



FOREST GENE CONSERVATION ASSOCIATION

2020-2021 ANNUAL REPORT



PRESIDENT AND CEO MESSAGE

2020 - A year to remember or a year to forget?

The ups and the downs, the constant news, the waves, and the lockdowns. From a shortage of toilet paper to a real estate boom. From a crisis in long term care to the miracle of vaccines, it's been quite a ride and it's not over yet. And incredibly, through it all, the Forest Gene Conservation Association has been able to not only hold things together but to actually grow. Increases in staff, budget and scope of influence are all evidenced in the report that follows, ...I hope you enjoy the read!

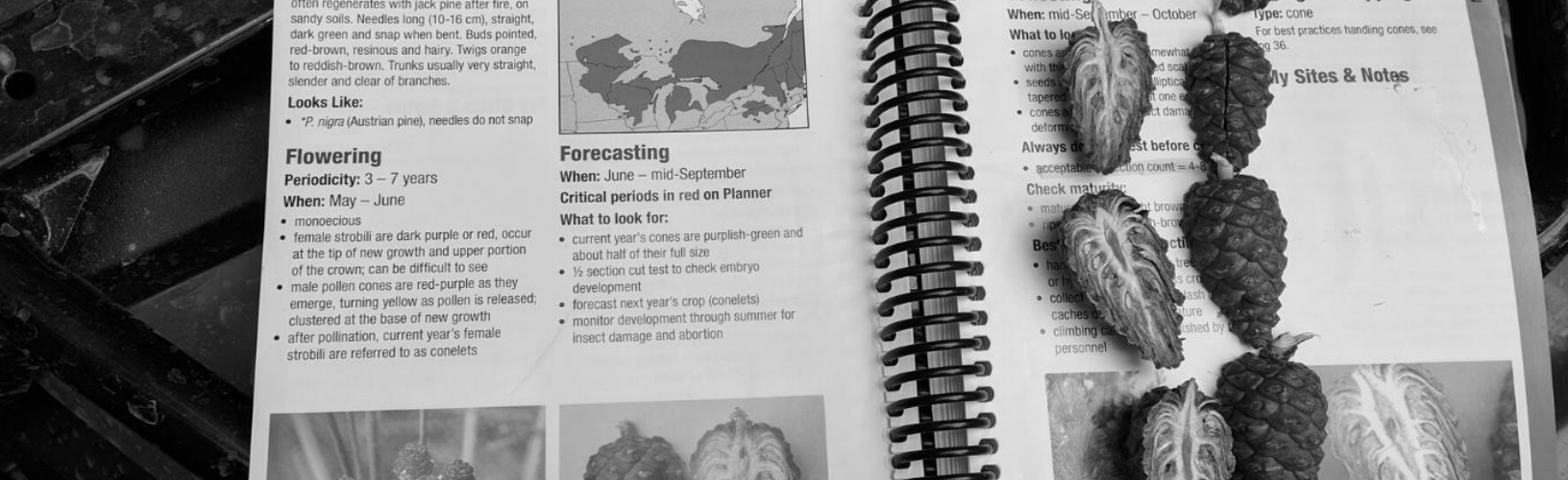
What makes the accomplishments especially noteworthy is that it has also been a year of transition for the FGCA. Barb Boysen, the General Manager whose name has been synonymous with the FGCA for three decades is stepping away towards a well-earned retirement, but such is her commitment that she is still with us. Barb has been part time staff and full-time advisor to our new Chief Executive Officer as **Kerry McLaven** has taken up the reins. The results speak for themselves, ...I hope you enjoy the read!

The environmental challenges ahead are not trivial, but the future looks bright for the FGCA. Our programs and priorities are central to achieving ecological sustainability in Ontario. Our staff and board are up to the challenge. I hope you will help us with this worthy work... after you enjoy the read!



Gary Nielsen
President FGCA





It has been a year of health, movement, and consciousness. As a society we are realizing the value of diversity at all levels, population, environmental, social, and economic, which will allow us to adapt to the world that lies ahead. Diverse systems developed with an assortment of perspectives and people, are critical for the advancement of resilient policies, initiatives, and programs- especially under climate change.

As an organization that supports genetic diversity as a primary strategy to adapt to climate change, we cannot move forward towards our mission and vision without the research, without the dirty boots, without traditional perspectives and innovative thinking. Our work relies so much on diverse viewpoints, which also enables us to challenge the systems we are all maybe too comfortable with. Learning from those that came before us, those who have paved the way like Barb Boysen and Ed Patchell and from new and young people.

We have transformed this past year; leadership has changed, our team has grown and the structure on which we operate has also evolved to grow with us. We are positioning ourselves to take on new opportunities, while continuing to deliver effectively on current programs.

Our Butternut Archiving Program is at a point where we can begin to focus on next steps for recovery and other Trees in Trouble, our seed management expertise is requested regularly for initiatives at the provincial and national scales, Forestry Futures Trust continues to fund critical projects that support crown forest managers in tackling climate change adaptation, and southern Ontario practitioners are asking all the right questions.

We hope you enjoy this year's annual report, and we think you will be pleasantly surprised with what we have achieved over this past (remote) year thanks to our supportive members, committed staff, funders, and families.

We have embraced the new normal, but one thing is for certain, we cannot wait to see you all in person!

Kerry McLaven



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The Forest Gene Conservation Association

The Forest Gene Conservation Association (FGCA) is a not-for-profit organization unique in its focus on gene conservation, the foundation of resilient forests. For 27 years we have contributed to and helped to improve the understanding of gene conservation, critical to create resilience under our changing climate.

