Maple Syrup Season 2020 – Summary

by

Stephen G. Saupe
CSB|SJU Biology Department
Collegeville, MN 56321; ssaupe@csbsju.edu

Date Submitted: *April 23, 2020*

Introduction/Overview

This report documents the activities of the Saint John's Maple Syrup operation during the 2020 season. This was the 78th year since the monks of Saint John's and their friends began making syrup. It was, perhaps, the most unusual maple season in Saint John's maple syrup history.

On Friday, March 13th, St. Ben's and Saint John's closed their doors to students due to the COVID-19 pandemic. Students were sent home for several weeks to work on their classes online. On the same day, Outdoor University director John Geissler notified the syrupmakers by email that all preK- 12 maple syrup field trips were cancelled, the April 4th Maple Syrup Festival was cancelled, and that volunteers from the public were prohibited from assisting with sap collection or any other aspect of the operation. On March 19th, to protect the health of the syrupmakers, the maple syrup operation was ordered to close. The following day, March 20th, CSB|SJU cancelled all in-person classes and events on campus for the remainder of the semester. For a timeline of the campus response to the virus, visit https://www.csbsju.edu/covid-19.

The evaporator was fired one final time on Friday, March 20th. By the end of the day we had bottled our last 60 jugs of syrup and pulled taps from the trees. Normally the season ends when the trees stop producing sap, or the sap spoils before it can be cooked, or we run out of wood, or the syrup-makers are simply too exhausted to continue. This is the first time we've closed because of a global pandemic. It was difficult to shut down so early in the season, knowing that the trees would still produce sap to make syrup.

Despite the premature ending, we had a good run. By the end of the season (March 20th) we had collected nearly 8,000 gallons of sap and produced 218 gallons of delicious, amber/rich syrup. Our crop yield was about 80% of what we expected.

Perhaps the biggest disappointment of the season was not the loss of some syrup or having to clean up without volunteer help, but the cancellation of our educational activities and festival. The Saint John's Maple operation is characterized by these outreach activities. Despite the virus eliminating these community activities, it could not take away the Benedictine spirit that permeates every aspect of our operation.

Staff

Br. Walter Kieffer, OSB, was the leader of the operation. He was assisted by the Core Crew (Gary Gillitizer, Jean Lavigne, Al Meiers, Bill Mock, Jim Preusser (**Figure 23**), Stephen Saupe, and Dan Weber), Darrell Ashfeld, Mark Ludowese, Harold Zipp, Saint John's Outdoor University staff members (**Figure 26**), and some volunteers from the general public.

The Core Crew reported investing 404.5 hours into the operation (**Table 4**). There were 38 other volunteers (including super volunteers Darrell Ashfeld, Larry Huls, Mark Ludowese, Harold Zipp), who invested 319 hours. In sum, it took 723.3 total volunteer hours produce Saint John's maple syrup in 2020 (**Table 4**). In other words, there are 3.3 volunteer hours invested in every gallon of syrup (**Table 3**). This figure doesn't include clean-up hours or the time of the syrup boss, Br. Walter.

Another consequence of COVID-19 is that the number of volunteers was much smaller this year than in the past. During the past five years (2019 – 2015), an average of 157 volunteers (**Figure 1**) annually donated 1180 hours to the operation (**Figure 2**). Less than a quarter (24.2%) of our usual number of volunteers participated this year, and these individuals provided just slightly more than a quarter of the usual volunteer hours (27%).

Over the past several years, even if we ignore the data from 2020, there has been a slight trend toward decreasing participants in the operation (**Figure 1**). Perhaps the main reason is that we no longer host a Tapping Day Festival when between 100 to 300 people would join us to tap trees.

Though the majority of our work occurs during the spring maple season, Br. Walter and the Core Crew keep busy year-round making wood and doing other projects. During these times it's not uncommon to be assisted by volunteers, including Arboretum student workers and others, whose work hours never get recorded in our official statistics. As an example, on the Abbey "Day of Giving" in September which was organized by Fr. Roman Paur, six volunteers joined Br. Walter for six hours to split and stack wood.

The Outdoor University staff does an amazing job recruiting volunteers. Potential volunteers sign up for our mailing list and receive periodic updates about work opportunities. To encourage volunteers to read the updates, Sarah includes informational and entertaining "Snippets" (**Table 5**).

Tapping

In the past few years, the Core Crew has done the tapping. The advantage of this plan is it allows us to be more flexible on when to tap based on weather. Since February had been relatively warm, it appeared that it might be an early sap flow season. Br. Walter installed some test spiles on February 16th. Those on south slopes were wet, which was a sign that the season was beginning. On February 18th the crew met at the shack to begin the process of opening the sugar shack. The replacement sap pan for Big Burnie was also installed. The Crew began tapping on Wednesday, February 26th and installed taps for the next few days (**Figure 5** & **6**). Each day, at least 200 taps were installed (**Figure 8**).

By the end of the season, 1446 taps were installed (**Table 3** & **6**). Of these, 1404 were "drop bucket" production taps installed by the Core Crew (**Figure 4**). The remainder were installed by students in Introductory Biology (BIOL201) and Natural History of Maple Syrup (BIOL378).

This year, the production and education areas were slightly different than in the past (**Figure 3**). West Horseshoe and the Pond (see **Appendix 4**), which are normally used for education, were converted into production areas. The north halves of the Peninsula and North Point, which have been production areas in the past, were saved for education. Relatively few trees were tapped in the education areas this year because we closed before our festival and visits by preK-12 school groups.

All production taps this year used "drop buckets." These consisted of a 5/16-inch, white plastic spile attached to a four-foot length of 3/16 inch tubing. The tube was run into a bucket sitting on the ground (**Figure 4**). Installing the drop buckets takes a little more effort. The spile must be about four feet above the ground (**Figure 6**) and any snow at the base of the tree must be removed so the bucket sits flat on the ground (**Figure 7**). A 19/64ths bit was used to drill the holes. Despite their high cost, we broke two of them.

One potential advantage of the drop bucket system is that the 4 ft drop can create a vacuum on the hole. For every foot that sap falls in the tube, it theoretically creates a vacuum of 0.88 inches of mercury (*see* Tim Perkins, 2017, Ask Proctor, *Maple Digest*, October). Thus, there should be a vacuum of 3.5" Hg at the hole. The real benefit is that for every 1" Hg vacuum there is a 5-7% increase in sap yield (see Perkins *et al*., 2016, A Summary of Research to Improve Vacuum in Maple Tubing Systems. *Maple Digest*, June).

This means that at a minimum we would expect an increased production of sap of about 17.5% (= 3.5 x 5%) compared to a standard bucket hanging on a spile. In the past using our standard hanging buckets/bags, our sap yield has been 7.4 gallons per tap (**Table 7**). Thus, with the drop buckets we expect a 17.5% greater yield of sap, or 8.7 gallons per tap (= 7.4 + 0.175 x 7.4).

Our sap yield using the drop buckets was 5.5 gallons per tap (*see Sap Production section below*). Although lower than expected, it's not a fair comparison because we pulled the taps before the season ended. We can estimate how much sap we might have collected by using sap production data from Wildwood Ranch, our maple-syruping neighbors to the south. According to Ben Carlson, they collected about 49% of their sap after March 19th, the day we stopped. If we assume that our sap yield would have also been 49% greater, then we would have collected a total of 11,823 gallons (7,935 + 0.49 x 7,935) of sap, or in other words, 8.2 gal/tap. This value is close to the theoretical yield and suggests that the drop buckets may have increased sap flow over traditional hanging buckets. Considering that this result contradicts studies at the Proctor Center in Vermont (Perkins, 2017), it would be especially interesting to repeat this mini experiment during a full season.

As an aside, there are often unexpected surprises when you spend so much time in the woods tapping trees and collecting sap. On one of our tapping days we discovered wolf tracks in "Dan's Back End" (**Figure 9**).

Pulling Taps/Clean Up

The taps were pulled beginning on March 19th (**Table 3** & **6**). The job was finished the following day (March 20th). Spiles were simply twisted by hand and pulled from the trees. All supplies were then placed near a storage barrel for pickup (**Figure 10**). The buckets and supplies were hauled in from the woods on Tuesday, March 24th. As in the past few years, the buckets were tossed into a cage to return to them to the sugarhouse (**Figure 11)**. The buckets were stored at the shack until cleaned (**Figure 12**).

This was the earliest year that we've ever pulled taps (**Table 8**). In fact, we closed nearly a month before our average (April 13th).

Little Larry, our teaching evaporator, was cleaned and disassembled soon after receiving Geissler's March 13th note that school groups were canceled. In mid-April the Crew set up the bucket washing station and cleaned up the rest of the supplies.

Once the buckets are cleaned, they will be stored in stacks on their sides. We've learned that storing them upright makes it more difficult to separate them after storage.

Sap Production

Sap production data, as is tradition, were recorded on scrap wood (**Figure 13**). The 2020 data are summarized in **Tables 1, 3,** & **6**. Sap data for all years for which we have records are summarized in **Table 7**.

Our first sap collection was on March 4th (**Table 3** & **Figure 15**). Though not our earliest sap collection, it was clearly an early year. Compared to the previous year, in 2020 the season was over before it even began in 2019. **Figure 16** shows historical sap production data for our operation.

What makes this season particularly interesting is that it was over so early (March 19th). As mentioned, this was the earliest we've ended (**Table 8**). In fact, based on the date on which 50% of the yearly sap is collected, the season was more than two weeks earlier than average (**Figure 17**). By March 13th we had collected 50% of the total sap for the year compared to an average date of March 31st. Not surprising, the length of the season was also shorter. From first to last sap collection the season was 15 days, more than a week shorter than average (24.8 days).

Though a short season, the overall sap and syrup yield was reasonable, in part because there were quite a few sap collection days (10), which is near the average (12.4) (**Table 7**).

A total of 7,935 gallons of sap was collected in 2020 (**Tables 1**, **3**, & **6**). The largest daily sap collection during the season was 2,145 gallons on the last day, March 19th (**Table 1**). Based on the number of taps, it was a lower year for sap production. We collected 5.5 gallons of sap per tap compared to our average of 7.4 (**Tables 1, 6,** & **7)**, or about 25% less sap than expected.

Every year there are biological signals that the maple season is progressing. One of these is the appearance of snow fleas, or springtails (Collembola). These tiny arthropods, which seem to miraculously appear on warm days, are common soil invertebrates. In some years, like this one, they

are very common. In some sections of the sugarbush, nearly every bucket was covered, inside and out, with these interesting creatures (**Figure 14**). It's been reported that they are one of most abundant soilborne animals; there can be as many as 100,000 per square meter!

To reduce the risk of COVID-19 transmission during our last volunteer collection, John Geissler issued some "common sense" recommendations for sap collectors in an email on March 17th. These guidelines were emailed to the Crew and posted at the shack (**Figure 22**) and include: (1) Sap collectors do not enter the sugar shack; (2) People drive themselves out to the shack; (3) Collectors were assigned to different areas of the sugarbush rather than a large group in one area; (4) maintain a 10-foot radius around themselves; and (5) if you feel sick, stay home. In addition, an informational sign (**Figure 22)** describing how to collect was also posted at the shack to avoid the need for a Core Crew member to greet and interact with volunteers, as we usually do.

