



FOREST ECOLOGY ENVIRONMENTORS LESSON PLANS

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Ecotrust

**These lesson plans are open for use, but please do not publish. Finalized lesson plans will be provided in a published manuscript in November 2020.
Cover photo by Kimber Anderson.**

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Yakama Nation Natural Resources staff
Heritage University
Intertribal Timber Council
Affiliated Tribes of Northwest Indians
Economic Development Corporation
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WELCOME

The Environmentors program supplements student courses. Students should still receive primary instruction from their current course work and educators. If students need to engage in credit recovery or need an alternative source of credits, we worked with the principal, teacher, assigned mentor, and student to meet the standards and products necessary to complete course credits.

The Environmentors class met Wednesdays and Fridays from 12-1:30PM for 6 weeks. There were 6 weeks of instruction with a total of 8 lesson plans. The last two lesson plans were focused on one-on-one mentoring to finish research posters and work with students to prepare them for their research poster presentations in week 6. During week 5 we only met for Wednesday June 3, because Friday June 5 was Treaty Days and a holiday. To make up for missing a day the students met on Monday, June 8 during week 6 to finish their research posters and practice presenting. The students met with their mentors on Wednesday, June 10 for a final practice run of their presentations before presenting to their research posters.

Professors, instructors, and staff from Heritage University, Yakama Nation Tribal School, and Yakama Nation Natural Resource Programs attended the student presentations. Examples of student activities and posters are included in the appendices.

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LESSON PLANS

Lesson Plan 1

INTRODUCTION

Theme

Overview of Course / Expectation Setting,
Relationship Building

Student will

- Meet mentors, peers, instructors
- Understand course expectations
- Learn basic Zoom technology skills
- Receive introductions to invasive species and wildlife cams

Links

[NPR Murder Hornets](#)

[YNTS Urban Forest Ecology YouTube Channel](#)

Agenda

- Instructor and Mentor Introductions
- Zoom Activity
- Calendar and Expectations
- What are Invasive Species?
- Zoom Breakout Rooms
 - Invasive Species Control Activity
 - Intro to Wildlife Cams

Activities

Introduce Instructors and Mentors

Introductions to Zoom

- Have your camera on if available, it helps us and your peers see that you're engaged, not napping / on social media, and you're showing up for your peers and instructors
- Adding a virtual background
- Rename your zoom name
- Go to reactions and raise your hand and clap
- Mute function
- Chat everyone / private messages

Expectations

- Show up on time
- Write name in chat everyone for attendance
- Ask questions, drop answers to questions, copy/paste links. Sometimes I may ask you to speak up and use your voice to answer a question, other times I'll ask that you drop your answers in the chat box.

Materials needed

- Make sure you have something else to write on and take notes such as another tablet, laptop, phone, pen / pencil and paper
- Use different colors, highlights to keep engaged
- Bring snacks and water



Lesson Plan 1 continued

Accessibility

Chat answer (Everyone or Private)

Are your accessibility needs met? We want to work with you to make sure you are able to participate effectively, so this will help us adapt activities to your needs.

- Do you have a good internet connection?
 - Do you need to have your video camera off at times?
 - Are you able to be at home during class time, or do you need to be somewhere else?
 - Are you able to write? (laptop or pen / pencil and paper)
 - Speak up and participate in class—more engaging and fun; you can also use the chat option in some cases
-

Group Activities

- Invasive Species — what are invasive species?
- NPR Murder Hornets

What are murder hornets?

What do they do?

What are they using to trap the hornets?

How do you capture the worker bees?

Mentor Breakout Session

- Link to use:
[YNTS Urban Forest Ecology You Tube Channel](#)
 - Mentors will introduce students to the trail camera channel and watch a few uploaded videos. Ask students what they see:
 - Is it day/night?
 - What animal do they see? What is it doing?
 - What plants do you see?
 - What's the temperature?
 - Introduce them to the TrailCams
-

Lesson Plan 2

URBAN FORESTS

Theme

What are Urban Forests?

Why are they important?

Student will

- Learn what are urban forests
 - Learn why urban forests are important
 - Learn map elements
 - Learn how to make a map
-

Links

[American Forests Benefits of Urban Forest](#)

[google.com/maps](https://www.google.com/maps)

Agenda

- Intro/Check-in/Attendance/Review Agenda
- Expectations and accessibility
- What is an urban area? A rural area?

Activities

Write in the chat what you would find or do in an urban area?

Group discussion: do you think Toppenish is an urban area? why/why not?

Have students watch this video and answer these two questions:

- What is an urban forest?
- List 2 benefits of urban forests

Watch:

[American Forests Benefits of Urban Forest](#)

- Group discussion

Map Activity

- Explain parts of a map: a Title, a Legend, a Grid, a Compass Rose to indicate direction, and a Scale

In breakout groups have students:

- Navigate to [google.com/maps](https://www.google.com/maps)
 - Find Toppenish, WA
 - Switch to Satellite view
 - Navigate to urban forest at high school
 - Screenshot urban forest
 - In paint, or photo edit, add in the elements of the map (Title, Legend, Grid (this was too hard w/ current tech), Compass Rose, Scale
 - Add map to student folder when complete
-

Lesson Plan 3

SCIENTIFIC PROCESS AND RESEARCH QUESTIONS

Theme

Scientific Process and Research Questions

Student will

- Create Ichishkiin Database
 - Name Urban Forest
 - Introduction of example research poster (final project)
 - Learn the scientific method
 - Choose their research topic
 - Identify their research question
 - Find two articles and read them that they would need for their research question
-

Links

[Introduce Ichishkiin Database](#)

[Scientific Method Worksheet](#)

[Research Poster Template](#)

Agenda

- Check-in/intro
- Introduce Ichishkiin Database
- Research Poster Template
- Scientific method and forming a research question
- Scientific Method Worksheet
- Mentor breakout activities
 - Choosing a research topic
 - Research 2 websites for research topics and answer questions

Activities

Expectations: video cam, snacks, water, check-in about interruptions, rename your zoom name

[Introduce Ichishkiin Database](#)
(plants, trees, places)

Naming the urban forest: YNTS Urban Forest

Overview of [Research Poster](#)

[Scientific Method Worksheet](#)

In breakout groups have students:

- Have students create a new google doc in their student folders “Research Topic and Question”
- Guide students in choosing their research topics
- Have students work together and brainstorm research topics for each other if more than one student in a group.
- Once students have decided on a research topic and question, write it in the scientific method worksheet

Lesson Plan 3 continued

- Work together to ID google search words
- Add map to student folder when complete
 - Teach them about keywords for googling information i.e. searching just otter instead of river otter could lead to results w/ the wrong otter species

Find 1 website about their chosen topic

- Complete Writing assignment
 - What is this website about?
 - How does this website relate to your chosen topic?
 - Write 2 questions you think the website could answer.
-

Group Discussion

- Student share out of research topic with/ class, ask if each student understands the topic, each student write in chat box 1-2 questions for their peers related to the topic.
-

Reflection

Many students did not complete the mentor breakout activity and needed two days to review

Lesson Plan 4

FOREST COMMUNITY

Theme

Forest Community

Student will

- Learn key terms of a Forest Community
 - Learn factors that can influence a forest community
 - Apply lessons learned to field observations for research
-

Links

[Forest Community Slide Deck](#)

[YNTS Urban Forest Ecology YouTube Channel](#)

[Wildlife Cam Screen Capture](#)

[Field Journal Template Example](#)

Agenda

- What is a forest community?
- What influences a forest community?
- Introduction to field journaling

Group Activities

Check-in and intro

Introduce concept of a system

- Basketball game—write in the chatbox what do you need to play basketball game

[Forest Community Slide Deck](#)

- **Forest**—is a complex system with many interdependent elements, including plant and animal species, soil and water, and cycles and processes.
- **Community**
 - What does community mean to you?
 - What does community mean to a beaver? A river otter?
 - What can change a beaver's community?
 - Group or association of two or more different populations or species occupying the same area
- **Species**—a group of living organisms consisting of similar individuals that are capable of exchanging genes.

Factors that can influence a Forest Community

- **Population**—number of different species; number of animals of a species
- **Species richness**—number of different species
- **Species composition**—the amount of each species within the community (think of this like percentages)

Introduction to Field Journaling

- Preview [Wildlife Cam Screen Capture](#) (one journal entry per sighting)
- Ask students:
 - Describe the habitat, weather, wildlife and wildlife activity, time and date, temperature.
 - Make connections and questions to previous sightings
 - Share out one question you have about this observation

Lesson Plan 4 continued

Mentor Activities

- Complete previous Scientific Method Writing Assignment
- Introduce students to the template with the goal of recording and organizing their data
- Use [Field Journal Template Example](#) as an example to fill out the template together, then use the wildlife camera links to watch and record sightings.

Reflection

See Field Journal Template in Appendices as well as “Student Data Worksheet”.

The “Student Data Worksheet” ended up replacing the Field Journal Template as a means to record, organize, and analyze data.

