

Trees and Forests

Teacher Guide

Essential Question

What role do trees and forests have in the world?



Targets

1. Why are trees important?

- Why do trees and forests have value?
- In what way do plants and animals live, under, and among trees?
- What role do trees have in nutrient cycles?

2. What makes trees unique?

- How can you tell trees apart from the other plants, and from each other?
- What can you learn from leaf shapes and tree growth patterns?

3. What effect do people have on trees and forests?

- Why have people changed the way they use forests?
- Are human actions making things better or worse for forests?

Pre-Assessment

Student Activity

Think about these questions:

- What valuable resources do trees and forests provide that allow humans to survive and thrive?
- You are hungry, so you decide to look for some plants and animals you can use for food. Where might you find plants and animals near trees? Why would they be there?
- You are thirsty, but there is no stream or river nearby. Your survival guidebook says that trees are part of the water cycle. Explain the connection of trees with the water cycle and how that might help your thirsty situation.
- Your survival guidebook says that pine branches can be used to make an emergency shelter. How can you tell a pine tree from other trees in the forest?
- You decide to build a large home, so you cut all the trees in the area to provide lumber. Explain three negative consequences that might result from cutting all the trees at once.

Teacher Notes

The pre-assessment questions, which cover the basic curriculum concepts of this unit, are meant to gauge pre-existing knowledge of content. The following suggested answers could be compared to students' responses to assess their knowledge. The objects in the sky move, not the Earth (The Sun goes up and down and around the Earth.)

- Trees provide many raw resources, the most important of which is wood for building homes and other products. Forests are valuable in many ways: they provide sources of recreation and nature enjoyment, homes for animals and plants that might be food, and sources of goods used in industry.
- The forest floor is rich in plant life and wildlife. Because trees are producers, they contribute to the base of many food chains. Therefore, many animals live near trees, using their leaves, bark, roots, and seeds for food. Trees provide shelter and homes for many other organisms. Often, we can find other animals and plants around trees.
- Trees draw water through their roots and use water to transport materials to their tissues—even to the top of the tree. Water has an important role in photosynthesis, and it evaporates into the atmosphere. Knowing that trees gather water in their roots and leaves would be useful knowledge to someone who is thirsty.
- Pine trees are coniferous trees, meaning they bear cones. Also, they are evergreens, meaning their needle-like leaves remain green all year round.
- Cutting all the trees in an area means that no tree resources would be available for many years while the trees grow again. Because trees provide shelter and protection from elements, cutting them would expose you to extremes of weather. Trees hold soil in place, and cutting them could result in erosion, especially on hillsides.

Why are trees important?



Section 1 Vocabulary

Term	Definition
canopy	treetop layer of the forest
carbon cycle	nutrient cycle that moves and balances carbon on earth
chlorophyll	green pigment in leaves that captures the sun's energy for photosynthesis
consumer	a living thing in a food chain that relies on other organisms for food
decomposer	a living thing that breaks down wastes and dead or decaying organisms
ecosystem	a system formed by the interaction of a community of organisms in the environment
environment	the air, water, minerals, organisms, and everything else that surrounds a living thing
food chain	the path through which energy flows from one organism to another in

	an ecosystem
forest floor	bottom layer of the forest – the ground and any organisms and litter on it
habitat	the environmental area where a particular organism or group of organisms is located
natural resource	any material in the environment that can be used
nitrogen cycle	nutrient cycle that moves and balances nitrogen on Earth
organism	a form of life that stands on its own, such as a plant or animal
phosphorus cycle	nutrient cycle that moves and balances phosphorus on Earth
photosynthesis	a process through which plants use energy from the sun, carbon dioxide, and water to make food
producer	an organism at the beginning of a food chain that has the ability to make its own food
species	a group of organisms that are similar in appearance and can breed to produce fertile offspring
understory	middle layer of the forest, under the canopy and above the forest floor
water cycle	nutrient cycle that moves and balances water on Earth



Discover – Life in the Forest

Teacher Notes

None Provided

Why do trees and forests have value?



Observe – Forests are a Natural Resource

Teacher Notes

- An effective Internet search term for this activity is "Alberta forestry". Students can be made aware of issue bias, which is a recurring issue in this unit. Forestry industry sources tend to present tree harvesting and industry practices in a positive light, and conservationist groups tend to do the opposite, presenting all forestry industry practices in a negative light. The more students become aware of this, the better they will be able to assess critically the information they find from Internet sources.



Observe – A Finland Forest

Teacher Notes

- The Finland Forest website is a very entertaining website journey, but it is very rich with information and features. Students should be encouraged to take the journey slowly and carefully so that none of the embedded features is missed.



Exit Pass

Student Activity

Answer the following questions. When you have finished, submit your answers for grading.

1. Why are trees valuable to the economy?
2. What raw materials are produced by the forestry industry?
3. Why are trees considered a *renewable* resource?
4. Many people from around the world visit Alberta forests each year. Why do you think this is so? Do you think these visits are a good thing?
5. Jensen is talking to his friend and says, "I don't care if they cut down that forest. There's only flies and mosquitoes in there anyway." What is your response to Jensen?

Suggested Answers

1. *Why are trees valuable to the economy?*
 - When trees are cut, the wood products can be used for many things. Wood can be burned as fuel, made into lumber for resale as building material, or converted into other forms such as pulp that can then be turned into many other products. All steps from the harvesting of wood to sale of the products require human jobs in forestry, manufacturing, and sales—all of which contribute to the economy.
2. *What raw materials are produced by the forestry industry?*
 - The raw materials are wood, wood pulp, and food materials for livestock.
3. *Why are trees considered a renewable resource?*
 - Areas that are harvested of trees can be re-planted. If the rate at which trees are replaced by planting is the same at which they are harvested, then trees can be renewable forever.
4. *Many people from around the world visit Alberta forests each year. Why do you think this is so? Do you think these visits are a good thing?*
 - Alberta's forests provide rich tourist opportunities. The forests are some of the most beautiful in the world, and many quality recreational activities are available. Whether the visits are good or not is a matter of opinion. Most people say that the tourist industry is good for the Alberta economy, and that worldwide awareness of Alberta forests is a good thing. However, some might be concerned that more visitors to forests means more potential stress on the ecosystem.
5. *Jensen is talking to his friend and says, "I don't care if they cut down that forest. There's only flies and mosquitoes in there anyway." What is your response to Jensen?*

- It is true that the forest is the source of some "pest" animals that might not be desirable to some people. However, "pest" animals may have important roles in the ecosystem, too. What is a "pest" to one person may be very much appreciated by someone else. Likely, every ecosystem has parts that are pleasant and some that are unpleasant. Because someone is inconvenienced by flies and mosquitoes is a weak argument for destroying the forest.

