

2015

The St. Paul Campus Woodlot

Inventory Report & Management Plan



FNRM 4501/5501

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Acknowledgements

The authors would like to thank everyone involved in the completion of this project in particular the CFANS staff and faculty that gave us the feedback that helped us shape our recommendations.

Executive Summary

The St. Paul Campus Woodlot: Inventory Report & Management Plan

Prepared by FNRM 4501/5501 Urban Forest Management Class

May, 2015

<u>Report Section</u>	<u>Page Reference</u>
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Introduction and Background - Page 8	
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This document summarizes the report entitled *The St. Paul Campus Woodlot Inventory Report & Management Plan*. The purpose of the report is to provide information and management recommendations for the St. Paul Campus Woodlot—a wooded lot approximately 2.3 acres in size located between the Student Center and McNeal Hall on the St. Paul campus of the University of Minnesota - Twin Cities in Falcon Heights, MN.

Problem Statement - Page 10	
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The St. Paul Campus Woodlot currently has no management plan. Dead trees are a public safety issue and invasive species are thriving. A trail passing through the woodlot is not maintained, is muddy and/or icy during wet seasons and winter, and is a source of intensified erosion on the steep slope. The woodlot is not ADA accessible, inviting, engaging or widely used; however, the area has great potential for educational and recreational activity. The objective of this report is to provide recommendations on how the St. Paul Woodlot can become a well-maintained, attractive, and an integral part of the educational and outreach endeavors of the University of Minnesota.

Methods – Page 10	
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Woodlot Inventory - A full-tally inventory was conducted on the woodlot. Species and status (live or dead) were recorded for all trees with a trunk measuring over 4 inches in diameter. Understory components were assessed qualitatively.

Faculty Survey- In order to best determine how the current state of the space should be changed, a survey was sent out to gain information on perception, usage, and opportunity. The questions were generalized to the whole area and directed to natural resource professors and staff identified as having a stake in this area: Environmental Sciences, Policy & Management (ESPM); Forestry; Recreation Resource Management (RRM); Soils; and Fisheries and Wildlife.

Results - Page 11	
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Woodlot Inventory - The canopy of the woods area consists mainly of invasive Norway maple (32%), and hackberry (23%). The full results of the inventory are summarized in tables 1 and 2. Species compositions are graphed in figure 2 and 3.

Faculty Survey - The responses indicated common issues within the wooded area such as erosion, trail accessibility, lack of species diversity, lack of seating/teaching areas, and lack of purpose for the woodlot. Many faculty members expressed interest in using the wooded area more, especially for teaching opportunities, and that improvement of the single trail that passes through the woodlot would increase use within the space by faculty, students, and visitors. The addition of signage and seating would increase the public's knowledge of what the woodlot has to offer in terms of enjoyment and education. The results of the faculty survey are summarized in table 3.

Recommendations – Page 14

Fixing the Trail - The trail that runs through the lot is at a steep angle, prone to erosion, and is in poor condition. It is recommended that a sitting area be constructed in the clear area on the downhill side of the woods area where the ground is flat, providing enough seating to accommodate a class - and should be compliant with The Americans with Disabilities Act (ADA) standards for handicap accessibility.

Safety – There are two primary recommendations related to safety.

Hazard Trees - There are a number of dead standing trees in the woods area of the woodlot. These trees should be trimmed and topped to eliminate the hazard, while leaving trunk intact to provide additional wildlife habitat.

Visibility - To keep the trail and sitting area safe, it is recommended that the understory of the woodlot be kept relatively thin. This would keep the trail and proposed sitting area highly visible, which would reduce the risk of crimes such as assault.

Additional Landscape Features – It is recommended that two additional landscape features be constructed to beautify the campus woodlot.

Rain Garden - Due to the steep slope of the woods area, water tends to pool at the bottom of the hill following storm or snowmelt events. The turfgrass is in poor condition; therefore, the installation of two rain gardens is recommended; one on each side of the entrance to the trail.

Terraced Hillside - Due to the steep slope of the turfgrass area on the north side of the woodlot, the area is difficult to mow and maintain. To make maintenance easier, it is recommended that terracing be installed to retain the hillside with the addition of shade-tolerant shrubs to make this an attractive feature of the lot.

