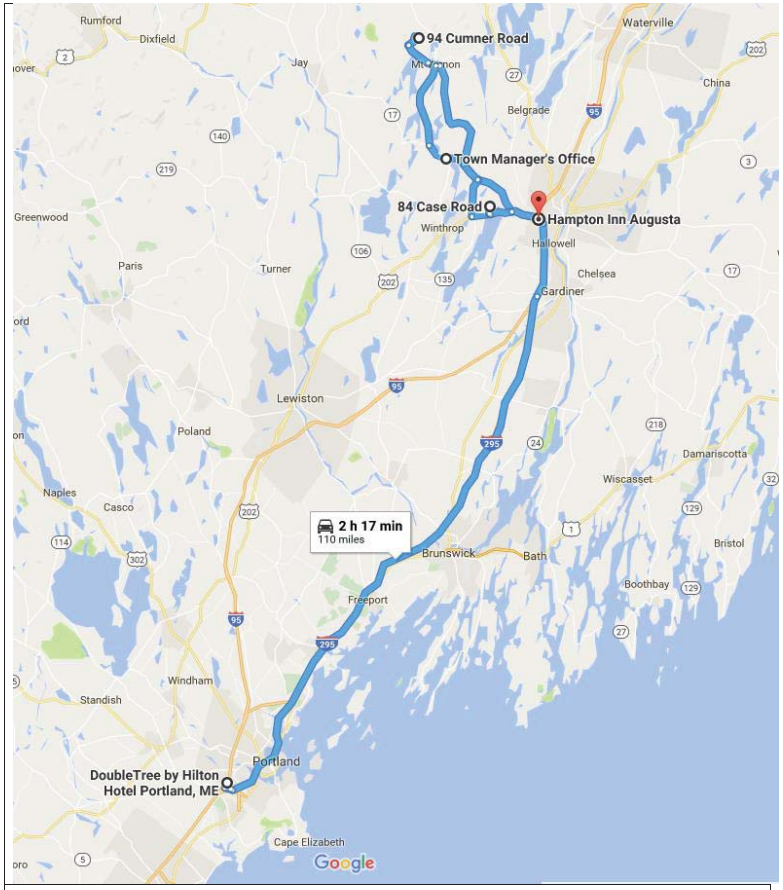
Chestnut Restoration Field Tour

Saturday, October 7, 2017
Vienna, Readfield, and Winthrop, Maine

Society of American Foresters

THE AMERICAN CHESTNUT FOUNDATION®

MAINE WOODLAND OWNERS



Map with driving route and tour stops.

Saturday, October 7, 2017
Chestnut Restoration Field Tour Agenda

8:15 AM Buses depart Double Tree Hotel in South Portland

9:30 AM Hampton Inn, Augusta
Registration, Coffee, Welcome and Introductions (Hotel parking lot)

9:45 AM Travel to Ladd Woodlot, Vienna

10:30 AM **Chestnut Silviculture, Cold Tolerance & Disease Resistance**
Dr. Brian Roth, METACF Science Chair

11:30 AM Travel to Readfield

12:00PM Boxed Lunch

12:45 PM **Visit Large Surviving American Chestnut Tree & Germplasm Conservation**
Dr. Thomas Klak: Professor, University of New England

1:30 PM Travel to Wiesendanger Woodlot, Winthrop

1:45 PM **Seed orchard & Breeding for Disease Resistance**
Dr. Jared Westbrook, TACF Geneticist

2:45 PM Travel to Hampton Inn, Augusta

3:00 PM Travel to South Portland

4:00 PM Bus Arrives at DoubleTree South Portland
Adjourn

STOP 1: Vienna, Maine

Chestnut Cold Tolerance & Disease Resistance

Property Owner: Maine Woodland Owners Trust
Property Name: Ladd Forest
Location: Vienna
Year Acquired: 2000
Acreage (approx): 130
Donor: Chester Ladd
Description: This property is located on the Cumner Road in Vienna. Although the majority of the lot is productive forest land, about 40 acres consist of wetlands, swamps and meadows. The terrain is rolling to flat with occasional rock outcroppings.
Key Features: The most prominent key features of this property are Bent Pond, located near the center of the property, and frontage on Black Pond.
Public Access Information: Maine Woodland Owners makes all of its properties open and available to the public. We ask that the public treat all of our properties with respect. Allowed uses on this forest include hiking, hunting, nature walks, and snowmobiling. All-Terrain Vehicles (ATV's) are not allowed on Maine Woodland Owners property unless there is a written agreement with a local ATV club. There is no agreement for ATV use on this property. No campfires or overnight camping is allowed on any Maine Woodland Owners property. We ask that you carry out what you carry in and leave the property as you found it. Contact us directly with any questions concerning allowed public uses of our property.

