

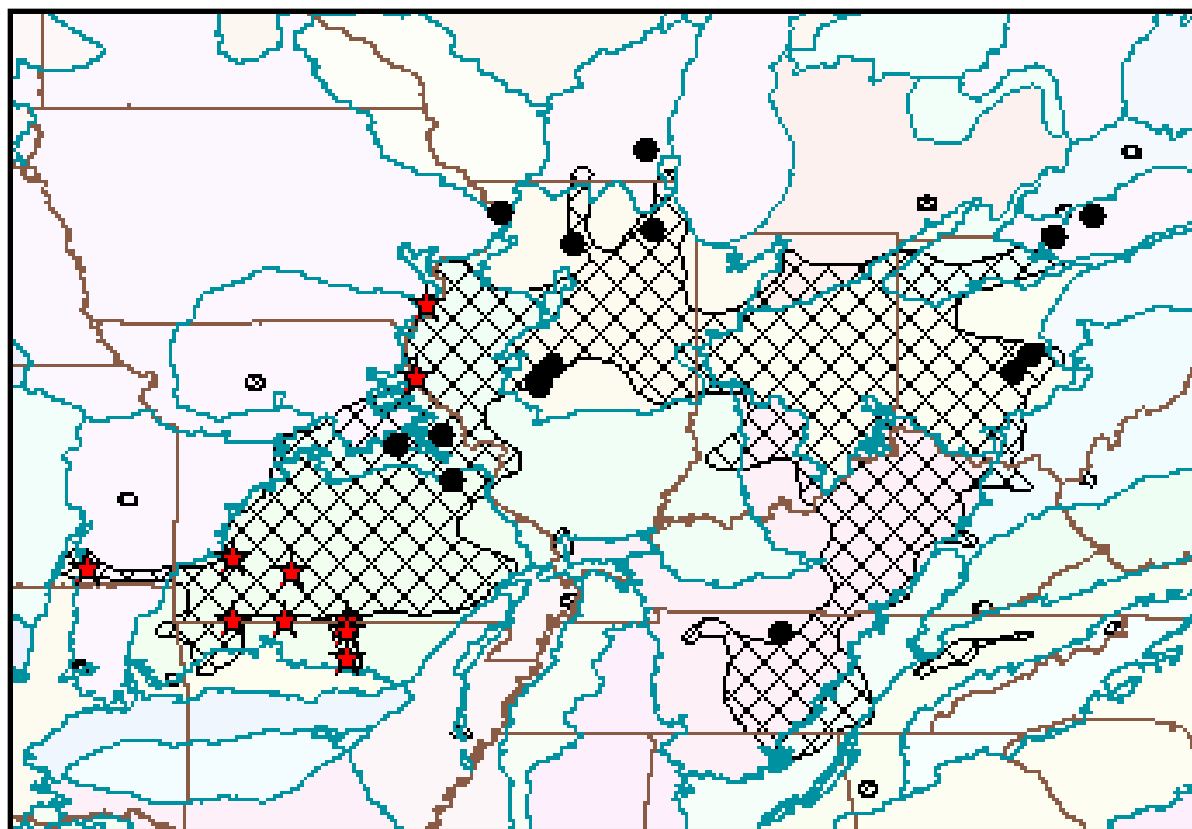
2010 Collection Trip Kansas, Missouri and Arkansas



United States Department of Agriculture

September 13-19, 2010

NC7 *Fraxinus quadrangulata* Sites



● Past accessions

★ 2010 accessions

TABLE OF CONTENTS

Introduction.....	4
Collection Trip Plan.....	5
Collection Trip Daily Log.....	6
Trip Summary.....	11
Alphabetical List of Germplasm.....	12

Introduction

The USDA-ARS Plant Introduction Station (Ames, IA) completed a collection trip to Kansas, Missouri, and Arkansas 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)
- **Matt O'Hearn**, Biological Science Aide, USDA-ARS Plant Introduction Station, Ames, IA (right)



Objectives:

- Identify and collect *Fraxinus quadrangulata* populations and potentially other NPGS genera in Kansas, Missouri, and Arkansas during 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 and preserve genetic diversity of *Fraxinus* germplasm