Signage - Signs should provide information about the identification of significant, unique, or invasive plant or animal species, the purpose of habitat trees, the purpose of the trail renovation, the purpose of the rain garden and terraced hillside. Signs would provide website information to obtain further information.

Maintenance - The trail and sitting area will require regular maintenance, particularly if ADA compliance is desired. The site would have to be monitored regularly to keep tabs on potential hazard trees and the presence of invasive species. The added shrubs proposed in the terraced hillside and rain gardens may

require maintenance as well; however, terracing the hillside would reduce maintenance of the turfgrass in that area.

Faculty members and departments of the College of Food, Agriculture, and Natural Resource Science that are interested in utilizing the woodlot for educational purposes and may be interested in helping to maintain the woodlot: Forestry, Wildlife, Soils, Horticulture, Entomology/Pathology, Landscape Architecture, Extension. Additional volunteer help could come from master naturalists and student groups. Alumni may be an important source of funding for maintaining the woodlot.

Potential Projects - Two departments have expressed interest in projects in the woodlot

Department of Soil, Water, Climatology

Study the effects of above-ground biodiversity on below-ground biodiversity (bacteria, fungi, earthworms, and insects). Study the relative rates of decomposition of different plant materials from the “forest” and discuss why some materials resist decomposition more effectively than others.

Department of Fisheries and Wildlife

In order to help foster University-wide engagement, the Department of Fisheries and Wildlife has been invited to be a part of implementing “The Bat House Design Competition”. The entries will be displayed at the Regis Center for Art on the University of Minnesota’s West Bank, as well as in the atrium between Green and Skok halls on the Saint Paul Campus. The winning entry will have their bat house installed in the woodlot.

Conclusion & Closing Remarks - Page 22

The Saint Paul Woodlot has great potential for educational and recreational uses and can add considerable value to the campus. This management plan will help to improve the ecological condition of this area and also improve its accessibility to the public. The inventory of existing trees can inform future management strategies. The faculty survey provides guidance for future development and usage. Fixing the trail will reduce erosion problems and also make the woodlot more accessible to the public. The sitting area on the downhill side of the woods also provides a teaching area with outdoor seating. Trimming and topping of hazardous trees reduces liability, while providing habitat for wildlife. Keeping a thin understory around the sitting area will increase the visibility and reduces the risk of crime. Rain gardens catch sediment and runoff, provide habitat for pollinators, and add curb appeal. Maintenance will be easier on the grassy slope by installing terracing and adding shrubs. Installing signage in the woods adds a unique feature to the campus and provides an additional “Learning Lab” opportunity. Implementing the recommendations provided by this report will make the St. Paul Woodlot a valuable asset to the Saint Paul campus of the University of Minnesota.

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Introduction & Background

The purpose of this document is to provide information and management recommendations for the St. Paul Campus Woodlot, a 2.3 acres parcel located between the Student Center and McNeal Hall on the St. Paul campus of the University of Minnesota - Twin Cities in Falcon Heights, MN. The lot consists of a variety of native and non-native species. The lot is composed of two different areas – a turf area (turfgrass cover) and a wooded area (leaf litter cover (figure 1). The wooded area of the lot has remained relatively untouched, though a number of unique individual trees have been planted. A dirt trail runs southwest to northeast through the woodlot. There is a single bench on the side of the trail and a number of benches on the uphill side of the turf area. A notable feature of the woodlot is the blanket of Siberian squill (*Scilla siberica*) that appears during early spring.

This project group was tasked with inventorying the woodlot and developing a detailed plan for its future use based on the needs and desires of the CFANS faculty members, students and visitors who use it most.