Lesson Plan 5

GIS AND SOILS

Theme

GIS and soils

Student will

- Students will learn what is GIS
 - Students will learn real-life applications of GIS
 - Students will learn basic soil properties
 - Students will write introduction sections of research poster
-

Links

[Wolf Voyageurs Project Video](#)

[Soil Types Slides](#)

[Scientific Method Worksheet](#)

[Overview of Research Poster](#)

[Web Soil Survey](#)

[YNTS Urban Forest Ecology YouTube Channel](#)

Agenda

- Check-in/intro
- Reflection of Course Content
- Wolf Voyageurs
- How do we track wolves?
- GPS and GIS
- Soil types
- Web Soil Survey

Activities

General Check-in and links

Expectations: video cam, snacks, water, check-in about interruptions, rename your zoom name

Review of Course Content:

- Google Maps aerial image of the xwayama forest
- Your research topic/question
- Website with 2-3 sentences of writing
- A field journal observation using the wildlife cams

[Wolf Voyageurs Project Video](#)

How do we track wolves?

GPS and GIS

[Soil Types Slides](#)

[Web Soil Survey](#)

- Demo navigating to a location other than Topenish and identifying the soils
 - Use key to identify soils
 - Complete “SOILS” section of Scientific Method Worksheet
-

Mentor Activities

Open [Web Soil Survey](#)

Find Urban Forest near High School

Complete “SOILS” section of

[Scientific Method Worksheet](#)

- What are the five soil types found in Xwayama forest?
 - Write what each soil type means (Try using Google: “what is ____ soil)
-

Lesson Plan 6

RESEARCH POSTERS

Theme

Research Posters

Student will

- Learn how to navigate Google Suite
 - Learn the components of a research poster
 - Apply the scientific method to their research
-

Links

[YNTS Urban Forest Ecology YouTube Channel](#)

[Scientific Method Worksheet](#)

[Research Poster](#)

[Student Data Worksheet](#)

Agenda

- Check-in and review course content
- Overview of components of a research poster
- Overview of introduction section
- Use research materials to complete introduction section of research poster

Group Activities

By now you have:

- A Google Maps aerial image of the xwayama forest
- your research topic/question
- a website with 2-3 sentences of writing
- Field journal observations using the wildlife cams
- Soils information

[Scientific Method Worksheet](#)

Overview of Research Poster [template](#)

- Discuss components of the research poster
 - Demonstrate how to navigate and edit in Google slides
 - Overview of “introduction” section in research poster
-

Mentor Activities

Using your research materials ([Scientific Method Worksheet](#), [Field Journal Observations/Student Data Worksheet](#), and [YNTS Urban Forest Ecology You Tube Channel](#)) have students complete the “introduction” section of their research poster.

Reflection

At this point, the students have been recording data observations of wildlife in the Student Data Worksheet instead of the Field Journal Template.

Lesson Plan 7

RESEARCH POSTER RESULTS

Theme

Research Poster Introductions and Results

Student will

- Form hypotheses
 - Write draft habitat descriptions in the research introduction section of their research posters
 - Make scientific observations
 - Analyze and draw conclusions from data collected through observations
 - Synthesize and write up data findings
-

Links

[YNTS Urban Forest Ecology YouTube Channel](#)

[Scientific Method Worksheet](#)

[Student Data Worksheet](#)

[Research Poster](#)

[Soils information](#)

Reflection

At this point in the course, students were at different stages of making research observations and completing research poster sections. To allow for this variation students who were further along could strengthen research with additional observations and trend analysis.

Agenda

- Moving from a research question to hypothesis
- Overview of results section of Research Posters
- Mentor activities:
 - Continue adding research observations to Student Data Worksheet
 - Write up observations in results section

In-Class Activities

Expectations: video cam, snacks, water, check-in about interruptions, rename your zoom name

Student Contact Info

By now you have:

- A Google Maps aerial image of the xwayama forest
 - your research topic/question
 - a website with 2-3 sentences of writing
 - a field journal observation using the wildlife cams
 - [Soils information](#)
 - Introduction to [Research Posters](#)
 - Overview of results section
-

Mentor Activities

Complete Introduction draft (hypothesis, research topic description, soil description).

Work with students to continue to record observations in [Student Data Worksheet](#) and write observations in result section of [Research Posters](#).

Lesson Plan 8

PLANT IDENTIFICATION

Theme

Plant Identification

Student will

- Learn about basic leaf structure and arrangement
 - Learn to describe habitat community and structure
 - Perform research for their project
-

Links

[Plant ID Leaves Slides](#)

[YNTS Urban Forest Ecology YouTube Channel](#)

[Scientific Method Worksheet](#)

[Student Data Worksheet](#)

[Research Poster](#)

[Soils information](#)

Agenda

- Introduction to plant identification
- Overview of plant identification questions in introduction
- Mentor activities:
 - Complete research poster introduction
 - Continue adding to results section of research poster
 - Continue to log new observations in student data worksheet

Group Activities

Expectations: video cam, snacks, water, check-in about interruptions, rename your zoom name

Student Contact Info

By now you have:

- A Google Maps aerial image of the xwayama forest
- your research topic/question
- a website with 2-3 sentences of writing
- a field journal observation using the wildlife cams
- [Soils information](#)

Introduction to Plant Identification

- Leaf Arrangement and Structure
 - [Plant ID Leaves Slides](#)
 - Complete introduction section that includes plant identification
-

Mentor Activities

- Begin moving content from scientific method worksheet to research poster (introduction drafted on the poster)
 - Continue building your poster
 - Log new wildlife cam observations
-

Reflection

The introduction took students the longest, because we were building out the habitat description. After Lesson Plan 8, students had two “working classes” devoted to one-on-one time with their mentors to complete the research posters and prepare for their final research poster presentation. I would recommend a full additional day for students to work with mentors on finishing their poster and preparing their presentation.



APPENDICES

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Original Content

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Student Activity Examples

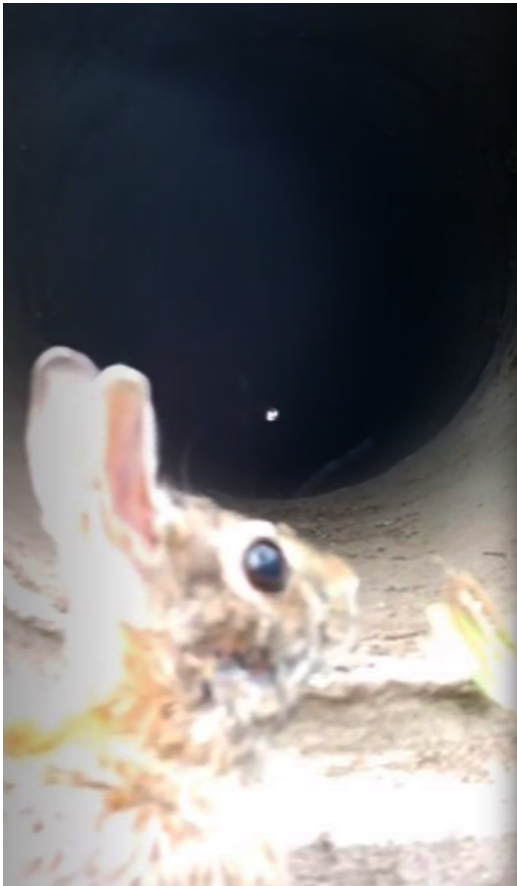
29

Slide Deck Resources

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Curriculum Resources
& Contact Information

ORIGINAL CONTENT



Wildlife camera footage

Wildlife camera footage uploaded to YouTube channel site each week by Yakama Nation Natural Resource staff

[YNTS Urban Forest Ecology YouTube Channel](#)

Xátxat

Duck

*Anas
platyrhynchos*

Introduce Ichishkiin

Students built out this database with the help of mentors so they could include Ichishkiin names alongside the common and scientific names for plants, animals, and natural resources in their research posters.

[Introduce Ichishkiin Database](#)

STUDENT ACTIVITY EXAMPLES

Scientific Method Worksheet Example

Students used the scientific method worksheet to learn about the scientific method and choose their research topics. The worksheet also includes student in-class activities related to habitat description (i.e. Soils and Plant Identification activities).

Research Poster Template Example

Students used the research poster template to present their research to Yakama Nation Tribal School and Heritage University staff and Yakama Nation Natural Resource Department staff.

Student Data Worksheet Example

The “student data worksheet” replaced the field journals in the course. Students used the data worksheet to record their wildlife observations and analyze their data for their research posters

Important Links from Class:

[Link to all Wildlife Cams YouTube Playlists](#)

[Link to Tree ID Photos](#)

[Link to Soil Information and Photos](#)

[Link to Urban Forest Google Map Photos](#)

Your Website Links:

[Beaver swimming in Pond](#)

Research Topic	Question
What are you studying? Birds	What are you trying to answer through your research? Can birds see at night?

Hypothesis
What we're trying to prove or disprove through our testing
If birds are recorded flying at night, then they can see at night.

