tree has fully developed all its new parts for the season (leaves, twigs, seeds/fruits, etc.), the sugars are stored in the cells of the inner wood. This stored energy will help power next year's spring growth until the tree again fully develops its leaves.

The inner wood helps hold the tree up, too. This inner part of the tree is where we get wood for building and making things.

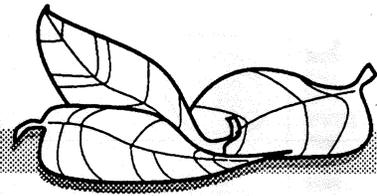
2. **xylem:** Xylem is a narrow band of cells at the outer-most edge of the inner wood. Its main job is to **conduct** water and minerals throughout the tree, from the root system towards the leaves. It has tiny pipelines that carry water and small amounts of dissolved minerals from the roots to the leaves.

3. **cambium:** This is a thin layer of growing tissue on the outside of the xylem. Its job is to make the trunk, branches, and roots grow thicker. The trunks and branches of most trees grow thicker as long as the tree lives. It is this cambium layer that causes the thickening. It uses the sugar manufactured by the leaves to make new plant tissue. On its outside, the cambium makes new phloem tissue, or inner bark. On its inside, it makes new xylem, which eventually becomes wood. (See Grades 7-9, page 8 for more information).

4. **inner bark or phloem:** This layer also has tiny pipelines. The food made by the leaves moves through the phloem to the other parts of the tree. This food is called **sap**.

5. **outer bark:** This is the "skin" of hard, dead tissue that protects the living inner parts of the tree from injury. The outer bark stretches to let the trunk and branches grow thicker. The bark of a few kinds of trees, such as beeches and birches, is smooth because it stretches easily. But the bark of most other trees does not stretch so well. As the trunk and branches grow thicker, they push against the bark. It finally cracks, dries, and becomes rough with large ridges. Most trees lose old bark from time to time and replace it with a new layer.

**Remember:** Bark needs our protection! A tree's outside bark protects it from insects, fungus, and disease. The inner bark moves food from the leaves to the roots. Peeling, carving, or



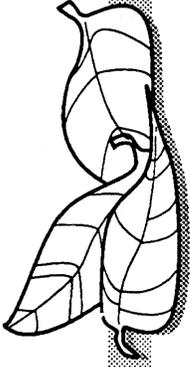
damaging a tree's bark may cause the tree to die.

### **Crown (Canopy)**

The crown is the branches and leaves of the tree. It has the important job of making food for the tree. The leaves (the leaves of a pine tree are its needles) are tiny "factories" that make food, using water absorbed by the roots and carbon taken from the carbon dioxide in the air. Only a small amount of the water carried to the leaves is used to make food. The leaves lose most of the water into the air. Like the water and dissolved minerals carried from the roots, the food made by the leaves is also called sap. It travels through the leaves, branches, and trunk to parts of the tree where it is needed. These leaf "factories" get their energy, or fuel, for the work of making food from the sun. Putting the sun's energy to work to make food in this way is called **photosynthesis**.

Other important parts of a tree include the flowers and fruits. Flowers and fruits are the ways in which most trees reproduce. That's where seeds are found that will grow into new trees. Trees have many kinds of flowers. Some trees have very showy flowers and others have small, plain-looking flowers. Needleleaf trees have small, plain flowers that are hardly noticeable.

The fruits of some broadleaf trees, such as apples and cherries, have a tasty outer covering. The fruits of other broadleaf trees, like acorns and beechnuts, are hard nuts. Ashes, elms, and maples have thin, winged fruits. Most needleleaf trees bear their seeds in cones.

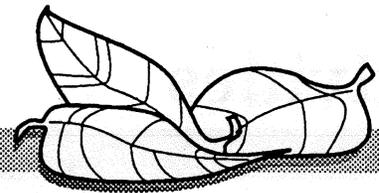


See activity details on pages 1-6 through 1-12.

## Calendar

<p>Discover: Roots!</p> <p>Science</p>	<p>Look for: Robins returning. Create: X-ray vision art.</p> <p>Science/ Art</p>	<p>Discover: Role of root hairs.</p> <p>Science</p>	<p>Build: Root viewing boxes.</p> <p>Science</p>	<p>Look for: Tulips blooming. Have a maple tasting party.</p> <p>Science</p>
<p>Do: Bark rubbings.</p> <p>Art</p>	<p>Look for: Lilac bushes and apple trees blooming.</p> <p>Science</p>	<p>Hike: Take a nature scavenger hunt.</p> <p>Science/Art</p>	<p>Write: Be poets! Tree poems are fun and easy.</p> <p>Language Arts</p>	<p>Listen: Go on a guided fantasy to your favorite woodland.</p> <p>Language Arts</p>
<p>Do: Rodney the Root (Activity Sheet).</p> <p>Science</p>	<p>Discuss: Recycling. How can we save trees? <i>Fun Fact:</i> Saving a four-foot stack of newspapers saves a tree!</p> <p>Social Studies</p>	<p>Hike: Take a nature hike. Walk and talk trees!</p> <p>Science</p>	<p>Create: Natural monsters!</p> <p>Art</p>	<p>Create: 3-D Trees! (Activity Sheet)</p> <p>Art</p>
<p>Do: Taste incredible edibles - and they're all from trees!</p> <p>Science</p>	<p>Discover: Root power!</p> <p>Science</p>	<p>Listen: Enjoy Joyce Kilmer's familiar poem, "Trees."</p> <p>Language Arts</p>	<p>Look for: Maple and elm seeds!</p> <p>Science</p>	<p>Play: "Leaf It To Us."</p> <p>Science/ Language Arts</p>

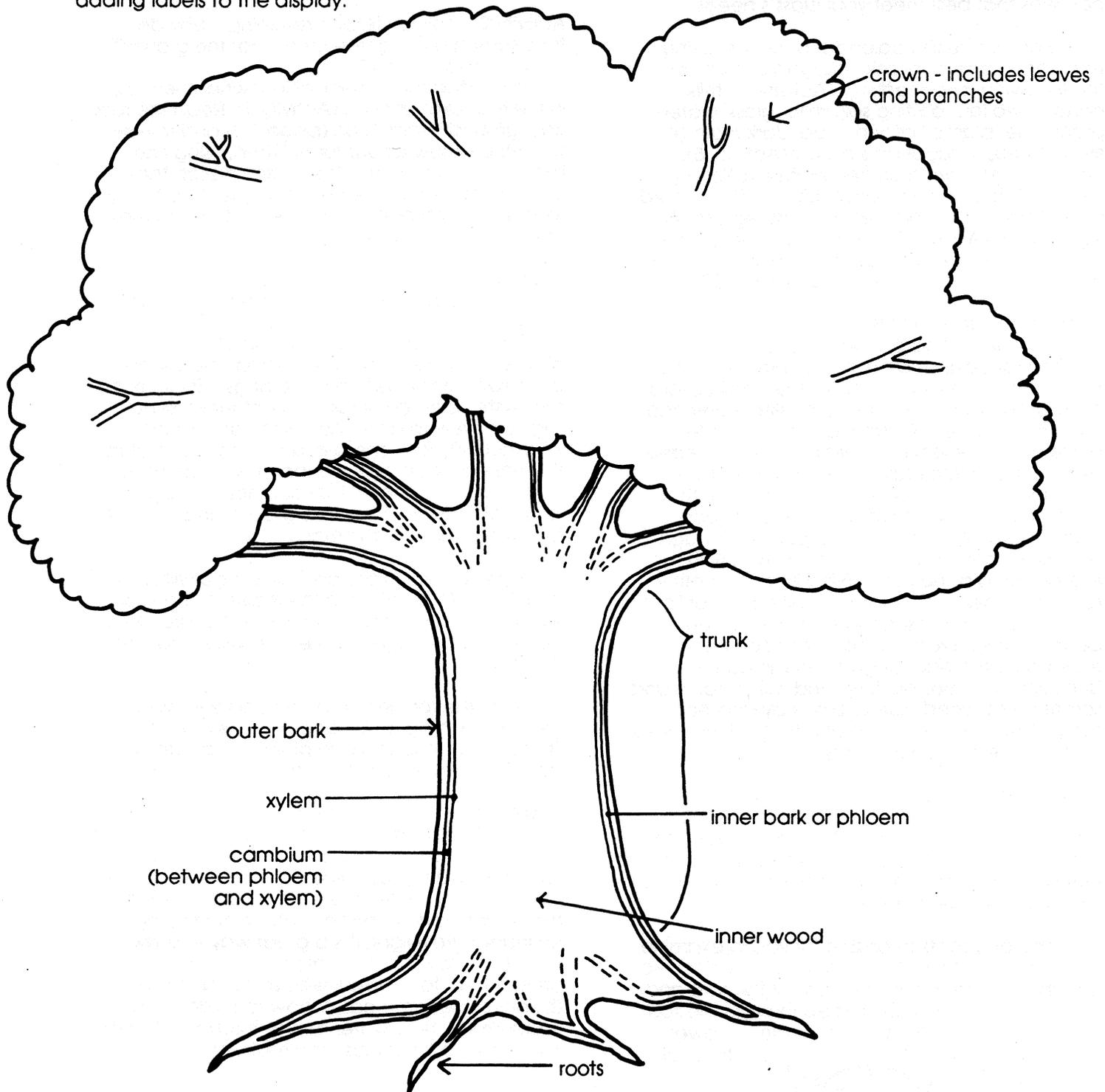
# Bulletin Board Idea



## Parts of a Tree

Make a large tree cutout (three-and-a-half to four feet tall). Post on a bulletin board or wall.

Students participate by painting or coloring the tree, drawing in the layers and parts of the tree, and adding labels to the display.



# Activities

## Hands On - Minds On Activities

Follow these activities in order and you have one for each of the 20 days in Arbor Month (see calendar). Or, pick and choose any of the activities that best meet your class's needs.

To complete the calendar activities during the month, collect or ask youngsters to bring in the following: two seedlings (Activity 3); milk carton, two jars, potting soil, knife, glass, water-proof glue, plastic kitchen wrap, dark cloth (Activity 4); maple sugar and candy (Activity 5); leaves, twigs, bark, fruit, tree pictures (Activity 13); toilet tissue tubes, yarn (Activity 15); "tree edibles" (Activity 16); packet of seeds, egg shells, egg carton (Activity 17); large tree cutout; construction paper leaves; beanbag; tape or piano music; tree and non-tree items (Activity 20).

### Activity 1: Examine roots!

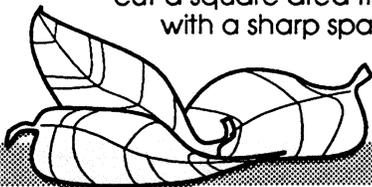
*You'll need:* Sharp sticks or forks.

Tree root expert Dr. Thomas Perry tells us how to examine tree roots. Most of the small absorbing roots of trees are in the forest **litter layer** and top inches of the soil. They are often smaller across than the lead in a pencil. You can easily expose them: Carefully sweep away surface litter and soil with fingers and dig gently with a sharp stick or fork. These small roots are constantly growing, dying, and regrowing throughout the season, and can be examined with the eye or with a hand magnifying lens. A healthy root tip usually has a creamy white, pink, or light tan interior and will snap like a fresh garden bean. It has a pleasant odor that can be masked by the odor of good, clean earth. Unhealthy root tips are limp and dull in color, and sometimes stained blue or black by disease fungi. They will often smell of rotting things. Have you uncovered healthy roots?

Dig (gently, please!) more deeply into the soil, and you'll see that most of the fine roots have grown upward into the surface layers of soil from larger roots that grow horizontally. These horizontal roots are usually located four to eleven inches below the surface.

If the only roots available for you to examine are in a grassy lawn, here's how to proceed: Go out about 15 feet from the trunk of the tree and cut a square area through the sod with a sharp spade or trowel.

Gently peel



back the sod. You'll see both the tree roots and the grass roots intermingled in the surface inches of the soil. When you're done, just pat the sod down carefully and water for several days.

**Activity 2:** Look for: Robins returning. Why do they search among tree roots near the ground?

Art: "X-ray Vision."

Invite students to think about what they saw in the root examination (Activity 1). Read the root Background Information (page 1-1) and review what they know about roots. Then, using fine lines and "x-ray vision," they each sketch their idea of what an entire tree looks like, tree tops to root tip. Which part of the tree will take up most of the drawing space?

**Activity 3:** The Role of Root Hairs.

*You'll need:* two seedlings, potting soil, and two jars for this observation activity.

Show how root hairs have a vital role in absorbing water and minerals from the soil by using two nearly identical seedlings. (Be sure the root systems of seedlings are kept moist; seedlings are likely to die if allowed to dry as long as 20 minutes!) From one seedling, remove all of the tiny hair-like roots, leaving the main roots intact. Plant both seedlings in identical soil in two jars, and water daily. Compare growth and vigor of the two trees. Graph heights.

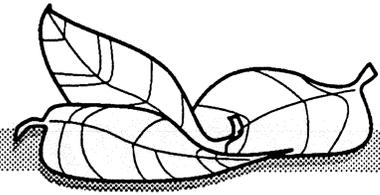
Is growth good or poor? Is foliage wilted or healthy? What color are the leaves? The seedling without root hairs may survive, but growth will be poor and foliage will likely be wilted from the first day on.

After the root lesson above, care for your healthy seedling until it becomes well established. Then students can plant it in an area they decide is well suited to the tree's survival needs.

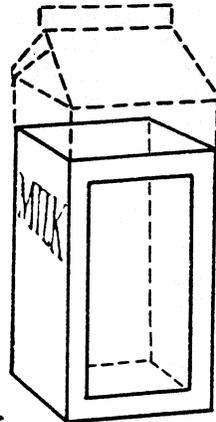
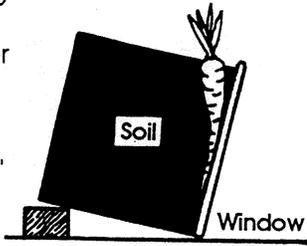
**Activity 4:** Root viewing box.

*You'll need:* a half-gallon milk carton; sharp knife; piece of glass cut 3 1/2" x 7 1/4"; purchased "soil" mix; waterproof glue.

Roots get full exposure with this fun project made from a milk carton. With a lot of sunlight or an indoor grow light, it's a great way to show how roots develop in ideal soil. Use it to show other things, too: How seeds sprout and grow (beans or peas are easy); how roots develop in problem soil; how water moves through different soil types; how cuttings form roots, etc.



Cut the top from the milk carton. Cut out a window area from the side, leaving a 1/4" border frame. Insert the glass. For a snug seal, use waterproof glue. Thoroughly dampen the soil mix, then fill the box to near top and water again to settle the soil. Sow seeds 1/4" from the glass window.



Important: Tip the carton at a slant to keep roots growing against the glass so their action can be seen. Cover the box with plastic kitchen wrap to slow evaporation. Moisten soil when it becomes dry. Cover the window with dark cloth except at viewing time, as many roots tend to grow away from any light source. Fertilize after a month.

**Activity 5:** Look for: Tulips blooming.

Maple tasting party. How would you like to eat pancakes or waffles with real maple syrup on them? REAL maple syrup is made from the sap of a sugar maple tree. The boxelder, native to Utah, can also be used. The sugar maple sap has more sugar in it than the sap of other trees. (Sap is water mixed with the sugar and minerals a tree needs to grow.) Native Americans taught European settlers how to make syrup and sugar from sap. These were the only sweeteners, other than honey, that many settlers had.

Sap starts to move in the trees in late winter or early spring (typically during late March in Utah). Sap moves when the days start warming up and nights are still freezing cold. If the days and nights are both cold, nothing will happen. The trees are tapped as soon as the sap begins to move or run. A hole is drilled into the tree with a tool called a brace. A spout is put into the hole and sap starts dripping out of the spout. A tube is attached to the spout to bring the sap into a bucket. Only a small amount of sap is taken so there is plenty left for the tree.

Sap is thin and runny, but we like syrup a little thicker. That's why people boil the sap and cook out some of the water. It takes a long time

to make the syrup thick enough, and the sap is closely watched so it doesn't burn. About 40 gallons of sap cook down to make one gallon of syrup. Have a tasting party with maple syrup and maple sugar candy to taste. (If you can, bring in a person who taps trees to show children the equipment and how it is used.)

**Activity 6:** Bark rubbings.

Take a tour of a woods or neighborhood (be sure to get permission) and make rubbings of various tree barks using crayons and light-weight drawing paper. Enjoy the various textures you find. Are your rubbings from old trees or young trees? How do you know?

**Activity 7:** Look for: Lilac bushes and apple trees blossoming.

**Activity 8:** Nature scavenger hunt.

Give each student a bag and a list of things from nature to find. Guide students to a safe and specific outdoors area in which to hunt. Set a time limit and turn them loose. Encourage hunters to select things of interest they find on their own, too. Caution them not to break, damage, or take living plants. Your scavenger list may include things like acorns, pine cones, maple seeds, elm seeds, catkins or pussy willows, leaves.

As a follow-up you may wish to have students make art collages to display some of their natural finds.

**Activity 9:** Creative writing: Poetry.

Brainstorm words that can be used and list them on a chalkboard. Then write poems about why trees are so special in our lives. Students can write about what trees and forests do for them, how they make them feel. Or, they can pretend they are trees and talk about how things look, from a tree-top point of view! What are some other ideas?

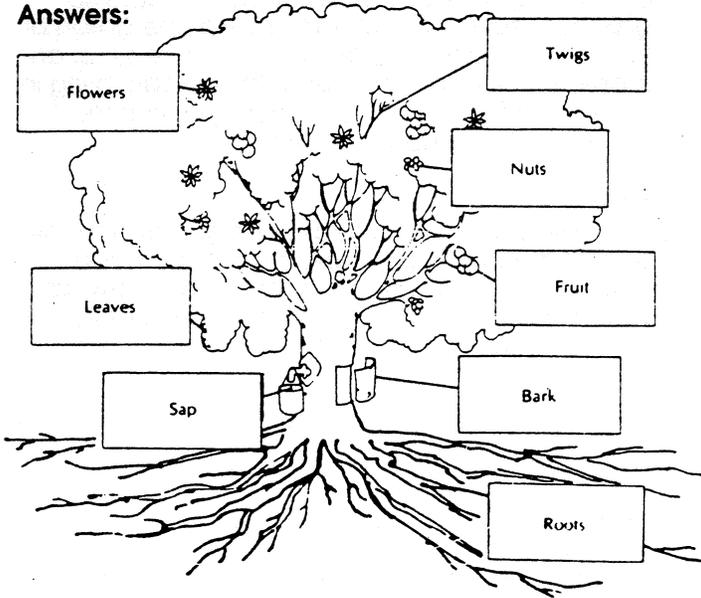
**Activity 10:** Guided fantasy.

If there is room, have the students lay down on the floor. (Alternate site: if you have a woods available, go into the woods for this project.)

Tell students: Close your eyes. You are resting on your back in a large forest. What are you feeling? What does it smell like? What sounds do you hear? How do the trees look from this angle? How does the sky look?

**Activity 11:** Do Activity Sheet A (Page 1-11).

**Answers:**



leaves from each one. (Collect a leaf for each child in your group. If you gather the leaves quite a while before you do the activity, you can keep them fresh by wrapping them in a wet towel.) Collect a few twigs, pieces of bark, and other tree parts, too. Keep in mind where all of the trees are located so you can find them again when you go outdoors with your students.

Trace an outline of each kind of leaf on a piece of paper. (You may need to enlarge the outlines and go over them with a dark marker so they'll be easy to see from a distance.) Tape or hang each of the leaf outlines in a different place in the room.

When you're ready to start the activity, have the students sit in a circle. Lead a discussion about the different parts of a tree. Show pictures of leaves, bark, branches, roots, and other tree parts as you talk. Pass around any parts you collected before the activity. You may want to talk about what each tree part does.

**Activity 12:** Become recycling sleuths.

What are some of the many ways we can **recycle** to help save our trees? Recycle paper products; save newspapers for recycling centers; find out where the nearest recycling center is for you. What other things will they recycle? What do they make from the recycled products? What can you do? Cut out magazine pictures to make greeting cards; use discard mail as scrap paper; cut corners from envelopes and slip over pages for neat bookmarks. What are some other things you can do?

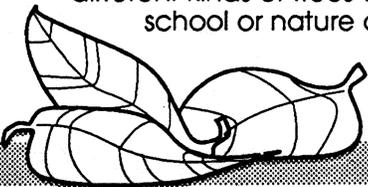
*Fun fact:* Recycle just one Sunday edition of the New York Times newspaper and we've saved 75,000 trees!

**Activity 13:** Walk and talk trees.

*You'll need:* leaves from several different kinds of trees; twigs, bark, fruit, nuts, or other tree parts; pictures of trees and tree parts.

This activity helps younger children look more closely at trees. First, they'll learn about some of the different "parts" that make up a tree. Afterward you can take them on a walk outside to compare some of the different trees in your area.

Before the students arrive, find four or five different kinds of trees around your school or nature center and collect some

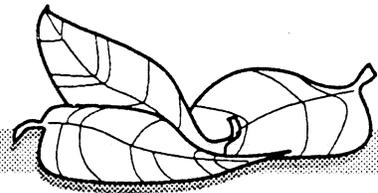


After the discussion, give each child one of the leaves you collected. To help them observe their leaves closely, ask some questions. For example: Are the leaf edges pointed or smooth? Are any of the leaves a different color from the others? Do any of the leaves have tiny hairs on their undersides? Can you see and feel the veins? Is there anything special about any of the leaves? (For example, some may notice that their leaves have been munched on by insects or other animals.)

Next, tell the students there's a picture of each type of leaf hanging somewhere in the room. Have them look for the leaf outlines that match their particular leaves, then have each of them go and stand next to the correct picture.

Once everyone has found the right leaf shape, tell them they're going to be taking a walk outside to find the trees the leaves came from. (Have them take their leaves with them outside.)

Each group of students with the same kind of leaf should keep their eyes peeled for "their" tree. Stop at certain trees as you walk along and ask if anyone thinks his or her leaf came from that particular tree. Have the youngsters who say "yes" hold their leaves up in the air. Are they right? Next, all of the youngsters look for some of



the tree's parts on the ground. Can they find twigs and buds, fruit or nuts, other leaves, or any other tree "pieces"? Compare the parts they find to those of the other trees you stop and talk about.

*Adapted from Ranger Rick's Naturescope "Trees are Terrific." Used with permission.*

**Activity 14:** Natural monsters.

Tree monsters are lurking in your classroom! Go outside and gather items from trees that you could make monsters from. Glue these pieces onto construction paper and add paint or crayon details. What is the name of each monster?

**Activity 15:** Getting to know tree parts!

Do Activity Sheet B (Page 1-12).

*You'll need:* Toilet paper or paper towel tubes, large construction paper, glue, yarn, scissors, markers.

Have fun making three dimensional trees that show some of the basic tree parts. Activity Sheet B shows students the process; they add their own three dimensional features and creativity!

*Adapted from Ranger Rick's Naturescope "Trees are Terrific." Used with permission.*



Sample Tree

**Activity 16:** Look for: Bees pollinating.

Have an incredible edibles tasting party! Ask: How many tree products have you eaten this week? This year? Your party fare might include bananas, oranges, apples, dates, walnuts, cashews and other nuts, bark (aka cinnamon!), maple syrup, more.

**Activity 17:** Root power.

*You'll need:* package of small seeds, an eggshell broken in half, part of an egg carton, potting soil.

Put some potting soil in each eggshell half; sprinkle seeds in one half shell. Cover according to the directions on the seed package. Put the shells in the carton so they will stay upright. Water very lightly and place in the sunlight. After a few weeks, watch what happens. The shell

with the seeds will start to crack from the roots. Discuss how roots cause damage to sidewalks or basements.

**Activity 18:** "Trees."

Read the familiar tree poem "Trees," by Joyce Kilmer. What does it mean to students?

**Activity 19:** Look for: Maple and elm seeds.

**Activity 20:** Play "Leaf it to Us!"

*You'll need:* a large (approximately three-and-a-half foot) cut out pattern of a tree (use your bulletin board tree as a guide); a pile of construction paper leaves; a beanbag; recorded or piano music; some tree and non-tree items like a rock, feather, pine cone, maple seeds, pine needles, acorn.

Tape or hang the paper tree on the wall or bulletin board (at a height all the children can reach) and stick a circle of tape to each branch tip. Put the leaves in a pile near the tree, set up the music, and you're ready to play the game. Here's what to do:

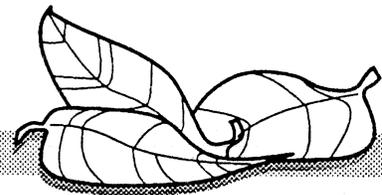
Have the students sit in a semicircle around the tree. Explain that everyone will get to help "dress up" the paper tree with the cutout leaves. But before a player can put a leaf on the tree, he or she must answer a tree question.

Next, give one of the children a beanbag. Start the music, and have the players pass the beanbag around the semicircle. When the music stops, ask whoever ends up with the beanbag one of the questions below. After a player has answered a question correctly, he or she can take one of the leaves from the leaf pile and stick it on one of the tree's branch tips. (If someone gives a wrong answer at first, talk about the question until he or she comes up with the right answer. That way everyone who answers a question will be able to put a leaf on the tree, even if the original answer isn't right.)

Continue playing until all the leaves are on the tree. Make sure everyone gets to answer at least one question. (You may need to add a few questions to this list, depending on the size of your group.)

**Questions**

1. Hold up a "non-tree" object such as a rock. Ask, "Is this part of a tree?"



2. What happens to some tree leaves in the fall? (On some trees-most deciduous trees- the leaves turn different colors and fall off. On most pines and other evergreens, they don't change colors and they don't fall off.)

3. What is a way a bird might use a tree? (Birds perch in trees, build nest in trees, and/or roost (sleep or rest) in trees. Some birds eat a tree's fruit or nuts, or eat the insects that live in or on trees.)

4. How does a tree's bark help the tree? (Bark protects a tree from insects, diseases, cold weather, and other things that could harm it.)

5. Hold up a pine cone and ask, "What is this?"

6. Can you name a kind of food that people get from trees? (Apples, oranges, cherries, and other fruits; also walnuts, pecans, and many other nuts.)

7. Can you name a kind of animal that lives in trees? (Bats, birds, insects, spiders, squirrels, and other animals often live in trees.)

8. Is a tree a living thing?

9. Is a tree a plant or an animal?

10. Hold up some pine needles and ask, "What are these?"

11. What do a tree's roots do? (They absorb water and minerals and help hold the tree steady in the soil.)

12. What is a big group of trees all living in the same place called? (A woods or forest.)

13. Can you name something made from trees that people use every day? (Paper, pencils, and wooden furniture are just a few examples.)

14. When there are no leaves on a tree in winter, does it mean the tree is dead? (No. Trees that lose their leaves in fall stay alive all through the winter, but are in a kind of resting stage.)

15. Would trees be able to grow if the earth never got any sunshine? (No. Trees, like most plants, need sunshine to grow.)

16. What color are most trees' leaves most of the time? (Green.)

17. Can you name a color some leaves become in the fall? (Yellow, red, orange, purple, brown. Some trees leaves stay green all year.)

18. When you grow up, will you be taller or shorter than most kinds of trees get to be when they're grown? (Shorter.)

19. How might an insect use a tree? (Some insects eat tree leaves, bark, seeds, and other tree parts. Some insects lay their eggs on or in trees. Some katydids and other insects "sing" from perches in trees.)

20. If there were tall trees all around your house, would you feel warmer or cooler in the house on a hot, summer day? (Cooler.)

21. Hold up a piece of bark and ask, "Is this part of a tree?" (Also ask where bark is found on a tree (on the trunk, branches, and roots).)

22. If you lived in a place that was windy all the time and you planted some big pine trees around your house, how would it make a difference in the wind against your house? (Trees make good windbreaks.)

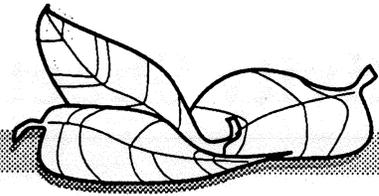
23. Hold up an orange and ask, "Is this part of a tree?" (An orange is the fruit of an orange tree.)

24. Hold up an acorn and ask, "What would this grow into if it were planted?" (An oak tree.)

*Adapted from Ranger Rick's Naturescape "Trees are Terrific." Used with permission.*

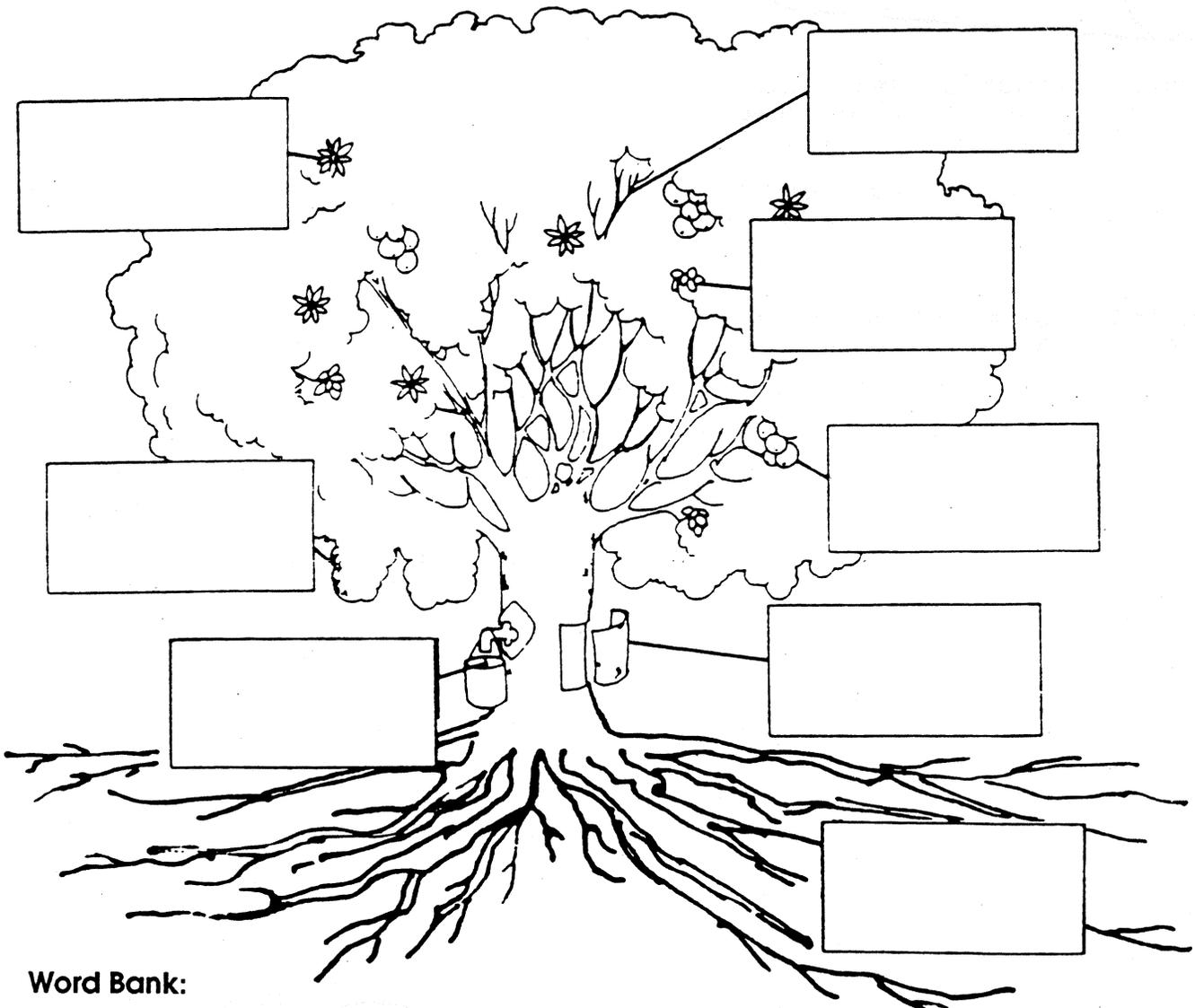
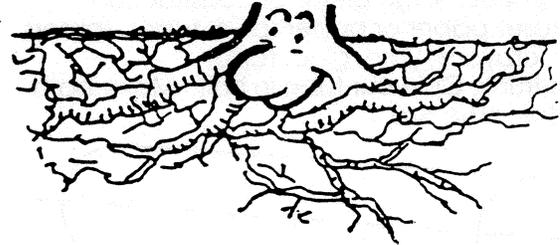


# Activity Sheet A



Rodney the Root says...

label the parts of a tree.



Word Bank:

twig  
roots

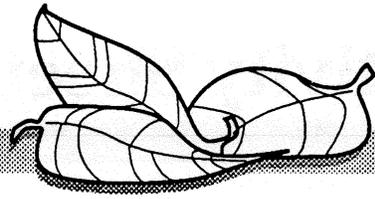
bark  
leaves

flowers  
fruit

nuts  
sap

Answers: See Activity 11, page 1-8.

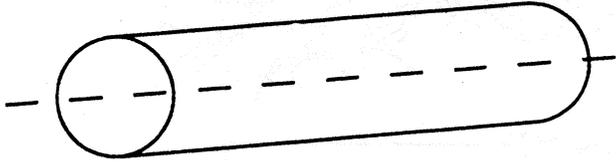
# Activity Sheet B



## 3-D Trees!

You'll need: large piece of construction paper, toilet paper or paper towel tubes, scissors, markers, crayons, yarn, glue, tape.

Your trunk: Cut your tube in half. Make both halves the same size.



Use markers or crayons to make bark and knot holes. Tape your halves end-to-end on your paper. Leave room for your crowns and roots!

Make paper leaves and yarn roots. Glue in place. Add grass, flowers, animals that might live in or near your tree.

*Adapted from Ranger Rick's Naturescope "Trees are Terrific." Used with permission.*

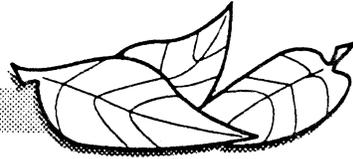
Sample sketch: See Activity 15, page 1-9.



# Grade 2



## Tree Life



### Objectives

- Students will gain a basic knowledge of a tree's life cycle.
- Students will develop appreciation for trees and be motivated to plant them.