Our Vision A genetically diverse, resilient forested landscape in Southern Ontario that supports healthy ecosystems, healthy people, and a healthy economy.

Our Mission To ensure that genetic diversity is recognized and protected as the foundation of a resilient forested landscape.

Our Goal To assist forest practitioners to conserve the genetic diversity of southern Ontario forests, by implementing 4 Strategies.

- **Species Conservation-** Implementing recovery programs for at risk woody plant species.
- **Seed Management Expertise-** Ensuring the supply and use of high-quality, locally adapted woody plant seed.
- **Climate Change Adaptation-** Providing strategic forest management advice and facilitating assisted migration.
- **Education and Advocacy-** Increasing awareness and expertise in forest genetic management principles and practices.





Officers of the Board

Gary Nielsen- President
Matt Mertins, R.P.F.- Vice President
Nancy Young, R.P.F.- Secretary
Dr. Aron Fazekas- Treasurer

Board of Directors

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Elizabeth Celanowicz
Jeff Sharp, Provisional Member OPFA
John Enright, R.P.F.
Maureen Jaques
Rob Davies, Associate Member OPFA
Stephen Smith
Terry Schwan, R.P.F.

Committees of the Board

Executive
Business Development
Butternut Conservation
Climate Change Strategy
Climate Change Trials
Ontario's Natural Selections
Seed Collection Area Network
Species Conservation
Education & Advocacy

**FGCA TEAM
2020/2021**

**KERRY
MCLAVERN**

BARB BOYSEN

HEATHER ZURBRIGG

KRISTEN SANDVALL

MELISSA SPEARING

MADELAINE DANBY

GREG BALES

**BRIANA
HEUVING**

**BECKY
MCLAURIN**

**ROSA
XIMENA TEJADA
DE LA CRUZ**

COREY GENT

**ROSE
FLEGUEL**

**NANCY
WEHLAU**

QUINN BALES

**ALEC
BALES**

Education and Advocacy

INCREASING AWARENESS AND EXPERTISE IN FOREST GENETIC MANAGEMENT PRINCIPLES AND PRACTICES

This past year has certainly pushed the FGCA to become more creative in our work to increase awareness amongst our members, partners, and new audiences. Traditionally, smaller numbers of staff would attend meetings and conferences, manage conference booths, and deliver in-person workshops. Fortunately, many of our partner organizations embraced virtual platforms to deliver engaging events, providing FGCA staff with the opportunity to participate from home.

Not only that, the FGCA was also invited to present and moderate panels at conferences relevant to our target audiences. Many staff not only participated in these events, but also leveraged events for greater networking and fundraising opportunities and were able to showcase their personal careers.

Within this transitional year, new ideas, techniques, and strategies were developed and some implemented, while others will be tested and measured in 2021/2022.

Increasing Awareness and Expertise

This past year, the FGCA worked diligently to maintain our presence, if only virtually, through conferences, conference committees and delivering presentations to a variety of audiences. Some events that we attended and presented in 2020/2021 include:

- Canadian Institute of Forestry Annual Conference
- Forest Ontario Annual Conference
- Forest Health Review

- Ontario Professional Foresters Association Annual Conference
- Building Urban Forest Resilience in Peel-Working Group
- NIACS Climate Change Adaptation Workshop
- Natural Resources Canada's 2 Billion Tree Program Discussions
- Women in the Workplace Roundtable-with Hon. Jill Dunlop (Associate Minister of Children and Women's Issues) and Hon. Jeff Yurek (Minister of Environment Conservation and Parks).
- Vulnerability Assessment and Climate Change Adaptation Options for the Chatham-Kent Shoreline
- Tableau digital conference
- Assisted Migration in Practice online course
- Improving Forest Resilience to Climate Change and Extremes with Genetics (CIF)
- Forest Gene Conservation Technical Advisory Committee (GCTAC) annual extension meeting.
- Certified Seed Collector Courses

In addition to this work, the FGCA has developed plans to engage regularly with our Facebook audience. Weekly posts have become standard practice and include forest genetic resource management resources, updates on field work completed and images of the FGCA team, members and partners delivering programming across Ontario. The FGCA has also explored the use of staff LinkedIn accounts to communicate some of the more complex ideas and initiatives associated with climate change and forest gene

conservation. This platform will be pursued further in 2021/2022.

Forest Genetic Resource Management Shortcourses

Ontario has invested significant time and resources into forest genetic resource management. With our changing demographic and the retirement of many genetic resource experts, the FGCA recognized the need to improve basic understanding of genetic resource management.

Funded by Forestry Futures Trust, the FGCA developed content for a Forest Genetic Resource Management Short Course program which will focus on staff, FGCA members and practitioners through presentations, courses, manuals, blog and engaging social media challenges, etc.

This past winter our in-house experts delivered elements of the course to staff, through lunch and learns, and through presentations to committee members. Work completed this past year will aid in broader application and hands-on teaching in the second year of the project.

Website

Additional time working remotely provided the FGCA with an excellent opportunity to complete the long-standing objective of updating the FGCA website. The new website www.fgca.net mirrors the FGCA's 5 Year Strategic Direction and offers valuable information pertaining to the FGCA's many, deeply rooted and long-standing programs. The website serves as FGCA's primary source of information including case studies of the work we have completed with our partners and resources for landowners, seed collectors, government, practitioners, and the like. The website also functions to create efficiencies in administration including the collection of

information associated with membership, course registration and the purchase of seed manuals. This year, we also improved visibility of the website-based blog which allows us to create fresh content that is shared on social media to drive people to our website.

Promotional Material

The FGCA team is now fully equipped with promotional wear for events and field work. Hats, clothing, car magnets and business cards and much more, all help the FGCA staff and board effectively promote the organization in the office and in the field.