Disease Resistance and Cold Tolerance Restoration Test Plantings in Maine

Background: The Maine chapter is about five years away from producing significant amounts of potentially blight resistant B3F3 seed that incorporates Maine native sources. There is uncertainty how well adapted this material will be to cold Maine winters as there is evidence of a tradeoff between blight resistance from Chinese sources and their vulnerability to winter shoot injury (Saielli *et al.* 2014). These early trials will provide data on blight resistance and cold adaptation which will be informative for a reintroduction program in Maine and other northern breeding zones.

Research question: How do *Castanea dentata* seed sources from contrasting temperature zones and levels of blight resistance perform in forested settings in Maine?

Approach: Select seed sources from populations across contrasting temperature zones (warm vs. cold) and levels of resistance (native, Chinese, B3F2, B3F3) and test their performance in mixed-family block plantings under operational field conditions on two locations in Maine (table 1).

Experimental Design: 2 x 3 incomplete factorial randomized complete mixed-family block design, replicated across two locations. A total of 6 combinations of provenance and improvement for disease resistance will be planted on an 8' x 8' spacing in 36 tree mixed-family plots (~5 sources within each family plot), randomized in three replicate blocks within each location. The total area needed for each site is a little over an acre, including a single border row of Maine B3F2's surrounding each location (figure 1.).

Figure 1. Schematic Layout for a Single Location:

Block 1	
Chinese	ME - native
VA – B3F2	VA – B3F3
VA - native	ME – B3F2

Block 2	
ME – B3F2	VA - native
ME - native	VA – B3F2
VA – B3F3	Chinese

Block 3	
VA – B3F3	ME - native
VA – B3F2	Chinese
VA - native	ME – B3F2

Note: each cell represents a plot of 36 trees from between 4 to 6 sources in an intimate mixture (6 trees x 6 trees). The identities of each tree is maintained in the field so that within source of variation could be quantified.

Experimental Locations:
One location was planted on Maine Woodlands Owners Trust property in a recently harvested shelterwood in Vienna, ME (44.5325,-70.0141) and the other in an old field on New England Forestry Foundation Trust property in Knox, ME (44.5202,-69.2708). Seedlings were grown in the greenhouse with seedlings 'de-nutted' before planting in the field. Seedlings were protected with 12" aluminum flashing. Deer fencing will be considered as needed. The majority of competing understory hardwood and herbaceous vegetation were treated with herbicide prior to and post planting as necessary.

References:
Saielli,T.M., P.G. Schaberg, G.J. Hawley, J.M. Halman, and K.M. Gurney. 2014. Genetics and silvicultural treatments influence the growth and shoot winter injury of American chestnut in Vermont. Forest Science. 60(6):1068 –1076.

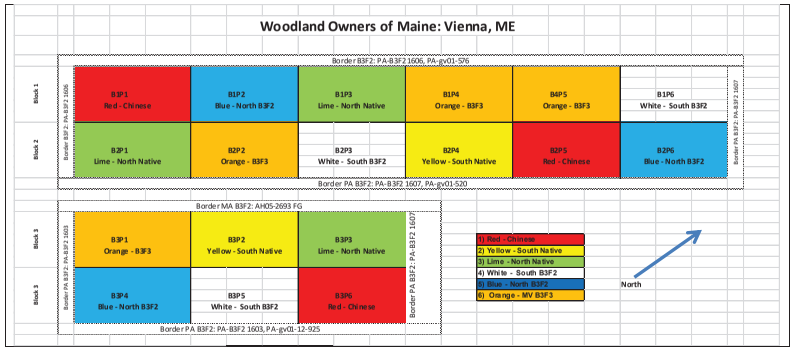
Table 1. Sources of seed by temperature zone and level of blight resistance.