### Background Information

Utah, like many parts of the world, has very cold winters. During this time the ground is hard and seems lifeless under layers of snow and frost. But under all this cold lie the **seeds, roots, and stems** that will be next summer's plants. Each seed holds a tiny plant and some food that will feed the new plant. Roots and stems have tiny **buds** that will begin to grow when the weather warms. The cold earth is far from lifeless. Winter is simply a time of rest.

As spring arrives, the rays of the sun begin to warm the earth. Snow and frost melt. The moisture soaks the seeds and makes them swell. The tiny plants begin to grow. Buds and roots also begin to grow and soon we see new plant life.

Through the hot summer months, plants grow strong and sturdy. But at the end of the season, a plant's work is usually done. For some plants, it's the end of their lives. For others, it means going into a long rest as the autumn ground freezes and there is no more water. They will "sleep" (lie **dormant**) again until spring, when the **life cycle** will start all over again.

### It Starts With Seeds

They can be as large as a coconut or as small as the head of a pin. Some are flat, some are round; others are long and thin. Most

travel...some by air, some by water, some by quietly

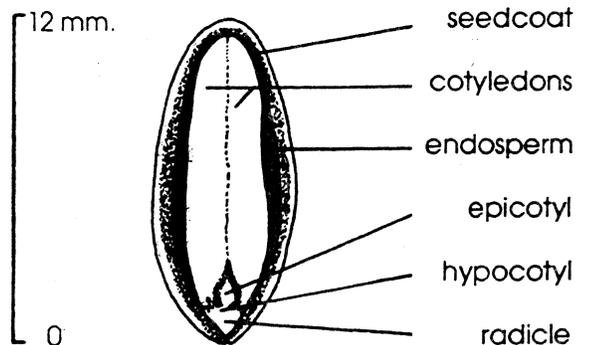


### Vocabulary Words

seeds	sapling	sapwood
roots	root tips	heartwood
stems	cambium	chloroplasts
buds	fibers	carbon dioxide
dormant	sap	photosynthesis
life cycle	cells	evergreen
oxygen	cellulose	broadleaf
chlorophyll	annual rings	deciduous
pollen	outer bark	ecology
seedling	inner bark	germinate

hitching a ride with a passing person or animal. Touch them with a bit of warmth and moisture, and the miracle of growth begins. What are they? Seeds, wonderful seeds!

Seeds look and feel very different from each other, but they're all alike in important ways. Each of them is a baby plant with its own food supply, all put together in one handy, self-sealing package. They all have the same needs for growth-moisture, warmth, sunlight, food, **oxygen**. And they all begin to grow in much the same way: Moisture soaks the outer shell of the seed until it becomes soft. The food inside expands as

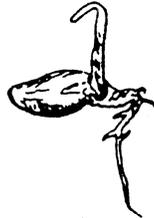


Seed Cross Section

the water enters the seed. If warmth is also present, the shell breaks open and growth begins.

A seed contains everything that's needed to form a new plant. The cross-section on page 2-1 shows the parts of a Kentucky coffeetree seed.

As growth begins, a small root pushes out of the seed and down into the earth to search for water. A tiny stem pushes up through the soil reaching toward the sunlight.



As the plant grows underground, it uses the food stored in the seed. As soon as it pushes out of the ground into the sunlight, it begins to make its own food. Food is made by the leaves and the stem of the plant. A green material in the leaves' plant tissues -**chlorophyll**- acts together with water, air, and sunlight to make a kind of sugar that is food for the plant. The sugar flows from the chlorophyll throughout the plant so the whole tree is nourished.

Some tree species have unusual seed "containers." Think about coconuts, bananas, apples, pine cones. Pine cones vary, too. One kind is small and papery and full of tiny grains of **pollen** that look like yellow powder. The wind blows the pollen out of the cones. Another kind of cone is covered with wood scales that hold seeds. When a seed is ripe, the wind blows it off the scale. When it reaches the ground, the seed may take root and grow into a new pine tree.

The young tree that grows from a seed is called a **seedling**. After a tree reaches a height of six feet or more and its trunk is one to two inches thick, it is called a **sapling**. The tree grows taller and its trunk grows thicker every year. The tree continues to grow as long as it lives.

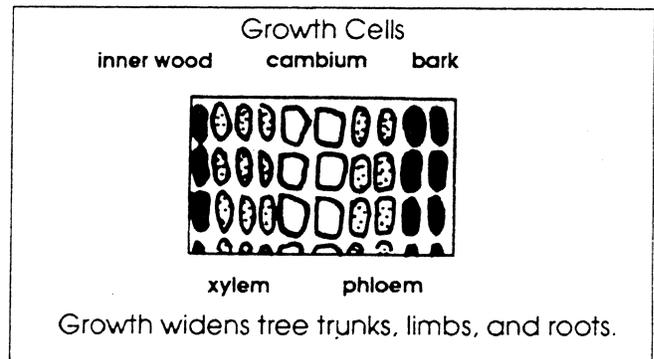
### Where Growth Takes Place

Trees have three different growing parts: the **root tips**, the **cambium** layer, and the buds. The root tips cause the roots to grow longer and spread out in search of more water and minerals. The cambium layer is a thin layer of cells between the bark and the inner wood. You'll find

cambium in the trunk, limbs, and roots. The buds on the limbs grow and get longer, making the tree taller and wider. This also makes it possible for the limbs to spread out to receive more sunlight.

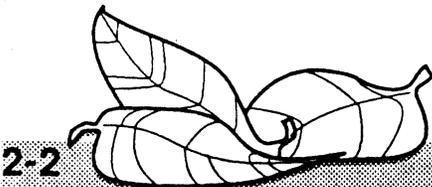
Wood is not solid material. It is made up of a lot of little **fibers** woven together that can be seen only under a microscope or very strong magnifying glass. Fibers vary from short to long.

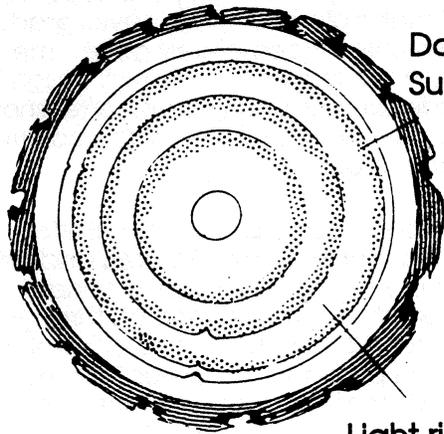
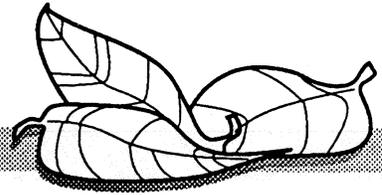
Little tubes carry plant foods up and down the trunk of the tree and through the branches as liquid called **sap**. These tubes, or pipelines, are made up of many small sections called **cells**. The cells are so small they can only be seen through a magnifying glass.



The ends of the cells are open, like a soda straw. A row of material called **cellulose** forms around the outside to strengthen the tube. A piece of wood, even as small as a pencil, contains millions of these cells.

By looking at the cross section of a tree trunk, you can see tree growth from the center towards the outside. Look closely at the top of a stump or the end of a log, and you can see rings in the wood. These rings are made by growing layers of wood; a new layer is added each year. Each layer is made up of a band of lighter colored wood called spring wood and a band of darker wood called summer wood. The spring wood band is usually wider than the summer wood band. These rings are called **annual rings**.





Dark rings are  
Summer Wood

Light rings are  
Spring Wood

Tree Cross Section

The tree's age can be figured out by counting the rings on a stump. Remember, one light ring and one dark ring together make one year. Start from the center and count out; count only the dark rings.

The covering on the outside of the stump or log is usually rough and does not look like the wood. This is called the **outer bark**. It is a layer of dead cells and is only a protective coat. Just inside the outer bark is a thinner, lighter colored layer called the **inner bark**.

The very thin layer of cells just inside the bark can't be seen by the naked eye. It is the **cambium** (discussed earlier).

Next is a wide band of lighter colored wood that is called **sapwood**. Notice the darker, dead, inactive wood in the center of a stump or log. It is called **heartwood** and it gives support and strength to the tree. For more information about annual rings, see Grade 6, pages 6-8 and 6-9.

The shape of a tree varies. Part of that is due to the kind of tree it is. Part is due to the tree's environment. When a tree stands in an open location, branches often grow low down on the trunk. They may spread out, almost sweeping the ground. When trees grow close together, like in a forest, the lower branches do not get enough light and soon die. The branches forming the crown at the top of the tree are sometimes the only ones that survive.

## The Leaves' Job

Sunlight comes into a leaf through the leaf's skin, which is clear like glass. Beneath the skin are millions of tiny "bags"—again called cells. These cells are like little balloons filled with water and living jelly. Inside the cells are small green packages called **chloroplasts**. The chloroplasts are green because they are filled with green chlorophyll. The chlorophyll catches some of the sunlight that falls on a leaf.

While the green packages are catching sunlight, other things are happening in the leaf. Air comes into the leaf through many tiny openings. Water, moving up from the roots far below, flows through the leaf. The air and water mix together and flow into the cells.

These cells are like little factories. Here, the green chlorophyll works away. Using sunlight as a source for energy, it changes water and a gas from the air (called **carbon dioxide**) into a form of sugar. This process is called **photosynthesis**. The sugar made by the leaves is food or energy for the growing parts of the tree and for storage. During photosynthesis, the leaves also produce oxygen, which is released into the atmosphere.

Some trees lose their leaves before winter; others do not. Why does this happen? Leaves make the food for the trees and they need water to do it. A tree gets water from the ground. The roots take it in, then the water travels up the trunk to the leaves. In late summer, a thin layer of cork grows over the leaf-twig connecting spot. Water can no longer pass into the leaf, so it dries up, dies, and falls off.

Another kind of tree, the **evergreen**, does things a bit differently. Its leaves are called needles and they fall off, but not all at once like the first trees (**broadleaf** or **deciduous**) we talked about. Evergreen needles are tough and don't freeze in winter, so they don't lose water as quickly as other kinds of leaves do. By holding onto the water that's in them, they stay alive and green even in winter.

## Seasons Come, Seasons Go

Seasonal changes bring a lot of variety to a forest. During the spring of the year, forest life is renewed. The flowering plants, including many trees and shrubs, display their showy flowers. The broadleaved trees and shrubs begin to cover

themselves with new leaves, while the evergreens develop new shoots, known as candles, that later flare out into new stems and needles. The male pollen-bearing flowers of evergreens are also colorful with their different shades of yellow and purple. Have you ever tapped the end of a pine branch when the pollen was ripe? If not, try it sometime; you will see a dense cloud of yellow or purple pollen drift away with the wind. The wind will carry some of this pollen to female flowers of the same tree or to neighboring trees that are the same kind. These female flowers will then begin producing new pine cones.

While all the forest plants are springing to life, fur-bearing mammals are giving birth to their young. Songbirds, game birds, predatory birds (hawks and owls), and scavengers (vultures, gulls, crows) are hatching their offspring. Along nearby ponds and lakes, waterfowl hatch their young. All this new plant and animal life is a wonderful form of beauty for people to enjoy.

During late spring and summer, all the new life that began in the spring is "growing up." Many flowers turn into showy fruits; young birds grow feathers and begin flight training; ducklings start to swim; young fur-bearing animals romp around and learn the serious business of hunting for food and hiding from their predators. While all this activity is going on, the trees in the forest are adding a new layer of wood around their trunks and spreading their branches wider and higher.

In the fall, the forest changes into a new kind of beauty. The leaves of broadleaved trees, shrubs, and other plants change to brilliant colors of red, yellow, and orange. Do you know why the leaves of broadleaved plants change color? Many people think frost causes this change. Actually, frost can cut down the brightness of autumn colors. The green color in leaves comes from the green chlorophyll. When exposed to light, chlorophyll starts the process of photosynthesis.

Carbohydrates are made during photosynthesis. These carbohydrates collect in the leaves and make other colors. In the fall, when temperatures are too low but not yet freezing, the

production of the green chlorophyll stops. The chlorophyll that is already in the leaves gradually breaks down until it is completely gone. The other colors in the leaves then show through in various shades of reds and yellows. After showing their beauty for several weeks, the colorful leaves fall to the ground.

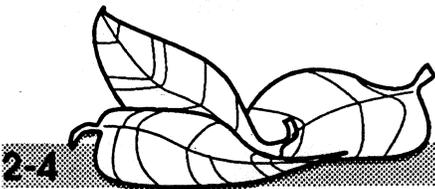
During the fall, some birds and waterfowl migrate to warmer climates. Squirrels and chipmunks are busy storing acorns, pine cones, and seeds of other plants to feed on through the long winter months. Bears and other hibernating animals prepare to "hole-up" for much of the winter. Most of the trees and other plant life shed their seeds before the snow flies so the seeds will be ready to sprout into new plants when the snow melts the next spring.

## Death Of A Tree

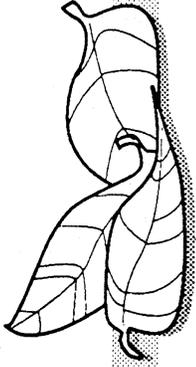
We are part of a living and dying world. Plants and animals are born, grow to maturity, age, and die. Their places, in turn, are taken by other plants and animals. As each living thing dies, decays, and returns to the soil, it affects the area around it and changes the environment. For example, one plant's death may make it possible for new plants to grow where they could not before. This is a part of the exciting process called **ecology**.

The Norway (red) pine shows the death/new life connection. Norway pine tree seeds need mineral soil to **germinate** and grow. When a Norway pine tree is growing, it covers the forest floor with litter, making it impossible for other pine seeds to reach mineral soil. This means Norway pine seeds cannot reproduce themselves in the dense forest. When the Norway pine dies and the litter is disturbed, though, other Norway pine seeds may fall on the mineral soil and start to grow.

Plants that like shade, like the sugar maple, can sprout and grow on rotten logs. Plants growing on rotten logs help the log decay back into the soil. Small animals find homes in the logs; these animals become food for other animals. And so, death brings new life to a forest.



# Grade 2



See activity details on pages 2-7 through 2-11.

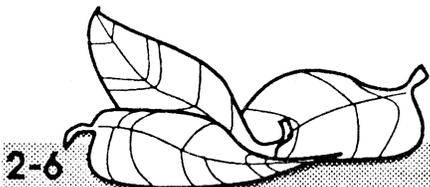
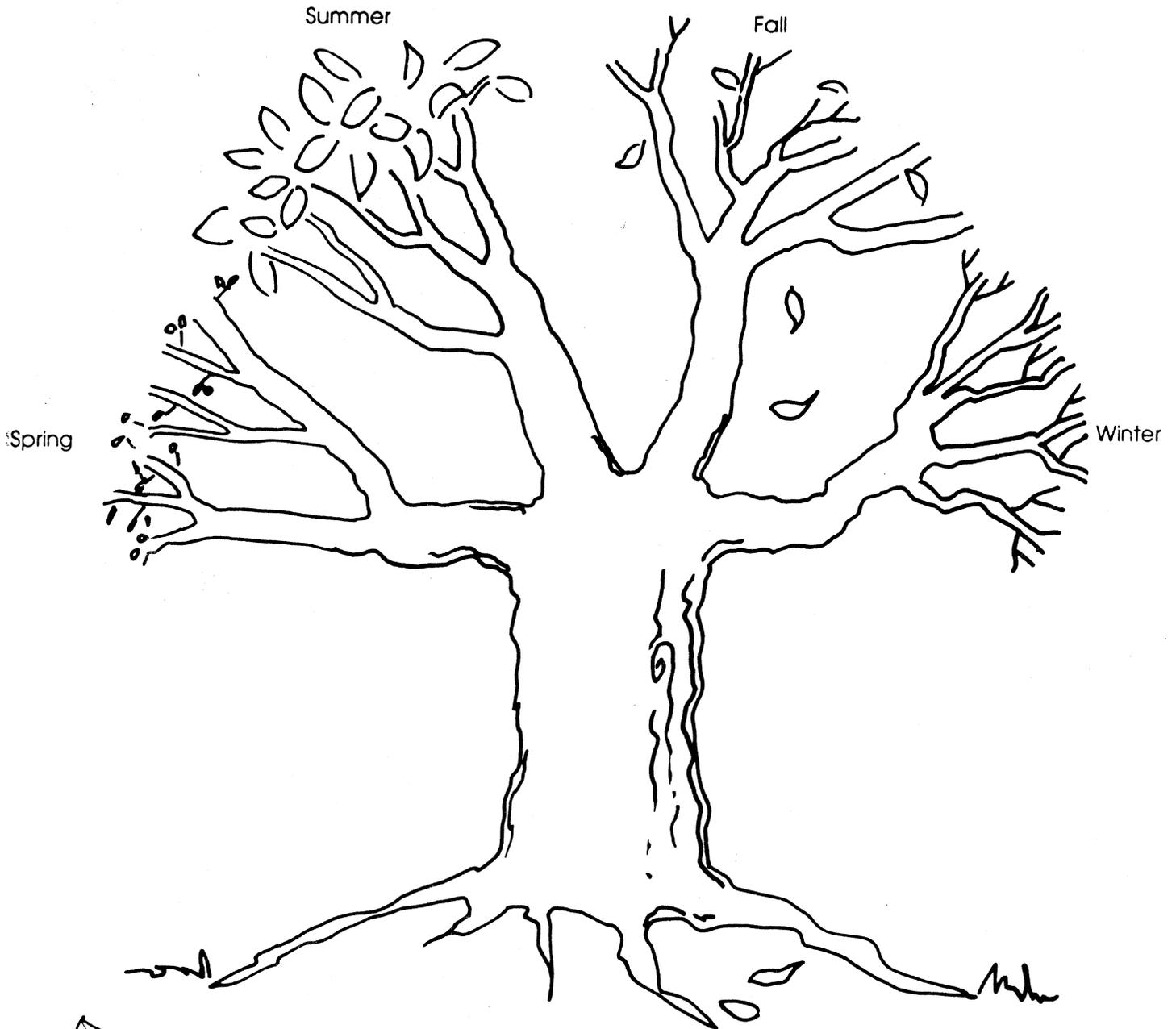
## Calendar

<p>Do: Plant Kentucky coffeetree seeds!</p> <p>Science</p>	<p>Create: Pine cone critters.</p> <p>Art</p>	<p>Hike: Nature scavenger hunt.</p> <p>Science</p>	<p>Write: "Life of a Leaf" stories.</p> <p>Language Arts</p>	<p>Create: Tree monsters.</p> <p>Art</p>
<p>Create: Hear the forest!</p> <p>Language Arts</p>	<p>Discover: Treasures in rotting logs!</p> <p>Science/Social Studies</p>	<p>Do: Stump rubbings.</p> <p>Art/Science</p>	<p>Discover: Tree growth patterns.</p> <p>Science</p>	<p>Write: Be a poet. Tell about those marvelous trees!</p> <p>Language Arts</p>
<p>Do: Rodney the Root's Seed Search. (Activity Sheet)</p> <p>Language Arts</p>	<p>Listen: Woody literature and folklore.</p> <p>Language Arts</p>	<p>Look for: Tulips blooming, bees pollinating, robins nesting.</p> <p>Science</p>	<p>Discover: The number of pounds of paper your school uses!</p> <p>Math</p>	<p>Listen: Shel Silverstein's delightful book, "The Giving Tree."</p> <p>Language Arts</p>
<p>Research: What recycling has to do with saving trees.</p> <p>Science</p>	<p>Discover: Dead leaf skeletons.</p> <p>Science</p>	<p>Look for: Tree frogs. Discuss: If a tree falls in the forest and there's no one to hear it, does it make a sound?</p> <p>Science/Language Arts</p>	<p>Look for: Crab apple trees blooming. Fun Fact: Banyan trees make their homes inside other trees.</p> <p>Science</p>	<p>Discuss: How many species of trees can you name? How many grow in Utah?</p> <p>Science</p>

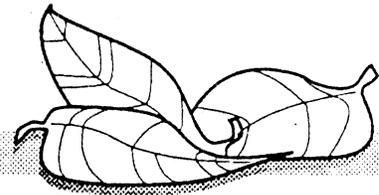
# Bulletin Board Idea

## A Tree For All Seasons

Make a basic tree trunk with branches.  
Divide the crown according to the four seasons.  
Students participate by adding appropriate parts  
(buds, leaves, etc.) to each season's section.



# Activities



## Hands On - Minds On Activities

Follow these activities in order and you have one for each of the 20 days in Arbor Month (see calendar). Or, pick and choose any of the activities that best meet your class's needs.

To complete the calendar activities during the month, collect or ask youngsters to bring in the following: Kentucky coffeetree seeds and planting supplies (Activity 1); pine cones (Activity 2); "The Giving Tree" by Shel Silverstein (Activity 15).

### Activity 1: Plant Kentucky coffeetree seeds!

*You'll need:* potting soil; sand paper; styro-foam or plastic cups (2 per student, 10 oz. - 12 oz. size or larger); seeds (order from: F.W. Shumacher, 36 Spring Hill Road, Sandwich, MA 02563).

*What you do:*

1. Scarify the seeds by rubbing gently on fine sandpaper until the seed coat is penetrated.
2. Fill each cup to within one inch of its top with potting soil.
3. Push seed about one inch into the soil. Cover the seed with soil and smooth the surface.
4. Water until soil is moderately moist.
5. Set cups on a window ledge or table in direct sunlight.
6. Check daily for moisture needs. If soil feels dry to the touch, add one or two table-spoons of water. Don't overwater. Your cup has no drainage system to get rid of extra water.
7. Watch for signs of germination (sprouting of the seed). Your sprout should appear in three to four weeks. Continue to water as needed. When the seedling has outgrown its container, transplant to a larger pot with good drainage. The seedling may be transplanted outdoors after one year.
8. To plant outdoors, see information in the Appendix, page 3. In addition to the Kentucky coffeetree seeds, try sprouting apple, peach, pear, avocado, orange, grapefruit, cherry trees. Or, try vegetable seeds. Beans are easy to grow and you'll see fast results; the bean sprouts appear in just a few days.

### Activity 2: Pine cone critters.

Have students collect pine cones and bring them to class. Look for a variety of sizes...they're out there somewhere! Glue pine cones together to make animal critters. Use pipe cleaners, construction paper, etc. to add finishing touches.

### Activity 3: Nature's scavenger hunt.

Give students bags and a list of things to find. Go outdoors to a safe and specific area in which to hunt. Set a time limit, and they're off! The list

of items to find might include pine cones, acorns, maple tree seeds, a dandelion, pussy willows, a feather, leaf buds, etc. You may want to do a "dry run" in the hunt area first to find things to add to the list.

### Activity 4: Life of a leaf.

You are a leaf. What happens to you each season? When there is pollution in the air? When a hungry caterpillar decides you would make a tasty lunch? When you are chosen the most beautiful leaf in the school leaf collection? Write a story about yourself and your life as a leaf. Use plenty of details and describing words!

### Activity 5: Create: Tree monsters.

Tree monsters are lurking in your classroom! Go outside and gather items from trees that you could make a monster from. Glue these pieces onto a piece of construction paper. Add crayon or paint features and details. What is the name of your monster?



### Activity 6: Forest sounds.

Gather rhythm band and other instruments and create your own forest music. How does a forest sound? Which instrument(s) would you use to create the sounds of soft breezes through the leaves, strong wind through the needles or 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 day? Create your forest sounds with the instruments, tape recording your best efforts. Invite others to listen to your tape. Do others "hear" your forest the same way you do?

**Activity 7: Rotting treasures.**

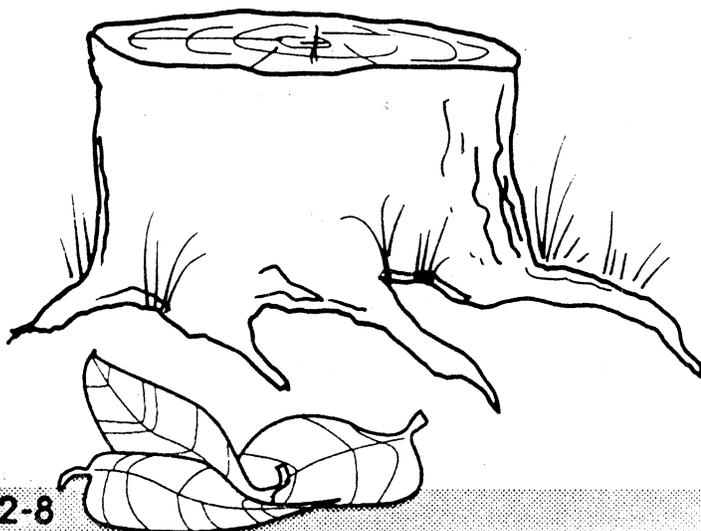
One of the best ways to learn about the ecology of an area is to study a rotten log or decaying stump. The competition and cooperation among plants, animals, and other factors of local environment (moisture, air temperature, light) can all be studied in this exercise. While all these things are happening in a very minor part of our environment, such as the log, the same things are at work in the larger environment, like the forest.

Study a rotten log or decaying stump and you see a community at work. Just as in your community, city, town, or village, the same birth, life, and death forces are at work. A good example of cooperation and competition exists in the log community, too. What comparisons can students make between the log community and their own?

**Activity 8: Stump rubbings.**

Find the stump of a large tree. (Dutch elm and oak wilt diseases have affected many trees. Diseased trees have been removed, and their stumps are a good learning source.) Do a stump rubbing, using a strip of paper and a soft lead pencil or dark crayon. Figure out when the tree was cut and find important dates in your community, state, or nation's history by counting toward the center. (See Grade 6, page 6-8 for more information about reading annual rings.)

It might be fun to see who in the class can find the oldest tree stump, and who can pick out the most important dates.



**Activity 9: Tree stumpers.**

On the same stump (or stumps) find the good and bad growth years. Compare with the weather history of an area to see if there is a relationship. Compare stump rubbings from several trees to see if growth patterns are similar. If not, research what may have caused the differences, i.e., insects, disease, competition from surrounding trees, a roadway, sidewalk, or building, etc.

**Activity 10: Try being a poet!**

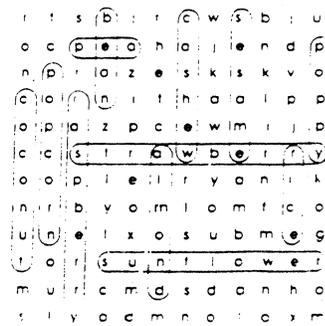
Write a poem about why trees are so special in our lives. As a group, brainstorm words that can be used. Then let the creative juices flow! Write about what trees and forests do for you... how they make you feel. Or imagine you are a tree. Talk about how things look from your point of view, or how you feel. What are some other ideas?

**Activity 11: Seed search.**

You'll need: Rodney the Root's *Seed Search* Activity Sheet A. (Page 2-10.)

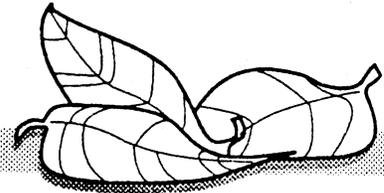
Discuss the activity sheet and do the word search.

**Answers:**



**Activity 12: Literature and folklore.**

Literature is packed with fascinating folklore and legends about plants and trees. Your librarian will be able to direct you to good sources. For example: It's said that Ojibway Indians seldom took down a living tree because they believed a tree could feel pain. Their medicine men told of trees wailing as they were being chopped down. Many other tribes around the world have also been especially respectful of trees. The primitive Basoga of central Africa



sacrificed animals to each tree they were about to cut down. Scandinavian elves and trolls are tree lovers, too.

**Activity 13:** Look for: Tulips blooming, bees pollinating, robins nesting.

**Activity 14:** Pounds and pounds of paper.

How much paper do youngsters use in your school? Here's a survey with surprising results:

1. Each student weighs all the paper in his or her desk (books, notebooks, etc.) on a postage scale. Add each student's total for a grand total.
2. Divide to find the average weight of paper per student.
3. Multiply the average weight by number of students in the school. What's the grand total for your school?
4. A 16-inch diameter tree used in paper production yields 700 pounds of paper. How many trees did your school consume?

**Activity 15:** "The Giving Tree."

Read and discuss Shel Silverstein's delightful book, "The Giving Tree." What things did people do that were damaging to this tree? How did the tree keep "loving back" in spite of what happened to it? Did the story change your feelings about trees? About how people treat trees?

**Activity 16:** Become recycling sleuths!

What are some of the many ways we can recycle to help save our trees? (Recycle paper products, save newspapers for recycling centers, etc.) Where is the nearest recycling center for you? What other things will it recycle? Find out what it does with the recycled products. What can you do to recycle products? (Cut out magazine pictures to make greeting cards; use discarded mail as scrap paper; cut corners from envelopes and slip over pages for neat bookmarks, etc.) What are some other things you can think of?

**Activity 17:** Dead leaf skeletons.

You can find leaves late in the winter or early in the spring that have not fully rotted into rich soil. Look under bushes, in tall grass, or all over the ground in the woods. Dig through the layers of rotting leaves. You might find a leaf "skeleton" with just the harder veins left. Dig down and look for leaves on the bottom that have almost turned

to soil and you may find insects hiding from the cold.

**Activity 18:** Look for: Tree frogs.

Debate the age-old question: If a tree falls in the forest and there's no one to hear it, does it make a sound?

**Activity 19:** Look for: Crab apple trees blooming.

*Fun Fact:* Most trees grow from the ground up, but not most banyan trees. The banyan usually sprouts above the ground and grows down. Banyans are planted when birds, bats, or squirrels drop seeds into cracks in the branches of other trees, called hosts. When a banyan sprouts, its roots grow down from the host branches and into the ground, forming trunks. The banyan kills the host tree by preventing its trunk from growing. After the host dies, the banyan continues to grow and eventually, one tree appears to be an entire forest.

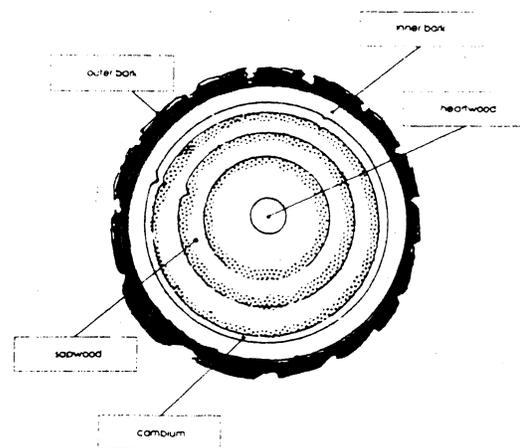
**Activity 20:** Brainstorm: All those trees!

How many different species of trees can you or your group list? Write the names on the chalkboard or on chart paper. Go through your list, circling those that grow in Utah drawing lines through those that don't. Research to find where the others grow.

## More Activity Fun

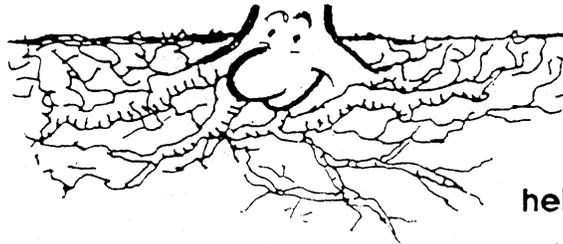
**Learn those layers!** See Activity Sheet B, page 2-11.

**Answers:**



# Activity Sheet A

Rodney the Root says...



help me in a seed search.

How many plants can you name whose seeds are often eaten by humans? Check out the puzzle below. Names are up and down and across. Did you find all 12?

r t s b j r c w s b j u  
o c p e a h a j e n d p  
n p r a z e s k s k v o  
c o r n i t h a a l p p  
o p a z p c e w m i j p  
c c s t r a w b e r r y  
o o p l e l r y a n i k  
n r b y o m l o m f c o  
u n e l x o s u b m e g  
t o r s u n f l o w e r  
m u r c m d s d a n h o  
s l y a d m n o l o x m

## Look for these seeds:

coconut  
sesame

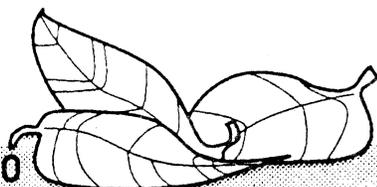
bean  
almond

cashew  
raspberry

sunflower  
strawberry

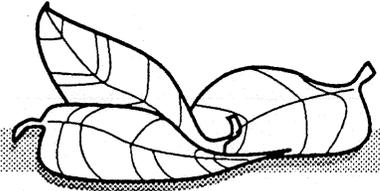
popcorn  
poppy

pea  
rice



Answers: See Activity 11, page 2-8.

