

FIRE BRIGHT

LEARN • WORK • LEAD



Credit: Yuri Arcur, stock.adobe.com

SUPPLEMENTAL ACTIVITY BOOKLET

Name _____

Period _____



Oregon State
University

EM 9416-A | MARCH 2024

View online: <https://extension.oregonstate.edu/catalog/pub/em-9416-fire-bright-learn-work-lead>

1. LIVING IN AN ERA OF MEGAFIRE

Key vocabulary

Term	Definition or sketch
Megafire	
Wildland Urban Interface	
Wildfire risk	
Wildfire preparedness	
Fire-wise community	
Geographic Information Systems (GIS)	
Trauma	
Trauma risk and protective factors	

National cohesive wildfire management strategy

Define:

1.

2.

3.

Wildfire case studies

Use the chart below to compare and contrast the assigned community case studies.

Question	Milli Fire (2017), Sisters, OR	Camp Fire (2018), Paradise, CA
What were the conditions of the communities prior to wildfire arriving? (Consider: prior fuel reduction treatments, evacuation plans, etc.)		
What was the cause of the fire?		
How much time was there between the start of the fire and when it threatened the community?		
Were evacuations ordered? If so, when?		
What was the wildfire's impact on the community?		
How did the speed of fire spread after initial ignition differ between the two case studies?		

Did one community fare better than the other when they experienced wildfire? If so, why?

Claim:

Evidence (from the table on page 4):

Reasoning:

Wildfire Risk Explorer

Using the Oregon Wildfire Risk Explorer, answer the following questions about either your local fire district or fire-wise communities in your area.

Community explored:

Burn probability findings:

Historical fire intensity and flame length findings:

Hazard to potential structure findings:

Explain the overall risk to community (low, moderate, high) based on your findings:

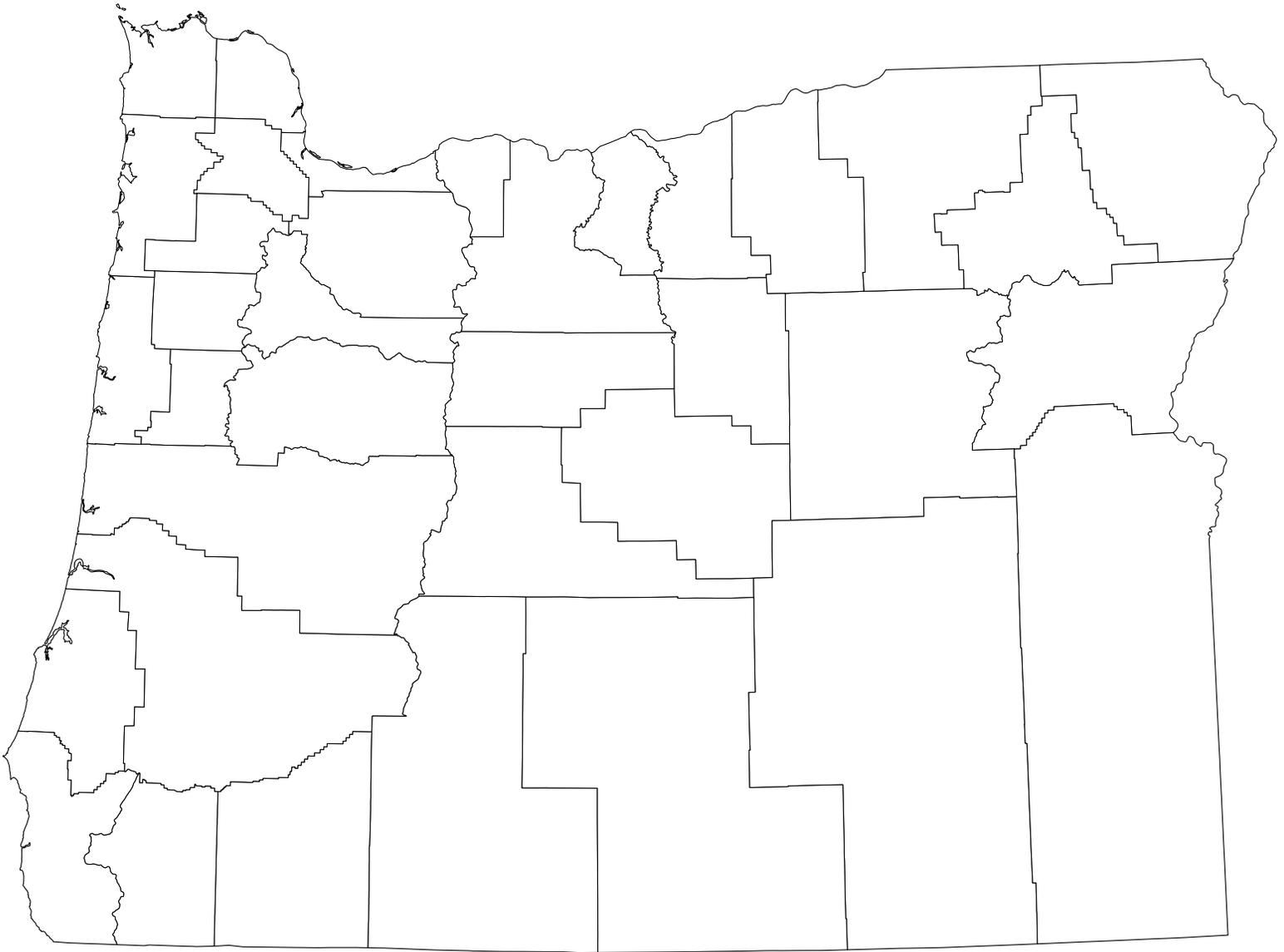
2. FORESTS IN A WILDFIRE-PRONE ENVIRONMENT

Key vocabulary

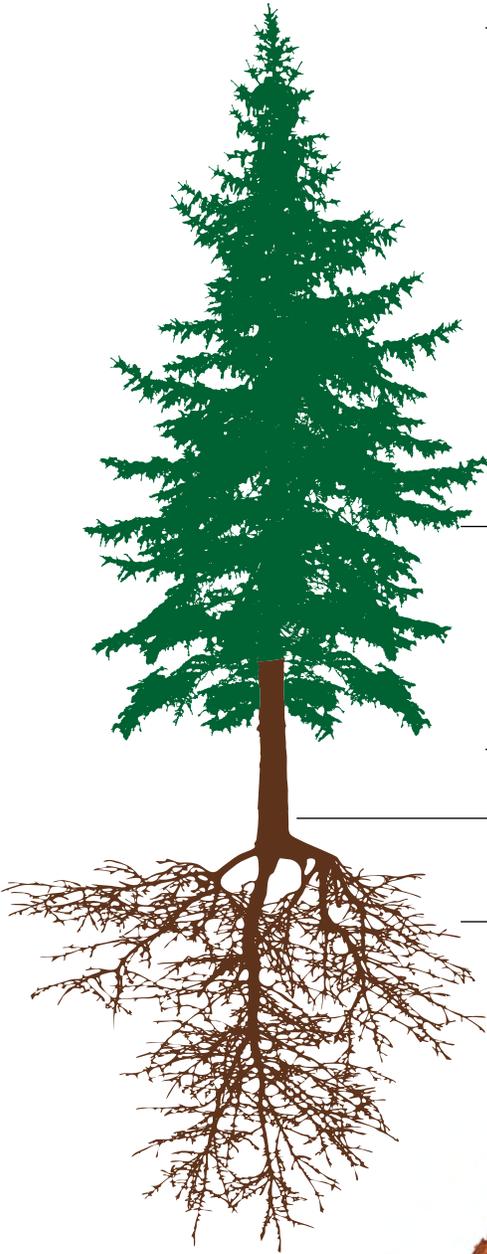
Term	Definition or sketch
Fire interval	
Stand replacing	
Low-severity fire	
Understory vegetation	
Old-growth forest	
Tree crown	
Root system	
Photosynthesis	

Forest types and fire regimes map

Color code the map below to the 12 forest types and use with the chart on the next page.