Key Memberships

FGCA members consist of individuals and organizations based in Ontario which collectively represent forest conservation, restoration, management, research, and science sector in addition to forest and land use policy makers and associations. Our membership also includes a small number of students.

In addition to FGCA's committed members, the FGCA works with a broader network of partners and associates that aid in the delivery of our 4 strategies of species conservation, seed management expertise, climate change adaptation, education and awareness.

The FGCA's members, partners, and collaborators include but are not limited to:

- Algonquin Forestry Authority
- Bancroft Minden Forest Company
- Canadian Forest Service/ Natural Resources Canada
- Carolinian Canada Coalition
- City of Ottawa
- City of Toronto
- Conservation Halton
- Conservation Ontario
- Credit Valley Conservation
- Essex Region Conservation Authority
- Ferguson Tree Nursery
- Fleming College
- Forestry Futures Trust
- Forests Ontario
- Grand River Conservation Authority
- Ground Covers Unlimited
- Kayanase
- Lake Simcoe Region Conservation Authority
- Mazinaw Lanark Forest Inc.
- Ministry of Environment Conservation and Parks
- Ministry of Natural Resources and Forestry
- Mississaugas of Scugog Island First Nation
- National Tree Seed Centre
- Ontario Woodlot Association
- Ottawa Valley Forest
- Project Learning Tree Canada
- ReForest London
- Rideau Valley Conservation Authority
- Rouge National Urban Park
- Simcoe County
- Society for Ecological Restoration- Ontario Chapter
- Somerville Seedlings
- St. Clair Region Conservation Authority
- The Arboretum, University of Guelph
- Upper Thames River Conservation Authority
- Urban Forest Associates Inc.
- Westwind Forest Stewardship

In 2020/2021 the FGCA participated on councils and committees including the Ontario Biodiversity Council and the Ontario Professional Forester's Association conference planning committee. We have also participated in initiatives like Project Learning Tree Canada's *My Green Mentor* program and the Forests Ontario 2 Billion Tree Program Technical Task Team.

Species Conservation

IMPLEMENTING RECOVERY PROGRAMS FOR AT RISK WOODY PLANT SPECIES

Species Conservation has been FGCA's largest program area and 2020 was no exception. With minimal resources, new funding opportunities and the support of our volunteer Species Conservation Committee, the FGCA was able to make some significant strides on general at-risk species, and trees in trouble program. This was due to the streamlined execution of the FGCA Butternut Recovery Program. Our spring grafting program moved forward skillfully and with minimal glitches thanks to the commitment and passion of the FGCA team and even family members!



Figure 1 Butternut seed collected and sown fall 2020.

Additional planning is also underway to draft a FGCA Ash recovery strategy in preparation for the imminent listing of Black Ash as an Endangered Species under the Ontario Endangered Species Act in 2021/2022.

General Species at Risk

The FGCA, including the volunteer Species Conservation Committee (SCC), have been steadily working to expand our knowledge and set priorities for at-risk species programming. Once completed, this work will provide the FGCA with direction to ensure the most efficient use of resources and for the procurement of funding. This work will help address general inquiries about funding, research and resources pertaining to species impacted by pests, diseases, land utilization, etc.

The SCC and staff developed a data collection template to form the foundation of a directory for woody plant species conservation and recovery activities and programs. This will ensure that the FGCA is recognizing the meaningful work of organizations across. In addition to this, the committee developed a detailed survey to improve our awareness of existing programs which will enable our team to connect and collaborate in the coming year.

This project was placed on hold early in 2020 due to limited staff resourcing, however late in the year, the FGCA was awarded funding through Project Learning Tree Canada through their Green Jobs program which allowed us to hire Rosa, a Canadian newcomer, and Master's candidate in Environmental Sustainability, to help the SCC revise the survey and develop an

outreach plan. The survey is set for release in 2021/2022.

This past year, the team worked diligently to establish new professional networks and contacts to ensure that the FGCA remain on contact lists pertaining to the Provincial Endangered Species Act (ESA, 2007), the development of policies, and the official listing of Endangered or at-risk woody plant species at the provincial and federal level.

Butternut Recovery

The FGCA continues to operate our provincially recognized Butternut Recovery Program which, in 2020/2021, saw the archiving of 17 putatively tolerant, pure Butternut trees from south, central, and eastern Ontario as overall benefit activities for the species. Although this is simply stated, this involves the development of agreements and permits, volunteers, contractors, equipment and months and months of planning, field, greenhouse, and planting work.

In 2020, the FGCA increased the total number of archived trees to over 125, representing individuals from across Ontario (Butternut's northernmost range).

The FGCA acquired additional part-time staff during our busy spring operations and acquired additional equipment to ensure health and safety remained utmost priority under the COVID-19 restrictions. A special thanks to family members of the FGCA team, including Greg's sons Quinn and Alec, and Rose's sister Nancy who worked to ensure we remained in our social 'bubbles'.

The success of our 2020/2021 program goes beyond staff as we relied significantly on the expertise of our local partners including Upper Thames River CA, Somerville Nurseries, Ferguson Tree Nursery, the Rideau Valley CA and many



Figure 2 John Enright, Forester for the Upper Thames River CA, conducts pruning at the Southern Ontario Butternut Seed Orchard



Figure 3 Kristen Sandvall, FGCA's SW Ontario Program Coordinator and Consultant Terry Schwan, R.P.F collecting Butternut scions for grafting program.

more organizations including contractors, arborists, stewardship groups, individuals, volunteers, etc. Without whom, we would not be able to execute our high-quality program.

