LEAF-Wisconsin's K-12 Forestry Education Program
College of Natural Resources
University of Wisconsin-Stevens Point

Enriching Students. Sustaining Forests.

The Wisconsin K-12 Forestry Education Program

FORESTER ACTIVITY GUIDE

LEAF is a partnership program between
Wisconsin Department of Natural Resources—Division of Forestry
and
Wisconsin Center for Environmental Education
College of Natural Resources
University of Wisconsin-Stevens Point

WISCONSIN
DEPT. OF NATURAL RESOURCES

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LEAF: Wisconsin's K-12 Forestry Education Program

LEAF was created to help promote forestry education in Wisconsin schools. In 2001, Wisconsin K-12 forestry education stakeholders evaluated the current status of and the needs for Wisconsin-based K-12 forestry education. A variety of programs existed, but voids were identified in delivery and dissemination of educational materials and services. To offer a more unified effort, stakeholders supported the development of a comprehensive program that would enhance existing efforts.

During the spring of 2001, legislation was written to establish the LEAF program as a partnership between the Wisconsin Department of Natural Resources-Division of Forestry and the Wisconsin Center for Environmental Education at the College of Natural Resources, University of Wisconsin-Stevens Point. Funding for the program is provided through a surcharge on the sale of seedlings from Wisconsin Department of Natural Resources-Division of Forestry nurseries.

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ACKNOWLEDGEMENTS

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We are especially grateful to the Wisconsin Environmental Education Board for providing the funding to make the original Forester Activities resource a reality.

LEAF

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Forester Activities
2022
Wisconsin Department of Natural Resources—Division of Forestry LEAF
LEAF Program—Wisconsin Center for Environment Education

Rationale

- This resource will help you prepare an age-appropriate, interactive, outdoor (modifiable to indoor) program/activity for youth in grades Kindergarten through twelve. Each program/activity enriches existing lessons from *LEAF's Wisconsin K-12 Forestry Lesson Guides*.

Forester Activity Guide Includes:

- TEMPLATES to use when contacting educators (initial, confirmation, follow-up)
- TIPS for working indoors or outdoors in rural or urban settings with various grade-levels
- INTRODUCTION, Theme 1: What Does a Forester Do? Allows you a chance to introduce yourself and share the role of a forester.
- LESSON THEMES (2 through 5) include activities that support the most-requested topics for Forester Presentations
    - 2: Caring for the Forest
    - 3: Forest Products / Benefits
    - 4: Tree Planting & Restoration
    - 5: Fire
- PRINTABLE Lessons in PDF format that are easily accessible
- LINKS to Wisconsin's Environmental and Sustainable Literacy Standards
- RESOURCES that can be shared with educators that connect to the Forester Activity

Best Practices for all Programs / Activities

To make the most of your experience we suggest that you:

- Use the email templates to communicate with the teacher in advance of your program
- Review the activity you have selected
- Consider modifications you may need to make to the activity
- Print the Forester Guide for all activities that will be used during your program
- Print any student materials that will be needed for your program
- Collect materials needed for each activity well in advance of your program

Division of Forestry Key Target Messages

Developed for use by professional foresters, this guide helps insure that a consistent message is given in classrooms throughout the state. Each program communicates one or more of the DNR Division of Forestry's target messages which include:

1. *Wisconsin has a plan to sustain the healthy, working forests vital to Wisconsin's well-being.*
2. *Forests and forest products have a key role in supporting climate resilience.*
3. *Diversity in both the forest resource and the forestry workforce is vital.*
4. *Forests are important to both rural and urban prosperity.*
5. *Forests support local economies with revenue from forest recreation as well as forest products and jobs.*
6. *Forests are a renewable resource providing products, aesthetics and recreational opportunities important to our everyday lives.*
7. *Forests support other vital natural resources in Wisconsin, including clean air, water, and wildlife habitat.*
8. *Everyone can help sustain Wisconsin forests (by being careful with fire, not spreading invasive species, using wood products rather than alternatives, planting and caring for a native tree, enjoying the outdoors responsibly and more).*

Updated by Natural Resources Staff Specialist, Kirsten Held
Approved by Chief State Forester Heather Berklund, February 2022.

Letter Template

Initial Request Letter

Dear *Insert Teacher Name*,

Thank you for your interest in having me visit your class. In order to provide the best experience for your students, it would be helpful if you could answer the following questions for me:

What is the ideal date and time for my visit? What other dates/times would work for you?

How long would you like the activity / presentation to be?

Where will the presentation take place? Indoors, outdoors, if outdoors please describe the area/space we are able to use.

About how many students will I be working with?

Have your students already been learning about forests and/or Forestry? If so, what topics have they already learned about?

All of my presentations begin with an introduction that explores the theme *What does a Forester do?* After that, I have materials and activities that I can present related to the following themes:

- *Caring for the Forest*
- *Forest Products / Benefits*
- *Tree Planting & Restoration*
- *Fire*

Please let me know which of these themes would best meet the needs of your students. If none of these themes are an excellent fit, please share other ideas you might have for my visit. I may be reached at *insert email and phone number/extension*.

Sincerely,

Letter Template

Confirmation Letter

Theme One: What does a Forester do?
Theme Two: Caring for the Forest

Dear *Insert Teacher Name*,

This letter confirms that I am scheduled to present "What does a Forester do?" and "Caring for the Forest" in your classroom on *insert program date and time* to your *insert grade level* grade students.

During my program students will

- Examine the job of a forester
- Understand how to become a forester and the skills needed to be a forester
- Explore forestry-related careers
- Examine the need for sustainable forest management and the forester's role in it
- Explain why trees are cut down in forests

Please review the information I have provided above and contact me if anything is incorrect.

If you would like to prepare students in advance feel free to have them write questions for me on a notecard or sticky-note.

I will check in at the office when I arrive. I plan to arrive 10 to 15 minutes before the program is scheduled to begin to set up for the activities. I look forward to working with you soon!

Sincerely,

Letter Templates

Follow-up Letter

Theme One: What does a Forester do?
Theme Two: Caring for the Forest

Dear *Insert Teacher Name*,

Thank you for inviting me into your classroom to help students understand the role of a forester and how people care for forests. I hope you and your students enjoyed the program.

If you would like to extend student learning and engagement related to forestry and caring for the forests following my visit, please consider these LEAF activities which can be found in the **LEAF Wisconsin K-12 Forestry Lesson Guides** at the following link: https://www3.uwsp.edu/cnr-ap/leaf/Pages/K-12-Forestry-Lesson-Guides.aspx .

THEME 1: WHAT DOES A FORESTER DO?

- LEAF 2-3 Field Enhancement 1: I Can Be a Forester
- LEAF 5-6 Lesson 6: What is Management?
- LEAF 7-8 Lesson 3: How Forests are Managed

THEME 2: CARING FOR THE FOREST

- LEAF 2-3 Lesson 5: Decisions, Decisions
- LEAF 4 Lesson 7: Sustaining Our Forests
- LEAF 5-6 Lesson 6: What is Management?
- LEAF 7-8 Lessons 3 & 4: How Forests are Managed and Forest Management Issues
- LEAF 9-12 Field Exploration 4: Timber Cruise

I also recommend the lessons from the **LEAF Urban Forest Lesson Guide** which can be accessed at the following link:https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-Lesson-Guide.aspx.

Please let me know if I can be of further assistance.

Sincerely,

Letter Templates

Confirmation Letter

Theme One: What does a Forester do?
Theme Three: Forest Products / Benefits

Dear *Insert Teacher Name*,

This letter confirms that I am scheduled to present "What does a Forester do?" and "Forest Products / Benefits" to your class on *insert program date and time* to your *insert grade level* grade students.

During my program students will

- Examine the job of a forester
- Understand how to become a forester and the skills needed to be a forester
- Explore forestry-related careers
- Investigate the products that come from the forest
- Explore the many uses of the forest

Please review the information I have provided above and contact me if anything is incorrect.

If you would like to prepare students in advance feel free to have them write questions for me on a notecard or sticky-note.

I will check in at the office when I arrive. I plan to arrive 10 to 15 minutes before the program is scheduled to begin to set up for the activities. I look forward to working with you soon!

Sincerely,

Letter Templates

Follow-up Letter

Theme One: What does a Forester do?
Theme Three: Forest Products / Benefits

Dear *Insert Teacher Name*,

Thank you for inviting me into your classroom to help students understand the role of a forester and forest products and benefits. I hope you and your students enjoyed the program.

If you would like to extend student learning and engagement related to forestry and caring for the forests following my visit, please consider these LEAF activities which can be found in the **LEAF Wisconsin K-12 Forestry Lesson Guides** at the following link: https://www3.uwsp.edu/cnr-ap/leaf/Pages/K-12-Forestry-Lesson-Guides.aspx .

THEME 1: WHAT DOES A FORESTER DO?

- LEAF 2-3 Field Enhancement 1: I Can Be a Forester
- LEAF 5-6 Lesson 6: What is Management?
- LEAF 7-8 Lesson 3: How Forests are Managed

THEME 3: FOREST PRODUCTS / BENEFITS

- LEAF Urban Forest Guide K-4 Unit; Lesson 2: Urban Forest Benefits
- LEAF Urban Forest Guide 5-8 Unit; Lesson 2: Urban Forest Benefits
- LEAF Urban Forest Guide 9-12 Unit; Lesson 1: What's it Worth?
- LEAF K-1 Guide, Lesson 3: My Favorite Forest Use
- LEAF 2-3 Guide, Lesson 4: Forests are Important to Me!
- LEAF 4 Guide, Lesson 6: Forests are Important to You and Me
- LEAF 5-6 Guide, Lesson 5: We All Need Trees
- LEAF 7-8 Guide, Lesson 5 Many Forests, Many Values, Many Reasons
- LEAF 9-12 Guide, Marketplace Matters: Understanding the Economic Value of WI Forests
- LEAF 9-12 Guide, Lesson 4: The Forest Marketplace
- LEAF 9-12 Guide, Field Experience 4: Timber Cruise

I also recommend the lessons from the **LEAF Urban Forest Lesson Guide** which can be accessed at the following link:https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-Lesson-Guide.aspx.

Please let me know if I can be of further assistance.

Sincerely,

Letter Templates

Confirmation Letter

Theme One: What does a Forester do?
Theme Four: Tree Planting and Restoration

Dear *Insert Teacher Name*,

This letter confirms that I am scheduled to present "What does a Forester do?" and "Tree Planting and Restoration" in your classroom on *insert program date and time* to your *insert grade level* grade students.

During my program students will

- Examine the job of a forester
- Understand how to become a forester and the skills needed to be a forester
- Explore forestry-related careers
- Explore what trees need to grow
- Learn where trees should be planted
- Learn how to care for planted trees
- Understand what their tree might grow up to be used for
- (OPTIONAL) Examine threats to the health of the planted trees

Please review the information I have provided above and contact me if anything is incorrect.

If you would like to prepare students in advance feel free to have them write questions for me on a notecard or sticky-note.

I will check in at the office when I arrive. I plan to arrive 10 to 15 minutes before the program is scheduled to begin to set up for the activities. I look forward to working with you soon!

Sincerely,

Letter Templates

Follow-up Letter

Theme One: What does a Forester do?
Theme Four: Tree Planting and Restoration

Dear *Insert Teacher Name*,

Thank you for inviting me into your classroom to help students understand the role of a forester and how we can plant trees and restore our forests. I hope you and your students enjoyed the program.

If you would like to extend student learning and engagement related to forestry and caring for the forests following my visit, please consider these LEAF activities which can be found in the **LEAF Wisconsin K-12 Forestry Lesson Guides** at the following link: https://www3.uwsp.edu/cnr-ap/leaf/Pages/K-12-Forestry-Lesson-Guides.aspx .

THEME 1: WHAT DOES A FORESTER DO?

- LEAF 2-3 Field Enhancement 1: I Can Be a Forester
- LEAF 5-6 Lesson 6: What is Management?
- LEAF 7-8 Lesson 3: How Forests are Managed

THEME 4: TREE PLANTING & NATURAL RESTORATION

- LEAF Urban Forest Lesson Guide 5-8; Lesson 3: Management Decisions and Biodiversity
    - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/Urban-Forest-5-8-Unit/UF58L3.pdf

I also recommend looking over other lessons from the **LEAF Urban Forest Lesson Guide** which can be accessed at the following link:https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-Lesson-Guide.aspx.

Please let me know if I can be of further assistance.

Sincerely,

Letter Templates

Confirmation Letter

Theme One: What does a Forester do?
Theme Five: Fire

Dear *Insert Teacher Name*,

This letter confirms that I am scheduled to present "What does a Forester do?" and "Fire" in your classroom on *insert program date and time* to your *insert grade level* grade students.

During my program students will

- Examine the job of a forester
- Understand how to become a forester and the skills needed to be a forester
- Explore forestry-related careers
- Examine the role of fire in forests
- Differentiate between "good" fire and "bad" fire
- Understand how to prevent unplanned forest fires
- Explore careers related to fire in the forests

Please review the information I have provided above and contact me if anything is incorrect.

If you would like to prepare students in advance feel free to have them write questions for me on a notecard or sticky-note.

I will check in at the office when I arrive. I plan to arrive 10 to 15 minutes before the program is scheduled to begin to set up for the activities. I look forward to working with you soon!

Sincerely,

Letter Templates

Follow-Up Letter

Theme One: What does a Forester do?
Theme Five: Fire

Dear *Insert Teacher Name*,

Thank you for inviting me into your classroom to help students understand the role of a forester and the role of fire in our forests. I hope you and your students enjoyed the program.

If you would like to extend student learning and engagement related to forestry and caring for the forests following my visit, please consider these LEAF activities which can be found in the **LEAF Wisconsin K-12 Forestry Lesson Guides** at the following link: https://www3.uwsp.edu/cnr-ap/leaf/Pages/K-12-Forestry-Lesson-Guides.aspx .

THEME 1: WHAT DOES A FORESTER DO?

- LEAF 2-3 Field Enhancement 1: I Can Be a Forester
- LEAF 5-6 Lesson 6: What is Management?
- LEAF 7-8 Lesson 3: How Forests are Managed

THEME 5: FIRE

- LEAF K-12 Wildland Fire Guide
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/LEAF-K-12-Wildland-Fire-Guide-2.aspx
- Hot Topics: Wildfires & You (link in lesson slideshow)
- Learning from the Ojibwe… (link in lesson slideshow)

I also recommend several WIDNR videos, articles, and website resources that are linked in the lesson slideshow.

Please let me know if I can be of further assistance.

Sincerely,

Tips for Various Audiences

- **Connect to your audience!** Engage them! This is the most important aspect of your presentation!
- **Connect your audience to the forest!** Remind them WHY forests matter!
- **Connect your audience to place!** If possible, get your audience outdoors!

