

# SAGATAGAN



## Tick Talk ASHLEY WALKER

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Often confused with insects, ticks are eight-legged arachnids that are closely related to mites and spiders and can be found in the underbrush of forested areas all throughout the United States. Ticks begin to surface from their dormant stage among the leaf litter as the sun reaches down to the forest floor during spring.

Minnesota is home to thirteen different species of ticks. Of those thirteen species, most are considered bat ticks or bird ticks that will likely never be encountered by humans, while only three species are regularly found by people: the American dog tick (wood tick), black-legged tick (deer tick) and brown dog tick. The brown dog tick is primarily found on dogs. Unable to survive the Minnesota winter, it is an uncommon tick in this region, although it can persist in heated, indoor areas where dogs frequent, such as kennels.

Ticks have four main stages in their life cycle: egg, larva, nymph and adult. Similar to insects, ticks go through metamorphosis to transform from an egg to an adult. As ticks grow, their hard outer “shell,” called an exoskeleton, can’t stretch with them. Instead, they must go through a molting where they break out of their too-small exoskeleton and create an entirely new, larger one.

During the immature larval and nymphal stages, ticks will typically look like smaller versions of the adults with slightly different coloration and patterns. The larvae stage is the only stage where the tick has six legs rather than the eight legs characteristic to arachnids.

Ticks survive by ingesting blood from animals. In order for a tick to change from one life stage to the next, it must find a host and take a blood meal before molting. Most ticks must find a new host animal at each life stage. Sometimes that animal happens to be a human.

Humans typically care about ticks because adult and nymphal ticks can often be found feeding on them after taking a hike through the prairie or woods. In

general people have enough blood to donate some meals to a few tiny ticks, so why does it matter? The issue arises when we talk about ticks as vectors.

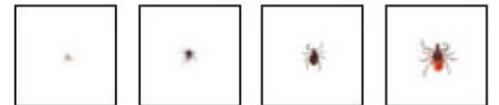
A vector is any organism that can carry a disease from one host to another without being affected by the disease themselves. Ticks, mosquitoes and many other arthropods are vectors of diseases. This means that the ticks are not the direct cause of people getting sick, but rather the bacteria, viruses and other microorganisms that can be carried inside the tick’s gut are to blame.

Ticks are not able to fly or jump, but instead had to evolve some beneficial behaviors in order to find a meal. Hungry ticks can often be found climbing plants and extending their front legs in hopes of being picked up by an approaching animal, a behavior known as questing. Ticks can sense potential hosts by detecting carbon dioxide and other biochemical cues using small sensory pits called Haller’s organs on the ends of their

CONTINUED ON PAGE 2



**Deer Tick**  
*Ixodes scapularis*



**Dog Tick**  
*Dermacentor variabilis*



Deer ticks are responsible for most tickborne diseases in Minnesota, including Lyme disease. American dog ticks (or wood ticks) are commonly found on preK-12 field trips in the spring. Kids are taught to look for the “necklace” on adult females and “suspenders” on adult males before giving the tick a name and returning it to its habitat. [WHATISLYME.COM](http://WHATISLYME.COM)

front, extended legs. When a tick is sitting on a long blade of grass or on the tip of a branch in the underbrush with its front legs extended, it is essentially sniffing the air for an animal's scent.

Once a host animal is found, the tick moves around the body until it finds a suitable place to attach and begin feeding. In order to carry the microorganisms that can cause disease, a tick must first feed on an infected animal harboring the bacteria, viruses, or protozoa. If the host is infected, the microorganisms will enter the gut as the tick ingests the blood meal where it will linger without impacting the tick's own life cycle. After feeding, the tick will usually molt to the next life stage and will require another blood meal. When they find their next host, such as a human, and attach to feed, the microorganisms can then be released into the new host's blood stream after approximately twelve to twenty-four hours of attachment.