Introduction
<i>The introduction addresses the reason "why" you chose this topic. This section should also include general information about your topic.</i>
<ul style="list-style-type: none">Describe xwayama forest. Where is it located? What does the name mean? What does it look like? What animals and plants are there? Is there or is there not water? What is the general climate (weather) of the area? Xwayama forest (Aka golden eagle forest) has many types of animals and plant species the location is right next to the infamous Yakama Nation Tribal School and alongside the highway 97, the description of the forest would be that its made up of trees that still need to be identified but will be soon it also has a little nature made pond it may look like a grotto from time to time or a mysterious forest to some but originally it's just a small piece of nature that escaped the city life of everything else temperature varies between to degrees in the forest one being 26f being the lowest and 92f being the highest temperature.Introduce your topic:What are you studying and why did you choose this topic? My topic is about the culverts and what type of animals use them and why they would use them.General information about the topic:

The culverts are man made tunnels mainly built under roads for small animals that need to get to point A to B safely also we'll be studying one type of animal commonly known as the otter because during the culvert cam video we mainly saw river otters using them more than the other animal and i want to know why.

- What are the basic physical characteristics of the animal?
 - What is their native distribution range?
 - What the otters eat are fish, smaller mammals, turtles
 - The otters are both but mostly active during the night
 - Their behaviour is mainly secretive and shy but if captured they try to resist by being more bitey
 - The otters like to be alone
 - What is a traditional story about this animal?
 - Are there any culturally specific uses or traditions associated with this animal or the plants in its habitat or diet?
- Information you found from the website you researched in week 2
- Photos, illustrations, graphs, timeline, and/or other visual data representations

Introduction continued on following pages

River or Northwest Sandbar Willow (*Salix sessilifolia*)

- River willow (*Salix fluviatilis*) now merged as the same species.
- Medium shrub to small tree from 7 to 22 *ft* tall with a narrow, upright, compact form and multiple branches at the base.
- Closely resembles coyote willow with which it may hybridize.
- Spreads by underground shoots (suckers, rhizomes) to form thickets or dense clumps.
- Performs best in full sun.
- Prefers moist sands, gravels and silts, but tolerates nearly all soil textures where moisture is not limiting; tolerates perpetual flooding.
- Colonizes sandbars and other sites along streams, ponds, and lakes.
- Low elevations from sea level to 700 *ft*, from southwestern British Columbia south to Washington and southern Oregon west of the Cascades.
- Summer Key - Leaves long and narrow, lance shaped or linear; pointed at the tip and tapered at the base; light green and sparsely to moderately hairy above and below; paler below with a whitish, slight waxy coating; margins smooth to many scattered teeth. Twigs brown to green and somewhat silky when young.
- Winter Key - Buds tan or light brown, sometimes with minute hairs at the base. Branchlets dull brown, to orange-red or tan color sometimes fuzzy when young. Bark of older limbs and trunks grayish-brown and scaly.
- Propagates easily from dormant hardwood.
- Plant as cuttings in the Bank and Overbank Zones.



River or Northwest Sandbar Willow (*Salix sessilifolia*)



<p style="text-align: center;">SOILS Use Soil screenshot to answer https://drive.google.com/file/d/1PMY-HWHUAXD98jEsIDp_GmBJvkzDodnj/view?usp=sharing</p>	
What are the five soil types found in Xwayama forest?	
Write what each soil type means (try using google: "what is ____ soil)	
<p style="text-align: center;">PLANT ID Use slides to answer: https://docs.google.com/presentation/d/1oS3WF5IF4u_hU3u4WGXTpSwO7BZpi729t3-sNNUaKLs/edit?usp=sharing</p>	
Describe the leaf structure and arrangement for specimen A: Chinese Elm Tree.	<i>Leaf structure is petiolate, leaf venation is pinnate, leaf margin is serrated, leaf arrangement is alternate</i>
Describe the leaf structure and arrangement for specimen B Sandbar Willow.	<i>Leaf structure is sessile, leaf venation is pinnate, leaf margin is entire, leaf arrangement is opposite</i>
<p style="text-align: center;">Sandbar Willow Hint: use the common riparian plants p. 76-77</p>	<p style="text-align: center;">Chinese Elm Tree Hint: Use Google</p>
<ul style="list-style-type: none"> • Is this species native, non-native, and/or invasive? • What is the scientific name for this species? • What is the average height for this species? • What habitat characteristics can this species grow in? <ul style="list-style-type: none"> ○ How much sun? ○ What soils does it like? ○ Where does it typically grow? ○ What elevation range is it found in? 	<ul style="list-style-type: none"> • Is this species native, non-native, and/or invasive? • What is the scientific name for this species? • What is the average height for this species? • What habitat characteristics can this species grow in? <ul style="list-style-type: none"> ○ How much sun? ○ What soils does it like? ○ Where does it typically grow? ○ What elevation range is it found in?

<p style="text-align: center;">Methodology</p> <p>Questions that should be answered here: how did you observe the wildlife? Where was the</p>

data located? Who collected the data? What tools did you use to observe the data? How did you analyze the data (review, make observations, draw conclusions from those observations). What did you use to find information about your topic besides the youtube videos? How did you find this additional information?

What You Did	How You Did It
1. Reviewed Wildlife Camera Footage	Videos were uploaded to class YouTube Playlist
2.	
3.	
4.	
5.	

Results

What did you find from your observations from YouTube, information from the internet and other resources.

Conclusions

Write one paragraph. Restate the problem or issue and the main findings from your study.

Recommendations

This is where you can include suggestions for future research. For your chosen topic, what should researchers focus on? Why should they focus on these areas? What challenges did you encounter and what do you need to overcome these challenges in the future? What outstanding questions or concerns do you have about your topic that merit future study?

Title of Research Project

Student Name | Date | YNTS EM Program

Hypothesis

Write your Hypothesis here.

Introduction

The introduction addresses the reason “why” you chose this topic. This section should also include general information about your topic.

This section could include:

- The Map of Xwayama Forest (*figure 1*)
- a traditional legend or story about your topic (*optional*)
- **Description of habitat.** The description of habitat should come from your observations and analyses of the **wildlife cams, soils activity, and plant ID activity.**
- Answers to the introduction section questions from the scientific method worksheet

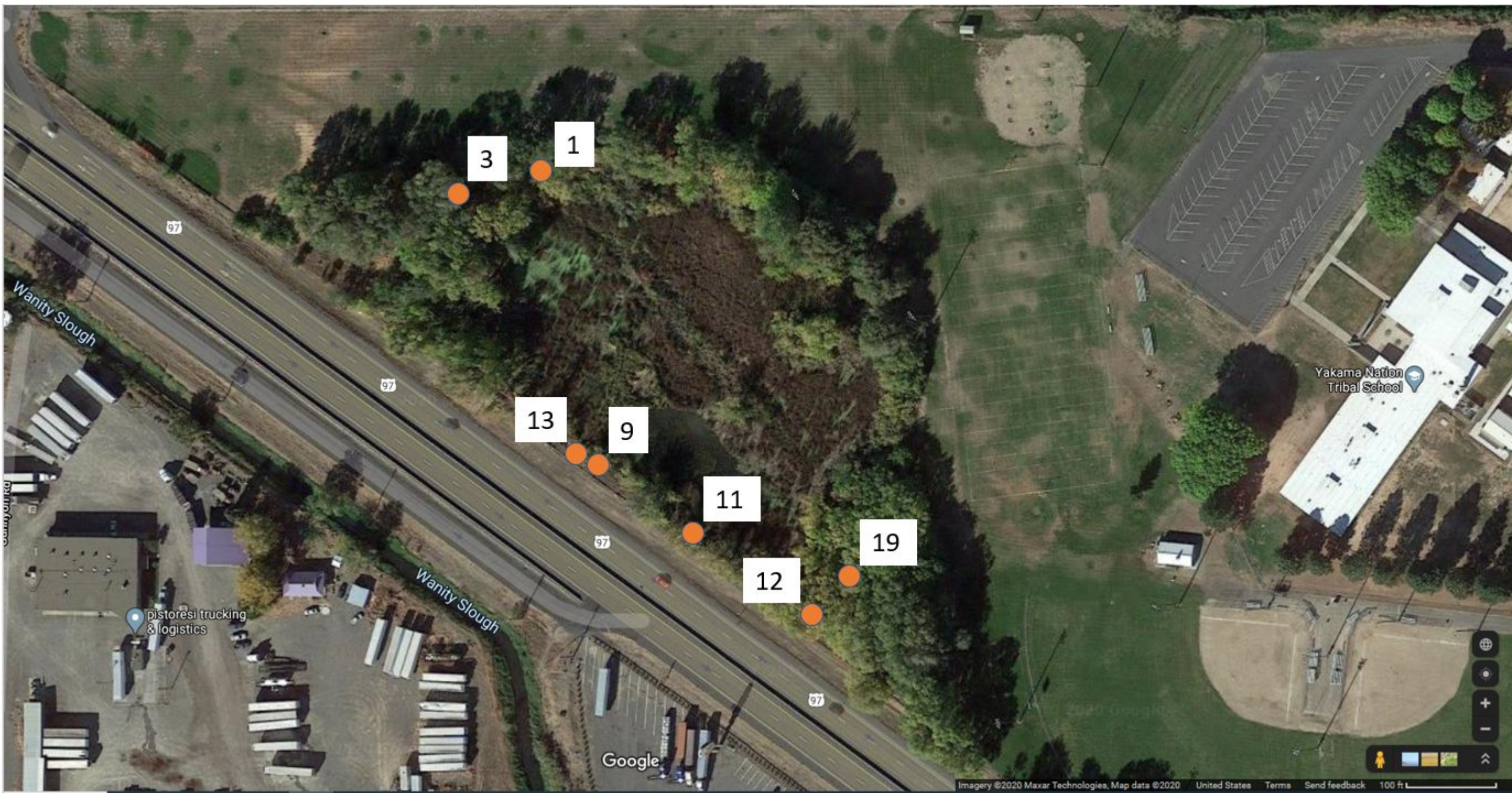


Figure 1. Map of Xwayama Forest and Wildlife Camera Locations

Plants and Animals Observed in Xwayama Forest		
Ichishkiin	Common Name	Western Scientific Name