Temp Zone	Source of Resistance	Family	Fam. Code
Warm	Chinese	Tree1&2,NH	A
Warm	Chinese	Tree 3, NH	B
Warm	Chinese	Greg Miller	C
Warm	Chinese	VT-EX022xOP, Essex, VT	D
Warm	Chinese	Clark Farm, Ashfield, MA	E
Warm	Native	SCBI 45, FrontRoyal Orch,VA	A
Warm	Native	GAHT1xOP,WagonGap, NC	B
Warm	Native	(Pine Mtn. Orch), Harlan, KY	C
Cold	Native	EM-193, Embden, ME	A
Cold	Native	Embden, ME	B
Cold	Native	Bulk, Sherburne Orchard, NY	C
Cold	Native	Bulked, Zoar Orchard, NY	D
Cold	Native	A1524,Pennypack Trust, PA	E
Warm	B3F2	TTU-G32, TNSUM1 x VA89	A
Warm	B3F2	TTU-H12, TNSUM1 x VA89	B
Warm	B3F2	TTU-B7, TNSUM1 x VA89	C
Warm	B3F2	TTU-C27, TNSUM1 x VA89	D
Warm	B3F2	TTU-K2, TNCLA1 x GL28	E
Cold	B3F2	AH04-3340xOP(WxGL367)	A
Cold	B3F2	AH03-3242xOP(ACxCH199)	B
Cold	B3F2	AH05-2504xOP(FxCH526)	C
Cold	B3F2	H-4-116 (Lovell/Howlett)	D
Cold	B3F2	H-3-419 (Sebec/Dickie)	E
Warm	B3F2	H-2-158 (Jay/Lindgren)	F
Warm	B3F3	D4-27-78	A
Warm	B3F3	D9-29-143	B
Warm	B3F3	D2-10-3	C
Warm	B3F3	D3-27-46	D
Warm	B3F3	D5-28-88	E

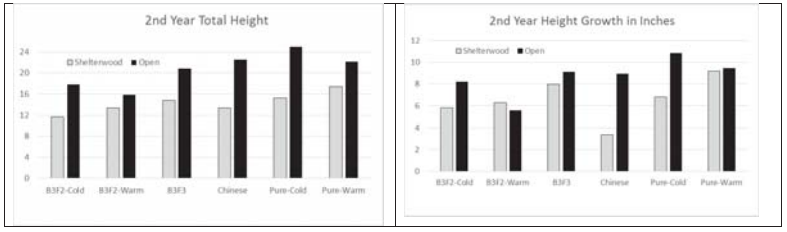
Acknowledgements:

Layout/Planting volunteers:	Seed contributors:
Darrah Wagner	Jeff Donahue
Becky McMahon	Kendra Gurney
Robin McMahon	Sara Fitsimmonz
Al & Judy Faust	Tom Saielli
Hunter Manley	Matt Brinkman
Zac Ragot	Bill Powell
Brian Roth	Andy Newhouse
Peter & Betty Bohman	Roger Willby
Eric Evans	Mark Stoakes
Jeanne Siviski	Martin Cipollini
Glen Thompson	Scot Freidhof
Anthony Burgess	Glen Rea
Bob Weir	Eric Evans
Larry Totten	Curtis Laffin
Tom Klak	
Greg LeClair	

