



## ANNUAL REPORT 2017-2018

Our 24th year working in forest gene conservation in southern Ontario was a year of huge opportunities and challenges. This year we hired our first employees – Heather Zurbrigg, Species Conservation & Administration Coordinator; Melissa Spearing, Seed and Climate Change Coordinator; and Greg Bales, Central Ontario Operations Manager. Our butternut recovery program built new facilities, so we can archive twice the number of butternut – a timely investment as we are quickly losing this species to age and cutting, not just the canker. Forestry Futures Trust funding supported our organization to provide service to our SFL partners, and we made great progress in the white pine seed orchards, overall seed management and in climate change planning. Thinning and topping in 5 orchards during cone collection resulted in over 350 Hl of cones, whose seed will support reforestation and assisted migration efforts for many years.

This year MNRF announced the closure of the Ontario Tree Seed Plant – a cornerstone of Ontario’s reforestation program since 1923. With the September 2018 closure date looming, key stakeholders including FGCA, Forests Ontario, our SFL members, Somerville Nurseries and the Ferguson Forest Centre immediately formed an informal coalition to try to mitigate the effects. At the very least the Coalition’s work resulted in the designation of significant seed supplies to support Forests Ontario’s reforestation goals, as well as the attention and support of many concerned individuals and associations who wrote to the government. The MNRF response was to provide support for FGCA and Forests Ontario to undertake a seed management sector analysis and then prepare a business plan to help ensure that Ontario will have long-term, high quality, source-identified seed supplies of native species. The future of seed management in Ontario is still very uncertain, but the hard work, passion and dedication of our staff and partners give us much hope – special thanks to **Melissa Spearing, Mark McDermid, Kerry McLaven, Gary Nielsen, Rob Keen, Matt Mertins, Ed Patchell, and Dave Harbec.**

Finally, we honour the Ontario Tree Seed Plant Staff – **Charity Dobbs, John White, Derk Sluiter, Sarah Drabble-Bisgould** and **Gus Hajicostis**. We have worked with them closely for decades. Their rare expertise and skills have served Ontario’s reforestation programs well and will be sorely missed.

*Barb Boysen*, FGCA General Manager

275 County Road 44, Kemptville ON K0G 1J0 [www.fgca.net](http://www.fgca.net) [fgcaontario@gmail.com](mailto:fgcaontario@gmail.com) [heather@fgca.net](mailto:heather@fgca.net)  
[melissa@fgca.net](mailto:melissa@fgca.net)

This report is presented as per the Goals in the *FGCA 5-year Strategic Plan (2010-2014)*

**Forest Restoration:** Increase quality/quantity of source-identified, native species seed

**Promotion of Gene Conservation Principles** - Increase awareness of FGCA program in forest management and conservation sectors.

**Species Conservation & Restoration** - Increase awareness of native species diversity and threats to their status and develop programs for recovery.

**Climate Change Adaptation** - Increase awareness and use of genetic resource management principles to help conserve and improve native forest resilience.

**Administration** of an effective, responsive, fiscally viable NFP corporation that serves its membership.

Our programs could not succeed without the many partners referenced below. Contact us for more information.

## TABLE OF CONTENTS

<b>Forest Restoration</b>	<b>3</b>
<b>Seed Strategy</b>	<b>3</b>
A draft white paper – Tomorrow's Forests: The Future of Tree Seed Management in Ontario	3
Draft - Ontario Native Seed Management System: Market Analysis and Business Plan	3
A new FGCA - Forests Ontario 5-year MOU to deliver the Ontario Tree Seed Stewardship Initiative	3
<b>SFL Seed Source Tracking and Seed Banking System</b>	<b>4</b>
Certified Seed Collector (CSC) Training	4
Review of SFL seed inventory	4
Frozen storage specifications	4
<b>Seed Source Analysis Capacity</b>	<b>4</b>
<b>Ontario's Natural Selections (ONS) Seed Source Certification Program</b>	<b>5</b>
Seeds of Ontario Trees & Shrubs Manual (2014)	5
Certified Seed Collector Course	5
Train the Trainer Seed forecasting and collection workshops	5
<b>SCAN – Seed Collection Area Network</b>	<b>5</b>
Manage Crown SCAN Site Priorities with SFLs	5
<b>White Pine Seed Orchard Management</b>	<b>7</b>
SFL Managed Orchards – Conger, Gratton, Taylor Lake, Snowdon, Crowe River	7
Southern Ontario Orchards - Cayuga, Glencairn, Scugog	9
<b>Promotion of Gene Conservation Principles</b>	<b>10</b>
<b>Presentations</b>	<b>10</b>
<b>Website - <a href="http://www.fgca.net">www.fgca.net</a></b>	<b>10</b>
<b>Species Conservation and Restoration</b>	<b>11</b>
<b>Butternut Recovery</b>	<b>11</b>
Planning and Coordination	11
Grafting	11
Seed Orchards (archives)	11
Landowner Outreach to find Archivable Trees	11
Funding Agreements	11
Government Liaison	12
<b>Ash Conservation</b>	<b>12</b>
<b>Climate Change Adaptation</b>	<b>13</b>
<b>Climate Change Strategy</b>	<b>13</b>
Climate change information synthesis to support forest management	13
<b>Climate Change Assisted Migration</b>	<b>13</b>
Initiate USA seed network	13
Assisted Migration and Seed Production Area Trials	13
Assisted Migration Advice	13
<b>Administration:</b>	<b>14</b>
<b>FGCA Board of Directors</b>	<b>14</b>
<b>Staff</b>	<b>14</b>
<b>NFP Corporation</b>	<b>14</b>
<b>FGCA Office</b>	<b>14</b>