In 2020/21 FGCA and local partners continued to manage and monitor our 5 Ontario Butternut seed orchards:

- Southern Ontario Butternut Seed Orchard (1)- Oxford County
- Central Ontario Butternut Seed Orchard (1)- Glencairn
- Central Ontario Butternut Seed Orchard (2)- Simcoe County
- Eastern Ontario Butternut Seed Orchard (1)- Kemptville
- Eastern Ontario Butternut Seed Orchard (2)- Kemptville

This past year there were several management challenges within our Butternut orchards which required additional funding and resources including, Walnut Shoot moth and Gypsy moth egg mass monitoring and treatments, porcupine predation, Butternut seed predation in the fall and the lower survival rates of newly established grafts in some archives.

Thanks to the recent developments in the FGCA Butternut database, we are more effectively able to follow trends and plan more effectively for the next year. Of critical interest are the challenges pertaining to overwintering loss, and drought loss which may require adjustments in scheduling, tending, handling, irrigation, etc. Besides these challenges and others that we manage on an annual basis, the archives are in good health and are being monitored and collaboratively managed by local staff, contractors, and partners. Managers at each archive have the ability to connect with others on quarterly Butternut operations meetings.

As the FGCA Butternut program continues to archive trees annually, the 5 currently existing archives are nearing capacity. This year, the

FGCA began discussions with The Arboretum, University of Guelph as a potential site for a smaller butternut archive. Additional fundraising



Figure 4 Walnut Shoot Moth hibernacula at Eastern Ontario Butternut Seed Orchard

will be required in 2021/2022 to support the creation of a new archive at The Arboretum. The FGCA will also be discussing and exploring the establishment of another full-sized archive to support the program.

This past year the Ministry of Environment Conservation and Parks (MECP) released a [proposal under the ESA to enable the use of the Species at Risk Conservation Fund](#) which will have implications to the way Butternut (*Juglans cinerea*) recovery activities are currently being delivered in Ontario. The FGCA participated in associated workshops and meetings and supplied detailed information about our program and the implications of the proposed changes on Butternut recovery in Ontario. Additionally, we provided technical information, including images, timelines and participated in meetings to support the policymakers and staff's



Figure 5 Eastern Ontario Butternut Seed Orchard August 2020

understanding of successful recovery programs here in Ontario. We expect to hear more information on this proposal in the coming year.

In 2019, the Ontario Forest Research Institute (OFRI) ceased to offer DNA testing for hybridity. Prior to the closing of the testing lab, the FGCA worked in partnership with OFRI and offered administrative services and facilitated the collection of samples from environmental consultants. Due to this role, the FGCA remains a trusted source of information for environmental consultants with respect to genetic testing for Butternut. Upon closure of the lab, alternatives were not immediately available, therefore the FGCA and Dr. Aron Fazekas, explored alternatives which would meet and possibly exceed the previous standard of DNA testing completed by OFRI. A handful of options were discussed as was the role of the FGCA in this new endeavour, this too, was hampered by the COVID-19 pandemic.

The FGCA actively sought options for DNA testing with some prospects including the Biodiversity Institute of Ontario and Precision Biomonitoring Inc. which will be used to complete DNA testing for the FGCA Butternut Recovery Program.

Ash Recovery

The FGCA continues to receive inquiries about other at-risk species and trees in trouble, most recently, inquiries pertaining to Black Ash and associated recovery programming. In 2020/2021 Black Ash was not yet designated as an

Endangered Species but this designation was imminent for 2021/22.

This past year the FGCA discussed plans to create an internal recovery strategy for Ash species that considers the socio-economic implications of recovery across Ontario; and a strategy that respects the traditional use of Ash in indigenous cultures. A greater effort to fundraise for the development of a recovery program will be explored as Ash continues to be impacted at an unprecedented rate due to Emerald Ash Borer.

New Opportunities

Natural Resources Canada Wood Identification Program

Unique to the FGCA and through our partnership with Natural Resources Canada (NRCan), the FGCA participated in the NRCan Wood Identification Project and the Global Timber Tracking Network, a project to combat illegal harvesting and transportation of Sugar maple, Red maple, Bur oak and Red oak across international borders. Tree cores, leaf samples and associated data, was collected by FGCA staff and sent to the National Tree Seed Centre (NTSC)

for further analysis. The project is staged to continue in 2021/2022 pending funding support.

Butternut Archiving for the Rouge

Through a new partnership with Parks Canada and the Rouge National Urban Park (RNUP), the FGCA conducted a small-scale Butternut inventory to identify pure, hybrid and unknown Butternut individuals and conducted Butternut Health Assessments (BHA) and collected samples for DNA testing on trees identified as pure. COVID-19 certainly restricted the scale of this project, however, RNUP has intentions of broadening this inventory work in 2021/2022.

The inventory work led to an agreement for the archiving of one pure individual from which scions were collected to be used in the spring of 2021.

The FGCA is optimistic that there are other pure individuals within the park which may be good candidates for archiving.

Butternut Habitat Characteristics to Inform Reintroduction

The reintroduction of pure and putatively tolerant Butternut is part of the FGCA's long-term Butternut recovery strategy. In 2020/2021 the FGCA was able to acquire funding from Environment Canada to assess the habitat conditions of Butternut in Ontario. This work focuses on comparing sites with good and poor natural regeneration to determine trends and conditions favourable to Butternut. The project was initiated in 2020 and will continue into 2021. The work is being executed with the support of the Rideau Valley CA (RVCA) and their database of Butternut landowners and Butternut seed collection sites. The FGCA, with the help of the RVCA selected 10 sites for data collection including 5 sites with natural regeneration and 5 sites without. Staff also developed sampling methods and protocols which will be used during field season (June 2021).