Trial Layout for the Shelterwood treatment

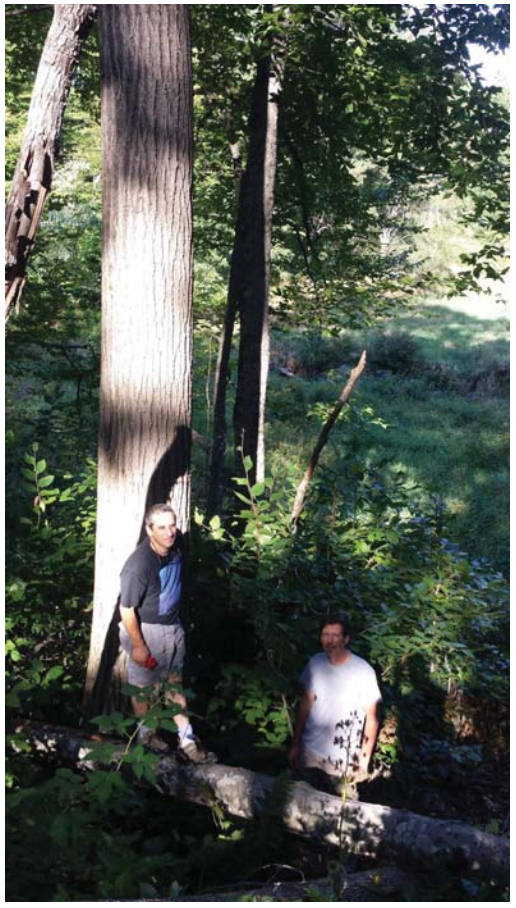


Preliminary Growth Results (2017)



Stop 2: Readfield, Maine

Factory Square History, Large Surviving Chestnut Tree and Germplasm Conservation in Maine



FACTORY SQUARE & BEAN MILLS REVISITED

Readfield History Walk #26

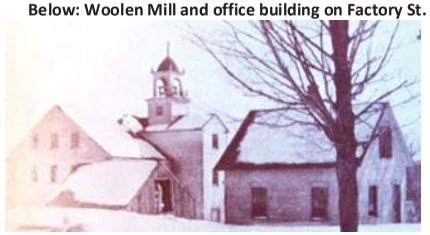
5/15/2015

By Dale Potter-Clark

T o learn more about Readfield History Walks visit www.readfieldhistorywalks.blogspot.com

Requests to be added to the email list can be sent to crossings4u@gmail.com.
By doing so you will receive reminders and pre-walk materials via email.

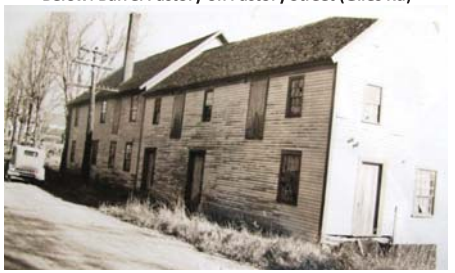
Above: This historical sign once stood at Bean's Mills.
Below: Woolen Mill and office building on Factory St.



Below: Factory dam on Mill Stream Road in 1961

Below: The mill pond within Factory Square

Below: Barrel Factory on Factory Street (Giles Rd)



Below: Carriage Shop and Grist Mill on Mill Stream Road

Below: Upper dam at Bean's Mills circa 1900

Below: Factory dam on Mill Stream Road circa 1930

"The Larches" c1900 known as Gov. Jonathan Hunton house. The first house built on this lot, by Rev. Carpenter Smith, was brick and sat further west, near the stream and James Craig's 'Grist Mill Pond".
Today this house is owned by Will and Bonnie Harris.

Sylvanus and Sophronia (Vance) Giles. They moved part of the original Cornforth house to become part of this home.

Nathaniel Bartlett house. He and Nathaniel Mayo assumed operations at Joel Bean's carding and fulling mill in 1819. Current home of George Allen.

In the left column:

1. F.I. Brown house and Store in 1892. Current home of John Knox.
2. Charles P. Greeley house. He purchased Joseph Fogg's tannery which (in 1815) had been built above the fourth dam on Factory Square. Current home of Dan Meyer.
3. Cornforth house. He built the Woolen Mill. Current home of Charlie Knight.
4. Milton Bean house. The Beans built the first dam then started several enterprises on the stream. Torsey Pond was called Joel Bean's Mill Pond for many years. Current home of Gene Carbona.

Joshua Bean III Tannery and Cordwainer Shop on Handy Stream

William Turner c.1844 at Old Kents Hill Road was included on the Factory Square history walk on 10/11/13.

On our 10/11/2013 History Walk we included the Sims-Curtis house on Old Kents Hill Road but at the time knew nothing about the origin of the house or what the adjacent stream / water power / dam was used for. No one knew the origin of the name Handy Stream either or who built that (lovely old) dam. All we knew was that this was part of the Factory Square industrial area. So I did a little digging and below is what I came up with.

First of all, Nathaniel Handy lived there around 1930 – thus the name Handy Stream. The house was built by William Turner c.1844. The land this house sits on was sold to Turner by Lot Morrill in 1847 and in the deed it says that Turner had already built a dwelling house on the property. The births of two of William Turner's children were recorded in Readfield. The first was born on 10/4/1844 - which leads me to believe this is about the time Turner built this home.