Forest type	Color	Fire regime	Key characteristics
Spruce hemlock			
Mixed conifer			
Juniper woodland			
Ponderosa pine			
Douglas-fir			
Subalpine			
Western larch			
Lodgepole pine			
Oak woodlands			



Tree anatomy

Label the image with the correct parts of a tree from this list of words:

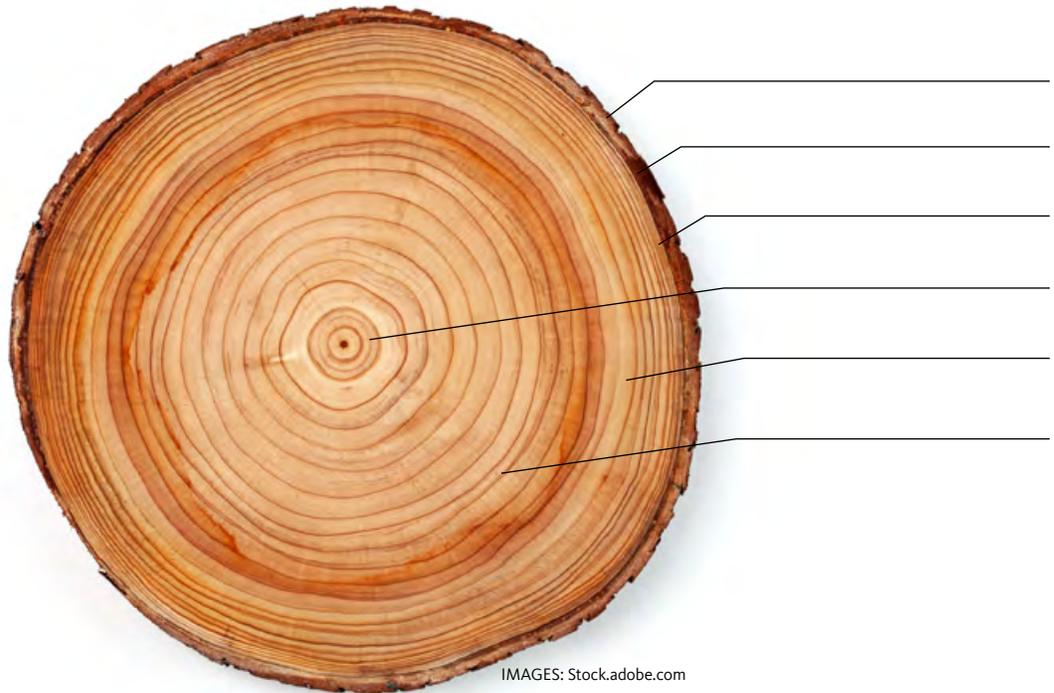
- Crown
- Root system
- Trunk
- Foliage

Four empty rectangular boxes for labeling, connected to the tree image by lines. The top two boxes are connected to the crown area, and the bottom two are connected to the trunk and root system areas.

Tree cookie

Label the image with the correct parts of a tree from this list:

- Heartwood
- Outer bark
- Cambium
- Phloem
- Xylem
- Growth ring
- Sapwood



Tree ID using a dichotomous key

Try using the words below to make your own dichotomous key in the space below. Use the key during the next field day.

- Conifer
- Deciduous
- Alternate branching
- Opposite branching
- Compound leaf
- Leaflets
- Simple leaf
- Needle bundle
- Smooth leaf
- Serrated leaf
- Lobed leaf
- Palmate shaped leaf
- Pinnate shaped leaf

Forest structure key vocabulary

Term	Definition or sketch
Canopy	
Understory	
Crown classes	
Dominant	
Co-dominant	
Intermediate	
Suppressed	
Live crown ratio	
Succession	
Pioneer species	

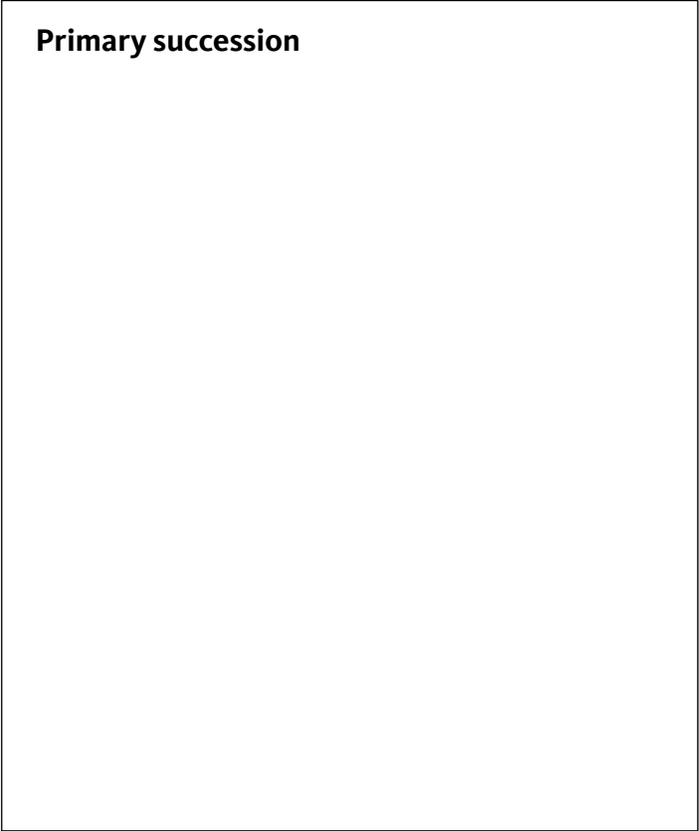
What happens after a fire?

