Vascular Plant Inventory
George Washington Carver National Monument

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Table of Contents

List of Figures iii
List of Appendices iii
Summary iv
Acknowledgements v
Introduction 1
Materials and Methods 4
Results 5
Discussion 6
Conclusion 8
Literature Cited 9

List of Figures

Figure 1. Location of George Washington Carver NM, Newton County, Missouri. 10

Figure 2. Location of areas of special concern at George Washington Carver NM. 11

List of Appendices

Appendix 1. Revised Flora of George Washington Carver NM (December 2004)..... 12

Appendix 2. List of flora of unknown status at George Washington Carver NM. 26

Appendix 3. List of excluded taxa at George Washington Carver NM. 28

Appendix 4. Botanical and general assessment of the 30-acre tract at George Washington Carver NM. 29

Summary

A vascular plant inventory was conducted at George Washington Carver National Monument in autumn, 2002 in an effort to re-document the plant taxa originally collected in the late 1950's by Ernest J. Palmer. The current study, combined with previous work conducted in the 1990's, resulted with 79% of Palmer's taxa being re-documented and has added 178 taxa not documented by Palmer. The Monument is represented by 645 distinct taxa with the Asteraceae, Poaceae, Cyperaceae, and Fabaceae comprising the most taxa. Of the 645 taxa, 114 are introduced and represent 35 families. Five taxa of special concern that were found are tracked by the Missouri Department of Conservation. The study involved verification of identity of all of Palmer's specimens, field collection of plant specimens, quantitative analysis of habitats at the Monument, and spatial documentation of all plant species recorded. Due to the passage of time and changes in land use since Palmer's research, the ultimate result of the new study is a revised flora of the Monument.

Acknowledgements

A project of this scope cannot be completed without assistance from a wide variety of people. I would like to thank Scott Bentley, Superintendent, and Leslie Sadler, Administrative Officer, George Washington Carver National Monument, for providing the means, support, and work space for the field phase of this project. Also, Park Ranger Dena Matteson was very helpful in providing materials and data from past surveys, as well as assistance in updating the Monument's herbarium database. Mike Williams, Heartland Network I&M Program, was supportive and encouraging throughout the entire project, and I would like to especially thank him for extending this project for me, allowing me to focus attention on the newly acquired 30-acre tract. And, finally, I would like to thank Lana Henry, George Washington Carver National Monument Chief Ranger, for providing the initial impetus for starting this project.

Introduction

Congress passed the National Parks Omnibus Management Act in 1998 in response to concerns about the condition of natural resources within the national parks. The act requires each park to gather baseline inventory data on pertinent natural resources, data that will provide a pivotal step toward establishing an effective monitoring program furthering the ability to effectively manage and protect park resources and abide by the National Park Service (NPS) mission statement. The NPS responded with the Natural Resource Challenge program, including the establishment of biome-based inventory and monitoring networks. The Heartland Network, as part of the NPS Inventory and Monitoring (I&M) program, has undertaken inventories of vascular plants and vertebrates within fifteen parks in eight Midwestern states.

The late Ernest J. Palmer surveyed and documented the flora of George Washington Carver NM in the late 1950's. The resulting products were a written flora (provided to the park in 1964) and a herbarium collection (which is still stored at the Monument). During the 40+ years hence, the Monument has had many changes in its management, its physical character, and its flora. In addition, several botanical surveys have been conducted since Palmer's. The purpose of this project is to provide a current baseline from which to compare Palmer's flora of the Monument, including the confirmation of as many of Palmer's plant species as possible. Ultimately, this will result in a revised flora for the Monument, something that, as will be evident from the findings, is certainly due.

During the course of this project, the Monument acquired (through donation) the last portion of the original Carver farm. This 12.2 ha (30 ac) tract, located adjacent to the southwest boundaries of the current Monument, became the focus for additional plant study during this project in 2004.

Study Area

George Washington Carver NM is located in southwest Missouri about 17 km (10.6 mi) southeast of Joplin (Figure 1). The Monument is about 85 ha (210 ac) in size and is comprised of 32.4 ha (80 ac) of upland forest/riparian woodland consisting of oak/hickory and mixed hardwood and 52.6 ha (130 ac) of open prairie, restored prairie, and old field.

Authorized by Congress in 1943, George Washington Carver NM was opened in 1952. As indicated in Palmer's original report (Palmer 1964), portions of the land within the new Monument had previously been cultivated, grazed, or both. Although Palmer does not mention the practices during the time of his study, grazing and cropping continued under lease until the late 1970s (Jones 1997).

Beginning in the 1980's, as a result of historic prairie research conducted by Dr. James Jackson of Missouri Southern State College (MSSC), a tallgrass prairie restoration program was initiated. This restoration program was expanded to include a total of 48.6 ha (120 ac) by the mid-1990s (Jones 1997). Although many early aspects of the restoration were rather poorly documented, several species of grasses and forbs (and possibly shrubs) were planted during this time.

The newly acquired 12.2 ha (30 ac) tract has had a history of mining and grazing. Abandoned mine tailings, building foundations, and trash were removed from the site during early 2004, but problems with fencing allow cattle to continue to impact the site. As a result, the area suffers from trampling and heavy grazing.

Previous Plant Studies

Ernest J. Palmer was already a well-known botanist when he began his work at George Washington Carver NM. Good friend and fellow botanist Julian Steyermark included Palmer's work on *Crataegus* in his *Flora of Missouri* (1963). Associated for many years with the Arnold Arboretum at Harvard, Palmer spent many years traveling the United States, as well as in foreign countries, botanizing and collecting specimens. Many of his travels were documented in regular contributions to that institution's published journals in the early 20th century.

Near the end of his career (and his life) now Webb City, Missouri resident Palmer began a comprehensive survey of the natural history of the Monument. His field studies and collecting resulted in, among other things, a herbarium collection and list of plants. Plant specimens were dated from 1956 to 1960. A written summary of his work, entitled The Flora and Natural History of George Washington Carver National Monument (Palmer 1964), included not only plants, but also all vertebrate fauna groups, mollusks, cryptogams, and even geology. More details about Palmer's plant work are included in the section entitled "Palmer flora survey".

In 1983, the National Park Service published a "revised" version of Palmer's flora of George Washington Carver NM (Palmer 1983). As noted in its preface, the list (and accompanying text) is presented in its original form, with the exception of the species themselves. These were updated using Flora of the Great Plains (1986) and Steyermark (1963). No attempt was made to examine the specimens at the Monument.

During 1969-1970, D. Metsker collected plant specimens at the Monument. These were mainly woody species, and no formal report exists in the Monument files. Betty Bensing contributed to the park's herbarium with a smattering of plant specimens collected during 1981. Again, no written report apparently accompanied this collection. Both Metsker and Bensing's specimens were added to the park's historic archival collection.

In the 1980s, numerous student research projects focused on a variety of natural history subjects in the park, including plants. One, by Marston (1989) was a study of woody vegetation. Field study by Cox (1993) focused on all flowering plants, but did not include specimen collection. Other studies were featured in a short-lived periodical published as a joint project between the Monument and MSSC in the 1980's. In addition, Dr. James Jackson contributed a lot of knowledge about historic area prairies and a comparison of the Monument's then open areas to those historic prairies (Jackson 1984).

Prairie Monitoring

A comprehensive monitoring study of the Monument's prairie restoration units was conducted in 1993 by Kathy Gifford. This work involved survey plots set up at regular intervals across all of the prairie restoration units, with each plot sampled for species abundance and distribution. Although very little of the work was documented by specimen, all of the plot reports have been reserved in the Monument's files. Frustratingly, several species were recorded in these surveys that would be new to the Monument, but are without specimen documentation. Prairie monitoring continued in the early 1990's by Louise Wilson (Wilson and Jackson 1993). As with Gifford's work, this was conducted without specimen documentation.

Woodland Survey

Barry Jones conducted a comprehensive woodland survey during the period 1995-1997. All of the Monument's woodland areas were sectioned off into 10m square grids, within which all tree specimens over 2.54 cm (1 in) in trunk diameter were recorded and grouped into 5 size categories (Jones 1997). The survey contributed information about the composition of the Monument's woodlands, offered a comparison between separate areas of the Monument's flora, and located species that otherwise would not have easily been found.

Early Palmer Flora Confirmation

A large amount of plant specimens were collected, beginning in 1994, with the dual purpose of re-documenting species on Palmer's list and documenting new species to the Monument. Around 850 specimens, collected by Jones (1994-1997) and Alan Ross (1997-1998), comprised what was a new herbarium collection. Many of Palmer's species, particularly those not represented by Palmer specimen, were documented in this new collection. Also, more than 120 species new to the park were documented by specimen.

Materials and Methods

The purpose of this project was to evaluate the existing park flora, update where required, and develop a current park flora. This task required several steps including: verification of Palmer's plant specimens, cataloging specimens collected in the mid-1990's, determining a list of needed specimens, field checking, identification, and collection of needed specimens, field checking the 12.2 ha (30 ac) addition to the park (acquired in late 2003), and preparing a final report including an updated flora.

Validation of Palmer specimens – in the Monument's archives, all of Palmer's plant specimens were inspected and re-keyed using Steyermark (1963), and in some cases Steyermark/Yatschievych (1999). Notations were made of any difficult to identify (i.e. due to poor condition) or any clear misidentifications. With a few exceptions, the taxa on the list were treated using Yatschievych and Turner (1990), or Yatschievych (1999), to conform to modern taxonomy.

Validation of 1990s specimens – also in the archives, specimens collected by Jones and Ross (collectively, 1994-1998) were checked for correctness, and any needing further documentation were noted.

Field collection – beginning in spring 2003, all areas of the Monument were searched to further document Palmer species, as well as species new to the park. Specimens were identified, often microscopically, then placed in a plant press, mounted on herbarium sheets, and labeled with scientific and common name, location, date, and specimen number. Specimens are housed at the Monument. In 2004, the newly acquired 12.2 ha (30 ac) tract was explored for species, with field checking in the rest of the park continuing simultaneously.

GPS data – a GeoXT GPS data logger was used to collect location data (NAD83) for each of Palmer's taxa documented by specimen. Data was then differentially corrected where possible and exported to a shape file.

Database construction – a database was developed for all of Palmer's plant taxa and then used to track the re-documentation by recent specimen. Other databases were developed to track new species and to document Palmer taxa not represented by specimen.

Habitat description – terrestrial habitat inventory forms were completed for two sampling locations in each prairie unit (with the exception of Unit 2), with 3 samples taken in the new 12.2 ha (30 ac) tract. GPS locations were recorded for each sampling plot.

New flora – taxa not originally found by Palmer were documented by specimen, accessioned to the Monument's herbarium, and kept on a separate list. Species found previously (i.e. during the period 1993-1997) were also noted when found, and occasionally re-documented by specimen. The list of new species was then incorporated into the revised flora of the Monument.

Results

Park Flora

Palmer's list for the flora of George Washington Carver NM identified 663 distinct taxa. Fifty-six taxa have undergone nomenclatural changes and have either been elevated to species status or "clumped" with other species, subspecies, or varieties bringing the revised number of Palmer's taxa to 592. Collections made during the 1990's re-documented 385 of Palmer's taxa. For this study (which, for the purposes of confirming Palmer's list, included the work conducted in the 1990's by Jones and Ross), 88 additional taxa from the list were documented, bringing the total re-documented taxa to 472 of Palmer's 592 taxa. This means that 124 taxa from Palmer's flora have yet to be documented (45 were not originally represented by a Palmer specimen).

A total of 178 taxa (species) have been documented by specimen since 1994 that were not recorded by Palmer (170 specimens were collected for this project-most were either vouchers for Palmer's taxa or new to the Monument). Attempts were made to re-document species found in the 1990's, with variable success. Many of these species are now regularly occurring in the Monument, but several others were not re-located for this project.

As a result of this inventory and a revision of Palmer's list, the flora of George Washington Carver NM is represented by 645 taxa (see Appendix 1). The Asteraceae, Poaceae, Cyperaceae, and Fabaceae comprised the most taxa (93, 83, 44, and 40 respectively). Of these, 114 are non native taxa and represent 35 families. Ninety one of Palmer's taxa were not confirmed in any later research and are thus listed as "Status Uncertain" (Appendix 2); 31 of Palmer's taxa are not known to occur at the Monument and are thus listed as "Excluded" (Appendix 3).

Species of concern

The most recent data (Missouri Department of Conservation 2004) was consulted for this project to determine which species were worthy of treatment as endangered or threatened. No plants listed as federally endangered or threatened were found at the Monument. However, a few species present are listed as species of concern by the State of Missouri. Interestingly, all but one (*Carex texensis*) were not listed by Palmer: buffalograss (*Buchloe dactyloides*) – S1 (critically imperiled), Texas sedge (*Carex texensis*) – S1 (critically imperiled), coco grass (*Cyperus compressus*) – SU (possibly in peril; status uncertain), Nuttall tick-treefoil (*Desmodium nuttallii*) – S3 (rare and uncommon), and lance-like spikerush (*Eleocharis lanceolata*) – S1 (critically imperiled)(see Figure 2).