Table 1. Plants and Animals Observed in Xwayama Forest

Methodology

This section should explain what you did and how you did it. This will include describing how you observed your topic. Everyone should include that they **observed footage collected between (insert date) to (insert date) at (name of forest) using wildlife cameras placed by Yakama Nation Wildlife staff. The Yakama Nation Wildlife staff collected camera footage each week and uploaded to this class’s YouTube channel for observation. Field Journals were used to collect observations made from the YouTube videos.**

Questions that should be answered here: how did you observe the wildlife? Where was the data located? Who collected the data? What tools did you use to observe the data? How did you analyze the data (review, make observations, draw conclusions from those observations). What did you use to find information about your topic besides the youtube videos? How did you find this additional information? This can include stories and information collected in class, through interviewing a friend, family member, teacher, or Yakama Nation staff member.

You could include graphs, pictures, and other visual data here that help explain what you did and how you did it.

Results

This is where you explain what you found based on the research you conducted (observations from you tube, information from the internet and other resources).

Conclusion

This section should be no more than one paragraph. You should restate the problem or issue you chose for the research poster and include the main ideas from your poster.

Recommendations

This is where you can include suggestions for future research. For your chosen topic, what should researchers focus on? Why should they focus on these areas? What challenges did you encounter and what do you need to overcome these challenges in the future? What outstanding questions or concerns do you have about your topic that merit future study?