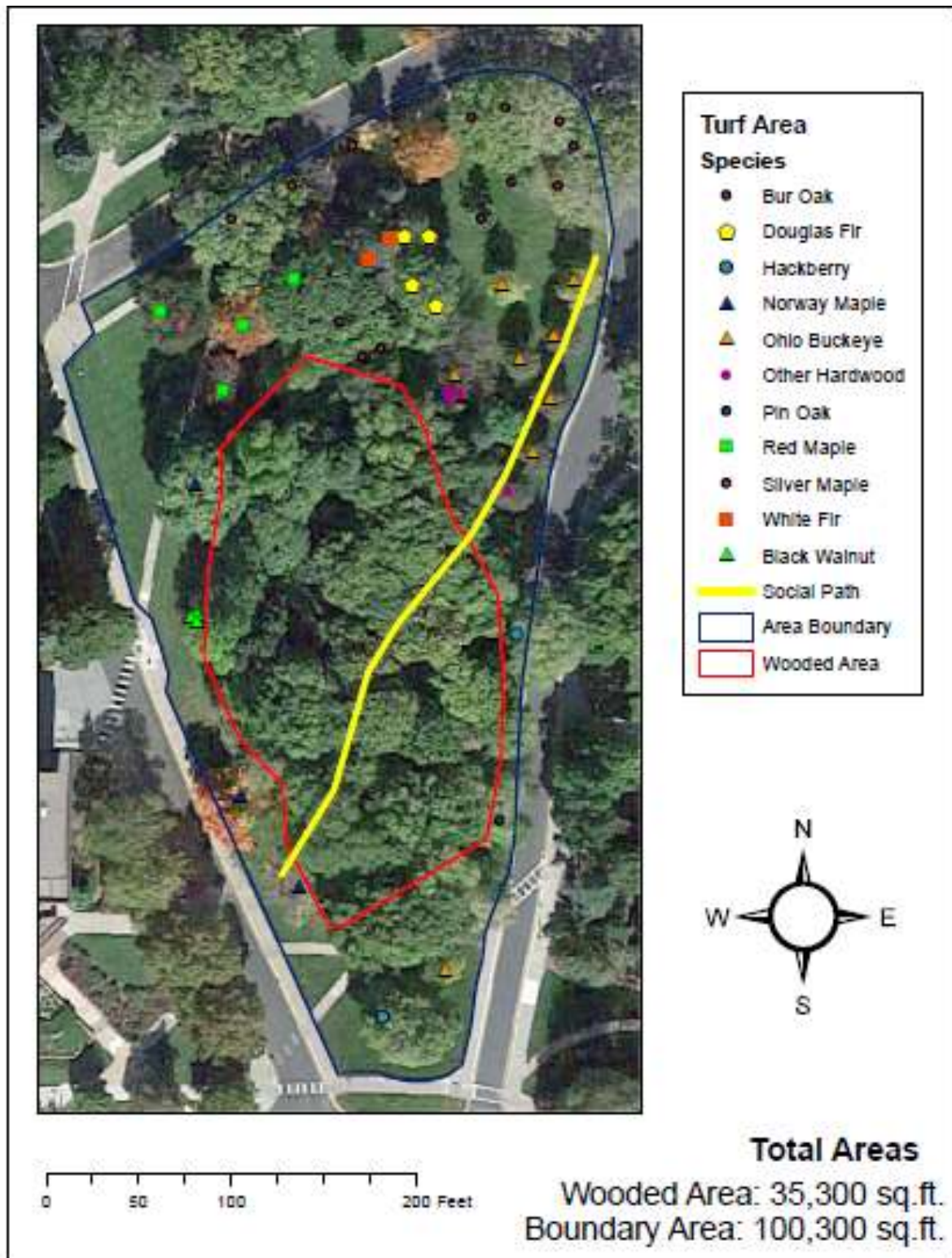


Figure 1. Map of the St. Paul Campus Woodlot

Problem Statement

The woodlot is currently being managed without a plan and its condition is degrading. Invasive species are thriving in this area and dead standing trees are becoming safety issue. The trail (yellow line in Figure 1.) does not receive regular maintenance and becomes inaccessible especially during storm or snowmelt events. The trail is poorly constructed and has a steep grade. The slope on the northern portion of the woodlot makes it unfavorable for people walking in this area and causes erosion problems. Overall, the woodlot in its current condition is not particularly accessible or engaging to students, faculty, or visitors, however, this area has great potential for both educational and recreational uses if a proper management plan can be developed and implemented.

Methods

Woodlot Inventory

A full-tally inventory was conducted on the woodlot. The lot was divided into two sections - the area with turf grass cover (turf area) and the area with leaf litter cover (wooded area). The two sections were inventoried separately. Species and status (live or dead) were recorded for all trees greater than 4 inches DBH (aka, diameter at breast height, i.e., trunk width measured at 4.5 feet above ground). Understory components were assessed qualitatively.