Discussion

A total of 255 taxa on Palmer's list are not present in Palmer's park herbarium collection. This was the reason for much of the "modern" collection in the 1990's: to further document Palmer's work. Due to Palmer's extensive history of documentation by specimen, the reason for these omissions is unclear. Attempts were made by the author during the 1990's to check with other herbaria in Missouri and Kansas to determine whether any of the park-collected specimens ended up in other collections, but little progress was made. Now that many herbaria are becoming computerized, this may be a worthy project of future pursuit. Most importantly, despite the fact that many were found for this study, taxa not represented by Palmer specimen were considered, in some cases, to be less worthy of consideration for inclusion in the revised flora and, in fact, made the acceptance of the original record questionable.

Several taxa were found in Palmer's herbarium collection at the park that are not included on Palmer's flora. These taxa, 21 in all (20 species, and one infra-taxon), were checked for correctness and added to Palmer's "list" for the purpose of this study. During checking of the Palmer herbarium specimens for this study, a few specimens were clearly misidentified by Palmer. This resulted in a deletion and/or substitution for some of Palmer's reported species.

New tract: Although it is unknown whether Palmer would have surveyed the 12.2 ha (30 ac) tract during his study, the author decided to survey it for this project for two reasons: it was a good opportunity to assess the flora of the site while newly acquired (in case there were any rare or, conversely, problem species) and the recent land use patterns of the site appear to fit the conditions described by Palmer in some areas of the Monument in the late 1950's (i.e. heavily disturbed by agricultural use). An assessment of the site is included as Appendix 4.

Areas of special concern

Any cursory study of the region will reveal that the use history and botanical makeup of George Washington Carver NM reveal it to be anything but a "pristine" natural area. However, specific surveys conducted during the 1990's, in addition to observations made by the author in the course of field work for this study, have shown that several areas of the Monument deserve attention and protection. Any management or development plans involving these areas should keep these factors in mind. Of particular interest are wet prairie areas, Williams Pond, and Harkins (see figure 2, as described below).

1. Wet prairie areas –located in southwest prairie unit 5, west unit 6, and in the south-central unit 3, these are particularly notable due to the diversity of plants that are only found in damp areas. Typically, these areas remain either with standing water or with wet soil for most of the year (with a normal drying during the summer drought season). Many species of *Carex, Cyperus,* grasses, and even forbs are found *only* in these areas.

2. Williams Pond –although an artificially created impoundment, this site has become the "repository" for some of the most unique plants in the Monument. These include 13 species found exclusively at the pond: water starwort (*Callichtriche heterophylla*), coontail (*Ceratophyllum demersum*), fall witchgrass (*Digitaria cognata*), several species of spikerush

(*Eleocharis acicularis, Eleocharis erythropoda [calva]*, *Eleocharis obtusa*), autumn fimbristylis (*Fimbristylis autumnalis*), rush (*Juncus diffusissimus*), naiad (*Najas guadalupensis*), fog fruit (*Phyla lanceolata*), pondweed (*Potamogeton crispus*), marsh water cress (*Rorippa palustris*), and horned pondweed (*Zanichellia palustris*). Others typical plants found at the pond are: mud water starwort (*Callichtriche terrestris*), barnyard grass (*Echinochloa crus-galli*), eclipta (*Eclipta prostrata*), spikerush (*Eleocharis verrucosa*), duckweed (*Lemma minor*), chapman bluegrass (*Poa chapmannia*), smartweed (*Polygonum punctatum*), and water cress (*Rorippa nasturtium-aquaticum*).

3. Harkins – located in the northwest corner of the Monument, this area of woodland is the least disturbed in the Monument. It is also the area that receives the least attention. As shown in tree survey work (Jones 1997), the makeup of the forest is markedly different from the rest of the Monument. In addition, several plant species have *only* been recorded from this area. Examples include white ash (*Fraxinus americana*), mad dog skullcap (*Scuttelaria lateriflora*), small passionflower (*Passiflora lutea*), monkeyflower (*Mimulus alatus*), ground ivy (*Glechoma hederacea*), and Palmer hawthorn (*Crataegus palmeri*).

Conclusion

Over its history, management planning (or lack thereof) has resulted in a variety of interesting practices. Although no flora exists in a vacuum, that of George Washington Carver NM has changed with the whim of management. Initially an active farm during its early years, some elements (such as grazing and possibly cropping) continued until the 1980's. This practice was discontinued by the time extensive floral surveys were conducted in the 1990's, but prairie restoration was already well underway. The following areas should be the focus of future management.

1. Prairie areas – Restoration and management in recent years have been minimal, and planting and management begun in the 1980's has resulted in some areas (notably units 5, 6, and 7) with a thick monoculture of mainly 3 or 4 types of warm season grass. If a current Prairie Restoration Plan exists, it should be consulted to see if any provisions were put in it for maintaining a better mix of plants.
2. Carver Trail plantings – In recent years, a "landscaping" project along the newly re-routed section at the beginning of the trail resulted in the planting of several species that were previously not native to, or found in, the Monument. The project apparently did not come with a provision of continual maintenance, as evident in the amount of weeds that have since grown up in this area. Many of the plants are now difficult to see. It is not clear whether any management plan existed for this area of the park prior to the start of the "landscaping" project (or even the trail re-routing itself). It is recommended that either the area either be cleared of these plants (since most did not occur in the area to begin with) or be regularly maintained and marked as some sort of "garden" to separate it from the natural surroundings.
3. New Tract – This new property is heavily overgrazed due to past use and to the inability of the staff to keep cattle from the property. Until this situation is changed, impacts will continue to occur. One recommendation is that it could function under an arrangement similar to that used in past decades, where grazing is allowed and controlled by permit under a special management plan. In the latter option, the use of the area by livestock could be better managed and its impacts monitored via comprehensive range surveys. This would not only provide valuable data on the impacts of grazing, but it would also provide a smoother transition of ownership and strengthen public relations. Alternatively, this property could be added to any revised Prairie Management Plan. A more detailed assessment of the tract is included as Appendix 4.

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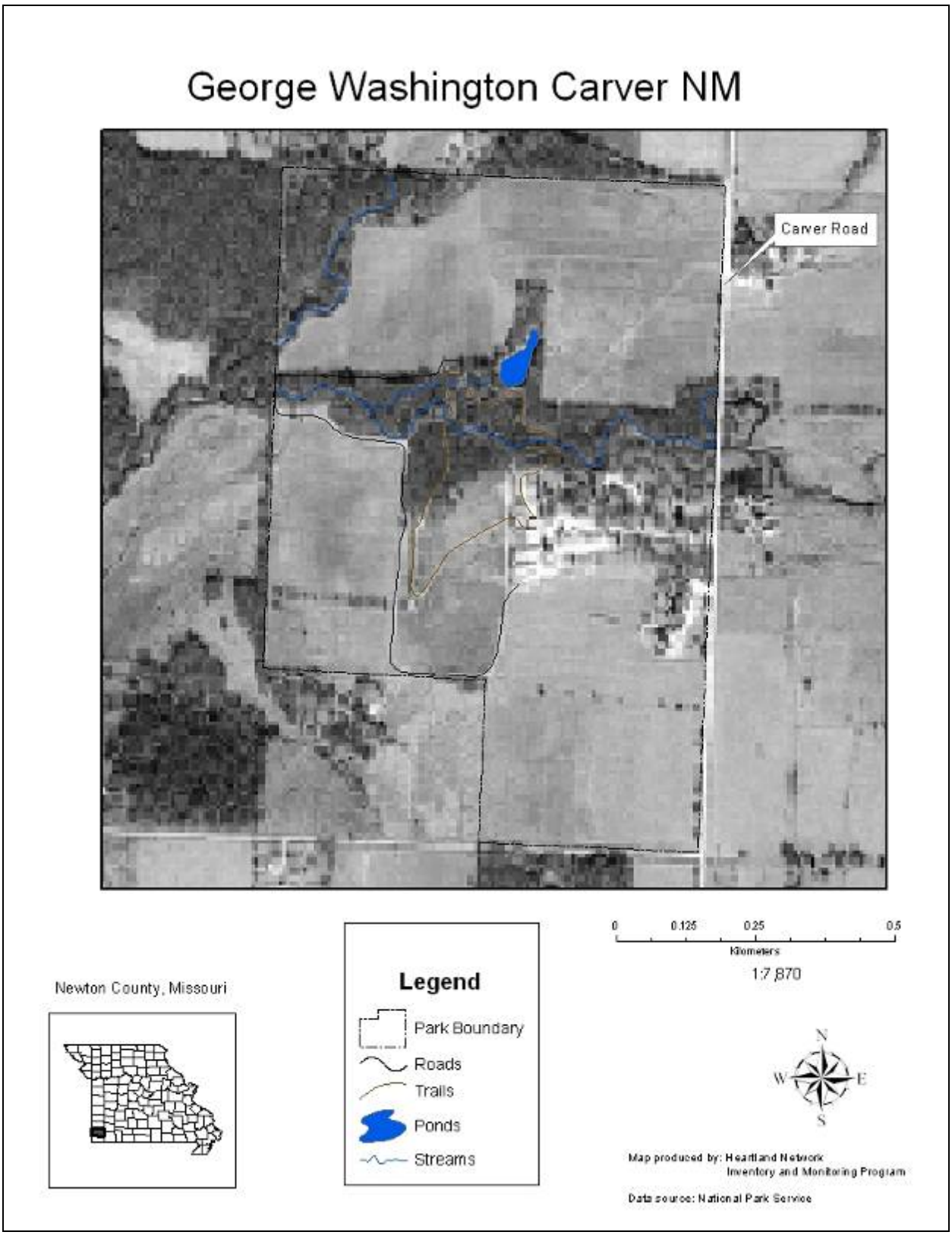


Figure 1. Location of George Washington Carver NM, Newton County, Missouri.

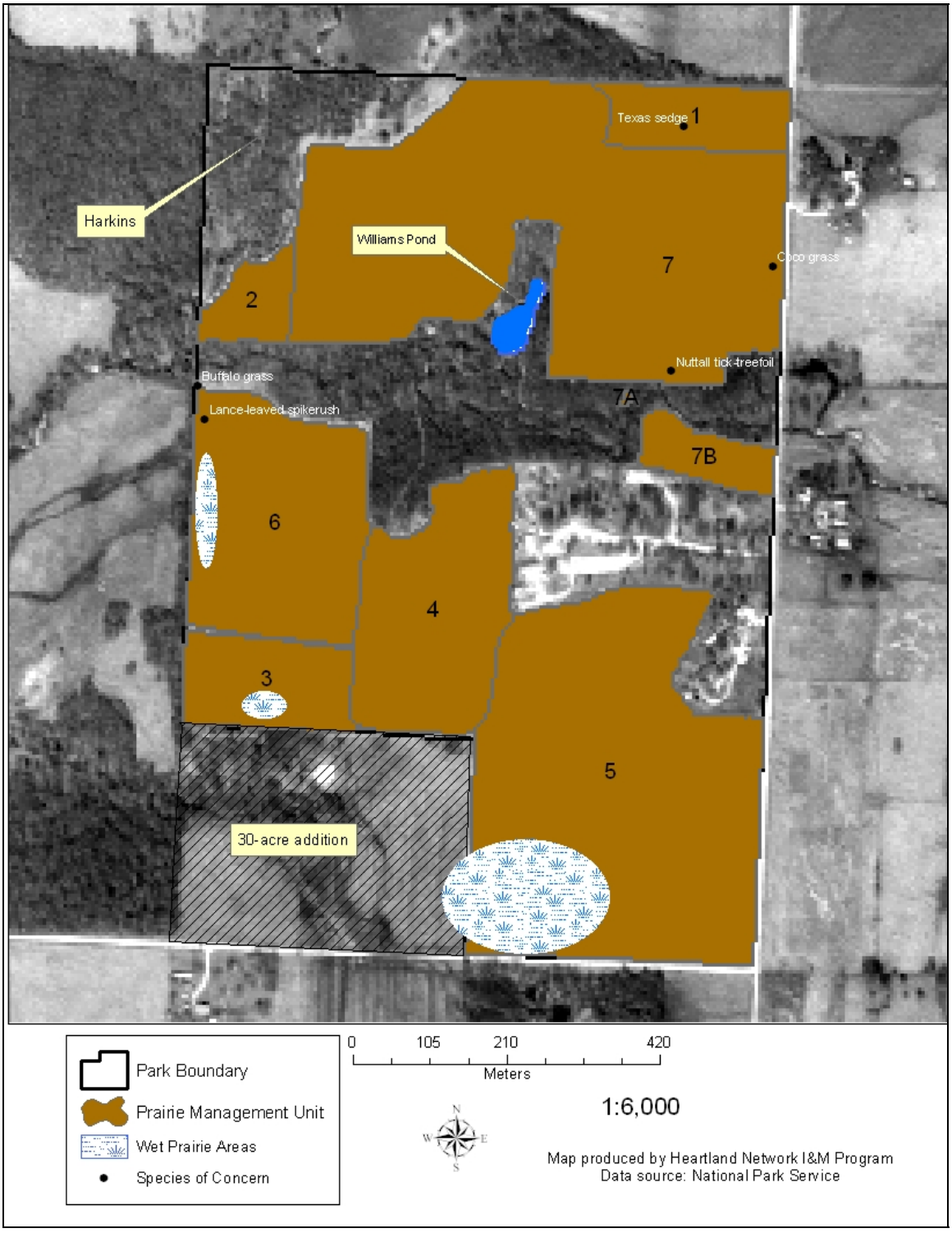


Figure 2. Location of areas of special concern at George Washington Carver NM.

