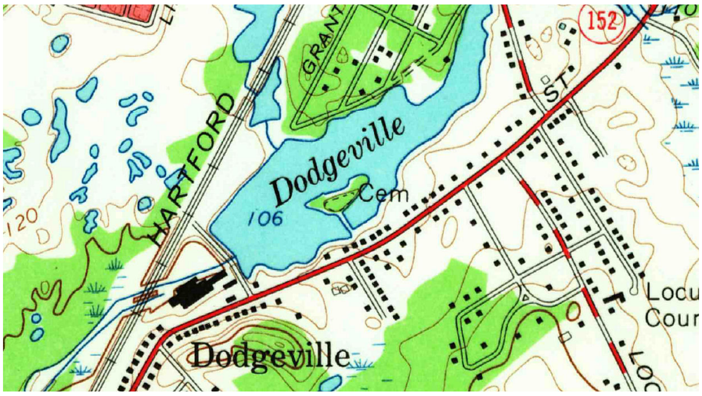
February 2020

ATTLEBORO LAND TRUST NEWS

A Monthly Newsletter on Outdoor Adventure and Conservation

In This Issue

What's Happening at the Land Trust



On January 11, **Ben Cote** of the "**Friends of the Ten Mile**" gave a talk and tour of the Dodgeville Island Cemetery. More tours are coming up including "**The Headwaters of the Ten Mile**".

Also on January 11, there was an all-day **Community Resilience Building** (CRB) workshop at city hall in conjunction with Municipal Vulnerability Planning for the city's Hazard Mitigation Plan. The Land Trust was represented by five members.

Join **Larry Rosenberg** of **Elders for Climate Action** for a presentation and conversation on changing our power grid by transporting wind and solar energy from the West and Southwest to the East. **"Getting Wind and Solar from Far Away to Power our Electric System"** at the Attleboro Public Library on February 26 at 7:00 PM

Millennials Welcome!

The Land Trust was started by energetic and environmentally conscious folks in their 30's and 40's. Today, our most active members are retirees, with available free time to "make a difference" here in their own community. But the future of the organization belongs to those MILLENNIALS who will carry the mission of preserving open space forward. As more and more land is gobbled up for development, the environment future generations will live in will be determined by what this younger generation does now. Please join us in maintaining a healthy balance of open space in the Attleboro's.

Contact Us	Attleboro Land Trust	To subscribe to this newsletter
Attleborolandtrust@gmail.com	P.O. Box 453	send your email to
(508) 223-3060 ext. 3604	Attleboro, MA 02703	Attleborolandtrust822@gmail.com

WHY BIRDS DEFEND TERRITORIES

This is the time of year when true "birders" delight at sitting where it is warm and enjoying the birds that they attract to their outside feeders. The usual suspects arrive each year but the hope is that something unusual appears for a meal and becomes a regular in your backyard. If you feed birds, the unexpected can always happen from a small flock of Evening Grosbeaks or Pine Dickcissel that come down from further north to enjoy our local bounty. You may even have the misfortune of attracting Black Bear, Fox or Coyotes that enjoy the spilled seed on the ground. In nature, anything can happen, especially the enjoyment.

With so many different birds enjoying the feeder, it is hard to imagine that this near "peaceable Kingdom" can change so quickly between these different species. As the days lengthen and become warmer, a new behaviour begins as if a switch is turned on. It occurs throughout the entire animal kingdom, but is far more easily observed in birds. Mornings are full of calls that signal an end to the nice social life at the various feeders. By very early spring, the resident males have staked out a territory that they will defend.

So why do birds become so aggressive in protecting a selected territory? There is a lot that goes into it but it truly comes down to the story of "the birds and the bees" The male will look very hard for a site that has everything he and his new mate will need to raise a family. It requires a food source, shelter with nest building materials and usually a water source. Our native or local birds have an advantage of being first to a good spot but it will still need to be defended. At those moments, you will see how determined and feisty even a small bird can be when protecting his carefully selected homestead.