Figure 6 Kristen Sandvall collects wood core samples for the NRCan Wood ID project.



Figure 7 Melissa Spearing collecting leaf samples for the NRCan Wood ID project.

Tree Seed Management

ENSURING THE SUPPLY AND USE OF HIGH QUALITY, LOCALLY ADAPTED WOODY PLANT SEED.

Seed Strategy

With a rapidly changing tree seed landscape in Ontario, due in part to the loss of the Ontario Tree Seed Plant, the FGCA continues to participate in several discussions with current partners and members pertaining to tree seed procurement, seed program capacity building, training needs, etc. Not only that, the FGCA participated in discussions and meetings with new organizations and potential partners that have or are developing seed programs and strategies. Noteworthy discussions had in 2020 include discussions with the Government of Canada, Forests Ontario, Carolinian Canada Coalition, Conservation Ontario, and our partner nurseries.

Most prominent discussions in 2020 were those pertaining to the Federal Government's Nature-Based Climate Solutions announcement to plant 2 Billion Trees in Canada over 10 years. The FGCA participated in information sessions and meetings to advance knowledge and improve attendees understanding of the importance of seed source, seed quality, seed collection and the variable nature of seed procurement and deployment under climate change.

In 2020, FGCA continued to supported Forests Ontario in modifying the seed database to ensure it could meet the needs of FGCA's Sustainable Forest License Holder partners. This included supporting their needs pertaining to seed requisitioning and their reporting requirements. Ultimately this database will be an excellent tool for seed managers, nurseries and businesses looking to make the most of current seed inventories and gain access to other inventories to augment their seed banks.

The FGCA has uploaded our bulk White pine tree seed inventory data onto the database and will be working with Forests Ontario to facilitate its use by SFL partners and others.

In November 2020, the Ministry of Natural Resource and Forestry (MNRF) released the [Ontario Tree Seed Transfer Policy](#) and associated policy dataset which applies to crown forest managers and provincially funded programs. The policy replaces the former Ontario Seed Zone Policy and enables practitioners to make seed procurement and deployment decisions that consider climate change. The FGCA and its members participated in a workshop about the policy and subsequent tableau tool which is accessible to the public. The tools developed for the policy are useful for practitioners that are not required to follow the policy and have been encouraged to do so by the FGCA.

The FGCA participated in MNRF-led workshops pertaining to the new policy along with the Superior Woods Tree Improvement Association (SWTIA) and Northeast Seed Management Association (NeSMA). The forest genetics associations and MNRF discussed communication opportunities to improve practitioner understanding for broader adoption beyond crown forests. Following this announcement, the FGCA submitted a proposal into the MNRF to revise our *Seeds of Ontario Trees and Shrubs Field Guide* to reflect the new policy as this manual is widely used by practitioners in Ontario and across Canada.

2 BILLION TREE PROGRAM DISCUSSIONS



FGCA Participates in information sessions hosted by Natural Resources Canada

NOVEMBER 2020

- Indigenous Forest Partnerships
- Tree Planting in Community and Urban Forests
- Tree Planting on Private Lands
- Tree Planting on Crown Lands



Federal government launches plan to plant 2 Billion Trees

DECEMBER 2020

Honorable Seamus O'Regan Canada's Minister of Natural Resource, launched the Government of Canada's plan to plant 2 billion trees over 10 years to reduce carbon pollution and to work to achieve net-zero greenhouse gas emissions by 2050.



2 Billion Tree Program Technical Task Team

MARCH 2020

The FGCA was invited to participate on Forests Ontario's 2 Billion Tree Program Technical Task Team- aimed at developing a collaborative Request for Information submission to Natural Resources Canada for tree planting capacity building in Ontario.

Ontario's Natural Selections

Ontario's Natural Selections was originally designed as a voluntary seed certification program and has always involved training sessions to facilitate its objectives. Our focus this past year has been to ensure that chain of custody and quality is conserved and can be maintained from seed collection, to seed handling, processing, testing and storage. Our partners are still experiencing the effects of the closure of the Ontario Tree Seed Plant and are relying on a small pool of knowledge to build capacity to respond to industry needs.

Certified Seed Collector Courses

The primary focus to date has been our Certified Seed Collector (CSC) courses. Fortunately, the FGCA developed capacity to deliver a virtual CSC basics and advanced course in 2019/2020 which was tested in 2020/2021 under the COVID-19 travel restrictions. The FGCA will be delivering in-field sessions in fall 2021 and is working to keep attendees engaged between sessions. The online version of the course has been well received by attendees and has provided more individuals and organizations with the opportunity to attend and in larger numbers than in-person events. This method of delivery allows participants to determine their learning path. Whether you are looking to be fully certified, or you are just looking for basics training for general understanding of seed collection, seed biology and basic gene conservation principles, we can now effectively deliver on both.

To become a CSC under the new virtual format, an attendee must:

- attend a virtual CSC Basics session,
- attend a virtual CSC Advanced session,
- attend an In-person Field session,
- pass the CSC exam, and
- sign the CSC Code of Ethics.

Individuals who have not completed the exam 6 months after taking the course will have to pay

an administration fee to submit the exam. Initial discussions are underway about setting guidelines for administration fees, time limitations and course retake requirements.

The FGCA partnered with ReForest London to offer training as part of their Signal Boost program with the objective to build seed collection capacity locally to meet the needs of planting programs. A Basics course was delivered in November which saw over 130 participants and an Advanced CSC course was delivered in January 2021 with 60 participants. In-field Sessions will be held in late summer/ early fall of 2021.

