



Scoutrees and Climate Change



- Celebrating Our Legacy

by Jennifer Harwood

The Scoutrees program is a tremendous accomplishment of which we can all be proud. It demonstrates the major commitment from Scouting councils and groups to the continued health of Canada's air and ecosystems. Scoutrees also helps reduce climate change, since trees play a considerable role in absorbing greenhouse gases.

What is climate change?

Climate change is caused by the accumulation of greenhouse gases in the atmosphere. These gases trap heat similar to the glass in a greenhouse, causing temperatures on earth to rise. Scientists are predicting an increase in the average earth temperature of one to three and a half degrees Celsius over the next century. Temperatures will vary across the earth - Canada could experience a temperature increase of as much as five to ten degrees Celsius.

Human activities, particularly the use of energy to heat our homes and power our cars, are a primary source of greenhouse gases. However, scientists also attribute the loss of forest cover to increased carbon dioxide in the atmosphere.

Trees are important!

Tree planting is an important contribution Scouts Canada can make in reducing climate change. This is because forests remove carbon dioxide,

a main greenhouse gas, from the atmosphere through photosynthesis. Trees absorb carbon through their leaves and release oxygen. (Oxygen is the "dioxide" part of "carbon dioxide".

Canada plans to promote management of forests and agriculture as one means of reducing its greenhouse gas emissions. This will include creating new forests, reducing the permanent loss of forests through land-use change and improving forest management practices.

Making your Scoutrees project work for climate change

Through Scoutrees, two million trees are planted each year. This already makes an impact on the amount of forest cover available in Canada to absorb carbon dioxide and reduce climate change. Over the 30 year life of the program, it is estimated that Scoutrees has removed approximately two million tonnes of carbon dioxide. That is the equivalent to absorbing all the carbon dioxide emitted through energy use by 7.7 million single detached homes in Canada or 275,000 cars every year!

There are a few things you can do to improve the contribution and effectiveness your Scoutrees project can make to climate change. During your preparations, find out if the trees you will be planting will be protected in the long-term. This will enhance the effectiveness of your Scoutrees project.

Forest management practices can affect the amount of carbon that any one forest stand can absorb. What are the forest management practices of your Scoutrees planting site (if applicable)? Reducing soil disturbances, or improving forest regeneration after fire, insect infestation, outbreak of disease or large-scale harvesting all help forests absorb and store more carbon. Before and on planting day,



Gentle Giants, always watching over us.

Carbon dioxide is a greenhouse gas; oxygen isn't.) This makes trees "storage vessels" of carbon and one of the pieces of the puzzle to reducing the impact of climate change. With almost 10% (over 400 million hectares) of the earth's forests in Canada, Canadians bear a large responsibility for forest stewardship. The other places where carbon can be stored are oceans, soil, other plants, and in geological formations deep within the earth's crust.

Photo: Chris Barber

take measures to help your section be prepared for low-impact tree planting by reducing their disturbances to soil and other vegetation to the greatest extent possible.

We will not be able to completely reverse climate change. This must be kept in mind when thinking about the long-term potential of your Scoutrees project. Canada will be significantly affected by warmer temperatures, resulting in a greater frequency and intensity of storms and droughts, and a higher incidence of forest fires, disease and insect infestations. These impacts will be most significant in higher latitudes (45°N to 65°N) and the interior of continents, and will affect forests. Scientists predict a shift northward of animal and plant species, including forest lines.

The bottom line is that we have to be prepared to adapt to the changes we will experience. Not only is this important for humans, it is important for the natural world as well. For instance, forests will become more vulnerable in the future due to increased temperature, a drier (or wetter) climate and greater incidence of insect infestation and disease triggered by climate change. How hardy are the trees you will be planting? Find out what types of impacts are predicted from climate change for your province (see references for the Government of Canada web site at the end of this article for helpful resources). If drier conditions are predicted, are your species resistant to drought? If wetter, can they handle a lot of moisture? What temperature range can they tolerate?

“What did we accomplish?”