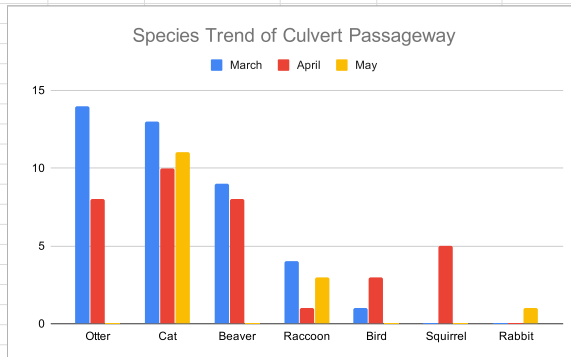
Works Cited

Text
Text
Text

Video Log													
Date (M/D/Y)	Time Begin (first time spotted)	Time End (last time spotted)	Day or Night	Atmospheric Pre: Temperature (F)	Camera #	# of animals	Description of Animal	Land or Aquatic	Animal Behavior	Description of Camera View	Evidence of Predation?	If yes - what?	
3/11/20	9:00 PM (0:03)	9:00 PM (0:08)	Night	23.53inHg	27F	culvert Cam #1	1 Cat	Non-aquatic	Standing at culvert entry.	At the culvert entry.	No	46 sightings	
3-11-0200	9:14 PM (0:23)	9:14 pm (0:28)	Night	23.53inHg	29F	culvert Cam #1	1 Otter	Aquatic	walking around the front of the culvert	At the culvert entry.	No		
3/11/20	9:15 pm (0:43)	9:16 pm (1:34)	Night	23.56 inHg	33f	culvert Cam #1	1 Otter	Aquatic	walking back and forth in the culvert c in the entry.	at the culverts entry.	no		
3/11/20	9:18 pm (1:44)	9:19 pm (1:54)	Night	23.56 inHg	35f	culvert Cam #1	2 otter	Aquatic	walking into the culvert	at the culverts entry.	No		
3/11/20	9:22 pm (2:03)	9:22 pm (2:04)	Night	23.56 inHg	35f	culvert Cam #1	1 otter	Aquatic	running out of the culvert	at the culverts entry.	No		
3/13/20	10:19 pm (4:24)	10:19 pm (4:26)	Night	28.97 inHg	16f	culvert Cam #1	1 Cat	Non-aquatic	walking in the culvert	at the culvert entry.	no		
3/14/20	5:11 am (5:04)	5:11 am (5:07)	Night	29.11 inHg	9f	culvert Cam #1	1 beaver	Aquatic	waddling out of the culvert	at the culvert entry.	no		
3/16/20	5:24 am (6:24)	5:25 am (6:32)	Night	23.53 inHg	-4f	culvert Cam #1	1 Cat	Non-aquatic	walking out of culvert	at the culvert entry.	no		
3/15/20	4:03 am (5:44)	4:03 am (5:50)	Night	29.47 inHg	9f	culvert Cam #1	1 racoon	Non-aquatic	walking out of culvert	at the culvert entry.	no		
3/15/20	9:56 am (6:04)	9:56 am (6:08)	Night	29.53 inHg	9f	culvert Cam #1	1 Cat	Non-aquatic	walking into the culvert	at the culvert entry.	no		
3/17/20	9:19 am (6:34)	9:19 am (6:37)	Day	23.23inHg	22f	culvert Cam #1	1 Cat	Non-aquatic	walking into the culvert	at the culvert entry.	no		
3/17/20	7:28 pm (8:34)	7:28 pm (8:39)	Night	23.11 inHg	31f	culvert Cam #1	1 Cat	Non-aquatic	walking out of the culvert	at the culverty entry.	no		
3/17/20	10:02 pm (8:54)	10:03 pm (9:14)	night	23.14 inHg	22f	culvert Cam #1	1 Cat	Non-aquatic	walking out of culvert	at the culvert entry.	no		
3/17/20	10:32 pm (9:55)	10:32 pm (10:00)	night	23.14 inHg	22f	culvert cam#1	1 Cat	Non-aquatic	walking into the culvert	at the culvert entry.	no		
3/18/20	8:52 pm (14:15)	8:52 pm (14:49)	night	29.17 inhg	31f	culvert cam #1	1 otter	Aquatic	walking and hanging out in the culvert	at the culvert entry.	no		
3/18/20	8:53 pm (14:55)	8:53p pm (14:59)	night	29.17 inHg	32f	culvert cam #1	1 otter	Aquatic	waddling into culvert	at the culvert entry.	no		
3/19/20	8:36 pm (15:35)	8:36 pm (15:48)	night	29.41 inhg	31f	culvert cam #1	1 Cat	Non-aquatic	hanging out in the culvert	at the culvert entry.	no		
3/20/20	11:09 pm (15:55)	11:09 pm (16:15)	night	29.50 inHg	27f	culvert cam #1	1 Cat	Non-aquatic	walking out of culvert	at the culvert entry.	no		
3/21/20	1:31 am (16:16)	1:31 AM (16:19)	night	29.50inHg	22f	culvert cam #1	1 racoon	Non-aquatic	walking into the culvert	at the culvert cam entry	no		
3/21/20	1:42 am (16:36)	1:42 am (16:43)	night	29.50 inHg	23f	culvert cam #1	1 unknow maybe otter		standing at the side of camera	at the culver cam entry	no		
3/21/20	1:45 am (16:56)	1:46 am (17:04)	night	29.50 inHg	25f	culvert cam #1	1 unknow maybe otter		standing in front of culvert cam	at the culvert cam entry	no		
3/22/20	5:49 am (17:16)	5:49 am (17:21)	day	29.44 inHg	11f	culvert cam #1	1 otter	Aquatic	running into culvert	at the culvert cam entry	no		
3/22/20	5:50 am (17:36)	5:50 am (17:40)	day	29.44 inHg	13f	culvert cam #1	1 otter	Aquatic	walking around the front of the culvert	at the culvert cam entry	no		
3/22/2020	5:50 am (17:47)	5:50 am (17:54)	day	29.44 inHg	16f	culvert cam #1	1 otter	Aquatic	walking into the culvert	at the culvert entry	no		
3/22/20	5:53 am (17:55)	5:53 am (17:56)	day	29.44 inHg	16f	culvert cam #1	1 unknow maybe otter		running out of the culvert	at the culvert entry.	no		
3/22/20	6:11 am (19:56)	6:11 am (20:04)	day	29.44 inHg	14f	culvert cam #1	1 otter	Aquatic	walking into the culvert	at the culvert entry.	no		
3/22/20	6:11 am (20:13)	6:12 am (21:07)	day	29.44 inHg	14f	culvert cam #1	2 otter	Aquatic	both of the otters were hanging out at	at the culvert entry.	no		
3/22/20	6:14 am (21:56)	6:14 am (22:15)	day	29.44 inHg	22f	culvert cam #1	2 otter	aquatic	walking out of culvert	at the culvert entry.	no		
3/22/20	6:42 pm (23:56)	6:42 pm (24:03)	night	29.44 inHg	46f	culvert cam #1	1 otter	aquatic	standing in front of culvert	at the culvert entry.	no		
3/22/20	6:42 pm (24:16)	6:43 pm (24:38)	night	29.14 inHg	48f-50f	culvert cam #1	2 otter	aquatic	hanging out in the mouth of the culvert	at the culvert entry.	no		
3/23/20	4:38 am (27:17)	4:39 am (27:31)	night	29.06 inHg	33f	culvert cam #1	1 racoon	non-aquatic	walking out of culvert	culvert entry	no		
3/23/20	11:29 pm (29:38)	11:29 pm (29:55)	night	29.29 inHg	22f	culvert cam #1	1 beaver	aquatic	waling into culvert	culvert entry	no		
3/24/20	12:10 am (29:57)	12:10 am (29:59)	night	29.23inHg	22f	culvert cam #1	1 beaver	Aquatic	walking out of culvert	culvert entry	no		
3/24/20	12:51 am (30:18)	12:51 am (30:27)	night	29.23 inHg	18f	culvert cam #1	1 beaver	Aquatic	walking into the culvert	culvert entry	no		
3/24/20	8:08 pm (30:36)	8:08 pm (30:56)	night	29.17 inHg	29f	culvert cam #1	1 unknow		standing to the side of culvert	culvert entry	no		
3/24/20	9:31 pm (31:16)	9:31 pm (31:19)	night	29.17inHg	25f	culvert cam #1	1 racoon	Non-aquatic	walking into the culvert	culvert entry	no		
3/24/20	10:23 pm (31:37)	10:24 pm (32:01)	night	29.17 inHg	25f	culvert cam #1	1 unknown		standing at the side of camera	culvert entry	yes		
3/24/20	11:13 pm (32:01)	11:13 pm (32:05)	night	29.17 inHg	22f	culvert cam #1	1 cat	Non-aquatic	walking into culvert	culvert entry	no		
3/25/20	10:50 pm (34:20)	10:50 pm (34:22)	night	29.32 inHg	13f	culvert cam #1	1 cat	Non-aquatic		culvert entry	no		
3/25/20	11:02 pm (34:23)	11:28 pm (34:27)	night	29.32 inHg	13f	culvert cam #1	1 beaver	aquatic	walking into culvert	culvert entry	no		
3/27/20	1:35 am (36:28)	1:36 am (36:38)	night	29.26 inHg	27f	culvert cam #1	1 beaver	Aquatic	walking out of culvert	culvert entry	no		
3/27/20	9:21 am (36:46)	9:21 am (36:48)	day	29.32 inHg	37f	culvert cam #1	1 bird	non-aquatic	standing at mouth of culvert and flying	culvert entry	no		
3/27/20	10:34 pm (40:47)	10:34 pm (40:51)	night	29.33 inHg	27f	culvert cam #1	1 cat	non-aquatic	walking into culvert	culvert entry	no		
3/28/20	1:08 am (41:06)	1:09 am (41:18)	night	29.35 inHg	23f	culvert cam #1	1 beaver	Aquatic	walking in and out of culvert	culvert entry	no		
3/30/20	9:51 pm (45:40)	10:41 pm (46:15)	night	29.23 inHg	25f	culvert cam #1	1 beaver	Aquatic	walking around inside the culvert	culvert entry	no		
3/30/20	10:45 pm (46:27)	11:20 pm (46:59)	night	29.23 inHg	27f	culvert cam #1	1 beaver	Aquatic	walking around inside the culvert	culvert entry	no		
4/1/20	8:05 pm (48:59)	9:12 pm (49:50)	night	29.38 inHg	25f	culvert cam #1	1 beaver	Aquatic	walking around inside the culvert and	culvert entry	no	37 sightings	
4/2/20	6:59 pm (49:52)	6:59 pm (49:57)	night	29.41 inHg	35f	culvert cam #1	1 cat	Non-aquatic	standing at the mouth of the culvert	culvert entry	no		
4/4/20	9:01 am (52:12)	9:01 am (52:14)	day	29.17 inHg	32f	culvert cam #1	1 cat/black	non-aquatic	walking into culvert	culvert entry	no		
4/4/20	6:47 pm (54:12)	6:47 pm (54:12)	night	28.97 inHg	35f	culvert cam #1	1 cat	non-aquatic	running out of culvert	culvert entry	no		
4/4/20	11:29 pm (54:32)	11:39 pm (54:45)	night	28.97 inHg	31f	culvert cam #1	1 beaver	aquatic	wandering inand out of culvert	culvert entry	no		
4/5/20	1:20 am (54:45)	1:20 am (54:47)	night	28.97 inHg	22f	culvert cam #1	1 beaver	aquatic	wandering in and out of a culvert	culvert entry	no		
4/5/20	2:27 am (54:48)	2:27 am (54:49)	night	28.97 inHg	23f	culvert cam #1	1 cat	non-aquatic	walking out of culvert	culvert entry	no		
4/5/20	6:18 am (54:51)	6:18 am (54:57)	day	29.00 inHg	20f	culvert cam #1	1 bird	non-aquatic	flying in front of culvert	culvert entry	no		
4/5/20	11:43 am (56:61)	11:43 am (56:55)	day	29.00 inHg	53f	culvert cam #1	1 squirrel	non-aquatic	walking in the culvert	culvert entry	no		
4/5/20	11:43 am (57:12)	11:43 am (57:19)	day	29.00 inHg	53f	culvert cam #1	1 squirrel	non-aquatic	running out of culvert	culvert entry	no		
4/5/20	11:45 am (58:43)	11:45 am (58:50)	day	29.00 inHg	53f	culvert cam #1	1 squirrel	non-aquatic	standing at front of culvert then running	culvert entry	no		
4/5/20	11:45 am (59:09)	11:45 am (59:13)	day	29.00 inHg	60f	culvert cam #1	1 squirrel	non-aquatic	running out of culvert	culvert entry	no		
4/5/20	11:50 am (1:01:06)	11:50 am (1:01:08)	day	29.00 inHg	60f	culvert cam #1	1 squirrel	non-aquatic	standing at the front of the culvert	culvert entry	no		
4/5/20	3:32 pm (1:03:07)	3:32 PM (1:03:09)	day	28.97 inHg	51f	culvert cam #1	1 black cat	non-aquatic	walking into culvert	culvert entry	no		
4/5/20	8:52 pm (1:05:07)	8:52 pm (1:05:09)	night	28.97 inHg	29f	culvert cam #1	1 cat	non-aquatic	standing in front of culvert	culvert entry	no		
4/5/20	8:52 pm (1:05:10)	8:56 PM (1:05:16)	night	29.00 inHg	27f	culvert cam #1	1 beaver	aquatic	walking into culvert and walking out of culvert	culvert entry	no		

