

# University of Minnesota Twin Cities Campus Arboretum



## Chapter Four: Significance

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## **Significance of a Campus Arboretum**

The University of Minnesota - Twin Cities Campus is home to an immense variety of exceptional trees, shrubs and plant communities (hereby referred to as natural features). These features are exceptionally maintained but go largely unnoticed by the greater campus community. A stunning bur oak tree or beautiful native prairie planting are commonly overshadowed by the countless architectural achievements occupying the campus: the sparkling Weisman Art Museum and the towering TCF Bank Stadium to name a few. Though these structures justifiably require appreciation and celebration, the Twin Cities campus offers natural marvels as equally impressive. The establishment of a Twin Cities Campus Arboretum would celebrate the stunning natural features around campus and their collective part in University history, connect and expose campus visitors to nature and green elements in their everyday lives and reestablish an appreciation for greenspaces in a modern, highly-urbanized environment.

The creation of a campus arboretum allows for meaningful interaction with nature and greenspace in an everyday setting and in an equitable way for all campus visitors. The University of Minnesota currently supports the award-winning Minnesota Landscape Arboretum in Chaska, Minnesota; however, the distant location, cost of transportation, and required entrance fee for non-members limit the potential for attendance and diminish possible benefits to potential visitors. By bringing an arboretum to the Twin Cities campus, equitable access to natural feature identity, significance and general information can be disseminated to any and all passers-by. This will significantly expand the diversity of demographics that are provided with this captivating information.

Through repeated exposure to natural feature information, visitors of the highly-urbanized Twin Cities Campus can establish meaningful connections with and an appreciation for natural features and greenspaces. Establishing these connections will undoubtedly increase usage of existing greenspace and as a result, increase the number of individuals receiving the numerous benefits associated with such exposure.

## **Significance of Natural Features for Inclusion**

Natural features on the Twin Cities Campus are exceptionally maintained by UMN Landcare and thus can reach incredible sizes and impressive lifespans. As a result, many of these features are quite rare and have experienced notable moments in University history; for example, a prominent bur oak tree found on the Saint Paul Campus today is older than the surrounding buildings, as displayed by the photograph below. Inclusion of these features in a Campus Arboretum would serve as protection from future development while connecting observers and passers-by to UMN-TC campus history and the campus community in a meaningful way.



Figure 1. A 1915 photo of the then new Saint Paul Gymnasium, shielded partly by maple trees (left) and a bur oak tree (right). The bur oak tree remains today (2019) and is an impressive feature on the UMN Twin Cities Campus. Photo retrieved from UMN Libraries UMedia website (<https://umedia.lib.umn.edu/item/p16022coll175:6210?q=st+paul+campus>).

### **Significance of Existing Natural Features**

Nominated natural features on University of Minnesota Twin Cities Campus property should satisfy one of the following five criteria values for inclusion in the Campus Arboretum: horticultural, social, educational, historic or aesthetic. Nomination of established trees, shrubs, plant communities or existing natural features currently located on University of Minnesota-Twin Cities campus property can originate from any faculty, staff, student or affiliate of the University. For inclusion into the University of Minnesota-Twin Cities Campus Arboretum the nominated tree, shrub, plant community or existing natural feature must meet one of the following criteria as determined by the University of Minnesota-Twin Cities Campus Arboretum Advisory Commission:

## **Five Inclusion Criteria for Established Natural Features:**

The Twin Cities Campus Arboretum celebrates diverse natural features; these features satisfy one (or more) of the following criteria.

1. Horticultural
  - Species or variety that is rare or of a very localized distribution
  - Particularly old or venerable
  - Outstanding for its height, trunk circumference or canopy spread
  - Sole individual of species on campus property
  - Significant ecological contribution (soil retention, storm-water collection, etc.)
2. Social
  - Unique location or context
  - Associated with Native American activities
  - Important landmark
  - Spiritual and religious associations
3. Education
  - Proximity ideal for educational purposes
  - Contribution to educational landscape
4. Historic
  - Forms part of an historic park, garden or town
  - Commemorates an occasion
  - Associated with an important event, person, group or institution
5. Aesthetic
  - A really great looking tree
  - Exhibits curious growth form or unusual physical features whether naturally occurring or resulting from human intervention

## **Nomination Process and Timeline (During Planning and Development Stages):**

- May 1: Annual nomination deadline
- June: Nominated natural features are inspected by a qualified arborist for health and sufficient growing space.
- Summer: Nominated features are visited by the Campus Arboretum Advisory Council, who will evaluate the feature against the criteria and vote whether or not to move the nomination forward.
- Fall: Nominated trees are presented to all invested stakeholders (UMN Landcare, individual advisors, educational departments, etc) for final comments before voting for feature inclusion.
- Spring: New features are added to existing campus arboretum maps, databases and websites and receive informational plaques.