Appendix 1. Revised Flora of George Washington Carver NM (December 2004).
The revised flora is based on this inventory as well as specimens obtained from Jones (1997), Palmer (1964), and an unpublished, revised flora produced for the park's files in 1997 by Jones based on specimen documentation from 1994-1998.

Note: The following Flora follows an alphabetical order, first by family, then by species. Each name is given a taxon number and comments. Entries preceeded with ♦ indicate a non-native taxon. Infraspecies have been noted.

ACANTHACEAE

1	Dicliptera brachiata (Pursh) Sprengel. Dicliptera	Uncommon.	Near Carver spring.	
2	Ruellia humilis Nutt. hairy false petunia.	Common		
3	Ruellia strepens L. tall false petunia.	Common		

ACERACEAE

4	♦Acer ginnala Maxim. Amur maple	Rare. Near birthplace cabin.		
5	Acer negundo L. Boxelder. var. texanum	Common	common throughout in woods	
6	♦Acer platanoides L. Norway maple	Rare. Development subzone.		
7	Acer rubrum L. Red Maple	Rare	Development subzone.	
8	Acer saccharinum L. silver maple, soft maple.	Uncommon	east Carver branch streambed	
9	Acer saccharum Marshall. Sugar maple	Rare	Development subzone.	

ALISMATACEAE

10	Alisma subcordatum Raf. water plantain.	Rare	Found only on 30-acre tract	
11	Sagittaria latifolia Willd. Broadleaved arrowhead.	Rare	Williams Br. Near Carver House	

AMARANTHACEAE

12	Amaranthus albus L. Tumbleweed	Uncommon	boneyard	
13	Amaranthus hybridus L. wild beet.	Rare	boneyard	
14	Amaranthus retroflexus L. green amaranth	Rare	northeast unit 1	
15	Amaranthus rudis J. Sauer. western waterhemp.	Rare	boneyard	
16	♦Amaranthus spinosus L. thorny amaranth.	Rare	30-acre tract along dirt road	

ANACARDIACEAE

17	Rhus copallina L. winged sumac.	Common	fairly common in open areas	
18	Rhus glabra L. smooth sumac.	Common	fairly common in open areas	
19	Toxicodendron radicans (L.) Kuntze. poison ivy.	Common	fairly common throughout woodlands	

ANNONACEAE

20	Asimina triloba (L.) Dunl. pawpaw.	Rare	Carver trail at big boardwalk	

APIACEAE

21	Chaerophyllum tainturieri Hook. Tx wild chervil.	Uncommon		
22	Cicuta maculata L. spotted cowbane.	Rare		
23	♦Conium maculatum L. Poison hemlock	Rare		
24	Cryptotaenia canadensis (L.) DC. hornwort.	Uncommon		
25	♦Daucus carota L. Queen Anne's lace.	Uncommon		
26	Daucus pusillus Michx. wild carrot.	Occasional	West Unit 3 upland	
27	Eryngium yuccifolium Michx. button snakeroot.	Uncommon	Unit 2	
28	Osmorhiza longistylis (Torrey) DC. Anise root	Rare		
29	Ptilimnium nuttallii (DC) Britt. mock bishopweed.	Uncommon		
30	Sanicula canadensis L. Canada black snakeroot.	Uncommon		
31	Sanicula odorata (Raf.) Pryer & Phillipe. black snakeroot.	Common		
32	♦Torilis arvensis (Huds.) Link. hemlock chervil.	Abundant		
33	Zizia aurea (L.) Koch. Golden alexanders	Rare	Northeast conrer of Unit 1.	

APOCYNACEAE

34	Amsonia illustris Woodson, Blue star	Uncommon	Northeast corner of Unit 1.	
35	Amsonia tabernaemontana Walt.Gattinger's am.	Uncommon		
36	Apocynum canabinum L. var. pubescens (Mitchell) A. DC. Downy dogbane or Indian hemp			Infraspecies
36	Apocynum cannabinum L. indian hemp.	Common		

APOCYNACEAE, (cont.)

37 Apocynum sibiricum Jacq. Sessileleaved dogbane. Common

AQUIFOLIACEAE

38 Ilex decidua Walt. Possumhaw, deciduous holly. Rare west edge unit 5 at fence

ARACEAE

39 Arisaema dracontium (L.) Schott. green dragon. Rare near boy Carver statue

ARALIACEAE

40 ♦Hedera helix L. English ivy Rare Development Subzone, apartments.

ASCLEPIADACEAE

41 Asclepias amplexicaulis Sm. Bluntleaved milkw. Uncommon
42 Asclepias hirtella (Penn.) Woodson roughleaved milkw. Uncommon
43 Asclepias incarnata L. swamp milkweed. Rare
44 Asclepias purpurascens L. purple milkweed. Uncommon
45 Asclepias syriaca L. Common milkweed Common
46 Asclepias tuberosa L. Butterflyweed. Uncommon
47 Asclepias verticillata L. Whorled milkweed Rare
48 Asclepias viridiflora Raf. Greenflowered milkw. Common
49 Asclepias viridis Walter. Green-flowered milkweed Rare
50 Cynanchum laeve (Michaux) Pers. Vine Milkweed Rare Unit 1, north boundary fence.
51 Gonolobus gonocarpus (Walter) Perry, Angle pod Rare Near boy Carver statue.

ASPLENIACEAE

52 Asplenium platyneuron (L.) Oakes. ebony spl. Uncommon Harkins woodland slopes

ASTERACEAE

53 Achillea millefolium L. yarrow. Abundant
53 Achillea millefolium L. forma roseum Rand & Redf. Infraspecies
53 Achillea millefolium L. var. lanulosa (Nutt.) Piper ex Piper & Beattie Infraspecies of A. millefolium
54 Ambrosia artemisiifolia L. common ragweed. Common
55 Ambrosia bidentata Michx. Lancel. ragweed. Uncommon
56 Ambrosia psilostachya DC. Western ragweed Rare Unit 4 near cemetery.
57 Ambrosia trifida L. Horseweed. Common specimen not found
58 Amphiachyris dracunculoides (DC.) Nutt. Broom snakeroot Rare 30-acre tract.
59 ♦Arctium minus (Hill) Benth. & Schkuhr. burdock. Rare 30-acre tract.
60 Artemisia ludoviciana Nutt. western mugwort. Common
61 Aster cordifolius L. ssp. sagittifolius (Wedemeyer ex Willd.) A. G. Jones Uncommon
62 Aster drummondii Lindl. Drummond's aster. Uncommon Now a separate species
63 Aster ericoides L. heath aster. Common
64 Aster fragilis Willd. var. subdumosus (Wieg.) A. G. Jones sm wht ast. Status uncertain
65 Aster lanceolatus Willd. Aster Uncommon
66 Aster oolentangiensis Riddell. Skyblue aster. Uncommon
67 Aster patens Ait. late purple aster. Common
68 Aster pilosus Willd. white heath aster. Common
69 Aster praealtus Poir. Willowleaved aster. Uncommon
70 Aster urophyllus Lindley. Aster Rare
71 Bidens aristosa (Michx.) Britton. Tickseed sunfl. Uncommon
72 Bidens bipinnata L. Spanish needles. Uncommon
73 Bidens cernua L. nodding beggarticks. Uncommon Harkins streambed.
74 Bidens frondosa L. common beggarticks. Common Harkins streambed.
75 Boltonia asteroides (L.) L'Her. var. latisquama (A. Gray) Cronq. Rare 30-acre tract, central wet area.
76 Brickellia eupatorioides (L.) Shinners false bone. Common
77 ♦Carduus nutans L. Musk thistle Uncommon
78 Chrysopsis pilosa Nutt. golden aster. Abundant
79 Cirsium altissimum (L.) Spreng. tall thistle. Common
80 Cirsium discolor (Muhl.) Spreng. field thistle. Uncommon
81 Cirsium undulatum (Nutt.) Sprengel. Wavy-leaved thistle Rare
82 ♦Cirsium vulgare (Savi.) Ten. bull thistle. Uncommon
83 Conyza canadensis (L.) Cronq. Canada fleabane. Common
84 Coreopsis grandiflora Hogg. Largefl coreopsis. Uncommon East Unit 1.
85 Coreopsis tripteris L. Tall coreopsis Rare West Unit 3 upland.
86 Echinacea pallida (Nutt.) Nutt. Pale purple coneflower Uncommon
87 Echinacea purpurea (L.) Moench. Purple coneflower Uncommon Near walnut fence row.

ASTERACEAE, (cont.)

88 Eclipta prostrata (L.) L. eclipta. Uncommon Williams pond.
89 Elephantopus carolinianus Willd. elephant's foot. Abundant
90 Erechtites hieracifolia (L.) Raf. fireweed. Uncommon
91 Erigeron annuus (L.) Pers. annual fleabane. Abundant
92 Erigeron philadelphicus L. Philadelphia fleabane Rare
93 Erigeron strigosus Muhl. daisy fleabane. Common
94 Eupatorium altissimum L. tall thoroughwort boneset. Uncommon
95 Eupatorium coelestinum L. Mistflower. Common
96 Eupatorium rugosum Houtt. white snakeroot. Common
97 Eupatorium serotinum Michaux. Boneset Rare
98 ♦Galinsoga quadriradiata Ruiz Lopez & Pavon. galinsoga. Uncommon
99 Gamochaeta purpurea (L.) Cabrera purple cudweed. Common
100 Gnaphalium obtusifolium L. Bluntleaved everlasting. Common
101 Helenium amarum (Raf.) Rock. bitterweed, yellow dog fennel. Rare 30-acre tract.
102 Helenium autumnale L. sneezeweed. Occasional 30-acre tract.
103 Helenium flexuosum Raf. Sneezeweed Rare South-central Unit 3.
104 Helianthus grosseserratus Martens. Sawtooth sunflower. Common
105 Helianthus hirsutus Raf. rough sunflower. Uncommon
106 Helianthus maximilianii Schrader. Maximillian sunflower Uncommon
107 Helianthus mollis Lam. Ashy sunflower Common
108 Helianthus tuberosus L. Jerusalem artichoke. Rare
109 Heliopsis helianthoides L. Common
109 Heliopsis helianthoides (L.) Sweet var. scabra. (Dunal) Fern. Rough ox-eye Infraspecies
110 Hieracum longipilum Torr. Longhaired hawkweed. Uncommon
111 Iva annua L. Marsh elder Rare Near statue.
112 Krigia caespitosa (Raf.) Chambers. small dandelion. Uncommon
113 Krigia dandelion (L.) Nutt. Dwarf dandelion Rare
114 Krigia virginica (L.) Willd. dwarf dandelion. Uncommon
115 Lactuca canadensis L. Canada wild lettuce. Common
116 Lactuca floridana (L.) Gaertn. Florida wild lettuce. Uncommon
117 ♦Lactuca saligna L. Willowleaved wild lettuce. Uncommon
118 ♦Lactuca serriola L. prickly wild lettuce. Common
118 ♦Lactuca serriola L. f. integrifolia (Gray) Prince & R. Carter prickly lettuce Infraspecies
119 ♦Leucanthemum vulgare Lam. Oxeye daisy. Abundant
120 Liatris pycnostachya Michaux. Button snakeroot Rare
121 ♦Matricaria discoidea DC. Pineappleweed. Rare Maintenance yard.
122 Pyrrhopappus carolinianus (Walt.) DC. false dandelion. Uncommon
123 Ratibida pinnata (Vent.) Barnh. prairie coneflower. Uncommon
124 Rudbeckia hirta L. Blackeyed Susan. Abundant
125 Rudbeckia subtomentosa Pursh. Sweet coneflower Uncommon Southwest Unit 5.
126 Rudbeckia triloba L. Browneyed Susan. Common
127 Senecio obovatus Muhlenb. ex Willd. Squaw weed, groundsel Rare Southwest Carver woods.
128 Silphium integrifolium Michx. Entireleaved rosinweed. Rare West Unit 3 upland.
129 Silphium laciniatum L. Compass plant, rosinweed Rare Near cemetery.
130 Silphium perfoliatum L. Cupplant. Uncommon North of picnic area.
131 Solidago altissima L. tall goldenrod. Common
132 Solidago canadensis L. Canadian goldenrod Common
133 Solidago gigantea Ait. late goldenrod. Common
134 Solidago hispida Muhlenb. ex Willd. Goldenrod Rare
135 Solidago missouriensis Nutt. Goldenrod Rare
136 Solidago nemoralis Dryander var. nemoralis. Old field goldenrod Rare
137 Solidago radula Nutt. Uncommon East Unit 1.
138 ♦Taraxacum officinale Weber. common dandelion. Abundant
139 ♦Tragopogon dubius Scop. Goat's beard Common
140 Verbesina alternifolia (L.) Britton. Yellow ironweed Uncommon
141 Verbesina helianthoides Michx. yellow crownbeard. Common East Unit 4.
142 Verbesina virginica L. white crownbeard. Common
143 Vernonia arkansana DC. great ironweed. Common
144 Vernonia baldwinii Torr. Baldwin's ironweed. Common
145 Vernonia missurica Raf. Missouri ironweed. Uncommon
146 Xanthium strumarium L. cocklebur. Rare 30-acre tract.