Kindergarten through 4th Grade

- Patience…give clear expectations and directions.
- Be aware of their distractibility.
- Before they'll care about your topic, they need to know you care for them (and are interested in them as well).
- Share your personal stories, anecdotes and experiences. YOU are a lot cooler than a "concept."
- Don't be afraid to have fun with them… let your guard down.
- Answer, or attempt to answer, their questions, whether they are on topic or not, then move on.
- Smile! Enjoy the diversions, but redirect and give clear boundaries.
- In Kindergarten and first grade, children can understand your instructions, but cannot read well.

5th Grade through High School

- Be positive. If you are, chances are they will be too.
- Listen! More than ever before students are in need to know adults and their peers care.
- Your energy and enthusiasm can be significant in getting disinterested students engaged in learning.
- Be patient.
- Avoid embarrassing the students or singling them out.
- Expect some students will have short attention spans and an inability to concentrate.
- Be a good role model.
- "Walk a mile in their shoes" and try to remember what you were like at their age and treat students as you would like to be treated.

Presentation Kit Items

LEAF recommends putting together a tote or box that you can take along when you travel to engagements. While you will want to pack items specific to each engagement, it is recommended that you bring the following items to all engagements:

Recommended Kit Items

- Vest
- Helmet
- Compass
- Maps
- Radio
- Calculator
- Biltmore Sticks / Cruising Sticks
- Diameter Tapes
- Deep Woods Off
- Chaps for Briars
- Fire Equipment / Tools

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THEME 1

What does a FORESTER do?

In this Lesson you will find:

Lesson which includes

- Forester Introduction
- What Does a Forester Do?
- What Do Urban Foresters Do?
- Forester Skills
- How Do You Become a Forester?
- Careers in Forestry
    - Video of Forester and Forester / Forest Ranger
    - Additional Career videos included

Link to corresponding lesson slideshow (google)

Optional Activities related to this theme

- Leaf Rubbings

Links to Videos that support this lesson

LEAF Lessons that support this theme

PRIMARY OBJECTIVES

- Students will examine the job of a forester
- Students will understand the skills needed to be a forester
- Students will understand how to become a forester

SECONDARY OBJECTIVE

- Students will explore additional forest / forestry related careers

DNR Key Target Messages

- Wisconsin has a plan to sustain the healthy, working forests vital to Wisconsin's well-being. (1)
- Diversity in both the forest resource and the forestry workforce is vital. (3)
- Forests are a renewable resource providing products, aesthetics and recreational opportunities important to our everyday lives. (6)
- Forests support other vital natural resources in Wisconsin, including clean air, water, and wildlife habitat. (7)

Wisconsin Standards for Environmental Literacy & Sustainability

(supported by this lesson)

- Students analyze the dynamic balance between natural and cultural systems. (Strand 3: Engage; Standard 6)
- Students engage in experiences to develop stewardship for the sustainability of natural and cultural systems. (Strand 3: Engage; Standard 7)

Preparation

- Lesson is prepped for grades 4-12; follow modifications for K-3
- Read the lesson to familiarize yourself with what you need to explain and where you may need to elaborate.
- If you are presenting indoors and want to use the slideshow/videos
    - Reach out to the teacher to make sure there is a projector and computer with internet available.
    - Email the slideshow to the teacher and ask them to have it ready for your visit.
- If you are presenting outdoors, consider having print images from the slideshow to share/pass around
- You know the job of a forester best! Feel free to make this lesson your own!

Materials:

- Team Level Forester Kit
- Notecards or Sticky-notes for student questions
- Theme 1: What Does a Forester Do? Lesson Slideshow-(optional)
    - https://docs.google.com/presentation/d/17sulOPQPkaVJWk4HRMoVkyGbzfHXdfhmnp_vMA4W1TY/edit?usp=sharing
    - The slideshow is in google format because that is the format most commonly used in schools. Please share the slideshow with the educator so they can access the recommended teacher resources
- Video Links (in slideshow)

Modifications

For K-3 Audience:

- Use alternate slideshow for lesson: https://docs.google.com/presentation/d/1haSgNfquSq_BeWHDzGFcOg1dSK4Pa9PIrg2DINxluG4/edit?usp=sharing

For Urban Setting

- Spend additional time on *What do URBAN FORESTERS do?* section
- Discuss storm damage/clean-up

For Indoor Setting

- Use slideshow and video resources to support your presentation

For Outdoor Setting

- Print images from slideshow (or other images) to show learners
- Rely on items from the Team Level Forester Kit in place of slideshow and video

WHAT DOES A FORESTER DO?

Discuss the following topics in your presentation:

FORESTER INTRODUCTION

- Name
- Job Title
- Where you work
- Why you became a forester
- What you like best about being a forester
- Before we continue, write down 1 question you have for me today.

WHAT DOES A FORESTER DO?

Heather Berkland, Chief State Forester, Wisconsin DNR, Division of Forestry, states the common goal of Forest professionals is:
"To sustainably manage forests for the economical, ecological, social, and cultural benefits for all of us today and for the future."

Show tools from Team-Level Kit as you discuss these topics:

- Plant and care for trees
- Conduct forest inventories
- Mark trees that should be cut
- Manage timber sales
- Help private landowners meet goals for their land
- Manage fire
    - Prescribed burns
    - Wildfire prevention
    - Extinguish fires
- Provide Leadership
    - County forests
    - School forests

WHAT DOES A FORESTER DO? (continued)

WHAT DO URBAN FORESTERS DO?

Please do not skip this, even if you are NOT presenting to an urban audience.

What are Urban Forests?

- The urban forest is all the trees, plants, and beings living in and around a city, town, village, etc. The urban forest includes both public and private lands.

What do Urban Foresters do?

Manage trees and tree canopies in cities for:

- Energy conservation
- Economic value
- Improved air quality
- Reduced stormwater runoff
- Carbon storage
- Aesthetics

FORESTER SKILLS

- Provide leadership
- Communicate effectively
- Reason and Problem solve
- Manage time
- Collaborate
- Use math & science
- Work with tools

WHAT DOES A FORESTER DO? (continued)

HOW DO YOU BECOME A FORESTER?

- Earn a bachelor's degree (or higher) from a school with a curriculum accredited by the Society of American Foresters or an equivalent degree.
- In Wisconsin, students can earn a bachelor's degree in Forestry at:
  - University of Wisconsin—Madison
  - University of Wisconsin—Stevens Point
- In Wisconsin, students can earn a minor in Forestry at:
  - Northland College, Ashland *(and the two universities that offer bachelor's degrees)*
- In Wisconsin, students can earn a certificate to be a Forest Management Specialist at:
  - Fox Valley Technical College, Appleton

CAREERS IN FORESTRY

Play one or more videos from the slideshow or discuss these featured careers from WIDNR youtube channel:

- Forester
- Forest Ranger
- Forestry Technician
- Forest Products Specialist
- Field Technology Coordinator
- Forest Management and Ecology Research Scientist
- Forest Inventory Analyst

Review Key Messages

- Foresters and others who work in the forest sustainably manage forests for the economical, ecological, social, and cultural benefits for all of us today and for the future.
- Foresters sustainably manage forests by planting, caring for, and harvesting trees.
- Foresters use a variety of skills during their work and must be effective communicators, coordinators, and collaborators.
- There are several interesting careers related to forests and forestry.

Questions?

- Questions from the presentation
- Collect Notecards / Sticky-notes and answer questions

Optional Activities Related to this theme

- **Leaf Rubbings**
  - Collect leaves with students (or bring some along), place paper over leaves, gently rub a crayon over the leaves, talk about the different parts of the leaves

Recommended Teacher Resources

All teacher resources are linked in the google slideshow;
please share the google slideshow with educators you work with.

- WIDNRTV career videos that were not shown during the presentation
- Into Forestry: Heroes of the Forest Video
- LEAF K-12 Forestry Lesson Guide Career Explorations
- LEAF K-12 Forestry Lessons & Field Enhancements

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THEME 2

Caring for the FOREST

In this Lesson you will find:

Lesson which includes

- Plantation Game (K-8)
- Taking Care of Urban Forests (K-8)
- Tree Inventory (7-12)

Link to corresponding lesson slideshow (google)

Optional Activities related to this theme

- Why Would Anyone Cut Down A Tree? (book)
- From Seeds to Sky (video)
- Tree Cookies Lesson
- Learn about your Land (UW-Extension self-paced course)

LEAF Lessons that support this theme

PRIMARY OBJECTIVES

- Students will examine the need for sustainable forest management and understand what we do / don't do to the forest.
- Students will be able to explain why trees are cut down in forests.

DNR Key Target Messages

- Wisconsin has a plan to sustain the healthy, working forests vital to Wisconsin's well-being. (1)
- Diversity in both the forest resource and the forestry workforce is vital. (3)
- Everyone can help sustain Wisconsin forests (by being careful with fire, not spreading invasive species, using wood products rather than alternatives, planting and caring for a native tree, enjoying the outdoors responsibly and more). (8)

Wisconsin Standards for Environmental Literacy & Sustainability

(supported by this lesson)

- Students develop and connect with their sense of place and well-being through observation, exploration, and questioning. (Strand 1: Connect, Standard 1)
- Students evaluate relationships and structures of natural and cultural systems and analyze their interdependence. (Strand 2: Explore; Standard 2)
- Students engage in experiences to develop stewardship for the sustainability of natural and cultural systems. (Strand 3: Engage; Standard 7)

Preparation

- Read the lesson to familiarize yourself with what you need to explain and where you may need to elaborate.
- If you are presenting indoors and want to use the slideshow/videos
    - Reach out to the teacher to make sure there is a projector and computer with internet available.
    - Email the slideshow to the teacher and ask them to have it ready for your visit.
    - Select the slides that go with your desired activity.
- You know how to care for the forests. Feel free to make this lesson your own!

Materials:

- Team Level Forester Kit
- Theme 2: Caring for the Forests Lesson Slideshow-(optional)
    - https://docs.google.com/presentation/d/1fQ2W_GKqeKkD14ph9zBtq6ynLnnvQYfzgCghKnQZ2WY/edit?usp=sharing

Plantation Game

- Grocery bag with various forest products
    - Paper plates, cardboard, paper towels, napkins. toilet paper, pencils, etc.
- Stuffed forest bird & stuffed forest animal

Tree's Life Game

- Tree's Life Game Cards

Tree Inventory

- Tree ID Documents
- Tree ID Data Sheet OR Tree Inventory Data Sheet

Modifications

For K-8 Audience:

- For early elementary audiences, consider beginning by reading the story, "Why would anyone want to cut down a tree" (Link in lesson)
- Use Plantation Game or Tree's Life Game

For 7-12 Audience:

- Use Tree Inventory

For For Urban Setting

- Use Tree's Life Game vs Plantation Game

For Outdoor Setting

- All activities are meant for an outdoor setting

For Indoor Setting

- K-8: Plantation Game and Tree's Life can be modified for kids to participate within the classroom; move chairs/tables to create open spaces
- 7-12: Utilize LEAF 9-12 Urban Guide Extension Activity, Lesson 2: Working Together (link in lesson plans)

CARING FOR THE FOREST—PLANTATION GAME (K-8)

PLANTATION GAME

Ideal for grades K-5; Play in a large, outdoor space if possible

INTRODUCTION

- Ask students what forests give us / what trees do for us.
  - Possible answers include: Shade, O2, clean water, wildlife, lumber, paper, chemicals, campsites, food, etc.
- Explain to students that they are going to play a game that will teach them about the life cycle of a pine plantation and the products and benefits people and wildlife get from the forest.
- Explain to students that the game will also help them understand how foresters do their job.

PLANTING

- Arrange the students in 5 rows, facing you
- Have the rows of kids stand as close to each other as possible
- Tell the kids to sit down because you just "planted" them
- Tell the kids they are 2-year old seedlings from the DNR nursery that have been planted in a field

GROWING

- Ask the kids to stand up
- Tell them to slowly extend their arms out from their sides until they touch the next person and then freeze in place.
- Ask students WHY they think they had to freeze in place like they stopped growing?
- Explain that the trees are now fighting each other for sunlight, water, and nutrients and are now "stuck" where they cannot grow anymore.
- Tell them to imagine they are 25 year old trees and 6 inches around.

CARING FOR THE FOREST—PLANTATION GAME (K-8)

THINNING

- Ask students what they think foresters can do to help the trees be able to grow again.
- Tell them that foresters **thin** the plantation.
- **Thinning** is when foresters have **loggers** cut trees down in order to give the rest of the trees more room to grow.
- Have students sitting in the 2nd and 4th row sit down. Explain to them that they are the trees that the loggers have cut down.

FOREST PRODUCTS

- Ask the students what they think happens to the trees that have been cut down?
- Ask the kids what products the trees may have been turned into?
    - Possible answers include: paper plates, cardboard, paper towels, toilet paper, pencils, etc.
- Pass out items from the grocery bag of forest products to the trees that have been cut down. Tell them they are now that item.

REMAINING TREES

- Explain to students that all the remaining trees now have room to grow.
- Have students extend their arms all the way out to show this.
- Ask students to slowly rotate until they (gently) hit people in front of and behind them.
- Ask students what they think happened.
- Tell them they are now 35 years old, 50 feet tall and 12" in diameter. Tell them they are "stuck" again and cannot keep growing.
- Ask students what should be done?
- Their answer should be "**thinning**".

CARING FOR THE FOREST—PLANTATION GAME (K-8)

THINNING / FOREST PRODUCTS

- Ask every other student in the standing rows to sit down.
- Ask what they think they may have turned into this time now that they are bigger trees.
    - Possible answers include: Lumber, small log cabins, along with all the other items that smaller trees were made into.
- Tell students that we keep doing this in the forest about every 10 years until the trees are 90 years old and about 25 inches in diameter. At that point, loggers cut down almost all of the rest of the trees.
- Have all but the tallest kid and one other student sit down. Ask what forest products the largest trees might get turned into.
    - Possible answers include: Big timbers, big cabin logs, telephone poles
- Remind the students that earlier you discussed that forests do more than just provide lumber. They are also homes for wildlife.
    - Give the tallest student a stuffed bird and tell students that tree has a bird's nest in it.
    - Give the other standing student the stuffed forest animal and tell them that they are a hollow tree providing a home to that animal.
    - Tell students some trees will never be cut down because they are providing other special values that are important too.

PLANTING

- At this point, everyone is sitting except for the two Wildlife trees.
- Tell students that trees are a **renewable resource**.
- Ask students what a **renewable resource** is.
- Ask students what comes next in the process then…
    - Answer is to **Plant more trees!**

ASK QUESTIONS / ANSWER QUESTIONS

CARING FOR THE URBAN FOREST—TREE'S LIFE GAME (K-8)

TREE'S LIFE GAME (URBAN FOREST FOCUS)

Modified from LEAF Urban Guide Lesson 3—*Taking Care of Urban Forests*
Ideal for grades K-8; Play in a large, outdoor space if possible

PREPARATION

- Mark out a course at the location of your presentation
  - The course can be made using cones or creating a path between trees
- Print out and cut apart 1 set of "Tree's Life Game Cards"; feel free to add additional cards of your own to the game *(laminate for future use)*
- **Adaptation for older students**-print one set of cards for every 4-5 students and have them complete the activity with minimal guidance

INTRODUCTION

- Explain to students that there are things in the **urban forest** that make it challenging for trees to grow.
- Tell them they will play a game to learn about some of those things and see what can be done to help trees in urban forests (aka...what can be done to manage urban forests)
- Break students into teams (no more than 4-5 per team). Have teams decide on a team name.
- Explain that all groups are going to start at the same place (cone or tree) and all groups have the same goal...be the first to get to the finish (cone or tree).
- Decide which team will go first.