In what ways do plants and animals live on, under, and among trees?



Discover – Life in the Forest

Teacher Notes

- The Forestry Image website is very comprehensive, providing images of hundreds of organisms. In step 3, students are warned about trying to add too many organisms to their bubble maps. This is a good opportunity to stress a reasonable, organized approach. If students can construct a well-organized and neat map, they should try to list as many organisms as possible.



Observe – The Layers of a Forest

Teacher Notes

- The Forestry Image website is very comprehensive, providing images of hundreds of various organisms. In step 3, students are warned about trying to add too many organisms to their bubble maps. This is a good opportunity to stress a reasonable, organized approach. If students can construct well-organized and neat maps, they should try to list as many organisms as possible.

Collaboration Opportunity

Students who are moving through this course as a cohort would benefit from collaboration activities. This activity could be done with a partner.

Partner Up

Complete this activity with a partner. Follow these steps:

1. Post a request in our class discussion board or talk to your teacher to see if anyone is available to work with you.
2. Talk with your partner and decide when you will meet in Google Docs to work on this activity.
3. Remember to share Bubble Map in Google Docs and work on this at the same time .
4. If you cannot work on this activity at the same time, divide the work and each do your part.
5. Set a date for completion. "Let's have this done by..."
6. Read your partner's entries in the bubble map. Do you have any questions?
7. Plan a day and time when you can phone, text, chat, Skype, Facetime, VSee or communicate by any other medium to discuss and answer each other's questions.
8. Save a copy of the your completed Bubble Map in your *Trees Notebook*.



Observe – Forest Food Chain

Teacher Notes

- Students might find the direction of the arrows on food chains confusing. Often, students point the arrows in the direction from whatever does the eating toward whatever is being eaten. The correct way to direct the arrows is in the direction of the flow of energy, that is, from whatever is being eaten toward whatever is doing the eating.



Discover – The Forest Speaks Up

Teacher Notes

- This activity provides an excellent self-expression opportunity as well as freedom in the choice of subject matter. In step 2, students have the option to use their own choices of animals. This can be extended to the form of expression. If the student desires more flexibility, this assignment could be done as a blog entry, a mock magazine article, an Internet advertisement (perhaps including motion or action), a legal notice, a proclamation from a politician,... whatever the student can imagine!



Exit Pass

Student Activity

Reread your RAFTS from the Forest Speaks Up activity and compare it one more time to *The Forest Speaks Up Rubric*. After a few minutes of comparing and reflecting on your work, complete this Self-Reflection.

Criteria	Excellent	Proficient	Adequate	Limited
Thinking Investigation, and Communication				
Demonstrating creative thinking and analysis of relationships among key concepts.	<input type="checkbox"/> My creative writing work demonstrates a high degree of thoughtful analysis of a forest interaction.	<input type="checkbox"/> My creative writing work demonstrates considerable thoughtful analysis of a forest interaction.	<input type="checkbox"/> My creative writing work demonstrates some thoughtful analysis of a forest interaction.	<input type="checkbox"/> My creative writing work demonstrates limited thoughtful analysis of a forest interaction.
	<input type="checkbox"/> My writing is very well organized, clear, and well thought out.	<input type="checkbox"/> My writing is well organized, clear, and well thought out.	<input type="checkbox"/> My writing is somewhat organized, reasonably clear, and reasonably thought out.	<input type="checkbox"/> My writing is poorly organized, not clear, and not thought out.

What role do trees have in nutrient cycles?



Observe – Trees Help to Cycle Nutrients

Teacher Notes

- The Forestry Image website is very comprehensive, providing images of hundreds of organisms. In step 3, students are warned about trying to add too many organisms to their bubble maps. This is a good opportunity to stress a reasonable, organized approach. If students can construct a well-organized and neat map, they should try to list as many organisms as possible.



Observe – Photosynthesis

Teacher Notes

- The websites provided for research for this activity cover the basics of photosynthesis. If desired, have the students complete the Challenge.
- Hints for Challenge materials: if no outdoor plants are available, any green leaves from the produce section of the grocery store will work. Spinach leaves work particularly well. Smooth paper coffee filters (such as the basket-style) work better than the "accordion-style" folder filters do.
- The Challenge is essentially the process of paper chromatography. Students need not understand the mechanism of how it works. However, as background information, the process is relatively simple. As the solvent diffuses up the paper, it dissolves the various components of the sample placed on the paper. Various components have various molecules, each of which likely has slightly different polarity (and therefore, slightly different amounts of attraction to the solvent). The various solubilities cause various colours to leave solution at various locations as the solvent moves up the paper.



Exit Pass

Student Activity

Answer the following questions. When you have finished, submit your answers for grading.

1. In the water cycle, we can say correctly, "Water that evaporates from a lake returns to the lake." Describe how that happens in the water cycle. Be sure you use the following words in your description: *evaporate*, *clouds*, *rain*, *soil*, and *tree*.
2. It is estimated that 200 million more gas-burning cars will be on the roads of the world in 2015 compared to 2010. How will such an increase in the number of cars affect the world's carbon cycle?
3. Your studies of the nitrogen cycle included learning that certain organisms "fix" nitrogen. What are the important organisms that "fix" nitrogen?
4. When someone describes the "raw materials" for something, he or she is describing what is necessary to make something. For example, the raw materials for hot chocolate are milk, sugar, and cocoa. What are the raw materials for *photosynthesis*?
5. What do plants produce by the process of photosynthesis?

Possible Answers

1. In the water cycle, we can say correctly, "Water that evaporates from a lake returns to the lake." Describe how that happens in the water cycle. Be sure you use the following words in your description: *evaporate, clouds, rain, soil, and tree*.

A good answer describes the water cycle as follows: Water evaporates from a lake and rises as water vapour in the air. The water vapour turns into clouds and condenses into raindrops that fall to the ground and sink into the soil. Some water returns to the lake as both runoff and groundwater.

2. *It is estimated that 200 million more gas-burning cars will be on the roads of the world in 2015 compared to 2010. How will such an increase in the number of cars affect the world's carbon cycle?*

More cars mean more burning of fossil fuel, which means more carbon in the form of carbon dioxide will be released into the atmosphere.

3. *Your studies of the nitrogen cycle included learning that certain organisms "fix" nitrogen. What are the important organisms that "fix" nitrogen?*

Bacteria.