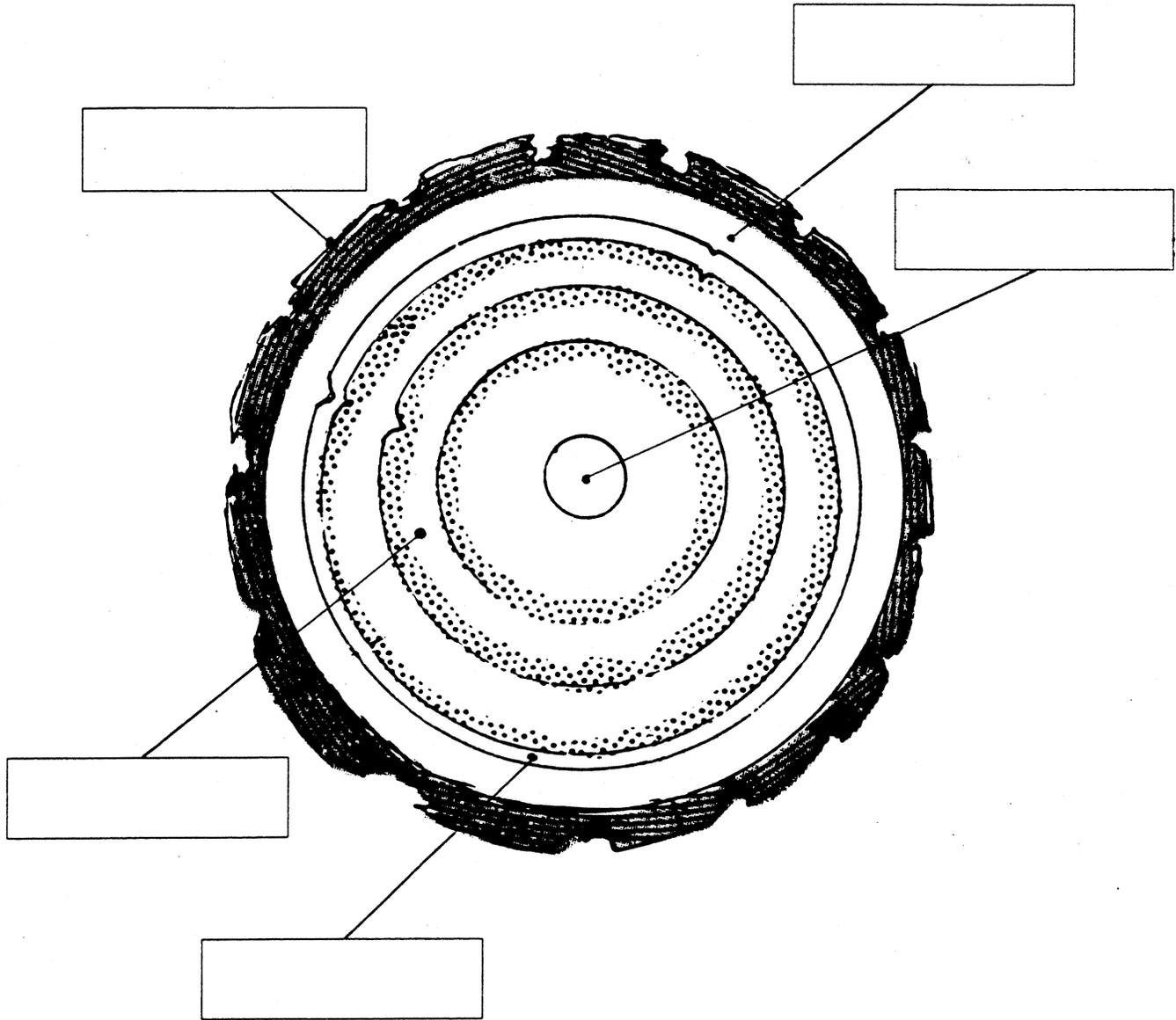
# Activity Sheet B



## Learn Those Layers

Can you label each layer? The layers you're looking for are:

outer bark   heartwood   inner bark   cambium   sapwood



Answers: See More Activity Fun, page 2-9.



# Grade 3



## Tree Enemies

### Objective

- Students will understand some of the causes of damage to trees and what they can do to help prevent it.

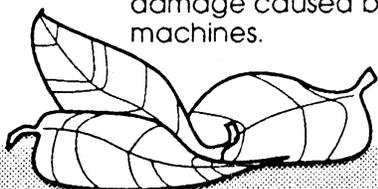
### Background Information

Our priceless friends, the trees, have many enemies. Fire, wind, ice, lightning, **pollution**, disease, insects, machines and vehicles, animals, and abuse from people all take their toll. Some of these, such as weather damage, we can't prevent. Others we can do much about. With good care and management, trees can continue to be **renewable natural resources**.

Trees give us many things. This includes fuel, lumber, wood pulp, fiber, and food for both humans and animals in the form of fruits, nuts, bark, and leaves. Trees are an essential part of the earth's environment because they absorb **carbon dioxide**, give off **oxygen**, hold water and soil in place, and return nutrients to the soil.

Forests are delicate. If disturbed, they can be destroyed. It is our job to protect, **conserve**, and manage the forests of the world rather than simply cut them for our uses today. Proper management of a lumber forest includes planting, growing, and reproducing trees to provide lumber in the shortest possible time. At the same time, forest managers must control **erosion**, guard **watersheds**, protect animals, allow for agriculture, and provide for recreation. Each of us has a responsibility to do what we can to save and protect trees, too.

In these lessons, we will discuss some of the natural causes of damage to trees, as well as damage caused by people and machines.



### Vocabulary Words

pollution	root grafts
renewable natural resources	blockages
carbon dioxide	sapwood
oxygen	chemicals
conserve	environment
erosion	girdling
watersheds	humus
fungus	kindling
elm bark beetles	

### Natural Causes of Damage

Did you know that trees, just like people and animals, can get diseases? They can...and it can be serious.

A **fungus** is a tiny plant that may be deadly to certain trees. Two diseases caused by fungus that have had major effects on the trees in the United States are Dutch elm disease and oak wilt.

### Dutch Elm Disease

Dutch elm disease was first described in the Netherlands in 1919. It spread quickly in Europe and by 1934 was found in most European countries and the British Isles.

European **elm bark beetles**, which carry the disease, were reported in the United States, in Massachusetts, as early as 1909. The fungus that causes the disease came into this country in logs shipped from Europe. The logs contained both the fungus and the European elm bark beetles. The logs were shipped to factories in New York, Ohio, and Indiana. The bark beetles escaped from the logs as they traveled and carried the fungus to at least seven states.

Once in the country, Dutch elm disease spread rapidly. In 1930, new diseased elm trees were found in Ohio. The disease was reported around the port of New York in 1933. Dutch elm

disease is now found in 41 states, from southeastern Canada to Texas, west to Colorado and California, and north to Oregon. It is the most destructive shade tree disease in North America.

The first cases of Dutch elm disease in Utah were reported in the early 1980's. It's believed that it came in from Idaho where it had been previously reported.

The American elm has been planted in cities and towns throughout Utah. Spread of the disease through the state has been spotty. Siberian elm is more plentiful but it is resistant to the disease.

Hopefully, through careful monitoring, the disease can be kept under control in Utah.

#### *How is the disease spread?*

Dutch elm disease is caused by a fungus. It spreads from tree to tree in two ways: First, elm bark beetles carry the fungus spores attached to their bodies and pass them into healthy trees when they feed on their branches. Second, the disease can be spread by **root grafts** (roots naturally growing together) when the roots of an infected tree happen to be grafted to the roots of a healthy tree.

Once in the tree, the Dutch elm disease fungus invades the water-conducting vessels of the elm. The fungus causes the tree to form **blockages**, in an attempt to stop the invader. Together with the fungus, these blockages plug the water-carrying vessels of the tree and stop water movement. This causes the tree to wilt and die.

#### *What are the signs of the disease?*

The first sign of Dutch elm disease in a tree is wilting in one or more of the upper branches. Leaves on the branches turn dull green to yellow and curl, then become dry, brittle, and turn brown. Peeling bark from wilted branches of diseased trees shows light to dark brown streaks or solid blue to gray colored streaking of the wood beneath the bark. In a cross section of the branch, you'll see a broken brown ring in the outer **sapwood** of the wilting, dead, or dying branches.

Some trees die several weeks after becoming infected, while others wilt slowly and survive for a year or longer.

#### *How can we prevent the disease from spreading?*

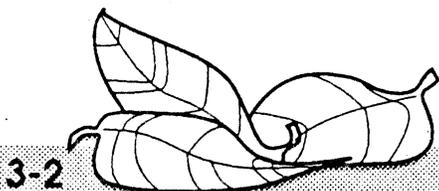
The best way to manage Dutch elm disease is to prevent it. The ways to prevent Dutch elm disease are described as "sanitation." This includes catching signs of the disease early, and getting rid of all weakened, dying, or dead elm trees. Stripping the bark from elm wood takes away elm bark beetle breeding places and sources of the fungus. The steps in a sanitation program are:

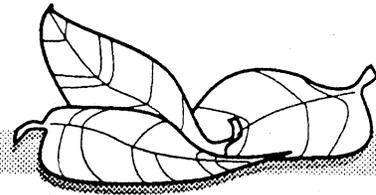
1. *Catch the disease early.* Foresters carefully inspect elm trees in any area where the disease has been found. This inspection turns up trees showing signs of disease.

2. *Separate the tree from others.* Foresters disrupt root grafts between infected and healthy trees. Once a tree is known to be diseased, root graft barriers are set up so the diseased tree's roots cannot spread the disease to healthy trees through root grafts. This root graft blocking can be done by trenching around infected trees, or by putting **chemicals** in holes around the trees.

3. *Remove the diseased wood.* This means getting rid of all dead and dying elm material from the area of diseased trees. Dead and dying elm wood, including stacks of firewood logs, are breeding places for elm bark beetles. A piece of elm branch the size of a small fireplace log can produce up to 1,800 beetles. Left to stand, a complete tree can produce hundreds of thousands of beetles. If this tree is infested with the fungus, each beetle carrying the fungus spores can then carry the disease to healthy trees during feeding. This is why removal of diseased trees is so important.

4. *Destroy diseased wood.* This is done by chipping, debarking, burning, or burying elm material.





## Oak Wilt Disease

### How is the disease spread?

Oak wilt disease is similar to Dutch elm disease in several ways. First, oak wilt is also caused by a fungus that gets into the tree's outer sapwood. It mainly affects those vessels that carry water and minerals from the roots to the leaves. To try to protect itself from the fungus, the tree forms blockages. They clog the vessels and cut off the tree's water supply. Without water, the oak wilts and dies.

Again as in Dutch elm disease, the fungus that causes oak wilt is carried from tree to tree in two ways. First, it is spread through grafted roots when the roots of a diseased tree are attached to the roots of a healthy tree. Second, the fungus can be spread by sap-feeding beetles. The fungus creates a fruiting or spore-bearing material between the bark and wood of a tree that cracks the bark open. That exposes the spore-bearing material that attracts the beetles. As the beetles crawl on the material, spores of the fungus stick to them. They then fly to other oaks that have been wounded and have exposed water conducting tissues, and infect the healthy trees.

### What are the signs of the disease?

As in Dutch elm disease, the first sign of oak wilt disease in a tree is wilting. It usually starts near the top of the tree and then quickly involves the entire crown. You'll also see brown to black coloring in the outer sapwood of the diseased tree.

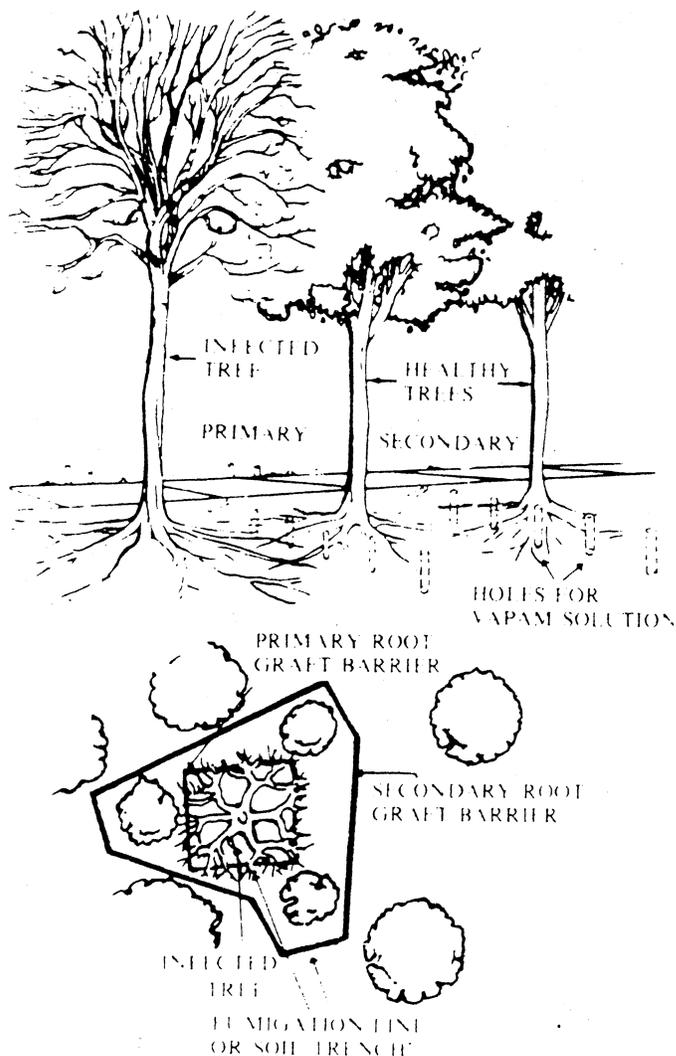
Another sign of oak wilt is leaf color changes. The leaves of red oaks turn dull green, bronze, or tan beginning at the outer edges of the leaf.

Unlike Dutch elm disease, oak wilt can be controlled without destroying every diseased tree. This is because the fungus only produces spores for a short time on a small part of the diseased tree. If these trees are treated so no spores will form on them, infected oak trees can be used for firewood and other purposes. Red oaks can be used only when they are beyond the stage of producing or harboring spores, however. If a red oak is not past this stage, it can be used as firewood only if the bark is removed.

### How can we prevent the disease from spreading?

Some of the steps to prevent oak wilt disease

from spreading are similar to those of Dutch elm disease. First, the disease must be found, and diseased trees isolated from healthy trees through separating the root grafts. As with Dutch elm disease, root graft separation is done by mechanically trenching around infected trees or by using Vapam, a soil sterilizing chemical that kills living plant tissue.



A second way to prevent oak wilt from spreading is to protect oak trees from being wounded, especially between April 15 and July 1 each year. Trees should not be pruned during this time and working around trees should be avoided if at all possible.

## Insects

Insects can be good or bad for trees. Some are truly plant enemies. They are hungry little creatures that chew away day and night. If they eat all the buds or young leaves on a tree, or the water conducting tissue under the bark, the tree can die.

It is difficult to know how to control insects. Some people use chemicals that kill the bugs, but these chemicals can also cause other damage to the **environment**. Other folks try to combat some bugs with other bugs that like to eat them. This is more difficult, but better for the environment. Getting rid of harmful insect enemies is important, but it has to be done with care. All insects, even those that attack plants, help the balance of nature. The best protection for trees is to keep them healthy in the first place.

## Fire

**Fire can be another great enemy to trees. When it is very dry, forests can burn quickly. Raging forest fires destroy valuable timber and threaten lives and property. They can also harm the soil and destroy the forest as a home for wildlife. Firefighters battle fires by digging up the ground to create fire breaks and with water to keep them from spreading. Some fires are caused by lightning, but most are caused by careless people.**

**Fire has a good side as well; it is part of the cycle of life in most ecosystems. Fires can be helpful to trees. They reduce dead wood and help regenerate a forest.**

## Pollution

Imagine a world that is plain, even ugly—a world without beauty. Imagine a world in which most of the trees are dead. It wouldn't be a very pleasant place to live. But many scientists fear that's what our world will be like if we don't do something about pollution. Both air and water pollution are tough on trees. Pollution can poison a tree's system, slow its growth, and even kill it. Pollution happens when human-made and natural wastes dirty the air or water. Human-made wastes are the main sources of pollution. The greatest air pollution comes from the burning of fuel to power motor vehicles, heat or cool

buildings, and run industry. Water pollution is most heavily caused by wastes from industry, chemicals and other poisonous substances, and household garbage.

## Other Human Actions

People can be a tree's best friend; they often are its worst enemy, too. Plants and trees need land to grow on. But people need roads, houses, factories, mines, fields, shopping centers, and parking lots. So trees are chopped down, and land is cleared and paved. Little by little, the world's great forests are disappearing.

Left alone, nature often renews itself. If we change too much land without renewing what we're taking away from it, we can upset or change the environment. Then all plant, animal, and even human life is affected.

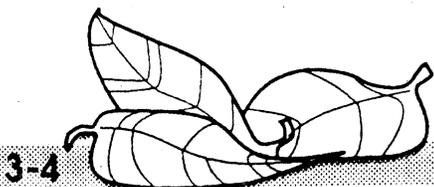
What can people do? Careful and thoughtful management of our resources is the key. People in government, industry, private groups, and individuals are working together to find ways to meet human needs today and also save our resources for future generations.

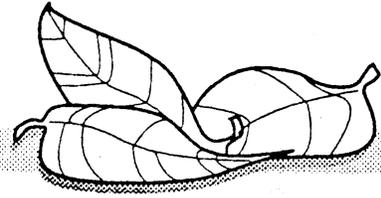
Sometimes we might think people who are cutting down forests and clearing land are the only culprits. Not true. People are wounding trees every day right in our own neighborhoods!

Trees are wounded in three ways—damage to roots, to bark, and to the structure itself (limbs, trunk, leaves). Serious damage to any of these parts of the tree can threaten its health or even kill it. Many tree wounds are caused simply because people do not realize their actions could be hurting trees. Trees seem so strong, so sturdy...sometimes we don't think about how vulnerable they are.

What are some ways each of the three sections of the tree can be injured by people? What effects do these injuries have on trees?

a. **Tree roots** are injured when they're cut into or cut off, choked off from needed moisture or nutrients, or poisoned. Lawnmowers, digging or grading equipment, and even shovels can create serious root-cutting problems. Packing the soil above the roots limits air and moisture flow and can damage delicate roots. Dumping





chemicals and other toxic substances near the root system of a tree can cause poisons to enter the conducting vessels of the tree, damaging and killing tissue. Since the root of the tree is the first step in its food system, damage to roots can close down the tree's ability to get water and nutrients. Without these essentials, the tree will die.

b. **Damage to bark** happens through cutting or carving, ramming, fire, animal activity, people chaining or attaching things to the tree. Lawn mowers and weed eaters do their share, too. Bark has an outer dead layer and an inner living layer. The outer layer is the "skin" of the tree, protecting the soft inner parts of the tree from damage. The inner layer of bark carries food made by the leaves to other parts of the tree. Bark is a fascinating material that stretches and separates as the tree gets larger. The grooves are created when the bark cracks and dries as it's forced to stretch to fit the growing tree. Bark damage makes the tree more open to disease, rot, animal and insect invasion. It also destroys some of the water conducting tissues.

If bark injuries aren't too serious, uninjured parts of the tree can carry food and water supplies. Bark damage that goes most of the way or all around the tree is called **girdling**. Girdling usually kills the tree. Tree guards or mesh shields can help protect against girdling damage from animals and careless humans.

c. **Damage to the structure of the tree** comes through cutting, carving, breaking off, improper pruning, climbing, etc. This type of damage ruins the beauty of the tree. If there are bark injuries or open cuts, the tree faces the same health threats it did in b, above.

What can we do to help protect trees? A lot! Here are just a few suggestions:

- **Recycle newspapers and wastepaper.** Boy Scouts, Girl Scouts, and other groups often collect old paper. Many cities also recycle it. It can be sent to places that make new paper from it. This means fewer trees will be cut down to be made into paper.

- If you have a lawn, help your family rake the leaves that fall on it in autumn. Don't burn them - that pollutes the air. Instead, rake them into an out-of-the-way pile. Flatten the top of the pile

and leave it where rain can soak into the pile. The leaves will rot and turn into dark, muddy-looking **humus** (soil). Spread the humus on your lawn and it will make the soil richer for the grass and other plants.

- Don't peel the bark from trees. The outside bark protects a tree from insects and fungi. The inner bark moves food from the leaves to the roots. Peeling off a tree's bark is like taking off its skin. It may cause the tree to die.

## American Elm's Twilight

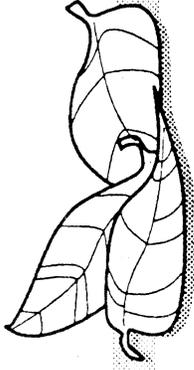
An old friend died today. You won't find his name in the obituary column even though he has been a resident of Fargo longer than most. He was one of the first to welcome me to Fargo. Knowing what a grand creature of nature he was, I imagine he welcomed many people. Once you got to know him he would share many secrets with you. All you had to do is sit with him. He told me about the river, the blowing winds of the plains; he even talked about the city when it was young. The last few years you could see his disease spreading. However in my own mind, I refused to believe he would die.

He was such a strong creature. I remember once when he held me and a canoe in his arms. It was during the flood of 1975. It was during this time he really shared a lot of secrets with me. He shares the secrets of the river, wood ducks, squirrels, and those pesky raccoons. He lived next to the river and I moved into this neighborhood because I enjoyed him so much. When a close friend of his died I learned a lot about age.

When anything dies we think of all the good they have done. He will be missed by many friends: squirrels, birds, and even raccoons that gave him so much grief. There is no one to take his place and there won't be for the next 50 or 60 years.

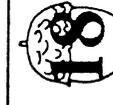
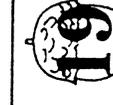
I went down to see him early this morning. To see him laid out seemed so unnatural. As I looked around, it made me so sad that there was not one to take his place and so few to grieve him. He was born in about 1805 and died 1985 of Dutch Elm disease.

Letter to Editor  
Fargo Forum, 10-09-85  
Jim Papacek, Fargo  
N.D. Outdoors, July, 1986

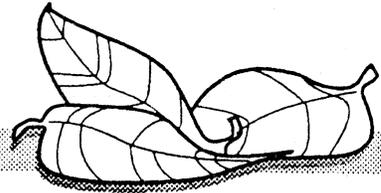


See activity details on pages 3-8 through 3-13.

# Calendar

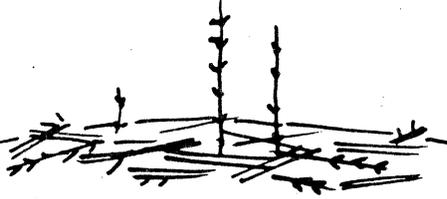
<p> Interview: Visit city hall to learn about your community's trees.</p> <p>Social Studies</p>	<p> Research: Learn about Dutch elm and oak wilt diseases.</p> <p>Social Studies/ Science</p>	<p> Hike: Is there a doctor in the forest? Take a nature hike and check it out.</p> <p>Science</p>	<p> Create: See trees through "the eyes of the beholder."</p> <p>Art</p>	<p> Discover: Which forest products do you think are most important?</p> <p>Science</p>
<p> Discuss: Are forest products necessary or just nice? Talk it over!</p> <p>Language Arts/Science</p>	<p> Interview: Get to know conservation groups.</p> <p>Social Studies</p>	<p> Record: Go on a wood-finding tour.</p> <p>Science/Math</p>	<p> Research: Look for: Lilac bushes and apple trees blooming.</p> <p>Science</p>	<p> Research: What's happening to your community's trees? Newspapers and guest speakers can help you check it out.</p> <p>Social Studies/Science</p>
<p> Look for: Bees pollinating.</p> <p>Science</p>	<p> Research: Discover what fast food containers have to do with trees.</p> <p>Social Studies</p>	<p> Do: How do people wound trees? (Activity Sheet)</p> <p>Social Studies/ Science</p>	<p> Hike: Be damage detectives! Take a nature hike to gather information.</p> <p>Science</p>	<p> Do: Trees Have Many Enemies. (Activity Sheet)</p> <p>Language Arts/ Science</p>
<p> Discover: How much paper does your school use?</p> <p>Math</p>	<p> Research: Explore forest fires.</p> <p>Science/Language Arts</p>	<p> Research: Meet Utah foresters: Dr. Ted W Daniel researcher; Vern Fridley, teacher; and Paul Rokich, planter</p> <p>History</p>	<p> Listen: Enjoy Shel Silverstein's delightful book, "The Giving Tree."</p> <p>Language Arts</p>	<p> Look for: Tulips blooming, sugar maple and red oak leaves.</p> <p>Science</p>

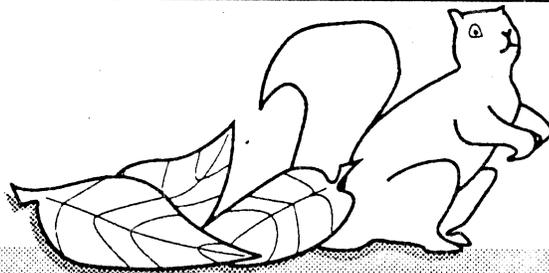
# Bulletin Board Idea



## Tree Enemies

Create a cause and effect chart that includes both natural and human hazards for trees. Students participate by finding or drawing pictures to match each category. If appropriate in some categories, students might also draw or find pictures that offer solutions to the problems.

Cause	Effect	Solution
<b>Insects</b> 		
<b>Fungi</b>		
<b>Humans</b> 		
<b>Pollution</b>		
<b>Fire</b>		



# Activities

## Hands on - Minds on Activities

Follow these activities in order and you have one for each of the 20 days in Arbor Month (see calendar). Or, pick and choose any of the activities that best meet your class's needs.

To complete the calendar activities during the month, collect or ask youngsters to bring in the following: mail-order catalogs (Activity 8); newspaper articles about things that are affecting local trees (Activity 10); National Geographic magazine, February 1989 (Activity 17); "The Giving Tree" by Shel Silverstein (Activity 19).

### Activity 1: Take a field trip.

Arrange to have your class visit your community's local government offices (city hall, county courthouse) to learn answers to these questions:

1. What department is in charge of the trees in the community?
2. How much money does this department spend each year on tree care?
3. Has the community planted any trees? Where did they get their planting stock (trees)? What species of trees were planted? Why were these species selected? Have the plantings been successful? Did the trees survive?
4. How does the department in charge of trees decide which species will be planted in the community?
5. Who decides where and when trees will be planted? Does the department listen to suggestions from local citizens on when and where to plant? Can local citizens plant trees on the community's property? If they can, how do they go about doing so?

Have students identify a location in their community where they think a tree or trees should be planted. Based on the information they have learned, attempt to get the tree or trees planted.

Note: Instead of visiting the local government office, it may be easier to ask a representative of the department in charge of the community's trees to visit your class to be questioned by students. Questions should be prepared in advance, and if possible, given to the representative before his or her visit.

*Adapted from information: Copyright 1975 The American Forest Institute, Inc. Reprinted with permission.*

### Activity 2: Trees get "sick" too!

Discuss the Dutch Elm and Oak Wilt sections of the Background Information part of this unit. Then assign students to one or more of these activities.

1. Contact your local tree inspector or city forestry department. How serious is Dutch elm or oak wilt disease in your community or neighborhood? How is it being managed? What is being done with trees that are cut down and removed?

2. Is there an area in the community where diseased trees are standing? Visit that area and look for symptoms of Dutch elm or oak wilt disease on the trees. If trees have been recently removed from the area, inspect the stumps. What symptoms of the disease do you see?

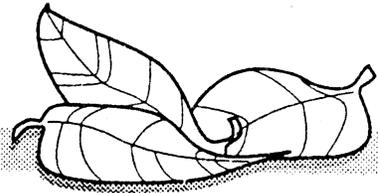
3. Think of ways in which your community could prevent a problem like Dutch elm disease and oak wilt disease in the future. (For example, a variety of trees could be planted so disease in one particular species would not spread so quickly.)

### Activity 3: Is there a doctor in the forest?

Take your students on a walk to find one tree that looks healthy and another that looks unhealthy. Encourage them to look closely at the growing conditions, for signs of insects (eggs on trunk, larva eating leaves, etc.), and for damage caused by people.

Ask students how they know the difference between healthy trees and unhealthy ones. Back in class, ask them to draw pictures of a healthy tree and an unhealthy one.





Discuss: What things make trees unhealthy? Include such things as disease, insects, fire, wind, lightning, pollution, lack of proper moisture, and poor growing conditions. Can students suggest actions people might take to help trees stay healthy? For example, people can protect trees from forest fires and remove diseased trees so that they won't infect others. They can also water and mulch trees regularly.

**Activity 4:** Another point of view.

After discussion, based on additional research if necessary, ask students to think about how each of these individuals might view a healthy and an unhealthy tree. Ask the students to choose one of the individuals listed, then draw pictures of healthy and unhealthy trees as they think this individual might see it — or might use it.

- an artist
- an ecologist
- a landscape architect
- a forester
- a bird who lives in the trees
- a tree farmer
- a tree inspector
- a homeowner
- a gypsy moth
- a logger
- a camper

Create a gallery of these drawings, with the students serving as guides for each other, pointing out the differences in the way the various people and animals might view healthy and unhealthy trees.

*Adapted from Project Learning Tree.  
From Teachers' Guide for Arbor Day in New Hampshire.*

**Activity 5:** Which is most important?

Allow 15 minutes for each student to list ways he or she uses paper and other forest products in a year. Students then draw a line through items on their lists they believe are least important to them and circle three items they consider most important.

Next to each of the three top priority items, students write down a product or material that could replace it. For example, instead of using paper to record thoughts, cassette tapes could be substituted.

Discuss the merits of the ideas they suggest.

1. Is the environment affected? If so, how?
2. Does the substitute serve the same purpose as well and as inexpensively?
3. Is the substitute made from a renewable or a non-renewable raw material?
4. Will the substitute require more or less energy to produce than the original forest product?
5. Is the substitute recyclable?

**Activity 6:** Necessary or just nice?

Brainstorm a list of forest product uses in these areas of home living:

1. Kitchen (cutting board, knife handles...)
2. Interior (furniture, shutters, coat hangers...)
3. Maintenance (broom handle, vacuum cleaner bags...)
4. Food (vanilla, nuts, wild game...)
5. Exterior (fence post, picnic table...)

Divide the class into small groups. Students use the list for discussion to answer these questions:

1. Which of the items listed are necessary for human survival?
2. Which of the items are wasteful? Which show sound conservation practices? Why? Which of the wasteful products are you willing to eliminate or find a substitute for? What would be the environmental effect if everyone avoided the wasteful products?
3. Look at the items you decided were essential. Are there materials available that could be substituted for the forest products used? Do you think the substitute material would serve as well as the forest product?

**Activity 7:** Get to know conservation groups!

What are some organizations that work for conservation and protecting the environment? (The American Forestry Association, Izaak Walton League, Greenpeace, National Wildlife Federation, Sierra Club, the Wilderness Society, nature conservatories, and state conservation agencies are some.) Contact one of the organizations in your community. Can someone come out to talk to the students about their work? Or, do they

have brochures and educational materials for young people? Some organizations are already geared to youth - Boy and Girl Scouts, 4-H, Camp Fire Girls, FFA, etc.

**Activity 8:** Go on a wood-finding tour!

Make a class visit to a local department store or use mail-order catalogs in the classroom.

First, the class makes up a survey sheet for recording information. Divide the class into teams of three or four students each and ask each team to name one of its members as "recorder." The recorder writes team observations on its survey sheet.

Assign each team to a particular department in the store or a section of the catalog. Students are to identify and record as many items as they can that use wood or other forest products. More information such as cost and place of origin also may be gathered.

After information has been collected and tabulated, discuss these questions:

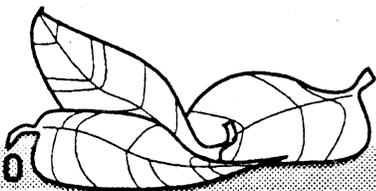
1. Count the total number of wood/forest products found.
2. How would your lifestyle change if forest products suddenly became unavailable?
3. How many items listed are basic survival needs? How do you decide which are needs and which are only wants?
4. What is your own favorite forest product? Why?

**Activity 9:** Look for: Lilac bushes and apple trees blooming.

*Fun Fact:* Lilacs are grown and loved all over the world. A color has even been named after them!

**Activity 10:** What's happening to our neighborhood trees?

Find newspaper articles about things in your community that are affecting the community trees. Report your findings and post the clippings on your bulletin board display. Guest speaker: Invite a nursery, landscape, or tree-pruning professional to speak to your group about how to care for and protect trees.



**Activity 11:** Look for: Bees pollinating.

**Activity 12:** Check out containers.

Contact a local fast food business and find out what their food trays and containers are made from. Are they recyclable? Write letters and perhaps draw pictures expressing your concern and encouraging them to help save our trees. If they aren't using recyclable containers, suggest that they do so!

**Activity 13:** How do people wound trees? Activity Sheet A (page 3-12).

Do the activity sheet and learn more.

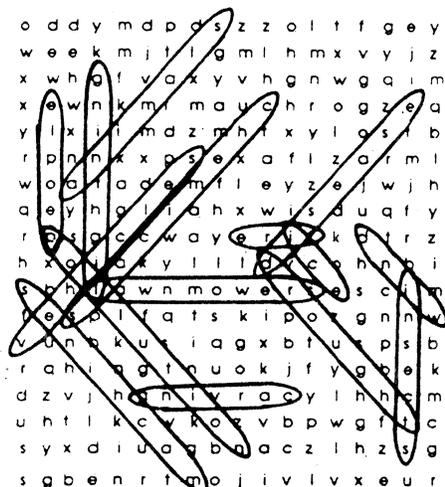
**Activity 14:** Damage detective tour.

Take a walk around the neighborhood and look for different forms of damage to trees. Scars, broken branches, misshapen trees are clues. Discuss:

- a. What caused the damage?
- b. Is this an old injury? A new one? How can you tell the differences between old and new injuries?
- c. What causes tree "bleeding"? How does this compare to scabs people get when they cut themselves?
- d. Why are trees pruned and trimmed? Can pruning help a tree? Hurt a tree? How can you learn proper ways to prune a tree?

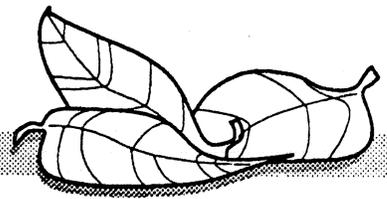
**Activity 15:** Trees Have Many Enemies. Activity Sheet B (page 3-13).

**Answers:**



**Activity 16:** Pounds and pounds of paper!

How much paper do youngsters use in your school? Here's a survey with surprising results:



a. Each student weighs all the paper in his or her desk (books, notebooks, etc.) on a postage scale. Add each student's total for a grand total.

b. Divide to find the average weight of paper per student.

c. Multiply the average weight by number of students in the school. What's the grand total for your school?

d. A 16-inch diameter tree yields 700 pounds of paper. How many trees did your school consume?

*Fun Fact:* An average of over 600 pounds of paper is used each year by every man, woman, and child in the United States!

**Activity 17:** Is there such a thing as a good forest fire? Fire is usually an enemy to a forest, but sometimes fire can be helpful. For example, there was a great fire in Yellowstone National Park in the summer of 1988. (For a very informative article about this fire, see National Geographic, Feb. 1989). The summers are very short in this park, so there is little time for dead trees to decay. In 1988, there were great amounts of dry wood lying around like great piles of **kindling**. (Make sure children understand the meaning of this word.) Why would a fire have an easy time taking off during a dry summer? How might this fire have been helpful? (The fire cleaned out old forest and opened space for new growth and meadows. It encouraged growth of different types of vegetation. This in turn brings in animal life. If you can get the National Geographic article, discuss whether or not this fire should have been allowed to burn. What do you think should have been done?)

**Activity 18:** Nifty naturalists.

Dr. Ted W. Daniel, Vern Fridley, and Paul Rokich are names of three Utah foresters who have made noteworthy contributions toward the promotion and development of Utah forestry. Each of you can contribute to forestry in Utah. Start a nature journal to write about things you would like to do to help preserve the environment. You're sure to notice things when you take a walk, drive along the roads, or even stare out a window. What new habits or practices can you begin right away? Who can help you put your other ideas into action?