PLAYING THE GAME

- Call out the name of the team that is up first, draw a "Tree's Life Game Card" and read it aloud.
- Have the students either take steps forward (toward the finish line) or backwards (away from the finish line) based on what the card says.

CARING FOR THE URBAN FOREST—TREE'S LIFE GAME (K-8)

PLAYING THE GAME (continued)

- Students should never move back past start-they should always stop when they get back to start (or just not move off start).
- Once that team is done moving, draw a card for the next team, and the next, etc.
- Repeat the process until a team makes it to the finish line.

DISCUSSION

Ask students the following questions:

- What were some of the challenges for urban trees that you learned about in the game?
- What were some solutions or ways to help urban trees that you learned about in the game?
- Can you think of other challenges/solutions for urban trees?
- Ask students what they think foresters do to manage urban forests?
    - Possible Answers include: pruning, planting, mulching, watering, protecting, inspecting, etc.
- Ask students how they think this is different from a rural forest?
    - Possible Answers include: rural forests have more trees so each tree doesn't get as much individual attention, rural trees often have more space, nutrients, water, etc.
- Ask students if rural forests still need to be managed?
    - Possible Answers include: Sometimes. Rural trees may still survive if they aren't part of a managed forest but trees will be healthier if a forest is managed well. Management of a rural forest will be different than management of an urban forest (for example, thinning takes place in rural forests more often)

CARING FOR THE FOREST—TREE INVENTORY (7-12)

TREE INVENTORY

Ideal for grades 7-12; Outdoor Location at school yard or school forest

PREPARATION

- Determine what Tree ID materials will work best for your setting and prepare them for your presentation
  - WIDNR Community Tree Map https://pg-cloud.com/Wisconsin/
  - LEAF Tree Identification Terms https://www3.uwsp.edu/cnr-ap/leaf/Documents/7-8%20Tree%20ID%20Terms%202012.pdf
  - WI Urban Tree Key https://www3.uwsp.edu/cnr-ap/leaf/Documents/Urban%20Tree%20Key%20-%20Final.pdf
  - LEAF Tree ID Key https://www3.uwsp.edu/cnr-ap/leaf/Documents/LEAFTreeIDKey2014November172014.pdf
  - LEAF Winter Tree ID https://www3.uwsp.edu/cnr-ap/leaf/Documents/LEAFWinterTreeIDKey.pdf
  - LEAF Tree ID Data Sheet https://drive.google.com/file/d/1wrAIWkUgW1dTKHc03_PcebN_zXE0Whcg/view?usp=sharing
  - LEAF Forester Guide Tree Inventory Sheet https://docs.google.com/document/d/1fXpx0r93_ZZ1s7IdKkO1SU9C16K3x4Z_v8Hc0KkHym8/edit?usp=sharing

INTRODUCTION

- Explain to students what a **tree inventory** is and its purpose
  - Record location & characteristics of individual trees including: Location of tree, name of the tree species, tree diameter, tree height, tree health

TREE ID/INVENTORY TOOLS

- Show tools you use to help you with Tree ID and Tree Inventories; Explain how they work
  - Include documents from above
  - DBH tape
  - Biltmore sticks

CARING FOR THE FOREST—TREE INVENTORY (7-12)

BEGIN TREE ID/INVENTORY

- Demonstrate process for identifying and inventorying trees
- Have students participate and practice using the tools
- It is not expected that you complete an entire inventory, goal is to teach educators and students HOW so they can complete the inventory

DEBRIEF

- Discuss how data from tree inventory can be utilized:
  - Tree needs/care, tree management, plans for future planting, etc.

ADDITIONAL TOOLS/RESOURCES:

- WIDNR Inventory Basics https://dnr.wisconsin.gov/topic/urbanforests/treeinventories
- WIDNR Wisconsin Tree Canopy Coverage
  - https://dnr.wisconsin.gov/topic/urbanforests/ufia/landcover
- Additional iTree Tools https://www.itreetools.org/

EXTENSION ACTIVITY: WORKING TOGETHER

(LEAF Urban Guide 9-12 Unit, Lesson 2)
https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/Urban-Forest-9-12-Unit/UF912L2.pdf

- Students participate in an interactive game to learn about urban forest management techniques and how homeowners, business owners and city foresters can work together to avoid conflict.

Review Key Messages

- Anyone can be involved in caring for trees/forests
- Caring for trees is an important part of forest management
- Both rural and urban forests can benefit from forest management
- Rural forests are managed differently than urban forests

Optional Activities Related to this Theme

- **Why Would Anyone Cut Down a Tree?** Book by Roberta Burzynski; from USDA Forest Service https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd925558.pdf
- **Wisconsin Young Forest Partnership "From Seeds to Sky" video** https://www.youtube.com/watch?v=HmRRaNl1GSA
- **Tree Cookies Lesson**
  - Bring tree rings along on your visit
  - Explain how tree rings form
  - Students examine tree rings
  - Learn how trees grow and deal with wounds
- **Learn about your Land** (UW-Extension self-paced course)

Recommended Teacher Resources

All teacher resources are linked in the google slideshow; please share the google slideshow with them.

- LEAF Urban Forest Lesson Guide K-4 Unit
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-K-4-Unit.aspx
- LEAF Urban Forest Lesson Guide 5-8 Unit
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-5-8-Unit.aspx
- LEAF Urban Forest Lesson Guide 9-12 Unit
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-9-12-Unit.aspx
- LEAF 2-3 Guide, Lesson 5: Decisions, Decisions
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/enhance-your-site/2-3-Wisconsin-Forestry-Lesson-Guide/2-3L5.pdf
- LEAF 4 Guide, Lesson 7: Sustaining our Forests
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/4th-Grade-Wisconsin-Forestry-Lesson-Guide.aspx
- LEAF 5-6 Guide, Lesson 6: What is Management?
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/5-6-Wisconsin-Forestry-Lesson-Guide/5-6L6.pdf
- LEAF 7-8 Guide, Lesson 3: How Forests Are Managed; Lesson 4: Forest Management Issues
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/7-8-Wisconsin-Forestry-Lesson-Guide.aspx
- LEAF 9-12 Guide, Field Experience 4: Timber Cruise
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/9-12-Wisconsin-Forestry-Lesson-

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THEME 2

Supporting Resources

TREE'S LIFE GAME CARDS

You are not planted too close to a house. **MOVE AHEAD 3 SPACES.**	Your shade cooled someone's house. **MOVE AHEAD 2 SPACES.**	Your fruit is food for birds and they help you spread your seeds. **MOVE AHEAD 2 SPACES.**
You are properly taken care of by a family. **MOVE AHEAD 3 SPACES.**	You are a tree that grows well in Wisconsin weather. **MOVE AHEAD 2 SPACES.**	Someone hung a bird house in your branches to help wildlife. **MOVE AHEAD 3 SPACES.**
You survived an ice storm because you were pruned. **MOVE AHEAD 2 SPACES.**	You were inspected for insects that could hurt you, and there were none. **MOVE AHEAD 3 SPACES.**	People prevented pollution from getting into the water. **MOVE AHEAD 2 SPACES.**
Someone put a fence around you when you were young to protect you. **MOVE AHEAD 3 SPACES.**	You were planted in good soil. **MOVE AHEAD 2 SPACES.**	You have plenty of room to grow. **MOVE AHEAD 3 SPACES.**
Someone hired an arborist to take care of you. **MOVE AHEAD 2 SPACES.**	Someone watered you during a dry summer. **MOVE AHEAD 3 SPACES.**	You were planted! **MOVE AHEAD 2 SPACES.**
Someone pruned off your broken branch. **MOVE AHEAD 3 SPACES.**	You have mulch on your roots to protect them. **MOVE AHEAD 2 SPACES.**	You are the right size for your spot. **MOVE AHEAD 3 SPACES.**

TREE'S LIFE GAME CARDS

Someone fertilized you. **MOVE AHEAD 2 SPACES.**	You are a short tree planted under power lines so you fit there. **MOVE AHEAD 3 SPACES.**	Someone mowed the lawn around you carefully so your trunk did not get hit. **MOVE AHEAD 3 SPACES.**
Someone carved their initials on your trunk. **MOVE BACK 1 SPACE.**	You were planted under power lines and have grown too tall to fit there. **MOVE BACK 2 SPACES.**	Someone hung on your small branch and broke it off. **MOVE BACK 2 SPACES.**
Someone cabled their bike to you and hurt your bark. **MOVE BACK 1 SPACE.**	You were pruned at the wrong time of year and got a disease. **MOVE BACK 2 SPACES.**	A car backed into you. **MOVE BACK 1 SPACE.**
People hit you with a lawnmower. **MOVE BACK 2 SPACES.**	An insect attacked you. **MOVE BACK 1 SPACE.**	You were planted too deep in the ground. **MOVE BACK 2 SPACES.**
You can't live in the soil you were planted in. **MOVE BACK 2 SPACES.**	The road was widened and your roots were cut off. **MOVE BACK 1 SPACE.**	A new house was built on your roots. **MOVE BACK 2 SPACES.**
There is too much pollution. **MOVE BACK 1 SPACE.**	There is not enough space for you to grow. **MOVE BACK 1 SPACE.**	There is concrete too close to your roots. **MOVE BACK 2 SPACES.**

LEAF Forester Guide Tree Inventory Data Sheet

Tree # / ID	**Location**	**Tree Type** Conifer/Broadleaf	**Branching Pattern** Opposite / Alternate	**Tree Name**	**Tree Diameter** (breast height)	**Tree Height**	**Tree Health** Overall tree health crown, trunk, bark, foliage, etc 5 = Excellent, 4 = Good, 3 = Fair, 2 = Poor, 1 = Dead

Adapted from: LEAF 7-8 Field Enhancement 1: Tree ID Data Sheet

LEAF Forester Guide Tree Inventory Data Sheet

Tree # / ID	**Location**	**Tree Type** Conifer/Broadleaf	**Branching Pattern** Opposite / Alternate	**Tree Name**	**Tree Diameter** (breast height)	**Tree Height**	**Tree Health** Overall tree health crown, trunk, bark, foliage, etc 5 = Excellent, 4 = Good, 3 = Fair, 2 = Poor, 1 = Dead

Adapted from: LEAF 7-8 Field Enhancement 1: Tree ID Data Sheet

TREE ID DATA SHEET

Tree Number	Tree Type		Branching Pattern		Tree Name	Wildlife Observations (nest, droppings, food remains, etc.)	Describe the tree bark (rough, scaly, dark, smooth, light, etc.)	Sketch the overall shape of the tree
	Conifer	Broadleaf	Opposite	Alternate				
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Group Member Names: _____

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THEME 3

FOREST

Products & Benefits

In this Lesson you will find:

Lesson which includes

- Forest Products—Does it Come from a Tree? Activity
- Forest Benefits—Forest Benefits Team Challenge Activity
- Urban Forest Benefits—Problem Solving Activity

Link to corresponding lesson slideshow (google)

Optional Activities related to this theme

- LEAF Urban Guide Lessons/Activities

LEAF Lessons that support this theme

PRIMARY OBJECTIVES

- Students will investigate the products that come from the forest.
- Students will explore the many uses of the forest.

DNR Key Target Messages

- Forests and forest products have a key role in supporting climate resilience. (2)
- Forests are important to both rural and urban prosperity. (4)
- Forests support local economies with revenue from forest recreation as well as forest products and jobs. (5)
- Forests are a renewable resource providing products, aesthetics and recreational opportunities important to our everyday lives. (6)
- Forests support other vital natural resources in Wisconsin, including clean air, water, and wildlife habitat. (7)

Wisconsin Standards for Environmental Literacy & Sustainability

(supported by this lesson)

- Students evaluate relationships and structures of natural and cultural systems and analyze their interdependence. (Strand 2: Explore; Standard 2)

Preparation

- Read the lesson to familiarize yourself with what you need to explain and where you may need to elaborate.
- If you are presenting indoors and want to use the slideshow
    - Reach out to the teacher to make sure there is a projector and computer with internet available.
    - Email the slideshow to the teacher and ask them to have it ready for your visit.
    - Select the slides that go with your desired activity.
- You know a lot about forest products and benefits. Feel free to make this lesson your own!

Materials:

- Team Level Forester Kit
- Theme 3: Forest Products / Benefits Slideshow- (optional) https://docs.google.com/presentation/d/1sNiTojDOVdoX0BM2JWaP8pMHkzG6SL_g8BTzlODzfXg/edit?usp=sharing

Does it Come From a Tree? Game

- Variety of items that do/don't come from a tree (include things that seem like they come from a tree) Items listed below are referenced in the lesson
- toilet paper/paper towel roll, paper clips, newspaper, sponges, apple, mac & cheese, chewing gum, maple syrup, toothpaste, comb, disinfecting wipes, suntan lotion, pencil, ping-pong balls, aspirin, nail polish, white sugar, chocolate, cotton balls, shampoo, cork, oatmeal

Forest Benefits Team Challenge

- Paper and Pencil for each group of students

Urban Forest Benefits Problem Solving Activity

- Copies of the Urban Forest Benefit Scenario Cards (Scenarios & Blank Cards); cut apart
- https://drive.google.com/file/d/1B0lEbFjEMF2VWWpuNW5d08mocdWodfs0/view?

Modifications

For K-4 Audience:

- Consider using LEAF Urban Forest Guide 1-4 Unit; Lesson 2: Forest Benefits (linked in plans)

For 5-8 Audience:

- Use as designed

For 9-12 Audience:

- Consider using LEAF Urban Forest Guide 9-12 Unit; Lesson 1: What's It Worth (linked in plans)

For Urban Setting

- Be sure to leave time for the Urban Forest Benefits-Problem Solving Activity

Indoor/Outdoor

- Lesson can be completed indoors/outdoors

FOREST PRODUCTS / BENEFITS

INTRODUCTION

The forest provides us with many economic, ecologic, social and cultural benefits. Today we will explore forest products and other forest benefits.

FOREST PRODUCTS—Does it Come from a Tree? Game

Explain to students that they are going to play an easy game and all they have to do is figure out if the objects you share come from a tree.

You will lead the game and there are only 3 rules:

1. Have fun
2. You have to learn at least 1 new thing
3. You must participate by saying either YES or NO for every item shown

Does it Come from a Tree? Game Script/Directions

Grab a **toilet paper/paper towel tube** and use it as your pointer.