BALSIMINACEAE

147 Impatiens capensis Meerb. Redflowered jewel weed. Uncommon near Carver house

BERBERIDACEAE

148 Podophyllum peltatum L. mayapple. Common fairly common throughout in woods

BETULACEAE

149 Corylus americana Walt. hazelnut. Rare west unit 3 at fence

150 Ostrya virginiana (Miller) K. Koch. Ironwood, eastern hophornbeam Rare Development Subzone.

BIGNONIACEAE

151 Campsis radicans (L.) Seemann. Trumpet creeper Common

BORAGINACEAE

152 ♦Buglossoides arvense (L.) I.M. Johnston. Corn gromwell Uncommon

153 Hackelia virginiana (L.) I.M. Johnston. stickseed. Rare 30-acre tract.

154 Myosotis verna Nutt. Scorpiongrass. Common North Unit 5.

BRASSICACEAE

155 ♦Barbarea vulgaris R. Br. yellow rocket. Common

156 ♦Capsella bursa-pastoris (L.) Medic. shep's purse. Uncommon maintenance yard

157 Cardamine parviflora L. var. arenicola (Britt.) O.E. Schulz Uncommon

158 Draba brachycarpa Nutt. Shortfruited whitlowgrass. Uncommon s.e. unit 5

159 ♦Lepidium campestre (L.) R. Br. Field cress, cow cress Rare

160 Lepidium densiflorum Schrad. apetalus peppergrass. Uncommon mowed area near Admin.

161 Lepidium virginicum L. tonguegrass, peppergrass. Common service road n.e. unit 6

162 ♦Rorippa nasturtium-aquaticum (L.) Hayek. Water cress Common

163 Rorippa palustris (L.) Bess. ssp. glabra (Schultz) Stuckey. var. fernaldiana (Butters & Abbe) Stuckey marsh water cress. Rare. Williams pond

164 Rorippa sessiliflora (Nutt. ex Torrey & A. Gray) A. Hitchc. Yellow cress Rare

165 Sibara virginica (L.) Rollins. Virginia rockcress. Uncommon

CAESALPINIACEAE

166 Cercis canadensis L. redbud. Common fairly common throughout in woods

167 Chamaecrista fasciculata (Michaux) E. Greene showy patridge pea. Common west unit 3 upland

168 Gleditsia triacanthos L. honey locust. Common fairly common throughout in woods

169 Gymnocladus dioica (L.) K. Koch. Kentucky coffee tree. Uncommon. Development Subzone and near statue.

170 Senna marilandica L. wild senna. Uncommon unit 2

CALLITRICHACEAE

171 Callitriche heterophylla Pursh. water starwort. Rare Williams pond

CAMPANULACEAE

172 Lobelia cardinalis L. Cardinalflower. Rare East end of Carver branch by culvert.

173 Lobelia inflata L. indian tobacco. Rare Near large boardwalk.

174 Lobelia siphilitica L. blue lobelia. Rare Between Williams pond and Carver house.

175 Lobelia spicata Lam. Palespike lobelia. Rare Just west of walnut fence row.

176 Triodanis biflora (R & P) Greene. small venus' lookingglass. Common

177 Triodanis perfoliata (L.) Nieuw. Venus' lookingglass. Common

CANNABACEAE

178 Humulus lupulus L. hops. Rare Harkins, s.-c. in clearing

CAPRIFOLIACEAE

179 ♦Lonicera japonica Thunb. Japanese honeysuckle. Abundant

180 Sambucus canadensis L. elderberry. Uncommon

181 Symphoricarpos orbiculatus Moench. indian currant, buck brush. Abundant

182 Viburnum prunifolium L. northern blackhaw. Uncommon Just past Carver house.

183 Viburnum rufidulum Raf. southern blackhaw. Common

CARYOPHYLLACEAE

184 ♦Arenaria serpyllifolia L. Thymeleaved sandwort. Uncommon cemetery

185 ♦Cerastium brachypetalum Pers. Chickweed Occasional

186 Cerastium brachypodum (Engelm. Ex Gray) Robinson. Chickweed Occasional

187 Cerastium glomeratum Thuill. sticky mseear. Uncommon Williams pond

188 ♦Dianthus armeria L. depford pink. Abundant west of walnut fence row

189 ♦Holosteum umbellatum L. Jagged chickweed Occasional Along east boundary fence.

CARYOPHYLLACEAE (cont.)

190 ♦Saponaria officinalis L. bouncing bet. Rare Harkins at west boundary
191 Silene regia Sims. royal catchfly. Uncommon south unit 4
192 Silene stellata (L.) Ait. f. starry campion. Common Carver trail by big boardwalk
193 ♦Stellaria media (L.) Cyr. common chickweed. Common Harkins, along stream

CELASTRACEAE

194 Celastrus scandens L. bittersweet. Uncommon south edge unit 5 at fence
195 Euonymus atropurpureus Jacq. Burningbush, wahoo. Uncommon Harkins woods
196 ♦Euonymus fortunei (Turcz.) Hand.-Mazz. Wintercreeper. Uncommon. Scattered in woods.

CERATOPHYLLACEAE

197 Ceratophyllum demersum L. hornwort. Rare Williams pond

CHENOPODIACEAE

198 ♦Chenopodium album L. lamb's quarters. Uncommon maintenance yard
199 ♦Chenopodium ambrosioides L. mexican tea. Uncommon northeast unit 1 at culvert
200 Chenopodium berlandieri Moq. Goosefoot Uncommon
201 Chenopodium standleyanum Aellen. Goosefoot Rare

CLUSIACEAE

202 Hypericum drummondii (Grev. & Hook.) T. & G. Drummond's St. John's wort. Uncommon
203 Hypericum mutilum L. dwarf St. John's wort. Uncommon Unit 7 north of Carver house.
204 ♦Hypericum perforatum L. Common St. John's Wort Uncommon
205 Hypericum pseudomaculatum L. dotted St. John's wort. Uncommon
206 Hypericum punctatum Lam. dotted St. John's wort. Common
207 Hypericum sphaerocarpum Michx. roundfruited St. John's wort. Uncommon

COMMELINACEAE

208 Commelina carolinana Walt. Carolina dayflower Uncommon
209 ♦Commelina communis L. common dayflower. Uncommon bed of Harkins branch
210 Commelina erecta L. upright dayflower. Common lawn by apartments
211 Tradescantia ohiensis Raf. common spiderwort. Uncommon west unit 3

CONVOLVULACEAE

212 Calystegia sepium (L.) R. Br. Hedge bindweed Uncommon Northwest Unit 5.
213 ♦Convolvulus arvensis L. small bindweed. Abundant
214 ♦Ipomoea hederacea (L.) Jacq. blue morningglory, bindweed. Uncommon
215 Ipomoea lacunosa L. Small morning glory Uncommon Boneyard; propane tanks.
216 Ipomoea pandurata (L.) Mey. Manoftheearth, wild potato vine. Uncommon

CORNACEAE

217 Cornus amomum Mill. ssp. obliqua (Raf.) J. Wilson swamp dogw. Uncommon
218 Cornus drummondii Mey. Roughlv dogwood. Uncommon
219 Cornus florida L. Flowering dogwood Rare Development Subzone and in woods by statue.

CUPRESSACEAE

220 Juniperus virginiana L. red cedar. Uncommon Scattered in woodlands

CUSCUTACEAE

221 Cuscuta campestris Yunker. Dodder Rare
222 Cuscuta coryli Engelm. Hazel dodder Rare
223 Cuscuta pentagona Engelm. Lovevine, dodder. Rare
224 Cuscuta polygonorum Engelm. smartweed, dodder. Rare

CYPERACEAE

225 Carex amphibola Steud. sedge. Uncommon west unit 6, wet area
226 Carex annectens (E. Bickn.) E. Bickn. var. xanthocarpa (E. Bickn.) Wieg. Occasional
227 Carex blanda Dewey. charming sedge. Uncommon southwest unit 5
228 Carex brevior (Dewey) Mack. fescue sedge Rare southwest unit 5
229 Carex bushii Mackenzie Common
230 Carex cephalophora Muhl. Ovalheaded sedge. Uncommon northwest unit 5
231 Carex conjuncta Boott. Sedge Rare
232 Carex davisii Schwein & Torr. Davis' sedge. Common north of picnic area, shady area

CYPERACEAE (cont.)

233 Carex festucacea Schk. fescue sedge. Uncommon southwest unit 5
234 Carex frankii Kunth. Frank's sedge. Uncommon southwest unit 5
235 Carex granularis Muhl. medow sedge. Uncommon southwest unit 5
236 Carex gravida Bailey. heavy sedge. Rare southeast unit 7
237 Carex hirsutella Mack. Rough-leaved sedge Rare
238 Carex jamesii Schwein. Sedge Uncommon Near “persimmon grove”.
239 Carex leavenworthii Dewey. Leavenworth's s. Uncommon southwest unit 5
240 Carex lurida Wahl. sallow sedge. Rare Williams Br. Near Carver House
241 Carex molesta Mack. troublesome sedge. Uncommon northwest unit 5
242 Carex muehlenbergii Schk. Common southeast unit 4
242 Carex muehlenbergii Schk. var. enervis Boott. Muhlenberg's sedge Infraspecies N/a
243 Carex retroflexa Muhl. Uncommon north of picnic area, shady area
244 Carex rosea Schk. ex Willd. Sedge Rare
245 Carex scoparia Schk. ex Willd. Common
246 Carex shortiana Dewey. Short's sedge. Uncommon southwest unit 5
247 Carex texensis (Torr.) Bailey. Texas sedge Rare Central Unit 1.
248 Carex vulpinoidea Michx. fox sedge. Common west unit 6, wet area
249 Cyperus acuminatus Torr. & Hook. Sharppointed cyperus. Uncommon west-central unit 6
250 Cyperus compressus L. Coco grass Rare
251 Cyperus echinatus (L) Alph. Wood. Eggshaped cyperus. Abundant common throughout in open areas
252 Cyperus esculentus L. yellow nut grass. Rare boneyard
253 Cyperus lancastriensis Porter. Lancaster cyperus. Uncommon unit 3, wet area
254 Cyperus lupulinus (Sprengel) Marcks Occasional. 30-acre tract, mud flats
254 Cyperus lupulinus (Sprengel) Marcks ssp. macilentus (Fern.) Marcks Infraspecies N/a
255 Cyperus pseudovegetus Steudel. marsh cyperus. Uncommon unit 3, wet area
256 Cyperus squarrosus L. Occasional 30-acre tract, wet area
257 Cyperus strigosus L. Strawcolored cyperus. Uncommon unit 3, wet area
258 Eleocharis acicularis (L.) R. & S. needle spikerush. Rare Williams pond
259 Eleocharis erythropoda Steud. bald spikerush. Rare Williams pond
260 Eleocharis lanceolata Fern. Spikerush Rare Northwest Unit 6, in ditch.
261 Eleocharis macrostachya Britton. Rare
262 Eleocharis ovata (Roth) Roem. & Schult. Rare Williams pond
264 Eleocharis palustris L. Rare s.w. unit 5
265 Eleocharis verrucosa (Svenson) L. Harms Rare
266 Fimbristylis autumnalis (L.) R. & S. Fern. autumn fimbristylis. Rare Williams pond
267 Scirpus cyperinus (L.) Kunth Common
268 Scirpus pendulus Muhlenb. ex Elliot. reddish bulrush. Uncommon s.w. unit 5
269 Scleria pauciflora Muhlenb. var. caroliniana (Willd.) Alph. Wood. Nut rush Rare

DIPSACACEAE

270 ♦Dipsacus fullonum L. Common teasel Rare. North Unit 6.