Aggressive flight activity and warning calls change to more severe conflicts rapidly as they establish what is "mine". It rarely ends quickly or for very long since many males may want the same general location. This prolonged conflict is best exhibited by a male Robin or a Northern Mockingbird that tries to defend an ornamental crab tree (Malus sp.) or a healthy Hawthorne (Crataegus sp.) that is loaded with fruit. These fruit persist through the winter so they are an enticement to many local and migrating birds that in turn try to partake of this food source. This keeps the 'shop owner' very busy. Descending flocks of Cedar Waxwings or Starlings are the few birds that can succeed in overpowering a single male.

Depending on the bird or the territory involved, visual displays to intimidate and even attacks are an on-going element in their lives. Occasionally a bird may need to pull back its bounds or share space to preserve a territory and maintain the ability to attract a mate. The quality of food and nesting materials are the attributes that a male uses to determine how much energy he is expending to keep his choice spot. Having a suitable mate show up to stay and start nest building to raise a family is the ultimate goal.

When a female arrives, she is a true shopper and looks at all the factors before committing to a male or a territory. If not a life long pair or of a species, that shares the family duties, the female has to determine that everything she will need is available and close-by. A lone female can usually select the location and build a complete nest in four to five days. With all that is known about birds, field researchers still aren't sure whether the female selects the male with the choice territory or perhaps her needs drive her to a good territory and she takes the male that is there. Territory is the most likely answer.

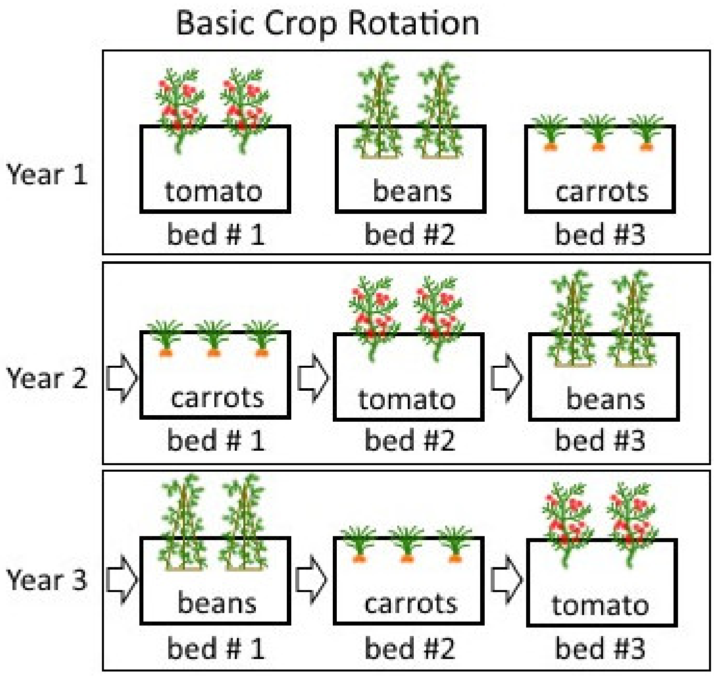
What is most interesting is that in many bird species after the brood of young birds has fledged, the male will just be off and on his own. If he survives through the rest of the year, he will be ready to do this same routine of finding, securing and protecting a spot to attract a female all over again. As he ages or the competition gets stronger, he may well have a poorer parcel or even no territory for attracting a mate. It is their cycle and the hard-wired part that will go on as long as they live. Phil Boucher

Crop Rotation

Tyler Smith, Jamie Laliberte   Attleboro High School

Crop rotation is a process that involves switching the plants grown in different fields or beds to keep growth productive and reduce pests. It was invented in the early 16th century by rural farmers in an area that is part of present day Belgium. It was later popularized by British agriculturist Charles Townshend in the 18th century. The four-field rotation system is what was later studied and improved by George Washington Carver during his time at college. Webster's dictionary defines crop rotation as "The system of varying successive crops in a definite order on the same ground, especially to avoid depleting the soil and to control weeds, diseases, and pests."