## Forest Restoration

### Seed Strategy

Forestry Futures Trust (FFT) funded a 2-year project to assist our Sustainable Forest Licensee (SFL) members in the development of a Central Ontario Crown Forest Seed Strategy for long-term sourcing, processing, and banking of seed with a climate change adaptation focus. The urgency is that in the past 20 years, just as the need for better seed planning and operations has increased, Ontario's seed capacity and expertise has deteriorated. The final strategy was to address all aspects from planning to operations, including availability and cost of processing and long-term storage services, and development of expertise in both planning and field operations.

The objectives of this project were made significantly more important when in August 2017 the MNRF announced that they would be closing the Ontario Tree Seed Plant (OTSP) in September 2018, removing high-quality expert services and facilities that the SFLs in Central Ontario and many others had solely depended on. These included seed collector communications and collection facilitation, seed pick-up and delivery, high-quality seed processing, storage and testing, all with attention to seed source identification, control, and tracking.

The Strategy work undertaken in this project thus contributed to a greater effort involving FGCA and our member SFLs, as well as Forests Ontario and reforestation nurseries to address the seed plant closure effects on the seed management sector in Ontario. In early 2018 the MNRF also provided some funding in addition to the FGCA FFT project funds and the stakeholders' in-kind and cash contributions. Results include:

#### A draft white paper – *Tomorrow's Forests: The Future of Tree Seed Management in Ontario*

*"This paper summarizes much of the accumulated knowledge related to tree seed acquisition, seed management, identifies some of the species-specific complexities, and reviews program management strategies undertaken in Ontario and in other jurisdictions. It also attempts to forecast what will be required in the future to address universal opportunities and challenges posed by changes to climate, loss in biodiversity, species at risk, invasive species, and landscape sustainability, all from a tree seed perspective.*

*This information is intended to inform managers and organizations charged with maintaining and enhancing forest cover and conducting tree seed management activities. Continued delivery of a robust seed management program will require a focus on sound science, collaboration and long-term planning for the entire reforestation cycle."*

#### Draft - Ontario Native Seed Management System: Market Analysis and Business Plan

*"Prompted by the Ontario Government's decision to close the Ontario Tree Seed Plant (OTSP) in September 2018, Forests Ontario (FO), a charitable foundation, and the Forest Gene Conservation Association of Ontario (FGCA), a not-for-profit corporation, in consultation with numerous stakeholders, have prepared the subsequent market analysis and business plan to ensure the long-term maintenance of vital programs benefitting Ontario society as a whole.*

*The development of this market analysis and business plan involved three phases. Phase 1 provided a general review of tree seed management in Ontario from 1900 to 2017 and includes consultation with many restoration partners and seed suppliers to determine how the critical functions provided by the OTSP could be maintained outside of government. This information is presented alongside a companion document *Tomorrow's Forests: The Future of Tree Seed Management in Ontario* (see Appendix I). In Phase 2, various seed management scenarios are considered, and a preferred option chosen. Phase 3 outlines the Ontario Native Seed Management System (ONSMS) business plan based on the preferred option."*

#### A new FGCA - Forests Ontario 5-year MOU to deliver the Ontario Tree Seed Stewardship Initiative

*"Whereas; the GOAL of the Ontario Tree Seed Stewardship Initiative (OTSSI) is to create and deliver a native seed management system for Ontario that will provide a sufficient and secure supply of viable, locally adapted, biologically*

*appropriate native seed, required for the ecological restoration efforts that will ensure resilient landscapes in a changing climate.”*

## SFL Seed Source Tracking and Seed Banking System

### Certified Seed Collector (CSC) Training

A CSC workshop at Ferguson Tree Nursery October 18-19, 2017 included Bancroft Minden Forest Company (Svetlana Zeran), Mazinaw Lanark Forest Company (Matt Mertins), Ottawa Valley Forest Inc (Liz Cobb) and Nipissing Forest Resource Management (Andree Morneault). The training will enhance SFL ability to seed forecast and seed bank, as well as potentially become CSC Trainers.

### Review of SFL seed inventory

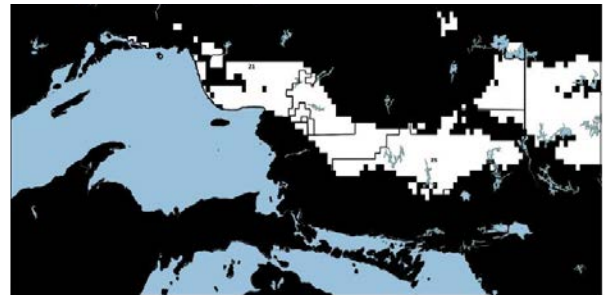
This in-depth analysis was assisted by Mark McDermid (Forests Ontario) to review seedlot quality (some seedlots purged), calculate years of good seed supply remaining relative to 5-year forecasted FMP plans, seed inventory volume/weights for suppliers intending to bid on storing SFL seed, and refinement of baseline data required to calculate future demand, i.e. average fresh seed germination rates, viable seeds/hectolitre, kg/hl.

