



The Leaflet

Fall 2016

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Seeing the forest through the trees

A recent TED Talk release features Forest Ecologist Suzanne Simard from UBC who presents the results of 30 years of research on forest networks. The roots of trees in forests are interconnected through underground fungal mycelia that act as communication channels between individuals. Through these channels transit a vast array of chemicals from nutrients to defense signals. Simard talks about a new form of intelligence and illustrates such networks as a mesh of links and nodes of various weights. All together these form structures reminiscent of the internet or our neural tissues. If you have never heard of forest networks, we strongly suggest you get acquainted with this fascinating subject. BEWARE: You have just entered the hidden dimension of forests.

ArboTeam

This summer, our field projects have been tackled by 6 students thanks to a generous grant from the federal government. We were blessed with the return of Stacey and Luke from last year's crew. Through their experience the group has gained autonomy, developed self-management skills and they have cultivated a spirit that has led to several successful initiatives. The composting and mulching efforts undertaken last year have improved soil fertility and weed control in the beds, around some of the tree specimens and in the nursery. Training in equipment handling and tick monitoring has provided the students with lasting practical knowledge. Hats off to them for all of their accomplishments.



The field crew (as indicated by asterisks) and ArboTeam as they are about to challenge the Campus Horticulture Centre team at softball. From left to right, top to bottom: Luke Gossage-Bleho*, Rob Pemberton, Michael Gossage-Bleho*, Justin Pemberton*, Mehrdad Sadegh, Stacey Olynick*, Scott Pemberton, Kiera O'Hagan*, Alexandra McDougall* and mascot Toby.

Commemorations

By the time you read these lines four new benches will have popped up along the Centre Road and five additional trees will have been labelled. This successful year is all thanks to thoughtful donors and to those who have helped in promoting the program.

Rabbits, rabbits everywhere...

By Sarah Dixon, Naturalist

People have been asking the Arboretum staff about some curious brown rabbits spotted on Macdonald Campus and in Beaconsfield. While seeing rabbits on the West Island is not rare, there seem to be more than usual. Based on the description, they appear to be eastern cottontails.

So where are all these rabbits coming from? It could simply be a one-off, but we cannot know for sure without a few decades of data on rabbit populations in the area. Furthermore, urban wildlife behave differently from their wild counterparts, having adapted to life in a human-dominated environment. Urban coyotes, for example, are almost completely nocturnal and songbirds that nest in cities have been found to sing at higher frequencies than those nesting in non-urban areas, so that they can be heard above the ambient noise.[1]

Let's explore a few hypotheses on why there are so many eastern cottontails this year.

A good year for babies?

The timing of the cottontail breeding season varies according to latitude, with northern populations breeding later in the year than southern ones. In addition, litter sizes tend to be larger in northern populations. Female cottontails dig a shallow nest in a secluded place and line it with grass and their own fur.[2] Last year may have been a particularly good year for breeding and rearing young. But let's look at other potential explanations.

Predators?

The idea of rabbits living close to people reminded me of a duck nest inventory I did years ago in a riverside urban park. All the nests we found were within a meter or so of a walking trail, which sounds bizarre at first until you



Eastern Cottontail Rabbit

consider the park's common predators, which include fox, raccoon and mink. It makes perfect sense for nests to be so close to trails since human activity would keep predators away. Could something similar be happening with the rabbits?

I did some research on predators of the eastern cottontail in urban areas and one of the most formidable is the coyote. Although they are seldom seen, coyotes have long been well adapted to urban areas. Urban coyotes are more nocturnal and less vocal than their wild counterparts. Despite living near cities, they prey mainly on small rodents, deer, and rabbits. As omnivores, they also consume berries and insects.[3]

Against the background of reports this July of a coyote in the West Island, a 2013 study in Chicago looked at the territories of feral cats and urban coyotes. Researchers found that cats preferred developed landscapes while coyotes chose more natural, undeveloped areas. When their territories met, cats avoided coyotes as much as possible.[4] Presumably, urban coyote territories also provide good nesting and foraging habitat for songbirds, since they offer a safe haven from feral and domestic cat predation.

However, actual coyote attacks on cats are rare. A study in Tucson, Arizona, on cat-coyote interactions found that the majority of fatal coyote attacks on cats occurred between 11:00 pm and 5 am, and were most frequent during the pup-rearing season.[5] Since coyotes prefer undeveloped areas and are most likely to encounter feral cats, it is safe to say that cars are a far greater threat to domestic cats than coyotes.