Use your journal to write about natural wonders you'd like to explore in your lifetime. Are they being cared for so future generations can enjoy them?

**Activity 19:** "The Giving Tree"

Read and discuss Shel Silverstein's delightful book, "The Giving Tree". What things did people do that were damaging to this tree? How did the tree keep "loving back" in spite of what happened to it? Did any parts of the story make you feel uncomfortable? Why do you suppose many people think this is a sad story?

**Activity 20:** Look for: Tulips blooming, sugar maple and red oak leaves!



# Activity Sheet A

## How Do People Wound Trees?



What happens to the tree?

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What happens to the tree?

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What happens to the tree?

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What happens to the tree?

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What happens to the tree?

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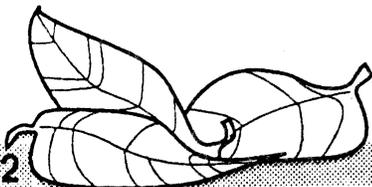
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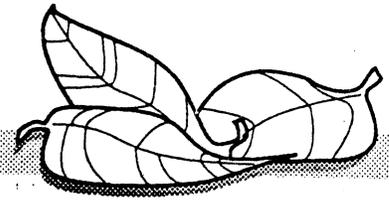
What happens to the tree?

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# Activity Sheet B



## Trees Have Many Enemies



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x w h g f v a x y v h g n w g q i m  
x e w n k m f m a u c h r o g z e q  
y l x i i m d z m h t x y l o s t b  
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r p s g c c w a y e r i f k d t r z  
h x o i a k y l l l d v c o h n b i  
s b h l a w n m o w e r s e s c i m  
f e s p l f q t s k i p o z g n n w  
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r q h i n g t n u o k j f y g b e k  
d z v j h g n i v r a c y l h h c m  
u h t l k c w k o z v b p w g f t c  
s y x d i u a g b n a c z l h z s g  
s g b e n r t m o j i v l v x e u r

### Can you find these words?

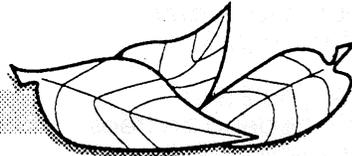
lawnmowers    chemicals    pollution    lightning    vehicles    machines    animals  
carving    drought    insects    disease    people    wind    fire    ice

Answers: See Activity 15, page 3-10.



# Grade 4

## Interdependency of Trees and Us



### Objectives

- Students will be able to list ways in which American lifestyles depend upon forest products.
- Students will recognize trees as a renewable resource.

### Vocabulary Words

- |                 |                    |
|-----------------|--------------------|
| interdependent  | renewable resource |
| goods           | seed orchards      |
| economy         | evergreens         |
| lifestyle       | deciduous          |
| consumer demand |                    |

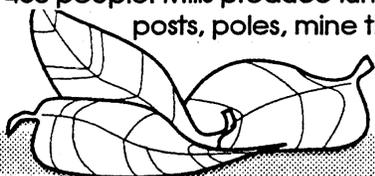
### Background Information

Have you ever thought of yourself as **interdependent** with trees? Probably not. Yet, humans depend on trees in many ways - and trees depend on humans, too. The forest industry is much like every other industry based on a major natural resource. It gives us **goods** that are important to our country's **economy** and **lifestyle**. But how can we be sure we will have a continuing supply of those important goods? We help the forest and the forest helps us. That's where intelligent management of the forest comes in.

People who manage forests must always keep in mind the **consumer demand** for products and services. Government studies say the demand for paper and wood products will double between now and the year 2030. Luckily, trees are a **renewable resource**. The forest industry, mostly in the southeast and the northwest parts of the country, is planning for the future and are planting trees now to meet the demand.

### Economic Value

Although Utah's forests are small compared to our neighboring states, they do provide some direct economic return to Utah. A 1997 survey indicated that annual sales of primary wood products amount to \$29 million and employ over 450 people. Mills produce lumber, fence posts, poles, mine timbers, and firewood.



The forest industry has been on the decline in Utah as well as the rest of the western U.S. since the 1960's. Recent surveys have found many of the sawmills that were producing in 1978 have closed, although firewood permits have been steadily rising during the same period. It is evident that the forests are not being logged as extensively as in earlier years.

In addition to wood products, grazing of livestock on a portion of these forests provides some economic benefits through browse and forage utilization while summer shade and protection from wind help prevent livestock weight losses.

### Other Values

In addition to the more direct benefits such as forest products, the native forests provide many indirect benefits. Forests are an important part of several state parks and are the primary attraction on the 2.3 million acres of forests managed as National Forests by the U.S.D.A. Forest Service. They provide beauty, watersheds, and recreation to Utah's mountains.

Native forests also provide critical habitat for ruffed and blue grouse, moose, elk, mule deer, turkey, rabbits, cougar, black bear, and other wildlife and plant species. Within the state, water eventually runs into either the Colorado River system or

the Great Basin. A small portion in the extreme northwest corner drains into the Columbia River system. Mountain forests provide much of the water used for irrigation of agricultural crops and for culinary uses such as drinking water. Without these water sources, people could not subsist in Utah.

In every chapter of this book, you'll find information about how people depend on trees. President George Bush, in a speech in Sioux Falls, S.D. (September, 1989) called them "the oldest, cheapest, most efficient air purifiers on Earth." They produce oxygen and provide shade, beauty, protection against wind and erosion, and food and homes for wildlife. They give us fuel, food, and wood products, quiet a highway's noise, and much more.

Our job is to help trees grow healthy and strong, to protect them against disease, injury, and too much cutting. When we do our job well, we enjoy all the benefits of trees - and trees benefit too.

## Utah Tree Products

Except for a few introduced palm trees in the St. George area, Utah has two tree types: deciduous and evergreen. The native deciduous trees include quaking aspen, Gambel oak, big tooth maple, box elder, cottonwoods, willows, Rocky Mountain maple, chokecherry, red osier dogwood, water birch, and alder. The evergreens include Utah Juniper, pinyon pine, ponderosa pine, Rocky Mountain juniper, lodgepole pine, white fir, blue spruce, engelmann spruce, subalpine fir, limber pine, bristlecone pine, Douglas-fir, and mountain mahogany.

Here are just a few of the many products trees bring to our lives: (Note-**This information may be used as a listening activity with Activity Sheets A and B on pages 9 and 10 of this unit.**)

**Ponderosa Pine:** This tree is prized for its fine wood used to make lumber. It is also a beautiful tree with orange bark that smells like vanilla.

**Pinyon Pine:** Native Americans taught the pioneers that the pine nuts from this tree were good to eat. Its wood is full of pitch and is used for firewood.

**Utah Juniper:** Called cedars by the pioneers, it is slow-growing making the wood very dense, thus making durable

fence posts and hot-burning firewood.

**Engelmann Spruce:** The wood of this tree makes the best violins throughout the world. Its one of the most plentiful commercial trees in Utah.

**Douglas-fir:** Another tree that produces fine lumber used to make wooden-framed houses. Young trees grown on plantations make excellent Christmas trees.

**Quaking Aspen:** Shredded wood is used to make swamp cooler pads. The wood is odorless and tasteless and will not splinter- used to make popcycle sticks, toothpicks, and matches.

**Lodgepole Pine:** Used since pioneer days to make railroad ties, teepees, and lumber.

**Gambel Oak:** Also known as scrub oak, often too small for wood utilization. Large trees yield wood that is excellent for furniture, wood carving, and firewood.

**Blue Spruce:** Very popular ornamental tree, prized for Christmas trees, and provides habitat for songbirds.

**Box Elder:** A county is named after this tree. Helps to filter the water in streams, holds soil.

**Fremont Cottonwood:** Most massive growing tree in Utah. Used in parks, shelter belts, and for wildlife habitat.

**Rocky Mountain Juniper:** Very fragrant wood is used to make "cedar" chest, repels moths and is a good alternative to moth balls which are toxic.

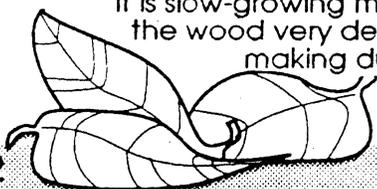
## Trees: A Renewable Resource

What does it mean to be a "renewable resource"? To renew means to begin again, to restore or revive. A resource is something that is a source of help or of value. Resources can give us things we need, or they can be sold to bring us money.

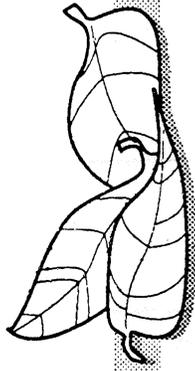
Trees are a renewable resource because you can use them and yet grow a new crop to give more trees in the future. This is different than some of our other natural resources. Silver and gold, oil and gas for example, are mined out of the ground. When they're gone, they're gone for good.

Renewable resources depend on people. We need to conserve and protect our present trees and plant a lot of new ones to keep the cycle going.

The activities in this lesson explore some of the many ways we depend on forest products.



# Grade 4



See activity details on pages 4-5 through 4-11.

## Calendar

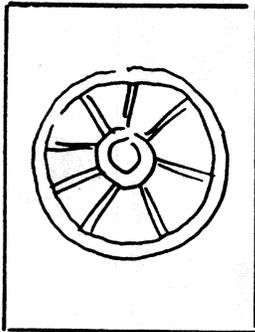
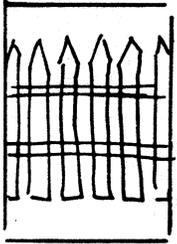
<p> Discuss: In what ways did people of Utah use wood in 1892? How do we use wood today?</p> <p>History</p>	<p> Look for: The "green tinge" in the tree canopy. Create: "Things Made From Trees" bulletin board display.</p> <p>Science</p>	<p> Create: Post wood product pictures on the bulletin board. Discuss: Each item.</p> <p>History</p>	<p> Look for: Tulips and daffodils blooming. Discuss: Any new wood product additions for your bulletin board.</p> <p>Science/History</p>	<p> Do: Ask students to bring a variety of nuts (in their shells) to school. <i>Fun Fact:</i> A bushel of pine cones represents about 55,000 new trees - enough to plant over 73 acres of forest land!</p> <p>Science</p>
<p> Look for: Crab apple trees in bloom. Research: Where do the trees of Brazil nuts grow?</p> <p>Science</p>	<p> Classify: Nuts that were brought to school and label each. Research: Where do the trees for pine nuts grow?</p> <p>Science</p>	<p> Research: Where do the trees for hickory nuts and almonds grow?</p> <p>Science</p>	<p> Research: Where do the trees for cashew nuts and filberts grow? <i>Fun Fact:</i> A pound of pine cone seeds represents 55,000 new trees.</p> <p>Science</p>	<p> Research: Where do the trees for English walnuts and black walnuts grow? Do: Have a "seed tasting" party!</p> <p>Science</p>
<p> Discuss: Which wood products are most important?</p> <p>Language Arts</p>	<p> Look for: Leaves sprouting on the silver maple and elm trees. Listen: <i>Utah Tree Products</i> (Activity Sheets)</p> <p>Science/Language Arts</p>	<p> Look for: Lilac bushes and apple trees blooming. <i>Fun Fact:</i> 56% of Utah's forests are Pinyon pine-Utah Juniper forests.</p> <p>Science</p>	<p> Listen/Create: "The Sugar-Plum Trees." <i>Fun Fact:</i> For every ton of wood produced, trees consume 1.41 tons of carbon dioxide and release 1.07 tons of oxygen.</p> <p>Language Arts/Art</p>	<p> Do: Pounds and pounds of paper activity.</p> <p>Math</p>
<p> Look for: Elm and silver maple seeds falling. Hike: Collect seeds.</p> <p>Science</p>	<p> Look for: Bees pollinating. Discover: Nifty Naturalists!</p> <p>Science</p>	<p> Create: Leaf and seed bug pictures.</p> <p>Art</p>	<p> Create: Complete art project. <i>Fun Fact:</i> If 17 million acres of forest land were covered with healthy young forest, it could supply oxygen for 32 million people.</p> <p>Art/Science</p>	<p> Look for: Monarch butterflies.</p> <p>Science</p>

# Bulletin Board Idea

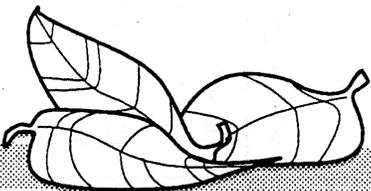
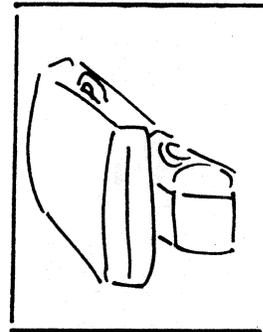
## Things Made From Trees

Students participate by bringing pictures or drawing pictures of things made of wood used in 1892 and in 1992-to show the differences in lifestyles and differences in wood uses.

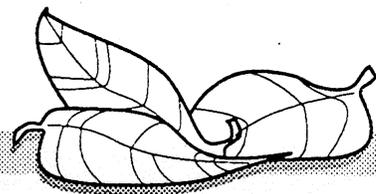
1899



1999



# Activities



## Hands On - Minds On Activities

Follow these activities in order and you have one for each of the 20 days in Arbor Month (see calendar). Or, pick and choose any of the activities that best meet your class's needs.

To complete the calendar activities during the month, collect or ask youngsters to bring in the following: magazine or newspaper pictures showing things made of wood used in the 1890s (approximately) and today; a variety of whole nuts still in the shell; seeds and plant parts; Roots magazine, Fall 1982 and Cricket magazine, August 1987 if possible.

**Activity 1: Brainstorm:** In what ways did people of Utah use wood 100 years ago? How do people in Utah use wood products today?

See: Teacher's guide and worksheet "From Paper to Plastic," Appendix page 10 for information and ideas.

Trees give us wood products. Did you know a person uses, in a lifetime, the wood produced by 300 mature trees? In a year, the average U.S. citizen uses 600 pounds of paper, 224 board feet of lumber, and hundreds of other forest products that all come from trees! Much of the timber harvest goes into homes and furniture, newspapers, books, writing paper, film, frozen food cartons, corrugated boxes...not to mention other valuable wood products like turpentine, alcohol, plastics, rayon, fuelwood, sugar and syrup, barrel staves, shingles, printing ink, baseball bats, chewing gum, musical instruments, dye, shatter-proof glass, shoe polish.

**Activity 2:** Look for: The "green tinge" in the tree canopy.

Cover a bulletin board with paper and a border. Students create the appropriate border for the bulletin board. (Perhaps a variety of wood products such as different kinds of paper cut into strips or patterns or a border of paper cartons or small boxes.) Be creative!

**Activity 3:** It all comes from trees!

Put all the pictures brought to school, drawn, or cut from magazines on the bulletin board and discuss each product. Many will be surprised

when things like chewing gum, printing ink, and shatterproof glass show up on the board.

**Activity 4:** Look for: Tulips and daffodils blooming.

Continue to discuss the bulletin board.

**Activity 5:** Bring nuts.

Ask students to bring from home or the grocery store 10 to 12 whole nuts still in the shell. Suggest a variety such as: pine nuts, Brazil nuts, hazelnuts, hickory nuts, almonds, cashews, filberts, English walnuts, black walnuts, macadamia nuts, coconuts, pecans, and pistachios.

**Activity 6:** Look for: Crab apple trees in bloom.

Research: Where do the trees of Brazil nuts grow?

(Answer: Brazil and Venezuela.)

**Activity 7:** Which nut is which?

Examine and identify the nuts in the shell that were brought to school. Label each and create a display counter for them. As each growing area is discovered, add the information to your display.

Research: Where do the trees of pine nuts grow?

(Answer: North America and Europe.)

**Activity 8:** Discover hickory nuts and almonds.

Research: Where do the trees for the hickory nuts and almonds grow? (Answer: Hickory nuts - Southern and Eastern United States, Eastern Canada, Mexico, China; Almonds - Mediterranean Basin countries, China, Iran, California.)

*Fun Fact:* American Elm harvested in the Red River Valley is sent to Europe and Japan where it is used for building furniture.

**Activity 9:** Discover cashew nuts and filberts.

Research: Where do the trees for the cashew nuts and filberts (also called hazelnuts) grow?

(Answer: Cashews - South America, other tropic areas; Filberts - produced commercially in Mediterranean countries and Oregon.)

*Fun Fact:* It takes a bushel of pine cones to produce less than a pound of seeds, but each pound of seeds represents about 55,000 new trees, enough to plant over 73 acres of forest land.

**Activity 10:** Discover English walnuts and black walnuts.

Research: Where do the trees for the English walnuts and the black walnuts grow?

(Answer: English walnuts - many Northern Hemisphere regions; Black walnuts - Northern and Central United States and South America.)

With all the "nuts" that have gathered in your classroom, have a "tree seed" tasting party.

**Activity 11:** Group decision making.

Divide the class into groups of three or four. The task is to focus on the 1990s side of the bulletin board, "Things Made from Trees." Which five products are the most important? Each group must decide and agree which items it would eliminate if they needed to eliminate all but five products. Each group comes up with a statement of why it feels those five items are the most important and should be left on the board. Each group then presents its decisions to the class. During its presentation, the group will take down from the bulletin board all but the five items it chose to leave. The following questions may help stimulate thinking:

1. What would happen if suddenly this product was unavailable?
2. Would this product's disappearance affect any of the essentials necessary for survival as, for example, food or shelter? What things are truly necessary for survival?
3. Is the product's current use wasteful? Why? Should the use be eliminated? What would be the impact if it were?
4. Could we find a substitute for this forest product? Is the substitute made from a renewable or non-renewable raw material? What would be the environmental and economic impact of the substitute? Would it use more or less energy to produce than the original forest product?

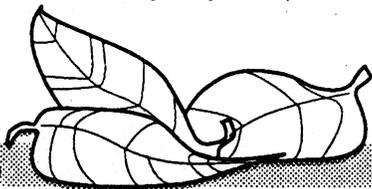
**Activity 12:** Look for: Leaves sprouting on the silver maple and elm trees.

Continue the debate about the most valuable tree products. Listening Activity: *Utah Tree Products* (Activity sheets A and B, pages 4-9 and 4-10.)

**Answers:**

**Ponderosa pine:** lumber, firewood

**Pinyon pine:** pine nuts, firewood



**Utah Juniper:** fence posts, firewood

**Engelmann spruce:** violins, pallets, lumber

**Douglas-fir:** Christmas trees, houses

**Quaking Aspen:** excelsior, popcycle sticks, toothpicks, shingles, matches, livestock feed

**Lodgepole pine:** poles, teepees, lumber, paper, railroad ties

**Gambel oak:** furniture, firewood, carvings

**Blue spruce:** ornamental, Christmas trees, wildlife shelter

**Box Elder:** syrup, filters water in the streams, shadetree

**Fremont Cottonwood:** park tree, good for shelterbelts, wildlife habitat

**Rocky Mountain Juniper:** cedar chests, natural "moth balls" - cedar balls, rot-resistant fence posts, paneling, firewood

**Activity 13:** Look for: Lilac bushes and apple trees blooming. Make a special note of the wonderful aroma in the air while these trees are blooming.

*Fun Fact:* Utah has 6 National Forests which cover 15% of our state.

**Activity 14:** The Sugar Plum Trees.

Read to the class Eugene Field's fanciful bedtime poem, "The Sugar-Plum Trees."

Encourage the children to listen carefully to the poem as you read it to them. Can they "see" the poet's picture in their mind's eyes as you read? It may take a couple of readings. Perhaps they have younger brothers and sisters who would especially enjoy the words of the poem. Have the students illustrate the poem for a younger child. Provide a copy of the printed poem to attach to the back or beside the illustration.

Source for "The Sugar Plum Trees:" *"Oxford Book of Children's Verses,"* by Iona & Peter Opie, Oxford Press 1973.

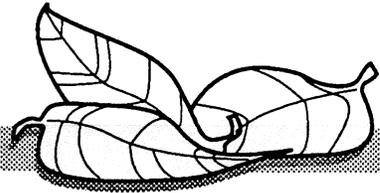
**Activity 15:** Pounds and pounds of paper!

How much paper do youngsters use in your school? Here's a survey with surprising results:

a. Each student weighs all the paper in his or her desk (books, notebooks, etc.) on a postage scale. Add each student's total for a grand total.

b. Divide to find the average weight of paper per student.

c. Multiply the average weight by number of students in the school. What's the grand total for your school?



d. A 16-inch diameter tree used in paper production yields 700 pounds of paper. How many trees did your school consume?

**Activity 16:** Look for: Elm seeds and silver maple seeds falling.

Spring hike: Take a spring hike and look for seeds and other interesting plant material to take back to the classroom.

**Activity 17:** Look for: Bees pollinating.

Dr. Ted W. Daniel, Vern Fridley, and Paul Rokich are names of three Utah foresters who have made noteworthy contributions toward the promotion and development of forestry in Utah.

You can be a forester, too! Start a nature journal to write about things you would like to do to help preserve the environment. You're sure to notice things when you take a walk, drive along the roads, or even stare out a window. What new habits or practices can you begin right away? Who can help you put your other ideas into action?

Use your journal to write about natural wonders you'd like to explore in your lifetime. Are they being cared for so future generations can enjoy them?

**Activity 18:** Leaf and seed bugs.

From the materials gathered on the spring hike, have your students create some leaf and seed bugs. For more specific instructions see Cricket magazine, August 1987, pages 48-49.

**Activity 19:** Work on leaf and seed bug art project.

**Activity 20:** Look for: Monarch butterflies. Finish art project.

## More Activity Fun

1. **Take a wood-finding tour!** Get permission from a store manager and make a class visit to a local department store, or use a mail-order catalog in the classroom.

As a preliminary step, the class should make up a survey sheet for recording information. Divide the class into teams of three or four students each and ask each team to name one of its members as "recorder." The recorder will log team observations on its survey sheet.

Assign each team to a particular department in the store or a section of the catalog. Students are to identify and record as many items as they can that use wood or forests and the environment.

Ask your students to brainstorm a list of environmental things affected by the forests. This list might include such things as water quality, air quality, and landscape aesthetics.

Each student chooses one item from the list and creates a poster advertising its value to humans, other organisms, and/or the biosphere. Display your posters for all to enjoy!

*Adapted from materials: Copyright 1975 The American Forest Institute, Inc. Reprinted with permission.*

2. **We All Need Forests** (Activity Sheet C, page 4-11.)

**What would you do if** you were in charge of 20,000 acres (8000 ha) of forest? If you owned a paper company, you would probably plant a species of fast-growing pine or other "paper tree" and manage as much of the forest as you could for pulpwood. If you were a wildlife biologist, you would try to manage the forest in a way that would provide the best habitat for the different species of wildlife you wanted to protect. And if you were a recreation planner, you might manage the forest to provide good campsites, hiking trails, ski paths, fishing streams, bike paths, and wildlife study areas.

Although most people don't realize it, most of the forests in this country are managed. How a

forest is managed depends on what it will be used for. In the past, most forests were managed for only one type of use, such as for raising pulpwood trees. But today, many more are being managed for several different uses at a time through the practice of *multiple use management*.

In this activity, your group will get a chance to discuss different forest uses and how some of these uses compete. They will also learn why multiple use management is so important.

Start off the activity by asking your group to name ways that they or their families use forests (for hiking, birding, hunting, fishing, camping, and so on). List the uses they come up with on the chalkboard or a large sheet of easel paper. Review again that forests are also important because they provide habitat for many types of wildlife and contain important natural resources. Next, ask someone to define the word *manage*. Explain that in order for people to use forests in different ways, forest managers must manage forests in different ways.

Pass out copies of *We All Need Forests*, page 4-11. Tell students this page lists some of the things that many forests are managed for. Ask them to look at the three rows on the page. Starting with the first row, labeled "**wildlife**," discuss some of the ways forests are *managed* to help protect different species of wildlife. This background information will help explain how forests are managed for wildlife:

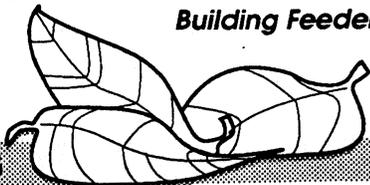
**Saving Snags:** One way people manage for wildlife in a forest is by leaving dead trees, or snags, standing instead of cutting them down. Snags provide nesting cavities for many birds and mammals, such as owls, woodpeckers, wood ducks, bluebirds, raccoons, and squirrels.

**Building Brushpiles:** By building brushpiles in a forest and along forest edges, forest managers help provide hiding and nesting sites for many animals that live on the ground such as foxes, rabbits, wood thrushes, and chipmunks.

**Letting Logs Lie:** Many types of animals use logs for nesting and hiding places. By not removing logs, managers can help provide homes and feeding areas for many kinds of wildlife.

#### **Building Feeders and Nesting**

**Boxes:** Putting up nesting



boxes in forests that have limited nesting sites can help attract wildlife. So can setting up feeding stations for birds and mammals.

**Burning:** For some species, the only way to maintain the right kind of habitat is to burn the area on a regular basis to get rid of undergrowth.

**Picking the Right Plants:** By planting certain types of trees and shrubs in a forest area, wildlife managers can provide habitat for specific types of wildlife.

Now have the students look at the row labeled "**recreation**." Compare this list with the list the children came up with. Discuss the fact that the forest is an important place for people to relax, learn more about and enjoy nature, and exercise.

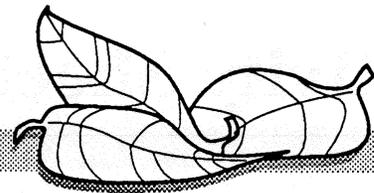
Explain that some of the ways people use forests for recreation compete with the needs of wildlife and can also disrupt the plants that grow there. For example, to build ski slopes in a forest, heavy equipment must come in and cut down trees to make the runs. Roads and parking lots must be built so that people can get to the slopes and park. Many times ski lodges and other facilities are also built.

Ask students to think of other ways recreational uses of the forest can harm the wildlife. The role of many forest managers is to balance the uses of a forest so that wildlife can be protected and people can use it for recreation, too.

Finally, have students look at the row labeled "**products**." Many forests are used for commercial purposes. Some forest areas are managed for lumber, some are managed for pulpwood, and some are opened up for oil, gas and mineral uses. These uses can upset the forest community and compete with wildlife and recreational uses. For example, you probably wouldn't want to camp near a strip mine in a forest or hike along an area that is being harvested. Why is it important to have commercial uses in a forest? (People need forest products.)

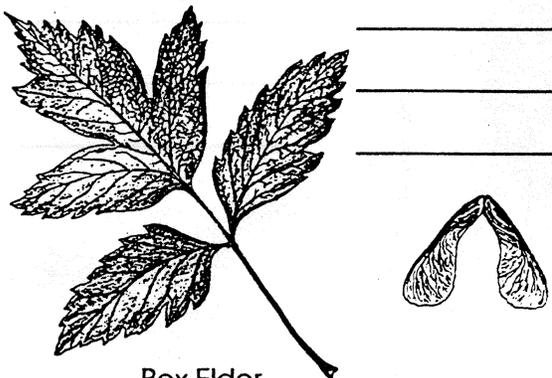
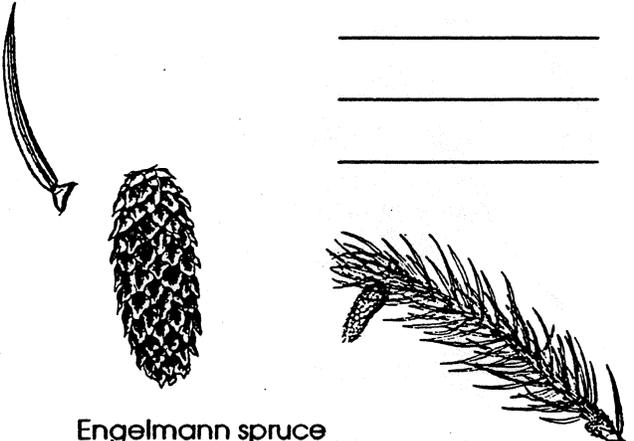
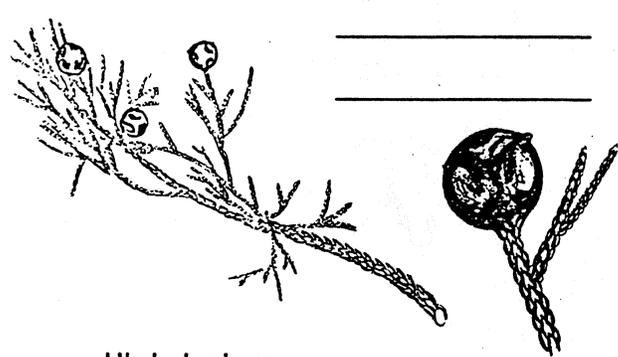
*Adapted from Ranger Rick's Naturescope: "Trees are Terrific." Used with permission.*

# Activity Sheet A



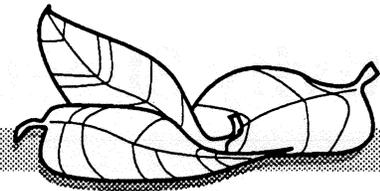
## Utah Tree Products

**Listening Exercise:** Listen as someone reads to you about Utah tree products. Make a list of the products for each tree as you hear them. Most, but not all of the trees you hear about, are shown on these pages. Then go back and draw pictures of those products.

 <p>Gambel oak</p>	 <p>Box Elder</p>
 <p>Quaking Aspen</p>	 <p>Pinyon pine</p>
 <p>Engelmann spruce</p>	 <p>Utah Juniper</p>

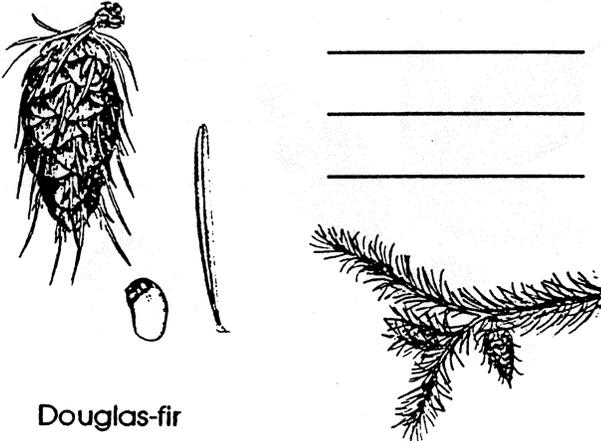
Answers: See Activity 12, page 4-6. Read-to-Kids Information: Utah Tree Products page 4-2.

# Activity Sheet B



## Utah Tree Products

**Listening Exercise:** Listen as someone reads to you about Utah tree products. Make a list of the products for each tree as you hear them. Most, but not all of the trees you hear about, are shown on these pages. Then go back and draw pictures of those products.



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Douglas-fir

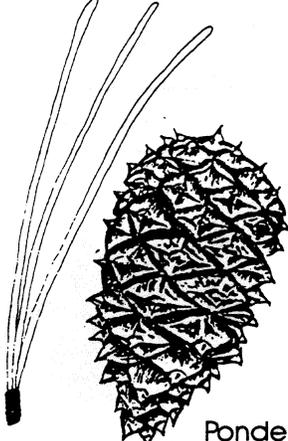


\_\_\_\_\_

\_\_\_\_\_

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Lodgepole pine

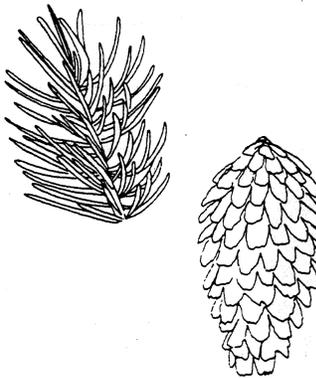


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Ponderosa Pine

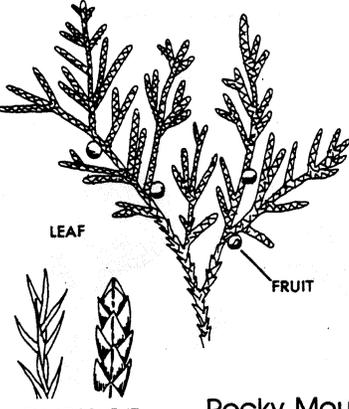


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Blue spruce  
(Utah State Tree)



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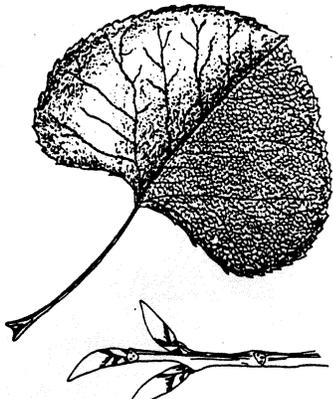
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LEAF

FRUIT

ENLARGEMENT

Rocky Mountain Juniper



\_\_\_\_\_

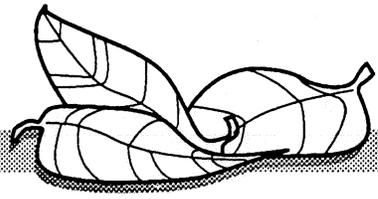
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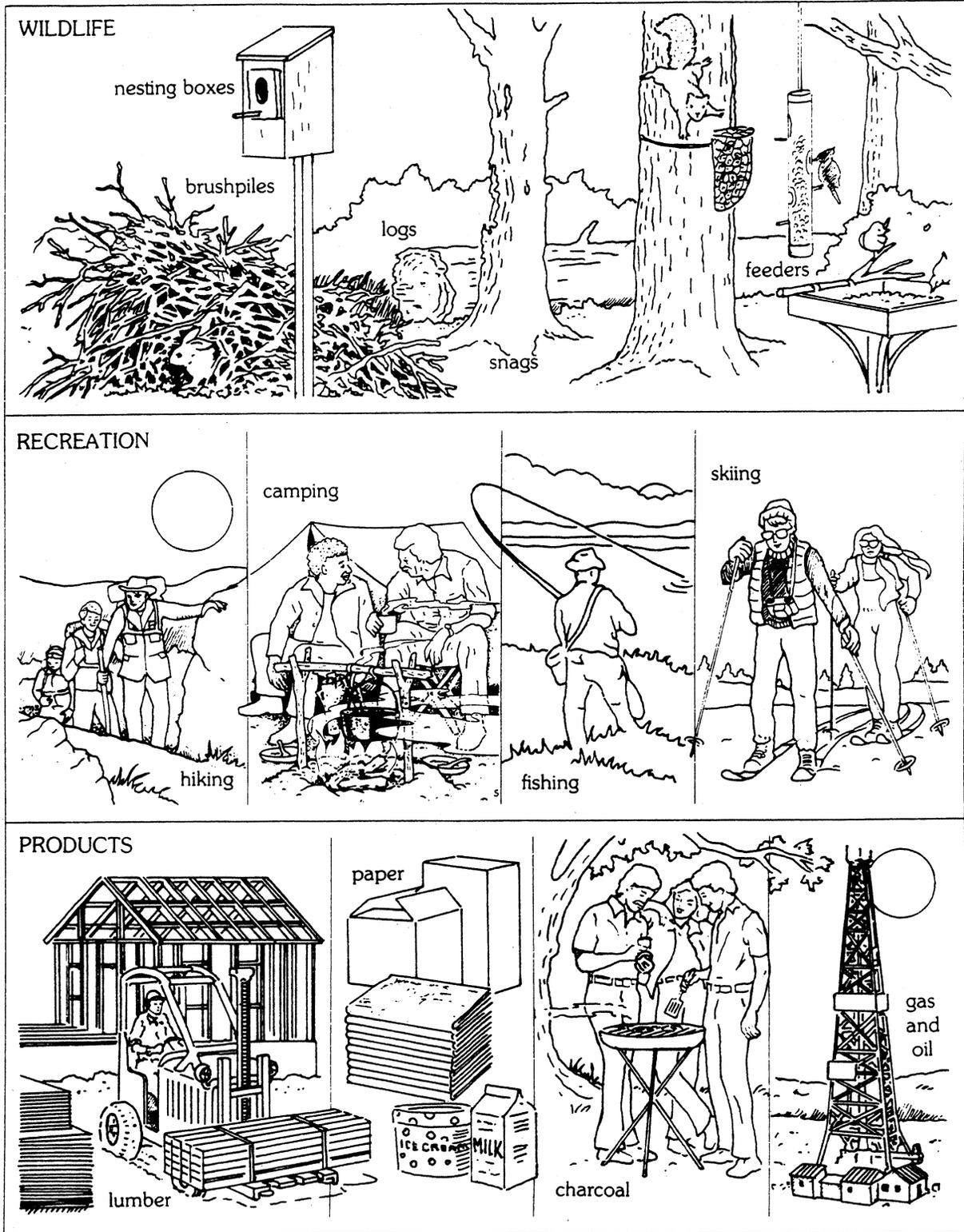
Fremont cottonwood

Answers: See Activity 12, page 4-6. Read-to-Kids Information about Utah Tree Products page 4-2.