Faculty Survey

In order to determine what changes should be made to the woodlot, a survey was sent out via email to gain information on how the woodlot is perceived and used by faculty members and facilities management and how said responders would like to see it used in the future. A set of questions was compiled so that they were easy to answer and aimed at making the whole survey less than 5 minutes in length, in hopes of having more responses. The questions were generalized to the whole parcel since this survey was sent to a wide range of people. Respondents were asked to return the surveys within one week.

The pool of recipients for the survey was selected based on current and possible future relation with the site. The focus was on natural resource professors and staff and representatives from facilities management. The natural resource areas that were identified as having a stake in this property were: ESPM, Forestry, RRM, Soils, and Fisheries and Wildlife. The email was then sent directly to professors who utilized the area for educational purposes and to department heads that would have a better of who might be interested in the woodlot. The survey can be found in appendix B.

Results

Woodlot Inventory

The results of the inventory are summarized in tables 1 and 2. Species composition for the woods area is graphed in figure 1 and species composition for the turf area is graphed in figure 2.

Table 1. Summary of inventory data for the woods area.

Species	Abbreviation	# of Individuals	# Live	# Dead
Norway Maple	NM	35	30	5
Hackberry	HB	25	24	1
Tilia spp.	BW	16	12	4
Green Ash	GA	9	7	2
Boxelder	BE	5	4	1
Kentucky Coffeetree	KC	5	5	0
Ohio Buckeye	OB	4	4	0
Scots Pine	SP	3	2	1
Black Cherry	BC	2	1	1
White Oak	WO	1	1	0
Black Birch	BB	1	1	0
Unidentified	UI	4	0	4
Total		110	91	19

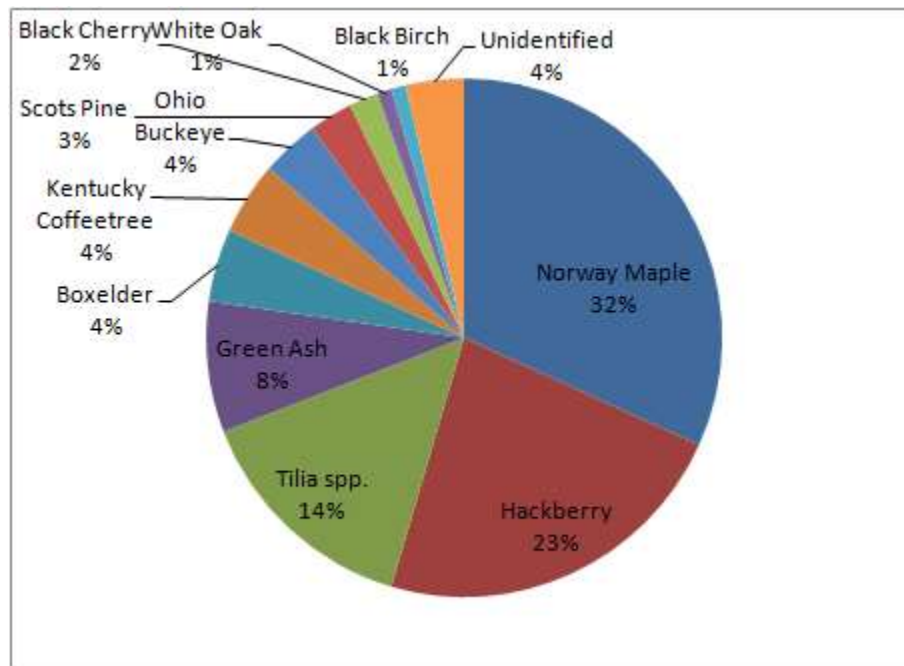


Figure 2. Species composition for the wooded area.

The canopy of the woods area consists mainly of Norway maple (*Acer platanoides*) and hackberry (*Celtis occidentalis*) with smaller components of *Tilia* species (presumable either *Tilia americana* or *Tilia cordata*), green ash (*Fraxinus pennsylvanica*), and Kentucky coffeetree (*Gymnocladus dioica*). The understory is dominated by boxelder (*Acer negundo*) and mulberry (*Morus* spp.). Individuals of species such as black cherry (*Prunus serotina*), black birch (*Betula lenta*), and Ohio buckeye (*Aesculus glabra*) are the result of planting.