Syrup Production

Syrup production data were, like the sap data, recorded on a scrap board (**Figure 18**). Based on these data we produced 246 jugs of syrup (**Tables 6** & **11**) that went into the cellar. Since we bottle into a mixture of various-sized containers (gallon, three-liter, four-liter), this equates to 218 gallons of syrup (**Table 11**). In other words, this year we produced about 11% fewer gallons of syrup than the number of jugs that were bottled. The actual difference between the number of jugs and gallons is due to the types of containers used. This year, about 2/3rds of the jugs used were three-liter containers, which meant the difference between the number of jugs and gallons, was a little larger than usual.

Historically, we have based our production statistics (*see* **Table 7**) on the number of jugs, whether gallons or liters, of syrup that are put into the cellar by the end of the season. However, we know that we always make more syrup than is reflected in this total because syrup is used at festivals, eaten by volunteers, and served to visitors and school groups. However, this year most of the syrup made it into the cellar because of the shortened season and cancelled festival and school tours.

We installed a new syrup pan this year. The previous one had numerous leaks after only a few seasons of use and the Leader Company replaced it under warranty.

Like sap flow, syrup production was also early this year. On average, our first day of syrup production is March 24th. This year it was about two weeks early (March 8th). This is the second earliest we've ever jugged syrup. It was also a very short cooking season; it was 11 days from beginning to end, compared to our usual 21 days (**Table 7**).

Three new grates were installed in the fire box of Big Burnie at the beginning of the season. They warped after just one day of firing. Dan also noticed that the density of the syrup drops after each firing. These observations suggested that perhaps a new firing method was necessary.

Jim, Dan and Walter realized that the problem was the result of using 3-foot long wood in the 4-foot deep firebox of Big Burnie. In the past, the three-foot pieces were all lined up flush with the door, which meant that there were comparatively few coals in the back of the firebox. To solve this problem, a staggered firing method was developed in which every other row of wood was flush with the door and the alternate row was pushed to the back of the firebox. In this way, the coals and air flow were evened out through the firebox. In addition, the grates were raked every second or third

firing to more evenly distribute the coals. This provided a more consistent draw-off, hotter fire, and best of all, a savings of wood. And, the grates no longer sagged.

Was it a Good Year?

Yes. Despite closing early, we had a good production year and made about 80% of the syrup we expected. Our historic syrup production is 0.19 gal syrup/tap or 0.76 qt of syrup/tap. Unfortunately, prior to 2015, our records did not always report whether we jugged the syrup into liter or gallon containers. Depending on the number of liter or gallon containers we used, the actual number of gallons might vary up to 10% or so. With this caveat, given the number of taps, this year we expected to make about 275 gallons (= 1446 x 0.19). Thus, our syrup/crop yield was 79.3% (= 218 / 275 x 100).

The sugar concentration of the sap, which is calculated using the Rule of 86, was slightly higher (2.4% = 2.4 Brix) than average (2.2 Brix; see **Tables 3, 6** & **7**). Though our calculated season average sugar concentration was 2.4 Brix, whenever we directly measured the sap sugar concentration it was even higher (see **Figure 13**) and averaged 3.0 Brix. At least part of the reason the measured sugar concentration is higher than the calculated is because on several collection dates we discarded a large amount of ice. This removes primarily water in the sap, which raises the sugar concentration. As a consequence, our sap/syrup ratio was 36.4 compared to our average value of 40.0 (**Tables 6, 7** & **8**).

Syrup production is an obvious measure of whether we had a successful year. Perhaps an even more important, though less tangible, indicator of our success is sharing the Benedictine philosophy with all those who visit the operation (**Appendix 1, 2** & **3**). Though we had fewer visitors and volunteers this year, COVID-19 couldn't dampen the Benedictine spirit that underlies our operation. That is what brings Brother Walter, the Core Crew, and our volunteers back to the operation year after year (**Figure 25**).

Syrup Analysis

We save a sample of each batch of syrup that is jugged during the season (**Figure 19** & **20**). This year we jugged syrup 23 times on six different days (**Table 2** & **6**). Each sample was analyzed for clarity, color, density and flavor.

The clarity of syrup this year was very good. All of the samples (**Figure 19**) were clear and lacked any debris or other foreign materials. A few of the samples had some oxidation near the top of the jars (**Figure 19,** *see 4, 5, 19, 20, & 23*). This occurs because the sample jars are not filled to the top. Air in the headspace of the container causes the discoloration. About half of the samples had a slight amount of cloudiness from nitre (sugar sand) that had settled on the bottom of the container. This is common in syrup and the amount that appeared in our samples was minor. The improvement in our syrup clarity reflects our care in filtering, and especially using only good filters for the final filtration before jugging.

The color of the syrup was amazingly uniform this year (**Figure 19**). Visually, there was very little difference between the first and the last sample jugged. Not surprisingly, the light transmittance (% Tc) of the samples fell within a narrow range, from 54 – 65 % Tc (**Figure 21**). It is unusual for samples to be so uniform in color. Typically, the first syrup produced is lightest in color and it gets

progressively darker as the season progresses. Based on color, all batches of syrup that were made this year would be graded "amber color/rich flavor."

Maple syrup should have a density of between 66 – 68.9 Brix to prevent spoilage and crystallization. All but three of our batches fell within this range. Two were below legal density and one was above. The mean density of the 23 samples was 67.2 Brix.

A taste test of the samples showed that nearly all of the samples had a great flavor. A few samples had a slight off-flavor, which most consumers would not likely notice. In short, Saint John's maple syrup tastes delicious.

Sweet Predictions Award

For fun, at the beginning of the season the Crew typically has a contest to predict the amount of syrup we will make. Unfortunately, we didn't have a chance to organize it this year. A listing of past winners is given in **Table 10**.

Festivals & Celebrations

Due to COVID-19, our major festival, which had been scheduled for April 6th, was cancelled.

Publicity/Honors

Articles and publications about the 2020 Saint John's maple operation include the following:

- Anon (2020) *Abbey Chronicle*. Spring. p 35.
- Halpern, Ashlea & A Parks (2020) Maple-tapping season is short and sweet in Minnesota. *Minnesota Monthly*. March 20th. (https://www.minnesotamonthly.com/featured/explore-feature/maple-tapping-season-is-short-and-sweet-in-minnesota/)
- Saupe, SG (2020) The maple syrup 8-ball. *Sagatagan Seasons*. March.

Maple Sap Award

This award is traditionally bestowed on the Core Crew member who, during the season, does something "less than brilliant." For examples, see the listing of past winners (**Table 9**). This year, the winner of 2020 Sap Award is COVID-19, which made a mockery of our 2020 syrup season.

Education & the Community-at-Large:

Few students visited the operation this year because of the pandemic. Before we closed, we hosted 219 student visitors; our smallest number since we began keeping records in 2005 (**Table 4** & **Figure 27**). This group included 11 introductory biology labs (BIOL201; 191 students) and 28 students in the Natural History of Maple Syrup course (BIOL378) taught by Kyle Rausch. There were no preK-12 class visits; these and other events were cancelled.

The Outdoor University program does a wonderful job to promote the operation. Among other things, they create "Crew" buttons (**Table 12**) and host an assortment of activities. This year, before

we closed, they served maple syrup sundaes in the Reef (March 10th) and hosted Flapjack Friday on March 13th.

Upgrades

As always, we made some improvements to the operation including (a) using a new firing method (see Syrup Production section); (b) new sap and syrup pans were installed on Big Burnie; and (c) the sap storage tanks were labeled.

One improvement that we made last season, but was not mentioned in the 2019 report, is that a new cage for collecting buckets was constructed (**Figure 11**).

Mice are a continuing problem. A mouse-proof area to store buckets and other equipment is needed. The Crew initially discussed building a "vault" in the woodshed. However, Gary Jorgenson, Saint John's Physical Plant Director, suggested that it might be simpler and more cost-effective to purchase a shipping container. We are exploring this latter option and it is likely to be in place before summer.

Acknowledgements

Many thanks to Br. Walter for providing insightful comments, additions, and editorial suggestions.

Tables, Figures & Appendices

(Tables appear first, followed by Figures, and then Appendices. Unless otherwise indicated, all images, figures, and tables are provided by SG Saupe)

Table 1. Sap Collection Data – Spring 2020	
Date	**Sap collected (gal)**
4-Mar	210
6-Mar	885
7-Mar	225
8-Mar	855
9-Mar	735
12-Mar	450
13-Mar	1000
14-Mar	755
18-Mar	675
19-Mar	2145
Total (gal)	**7,935**

Table 2. Syrup Production Data – Spring 2020	
Date	**Syrup (gals)**
8-Mar	7.1
9-Mar	32.8
14-Mar	53.0
15-Mar	29.7
19-Mar	35.3
20-Mar	60.0
Total (gal)	**217.9**

Table 3: Syrup Production Statistics Summary – Spring 2020	
Spiles (5/16ths)	1446
# sap collection days	10
Sap collection dates	4-19 Mar
Sap Season length (days)	15
Tanker loads of sap	38
Day on which 50% of annual sap collected	13 Mar
Total sap collected (gal)	7,935
Syrup produced (gal)	218
Batches of syrup finished	23
Volunteer hours per gallon syrup	3.3
Ratio (sap/syrup)	36.4
Sugar concentration (%)	2.4

Table 4: Saint John's Maple Syrup Operation Volunteers & Visitors – Spring 2020	
Volunteers *(counts families as one so total numbers are higher)*	38
Volunteer hours *(including Harold Zipp, Darrell Ashfeld, Mark Ludowese)*	318.8
Core Crew hours (*excluding Br. Walter & SJOU staff)*	404.5
Total Volunteer hours	723.3
Festival (*includes visitors, staff, volunteers*)	*cancelled*
Total Festival Participants	*n/a*
Student tours (*pre K – 12*)	*cancelled*
Student tours (*post-secondary; incl. biology labs - 191 & Maple course – 28)*	219
Total students	219

Table 5. Sarah's Syrup Snippets from 2020 *(Fun facts by Sarah Gainey in her email updates sent to the volunteer distribution list)*

Feb 27 – In order for sap to flow out of maple trees, we need temperatures to be below freezing at night and above freezing during the day. In general*, you can tap a maple tree and get sap to flow when the tree is dormant and you have those freeze-thaw temperatures. So while those conditions can be present in late fall, trees are historically tapped in the spring when you have a more reliable stretch of freeze-thaw temperatures.