# Activity Sheet C CopycatPage



## We All Need Forests



From Ranger Rick's Naturescope, "Trees are Terrific." Used with permission.



# Grade 5

## Forest Wildlife and Recreation



### Objectives

- Students will become familiar with the interdependence of forests and wildlife, and the kinds of wildlife in Utah forests.
- Students will become aware of the beauty and the recreational contributions forests make to Utah.

### Vocabulary Words

predators	conifers
vegetation	hardwoods
cover	aesthetics
species	recreation
habitat	forest regions
wetlands	
clearcutting	
controlled or prescribed burning	

### Background Information

There's a close relationship among soil, water, plants, and wildlife. Each depends on all the others. **Predators** take care of surpluses of other animals. Deer, rabbits, and others eat certain plants. Birds and squirrels distribute the seeds of plants so they will reproduce. Water gives life to all.

But people can, and do, change or alter the environment. Through carelessness, not knowing the facts, or simply putting their own wants and desires before nature's needs, people disturb or destroy soil, water, and **vegetation**. This in turn destroys wildlife.

Forests provide food, **cover** (protection), and nesting places for wildlife. The number of wildlife and the variety of wildlife **species** in an area depends on the number and variety of plants (flowers, weeds, vines, shrubs, and trees) in the area. No two species of wildlife have exactly the same needs.

### Wildlife Habitat

A wildlife **habitat** is a place or area where wildlife live - where they feed, nest, hide, and play. Habitat includes both land and water areas.



Each species of wildlife has its own habitat requirements. Most species need a variety of plants. Pheasants and quail like to feed in the farmer's corn and grain fields and return to the forest borders near the farm crops to rest, nest, and hide. Fox venture out into these fields and meadows to catch the unwary quail, pheasants, rabbits, or field mice and then return to their dens in the forest. Hawks soar over these same fields for the same food and return to their nests in the forest. The coyote might be seen ready to pounce on a rodent while its competitor, the badger, does the digging that chases the rodent out.

The wood duck feeds in water and returns to its home in a hollow forest tree. The greater the variety of vegetation and water areas, the greater the variety of wildlife species.

Swamp or marsh areas (**wetlands**) are necessary habitats for moose, muskrats, beavers, geese, ducks, and many songbirds. Draining wetlands destroys the habitat for these wildlife species. Because these areas are water holding areas, draining them can also result in floods downstream.

Forests located upstream from marshy areas hold back some of the water from rainfall and snow melt so the marshes do not overflow. The

water that does reach the marsh is clean, clear water. If it were not for the forests, this water would pick up soil particles along the way and gradually the soil would build up in the marsh. Then it would hold less water, and that water would be muddy. Forests are very important in maintaining a habitat for wetland wildlife.

## Wildlife Food

The greatest variety of wildlife is found along the shrubby edges of forest growth. That's where the greatest variety of food plants grow. Some species of wildlife such as quail, pheasants, and sharp-tail grouse prefer to feed near forest edges. These edges are found along the outside forest borders, beside roads or logging roads, along vegetation on stream banks, and in farmstead shelterbelts.

Snowshoe and cottontail rabbits feed on bark and twigs of shrubs and small trees. Porcupine feed on bark of valuable forest trees, while beaver feed on the bark of the less valuable aspen, willow, and birch.

Bears, raccoons, and many songbirds eat the berry-type fruits of wild plants such as strawberry, raspberry, blackberry, high-bush cranberry, blueberry, cherry, and hawthorn. The ruffed grouse eats these berries as well as wild strawberry leaves, wintergreen, and rose hips. During the winter, ruffed grouse eat buds and catkins of birch, willow, and aspen.

Deer prefer leaves and young twigs of bitter brush, Utah juniper, red osier dogwood, and sagebrush. They also eat big tooth maple, box elder, cottonwood, pinyon pine, willow, and aspen. When these plants are scarce during the winter months, deer will feed on grasses, tamarisk, alder, and pine. They will starve, however, if this is the only food available. Deer need browse plants. Their digestive systems are different from cattle; they would starve on a diet of hay.

The forester can help the deer by **clearcutting** forest areas or by **controlled** or **prescribed burning**. Clearcutting removes the older, larger trees, whose branches are out of reach for deer. Burning removes dead trees, older brush, and tree parts left behind by logging. Both cutting and burning make room for the new shrubs and young trees that provide food

for deer. The next time you see a clearcut or control-burned forest area, do not automatically think it is a poor forest practice because it is unsightly. Remember, clearcutting or control burning (1) creates the best conditions for growing new tree species as lodgepole pine and aspen; (2) makes more forest edges, which are preferred by a variety of wildlife; and (3) provides food for deer.

## Wildlife Cover

Wildlife will seek cover for (1) a place to hide; (2) shelter or protection from storms and wind; (3) shade on hot sunny days; (4) a place to nest or rest; (5) privacy during their mating seasons; (6) a place to build their nests; and (7) a safe place where their young can play and learn how to protect themselves.

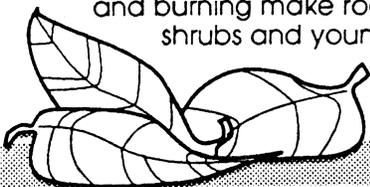
It makes sense...more variety of tree and other plant species means more variety of cover. Raccoons, squirrels, and wood ducks will use hollow trees for their homes. Grouse, pheasants, quail, and rabbits use brush piles of tree branches, low shrubs, or tangled grapevines to hide and build their nests. Songbirds build their nests in dense trees or shrubs. Most of this cover is found along the forest borders where tree branches grow near the ground.

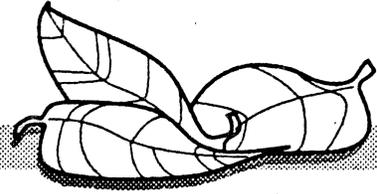
Trees and shrubs in a farmstead windbreak or a field shelterbelt also give excellent cover. They are animal roadways too, making protected travel lanes for game birds, songbirds, fox, rabbits, deer, and skunks. Good cover is important to smaller animals because their enemies live in the same animal community.

The forest is also home for predators such as hawks, owls, fox, and wolves that feed on smaller animals.

Scavengers such as vultures and crows also live in the forests. They have a special role. They help keep the forests clean by clearing away and feeding on dead forest animals.

Are all trees good for cover? Not really. In general, **conifers** provide good shelter and some food while **hardwoods** provide good food and some shelter. A forest that has a mixture of conifers and hardwoods is ideal for wildlife. Forests are different in types of soil, topography, climate, and plant species. Different types of



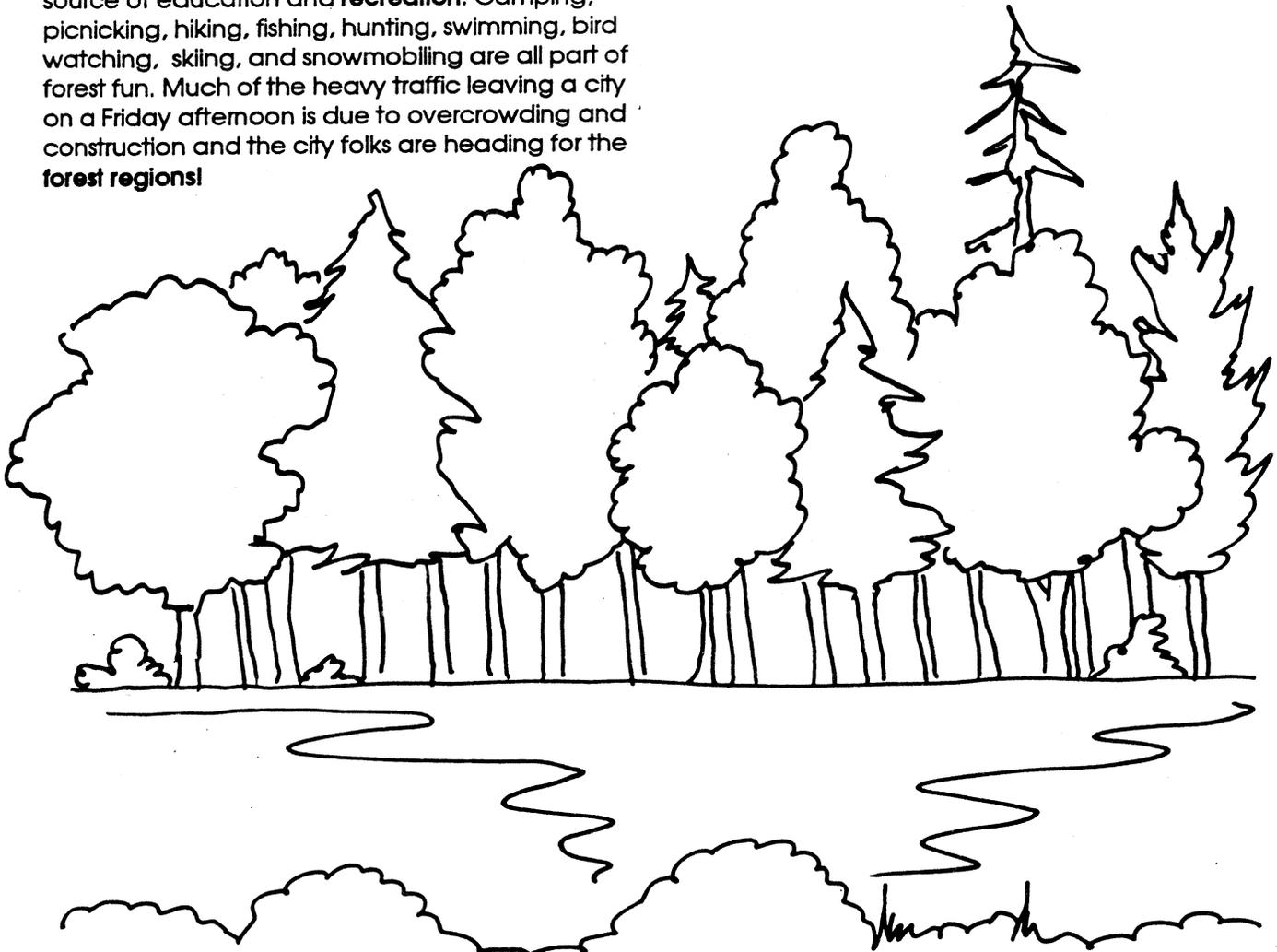


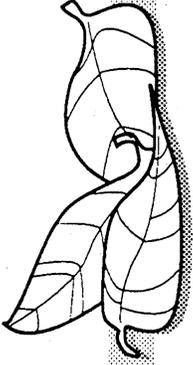
forest communities provide habitat for different species of wildlife.

### Forest Aesthetics and Recreation

Throughout the ages, poets, writers, and painters have praised the forest as a place of great beauty. Trees have given strength and a sense of peace to people in all walks of life. Forest **aesthetics** — the beauty of the forest and the plant and animal life in the forest — are enjoyed by youngsters and adults alike. The sight of a bounding deer along the edge of a forest, inspires awe and wonder in almost everyone.

Since the forest is a place of beauty and peace, it is only natural that it also is a great source of education and **recreation**. Camping, picnicking, hiking, fishing, hunting, swimming, bird watching, skiing, and snowmobiling are all part of forest fun. Much of the heavy traffic leaving a city on a Friday afternoon is due to overcrowding and construction and the city folks are heading for the **forest regions!**



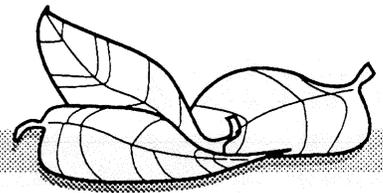


See activity details on pages 5-6 through 5-11.

# Calendar

<p>Discuss: Stages of the forest. Which animals live in certain parts of the forest?</p> <p>Science</p>	<p>Look for: The "green tinge" in the tree canopy. Build: Start your "Stages of the Forest" bulletin board.</p> <p>Science/Art</p>	<p>Discuss: Where does each animal of the forest nest and feed? Build: Place animals on the bulletin board.</p> <p>Science/Art</p>	<p>Build: Continue work on "Stages of the Forest" mural. Fun Fact: Since 1947, Utah has planted over 9,000,000 trees grown from seedlings at the State Tree Nurseries.</p> <p>Science/Art</p>	<p>Build: Finish "Stages of the Forest" mural. Read: "Wildlife Watcher" by Jim Arnosky.</p> <p>Science/Language Arts</p>
<p>Look for: Crab apples in bloom. Do: Crossword puzzle: Tree-mendous (Activity Sheet).</p> <p>Science</p>	<p>Discover: The squirrel-nut-tree relationship! Do: Students bring acorns to school.</p> <p>Science</p>	<p>Discover: Acorn inhabitants. Fun Fact: With the exception of cities located near rivers and streams, all urban trees have been planted by people in Utah.</p> <p>Math</p>	<p>Read: Magazine article "Life in a Nutshell." (National Geographic, June 1989)</p> <p>Science/Language Arts</p>	<p>Discuss: List facts in Activity 9. Fun Fact: There are more than 600 species of oaks!</p> <p>Science/Math</p>
<p>Hint: Collect things to create springtime landscapes.</p> <p>Art</p>	<p>Look for: Leaves forming on big tooth maples and Gambel oak trees. Create: Springtime landscapes.</p> <p>Science/Art</p>	<p>Look for: Dandelions. Create: Springtime landscapes.</p> <p>Science/Art</p>	<p>Write: Haiku or cinquain poems about your springtime landscape.</p> <p>Language Arts</p>	<p>Look for: Lilac bushes and apple trees in bloom. Read: Share your poems from Activity 14.</p> <p>Science/Language Arts</p>
<p>Look for: Bees pollinating. Discuss: Forest recreation.</p> <p>Science/Social Studies</p>	<p>Look for: Falling silver maple and elm seeds.</p> <p>Science</p>	<p>Look for: Bridal wreath blooming. Discover: Trees - living works of art.</p> <p>Science/Math</p>	<p>Read: "Little Raccoon" by Suzanne Noguere, or "Trees" poem by Joyce Kilmer.</p> <p>Science/Language Arts</p>	<p>Look for: Monarch butterflies.</p> <p>Science</p>

# Bulletin Board Idea



## Stages of a Forest

Students participate by drawing and painting the stages of a forest. Include an oat field and water as part of the background scenery. After the painting is finished, students draw and paint animals to fit in the scene in the appropriate places on the mural. Make them removable so students can take them off and put them back on again. Some animals may appear in more than one place. Example: Pheasants feed in meadows or cornfields and nest in brush in woods. Hints for a happy fit: Talk about proportion and relative sizes of animals *before* starting this part of the mural.



# Activites

## Hands On - Minds On Activities

Follow these activities in order and you have one for each of the 20 days in Arbor Month (see calendar). Or, pick and choose any of the activities that best meet your class's needs.

To complete the calendar activities during the month, collect or ask youngsters to bring in the following: "wildlife" magazines that can be cut apart for pictures; a large jar; acorns; "Wildlife Watcher" by Jim Amosky; National Geographic magazine, June 1989; Cricket magazine, May 1988; art books; "The Little Raccoon" by Suzanne Noguere or the poem "Trees" by Joyce Kilmer.

### Activity 1: Stages of the forest.

Discuss: Which animals live in each "stage" of the forest? Ask students to bring "wildlife" magazines to school that can be cut apart. Some titles to suggest are Field and Stream, Outdoor Life, National Wildlife, Ranger Rick.

### Activity 2: Look for: The "green tinge" in the tree canopy.

Students put white backing paper on the bulletin board and start to work on the mural. Animals to be researched and drawn in proportion to one another might be: skunks, woodpeckers, pheasants, quail, fox, rabbits, hawks, coyotes, wood ducks, geese, muskrats, deer, song birds, raccoons, squirrels.

### Activity 3: Discuss: Forest homes.

Where does each animal of the forest nest and feed? Place each animal in a proper place to show its habitat. Why does the animal need that particular habitat?

### Activity 4: Continue work on the "Stages of the Forest" mural.

Add additional animals from Activity 2 or research more of your own.

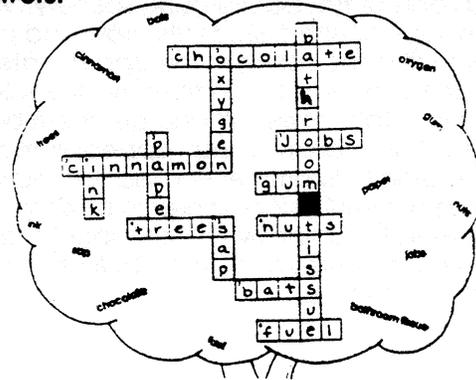
**Fun Fact:** Utah has 44 State Parks.

### Activity 5: Finish the "Stages of a Forest" mural.

Read the book "Wildlife Watcher," by Jim Amosky, Lothrop 1983. This book is also found in Cricket magazine, Sept. 1985. It is a non-fiction book about how people should conduct themselves in the forest if they wish to watch wildlife.

**Activity 6:** Look for: Crab apple trees in bloom.  
Do the crossword puzzle - *Tree-Mendous* - Activity Sheet A (Page 5-10).

**Answers:**



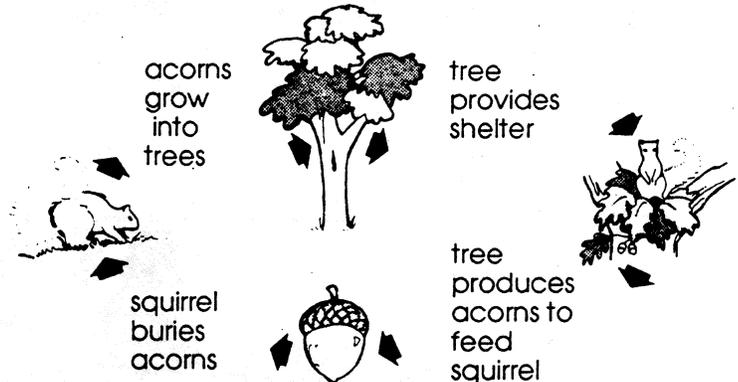
Ask students to bring acorns to school from their yards, parks, and the school yard. At this time of the year, suggest looking under oak trees where there are still many leaves on the ground. Look for acorns that have fallen on top of the leaves. These will probably be whole and not partially decomposed. Provide a large jar for the students to put acorns in.

### Activity 7: Forest relationships

Draw the squirrel-nut-tree relationship cycle on the board, or reproduce it for each student. Discuss what this diagram means. Ask the following questions; encourage students to ask questions, too!

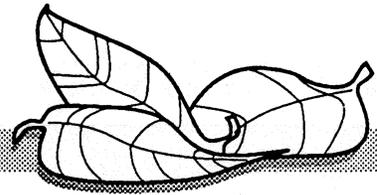
- Does every acorn grow into an oak tree? How do you know?
- What happens to the acorns that do not grow into oak trees?
- Does anything live in an acorn? How do you know?

List all the facts students know about acorns.



The Squirrel-Nut-Tree Relationship

U.S. Department of Agriculture Forest Service.



**Activity 8:** Examine acorns students have brought to school.

Are the acorns different in any way? Are there any holes in the shells? What might this mean?

Give each student one acorn. Have him/her crack open the acorn; warn not to crush it. Each student then carefully examines the inside of his/her acorn. Is there anything in the acorn besides the nut? Count the number of acorns that have something else inside. What is the percent of inhabited acorns compared to the total number of acorns examined?

Estimate how many acorns are left in the classroom jar. Record each person's estimate, then have one or two people count the acorns in the jar. Have students guess the number of those acorns they think might have inhabitants. Ask volunteers to explain how they arrived at their calculation. If no one has done so after several explanations have been given, offer the mathematical way to calculate percentages (based on your earlier findings). To check your estimation accuracy, examine all the acorns. If there are live critters in any of the acorns, you might want to save that acorn and see if the critter develops.

**Activity 9:** Life in a Nutshell.

Share the magazine article "Life in a Nutshell," National Geographic, June 1989. On a large sheet of paper attached to a bulletin board, have students write the facts they learned about acorns and acorn inhabitants from the article. This sheet might be titled "Life in a Nutshell."

**Activity 10:** Read some of the facts that have been written on yesterday's sheet and discuss.

*Fun Fact:* There are more than 600 species of oaks, all of which grow naturally only in the Northern Hemisphere.

**Activity 11:** Take a hike!

Collect nature things for a springtime landscape. (See Activity 12.) Encourage each person to include at least one tree part.

Be sure everyone understands that cutting buds, leaves, and branches off trees or picking blooming tulips and certain other flowers is not acceptable.

**Activity 12:** Look for: Leaves forming on big tooth maple and Gambel oak trees.

Create springtime landscapes. Using the "natural treasures" collected on your hike, combine illustration, design, and bits of nature to create scenes of springtime. Consider dioramas, or three-sided scenes constructed in boxes, too. Natural elements to choose from include stones and pebbles, twigs, bark, leaves, catkins, pine cones, nuts.

**Activity 13:** Look for: Dandelions.

Work on springtime landscapes.

**Activity 14:** Write haiku or cinquain (five stanza) poems about your springtime landscape. If you can get it, Cricket magazine, May 1988 has information.

**Activity 15:** Look for: Lilac bushes and apple trees blooming.

Share poems from Activity 14.

**Activity 16:** Look for: Bees pollinating.

As a group, list as many recreational activities as students can think of that take place outdoors. From cut-up copies of magazines, have students find as many outdoor recreation pictures as possible. Set the guideline beforehand that any picture selected must include at least one tree. Make a recreation collage on a large piece of paper or a poster board to display the pictures. How many of the students have done each of the recreational activities themselves? Which are group favorites? Share tales of adventures in forest recreation!

**Activity 17:** Look for: Silver maple and elm tree seeds falling.

**Activity 18:** Look for: Bridal wreath blooming.

Check out any art gallery and art books where you're sure to see lots of landscape and scenic art. What do you see as a main feature of beauty in many of the scenes? Trees, of course! Why do you think artists and photographers find trees such interesting objects? How do trees make you feel when you're looking at them in real life? In a painting or photograph? How can they set a mood for us?

**Activity 19:** Read the book "Little Raccoon," by Suzanne Noguere or the poem "Trees" by Joyce Kilmer.

**Activity 20:** Look for: Monarch butterflies.

# More Activity Fun

## We All Need Forests

What would you do if you were in charge of 20,000 acres (8000 ha) of forest? If you owned a paper company, you would probably plant a species of fast-growing pine or other "paper tree" and manage as much of the forest as you could for pulpwood. If you were a wildlife biologist, you would try to manage the forest in a way that would keep the best habitat for the different species of wildlife you wanted to protect. And if you were a recreation planner, you might manage the forest to provide good campsites, hiking trails, ski paths, fishing streams, bike paths, and wildlife study areas.

Although many people don't realize it, most of the forests in this country are managed. How a forest is managed depends on what it will be used for. In the past, most forests were managed for only one type of use, such as for raising pulpwood trees. But today, many more are being managed for several different uses at a time.

In this activity, you will get a chance to discuss different forest uses and how some of these uses compete. You'll also learn why managing for different uses is so important.

Ask your students to name ways they or their families use forests. (For hiking, birding, hunting, fishing, camping, and so on.) List the uses on the chalkboard or a large sheet of easel paper. Then explain that forests are also important because they provide habitat for many types of wildlife and contain important natural resources. Next ask if someone can tell you what the word *manage* means. Explain that in order for people to use forests in different ways, forest managers must manage forests in different ways.

Next pass out Activity Sheet B (Page 5-11). This page lists some of the things that many forests are managed for. Ask students to look at the three rows on the page. Starting with the first row, labeled "**wildlife**," discuss some of the ways forests are managed to help protect different species of wildlife. Use this background information to explain how forests are managed for wildlife:

**Saving Snags:** One way people manage for wildlife in a forest is by leaving dead trees, or



snags, standing instead of cutting them down. Snags provide nesting cavities for many birds and mammals, such as owls, woodpeckers, wood ducks, bluebirds, raccoons, and squirrels.

**Building Brushpiles:** By building brushpiles in a forest and along forest edges, forest managers help provide hiding and nesting sites for many animals that live on the ground, such as foxes, rabbits, wood thrushes, and chipmunks.

**Letting Logs Lie:** Many types of animals use logs for nesting and hiding places. By not removing logs, managers can help provide homes and feeding areas for many kinds of wildlife.

**Building Feeders and Nesting Boxes:** Putting up nesting boxes in forests that have limited nesting sites can help attract wildlife. So can setting up feeding stations for birds and mammals.

**Burning:** For some species, the only way to maintain the right kind of habitat is to burn the area on a regular basis to get rid of undergrowth.

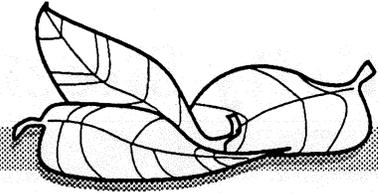
**Picking the Right Plants:** By planting certain types of trees and shrubs in a forest area, wildlife managers can provide habitat for specific types of wildlife.

Now have the students look at the row labeled "**recreation**." Compare this list with the list the children came up with. Discuss the fact that the forest is an important place for people to relax, enjoy nature, and exercise.

Explain that some of the ways people use forests for recreation compete with the needs of wildlife and can also disrupt the plants that grow there. For example, to build ski slopes in a forest, heavy equipment must come in and cut down trees to make the runs. Roads and parking lots must be built so that people can get to the slopes and park. Many times ski lodges and other facilities are also built.

Ask students to think of other ways recreational uses of the forest can harm the wildlife. The role of many forest managers is to balance the uses of a forest so that wildlife can be protected and people can use it for recreation, too.

Finally, have students look at the row labeled "**products**." Many forests are used for commer-



cial purposes. Some forest areas are managed for lumber, some are managed for pulpwood, and some are opened up for oil, gas, and mineral uses. These uses can upset the forest community and compete with wildlife and recreational uses. For example, you probably wouldn't want to camp near a strip mine in a forest or hike along an area that is being lumbered. Why is it important to have commercial uses in a forest? (People need forest products.)

*Adapted from Ranger Rick's Naturescope "Trees are Terrific." Used with permission.*

If you haven't already made a group collage in Activity 16, invite individual students to make forest collages showing all the different uses of a forest. They can cut pictures from magazines, draw their own pictures, and tape or glue on pieces of real forest items, such as toothpicks, paper, seeds, and roots. Have each person write a short paragraph explaining his or her collage, then hang the collages around the room.

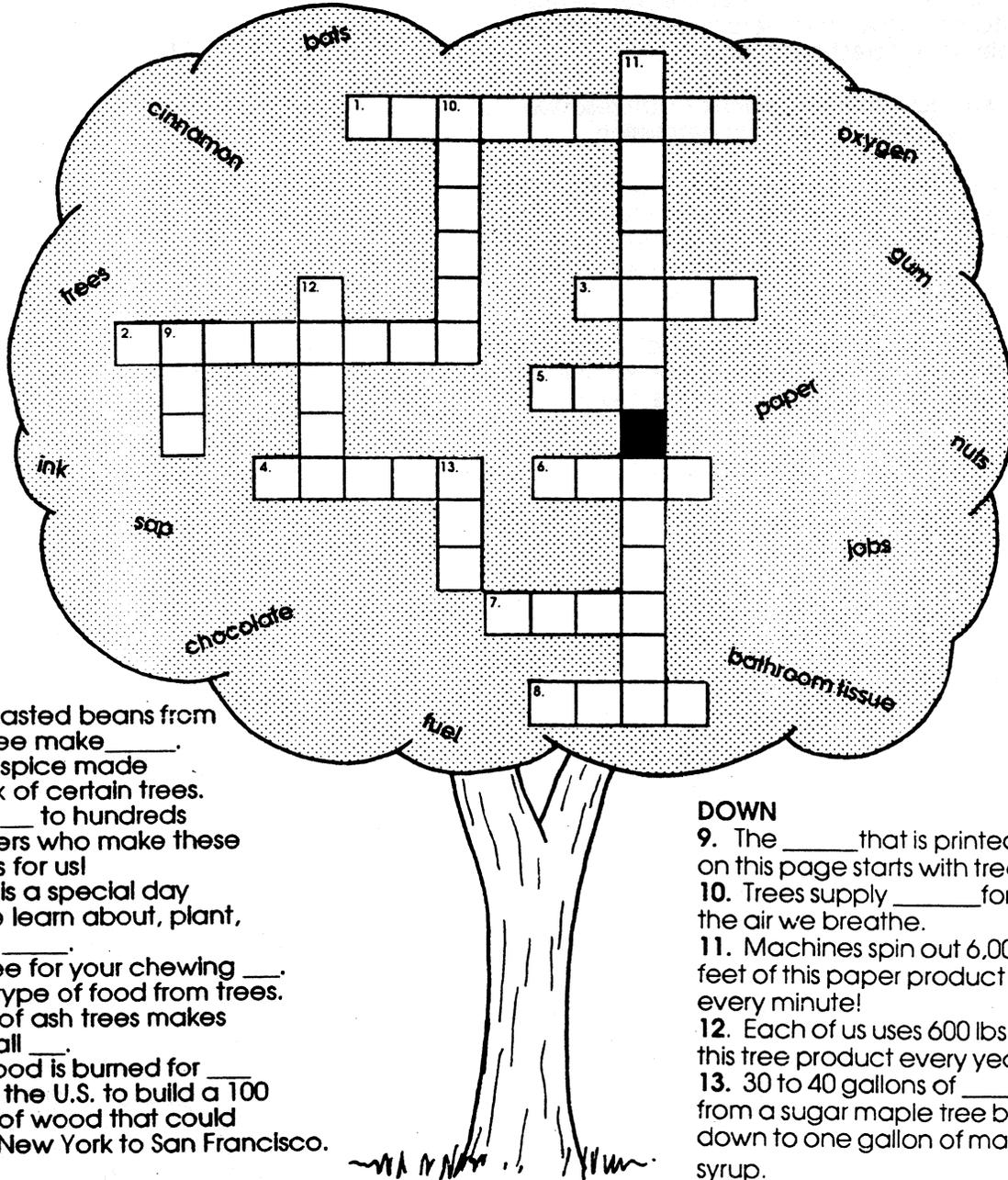


# Activity Sheet A

## Tree-Mendous

Tree (tre)n. A woody plant that is at least 20 feet tall when fully grown; trees grow taller, live longer, and become more massive than any other living thing; trees grow in many sizes and shapes; they serve us many ways.

You'll think trees are tree-mendous when you see some of the things they give us! Use these words to fill in the "crossword puzzle"...then you just might want to pat a tree on the bark!



### ACROSS

1. Ground, roasted beans from the cocoa tree make \_\_\_\_\_.
2. \_\_\_\_\_ is a spice made from the bark of certain trees.
3. Trees give \_\_\_\_\_ to hundreds of Utah workers who make these tree products for us!
4. Arbor Day is a special day when people learn about, plant, and care for \_\_\_\_\_.
5. Thank a tree for your chewing \_\_\_\_\_.
6. \_\_\_\_\_ are a type of food from trees.
7. The wood of ash trees makes great baseball \_\_\_\_\_.
8. Enough wood is burned for \_\_\_\_\_ each year in the U.S. to build a 100 foot tall wall of wood that could stretch from New York to San Francisco.

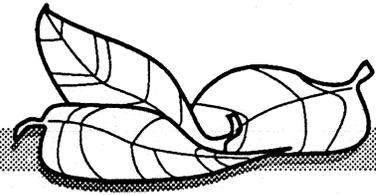
### DOWN

9. The \_\_\_\_\_ that is printed on this page starts with trees.
10. Trees supply \_\_\_\_\_ for the air we breathe.
11. Machines spin out 6,000 feet of this paper product every minute!
12. Each of us uses 600 lbs. of this tree product every year.
13. 30 to 40 gallons of \_\_\_\_\_ from a sugar maple tree boil down to one gallon of maple syrup.