In Minnesota, of the three common tick species, the black-legged or deer tick is responsible for vectoring the most diseases. The most well-known disease that deer ticks spread is Lyme disease, the most common tickborne illness in all of the United States. Along with Lyme disease, deer ticks may also carry the microorganisms responsible for human anaplasmosis, babesiosis, and Powassan encephalitis. Wood ticks, on the other hand, are only known to vector Rocky Mountain spotted fever in Minnesota, which is an extremely rare disease in this part of the country as most cases are reported in the southeastern and south-central United States.

At Outdoor U, we try to get as many children outdoors as possible, whether during rain, shine, snow or tick season. We teach our student visitors that ticks are a natural part of the outdoors in Minnesota and in order to be safe while also having fun, we have to be educated about things that we could encounter. Throughout field trips during spring and summer, our staff will inform the group about what ticks are, what they look like, how to tell wood ticks from deer ticks, as well as how to distinguish males from females.

After this brief talk, we do a "tick check" in order to look for ticks anywhere on exposed skin, such as around the ankles, behind the ears, or even on the backs of knees. If a student does find a tick, they get the excitement of figuring out if it is a boy or a girl and an opportunity to give it a name. After naming the tick, they let it go back into its habitat. At the end of the field trip, each student is given a sticker that reads "I had fun on an outdoor field trip today! Please check me for ticks." All of these measures are taken to minimize the chance of exposing our students to unsafe conditions.

Just like migratory birds finding their way back home or the first buds of flowers beginning to burst, tick season is upon us. As long as safety precautions are followed, there is no need to be worried about tick-borne illnesses. Getting outdoors is extremely beneficial to your mind and body, so protect yourself and simply heed the saying "spray before you work or play!"

*ASHLEY WALKER is the 2016-17 environmental education fellow at Outdoor U. Her background in entomology (among other things!) has served us well so we are excited that she has agreed to stay for a second year. She challenges you to ignore the mysterious itches you might have after reading this article.*

## Be Prepared for Prime Tick Season

- Deer ticks are most active during the nymph stage, typically from May to July, but can be found from March to November.
 

Deer tick life stages, actual size. CA Dept. of Public Health
- Do regular tick checks of your entire body during and after being outdoors. *Be sure to check the scalp, back of neck, behind the ears or knees, around waste-bands or other constricted places.*
- If you find an attached tick, **DON'T PANIC!**
  - Not all ticks are infected. Different species carry different diseases.
  - Ticks typically have to be attached for 12-24 hours before they transmit disease
  - Remove the tick by grasping the head, close to the skin. Pull outward slowly, gently and steadily.
- Minimize the amount of skin exposed. *Wear long sleeves and long pants. Tuck pants into shoes or socks. Wear light colors to make it easier to spot a tick hitching a ride.*

- MN Department of Health says "Spray before you work or play!"
  - Use a bug spray that contains 20-30% DEET to repel ticks (and mosquitoes, too).
  - If you're in tick habitat a lot: Soak your "explore" clothes and shoes in a solution that contains Permethrin. It kills ticks on contact and, depending on the product, can last on your clothes through several washes.

## Additional Tick Resources

[dnr.state.mn.us/insects/deerticks](http://dnr.state.mn.us/insects/deerticks)

[health.state.mn.us/divs/idepc/dtopics/tickborne/prevention](http://health.state.mn.us/divs/idepc/dtopics/tickborne/prevention)

[tickcounter.org](http://tickcounter.org)

# In the Presence of Good Stewards(hip)

RYAN KUTTER '03

For those of us involved in the Abbey Arboretum and Saint John's Outdoor University over the past two decades, Tom Kroll has been a constant in our experience. He served as one of the first members of the advisory council when founder Fr. Paul Schwietz began to organize land management and educational programs in the mid-1990s. Many of us will feel disoriented when Tom retires as Outdoor U director and Abbey land manager in May after sixteen years of service.

