2010 Collection Trip

Minnesota and Wisconsin

United States Department of Agriculture

September 26 – October 1, 2010

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Introduction

The USDA-ARS Plant Introduction Station (Ames, IA) and the University of Minnesota (Grand Rapids, MN) completed a collection trip to Minnesota and Wisconsin in 2010. Funding was supported by the USDA Plant Exploration Program, which is coordinated by the Plant Exchange Office, National Germplasm Resources Laboratory, USDA-ARS, Beltsville, Maryland. Participants included:

- **Jeffrey D. Carstens**, Agricultural Science Research Technician, USDA-ARS Plant Introduction Station, Ames, IA (left)
- **Egon Humenberger**, Assistant Scientist, University of Minnesota North Central Research and Outreach Center, Grand Rapdids, MN (right)

The objectives were to:

- Identify and collect *Fraxinus* spp. populations and potentially other NPGS genera in Minnesota and Wisconsin in 2010.
- Store and backup collections at the USDA-ARS Plant Introduction Station and the National Center for Genetic Resources Preservation in Fort Collins, Colorado, respectively
- Ultimately, conserve the genetic diversity of *Fraxinus* germplasm

Collection Trip Plan

Sunday, 26 September 2010
St. Charles, MN; Whitewater State Park

Monday, 27 September 2010
Hokah Cemetery; Trempealeau, WI; Perrot State Park

Tuesday, 28 September 2010
Willow River State Park; St. Croix Falls, WI; Taylor Falls, MN; Turtle Lake; McMillian Marsh

Wednesday, 29 September 2010
Wildwood Park; Navarino Wildlife Area; New London, WI

Thursday, 30 September 2010
Bulbolz Nature Center; Calumet County Park; Lake Poygan

Friday, 1 October 2010
Wyeville, WI

Collection Trip Daily Log

Sunday, 26 September 2010

At our first site along MN 74, we noted approximately a dozen green ash trees. Unfortunately, only two trees were noted with seeds. It is possible that specimens may be siblings from nearby farmstead-planted ash. Specimens were located along the road and were essentially growing by themselves. The first tree (FP330 #1 – approximately 8-10" d.b.h. and 45' in height – most seeds accessible via hand due to unpruned, low-hanging branches) seemed to have a fair amount of damage from ash seed weevils. The second tree (FP330 #2 image taken along road with farm in far distance/background – approximately 10" d.b.h. and 30' in height – also with seeds accessible via hand due to unpruned, low-hanging branches) had essentially all good (slightly green – no brown), filled seed. The only additional green ash trees noted were along MN 74 (6-8 very small trees – no seeds) located at the south picnic area of Whitewater State Park. All of which were devoid of seeds. One specimen at the south picnic area (20-24" d.b.h.) had no remaining leaves and only a couple of main branches still supporting a small number of very brown, sickly-looking seeds. The specimen from the initial reconnaissance that initially served as the voucher for this population was approximately 10 miles away from FP330 #1 and #2 and only had 4-5 clusters of seeds persisting. These seeds also looked very brown. Since this area received a large amount of rain (8-10") in the week before collecting, it is possible that heavy rains could have easily knocked large numbers of seeds off trees. Green ash was more common north of Whitewater State Park along 74. Most specimens seemed to have 1-2' of green leaves on the apical portions of stems, while remaining leaves have dropped. Some yellow fall color was noted. Surprisingly, *Fraxinus nigra* was just as abundant or slightly more so in this area than was green ash.

Black ash was easily found throughout the Whitewater State Park and also throughout the wildlife management areas north of the state park on MN 74. This area (N44.18600 W91.98564) supported a fairly large number of mature black ash that would be worth sampling in the future. At the very south end of the state park along MN 74, a couple specimens of black ash with seed (18-20" d.b.h. and 55-60' in height) were noted in the park. It was decided that additional time should be spent looking for seeds on black ash,

Collection Trip Daily Log

Sunday, 26 September 2010 (cont'd)

resulting in the harvest of 6 specimens. In general, 95%+ of the very large, most likely reproductive specimens of black ash noted were not bearing seeds. It was very easy to spot the male specimens of black ash due to the presence of ash flower gall. Black ash seemed to be common around intermittent streams and small valleys and also lowlands. Some *F. nigra* were completely defoliated, while other specimens exhibited an acceptable level of favorable, fall color (yellow or faded, light, yellow-green color). Associate species noted in the park included wild ginger, paper birch, box elder, walnut, willow, white pine, hackberry, and oak. Nearby, a fair number of *Cornus alternifolia* located along MN 30 heading east off MN 74 were easily spotted due to sporadic, splotchy, highlights of red-toned fall color.