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Nuts from the forest

By Sarah Dixon, Naturalist

In the fall, I spend a lot of time around the **Butternut** tree looking on the ground for a nut; just one nut, that is good and that I can eat. The problem is that whenever I go looking for butternuts on the forest floor, they're either rotten, or infested with insects. Yuck. Looking up into the tree reveals why; squirrels and chipmunks are hastily chewing away at the branches and running off with the ripe nuts before they have a chance to drop to the ground. I feel this unfair; the rodents are cheating somehow as they run off with every single good nut. Occasionally one of the nuts they reject will fall and hit me in the head, which just adds insult to injury.

Given the fact that not a single nut gets by the vigilant squirrels, as well as the fact that the name of the tree is butternut; I can only speculate that the nut tastes absolutely delicious and contains not only oil and protein, but also a significant amount of concentrated magic (but this has yet to be confirmed by scientific research).

Butternuts are at the most northern limit of their distribution here, and there is good reason to believe that the trees were originally cultivated by First Nations people hundreds of years ago for the nuts they produce. The Arboretum plantation of **Black walnut** trees was established in 1950, not for their nuts, but for their dark and beautiful wood. Today the stand is a source of nuts for local wildlife.

On that note, the nutty person looking to bake cookies does her foraging along the shore in an area where the city has planted Black walnuts for their beauty. Aside



The round and corrugated fruit of Black Walnut

from my long-term curiosity regarding what a butternut nut tastes like, I do my food collecting up North in a huge forest where I am presumably the only person gathering. The Arboretum isn't big enough to handle serious food collecting but it is a great place to learn about different trees and how to identify them. The rodents and other animals need these nuts to survive the winter, so the Arboretum is their limited grocery store.

So what can be done with wild nuts? Many things! Butternut and Black walnut are both, as the latter name implies, walnuts. They can be used in any recipe where regular walnuts are called for: brownies, cookies, fudge, cakes, and so on. I have found a recipe or two for walnut salad in which I'm sure they would be excellent. Euell Gibbons,

in his timeless book *Stalking the Wild Asparagus* has a recipe to make a soup base by boiling the shelled walnuts in water until you get a soup stock then skimming off the oil floating on top before using.

Our area also has several different **Oak species**, of which the Red oak is by far the most common. I bring this up

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The oblong and fuzzy fruit of Butternut



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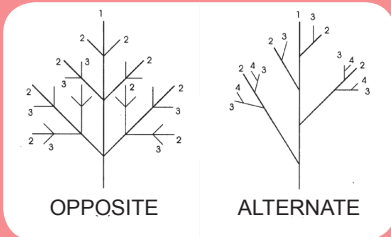
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Telling a tree from another during the winter months

By Iliana Irons, Student Volunteer

The forestry class that I registered for at McGill University was scheduled in the depth of winter. As one would expect, a substantial part of this course was dedicated to tree identification, which took place here, at the Morgan Arboretum. One student asked: "How are we supposed to identify the trees if their leaves have fallen?" I sat at my desk, puzzled. My professor replied: "Using the bark, of course!" As their

name implies, most evergreen trees do not lose their needles in the fall, making it much easier to identify them. Hardwoods, on the other hand, lose their leaves during the cold weather so we must distinguish them by other means, like their bark or their branching pattern! As you walk around the Centre Road this fall, use these guidelines to recognize the trees that surround you on the path.



ASH

Spot the opposite branching pattern, which you will only find amongst the ash and maple trees locally. As for the bark, it has a very distinct pattern of intersecting diamond-shaped ridges.



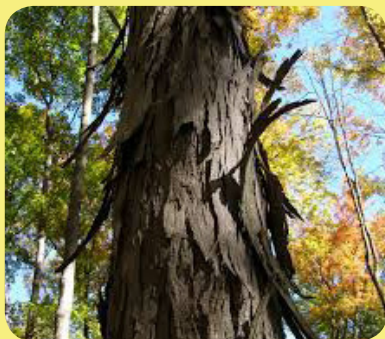
BEECH

I would say that the beech tree is one of the easiest to recognize because of its very smooth light grey bark. You may, however, see some beech trees covered with a thin, waxy white crust. This is caused by scale insects, which are feeding on the beech tree sap and are the vector of beech bark disease. During the fall, fungal fruiting bodies can be seen as deep-red, lemon-shaped patterns on the bark of the beech tree. This is another symptom of beech bark disease, which has affected several of our beech trees.



IRONWOOD AND SHAGBARK HICKORY

The bark of the ironwood is brownish-grey in color and has short and narrow vertical strips that seem to unpeel from the trunk at both ends. Do not confuse this bark with that of the shagbark hickory, which has much longer strips.