Collection Trip Plan

Monday, 13 September 2010

St. Philippine Duchesne Memorial Park; Dingus Natural Area; Neosho River Watershed

Tuesday, 14 September 2010

Bourbon County Lake State Park; Big Creek; Fiddlers Ford Access

Wednesday, 15 September 2010

Springfield Lake, Odin Access Conservation Area, Noblett Lake Campground/Mark Twain National Forest

Thursday, 16 September 2010

Norfolk Lake; Barkshed Campground/Sylamore Wildlife Management Area

Friday, 17 September 2010

Gene Rush Wildlife Management Area; Drury-Mincey Conservation Area

Saturday, 18 September 2010

Pilot Knob Conservation Area; Piney Creek Wilderness Area; Roaring River State Park

Sunday, 19 September 2010

Galena, KS; Elk City State Park; Caney River Watershed

Monday, 20 September 2010

Return to Ames, IA

Collection Trip Daily Log

Monday, 13 September 2010

An early morning departure out of Ames, Iowa allowed time to search for blue ash populations collections. While traveling to our first destination, a nice population of *Euonymus atropurpureus* was harvested along the roadside in Franklin County.

The first two targeted sites, Dingus Natural Area and St. Phillipine Duchesne Memorial Park in Linn County Kansas, did not reveal any *Fraxinus quadrangulata*. These locations were selected for potential areas to contain blue ash due to historical herbarium vouchers of *Gymnocladus dioicus*, an associate species and limestone indicator. However, a nice population of green ash was harvested in the floodplain of Sugar Creek (Anderson County, KS) and a white ash population in some upland areas near Big Sugar Creek (Linn County, KS).

Tuesday, 14 September 2010

In Neosho County, we drove through prairie habitats and found an eye catching population of *Eryngium leavenworthii*. We were excited to harvest this species as it is currently not represented in the National Plant Germplasm System. A brief visit to a cemetery and lowlands around the Neosho River just north of Shaw, KS resulted in finding an abundant population of *Carya illinoensis* instead of *Fraxinus pennsylvanica*. Additional harvests along gravel roads included *Celastrus scandens*, *Helianthus mollis*, and *Rudbeckia triloba*.



Eryngium leavenworthii – Neosho Co. KS

Our first blue ash site with historical documentation was successful and exciting. Private property along Big Creek 8 miles east of Chanute, KS in Neosho County supported a fairly extensive population (200+ individuals). This population seemed to be very localized as blue ash was not noted previously. Unfortunately, seed production was not present. It is recommended that a future harvest from this population be made.

The last visit for the day and first visit in Missouri resulted in the collection of multiple blue ash specimens from a population at Fiddlers Ford Conservation Area.

Collection Trip Daily Log

Wednesday, 15 September 2010

After driving through a good portion of what was expected to be the heart of blue ash country, we realized that blue ash is not easy to find. Targeting areas with documentation of historical herbarium specimens and also habitats containing very steep (65-75 degrees) slopes with shale substrate and seeps helped pinpoint blue ash populations. Our first collection of the day was from a small population along Panther Creek. All remaining areas targeted for blue ash were unsuccessful. However, roadside collections of *Echinacea* sp., *Liatris pycnostachya*, and *Rudbeckia triloba* were made. Odin Acces Conservation Area exploration noted extremely large *Cornus florida*, *Morus rubra*, and *Asimina triloba*. It was clear that this habitat did not have steep enough slopes and soils seemed fairly high in organic matter. This was the first population of *Asimina triloba* that I've noted in nature supporting fruits. A nice collection of fruits from *Cornus florida* was made before leaving. Although Noblett Lake Campground in the Mark Twain National Forest supported a large diversity of flora, no blue ash were noted. Blue ash has been documented in this area in the past (herbarium specimens), but would suspect that the habitat only supports a few individuals, which would most likely require a significant amount (~ 6 hours) of time to find. Reasons for this habitat not supporting a population of blue ash might include soils with high organic matter, relatively neutral pH, and lack of steep slopes.