This parcel is located on the easterly line of lot #211. Water flowage rights (from the adjoining stream and dam) were reserved for Joshua Bean III tan yard. The southeast corner of the tan yard bordered on this property.* Joshua Bean III was a tanner and a cordwainer (shoe maker). It has been passed down from owner to owner over the years that an outbuilding on this property was a cobbler shop. On inspection of the interior it is indeed of ancient construction but beyond oral history we do not have written documentation it was that of Joshua Bean III, but it seems very feasible it was his.

This dam on Handy Stream is on the Old Kents Hill Rd. Handy Stream was originally called White Stream in the earliest days of Readfield's settlement.

In referring to Kingsbury's History of Kennebec County pg. 894 the following information is given about this tanning mill: "Joshua Bean built a tannery and a bark mill before 1815 on a stream that crosses what used to be called Cameron Hill. This was in operation as late as 1840." One of the old deeds from which I extracted the above information refers to an adjoining property as "...previously known as the Cameron place..."
The same deed also refers to Bean's mill pond.** So this is where Cameron Hill is - I have always wondered! Another piece of our history puzzle solved!

* Kennebec County Registry of Deeds Book 165 Pages 412-413 1/4/1847
** Kennebec County Registry of Deeds Book 127 Book 403

James Craig's Grist, Sawmill and Mill House on the fourth dam

Below are some tidbits about another house that we knew little about when we walked Factory Square in October 2013. The "Grist Mill house" brought out significant interest. It is located on Factory Square next to the stream. I actually stumbled onto some very interesting information about this house when researching for History Walk #15. Although the info below focuses on the surviving structure, bear in mind that Craig also Built the first sawmill and grist mill in Readfield sometime before 1790.

Above: James Craig's "Grist Mill house" on Factory Square as it looked October 2013.
Right: As it looked September 13, 2014.

This house, located on the Mill Stream Road / Factory Square, is the only surviving structure from Readfield's early industrial period. It was in an extremely debilitated state when we did Readfield History Walk # 13 in October 2013. Unbeknown to us it had been purchased by Bob and Helen Bittar and was destined for rehab in the very near future. In old deeds it is described as the "Grist Mill house". On November 18, 1805 James Craig, who built the grist mill at Factory Square, sold his grist mill lot and buildings thereon on lot #212 to Robert Page (Kennebec Registry of Deeds Book 9 Page 53). The deed states that on the land was "a grist mill, house and barn." James Craig was the earliest and one of Readfield's most visible and influential industrial pioneers. Although foundations still exist, this house is the only surviving factory or mill building that was occupied / used during Readfield's 18th century industrial period.

Dana Fogg's store was located in the green area between Route 17 and Mill Stream Road. His slaughter house was located behind that about where route 17 is now. His father was Joseph Fogg who owned and operated a tannery on Mill Stream, behind, north of their house, and east of / behind the Woolen Mill.

One more house we did not know much about on our 10/2013 History Walk was the brick house on Old Kents Hill Road, formerly that of Jack Smart. Gov. Anson P. Morrill had this house built or improved on for his daughter and husband, Richard and Ellen Mills. Morrill signed it over to them on Christmas Day 1865. Mills was one of the owners of the Readfield Woolen Manufacturing Company, along with several others, for a few years.

Readfield Corner and Factory Square in 1856

The red circle indicates the general area of Factory Square. The streets that currently surround this industrial area are Mill Stream Road, Giles Road and sections of Main Street and the Old Kents Hill Road. Also included is the location of the upper dam at the head of Torsey Pond.

1) Upper dam at head of Torsey Pond. Located here were; Joel Bean's grist mill; brickyard; fulling mill and carding mill.

2) Handy Brook dam provided a water source for Joshua Bean's tannery.

3) 2nd and 3rd dams on Giles Road were referred to as the factory dams. Factories and businesses in this area: scythe factory; woolen mill (box factory); woolen mill office; barrel mill; 2 boarding houses; Morrell store / clothing manufactory; Johnson's 2nd store & tailor shop.