The first option for inclusion of existing features is by nomination from the public, including staff, students, Landcare, departments, and frequent users of the UMN -TC campus. While the general public can submit nominations, they will all be checked by certified arborists or horticulturalists for legitimacy and quality of the feature. Then the Campus Arboretum Advisory Council will decide whether the feature fits any of the inclusion criteria. If the nomination is moved forward, then invested stakeholders will be able to comment on the features before the Advisory Council votes on inclusion.

### **Procedures for Future Planting and Inclusion in Campus Arboretum**

The future inclusion of new natural features will involve interested parties making decisions. The Stakeholder Group sent out a survey with a question pertaining to interest in future UMN-TC arboretum development. A voting process can take place within departments that expressed interest in future inclusion. This will allow stakeholders to have a voice concerning what they find important in the decision process for features that will be established and planting. Representatives from each interest group will share their decisions with the University of Minnesota-Twin Cities Campus Arboretum Advisory Commission for final voting on future inclusion. When new plantings or natural features are being installed for the arboretum, they must fit at least one of the five criteria described above.

## Nomination Form for Feature Inclusion in Campus Arboretum



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-For Official Use Only-

Accepted \_\_\_\_\_

Declined \_\_\_\_\_

### TWIN CITIES CAMPUS ARBORETUM FEATURE NOMINATION FORM

- Nominations of natural features (plants, landscapes, vegetative communities and natural features) are accepted year-round and reviewed after May 1 each year.
- Attachments may also be submitted, including photos and additional text.

Feature Information
Date:
Feature Description:
Species (botanic or common name) if known:
Location Street Address (approximate):
Location Description:
Feature Size: Height (approximate): Area occupied/Crown spread (measure from one edge to opposite edge):  Circumference of trunk/main stem (approximately 4.5 ft from ground):
Approximate age:
Condition:
Noteworthy Features (see Criteria requirements on the back) Check all that apply: <input type="checkbox"/> Horticulture <input type="checkbox"/> Social <input type="checkbox"/> Education <input type="checkbox"/> Historic <input type="checkbox"/> Aesthetic

Nominator Information
Name:
Address:
City, State, Zip:
Phone:
Email:
Relationship to the University:



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### **CAMPUS ARBORETUM NOMINATION FORM INSTRUCTIONS**

Thank you for your interest in the UMN Twin Cities Campus Arboretum and for nominating your favorite natural feature for inclusion. While you are preparing this nomination, please consider the following:

The Twin Cities Campus Arboretum celebrates diverse natural features; these features satisfy one (or more) of the following criteria:

#### **Criteria for Inclusion:**

1. Horticultural
  - Species or variety that is rare or of a very localized distribution
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## **Tree Campus USA**

Tree Campus USA is a program put on by the Arbor Day Foundation to promote and recognize college and university campuses with exceptional urban forests. This program enables the students, faculty, and local communities to be involved in the planning and management of the trees and greenspaces on campuses across the nation. While this program is not directly related to the proposed UMN Campus Arboretum, inclusion in this program would further the interests of the University and accelerate the development of the Arboretum.

There are five standards that are required in the process of becoming a Tree Campus USA. Some of these are completely or nearly fulfilled, and some will require further development. They are listed below:

- Campus Tree Advisory Commission
- Campus Tree Care Plan
- Campus Tree Program with Dedicated Annual Expenditures
- Arbor Day Observance
- Service Learning Project

### ***Standard 1 - Campus Tree Advisory Commission***

Currently, there is no Campus Tree Advisory Commission. A formation of a commission would be required, and must include a representative from each of the following groups:

- Student (undergraduate or graduate)
- Faculty (see stakeholder section for list of interested departments and people)
- Facilities Management
- Community (city forester, municipal arborist, community tree board member, etc.)