Natural succession: Draw or describe what would occur in each part of the forest in each stage.

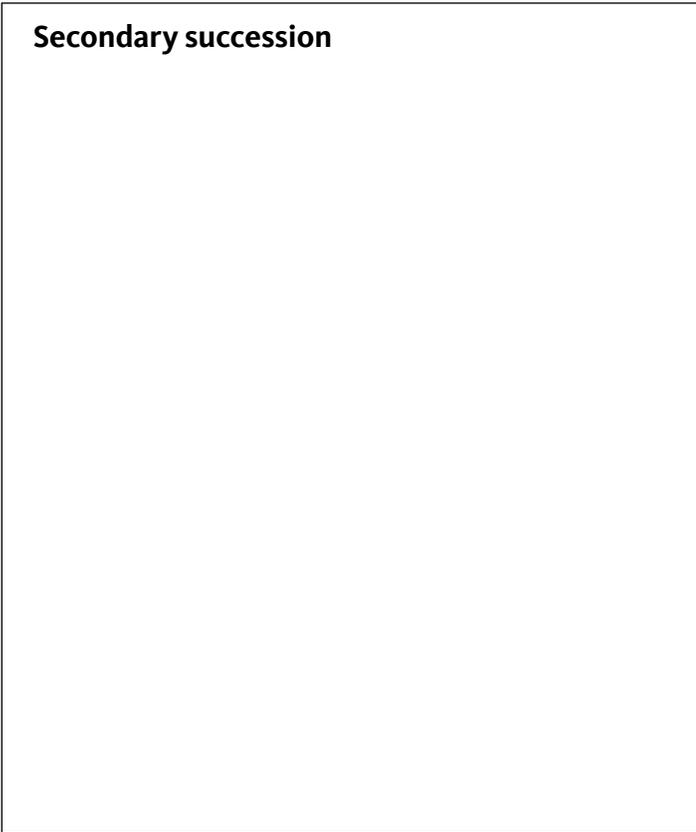
Immediately after a fire



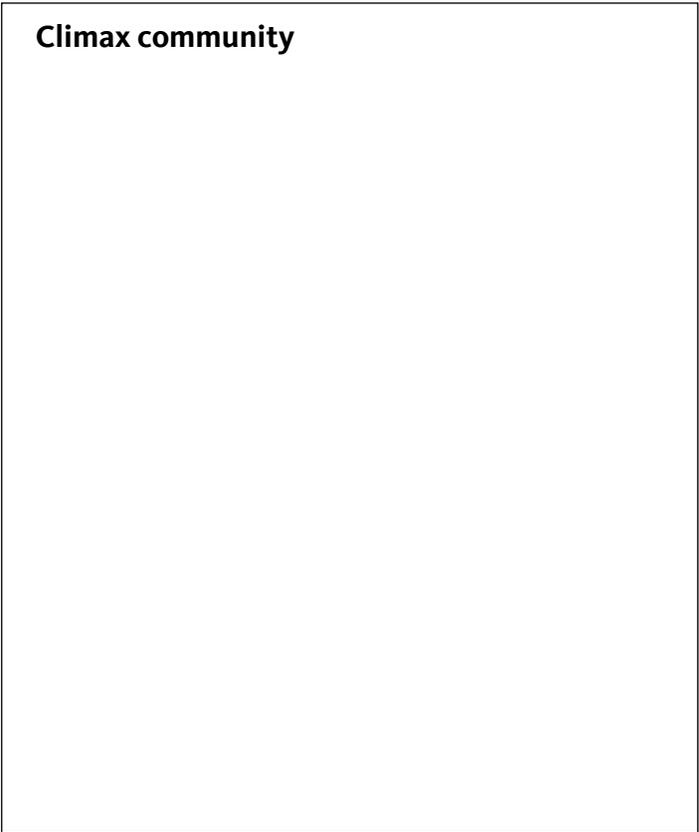
Primary succession



Secondary succession



Climax community



Natural succession

Choose a forest type and provide examples of the species present in each stage of growth after a fire.