*Of course, it is actually much more complicated than that (link to https://www.massmaple.org/about-maple-syrup/how-sugar-maple-trees-work/

March 5 – Our Saint John's Maple Syruping operation acts under the guidance of our own personal maple syrup guru, Walter Kieffer, OSB. He has been making syrup at Saint John's for more years than he has toes and fingers to count them on and was recently featured in this great article in Minnesota Monthly (https://www.minnesotamonthly.com/featured/explore-feature/maple-tapping-season-is-short-and-sweet-in-minnesota/)

March 10 – Much like our college students, maple syrup also gets graded on its 'performance.' Or rather, the performance of the people responsible for cooking it. The USDA determines the grading process of maple syrup, which is determined by the color and flavor of the syrup (https://minnesotagrown.com/pick-of-the-month/maple-syrup-flavor-guide/) . The way it is graded has also recently changed. One of our own syrupers, Steve Saupe, professor in the CSB/SJU biology department, is even a judge at the MN State Fair for the maple syrup competition. I wonder what is harder to grade, maple syrup or biology exams??

March 16 – Even though our syrup community can no longer gather to spread the good word of real maple syrup to the 1000+ school kids who were scheduled to come visit us this year, here is a great example of community coming together to support kids. https://wjon.com/restaurants-providing-free-food-to-kids-in-central-mn/

Table 6. 2020 Summary Data

2020 Summary: Sap & Syrup Data

# of Taps																						
Taps 5/16th (metal spiles)		42																				
Taps 5/16th (drop lines)		1404										**2020 festival details**										
Taps 5/16th (tubing)																						
Taps total (actual count)		1446										4-Apr	cancelled									
Taps total (GPS count)																						
Taps Placed		26-Feb	Feb 27, Feb 28, and others									TTL	0									
Taps Pulled		19-Mar	finished Mar 20																			
Wood Used (cords)																						
volunteers		38																				
volunteer hours		153.0																				
super volunteers		3	Harold Zipp, Mark Ludowese, Darryl Ashfeld																			
super vol. hours		165.8																				
Core Crew hours		404.5	Gary Gillitizer, Dan Weber, Ssaupe, Jim Preusser, Jean Lavigne																			
total hours		723.3																				
Students preK-12		0																				
Students post (CSBSJU)			(bio labs, maple course)																			
Community			mix of students and community in various tours																			
Tapping Day participants		not held this year																				
Syrup Boss		Walter Kieffer, OSB																				
Core Crew		Gary Gillitzer,Stephen Saupe, Dan Weber, Jim Preusser. Bill Mock and Al Meiers had not returned from snow birding. Jean Lavigne was involved with classes																				
Super Volunteers		Harold Zip, Daryl Ashfield, Mark Ludowese & Larry Huls																				

			Syrup Production											Sap Production						
DATE	**Batch**	Time	**3L**	**Gal**	**4L**	**5 Gal**	**Total (jugs)**	**Total (gallons)**	**Total (Gal/day)**	**Batches finished**	**Ttl Jugs / day**		**DATE**	**Full Loads**	**Partial Loads**	**Ttl loads**	**Gal partial load**	**GALLON**	**Cumul**
8-Mar	1	3:00 PM	5	1	2		8	7.1	7.1	1	8		4-Mar		1	1	210	210	210
9-Mar	2	9:30 AM	5		4		9	8.2	32.8	4	36		6-Mar	3	1	4	210	885	1095
	3	11:30 AM	4	1	4		9	8.4					7-Mar	1		1		225	1320
	4	1:15 PM	6	2	2		10	8.9					8-Mar	3	1	4	180	855	2175
	5	2:30 PM	4	1	3		8	7.3					9-Mar	3	1	4	60	735	2910
14-Mar	6	10:00 AM	5	1	1		7	6.0	53.0	6	60		12-Mar	2		2		450	3360
	7	11:00 AM	9	1			10	8.1					13-Mar	4	1	5	100	1000	4360
	8	11:45 AM	8		2		10	8.5					14-Mar	3	1	4	80	755	5115
	9	1:00 PM	3	2	3		8	7.5					18-Mar	3		3		675	5790
	10	3:00 PM	5	1	5		11	10.2					19-Mar	9	1	10	120	2145	7935
	11	4:00 PM	8	1	5		14	12.6											
15-Mar	12	2:30 PM		1	7		8	8.4	29.7	3	33								
	13	3:30 PM	7	1	2		10	8.7											
	14	5:00 PM	12		3		15	12.7											
19-Mar	15	1:15 PM	6		3		9	7.9	35.3	4	41								
	16	2:30 PM	10		1		11	9.0											
	17	3:45 PM	6	1	3		10	8.9											
	18	5:15 PM	8	1	2		11	9.5											
20-Mar	19	10:15 AM	7		6		13	11.9	60.0	5	68								
	20	12:30 PM	12	2			14	11.5											
	21	2:00 PM	5	1	4		10	9.2											
	22	4:15 PM	3		8		11	10.8											
	23	6:30 PM	17	1	2		20	16.6											
								ttl	217.9	23.0	246.0								
								avg	36.3	3.8	41.0								
6									**count**	6		**SAP DAYS**	10		**#LOADS**	38	**TTL SAP**	7935	
			155	19	72		246	217.9	**sum**										
20-Mar			17.0	2.0	8.0		20.0	16.6	**max**				19-Mar	9				2145.0	
8-Mar			3.0	1.0	1.0		7.0	6.0	**min**				4-Mar	1				210.0	
14-Mar			7.0	1.2	3.4		10.7	9.5	**average**				11-Mar	3.4				793.5	
14-Mar			6.0	1.0	3.0		10.0	8.9	**median**				10-Mar	3.0				745.0	
12									**difference**			**length**	15						
			122.8	19.0	76.1			217.9	gallons					**sap/syrup**	36.4			sap per tap	5.49