- Ask students if they know what the roll is. **Paper towel tube**
- Ask them if they know if it comes from a tree. **Yes!**
- Explain—**Yes, it is a paper product and that most paper comes from trees!**

Here's another easy one—**Newspaper**

- Did it come from a tree? **Yes!**
- Explain—**Yes, it also is a paper product! Did you know that Wisconsin is the #1 paper producer in the United States and has been for a LONG time (over 50 years) and that is because we have foresters to help us sustainably manage forests.**

Consider highlighting a few other specialty papers: Reeses' brown liner, Band Aide Wrapper, Gift Wrap / Tissue Paper

Tell students that things may get trickier now.

Paperclip

- Does this come from a tree? **No**
- Are you sure? It has the word **paper** in it's name? **No! Paper clips are made of metal which doesn't come from trees. And, while metals are often recyclable, they are non-renewable resources, unlike trees which are both recyclable and renewable.**

FOREST PRODUCTS / BENEFITS

Apple?—Yes

Cotton balls? - No! Cotton balls come from a non-wood herbaceous plant, cotton. Remember, while TREES are PLANTS; not all PLANTS are TREES.

What about **Macaroni & Cheese?** - **Hmmmm?**

- **The BOX is cardboard which is made from trees.**
- What about the **pasta? - No! It comes from a grass/grain plant**
- What about the **cheese?** It rhymes with trees, and we are in Wisconsin so surely we have cow trees in Wisconsin!?! Right? The answer is **Yes! The cheese doesn't actually come from trees, but there is more than cheese in the packet. The cheese gets thick because it has a product from trees that helps thicken it—TREE CELLULOSE. Tree Cellulose is used in lots of foods as a thickening agent or to help prevent foods (like shredded cheese) from sticking together!** If you think that's gross...think about other things you eat...wheat, carrots, other plant products. Trees are plants and this is just another plant product we consume!
- **Cake Mixes have cellulose...anti-caking agent**
- **Parmesan Cheese—most shredded cheese is coated in cellulose to keep from clumping**
- **Ice cream—Yup! Cellulose is used to make ice cream creamier and stop crystals from forming in it!**

What about **sponges?**

- **Yes and No!**
- **Many sponges are made from wood fibers, also known as cellulose**
- In the past sponges came from the ocean (they are living organisms but we don't use them like this much anymore)
- Some sponges are made from petroleum products too

Chewing gum?

- **Yes and No!**
- **Yes—Traditional gum recipes started with chicle sap from the sapodilla tree**
- No—Most modern gums are made from manufactured plasticizers and rubberizers that mimic the natural product.

FOREST PRODUCTS / BENEFITS

Toothpaste? Yes!

- **Toothpaste can contain several different wood components including carboxymethyl, cellulose, cellulose gum** (agents that help hold it together) **and xylitol (a sugar alcohol naturally sourced from trees/plants that can add a sweet flavor to something without contributing to cavities/decay)**
- Other bathroom /cosmetic products use thickeners too…
    - **Shampoos, lotions, suntan lotions**

Nail Polish? Yes! Sometimes!

- **Some nail polishes contain the wood component nitrocellulose, which is added for its strength and quick-dry properties.**

Ping-pong ball?????

- **Yes! A wood component, celluloid, is used to make the balls because it is easily molded and shaped while allowing for the high-bounce property of the ball.**

Comb?

- **Yes,** while combs are made from plastic, **many are reinforced with wood fibers!**
- The same is true for: **glasses frames, guitar picks**

Maple Syrup?

- **Yes** / no! **Pure maple syrup comes from boiling down the sap collected from maple trees, however, not all syrup comes from a tree.** Often, regular pancake syrup you purchase from the store does NOT come from a tree—it comes from CORN!

Chocolate?

- **Yes! Chocolate comes from the cacao tree, a native tree of the Amazon. These trees can also be found in South and Central America, the Caribbean, and other humid/tropical climates**

White sugar?

- No! Sugar comes from sugar cane, which is a plant, but not a tree!

FOREST PRODUCTS / BENEFITS

Aspirin?

- **Yes and No! Yes, willow bark was used before aspirin in historic remedies**
- No, willow bark is not used as an ingredient in Aspirin today.
- **Yes, cellulose is often used in pills and capsules today to help bind and distribute the medicine evenly**

Disinfecting Wipes?

- **Yes! Disinfecting wipes are often made of rayon, which is produced from the wood component cellulose, which allows the sheet to hold the liquid and maintain its shape and texture.**
- Rayon can also be found in **clothing, bedding, furnishings**

Pencil?

- **Yes! Pencils are a solid wood product that comes from trees and we use them almost every day!**
- Other products that we often use daily include: **homes, furniture, picture frames**

Bottle cork?

- **Yes! The cork used to create bottle cork ONLY comes from the cork oak. These trees are stripped for their cork to help create the stoppers.**

Oatmeal?

- No! Oatmeal is made from oats which is a plant, not a tree.

DISCUSSION:

- **Which wood products were most surprising to you?**
- **How would your life be different if wood products were not a part of it?**
- **How does understanding how many products are truly wood products increase the importance of sustainable forest management?**

FOREST PRODUCTS / BENEFITS

FOREST BENEFITS—Forest Benefits Team Challenge

Explain to students that forests are important for reasons other than just the products they produce. Forests provide other economic, ecological, social, and cultural benefits as well.

You are going to participate in a TEAM challenge to see if you can identify many of these benefits.

GOALS:

1. **Students identify as many forest benefits in each quadrant (economic, ecological, social, cultural) as possible.**
2. **Students identify benefits that other teams DON'T think of.**

INSTRUCTIONS:

1. Divide students into teams of 3-4 people
2. Each group needs a paper and pencil
3. Each group should divide their paper into 4 quadrants: Economic, Ecological, Social, Cultural
4. Share the GOALS (above) with teams
5. Give groups 5-10 minutes to write as many benefits of forests (RURAL and URBAN FORESTS) that they can think of in each quadrant. Remind them, that in addition to thinking of as many benefits as possible, they want to think of benefits other groups might not think of.
6. When "time" is up, each group takes turns sharing forest benefits one at a time from each category. If any other team/s has/have that benefit on their list, no team gets a point for it. If NO other team has the benefit on their list, the team sharing the benefit gets a point. Do this for each quadrant separately. Economic benefits cannot include forest products! Discuss benefits and tally points along the way. Feel free to share out your own thoughts on benefits that are not mentioned.
7. Have each team tally points. Consider bringing a prize for the winning team.

FOREST PRODUCTS / BENEFITS

Possible benefits to share:
Economic: Jobs, revenue from recreation, cost savings from shade provided by trees, increased property value, etc.
Ecological: Habitats, species diversity, contributions to natural cycles (water, carbon, etc.), improve air quality, water quality, stormwater runoff, shade
Social: Recreational opportunities, benefits of green spaces on health and mental health, gathering spaces, etc.
Cultural: Identity, sense of home, spiritual enrichment, history, traditions

Discussion:

- **What forest benefits are most important to you?**
- **What forest benefits had you never thought about before?**
- **How do foresters work to preserve all these benefits?**

URBAN FOREST BENEFITS—Problem Solving Activity

Explain to students that urban trees can be a solution to many problems and that in this activity they will think about a problem that can be common in urban areas and how urban trees/forests can help solve the problem.

INSTRUCTIONS:

1. Divide students into teams of 3-4 people
2. Give each group a different scenario to discuss https://drive.google.com/file/d/1B0lEbFjEMF2VWWpuNW5d08mocdWodfs0/view?usp=sharing
3. Allow groups 5 minutes to discuss their scenario and a solution to the scenario that relates to urban trees/forests
4. Have groups share their scenarios and solutions with the rest of the class
5. If time permits, give each group a blank scenario card. Have them think of an urban problem that urban forests/trees could solve and write it on the front side of the card. Have them record their solution on the back side of the card. Have groups share (or collect the cards and share them yourself).

FOREST PRODUCTS / BENEFITS

Discussion:

- **What urban forest benefits do you think are most important. Explain.**
- **What urban forest benefits had you never thought about before?**
- **It sometimes can take a long time for trees to grow so we can reap their benefits. What are some things residents in urban areas can do in the meantime to help with some of the problems described in the scenarios?**

Review Key Messages

- Forests provide us with many products that contribute to our quality of life.
- Forests, both rural and urban, provide us with many benefits (economic, ecological, social, and cultural)
- Everyone benefits from sustainable management of rural and urban forests.
- Forest management increases the sustainability of a forest

Optional Activities Related to this Theme

- **iTree Design** https://design.itreetools.org/
- **National Tree Benefit Calculator**
  - http://www.treebenefits.com/calculator/index.cfm
- **Green Cities: Good Health** http://depts.washington.edu/hhwb/
- **LEAF Urban Forest Guide K-4 Unit; Lesson 2: Urban Forest Benefits**
  https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/Urban-Forest-K-4-Unit/UFK4L2.pdf
- **LEAF Urban Forest Guide 5-8 Unit; Lesson 2 Urban Forest Benefits**
  https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/Urban-Forest-5-8-Unit/UF58L2.pdf
- **LEAF Urban Forest Guide 9-12 Unit; Lesson 1 What's it Worth?**
  https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/Urban-Forest-9-12-Unit/UF912L1.pdf

Recommended Teacher Resources

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please share the google slideshow with educators.

- LEAF Urban Forest Lesson Guide K-4 Unit
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-K-4-Unit.aspx
- LEAF Urban Forest Lesson Guide 5-8 Unit
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-5-8-Unit.aspx
- LEAF Urban Forest Lesson Guide 9-12 Unit
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-9-12-Unit.aspx
- LEAF K-1 Guide, Lesson 3: My Favorite Forest Use
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/K-1-Wisconsin-Forestry-Lesson-Guide/K-1L3.pdf
- LEAF 2-3 Guide, Lesson 4: Forests are Important to Me!
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/enhance-your-site/2-3-Wisconsin-Forestry-Lesson-Guide/2-3L4.pdf
- LEAF 4 Guide, Lesson 6: Forests are Important to You and Me
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/4th-Grade-Wisconsin-Forestry-Lesson-Guide/4L6.pdf
- LEAF 5-6 Guide, Lesson 5: We All Need Trees
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/5-6-Wisconsin-Forestry-Lesson-Guide/5-6L5.pdf
- LEAF 5-6 Guide, Field Enhancement 1: Wood's Worth
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/5-6-Wisconsin-Forestry-Lesson-Guide/5-6FE1.pdf
- LEAF 7-8 Guide; Lesson 5: Many Forests, Many Values, Many Reasons
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/7-8-Wisconsin-Forestry-Lesson-Guide/U78_L5.pdf
- LEAF 9-12 Guide, Marketplace Matters: Understanding the Economic Value of Wisconsin's Forests
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/9-12-Wisconsin-Forestry-Lesson-Guide/MarketplaceMatters.pdf
- LEAF 9-12 Guide, Lesson 4: The Forest Marketplace
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/9-12-Wisconsin-Forestry-Lesson-Guide/9-12L4.pdf
- LEAF 9-12 Guide, Field Experience 4: Timber Cruise
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/9-12-Wisconsin-Forestry-Lesson-Guide/4_TimberCruise.pdf

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THEME 3

Supporting Resources

PROBLEM:
Residents are having trouble sleeping due to all the noise coming from the street.

PROBLEM:
Residents are suffering from depression or feeling isolated.

PROBLEM:
When there is rain, especially heavy rain, the streets flood very quickly.

PROBLEM:
Residents don't observe birds or animals much anymore.

PROBLEM:
Residents are struggling with breathing problems like asthma.

PROBLEM:
Residents complain how how it is outdoors for them and their pets when they want to be outside.

PROBLEM:
It costs a lot of money to run an air conditioner during the daytime when temperatures are at their highest.

PROBLEM:
Residents don't like that anyone walking on the street can see into their home/apartment.

PROBLEM:

PROBLEM:

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THEME 4

TREE Planting & Natural Restoration

In this Lesson you will find:

Lesson which includes

- Tree Planting (Planting & Caring for Trees)
- Invasive Species Plant Game
- Invasive Species EAB Game
- Worm Watch

Link to corresponding lesson slideshow (google)

Optional Activities related to this theme

- LEAF Urban Guide Lessons/Activities

LEAF Lessons that support this theme

PRIMARY OBJECTIVES

- Students will explore WHAT trees need to grow.
- Students will learn WHERE trees should be planted.
- Students will learn HOW to care for planted trees.

SECONDARY OBJECTIVES

- Students will understand what their tree might grow up to be used for.
- Students will examine the impact of invasive species on trees

DNR Key Target Messages

- Wisconsin has a plan to sustain the healthy, working forests vital to Wisconsin's well-being. (1)
- Forests are a renewable resource providing products, aesthetics and recreational opportunities important to our everyday lives. (6)
- Everyone can help sustain Wisconsin forests (by being careful with fire, not spreading invasive species, using wood products rather than alternatives, planting and caring for a native tree, enjoying the outdoors responsibly and more). (8)

Wisconsin Standards for Environmental Literacy & Sustainability

(supported by this lesson)

- Students engage in experiences to develop stewardship for the sustainability of natural and cultural systems. (Strand 3: Engage; Standard 7)

Preparation

- Lesson is ideal for **grades 5-8**
- Read the lesson to familiarize yourself with what you need to explain and where you may need to elaborate.
- If you are presenting indoors and want to use the slideshow
    - Reach out to the teacher to make sure there is a projector and computer with internet available.
    - Email the slideshow to the teacher and ask them to have it ready for your visit.
    - Select the slides that go with your desired activity.
- You know a lot about trees and invasives. Feel free to make this lesson your own!

Materials:

- Team Level Forester Kit
- Theme 4: Tree Planting & Natural Restoration slideshow -(optional) https://docs.google.com/presentation/d/1tWKW2PWHnZsVOsyDZ1vofdBWIApWVudXs0xehUKdijQ/edit?usp=sharing

Planting Trees & Tree Care

- Equipment for tree planting/care if that is part of your presentation

Invasive Species Plant Game

- Pinnies, colored flags, or ID tags to separate Invasive Species and Native Plants
- Pathway Items: boots, shoes, backpacks, clothing items, gloves, toy bike, stuffed animals (pets/wild), shovels

Invasive Species EAB Game

- Invasive Species EAB—Stop the Beetle Game pdf (need to print back story to read and questions for Location Leaders) https://drive.google.com/file/d/1jQTZDYZ9s_IsTabyc8by7sGYzOrXij4P/view?usp=sharing

Worm Watch

- Mustard Mix (See activity for amounts)
- Worm Watch Data Sheet https://drive.google.com/file/d/1B4aMzLXpkkYpa2iWsDISQ-MZMNzkEu3k/view?usp=sharing

Modifications

For K-4 Audience:

- No adjustments from Tree Planting/Tree Care
- Offer more general ideas related to invasive species; break down instructions very well before games/activities

For 9-12 Audience:

- Consider using entire Worm Watch Lesson (linked in activity)

For For Urban Setting

- Make sure students understand that invasives impact both Urban & Rural Forests / Trees

Indoor/Outdoor

- Activities are easiest to complete Outdoors but games can be modified to take place in a large indoor space
- Worm watch MUST take place outdoors

PLANTING & CARING FOR TREES

INTRODUCTION

There are a lot of things to consider when planting trees, caring for trees, and restoring land.