DRYOPTERIDACEAE

271 Woodsia obtusa (Spreng.) Torr. Wood's fern. Uncommon Harkins woodland slopes

EBENACEAE

272 Diospyros virginiana L. persimmon. Uncommon
272 Diospyros virginiana L. var. platycarpa Sarg. Broad-fruited early persimmon Infraspecies

EUPHORBIACEAE

273 Acalypha ostryifolia Riddell. Three-seeded mercury Rare
274 Acalypha rhomboidea Raf. common threeseeded Common along north boundary of Harkins
275 Acalypha virginica L. Virginia threeseeded Uncommon east-central unit 6
276 Chamaesyce maculata (L.) Small. milk purslane. Common boneyard
277 Chamaesyce nutans (Lag.) Small. nodding spurge. Uncommon north unit 5
278 Croton capitatus Michx. Goatweed, hogwort. Common fairly common throughout open areas
279 Croton glandulosus L. var. septentrionalis Muell. Arg. glandular hogwort. fairly common throughout open areas
280 Croton monanthogynus Michx. Prairietea. Common fairly common throughout open areas
281 Euphorbia corollata L. flowering spurge. Uncommon n.w. unit 5
282 Euphorbia dentata Michx. toothed spurge. Common maintenance yard
283 Phyllanthus caroliniensis Walt. Carolina phyllanthus. Occasional central unit 6 in wet area
284 Tragia betonicifolia Nutt. noseburn, stinging spurge. Common fairly common in prairies

FABACEAE

285 Amorpha canescens Pursh. Lead plant Uncommon
286 Amphicarpaea bracteata (L.) Fern. Hogpeanut. Uncommon west unit 3 upland

FABACEAE (cont.)

287 Baptisia alba (L.) Vent. var. macrophylla (Larisey) Isely. White Wild indigo Uncommon
288 Dalea candida Michaux ex Willd. White prairie clover Rare Unit 4 by cemetery.
289 Dalea purpurea Vent. Purple prairie clover Rare Unit 4 by cemetery.
290 Desmodium canescens (L.) DC. hoary beggar's lice. Common s.e. unit 7
291 Desmodium glutinosum (Muhlenb. ex Willd.) Alph. Wood Rare Woods near large boardwalk.
292 Desmodium illinoense Gray. Illinois beggar's lice. Uncommon south edge unit 5 at fence
293 Desmodium nuttallii (Schindler) B. G. Schubert. Tick treefoil Uncommon Southeast Unit 7.
294 Desmodium obtusum (Muhlenb. ex Willd) DC. Tick clover Rare
295 Desmodium paniculatum (L.) DC. diffuse beggar's lice Uncommon unit 2
296 Desmodium sessilifolium (Torr.) Torr. & Gray. Narrowleaved beggar's lice. Uncommon central unit 1
297 ♦Kummerowia stipulacea (Maxim.) Makino Korean clover. Uncommon n. edge unit 6 at service road
298 ♦Kummerowia striata (Thunb.) Schindler. Japanese lespedeza. Uncommon north unit 5 at mow line
299 Lespedeza capitata Michaux. Round-head lespedeza Common
300 ♦Lespedeza cuneata (Dum.-Cors.) Don. Sericea lespedeza Common
301 Lespedeza procumbens Michaux. Trailing bush clover Occasional
302 Lespedeza repens (L.) Barton. Creeping bush clover Occasional
303 Lespedeza stuevei Nutt. Stueve's bushclover. Uncommon west unit 3 upland
304 Lespedeza violacea (L.) Pers. Bushclover. Uncommon southwest Harkins woods
305 Lespedeza virginica (L.) Britton. Slender bush clover Occasional
306 ♦Medicago lupulina L. Black medick Occasional
307 ♦Melilotus albus Medic. white sweet clover. Uncommon n.w. unit 5
308 ♦Melilotus officinale (L.) Lam. yellow sweet clover. Uncommon n.w. unit 5
309 Orbexilum pedunculatum (Miller) Rydb. Sampson's snakeroot Uncommon
310 Robinia pseudoacacia L. Kentucky locust. Uncommon Carver woods west of Carver house
311 ♦Securigera varia (L.) Lassen Crown vetch Uncommon Central Unit 1.
312 Strophostyles helvula (L.) Ell. trailing wild bean. Common east unit 6
313 Strophostyles leiosperma (Torr. & Gray) Piper. Narrowleaved wild bean. Uncommon north-central unit 7
314 Stylosanthes biflora (L.) BSP. Pencilflower. Common west unit 3 upland
315 Tephrosia virginiana (L.) Pers. goat's rue. Uncommon south unit 4
316 ♦Trifolium arvense L. Rabbitfoot Clover Rare Service road near Maintenance yard.
317 ♦Trifolium campestre Schreb. low hopclover. Common n.e. unit 5 at mow line
318 ♦Trifolium dubium Sibth. least hopclover. Common n.e. unit 5 at mow line
319 ♦Trifolium hybridum L. Alsike clover. Uncommon s.w. unit 5
320 ♦Trifolium pratense L. red clover. Common n.w. unit 5
321 ♦Trifolium repens L. white clover. Common DZ
322 ♦Vicia sativa L. Common vetch Common
323 Vicia villosa Roth ssp. varia (Host) Coriere. winter vetch. Common southeast unit 5

FAGACEAE

324 Quercus macrocarpa Michx. bur oak. Uncommon service road w of Carver house
325 Quercus marilandica Muenchh. black jack oak. Rare s edge of woods w of VC
326 Quercus muhlenbergii Engelm. chinquapin oak. Common common throughout in woods
327 Quercus nigra L. Water oak Rare Development Subzone.
328 Quercus palustris Muenchh. Pin Oak Rare Development subzone.
329 Quercus phellos L. Willow oak Rare Development subzone.
330 ♦Quercus prinus L. Chestnut Oak Rare Development subzone, near Visitor Center.
331 Quercus rubra L. Northern Red Oak Rare Development subzone, near VS&RM.
332 Quercus shumardii Buckl. var. schneckii (Britt.) Sarg. Schneck's red oak Occasional west end of Carver branch woods
333 Quercus stellata Wang. post oak. Rare southwest corner of Carver woods near trail; in 1997 study
334 Quercus velutina Lam. black oak. Common fairly common throughout in woods

FUMARIACEAE

335 Corydalis crystallina Engelm. mealy corydalis. Uncommon unit 1 upland
336 Corydalis flavula (Raf.) DC. Pale corydalis Occasional

GENTIANACEAE

337 Gentiana puberulenta J. Pringle. Downy gentian Rare West Unit 3 upland.
338 Sabatia angularis (L.) Pursh. Rosepink. Common East Unit 3.

GERANIACEAE

339 Geranium carolinianum L. Carolina crane's bill. Abundant common along edge of DZ

GROSSULARIACEAE

340 Ribes missouriense Nutt. Missouri gooseberry. Common fairly common throughout in woods

HAMMAMELIDACEAE

341 Liquidambar styraciflua L. Sweetgum Rare Development subzone.

HYDRANGEACEAE

342 ♦Philadelphus coronarius L. Mock orange Rare Boardwalk by statue.

IRIDACEAE

343 ♦Iris germanica L. German iris, blue flag Rare North Unit 6.
344 Sisyrinchium angustifolium Miller. Stout blueeyed grass. Common southwest unit 5
345 Sisyrinchium campestre Bickn. pointed blueeyed grass. Common n. edge unit 6 at woods

JUGLANDACEAE

346 Carya cordiformis (Wang.) K. Koch. Bitternut Uncommon west end of Carver branch woods
347 Juglans nigra L. black walnut. Abundant common throughout in woods

JUNCACEAE

348 Juncus acuminatus Michx. Sharpfruited rush. Common southwest unit 5
349 Juncus biflorus Ell. Twoflowered rush. Uncommon unit 2
350 Juncus brachycarpus Engelm. Rare
351 Juncus diffusissimus Buckl. diffuse rush. Rare Williams pond
352 Juncus dudleyi Wieg. Dudley's rush Rare
353 Juncus effusus L. Bog rush Rare
354 Juncus interior Wieg. midwestern rush. Common southwest unit 5
355 Juncus marginatus Rostk. Grassleaved rush. Uncommon southwest unit 5
356 Juncus secundus Beauv. Onesided sedge. Uncommon west unit 6, wet area
357 Juncus tenuis Willd. slender rush. Common southwest unit 5
357 Juncus tenuis Willd. f. anthelatus (Wieg.) F. J. Herm. Slender rush Infraspecies N/a
358 Juncus torreyi Cov. Rush Uncommon

LAMIACEAE

359 Agastache nepetoides (L.) Ktze. giant hyssop. Rare 30-acre tract.
360 ♦Glechoma hederacea L. Ground ivy Rare North-central Harkins woods, large colony.
361 Hedeoma hispidum Pursh. rough pennyroyal. Rare
362 ♦Lamium amplexicaule L. henbit, deadnettle. Abundant
363 ♦Lamium purpureum L. purple deadnettle. Common
364 Lycopus americanus Muhl. Cutleaved waterhorehound. Uncommon
365 Lycopus virginicus L. Bugleweed Rare
366 ♦Mentha X piperita L. peppermint. Rare
367 Monarda fistulosa L. Horsemint, beebalm. Uncommon
368 ♦Perilla frutescens (L.) Britton. Beefsteak plant Uncommon. Carver trail just past statue.
369 Physostegia angustifolia Fern. False Dragonhead Rare Unit 2.
370 Prunella vulgaris L. selfheal. Common
371 Pycnanthemum tenuifolium Schrad. Narrowleaved mountainmint. Uncommon
372 Salvia azurea Lam. blue sage. Common Unit 4.
373 Scutellaria lateriflora L. Maddog skullcap. Rare Harkins branch at north boundary.
374 Teucrium canadense L. American germander. Common

LAURACEAE

375 Lindera benzoin (L.) Blume. Spicebush Rare Carver woods southeast of “persimmon grove”.
376 Sassafras albidum (Nutt.) Nees. white sassafras. Common fairly common throughout in woods

LEMNACEAE

377 Lemna minor L. small duckweed. Rare Williams pond
378 Spirodela polyrhiza (L.) Schleiden. Duckmeat Rare Williams pond.

LILIACEAE

379 Allium canadense L. wild garlic. Uncommon Carver trail at Williams Br.
380 Allium stellatum Ker Galler. Wild onion Rare
381 ♦Allium vineale L. field garlic. Common northeast corner unit 5
382 Camassia scilloides (Raf.) Cory. wild hyacinth. Rare south unit 4
383 ♦Narcissus pseudonarcissus L. Daffodil Occasional Northwest Harkins woods.

LILIACEAE (cont.)

384 Nothoscordum bivalve (L.) Britt. false garlic. Abundant west boundary at Harkins woods
385 Polygonatum biflorum (Walt.) Ell. var. commutatum (Schultes f.) Morong. Solomon's seal. Uncommon near boy Carver statue
386 Trillium sessile L. Sessileflowered wakerrobin. Common near boy Carver statue

LINACEAE

387 Linum sulcatum Riddell. Grooved flax Rare

LYTHRACEAE

388 Ammannia coccinea Rottb. Largelvd toothcup. Common West Unit 6 wet area.
389 Cuphea viscosissima Jacq. Clammy-weed Uncommon 30-acre tract.
390 Lythrum alatum Pursh. winged loosestrife. Common Southwest Unit 5.

MALVACEAE

391 ♦Abutilon theophrasti Medic. Velvetleaf. Uncommon boneyard
392 Callirhoe digitata Nutt. winecups. Uncommon east unit 1
393 ♦Malva moschata L. Musk Mallow Rare
394 ♦Sida spinosa L. prickly mallow. Common maintenance yard

MENISPERMACEAE

395 Cocculus carolinus (L.) DC. coralbeads. Uncommon n.w. unit 4
396 Menispermum canadense L. moonseed, yellowroot. Uncommon woods east end of Carver branch

MIMOSACEAE

397 Desmanthus illinoensis (Michx.) MacM. false sensitive plant. Uncommon south-central unit 3
398 Schrankia nuttallii (DC.) Standl. sensitive briar. Common unit 4 along trail

MOLLUGINACEAE

399 ♦Mollugo verticillata L. Carpetweed. Common housing/maintenance yard

MORACEAE

400 ♦Maclura pomifera (Raf.) Schneid. osage orange. Abundant fairly common throughout in woods
401 ♦Morus alba L. white mulberry. Uncommon DZ near Admin
402 Morus rubra L. red mulberry. Common fairly common throughout in woods

NYCTAGINACEAE

403 Mirabilis albida (Walt.) Heimerl. pale umberella wort. Rare east unit 1
404 Mirabilis nyctaginea (Michaux) MacMillan. Wild four-o'clock Rare Maintenance yard.