But Tom's perspective encourages us to reconsider our own limited vision. As steward of a forest that has been actively managed since at least the 1860s he is actually a short-timer. The Benedictines brought forestry practices from Germany, where management was already established with the long view of more than hundred year plans.

One of the major forestry tasks pursued by both Fr. Paul and Tom is the regeneration of healthy oak stands. Casual observers often assume that the primeval feel of old oaks in the Abbey Arboretum is a constant, while in fact it is subject to constant change. Intentional management over more than a century has created a healthier forest than neighboring lands that were left untended, and under natural progression these old oaks would quickly transition to a maple and basswood forest.

After many years of experimentation Tom has found a technique of progressively fencing small exclosures to prevent over-browsing by deer. This allows oaks to sprout and advance to an age beyond risk for deer-browse. When surrounding trees are retired, the sunlight-dependent oak saplings are able to grow into maturity. By continuing

this technique over the next half-century the Abbey Arboretum can expect healthy oak stands into the next hundred years.

A new challenge for forestry is the advance of climate change, which is predicted to unravel the stability of Minnesota's distinct biomes of prairie, deciduous forest and coniferous forest. In some places biologists and land managers have attempted assisted migration by preemptively planting species that would best adapt to future conditions.

Tom prefers not to try to correctly guess the future effects of these very real changes. He aims to keep the forest as healthy as possible, with broad genetic diversity, and anticipates that existing plant DNA, in some cases currently unexpressed, will find ways to adapt to conditions better than speculative replantings.

Tom calls the stewardship tradition at Saint John's palpable, felt in the presence of architecture, history and culture, as well as a great example where good forestry was implemented with a long vision. At a time when other rural monasteries were being engulfed by urban development, then SJU President Dietrich Reinhart, OSB, encouraged Tom to find solutions to preserve the ecological community at and around Saint John's. Through innovative establishment of 300 acres of conservation easements from neighboring properties and 306 acres of outright purchases of adjacent properties, Tom has assisted the Abbey in expanding the core of the Abbey Arboretum and ensured a widening buffer of protected land.

The unique posture of monastic stability has provided the strong foundation upon which further gains can be made. Through Tom's work with the DNR and Minnesota Land Trust, the Abbey is positioned at the beginning of a renaissance of land protection that was begun by the earliest monks at Saint John's who methodically built upon multiple parcels of land. Tom has been inspired that the monks "treat everything as a vessel of the altar," and treat land with the deepest respect.

Environmental educational programming facilitated by this landscape, have grown from 3000 in 2002 to nearly 20,000 in 2016. Tending to these human lives has been one of the most meaningful aspects to Tom's work, done through the staff he has developed and encouraged. Working with college students Tom has been gratified to see "high quality young people develop into high quality adults."

Oak trees sprouting when Tom undertook his work at Saint John's are now little more than saplings blending into the understory of the forest. We know those early years of the Abbey Arboretum's emergence, planted by Fr. Paul and cultivated by Tom, are critical. Considering the community of stewardship from the Abbey, Tom Kroll, and all the land managers who have come before, land managers yet to come can work with confidence that the underpinnings of this forest and the educational outgrowths of it are well-rooted and strong.

Tom Kroll stands among the tall oaks of the Abbey Arboretum. OUTDOOR U.

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RYAN KUTTER is a Saint John's University alumnus and is the studio manager at The Saint John's Pottery.



CSB/SJU students enrolled in BIOL 379: The Natural History of Maple Syrup host a variety of activities at the annual Outdoor U Maple Syrup Festivals. They have been able to summarize festival visitors' maple syrup taste preferences. AMY SAUPE.

## By the Numbers

*For people at recent maple syrup festivals:*

- 82.4% could taste the difference between a 2% sugar solution and bottled water.
- 100% could taste the difference between commercially purchased maple water and bottled water.
- 72.7% tasted the difference between an off-flavor “buddy” syrup and a good syrup.
- 63% preferred real maple syrup over Mrs. Butterworth’s or Aunt Jemima, although only 48.3% of people under the age of 18 preferred real maple syrup.
- It was nearly a 50/50 split for preference of either a lighter or darker maple syrup.