### Frozen storage specifications

Recommendations were provided to SFLs for their seed inventory to help them find a new seed bank facility as of September 2018. Relating to the difficulty in obtaining regular quantities of seed of some species (e.g. red pine), their existing investment in seed will be maintained by finding facilities which have a dry room outside the storage facility to ensure high-quality handling and -20C frozen storage in a secure location with backup power. Seed container quality is also important, as are shipping conditions. Seed with declining vigour would be detrimentally affected if transferred to a poly bag, placed in only a cooler or even only at -3C for a long period of time.

## Seed Source Analysis Capacity

Clients were provided with seed source advice using NRCAN’s SeedWhere tool. Dan McKenney of NRCAN reported that SeedWhere would soon be live on the Forest Recovery Canada website. Melissa Spearing newly employed a method described by NRCAN’s Glenn Lawrence using multiple raster outputs to compare a seed zone into a projected focal zone. This map, as an example, represents, to the best of FGCA’s knowledge and SeedWhere’s capabilities, the climatic variance within Seed Zone 26 and



zones for this time period, or under potential climate autionary principle)).

**Sample Climate Analysis**  
**Example: Seed Zone 35 – movement of suitable climate – focal zone approach**



Melissa also provided information to MNRF’s Seed Transfer Policy Development team regarding how FGCA is using SeedWhere and our approaches to seed transfer analyses and recommendations.

NRCAN SeedWhere analysis projected Seed Zone 35 (delineated as per 1968-1988 climate) into the near future, 2011-2040 under CC projection RCP 4.5, for consideration in the forthcoming MNRF Seed Transfer Policy. Red areas are most similar to the 1968-1988 Seed Zone 35 conditions, with orange being somewhat similar.

## Ontario's Natural Selections (ONS) Seed Source Certification Program

### Seeds of Ontario Trees & Shrubs Manual (2014)

The seed manual was widely distributed, with copies going across Ontario and the USA.

### Certified Seed Collector Course

The CSC workshop curriculum was revised in 2017. Melissa Spearing also revised species pages with new images and minor text corrections for Forests Ontario to include in the website Forecasting Tool.

### Train the Trainer Seed forecasting and collection workshops

Modified Train-the-Trainer (TtT) presentations were developed, along with an orientation package for trainers to hold their own workshops outlining the necessary steps, tools, and resources required to host 1-day seed forecasting, 1-day mentoring or full 3-day CSC courses. CSC Trainers can support local efforts by:

- Local coordination of collection – help forecast crops and arrange collections with other CSCs, volunteers, students, potential collectors, etc
- Being a Trainer/Assistant Trainer – support local, regional or any seed training effort
- Being a Collector – a valuable role to maintain expertise (but not sufficient on its own to be a trainer).

The first TtT workshop was held July 25-26 at the Ontario Tree Seed Plant involving 16 experienced and interested seed collectors from Central and Southern Ontario. Brian Swaile, Ron Thayer, Barb Boysen, Kerry McLaven and Melissa Spearing led the Train-the-Trainer workshop. The participants brought one of the widest species samples of any CSC workshop to date, most with seed. This was followed up with a practical seed collection day in late August touring Glencairn seed orchard and several sites on Somerville Nurseries farms. Further TtT efforts included:

- **September 2017** – Trainees assisted Ron Thayer with the delivery of three southwestern Ontario field sessions
- **October 18/19, 2017** – Trainees assisted Barb Boysen, Melissa Spearing, and Brian Swaile with a CSC workshop; participation by SFL foresters is a first step towards developing them as Train the Trainers
- **March 21/22, 2018**: Barb Boysen led a CSC workshop with assistance from trainees Heather Zurbrigg and Brandon Williamson, at Kayanese to further Train the Trainers and develop CSC network to help deliver SFLs assisted migration seed needs. Tim Gray and Melissa Spearing provided extensive samples.

## SCAN – Seed Collection Area Network

The Ontario Tree Seed Plant had initially administered the new SCAN database, but the closure announcement resulted in Forests Ontario taking responsibility. Forests Ontario and FGCA met with MNRF in January 2018 to download a complete digital package of the SCAN database files and the Ontario Tree Seed Database files. At the 2017 FGCA AGM, SFL managers and staff attending were given information and site demonstration based on their SCAN package at a Westwind managed stand site. Several SFL staff requested an electronic SCAN site registration version. Melissa had previously asked for MNRF Southern Region Assistance which is pending.

### Manage Crown SCAN Site Priorities with SFLs

Last year Melissa Spearing developed individual packages for each SFL, which included:

1. A map of the Forest Management Unit's SCAN sites and help from the National Tree Seed Centre/Petawawa Forest Research Institute seed collection records to help find particular stands.
2. A table of species and seed zone targets specifically targeted to their FMU.
3. FGCA's SCAN stand guidelines for best, good and acceptable sites to submit.
4. A paper copy of the SCAN Data Form.

A complete list of Southern Ontario SCAN site targets follows. Addressing these gaps was pre-empted by white pine orchard work and seed strategy work.