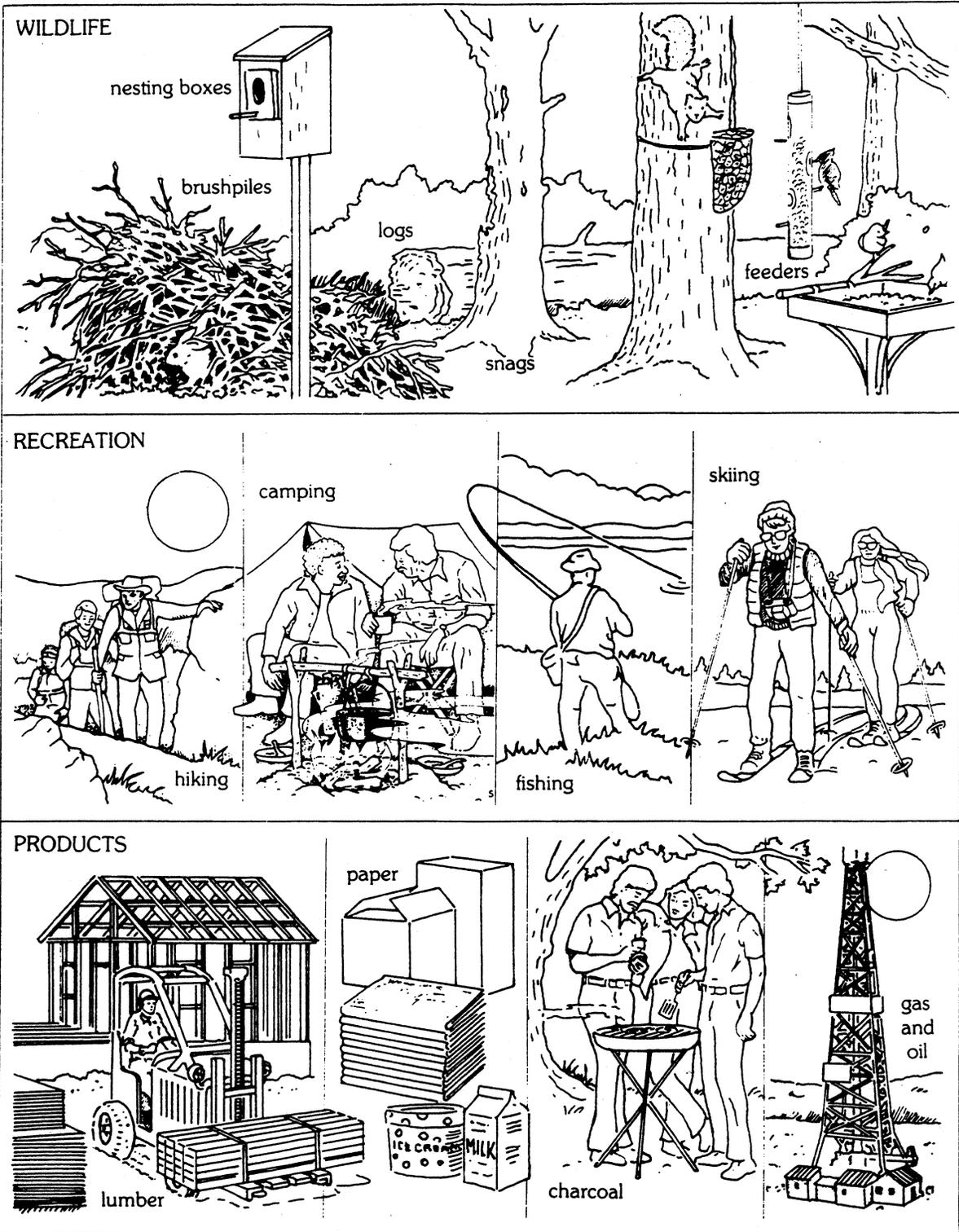
Answers: See Activity 6, page 5-6.



# Activity Sheet B CopycatPage



## We All Need Forests

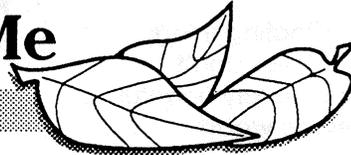


Adapted from Ranger Rick's Naturescope "Trees are Terrific." Used with permission.



# Grade 6

## The Tree: A Key to Healthy Soil, Air, Water, and Me



### Objectives

- Students will use a freshly-cut tree stump or log cross section to evaluate the history of the tree and its growth.
- Students will be able to differentiate between shelterbelts and field windbreaks, be acquainted with the Utah history of these plantings, and be able to identify the advantages of planting them in open areas.
- Students will be able to define "urban forest" and explain how trees benefit urban areas.
- Students will be able to list criteria for selecting and maintaining trees suitable to their community's environmental conditions.
- Students will be able to identify ways trees contribute to human health.

### Background Information

Look at a freshly cut tree stump or a log cross section, and the first thing you'll notice is the series of circles or rings of dark and light wood. By learning to interpret and understand the relationship of these rings, we have many clues to the history of the tree and the forest it came from.

These circles or **annual rings** are created by the yearly growth patterns of the tree. Each year, a new ring is formed just beneath the bark of the tree. The light-colored part of the ring is formed from spring growth. Moisture and nutrient levels are high and the tree is growing rapidly



### Vocabulary Words

annual rings	prevailing winds
girth	evergreen
conducting vessels	deciduous
environment	photosynthesis
competition (in forests)	drought
farmstead shelterbelts	species
erode	urban forest
field windbreaks	

in height and **girth**. **Conducting vessels** are large and the wood fibers are less dense, so the color is lighter. The darker wood is grown as spring moves to summer. The tree's growth slows and conducting vessels are smaller with denser fibers.

You can tell the age of the tree by counting the annual rings. Start at the center and count out. If the tree was cut this year, subtract the age from the year and that's when it started.

When you compare the ways various trees grow, you will see many differences. Some trees grow quickly, some slowly. How fast a tree grows depends on the type of tree and the tree's **environment**. The amount of light and water and/or damage by insects, disease, or fire can cause many differences between trees from different areas or even from the same forest.

In individual trees, you'll see a lot of difference in growth rate over the years. Young trees usually grow fast, slowing down as they get larger and compete with one another. Some may not be able to stand up to the **competition**. They may show little or no growth, and eventually die. Or they may respond to a thinning or removal of other trees around them. They get a

larger share of light and water. That increases their growth rate. Insects, disease, injury by fire, wind, or frost can slow growth rates for certain years.

The results of all these growth-affecting things can be seen in tree cross sections. Trees don't replace damaged cells like people, every harmful event in a tree's life is recorded in the wood.

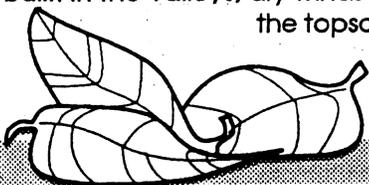
## Trees in Our History

When Brigham Young led the Mormon Pioneers into Utah, they found virtually no trees in the valleys. They came from Europe and the eastern U.S. where the land was covered with trees. They weren't sure that they could live in a place without trees. But under the direction of their leader, they made the desert "blossom like a rose"! They began to clear and irrigate the sagebrush covered valleys to grow agricultural crops.

The pioneers were faced with a new problem. There was no ready source of lumber to build houses or firewood for heating and cooking. They had to haul logs and firewood in from the nearby mountains. Things were hard for the early pioneers, but they survived and things began to improve. But they still missed the trees around their homes like before.

It wasn't long before the pioneers realized that the treeless valleys gave no protection from the cold winter winds and snowstorms, and no shade during the hot summer months. To get this protection and shade, the pioneers began to plant trees around their farm buildings and feedlots. These plantings are called **farmstead shelterbelts**.

Pioneers plowed up millions of acres to grow crops. Animals overgrazed the mountains; more and more soil was exposed to rain, snow, and wind. Without grass and brush to hold it in place, valuable mountain watersheds and valley top soil began to erode away. To solve water erosion in the mountains, grazing was limited, trees and grasses were re-planted, and contour trenches were built. In the valleys, dry winds were blowing the topsoil away.



To save valuable topsoil, farmers began planting rows of trees in their fields to slow down the wind. These are called **field windbreaks**.

## Farmstead Shelterbelts

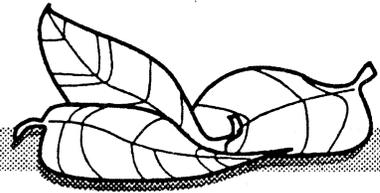
As you drive along through Utah, trees are a familiar sight around farm buildings, and livestock feedlots. Trees give protection from Utah's strong cold winter winds and driving snowstorms.

Winter's prevailing winds in Utah are from the northwest. The ideal farmstead planting, then, is an L-shaped belt of trees and shrubs on the north and west sides of the farmstead area. The design of the planting depends on the number and location of buildings and feedlots on the farmstead. The location of the farmstead with respect to roads is also important. Protecting the farm home is a main goal of these shelterbelts.

For the best protection, the plantings should be about 100 feet from the buildings or feedlots. Trees planted within 50 or 60 feet cause snow to pile up around the buildings or in the feedlot during the winter. It will create a hot air pocket (no air movement) during hot summer days. The northern belt of trees and shrubs should extend east...and the west belt should extend south... about 50 feet beyond the last building or feedlot to be protected.

A farmstead shelterbelt's main purpose is to stop the wind. The idea is to plant as few rows as possible and still do the job of stopping the wind. **Evergreens** are especially good for this because they keep most of their needles all year around and give good winter protection. Their branches also extend all the way to the ground.

It is ideal to plant shelterbelt trees close together in rows and plant the rows close together so they grow together and give the earliest possible protection. When trees are planted close together, however, they should be thinned out before they begin to crowd each other. In a dense shelterbelt, the amount of light reaching inside trees is limited. The outside branches of the outside rows exposed to the sun will be alive to the ground line, while the branches inside the shelterbelt may be dead except in the tops of the crowns.



## Field Windbreaks

All America awoke to the seriousness of soil losses through wind erosion when the first great dust storm hit the Great Plains in May, 1934. The storm started in western Kansas, Texas, Oklahoma, and eastern Colorado. It carried an estimated 200 million tons of soil at a height of almost two miles across the country in a north and easterly direction and for hundreds of miles out over the Atlantic. Dust settled in Canada, blocked out the sun over our nation's capitol, and sifted through screens of homes and office buildings all across the country. Some farms lost topsoil as deep as their plows reached. The blowing soil particles cut off crop plants at the soil line as cleanly as you could cut them with a knife.

After the dust storms, field windbreaks began to appear throughout the Great Plains and midwest states. The two main purposes of a field windbreak are:

1. To hold the valuable topsoil in place - keeping it from blowing off the land and filling up ditches.
2. To keep the winter snowfall on the cropland. This prevents snow from blowing off the land and piling up in ditches, along roads, and on highways. It helps keep more moisture in the crop soil, too.

An effective field windbreak is not one that is so dense that it completely stops the wind. Instead, a windbreak should be open enough to slow down the wind and allow it to filter through - much like a screen in a window opening on your house. This allows the snow to filter through the tree planting and spread over the protected cropland. When the snow melts, moisture is added over the entire protected area. Since **deciduous** trees lose their leaves in the winter, they are better to use for field windbreaks than evergreens. A single row correctly spaced can do the job.

Along with holding the topsoil in place and keeping the winter snowfall on the cropland, field windbreaks (a) provide food, cover, and travel lanes for wildlife; (b) provide more pleasant conditions for planting, cultivating, and harvesting crops; and (c) add beauty to the landscape.

## Trees and Us

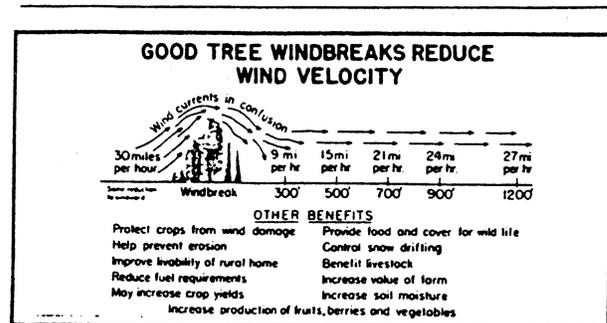
Trees do more than spruce up our space and provide wind shelter! They serve humans in many beautiful, practical, important ways.

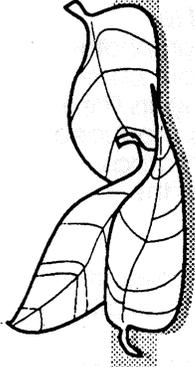
**Trees supply the oxygen we need to breathe.** Trees make their food through **photosynthesis**; carbon dioxide and water are combined with sunlight energy to make sugars (tree food) and oxygen. Enough oxygen is produced by a single acre (about the size of a football field) of young growing trees to supply the needs of 18 human beings each year.

**Trees help our environment.** They clean the air by trapping much of the dust, dirt, and grit that pollute the air and fall on us. They keep our air supply fresh by absorbing the carbon dioxide we exhale and that is given off by factories and engines. They are great privacy and sound barriers. They refresh our watersheds, cool the air, and shelter us from direct sunlight on hot, sunny days.

**Trees help save energy costs.** A single row of tall evergreens planted on the northwest side of a home can cut fuel bills up to 20 percent. On hot summer days, trees are natural air conditioners; they lower air temperatures by evaporating water in their leaves. Shade trees planted near homes can lower the indoor temperature considerably.

Trees do much to make our lives and our world healthier and happier!



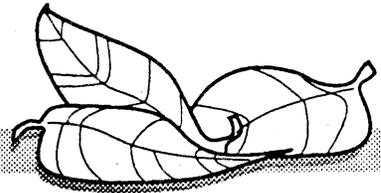


See activity details on pages 6-7 through 6-13.

# Calendar

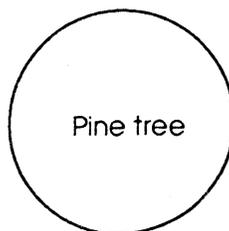
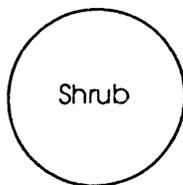
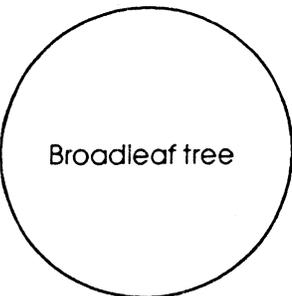
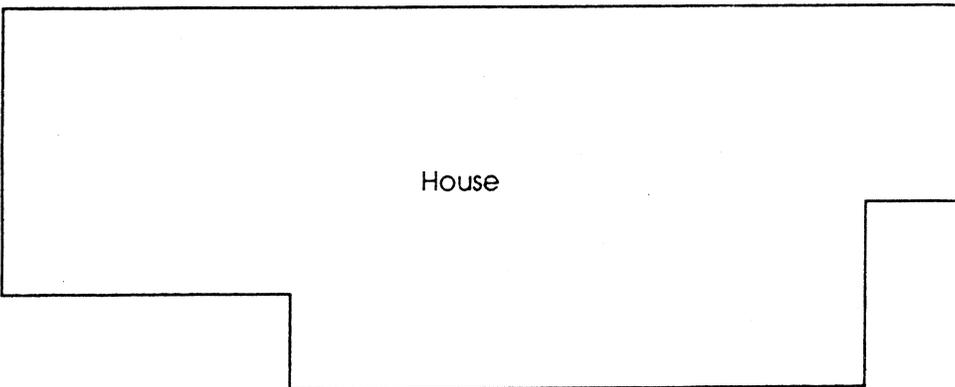
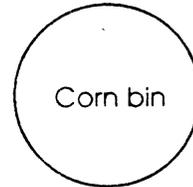
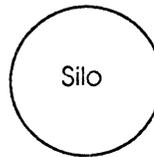
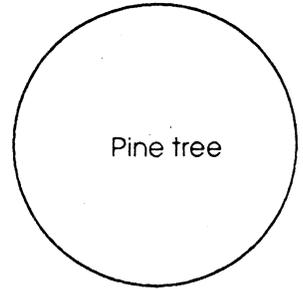
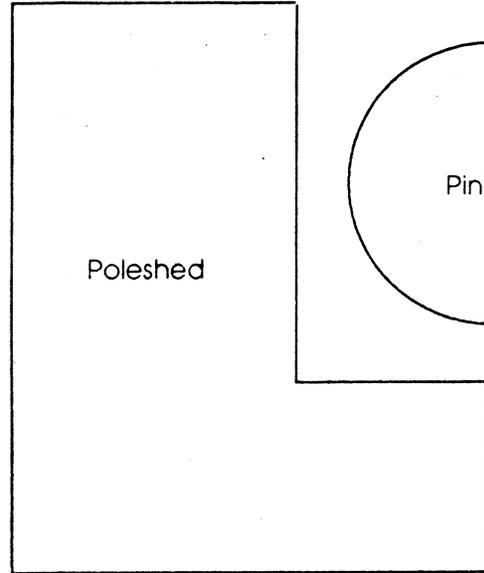
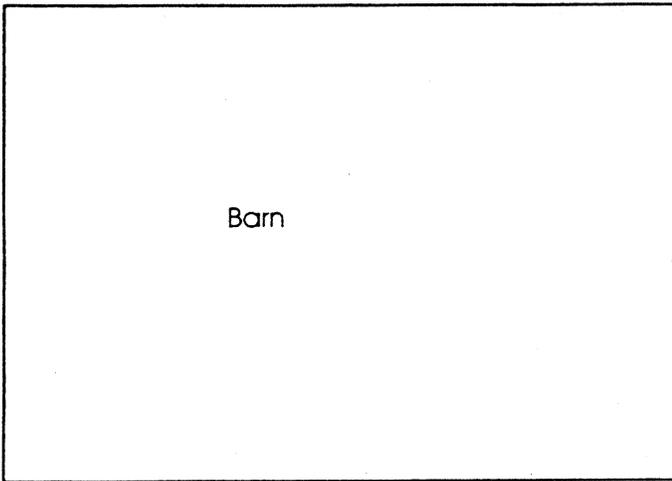
<p><b>1</b></p> <p>Research: The "Dust Bowl" of the mid 1930s.</p> <p>Social Studies/History</p>	<p><b>2</b></p> <p>Look for: The "green tinge" in the tree canopy.</p> <p>Science</p>	<p><b>3</b></p> <p>Discuss: Farmstead shelterbelts and field windbreaks. Create: Back-ground and symbols for bulletin board.</p> <p>Science/Art</p>	<p><b>4</b></p> <p>Look for: Tulips and daffodils blooming. Create: Symbols and "aerial" view of farmsteads.</p> <p>Science/Art</p>	<p><b>5</b></p> <p>Create: Paper/pencil sketches and plans of farmsteads and shelterbelts.</p> <p>Social Studies</p>
<p><b>6</b></p> <p>Look for: Crab apple trees in bloom. Present: One or two groups' shelterbelt projects.</p> <p>Science/Language Arts</p>	<p><b>7</b></p> <p>Present: Group shelterbelt projects.</p> <p>Science/Language Arts</p>	<p><b>8</b></p> <p>Present: Remaining group shelterbelt projects.</p> <p>Science/Language Arts</p>	<p><b>9</b></p> <p>Research: Examine freshly cut tree stumps and read the rings.</p> <p>Science</p>	<p><b>10</b></p> <p>Look for: Leaves forming on silver maple and red oak trees. Write: Fact cards and post near your tree stump.</p> <p>Science/Language Arts</p>
<p><b>11</b></p> <p>Create: Crayon or soft lead pencil rubbings of annual rings of a tree.</p> <p>Art</p>	<p><b>12</b></p> <p>Research: Estimate important dates in your community's history by reading rings.</p> <p>Social Studies/History</p>	<p><b>13</b></p> <p>Look for: Dandelions. Do: Copycat Pages 1 and 2. (Activity Sheets)</p> <p>Science</p>	<p><b>14</b></p> <p>Write: A story about "The Life of A Tree Stump."</p> <p>History/Language Arts</p>	<p><b>15</b></p> <p>Look for: Lilac bushes and apple trees blooming. Discuss: Urban forests.</p> <p>Science</p>
<p><b>16</b></p> <p>Look for: Bees pollinating. Interview: Develop a set of questions for your guest speaker (See Activity 19).</p> <p>Science/Language Arts/Social Studies</p>	<p><b>17</b></p> <p>Look for: Silver maple and elm seeds falling. Research: Identify locations in your community that would benefit from trees.</p> <p>Science/Social Studies</p>	<p><b>18</b></p> <p>Look for: Bridal wreath blooming. Discuss: How are trees keys to healthier soil? Air? Water? People?</p> <p>Science</p>	<p><b>19</b></p> <p>Listen: Guest Speaker-forester, parks manager, public groundskeeper, Department of Natural Resources or Department of Agriculture employee.</p> <p>Social Studies/Lang. Arts</p>	<p><b>20</b></p> <p>Look for: Monarch butterflies. Write: Thank you notes to guest speaker, noting new things learned from his/her visit.</p> <p>Science/Language Arts</p>

# Bulletin Board Idea

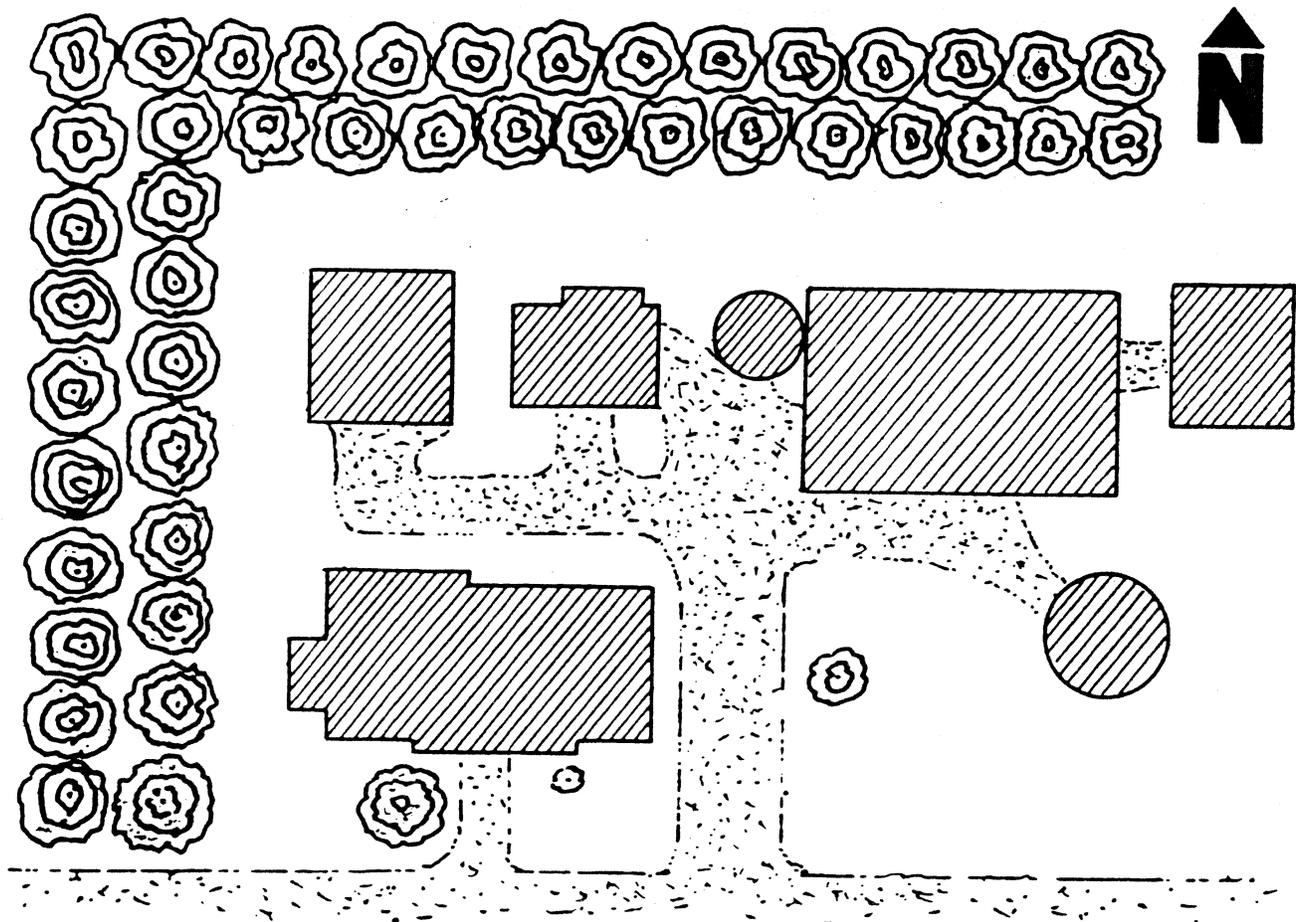


## Designing Shelterbelts and Windbreaks

Students participate by creating an "aerial" view background for the bulletin board itself, then attaching farm buildings and shelterbelt symbols. In groups, they will construct various farmstead shelterbelt patterns to reduce effects of wind on the farm buildings and soil. Use these symbols as patterns to create farmsteads with shelterbelts, or have students make their own symbols.



# Bulletin Board Idea Continued

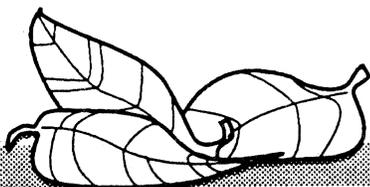


Key: 1" = 25'

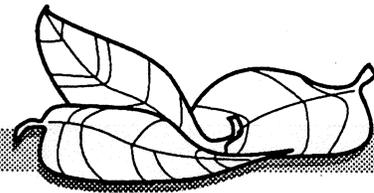
## A sample windbreak design for farm headquarters:

Guidelines for plantings:

1. Plant shelterbelt on north and west sides of farmstead buildings.
2. Plant first row of plantings about 100' from buildings and feedlots, and 50' beyond.
3. Plant at least three rows of trees for desired density and protection.
4. Plant slow-growing trees in outside rows (pine, arborvitae, spruces).
5. Plant fast-growing trees in inside rows (maple, honeysuckle).
6. Plant rows about 16 feet apart.



# Activities



## Hands On - Minds On Activities

Follow these activities in order and you have one for each of the 20 days in Arbor Month (see calendar). Or, pick and choose any of the activities that best meet your class's needs.

To complete the calendar activities during the month, collect or ask youngsters to bring in a freshly-cut tree cross-section of a branch or trunk.

### Activity 1: Dust Bowl days.

Display any materials with information about the "Dust Bowl" of the mid 1930s. Have a large sheet of paper or tag board titled "Dust Bowl of the 1930s" available. Students research the topic and list facts they find on the piece of paper.

*Fun Fact:* Trees hold the soil and reduce erosion. Native Trees along rivers, creeks, and streams in Utah protect the banks by slowing down and absorbing runoff water like giant sponges.

### Activity 2: Look for: The "green tinge" in the tree canopy.

Share the facts about the "Dust Bowl." Add any new understandings to the sheet of paper.

### Activity 3: Windbreaks and shelterbelts.

Discuss farmstead shelterbelts and windbreaks. Ideal shelterbelt design planting is an L-shaped belt of trees and shrubs on the north and west sides of buildings. Plantings should be 100 feet from buildings and feedlots and 50 feet beyond the last building or feedlot. Have students start cutting symbols for buildings, several trees, and shrubs. See designs for symbols on page 6-5. Have some students attach white paper to the bulletin board. Trim and title the board. This will be the background for an aerial view of a farm. Working together, determine the scale of inches for feet and feet for miles, then mark off an area on the bulletin board that is several hundred feet square. Next, students draw a road and driveway for one farm. It should look like an aerial view. Scale option: 1" = 25' and make a square section 36" x 36".

### More about farm shelterbelts:

In addition to stopping the cold winter winds and preventing the piling up of snow around buildings, a farmstead shelterbelt provides these

benefits:

1. Saves up to 20 percent of the cost of fuel for heating the home.
2. Reduces feed costs for livestock. Livestock use up less energy to keep warm; this energy can be used to gain weight.
3. Provides food and cover for songbirds, gamebirds, and small wildlife mammals. During recent winters in North Dakota, over 50 percent of our pheasants wintered in farmstead shelterbelts.
4. Protects flower gardens, vegetable gardens, orchards, and ornamental plantings.
5. Provides shade for the farm family and livestock.
6. Provides a picnic and recreation area in its shelter.
7. Makes the task of daily farm chores more pleasant and less vigorous, whether it be feeding livestock or repairing farm machinery.
8. Makes the farmstead a quieter place to live because outside noises are deadened.
9. Makes the entire farmstead more attractive and increases its value.

*Fun Fact:* During a bad winter, cattle protected by tree windbreaks lose 10 lbs. per unit less than unprotected cattle. During a good winter, cattle protected by tree windbreaks gain 35 lbs. per unit more than unprotected cattle.

### More about field windbreaks:

Wind erosion and the loss of rich, productive topsoil aroused public concern on a national scale after the "Dust Bowl" days. This marked the beginning of wide-scale tree planting on the Great Plains known as shelterbelts. This type of planting is known as "field windbreaks" in Utah.

How do farmers decide if field windbreaks can help them? It's determined by:

**1. Type of soil.** The need for field windbreaks is greater on a farm with sandy soil than a farm with clay soil. Why? Clay soil particles are smaller than sand particles, but they stick together to form larger particles or "clods." Since these larger clay clods are heavier than the smaller sand particles, they are not as easily blown away by the wind.

**2. Type of vegetation.** When a farmer is growing row crops such as corn and soybeans, bare soil is exposed between the rows. This bare soil is subject to erosion, especially when the plants are small. Field windbreaks protect this soil. If, however, there are woodlands, roadside

grass, pasture, small grain crops, and stream or ditch plants near row crops, the need for field windbreaks is not as great.

**3. Farming practices.** Grass terraces, contour farming, and strip cropping reduce need for field windbreaks. Fall plowing that exposes bare soil during the winter months increases the need for field windbreaks. We have all seen black snow in the ditches along the highway during the winter. This is a mixture of snow and topsoil that blew off farmland plowed the previous fall. Tree plantings, any grass cover, and even corn or soybean stubble would reduce this soil and moisture loss.

In planting a windbreak it should be remembered that trees will slow down the wind for a distance of approximately 25 times their height. Beyond this distance, the trees have no effect. In other words, a field windbreak having trees 30 feet high will slow down the wind for a distance of 750 feet.

**Activity 4:** Look for: Tulips and daffodils blooming.  
Finish work on the symbols and aerial view for the bulletin board.

**Activity 5:** Build farmsteads.

In groups of four or five, have students sketch one farmstead on a piece of paper. Discuss where farm buildings should be placed. Next, each group decides on where to "plant" a shelterbelt around this farmstead. Remind them of the distances needed to be effective. Have students "plant" a windbreak on their group project sheets.

**Activity 6:** Look for: Crab apple trees in bloom.

Have one or two groups display their farmstead plan on the bulletin board by attaching their cut-outs to the board with pins. Use cut-out symbols for buildings, roads, trees, etc. Have a "reporter" explain the group's thinking in their plan.

**Activity 7:** Farmstead sketches.

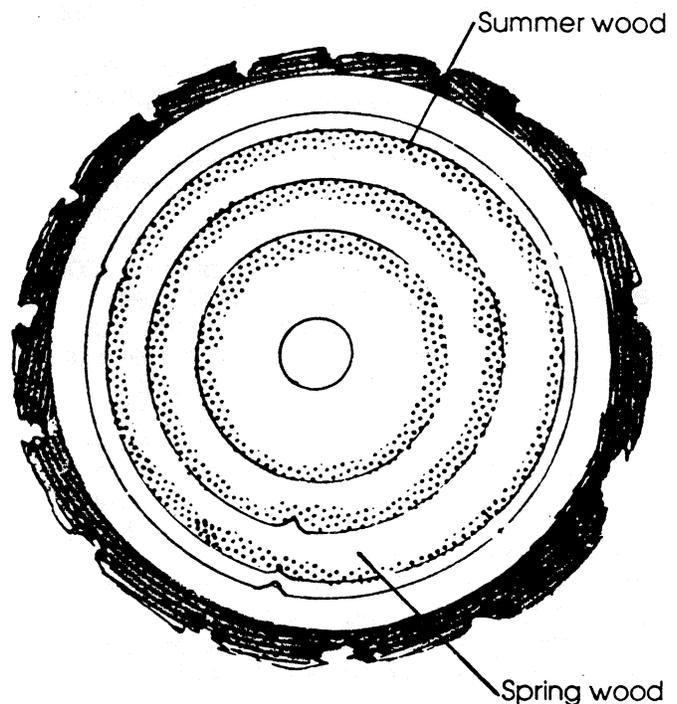
Have two or more groups display their sketches and give the reasons for their decisions.

**Activity 8:** Farmstead sketches, continued.

Have remaining groups display their sketches and give reasons for their decisions.

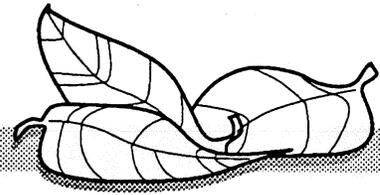
**Activity 9:** Stump spies:

Bring a freshly cut tree cross section into the classroom. Invite several students to count the rings, and to read the rings. Tree rings are nature's record keepers. "Read your stump" with these tips: Look for the pattern of wide light rings and dark narrow rings in the wood. Each light band represents one spring's growth. The dark band is summer growth. Together they are one annual ring. A new annual ring is added under the bark each year. To tell the tree's age, count from the center out to the bark. The width of the light rings also tells about the weather during past springs. Wide rings mean spring weather was good: warm days, lots of rain, much growth. Narrower rings mean spring was probably cold or dry so the tree didn't grow as much. Or, the tree may have been crowded in early years, shaded by larger trees until they were harvested. Trees don't "just grow"; the surrounding environment has a big effect upon them.

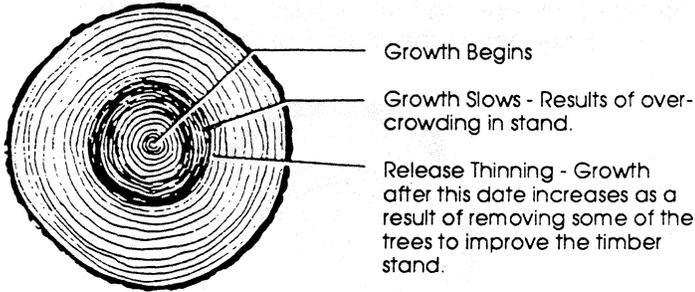


Tree cross sections are available from Project Learning Tree (see the Resources section), or they may be obtained from a tree service, a firewood pile, or cut from pruned branches.