The mill dam – or 4th dam - was located on Mill Stream Road. There were 14 businesses and factories manufacturing concerns located in this section of Factory Square at various times: James Craig's grist mill (later Record's grain & feed); Craig's sawmill; Williams blacksmith & carriage shop; cheese factory; sash factory; Currier's brickyard; Bean's brickyard; Hunt's brickyard; F.I. Brown Store; malt house and brewery; meat store; and a slaughterhouse.

Joel Bean Mill Stream as it was once called. Note the mill foundation on the right. There was a gristmill, sawmill, fulling mill and dwelling house at this location.

More of the remaining mill foundations at Bean Mills. Joel Bean built his mills about 1802 at this location.

The bridge at Bean Mills was rebuilt in the 1930s. In the distance is Milton Bean's house (Carbona). Milton died the same year as his father Joel, in 1828.

Germplasm Conservation Orchards (GCOs) in Maine October 3, 2017

by: Thomas Klak | Chair, Gene Conservation Committee
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WHY: The American Chestnut Foundation's "2017-2027 Strategic Plan" encouraged state chapters to create Germplasm Conservation Orchards (GCOs), to be planted with seedlings from wild and local pure American chestnuts. The aim is to capture and preserve American chestnut genetic diversity in easily-accessible orchards. While some state chapters, particularly Pennsylvania and New York, have been long-term GCO leaders, and others such as Maine are now heeding the GCO call.

FINDING SEEDS: Beginning in the summer of 2016, the Maine chapter directors have been searching for wild chestnut seeds for GCOs through a three-part approach:

1. We consulted the *Dentata* database, which is the repository for information from the chestnut Tree Locator forms. Over the years, we have located +-200 wild trees scattered across the southern half of Maine, see map.
2. Directors have also been pursuing leads on chestnuts with burrs from the general public; the Fryeburg Fair and newspaper articles on TACF-ME chapter have been good sources for the public contacting us about wild chestnuts they know about.
3. Brian Roth has been doing fly-overs each July when pastel-yellow catkins stand out in the forest.

FROM GATHERING SEEDS TO 4 GCOS: From these three sources of leads, directors have been searching by land for accessible wild trees with burrs. Chapter volunteers returned to some of the more accessible fertile trees in early October 2016 to gather seeds (before all were eagerly taken by wildlife!). They separated seeds from burrs, and then cold moist stratified them in moist peat moss in refrigerators until February 2017. During the winter dormancy season, chapter directors sought out suitable landowner-partners and sites for GCOs across Maine. Next, students at the University of Maine-Orono, Unity College and the University of New England in spring semester ecology courses sowed the seeds and then tended to the seedlings in pots in their respective campus greenhouses. From late May through early August, teams of chapter directors, interns and volunteers planted the seedlings and created GCOs protected by solar electric fences at four distinct Maine locations. Limited rainfall created a need for frequent watering throughout the summer of 2017.

Each of Maine's four GCOs has its own interesting story of partnerships and geographical context. The *Chestnut* journal will feature each of these orchards in a four-part series. The first one presented in the current issue (October 2017) is an orchard sited in Dover-Foxcroft, at the far northern end of the American chestnut's native range. It is managed by a dedicated and enthusiastic team from the Piscataquis County Soil and Water Conservation District.

MAINE SOURCES: In early October 2016, TACF-ME collected seeds from 7 wild trees in Maine:

- Embden Forest tree
- Embden Road tree
- Jeff Leach House tree Fryeburg
- Gamewell tree Fryeburg
- Atkinson Dalton tree (tree is no longer accessible)
- Kennebunk Big Tree (hoping to harvest fertile seeds again 2017)
- Kennebunk 4 Small Trees (no burrs on them in 2017)

SOURCES FROM OTHER CHAPTERS: In early 2017, we also received seeds from wild trees from other chapters; these seedlings as a whole **grew bigger and healthier** than the Maine-sourced seedlings:

- New Hampshire (NH 001 xOP; NH-AM1601 & 1602)
- NH-MF003 x open VT/NH Curt Laffin/Carol Wallace, Milford, NH
- PA-SlBt x open PA/NJ Rita Schoeffel
- PA-Haun x open PA/NJ Mercer Co., Haun orchard
- CCAV1602 x open Carolinas, Banner Elk, Claire Kimmel tree
- CC245 x TNWAS01 Carolinas, Wagon Gap x Huckleberry Knob
- TNWAS01 x open Tennessee Huckleberry Knob tree

GREENHOUSES: During the spring semester 2017, students at 3 Maine universities (University of New England, University of Maine Orono and Unity College) potted up the stratified wild seeds and grew the seedlings in greenhouses on the 3 campuses.