Crop rotation is incredibly beneficial to the soil, and is a very smart practice to implement if you want the soil in which you grow to remain fruitful for a very long time. No better example would be when George Washington Carver essentially saved the agriculture industry of the rural south. Carver studied the earth in the fields in which poor southern families grew the crop upon which the south relied and was famous/infamous for, cotton. The crop had become almost entirely unprofitable, due to the small yield and poor quality. After studying the soil, carver found that it lacked important nutrients that cotton plants need in order to grow at an efficient rate, the result of the fields only having cotton grown in them for years. Carver theorized that having a different crop grow in the fields would allow the field to replenish the necessary nutrients. This is where peanuts come in, after the harvest of peanuts was collected, cotton was then replanted, and the results were much better than they had been for years. Carver then continued crop rotation studies, and his research is still being put to work today, from acres of land to the patch out behind your house, crop rotation works.



If crop rotation isn't enforced then your beds will be more susceptible to diseases and pests. Also with crop rotation, keeping track of what plants you have planted in different beds is essential. For example, if you plant tomatoes where you last planted potatoes, it isn't a good idea due to them being in the same crop family. This means that they suffer from the same pests such as eelworm and nematodes. Crop rotation is helpful because if you plant potatoes and you dig them up when not growing, then birds can eat pests in the soil, such as slugs and wireworms. The rotation idea of roots, fruits, and leaves doesn't work due to some of the plants from those categories being in the same family. Crop rotation also works to control disease and pests without the need for additional pesticides. Most crop-borne pathogens and pests rely on a host species in order to thrive, such as corn weevils and wireworms. By continuously rotating crops, you prevent the buildup that would occur by otherwise only planting one crop. Also growing ground cover crops in the winter such as winter rye or hairy vetch, puts back nitrogen into the soil requiring less fertilizer later.

In short, crop rotation is an important process to understand and maintain in order to have successful crops. It allows for crops that are more bountiful, lets the soil you grow in remain fertile for a longer time, prevents buildup of pests and diseases, and the need for excess pesticides and fertilizers. If managed properly and monitored correctly, crop rotation is an incredibly good practice to follow.

The Dying of Lake Suwa from Climate Change

"Do you know what the foundation of religion is?" asks Shinto priest, Kiyoshi Miyasaka, "Fear of Nature. Then comes appreciation, then familiarity, and then we take it for granted."

Miyasaka takes care of a centuries old shrine that watches over Lake Suwa in Japan. For most years, the lake would freeze over and then during a slight warming the ice would crack and two ice sheets would noisily push together forming a ridge, omiwatari or the crossing of the gods, from one side of the lake to the other. The locals would fear it was the back of a dragon who lived in the lake. The ice would be so thick that military tanks would rumble across it and planes would land there. Now it rarely freezes solid enough to support people safely, if it freezes at all, which it didn't for 17 straight years.

For almost 600 years, the priests have recorded the weather and ice on the lake. In the past century, the average temperature has increased 2.4C or 4.3F, twice the rest of Japan. Most of the fish have died out from the lack of oxygen because without the water having a hard freeze, there is a lack of water circulation. Where they used to get 1,000 tons of fish a year, now they only get 10 tons.

This is only one of over 100 million lakes in the world affected by climate change and human factors. Around here, we see lakes choked with weeds and algae from over fertilization, waste and rising temperatures. Fish and other aquatic life are getting scarce. Where we used to go skating on lakes and ponds in November, most aren't safe until January if then. Our existence depends on these lakes.

From an article by Mari Saito

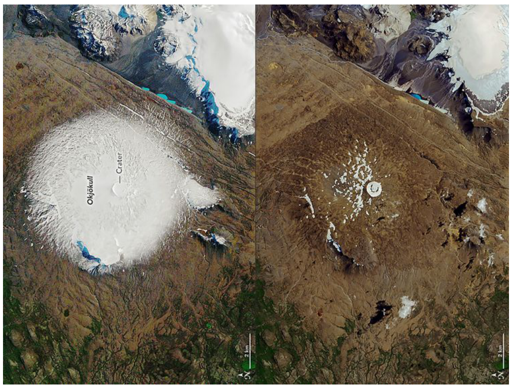
Updates, Comments, and Interesting Reading

A study published in Nature Communications shows that at the current rate of sea level rise, oceans will flood the homes of 300 million people around the world by 2050. The current estimated population of the U.S. is 328 million.