Table 7. Data Summary from all years

St. John's Maple Syrup - Summary of Data
1942 - present

colored cells are calculations

Year	Make syrup? 1=yes	# of Taps	total syrup (gal)	total sap collection (gal)	Wood used (cords)	Taps placed	Taps Pulled	First Day syrup	last day syrup	Mean Syrup date	# days between first & last cooking	# cooking days	batches finished	avg gal per batch	avg gal per cook day	first day sap	last day sap	# sap collecting days	Midpoint Sap Collection	mean sap collection date	Median sap collection date	Length sap season (last - 1st collect day)	# tanker loads	max daily sap collected	min daily sap collected	average gal sap collected per collecting day	average gal sap collected per tap per collecting day	Sap (gal) per tap per season	Syrup (gal) per tap	Syrup (qt) per tap	sap/syrup ratio	syrup/cord	average sugar conc from Hale ref 86	interval between tapping (years)	Make syrup? 1=yes
1940																																		
1941																																		
1942	1	150	45	1440				28-Mar	12-Apr																			9.6	0.30	1.20	32.0		2.69	0	1
1943	1	900																															1	1
1944																																		
1945	1	1750	246	8600				16-Mar	12-Apr																			4.9	0.14	0.56	35.0		2.46	2	1
1946																																		
1947																																		
1948	1							17-Mar								17-Mar																	3	1
1949	1							7-Apr								7-Apr																	1	1
1950																																		
1951	1		273	9000					26-Apr																						33.0		2.61	2	1
1952																																		
1953																																		
1954	1	800	210																										0.26	1.05				3	1
1955																																		
1956																																		
1957																																		
1958																																		
1959	1	800				17-Mar		7-Mar	10-Apr																								5	1
1960																																		
1961																																		
1962																																		
1963																																		
1964	1	1500	182																										0.12	0.49				5	1
1965																																		
1966	1	2200	350	13000																								5.9	0.16	0.64	37.1		2.32	2	1
1967																																		
1968	1	3100																															2	1
1969																																		
1970																																		
1971																																		
1972	1			16477												23-Mar	20-Apr	15	6-Apr	6-Apr	5-Apr	28	94.0	2800.0	175.0	1098.5						4	1
1973																																		
1974	1	3700	369	15379				3-Apr	20-Apr	11-Apr	17	15	63	5.9	24.6	3-Apr	19-Apr	12	9-Apr	9-Apr	8-Apr	16	87.9	2275.0	175.0	1281.6	0.3	4.2	0.10	0.40	41.7		2.06	2	1
1975																																		
1976																																		
1977																																		
1978	1	1850	373	14674		19-Mar	15-Apr	26-Mar	16-Apr	5-Apr	21	14	58	6.4	26.6	22-Mar	15-Apr	13	4-Apr	3-Apr	4-Apr	24	83.9	1943.0	481.0	1128.8	0.6	7.9	0.20	0.81	39.3		2.19	4	1
1979																																		
1980																																		
1981																																		
1982	1	1850	271	9758		16-Mar	26-Apr	2-Apr	24-Apr	14-Apr	22	12	42	6.5	22.6	2-Apr	22-Apr	13	13-Apr	13-Apr	14-Apr	20	55.8	1225.0	350.0	750.6	0.4	5.3	0.15	0.59	36.0		2.39	4	1
1983																																		
1984																																		
1985	1	1950	560	21179		13-Mar	13-Apr	17-Mar	12-Apr	1-Apr	26	17	71	7.9	32.9	16-Mar	11-Apr	17	1-Apr	29-Mar	31-Mar	26	121.0	2100.0	117.0	1245.8	0.6	10.9	0.29	1.15	37.8		2.27	3	1
1986																																		
1987																																		
1988	1	2000	348	12850				23-Mar	8-Apr	30-Mar	16	11	37	9.4	31.6	23-Mar	6-Apr	12	30-Mar	30-Mar	30-Mar	14	73.4	1807.8	175.0	1070.8	0.5	6.4	0.17	0.70	36.9		2.33	3	1
1989																																		
1990	1	1300	364	11384		9-Mar		26-Mar	11-Apr	2-Apr	16	12	47	7.7	30.3	22-Mar	10-Apr	11	30-Mar	31-Mar	30-Mar	19	65.1	1662.5	52.5	1034.9	0.8	8.8	0.28	1.12	31.3		2.75	2	1
1991																																		
1992	1	1600	344	14481				20-Mar	4-Apr	27-Mar	15	12	38	9.1	28.7	19-Mar	4-Apr	15	28-Mar	26-Mar	27-Mar	16	82.7	2100.0	306.3	965.4	0.6	9.1	0.22	0.86	42.1		2.04	2	1
1993																																		
1994	1	1600	308	12598				17-Mar	5-Apr	27-Mar	19	14	45	6.8	22.0	16-Mar	4-Apr	14	28-Mar	24-Mar	24-Mar	19	72.0	1750.0	87.5	899.9	0.6	7.9	0.19	0.77	41.0		2.10	2	1
1995																																		
1996	1	1200	277	10631		13-Mar		31-Mar	24-Apr	12-Apr	24	13	36	7.7	21.3	21-Mar	22-Apr	17	9-Apr	7-Apr	8-Apr	32	60.7	1750.0	87.5	625.4	0.5	8.9	0.23	0.92	38.4		2.24	2	1
1997																																		
1998																																		
1999	1	1200	181	7369		26-Feb	10-Apr	18-Mar	10-Apr	27-Mar	23	12	22	8.2	15.1	26-Feb	8-Apr	19	22-Mar	24-Mar	24-Mar	41	42.1	992.3	105.0	387.8	0.3	6.1	0.15	0.60	40.7		2.11	3	1
2000	1	1200	223	10092				16-Mar	2-Apr	25-Mar	17	9	33	6.8	24.8	6-Mar	30-Mar	10	22-Mar	20-Mar	20-Mar	24	57.7	1925.0	175.0	1009.2	0.8	8.4	0.19	0.74	45.3		1.90	1	1
2001																																		
2002	1	600	107	3413			17-Apr	1-Apr	25-Apr	11-Apr	24	5	12	8.9	21.4	28-Mar	13-Apr	7	8-Apr	4-Apr	6-Apr	16	19.5	1138.0	175.0	487.6	0.8	5.7	0.18	0.71	31.9		2.70	2	1
2003	1	539	146	6519				27-Mar	9-Apr	2-Apr	13	5	17	8.6	29.1	17-Mar	9-Apr	11	30-Mar	28-Mar	29-Mar	23	37.3	1225.0	175.0	592.6	1.1	12.1	0.27	1.08	44.8		1.92	1	1
2004	1	600	99	5513			15-Apr	24-Mar	16-Apr	2-Apr	23	8	10	9.9	12.4	18-Mar	5-Apr	10	31-Mar	27-Mar	26-Mar	18	31.5	1575.0	175.0	551.3	0.9	9.2	0.17	0.66	55.7		1.54	1	1
2005	1	600	45	2770		5-Mar	16-Apr	4-Apr	16-Apr	8-Apr	12	5	6	7.5	9.0	24-Mar	10-Apr	9	2-Apr	2-Apr	4-Apr	17	15.8	525.0	57.8	307.8	0.5	4.6	0.08	0.30	61.6		1.40	1	1
2006	1	1000	124	5031		11-Mar	9-Apr	24-Mar	12-Apr	4-Apr	19	7	7	17.1	17.7	13-Mar	10-Apr	10	26-Mar	28-Mar	27-Mar	28	28.8	1006.3	175.0	503.1	0.5	5.0	0.12	0.50	40.6		2.12	1	1
2007	1	965	116	3680		10-Mar	21-Apr	24-Mar	26-Apr	11-Apr	33	6	13	10.5	19.3	18-Mar	14-Apr	8	12-Apr	1-Apr	2-Apr	27	21.0	1050.0	87.5	460.0	0.5	3.8	0.12	0.48	31.7		2.71	1	1
2008	1	1000	227	9360		1-Mar	18-Apr	29-Mar	20-Apr	8-Apr	22	9	24	9.5	25.2	21-Mar	19-Apr	12	5-Apr	4-Apr	3-Apr	29	41.6	2025.0	200.3	780.0	0.8	9.4	0.23	0.91	41.2		2.09	1	1
2009	1	1287	268	10840	12.5	14-Mar	13-Apr	23-Mar	14-Apr	5-Apr	22	8	27	9.9	33.5	17-Mar	13-Apr	13	3-Apr	1-Apr	3-Apr	27	53.0	1915.0	80.0	833.8	0.6	8.4	0.21	0.83	40.4	21.4	2.13	1	1
2010	1	938	130	5345	4.5	13-Mar	11-Apr	23-Mar	10-Apr	29-Mar	18	6	11	11.8	21.7	17-Mar	29-Mar	7	23-Mar	23-Mar	23-Mar	12	53.0	1915.0	80.0	763.6	0.8	5.7	0.14	0.55	41.1	28.9	2.09	1	1
2011	1	1200	126	5615				2-Apr	11-Apr	6-Apr	9	5	12	10.5	25.2	18-Mar	10-Apr	9	2-Apr	31-Mar	2-Apr	23	29.0	1310.0	225.0	623.9	0.5	4.7	0.11	0.42	44.6		1.93	1	1
2012	1	1100	39	2410		10-Mar	24-Mar	22-Mar	31-Mar	26-Mar	9	2	3	13.0	19.5	15-Mar	24-Mar	5	19-Mar	19-Mar	19-Mar	9	14.0	795.0	295.0	482.0	0.4	2.2	0.04	0.14	61.8		1.39	1	1
2013	1	1326	557	19055	24.0	9-Mar	26-Apr	5-Apr	29-Apr	16-Apr	24	19	48	11.6	29.3	30-Mar	26-Apr	19	17-Apr	13-Apr	14-Apr	27	87.0	2925.0	225.0	1002.9	0.8	14.4	0.42	1.68	34.2	23.2	2.51	1	1
2014	1	1493	317	12160	12.5	15-Mar	22-Apr	7-Apr	24-Apr	16-Apr	17	10	29	12.1	31.7	1-Apr	22-Apr	13	11-Apr	11-Apr	11-Apr	21	57.0	2250.0	220.0	935.4	0.6	8.1	0.21	0.85	38.4	25.3	2.24	1	1
2015	1	1577	345	11785	13.3	8-Mar	14-Apr	19-Mar	13-Apr	31-Mar	25	11	37	9.3	31.3	12-Mar	11-Apr	15	30-Mar	27-Mar	28-Mar	30	56.0	1800.0	130.0	785.7	0.5	7.5	0.22	0.87	34.2	26.0	2.51	1	1
2016	1	1743	382	15380		25-Feb	8-Apr	8-Mar	12-Apr	23-Mar	35	14	45	8.5	27.3	28-Feb	11-Apr	13	22-Mar	22-Mar	22-Mar	42	72.0	3455.0	100.0	1183.1	0.7	8.8	0.22	0.88	40.2		2.14	1	1
2017	1	1417	264	10355		14-Feb	11-Apr	6-Mar	9-Apr	24-Mar	34	8	29	9.1	33.0	18-Feb	7-Apr	17	21-Mar	17-Mar	21-Mar	48	52.0	1875.0	40.0	609.1	0.4	7.3	0.19	0.74	39.3		2.19	1	1
2018	1	1589	251	8715		24-Feb	29-Apr	25-Mar	1-May	18-Apr	37	9	33	7.6	27.9	17-Mar	29-Apr	14	13-Apr	8-Apr	12-Apr	43	42.0	1705.0	100.0	622.5	0.4	5.5	0.16	0.63	34.7		2.47	1	1
2019	1	1742	523	19960		15-Mar	16-Apr	25-Mar	20-Apr	6-Apr	26	14	62	8.4	37.3	22-Mar	16-Apr	15	3-Apr	3-Apr	3-Apr	25	94.0	2475.0	425.0	1330.7	0.8	11.5	0.30	1.20	38.2		2.25	1	1
2020	1	1446	218	7935		26-Feb	19-Mar	8-Mar	19-Mar	14-Mar	11	6	23	9.5	36.3	4-Mar	19-Mar	10	13-Mar	11-Mar	10-Mar	15	38.0	2145.0	210.0	793.5	0.5	5.5	0.15	0.60	36.4		2.36	1	1
sum		52812	9205.7	354754	66.8							298	940					385																	
average		1390	256	10136	13.4	7-Mar	13-Apr	23-Mar	14-Apr	3-Apr	21.0	9.9	31.3	9.2	25.6	18-Mar	11-Apr	12.4	31-Mar	30-Mar	30-Mar	24.5	56.1	1788.4	176.2	811.2	0.6	7.4	0.19	0.76	40.0	25.0	2.2	1.9	
median		1313	257	10092	12.5	10-Mar	15-Apr	24-Mar	12-Apr	3-Apr	21.5	9.5	31.0	9.0	25.9	18-Mar	11-Apr	13-Jan	1-Apr	31-Mar	31-Mar	24.0	55.8	1807.8	175.0	785.7	0.6	7.5	0.19	0.74	38.8	25.3	2.2	1	
minimum		150	39	1440	4.5	14-Feb	19-Mar	6-Mar	19-Mar	14-Mar	9.0	2.0	3.0	5.9	9.0	18-Feb	19-Mar	5	13-Mar	11-Mar	10-Mar	9.0	14.0	525.0	40.0	307.8	0.3	2.2	0.04	0.14	31.3	21.4	1.4	0.0	
maximum		3700	560	21179	24.0	19-Mar	29-Apr	7-Apr	1-May	18-Apr	37.0	19.0	71.0	17.1	37.3	7-Apr	29-Apr	19	17-Apr	13-Apr	14-Apr	48.0	121.0	3455.0	481.0	1330.7	1.1	14.4	0.42	1.68	61.8	28.9	2.7	5.0	
count	42	38	36	35	5.0	22	21	35	34	30	30	30	30	30	30	33	31	31	31	31	31	31	31	31	31	31	30	33	35	35	34	5	34	42	42

(note - when entering data for years, be sure it it same year as others in column, i.e., 2004, 2005 or 2006)

(note - entered data as jugs rather than gallons prior to about 2015

years since beginning 79

	Seasons making Syrup 1,0	# of Taps	total syrup (gal)	total sap collection (gal)	wood used (cords)	Taps placed	Taps Pulled	first day syrup	last day syrup	Mean Syrup date	# days between first & last cooking	# cooking days	batches finished	avg gal per batch	avg gal per cook day	first day sap	last day sap	# sap collecting days	Midpoint sap (50% of your collected)	mean sap collection date	Median sap collection date	Length sap season (last - 1st collect day)	# tanker loads	max daily sap collected	min daily sap collected	average sap collected per collecting day	average gal sap collected per tap per day	Sap (gal) per tap per season	Syrup (gal) per tap	Syrup (qts) per tap	sap/syrup ratio	syrup(gal)/cord	average sugar conc from Hale ref	interval between tapping (years)	Seasons making Syrup 1=Y

Table 8. Summary Statistics

Summary of St. John's Maple Syrup Statistics: 1942 – 2020

compiled by

Stephen G. Saupe
College of St. Benedict/St. John's University
Biology Department
Collegeville, MN 56321
date: *April 7, 2020*

This document provides a summary of data from the St. John's Maple Syrup Operation. Ranges are shown in parentheses. Data prior to 1972 are incomplete because they were destroyed when the original sugar house burned down. The 2020 season was cut short due to COVID-19.