GCO Locations: During the summer 2017, we created 4 GCOs, each with 100 seedlings from the variety of source trees listed above, in 4 different parts of the Maine (see map):

1. Saco, southern Maine (planted late May '17; near Tom who watered 8 times summer '17!)
2. Long Island, next to Acadia National Park (planted July 5 '17; difficult to water, drought conditions)
3. Dover-Foxcroft, northern end of chestnut native range (planted July 18, watered by local caretakers)
4. Greenville, south of Bath (planted Aug 1 '17; difficult to water: far away, no water on site)

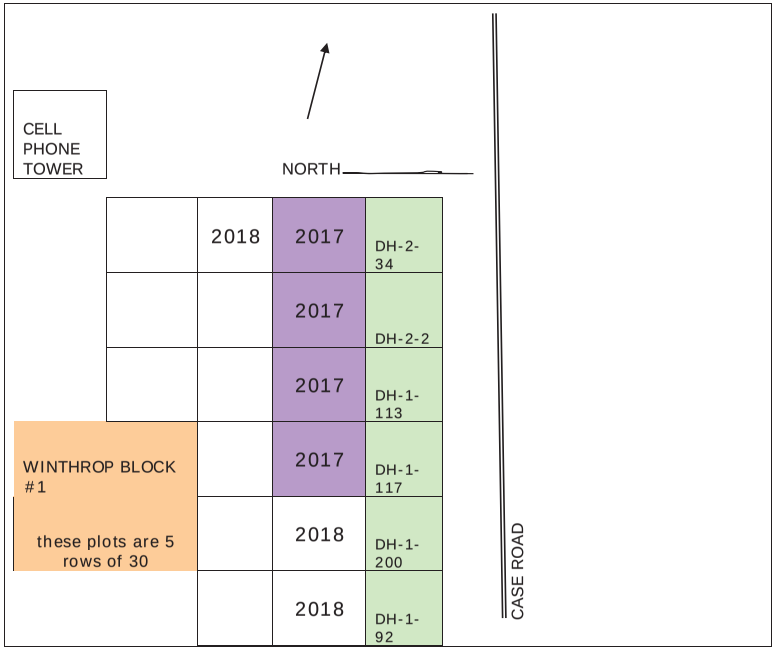
Some Take-Away Lessons from Maine GCO Project thus far:

1. SOURCE TREE DIVERSITY: We are seeking to diversity the source trees from which fertile, quality seeds are harvested in October 2017. These seeds will be greenhouse-sowed in Tree Pots beginning in Feb '18, for GCO planting in late May '18.
2. SEED QUALITY: we will see if improved collection & stratification techniques Oct '17-Feb '18 will increase the quality of Maine seedlings, and bring them up to the level of seedlings from other states.
3. TREE POTS: We use pots from Stuewe & Sons in Oregon, but there are different sized pots. This season virtually all seedlings were grown in D40 pots; a few experimental seedlings were grown in "tree pots" and the result is seedlings 2 or more times as tall and with much larger roots. Tree pots hold 4 times as much growing medium at D40s, there is more room for root development. Next spring all seedlings will be grown in tree pots at the University of New England. The down-side is that the pots are much heavier to get to the field.
4. OUT-PLANT EARLY AFTER FROST: The 1st of the 4 orchards that was planted in late May, soon after that the threat of frost, is showing exceptional growth. Seedlings in other GCOs are smaller and probably have higher mortality. It is valuable to take full advantage of the growing season.
5. DROUGHT WATERING: Summer 2017 was another drought season in southern Maine. Newly planted orchards needed recurrent watering for most of the seedlings to survive. Distance and accessibility to orchards reduces the ability to regularly water.