Immediate aftermath

Primary succession

Secondary succession

Climax community

Managed succession

Choose a forest type and provide examples of the species that would be introduced in each stage of growth after a fire.

Immediate aftermath

Primary succession

Secondary succession

Climax community

Threats to forests

Insects		
Type	Why it's a threat	What evidence could it leave on trees?
Bark beetle		
Defoliator		
Wood borer		
Diseases		
Foliage disease		
Root disease		
Rust disease		
Stem decay		
Sudden oak death		

List other threats:

Panelist roundtable notes

Name

Organization

Position or title

Required skills

Education or training

How to get started

Name

Organization

Position or title

Required skills

Education or training

How to get started

Name

Organization

Position or title

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How to get started

Name

Organization

Position or title

Required skills

Education or training

How to get started

Tools of the trade

Tool	Purpose	Steps to use
Diameter at breast height (DBH) measuring tape		
Clinometer		
Increment borer		
Compass		
Densiometer		

3. EXPLORING WILDFIRE

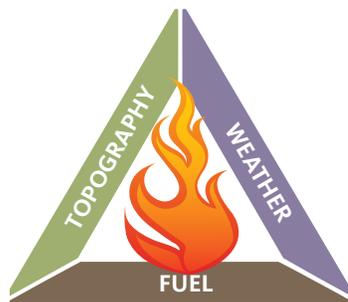
What is meant by low-severity fire?

What is meant by high-severity fire?

Compare these triangles. What do they have in common?