General

First season to make syrup	1942
Number of years since St. John's began making syrup	78
Number of seasons during which St. John's has made syrup	41
Average time (in years) between successive syrup-making seasons	1.9

Tapping Data

Average date trees are tapped	7 March (14 Feb – 19 Mar)
Average date taps are removed	13 April (19 Mar – 29 Apr)
Average number of taps (*for all seasons*)	1390
Average number of taps (*prior to 2002*)	1613
Average number of taps (*since 2002*)	1166
Fewest number of taps *(& year installed)*	150 *(1942)*
Maximum number of taps *(& year installed)*	3700 *(1974)*

Sap Collection Data

Average first date of sap collecting	18 March
Earliest date on which sap was first collected *(& the year)*	18 Feb *(2017)*
Latest date on which sap was first collected *(& the year)*	7 Apr *(1949)*
Average last date of sap collecting	11 April
Earliest date on which sap was last collected *(& the year)*	19 March *(2020)*
Latest date on which sap was last collected *(& the year)*	29 April *(2018)*
Average date on which 50% of yearly sap is collected	31 Mar *(13 Mar – 17 Apr)*
Average number of days during the season on which sap was collected	12.4 (5 – 19)
Average number of days between first and last sap collection *(= length of sap production season)*	21.5 (9 – 48)

Sap Volume Data

Most sap collected, in gallons, during a season *(& the year)*	21,179 *(1985)*
Average sap collected, in gallons, during a season	10,136
Average sap collected, in gallons, on a collecting day	811.2 (308 – 1331)
Most sap collected, in gallons, on a single day *(& the year)*	3455 *(2016)*
Average gallons of sap collected per tap	7.4 (2.2 – 14.4)
Average gallons of sap collected per tap per collecting day	0.6 (0.3 – 1.1)

Sugar House & Evaporator Info

Year sugar house constructed (first season of use)	1971 (*1972*)
Year South addition added to sugar house	1999
Year West addition to sugar house completed and wood shed renovated	2009
Teaching Evaporator (Little Larry) size	2 ft. wide x 6 ft. long
Teaching Evaporator (Little Larry) capacity [gallons sap boiled per hour / gallons syrup produced per hour]	20 / 0.5
Production Evaporator (Big Burnie) size	4 ft. wide x 14 ft. long
Production Evaporator capacity [gallons sap boiled per hour / gallons syrup produced per hour]	200 / 5

Syrup Production Data

Average gallons of syrup produced during a season (*data for all seasons*)	256
Average gallons of syrup produced during a season (*since 2002*)	225
Maximum gallons of syrup produced in a season	560 (*1985*)
Minimum gallons of syrup produced in a season *(& the year)*	39 (*2012*)
Average quarts of syrup per tap	0.76 (0.14 – 1.7)
Wood used (gallons syrup / cord burned)	25.0 (21.4 – 28.9)

Sugar Concentration Data

Average sap/syrup ratio	40.0 (31.3 – 61.8)
Average seasonal sugar content of sap, in percent	2.2%
Lowest seasonal sugar content of sap, in percent *(& the year)*	1.4% (*2005*)
Highest seasonal sugar content of sap, in percent *(& the year)*	2.7% (*1990*)

Saint John's Maple Syrup

Table 9. Great moments in Saint John's Maple Syrup History – A Summary of the Maple Sap Award Winners		
Year	**Award Winner**	**Great Moment**
2020	COVID-19	For making a mockery of the maple syrup season
2019	Al Meiers	For inadvertently cursing when a kindergarten school group was visiting the shack
2018	Sarah Gainey	Leaving the parking brake on while nearly a dozen people tried to push her out of a slippery parking place
2017	Gary Gillitzer	Wrapping the sap wagon around a tree
2016	Br. Walter Kieffer	Burning Big Burnie's syrup pan
2015	Br. Walter Kieffer	Getting whacked in the head with the handle of a tire jack
2014	Tom Kroll	Forgetting to order desperately need gallon jugs
2013	Gary Gillitzer	Driving a full sap tank into the woods to collect more sap

Table 10. Great moments in Saint John's Maple Syrup History – A Summary of the Sweet Prediction Winners	
Year	**Award Winner**
2020	not done
2019	not done
2018	Mark Ludowese
2017	Ashley Walker
2016	Bill Mock
2015	Br. Walter Kieffer & Al Meiers (*tie*)
2014	Br. Walter Kieffer
2013	Bill Mock

Table 11: Analysis of Actual Syrup Production during the 2020 Season.			
Container size	**Number Jugged**	**% of total jugs**	**Volume (gallons)**
4-liter glass jug	72	29.3	76.1
3-liter glass jug	155	63.0	122.8
Gallon glass jug	19	7.7	19
5 gallon	0	0	0
Total	**246**	**100**	**217.9**

Table 12. Maple Syrup Crew Button Summary (information provided by Sarah Gainey, Saint John's Outdoor U)		
Year	**Color**	**Designer** *(if known)*
2008	Light green	
2009	Light purple	
2010	Light blue	
2011	Bright Orange	
2012	Bright yellow	
2013	Red	
2014	Teal	Teresa Gonia
2015	Green	Maddie Norgaard
2016	Black with white lettering	Natalie & Siri
2017	Dark purple	Pearce Jensen
2018	Craft paper brown	Ella Grote & AnnMarie Backstrom
2019		
2020		

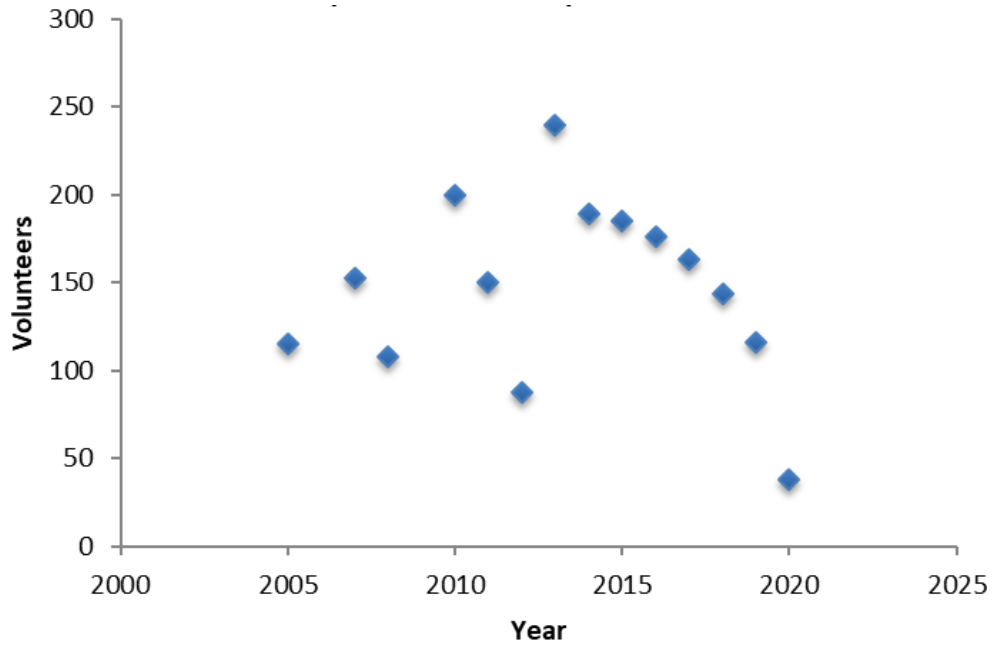

Fig 1. Numbers of volunteers who participate in producing Saint John's maple syrup. Data exclude the Core Crew and Br. Walter.

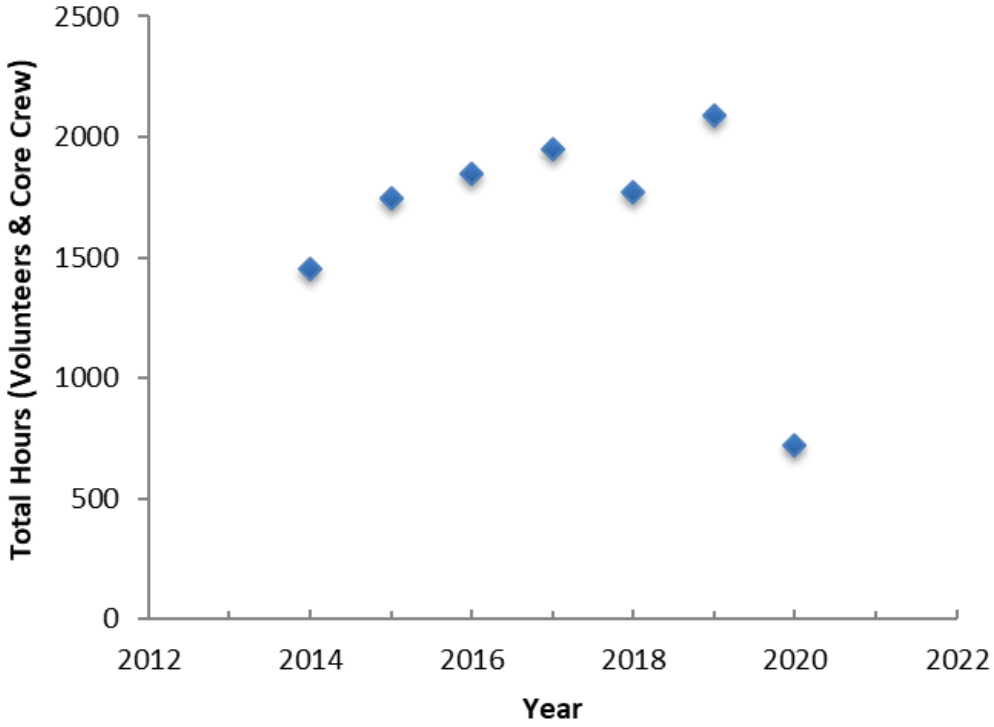

Figure 2. Hours invested in the Saint John's Maple Syrup Operation by all volunteers including the Core Crew.