Every year since 2002, the Saint John’s Maple Syrup operation has hosted one or more festivals. These festivals have attracted as many as 1758 visitors in a single season who have the opportunity to tap trees, tour the sugar shack, and feast on maple syrup sundaes.

As a part of the festivities the students in my Natural History of Maple Syrup course have hosted educational booths that have featured topics such as the geographical distribution of maple trees, maple syrup quality and grading, and the Rule of 86. Our most popular displays have involved sensory evaluations of maple syrup. In other words, people like to taste maple syrup. This report summarizes what we have learned about the taste preferences and abilities of our guests.

### Sugar Tasting Threshold

The concentration of sugar (sucrose) in maple sap is about 2%. The minimum threshold to taste table sugar is reported to be about 0.34% sucrose. However, individuals vary significantly in this ability. We decided to see how many participants could taste the sweetness in a sugar solution that has the same concentration as maple sap. We hypothesized that everyone should be able to do so considering the minimum threshold is nearly ten times lower than the amount of sugar in maple sap. To test this

hypothesis participants did a blind taste test comparing bottled water to a 2% sugar solution. Of the 187 individuals who took the challenge, most (82.4%) could recognize which cup held the sugar solution and which was water. Considering the sugar concentration in the test solution was about ten times greater than the typical threshold, it was more surprising that roughly one in six visitors were unable to distinguish between the two. The range of variation in tasting ability certainly varies widely.

### Maple Sap

One of the newest culinary trends is drinking maple sap or maple water. Though Koreans and others have been drinking raw sap as a spring tonic for years, this practice has only recently caught on in the United States. Maple producers are expecting maple water to be a huge industry that will surpass coconut water as the next big fad. At Trader Joe’s and other markets you can now purchase pasteurized maple sap. Following up on our previous study, we wondered whether our visitors could detect the sweetness in commercial sap. We surmised that the same percentage of participants (82%) would be able to distinguish maple sap from water. To test this hypothesis, visitors were provided with a blind tasting comparing Trader Joe’s maple water (2.3% sugar) and bottled water.

We were surprised that out of 65 taste-testers, 100% of them could tell the difference. Perhaps the slightly higher sugar concentration in the maple water exceeded everyone's sugar threshold or some trace ingredient in the maple water enhanced the sugar flavor. In any event, the take-home message is that if you purchase maple water, you will likely be able to detect the sweetness.

### Off Flavor Maple Syrup

Maple syrup should taste like “maple.” Unfortunately syrup can readily take on many off-flavors. I've sampled syrups that tasted like detergent, blueberries, peanut butter, caramel, butterscotch, acid, and even motor oil. “Buddy” syrup, a common off-flavor, tastes like a Tootsie Roll. Though I enjoy eating Tootsie Rolls, maple syrup shouldn't taste like one. This off-flavor is due to cooking “bud sap,” which is late season sap produced by the trees as they get ready to leaf out. Out of 220 participants, about three-quarters (72.7%) could tell the difference between a buddy syrup and a good one. Though I'm clearly biased, I've rarely detected an off-flavor in any Saint John's maple syrup. This is fortunate because off-flavored syrup can only be used legally in commercial applications.

### Artificial Maple Syrup

I'll admit it. I am a syrup snob. I will only eat 100% real maple syrup. In contrast, others prefer to slather their pancakes with a maple-flavored, high-fructose corn syrup such as Mrs. Butterworth's or Aunt Jemima. We measured syrup preferences by providing festival visitors the opportunity to do a blind sampling of pure maple syrup and Mrs. Butterworth's or Aunt Jemima syrup. Out of 276 individuals, 63% preferred real maple syrup. It's a little surprising that more than a third of the attendees at our maple syrup festivals prefer artificial syrup.