NYSSACEAE

405 Nyssa sylvatica Marshall. Black tupelo Rare Development subzone.

OLEACEAE

406 ♦Forsythia suspensa (Thunb.) Vahl. Forsythia Rare Carver trail south of Williams pond.
407 Fraxinus americana L. white ash. Rare Harkins woods.
408 Fraxinus pennsylvanica Marsh. green ash. Abundant
409 ♦Ligustrum ovalifolium Hassk. Privet Uncommon Scattered.
410 ♦Ligustrum vulgare L. Privet Uncommon Scattered.

ONAGRACEAE

411 Gaura longiflora Spach. gaura. Rare
412 Gaura parviflora Douglas Velvety gaura Occasional
413 Ludwigia alternifolia L. Seedbox. Uncommon
414 Ludwigia palustris (L.) Ell. Waterpurslane. Uncommon
415 Oenothera biennis L. common eveningprimrose. Uncommon
416 Oenothera laciniata Hill. Cutleaved eveningprimrose. Uncommon
417 Oenothera linifolia Nutt. Narrowleaved sundrops. Uncommon
418 Oenothera villosa Thunb. susp. villosa Common evening primrose Rare

OPHIOGLOSSACEAE

419	Botrychium dissectum Spreng. forma dissectum. Cut-leaf grape fern	Uncommon	
420	Botrychium virginianum (L) Sw. Rattlesnake fern	Uncommon	

ORCHIDACEAE

421	Platanthera lacera (Michaux) G. Don. var. lacera. Ragged orchid	Rare	Unit 1.
422	Spiranthes cernua (L.) Rich. Ladies' tresses	Common	
423	Spiranthes lacera (Raf.) Raf. Ladies tress	Occasional	Northeast 30-acre tract.

OXALIDACEAE

424	Oxalis dillenii Jacq. yellow wood sorrel.	Uncommon	Carver trail in woods
425	Oxalis florida Salisb. ssp. prostrata (Haw.) Lourt.	Rare	
426	Oxalis stricta L. yellow wood sorrel.	Abundant	fairly common throughout
427	Oxalis violacea L. sheep sour.	Common	fairly common throughout

PASSIFLORACEAE

428	Passiflora incarnata L. Passionflower, maypops.	Uncommon	
429	Passiflora lutea L. var. glabriflora Fern. small passionflower.	Rare	Northwest Harkins woods.

PHYTOLACCACEAE

430	Phytolacca americana L. american pokeweed.	Common	North unit 5

PLANTAGINACEAE

431	Plantago aristata Michx. bracted plantain.	Uncommon	Service road near Unit 4.
432	♦Plantago lanceolata L. English ribgrass.	Uncommon	
433	Plantago rugelii Dcne. Rugel's plantain.	Common	
434	Plantago virginica L. hoary plantain.	Common	

PLATANACEAE

435	Platanus occidentalis L. sycamore.	Common	fairly common throughout in woods

POACEAE

436	Agrostis hyemalis (Walt.) BSP. hairgrass.	Common	west unit 7
437	Agrostis stolonifera L. var. palustris (Huds.) Farw.	Rare	s.w. unit 5, wet area
438	Alopecurus carolinianus Walt. Carolina foxtail.	Common	west unit 6, wet area
439	Andropogon elliottii Chapman. Elliot's broomsedge	Rare	
440	Andropogon gerardii Vitman. big bluestem.	Abundant	common throughout in open areas
440	Andropogon gerardii Vitman var. chrysocomus (Nash) Fern. Yellow-bearded bluestem	Infraspecies	N/a
441	♦Andropogon ischaemum L. var. songaricus Rupr. ex Fisch. & Mey. King ranch bluestem	Rare	
442	Andropogon virginicus L. broomsedge.	Uncommon	south unit 5
443	Aristida longespica Poiret. Longspike three-awn	Rare	Central Unit 3, low area.
444	Aristida oligantha Michx. Tripleawled grass.	Rare	service road near cemetery
445	♦Avena fatua L. var. sativa (L.) Hausskn.	Rare	n.w. unit 5, disturbed ground
446	Bothriochloa laguroides (DC.) Herter. Silver bluestem	Rare	Boneyard.
447	Bouteloua curtipendula (Michx.) Torr. Sideoats.	Abundant	North unit 5
448	♦Bromus commutatus Schrader. Brome grass	Rare	
449	♦Bromus inermis Leysser. Smooth brome	Uncommon	
450	♦Bromus japonicus Thunb. Japanese bromegrass.	Uncommon	North unit 5
451	♦Bromus racemosus L. upright bromegrass.	Uncommon	North unit 5
452	♦Bromus secalinus L. cheat, chess.	Occasional	30-acre tract, s.w.
453	♦Bromus sterilis L. barren bromegrass.	Uncommon	North unit 5
454	♦Bromus tectorum L. downy bromegrass.	Common	North unit 5
455	Buchloe dactyloides (Nutt.) Engelm. Buffalo grass	Rare	Boneyard, and DZ by apartments.
456	Chasmanthium latifolium (Michaux) Yates	Abundant	common in woodlands
457	Chloris verticillata Nutt. Windmill grass	Rare	In cemetery by Carver graves.
458	Cinna arundinacea L. reed grass.	Uncommon	Williams Br. Near Carver House
458	Cinna arundinacea L. var. inexpansa Fern. & Grisc. Wood Reed-grass	Infraspecies	N/a
459	♦Cynodon dactylon (L.) Pers. Bermuda grass.	Common	maintenance yard
460	♦Dactylis glomerata L. Orchardgrass.	Uncommon	central unit 5 by tree
461	♦Digitaria ciliaris (Retz) Koeler. Southern crabgrass	Rare	
462	Digitaria cognata (Schult.) Pilg. ssp. cognata	Common	Williams pond edge
463	♦Digitaria ischaemum (Schreber) Schreber ex Muhlenb. Crabgrass	Rare	
464	♦Echinochloa crusgalli (L.) Beauv. barnyard grass.	Occasional	Harkins at west boundary
465	Echinochloa muricata (Beauv.) Fern.	Uncommon	Williams pond edge

POACEAE (cont.)

466 ♦Eleusine indica (L.) Gaertn. Goosegrass. Uncommon boneyard
467 Elymus canadensis L. var. canadensis. slender wild rye. Infraspecies N/a
468 ♦Elymus repens (L.) Gould. quackgrass. Rare northeast corner unit 5
469 Elymus smithii (Rydb.) Gould Western wheat grass Uncommon
470 Elymus virginicus L. Common west unit 3
470 Elymus virginicus L. var. glabriflorus (Vasey) Bush. Smooth-flowered wild rye Infraspecies N/a
470 Elymus virginicus L. var. virginicus Virginian wild rye Infraspecies N/a
471 ♦Eragrostis cilianensis (All.) E. Mosher. Strongscented lovegrass. Occasional boneyard
472 Eragrostis intermedia Hitchc. plains lovegrass. Occasional e. boundary @ n.e. corner
473 Eragrostis pectinacea (Michx.) Nees. Comblike lovegrass. Rare n.w. unit 5, disturbed ground
474 Eragrostis spectabilis (Pursh.) Steud. purple lovegrass. Common just w of walnut fence row
475 ♦Festuca pratensis Huds. tall fescue. Abundant Throughout
476 Festuca subverticillata (Pers.) E. Aleks. nodding fescue. Uncommon woodlands
477 Glyceria striata (Lam.) Hitchc. nerved mannagrass. Uncommon s.w. unit 5
478 ♦Hordeum pusillum Nutt. small wild barley. Common s.w. unit 5
479 Leersia oryzoides (L.) Swartz. rice cut grass. Uncommon east Carver branch streambed
480 Leersia virginica Willd. white grass. Uncommon trail bet. Pond & house
481 ♦Lolium perenne L. Italian ryegrass. Rare northeast corner unit 5
482 Melica nitens (Scribn.) Nutt. shining melicgrass. Uncommon e Carver branch in woods
483 Muhlenbergia bushii R. Pohl. Muhly Occasional
484 Muhlenbergia frondosa (Poir.) Fern. Wirestem muhly. Uncommon east unit 5 at wood fence
485 Muhlenbergia schreberi Gmel. nimble will. Common weedy area north of picnic area
486 Panicum acuminatum Sw. var. acuminatum Common s.e. unit 4
486 Panicum acuminatum Sw. var. lindheimeri (Nash) Beetle Infraspecies N/a
487 Panicum anceps Michx. beaked panicgrass. Abundant common throughout in open areas
488 Panicum capillare L. Oldwitch grass. Common s.w. corner of west unit 7
489 Panicum clandestinum L. Hidden panic-grass Uncommon east Carver woods
490 Panicum commutatum Schultes. Ashe's panic grass Uncommon
491 Panicum dichotomiflorum Michx. fall panicgrass. Rare Harkins at west boundary
492 Panicum malacophyllum Nash. Soft-leaved panic-grass Uncommon west unit 1
493 Panicum oligosanthes Schultes var. oligosanthes Few-flowered panic-grass Common n.e. unit 7
493 Panicum oligosanthes Schult. var.scribnerianum (Nash) Fernald Infraspecies N/a
494 Panicum sphaerocarpon Ell. Round-seeded panic-grass Uncommon
495 Panicum virgatum L. switchgrass. Abundant common throughout in open areas
496 Paspalum laeve Michx. Field Paspalum. Uncommon.
497 Paspalum pubiflorum Rupr. var. glabrum Vasey. depressed paspalum. Uncommon. n.w. unit 5, disturbed ground
498 Paspalum setaceum Michx. var. muhlenbergii (Nash) D. Banks. Muhlenberg's paspalum Uncommon w of walnut fence
499 Phalaris caroliniana Walter. Canary grass Rare Southwest Unit 5.
500 ♦Phleum pratense L. Timothy. Common unit 5
501 Poa chapmannia Scribner. Blue grass Uncommon Williams pond.
502 ♦Poa compressa L. Canada bluegrass. Common s.w. unit 5
503 ♦Poa pratensis L. Kentucky bluegrass. Common Carver Trail just n. of VC
504 Poa sylvestris A. Gray. woodland speargrass. Uncommon woods along Carver trail
505 Schizachyrium scoparium (Michx.) Nash. little bluestem. Common common throughout in open areas
506 ♦Setaria faberi Herm. Faber's foxtail grass. Common n.w. unit 5
507 ♦Setaria glauca (L.) Beauv. Yellow foxtail grass Uncommon Williams pond edge
508 Setaria parviflora (Poiret) Kerguelen. prairie foxtail grass. Common maintenance yard
509 ♦Setaria viridis (L.) Beauv. green foxtail grass. Uncommon boneyard
510 Sorghastrum nutans (L.) Nash. Indian grass. Abundant common throughout in open areas
511 ♦Sorghum halepense (L.) Pers. Johnsongrass. Common North unit 5
512 Spartina pectinata Link. Cord grass Uncommon
513 Sphenopholis obtusata (Michx.) Scribn. var. major (Torr.) Erdman. slender wedgegrass. Uncommon s.e. unit 7
514 Sporobolus compositus (Poir.) Merr. Uncommon west unit 7
515 Sporobolus vaginiflorus (Torrey) Alph. Wood. Poverty Grass Rare
516 Tridens flavus (L.) Hitch. tall redtop. Abundant common at field edges
517 Tridens strictus (Nutt.) Nash. Longspike tridens Rare
518 Tripsacum dactyloides (L.) L. Gama grass Rare East-central Unit 4, colony.
519 Vulpia octoflora (Walt.) Rydb. slender fescuegrass. Common s.e. unit 7

POLEMONIACEAE

520 Phlox divaricata L. Blue phlox, sweet william Common Carver branch by statue.

POLYGALACEAE

521 Polygala sanguinea L. field milkwort. Uncommon south unit 4
522 Polygala verticillata L. var. verticillata Milkwort Rare

POLYGONACEAE

523 ♦Polygonum aviculare L. small knotweed. Common boneyard
524 Polygonum bicorne Raf. Pink smartweed Uncommon West Unit 7.
525 ♦Polygonum convolvulus L. black bindweed. Uncommon n.e. unit 5 at mow line
526 Polygonum hydropiper L. Water pepper Rare
527 Polygonum hydropiperoides Michx. mild water pepper. Uncommon Williams Br. Near Carver House
528 Polygonum pensylvanicum L. pinkweed. Uncommon s.e. unit 7
529 ♦Polygonum persicaria L. lady's thumb. Uncommon northeast unit 2
530 Polygonum punctatum Ell. smartweed. Uncommon west boundary at Harkins branch
531 Polygonum ramosissimum Michx. bushy knotweed. Rare south-central unit 5
532 Polygonum scandens L. climbing false buckwheat. Uncommon levee of Williams pond
533 Polygonum virginianum L. jumpseed. Uncommon central Harkins woods
534 ♦Rumex acetosella L. common sorrel. Abundant North unit 5
535 Rumex altissimus Wood. pale dock. Rare n.w. unit 5
536 ♦Rumex crispus L. Narrowleaved dock. Common North unit 5
537 ♦Rumex obtusifolius L. bitter dock. Rare maintenance yard