4. *When someone describes the "raw materials" for something, he or she is describing what is necessary to make something. For example, the raw materials for hot chocolate are milk, sugar, and cocoa. What are the raw materials for photosynthesis?*

The raw materials of photosynthesis are water and carbon dioxide. [Listing energy from the Sun and chlorophyll is acceptable.].

5. *What do plants produce by the process of photosynthesis?*

Photosynthesis produces oxygen and food in the form of sugar.

Assessment 1 – Your Voice

Student Assessment

When you see an animal in the forest, you might get excited. The fact that we can enjoy watching wildlife makes trees very important. When you think about how animals and trees interact, you can think of many other ways that trees are important. They provide food. They provide shelter. They provide a place to hide. They provide shade. That's just a few examples of the importance of trees! The list could go on and on!

Now, it's your turn to make a list in the following activity.

Instructions

1. Choose one of these five images and download it to your computer.
2. Create a VoiceThread account if you do not have one already: <https://voicethread.com> Upload the image you chose to a new VoiceThread.
3. Use the comments feature (either audio, video, or text) to comment on your VoiceThread. Your goal is to comment on **10** things you have learned from section 1 about “Why are trees important?”
4. Be sure to read the criteria and **Your Voice Rubric**, and **Criteria** carefully **first** because they will help you know what is expected of you.
5. Revisit your VoiceThread, the rubric, and the *Check It* feedback to help you improve your work. When you are finished, submit your VoiceThread to your teacher.

Criteria

Your information resource should include the following:

- One of the five images provided or one you found on your own.
- A recording of your 10 answers to the question, “Why are trees important?”

Challenge

If you want an extra challenge, put your reasons in order from least important to the most important. Be sure to explain why your reasons are more important than others are.

Your Voice Rubric

	Excellent	Proficient	Adequate	Limited
Creation of a forest interaction VoiceThread	My forest interaction VoiceThread expresses the importance of trees in a way that makes excellent sense and with a great deal of unique ideas about why trees are important.	My forest interaction VoiceThread expresses the importance of trees in a way that makes good sense and with many unique ideas about why trees are important.	My forest interaction VoiceThread expresses the importance of trees in a way that makes reasonable sense and with some unique ideas about why trees are important.	My forest interaction VoiceThread expresses the importance of trees in a way that does not make sense and/or with few unique ideas about why trees are important.

Collaboration Opportunity

Students who are moving through this course as a cohort would benefit from collaboration activities. This assessment is ideal to invite peer review.

Check It

When your VoiceThread is complete, share it to your group for feedback.

1. Upload the **Your Voice Rubric** into VoiceThread.
2. Share your VoiceThread with your group members. Use the Share button, and invite them using their e-mail addresses.
3. Ask them to listen to your VoiceThread and leave comments.
4. They will leave you feedback based on these criteria:
 - Has the student included various **unique** reasons why trees are important?
 - Identify the two best comments in the VoiceThread, and explain why you feel that way.
 - Identify one comment you would revise, and make specific suggestions to how it might be improved.
 - Suggest two additional ways that trees are important that the student might consider including.
 - What is your general impression of the VoiceThread? Provide **three** words or phrases to describe the work.

Sample Feedback Form

Has someone in your group asked you to listen to his or her VoiceThread and give feedback?

1. Open the VoiceThread.
2. Start by reading **Your Voice Rubric**.
3. Then, look at the image, and listen to the comments.
4. Think about the following criteria before you provide feedback.
 - Has the student included various **unique** reasons as to why trees are important?
 - Identify the two best comments in the VoiceThread, and explain why you feel that way.
 - Identify one comment you would revise, and make specific suggestions to how it might be improved.
 - Suggest two additional ways that trees are important that the student might consider including.
 - What is your general impression of the VoiceThread? Provide **three** words or phrases to describe the work.
5. Listen to the VoiceThread two or three more times as you consider the rubric and criteria.
6. Write what you would like to say as feedback. Then, record your feedback on the VoiceThread and let your group member know when you are finished.

Sentence starters for providing feedback:

- You might think about _____.
- You might consider _____.
- What if you _____?
- I had trouble understanding _____. You might want to clarify this part.
- I noticed that _____.
- It helped when you _____.
- I liked _____ because _____.

Please provide your feedback here:

What makes trees unique?



Section 2 Vocabulary

Term	Definition
annual	a plant that lives for only one growing season
coniferous	trees that produce cones
conservationist	a person who practises conservation, taking actions that preserve and protect natural resources
cultivation	the action of preparing ground, planting, and tending to plants in an effort to get them to grow
deciduous	trees that lose their leaves seasonally
dichotomous	involving two choices [A dichotomous key uses a series of two-option decisions to identify an organism.]
evergreen	trees that keep their leaves all year round
perennial	a plant that has a life cycle of more than two years
tree cookie	a slice through a tree trunk used to count tree rings
tree ring	a ring in the trunk of a tree that represents a year of growth

How can you tell trees apart from other plants, and from each other?



Observe – A Field Trip to Cathedral Grove?

Teacher Notes

- Cathedral Grove is a stand of trees in Macmillan Provincial Park on Vancouver Island, located about 16 km east of Port Alberni. Because few forested areas of Canada are more spectacular, students should be encouraged to visit if they get the opportunity. For more information on the park, please visit this Wikipedia entry:
http://en.wikipedia.org/wiki/MacMillan_Provincial_Park .



Observe – Trees, Trees, and More Trees!

Teacher Notes

- Coniferous trees are the dominant plants over large areas of the boreal forest, which covers a large area of Canada. Most students recognize coniferous trees and relate them to their surroundings. Encourage students to use personal examples of trees from their neighbourhoods or yards in their studies of trees.



Exit Pass

Student Activity

Answer the following questions. When you have finished, submit your answers for grading.

1. A friend gives you a package of seeds as a present. The package is marked clearly as "annual". Your friend says, "I hope you plant those seeds and enjoy the plants for the next 20 years." Why is your friend mistaken?
2. Are the trees in your neighbourhood coniferous or deciduous? How can you know the difference? If you do not have trees in your neighbourhood, answer this question for the nearest place you know of that has trees.
3. No classification system is perfect. Although most conifers are evergreens, that is not always the case. The photo shows a branch of a larch tree, sometimes called *tamarack*. It has green needle-type leaves, and it produces cones. However, larch leaves change colour and fall off in autumn. Is the larch a coniferous tree or a deciduous tree? Explain your answer.