Species by Seed Zone	28	29	30	31	32	33	34	35	36	37	38	Grand Total
American beech	3	2	1	0	2	3	3	3	0	1	3	21
Basswood	3	0	1	2	0	3	3	2	1	0	3	18
Bitternut hickory			0	0	0	3	2	3	2	0	3	13
Black ash	3	2	2	3	3	3	3	3	3	3	3	31
Black cherry	0	3	3	1	0	0	0	3	0	0	3	13
Black gum										3	3	6
Black oak						0	3	3	2	0	2	10
Black spruce	3	1	1						0			5
Black walnut		0	0		1	3	1	3	3	3	3	17
Blue ash					3					3	3	9
Burr oak	3	2	3	3	2	3	1	3	0	0	0	20
Butternut			2		3	3	3	3	1	3	3	21
Chinquapin oak									3	3	3	9
Cucumber tree										3	3	6
Eastern flowering dogwood					1		1			3	3	8
Eastern hemlock	0	0	0	1	0	3	0	2	0	3	0	9
Eastern red cedar					3	3	3	3	3	2	3	20
Eastern white cedar	2	1	0	2	0	0	0	2	0	0	3	10
Eastern white pine	0	0	0	0	0	0	0	0	0	0	3	3
European larch	2	2	1		0	0	0	2	0	0	0	7
Green ash		3	3	3	3	3	1	3	1	1	3	24
Hackberry					2		3	3	0	1	3	12
Honey locust										3	3	6
Hoptree									0	0	3	3
Jack pine	3	3	3	3	0		0	0	0	0		12
Kentucky coffee tree										3	3	6
Norway spruce		0			0	0	1	2	0	0	3	6
Ohio buckeye											3	3
Pawpaw									0	3	3	6
Pignut hickory										2	3	5
Pin oak										1	0	1
Pitch pine					0				1			1
Pumpkin ash										3	3	6
Red maple	3	0	1	3	3	2	3	3	0	0	1	19
Red oak	0	0	0	0	0	2	0	0	0	0	0	2
Red spruce	3	3	2	3					3			14
Sassafras										3	3	6
Shagbark hickory							2	3	0	0	0	5
Shellbark hickory										3	0	3
Shumard oak										2	1	3
Silver maple	3	3	3	3	0	3	2	3	0	0	0	20
Sugar maple	3	0	0	3	0	1	0	1	0	0	3	11
Swamp white oak										3	1	4
Sycamore										0	3	3
Tamarack	3	3	3	2	0	3	3	3	0	2		22
Tulip tree										0	3	3
White ash	2	2	3	3	1	3	2	3	0	0	1	20
White birch		0	0	3		2	1	2	2	1	3	14
White oak	3	3	1	3	0	3	2	3	0	0	2	20



White spruce	1	0	0	1	0	0	0	0	0	0	2
Yellow birch	0	0	1	0	3	3	3	3	0	3	3
Grand Total	43	33	34	42	30	52	46	67	25	64	101

## White Pine Seed Orchard Management

There are 8 white pine seed orchards being managed by FGCA and local partners. Substantial funding from the Forestry Futures Trust supported their management this year. 5 of them are under SFL licenses; 3 of them are on Crown land south of the Area of the Undertaking (northern crown forest area). FGCA is working with MNRF Integration Branch to secure some form of tenure to allow us to continue to invest and manage the 3 southern orchards. A draft 'Collection Permit' is awaiting approval as of March 2018.

Melissa Spearing undertook extensive work, based on 2016-2017 efforts, using an ArcMap 10 software license provided to FGCA by Forests Ontario. Each tree in all Pw orchards has a unique Orchard+Block+Tree+Row LINK\_ID as a useful code for field forms and database connection to the unique GIS point. Digitization of all the Pw seed orchards' clone inventory and size/health information informs gene conservation objectives and management in lieu of robust progeny tests. Using the precautionary principle, more genetic diversity in the face of climate change is desired versus traditional tree improvement traits and protocol to narrow the breeding pool. Rules for thinning the orchards are to retain 1-2 ramets of each clone within the orchard and within each block replicate, release trees on at least 2 sides, remove blister rust infected stems, keep spacing as uniform as possible and reduce stocking to a minimum of 50% of the original matrix. Overall, the aim was also to improve crown management and longevity of the orchards. This sometimes required removing the largest trees where topping may no longer be effective and instead favour healthy medium and smaller trees.

A GIS-based thinning exercise was proposed to ensure that SFL staff/other tree markers wouldn't accidentally eliminate clones while marking, not knowing the count within or amongst all orchards. SFL staff members were appreciative of the protocol, data summaries and maps to aid in adhering to genetic conservation principles not typical in routine tree marking. Where health, form and gene conservation values were equal, "Questionable" trees were suggested for possible removal and SFL staff/tree markers could decide on which to keep.

**2018-2019 Information Management for all seed orchards:** Melissa to join all databases for a final accounting of clones and associated data remaining after thinning and generate post-thinned 2018 maps for each orchard. Locate, digitize and standardize a plus tree database and link spatially to orchard records.