4/7/20 5:33 am (1:05:37)	5:33 am (1:05:38)	day	29.35 inHg	16f	culvert cam #1	1 bird	non-aquatic	stand ing in the opening of culvert	culvert entry	no	
4/7/20 10:19 pm (1:07:38)	11:13 pm (1:08:45)	night	29.44 inHg	37f	culvert cam #1	1 beaver	aquatic	standing in front of camera then walks	culvert entry	no	
4/8/20 12:12 am (1:08:45)	12:12 am (1:08:47)	night	29.47 inHg	32f	culvert cam #1	1 cat	non-aquatic	walking out of culvert	culvert entry	no	
4/9/20 5:44 am (1:10:48)	5:44 am (1:10:51)	day	29.47 inHg	16f	culvert cam #1	1 otter	aquatic	walking out of culvert	culvert entry	no	
4/9/20 6:32 pm (1:12:48)	6:32 pm (1:12:56)	day	29.26 inHg	62f	culvert cam #1	1 cat	non-aquatic	walking out of culvert	culvert entry	no	
4/9/20 7:03 pm (1:14:47)	7:03 pm (1:14:50)	night	29.26 inHg	57f	culvert cam #1	1 otter	aquatic	running into culvert	culvert entry	no	
4/9/20 9:07 pm (1:15:28)	9:07 pm (1:15:31)	night	29.26 inHg	41f	culvert cam #1	1 otter	aquatic	walking into culvert	culvert entry	no	
4/9/20 9:09 pm (1:15:37)	9:09 pm (1:15:43)	night	29.29 inHg	42f	culvert cam #1	1 otter	aquatic	walking out of culvert	culvert entry	no	
4/9/20 9:19 pm (1:15:49)	9:19 pm (1:15:51)	night	29.29 inHg	42f	culvert cam #1	1 otter	aquatic	speeding out of culvert	culvert entry	no	
4/9/20 10:42 pm (1:15:54)	10:45 pm (1:15:56)	night	29.26 inHg	33f-35f	culvert cam #1	1 otter	aquatic	walking in and out culvert	culvert entry	no	
4/10/20 9:48 pm (1:15:57)	9:48 pm (1:16:04)	night	29.23 inHg	46f	culvert cam #1	1 otter	aquatic	walking in and out of the culvert	culvert entry	no	
4/10/20 10:22 pm (1:16:18)	10:23 pm (1:16:45)	night	29.23 inHg	46f	culvert cam #1	1 beaver	aquatic	standing infrot of camera	culvert entry	no	
4/10/20 11:11 pm (1:16:50)	11:11 pm (1:16:56)	night	29.23 inHg	42f	culvert cam #1	1 otter	aquatic	stands in front of camera and walks in	culvert entry	no	
4/11/20 6:44 pm (1:16:59)	6:44 pm (1:17:14)	day	29.41 inHg	44f	culvert cam #1	1 black cat	non-aquatic	stood at the front of the culvert then w	culvert entry	no	
4/12/20 12:05 am (1:19:00)	12:05 am (1:19:01)	night	29.56 inHg	35f	culvert cam #1	1 unknown		stood in front of the camera	culvert entry	no	
4/13/20 8:11 am (1:19:02)	8:11 am (1:19:15)	day	29.74 inHg	29f	culvert cam #1	1 black cat	non-aquatic	stood in front of the camera then walk	culvert entry	no	
4/13/20 7:45 pm (1:21:01)	7:45 pm (1:21:04)	night	29.62 inHg	37f	culvert cam #1	1 beaver	aquatic	stood in front of camera the walked in	culvert entry	no	
4/14/20 12:44 pm (1:21:05)	12:44 pm (1:21:10)	day	29.53 inHg	96f	culvert cam #1	1 bird	non-aquatic	stood at the front of the culvert the fle	culvert entry	no	
4/16/20 10:44 am (1:25:04)	10:44 am (1:25:05)	day	29.68 inHg	71f	culvert cam #1	1 unknown		brushed up on the camera	culvert entry	no	
4/17/20 9:34 pm (1:29:05)	9:35 am (1:29:09)	night	29.11 inHg	48f	culvert cam #1	1 beaver	aquatic	brushed up on the camera then walke	culvert entry	no	
4/18/20 5:25 am (1:29:10)	5:25 am (1:29:14)	day	29.14 inHg	37f	culvert cam #1	1 racoon	non-aquatic	stood in the culvert then walked out	culvert entry	no	

5/10/20 6:58 PM (0:03)	6:58 (0:08)	Day	29.17 inHg	73F	Camera #13, Week 2	1 Cat (black/sleek tail)	Non-aquatic	Exiting culvert.	Culvert entrance.	No.	15 Sightings
5/10/20 10:54 PM (2:04)	10:57 PM (2:30)	Night	29.17 inHg	55F	Camera #13	1 Raccoon	Non-aquatic	Entering and exiting culvert.	Culvert entrance.	No.	
5/11/20 9:57 PM (2:43)	9:58 PM (2:50)	Night	29.00 inHg	55F	Camera #13	1 Cat (black/sleek tail)	Non-aquatic	Entering culvert.	Culvert entrance.	No.	
5/14/20 10:39 PM (3:03)	10:39 PM (3:06)	Night	29.35 inHg	46F	Camera #13	1 Cat (black/sleek tail)	Non-aquatic	Entering culvert.	Culvert entrance.	No.	
5/15/20 1:01 AM (3:08)	1:01 PM (3:09)	Night	29.38 inHg	44F	Camera #13	1 Cat (black/sleek tail)	Non-aquatic	Exiting culvert.	Culvert entrance.	No.	
5/15/20 10:15 AM (3:10)	10:16 AM (4:35)	Day	29.47 inHg	78F	Camera #13	1 Cat (black/sleek tail)	Non-aquatic	Entering and complete exit of culvert.	Culvert entrance.	No.	
5/15/20 10:48 PM (5:02)	10:48 PM (5:03)	Night	29.35 inHg	42F	Camera #13	1 Cat (black/sleek tail)	Non-aquatic	Exiting culvert.	Culvert entrance.	No.	
5/16/20 10:04 PM (5:03)	10:04 PM (5:08)	Night	29.03 inHg	50F	Camera #13	1 Cat (black/sleek tail)	Non-aquatic	Entering culvert.	Culvert entrance.	No.	
5/17/20 7:14 PM (0:03)	7:14 PM (0:06)	Day	29.03 inHg	51F	Camera #13, Week 3	1 Cat (black/sleek tail)	Non-aquatic	Exiting culvert.	Culvert entrance.	No.	
5/18/20 7:00 AM (2:03)	7:01 AM (2:13)	Day	29.09 inHg	46F	Camera #13	1 Rabbit	Non-aquatic	Sitting near culvert entrance.	Culvert entrance.	No.	
5/20/20 6:08 AM (4:04)	6:08 AM (4:27)	Day	29.17 inHg	46F	Camera #13	1 Cat (Gray/fluffy tail)	Non-aquatic	Entering and exiting culvert.	Culvert entrance.	No.	
5/26/20 9:01 PM (0:03)	9:01 PM (0:04)	Night	29.38 inHg	59F	Camera #13, Week 4	1 Raccoon	Non-aquatic	Entering culvert.	Culvert entrance.	No.	
5/26/20 9:05 PM (0:05)	9:05 PM (0:06)	Night	29.38 inHg	59F	Camera #13	1 Raccoon	Non-aquatic	Exiting culvert.	Culvert entrance.	No.	
5/28/20 9:45 AM (0:07)	9:52 AM (5:18)	Day	29.44 inHg	80F	Camera #13	1 Cat (Stripped gray)	Non-aquatic	Lounges, then exits the culvert.	Culvert entrance.	No.	
5/28/20 10:06 AM (6:07)	10:06 AM (6:12)	Day	29.44 inHg	87F	Camera #13	1 Cat (Stripped gray)	Non-aquatic	Entering culvert.	Culvert entrance.	No.	



	March	April	May
Aquatic	23	16	0
Non-aquatic	18	19	15
	March	April	May

[illegible]

SLIDE DECK RESOURCES

Soil Types Slides

A slide deck used in Lesson Plan 5: GIS and Soils to introduce basic soil types and composition. Students used this deck in conjunction with the Web Soil Survey to identify soil types in the Xwayama urban forest. Students also used this deck to complete the Soil activity in the Scientific Method Worksheet.

Plant ID Leaves Slides

A slide deck used in Lesson Plan 8: Plant Identification to introduce basic leaf structure and composition. Students used this deck to complete a Plant Identification activity located in the Scientific Method Worksheet.

Forest Community Slide Deck

A slide deck used in Lesson Plan 4: Forest Community to introduce key terms of a Forest Community and learn factors that influence a forest community. Students used this deck to deepen their descriptions of their wildlife habitat observations from the YNTS Urban Forest Ecology YouTube Channel.

Soil or dirt?

Soils

- Medium to grow plants
- Emit and absorb gases and dust
- Provide habitat for organisms and wildlife
- Absorbs, releases, alters, purifies, filters water
- Recycles nutrients
- Organisms can use soils for engineering (wildlife can build homes, restoring streams, create banks)

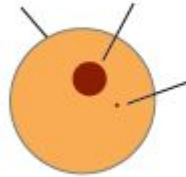
Soil Properties

- **TEXTURE**
- **STRUCTURE**
- **COLOR**
- **PROFILE**

Soil Texture (size)

- Sand, Silt, Clay

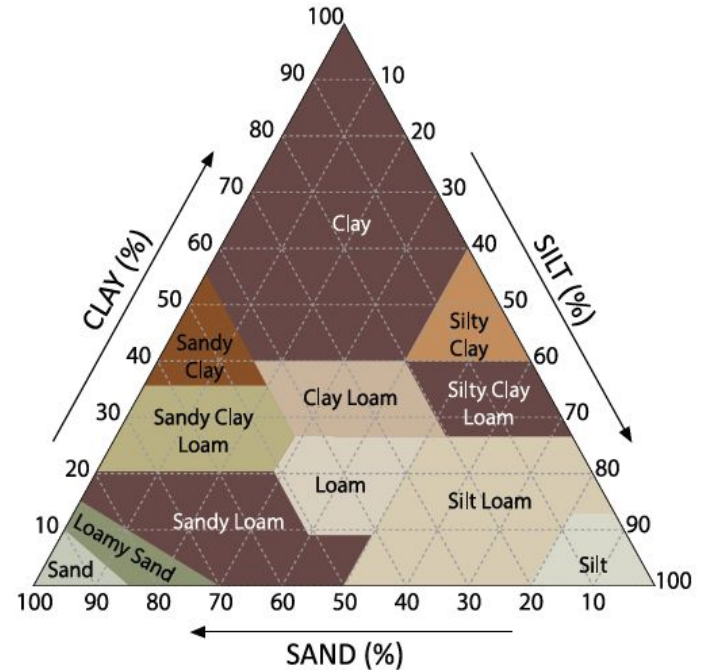
SAND – 2.0
to 0.05 mm



SILT – 0.05 to 0.002 mm

CLAY – less than 0.002 mm


Soil is composed of different-sized
particles: sand, silt, and clay.