In 2020, the FGCA also advanced our Ontario's Natural Selections (ONS) Committee to review and plan for the modernization of the ONS Manual (2002). The FGCA created the manual when the Ministry of Natural Resources was active in tree seed acquisition, processing, testing and storage in Ontario. Now that the landscape in Southern Ontario has changed, primarily due to government divestment and policy revisions, the FGCA recognized the need to revitalize the ONS manual to ensure it is applicable and relevant to the current landscape and useful for members, partners, and future collaborators.

FGCA staff continue to be an excellent source of information during the seed crop forecasting and collection season for practitioners across Ontario. Staff received numerous calls, texts, and messages through social media from individuals and organizations seeking advice on seed quality, maturity, best handling practices and many other questions during the collection season.

Seed Collection Area Network

The Seed Collection Area Network (SCAN) continues to be built- as an in-situ network of potential seed collection sites. The data however is currently in a format that does not allow for validation or access by multiple users.

This past year, FGCA staff and the SCAN Committee explored alternative data management systems for broader application which would also be more interactive for users. A new and modernized system would allow the FGCA to retain records pertaining to collections and evaluate sites contained in the database.

After exploring multiple options, the FGCA acquired an ArcGIS licence which introduces tools and applications to host this type of geospatial data. The FGCA will be working to acquire funding in 2021/2022 to advance the SCAN program, making it more accessible to Sustainable Forest License (SFL) holders and partners like Forests Ontario, nurseries, and others.

SCAN is a significant tool to facilitate seed movement under climate change. However, its current sites are predominantly important to address central Ontario's crown forests' needs (based on SeedWhere analysis). TO meet the needs of southern and south-central Ontario, FGCA will work to expand into the USA.

Seed Orchards and Seed Production Areas

The FGCA currently leads the management of 3 southern White Pine seed orchards; Cayuga, Scugog and Glencairn with the help of local managers and partners. The FGCA also supports the management of the 5 central Ontario White Pine Seed Orchards under the management of the local SFLs.

In 2020, a medium crop of White pine was realized and collected from the Taylor Lake and Scugog White Pine seed orchards. Bulk collections and clonal collections were sent to

Ferguson Tree Nursery and Somerville Nurseries where they were processed. Bulk seedlots have been stored with the FGCA's seed inventory in Kemptville and clonal seedlots will be sent to the



Figure 8 Barb Boysen, FGCA's Project Forester, collects White pinecones at the Taylor Lake Seed Orchard.

National Tree Seed Center for germination testing and storage in 2021.

In the winter of 2020, the FGCA contracted the arborist company Davey Tree, to conduct thinning work at the Cayuga White pine seed orchard, thanks to the support of the Forestry Futures Trust. Thinning was completed in the winter to minimize disturbance and was executed well.

Thinning was also completed at the Taylor Lake White pine seed orchard during cone collection season. This was the final thinning of the seed orchard which made it the first southern White pine seed orchard to receive that treatment, which will help this orchard maintain its seed production potential.

This past year, staff and volunteers established two of 4 White pine Seed Production Areas (SPA) planned for 2020 (Taylor Lake, Kemptville, Glencairn and Westmeath). The original plan to establish 4 SPAs was compromised to accommodate the health and safety restrictions of COVID-19. During the spring of 2020, SPAs were established at Taylor Lake and in Kemptville at the Ferguson Tree Nursery. Plug stock grown for the other two sites were transplanted into the field to produce a g+1 stock type for use in the spring of 2021 at the Glencairn and Westmeath sites. The FGCA is thankful for the support of staff and volunteers who made the 2020 SPA planting a success.

TREE SEED PRODUCTION AREA:
A NATURAL OR PLANTED
STAND, MANAGED FOR THE
PRODUCTION OF TREE SEED.

New Opportunities

Seed Sampling and Germination Testing Training

In 2020 the FGCA was approached by the Ferguson Tree Nursery to develop a training module in accordance with national and international standards to inform their new seed processing and testing facilities. The module focused on proper seed sampling, germination testing methods and seed handling for proper storage. This aligned well with the FGCA's objectives to ensure seed is maintained at the highest possible quality and is prepared for long term storage. The FGCA also provided seed collected from the southern Ontario White pine seed orchards to use for training purposes.

Exploring New Opportunities for Seed Certification

Thanks to the introduction from Forests Ontario, the FGCA engaged in discussions with the Sustainable Forest Initiative to explore the use of *Ontario's Natural Selections* in certification standards and programming. Although we are unable to include source certification in the program at this time, the door has been opened for further discussion on the importance of seed source to help practitioners meet SFI's Climate Smart objectives in crown and urban forest management.

Tree Improvement in Atlantic Canada

The FGCA was contacted by J.D. Irving and the Atlantic Tree Improvement Council (AtlanTIC) in 2019 to acquire White pine clonal seed collected from the Cayuga white pine seed orchard. The AtlanTIC group, in partnership with the Department of Natural Resources and Energy Development in New Brunswick, was leading the construction of a progeny test for climate change on White pine seed, sourced from across the Atlantic region. The FGCA provided clonal collections from 2017, and in return obtained support in the design of the 4 Cayuga White pine SPAs. The AtlanTIC group have reported that most of the clonal lots did quite well, and they were impressed with the size of trees in comparison to the other provincial selections.

FGCA Clonal Seedlot Inventory at the NTSC

This past year, the NTSC updated FGCA's White Pine seed orchard clonal seedlot inventory. These seedlots are now stored at the NTSC and will be subject to germination tests to determine the storage term. By working with the NTSC, the FGCA can guarantee that seed is stored appropriately for long term use and research purposes. Seed can also be accessed by the NTSC and their network as approved by the FGCA.