Thursday, 16 September 2010

Early morning exploration targeted steep slopes in the Norfolk Lake Wildlife Area. Harvests were made from *Fraxinus quadrangulata* and *Monarda citriodora*. Exploration continued along Norfolk Lake into Arkansas resulting in a small collection of blue ash around the Gamaliel Recreation Area in Baxter County. Very large *Cotinus obovatus* and a few *Viburnum bracteatum* and *Fraxinus americana* were noted as associate species. Shortly after entering the Sylamore Wildlife Management Area a very large population of *Fraxinus americana* was harvested along Push Mountain Road.

Collection Trip Daily Log

Thursday, 16 September 2010 (cont'd)

Due to the extreme variation in topography and poor quality roads, a large amount of time was exhausted traveling from site to site. Our last site around the Barkshed Campground was very interesting. *Fraxinus quadrangulata* seemed to be scattered throughout the area rather than as a concentrated population. It was exciting to see a fair number of individuals of *Cornus alternifolia* while harvesting blue ash. Extreme variation in topography is most likely creating microclimates suitable to support *Cornus alternifolia*. This population of pagoda dogwood would stretch into the far southern extremity of its native range.

Friday, 17 September 2010

Explorations around the Gene Rush Wildlife Management Area turned up a few blue ash individuals, but no seeds. Additional specimens were also noted throughout very steep slopes (generally south or west facing) in the northeast corner of Newton County. Before crossing the Missouri-Arkansas state line, a nice population of white ash was harvested. It was interesting to note *Allium stallatum* and *Frangula caroliniana* as associate species. Our last visit for the day at Drury-Mincey Conservation Area resulted in finding the largest and most mature population of *Fraxinus quadrangulata*. This population continued for approximately one mile along a steep, north-facing slope adjacent to the White River. Substantial amounts of seeds were harvested from multiple specimens. Large specimens of *Cotinus obovatus* were noted.

Collection Trip Daily Log

Saturday, 18 September 2010

A visit to Pilot Knob Conservation Area resulted in a nice hike on a beautiful morning. The assumption that blue ash could be found in this area with no difficulties was incorrect. Even after exploring areas with steep, south-facing slopes and noting too many acid-loving plants we finally decided to move on to a new site. Before even arriving to Roaring River State Park/Piney Creek Wilderness Area a very large population of blue ash was found at the Roaring River Wildlife Management Area. This area was abundant with mature blue ash supporting lots of seeds. Majority of the day was spent sampling numerous specimens throughout a large area (1-2 sq. miles).



Roaring River WMA - Barry Co. MO



Roaring River Wildlife Management Area - Barry Co. MO

Collection Trip Daily Log

Sunday, 19 September 2010

Our last day started with exploration just outside of Galena, KS . A historical, blue ash herbarium specimen led us to a site along Short Creek where a small localized, north-facing slope supported some virgin woodlands. Unfortunately only one specimen of blue ash was found. It is interesting to note that a previous botanizing exploration successfully documented the presence of a species in such extremely low numbers.

Our next visit to Elk City State Park resulted in the harvesting of another *Eryngium leavenworthii* population and also from one plant of *Viburnum rufidulum*. Literally millions of *Fraxinus quadrangulata* seedlings were noted on the bluffs of a steep northeast-facing slope on the northeast corner of Elk City Lake. Since seed production was not present, approximately 20 blue ash seedlings (one year old seedlings - 1-2" in height) were removed and placed in moist paper towel for transport.

Our last visit along the Caney River Watershed located in the far southwest corner of Chautauqua County noted scattered specimens of blue ash, but no seeds. It is recommended that a future seed collection be made from this site. It was interesting to note *Sapindus drummondii*, *Carya illinoionensis*, *Viburnum rufidulum*, and *Betula nigra*. This site would mark the western range of all species, except *S. drummondii*.



Sapindus drummondii - Chautauqua Co. KS

Were able to harvest seeds from three specimens of *Carya illinoionensis* which were transferred to L.J. Grauke for inclusion into the NPGS pecan collection.

Trip Summary

In total, we obtained 27 accessions (3- *F. americana*, 2 – *F. pennsylvanica*, 8 – *F. quadrangulata*, and 14 miscellaneous genera).