Each individual campus may also have other interested student organizations, alumni, faculty, or staff that could be represented such as administration, sustainability coordinator, professor emeritus, etc. The Campus Tree Advisory Commission would assist in the guidance for future planning, approval of a comprehensive campus tree plan, education of the campus population as to the benefits of the campus trees, and development of connectivity to the community.

### ***Standard 2 - Campus Tree Care Plan***

A comprehensive Campus Tree Care Plan is the second requirement to achieve Tree Campus USA Status. It should be flexible enough to fit the needs and circumstances of the particular campus. The Tree Care Plan should be goal oriented and provide the opportunity to set good policy and clear guidance for planting, maintaining, and removing trees. It should also provide education to the campus community about the importance of the campus forest, and the care necessary to maintain it.



A Campus Tree Care Plan must include:

- Clearly stated purpose.
- Responsible authority/department
- Campus tree care policies for planting, landscaping, maintenance and removal including establishing and updating a list of recommended and prohibited species; managing for catastrophic events.
- Protection and Preservation policies and procedures - include process for implementing tree protection plan including step-by-step process that every project must follow including construction and trenching.
- Goals and Targets - develop at least one goal and target for your Campus Tree Plan. These could include (but are not limited to) tree canopy target, development of a link between the Campus Tree Plan and other green initiatives on campus or in the community; completion of a campus-wide tree inventory, etc. Include how the goal will be measured.
- Tree damage assessment - enforcement, penalties, and appeals.
- Prohibited practices.
- Definitions of terminology related to campus trees.
- Communication strategy - how the campus tree care plan will be communicated to the college community and contractors to heighten awareness about the policies and procedures as well as the goals of the institution.

The UMN Landcare department currently manages planting, tree care, and removal. With the creation of an advisory committee, the rest of the elements can be easily fulfilled by amending the current tree care plan.

### ***Standard 3 - Campus Tree Program with Dedicated Annual Expenditures***

In order to be designated a Tree Campus USA, the campus must allocate finances for its annual campus tree program. Evidence should be shown that an annual work plan has been established and expenditures dedicated towards that work plan. Expenditures could include, but are not limited to:

- Cost of trees purchased
- Labor, equipment and supplies for tree planting, maintenance (pruning, watering, fertilization, mulching, competition control, etc.) and removal, if needed
- Value of volunteer labor and other contributions from student or civic organizations
- Staff time dedicated to campus forest planning, tree care contractors
- All associated costs of the campus tree management including:
  - Public education related to the campus forest
  - Professional training

- Related association memberships (International Society of Arboriculture and local chapter, Society of Municipal Arborists, state urban forest council, etc.)
- Campus tree inventory

#### ***Standard 4 - Arbor Day Observance***

An Arbor Day observance is the fourth requirement. Arbor Day provides a golden opportunity to educate the campus community on the benefits of the trees on their campus property and in the community. The Arbor Day observance can be on the campus or held in conjunction with the community where the campus is located. Your observance may be held at an appropriate time for your campus as long as it is related to trees in some way. Recording of the date the observance was held with attachment that includes program of activities, news coverage, and/or pictures – will be required when submitting your application.

This requirement is already fulfilled through the Arboriculture Course (FNRM 3501), in which students plan and lead an annual Arbor Day/Month celebration. Students work with UMN Landcare to fit their goals for trees to be planted on campus. They also advertise the event to students at the University of Minnesota and surrounding community.

#### ***Standard 5 - Service Learning Project***

The Service Learning Project should be an outreach of the spirit of the Tree Campus USA initiative. This project should provide an opportunity to engage the student population with projects related to trees and can be part of a campus or community initiative. The project must be done within the course of the year application is submitted. Project ideas include, but are not limited to:

- Volunteer tree plantings or tree maintenance
- Tree inventory (campus or community)
- Establishment of campus arboreta
- Student-led effort to have community designated a Tree City USA
- Coordinate internships with the urban forestry or parks department in your community
- Assist Project Learning Tree or other programs centered around trees in training teachers at schools near your campus or organize training for your school's College of Education
- Other tree-related service learning or educational programs for students
- Partnership with state forestry departments on regional projects

Many of these could be incorporated as an option for a Service Learning Project, which are required elements in many ESPM and FNRM courses.