Sea level rise in Boston Harbor has been 10.4 inches since 1922. In the next 30 years it will rise by 6 – 18 inches more depending on how much we reduce global emissions. By the end of the century, it could rise by 6 – 7 feet if we don't stop global warming.

Phytoplankton, which produce 50 -80 % of the O2 in the atmosphere, are decreasing due to the warming of the oceans that contain less dissolved gasses than colder water. The journal of Nature has reported a 40% loss of phytoplankton since 1950.

Ireland will be having a "Latte Levy" by 2021 costing .25 Euros ($.28) on disposable cups and later a tax on take-out food containers in an effort to minimize plastic waste. There is a problem with recycling plastic waste, which is exposed to food or drink.



CO2 in the atmosphere is increasing faster than predicted. A new study shows that bacteria have increased respiration; the warmer they get, there by releasing more CO2.

Okjokull Glacier in Iceland has disappeared due to global warming.

Attleboro Community Garden

Even though we are in the midst of winter, the Attleboro Community Garden is already planning its upcoming garden season. The Garden, which is located at the juncture of Riverbank Road and Mechanic Street, is scheduled to open on April 4th with a rain date of April 18th.

Registration sessions have been scheduled for February and the beginning of March. If you would like to sign up, you must come to a registration session in person. No plots will be reserved via email, phone or regular mail. Returning gardeners have until February 29th to renew their plot registration. All new gardeners will be placed on a waitlist on a first come basis and will be assigned plots as they become available. Plots are $25 for the season and gardeners are required to volunteer at least 4 hours during the Garden season. No one will be denied a plot if they can't afford the registration fee.

Free seeds will be available at each of the registration sessions which will be held at the Attleboro Public Library on the following dates:

- **Monday, February 10, 6 to 8 pm**. This session will include a meeting of gardeners to start at 6:15 pm. This is a great opportunity to meet fellow gardeners, hear about 2020 plans and provide your input and ideas.
- **Saturday, February 29, 10:30 to noon**. Gardener Danielle Cournoyer will lead an informative and lively Seed Starting Workshop geared toward the novice to mid-level experienced gardener. She will cover what you need to know to start growing seeds including when to plant, planting media, lighting and resources. The workshop is open to the public and is geared toward teenagers and adults. Garden registration will take place quietly on the side of the room.
- **Saturday, March 7 Registration from 10 to noon**.

If the weather is inclement on any of the registration days and the Library is closed or closing early, the registration session will be canceled. If the Library has a delayed opening, the registration session will be held according to the delayed hours although not past the scheduled meeting end-time.

For more information contact the Attleboro Community Garden Co-Coordinators - Juliet Teixeira, 508-222-2569; texjade@yahoo.com; or Danielle Cournoyer, 508-315-9937; ellecour@gmail.com.

The Attleboro Land Trust is looking for Supporters by becoming a member, making a Tax-Deductible Contribution and/or as a Conservation Volunteer. Membership, contributions or volunteering can be done securely at Attleborolandtrust.org or by mail at Attleboro Land Trust, P .O. Box 453, Attleboro, MA 02703. Thank you for your support.

What's Happening on the Barrows' Farm in 1720

Winter was the time to build up supplies and barter goods since the warmer months were used for farming. The men could be at the cooper's mill making casks, buckets, churns and tubs. The fire needed to soften the staves for bending would also keep them warm. Home in the evening, they could carve utensils and dishes, and make furniture and brooms. Farming tools such as wooden rakes and pitchforks could be fashioned while making nails was a common way to make more money, since they were selling lumber and the colonists needed the nails as well.

The women could be making soap from wood ashes, to produce lye, and tallow, or candles from beeswax, or tallow. Cloth would be made from the wool or linen thread they had spun and then made into clothing. The fur from animals and the leather from hides could also be fashioned into outerwear, work aprons, shoes, harnesses and boots.

The meals in the winter were normally hearty stews. The meat could be fresh game but more likely, frozen, smoked or dried meat or an old chicken or duck that wasn't expected to lay eggs in the new season. It would take a little time to soften it up along with the dried beans and vegetables from the root cellar. They would even add apples or other hard fruits. The colonists tended more to a meat and bread diet with the fresh game roasted to provide a little variety.