Figure 9. White pine clonal germinates. Photo credit AtlanTIC

Climate Change Adaptation

PROVIDING STRATEGIC FOREST MANAGEMENT ADVICE AND FACILITATING ASSISTED MIGRATION

Each year the FGCA team develops greater capacity to empower practitioners to take action in forest genetic resource management under climate change, thanks to the help of the Canadian Forest Service (Natural Resources Canada). Not only that, but our team also works closely with local resource managers and practitioners, to develop decision management tools and strategies to inform climate change adaptation projects. Significant strides were made in 2020 which have improved staff and members' understanding of the critical role this work plays in the future of forest resource management and establishment.

Climate Change Strategies

Since 2004, the FGCA has provided seed transfer advice using SeedWhere. Now, the FGCA can take full advantage of the web-based tools like ArcGIS, QGIS and Tableau in combination with the new Ontario Tree Seed Transfer policy and a plethora of climate models and information from Natural Resources Canada, the Canadian Forest Service, the US Forest Service, and many others.

In 2020/2021, the FGCA begun discussions with Westwind Forest Stewardship based on FGCA's report, *Adapting to a Changing Climate: A Report for Southern Region Sustainable Forest License Holders* (March 2017), to undertake a climate change adaptation project suitable for the French Severn Forest. Two projects evolved from these discussions, the first being a climate change ready White pine SPA utilizing a minimum of 3 seed sources, one of which being

a US seed source. Site preparation was funded by Westwind and a site visit was conducted with FGCA and Westwind in December 2020. The first phase of planting will be completed in fall 2021 with the support of the Forestry Futures Trust.



Figure 10 Site prep completed at future Westwind Seed Production Area. December 2020.

Discussions with Westwind Forest Stewardship staff also focused on a climate change vulnerability assessment for the French Severn Forest. Since Westwind currently has a small tree planting program, climate adaptation through tree planting will not be the sole strategy for the French Severn Forest. Therefore,

Essex Region Climate Change Adaptation; A review of our Tree Planting Program and an example of some of the tools used to identify species suitability, and seed procurement areas in a changing climate

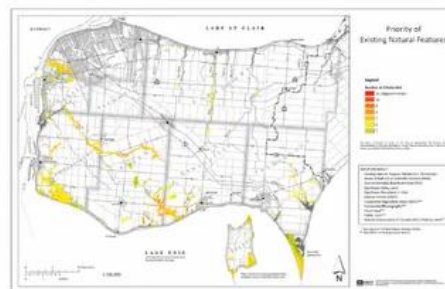


Figure 11 Rob Davies, Forester for the Essex Region CA delivers a presentation at the Forests Ontario conference

this project will include field sessions to discuss climate adaptation and species vulnerabilities and the role of silvicultural treatments in addition to seed sourcing for adaptation.

In southern Ontario, the FGCA team undertook a project with the Essex Region Conservation Authority (ERCA) and their staff forester to develop a Climate Change Strategy Toolbox which was a collection of data and analysis completed for the watershed. The final product is now accessible to ERCA and can be updated as more data becomes available. The work was intended to be used to make management level decisions on climate adaptation actions through tree planting and the creation of seed orchards and seed production areas to supply ERCA's tree planting programs. ERCA was invited to the 2020 Forests Ontario conference to speak about the project, and the intended outcomes.

Assisted Migration

In 2020, the Climate Change Trials Committee (CCTC) discussed long term strategies associated with the creation, monitoring and management of the FGCA-initiated Assisted Migration (AM) sites across Ontario. Four sites are on Conservation Authority (CA) properties and one on private land, and all are managed by local CA representatives. Costs associated with the management are often shared between the local manager and the FGCA.

The oldest of the 5 sites (Holst) was the first trial thinned in 2019 and continues to be maintained for the purpose of monitoring and future seed collection. In 2020, the Oxford assisted migration site was thinned due to silver maple competition which could limit the potential growth of neighbouring Oak. The Climate Change Trial Committee along with re-evaluate AM trial plans and funding opportunities for future site installation, monitoring and maintenance. In addition to that, conservation easements are being explored for long term site protection. As oak is the focus of most AM sites, monitoring for

Gypsy moth was also completed by local partners and dormant oil treatments were completed.



Figure 12 Fall dormant oil treatment to mitigate Gypsy Moth on Holst Assisted Migration Trial. Photo credit John Enright.

The FGCA had sown White pine seed with Ferguson Tree Nursery in 2019/2020 which grew over 2020/2021 to be made available to SFL partners as part of a multi-year Forestry Futures Trust funding project. These trees will be used by the SFLs in combination with local source material during their operational tree plant in the spring of 2021/2022.

New Opportunities

Forests Ontario EcoDistrict-based Climate Change Analysis

In the spring of 2020, Forests Ontario approached the FGCA seeking recommendations for climate change adaptation through seed procurement and management for their afforestation programs. The objective was to

inform seed movement and management within 6 Ontario EcoDistricts using climate change models and species range predictions under the various climate scenarios. Analysis began in the summer of 2020 and was revisited when the MNRF released the Ontario Tree Seed Transfer Policy. The project is staged to be completed in 2021.

The FGCA was introduced to the Northern Institute of Applied Climate Science (NIACS) and their Adaptation Planning and Practices training course. The training works to support US-based resource managers in their quests to prepare and adapt to climate change through adaptation projects. FGCA staff and members attended the NIACS course to determine its applicability here in Ontario. Discussions are set to continue into 2021 which may include the development of additional resources before the course can be made available to Ontario-based resource managers.