### SFL Managed Orchards – Conger, Gratton, Taylor Lake, Snowdon, Crowe River

**Conger** - Managed by Westwind Forest Stewardship. Georgian Bay Breeding Zone, Seed Zones 28 and 31

- Updated clonal field assessment; prepared digital thinning prescription. Gene conservation logic resulted in keeping 9 clones that a tree marker would have removed based on form.
- Tree marking completed, and 105 marked trees removed; slash chipped.
- Stocking now 41.3% of original; necessary given 4.5 x 4.5-meter spacing; no loss of remaining clones.
- No 2017 crop due to few cones and heavy cone beetle effect

Conger Plans for 2018-2019:

- Update database and produce final post-thinning maps.
- Update management plan
- Forecast 2018 & 2019 crops



**Grattan** - Managed by Ottawa Valley Forest. Algonquin Breeding Zone and Seed Zones 29 and 30:

- Updated clonal field assessment and prepared digital mapping/thinning prescription
- Crop forecasting - 1 cone cut had 31 seeds/half; the highest of 2017 cut tests done in all orchards.
- Tree marking completed – 337 trees removed and marked trees removed
- Cone collection completed in thinning and topping operation – 30 HI of cones.

Gratton Plans for 2018-2019:

- OVF to confirm clones removed in 2017 to update the database and generate a post-thinning map.
- Finish chipping of brush piles and log removal
- Forecast 2018 & 2019 crops

**Taylor Lake** - Managed by Mazinaw-Lanark Forest Inc., Breeding Zone 6E east, Seed Zones 35, 36, part 30.

- Updated clonal field assessment and prepared digital mapping/thinning prescription
- Tree marking completed - 339 trees identified for removal and 95 optional = 434 trees needed to reach 40% stocking target while adhering to gene conservation targets.
- Marked trees removed and many residual trees topped
- 80 HI of cones collected from thinned trees and tops; a much higher amount than forecasted.

Taylor Lake 2018-2019 Plans:

- Update database and produce final post-thinning maps.
- Additional topping is needed on remaining trees.



**Crowe River** - Managed by Bancroft Minden Forest Co., Algonquin Breeding Zone, Seed Zones 28, 29, and 30

- Partial inventory done
- Forecasting July 7, 2017 by Melissa: 18.8 avg seeds per half section, n=35, from 4 trees. Light crop
- No further work was undertaken as BMFC realized their seed collection needs solely in Snowdon.

Crowe River 2018-2019 Plans:

- Ground-truth, digitize and collect Form 1 data on all living/dead trees.
- Site clean up including lower and side pruning; labelling, GIS thinning plan, thinning and topping
- 2018 and 2019 crop forecast

**Snowdon** - Managed by Bancroft Minden Forest Co., Algonquin Breeding Zone, Seed Zones 28, 29, and 30.

Snowdon Pw Seed Orchard represents the most improved orchard relative its status March 2017, with much credit to Bancroft Minden Forest Company staff and contractors.

- July 6 forecasting notes: 17.7 avg seeds per half section, n=65, from 7 trees.
- Updated clonal field assessment and digital mapping/thinning prescription
- Tree marking completed - identified 652 for removal plus 196 optional choices for tree marker
- marked trees removed and many residual trees topped
- 85 HI of cones collected

85 hectolitres (.4/bag) from Snowdon at the Ontario Tree Seed Plant, September 1, 2017.



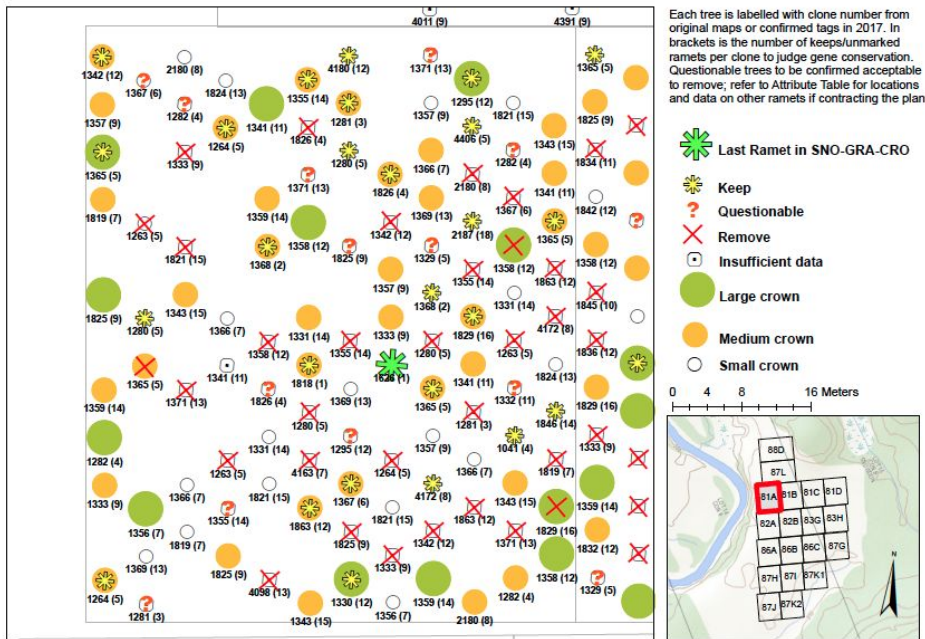
Snowdon 2018-2019 Plans:

- Confirm trees removed in 2017 operations to update the database and generate a new orchard map.
- Locate original planting map for 88D.



Snowdon Seed source identification shipping labels accompanying each bag.

Snowdon Pw Seed Orchard August 2017 Thin Plan: 81A



Maps generated August 20, 2017 by the Forest Gene Conservation Association. Final marking decisions will be made by an approved tree marker and reported back to the FGCA for database entry.