PLANTING & CARING FOR TREES

Why Plant a Tree?

Discuss the various Economic, Ecological, Social and Cultural Benefits trees provide.

From DNR "New Tree Planting" Brochure

Things to consider BEFORE planting a tree

1. Where to plant your tree? Look up, look down, look around.
2. **Hardiness Zone**-Know your zone AND choose trees adapted to that zone; Consider planting species **native** to the area. Explore species & hardiness zones at: https://mortonarb.org/plant-and-protect/trees-and-plants/
3. Determine what type of Nursery Stock tree is best for your situation: Bare Root, Containerized, Balled and Burlapped
4. Think about what your tree will grow up to be used for
5. Call before you dig! Diggers Hotline: 1-800-242-8511

Planting a Tree

1. Determine where the **root collar** is located within the **root ball.**
2. **Dig a planting space 2-3 times wider than the root ball, but NOT deeper.**
3. Determine depth to plant by measuring the distance from the bottom of the root ball to the root collar.
4. Remove all tags, ribbons, and trunk guard and gently ROLL the tree into its space. DO NOT drag or lift the tree by its trunk.
5. Carefully remove soil from the top of the root ball to expose the root collar. **Be sure the root collar is either LEVEL or 1-2 inches ABOVE the surface.** Remove burlap, twine, wire.
6. Back fill the planting space with soil.
7. **Water to thoroughly eliminate all air pockets** – do not pack/tamp.

PLANTING & CARING FOR TREES

TREE PLANTING RESOURCES:

Videos

WIDNRTV *Planting a Balled and Burlapped Tree*
- *https://www.youtube.com/watch?v=ZijTjoDQid8*

WIDNRTV *Planting a Tree from a Container*
- *https://www.youtube.com/watch?v=FC3uEZALMwY*

Arbor Day Foundation *Planting a Bare Root Tree (seedling)*
- *https://www.youtube.com/watch?v=d5FiqoypXfo*

Utah State University Extension *Planting a Bare Root Tree*
- *https://www.youtube.com/watch?v=U4j0LewYwuQ*

Other Tree Planting Resources:

- WIDNR
  - https://dnr.wisconsin.gov/topic/urbanforests/treeplantingresources
- Tree Installation Process and Practices (fnr.purdue)
  - https://www.extension.purdue.edu/extmedia/fnr/fnr-433-w.pdf
- WIDNR New Tree Planting PDF
  - https://drive.google.com/file/d/1ypkqpueqvIJR6BXqZTYXxMdlP3MKCpMG/view?usp=sharing
- WIDNR New Tree Planting Poster
  - https://drive.google.com/file/d/1hdFM_tyABxq4G4csKHDxtyttn5-tM3g4/view?usp=sharing

PLANTING & CARING FOR TREES

Caring for a Tree

Watering: Always check soil moisture before watering!

- Water daily for 1-2 weeks after planting
  - 1 inch diameter trunk = 10 gallons of water
  - 2 inch diameter trunk = 20 gallons of water
- Water every 2-3 days for 3-12 weeks after planting

Mulching:

- Apply 2-4 inches of mulch over the root zone
- Keep mulch 3-6 inches away from the trunk of the tree

Staking:

- Most trees do NOT need to be staked
- If staking is necessary, use wide webbing straps and secure webbing to stakes with heavy gauge wire & make sure the tree can move

Pruning:

- Less is better. New trees need all the leaves they can get
- Prune only dead, broken, diseased or rubbing branches

PRUNING RESOURCES:

Activity:

- Indoor Pruning Activity: Use markers on tree limb samples to indicate where and how to make appropriate pruning cuts *(get samples from municipality)*

Resources:

- How to Prune Trees https://www.dec.ny.gov/docs/lands_forests_pdf/prunetree.pdf
- Why and When to Prune: https://www.ipm.iastate.edu/video/principles-pruning-when-and-why-prune
- Making a good cut: https://www.ipm.iastate.edu/video/principles-pruning-making-good-cut
- Included Bark: https://www.ipm.iastate.edu/video/principles-pruning-included-bark

PLANTING & CARING FOR TREES

Discussion Questions: (Planting & Caring for Trees)

- **What things are important to consider BEFORE planting a tree?**
- **What things are important to consider WHILE planting a tree?**
- **What things are important to consider when caring for a tree?**
- **Where in your neighborhood/home is a good place to plant a tree?**

DNR FORESTRY EDUCATIONAL RESOURCES
(not all related to tree planting and care)
https://dnr.wisconsin.gov/education/forests

INVASIVE SPECIES

Introduction:

Invasive species impact Wisconsin lakes, rivers, and landscapes. Members of the community can help slow the spread of invasive species. Some invasive plant species that impact Wisconsin forests include:

- Buckthorn
- Garlic Mustard
- Japanese Knotweed
- Dame's Rocket
- Honeysuckle
- Barberry
- Autumn Olive
- Oriental Bittersweet

To prevent the spread of invasive plant species:

1. Inspect clothing and equipment for seeds, insects, etc. before moving from one area to another
2. Leave native trees and plants alone
3. Be on the lookout for invasive species and follow specific instructions to remove invasive species from an area

Wisconsin forests are also impacted by Invasive Animal Species. Some invasive animal species include:

- emerald ash borer
- Asian longhorn beetle
- spongy moth
- earthworms, crazy worms
- oak wilt
- annosum root rot

INVASIVE SPECIES PLANT GAME—Outdoor/Gym activity

Adapted from USDA Animal and Plant Health Inspection Service, "Attack of the Invasive Species"
https://bugwoodcloud.org/mura/cogacisma/assets/File/Educational/Outreach%20Material/Educator%20Materials/HP-YouthActivity.pdf

INVASIVE SPECIES

INVASIVE SPECIES PLANT GAME—Outdoor/Gym activity

Goals:

- To help students understand how invasive species spread
- To help students understand how invasive species can impact native species

Instructions:

1. Divide kids into two teams: **Invasive Species** and **Native Plants**. 2/3 students should be invasive species and 1/3 students should be native plants.
2. Determine a way (pinnies, colored flags, etc.) to distinguish between the Invasive Species and Native Plants.
3. Have **Pathways** scattered throughout the playing field. (Pathways can include boots, backpacks, shoes, toy bicycle, clothing items, gloves, etc.
4. During the game, native plants must tag invasive species before they can reach a pathway.
   -If a native plant tags an invasive species BEFORE they reach a pathway, the invasive species becomes a native plant
   -If an invasive species reaches a **pathway** before being tagged, they are "safe" and can sit down at the pathway AND they can pick a native plant that has to become an invasive species and join them.
   -Pathways may only be used by 1 invasive specie and their "new" invasive.
4. The game ends when either ALL invasive species have become native plants OR when ALL native plants have become invasive species.
5. At the end of the round, discuss what happened and make connections to real issues with invasive species.
   -Invasive species often spread faster than native species
   -Invasive species often don't have natural predators/consumers to help keep numbers down
   -Invasive species are often able to handle changing conditions (weather, drought, climate) better than native species
6. If time permits, add challenges for native plants
   -Native plants must WALK, while invasive species can run
   -Increase the number of invasive species (3/4) and decrease the number of native plants (1/4)

Possible Discussion Questions:

1. **What are some of the factors that help invasive species spread?**
2. **Why is it important to prevent the spread of invasive species?**
3. **What things can people do to prevent the spread of invasives?**

INVASIVE SPECIES

INVASIVE SPECIES EAB GAME—Outdoor/Gym activity

Adapted from www.HungryPests.com "Stop the Beetle: Now!"

Copy of Activity:
https://drive.google.com/file/d/1jQTZDYZ9s_IsTabyc8by7sGYzOrXij4P/view?usp=sharing

Goal: Students will discover how the movement of firewood may contribute to the spread of the Emerald Ash Borer Beetle and why it is important not to move firewood.

Materials:

- 25 sticks (12 short and 13 long) made into bundles of 5 sticks each
  - Each bundle should have 5 total sticks in any combination of short and long
- 5 EAB Location Leader Questions

Preparation:

- Choose 5 locations in the schoolyard (learning space) to represent the following
  - Forest, Campground, Trail, Backyard, Neighborhood Park
- Choose 5 students to be **Location Leaders**, give them their EAB Question and explain their role to them

Procedure:

1. Read the Back Story; OR discuss what EAB is and how it came to Wisconsin making sure you cover all questions in part 5.
2. Have the **Location Leaders** go to their location
3. Divide the remaining students into groups of 3-5; give each group a stick bundle
4. As fast as they can, each team must travel to each location
5. When they arrive at the location, the **Location Leader** will read them their question.
   - If they answer correctly, they leave a stick from their bundle at the location and move on to the next location

INVASIVE SPECIES

QUESTIONS:

- **What species of tree does the EAB love to eat?** Ash trees
- **Where does the EAB lay its eggs?** On the bark of Ash trees
- **What spreads EAB?** People moving firewood
- **How does the EAB larvae kill a tree?** EAB larvae kill a tree by disrupting the systems that transport food and water in the tree
- **What is metallic, green and flies?** Emerald Ash Borer Beetle (EAB)

6. The winning team is the first to visit every location and have the FEWEST sticks left in their bundle.
7. Once all teams have completed their journey and the winning team has been determined, gather as a group. Explain to students that the sticks they were carrying represented firewood and that the **long** sticks represented firewood that was **infested with EAB**!
8. Walk with the group back to each location and see how much EAB firewood was left behind. Discuss the following questions:
    - **Which locations had firewood at them?**
    - **Could you tell when you left the firewood that it had the EAB hidden inside it?**
    - **What do you think will happen to the ash trees in locations if the firewood is infested with EAB?**
    - **Who put the infested firewood in the location?**
    - **What does this tell you about the spread of EAB and how it moves from location to location / state to state?**
    - **What can we do to prevent the spread of EAB?**

INVASIVE SPECIES : WISCONSIN WORM WATCH

In this lesson students participate in a citizen science project and determine if invasive earthworms are present in a forest.

Background: All earthworms in Wisconsin are invasive species! There have been no native worm species in Wisconsin since the last glacial period. Humans have introduced about 20 species of earthworms to Wisconsin from Europe and Asia by accident, or for farming/fishing. Although worms can be good for gardens, they are harmful to hardwood forests.

Materials:
Mustard powder
Disposable plastic water jugs (1 gallon or larger) filled with water
Earthworm identification book or tools
Forest site

Preparation: Mix 1/3 cup of mustard powder in 1 gallon of water & shake well. Do this about 20 minutes prior to conducting this activity; shake well when conducting activity.

Instructions:
1. Be sure all students have data sheets to record information/observations
2. Select survey sites (approximately 2' x 3')
3. Clear any ground covering
4. Shake mustard mixture and pour half of it over survey area and count and sort worms that emerge for 5 minutes
5. Pour the other half of the mixture over the site and count and sort worms for an additional 5 minutes.
6. Gather all supplies, keep the worms and move to a new location 10-20 feet away and repeat.
7. Record all findings and submit to Bernie Williams (Bernadette.williams@wisconsin.gov)

Extension Activities:
1. Create a graph; Plot the total number of juvenile and adult epigeic, endogeic, and anecic earthworms found in the sample plots

Discussion Questions:
- **What type of earthworm was found in the highest quantity? Why do you think that was?**
- **Would you consider the total amount of earthworms found in your sample plots to be quantified at a low, medium, or high level?**
- **Based on this data, what conclusions can you draw about the soil conditions or amount of organic layer present in the forest?**

Access a complete lesson at the following link:
https://www3.uwsp.edu/cnr-ap/leaf/school-forests/Documents/Forest%20Health_Wisconsin%20Worm%20Watch.pdf

Review Key Messages

- There are many factors to consider when planting trees.
- It is as important to care for trees as it is to plant them.
- Invasive species impact Wisconsin forests
- Humans contribute to the spread of invasive species
- There are several things people can do to minimize the impact of invasive species on Wisconsin Forests

Optional Activities Related to this Theme

- **LEAF Urban Forest Lesson Guide 5-8; Lesson 3: Management Decisions and Biodiversity**
  - https://www3.uwsp.edu/cnr-ap/leaf/SiteAssets/Pages/Urban-Forest-5-8-Unit/UF58L3.pdf

Recommended Teacher Resources

All teacher resources are linked in the google slideshow; please share the google slideshow with them.

- LEAF Urban Forest Lesson Guide K-4 Unit
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-K-4-Unit.aspx
- LEAF Urban Forest Lesson Guide 5-8 Unit
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-5-8-Unit.aspx
- LEAF Urban Forest Lesson Guide 9-12 Unit
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/Urban-Forest-9-12-Unit.aspx
- LEAF K-12 Forestry Lesson Guides
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/K-12-Forestry-Lesson-Guides.aspx

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THEME 4

Supporting Resources

New Tree Planting

Things to Consider Before Planting a Tree

Where to Plant

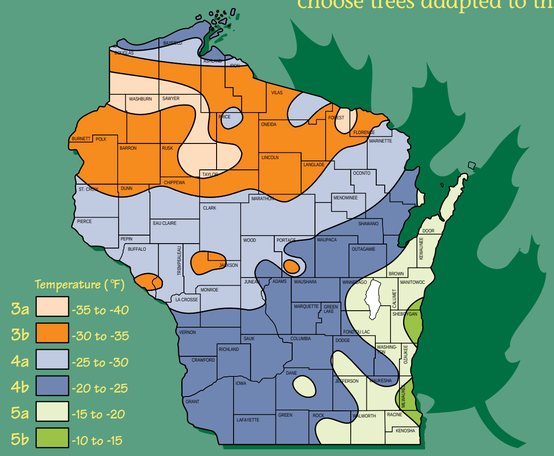
If there are overhead utilities plant a low growing tree or select a different planting site. Planting a tall growing tree where it doesn't have room to grow can lead to the unsightly and unhealthy practice of topping, shown left.

Right Tree Right Place

Make sure you leave plenty of room for your tree to grow. That perfect spot right next to the house may not be so perfect when the tree reaches its mature size.

The Hardiness Zone

Know your hardiness zone and choose trees adapted to that zone.



7 Steps in Planting Your Tree

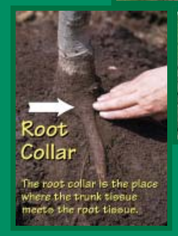
IMPORTANT – Call Before You Dig!
Contact Diggers Hotline at 1-800-242-8511

Step 1 → Determine where the root collar is located within the root ball.

Step 2 → Dig a planting space two to three times wider than the root ball, but no deeper. To determine proper planting depth, measure the distance from the bottom of the root ball to the root collar.

Step 3 → Before placing a tree in its planting space, remove all tags, ribbons, and trunk guard. To avoid root damage, don't drag or lift the tree by the trunk. Gently guide the tree into the planting hole.

Step 4 → Remove twine, clip and fold back wire basket and trim burlap. If left on, this material can girdle the tree. **Note:** If planting a containerized tree remove the entire pot.