Table 2. Summary of inventory data for the turf area.

Species	Abbreviation	# of Individuals	# Live	# Dead
Bur Oak	BO	12	12	0
Ohio Buckeye	OB	8	8	0
Red Maple	RM	4	4	0
Douglas Fir	DF	4	4	0
Other Hardwood	OH	4	4	0
Norway Maple	NM	3	1	2
Black Walnut	WN	3	3	0
Hackberry	HB	2	2	0
Silver Maple	SM	2	2	0
White Fir	WF	2	2	0
Northern Pin Oak	PO	1	1	0
Total		45	43	2

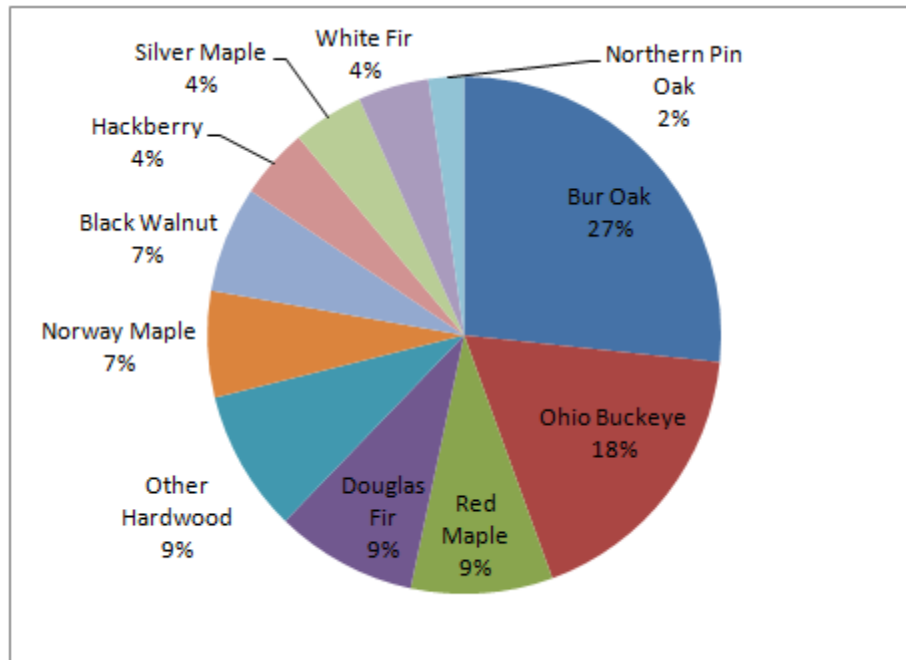


Figure 3. Species composition for the turf area.

The turf area of the campus woodlot is a cultivated ecosystem, not a remnant, like the wooded area. Trees in this area are primarily planted and have been maintained to a higher degree than those in the woods area. As a result, there are much fewer dead or dying trees. The largest individuals are bur oak (*Quercus macrocarpa*), red maple (*Acer rubrum*), and Norway maple. This area is covered with mowed turfgrass and thus has no understory.

Faculty Survey

Following the dissemination of the survey created on March 4th, 2015, 8 responses from potentially interested individuals were received regarding the woodlot (table 3).

Table 3. Summary of survey responses.

Current Issues	Current Perspective	Current Utilization	Future Utilization
Trail Damage (3)	Not Inviting (2)	Not accessible	Greenspace corridor
Tree Damage	Neglected	Teaching (6)	Student Recruiting
Erosion	Little educational value	Walking (3)	Research/Study Plot (3)
Graffiti	Unknown purpose (2)	Aesthetics	Teaching opportunities (5)
Littering	Lack of space	Seating	Signage (3)

Species Diversity (3)	Lack of privacy (2)		Increased seating (2)
Seating	Aesthetics from distance		Improve Trail - accessible (4)
Signage	Lack of signage		Increased Species Diversity (3)
	Just a walk through		Safety
			Address Erosion
			Wildlife Habitat

The responses indicated common issues within the wooded area such as erosion, trail accessibility, lack of species diversity, as well as many other problems. Overall, there was a general lack of knowledge regarding the greenspace and how to utilize it for education, research, and enjoyment. This lack of clarity deters faculty from utilizing the space to its full potential and either deters or appears as uninviting for visitors and students to utilize for recreation. A general consensus illustrated that many people passing throughout campus merely use the college woodlot as a walk through from one place to another.