A soil texture triangle helps identify the soil type.

Soil Structure (shape)

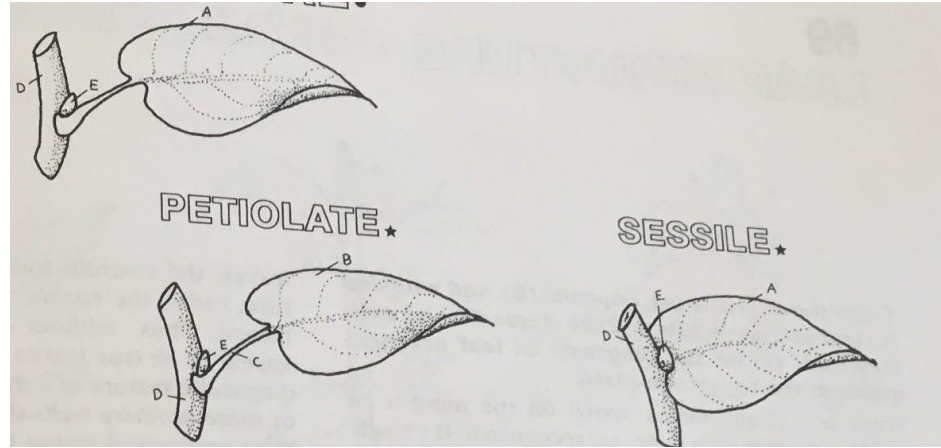
- How clay, silt, and sand combine
- When combined, this creates a “ped.”
- How the “ped” was formed (freezing, drying, moist) can influence its shape
- Soil Structures:
 - Single-grained (sand)
 - Massive (clay)
 - Blocky, granular, columnar



Plant ID: Leaves

YNTS EM Class | Spring 2020

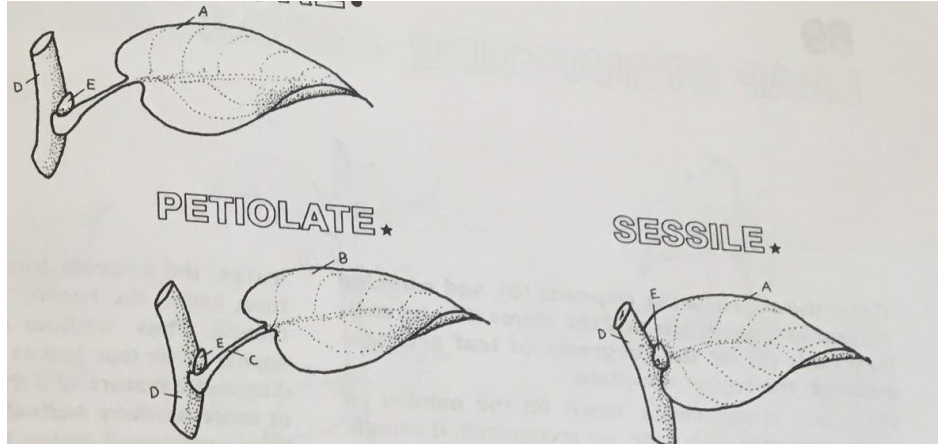
Basic Leaf Structure



Lamina primary photosynthetic surface

Petiole the narrow, stalklike portion of the leaf

Basic Leaf Structure



- **Petiolate** leaves that **have** a petiole
- **Sessile** leaves that **do not have** a petiole

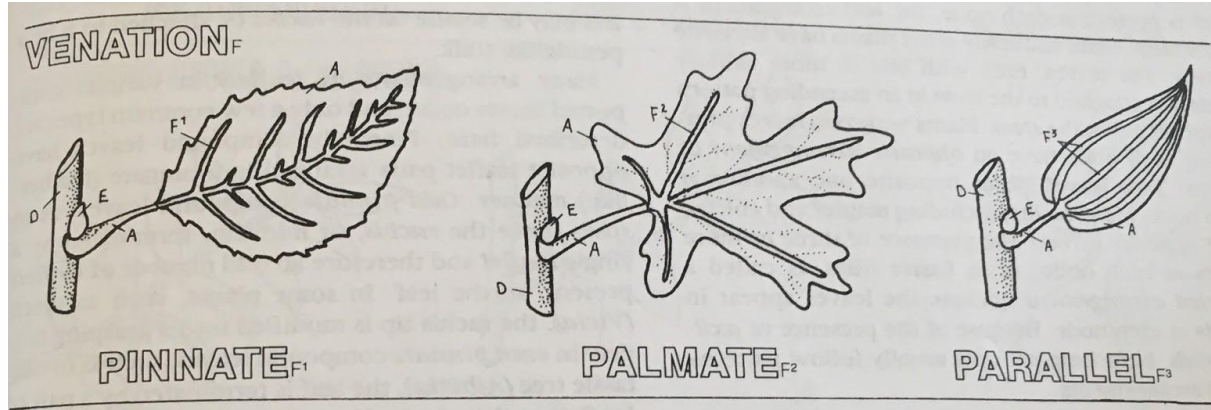


Buttonbush (*Cephalanthus occidentalis*)



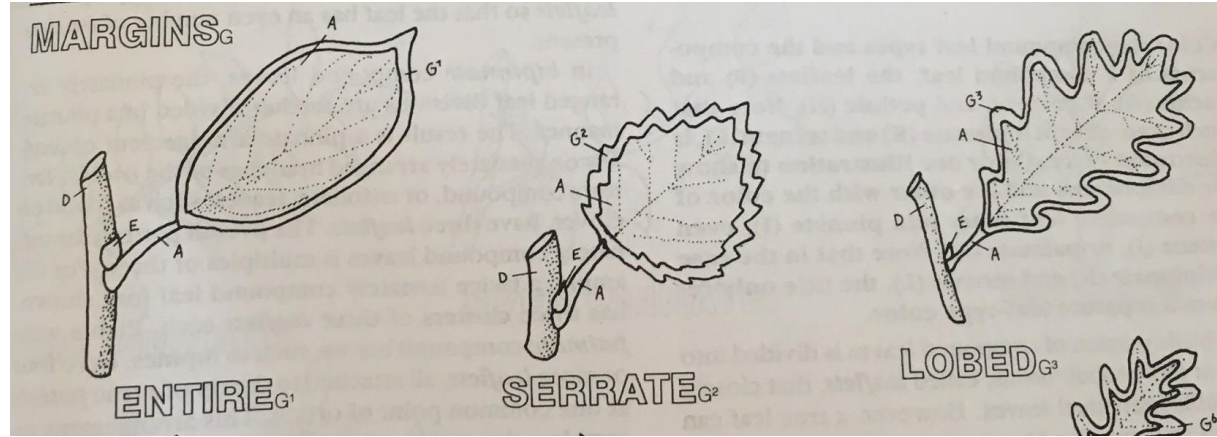
Yellow Willow (*Salix lutea*)

Leaf Venation



- **Venation** how the veins of a leaf are arranged.
- **Pinnate** one main vein that begins at base of lamina, smaller veins branch from the main vein
- **Palmate** one central point near the base of the lamina with many veins attached to the central point
- **Parallel** more than one main vein that begins at the base of the lamina

Leaf Margins



- **Margins** used to describe and name leaf types
- **Entire** smooth, no incisions or lobes
- **Serrate** sharp, toothlike projections that are evenly spaced around leaf
- **Lobed** broad, rounded lobes that alternate with round clefts that are irregularly spaced.