Step 5 → **Carefully remove soil from the top of the root ball to expose the root collar. Check to see that the root collar is either level with or 1"to 2" above finished grade.** Planting a tree too deep can kill it!

Step 6 → Back fill planting space with soil. Water thoroughly to eliminate air pockets. Do not tamp!

Step 7 → Celebrate a job well done … a properly planted tree!

Caring for Your Tree

Watering - Water as needed throughout the season, about 1" per week.

Mulching - To properly mulch, apply 2" to 4" of woody mulch (aged wood chips, shredded bark or something similar) over the root zone. Make sure to pull the mulch 3" to 6" away from the trunk.

Staking -
Most newly planted trees do not need to be staked. If staking is necessary, use wide webbing straps. Secure webbing to stakes with heavy gauge wire. Attach materials so that the tree is allowed to move in the wind.

Do not encircle the tree with wire threaded through a garden hose – this can girdle the tree.

Proper Pruning -
Less is better, newly planted trees need all the leaves they can get. Remove only dead, broken, diseased or rubbing branches.

Step 1-7 photos by Bob Queen WDNR. Graphic Design by Linda Pohlod, Blue Sky Illustration & Design, LLC

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Step 4 – Remove twine, clip and fold back wire basket and trim burlap. If left on, this material can girdle the tree.

Note: If planting a containerized tree remove the entire pot.

Step 5 – Carefully remove soil from the top of the root ball to expose the root collar.

Check to see that the root collar is either level with or 1" to 2" above finished grade. Planting a tree too deep can kill it!

Step 6 – Back fill planting space with excavated soil. Water thoroughly to eliminate air pockets. Do not tamp!

Step 7 – Celebrate a job well done … a properly planted tree!

For more information, contact the WDNR Forestry Program at 608/267-7494 or your local county UW- Extension office.

Step 1-7 photos taken by Bob Queen.

Caring For Your Tree

Watering - Water as needed throughout the season, about 1" per week. To avoid over-watering, remember to check the wetness of the soil under the mulch and adapt your watering to rainfall and soil conditions.

Mulching - Mulch improves soil structure and aeration, keeps roots cool and moist, controls weeds, and keeps lawnmowers and weed whips away from the trunk. To properly mulch, apply 2" to 4" of woody mulch (aged wood chips, shredded bark or something similar) over the root zone. Make sure to pull the mulch 3" to 6" away from the trunk to prevent bark rot and limit rodent feeding.

Staking – Most newly planted trees do not need to be staked. If staking is necessary, use wide webbing straps. Secure webbing to stakes with heavy gauge wire. Attach materials so that the tree is allowed to move in the wind.

Do not encircle the tree with wire threaded through a garden hose – this can girdle the tree. Remove stakes and ties within one year. The use of trunk wrap is not recommended.

Proper Pruning – Less is better, newly planted trees need all the leaves they can get. Remove only dead, broken, diseased or rubbing branches.

Text by Tracy Salisbury, Urban Forester, WDNR and Genny Fannucchi, Forest Resource Education and Awareness Specialist, WDNR. Design by Linda Pohlod, Graphic Artist.

This publication is available in alternative format (large print, Braille, audio tape etc.) upon request. Please call 608/267-7494 for more information.

WISCONSIN DEPT. OF NATURAL RESOURCES

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New Tree Planting

Bob Queen

"One who plants a tree, plants hope."

Selecting Your Tree

Things to consider before planting a tree.

Where to Plant

Where you plant a tree is very important. The first step is to look up. If there are overhead utilities plant a low growing tree or select a different planting site. Planting a tall growing tree where it doesn't have room to grow can lead to the unsightly and unhealthy practice of topping as shown above.

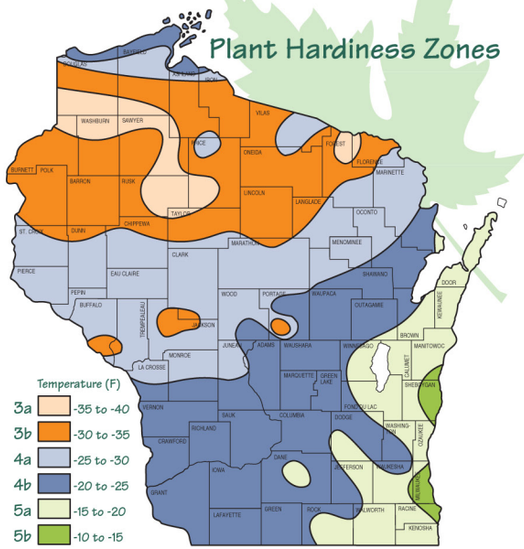
Right tree right place

The second step is to look down. Are there underground utilities, waterlines, or septic systems in the area? If so, select a different planting site.

The last step is to look around. Make sure you leave plenty of room for your tree to grow. That perfect spot right next to the house may not be so perfect when the tree reaches its mature size.

The Hardiness Zone

Trees are classified by *hardiness zone*. The hardiness zone is based on the lowest average winter temperature that a tree can tolerate. Wisconsin has six different zones ranging from 3a (coldest) to 5b (warmest). Know your hardiness zone and choose trees adapted to that zone.



Types of Nursery Stock

Bare Root –

Just as the name implies, these trees do not have soil around the roots. Advantages: less expensive, lightweight, condition of the root system is easily seen and stock recovers quickly after planting. Disadvantages: limited availability, roots must be kept moist and stock must be planted while dormant.

Containerized –

There are two types of containerized trees: 1) *potted*, a bare root tree placed in a pot with soil and 2) *container grown*, a tree that has grown in a pot for at least a year. Advantages: easy to handle and plant, and stock can be planted anytime during the growing season. Disadvantages: circling roots (if stock left in container too long) and condition of the root system is not readily visible.

Balled and Burlapped (B & B) –

These trees are dug with a ball of soil around the roots. The ball is wrapped in burlap and tied with twine. The root ball may be within a wire basket. Advantages: stock is available throughout the growing season, is often larger and provides greater visual impact. Disadvantages: expensive, heavy, difficult to move and plant and often difficult to locate the root collar (see photo at right) and plant the tree at the proper depth.

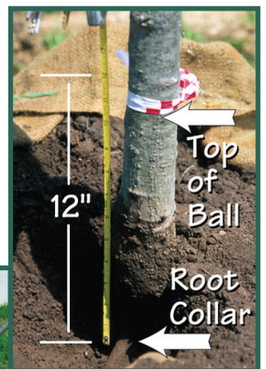
The root collar is the place where the trunk tissue meets the root tissue.

7 Steps in Planting Your Tree

IMPORTANT – Call Before You Dig!
Contact Diggers Hotline at
1-800-242-8511

Step 1 – Determine where the root collar is located within the root ball.

Step 2 – Dig a planting space two to three times wider than the root ball, but no deeper.



To determine proper planting depth, measure the distance from the bottom of the root ball to the root collar. To help the roots grow, widen the planting site by tilling or spading around the excavated area.

Step 3 – Before placing a tree in its planting space, remove all tags, ribbons, and trunk guard. Carefully roll the tree into its planting space. To avoid root damage, don't drag or lift the tree by the trunk. Gently guide the tree into the planting hole.

Invasive Species EAB "Stop the Beetle" Game

Adapted from USDA, "The Great EAB Escapade" www.hungrypest.com
https://www.aphis.usda.gov/hungrypests/youth-activities/eab-outdooractivity.pdf

Goal: Students will discover how the movement of firewood may contribute to the spread of Emerald Ash Borer and why it is important not to move firewood.

Materials:

- 25 sticks (12 short and 13 long) made into bundles of 5 sticks each
  - Each bundle should have 5 total sticks in any combination of short and long
- 5 EAB Location Leader Questions

Preparation

- Choose 5 locations in the schoolyard (learning space) to represent the following:
  - Forest
  - Campground
  - Trail
  - Backyard
  - Neighborhood Park
- Choose 5 students to be **Location Leaders**, give them their EAB Question and explain their role to them.

Invasive Species EAB "Stop the Beetle" Game

Adapted from USDA, "The Great EAB Escapade" www.hungrypest.com
https://www.aphis.usda.gov/hungrypests/youth-activities/eab-outdooractivity.pdf

PROCEDURE:

1. Read the "Back Story" to all students

"Back Story"

Introducing the Activity

Gather your group together and tell them: *There's something happening to the ash trees in our state. They're dying! Ash trees are important to both our environment and our economy.*

A beetle called the Emerald Ash Borer beetle (EAB for short) is killing these trees. It's called "Emerald" because it's a beautiful metallic green color. But it's so small that it can fit on a penny – so in fact, you probably won't ever see one. The EAB lays its eggs on the bark of the tree, and when the eggs hatch, the larvae eat into the tree. They hide inside the tree where they develop and grow, disrupting the systems that transport food and water to the tree and eventually killing it.

We think the EAB got to the U.S. from Asia by "hitchhiking" in shipping materials. It was first detected in Michigan in 2002. Now, it has been detected in other States. So we have to wonder: How did it get to so many States?

Today, we'll visit fictional "locations" like the ones we have around our state. These are the types of places that may have ash trees that could be destroyed by the beetle. We're going to learn more about ash trees and the EABs that can harm them!

STOP THE BEETLE: NOW!

www.HungryPests.com

Invasive Species EAB "Stop the Beetle" Game

Adapted from USDA, "The Great EAB Escapade" www.hungrypest.com
https://www.aphis.usda.gov/hungrypests/youth-activities/eab-outdooractivity.pdf

PROCEDURE:

1. Read the Back Story (from previous slide)
2. Have the **Location Leaders** go to their location
3. Divide the remaining students into groups of 3-5; give each group a stick bundle (5 sticks, mix of short/long)
4. As fast as they can, each team must travel to each location (give each group a different starting locations-after that, they should move to avoid "crowding").
5. When they arrive at the location, the **Location Leader** will read them their question.
    - If they answer the question correctly, they leave any stick from their bundle at the location (it represents the start of a "fire" in the fire pit before they move to the next location.
    - If they answer the question incorrectly, they must move on to the next location without leaving a stick for the fire.
6. The winning team is the first to visit every location and have the FEWEST sticks left in their bundle.
7. Once all teams have completed their journey and the winning team has been determined, gather as a group. Explain to students that the sticks they were carrying represented firewood and that the **long** sticks represented firewood that was **infested with EAB**!
8. Walk with the group back to each location and see how much EAB firewood was behind. Discuss the following questions:
    - Which locations had firewood at them?
    - Could you tell when you left the firewood that it had the EAB hidden inside?
    - What do you think will happen to the ash trees in the locations if the firewood is infested with the EAB?
    - Who put the infested firewood in the location?
    - What does this tell you about the spread of EAB and how it moves from location to location or state to state?
    - What can we do to prevent the spread of EAB?

FOREST

Question: What species of tree does the EAB love to eat?

ANSWER: Ash trees

CAMPGROUND

Question: Where does the EAB lay its eggs?

ANSWER: On the bark of Ash trees

TRAIL

Question: What spreads EAB?

ANSWER: People moving firewood

BACKYARD

Question: How does the EAB larvae kill a tree?

ANSWER: EAB larvae kill a tree by disrupting the systems that transport food and water in the tree

NEIGHBORHOOD PARK

Question: What is metallic, green and flies?

ANSWER: the Emerald Ash Borer Beetle (EAB)

Wisconsin Worm Watch Survey

Date of Survey ___/___/_____

School: _____

Land Type: Public Private Commercial Tribal

Location: _____

Are there any distinctive landmarks? _____
_____
_____

Weather Conditions: Sunny Cloudy Rainy Slightly Overcast

Air Temperature: ____° Soil Temperature ____°

Is there a duff layer (leaf litter)? Yes No Measure depth? _____

Mustard Extraction Instructions:

1. Select site
2. Clear any ground covering and lay down frame
3. Mix a 1/3 cup of mustard powder in 1 gallon of water & shake well
4. Pour over area and count & sort worms that emerge for 5 minutes
5. Make sure all the worms are gathered then pour the other half over and wait an additional 5 minutes
6. After gathering all supplies keep the worms and move on to a new location 10 to 20 feet away and repeat.

Submit findings to: **Bernie Williams** **bernadette.williams@wisconsin.gov**

101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921

608-266-0624

Remember to take pictures and record survey information on the back of this form.

Plot # ______		
Type	Juvenile	Adult
Epigeic		
Endogeic		
Anecic		

Plot # ______		
Type	Juvenile	Adult
Epigeic		
Endogeic		
Anecic		

Plot # ______		
Type	Juvenile	Adult
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Plot # ______		
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Anecic		

Plot # ______		
Type	Juvenile	Adult
Epigeic		
Endogeic		
Anecic		

LEAF-Wisconsin's K-12 Forestry Education Program
College of Natural Resources
University of Wisconsin-Stevens Point

THEME 5

The Role of Fire in FORESTS

In this Lesson you will find:

Lesson which includes

- Introduction to Wildland Fire and Background Information
- Outdoor Activities
  - Flame Game
  - Safe Campfire Practices
- Indoor/Outdoor Activities
  - Fire Safety with Smokey
  - The Fire Triangle
  - Wildland Fire Survey
  - Wildland Fire Facts & Myths

Link to corresponding lesson slideshow (google)

Optional Activities related to this theme

- DNR Videos
- DNR Resources

LEAF Lessons that support this theme

- Wildland Fire Guide

PRIMARY OBJECTIVES

- Students will examine the role of fire in forests.
- Students will differentiate between "good" fire and "bad" fire.
- Students will understand how to prevent unplanned forest fires.
- Students will explore careers related to fire in the forests.

DNR Key Target Messages

- Wisconsin has a plan to sustain the healthy, working forests vital to Wisconsin's well-being. (1)
- Everyone can help sustain Wisconsin forests (by being careful with fire, not spreading invasive species, using wood products rather than alternatives, planting and caring for a native tree, enjoying the outdoors responsibly and more. (8)

Wisconsin Standards for Environmental Literacy & Sustainability

(supported by this lesson)

- Students examine the interactions and outcomes of cycles and flows in natural and cultural systems. (Strand 2: Explore; Standard 4)

Preparation

- Read the lesson to familiarize yourself with what you need to explain and where you may need to elaborate.
- If you are presenting indoors and want to use the slideshow
    - Reach out to the teacher to make sure there is a projector and computer with internet available.
    - Email the slideshow to the teacher and ask them to have it ready for your visit.
    - Select the slides that go with your desired activity.
- You know a lot about Wildland Fire. Feel free to make this lesson your own!