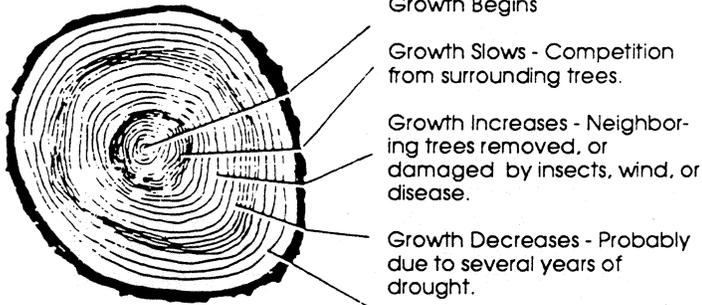




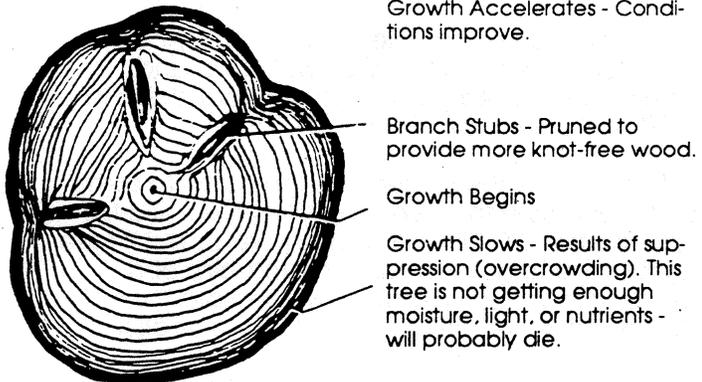
Examine these ring patterns. What stories do they tell? How are the growth patterns alike? How are they different?



Growth Begins  
 Growth Slows - Results of overcrowding in stand.  
 Release Thinning - Growth after this date increases as a result of removing some of the trees to improve the timber stand.



Growth Begins  
 Growth Slows - Competition from surrounding trees.  
 Growth Increases - Neighboring trees removed, or damaged by insects, wind, or disease.  
 Growth Decreases - Probably due to several years of drought.  
 Growth Accelerates - Conditions improve.



Branch Stubs - Pruned to provide more knot-free wood.  
 Growth Begins  
 Growth Slows - Results of suppression (overcrowding). This tree is not getting enough moisture, light, or nutrients - will probably die.

**Activity 10: Look for: Leaves forming on big tooth maple and Gambel oak trees.**

Post these fact cards near the tree stump:

- During a good growing season, a wide ring is laid down.
- During a poor growing season (**drought**, cold winter, a spring frost) the ring will be much narrower, showing the tree was able to grow very little.

- Other things besides weather influence a tree's growth, too. Examples are insect damage, diseases, fire, root damage, transplanting, and competition from other trees for sunlight, water, or nutrients.

Look at the rings and ask students to try to determine which annual rings represented good growing years and which represented poor growing years.

**Activity 11: Ring rubbings.**

Make crayon rubbings of annual rings from several trees. Simply put lightweight paper over the rings and rub on the paper with the side of a crayon.

**Activity 12: Using the rubbings from Activity 11, determine:**

- How do the annual ring patterns of different **species** of trees vary?
- Which tree is the oldest?
- If you know approximately when a tree was cut, you can count backwards on the rings and identify the rings that correspond with important dates in your community or nation. Mark and label those rings.

**Activity 13: Look for: Dandelions.**

Do Activity Sheets A and B (pages 6-12, 6-13). Pass out copies of Activity Sheet A (page 6-12) and have everyone look at the cross sections on the left-hand side of the page. Explain that each cross section represents a different tree. On the right-hand side are pictures showing seven factors that can affect tree growth. Go over the factors with the students so they understand each one. Then discuss each cross section and the factor or factors that could have influenced its growth pattern. Have the youngsters draw lines from each cross section to the matching factor or factors.

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).

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

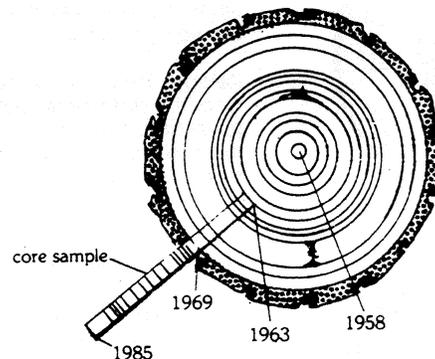
Cross Section C: The mark beginning in year six is all that's left of a branch that died and fell off (picture 7). Eventually the tree's trunk grew around the remains of the branch and covered it. (The branch could also have been broken or cut off.)

Cross Section D: The narrow rings shown in this cross section could have been caused by several factors such as drought (picture 3), heavy insect damage (picture 4), or damage from construction (picture 5). If a tree lost all or most of its leaves because of an insect attack or drought, it would not be able to make food and would grow very little that year. And root damage from the construction of a house or sidewalk too close to the tree would reduce the water and minerals the roots could take up. Ask the students if they can think of other factors that might cause narrow growth rings (disease, cold winter, a spring frost, transplanting, competition from other trees for sunlight and nutrients, etc.)

Now pass out a copy of Activity Sheet B (page 6-13) to each person. Explain that the large cross section at the top of the page is from a tree that was used to build a farmhouse. They must find out when the farmhouse was built by finding out when the tree started growing and when it was cut down. (They can assume that the farmhouse was built the same year the tree was cut.) They can also discover when some events happened during the life of the tree. To find out, they must study the core samples at the bottom of the page.

First, explain what a core sample is and how a core sample is taken. Have the students cut out each core sample, making sure they leave the lettered tabs attached. Then describe how *dendrochronologists* (people who study the past by looking at tree rings) cross-date trees by matching similar ring patterns from a core sample to a cross section. Explain that only one of the three cores is from a tree that grows in the same area where the log (the cross section) once grew. It has an interval of rings that overlaps with a section of the tree trunk at the top of the page. Students must first decide which core matches the trunk cross section.

To do this, they should take one of the core samples and try to match its pattern of lines with a section of the rings on the round cross section. (See the illustration for how to do this. Remind the students that core samples go no farther than the center of the tree, so they should not extend the core sample across the center of the cross section.)



When they've discovered which core sample overlaps the cross section (core sample B), they should count backward on the core sample to find out the actual dates when the core sample matches the cross section. Tell them that the line closest to the letter on their tab is the annual ring from 1985.

Once they determine the dates they can figure out when the tree was cut down and when it first started growing. (It was cut down in 1930 and started growing in 1896.)

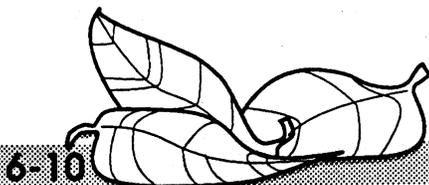
Then have the students assign dates to some of the events in the tree's life. What year did fire scar the tree? (1915). How many years did it take for the tree to grow around the remains of a dead branch? (10 years). How long did the drought that began in 1912 last? (two years).

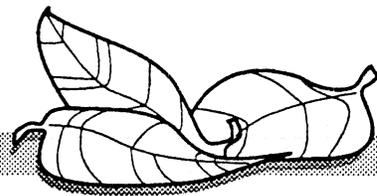
Wrap up the activity by asking the students for ideas on other things that cross dating can reveal.

*Adapted from Ranger Rick's Naturescope "Trees are Terrific." Used with permission.*

#### Activity 14: Creative writing.

Write a story about the tree stump's life...taking into account the annual rings and the kinds of growth years they each represent. For idea starters, check out your library. Literature is filled with fascinating folklore and legends about





plants and trees. Your media specialist or librarian will be able to direct you to good sources. For example: It's said that Ojibway Indians seldom took down a living tree because they believed a tree could feel pain. Their medicine men told of trees wailing as they were being chopped down. Many other tribes around the world have also been especially respectful of trees. The primitive Basoqa of central Africa sacrificed animals to each tree they were about to cut down. Scandinavian folklore sparkles with gnomes, trolls, and other wee folk who dance in the air, cavort through meadows, and often live or sleep in trees. What examples can you turn up to share?

**Activity 15:** Look for: Lilac bushes and apple trees blooming.

Introduce the term **urban forest**. It may be hard to see the forest for the buildings in our cities and towns, but it's there! The urban forest grows along boulevards, in parks, along streams, in yards and hidden corners of our daily environment. Take another look! Where are the urban forests in your neighborhood?

Urban forests give us special benefits. Our watersheds are protected and the quality of urban water supplies is improved, thanks to trees. They increase property value, provide habitats for birds and other animals, shade our homes and playgrounds, are pretty to look at, and fun to climb. They absorb carbon dioxide and give us fresh oxygen to breathe. They even serve as an early warning system against environmental pollution. If the trees start dying, we'd better investigate the reasons!

**Activity 16:** Look for: Bees pollinating.

Develop a list of questions for the guest speaker in Activity 19. Idea starters:

- a. Who is in charge of trees in our community?
- b. How much money is spent on trees each year in our community?
- c. Has the community planted any trees? Where did they get the trees to plant? What kinds of trees were planted? Why were these kinds chosen? What regular care do the trees get? Did the trees survive?
- d. Does the department in charge of trees have certain criteria for choosing the kinds (species) of trees that will be chosen?

- e. Who decides when and where the trees will be planted? Can local citizens plant trees on public property? If they can, what is the procedure for doing so?

**Activity 17:** Look for: Silver maple and elm tree seeds falling.

As a group, identify locations in the community where a tree or trees should be planted. In what ways would trees benefit these places? When your guest comes (Activity 19) be prepared to ask how to go about getting trees planted in places such as those the group identified.

**Activity 18:** Look for: Bridal wreath blooming.

Discuss: How trees are keys to healthier (a) soil; (b) air; (c) water; (d) people.

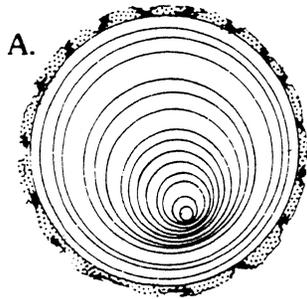
**Activity 19:** Guest speaker: Forester, parks manager, public groundskeeper, etc.

**Activity 20:** Look for: Monarch butterflies.

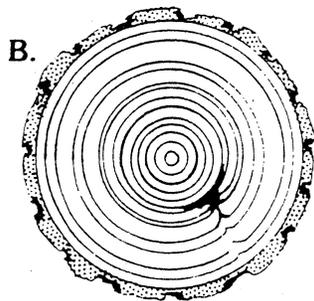
Write thank you notes to your guest speaker, noting new things learned from his/her visit.

# Activity Sheet A CopycatPage

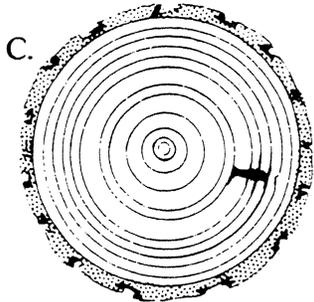
## Reading The Rings - Part 1



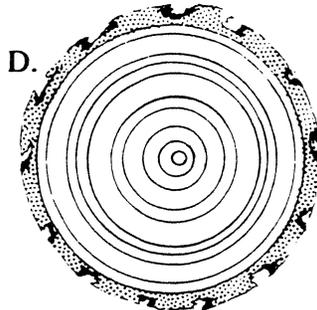
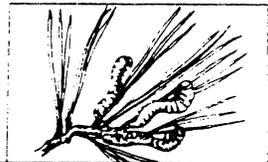
1. Fallen tree



2. Fire



4. Insect attack



5. Construction



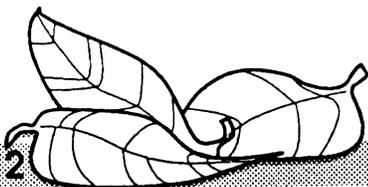
6. Growing on slope



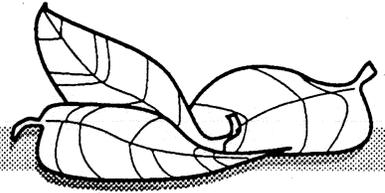
7. Dead branch



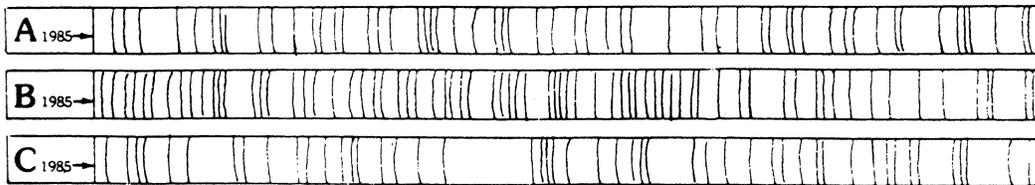
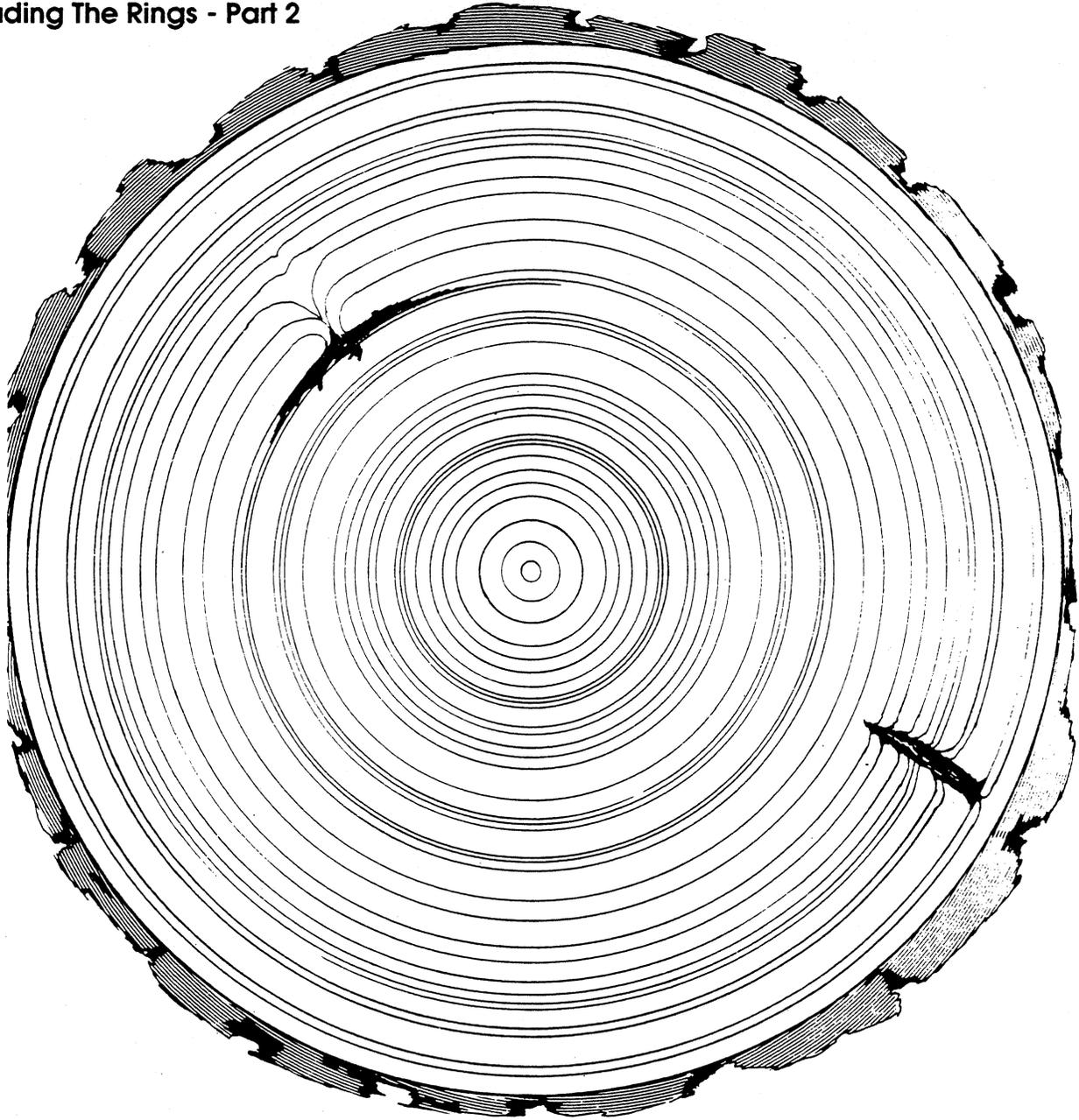
Adapted from Ranger Rick's Naturescope: "Trees are Terrific." Used with permission.



# Activity Sheet B CopycatPage



## Reading The Rings - Part 2



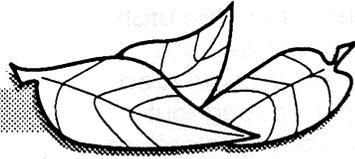
**Instructions - See Activity 13, page 6-10.**

*Adapted from Ranger Rick's Naturescope: "Trees are Terrific." Used with permission.*



# Appendix

## Let's Plant A Tree



### Background Information

#### Why do we need to plant trees?

All it takes is to look at a tree, or to sit under one on a hot summer day, to appreciate this unique plant. A tree is a beautiful living thing. Our peace of mind, our emotions, and our spirits are affected by what our eyes see. The pleasing look of trees makes them one of the most important, beautiful things in our environment.

But we receive many benefits from trees other than those we see. Trees make important contributions to the ecology and economy of our wilderness, rural, and urban areas.

Forests protect the water supply by preventing run-off and erosion. They also purify the air, provide habitat for wildlife, and occupy places where we can go to "get away from it all" by camping, hiking, and skiing.

Commercial forests in Utah produce mostly lumber, speciality products, and firewood. Most commercial forests are in Utah's mountains which receive most of the annual precipitation.

In places where proper ground cover is lacking in Utah's mountains, critical watershed's are in danger of floods, landslides, and erosion every year. The planting of trees in the mountains, and in field windbreaks and farmstead shelterbelts in rural Utah helps prevent costly wind and water erosion in our state. Windbreaks and shelterbelts also reduce the effects of summer and winter winds on humans and animals; cut down on heating costs in homes; protect feedlots, gardens, orchards, and crops; and beautify homes and farmsteads.

Trees make streets and residential areas in Utah's cities and towns more beautiful and valuable. But

they do much more than



make our urban areas pleasant places to live. Trees are one of nature's most efficient dust traps. Their leafy surfaces keep a steady flow of dust and dirt from saturating the air we breathe. They relieve sound pollution by breaking up and reducing sound waves; tests have shown that proper landscaping can reduce traffic noise, too. Trees keep cooling costs down in summer, and so conserve precious energy resources. They absorb carbon dioxide from the atmosphere and give off oxygen.

In a single day, each of us inhales 35 pounds of oxygen - and we get it all from green plants on land and vegetation in the sea. Planting trees is not only a matter of comfort, beauty, and economy. They help us survive!

#### How we plant a tree.

Scope out a site in your yard. Check with your parents first. (If you are unable to plant in your yard, contact your city offices to see about planting on the boulevard or at a local park. Other possibilities might be your church, school, or parents' office. In any case, be sure to get approval from the person in charge.)

**Call your local utility company to get help from an expert to locate buried electric, gas, or other utility lines.**

While waiting for the utility locator to do his/her job, try to select a tree that will grow well on the site you've selected. Consider the soil type. Is it sandy and well drained? Or heavy clay, and so perhaps wet and possibly compacted? Be sure to choose a tree that will grow in the soils of your site. For help, check with your local nursery or garden center, city forester, county extension agent or Soil Conservation District technician.

## Where can you get trees?

There are many possibilities! Your local nursery or garden center will have both large and small trees. Make sure the trees are acclimated to your local area in Utah.

Low cost seedlings are available from the Utah Division of Forestry, Fire and State Lands, Lone Peak Conservation Center in Draper. Local Area Managers at six different locations throughout Utah may assist you in making seedling selections and provide you with free tree planting advice. For ordering information write or call:

Lone Peak Conservation Center  
271 West Bitterbrush Lane  
Draper, UT 84020-9599  
Phone: (801) 571-0900 FAX: (801) 571-0468

Tree planting programs are available that may help you, too. Contact either the Utah State Forester at (801) 538-5555 or TreeUtah at (801) 364-2122 for more information. Several cost-share programs are available to purchase trees for a variety of uses on school and other public lands. **TreeUtah's** a non-profit corporation to help plant trees:

TreeUtah  
364 E Broadway St  
Salt Lake City, UT 84111  
(801) 364-2122 FAX: (801) 359-2062

When choosing and planting a tree, remember there are a number of different growing regions in Utah. (Ask your City Forester, local nurseryman, District Forester or Soil Conservation District office about species of trees best suited for your area.) Some species of trees do better in one region than another. Before choosing a tree, find out what kinds of trees do well in your part of the state, and also at your chosen planting site.

The root systems of both seedlings and saplings must be protected before the trees are planted. If the seedlings are bare root, they must be kept in water, and not exposed to wind and warm temperatures for more than 15 seconds before they are planted, or the roots will be damaged.

containers or large clumps of dirt that are surrounded by burlap. Some saplings are purchased bare root, however. All young trees, especially the bare root trees, must be protected from extreme hot and cold. Their roots must not be allowed to dry out.

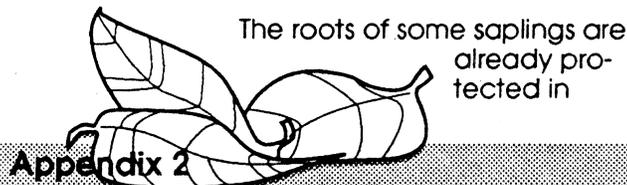
It's important to plant your trees properly. The Arbor Day kids show proper planting techniques on page 3 of this section.

Trees are living things that need your care and protection. They need to be mulched and watered regularly after planting, too.

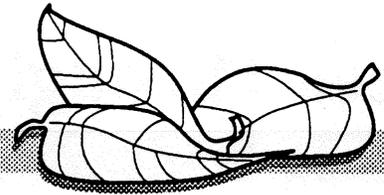
## Resource

The Utah Community Forest Council, another local non-profit corporation, has available several references on trees at cost. To obtain a free copy of their catalog of educational materials, contact:

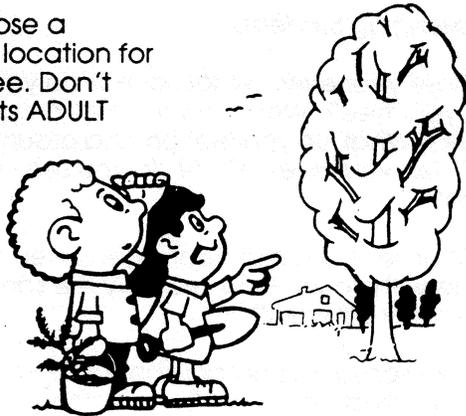
Executive Secretary  
Utah Community Forest Council  
P O Box 961  
Salt Lake City, UT 84110-0961  
(801) 538-5505 FAX: (801) 533-4111



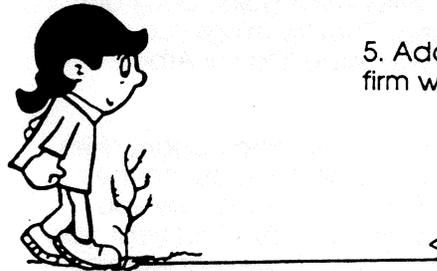
# How To Plant A Tree



1. Choose a proper location for your tree. Don't forget its ADULT size.



5. Add more soil and firm with foot.



2. Keep your roots moist at all times. Dry roots die.



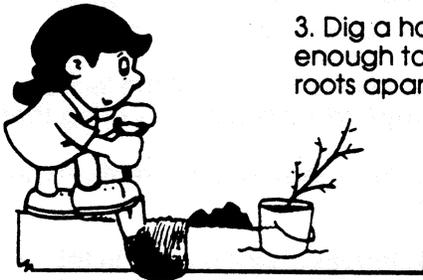
6. Mulch with wood chips.



7. Water regularly. \*Wait for shade!



3. Dig a hole large enough to spread the roots apart.



4. Place the tree in the hole at the proper depth. (See "How Deep" illustration.) Gently add loose soil.



How Deep?



Too deep

Too shallow.

Just right.

\*What care besides watering will your tree need in the months and years to come? (Protection from damage-people, animals, machines like lawnmowers, wind, disease, smothering by grass and groundcover, etc.) How will the tree get this protection?

# Trees Throughout the Seasons

Most of the activities in this guide book are geared toward spring. They're things you can do in connection with your Arbor Day or Arbor Month celebrations.

Trees offer fascinating learning opportunities all year long, however. Don't miss out on the other seasons! The following pages take you "through the year" with trees. Another year, you may want to make trees a whole-year learning adventure. A suggested on-going activity is to have students "adopt" trees that they can identify and observe through all the seasons. Each student creates a scrapbook about his or her tree and how it changes through the seasons.

If individual student scrapbooks don't fit easily into your school program, scan and choose other activities as each season arrives. Some activities are interchangeable from season to season. Your students will develop new interests in trees along with better scientific observation skills. You'll probably discover a lot of new things about those intriguing giant plants yourself!

## Trees Throughout The School Year

1. Starting in the fall, encourage each student to make a scrapbook called "My Adopted Tree." The scrapbook should have a strong cover so it will last all year. Each time a new drawing or project is completed, it goes into the scrapbook. Display the books for all to enjoy during Arbor Month. Students bring them home at the end of the year.

2. Once each season, each student draws a detailed picture of his or her tree, including all changes and at least six objects found in its environment (flowers, birds, animals, rocks, snow, seeds, grass, etc.).

3. Ask: What animals or insects can be seen near or on your tree during each season? Look in crevices of the bark, on the leaves, along the bottom of the trunk, and on branches and twigs. Make a picture list of the things you see each season.

## Challenging Students:

1. Close your eyes. What sounds do you hear around your tree? What do you smell around your tree? What do you feel on and around your tree? Open your eyes. What do you see around your tree?

2. Choose a dead or nearly dead tree to compare with yours. How are they the same? How are they different?

3. Take seasonal photographs of three or four different kinds of trees. Put them in school-year order and compare them at the end of the school year. Make a bulletin board display of your photographs.

4. How has your tree changed? Be sure to ask this question each season.

## Autumn Questions And Activities:

1. Ask each child to "adopt" a tree to observe and learn about all year long.

2. Take a leaf from your tree back to the classroom. Examine it with a magnifying glass. What do you see? Iron it between two pieces of wax paper and place it in your scrapbook.

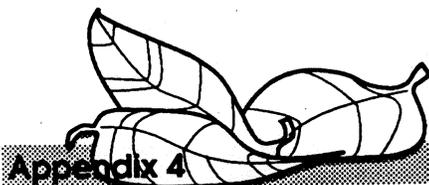
3. Are there holes in some of the leaves on your tree? Why? What has been eating them?

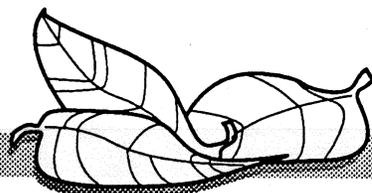
4. What is inside leaves to make them green? (Chlorophyll).

5. Why do leaves change color in fall? (The chlorophyll disappears from the leaf as the days become shorter. The yellow, orange, red, and brown pigments that are also in the leaf now show through.)

6. Why do leaves fall off the trees in autumn? (When the leaves are not producing food, they dry up and lose their hold on the branches. The wind blows them off.)

7. How much time has passed between the first color changes in the leaves of your tree and the time the tree is left bare?





8. Will a green leaf change color if it is placed in a cold place? Put a green leaf in a plastic bag and place it in a refrigerator. Watch the color changes for a few days.

9. What will happen to a green leaf when we boil it? Boil a green leaf for five to ten minutes. (Use hot burners only with adult supervision.) The water goes through a series of color changes. Collect several tablespoons of water as boiling proceeds. Include a sample of clear water. Keep the samples in order. Compare and discuss the changes. Remove the leaf from the water. What happens to the color?

10. How do the seeds from your tree differ from the seeds on other trees? How are they alike?

11. What is inside a seed from your tree? Cut it in half and look at it with a magnifying glass.

12. How do seeds from trees travel?

13. How did your tree begin growing?

14. What protects the buds during fall and winter?

15. Does your tree have any injuries? Who or what might have made them? (If there is a well-formed scar or if the injury is painted black, the wound is probably the result of planned pruning.)

16. Can you find holes that might have been made by woodpeckers?

17. Are there any cocoons on your tree?

18. What happens to a tree when it dies? (It rots or decays and becomes part of the soil again. This is good since it adds food to the soil.)

19. Is there "pollution" around your tree? Which litter is nature-made and which is human-made? Dispose of all human-made litter.

20. What geometric shapes do you see on or near your tree?

#### **Winter Questions And Activities:**

1. If they haven't already done so, ask each child to "adopt" a tree to observe and learn about all year long.

2. When does a tree stop growing? (Trees "sleep" or "rest" during the winter but never really stop growing until they die.)

3. What are your tree's food or water needs during the winter? (Compare this to the hibernation of bears.)

4. Are the needles of pine trees leaves? (Yes.)

5. Do evergreens ever lose their needles? (Yes. When new ones grow, the old ones fall off, but never all at once.)

6. How do evergreen needles stay alive in the winter? Look at some through a magnifying glass. (There is a covering of thick wax that keeps them from losing water. They do not dry out and die in the winter.)

7. Will evergreen branches change color if they are brought inside? Clip a branch from a spruce or pine tree and bring it to school. Put the branch in a sugar-water solution such as is used for Christmas trees. Watch the changes for several days.

8. Why is the bark of most trees rough and cracked? (The bark is not elastic enough to stretch as the tree grows.)

9. Why do trees have bark? (To protect the insides, like our skin.)

10. Make bark rubbings. Place a piece of paper over the bark and rub the side of a crayon firmly against the paper. Compare your rubbing with other rubbings. Place it in your scrapbook.

11. Measure around the trunk of your tree with a string or a tape measure. Compare your tree with others.

12. How can you tell the age of a tree? (Find a stump or a log and count the age rings in it.)

13. How old is *your* tree? Borrow an increment borer from a forester to take small cores from the trees. Count the rings.

14. How thick is the bark of your tree?

15. Will some wood from your tree float? Which of your group's trees are made of the

heaviest wood? Which of your trees are made of the lightest wood? (Use the core taken with the borer or a small twig from each tree as "floating" samples.)

16. Do the branches show signs of where the leaves used to be? (Look for "leaf scars" with a magnifying glass.)

17. What made the tracks in the snow around your tree?

### Spring Questions And Activities:

1. If they haven't already done so, invite each child to "adopt" a tree to observe and learn about all year long.

2. What evidence do you see of your tree "waking up"?

3. Cut a twig from your tree in the early spring. Bring it to the classroom and put it in water. Watch the bud scales open and the leaves unfold. Keep a record of when the twigs were put in the water, when the leaves appeared, and when the bud scales dropped off.

4. What makes the buds begin to grow? (Day length is increasing, making more "sun time" available. Warming temperatures allow water movement within the tree.)

5. Take a bud from your tree back to class. Examine it with a magnifying glass. Iron it between two pieces of wax paper and put it in your scrapbook.

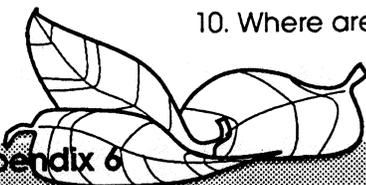
6. What part of the tree makes food? (Leaves make food for the trees. They use air, water, and sunlight.)

7. Why are leaves arranged on the branches the way they are? (So they don't overlap and block sunlight to the ones below.)

8. How does water get to the leaves? (It travels through tube-like cells in the roots, trunk, and branches of the tree.)

9. When do leaves make food? (During photosynthesis.)

10. Where are the roots of your tree?



11. Do some of the roots show above ground?

12. Why do the roots of the trees spread so far in the ground? (To form a strong base and to drink up minerals and moisture from the earth.)

13. Tie a plastic bag around the leaves of a small branch. Look at the branch after a few days. What do you see? (Drops of moisture should appear on the bag. Moisture is released from cells in the leaf. It moderates the air temperature and relative humidity surrounding the leaf. This is called *transpiration*.) Put another plastic bag around a dead twig and compare the two bags.

14. Is the whole tree growing? (Trees grow in length only near their tips, but they grow in diameter at their roots, trunk, and branches.)

15. What kind of food do trees make? Taste the sap from a maple tree. Is it sweet? (Trees make sugar. We use the sugar sap from maple trees to make syrup.)

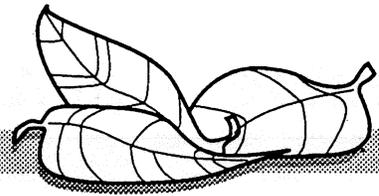
16. What movements does your tree make?

17. Look for a "food chain" near your tree. (Birds eat spiders, spiders eat insects, and insects eat leaves, etc.)

18. Take a picture of each student's tree. Mix up the pictures. Can each student find the picture of his or her own tree?

19. Make a picture list of all the things you think trees are good for. Some possibilities:

Trees give us:  
moisture in the air  
beauty  
shade  
flowers, fruit, and nuts  
saps and oils  
wood pulp for making paper, plastic, and rayon  
wood for building  
a place to climb  
places for birds' nests  
food and homes for animals and insects  
cork  
better soil



### Summer Questions And Activities:

1. If they haven't already done so, ask each child to "adopt" a tree to observe and learn about all year.
2. How is your tree like the others? How is it different?
3. Is your tree dead or alive?
4. Are there any nests in your tree? Why is it a good place for a nest? (The branches hold the nest in place. The nest is hidden and out of reach of many enemies.)
5. Are there many plants growing under your tree?
6. Are there more leaves on one side of the tree than on the other? Why? (The tree may get more sun on one side.)
7. Do you see buds near the leaves of your tree? When are buds for the next season's leaves made? (At the same time as leaves and new shoots, during elongation in spring.) When will these buds grow into leaves?
8. Take two leaves from your tree back to class. Examine them with a magnifying glass. Try to match your leaves to the leaf pictures in a tree identification book. What kind of tree is your tree?
9. Iron a leaf from your tree between two pieces of wax paper and place it in your "My Adopted Tree" scrapbook.
10. Make a leaf print with the other leaf from your tree. Place the leaf on newspaper. Brush the leaf with ink or paint. Move the leaf to a clean newspaper. Place a porous paper over the leaf and rub gently to transfer the ink or paint from plant to paper. Let the paint dry, and place the print in the scrapbook.
11. Gather a small piece of bark, a twig, a seed from your tree, and a small plastic bag of soil from under your tree (use a large spoon or trowel). Mount all these on a piece of heavy paper and place them in your scrapbook.
12. Take two temperature readings, one under your tree and the other away from its shade. How much do they differ? (Note: When

taking a temperature in the sun, shade the bulb of the thermometer.)