## Desired Species List:

This list contains trees, shrubs and vines that the University of Minnesota can incorporate into their planting plans. There are also sub lists dedicated to edible and medicinal plants, herbaceous plants, flowering plants, invasives for educational purposes and climate adapted species. The students who are assigned to the significance group in the future may add to this list by contacting Brittany Anderson ([branders@umn.edu](mailto:branders@umn.edu)), Jilian Rowen ( [Berk1002@umn.edu](mailto:Berk1002@umn.edu)), and Francis Bettelyoun ([Francis.bettelyoun@gmail.com](mailto:Francis.bettelyoun@gmail.com)) in order to begin the process of creating a list of edible and medicinal plants. Other stakeholders who are interested in the arboretum for educational purposes may be contacted to see what kinds of plants professors want to incorporate into their curriculum. By working on these projects, future students will be able to fill out the herbaceous plant list. All locations on the landscapes list are accessible except for Sarita. On the St. Paul campus, the heating plant should be contacted in regards to the Sarita wetland, foot traffic may not be allowed. Due to this Sarita might be best showcased from the campus shuttle.

### Trees

- Alder (*Alnus*)
- Black Alder (*A. glutinosa*)
- Speckled Alder (*A. incana*)
- Amur Chokecherry (*Prunus maackii*)
- Amur Corktree (*Phellodendron*)
- Amur Maackia (*Maackia amurensis*)
- Apricot (*P. armeniaca*)
- Ash (*Fraxinus*)
  - White Ash (*F. americana*)
  - Blue Ash (*F. quadrangulata*)
  - Green Ash (*F. pennsylvanica*)
- Bald Cypress (*Taxodium distichum*)
- Beech
  - American Beech (*Fagus grandifolia*)
- Birch (*Betula*)
  - Paper Birch (*B. papyrifera*)
  - Yellow Birch (*B. alleghaniensis*)
  - River Birch (*B. nigra*)
  - Sweet Birch (*B. lenta*)
  - European White Birch (*B. pendula*)
- Black Locust (*Robinia pseudoacacia*)
- Black Walnut (*Juglans nigra*)
- Cedar
  - Eastern Red Cedar ( *Juniperus virginiana*)
  - Northern White Cedar ( *Thuja occidentalis*)
- Cherry (*Prunus*)

- Black Cherry (*P. serotina*)
  - Chokecherry (*P. virginiana*)
  - European Plum (*P. domestica*)
- Douglas Fir (*Pseudotsuga Menziesii*)
- Eastern Hemlock (*Tsuga canadensis*)
- Eastern Redbud (*Cercis canadensis*)
- Elm (*Ulmus*)
  - American Elm (*Ulmus americana*)
  - Hybrid Elms
- Fir (*Abies*)
  - Balsam Fir (*A. balsamea*)
  - Fraser Fir (*A. fraseri*)
  - White Fir (*A. concolor*)
- Ginkgo (*Ginkgo biloba*)
- Hackberry (*Celtis occidentalis*)
- Hawthorn (*Crataegus*)
  - Cockspur Hawthorn (*C. crus-galli*)
- Hickory (*Carya*)
  - Bitternut Hickory (*Carya. cordiformis*)
  - Shagbark Hickory (*Carya. ovata*)
- Honeylocust (*Gleditsia triacanthos*)
- Horse Chestnut (*Aesculus hippocastanum*)
- Ironwood (*Ostrya virginiana*)
- Japanese Pagoda Tree (*Styphnolobium japonicum*)
- Japanese Tree Lilac (*Syringa reticulata*)
- Juniper (*Juniperus*)
  - Northern Red Cedar (*J. virginiana*)
  - Common Juniper (*J. communis*)
  - Rocky Mountain Juniper (*J. scopulorum*)
  - Other spp.
- Katsura (*Cercidiphyllum japonicum*)
- Kentucky Coffee Tree (*Gymnocladus dioica*)
- Linden (*Tilia*)
  - American Basswood (*T. americana*)
  - Little Leaf Linden (*T. cordata*)
- London Planetree (*Platanus acerifolia*)
- Magnolia
  - Cucumber Magnolia (*Magnolia acuminata*)
  - Loebner's Magnolia (*Magnolia x loebneri*)
  - Umbrella Magnolia (*Magnolia tripetala*)
- Maples (*Acer*)
  - Norway Maple (*A. platanoides*)
  - Red Maple (*A. rubrum*)
  - Freeman Maple (*A. xfreemanii*)