Thinning plan for Snowdon Block 81A generated from data collection July-August 2017. Similar thinning plans were done for most orchards

Southern Ontario Orchards - Cayuga, Glencairn, Scugog

**Cayuga** - Managed by Haldimand & Area Woodlot Owners Association, 2013-2018 MOU from MNR/Guelph District; To be managed by FGCA - awaiting MNR/Guelph Permit. Breeding Zone 7E, Seed Zones 37 and 38.

- Updated clonal field assessment and digital mapping/thinning prescription
- Tree marking completed - 623 trees marked for removal to bring stocking down to 47.4%.
- Marked trees with a collectable cone crop removed in late August to facilitate the collection of cones
- Unmarked trees with a collectable cone crop topped in late August to facilitate cone collection



- Bulk Cone Collection, processing, and banking – over 200 hectolitres (hl)
- Average kg seed/hl 1991-2016 for all OTSP processed Pw is 0.815 kg/hL; Cayuga 2017 yielded 1.26 kg/hL (53% heavier seed)
- Clonal Cone Collection, processing and banking – 160 lots of 20 litres each

#### Cayuga 2018-2019 Plans:

- 403 marked trees to be removed; update the database and produce final post-thinning maps.
- Map plus trees by clone card data.
- Update management plan & Renew/formalize tenure agreement.

#### Scugog - Managed by FGCA awaiting MNRF Permit. Breeding zone 6E west; seed zones 32, 33 and 34.

- Updated clonal field assessment
- Digital mapping/thinning
- Orchard cleared and mowed in preparation for marking prescription
- No marking was undertaken based on forecasting of a light non-collectable crop and prioritization of heavier crops in the Cayuga and Glencairn orchards.

#### Scugog 2018-2019 Plans:

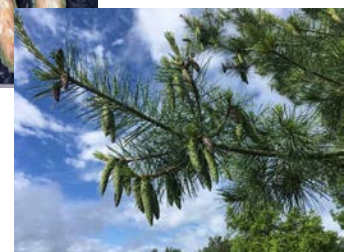
- Mark trees according to thinning plan; Blocks M, N, O & P: Identify clones with tube paint.
- Thin, prune and top trees.
- Formalize tenure agreement with MNRF
- Update management plan

#### Glencairn - Managed by FGCA awaiting MNRF Permit. Breeding zone 6E west; Seed zones 32, 33, 34.

- Updated tree labelling & pruned lower branches and storm damage
- Potential cone crop June 2017 (crown photo Dave Harbec)
- July 14 cut tests by Melissa Spearing: 14.7 avg seeds / 1/2 section, n=45, from 5 trees. Some cone beetle/borer damage.
- Cone Collection – approximately 67 hl

#### Glencairn 2018-2019 Plans:

- Update management plan
- Formalize tenure agreement with MNRF
- Assess clones and Generate thinning plan.
- Tree Marking, Thinning and Topping



## Promotion of Gene Conservation Principles

### Presentations

Throughout 2017-2018 Melissa, Heather and Barb attended many events with the FGCA display and delivered several presentations including at the OPFA conference, woodlot owner conferences, Community Forester's AGM, Forests Ontario annual conference, and MFTIP Plan Approver continuing education sessions.

These presentations highlighted Butternut Recovery, Seed Collection, SeedWhere, and SCAN and assisted migration as climate change adaptation strategies. This effort garnered support to add more southern Ontario SCAN sites and more butternut sites to inspect to find archivable trees. Re SCAN several Conservation Authorities are ready to assist, and older data (i.e. from the Essex Natural Habitat Restoration Program seed collection sites) has been gathered incidentally for inclusion. When the digital intake system is ready, Melissa

can begin prompting keen, professional land managers with authority to grant seed collection access to populate more SCAN sites to aid in assisted migration planning of species of interest in Central Ontario.

Website - [www.fgca.net](http://www.fgca.net)

The FGCA website has undergone a major transformation to allow it to be mobile friendly. Melissa Spearing is the current webmaster and will manage updates and revisions. Contact [melissa@fgca.net](mailto:melissa@fgca.net)

## Species Conservation and Restoration

### Butternut Recovery

This was a very busy year for butternut recovery. Heather Zurbrigg managed the program with the assistance of Greg Bales, and contractors Barb Boysen, Rose Fleguel, Virginia Gordon, Terry Schwan, Steve Bowers, Steve Pitt, Somerville Nurseries, Ferguson Forest Centre (FFC), and the Upper Thames River CA.

#### Planning and Coordination

Heather maintained the 5-year Recovery Program plan including draft grafting and seed orchard management plans that detail communications, expertise and training, techniques, facilities and data management.

Melissa provided GIS assistance in the preparation of a map to show archived tree locations and help us plan to attain short-term Recovery Strategy goal of 10 trees per Ecodistrict (see below).

#### Grafting

- Grafted 10 trees in April 2017, tended 1-year-old grafts of 10 trees, outplanted 2-year-old grafts of 10 trees in 3 orchards, prepared rootstock to graft 15 more trees in April 2018 in the expanded FFC facilities.
- Planned and implemented the expansion at Ferguson Forest Centre to be able to graft up to 25 trees a year including new grafting greenhouse and shadehouse ready for April 2018 grafting.
- Tree inspection then scion collection was done for 15 trees to be grafted in April 2018

#### Seed Orchards (archives)

- Draft management plans and management agreements were developed for 3 seed orchards
- Planning continued for 3 additional seed orchards at Somerville Nurseries, The Arboretum, and GRCA pending funding.
- Pruning tutorials were held in EOBSO and COBSO to manage the older grafts with help from Kristen Sandvall and Melissa Spearing
- Seed forecasting, collection and potting from older grafts in EOBSO, Kemptville
- Potted 2016 orchard progeny was planted in 3 seed orchards to monitor.