Monday, 27 September 2010

The cemetery at Hokah, MN had a half dozen large green ash trees. Majority of the specimens averaged 20" d.b.h. and 60-70' tall located on mid-level bluffs. There were a few smaller trees located on the cemetery boundary. We harvested 8 trees but quality seemed to be fairly low. We tried taking a road through a nearby floodplain and failed to find additional green ash.

The next site was located along WI 35 near Trempealeau, WI, but it could also be potentially contaminated via cultivated specimens. Most of the trees harvested were on the edge of private lands. Again, seed quality was very low.

Perrot State Park sported a large population of *Quercus rubra,* which were loaded with acorns and dropping heavily. The herbarium specimen marked for the green ash population in the park was completely void of leaves, but with lots of seed. Unfortunately, all seeds were empty. Time was then spent working near the railroad tracks which was very successful. A total of 10 trees having fairly high-quality seeds was sampled along a 1-2 mile stretch. It was interesting to note that specimens were restricted to the river side of the railroad. Egon suggested that possibly green ash trees were more likely to regenerate on a substrate with moving rather than stagnant water. All trees harvested were of relatively small size (20-40' tall).

Collection Trip Daily Log

Tuesday, 28 September 2010

Fraxinus pennsylvanica was found throughout Willow River State Park, but finding trees with substantial seed quantities of reasonable quality was difficult. We obtained samples of seeds from 11 mother trees.

The next site near Interstate State Park resulted in finding only 4 green ash trees with seeds. Unfortunately, seeds from each of the four trees were completely empty and/or weevil infested. Therefore, it was not worth spending time harvesting. Surprisingly, this area had a large number of white ash throughout the area, especially just west from the intersection of 240th and county road S. A few white ash trees were noted with seeds, but again seed quality was very poor. Due to the relatively rarity of white ash throughout central and western Wisconsin, it would be valuable to obtain this germplasm.

Nearby we noted fruitful populations of *Ostrya virginiana* and *Carpinus caroliniana.* We were able to harvest seeds from 7 and 4 trees, respectively. The *Carpinus* trees (image above) were exhibiting peak fall colors of mostly red shades, but some oranges as well.

Our next site near Taylor Falls, MN targeted a specimen of *Fraxinus americana.* This specimen was discovered during the reconnaissance trip with seeds, but unfortunately the seeds were not viable.

Continuing east to Turtle Lake that was supposed to have 12 trees with seeds, resulted in finding only one tree with seeds. Luckily we were able to harvest from two trees from private property. The specimens were approximately 55-60' tall, estimating the trees age around 40-50 years. The house was built in the early 1970's. Concerns of quality of this collection due to the potential for pollen contamination from cultivated specimens nearby is likely.

Collection Trip Daily Log

Tuesday, 28 September 2010 (cont'd)

We were able to find a few minutes before dark to glance over McMillan Marsh Wildlife Area. We did note a few *Fraxinus nigra* growing at the far north end of the property along the main channel, but no seeds were noted. Even if seeds were noted, it would have been impossible to harvest due to the degree of flooding in the area. This location would be excellent for harvesting black ash in the future to fill a large geographic collection gap, but we would recommend a full day for sampling. A few scattered specimens of *Viburnum lentago* were also noted.

Wednesday, 29 September 2010

Wildwood Park in Marshfield resulted in finding very few trees with seeds. We were able to harvest from 4 green ash and 2 white ash. A couple of other ash trees were harvested, but discarded due to the poor quality of seed. It is hard to say if seeds dropped early because of poor quality or if undesirable climatic conditions were experienced. An additional green ash tree with seeds was harvested across the street from Wildwood Park at the Alano Club of Marshfield.

A quick stop around the Little Wolf State Natural Area resulted in numerous "patches" of *Fraxinus nigra.* Under a good seed production year, it would not be difficult to get a large, population-based seed collection. All roads (except for Wigwam Road) seemed to lead to black ash stands. Before leaving the area, seeds from 4 specimens of *Tsuga canadensis* were obtained.

Navarino Wildlife Management Area resulted in finding only one green ash tree sporting seeds, but again all seeds were infested with weevils.

Our last site along WI 54 near New London was a difficult one. Due to flooding, the road-ditch was essentially filled with water. Most areas were crossable with hip waders (water averaging 3 ½ - 4' deep, but again seeds were of very poor quality due to empty or weevil-infested seeds. A total of 10 trees was noted with seeds. Unfortunately, only 3 trees were harvested. It is suspected that the percentage of good seed will average around 20-30%.

Collection Trip Daily Log

Thursday, 30 September 2010

Bulbolz Nature Center near Appleton presented only a few green ash with good seeds and a few others with completely empty/weevil infested seeds. We were able to harvest from a few trees in the parking lot. The entire perimeter of the park was explored only to find a small number of green ash without seeds or holding on seeds of very poor quality. We were very excited to find a large population of *Fraxinus nigra* at this site and surprised to see the immense size (approximately 20-26" d.b.h. and 50-80' tall) of the trees. This would be an excellent site to revisit. A nice population of white cedar was noted as an associate species.