The Scouts Canada Climate Change Education and Awareness Program is part of the Government of Canada’s program to encourage Canadians to reduce their personal contribution to climate change by one tonne of carbon. Just how much carbon is that? According to a rough estimate by Tree Canada Foundation, if every Canadian planted six trees, over a lifetime of 80 years those trees will have removed one tonne of carbon from the atmosphere.

How much carbon dioxide might your Scoutrees project absorb? The answer is tricky. Not all tree species are created equal. The ability of a tree to store carbon depends on its growth rate and lifespan. Certain species of trees – in particular fast-growing hardwood trees – can ab-

sorb carbon dioxide more quickly than others. Fast-growing varieties of larch and spruce are examples of these. In addition, trees must be suitable to the conditions into which they are planted in order to reap climate change benefits.

However, generalizations can be made. Tree Canada Foundation estimates that an “average” tree planted in an urban environment will remove two and a half kilograms of carbon dioxide every year. This number is slightly higher for trees planted in rural settings.

When thinking about a tree planting project, it is important to understand the wide range of benefits trees bring to the environment, to wildlife and to humans. Reducing climate change is only one of these benefits. Canada would not be better off if all new tree planting projects only focused on maximizing the ability of trees to absorb carbon. A diversity of tree species is necessary to maintain the range of benefits trees provide. While climate change is a worthy cause, don’t ignore the other benefits of trees and forests.

Translating forests and climate change into a (fun) teachable moment

The contribution Scoutrees makes to reducing greenhouse gas emissions

is an important part of Scouts Canada’s climate change education and awareness initiative. If you’ve never considered taking part in a Scoutrees project, consider making it a priority this year. Trees provide benefits such as cleaning the air, providing animal and bird habitat, and reducing climate change. But nothing beats having your section visit a location where they have planted trees and see the living testimony of their contribution to the environment.

As you gear up for this year’s Scoutrees project, consider helping your group learn about climate change and the role forests play in reducing greenhouse gas emissions. Try one of these fun and educational activities on or before the day of your Scoutrees project:

Beavers:

Forest Hide and Seek

Hide a number of natural objects or pictures found in forests around the meeting room (leaves, pinecones, twigs, berries, birds’ nests, bark, shrub clippings, flowers, etc.). Have Beavers look for the objects. Once all the objects are found, have them gather in the centre of the room to tell the group what they found. Talk about the purpose of a number of the objects to humans, animals, birds and plants.

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Falling leaves

Beanbags are the “leaves” for this falling leaf catch game. Ask Beavers to spread out in the playing area. Start them throwing and catching beanbags by tossing three or more beanbags to various children. Like trees, the Beavers must stay “rooted” to the spot as they try to catch the beanbags. When all the beanbag “leaves” have fallen, gather them up and play again.

Alternative

If Beavers are old enough to grasp the following concept, try this twist on the game with them. Explain to them that trees trap pollution from the air and turn it in to the good oxygen we breathe. When Beavers catch the beanbags, they are trapping pollution like trees. When they throw it to someone else, they are releasing good oxygen into the air.

Adapted from Scouts Canada's JUMP-START for Beavers, Trees and Nature Theme.

Forest mural

Have the entire colony make a mural of a forest that shows a number of the things that a forest provides. Each Beaver can be asked to draw a picture about one thing he or she feels is particularly important about forests. Examples are: homes for animals and birds, a beautiful place to walk, food for birds and people, trees that clean the air.

Cubs:

Carbon Pinball

The purpose of this activity is to help Cubs realize how trees work to take carbon dioxide out of the air. This game can be played indoors or outdoors near the Scoutrees planting site. Select three to four Cubs to act as “trees”. Divide the remaining Cubs

evenly into two teams and line them up at opposite sides of the playing field. Cubs that are “trees” are scattered in the middle of the playing field between the two rows. Cubs on either side of the playing field try to roll a “carbon dioxide molecule” (i.e. a ball) to each other without hitting the trees. Trees cannot move their feet, but can reach out to try to intercept the carbon dioxide molecule. If trees are successful at intercepting the carbon dioxide molecule, the Cub that rolled it joins the trees in the centre of the playing field.