This collection trip provided an opportunity to obtain *Fraxinus quadrangulata* germplasm from numerous populations throughout its native, southwestern range. We were able to gain a sense for habitat preferences (steep slopes, shale/limestone substrate, seeps, etc.), commonalities in plant associates (*Cotinus obovatus*, *Juniperus virginiana*, *Hydrangea arborescens*, *Ostrya virginiana*, and *Quercus muhlenbergii*) across collection sites, and the overall frequency (very low) of this species in nature.

Future blue ash seeds collections should target populations in Chautauqua County, KS – Caney River Watershed near Elgin; Neosho County, KS – Big Creek Watershed east of Chanute; and also in Newton County, AR - Gene Rush Wildlife Management Area (additional reconnaissance needed to locate additional specimens in Gene Rush WMA). These locations support a fair number of mature, blue ash specimens that under a normal seed production year could result in a substantial harvest.

It is suggested that if future *F. quadrangulata* harvests are to be targeted, optimum timing should occur in mid-August/early-September. Targeting collections in late-September does allow harvesting of white and green ash (slightly immature), but increases the potential for “shattering seed clusters” when harvesting blue ash at that time.

Two fairly large populations of *Gymnocladus dioicus* were documented along Canville Creek (37.7483°N 95.1769°W) in Allen County Kansas and also along Dalton Road (37.0365°N 96.3767°W) in Chautauqua County Kansas and should be targeted as future NPGS seed collections. In addition, the *Cornus alternifolia* population located in the Barkshed Campground area in the Sylamore Wildlife Management Area would make an excellent addition to the dogwood collection.

Alphabetical List of Germplasm Collected

<u>Taxonomy</u>	<u>Collection #</u>	<u>Locality</u>
<i>Carya illinoensis</i>	N/A	Chautauqua County, Kansas
<i>Celastrus scandens</i>	Ames 30593	Neosho County, Kansas
<i>Cornus florida</i>	Ames 30594	Wright County, Missouri
<i>Echinacea</i> sp.	Ames 30595	Wright County, Missouri
<i>Eryngium leavenworthii</i>	Ames 30596	Neosho County, Kansas
<i>Eryngium leavenworthii</i>	Ames 30597	Montgomery County, Kansas
<i>Euonymus atropurpureus</i>	Ames 30598	Franklin County, Kansas
<i>Fraxinus americana</i>	Ames 30599	Linn County, Kansas
<i>Fraxinus americana</i>	Ames 30600	Baxter County, Arkansas
<i>Fraxinus americana</i>	Ames 30601	Boone County, Arkansas
<i>Fraxinus pennsylvanica</i>	Ames 30602	Anderson County, Kansas
<i>Fraxinus pennsylvanica</i>	Ames 30603	Montgomery County, Kansas
<i>Fraxinus quadrangulata</i>	Ames 30604	Dade County, Missouri
<i>Fraxinus quadrangulata</i>	Ames 30605	Webster County, Missouri
<i>Fraxinus quadrangulata</i>	Ames 30606	Ozark County, Missouri
<i>Fraxinus quadrangulata</i>	Ames 30607	Baxter County, Arkansas
<i>Fraxinus quadrangulata</i>	Ames 30608	Stone County, Arkansas
<i>Fraxinus quadrangulata</i>	Ames 30609	Taney County, Missouri
<i>Fraxinus quadrangulata</i>	Ames 30610	Barry County, Missouri
<i>Fraxinus quadrangulata</i>	Ames 30611	Montgomery County, Kansas
<i>Helianthus mollis</i>	Ames 30612	Bourbon County, Kansas
<i>Liatris pycnostachya</i>	Ames 30613	Wright County, Missouri
<i>Monarda citriodora</i>	Ames 30614	Ozark County, Missouri
<i>Ostrya virginiana</i>	Ames 30615	Baxter County, Arkansas
<i>Rudbeckia hirta</i>	Ames 30616	Wright County, Missouri
<i>Rudbeckia triloba</i>	Ames 30617	Bourbon County, Kansas
<i>Viburnum rufidulum</i>	Ames 30618	Montgomery County, Kansas