Materials:

- Team Level Forester Kit
- Theme 5: Fire slideshow-(optional) https://docs.google.com/presentation/d/10TzjC9grTa_YzMausRF-toB031CsU9ZodbmLok_gknI/edit?usp=sharing

OUTDOOR SETTINGS:

Flame Game / Safe Campfires

- Wildland fire clothing, helmet, eye protection , gloves, boots
- Wildland firefighter tools—back can, bladder bag, axes, hoe, McLeod, Pulaski
- Items to represent flames that can be extinguished

INDOOR/OUTDOOR SETTINGS

- Smokey Coloring Pages, Drawing Paper, Crayons, Colored Pencils, Markers
- Fire Triangle Image
- Wildland Fire Survey
- Wildland Fire Facts & Myths Activity Sheet

Modifications

For K-2 Audience:

- Do not go over background information with students
- Use outdoor lesson or Fire Safety with Smokey Bear
- Use 75th Birthday video

For Elementary Audience:

- Brief background information
- All activities are appropriate for this grade level

For Middle School/High School:

- Use more of the background information
- Most activities can be appropriate for these grade levels
- Consider using Additional Resource…"Learning from the Ojibwe"

For Urban Setting

- Make sure you help kids connect with forests and campfires

Indoor/Outdoor

- Lessons have notations about Indoor/Outdoor activities

WILDLAND FIRE

INTRODUCTION TO WILDLAND FIRE / BACKGROUND INFO

Use the following information as you see fit for your audience.

There are two types of Wildland Fire:

- **WILDFIRES**: Unplanned fires started through human or natural (lightning) causes. Most Wisconsin wildfires are caused by human activities. Wildfires can take lives, destroy homes and property, and leave charred landscapes. Wildfire can have positive effects on fire-dependent ecosystems.
- **PRESCRIBED FIRE:** Planned fires ignited and controlled by land managers. Used to restore plant and animal habitat, reduce fuels to prevent dangerous wildfires, and control pests and diseases.

COMBUSTION *(for grades 7-12 only)*

- **Combustion** is the act of burning
- Combustion releases energy in the form of **heat**.
- **Combustion is the opposite of Photosynthesis**
  - **Photosynthesis:** Plants create energy from sunlight by combining water and carbon dioxide to make sugar and oxygen
  - **Combustion:** (requires O2) Sugars are broken down and energy is released as heat; carbon dioxide and water are components of smoke

THE FIRE TRIANGLE: **For fire to ignite and spread, three elements must be present; the elements can be thought of as the sides of a triangle.**

- **HEAT: Heat is needed to start and continue the combustion process**
  - For fire to spread, heat must move from one piece of burning fuel to another
- **FUEL: There must be fuel to burn**
  - Fuel characteristics (type, chemistry, size, shape) determine how intense a wildland fire burns and how far it spreads
  - Quantity of fuel and how it is arranged also influences fire
  - Fuels include trees, tree litter, grass, shrubs, logging slash
  - Light fuels like grass burn very fast and hot
  - Heavy fuels like logging slash burn for long periods of time
- **OXYGEN: Oxygen is needed for combustion**

If any one of these three elements is missing, the fire will extinguish!

WILDLAND FIRE

FIRE SEASON: In Wisconsin, most dangerous wildfires occur during the months of March, April, and May.

- **Dangerous Fire Situations**
  - **Low relative humidity**
  - **Strong/constant winds**
  - **High temperatures**
  - **Fuels readily available to burn**

FIRE ECOLOGY: (Cover basics only with K-5)

- **Fire causes short and long-term changes in ecosystem function, forest structure and ecosystem composition**
- **Ecosystem Function:** Ecosystem functions support life through the flow of energy and cycling of matter.
  - Wildland fire can decompose organic material (leaves, sticks, logs) and make nutrients available for plants to grow.
  - Wildland fire can clear forest trees, shrubs, and other organic material so sunlight can reach the ground and stimulate new plant growth.
  - New plant growth after fire provides food to many types of animals
- **Forest Structure:** Forest structure is the vertical and horizontal spacing of trees in a forest
  - **Vertical Layers:** Overstory and understory
  - **Horizontal spacing:** Density of tree cover across the landscape
  - Both can be changed by wildland fire
- **Ecosystem Composition**: The type and distribution of plants and animals in an area is changed by wildland fire.
  - Some plants cannot survive wildland fire (Maples); other plants are resistant / resilient (Oaks & Jack Pines)
  - Fire increases species diversity
  - Fire increases flower, seed, fruit, or nut production
  - Fire leads to eventual increase in animal numbers and species
  - Fire makes soil more fertile

WISCONSIN FIRE DEPENDENT ECOSYSTEMS

- Prairies, Sedge meadows, Oak savannas, Pine Barrens

WILDLAND FIRE

FIRE AND HUMANS

- Wildfires need a source of ignition—human activities cause the majority of fire ignitions in Wisconsin (Over 90% each year)
  - Outdoor burning
  - Sparks from railroads
  - Machinery
  - Individual and group activities in rural, forested, or grassland areas
- Early on American Indian Tribes used fire to create animal habitat and clear areas for agriculture
  - Expanded grasslands, prairies, savannas in South
  - Created tree stands of different ages, structures, and compositions in North
- 1800s: European settlers began to log, farm, build towns.
  - North, many small fires allowed to burn to clear more farmland; often small fires turned large due to fuels left behind from logging
  - Largest fire in Wisconsin's history—Peshtigo Fire of 1871 that burned in WI & MI and killed over 1,500 people and burned 1.5 million acres
  - In the south, fire reduced due to agriculture and resulted in loss of bison, elk, and cougar that depended on grasslands, prairies, and savannas
- 1904: Fire control efforts begin in Wisconsin
- 1920s-1940s: Fire prevention adopted; **Smokey Bear in 1944**
- Recent: Forest Management & Prescribed Fire

WISCONSIN BURNING PERMITS

- Burning permits are required by the Wisconsin DNR to encourage the public to burn safely.
- Burning permits are free and easy to obtain.
- Burning permits prove to be effective.

STEPS TO SAFE BURNING

1. Get a permit https://dnr.wi.gov/burnpermits/
2. Check before burning—after 11 a.m. on day you wish to burn check the daily burning restrictions for your county. https://dnr.wi.gov/topic/ForestFire/restrictions.asp
3. Follow the Rules https://drive.google.com/file/d/1SNffE-thMZVmXjMSRevFdBYGHShNddBd/view?usp=sharing

FIRE ACTIVITES—OUTDOOR SETTINGS

FLAME GAME:

GOAL: Help students understand how fires are extinguished and the tools used to extinguish them.

MATERIALS:

- Gear wildland firefighters wear (fire resistant clothing, helmet, eye protection, gloves, boots)
- Items to represent flames that students can extinguish (knock down)
- Tools to put out the fire (Back can, Bladder bags)

PROCEDURE:

- Set up "fire" ahead of time
- Show students gear—allow them to try it on, if possible
- Allow students to take turns extinguishing the fire with available tools

EXTENSION:

- Discuss/show tools that can be used to prevent spread of fire (axes, hoes, Pulaski, McLeod, etc)
- Allow students to try to use some of these tools

SAFE CAMPFIRE PRACTICE

GOAL: Practice how to safely build, light, extinguish a campfire.

MATERIALS: Safe space to build a fire, fuel, ignition source, bucket, water

PROCEDURE:

- Go through the steps to build a fire (only light if allowed on-site)
- Go through the proper steps to extinguish a fire; complete these steps using water even if the fire was not lit

EXTENSION: Discuss other times care is needed with recreational fire

- grills, camp stoves, lanterns

FIRE ACTIVITES—INDOOR/OUTDOOR SETTINGS

FIRE SAFETY WITH SMOKEY BEAR (K-2)

GOAL: Discuss Smokey's approved messages with students and have students create pictures to share Smokey's messages.

MATERIALS:

- Smokey Color Pages
- Drawing Paper
- Crayons, Colored Pencils, or Markers

PROCEDURE:

1. Share the Smokey 75th Birthday Video https://www.youtube.com/watch?v=h0A2Xreo3t4
2. Discuss Smokey's messages
    - Only you can prevent wildfires!
    - Help Smokey prevent wildfires!
    - 9-out-of-10 wildfires are caused by people!
    - Careless campers cause fires!
    - Drown your campfires!
    - Smokey's friends don't play with matches!
3. Have students color Smokey Color Pages OR create a picture of their own to share one of Smokey's messages.

DISCUSSION:

- **Why is it important to prevent wildfires?**
- **Why is it everyone's job to prevent wildfires?**

THE FIRE TRIANGLE (Grade 2/3 and up)

GOALS:

- Students will identify and describe the three sides of the fire triangle
- Students will explain how the fire triangle can be used to have a safe campfire

FIRE ACTIVITES—INDOOR/OUTDOOR SETTINGS

MATERIALS:

- Image of Fire Triangle
  - https://drive.google.com/file/d/1-iCsQxjBgV-d6wqWHZuwrpn1TdTaOIob/view?usp=sharing

PROCEDURE:

1. Explain to students that to understand fire, they need to understand the **fire triangle**. Show them the image and tell the class that for fire to ignite and burn, it needs three things: heat, oxygen, and fuel. Explain where these things come from.
2. Tell students that if you take away one of the sides of the fire triangle, the fire will go out AND that if any one of the sides is missing, a fire will not start so by understanding the fire triangle, people can prevent the start of wildfires.
3. Help students understand the fire triangle by using the following examples:

- **Suppose we want to have a campfire, what will we need to light it?** (Matches, they are a source of heat)
- **How do we keep the campfire burning?** (Add wood, that is fuel)
- **How can we make sure that the campfire doesn't get out of control?** (Make sure there is no source of heat or fuel near/around the campfire)
- **How can we make sure there is no heat/fuel around our campfire?** (We can clear away all the sticks and leaves around the fire. We can build a fire ring out of nonflammable materials like rocks. We can make sure we have water nearby to smother any fire that starts outside of the ring which is taking away oxygen.)
- **What if it is very windy? How will that affect the fire?** (It will add more oxygen and make the fire burn hotter and faster. It can also carry sparks-sources of heat-outside the fire ring. We need to make sure it isn't too windy.

DISCUSSION:

- **Explain how all sides of the fire triangle work to produce fire.**
- **Explain how understanding the fire triangle can help prevent fire.**

FIRE ACTIVITES—INDOOR/OUTDOOR SETTINGS

WILDLAND FIRE SURVEY

GOAL: Students understand that prevention of wildfire depends on the public understanding how fires start, the role of fire in nature, who is responsible for destruction caused by wildland fire and how we can be safe with fire.

MATERIALS: Wildland Fire Survey

- https://drive.google.com/file/d/19c_QV7a2ddCpwyveSwVpO-RtJVt8ihiL/view?usp=sharing

PROCEDURE:

1. The prevention of wildfire depends on the public understanding how fires start, the role of fire in nature, who is responsible for destruction caused by wildland fire and how we can be safe with fire. In this activity, you will see what you know about these aspects of fire.
2. Give each student a copy of the Wildland Fire Survey. Give them 5 or so minutes to complete the survey independently
3. Once all students are finished, go through the survey question by question and have kids share their answers. Discuss the correct answer for each question.

DISCUSSION:

- What questions had the most incorrect answers?
- How could misperceptions about these questions lead to misguided decision making or action about fire?
- What two things do you think are MOST important for everyone who lives in Wisconsin to know about wildland fire?

FIRE ACTIVITES—INDOOR/OUTDOOR SETTINGS

FIRE MYTH OR FACT:

GOAL: Students will understand that to effectively manage wildland fire, people must make decisions based on facts not myths. Students will learn important facts related to wildfire management.

MATERIALS: Wildland Fire Facts and Myths Activity Sheet

- https://drive.google.com/file/d/1AX9Ux1HVOrwl486T8b0PK9xVrcx3m50L/view?usp=sharing

PROCEDURE:

1. Ask students to define the word myth (an idea that is not supported by evidence)
2. Explain to students that for people to effectively manage wildland fire, they must make decisions based on facts and not myths.
3. Divide students into groups of two and have each pair identify each statement on Wildland Fire Facts and Myths Activity Sheet as a myth or fact. (Allow students about 5 minutes)
4. On the board or large poster paper, make two columns labeled Fact and Myth and list numbers 1-6 next to the columns
5. Go through the questions and have students raise their hand for each statement; allow students to explain their reasoning
6. Once you have totals for all statements, share the correct answers and discuss answers where students were incorrect and what would happen if people based decisions on some of the myths.
7. Tell students preventing destructive wildfires and maintaining the ecological benefits of wildland fire requires people make informed decisions based on facts.

EXTENSION: Suggest teachers/students read "Up in Smoke: Spring Means Peak Time for Wildfires in Wisconsin" by Joshua Morris, Wisconsin Natural Resources Magazine-Spring 2022.

- https://issuu.com/wisconsinnaturalresources/docs/wnr_spring_2022_final_spreads/s/15109153

Optional WIDNR Videos Related to this Theme

- **Wisconsin Smokey Singers "F-I-R-E", Smokey's 75th Birthday**
  - https://www.youtube.com/watch?v=h0A2Xreo3t4
- **Gear Up for Fire Season**
  - https://www.youtube.com/watch?v=S3QEfRupMNc
- **Be Ember Aware. Cottages and Cabins**
  - https://www.youtube.com/watch?v=TGsYUEf_aJY&list=PLC5084B6F6C8ABB2F
- **Think Your Fire is Out?**
  - https://www.youtube.com/watch?v=ypWY-BLTrW0
- **State Natural Areas-Prescribed Fire 2017**
  - https://www.youtube.com/watch?v=zGHQIzZiJQA
- **Fire Season is Here!**
  - https://www.youtube.com/watch?v=O6Fskq9a7uI

Other WIDNR / USDA Forest Service Resources

- **How Does the DNR Fight Wildfires?** (article by Catherine Koele, Wisconsin DNR Forestry News—May 9, 2022)
  - https://forestrynews.blogs.govdelivery.com/2022/05/09/how-does-the-dnr-fight-wildfires/#more-7541
- **Wildland Firefighter Employment—WIDNR**
  - https://dnr.wisconsin.gov/topic/forestfire/employment
- **Wildland Fire Careers—USDA Forest Service**
  - https://www.fs.usda.gov/managing-land/fire/careers
- **Up In Smoke: Spring Means Peak Times for Wildfires in Wisconsin** (article by: Joshua Morris, Wisconsin Natural Resources Magazine—Spring 2022)
  - https://issuu.com/wisconsinnaturalresources/docs/wnr_spring_2022_final_spreads/s/15109153
- **Fire Management Website—WIDNR**
  - https://dnr.wisconsin.gov/topic/ForestFire
- **Fire Management Dashboards—WIDNR**
  - https://dnr.wisconsin.gov/topic/forestfire/fireManagementDashboards
- **Safe BURNING—WIDNR**
  - https://drive.google.com/file/d/1SNffE-thMZVmXjMSRevFdBYGHShNddBd/view?

Review Key Messages

- Over 90% of all wildland fires in Wisconsin are started by humans.
- Education about wildland fire and fire prevention is important.
- Fire needs three elements to start/spread: Heat, Fuel, and Oxygen.
- Prescribed burning is an important tool for fire and forest management.

Recommended Teacher Resources

All teacher resources are linked in the google slideshow; please share the google slideshow with them.