#### Landowner Outreach to find Archivable Trees

Heather contacted agencies across southern Ontario re: our search for healthier trees to consider archiving, particularly in western Ontario (see gaps in map below).

- More than 20 landowners were contacted and FGCA was permitted access to the properties
- 12 of the 20 properties were visited by expert BHAs and 94 single tree assessments were done;
- 27 Category 3 Butternut trees were identified;
- 19 trees that were found to be of archivable quality and FGCA has put these trees into a ranked queue for archiving. 3 of these archivable trees will be used in the April 2018 FGCA grafting season.

#### Funding Agreements

Funding agreements were managed to undertake the following:

- In 2018 - agreements to archive 15 trees with grafting starting in April 2018
- In 2019 - agreements pending to archive 21 trees with grafting starting in April

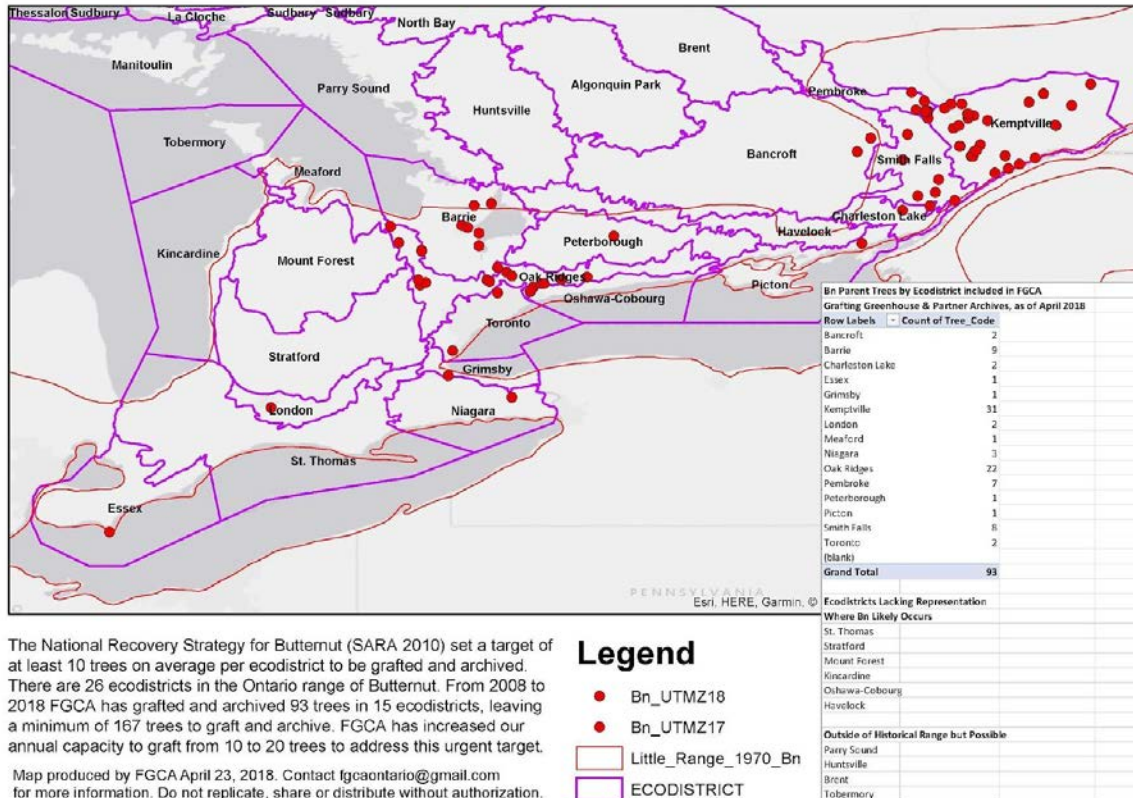
- In 2020 - agreements pending to archive 17 trees with grafting starting in April
- Expansion of Grafting Facility, Shadehouse and Cold Storage at FFC in Kemptville
- 2 Landowner outreach and archivable Tree Search agreements pending
- MOU with MNRF OFRI to administer the DNA testing program

## Government Liaison

**Heather Zurbrigg** and **Barb Boysen** participated in the following:

- Discussions with Parks Canada on Butternut management and the importance of maintaining areas with vigorous Butternut to naturally regenerate
- Communications with MNR to update them on FGCA Recovery Program and avoid misinterpretations about recovery practices.

## FGCA Butternut Archives - Parent Map as of April 2018



## Ash Conservation

- In August 2017 Melissa Spearing provided support to the National Tree Seed Centre and the Invasive Species Centre Citizen Scientist Training project, to enable ash seed collections in northern Ontario:
  - Seed Manuals and CSC training materials, including green and black ash samples for cut tests
  - Instruction on basic principles of seed collection, stand assessment re the population metrics critical for ash, productive cycles and ash weevil damage, importance of cut tests and assessing physiological maturity, process of getting the seed down, pressing a voucher specimen, properly documenting each seedlot and storage/shipping.
  - Demonstration and practice using a throw line with weights and a pole hook
  - Safety considerations when managing volunteers
  - Advice to change sites and collection method depending on collector capabilities and size of crop.
- In fall 2017 Melissa Spearing scouted for ash seed with Donnie McPhee, National Tree Seed Centre.