13. Does there seem to be a breeze under your tree when there isn't any away from its shade? Why? (The cool air under the tree is heavy and pushes the warm air away as it sinks to the ground.)

### Evaluation - (If A Year-Long Project)

Your evaluation of each student's skills and conceptual developments should be guided by the contents of "My Adopted Tree" scrapbooks, responses to questions, and participation in discussions. The questions listed below are designed to help you make good subjective evaluations. You'll need to adapt the questions to meet your students' age level.

- a. How well did the student follow directions?
- b. How much direction did the student require?
- c. Did the student formulate new questions?
- d. Did the student design new experiments to answer these questions?
- e. Did the student recognize cause and effect relationships?
- f. Could the student state the problem to be solved?
- g. Did the student arrive at conclusions by himself or herself?
- h. How many characteristics of his or her tree did the student identify?
- i. Could the student describe enjoyable and useful ways of using trees?
- j. Did the student compare and contrast the characteristics of his or her tree with those of other trees?
- k. Could the student predict the outcome of his or her investigations?
  1. Could the student predict changes in his or her tree?
- m. How well did the student use his or her five senses?

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# Planting With A Purpose: A Butterfly Garden

Arbor Month isn't just a time to honor trees. It's for celebrating and planting all kinds of things...shrubs, ground cover, sod, garden plants, flowers, and more.

Are you in the mood for a unique and different reason for planting...one that will be beautiful itself and will attract a host of interesting new wildlife to your yard? Try a butterfly garden!

## Planning...and Planting...for Guests!

Wild animals—including insects—have four basic needs for survival: food, water, shelter, and shade. Keep these needs in mind as you plant and all sorts of wild creatures will come to your garden—even though it's primarily a butterfly garden.

Utahns enjoy an incredible variety of beautiful butterflies. Among the most common are the monarch, painted lady, tiger swallowtail, admirals, cabbage butterflies, and several species of blues. Two types of food are necessary for butterflies—vegetation for caterpillars, and nectar sources for adult butterflies.

Many different plants are food sources for various butterfly caterpillars in Utah. The list includes trees (such as birch, aspen, willow), grasses and legumes, milkweed and flowering plants such as those shown on your butterfly garden map. Some of the best butterfly sources are dogbanes, milkweed, thistles, goldenrod, peppermint, and red clover. Butterflies like plants with flat-topped flowering heads. Single-flowered blossoms are better than double-flowered blossoms because nectar is more accessible.

Because their needs are similar to those of butterflies, bees and moths may be attracted to your butterfly garden. Early-spring blossoming plants that are available when they first emerge from their hives are important to bees.

## Digging In

1. **First, select a good site** for your garden. Full sun for at least several hours a day is best. Consult with the county extension office, Soil Conservation Service, or local garden center if you need to learn more about

the soil or drainage in your planting site. Good knowledge of your soil and site conditions is important because it influences your choices about which plants to use. Your county extension service can perform inexpensive soil tests for you. Once you know the soil types, a garden center or seed source can help you match plants to your soil and sell you the seeds you need. If some of the seeds on the garden map aren't available, substitute with dill, asters, sunflowers, violets, parsley, or petunias. Consider both annuals (plants that live through a single growing season) and biennials/perennials (species that come up two or more years without replanting). Sometimes, you can transplant wild plants into your garden from their natural settings.

2. **Work up your soil** with a roto tiller or by hand until it is smooth and finely textured. Use the size proportions on your garden map, or adapt the map to fit your space.

3. **Plant the seeds**, following directions for each species.

4. **Water daily at first**. After the garden is established, water as necessary to keep moist.

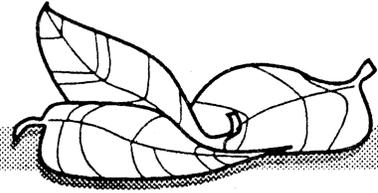
5. **Enjoy!** Watch carefully for wildlife visitors. Keep binoculars and magnifying glasses handy for a close-up view of your guests. You'll want a camera, too; a zoom-lens model is ideal. Your garden will be a neighborhood meeting place for all sorts of fascinating creatures!

## Resource

"*Landscaping For Wildlife*," by Carroll Henderson; Nongame Wildlife Program, Section of Wildlife, Minnesota Department of Natural Resources, 500 Lafayette Road, St. Paul, MN 55155-4007. The information for your butterfly garden was adapted from this source. To order, contact:  
Minnesota's Bookstore  
117 University Avenue  
St. Paul, MN 55155  
(612) 297-3000 or 1-800-652-9747

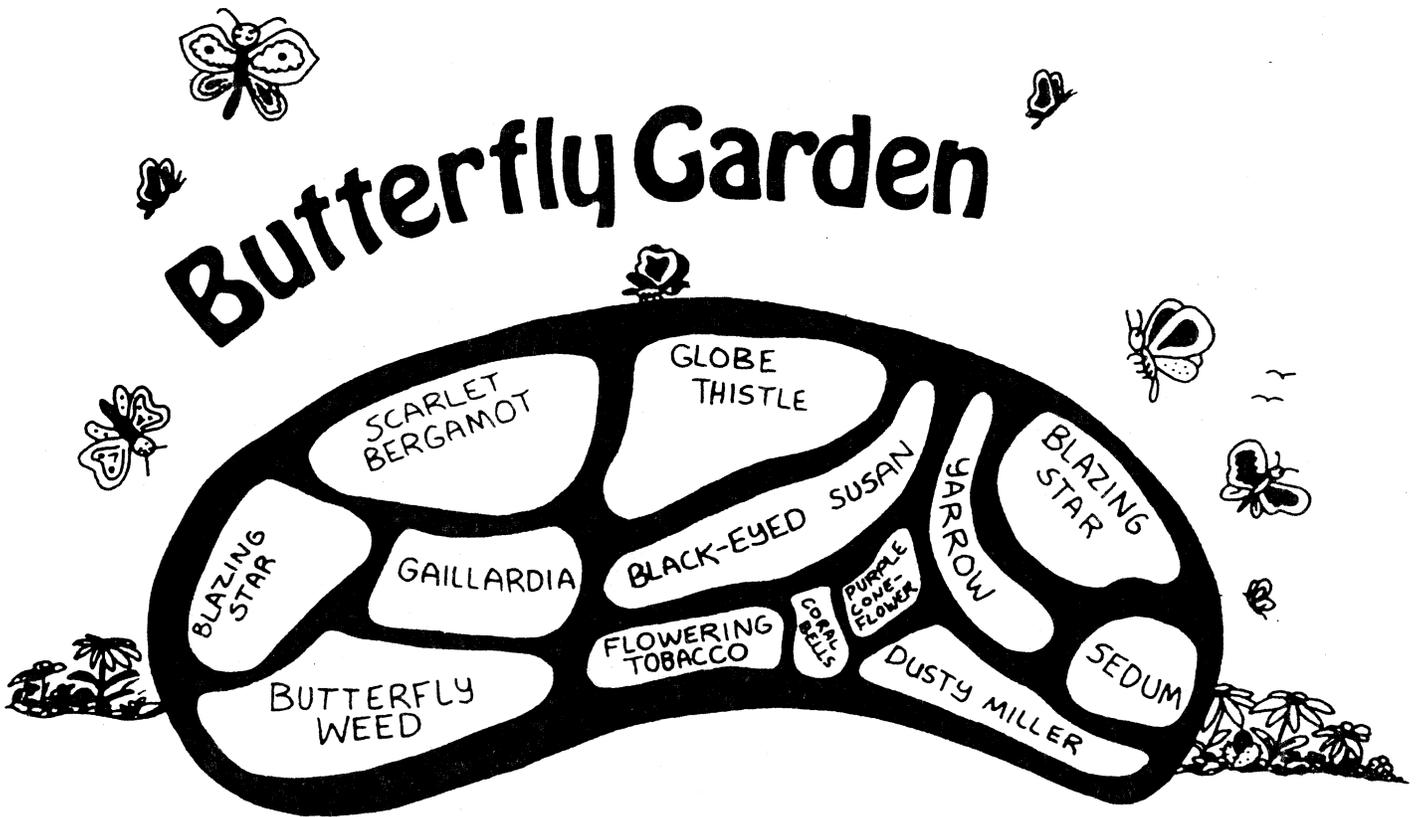


# Butterfly Garden



Butterfly garden designed by Carrol Henderson, Minnesota Department of Natural Resources, Division of Wildlife.

Found in: "Landscaping for Wildlife." To order this book, refer to previous page.



# From Paper to Plastic

It's hard to imagine what life would be like without trees. We use them to make everything from cardboard to chewing gum. In this activity your students can discover just how big a role trees play in their everyday lives.

First pass out a copy of Appendix page 12 to each student. Tell them that there are more than 40 things in the picture that are made, in some way, from trees. Have them use pencils to circle all the "tree objects" they can find. Afterward, discuss their answers using the following information. Then invite students to color the picture.

## Putting Trees To Work

### Building with Wood:

People build a lot of different things with wood. When logs are brought to the sawmill, their bark is removed and they are carefully measured and cut into lumber. Most lumber is used to construct houses and other buildings. Some is used to make athletic equipment, crates, furniture, tool handles, wooden toys, works of art, and many other things.

*Wood products in the picture:* banister, baseball bat, blocks, bookshelf, broom handle, bulletin board frame, cabinets, chairs, clock, counter, door, fence (see through open door), fruit bowl, molding (on walls), paintbrush handle, picture frames, sofa, stairs, stereo cabinet and speakers, spools for thread, stools, tables, tennis racket, umbrella handle, window frame, wood inside walls.

### Making Paper:

Paper is made from *cellulose*, the major component of cell walls in most plants. Most paper in the United States is made with cellulose that comes from trees. To turn a tree into paper, the bark is first stripped off and the trunk is chopped into small pieces, or *chips*. Afterward, the chips are usually cooked with chemicals until they form an oatmeal-like *pulp*.

Next the pulp is washed and the impurities (such as dirt) are filtered out, leaving a pulp of cellulose fibers and water. This "clean" pulp is then sent through a series of machines where the fibers are flattened and broken

apart so that they will form a smooth sheet when the

paper is dried.

Eventually the pulp is run onto screens and the water is drained off. And finally, the newly made paper is compressed and dried. (Depending upon the chemical process used to make the pulp and the amount of refining the pulp goes through, different kinds of paper can be made, such as coffee filter paper, heavy writing paper, and so on.)

*Paper products in the picture:* books, candy wrapper, cereal box, gift (wrapping and box), magazines, milk container, newspaper, notes on bulletin board, paper towels, record album covers.

### Cellulose Is Everywhere:

Besides being used to make paper, cellulose is one of the ingredients of many other products. For example, it can be mixed with certain chemicals, turned into a thick liquid, and then squeezed through small holes or slits to form fibers. The fibers can be used to make carpeting or conveyor belts, or they might be spun into fabric (rayon and some others) for making clothes or furniture. Different kinds of plastic films, such as cellophane and photographic film, are also made from cellulose.

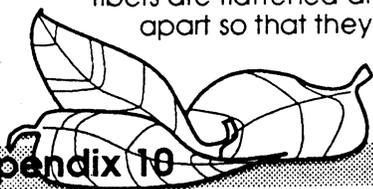
Cellulose is also added to certain substances that are used to make car steering wheels, toothbrush handles, ping-pong balls, and some other plastic products. And depending on how it's processed, cellulose can be used in making explosives, thickeners in shampoo and salad dressing, and wallpaper paste.

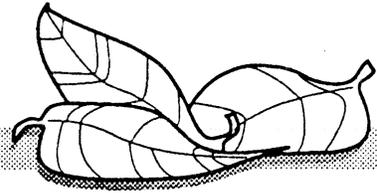
*Cellulose products in the picture:* buttons, comb, curtains, eyeglasses frame, hairbrush handle, luggage, pillows, rug, upholstery on sofa.

### About Bark:

Tree bark has lots of different uses. For example, the spongy bark of the cork oak tree, which grows in the Mediterranean countries of Europe and Africa, is stripped off and made into bottle cap liners, bottle stoppers, floats, and even heat shields for space vehicles.

Special chemicals in the bark of some trees also have a lot of different uses. For example, some trees produce *tannin*, which is used to cure leather.





*Bark products in the picture:* baseball (has a cork center), bulletin board.

#### **Using the Ooze:**

Some trees ooze special saps called *gums* and *resins*. Gums and resins can be used to make many things, including cosmetics, mouth-wash, paint thinner, perfumes, soap, and coatings for vitamins and other pills. Other trees produce a special juice called latex that can be used to make conveyor belts, hoses, rubber tires, and other rubber products.

*Gum, resin, and rubber products in the picture:* paint, rubber gloves.

#### **Eating Tree Food:**

People eat the fruit, nuts, roots, and bark of many different trees. Most fruit and nuts can be eaten right off of the tree. But other tree "parts" must be cooked, dried, or processed in some way before people can eat them.

*Tree foods in the picture:* apples, chocolate bar (cocoa tree beans are used to make chocolate), orange.

Besides the products we've listed, trees can also be used in making adhesives, asphalt, baby food, cleaners, inks, medicines, and pesticides. And many trees are sources of natural fibers that can be made into clothes, furniture, and stuffing material for cushions and life jackets.

*Adapted from Ranger Rick's Naturescope, "Trees are Terrific." Used with permission.*





# Resources



## General Resources All Levels

- **Utah Division of Forestry, Fire & State Lands**

Urban Forestry Program Coordinator  
PO Box 145703  
Salt Lake City, UT 84114-5703  
Phone:(801) 538-5505 FAX: (801) 533-4111

Arbor Day educational materials

- **Utah Community Forest Council**

PO Box 961  
Salt Lake City, UT 84110-0961  
Phone:(801) 538-5505 FAX: (801) 533-4111

Tree Education materials

- **Project Learning Tree -- "PLT"**

Project Learning Tree is an environmental education program developed by the American Forest Foundation to emphasize the forest as part of the human environment. The activity guide that is part of the program provides supplementary teaching activities in various subject areas that are correlated with the Utah State Core Curriculum for grades K-12.

The Utah Division of Forestry, Fire and State Lands is cooperating with Utah Society for Environmental Education in making workshops

and teaching materials available to Utah educators, and civic leaders. For more information, call or write:

- **Project Learning Tree Coordinator**

Utah Society for Environmental Education (USEE)  
350 South 400 East Suite #G4  
Salt Lake City, UT 84111  
(801) 328-1549

A variety of environmental education materials and services are available through USEE

- **USDA Forest Service**

Information Office  
324 25<sup>th</sup> Street  
Ogden, UT 84401  
(801) 625-5348

Variety of free education materials

- **Project WILD**

Division of Wildlife Resources  
1594 W. North Temple, Suite 2110  
Salt Lake City, UT 84116  
(801) 538-4720

Workshops similar to "PLT"

- **Project WET**

USU/Project WET  
5210 Old Main Hill  
Logan, UT 84322-5210  
(435) 797-2580

● **National Wildlife Federation**

<http://www.nwf.org/education/>  
Order Nature Scape “Trees Are Terrific”  
<http://nwf.org/bookstore/nwftitles.html>

● **Southern Forest Products Association**

P.O. Box 52468  
New Orleans, LA 70152

“Our Forest “ Booklet

● **National 4-H Council**

7100 Connecticut Avenue  
Chevy Chase, MD 20815  
(301) 961-2934

“What’s a Tree to Me?” Urban tree project booklet for 9 to 14 year olds to learn more about trees.

● **Champion International Corporation**

One Champion Plaza  
Stamford, CT 06921  
(203) 358-7000

“The Life of the Forest” booklet.  
Appropriate for grades 4 through 12.

**FRIENDS AROUND THE COUNTRY  
National Committees & Organizations**

National Arbor Day Foundation  
100 Arbor Avenue  
Nebraska City, NE 68410  
<http://www.arborday.org/>

Society of American Foresters  
5400 Grosvenor Lane  
Bethesda, MD 20814  
<http://www.safnet.org/>

American Forestry Association  
PO Box 2000  
Washington, DC 20013  
(202) 667-3300

**American Forest council**

1250 Connecticut Avenue NW  
Suite 320  
Washington, DC 20036

**National Woodland Owners Association**

374 Maple Avenue E, Suite 210  
Vienna, VA 22180

**National Christmas Tree Association**

611 E. Wells Street  
Milwaukee, WI 53202

**International Society of Arboriculture**

PO Box 3129  
Champaign, IL 61826  
<http://www.isa-arbor.com/>

**FRIENDS IN THE FIELD  
Utah Tree Planting Organizations**

**TreeUtah**

511 West 200 South, Suite 150  
Salt Lake City, UT 84101  
(801) 364-2122

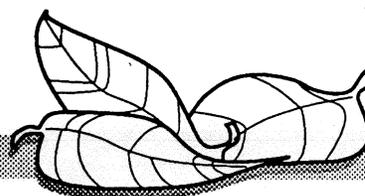
**Utah Community Forest Council**

PO Box 961  
Salt Lake City, UT 84110-0961

**The Utah Nursery & Landscape Association  
(UNLA)**

PO Box 526314  
Salt Lake City, UT 84152-6314  
<http://www.utahgreen.org/>

Utah Society of American Foresters  
338 East 1140 North  
Logan, UT 84321



# Video Resources

## Seeing is Believing Videos about trees

### Instructional Media Services

207 Milton Bennion Hall  
University of Utah  
Salt Lake City, UT 84112  
(801) 581-6112

Rentals for three day periods.  
Fees vary depending on each video.

" <i>Boreal Forest</i> "	19 min. 1963
" <i>Coniferous Forest Blome</i> "	16 min. 1969
" <i>Gymnosperms</i> "	16 min. 1961
" <i>Introduction to Forest Adventuring</i> "	26 min. 1965
" <i>Life in the Deciduous Forest</i> "	19 min. 1962
" <i>Problems of Conser.: Forest &amp; Range</i> "	14 min. 1969
" <i>Saw Timber</i> "	22 min. 1966
" <i>Spruce Bog: An Essay on Ecology</i> "	23 min. 1956
" <i>Succession: From Sand Dune to Forest</i> "	16 min. 1960
" <i>Temperate Deciduous Forest</i> "	16 min. 1961
" <i>Tree and Life</i> "	22 min. nd
" <i>Tree Community</i> "	18 min. 1978
" <i>Tree Improvement and Genetics</i> "	26 min. 1974
" <i>Tree Portraits</i> "	21 min. 1955
" <i>Trees and Their Care</i> "	29 min. 1964
" <i>Tropical Rain Forest</i> "	16 min. 1961

## Books

Note: The following books are listed according to grade level so teachers can locate titles that relate to the "*Arbor Day/Month Guide*" subject matter for their grades. Teachers are encouraged to use books from any grade level,

however, to expand students' exposure to the fascinating world of trees.

### Kindergarten

- Bulla, Clyde Roberts. "**A TREE IS A PLANT.**" Thomas Y. Crowell Co., 1960.
- Coats, Laura Jane. "**THE OAK TREE.**" MacMillan, 1963, ages 3-6.
- Collier, Ethel. "**A BIRTHDAY TREE.**" William R. Scott, Inc.
- Darby, Gene. "**WHAT IS A TREE.**" Pictures - Lucy and John Hawkins. Benefic Press, 1957.
- Orange, Anne. "**THE LEAF BOOK.**" Learner Pub. Co., 1975 (A book of leaf rubbings).
- Rinkoff, Barbara. "**GUESS WHAT TREES DO.**" Ill. by Beatrice Darwin, Lothrop, Lee and Shepard Co.
- Shapp, Martha and Charles. "**LET'S FIND OUT ABOUT TREES.**" Franklin Watts, 1970, ages 5-8.
- Udry, Janice May. "**A TREE IS NICE.**" Harper Row, 1956, ages 3-6.

### Grade 1

- Atwood, Ann. "**THE KINGDOM OF THE FOREST.**" Scribners, 1972, ages 5-7.
- Hiller, Ruth. "**THE REASON FOR FLOWERS.**" Gross and Dunlap.
- Jordan, Helene J. "**HOW A SEED GROWS.**" Ill. by Joseph Low, Thomas Y. Crowell Co., 1960.
- Lasky, Kathryn. "**SUGARING TIME.**" MacMillan, 1983, photos.
- Lavies, Bianca. "**TREE TRUNK TRAFFIC.**" E.P. Dutton.
- Podendorf, Illa. "**A NEW TRUE BOOK - TREES.**" Regensteiner Publishing Enterprises, Inc., 1982.
- Russell, Helen Ross. "**SPRINGTIME TREE SEEDS.**" Ill. by Stanley Fleming, Regensteiner, Publishing Enterprises, Inc., 1972.

### Grade 2

- Carrick, Donald. "**THE TREE.**" MacMillan Co., 1971, ages 6-7. Cutting down a tree.
- Davis, Burke. "**BIOGRAPHY OF A LEAF.**" Ill. by Jean Zallinger, 1922.
- Hutchins, Ross E. "**LIVES OF AN OAK TREE.**" Ill. by Jerome P. Collolly, Rand McNally and Company, 1962.
- Lemmon, Robert S. "**JUNIOR SCIENCE BOOK OF TREES.**" Ill. by Rene Martin, The Garrard Press, 1960.
- Paterson, Allen. "**THE WORLD OF A TREE.**" Ill. by Elsie Wrigley, Grosset & Dunlap, Inc., 1977.

Schwartz, David M. **"THE HIDDEN LIFE OF THE FOREST."** Crown Publishers, Inc.

Selsam, Millicent E. and Joyce Hunt. **"A FIRST LOOK AT LEAVES."** Ill. by Harriett Springer, 1972.

### Grade 3

Bellamy, David. **"THE FOREST."** Clarkson N. Potter, Inc.

Blough, Glenn O. **"LOOKOUT FOR THE FOREST - A CONSERVATION STORY."** 1955.

Busch, Phyllis S. and Arline Strong. **"ONCE THERE WAS A TREE."** The World Publishing House, 1968.

Carrick, Carol and Donald. **"A CLEARING IN THE FOREST."** Dial Press, 1970, ages 7-9.

Silverstein, Shel. **"THE GIVING TREE."**

Taylor, Mildred D. **"SONG OF THE TREES."** The Dial Press, 1975.

### Grade 4

Sabin, Louis. **"JOHNNY APPLESEED."** Troll Association, 1985.

### Resources:

- Minnesota Forest Industries, Inc.  
208 Phoenix Building  
Duluth, MN 55802

- Paper Mills and Lumber Mills of Minnesota:

Blandin Company  
Grand Rapids, MN

Boise Cascade  
International Falls, MN

Consolidated Papers, Inc.  
Toffe, MN

Hennepin Paper Company  
Little Falls, MN

Potlatch Corporation  
Cloquet and Brainerd, MN

### Grade 5

Hall, Bill. **"A YEAR IN THE FOREST."** McGraw Hill, 1970.

Kuhn, Dwight. **"THE HIDDEN LIFE OF THE FOREST."** Crown Pub. Co., 1988, photos.

Lerner, Carol. **"ON THE FOREST EDGE."** William Morrow and Co., 1978.

Mahey, Richard. **"OAK AND COMPANY."** Greenwillow Books, 1983.

### Resource List:

- **"A WALK IN THE FOREST"** by Herbert G. Lash  
Canadian Pulp and Paper Association  
2300 Sun Life Building  
Montreal, Canada

- **Worldwatch Institute**  
1776 Massachusetts Ave. N.W.  
Washington, D.C. 20036  
\$2.00 each for:

Worldwatch paper #58 - **"AIR POLLUTION, ACID RAIN, AND THE FUTURE OF FORESTS,"** March 1984.

Worldwatch paper #83 - **"REFORESTING THE EARTH,"** April 1988.

### Grade 6

Edwards, Joan. **"CARING FOR TREES ON CITY STREETS."** Schribner, 1975.

Gallob, Edward. **"CITY LEAVES, CITY TREES."** Schribner, 1972.

Life Nature Library. **"THE FOREST."** Time, Inc., 1962.

Pine, Tillies. **"TREES AND HOW WE USE THEM."** McGraw Hill, 1969.

U of MN Extension Bulletin. **"FIELD WINDBREAKS."** Cat NR-FO-08 29 (Available from Minnesota Extension Distribution Center).

The following materials are somewhat technical but provide good background knowledge about windbreaks and shelterbelts.

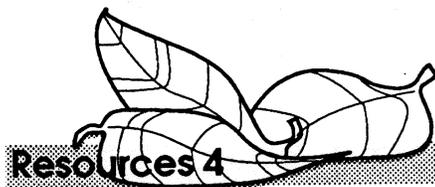
### U.S.D.A. Soil Conservation Service Bulletins

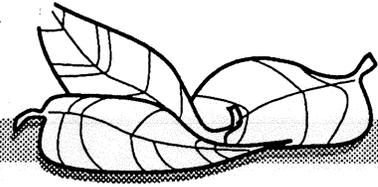
**"SOIL EROSION BY WIND."** Ag Information Bulletin 555.

**"AN ILL WIND MEETS A WINDBREAK."**

**"A TECHNICAL NOTE."** *Basic windbreak design criteria for farm and ranch headquarters areas and large residential lots.*

Subject: ECS-Forestry Series-190=LI-6





## Books About Trees & Tree Planting

- A Guide to the Trees of Utah and the Intermountain West:** Dr. Mike Kuhns, 1998, Utah State University Press, available from the Utah Community Forest Council. \$10.00
- Tree Basics:** Dr. Alex L. Shigo, 1996, available from the Utah Community Forest Council, \$4.00
- Trees of Utah:** Sherman G. Brough and Darrell J. Weber, 1993, Bristlecone Press, available from the Utah Community Forest Council, \$7.00
- Planting Landscape Trees:** Dr. Mike Kuhns, 1996, an USU brochure, free from the Utah Community Forest Council
- Rocky Mountain Tree Finder, A Pocket Manual for Identifying Rocky Mountain Trees:** 1972. Tom Watts, Nature Study Guild, Box 972, Berkeley, CA 94701, \$2.00

## Reference Books:

- America's Wild Woodlands** edited by Donald J. Crump et. al. (National Geographic Society) 1985.
- Audubon Society Nature Guides: Eastern Forests** by Ann and Myron Sutton (Alfred A. Knopf) 1985.
- Audubon Society Nature Guides: Western Forests** by Stephen Whitney (Alfred A. Knopf) 1985.
- Field Guide to Trees and Shrubs** by George A. Petrides (Houghton Mifflin) 1972.
- Forest** by Jake Page and the editors of Time-Life Books (Time-Life Books) 1983.
- The Forest** (2nd rev. ed.) by Peter Farb and the editors of Time-Life Books (Time-Life Books) 1980.
- The Great American Forest** by Rutherford Platt (Prentice-Hall) 1971.
- Hug a Tree and Other Things to do Outdoors With Young Children** by Robert Rockwell, Elizabeth Sherwood and Robert Williams (Gryphon House, Inc. Publishers) 1983.
- The Illustrated Encyclopedia of Trees, Timbers, and Forests of the World** by Herbert Edlin, Maurice Nimmo, et al. (Harmony Books) 1978.
- The International Book of the Forest** edited by Dr. Maurice Burton et al. (Mitchell Beazley Publishers) 1981.
- The International Book of Trees** by Hugh Johnson (Simon and Schuster) 1973.
- J. Sterling Morton** by James C. Olson (University of Nebraska Press) 1942.
- The Life of the Forest** by Jack McCormick (McGraw-Hill) 1966.
- The Living Forest** by Jack McCormick (Harper) 1959.
- Mister Tree Finder** by May T. Watts (Nature Study Guild) 1963.
- The Quiet Crisis** by Stewart Udall (Holt, Rinehart and Winston) 1963.
- Sharing Nature With Children** by Joseph Bharat Cornell (Amanda Publications) 1979.
- Spotter's Guide to Trees of North America** by Alan Mitchell (Usborne Publishing) 1979.
- Trees** by Lawrence C. Walker (Prentice Hall) 1984.
- Trees for American Gardens** by Donald Wyman (MacMillan Co.) 1965.
- Trees of North America** by C. Frank Brockman (Golden Press) 1979.
- Trees of North America** by Roger Phillips (Random House, Inc.) 1978.
- The Winter Tree Finder** by May T. Watts (Nature Study Guild) 1970.
- The Woodland Steward** by James R. Fazio (The Woodlands Press) 1985.

## Children's Books:

- Apples – How They Grow** by Bruce McMillan (Houghton Mifflin) 1979.
- Big Tree** by Mary and Conrad Buff (Viking) 1946.
- Birth of a Forest** by Millicent E. Selsam (Harper) 1964.
- The Blossom on the Bough** by Anne Ophelia Dowden (Thomas Y. Crowell Co.) 1975.
- A Closer Look at Jungles** by Joyce Pope (Gloucester Press) 1978.
- Exploring City Trees** by Margaret J. Anderson (McGraw-Hill) 1976.
- The Fall of Freddie the Leaf** by Leo Buscaglia, Ph.D. (Charles B. Slack) 1982.
- A First Look at Leaves** by Millicent E. Selsam and Joyce Hunt (Walker) 1972.

**Flower Fairies of the Woodland** by Cicely Mary Baker (Blackie and Son) 1984.  
**Forest Log** by James R. Newton (Thomas Y. Crowell Co.) 1980.  
**The Giving Tree** by Shel Silverstein (Harper and Row) 1964.  
**Have You Seen Trees?** by Joanne Oppenheim (Young Scott Books) 1967.  
**It's Arbor Day, Charlie Brown** by Charles M. Schulz (Random House) 1977.  
**J. Sterling Morton: Arbor Day Boy** by Clyde B. Moore (The Bobbs-Merrill Company, Inc.) 1962.  
**Lives of an Oak Tree** by Ross E. Hutchins (Rand McNally and Co.) 1962.  
**The Lorax** by Theodor Geisel (Dr. Seuss) (Random House) 1971.  
**Maple Tree** by Edith Thatcher (Morrow) 1968.  
**Maypoles and Wood Demons** by Elizabeth S. Helfman (The Seabury Press) 1972.  
**Oak & Company** by Richard Mabey (Greenwillow Books) 1983.  
**Once There Was a Tree** by Phyllis S. Busch (Scholastic Book Services) 1968.  
**Play with Trees** by Millicent E. Selsam (Morrow) 1950.  
**Secret Places** by D.J. Arneson (Holt, Rinehart and Winston, Inc.) 1971.  
**See Through The Forest** by Millicent E. Selsam (Harper) 1956.  
**Sugaring Time** by Kathryn Lasky (MacMillan Co.) 1983.  
**This Is the Forest** by Edith Thacher Hurd (Coward, McCann and Geoghegan, Inc.) 1969.  
**This Is a Leaf** by Ross E. Hutchins (Dodd, Mead) 1962.  
**This Is a Tree** by Ross E. Hutchins (Dodd, Mead) 1964.  
**A Tree Called Moses** by Laura Nelson Baker (Atheneum) 1966.  
**Tree Flowers** by Millicent E. Selsam (Morrow) 1968.  
**A Tree Grows Up** by Jean M. Guilcher and R.H. Noailles (Sterling) 1972.  
**A Tree Is Born** by M. Guilcher and R.H. Noailles (Sterling) 1960.  
**A Tree Is a Plant** by Clyde R. Bulla (Thomas Y. Crowell Co.) 1960.  
**A Tree Is Nice** by Janice May Udry (Harper and Row) 1956.  
**A Tree Is Something Wonderful** by Elizabeth K. and Padraic Cooper (Golden Gate Junior Books) 1972.  
**The True Book of Trees** by Illa Podendorf (Childrens Press) 1972.

## ARBOR DAY RAP

An original piece written and performed  
by Judy Throckmorton's first grade class  
for the 1991 state Arbor Day ceremony.

Western Hills Elementary School  
5190 South Heath Avenue  
SLC UT 84118

We're a rappin' first grade from Western Hills school

and we're here to say - Trees are cool

**Trees, Trees! Give us Trees!**

Trees give us desks, rulers, paper, pencils and books

Have places for reading in cozy nooks.

They give us fruit and food and lots of shade

We need them to make lemonade.

**Trees, Trees! Give us Trees!**

Our houses, cupboards, cabinets, doors,

garages, bookshelves, wall and floors

All come from lots of wood.

That's why trees are super good.

**Trees, Trees! Give us Trees!**

Boxes, chairs, cradles, tables,

even our toys, coat hooks and labels,

Baseball bats, wooden nickels and money

Even a place for bees to make honey.

**Trees, Trees! Give us Trees!**

Trees are fun for houses to play in

We can make concerts there

with pipes, flutes and a violin.

Canoes, carvings, shillelaghs, totems and clogs  
are made in countries other than ours.

**Trees, Trees! All from Trees!**

The food we eat. That's a treat!

Bananas, grapefruit, apples, limes,  
cherries, peaches, apricots and pines,  
oranges, lemons, coconuts and chocolate,  
maple syrup, dates, olives and other nuts  
All from trees.

**Trees, Trees! Give us Trees!**

A tree is a house for:

birds, worms, squirrels, bugs,  
whispering breezes and bird nest hugs.

We want to say in a major way

Plant trees for us and the monkeys to play.

At Halloween they're awfully scary  
when their limbs reach out and your back feels hairy.

At Christmas time it's great to see

The sparkling lights on the decorated tree.

**Trees, Trees! Plant a Tree!**

Springtime blossoms, summer fun,

autumn colors, then it's done

Take a rest till winter's through

then bloom again for me and you.

**Trees, Trees! Plant a Tree!**

They give us oxygen to breathe

Take it from me . . . **Plant a TREE!**