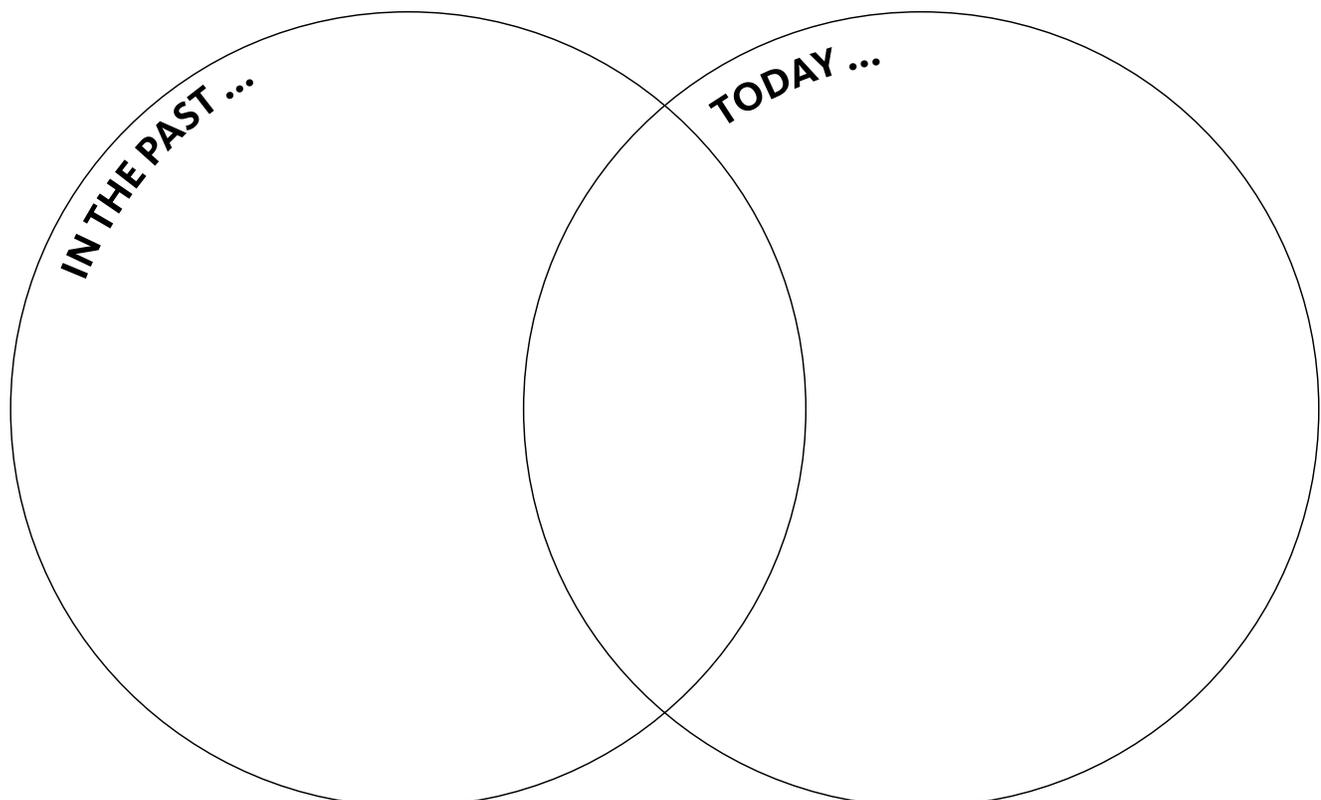


Fire triangle



Fire behavior triangle

How did/do wildfires start?



Triangle worksheets

Glue fire triangle foldable here.

Glue fire behavior triangle foldable here.

Draw and describe how a wildfire develops

Surface fire

Passive crown fire

Active crown fire

Independent crown fire

Fuels: Define the following terms

Choose a forest type and provide examples of the species present in each stage of growth after a fire.

Surface fuel

Ladder fuel

Crown fuel

Horizontal fuel continuity

Vertical fuel continuity

Draw a forest stand. Include all the fuels from the list above and label each one.

Wildfire adaptation and mitigation strategies: plants

Quick write: What are some of the ways plants protect themselves from wildfire or take advantage of wildfire?

How do these plants protect themselves from fire?

Manzanita

Ponderosa pine

Pacific madrone

Lodgepole pine

Ceanothus (buckbrush)

Summarize plant adaptation strategies.

What did you notice when the pinecone was exposed to high temperatures?

Wildfire adaptation and mitigation strategies: animals

How do the following animals adapt to wildfire?

Lizards

Elk

Owls

How do the following animals use fire to their advantage?

Eagles

Larvae

Woodpeckers

Firefighting strategies

Preventative mechanical thinning

What is it?

Why/when would you use it?

Wildfire suppression

What is it?

Why/when would you use it?

Managed wildfire

What is it?

Why/when would you use it?

Prescribed burning

What is it?

Why/when would you use it?

Comparing firefighting agencies in Oregon

Agency	Wildfire management strategies	Funding	Where
Oregon Department of Forestry			
U.S. Forest Service			
Bureau of Land Management			

4. WILDLAND FIREFIGHTING AND NATURAL RESOURCE CAREER PATHWAYS

Create a sketch of each tool you practiced with and write a brief statement to describe its function:

- Pulaski
- McLeod
- Shovel
- Combination tool
- Drip torch
- Fusee
- Firefighters' pack
- Emergency shelter
- Belt Weather Kit
- Compass
- Hose pack

Label the wildfire diagram



Situational awareness

What does **situational awareness** mean? Can you think of a time when you had to be aware of your surroundings or the situation you were in?

List the 10 standard firefighting orders:

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

How do you think the 10 standard firefighting orders help develop situational awareness?

List 18 watchout situations:

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

16.

17.

18.

Incident command system

Describe a scenario where everyone has a role and works together to be successful (example: football team).

What is the purpose of the ICS, and how does it relate to your example above?

Fire suppression limitations

Use this table from the National Wildfire Coordinating Group during the scenario practice slideshow.

Flame length	Limitations
0–4 feet	Fires can generally be attacked effectively using hand tools. Handline is more likely to hold the fire with these flame lengths.
4–8 feet	Fires are too intense for direct attack on the head by persons using hand tools. Handline cannot be relied on to hold the fire. Heavier equipment, such as bulldozers, may be more effective.
8–11 feet	Fires may present serious control problems: torching out, crowning and spotting. Any direct control efforts at the head will be ineffective. Consider indirect methods.
Greater than 11 feet	Crowning, spotting and major fire runs are probable. Control efforts at the head of the fire are ineffective. Control will be more effective at a location where the flame lengths will be less, such as along the flank or heel, or by indirect methods.