Stop 3: Winthrop, Maine

Seed Orchard Tour and Selection Strategies

Property Owner: Maine Woodland Owners Trust
Property Name: Georgia Fuller Wiesendanger Wildlife Protection Area
Location: Winthrop/Readfield
Year Acquired: 2011
Acreage (approx): 298
Donor: Georgia Wiesendanger Estate
Description: This property is located off the Case Road and south of Route 202 in Winthrop and extends into the town of Readfield. The donor loved animals and donated the parcels that comprise this property with a stipulation that there be no hunting allowed. Maine Woodland Owners accepted the property with hopes of demonstrating sustainable forestry, protecting wildlife and creating wildlife habitat.
Key Features: This property is close to a population center, easily accessed by the public, and a tremendous example of a healthy vibrant forest full of wildlife. There are ample opportunities for public use including hiking, nature walks, cross country skiing and snowshoeing.
Public Access Information: Maine Woodland Owners makes all of its properties open and available to the public. We ask that the public treat all of our properties with respect. Allowed uses on this forest include hiking, nature walks, and winter sports activities. All-Terrain Vehicles (ATV's) are not allowed on Maine Woodland Owners property unless there is a written agreement with a local ATV club. There is no agreement for ATV use on this property. No campfires or overnight camping is allowed on any Maine Woodland Owners property. We ask that you carry out what you carry in and leave the property as you found it. Contact us directly with any questions concerning allowed public uses of our property. By request of the donor, no hunting is allowed on the Wiesendanger parcel.



Map of The Cell Tower Graves Orchard at Winthrop, ME

Maine Breeding Program – (Eric Evans)

The current focus of our breeding program is to harvest seeds (B3-F2) from the most blight-resistant trees in our third-backcross (B3) orchards, and plant them in our seed orchards, which constitute the 5th generation of our 6-generation breeding program.

After evaluation and selection for blight resistance and American type, the seed orchards will produce seeds (B3F3 – the 6th generation) for chestnut test and restoration plantings in Maine's forests, starting in about 2020. We have two parallel and separate programs, named for the 1st-backcross tree that was the source of blight resistance – Clapper and Graves (the breeders who made the original Chinese-American crosses).

Each program has 20 breeding lines planted in our 3rd backcross orchards, and each is producing seeds for a system of 9 replicate seed orchards (called "blocks"). Each of the 9 "blocks" will eventually have one "plot" of 150 trees planted from each of the 20 breeding lines. The large

numbers of breeding lines and replicate plots and blocks is an essential feature of our goal to restore chestnuts with enough genetic diversity to thrive and continue evolving in Maine's forests.

Our Clapper seed orchards are nearly complete, needing only 11 more plots that we will plant in the coming few years. In contrast, our Graves orchards are less than half filled, needing 138 more plots to be planted in the 9 blocks in Hartland and Winthrop.

In both programs (Graves and Clapper) planting started in 2012 and has gradually progressed as our breeding orchards supplying the seeds have matured. All subsequent activities are also spread out over several years, starting with "inoculating" the trees with live blight when they are about 5 years old, followed by evaluation, rogueing, and re-evaluation of the remaining trees as they are culled down to just one per original plot of 150.

This process of selection will begin with our traditional method of comparing the canker sizes, and will probably also make use of emerging technologies based on genetic and biochemical analysis. Ultimate evaluation of the quality of each tree in the seed orchards will be demonstrated by the disease resistance and American form of its progeny in the forest test plantings. We expect to collect B3F3 seeds for our first test plantings of potentially highly blight-resistant trees starting around 2020. This testing phase will continue for at least 10 years as we evaluate and select in all 360 plots. We expect blight resistance to improve during that time, as the selections are refined based on initial testing results, and as more lines join the breeding population.

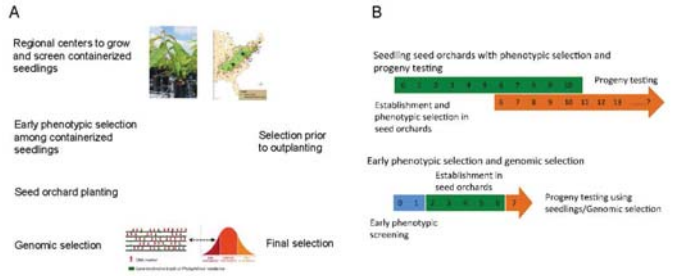


Figure 6: Early screening of containerized seedlings for blight resistance prior to outplanting in seed orchards, where final selections will be made with genomic selection (A). The combination of early screening and genomic selection has the potential to reduce the time between planting and final selection from ~15 years to 7 years (B).