- Striped Maple (*A. pensylvanicum*)
  - Sugar Maple (*A. Saccharum*)
  - Silver Maple (*A. Saccharinum*)
  - Amur Maple (*A. ginnala*)
  - Boxelder (*A. negundo*)
    - Champion boxelder
- Exotic Maples
  - Hedge Maple (*A. campestre*)
  - Hybrid Korean Maple (*A. x pseudosieboldianum*)
  - Nikko Maple (*A. maximowiczianum*)
  - Tatarian Maple (*A. tataricum*)
  - Three-flowered Maple (*A. trifolium*)
- *Malus* (spp.)
  - Apple (*M. Spp.*)
  - Crabapple (*M. Spp.*)
- Mountain Ash (*Sorbus decora*)
- Musclewood (*Carpinus caroliniana*)
- Northern Catalpa (*Catalpa speciosa*)
- Oaks (*Quercus*)
  - Bicolor Oak (*Q. bicolor*)
  - Black Oak (*Q. velutina*)
  - Bur Oak (*Q. macrocarpa*)
  - Northern Pin Oak (*Q. ellipsoidalis*)
  - Northern Red Oak (*Q. rubrum*)
  - White Oak (*Q. alba*)
- Ohio Buckeye (*Aesculus glabra*)
- Pines (*Pinus*)
  - Austrian Pine (*P. nigra*)
  - Eastern White Pine (*P. strobus*)
  - Jack Pine (*P. banksiana*)
  - Korean Pine (*P. koraiensis*)
  - Mugo Pine (*P. Mugo*)
  - Ponderosa Pine (*P. ponderosa*)
  - Red Pine (*P. resinosa*)
  - Scots Pine (*P. sylvestris*)
  - Swiss Stone Pine (*P. cembra*)
- Poplars (*Populus*)
  - Quaking Aspen (*P. tremuloides*)
  - Bigtooth Aspen (*P. grandidentata*)
  - Eastern Cottonwood (*P. deltoides*)
  - Balsam Poplar (*P. balsamifera*)
  - White Poplar (*P. alba*)
- Serviceberry (*Amelanchier spp.*)
- Spruce (*Picea*)

- Black Hills Spruce (*P. glauca* 'densata')
- Blue Spruce (*P. pungens*)
- Norway Spruce (*P. abies*)
- Serbian Spruce (*P. omorika*)
- White Spruce (*P. glauca*)
- Tamarack/Larch (*Larix*)
  - European Larch (*L. decidua*)
  - Tamarack (*L. laricina*)
- Tulip Tree (*Liriodendron tulipifera*)
- Turkish Hazel (*Corylus colurna*)
- Willow (*Salix*)
  - Black Willow (*S. nigra*)
  - Sandbar Willow (*S. interior*)
  - Weeping Willow (*S. alba*)
- Yellowwood (*Cladrastis kentukea*)
- Yew (*Taxus*)
  - Canada Yew (*T. canadensis*)
  - (*T. cuspidata*)

### **Shrubs and Small Trees**

- American Hazel (*Corylus americana*)
- Arrowwood (*Viburnum dentatum*)
- Astilbe
  - *Astilbe arendsii*
  - *Astilbe myriantha*
- Burning Bush (*Euonymus alatus*)
- Dogwood (*Cornus*)
  - Grey Dogwood (*C. racemosa*)
  - Red Osier Dogwood (*C. sericea*)
- Elderberry (*Sambucus canadensis*)
- Forsythia spp.
- Goats beard (*Aruncus dioicus*)
- Highbush cranberry (*Viburnum opulus*)
- Hydrangea (*Hydrangea* spp.)
- Juniper (*Juniperus*)
  - Chinese Juniper (*J. chinensis*)
- Prickly Ash (*Zanthoxylum americanum*.)
- Serviceberry (*Amelanchier* spp.)
- Smoketree (*Cotinus coggygria*)
- Spiraea (*Spiraea*)
  - Bridal Wreath Spiraea (*S. prunifolia*)
  - *Spiraea japonica* 'Little Princess'
- Sumac (*Rhus*)