With the appropriate changes made to better foster such activities, many faculty members have noted that they would be interested in using the wooded area more, especially for teaching opportunities. In general, the improvement of the single trail that passes through the woodlot would increase use within the space by faculty, students, and visitors. The addition of signage and seating would increase the public's knowledge of what the greenspace has to offer in terms of enjoyment and education. The changes made based on the management proposal appears to be met with equal excitement from respondents in regards to assisting with changes to the space and increasing future utilization of the college woodlot.

Recommendations

The management recommendations for the St. Paul Campus Woodlot fall into the following five categories:

Fixing the Trail

Due to its construction and lack of maintenance (it likely began as a "social path"), the trail that runs through the lot is in poor condition. It crosses the hillside at a steep angle, which makes it prone to erosion. In addition to this, the surface of the trail is "cupped" such that water pools in the center and flows down the trail during storm or snowmelt events (figure 4).



Figure 4. Photograph showing the trail following spring snowmelt. Note how the surface of the trail is flooded and muddy.

Rather than leave the trail in its current condition, the construction of a sitting area on the downhill side of the woods area, where the ground is flat is recommended (figure 5). Since a common complaint about the woodlot (and the St. Paul Campus in general) is a lack of available outdoor seating, this area should have several benches and should be compliant with ADA standards for handicap accessibility. More information on ADA regulations can be found in Appendix A.

In addition to this sitting area, the trail should be rerouted to form a switchback, which would provide students with a place to cut through the woodlot (as they are used to doing), thus discouraging the formation of a rogue trail. Information on proper trail construction can be found in Appendix A.



Figure 5. The proposed sitting area.

Safety

There are two primary recommendations related to safety.

Hazard Trees

There are a number of dead standing trees in the woods area of the woodlot. These trees could potentially become hazardous, so it is recommended that these trees be trimmed and topped, as has been done to the tree in figure 6. Trimming and topping the tree while leaving the bole intact would eliminate the hazard without removing potential wildlife habitat.



Figure 6. Example of a dead standing tree that has been trimmed and topped to reduce hazard limbs.

Visibility

To keep the trail and sitting area safe for students, it is recommended that the understory of the woodlot be kept relatively thin. This would keep the trail and proposed sitting area highly visible, which would reduce the risk of crimes such as assault.

Additional Landscape Features

The construction of two additional landscape features is recommended to beautify the campus woodlot.

Rain Garden

Due to the steep slope of the wooded area, water tends to pool at the bottom of the hill following storm or snowmelt events. This makes it very difficult to maintain the turfgrass in this area (figure 7). To manage this water, it is recommended that a rain garden be constructed at the bottom of the hill, on either side of the entrance to the trail (figure 8).



Figure 7. The current condition of the trail entrance.



Figure 8. The proposed rain garden.

For a list of recommended rain garden grasses and flowers, see Appendix A.

Terraced Hillside

The turfgrass area on the north side of the woodlot falls on a steep slope. This makes the grass in this area difficult to mow and maintain (figure 9). To make maintenance easier, it is recommended that terracing be constructed to retain the hillside (figure 10). The addition of shrubs on each tier could make this an attractive feature of the lot.



Figure 9. The steep hillside on the north side of the woodlot.



Figure 10. The proposed terraced hillside.

Recommended shade-tolerant shrub species for the terraced hillside include:

- Pagoda Dogwood - *Cornus alternifolia*
- Gray Dogwood - *Cornus racemosa*
- Bailey Red Twigged (AKA Red Osier, Isanti) Dogwood - *Cornus sericea* 'Bailey'
- Cardinal Dogwood - *Cornus s. 'Cardinal'*
- Yellow Twig Dogwood - *Cornus s. 'Flaviramea'*
- Isanti Dogwood - *Cornus s. 'Isanti'*
- Red Berried Elder - *Sambucus pubens*
- Hills of Snow Hydrangea - *Hydrangea arborescens* 'Grandiflora'
- Annabelle Hydrangea - *Hydrangea a. 'Annabelle'*
- Juneberry - *Amelanchier canadensis*
- Snowberry - *Symphoricarpus albus*
- Ash Leaf Spirea - *Sorbaria sorbifolia*
- Arrowwood - *Viburnum dentatum*
- Mohican Viburnum - *Viburnum l. 'Mohican'*
- Nannyberry - *Viburnum lentago*
- American Cranberrybush - *Viburnum trilobum*
- Compact American Cranberrybush - *Viburnum t. 'Compactum'*
- Common Witch Hazel - *Hamamelis virginiana*
- Kumson Forsythia - *Forsythia 'Kumson'*

Signage

The installation of descriptive signs would help to make the woodlot a more attractive feature of the St. Paul Campus. Signs should provide information about the purpose of the trail renovation, the purpose of the rain garden and terraced hillside, and significant, unique, or invasive plant or animal species. Signs should also provide web addresses for websites that provide additional information for those interested in learning more about each of these features.

Potential Projects

Department of Soil, Water, Climatology

Look for signs of fungal life (mushrooms, non-photosynthetic plants (which receive organic molecules from fungi))

Decomposition is a critical process in nature – different types of plant material breakdown at different rates. Mesh bags could be used (I believe they are called “litter bags”) to study the relative rates of decomposition of different plant materials from the “forest” – bark, leaves and needles from different types of trees, soft-bodied plants – and discuss why some materials resist decomposition more effectively than others.

Comparing the numbers and diversity of bacteria, fungi, earthworms, and insects in soil under the forest compared to soil under lawn would undoubtedly yield useful information about the effects of aboveground biodiversity on belowground biodiversity.

Finally, if there is access to the right equipment: Many plants share nutrients and/or chemical signals underground. If a type of tracer is injected into certain plants, it could be seen which plants receive the tracer to better understand connections.

Department of Fisheries and Wildlife

The Department of Fisheries and Wildlife has been invited to be a part of the University-wide “bat house design competition”. The entries will be displayed at the Regis Center for Art on the University of Minnesota’s West Bank, as well as in the atrium between Green and Skok halls on the Saint Paul Campus. The winning entry will have their bat house installed in the woodlot.

Maintenance

There are several maintenance concerns which accompany the recommendations proposed in this document. A properly constructed trail and sitting area will require regular maintenance, particularly if ADA compliance is desired. The site would have to be monitored regularly to keep tabs on potential hazard trees and the presence of invasive species and problems would have to be addressed in a timely manner. The added shrubs proposed in the terraced hillside would require maintenance as well, however, terracing the hillside would also reduce maintenance of the turfgrass in that area. Also, unfortunately, added benches and signs could become targets for vandalism.

There are a number of faculty members and departments of the College of Food, Agriculture, and Natural Resource Science that are interested in utilizing the woodlot for educational purposes that may also be interested in helping to maintain the woodlot. These departments include, but are not limited to:

- Forestry
- ESPM
- RRM
- Wildlife
- Soils
- Horticulture
- Entomology/Pathology
- Landscape Architecture
- Extension

In addition to faculty members, student groups, including the forestry club and the ESPM student association, may be in some position to help with maintenance of the woodlot. The university may also be interested in organizing volunteering events. Alumni may be an important source of funding for maintaining the woodlot.

Conclusion & Closing Remarks

The great potential of the woodlot for educational and recreational uses has considerable value to the campus. The development of this inventory report and management plan will help to improve the ecological condition of this area and also improve its accessibility to the public. By inventorying the trees, species, either native or non-native, can be managed as desired. The faculty survey provides guidance for future development and usage, as well as the potential area of improvement. Fixing the trail and rerouting it to form a switchback will not only reduce erosion problems but can also make it more accessible to the public. The sitting area on the downhill side of the woods also provides available outdoor seating. Trimming and topping of hazardous trees eliminate the likelihood of people staying in the woods getting injured while also providing habitat for wildlife. Keeping a thin understory around the

sitting area will increase the visibility and thus reduce the risk of crimes such as assault. Rain gardens can catch sediment and runoff from uphill, thus improves water quality and retains soil. The rain garden also provides habitat for pollinators and adds to curb appeal. By terracing the hillside, maintenance will be made easier and the addition of shrubs on each tier could make this an attractive feature of the lot. Installing signage in the woods adds a unique feature to the campus and provides learning opportunities for people interested in certain type of vegetation. Overall, with the development and further improvement of the management plan, this area will truly be a valuable asset of the campus.