Calumet Park was a complete bust. We checked 12 green ash trees with seeds and spent a fair amount of time thoroughly checking for good seeds. Essentially, no good seeds were found. This area had a nice population of green ash and would be worth sampling in the future. It was also interesting to note *Gymnocladus dioicus* growing by Coffee Tree Lodge. One tree bearing fruits was harvested. It measured 69" in circumference and 22" d.b.h. There were approximately 50 Kentucky Coffeetrees in the area, most likely representing 3-4 clonal patches. All were growing very close to the Coffee Tree Lodge. We also decided to check out High Cliff State Park for *Gymnocladus*. We found one very large specimen 115" in circumference/36.5" d.b.h. located near the General Store. It was bearing very small pods (1" in length), which were devoid of seeds. It was interesting to note a few small seedlings coming up in the adjacent ditch. It is unknown if the seedlings are suckers or individual seedlings.

Our last site near Lake Poygan provided relief due to the number of green ash tree with quality seeds. There was also a nice population of black ash just to the north-northeast of the parking lot in a slightly wetter habitat.

Collection Trip Daily Log

Friday,1 October 2010

Travel from Appleton, WI to Austin, MN along WI 21supported very few *Fraxinus.* It was obvious that a decrease in pH occurred throughout the area, as only acid-loving plants were noted. The first few trees of *Fraxinus* were noted near Wyeville, WI. However, due to the local scarcity of this species, we were only able to sample 3 specimens.

Our last collection of the trip was of *Fraxinus nigra* near Wilton, WI. Black ash was sporadically noted throughout this area just north of Wilton, WI. In a good seed production year, it wouldn't be hard to harvest from a handful of trees throughout a widespread (5-10 sq. miles) area. *Cornus alternifolia* was noted throughout the area along the roadsides where topographic features were more extreme.

Trip Summary

In total, we obtained 18 accessions (1- *F. americana, 2 – F. nigra, 11 – F. pennsylvanica,* and 4 miscellaneous genera).

This collection trip was a slight disappointment ,due to the sheer number of *Fraxinus pennsylvanica* growing throughout the areas targeted for collection. In a normal seed-production year with low pressure from weevils, large numbers of trees could be sampled. It was refreshing to be able to document a few areas supporting healthy populations of *Fraxinus nigra* (Whitewater State Park, Little Wolf State Natural Area, Bulbolz Nature Preserve, areas north of Wilton, WI, McMillan Marsh Wildlife Management Area, and Lake Poygan) and *Fraxinus americana* (near Interstate State Park and north of Taylor Falls, MN) for future sampling.

Optimal timing for seed collection of *F. americana and F. pennsylvanica* in central Wisconsin should occur in early to mid September. Please note that it is unclear whether green ash seeds this year were maturing early due to high weevil infestations and other environmental extremes.

Future reconnaissance efforts will better assess seed quality and compare overall abundance of the species intended for sampling to the number of specimens actually bearing seeds. This may better determine the ability to obtain numerous samples of germplasm at a desired level of quality.

Alphabetical List of Germplasm Collected

Taxonomy	Collection #	Locality
Carpinus caroliniana	Ames 30672	Polk County, Wisconsin
Fraxinus americana	Ames 30673	Wood County, Wisconsin
Fraxinus nigra	Ames 30674	Winona County, Minnesota
Fraxinus nigra	Ames 30675	Monroe County, Wisconsin
Fraxinus pennsylvanica	Ames 30676	Winona County, Minnesota
Fraxinus pennsylvanica	Ames 30677	Houston County, Minnesota
Fraxinus pennsylvanica	Ames 30678	Trempealeau County, Wisconsin
Fraxinus pennsylvanica	Ames 30679	Trempealeau County, Wisconsin
Fraxinus pennsylvanica	Ames 30680	St. Croix County, Wisconsin
Fraxinus pennsylvanica	Ames 30681	Barron County, Wisconsin
Fraxinus pennsylvanica	Ames 30682	Wood County, Wisconsin
Fraxinus pennsylvanica	Ames 30683	Outagamie County, Wisconsin
Fraxinus pennsylvanica	Ames 30684	Outagamie County, Wisconsin
Fraxinus pennsylvanica	Ames 30685	Winnebago County, Wisconsin
Fraxinus pennsylvanica	Ames 30686	Monroe County, Wisconsin
Gymnocladus dioicus	Ames 30688	Calumet County, Wisconsin
Ostrya virginiana	Ames 30689	Polk County, Wisconsin
Tsuga canadensis	Ames 30690	Portage County, Wisconsin