## Climate Change Adaptation

### Climate Change Strategy

Climate change information synthesis to support forest management

- The *Adapting to a Changing Climate: A Report for Southern Forest License Holders* (Version 1.0) was completed May 8, 2017, printed and distributed hard copies to all Central Ontario SFL managers.
- Melissa has gathered over 300 additional references and resources to review in Version 2, and a better understanding of seed demand planning to more accurately adjust figures to normalize SFL procurement strategies.
- Melissa and Barb, along with several other FGCA partners, attended the MNR Seed Transfer Policy Technical Workshop in Sault Ste. Marie August 30-31, 2017, in order to support and inform SFL partners about developments in Forest Genetic Resource Management policy and decision-making.

#### Adapting to a Changing Climate: A Report for Southern Region Sustainable Forest License Holders

Forest Gene Conservation Association  
275 County Rd 44 Kempenfelt, ON K0G 1J0  
www.fgca.net  
fgcaontario@gmail.com  
Composed by Melissa Spearing, Gary Nielsen and Barb Boyce



### Climate Change Assisted Migration

Initiate USA seed network

- The Canadian Forest Service provided Ontario seed zones to incorporate into the US Forest Service's Seedlot Selection Tool, which is revised and freely available at <https://seedlotselectiontool.org/sst/>
- Melissa's networking at the 2017 US National Native Seed Conference, Washington (<https://nativeseed.info/presentations/>) resulted in ongoing communications, including communications from the Plant Conservation Alliance, and a recent invitation for FGCA to present in Lexington, Kentucky regarding the development of Eastern US Seed Zones with consideration for blending into Canadian needs.
- The previous deliverable was to populate a US seed database but two databases exist for searching:
  - <http://nativeseednetwork.org/find-seed/>
  - <https://rngr.net/resources/directory>
  - While researching the tree seed market, other options appeared for sourcing known provenance: [https://www.google.com/maps/d/u/0/edit?mid=1EQCf8O0BazeWISpJZnSc\\_e8R1fX5C7Jl&ll=46.53656078941001%2C-89.17027039999999&z=5](https://www.google.com/maps/d/u/0/edit?mid=1EQCf8O0BazeWISpJZnSc_e8R1fX5C7Jl&ll=46.53656078941001%2C-89.17027039999999&z=5)

Assisted Migration and Seed Production Area Trials

- FGCA relied on the local trial owners to maintain the trials. A full assessment is planned for fall 2018.

Assisted Migration Advice

- Future involvement in assisted migration will be limited to advice to dedicated land managers to help them establish realistic objectives and select species and seed sources.
- Gary Nielsen and Melissa Spearing presented information to the Credit Valley Conservation Authority staff to help them understand the potential scope and role of assisted migration in their watershed.
  - FGCA Checklist for planning an Assisted Migration Planting
  - PPT presentation - Assisted Migration in Response to Climate Change in Ontario
  - PPT presentation - Practitioners Guide to frame Vulnerability Assessments



## Administration:

### FGCA Board of Directors

- In 2016 a 12 Member Board was elected/appointed as per a revised and approved Constitution and By-laws. Meetings and decisions were made via conference call and email and face to face meetings in June and November 2017 and in March 2018.

<b>Gary Nielsen</b>	Forest Consultant, Elected June 2016, Vice-President, FGCA Executive Committee
<b>John Enright</b>	<u>Upper Thames River CA</u> , Board member appointed by Conservation Ontario
<b>Steve Munro</b>	<u>Westwind Forest Stewardship</u> , Board member appointed by SFL members
<b>Kerry McLaven</b>	<u>Forests Ontario</u> , Elected June 2016, FGCA Treasurer, FGCA Executive Committee
<b>Terry Schwan</b>	Forest Consultant, Elected June 2016
<b>Aron Fazekas</b>	<u>The Arboretum, University of Guelph</u> , Elected June 2016
<b>Glenn McLeod</b>	Forest Consultant Elected June 2016, FGCA Secretary, FGCA Executive Committee
<b>Ed Patchell</b>	<u>Ferguson Forest Centre</u> , Elected June 2016 FGCA President, FGCA Executive Committee
<b>Steve Smith</b>	Forest Consultant Elected June 2016
<b>Rob Davies</b>	<u>Essex Region CA</u> , Elected June 2016
<b>Dave Harbec</b>	<u>Somerville Seedlings</u> , Elected June 2016
<b>Nancy Young</b>	<u>City of Ottawa</u> , Elected June 2016

### Staff

Barb Boysen	General Manager (contractor)
Heather Zurbrigg	Species Conservation & Administration Coordinator (employee)
Melissa Spearing	Seed and Climate Change Program Coordinator (employee)
Greg Bales	Central Ontario Operations Manager (employee)

### NFP Corporation

- Minutes were kept; Financial Reports reviewed; and Insurance maintained.

### FGCA Office

The FGCA maintained an office in Kemptville, renting from the Ferguson Forest Centre at 275 County Road 44, Kemptville Ontario K0G 1J0