RED OAK

The young red oak tree has smooth, greenish grey bark. As it matures, vertical grooves will begin to develop. Mature red oak trees have a furrowed bark with unbroken, long, vertical ridges.





SUGAR MAPLE

If you want to make your own delicious maple syrup this spring, be sure to spot the sugar maple bark so that you tap the right tree! Look for dark grey bark with vertical, irregular ridges. You will notice that the ridges curl outwards on the sides unlike those of the oak tree.



EASTERN WHITE PINE

You can identify the eastern white pine by its clusters of five needles, which remain on the tree throughout all four seasons! As for the bark, it is grayish to reddish-brown and separated into ridges that are broken horizontally into irregular blocks and 2-5 cm thick.



WHY DO SOME TREES HAVE BARK THAT PEELS?

The process of a tree's bark peeling is actually known as exfoliation. How is this advantageous to trees? Doesn't bark reduce water loss and protects trees from insects and diseases? There are three major theories as to why trees would shed this very important layer. Firstly, trees that live in environments that are abundant in water do not need to worry about losing water, so they can have this ability to remove their bark. Secondly, trees may also shed their bark as a protective measure in order to prevent the build-up of harmful parasites, fungi, mosses or lichens. Lastly, trees like the birch can photosynthesize through their bark, so exfoliation of the top bark layer which blocks the light allows the live inner bark access to the light. Therefore, the tree can take advantage of sunny winter days to produce carbohydrates, even without its leaves!

WHITE BIRCH AKA PAPER BIRCH

The white birch tree bark is, as you can guess, white in color! It also has black marks. Unlike the yellow birch, however, it flakes in large, horizontal strips. The inner bark is reddish-orange. When it is young, the white birch bark is dark red to almost black.



YELLOW BIRCH

Just as its name suggests, the yellow birch tree bark has a dull yellow or bronze color with black scars at maturity. The bark tends to flake in very thin, horizontal strips and curls out towards the ends. When it is young, however, the yellow birch tree will have a scaly appearance, and a shiny gray to reddish-brown color.



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because acorns can also be eaten and cooked. Unfortunately, my first experience with acorns revealed that I have a slight allergy to them, so I have little experience with using them in food. It goes without saying that you should always be wary of any possible reactions you (or your guests) may have to nuts. Given that wild nuts are uncommon, I recommend using them for special recipes made for people close to your heart or for foods you may want to prepare for, say, a special kind of friend you would like to impress so that they will notice you. Always ask about allergies!

Anyway, back to acorns. They can be eaten raw, but you might want to soak them a few times (changing the water between soakings) to remove the tannins. After soaking, acorns can be sliced and fried, used for baking, or dried out and ground into a flour to be substituted for regular flour.

You can find other nuts in the woods, but they either come from uncommon trees or taste badly. Take, for example, the **Bitternut hickory**. Given that the delicious pecan nut comes from a Hickory species, it would be reasonable to think that the Bitternut would also produce a tasty nut; however, the well-named Bitternut is a rebellious pecan, producing a, well, bitter nut that tastes horrible.

The **Shagbark hickory**, seemingly embarrassed to be related to the Bitternut hickory, produces one of the tastier nuts that can be found in our forests. Once you get the nuts out of their shell, roast them in the oven for 10 to 15 minutes. This will make them less bitter and bring out the flavour. I think this year I will try adding them to cinnamon buns.

The trouble you will find with walnuts and hickory nuts is that they tend to be hard to get at. First, you have to remove the hull and then extract the kernel from the husk. On the Web you will find plenty of interesting methods to do this but it will require some determination. We recommend you start with a small sample rather than one so large you might become discouraged while processing them. How hard is it to shell nuts could be correlated to how tasty the nut is (see the hard science graph). More research needs to be done on this question - I wonder if there are grants for this?



On the left: White oak acorns with their bowl-shaped, shaggy cap. On the right: Red oak acorns with their shallow cap covered with smooth brown scales.

Beaked hazel is a shrub found in our region. The nut is wrapped in a husk that extends out and looks like, well, a little beak. Be warned! The husk is covered in tiny hairs, so you may want to use gloves. The nut itself can be roasted and used in a variety of dishes, but it is best in chocolate desserts (and chocolate mousse). If I find some this year my project will be some do-it-yourself Nutella.

On the subject of my future ambitions, I have recently read about pine nuts and how they are used in cuisine


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So are cottontails moving near human lawns and habitat to avoid predators? Perhaps.