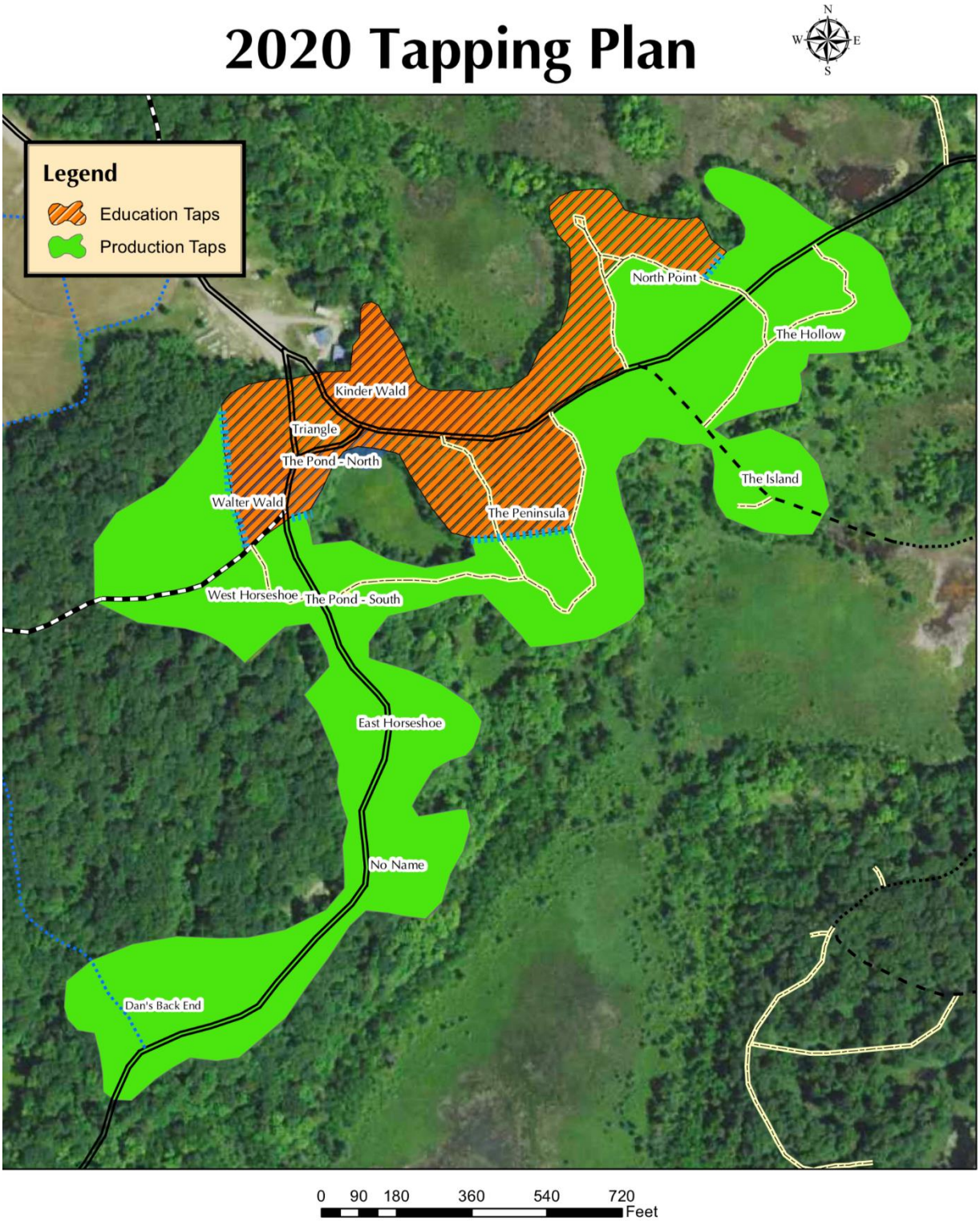

Figure 3. Tapping map. *Map courtesy of John Geissler, Saint John's Land Manager & Outdoor University Director.*

Figure 4. Drop buckets used to collect sap in the Saint John's Maple Syrup operation. There were 1404 taps collected with this system.

Figure 5. The Core Crew heads out into the sugarbush to install taps in late February. Helping were (*from left*) Larry Huls, Darrel Ashfeld, Harold Zipp, Jim Preusser, Dan Weber, and John Geissler.

Figure 6. Installing drop buckets. Brother Walter is using a marked stick to ensure the hole is drilled 4 feet above the ground. Dan Weber is waiting to tap in the spile with its attached dropline.

Figure 7. Tap installation crew. Brother Walter (yellow hat) drills a hole in the tree, Dan Weber (left) taps in the spile, Harold Zipp (middle) brings buckets to hang on the trees, while Larry Huls (right) shovels snow from the base of the tree.

Figure 8. Returning to the sugar shack after installing taps. From left – Br. Walter, Dan Weber, Larry Huls, Carol Hlebain.

Figure 9. Wolf tracks in Dan's Back End in the Saint John's Sugarbush. Top left – wolf track with dollar bill for scale. Top right – wolf tracks. Bottom – Jim Preusser checks out the wolf tracks.

Figure 10. Buckets and barrel waiting to be picked up for cleaning.

Figure 11. Dan Weber (left) and Larry Huls tossing buckets into the cage to take back to the sugarhouse for cleaning. John Geissler is driving the tractor.

Figure 12. Buckets waiting to be cleaned at the sugar shack

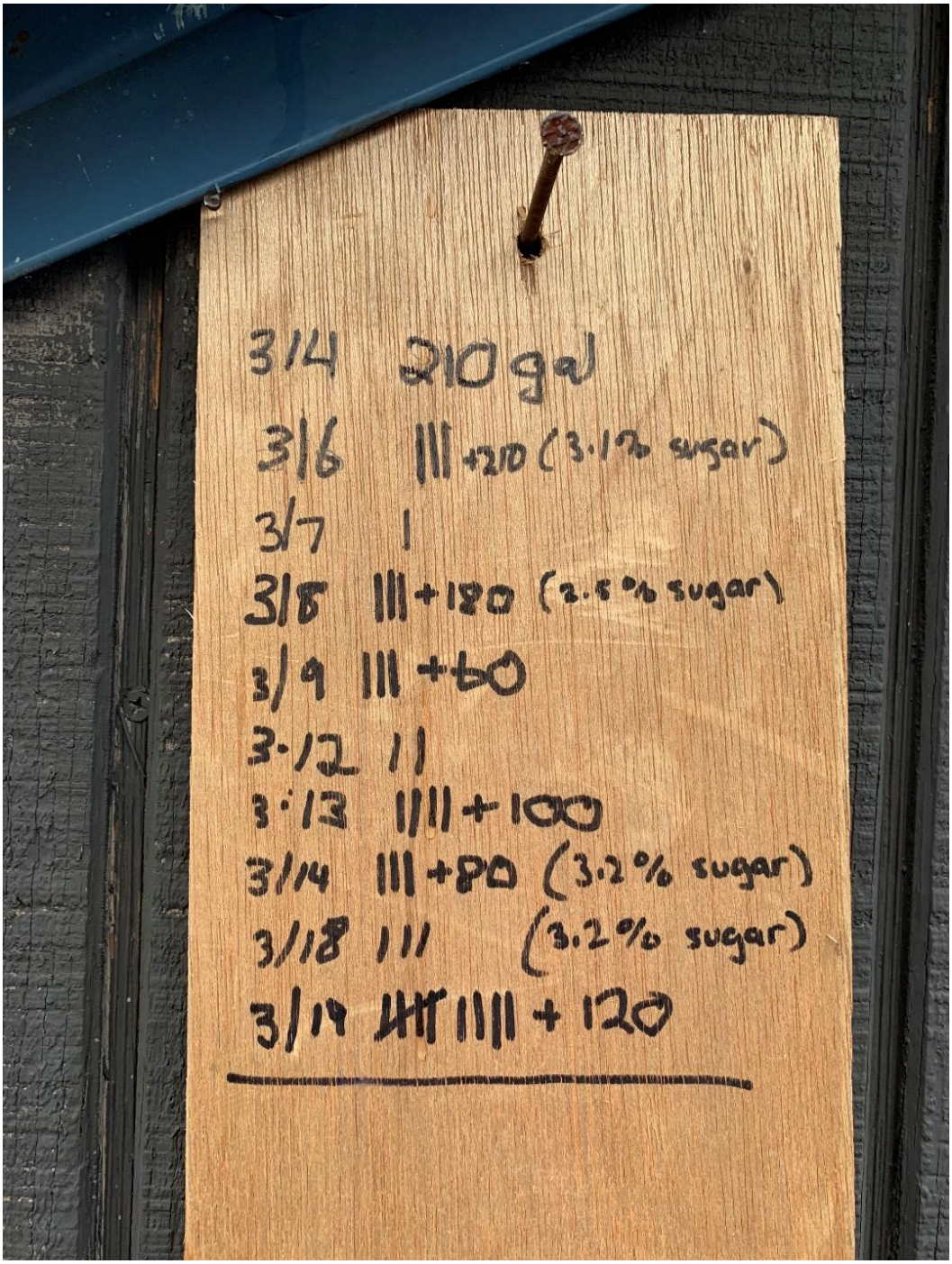

Figure 13. Sap collection record board from 2020.

Figure 14. Springtails (snow fleas) on a bucket (left) and floating on residual sap inside the bucket (right).

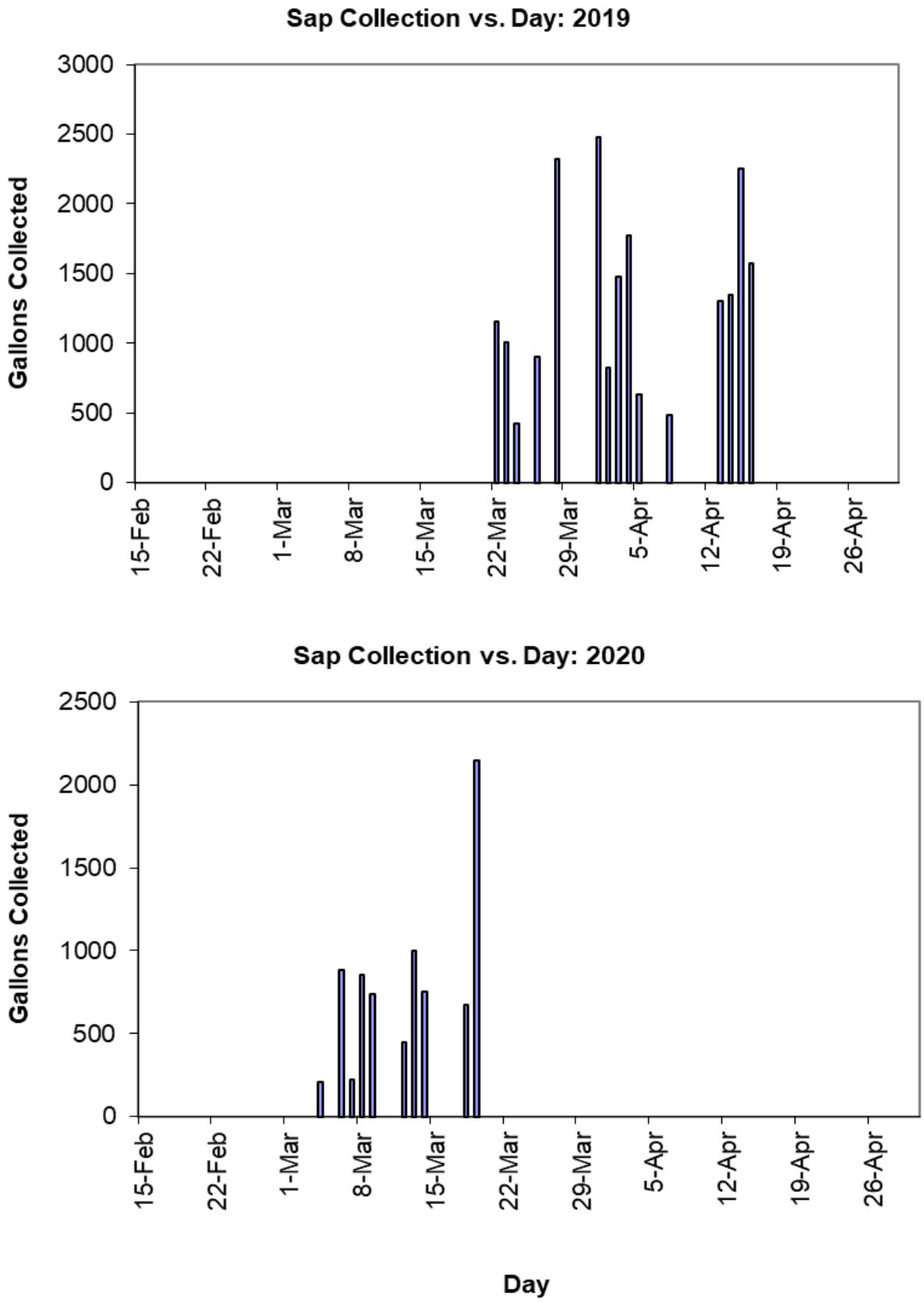

Figure 15. 2020 sap flow (bottom) compared to 2019 (top).