Wildfire career panel

Before you learn more about pursuing wildfire careers, work with a partner to develop questions to ask the professionals to help you better understand their careers. See Appendix A for help developing questions.

Questions:

Panelist roundtable notes

Agency

Minimum qualifications and requirements

Hiring timeline

Education and training

Salary

Job description and where they fight fire

Agency

Minimum qualifications and requirements

Hiring timeline

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Job description and where they fight fire

Agency

Minimum qualifications and requirements

Hiring timeline

Education and training

Salary

Job description and where they fight fire

Reflection: What would be your next steps in applying to one of the agencies you heard from today?

5. PROTECTING YOUR COMMUNITY FROM WILDFIRE

Defensible space

What do you think is meant by the term “defensible space”?

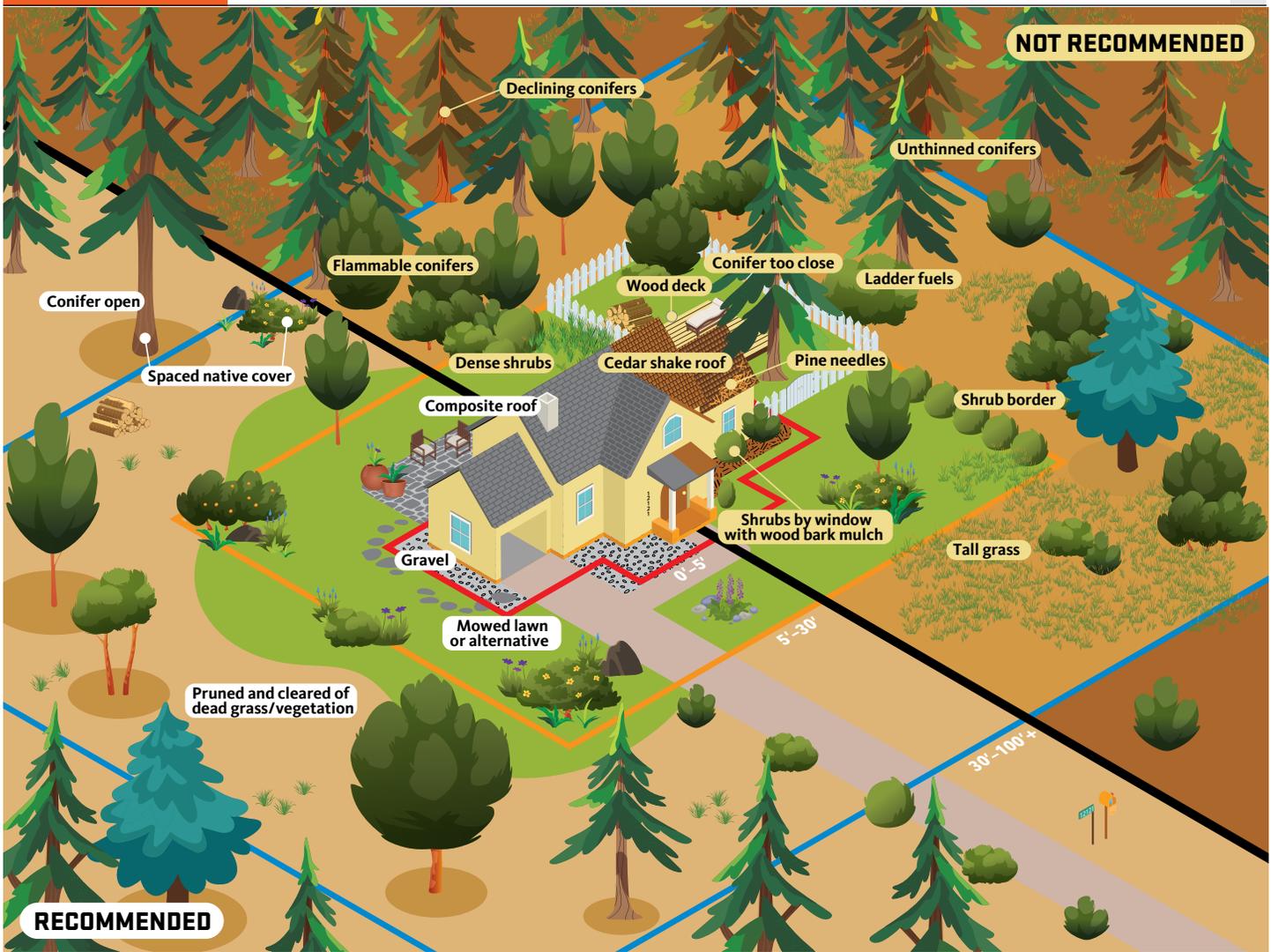
Describe how each of the following can ignite a house:

Embers

Flame contact

Radiation

Which of the three causes above is the most common way a house ignites during a wildfire?



RECOMMENDED

NOT RECOMMENDED

The practices on the left show some of the recommended ways to design and maintain your fire-wise landscape to help protect your home. The practices on the right are not recommended. Zones from 0–5, 5–30, and 30–100 feet from the house are based on the National Fire Protection Association’s Home Ignition Zone. ILLUSTRATION: © Oregon State University

When creating a defensible space around your home, identify:

- The distance from the building
- At least three actions you can take to reduce the risk of ignition

Zone	Zone location — distance from building	3 actions to reduce risk of home ignition
Immediate		
Intermediate		
Extended		

Assess your school using the defensible space checklist

How would you rate your school? (Circle one) Good Needs maintenance Needs major work

Which zone needs most work? (Circle one) Immediate Intermediate Extended

What three actions can your school community take to increase its resiliency to wildfire?

1. _____
2. _____
3. _____



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5 Simple Steps to Protect your Home



<p>1- Litter and Debris Clear all pine needles, leaves, and water the plants around your home</p>		
<p>2- Urban Fuels No chemicals, and reduce fuels around your home</p>		
<p>3- Grass Keep your grass mowed below 4 inches</p>		
<p>4- Vegetation Clear all plants around your windows</p>		
<p>5- Roof Cleaning and Gutters Clean your gutters and roofs</p>		



More Information

Oregon Department of Forestry 541-664-3328





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5 Pasos Simples Para Proteger Tú Casa



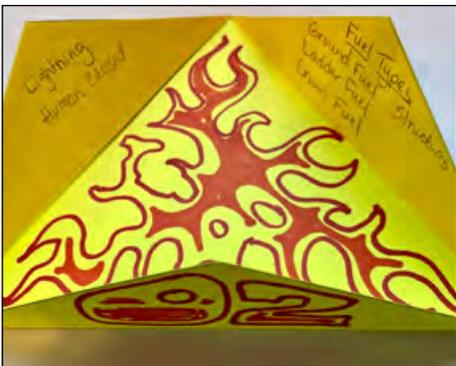
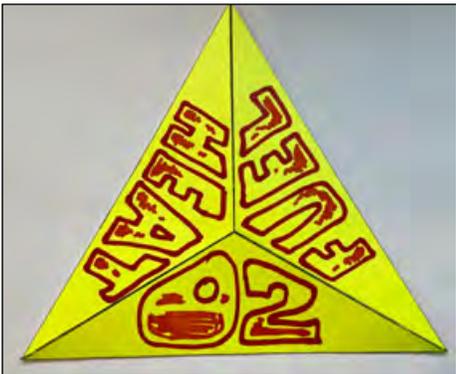
<p>1- Basura Y Escombros Limpia todas las ojas de pino, ojas, y regar las plantas alrededor de tu casa.</p>		
<p>2- Combustibles Urbanos sin productos quimicos, y reducir los combustibles alrededor tu casa.</p>		
<p>3- Césped Mantenga tu césped cortado abajo de 4 pulgadas.</p>		
<p>4- Vegetacion Limpiar todas las plantas alrededor de sus ventanas</p>		
<p>5- Limpieza De Tejados Y Canaletas Limpar tus canaletas y techos.</p>		



Más información

Departamento De Silvicultura En Óregon 541-664-3328





Fire triangles.



Students manipulate their tinker trees before setting them alight.



Students staff an outreach table.



Students talk to community members. ALL PHOTOS: Jennifer Payne



Students build and experiment with matchstick forests.

PHOTOS: Jennifer Payne



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