There was always the task of gathering, cutting and splitting wood to keep the house warm. There was no insulation in those days but they sometimes hung hides, rugs, or tapestries on outside walls to help keep the heat inside. At the Barrows house, sleeping quarters were in the loft for older children while there were a couple of bedrooms downstairs for adults and the youngest. There were over twelve people living in the house at various times with multiple generations, but in 1720, there were just the two adults and six children ranging from one to 12 years old.

Councilman Rick Conti State Representative Jim Hawkins

Attleboro Working to Counter Climate Change

On Saturday 11 January, there was an all-day Community Resilience Building (CRB) workshop at city hall in conjunction with Municipal Vulnerability Planning for the city's Hazard Mitigation Plan. Say that three times fast. There were city council members, city department personnel, Health department and Sturdy Memorial Hospital reps, Council on Aging and religious cooperative reps, and other city stakeholders, in total 27 participants. The mayor and Rep. Jim Hawkins were there for a while. The Land Trust was represented by five members.

Jim Riordan and two other facilitators from Weston and Sampson conducted the workshop. First, Bertha Young conducted a Vision Session asking everyone what their vision of the future Attleboro would be in the categories of land preservation, air quality, water, clean energy, transportation, and waste reduction. The participants were divided into three groups to discuss planning for flood damage, wind damage, heat/drought problems, and climate change in general. These dangers were all coordinated with infrastructure, social, and environmental factors and placed on charts. The various proposed solutions were then prioritized.

It will all then be put together by the MVP committee to form a plan for the city.

Eco-Anxiety: Will Climate Change Destroy the World?

NO! It will change the world and we need to lessen it, but it will not destroy the world or lead to the extinction of us. It will just make life harder. Reducing climate change is important, but we need to reassure our children and adults too, that their existence will go on. Our lives will change just as our lives have continually changed over our lifetime.

In writing this newsletter and doing work for the Land Trust, I have done considerable research on the subject, reading studies and articles every day. I also am studying the lives and state of the earth from "colonial times" to the present in order to put together the "What is Happening at the Barrows' Farm" series. The earth is changing and will continue to change just as it has from then to now.

In studying thermodynamics, we see that a rise in temperature of an object causes that object to have more energy.The Earth's temperature is rising - called *global warming* - resulting in an increase in energy. More energy means more activity. Glaciers are melting causing a rise in sea level, which floods areas. Ocean temperatures rising changes the marine ecosystem. Weather events are getting more severe and frequent. Areas of the earth are changing with some getting drier and others wetter. Even the tectonic plates are absorbing energy, resulting in earthquakes that are more frequent.

How is this happening since the sun, which provides this energy, is providing about the same amount of energy each day as it did 10,000 years ago? The "greenhouse effect" is keeping more of the energy on the earth. Acting like a one way mirror across our atmosphere, greenhouse gasses (GHG) allow energy from the sun to reach the earth, but reflect that energy back towards the earth when it tries to escape. Carbon dioxide, methane, and nitrous oxide are the main greenhouse gasses. The more they are released, the more heat is kept on the earth.

What can we do about it? The less GHG that is released, the less that will blanket the earth, retaining the heat. Nitrous oxide will remain in the upper atmosphere for about a century, methane for about a decade to thousands of years, and carbon dioxide will remain for thousands of years unless absorbed. Some carbon dioxide is being absorbed by the oceans, but that causes acidification destroying corals and some of the marine ecosystem. The other main method of absorbing CO_2 is with plants. The oceans have already absorbed the equivalent of 3.6 billion Hiroshima bombs of energy. Today we use significant stored fossil fuels while back in colonial times, they used wood and CO_2 would be reabsorbed by planted new trees. Most of this area was clear-cut for firewood. Burning wood put CO_2 into the air just as burning fossil fuel does today which explains why CO_2 levels have gone up for the last few thousand years.

We need to stop our living in fear and complacency and do things to mitigate the earth's global warming problem. We need to love nature and the earth. Your *Land Trust* is conserving trees and other plants to absorb the CO_2 being released. That is just one step. *We need your help to do more.*

Bill Lewis, Editor