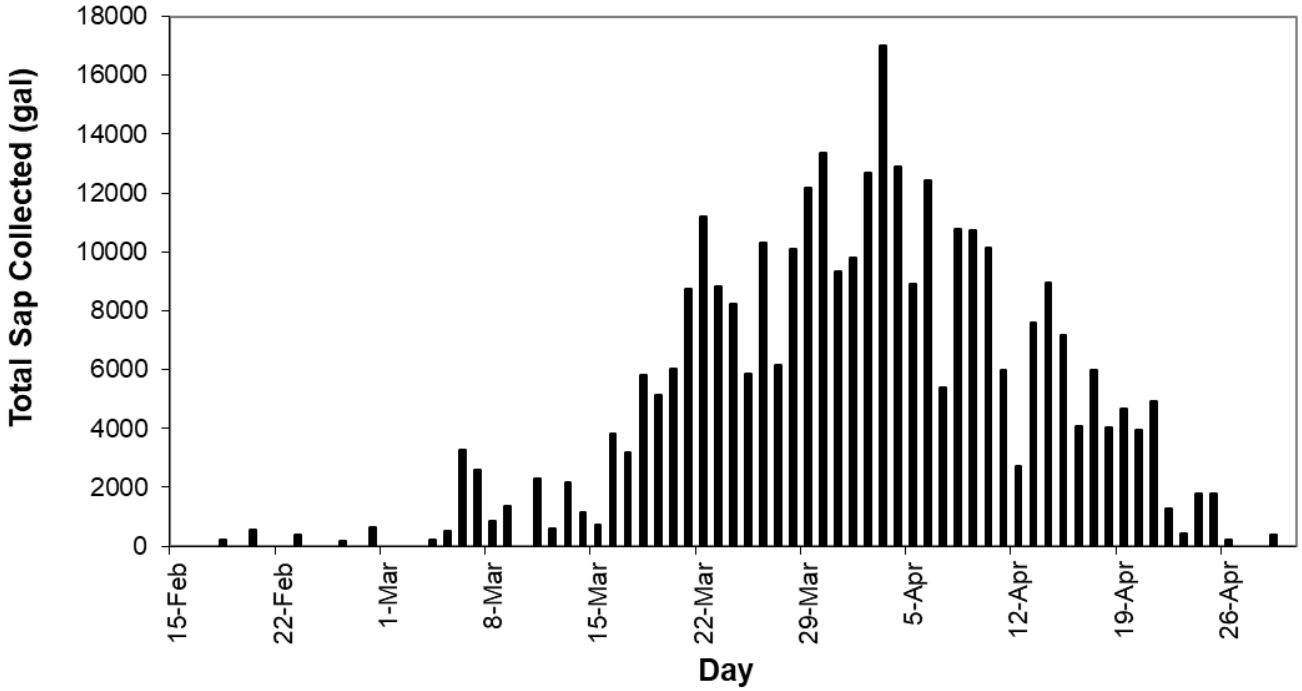

Figure 16. Total sap collected on a given day in the Saint John's sugarbush. Data from 1972 – 2020.

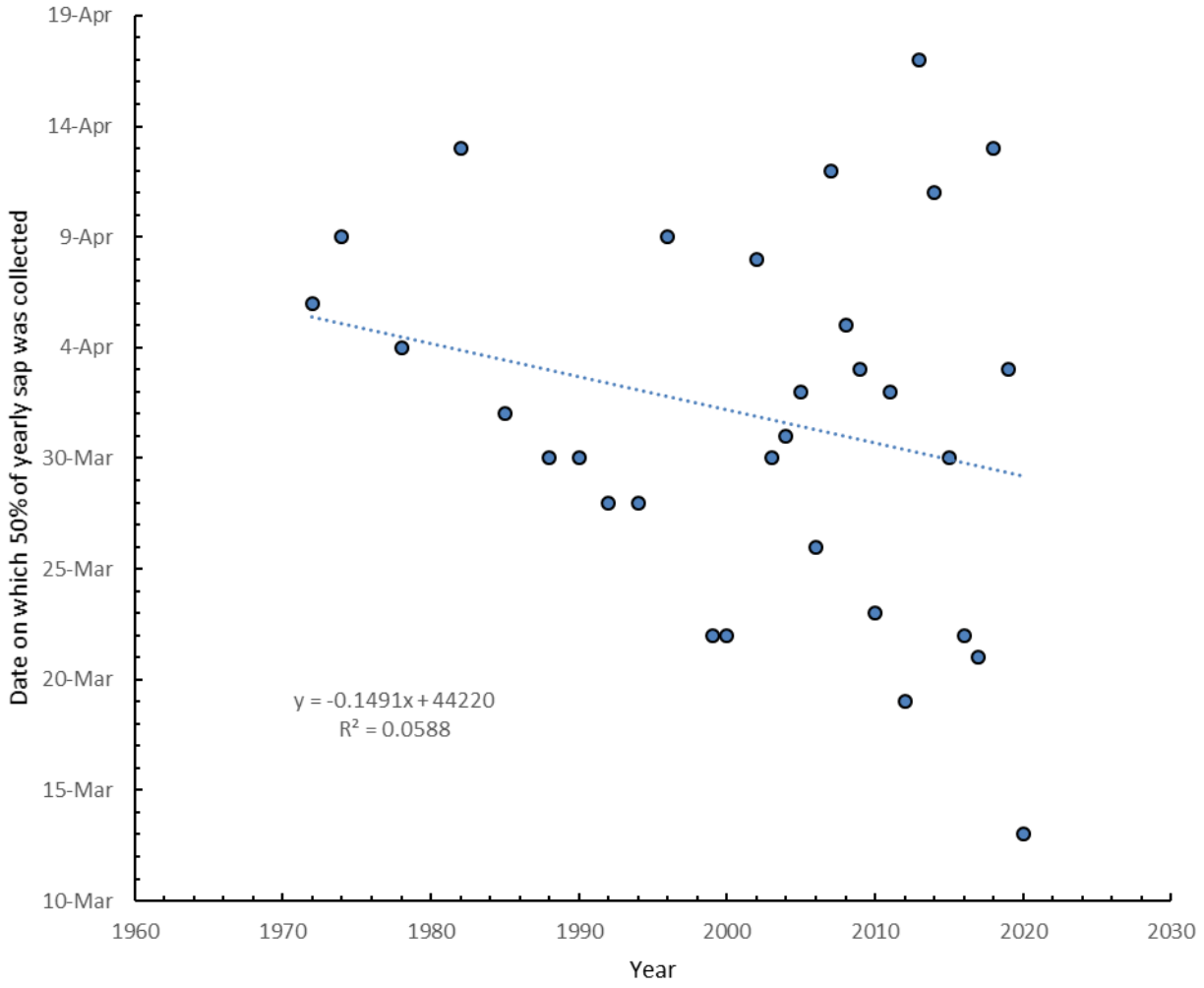

Figure 17. Date on which 50% of the sap for the year was collected.

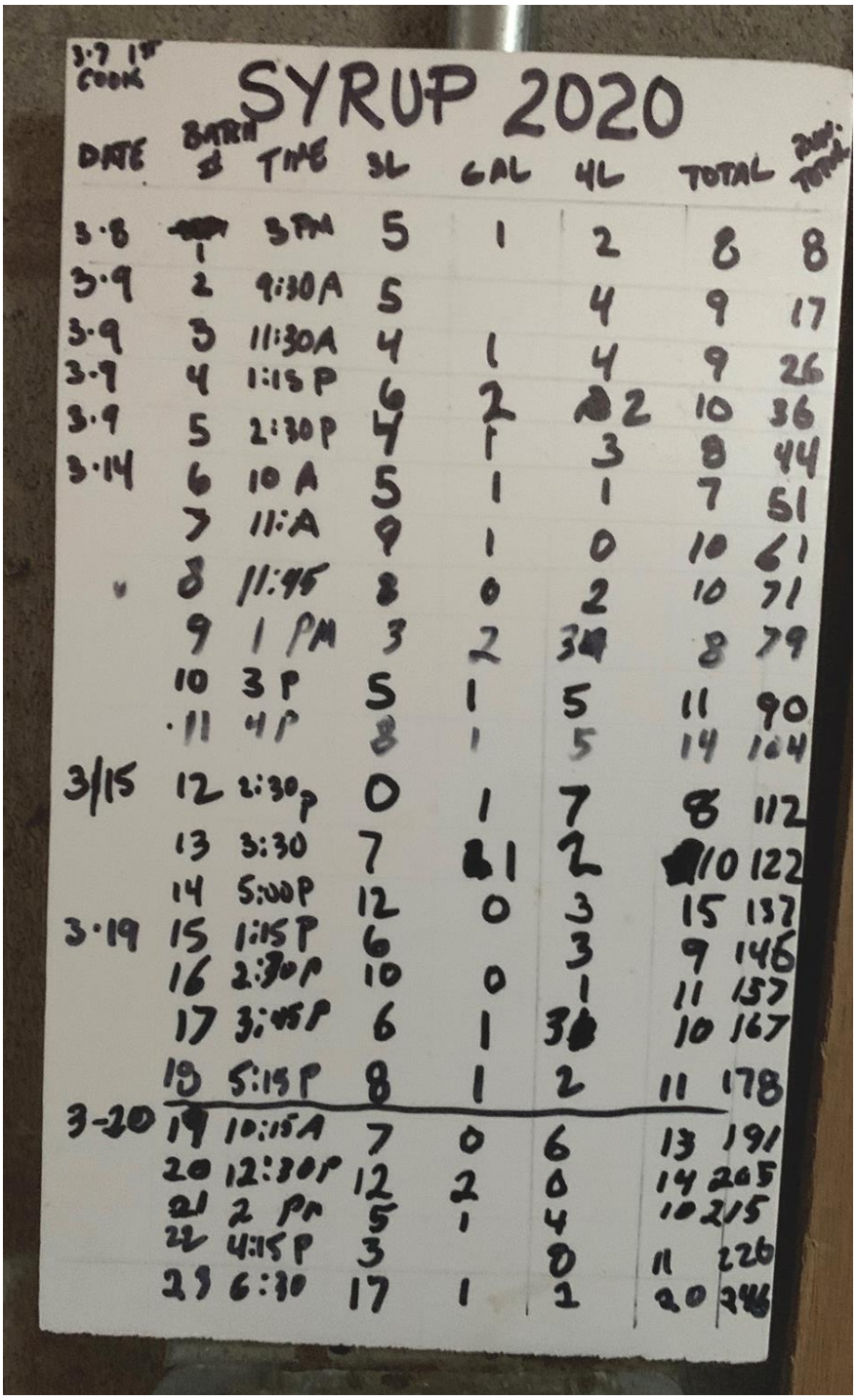

Figure 18. Scrap wood on which syrup production data were recorded during the 2020 maple syrup season.

