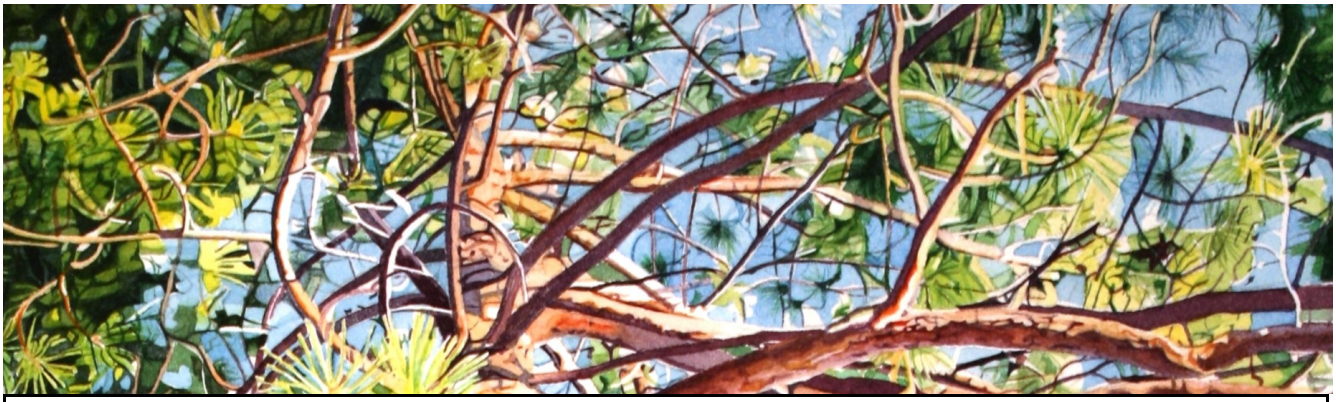


Branching Out Summer 2024

How Nature Works- it's simply complex

Strolling through our beautiful Oak Savanna forest, nature can seem so calm, so in balance but that is not really the case. It is in a constant state of flux, trying to achieve balance but never quite making it because the moving parts are always changing. In this edition, we look at some of the mechanisms at play.

The 90 %-10% Arrangement

Ninety percent of life on Earth consists of **specialists,** dependent on one food source at a critical stage in their development. Many herbivores are specialists relying on only one family of plants. The Monarch butterfly comes to mind with its dependence on members of the milkweed family to act as host plants for larvae. But we would be mistaken to believe that Monarchs are the exception. Our resident hog-nose snake consumes only toads. Koalas consume only eucalyptus foliage. Some plants are specialists requiring a narrow set of conditions in order to thrive, eg. cacti. Our native plants play host to a wide variety of the approximately 1100 insect species in our forest which, in turn, support the variety of fish, birds, amphibians and mammals.



Monarch larva on milkweed

Omnivores, on the other hand, are **generalists** eating a wide variety of foods. Raccoons, foxes and skunks have varied diets consisting of fruit, meat and even carrion. These opportunistic feeders don't need to go far to feast. Specialists, however, need a wider feeding range than generalists and, when environmental conditions change, specialists fall victim to extinction much more easily than omnivores. And, any parasite, dependent on specialist species are likely to go with them.

In nature, whenever a species becomes abundant, the omnivores, non-specialists, take full advantage. Dr. Lance Woolaver of Guelph University likens this to Whack-a-Mole, the beating down of prolific species that pop up in the biological landscape. This function balances the number of species and protects biodiversity eg. the return of wolves to Yellowstone, and the Massasauga rattler to the Bruce Peninsula kept the number of deer and rodents respectively down. Over time, however, one species has so dominated the planet, that, so far, Whack-a-Mole has made few dents in its success...humans. Sars and Covid-19 are taking advantage of our evolutionary success.

The Keystone Species

Some plants and animals are more important than others because they play critical roles in the survival of many species. The oak is host plant to 445 species of caterpillars, the birch to 385, spruce 144. Woodland sunflower is host to 22 species of pollinators, goldenrod to 22, aster to 16.
When these plants disappear, a wide variety of other species disappear as well. That is why lawns and areas dominated by foreign invasive plant species are dubbed "biological wastelands" by Dr Doug Tallamy. Not only is biodiversity lost but also the keystone species dependent on that biodiversity of plants and animals.

Use It Or Lose It

Nature is efficient. When something proves to be redundant, it is scrapped. Present day specialists like the Monarch butterfly once had a wider enzymatic profile in its digestive system, its larvae able to consume a wider variety of plants but, as consumption of the milkweed offered protection from predators, milkweed became the plant of choice. Over time, the redundant enzymes that allowed consumption of other plants were not produced at all, and so dependence on the host plant by the larvae was complete. When milkweed plants are eradicated, the Monarch is out of options. The Monarch is now on the Endangered Species List. When we plant milkweed in sunny spots on our properties, we offer hope for the return of these beautiful pollinators.

Adapt or Perish

All species have the potential to adapt, but how quickly is the key. Random mutations occur in the DNA that allow some individuals to compete for survival in changing environments more successfully than others and these new traits are passed on to future generations, increasing their numbers, leaving those who adapted more slowly or not at all behind. Over time, many creatures have suffered extinction but the current rates are alarming. According to The World Counts, by the end of this century" the rate of extinction will rise to 50% unless urgent action is taken" Here is the current breakdown by species:

Amphibians: 41%
Land plants: 34%
Reef corals: 33%
Sharks, rays: 36%
Mammals: 26%
Birds: 14%

Waste Not, Want Not

In nature, nothing is wasted. Every native food source is eventually consumed.
Humans have played a large part in extinctions, not by taking what we need to survive, but by taking more than we need and often wasting the surplus. The Zero Waste Council reports that in 2022, "63% of the food Canadians threw out could have been eaten". 60% of food produced in Canada is wasted every year. Locally, our land fills are predicted to be full by 2035. Food wasted means that the land that produced that food was wasted, land that was once forest or grasslands that supported a multitude of species, specialists and generalists alike

Conclusion Preserving Biodiversity is Essential

A wide variety of plants and animals offers many chance mutations of DNA, and therefore many chances for survival through adaptation. Conserving existing wild spaces and re-naturalizing urbanized landscapes gives species, specialists and generalists, herbivores and carnivores, predators and prey, and critical keystone species what they need to survive and thrive. And it is ultimately fundamental to our own survival, reliant, as we are, on nature and how it works.

Free Pollinator Plant Seeds

Huron Woods is a community dedicated to sharing what we have with nature ensuring the survival of the plants and animals that have lived here long before our arrival. The biodiversity of native plants is the key. If you know of a landowner who wishes to convert part or all of his lawn to a pollinator garden, free seed, suitable for planting in a sunny spot, is available by calling 519-238-6586. These seeds convert high maintenance lawns into easy care gardens to support a wide variety of pollinators. This program is Lawnshare, supported by Butterflyways and The David Suzuki Foundation.