A dump for domestic pets?

Unfortunately, rabbits are one of the most commonly abandoned pets, often released to fend for themselves. However, the rabbits seen are described as small, brown, and with a reddish tinge on the back of the neck, corresponding to the typical eastern cottontail, while domestic rabbits come in a variety of sizes and colours.

The wild card

The more I learn about nature, the more I learn that I don't know anything, and when you try to answer one question, five others arise. Nature is dynamic, adaptive and always changing. I call it the wild card because there are probably multiple factors at play here, some of which we cannot see. All three reasons suggested may play a role, or it may be something completely different that I would never have thought of! Perhaps the size of the eastern cottontail population has remained the same, but the rabbits have become bolder and we see them more often.

Then there's the question of time. Are cottontails living near people year round or only when the females are nesting with young? According to Feldhamer et al., cottontails produce larger litters in areas with fertile soil and smaller litters in areas where soil is poor. Perhaps MacDonald Campus has great soil and highly nutritious lawns.

Unfortunately, I can only answer the question of why more rabbits are being seen with more questions. This is how science works: you may get a headache, but you will also get a far deeper understanding of the world around

you. So enjoy seeing the cottontails! Don't feed them or disturb them; sit quietly at a respectful distance and watch them for a while. And don't freak out if you hear about a coyote or other predator in the neighbourhood. Like us, many of them were born and raised in the city and have adapted to life here. Nature is not something that occurs outside the realm of human activity and

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Fall Foliage

Explore the natural phenomena of leaf color change.

Sunday, October 2, 2016

Orienteering

Find your way through the forest using map and compass with the Rambler's Orienteering Club.

Saturday, October 8, 2016, starting at 7:30 pm

Fall International Astronomy Day

Participate in RASC's Bellevue Observatory Open House and Beginners Astronomy Lecture.

Saturday, October 15, 2016, 9 am – 12 pm

Tree ID Workshop

Learn to distinguish native trees with naturalist Chris Cloutier.

Friday, October 28, 2016, 4 – 10 pm

Halloween in the Haunted Forest

Walk the Orange trail and collect candy along the way from the spooky creatures of the forest.

Saturday, November 26, 2016, 9 am – 12 pm

Early Winter Birds Walk

Find out which birds call this area home for the winter and how they survive the frigid temperatures.



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wildlife does not stay neatly put within the imaginary lines we draw on maps that indicate protected nature areas. Nature is everywhere and we should celebrate our urban ecosystem.

[1] Ditchkoff, Stephen S., Sarah T. Saalfeld, and Charles J. Gibson. "Animal behavior in urban ecosystems: modifications due to human-induced stress." *Urban Ecosystems* 9.1 (2006): 5-12.

[2] Feldhamer, George A., Bruce C. Thompson, and Joseph A. Chapman. *Wild mammals of North America: biology, management, and conservation*. JHU Press, 2003.

[3] Morey, Paul S., Eric M. Gese, and Stanley Gehrt. "Spatial and temporal variation in the diet of coyotes in the Chicago metropolitan area." *The American midland naturalist* 158.1 (2007)

[4] Gehrt, Stanley D., et al. "Population ecology of free-roaming cats and interference competition by coyotes in urban parks." *PLoS One* 8.9 (2013)

[5] Grubbs, Shannon E., and Paul R. Krausman. "Observations of Coyote - Cat Interactions." *The Journal of Wildlife Management* 73.5 (2009) 🌿

Arboretum

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Morgan Arboretum

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Left Polypores by **Paul Scheiwiller**

Right ArboTeam by **Anne Godbout**

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throughout Europe, the Middle East and Asia. I have never really given a thought to pine nuts because the species of pine in our region produce kernels that are too small to really bother with. The **Korean Pine**, a species of tree grown primarily for landscaping in our region, produces large kernels that are harvested for food in other parts of the world. There are too many recipes and uses to summarize here, but look them up online to get an idea of the ways to use this nut. Currently it's the pesto recipes that intrigue me the most.

So there you have it, a few ideas for some wild food. As mentioned, always be careful of potential allergies, and also of properly identifying the species of tree. As a bonus I'll leave you with one last tree that is very useful, not so much for its mildly toxic nut, but in your social life.

With the American beech proceed as follows: invite your friend to go to the forest with you. Find a beech tree and have your friend lean against the trunk with you. Say the following "Hey Scott, you know what we're doing? We're spending time at the beech!" If your friend is still there after that; they are a good friend. Do not lose that friend.

Happy Baking!! 🌿

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