PORTULACACEAE

538 Claytonia virginica L. spring beauty. Abundant picnic area

POTAMOGETONACEAE

539 ♦Potamogeton crispus L. crisped pondweed. Rare Williams Pond

PRIMULACEAE

540 Lysimachia ciliata L. fringed loosestrife. Rare
541 Lysimachia lanceolata Walter Loosestrife Rare

RANUNCULACEAE

542 Anemonella thalictroides (L.) Spach. Rue anemone Rare
543 Delphinium carolinianum Walter ssp. penardii (Huth) M. Warn. Rare central unit 1
544 Ranunculus abortivus L. Kidneyleaved crowfoot. Uncommon Harkins, along stream
545 ♦Ranunculus bulbosus L. Bulbous buttercup Occasional Harkins branch streambed.
546 Ranunculus fascicularis Muhl. prairie buttercup. Common picnic area
547 Ranunculus hispidus (E. Green) Michaux Crowfoot, buttercup Rare
548 Ranunculus micranthus Nutt. Smallflowered crowfoot. Common stream bed of east Carver br.
549 Ranunculus recurvatus Poir. hooked buttercup. Uncommon Carver br. E. of big boardwalk

RHAMNACEAE

550 Ceanothus herbaceus Raf. Buckthorn Rare Southwest Unit 4.

ROSACEAE

551 Agrimonia pubescens Wallr. downy agrimonia. Uncommon 30-acre tract in woods
552 Crataegus crus-galli L. cockspur thorn. Uncommon Harkins woods
553 Crataegus palmeri Sarg. Palmer's hawthorn. Uncommon Harkins woods
554 Crataegus pruinosa (Wendl.) K. Koch. frosted haw. Rare Harkins woods
555 Fragaria virginiana Duchn. wild strawberry. Uncommon Harkins at west boundary
556 Geum canadense Jacq. white avens. Uncommon southwest corner of Carver woods near trail
557 Geum vernum (Raf.) T. & G. spring avens. Uncommon woods along Carver branch
558 ♦Potentilla recta L. Roughfruited cinquefoil. Abundant fairly common in open areas
559 Potentilla simplex Michx. Oldfield cinqefoil. Uncommon south end unit 5
560 Prunus americana Marsh. wild plum. Uncommon Harkins woods
561 Prunus angustifolia Marshall Chickasaw plum Rare
562 Prunus hortulana Bailey. wild goose plum. Uncommon Harkins woods
563 Prunus mexicana S. Watson. Big tree plum Uncommon
564 Prunus munsoniana Wight & Hedr. Wild goose plum Rare
565 Prunus serotina Ehrh. wild black cherry. Abundant common throughout in woods
566 ♦Pyrus calleryana Decne. Bradford Pear Rare
567 Rosa carolina L. pasture rose. Uncommon unit 1 upland
568 ♦Rosa multiflora Thunb. rambler rose. Abundant fairly common throughout in woods
569 Rosa setigera Michx. var. tomentosa Torrey & A. Gray. prairie rose. Uncommon south edge unit 5 at fence
570 Rubus argutus Link Uncommon west edge unit 3 at fence
571 Rubus flagellaris Willd. dewberry. Common North unit 5
572 Rubus occidentalis L. Blackcap raspberry. Common southwest Carver woods, low area
573 Rubus pensilvanicus Poir. Pennsylvania high blackberry. Common central unit 1

RUBIACEAE

574	Cephalanthus occidentalis L. Buttonbush.	Rare	Carver trail between Williams pond and Carver house.
575	Diodia teres Walt. rough buttonweed.	Abundant	Cemetery.
576	Galium aparine L. cleavers, bedstraw.	Abundant	
577	♦Galium pedemontanum (Bell.) All. Bedstraw	Common	
578	Hedyotis crassifolia Raf. bluets, starviolet.	Common	

RUTACEAE

579	Ptelea trifoliata L. wafer ash.	Rare	East Unit 1 at mow line.

SALICACEAE

580	Populus deltoides Marsh. cottonwood.	Rare	DZ "island" near VC
581	Salix caroliniana Michx. Ward's willow.	Uncommon	west end of Harkins branch
582	Salix exigua Nutt. Coyote Willow	Rare	Southwest Unit 5 at small “pool”.
583	Salix nigra Marsh. black willow.	Uncommon	east end of Carver branch

SAPOTACEAE

584	Bumelia lanuginosa Michx. Chittomwood	Common	

SAXIFRAGACEAE

585	Penthorum sedoides L. ditch stonecrop.	Uncommon	east Carver branch streambed

SCROPHULARIACEAE

586	Agalinis fasciculata (Elliot) Raf. Gerardia	Rare	Northwest Unit 6.
587	Agalinis tenuifolia (M. Vahl) Raf. Slender gerardia	Occasional.	Southwest Unit 5.
588	Bacopa rotundifolia (Michaux) Wettst. Water hyssop	Rare	
589	Dasistoma macrophylla (Nutt.) Raf. Mullein foxglove	Uncommon.	Carver trail along walnut fence row.
590	Gratiola neglecta Torr. clammy hedgehyssop.	Rare	
591	Leucospora multifida (Michx.) Nutt. conobea.	Uncommon	
592	Lindernia dubia (L.) Pennell Long-stalked false pimpernel		
593	Mimulus alatus Ait. winged monkeyflower.	Rare	Harkins at north boundary.
594	Mimulus ringens L. Squarestemmed monkeyflower.	Rare	Harkins at north boundary.
595	Nuttallanthus texanus (Scheele) D. Sutton. oldfield toadflax.	Rare	
596	Pedicularis canadensis L. Common lousewort	Uncommon	West Unit 3 upland.
597	Penstemon digitalis Nutt. foxglove beardtongue.	Common	Southwest Unit 5.
598	Penstemon tubiflorus Nutt. Beardtongue	Uncommon	
599	Scrophularia marilandica L. Maryland figwort.	Rare	North-central Unit 7.
600	♦Verbascum blattaria L. Mothmullein.	Common	
601	♦Verbascum thapus L. mullein.	Uncommon	
602	♦Veronica arvensis L. corn speedwell.	Common	
603	Veronica peregrina L. neckweed.	Common	
604	♦Veronica polita Fries Wayside speedwell	Uncommon	

SMILACACEAE

605	Smilax bona-nox L. Greenbriar.	Abundant	common throughout in woods
606	Smilax ecirrata (Engelm.) Wats. upright smilax.	Rare	s.w. Carver woods, low area
607	Smilax hispida Muhl. bristly greenbriar.	Abundant	common throughout in woods
608	Smilax lasioneuron Hook. carrionflower.	Rare	east end Harkins woods

SOLANACEAE

609	♦Datura stramonium L. Whiteflowered jimsonweed.	Rare	
610	Physalis angulata L. Angle-stemmed groundcherry.	Occasional	
611	Physalis heterophylla Nees. clammy groundcherry.	Common	
612	Physalis longifolia Nutt. groundcherry.		
612	Physalis longifolia Nutt. var. subglabrata (Mackenzie & Bush) Cronq.		Infraspecies
613	Physalis pubescens L. Downy ground cherry	Rare	
614	Physalis pumila Nutt. low groundcherry.	Uncommon	
615	Physalis virginiana Miller. Ground cherry	Uncommon	
616	Solanum carolinense L. common horsenettle.	Abundant	
617	Solanum ptycanthum Dunal ex DC. American black nightshade.	Uncommon	
618	♦Solanum rostratum Dun. Buffalobur.	Rare	30-acre tract.
619	♦Solanum sarrachoides Sendtner. Viscid nightshade	Rare	Central Unit 1.

ULMACEAE

620 Celtis laevigata Willd. southern hackberry. Common s edge of Harkins woods
620 Celtis laevigata Willd. var. texana Sarg. Texas hackberry Infraspecies N/a
620 Celtis laevigata Willd. var. smallii (Beadle) Sarg. Small's southern hackberry Infraspecies N/a
621 Celtis occidentalis L. western hackberry. Abundant common throughout in woods
622 Celtis tenuifolia Nutt. Thin-leaved hackberry Uncommon Harkins woods.
623 Ulmus americana L. american elm. Abundant common throughout in woods
624 ♦Ulmus pumila L. (shown as U. parvifolia) Siberian elm Rare
625 Ulmus rubra Muhl. slippery elm, red elm. Abundant common throughout in woods

URTICACEAE

626 Boehmaria cylindica (L.) Sw. false nettle. Uncommon along east Carver branch
627 Laportea canadensis (L.) Wedd. Wood nettle Common Near Carver statue.
628 Parietaria pensylvanica Muhl. pellitory. Uncommon east boundary fence near bridge
629 Pilea pumila (L.) Gray. clearweed. Uncommon along east Carver branch

VALERIANACEAE

630 Valerianella radiata (L.) Dufr. beaked cornsalad. Common

VERBENACEAE

631 Glandularia canadensis (L.) Nutt. Canada verbena. Abundant
632 Phryma leptostachya L. lopseed. Common
633 Phyla lanceolata (Michaux) E. Greene Northern fog fruit Rare Williams pond, east edge.
634 Verbena hastata L. Helberdleaved vervain. Uncommon Southwest Unit 5.
635 Verbena simplex Lehm. Narrowleaved vervain. Uncommon
636 Verbena stricta Vent. Mulleinleaved vervain. Uncommon
637 Verbena urticifolia L. white vervain. Uncommon. 30-acre tract.

VIOLACEAE

638 Viola pubescens Ait. Pennsylvania yellow violet. Common Near boy Carver statue.
639 Viola rafinesquii Greene. wild pansy, Johnny jump- up. Common
640 Viola sororia Willd. hairy blue violet. Common

VITACEAE

641 Ampelopsis cordata Michx. Falsegrape. Common north edge Williams pond
642 Parthenocissus quinquefolia (L.) Planch. Virginia creeper. Abundant fairly common throughout in woods
643 Vitis aestivalis Michx. summer grape. Occasional north unit 1
644 Vitis cinerea Engelm. winter grape, bird grape. Common fairly common throughout in woods
645 Vitis vulpina L. frost grape. Common fairly common throughout in woods

ZANICHELLIACEAE

646 Zanichellia palustris. L. horned pondweed. Rare Williams Pond

Appendix 2. List of flora of unknown status at George Washington Carver NM.

The following taxa were recorded by Palmer and not located during field research during the 1990's and 2003-4. More research is needed to determine the status of each. Entries with (♦) indicate a non-native taxon.

APIACEAE

SU1 Chaerophyllum procumbens (L.) Crantz. chervil.
SU2 Osmorhiza claytonii (Michx.) Clarke. Clayton's sweet cicily.
SU3 Perideridia americana (Nutt.) Reichb. American perideridia.
SU4 Spermolepis inermis (Nutt.) Math. & Const. slender spermolepis.

ASTERACEAE

SU5 Aster lateriflorus (L.) Britt. calico aster.
SU6 Bidens tripartita L. swamp beggarticks.
SU7 Eupatorium perfoliatum L. Cupleaf thoroughwort boneset.
SU8 Helianthus petiolaris Nutt. prairie sunflower.
SU9 Prenanthes aspera Michx. rough rattlesnakeroot.
SU10 Rudbeckia laciniata L. wild goldenglow.
SU11 Solidago arguta Ait. var. Boottii Palmer Steyerm. Boott's goldenrod.
SU12 Solidago rigida L. stiff goldenrod. Palmer specimen in poor condition.
SU13 Solidago ulmifolia Muhl. Elmleaved goldenrod.
SU14 ♦Sonchus oleraceus L. common sowthistle.

BRASSICACEAE

SU15 ♦Camelina microcarpa Andrz. false flax.
SU16 ♦Sisymbrium officinale (L.) Scop. hedge mustard.

CAESALPINIACEAE

SU17 Chamaecrista nictitans L. small wild senna.

CALLITRICHACEAE

SU18 Callitriche terrestris Raf. mud water starwort.

CARYOPHYLLACEAE

SU19 ♦Cerastium fontanum Baumg. common mseear. Palmer specimen difficult to identify.
SU20 Sagina decumbens (Ell.) Torr. & Gray. pearlwort.
SU21 Silene antirrhina L. sleepy catchfly.

CERATOPHYLLACEAE

SU22 Ceratophyllum echinatum A. Gray. hornwort. Palmer specimen difficult to identify.

CHENOPODIACEAE

SU23 ♦Chenopodium dessiccatum A. Nelson . Nlv gft.
SU24 ♦Chenopodium pumilio R. Br. Cutlv goosefoot.