This game mimics the role trees play in removing carbon dioxide from the air. As more and more trees join the centre of the playing field, it will become harder and harder for the carbon dioxide ball to escape past them to the other side. The game ends when everyone has become a tree. At the end of the game, help Cubs to make the connection between the game and their Scoutrees project.

Climate Change Relay Race

The purpose of this activity is to teach Cubs about a number of “causes” and “solutions” to climate change, including trees. This running activity can be played indoors or outside near the Scoutrees planting site. Have Cubs sit in their sixes in rows along the “start” line at one end of the playing field. At the opposite side of the field on the wall or lying on the ground, have either pictures or cards with words to represent a number of items related to climate change. Half of these objects should be items that contribute to climate change and half should be items that help to reduce climate change.

The first Cub in each six runs to the opposite end of the field at the sound of a whistle and picks out an object or word that is a “cause” of climate change. He/she then runs back

to his/her six and tags the next Cub. The second Cub runs to the opposite end of the playing field and selects a “solution” to climate change and runs back to tag the next Cub. (Alternatively, sixes could be assigned one of each of the “cause” and “solution” categories to collect in entirety.) This continues, alternating between “causes” and “solutions” until the last Cub in the six has returned. The entire six then sits down. The six leader should verify that the cards are all correct. If one or more cards are incorrect, the six leader tells the six that there is a mistake in their cards (but does not indicate which card(s) are wrong). The six must figure out which card(s) are wrong and correct their selection. The game finishes when one six is found to have all the correct answers.

Ideas for causes of climate change: car, house (home heating), factory, campfires, cutting down trees, forest fires, air conditioner, light bulb, greenhouse gas.

Ideas for solutions to climate change: bike, shoe, windmill, forest, shrubs, car pooling/city bus, recycling, cooking pot with a lid, sweater.

The Heat Game

For this game, you will need a large playing field and three large hula hoops. Mark out a perimeter of one metre around the playing area – this is designated as the clean zone. Explain to Cubs the important role of trees in absorbing carbon dioxide. Trees can help stop carbon dioxide from building up in the atmosphere to cause climate change. There are three sets of players in this game – the trees, the carbon dioxide molecules and the smoke stacks. Identify the Sixers as trees. Ask them to put on a vest or piney that identifies them as trees. Explain to the rest of the Cubs that they are carbon dioxide molecules that



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Figure out your personal climate change “footprint”

Planting trees through Scoutrees projects is a great contribution towards reducing climate change. However, ultimately Canadians will need to adjust their lifestyles to avoid raising greenhouse gas emissions further. Canadians can reduce climate change by making different transportation choices, such as carpooling and using public transit. They also can help make their homes more energy efficient. As a bonus, this will also save homeowners money on their heating and cooling bills. Governments and industries also must change business practices and provide incentives to promote renewable energy and energy efficiency. Do you know what your climate change “footprint” is? Find out at: <http://www.climcalc.net/> along with tips on what you can do now to reduce your personal contribution.

Sources: Tree Canada Foundation: <http://www.tcf-fca.ca/>

The National Arbour Day Foundation:
<http://www.arboday.org/trees/aerialbenefits.html>

float in the air. If they get tagged by a tree then they become oxygen, leave the playing area and return to the back of the line.

Identify one leader as a big coal burning electricity plant with a smoke stack. Use a hula hoop to represent the smoke stack. Hold the hula hoop with its edge on the floor so the Cubs can move through it. The Cubs line up behind the hoop and come through the hoop into the play area. While they are doing so yell "Heat, Heat, Heat" the whole time they are in the play area. The "trees" try to tag the carbon dioxide molecules. If carbon dioxide molecules are tagged they turn into oxygen molecules and must go to the "clean zone" at the side of the play area and return to the line behind the smoke stack. Once all the "molecules" have gone through the smoke stack and been tagged, stop the game. Add a few more "smoke stacks" or a few more trees and see what happens to the number of "heat" molecules floating around in the air. Discuss how having more trees means that carbon dioxide is removed from the air more quickly, reducing climate change.