The good news is that when we sort our data by age-group, college-age students showed the greatest preference (74.3%) for pure maple syrup when compared to pre- and post-college aged individuals. In fact, less than half (48.3%) of pre-college age individuals preferred pure maple syrup. This suggests that the Saint John's Maple Syrup operation has been successful in brainwashing our CSB/SJU students into preferring the “real deal.”

### Delicate versus Strong Syrup

The new maple syrup grading system recognizes four categories characterized by both color and its associated flavor: Golden color with a Delicate flavor; Amber color with a Rich flavor; Dark color with a Robust flavor; and

Very Dark with a Strong flavor. When presented with syrups of two different grades, 231 visitors showed a nearly equal preference for an Amber/Rich syrup (45.4%) compared to a Very Dark/Strong syrup (51.5%). A small number liked them both. The Amber syrup was described as sweeter while the flavor of the Very Dark syrup was variously described as burnt caramel, richer, heavier, smoky, bitter and with a stronger after taste.

In conclusion, our studies have shown that taste is clearly a personal preference. Certainly we think that Saint John's Maple Syrup is the best on the planet. We hope that you will join us at one of our festivals to try it yourself.

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*DR. STEPHEN SAUPE is a professor of biology at the College of Saint Benedict and Saint John's University. He is also a member of our Advisory Council, one of our core maple syrup volunteers, plant expert, maple syrup data keeper and general troublemaker.*

**Meet us at the sugar shack this spring!**  
*Celebrating 75 years of Saint John's Maple Syrup*

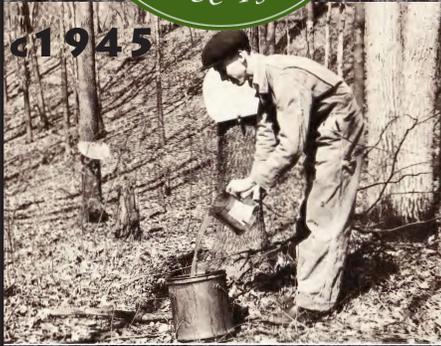
**Maple Syrup Festivals**  
**Saturdays, March 25 & April 1**  
*details, page 7*



Taste-testing maple syrup - by flavor, color, or in comparison to “maple-flavored” syrup - is a favorite pastime at the annual maple syrup festivals. TOMMY O'LAUGHLIN.



c1889



c1945

 **Saint John's Maple Syrup**

**1889** -The Eich family, long-time neighbors of Saint John's, makes maple syrup.

**1945** -This unnamed sap collector is among the earliest maple syrup photos at Saint John's.

**1966** -Sap collection via tank and tractor. (and Br. Walter Kieffer already helping make syrup at Saint John's)...some things haven't changed!

**1977** -This sugar shack was built in its current location. An earlier shack burned down in 1970 due to suspected late night partiers.

**1988** -Abbey Arboretum founder, Paul Schwietz, OSB, removes a barrel cover during sap collection. From a story in the SJU student newspaper, *The Record*.

**1998** -Br. Walter Kieffer (front) salvages materials from other campus projects to complete an addition to the sugar shack to provide more room and a lower stoking entrance to the furnace.

**2008** -The sugar shack is added onto once again, this time to provide better and safer indoor space for Outdoor U sugar shack tours.

**2013** -A shiny new production evaporator replaces the 1970s-era evaporator. Not pictured: a smaller "teaching" evaporator is also installed for smaller batches and demonstrations.

**2014** -The current sugar shack with the evaporators fired up (right). A large crowd gathers for the annual Community Tapping Day to kick off the maple syrup season (below).

All photos from Saint John's Abbey and University Archives or Saint John's Outdoor University.



1998



1966



2008



c1977



2013



1988



2014



2014

# Get Involved

SAINT JOHN'S OUTDOOR UNIVERSITY

## MAPLE SYRUP FESTIVALS

Saturdays, March 25 & April 2

1:00—4:00 p.m.