Figure 19. Samples from each jugging during the maple season. Top row: Samples 1 & 2; second row: 3 – 8; Third row: 9 – 15; Bottom row: 16 – 23.

Figure 20. Sample bottles in the window of the sugar shack.

.

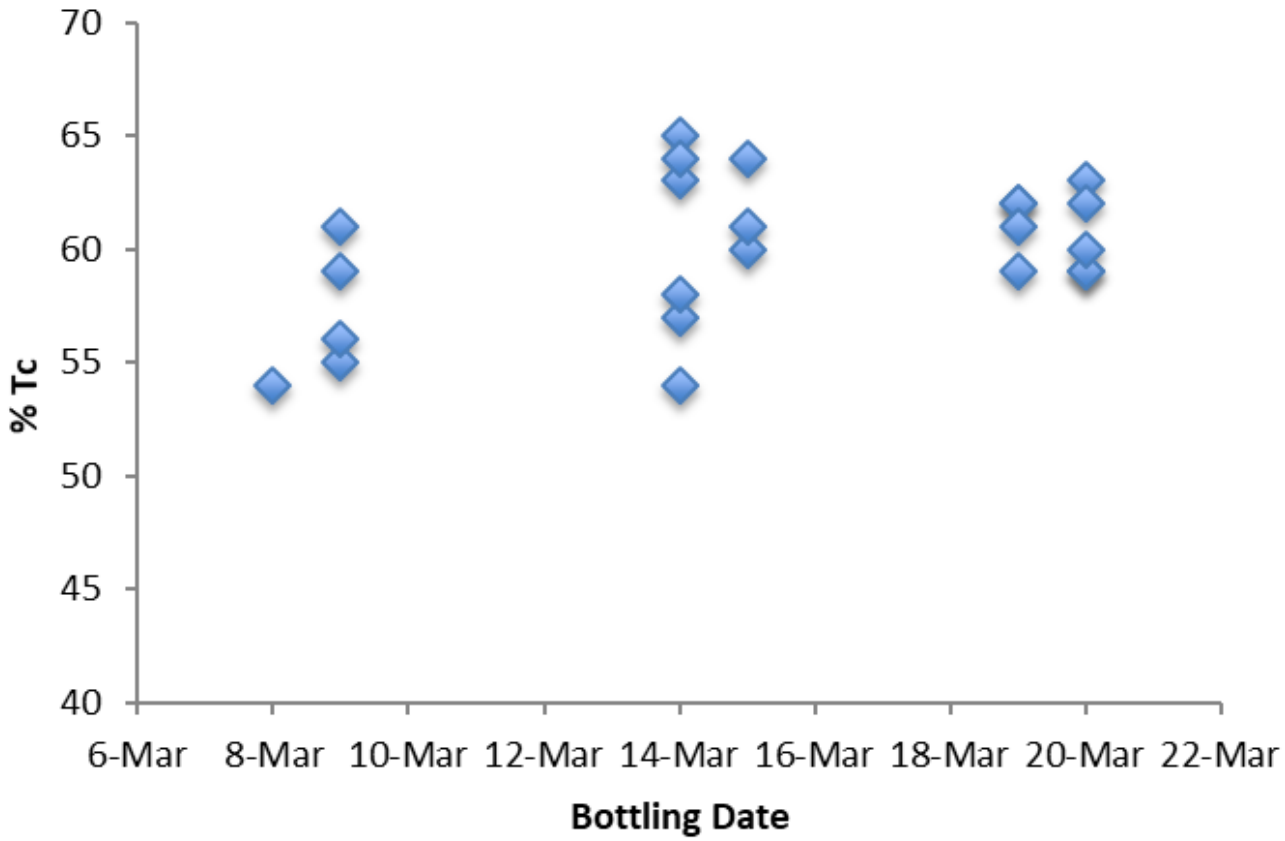

Figure 21. Light transmittance of 2020 maple syrup samples. Samples were collected during bottling on March 8th, March 9th, March 14th, March 15th, March 19th and March 20th.

Figure 22. Signs left out for volunteer sap collectors. The sign on the right describes the collecting procedure while the one on the left outlines safety expectations during the COVID-19 pandemic.

Figure 23. Jim Preusser takes a well-deserved break from stoking the evaporator.

Figure 24. Roof-top view of the steam stacks of Big Burnie.

Figure 25. Brother Walter provides a little extra smoke flavor to the brats while grilling lunch for the Core Crew.

Figure 26. John Geissler, Abbey Land Manager & Outdoor University Director, joins the Core Crew to tap trees.

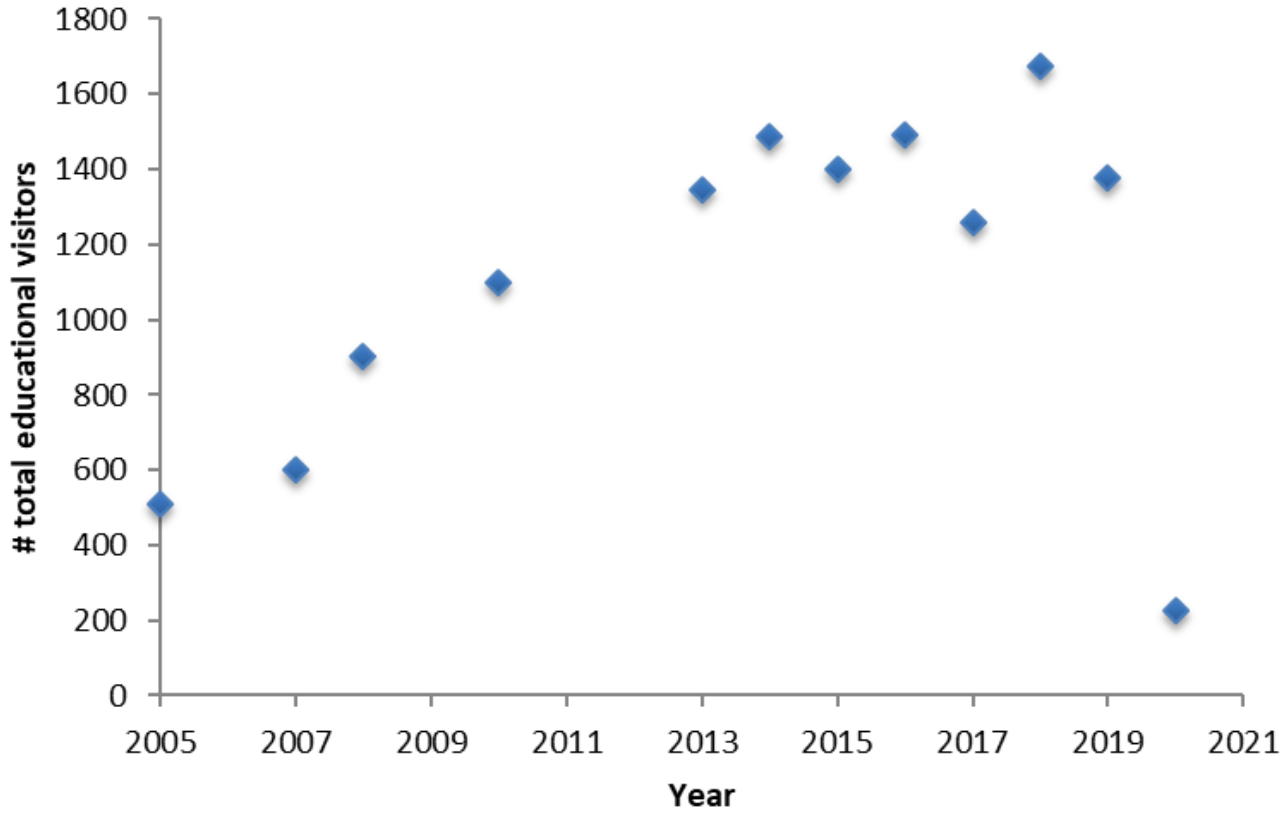

Figure 27. Educational visitors to the Saint John's Maple Syrup Operation; 2005 – 2020.

Appendix 1. Saint John's Maple Syrup Mission Statement

The mission of the Saint John's Maple Syrup operation is to continue the long-standing Benedictine tradition of making maple syrup. Since 1942 the monks and their friends have gathered together to tap trees, collect sap and boil it down to produce a heavenly confection that is a testament to the forest stewardship of the Benedictine community. In addition, we strive to provide opportunities for the Saint John's community, including monks, students, and the public at-large, to learn about, and participate in, the process of making this sustainable forest product.

updated: May 2012

Appendix 2: Saint John's Maple Syrup Goals & Objectives

In 2001, Abbot John Klassen, OSB, requested that the Saint John's Arboretum take joint responsibility with the Abbey for the Saint John's Maple Syrup operation. A Mission Statement (*above*) and the following goals and objectives were established:

Goals. *The goals of the Saint John's Maple Syrup operation are to:*

1. maintain the tradition of Benedictine syrup-making on campus

2. provide educational opportunities for the Saint John's community including monks, students, staff and the general public

3. provide the Abbey with maple syrup

Objectives: *To accomplish the goals elucidated above, the specific objectives of the Saint John's Maple Syrup operation are to:*

1. annually produce maple syrup and welcome visitors in the Benedictine tradition

2. collect sap and make syrup from approximately 1000 taps

3. make enough syrup to meet the needs of the Abbey and Arboretum (including festivals, visitors, and guests) and to reward our volunteers.

4. provide educational opportunities for CSB/SJU students, pre-college students, and the Saint John's community.

5. host annually a Community Tapping Day and Maple Syrup Festivals

updated: May 2012

Appendix 3: A Blessing – *by Walter Kieffer, O.S.B.*

Oh, God of all goodness.

In the beginning you created the earth and divided it between the lands and the waters.

On the lands you created all kinds of vegetation; plants and trees of all kinds, and commanded them to cover the earth, providing both shelter and food for all.

Of the multitude of trees you have given us in this forest, you gave us the sugar maple to provide your gift of sweet sap from the healthy trees, and fuel for the cooking from the old and culled trees.

Today, following the rich traditions of our native brothers and sisters, we ask your blessing on this spring ritual of sapping.

May all the tap holes be clean and of a correct depth.

Help us to tap the spiles correctly – hard enough to seal the spile and hold the bag, but without damaging the tree, splitting the wood and losing the sap.

We ask your blessing on this season's collecting, boiling, jugging, cleanup and wood restocking.

May you reward our labors with a fruitful harvest.

Lord, we ask your blessing on all nature.

Protect the woods and waters of our lands for generations to come.

Bless all who come out to work, observe, and visit.

May we be ever mindful of all gifts you provide for us.

We make this prayer as always through Christ our Lord, and in the power of your Holy Spirit. Amen.

Appendix 4: Saint John's Sugar Bush Map