Scouts:

Forest line tag

This game tests Scouts' knowledge about forests and climate change in a fun way. It can be played inside a large room or outside. Arrange Scouts into two teams (named "True" and "False"). Line the teams up opposite each other about one to two metres apart. Behind each team about 15 metres back mark out a "safety zone". Explain that one leader will read out a question regarding forests and climate change. The answer will either be True or False. If the answer is true, the "True" team chases the "False" team to their safety zone trying to tag them. Anyone who is caught before reaching the "safety zone" joins the other team. If the answer is false, the opposite happens. Before each question, the two teams line up again as they did at the beginning of the game. Leaders can take a moment during this time to talk about the true answer to the question (see notes supplied). The game continues until all the questions have been asked or all the members belong to one team.

Sample questions:

1. Almost half of Canada is forested.
TRUE: Canada has 400 million hectares of forest – that's 10 percent of all the forests in the world.

2. Trees act as "storage vessels" for carbon dioxide.

TRUE: Through photosynthesis, trees absorb carbon dioxide and release oxygen.

3. Trees will grow faster and stronger under climate change because there will be more carbon dioxide for them to absorb.

FALSE: Tree growth will not be affected by the presence of more carbon dioxide. However, climate change will mean more drought, warmer temperatures and other impacts, which will weaken trees' ability to survive.

4. We would run out of oxygen to breathe if forests did not create it.

TRUE: Although oxygen makes up about 1/5th of our air supply, we also depend on trees to produce more of it as a by-product of photosynthesis.

5. Forests contribute to climate change.

TRUE: Forests not only absorb carbon dioxide – which is a greenhouse gas – they also emit carbon dioxide through decaying leaves and branches. So, trees are a cause and a solution to climate change.

6. When you cut down a tree, it releases all of the carbon dioxide it has stored.

FALSE: Cutting down a tree does not release the carbon stored inside it; burning the wood or leaving leaves and branches to rot does.

7. If we just plant more trees and vegetation, we don't need to reduce our energy use or worry about climate change.

FALSE: Tackling climate change will require us not only to find ways to reforest and revegetate our communities, but to change the way we currently use energy.

8. One full-sized tree can absorb 75% of the carbon dioxide produced by the average car.

TRUE: Trees also help to absorb the noisy sounds of the city, including cars.

9. Climate change is going to affect forests on the coasts more significantly than those inland.

FALSE: Climate change impacts will be most significant in higher latitudes (45°N to 65°N) and the interior of continents.

10. When trees shade buildings, the building must use more energy for winter heating and summer air-conditioning.

FALSE: The opposite actually happens when trees are used as wind-breaks or shade for buildings.

FOR MORE INFORMATION ON TREES AND CLIMATE CHANGE, VISIT:

Canadian Forestry Service:

http://www.nrcan.gc.ca/cfs-scf/index_e.html

Government of Canada's Climate Change Site:

www.climatechange.gc.ca

Natural Resources Canada:

<http://www.nofc.forestry.ca/climate/>

World Resources Institute:

<http://www.wri.org/climate/sinks.html>

Canadian Forestry Association:

<http://www.canadianforestry.com/eng/teach/>

Tree Canada Foundation:

<http://www.tcf-fca.ca/>

Forest orienteering

Create an orienteering course for Scouts to follow in groups. Lead Scouts to a variety of stations to collect letters which they must unscramble to form a phrase. Ideas for the word which they are to unscramble are: SEQUESTRATION (this is the technical term for how trees absorb carbon), GLOBAL WARMING, CARBON CYCLE (trees illustrate the carbon cycle – from absorbing carbon in early growth to giving it off through decay), REFORESTATION.

Forest mapping exercise

Take a hike through a community forest. Have Scouts identify sources of carbon dioxide (leaf litter, fallen branches, other decaying organic matter, signs of damage from insects or disease) and carbon dioxide "sinks" – trees that remove carbon. Conduct a forest mapping exercise to determine the makeup of the forest (old stands, young stands, species make up) and estimate if the forest is generating more carbon than it is likely to be absorbing.

The continued great work of Scouts Canada will help ensure the slowdown in climate change in the years to come. Whatever your tree-planting project: have fun! X
– Jennifer Harwood works for the Delphi Group, an environmental consulting company.