Possible Answers

1. A friend gives you a package of seeds as a present. The package is marked clearly as "annual". Your friend says, "I hope you plant those seeds and enjoy the plants for the next 20 years." Why is your friend mistaken?
Annuals are plants that live for only one growing season. The plants that sprout from the seeds will not be alive in 2 years, let alone 20!
2. Are the trees in your neighbourhood coniferous or deciduous? How can you know the difference? If you do not have trees in your neighbourhood, answer this question for the nearest place you know of that has trees.
Answers will vary according to the types of trees in your neighbourhood. Remember coniferous trees bear cones, and most have needle-like leaves that remain green year-round (evergreen). Deciduous trees have flat leaves that fall off seasonally.
3. No classification system is perfect. Although most conifers are evergreens, that is not always the case. The photo shows a branch of a larch tree, sometimes called tamarack. It has green needle-type leaves, and it produces cones. However, larch leaves change colour and fall off in autumn. Is the larch a coniferous tree or a deciduous tree? Explain your answer.
Because the larch bears cones but also loses its leaves seasonally, it is both coniferous and deciduous.

What can you learn from leaf shapes and tree growth patterns?



Discover – What Can I Learn from a Leaf?

Teacher Notes

- As in the previous activity, student learning is most meaningful if they can make direct application to their local surroundings. Therefore, if possible, encourage students to use personal examples of trees from their neighbourhood or yard in their studies.
- Practising with a dichotomous key is crucial. Students should be encouraged to work through the *ID a Tree* website as many times as needed until they are comfortable with using a key.



Discover – Tree Cookies

Teacher Notes

- If students decide to collect their own samples, care must be taken with any form of cutting method for obtaining a tree cookie. Emphasis must be on caution.
- Often, when fresh tree cookie samples are collected, the faint rings can be very difficult to see. One technique that often works well to make the rings appear darker is to place water on the cookie and allow it to soak in.
- To differentiate one ring from another because they are very close together, use a magnifying glass.



Exit Pass

Student Activity

Answer the following questions. When you have finished, submit your answers for grading.

1. While on a winter walk, a friend challenges you to identify a snow-covered tree as coniferous or deciduous.
Explain to your friend why you can identify the tree type without being able to see the leaves.
2. Explain the meaning of dichotomous and why it is important in the identification of trees.
3. List the names of four Alberta tree species, and give a brief description of the leaves of each.
4. Two birch trees with exactly the same size trunk are cut. When the tree cookies are compared, one tree is determined to be approximately 10 years older than the other is.
Explain why two tree cookies of the same size can indicate such different ages.

Possible Answers

1. *While on a winter walk, a friend challenges you to identify a snow-covered tree as coniferous or deciduous. Explain to your friend why you can identify the tree type without being able to see the leaves.*
Only coniferous trees bear cones, which are clearly visible despite the snow.

2. *Explain the meaning of dichotomous and why it is important in the identification of trees.*
Dichotomous means "choice between two things". In the identification of tree samples, a key that presents clear choices between tree characteristics makes correct identification of trees easier than having to try to match a sample to a complicated reference.
3. *List the names of four Alberta tree species, and give a brief description of the leaves of each.*
Answers will vary according to the trees the student has sampled. Compare student answers to a trusted reference such as the [Alberta Forest Council Alberta's Trees](#) website.
4. *Two birch trees with exactly the same size trunk are cut down. When the tree cookies are compared, one tree is determined to be approximately 10 years older than the other is. Explain why two tree cookies of the same size can indicate such different ages.*
The age of a tree depends on the number of rings visible in the tree cookie. Each ring equals one year of growth. Rings might be closer together when growing conditions are difficult, which indicates slow growth. Therefore, two trees can be the same size but one is much older.

Assessment 2: Your Presentation

Student Assessment

You might think that trees and technology have very little to do with each other, but that is not so! Technology allows people to experience the uniqueness of trees in new and exciting ways.

Consider the tours you can take at canadiantreetours.org.

This website allows you to download a map that guides you through a discovery of various trees while teaching you along the way.

Your review assignment is similar. Your task is to use technology to demonstrate your knowledge about various types of trees.

Instructions

1. Find **10** interesting images on the Internet that include various types of trees.
2. Use the images you find to construct a Prezi presentation. If you are more comfortable with a different presentation format such as PowerPoint or Google Presentation Doc, then use that instead.
3. Your goal is to identify **10** things you have learned from section 2 about "What makes trees unique?" Include statements of what you have learned along with your images in your presentation.
4. Be sure to read carefully the criteria and **Your Presentation Rubric** *first* because they will help you know what is expected of you.
5. Revisit your presentation, the rubric, and the *Check It* feedback to help you improve your work. When you are done, submit your presentation to your teacher.

Criteria

Your Presentation needs to include:

- 10 images of trees.
- 10 statements of things you have learned about, "What makes trees unique?"
- an organization of images and statements in a creative way.

Your Presentation Rubric

	Excellent	Proficient	Adequate	Limited
Construction of a presentation on the uniqueness of trees	My presentation expresses a great deal of ideas about why trees are unique in a very interesting and creative way.	My presentation expresses several ideas about why trees are unique in an interesting and creative way.	My presentation expresses some ideas about why trees are unique in a somewhat interesting and creative way.	My presentation expresses few ideas about why trees are unique in a less than interesting and uncreative way.

Collaboration Opportunity

Students who are moving through this course as a cohort would benefit from collaboration activities. This assessment is ideal to invite peer review.

Check It

When your presentation is complete, share it to your group for feedback.

1. E-mail your presentation to your group. If you constructed a Prezu, you must copy the link and paste it in an e-mail to your group.
2. Attach a copy of **Your Presentation Rubric** to the e-mail.
3. Ask your group members to view your presentation and give you feedback.
4. They will leave you feedback based on the rubric and these criteria:
 - Has the student included various ideas about why trees are unique?
 - Identify the two ideas in the presentation that are the best, and explain why you feel that way.
 - Identify one idea you would revise, and make specific suggestions of how it might be improved.
 - Suggest two additional ideas why trees are unique that the student might consider including.
 - What is your general impression of the presentation? Select three words or phrases to describe the work.

Sample Feedback Form

Has someone in your group asked you to view his or her presentation and give feedback?

1. Open and read **Your Presentation Rubric** that was sent by e-mail.
2. View the presentation, look at the images, and read the student's ideas about why trees are unique. If a Prezi was constructed, copy the link and paste it in a browser to view.