- Fragrant sumac (*R. aromatica*)
  - Staghorn sumac (*R. typhina*)
- Magnolia
  - Magnolia Stellata
  - Magnolia Kobus
- Mock Orange (*Philadelphus* spp.)
- Viburnum (*Viburnum* spp.)
- Wafer Ash (*Ptelea trifoliata*)
- White mulberry (*Morus alba*)
- Witch hazel (*Hamamelis virginiana*)

### **Vines**

- Boston Ivy (*Parthenocissus tricuspidata*)
- Woodbine (*Parthenocissus vitacea*)
- River bank grape (*Vitis riparia*)

### **Herbaceous**

#### **Work with stakeholders to continue to fill out this list**

- Spring Ephemerals
- Native Prairie annual and biennials
- Cardinal flower (*lobelia cardinalis*)
- Smooth solomon's seal (*Polygonatum biflorum*)
- Wintercreeper (*Euonymus fortunei*)

### **Climate-Adapted Species:**

#### **Drought-tolerant:**

- Ponderosa Pine (*Pinus ponderosa*)
- Lodgepole Pine (*Pinus contorta*)
- Hardy Rubber Tree (*Eucommia ulmoides*)

### **Fruit-Bearing Species:**

- American plum (*Prunus americana*)
- Amur Chokecherry (*Prunus maackii*)
- Black Alder (*A. glutinosa*)
- Black Walnut (*Juglans nigra*)
- Cherry (*Prunus*)
  - Black Cherry (*P. serotina*)
  - Chokecherry (*P. virginiana*)
  - European Plum (*P. domestica*)
- Ginkgo (*Ginkgo biloba*)
- Hackberry (*Celtis occidentalis*)
- Hawthorn (*Crataegus*)
  - Cockspur Hawthorn (*C. crus-gall*)
- Hickory (*Carya*)

- Bitternut Hickory (*Carya. cordiformis*)
  - Shagbark Hickory (*Carya. ovata*)
- Honeycrisp Apple (*Malus pumila*)
- Honeylocust (*Gleditsia triacanthos*)
- Kentucky Coffee Tree (*Gymnocladus dioicus*)
- Lindens (*Tilia*)
  - American Basswood (*T. americana*)
  - Little Leaf Linden (*T. cordata*)
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  - Cucumber Magnolia (*Magnolia acuminata*)
- Maples (*Acer*)
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  - Northern Red Oak (*Q. rubrum*)
  - White Oak (*Q. alba*)
- Ohio Buckeye (*Aesculus glabra*)
- Serviceberry (*Amelanchier spp.*)
- Tulip Tree (*Liriodendron tulipifera*)
- Turkish Hazel (*Corylus colurna*)

### **Invasives (For Education)**

- Amur Maple (*Acer ginnala*)
- Amur Cork Tree (*Phellodendron amurense*)
- Barberry - (*Berberis thunbergii*)



- Buckthorn
  - European Buckthorn (*Rhamnus cathartica*)
  - Glossy Buckthorn (*Frangula alnus*)
- Thistle (*Cirsium*)
  - Canadian Thistle (*C. arvense*)
  - Bull Thistle (*C. vulgare*)
- Siberian Peashrub (*Caragana arborescens*)

### **Edible Plant landscape**

- Work with stakeholders to create plant list
- Identify potential areas.

### **Indoor Ecosystem/Tropical Species**

- Utilize existing greenhouse plants/ space
- Collaborate with the horticulture department to create plant list

### **Overall landscapes**

- CBS Conservatory-additional route option
- Community gardens/food gardens on St. Paul and West Bank
- Gravel bed (Green Hall)
- Horticulture garden
- Medicine garden
- Mississippi River corridor
- Mullen's wood
- Northrop Mall
- Prairie plantings - tallgrass and Bluff/goat
- Sarita wetland
- The Knoll
- The Lawn