LEAF RESOURCES:

- **LEAF K-12 Wildland Fire Guide**
  - https://www3.uwsp.edu/cnr-ap/leaf/Pages/LEAF-K-12-Wildland-Fire-Guide-2.aspx
- **Wisconsin Forest Tales—Chapter 1: Saenomehsaeh Finds a Way**
  - https://widnr.widen.net/view/pdf/rtwseyymi8/Chapter-1---WI-Forest-Tales.pdf?t.download=true&u=ustuql

OTHER RESOURCES:

- **Hot Topics: Wildfires & You** (The Forest Foundation) (grades 4-8)
  - https://static1.squarespace.com/static/55dc9bade4b05820bf02d414/t/56a961c71115e0522dc126dd/1453941304575/Fire+Curriculum.pdf
- **Learning from the Ojibwe: Combining Culture and Dendrochronology Tools** (The Cross-Pollinator—USDA Forest Service) (7-12)
  - https://www.fs.usda.gov/research/sites/default/files/2022-03/Cross-Pollinator_issue-5-feb2022.pdf
  - Chippewa National Forest staff are working with the Leech Lake Band of Ojibwe, the Leech Lake Tribal College, and the University of Minnesota to research and understand the historic use of fire in regional land management.

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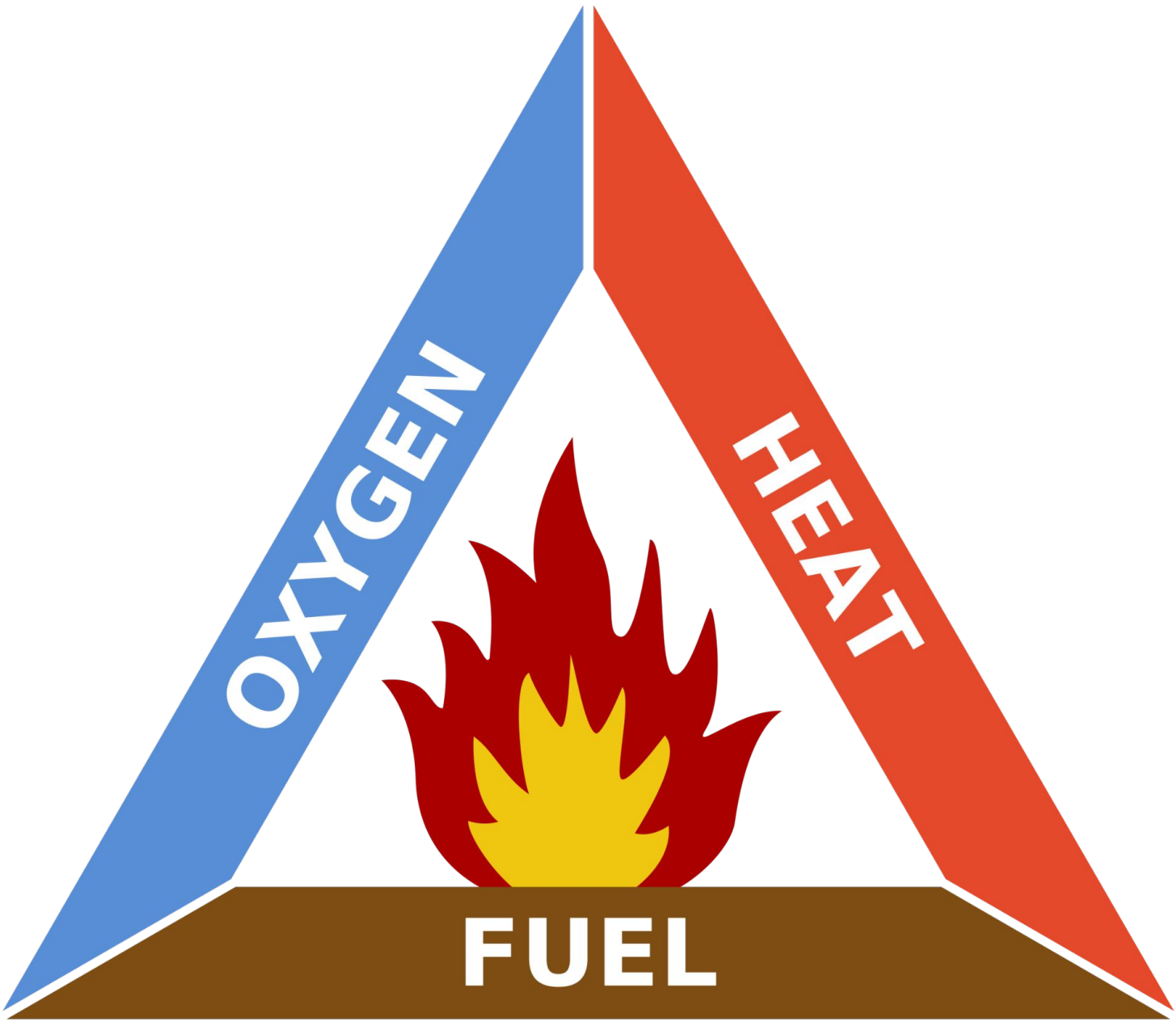
THEME 5

Supporting Resources


OXYGEN
HEAT
FUEL

Safe BURNING

PREVENTING PREPARING PLANNING

Burn responsibly...or don't burn at all!

Debris burning is the number one cause of wildfires in Wisconsin. Using fire as a method to dispose of vegetative yard waste isn't the only option. While debris burning is legal in most places, let's face it...**it's unsafe, unhealthy and a nuisance.** If you choose to burn, follow these simple guidelines to ensure you are burning SAFELY:

BEFORE BURNING

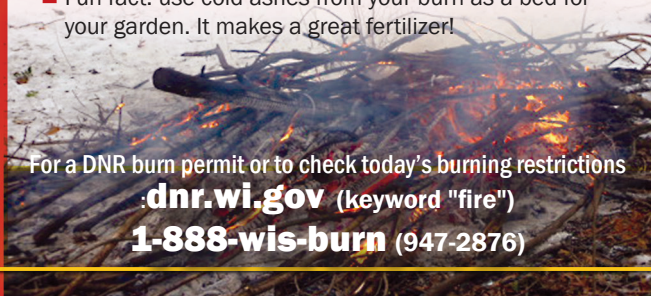
- Find alternatives to burning debris *before* deciding to burn
- Obtain proper burn permits and follow any restrictions
- Comply with local ordinances that may be more restrictive than state law
- Make certain you are only burning legal materials *(turn over for a complete list)*
- Keep an eye on the weather and avoid burning under windy conditions
- Make certain the area adjacent to the fire is free of all flammables

DURING BURNING

- Have a water source and firefighting tools handy
- Keep the size of the fire small and manageable
- Maintain a mineral soil firebreak around the burn area
- Never leave your fire unattended
- If weather conditions change for the worst, put the fire out
- If your fire escapes, dial 911 immediately!

AFTER BURNING

- Make sure the burn is completely out before leaving
- Use lots of water, drown, stir and repeat until cold
- Go back and check again later for any remaining smoke or embers
- Fun fact: use cold ashes from your burn as a bed for your garden. It makes a great fertilizer!



For a DNR burn permit or to check today's burning restrictions

dnr.wi.gov (keyword "fire")

1-888-wis-burn (947-2876)

Responsible BURNING

WHAT CAN I BURN WITH MY DNR BURN PERMIT?

Allowed

- Brush
- Leaves
- Pine needles
- Grass
- Clean wood
- Unrecyclable paper*
- Unrecyclable cardboard*

**Recycling of clean paper and cardboard is required by law!*

NOT Allowed

- Garbage
- Plastics
- Shingles
- Foam
- Structures
- Furniture
- Wire
- Metal
- Electronics
- Vinyl products
- Rubber products
- Oil-based products
- Painted, stained or treated wood

ALTERNATIVES TO BURNING

REUSE - Find someone else who can use it, have a yard sale or donate. Bring reusable shopping bags to the grocery store. Leave grass clippings on the lawn; they contain nutrients.

RECYCLE - Separate newspaper, magazines, cardboard, paper, glass, plastic and aluminum, steel or tin cans.

DISPOSE - Discard non-recyclable waste materials at a licensed landfill.

COMPOST - Mulch or collect leaves and plant clippings for composting or move brush piles in the woods for wildlife habitat.

CHIP - Collect brush and clean wood to make mulch or decorative chips, or use as heating fuel in fireplaces.

WAIT - Avoid burning in the spring. The safest time to burn is when the ground is completely snow-covered. Throw a tarp over legal materials and wait until it snows.

For a DNR burn permit or to check today's burning restrictions:

dnr.wi.gov (keyword "fire")

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PUB FR-551-2015

Smokey's friends don't play with matches!


SMOKEY
SMOKEY
HELP
PREVENT
FOREST FIRES!
Wendelin


SMOKEY
SMOKEY
AYUDE
A PREVENIR
LUMBRES
FORESTALES

The National Association of State Foresters
and
Your State Forester

NASF-FP-2

USDA, FOREST SERVICE

THEME 5: FIRE

Wildland Fire Survey

Circle the correct answer/answers.

- Which of the following is the leading cause of wildfire in Wisconsin?
    a. Debris burning
    b. Fireworks
    c. Lightning
    d. Machine sparks
    e. Smoking
    f. Campfires

2. Who is responsible for damages caused by an accidental, human-caused wildfire?
    a. The government
    b. The firefighters
    c. The person who started it
    d. The owners of the damaged property

3. (True or False) Everyone pays for the people and resources used to prevent and fight wildfires.
    a. True b. False

4. (True or False) Wildland fire is a natural process that maintains the health of forests and grasslands.
    a. True b. False

5. The danger of catastrophic wildfire changes through the season. The most dangerous time of year is the fire season, which occurs in:
    a. Winter (Dec, Jan, Feb)
    b. Spring (March, April, May)
    c. Summer (June, July, August)
    d. Fall (Sep, Oct, Nov)

6. (True or False) Firefighters can stop every wildfire.
    a. True b. False

7. What percentage of the 1500 accidental fires in Wisconsin each year is caused by humans?
    a. 20%
    b. 50%
    c. 70%
    d. 90%

8. Which of the following are legal to burn? Circle all that apply.
    a. Plastic
    b. clean wood
    c. kitchen wastes
    d. wet paper
    e. treated or painted wood
    f. Furniture
    g. yard waste (leaves, sticks, grass, etc.)

THEME 5: FIRE

Wildland Fire Survey

KEY

- 1. Which of the following is the leading cause of wildfire in Wisconsin?
  - ***a. Debris burning (35%)***
  - b. Fireworks (3%)
  - c. Lightning (5%)
  - d. Machine sparks (24%)
  - e. Smoking (4%)
  - f. Campfires (7%)

- 2. Who is responsible for damages caused by an accidental, human-caused wildfire?
  - a. The government
  - b. The firefighters
  - ***c. The person who started it***
  - d. The owners of the damaged property

- 3. Everyone pays for the people and resources used to prevent and fight wildfires. ***We pay for it through our taxes.***
  - a. ***True***
  - b. False

- 4. Wildland fire is a natural process that maintains the health of forests and grasslands. ***Eliminating fire from ecosystems can have negative impacts on forest health, and without proper management, lead to dangerous fire conditions.***
  - a. ***True***
  - b. False

- 5. The danger of catastrophic wildfire changes through the season. The most dangerous time of year is the fire season, which occurs in:
  - a. Winter (Dec, Jan, Feb)
  - ***b. Spring (March, April, May)***
  - c. Summer (June, July, August)
  - d. Fall (Sep, Oct, Nov)

- 6. Firefighters can stop every wildfire.
  - a. True
  - ***b. False***

- 7. What percentage of the 1500 accidental fires in Wisconsin each year is caused by humans?
  - a. 20%
  - b. 50%
  - c. 70%
  - ***d. 90%***

- 8. Which of the following are legal to burn? Circle all that apply.
  - a. Plastic
  - ***b. clean wood***
  - c. kitchen wastes
  - d. wet paper
  - e. treated or painted wood
  - f. Furniture
  - ***g. yard waste (leaves, sticks, grass, etc.)***

THEME 5: FIRE

Wildland Fire Facts and Myths Activity Sheet

Decide whether each statement is a fact or myth and circle the appropriate word in the parenthesis

1. Wildland fire is bad for Wisconsin's forests and grasslands. It destroys ecosystems by killing plants and animals. (*Fact or Myth)*

2. American Indian tribes living in what is now called Wisconsin intentionally started more wildland fires before settlers arrived than we do today. (*Fact or Myth)*

3. All wildland fires are dangerous and pose a threat to human life, property, and natural resources. (*Fact or Myth)*

4. Wildland fires can be planned and controlled in ways that benefit forests and grasslands and reduce the risk of catastrophic wildfires in the future. (*Fact or Myth)*

5. Wildland firefighters have the resources to stop every wildfire. (*Fact or Myth)*

6. Most destructive wildfires could be prevented if people knew how to be safe with fire. (*Fact or Myth)*

THEME 5: FIRE

Wildland Fire Facts and Myths Activity Sheet

KEY & Ideas to Discuss

Wildland fire is bad for Wisconsin's forests and grasslands. It destroys ecosystems by killing plants and animals. (*Fact or* ***Myth****)*

Wildland fire has been a part of the Wisconsin landscape for hundreds of thousands of years. Many forest and grassland ecosystems depend on fire to remain healthy.

American Indian tribes living in what is now called Wisconsin intentionally started more wildland fires before settlers arrived than we do today. (***Fact*** *or Myth)*

American Indian tribes used fire to manage for wildlife and clear areas for farming. Many of our forests and grasslands were a result of the fires started before European settlement. Because of lower population densities, their close dependence on and understanding of local natural resources, and their often nomadic lifestyle, fire was much more widely used than it is today.

All wildland fires are dangerous and pose a threat to human life, property, and natural resources. (***Fact*** *or Myth)*

Every fire is dangerous and must be treated so. Without proper planning and control, a fire can easily get out of control. Prescribed fire should be undertaken only by a responsible and trained professional.

Wildland fires can be planned and controlled in ways that benefit forests and grasslands and reduce the risk of catastrophic wildfires in the future. (***Fact*** *or Myth)*

Prescribed fire can help maintain healthy prairie, grassland, and forest ecosystems. Prescribed fire can also reduce the fuel in a forest by burning built up branches and leaves on the forest floor and eliminating smaller trees. This can reduce the risk of severe fire in the future.

Wildland firefighters have the resources to stop every wildfire. (*Fact or* ***Myth****)*

Wildfires that exhibit extreme fire behavior, such as crowning and torching, can cross roads, rivers, and the best made fire breaks. They can burn so hot that fire crews are not able to get enough water on them or move out of the way fast enough. Winds can alter the course of the fire, making any suppression strategy dangerous. Some fires are just too intense to stop.

Most destructive wildfires could be prevented if people knew how to be safe with fire. (***Fact*** *or Myth)*

Nine out of ten wildfires in Wisconsin are accidentally caused by people. Of those, more than one-third are caused by people burning garbage and other debris outside. Improper disposal of ash, careless equipment use, smoking, matches, and fireworks are causes for most of the rest. All of these activities can be done safely to greatly reduce the number of destructive wildfires.