3. Think about the following criteria before you provide feedback.
 - Has the student included various ideas about why trees are unique?
 - Identify the two ideas in the presentation that are the best, and explain why you feel that way.
 - Identify one idea you would revise, and make specific suggestions of how it might be improved.
 - Suggest two additional ideas why trees are unique that the student might consider including.
 - What is your general impression of the presentation? Select three words or phrases to describe the work.
4. View the presentation two or three more times as you consider the rubric and criteria.
5. Write what you would like to say as feedback. Then, send your feedback to the group member.

Sentence starters for providing feedback:

- You might think about _____.
- You might consider _____.
- What if you _____?
- I had trouble understanding _____. You might want to clarify this part.
- I noticed that _____.
- It helped when you _____.
- I liked _____ because _____.

Please provide your feedback here:

What effect do people have on trees and forests?



Section 3 Vocabulary

Term	Definition
climate change	a lasting change to average global weather and temperature conditions
deforestation	the permanent removal of forest and trees to prepare land for other uses
environmentalist	a person who takes actions to improve and protect the quality of the environment
erosion	the wearing away of rocks and dirt by the action of water, ice, wind, or other forces
greenhouse effect	process that warms the earth by trapping heat in the atmosphere
larva	the juvenile form in an insect's life cycle (For example, maggots are the larvae of flies.)
lumberjack	forestry industry worker responsible for cutting trees
mountain pine beetle	a beetle that causes disease and death in pine trees
national park	a protected natural area under the management of the national government
provincial park	a protected natural area under the management of a provincial government

Why have people changed the way they use forests?



Discover – The Way We Use Forests

Teacher Notes

- The *Tree World: Uses for Trees* website provides a very good list of tree uses, but no single source can list absolutely every possible tree use. Before completing the connection web in instruction step 2, an Internet search could be used to find even more uses of trees – simply use the search terms "uses of trees" in a search engine. Another good way to encourage thinking about uses of trees is to focus on personal use – encourage students to tour their yard and home and look critically at their surroundings for anything that comes from trees, or clues of family activities that involve trees.

Collaboration Opportunity

Students who are moving through this course as a cohort would benefit from collaboration activities. This activity could be done with a partner.

Partner Up

Complete this activity with a partner. Follow these steps:

1. Post a request in our class discussion board or talk to your teacher to see if anyone is available to work with you.
2. Talk with your partner and divide the reading assignment. Set a date for this research to be completed. "Let's have our reading done by..."
3. Set a day and time when you will meet in Google Docs to work on this activity.
4. Remember to share the Connection Web in Google Docs and work on this at the same time.
5. If you and your partner cannot work on this activity at the same time, divide the work and each do your part.
6. Set a date for completion. "Let's have this done by..."
7. Read your partner's entries in the connection web. Do you have some questions?
8. Plan a day and time when you can phone, text, chat, Skype, Facetime, VSee, or use any other medium to discuss and answer each other's questions.
9. Save a copy of your completed Connection Web in your *Trees Notebook*.



Exit Pass

Student Activity

Answer the following questions. When you have finished, submit your answers for grading.

1. List one historical use for trees that is not common anymore. Explain why it is not very common anymore.
2. Why are trees effective at preventing erosion?
3. On the open prairie, many farmers plant trees around their homes. Why do they do this?

Possible Answers

1. *List one historical use for trees that is not common anymore. Explain why it is not very common anymore.*

Answers will vary. Any good answer should express an understanding of how tree use has changed over time. An example answer would be the use of trees as cooking fuel – this has fallen out of favour in modern times because wood stoves are more difficult to use than gas or electric stoves.

2. *Why are trees effective at preventing erosion?*

The roots of trees hold soil in place. Without roots, soil can be washed away much more easily.

3. *On the open prairie, many farmers plant trees around their homes. Why do they do this?*
Trees are very effective windbreaks. By planting trees around their property, farm families can get relief from winds that can carry dust and batter buildings.

Are human actions making this better or worse for forests?



Discover – The Great Debate: Are We Harming or Helping Forests?

Teacher Notes

None Provided

Collaboration Opportunity

Students who are moving through this course as a cohort would benefit from collaboration activities.

Synchronous Session

The topic for the debate:

Are we harming or helping our forests?

Students have been asked to prepare themselves for this session by completing the following:

1. Contact your teacher to determine the day and time of the debate.
2. Read the Debate Information Websites. Each website has information of how humans either harm or help forests. As you visit the following list of websites, listen to or read all the information carefully. Keep track by making notes in your P-M-I Debate Log.

Debate Information Websites:

- Tree World: Actions and Protection (Explore the links in the left-hand menu.)
http://www.domtar.com/arbre/english/actions_et_protection/index.asp
- EcoKids: Threats to Our Forests
http://www.ecokids.ca/pub/eco_info/topics/forests/threats.cfm
- EcoKids: What We Can Do
http://www.ecokids.ca/pub/eco_info/topics/forests/what_we_can_do.cfm
- Alberta Environment: Focus on Forest Health
<http://www.srd.alberta.ca/MapsPhotosPublications/Publications/documents/FocusOnForestHealth-2003.pdf>
- How Deforestation Works <http://science.howstuffworks.com/environmental/green-science/deforestation.htm/printable>
- Forest Issues <http://www.nyo.unep.org/action/13.htm>
- The Kids for Saving Earth: Rainforest
<http://www.kidsforsavingearth.org/programs/rainforest.htm>
- Rainforest Facts <http://www.rain-tree.com/facts.htm>
- Canadian Parks and Wilderness Society <http://cpaws.org/campaigns/boreal-forest>
- The P-M-I Debate Log has three

Synchronous Session continued...

- a) Human Actions: Positive Effects on Forests (Plus)
- b) Human Actions: Negative Effects on Forests (Minus)
- c) Interesting Facts

Add notes according to what you have learned from the websites.

Developer: Insert the three-column table as follows. Students should be able to add with no limits, and edit their entries as they see fit. Must be printable.

P-M-I Debate Log

Human Actions: POSITIVE (Plus) Effects on Forests	Human Actions: NEGATIVE (Minus) Effects on Forests	Things I find Interesting

- 4. Choose a position by deciding on your opinion about the question, "Are we harming or helping forests?"
- 5. What additional information can you think of to contribute to this discussion? Add this to your chart.
- 6. Decide what you could say in the debate to explain your position. You might highlight your main points in the appropriate column of the chart.

Be sure to have access to this chart during the synchronous session so you can discuss your opinion.



Discover – Forests: Serious Issues, Hopeful Solutions

Teacher Notes

- Students are presented with a myriad of forest issues to research in this activity, they should be encouraged to take their time and review all the information carefully.
- Once information on issues is gathered, the learning emphasis for the student is on critical thinking skills and application of ideas, so if there is any opportunity to discuss the issues with the student, or perhaps linking students together for discussion via teleconferencing solutions, that would make for an excellent addition to the activity.