Outdoor U Members:

Adult - \$5 | Youth/Child - FREE

Nonmembers:

Adult - \$10 | Youth (ages 4-17) - \$5

Child - FREE

Receive \$1 off per person when you pre-register (up to \$10).



Join us for what has become our most popular event of the year! Sap collecting, syrup cooking, horse-drawn rides, demonstrations, and hot maple syrup sundaes await the whole family during this fun-filled event! Saint John's Maple Syrup patches \$2 each at the festival - for scouts, 4H, birthday parties, clubs, or anybody who likes to collect patches! *Pre-registration prices available through noon on the Friday before the festival you attend.*

## FRUIT AT THE FINISH TRIATHLON

\$15 - CSB/SJU students/faculty/staff/alum: Early registration through Apr 9

\$20 - CSB/SJU students/faculty/staff/alum: Late registration Apr 10 - 22

\$20 - Community participants: Early registration through Apr 9

\$25 - Community participants: Late registration through Apr 22

Compete individually or in teams of three in the annual fruit-themed triathlon. Swim 0.75K, run 6K, and bike 23K in this event hosted by the Peer Resource Program, Outdoor Leadership Center, and Outdoor U. Participants receive a t-shirt with this year's fruit-based slogan and logo.

## ANNUAL PLANT & GARDEN

### TOOL SALE

Welcome spring by stocking up at our annual plant and garden tool sale. Outdoor U members receive 50% off on all items. Memberships are available for purchase or renewal on the day of the sale. Proceeds from the annual plant sale support Outdoor U education and events.

## SPRING BIRDING DAY

\$12—Outdoor U members

\$16—Nonmembers

Includes morning refreshments and lunch

Spend a morning with Saint John's Outdoor U, hiking through the Abbey Arboretum with birders during peak migration. Early risers will be stunned by the abundance of birds active early in the day. Extend your day with a driving tour in the Avon Hills for more great birding opportunities.

Saturday, April 29

Saturday, May 13

8:30—10:30 a.m. or until sold out!

Saturday, May 20

5:30 a.m.—1:00 p.m., OR 8:00 a.m.—1:00 p.m.

Optional Birding 1:30—4:00 p.m.

Preregistration preferred.

## Saint John's Outdoor University Staff:

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Saint John's Outdoor U Director  
Abbey Arboretum Land Manager

SARAH GAINEY  
Assistant Director  
Envr. Education Coordinator

KYLE RAUCH  
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Envr. Education Coordinator

JENNY KUTTER  
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Environmental Education Fellow

DAN VOGEL  
Abbey Arboretum Forest Technician

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- 2 LAND LABORERS
- 7 NATURALIST AIDES
- 9 NATURALISTS
- 14 OLC STAFF
- 43 PRP FACILITATORS

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# SAGATAGAN SEASONS

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Saint John's  
**OUTDOOR**  
UNIVERSITY

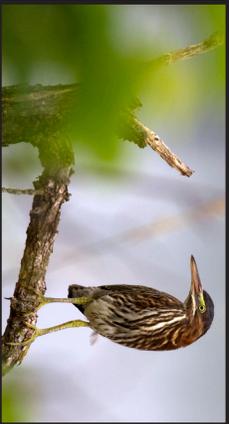


**THE PROGRAM**  
Saint John's Outdoor University provides environmental and outdoor education through classes, events and initiatives with the Abbey Arboretum, Saint John's University and the College of Saint Benedict.

**THE PLACE**  
Saint John's Abbey Arboretum is more than 2,500 acres of lakes, prairie, oak savanna and forest owned by Saint John's Abbey and surrounding Saint John's University.

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**SATURDAY, MAY 20**  
**Spring Birding Day in the Abbey Arboretum**

More than 100 species found in 2016. Who will you see?