Leaf Margins



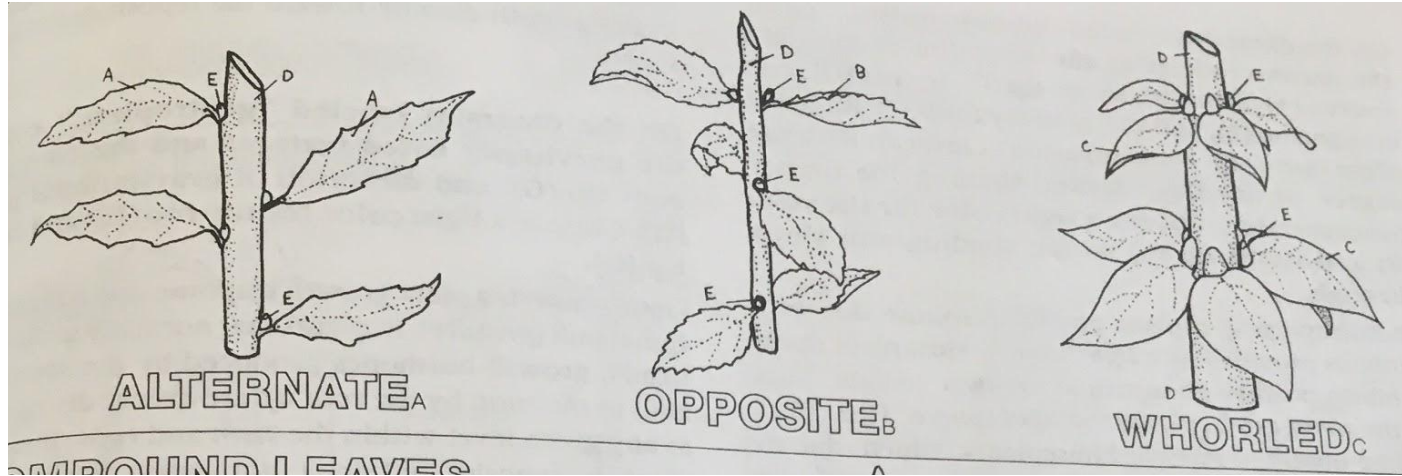
Buttonbush (*Cephalanthus occidentalis*)



Water or Black Birch (*Betula occidentalis*)

Skunkbush Sumac (*Rhus trilobata*)

Leaf Arrangement



- **Node** where a leaf emerges on the stem
- **Alternate** only one leaf at a node
- **Opposite** two leaves at a node
- **Whorled** three or more leaves at the same node





What influences a forest community?

- **Community** is a group or association of two or more different populations or species occupying the same area.
- **Species** is a group of living organisms consisting of similar individuals that are capable of exchanging genes.
- **Population--who's there?**
 - Number of individual species
 - how many beavers? How many river otters?
 - The different types of individual species
 - how many different animals are there in the forest?

CURRICULUM RESOURCES AND CONTACT INFORMATION

Curriculum Resources and Contact Information

These resources and contact information were used to plan and curate course content for the YNTS Urban Forest Ecology class.

Contact	Links	Notes
<p>Emily Jane Davis, Assistant Professor and Extension Specialist Department of Forest Ecosystems and Society, Forestry and Natural Resources Extension Ecosystem Workforce Program Co-Associate Director and OSU Lead Oregon State University 541-520-2688 (cell)</p>		<p>Connected us with all contacts below</p>
<p>Rick Zenn Senior Fellow 503.488.2103 rzenn@worldforestry.org</p>		<p>Workforce program at the World Forestry Center</p>
<p>Peter Matzka, Ph.D. Extension Forestry Educator Hopkins Demonstration Forest State Advisor Oregon Future Natural Resource Leaders Clackamas County Oregon State University Extension Service 200 Warner Milne Road Oregon City, OR 97045 Phone: 503-884-6202 Email: peter.matzka@oregonstate.edu Demonstrationforest.org extension.oregonstate.edu/Clackamas</p>		<p>Implemented Future Foresters high school program, interested in expanding the program outside of Oregon</p>

<p>Jason O'Brien Master Naturalist Program Coordinator Jason.Obrien@oregonstate.edu</p>	<p>Master Naturalist Online Course Modules – each of these links takes you to a Google Slide set that contains the main readings for each of the online course modules. I have highlighted the forest module. Within the full course environment in Canvas, each module has a written assignment (I'm attaching the forest assignment), and each assignment is posted on a discussion forum for small groups for follow-up dialog.</p> <ul style="list-style-type: none"> • Module 1 (Intro to OMN Program): https://beav.es/4YY • Module 2 (Ecoregions of Oregon): https://beav.es/4Yg • Module 3 (Oregon Geology & Earth Processes): https://beav.es/4YM • Module 4 (An Introduction of Watersheds): https://beav.es/4YQ • Module 5 (Principles of Ecology & Wildlife Management): https://beav.es/4YA • Module 6 (Ecology & Management of Oregon Forests): https://beav.es/4Yd • Module 7 (Ecology & Management of Oregon Rangelands): https://beav.es/4YP 	<p>Oregon Master Naturalists - Intended for adults but has content that can be used for older kids or potentially adapted for youth. Jason has also offered to adapt some of the material, just need to outreach with needs.</p>
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	<ul style="list-style-type: none"> Module 8 (Oregon in a Changing Climate): https://beav.es/4YW 	
	Firewise USA – Great resources under Teen for Wildfire Safe Communities tab (left sidebar). Including wildfire video tours and youth as change agents https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA	
	FireWorks https://www.fs.fed.us/rm/pubs/rmrs_gtr065.pdf	
Oregon Forest Resource Institute (OFRI) – K-12 grade specific videos and curriculum https://learnforests.org/ Norie Dimeo-Ediger Director of K-12 Education Programs dimeo-ediger@ofri.org	Forest Planner <ul style="list-style-type: none"> Presentation at Oregon Indian Educators Association 2019 Conference Link to Forest Planner tool 2018 How-to Guide to Forest Planner OFRI Curriculum Resources in Forestry McNeil Forest Planner HS LP Lori Loeffler Tillamook High School Examples Folder Holly McNeil Valor Christian High School Examples Folder Draft Forest Planner Lesson Plans	Ecotrust has worked with OFRI and Nori through the Foresty Planner/Forest Discovery tool project. The Forest Planner/Forest Discovery tool lesson plans draw from OFRI curriculum

	<ul style="list-style-type: none"> • Carbon Draft LP • Fire Draft LP • Timber Draft LP 	
<p>Project Learning Tree (PLT) – online curriculum for K-12 https://www.plt.org/ Oregon PLT and Project Wild: http://onrep.forestry.oregonstate.edu/ LeeAnn Mikkelson Oregon PLT State Coordinator Director, Oregon Natural Resources Education Program leeann.mikkelson@oregonstate.edu</p>		<p>LeeAnn met with Teresa and Stephanie to discuss available resources. LeeAnn also mentioned the Firewise program as an excellent resource. LeeAnn is mailing Teresa and I copies of the curriculum.</p>
	<p><u>Indigenous Focused, Lesson Plan Resources</u> Indian Land Tenure Foundation</p> <ul style="list-style-type: none"> • Lessons of Our Land **Need to register your email address, but it's free <ul style="list-style-type: none"> ○ Incorporating Tradition and Science ○ Tribal Environmental Education ○ Trust Lands Maps ○ Many Indigenous Homelands: Exploring Maps ○ Science and Tradition ○ Observing Nature 	

	<ul style="list-style-type: none"> ○ Medicinal Plants PPT ● Challenges of Land Fractionation-Message Runner v.9 	
	<p><u>Penn State Forestry Lesson Plans</u></p> <ul style="list-style-type: none"> ● Introduction to Urban & Community Forestry: Why Do We Need Trees? ● Community Forests w/ Experiments ● Forestry/Natural Resources Lesson Plans 10-12th grade <ul style="list-style-type: none"> ○ Selecting Trees for Urban Environments ○ Tree Leaves: Determining the Characteristics They Have in Common ○ Forest Fun ○ Forest Measurements ● Nature Conservancy Urban Tree Lesson ● Tree Toolkit ● USFS Finding my Forest 	
<p>John Punches Extension Forester (Union, Umatilla, Wallowa Counties) Oregon State University 10507 N McAlister Rd, Room 9 La Grande, OR 97850 541-963-1061 (office) 541-602-4689 (cell)</p>	<p>http://blogs.oregonstate.edu/northernbluesforests/</p>	<p>John offered to adapt program for HS students and different regions in OR and WA near NE Oregon, where his region is.</p> <p>Good ecology, natural history, geology, tree ID overviews</p> <p>Suggested putting together kits for students to</p>

<p>john.punches@oregonstate.edu Facebook: @OSUExtForestryNE Web: extension.oregonstate.edu/union</p>		<p>complete social distance appropriate lab courses</p>
<p>Paul D. Ries, Ed.D. Director, Graduate Certificate in Urban Forestry Oregon State University Dept. of Forest Ecosystems and Society 321 Richardson Hall, Corvallis, OR 97331 Phone: 541/990-7660 Email: paul.ries@oregonstate.edu</p>	<p>OSU_HORT350_Urban_Forestry_Syllabus</p>	<p>Introduction and overview of urban forestry can be used in the student pilot S2020 at YNTS</p>
<p>Ashley Carlisle (NAFWS staff and tribal member) – Native American Fish & Wildlife Society Summer Youth Practicum (SYP)</p> <p>Ashley Carlisle ACarlisle@nafws.org</p> <p>Ty Werdel (KSU PhD wildlife student and tribal member) – Native Student Professional Development Program with TWS and the Native Peoples Wildlife Management Working Group</p> <p>Ty Werdel werdel@ksu.edu</p> <p>Mike Dockry (UMN faculty and tribal member) – mainly mentors native forestry</p>		

<p>college students, used to work at College of Menominee Nation with USFS Northern Research Station, also does a fair amount of urban/community forestry research.</p> <p>mdockry@umn.edu</p>		
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