Collaboration Opportunity

Students who are moving through this course as a cohort would benefit from collaboration activities. This activity could be done with a partner.

Partner Up

Complete this activity with a partner. Follow these steps:

1. Post a request in our class discussion board or talk to your teacher to see if anyone is available to work with you.
2. Talk with your partner and decide how you will divide the reading for this research activity.
3. Remember to share the Forest Issue and Solutions Table in Google Docs so that you are both working in the same document.
4. Set a date for completion. "Let's have this done by..."
5. Read your partner's entries in the chart. Do you have any questions?
6. Plan a day and time when you can phone, text, chat, Skype, Facetime, VSee, or use any other medium to discuss and answer each other's questions.
7. Save a copy of the completed chart in your *Trees Notebook*.



Exit Pass

Student Activity

Answer the following questions. When you have finished, submit your answers for grading.

1. Case Study: ATV Use in Forests – Good or Bad?

You will often see ATVs (all terrain vehicles) being used in Alberta forests. They are a great way to get around, and they can be fun to drive. For forests, the impact of ATVs depends on how they are used; it might be good, or it might be bad.

Ecological workers use ATVs to do studies, and forestry workers use them to plant thousands of trees. Sightseers who use established trails may do little or no damage to the forest. However, some thrill-seekers may do damage to the forest by driving their ATVs in sensitive areas. Careless use of ATVs can start fires if the hot exhaust is left unattended in dry areas.

Do you think that the use of all-terrain vehicles in forests has a good or bad effect on forests? Explain your answer.

2. Explain briefly why cutting large areas of forest may contribute to global warming.
3. Choose any issue that affects forests negatively. Explain what you could do personally to address the issue to help save or improve the forest.
4. Many people suggest that government should have a role in protecting forests. However, others disagree, and say that government should leave forest issues for industry and the public to sort out. What do you think? Explain why or why not government should be involved in forest protection.

Possible Answers

1. *Do you think that the use of all terrain vehicles in forest has a good or bad effect on forests? Explain your answer.*
 - The effect of ATVs (all terrain vehicles) depends on how they are used. There is no *correct* answer to this question; it is meant to have students defend their position with fact and practical argument. Full credit should be given to any answer in which the student has provided clear and logical explanation for his or her opinion.
2. *Explain briefly why cutting large areas of forest may contribute to global warming.*
 - Trees remove greenhouse gases such as carbon dioxide from the air. Cutting trees results in less removal of greenhouse gases, which promotes global warming.
3. *Choose any one issue affects forests negatively. Explain what you would do personally to address the issue to help save or improve the forest.*
 - Answers will vary. Many negative effect issues concern forests. No matter the chosen issue, the personal actions should be communicated clearly and logically, and it should illustrate exactly what would be done to address the issue in question. For example, fires caused by humans affect forests negatively. A person can choose to inform him or herself on how to build fires properly in the forest. He or she can be sure that, while camping, he or she never builds or leaves a campfire that will be a danger to the forest.
4. *Many people suggest that government should have a role in protecting forests. However, others disagree, and say that government should leave forest issues for industry and the public to sort out. What do you think? Explain why or why not government should be involved in forest protection.*
 - This question has no correct answer; it is meant to have the student defend his or her answer with fact and practical argument. Full credit should be given to any answer in which the student has provided a clear and logical explanation for their opinion. In this particular case, answers should be clear as to the negative effects of government involvement (if the opinion is that governments *should not* be involved), or the positive effects of government involvement (if the opinion is that governments *should* be involved).

Assessment 3: Your Poster

Student Assessment

Trees and forests can produce strong emotions in people. That is understandable, considering that forests are near and dear to many and cherished for many cultural and personal reasons. When people learn that "their" forests are in danger, they can react strongly. Some people take it so seriously that they dedicate their whole lives to certain forest issues.

What about you? Do some forest issues make you respond emotionally or give you the feeling that you need to become involved or speak out? If so, that is good! The next activity gives you a chance to express yourself on a forest issue of your choice. Even if forest issues do not make you emotional, that's okay, too. However, some time such issues might affect you personally and you will need to be prepared to speak your concerns, which is what this next activity gives you a chance to do.

Instructions

1. Construct a 'Forest Issues' poster using an online graphics tool such as a Google Drawing Doc.
2. Include statements on your poster about the things you have learned in this section. Your goal is to add 10 things you have learned from section 3 about "What effect do people have on trees and forests?"
3. Be sure to read carefully the criteria and **Your Poster Rubric** first because they will help you know what is expected of you.
4. Revisit your presentation, the rubric, and the *Check It* feedback to help you improve your work. When you are done, submit your presentation to your teacher.

Challenge!

Add an ***In My Opinion*** section to your poster. In it, state your opinion about one of the following questions:

1. Why have people changed the way they use forests?
2. Are human actions making things better or worse for forests?

Criteria

Your Poster needs to include:

- a title that clearly identifies the topic of your poster
- images or graphics that help illustrate your topic
- 10 things you have learned about "What effect do people have on trees and forests?"

Your Poster Rubric

	Excellent	Proficient	Adequate	Limited
Construction of a forest issues poster	My poster expresses and organizes ideas about a forest issue in a way that makes excellent sense, and in a way that looks excellent.	My poster expresses and organizes ideas about a forest issue in a way that makes good sense, and in a way that looks good.	My poster expresses and organizes ideas about a forest issue in a way that makes reasonable sense, and in a way that looks reasonable.	My poster expresses and organizes ideas about a forest issue in a way that does not make sense, and in a way that looks poor.

Collaboration Opportunity

Students who are moving through this course as a cohort would benefit from collaboration activities. This assessment is ideal to invite peer review.

Check It

When your poster is complete, send it to your group for feedback.

5. Share your poster with your group by e-mail.
6. Attach a copy of **Your Poster Rubric** to the e-mail.
7. Ask your group members to view your poster and give you feedback.
8. They will leave you feedback based on these criteria:
 - Has the student included various forest issues that show the effect humans have on trees?
 - Identify the two forest issues in the poster that are the best, and explain why you feel that way.
 - Identify one forest issue you would revise, and make specific suggestions of how it might be improved.
 - Suggest two additional forest issues that the student might consider including.
 - What is your general impression of the poster? Select three words or phrases to describe the work.

Sample Feedback Form

Has someone in your group asked you to view his or her presentation and give feedback?