CORNACEAE

SU25 Cornus foemina Will. ssp. racemosa (Lam.) J. Wilson gray dwd.

CYPERACEAE

SU26 Carex bicknellii Willd. necklace sedge.
SU27 Carex caroliniana Schw. Carolina sedge. Palmer specimen keys to C. bushii.
SU28 Carex cristatella Britt. crested sedge.
SU29 Carex gracilescens Steud. slender sedge.
SU30 Carex gracillima Schw. graceful sedge. Palmer specimen keys to C. davisii.
SU31 Carex grisea Wahlenb.
SU32 Carex hystericina Muh. porcupine sedge. Palmer specimen difficult to key, may be C. lurida.
SU33 Carex normalis Mack. Rightangled sedge.
SU34 Carex oligocarpa Schk. few fruited sedge.
SU35 Fimbristylis annua (All.) R. & S. Baldwin's fimbristylis.
SU36 Kyllinga pumila Michx. Thinleaved cyperus.
SU37 Scirpus atrovirens Willd. dark green bulrush.

EUPHORBIACEAE

SU38 Chamaesyce humistrata (Engelm.) Small carpetweed spurge. Palmer specimen keys better to Chamaesyce maculata.

FABACEAE

SU39 Desmodium canadense (L.) DC. Canadian beggar's tick.

FUMARIACEAE

SU40 Corydalis aurea Willd. ssp. Occidentalis
SU41 Corydalis micrantha (Engelm.) Gray. Smallfl

HYDROPHYLLACEAE

SU42 Ellisia nyctelea L. nyctelia.

LAMIACEAE

SU43 Lycopus rubellus Moench. stalked waterhorehound.

LYTHRACEAE

SU44 Ammania robusta Heer & Regel Loose-flowered toothcup
SU45 Rotala ramosior L. var. ramosior (L.) Koehne

NAJADACEAE

SU46 Najas guadalupensis (Spreng) Magnus. Guadalupe naiad.

PLANTAGINACEAE

SU47 ♦Plantago major L. common plantain.
SU48 Plantago pusilla Nutt. tiny plantain.

POACEAE

SU49 Agrostis elliottiana Schult. bent grass. Palmer specimen keys to A. hyemalis.
SU50 Agrostis perennans (Walt.) Tuckerm. thin gr.
SU51 Bromus pubescens Muhl. ex. Willd.
SU52 Digitaria filiformis (L.) Koel. slender crabgrass.
♦Echinochloa crusgalli (L.) Beauv.
SU53 Eragrostis capillaris (L.) Nees. Lacegrass.
♦Eragrostis cilianensis (All.) E. Mosher.
SU54 ♦Eragrostis pilosa (L.) Beauv. India lovegrass.
SU55 Eragrostis trichodes (Nutt.) Wood. Hairlike lovegrass. Palmer species does not key to this species.
SU56 Festuca paradoxa Desv. Short's fescuegrass.
SU57 Muhlenbergia glabrifloris Scribn. Smoothflowered muhly.
SU58 Muhlenbergia sylvatica Torr. woodland muhly.
SU59 Muhlenbergia tenuiflora (Willd.) BSP. Slenderflowered muhly.
SU60 Panicum boscii Poir. Bosc's panic-grass
SU61 Panicum dichotomum L. var. ramulosum (Torr.) Lelong
SU62 Panicum flexile (Gatt.) Scribn. wiry panicgrass.
SU63 Panicum latifolium L. Broad-leaved panic-grass
SU64 Panicum rigidulum Nees. Agrostislike panicgrass. Palmer specimen keys to P. anceps.
SU65 ♦Poa annua L. annual medow grass.
SU66 Sporobolus neglectus Nash. annual dropgrass.

POLYGONACEAE

SU67 Polygonum amphibium L. swamp smartweed.
SU68 Polygonum erectum L. tall knotweed.
SU69 Polygonum lapathifolium L. Dockleaved smartweed. Palmer specimen does not key to this species.
SU70 Polygonum sagittatum L. Arrowleaved tearthumb.

PORTULACACEAE

SU71 Portulaca oleracea L. purslane.

POTAMOGETONACEAE

SU72 Potamogeton foliosus Raf. leafy pondweed.

PRIMULACEAE

SU73 Anagallis minima (L.) E.H. Krause Chaffweed
SU74 Androsace occidentalis Pursh. W. androsace.

ROSACEAE

SU75 Agrimonia parviflora Ait. Smallfl. agrimonia.
SU76 Crataegus calpodendron (Ehrh.) Medic. downy sugar haw. Palmer specimen identification in question.
SU77 Crataegus coccinioides Ashe. showy hawthorn.
SU78 Crataegus collina Chapman. hill hawthorn.
SU79 Crataegus englemanni Sarg. Englemann's hawthorn.
SU80 Crataegus pruinosa (Wendl. f.) K. Koch var. virella (Ashe) Kruschke
SU81 Crataegus regalis Beadle. royal hawthorn.
SU82 Crataegus reverchonii Sarg. var. discolor (Sarg.) Palmer. Reverchon's hawthorn.
SU83 Crataegus viridis L. green haw.
SU84 Crataegus X nitida (Engelm.) Sarg. shining hawthorn.
SU85 ♦Rosa micrantha Sm. Smallflowered rose.
SU86 Rubus ostryifolius Rydb. Bush's blackberry.

SMILACACEAE

SU87 Smilax pulverulenta Michx. Powdery smilax

VIOLACEAE

SU88 Viola missouriensis Greene. Missouri blue violet.
SU89 Viola X napae House. hybrid violet.

Appendix 3. List of excluded taxa at George Washington Carver NM.

The following taxa were recorded by Palmer (unless otherwise noted), but no longer occur at the Monument. Entries with (♦) indicate a non-native taxon.

ACANTHACEAE

E1 Justicia americana (L.) Vahl. Waterwillow. This species was supposedly represented by specimen, but the only specimen in the park's files was collected in the early 1950s by the park staff. A recent check of this specimen found that it appears to be a specimen of *Amsonia* (no flower or fruiting structures are present).

ARACEAE

E2 Arisaema triphyllum (L.) Schott. Jackinpulpit

ASTERACEAE

E3 Antennaria neglecta Greene. pussy's toes.
E4 ♦Anthemis cotula L. dogfennel.
E5 ♦Centaurea cyanus L. ragged robin, bachelors b.
E6 ♦Taraxacum erythrospermum Andrz. ex Besser. Redseeded dandelion.

BRASSICACEAE

E7 ♦Brassica juncea (L.) Coss. Indian mustard.
E8 ♦Brassica nigra (L.) Koch. black mustard.

CARYOPHYLLACEAE

E9 ♦Agrostemma githago L. corn cockle.

COMMELINACEAE

E10 Tradescantia ernestiana Anders. & Woodson. Ernest Palmer's spiderwort.

CYPERACEAE

E11 Carex lupulina Muhl. hop sedge.
E12 Schoenoplectus tabernaemontani (C.C. Gmel.) Palla

EUPHORBIACEAE

E13 Euphorbia cyathophora Murr. painted leaf.

FABACEAE

E14 Amorpha fruticosa L. false indigo.
E15 Cladrastis kentukea (Dum. Cours.) Rudd Rare. Not recorded by Palmer; planted; no longer at site
E16 Desmodium viridiflorum (L.) DC. Greenflowered beggar's lice.
E17 ♦Glycine max (L.) Kerr. Soy-bean
E18 ♦Medicago sativa L. alfalfa.

IRIDACEAE

E19 Iris virginica L. var. shrevei (Small.) Anders. Shreve's wild iris.

LAMIACEAE

E20 ♦Marrubium vulgare L. horehound.
E21 ♦Nepeta cataria L. catnip.
E22 Physostegia virginiana (L.) Benth. false dragonhead. Excluded based on mis-identification of specimen by Palmer.

LILIACEAE

E23 Maianthemum racemosum (L.) Link. false solomon's seal.
E24 Trillium viride Beck. Greenflowered wakerobin. Not present in park; not in region; Palmer error?

MALVACEAE

E25 Callirhoe alceoides (Michx.) Gray. Poppymall.
E26 Hibiscus laevis All. halberdleaved marsh mallow.
E27 ♦Malva rotundifolia L. common mallow, cheeses. Palmer specimen keys better to M. neglecta.

POACEAE

E28 Diarrhena americana Beauv. American diarrhena.
E29 Koeleria macrantha (ledeb.) Schult.
E30 ♦Secale cereale L. rye
E31 ♦Triticum cylindricum (Host) Cesati, Passer. & Gibelli Bearded goat grass

Appendix 4. Botanical and general assessment of the 30-acre tract at George Washington Carver NM.

Background

Historically, the original 1853 Moses Carver farm included 97.2 ha (240 ac). The original designation of George Washington Carver National Monument included all but 12.2 ha (30 ac) in the southwest corner of the original farm. Zinc mining occurred on the site around 1934, and remnants of the operation, namely tailings, building foundations, old pits, and trash, were present on the site. Otherwise, the site had been used for grazing. In December, 2003, the parcel was donated to the Carver Birthplace District Association by the owners the late W. J. "Bud" and Evelyn Taylor. As of this writing, the property is held jointly by the National Park Service and CBA.

Site description

In spring 2004, the site was cleared of the aforementioned mine remnants. Areas formerly covered by mine tailings and foundations are now mostly open ground, with little vegetation. Cattle grazing continued after the ownership change due to the absence of fences on the west side of the unit. Fences were installed during summer 2004, but cattle are still entering the property.

Topography of the tract is similar to that of the rest of the Monument, with gently rolling hills. A small seasonal stream (apparently a tributary of Carver Branch) flows from the south then northwest through the west side of the tract. During the spring and early summer, this riparian zone retained enough water to support emergent flora such as water plantain and *Carex* species. Another side branch originates in the center of the tract (in the vicinity of the site of the tailings pile) and flows into the main branch.

Flora

It was determined that a full vegetative survey was out of the scope of this project, but field checking of the site revealed that such a survey would have otherwise been redundant. Overall, the flora of the area is an extension of much of the remainder of the Monument, with two major exceptions:

1. Prairie elements: there are very few native prairie elements on the site, at least in terms of grasses.
2. Invaders: due to heavy livestock use and large areas of disturbed ground, invasive weeds abound, particularly increasers such as southern ragweed and ironweed.

Grassland areas are dominated (in order of abundance) by: southern ragweed (*Ambrosia bidentata*), tall fescue (*Festuca pratensis*), short ragweed (*Ambrosia artemisiifolia*), ironweed (*Vernonia* sp.), blackberry (*Rubus* sp.) and broom snakeweed (*Amphiachyris dracunculoides*). During the mid-summer months, there was very little grass cover due to grazing.

Woody species abound in the tract, both in the center, where a somewhat sparse woodland area occurs, and in scattered amounts throughout the southwest corner. A grove of small trees occurs in the extreme northeast corner of the tract. By far, the most abundant woody species are osage orange (*Maclura pomifera), coral berry (Symphoricarpus orbiculatus),* and honeylocust (*Gleditsia tricanthos).* In the northwest corner of the unit, a few oaks (*Quercus* spp.) and redbud (*Cercis canadensis*) can be found. A full list of woody species noted is shown below:

Common Name	Scientific Name	Abundance	Distribution
Hackberry	Celtis occidentalis	common	clumped
Redbud	Cercis canadensis	rare	sparse
Dogwood	Cornus sp.	rare	sparse
Green Ash	Fraxinus pennsylvanica	common	clumped
Honeylocust	Gleditsia tricanthos	common	clumped
Black Walnut	Juglans nigra	rare	sparse
Eastern Redcedar	Juniperus virginiana	rare	sparse
Osage Orange	Maclura pomifera	abundant	uniform
Mulberry	Morus sp.	rare	sparse
Eastern Cottonwood	Populus deltoides	rare	sparse
Black Cherry	Prunus serotina	common	clumped
Plum	Prunus sp.	common	uniform
Chinkapin Oak	Quercus muhlenbergii	rare	sparse
Post Oak	Quercus stellata	rare	sparse
Black Oak	Quercus velutina	rare	sparse
Winged Sumac	Rhus copallina	common	clumped
Smooth Sumac	Rhus glabra	common	clumped
Currant	Ribes missouriense	rare	clumped
Willow	Salix sp.	rare	sparse
Sassafras	Sassafras albidum	rare	clumped
Coral Berry	Symphoricarpus orbiculatus	common	clumped
American Elm	Ulmus americana	common	clumped

Wildlife notes

During the course of field work, a few notable species were observed. Painted buntings (*Passerina ciris*) were heard and seen in two separate areas during the 2004 breeding season. The scattered brush and trees in the center of the unit are good habitat for this species. In addition, this author heard, but did not see, the call of an eastern chipmunk (*Tamias striatus*) in the north-central portion of the woodlands in spring 2004. This would be a worthy record for following up, since there are no known records for the species in the Monument proper.