Administration

It is no question that COVID-19 had an impact on our organization and operations. The organization also experienced a significant transition with the change from Barb Boysen, former General Manager of over 25 years to Kerry McLaven the new Chief Executive Officer.

These changes presented a need to ensure human resource materials were up to date and provided staff, board, and management with the assurance that staff remained top priority for the organization throughout the transition period. Of greatest priority were the protocols and measures to ensure a safe working environment for staff. Some items that had been updated or developed the past year include:

- Staff personal development plans.
- Employee handbook and onboarding material.
- COVID-19 protocols and procedures.
- Updated health and safety protocols.
- Updated violence and harassment protocols.
- Templated reporting templates for board of directors.
- CEO performance review procedures.

The FGCA also had some significant and noteworthy staff changes. Early in the year, FGCA's Seed and Stock Coordinator Melissa Spearing was presented with an opportunity to participate in the Interchange Canada Program with the NTSC and Atlantic Forestry Centre in Fredericton New Brunswick. On November 16 Melissa assumed the duties of a National Tree Seed Centre Seed Biologist. Melissa's move to the NTSC in November which included a new Interchange Program agreement with the National Tree Seed Centre and workplans, ensuring adequate insurance coverage and transitioning other staff to fill FGCA's delivery needs.

One full-time hire and 2 part-time hires in 2020 augmented the FGCA in areas of species conservation and tree seed management to address capacity needs in 2020 and for the future. One of which was funded by Project Learning Tree Canada's Green Jobs Program.

Overall, the FGCA team has weathered the transition and is looking for other ways to improve our reach and delivery capabilities. Staff have relied on the support and guidance of the Committees of the board who help to tackle some of the complex initiatives undertaken by the organization.

The FGCA has officially and successfully transitioned our bookkeeping to QuickBooks software. FGCA staff have maintained bookkeeping capabilities and have solicited the accountant's support on an as needed basis. This process took more time and resources than originally planned however the outcome is positive and efficient given the fact that the organization has grown.

The new software also allows us to maintain the complex nature of some of our funders and deferred revenues making it easier for report development and auditing at year end.

In 2020 the FGCA, with auditor WBP Professional Corporation Chartered Professional Accountants completed our second audit report. This took a significant amount of additional time due to COVID-19 and corrections to the previous year's audit. For a second year in a row, the auditor presented the draft audit report to the board of directors, providing an explanation of the figures and answering board member questions. This provided the Board with additional clarity and confidence to approve the audit report.

Under the lockdown restrictions in 2020, FGCA staff and board were unable to meet face to face as we would have in the past. Staff have, on occasion and under COVID-19 safety protocols have met only for essential reasons. Besides

those occurrences, the FGCA team have remained informed and stayed in contact through regular virtual staff meetings and the use of Google and its associated products.

Thanks

“So let us leave behind a country better than the one we were left with”

-Amanda Gorman

All this work is made possible thanks to the careers that paved the way. On behalf of the FGCA membership and staff, the FGCA Board of Directors would like to thank two especially important people to the Forest Gene Conservation Association.

Ed Patchell, One-time FGCA President for life 2020 saw the retirement of long-time board member and former President, Ed Patchell. Ed enjoyed a long-storied career with the Ferguson Tree Nursery and for much of that time he also worked after hours to ensure the success of the FGCA. Ed served on the FGCA’s Board for 19 solid years, 12 of them as President. Providing expertise in seed, stock, and corporate management Ed was always pushing the board to run the FGCA more like a business and to not be afraid to take risks. Ed always willingly contributed his extensive knowledge, pragmatism, and camaraderie to every meeting, and for that we are so grateful. Ed, from all of us, we want to thank you for your years of commitment to the FGCA and to gene conservation in Ontario. We hope in retirement you will be able to find time to hit the slopes and visit often!



Figure 12 Ed Patchell and Rose Fleguel walking the Eastern Ontario Butternut Seed Orchards, Kemptville.

Barb Boysen, Matriarch of the FGCA

What can we say Barb, words will never be enough. A pioneer, a leader, a visionary, and a stubborn hard worker who personally made the FGCA what it is today. Leading the organization for over 26 years both inside and outside of government, Barb enjoyed highs and lows and sometimes just simply persevered. She grew the FGCA even as provincial programming and infrastructure fell away around her. She witnessed the retirement, and unfortunately, the passing of some of the great pioneers of woody plant seed and species conservation in Ontario. Regardless of what or who came and went, she pushed the organization on, reinventing and creating where necessary, embracing new opportunities, and in the process built an incredibly knowledgeable and equally passionate team who will carry on her legacy in the future.

Barb has her own unique and effective style. Her advice to “get a coffee” or “get a beer” let everyone know the nature of whatever it was we were about to deliberate on. Continuing her practice of having the craft beer and maple syrup flow after every FGCA meeting is just one more way she will be honoured and remembered even

if she is not longer at the head of the table. Barb continues to work with the FGCA team but only “on the fun stuff” so you may see her in a seed orchard, or out for a field tour or at the occasional AGM. For all that you have done Barb and for much more, we thank you.



Figure 13 The many faces of Barb Boysen 'doing the fun stuff.'

Both Barb and Ed’s contributions to the FGCA will be honoured at a more personal occasion at some time when circumstances permit.

Without you, the FGCA would not have been as successful this past year. Your support through membership, collaboration, funding, in-kind contributions, volunteering, etc. is significant and appreciated.

As we write this, we are busy working on the exciting things to come for 2021/2022. Get in touch and find out how you can get involved in the FGCA today.

Thank you for another excellent year, stay well!



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