1. Open and read **Your Poster Rubric** that was sent by e-mail.
2. Open the poster. Look at the image, and read the forest issue comments.
3. Think about the following criteria before you provide feedback.
 - Has the student included various forest issues that show the effect humans have on trees?
 - Identify the two forest issues in the poster that are the best, and explain why you feel that way.
 - Identify one forest issue you would revise, and make specific suggestions of how it might be improved.
 - Suggest two additional forest issues that the student might consider including.
 - What is your general impression of the poster? Select three words or phrases to describe the work.
4. Read the poster two or three more times as you consider the rubric and criteria.
5. Write what you would like to say as feedback. Then, send your feedback to the group member.

Sentence starters for providing feedback:

- You might think about _____.
- You might consider _____.
- What if you _____?
- I had trouble understanding _____. You might want to clarify this part.
- I noticed that _____.
- It helped when you _____.
- I liked _____ because _____.

Please provide your feedback here:

Final Assessment

Essential Question

What role do trees and forests have in the world?

Student Assessment

Here is your chance to show how well you understand the essential question of this unit. Imagine that you are part of community forest awareness group. The group's goal is to construct a website to present people with real-world questions or challenges and to provide possible answers for those questions and challenges.

Instructions

1. The group has produced a "choice board" from which group members can choose what they would like to answer. You have first choice from the choice board, and you need to select
 - **THREE** activities in single row
or
 - **FOUR** activities in the corners
2. Whatever your choices, you must provide clear responses to demonstrate that you understand the issues involved. If you include opinion in any answer, be sure to support it with facts and logical arguments.
3. Be sure to read carefully the **Choice Board Rubric** first because it will help you know what is expected of you.
4. Revisit your Choice Board responses, the rubric, and the *Check It* feedback to help you improve your work. When you are done, complete the Self-Reflection.
5. Submit your Choice Board responses and the Self-Reflection to your teacher.

Choice Board Rubric

	Excellent	Proficient	Adequate	Limited
Organizes information	Organization of information is comprehensive, distinct, and useful.	Organization of information is logical and categories are clear and useful.	Organization of information is basic and sometimes confusing.	Organization of information is ineffective.
Communicates key ideas and information	Communication of key ideas and information is convincing throughout the activity.	Communication of ideas and information is effective throughout the activities.	Communication of ideas and information is adequate during the activity.	Communication of ideas and information is ineffective during the activity.
Presents Information	Information is presented that engages and holds the interest of the reader.	Information is presented that communicates to the reader.	Information is presented that communicates to reader, but it does not sustain interest throughout.	Information is presented that does not suit the needs or interests of the reader.
Demonstrates understanding	Thorough and insightful understanding of the unit's concepts with comprehensive explanation of concepts uses relevant facts.	Clear understanding of the unit's concepts and with explanation of concepts uses relevant facts.	Understanding of the unit's concepts and explanation of concept significance uses generalities.	Little or no understanding of the unit's concepts is shown with an unclear explanation of concepts.

Collaboration Opportunity

Students who are moving through this course as a cohort would benefit from collaboration activities. This assessment is ideal to invite peer review.

Check It

After you have completed three or four Choice Board responses, send them with your group for feedback.

1. Share your Choice Board responses with your group by e-mail.
2. Attach the **Choice Board Rubric** to the e-mail.
3. Ask your group members to listen to, view, and/or read your responses and give you feedback.
4. They will leave you feedback based on these criteria:
 - Has the student included various responses that identify clearly the role trees have in the world?
 - Identify the two responses from the Choice Board that are the best, and explain why you feel that way.
 - Identify one response you would revise, and make specific suggestions to how it might be improved.
 - Suggest two additional pieces of information that the student might consider including.
 - What is your general impression of the Choice Board responses? Select three words or phrases to describe the work.

Sample Feedback Form

Has someone in your group asked you to view his or her responses and give feedback?

1. Read the **Choice Board Rubric**.
2. Read the responses carefully.
3. Think about the following criteria before you provide feedback.
 - Has the student included various responses that identify clearly the role trees have in the world?
 - Identify the two responses from the Choice Board that are the best, and explain why you feel that way.
 - Identify one response you would revise, and make specific suggestions to how it might be improved.
 - Suggest two additional pieces of information that the student might consider including.
 - What is your general impression of the Choice Board responses? Select three words or phrases to describe the work.
4. Read the Choice Board responses two or three more times as you consider the rubric and criteria.
5. Write what you would like to say as feedback. Then, send your feedback to the group member.

Sentence starters for providing feedback:

- You might think about _____.
- You might consider _____.
- What if you _____?
- I had trouble understanding _____. You might want to clarify this part.
- I noticed that _____.
- It helped when you _____.
- I liked _____ because _____.

Please provide your feedback here:

Resource Reference List

Below is a complete list of all the resources that are used to support learning in this unit.

Introduction to Trees

Trees: Heroes of our Planet – Video

http://www.youtube.com/watch?v=IVr5_J7R3_g

Why are trees important?

Tropical Rainforests – BrainPOP Video

<http://www.brainpop.com/science/earthssystem/tropicalrainforests/preview.weml>

- **Why do trees and forests have value?**

Natural Resources – BrainPOP Video

<http://www.brainpop.com/science/ourfragileenvironment/naturalresources/preview.weml>

The Footprint of the Canadian Forest Industry – Video

http://www.youtube.com/watch?v=_Vm6DPEm1Tc&

Forestry Equipment Operator – Video

<http://www.youtube.com/watch?v=iKLcXldANSk>

The Boreal Forest is Where I Want to Be – Video

<http://www.youtube.com/watch?v=HfcLCjXeXxg>

Forests for the Future: Cree Knowledge – Video

<http://www.youtube.com/watch?v=panyq1nHegg>

Tour Canada's Boreal Forest - Video

<http://www.youtube.com/watch?v=DURxklojz54>

UPM Forest Life – Interactive Virtual Field Trip

<http://w3.upm-kymmene.com/upm/forestlife/index.html>

World Map: Finland – Google Map

<http://bit.ly/xb7P9x>

- **In what ways do plants and animals live on, under, and among trees?**

Yellow-Bellied Sapsucker Bird Call

<http://www.xeno-canto.org/species/Sphyrapicus-varius>

Yellow-Bellied Sapsuckers - Video

<http://www.youtube.com/watch?v=zj-nXi-c3gM&h>

Forestry Images

<http://www.forestryimages.org/>

Walk in the Forest – Forest Layers website

<https://nationalzoo.si.edu/Education/conservationCentral/walk/default.cfm>

Food Chain in the Temperate Rain Forest

http://www.world-builders.org/lessons/less/biomes/rainforest/temp_rain/tempweb.html

The Food Chain Game

<http://www.sheppardsoftware.com/content/animals/kidscorner/games/foodchaingame.htm>

Forests for the Future: Recycled Paper – Video

<http://www.youtube.com/watch?v=22j7UhocVrl>

Temperate Deciduous Forest Animals – Website 1

<http://www.enchantedlearning.com/biomes/tempdecid/tempdecid.shtml>

Temperate Deciduous Forest Animals – Website 2

<http://www.mbgnet.net/sets/temp/animals/index.htm>

- **What role do trees have in nutrient cycles?**

The Most Amazing Thing About Trees – Video

<http://www.youtube.com/watch?v=BickMFHAZR0>

Nitrogen Cycle – BrainPOP Video

<http://www.brainpop.com/science/earthsystem/nitrogencycle/preview.weml>

Real Trees 4 Kids: Cycles

<http://www.realtrees4kids.org/sixeight/cycles.htm>

Photosynthesis – BrainPOP Video

<http://www.brainpop.com/science/cellularlifeandgenetics/photosynthesis/preview.weml>

Real Trees 4 Kids: Let's Eat

<http://www.realtrees4kids.org/sixeight/letseat.htm>

Biology 4 Kids: Photosynthesis

http://www.biology4kids.com/files/plants_photosynthesis.html

ADLC Digital Lesson on Pigments in Trees

<http://www.youtube.com/watch?v=WvUwoYegvYY&feature=youtu.be>

VoiceThread

<https://voicethread.com/>

What makes trees unique?

Giraffes feeding on acacia trees – Video

<http://www.youtube.com/watch?v=s1b8s-j0qfw&hd>

National Film Board – Legends of Aboriginal Peoples

<http://www.nfb.ca/subjects/aboriginal-peoples-in-canada/legends-and-literature>

- **How can you tell trees from other plants and from each other?**

Cathedral Grove – Google Maps

<http://g.co/maps/5smrb>

Cathedral Grove, British Columbia

<http://www.cathedralgrove.eu/text/01-Cathedral-Grove-1.htm>

ScienceMan Digital Lesson – Biomes – Temperate Rain Forest – Video

<http://www.youtube.com/watch?v=i58RWMuVLbQ>

Devonian Gardens – Google Maps

<http://g.co/maps/eq6xx>

Dr. Arbor's Laboratory

<http://urbanext.illinois.edu/trees3/lab.html>

Tree Canada

<http://treecanada.ca/en/>

- **What can you learn from leaf shapes and tree growth patterns?**

ADLC Digital Lesson – Alberta Trees

<http://www.youtube.com/watch?v=nXCCepfflKA&feature=youtu.be>

ID a Tree

http://nationalzoo.si.edu/education/conservationcentral/walk/walk4_broadband.html

Alberta Forest Council: Alberta's Trees

<http://www.abtreegene.com/trees.html>

VTree Leaf Key

<http://dendro.cnre.vt.edu/dendrology/syllabus/key/location.htm>

Guide to Common Native Trees and Shrubs of Alberta

<http://www.insideeducation.ca/sites/insideeducation.ca/files/TreeShrub.pdf>

ADLC Digital Lesson – Tree Cookies

<http://www.youtube.com/watch?v=5sZJyoURNYc&feature=youtu.be>

Science Nation: Lord of the Rings – Video

<http://www.youtube.com/watch?v=FAOYkx8E-Gc>

Welcome to the Laboratory of Dr. Douglas Fir

http://cf.ecokids.ca/pub/eco_info/topics/climate/treerings/index.cfm

Tree Cookies – Wonderville

<http://www.wonderville.ca/asset/tree-cookies>

Idaho Forests – Tree Cookies

<http://www.idahoforests.org/cookie1.htm>

Canadian Tree Tours

<http://www.canadiantreetours.org/>

Prezi

<http://prezi.com/>

What effect do people have on trees and forests?

- **Why have people changed the way they use forests?**

Lumberjack Show: Wood Chopping Competition – Video

<http://www.youtube.com/watch?v=o368zUnfuys>

Forest Academy

<https://www.theforestacademy.com/en/>

- **Are human actions making things better or worse for forests?**

Old Growth Environmental Protest – Video

<http://www.youtube.com/watch?v=5Lle8eT4SHI>

Forest Academy

<https://www.theforestacademy.com/en/#/forest-protection>

EcoKids: Threats to Our Forests

http://cf.ecokids.ca/pub/eco_info/topics/forests/threats.cfm

EcoKids: What We Can Do

http://cf.ecokids.ca/pub/eco_info/topics/forests/what_we_can_do.cfm

Alberta Environment: Forest Health

<http://esrd.alberta.ca/lands-forests/forest-health/default.aspx>

Government of Alberta: Impact of Forest Harvest

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/apa3317](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/apa3317)

How Deforestation Works

<http://science.howstuffworks.com/environmental/green-science/deforestation.htm/printable>

The Kids for Saving Earth Rainforest

<http://www.kidsforsavingearth.org/programs/rainforest.htm>

Rainforest Facts

<http://www.rain-tree.com/facts.htm>

Canadian Parks and Wilderness Society – Boreal Forest

<http://cpaws.org/campaigns/boreal-forest>

Mountain Pine Beetle and Forest Carbon in BC

<http://www.youtube.com/watch?v=anxJsQ7GEV4>

Alberta's Fight against Mountain Pine Beetle

<http://mpb.alberta.ca/FAQs/AlbertasFight.aspx>

Greenhouse Effect – BrainPOP Video

<http://www.brainpop.com/science/earthsystem/greenhouseeffect/preview.weml>

Natural Resources – BrainPOP Video

<http://www.brainpop.com/science/ourfragileenvironment/naturalresources/preview.weml>

Are We Running Out of Trees?

http://www.tappi.org/paperu/all_about_paper/earth_answers/EarthAnswers_RunOutTree.pdf

Government of Alberta: Impact of Forest Harvest

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/apa3317](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/apa3317)

Canada's Forests under Threat

http://www41.statcan.ca/2006/1664/ceb1664_003-eng.htm

Forest Impacts – David Suzuki Foundation

<http://www.davidsuzuki.org/issues/climate-change/science/impacts/forest-impacts/>

Forestry – Natural Resources Canada

<http://www.nrcan.gc.ca/earth-sciences/geomatics/satellite-imagery-air-photos/satellite-imagery-products/educational-resources/9321>

Current Forest Issues – Inside Education

http://www.insideeducation.ca/Current_Forest_Issues