Appendix

A - More Information

Recommended species for rain gardens:

<http://www.extension.umn.edu/garden/yard-garden/landscaping/best-plants-for-tough-sites/docs/08464-rain-garden.pdf>

Trail design and construction:

<http://conservancy.umn.edu/bitstream/handle/11299/48335/08425.pdf?sequence=1>

ADA compliant/handicap accessible trails:

<http://www.americantrails.org/resources/accessible/UTAPsum.html>

Urban forestry/urban natural resources in Minnesota:

<http://www.myminnesotawoods.umn.edu/category/urban-natural-resources/>

B - Survey Data

Survey

Hello all,

We are from Managing Urban Greenspaces class with Gary Johnson. We are assigned for a class project to write a proposal to redesign the wooded area between the St. Paul Student Center and McNeal Hall. This proposal will eventually be presented to the Dean and hopefully take physical form. As a prominent figure on the U of M campus, we would like to gain your input toward the changes we will propose for the wooded area. If you could answer the following quick questions, we will have a better idea for the potential vision of the area and its uses in the future. If you feel that you would like to expand further, please feel free to contact us to further discuss the project.

- 1- What are some current issues you see or have experienced in the current area?
- 2- How do you currently utilize the area? If not, why?
- 3- If the management level and current design were to change, would you use the space more often for teaching opportunities, research, or enjoyment?
- 4- What ideas would you have for changes for the space?
- 5- Would you be willing to help implement changes? (Research, sampling, implementation/labor, etc.)

If you know of anyone else who has interest in the area, please forward this e-mail so we can get as much feedback as possible. If you could have responses to us by Tuesday, March 10th, that would most grateful.

Thank you for your time, effort, and feedback.

-FNRM 4501

Responses

Ingrid Schneider, Professor, Forest Resources:

- 1) My class practices trail monitoring on the site; in the past they have noticed trail widening, tree root damage, graffiti and litter on/near the trail; erosion is clearly an issue.
- 2) I personally don't use the area--not enough space/privacy, no place to really sit besides the 1 or 2 benches.
- 3) Maybe, but I use it now.
- 4) Per 2 for personal use, more areas to sit...but that are private.
- 5) Of course.

Carl Rosen, Professor & Department Head, Soil, Water & Climate:

- 1) I see the space almost every day but have never really walked through it or used it for any class. No issues really - just not very inviting to walk through and it is kind of steep.
- 2) See above - It is unclear where or if you can actually walk through it - no signage. Steep slope
- 3) Probably mostly for enjoyment. There could be some teaching opportunities in a class like soil and water conservation.
- 4) As mentioned above - maybe some signage and if you want people to walk through - better entrance and exit ways.
- 5) I am personally over-extended right now and do not have time, but I would be willing to help recruit students.

Eric North, Research Fellow, Forest Resources:

- 1) Species diversity, poor trails.
- 2) Used for teaching in Dendrology, and Arboriculture, occasionally, would use more if species diversity and access were improved.
- 3) Yes.
- 4) remove some of the invasives, improve / add trails, add additional tree species that are minimally represented on campus (e.g. paper birch, red pine, etc.)
- 5) Yes.

Alan Ek, Professor & Department Head, Forest Resources:

- 1) The area is currently neglected and is a poor example of green space...its value to me is but an occasional walk through. It has little educational value from the standpoint of its existing vegetation.
- 2) I walk through it occasionally, when the path might be dry and I have business in that direction.
- 3) Definitely yes, primarily for teaching and demonstration of research...and student recruiting visits.
- 4) First, signage about history of what it was and what it is being restored/managed to provide the campus and visitors. Second, manage the whole area, but designate with corner stakes an area of say 1 acre, with subdivisions also marked, to manage each subdivision for various objectives, say a) urban forest-campus green space, b) park & trail and c) high economic value forest. The north end might be the best location for c). And locate a permanent study plot, say 1/10 acre in each. Then follow those study plots with annual or periodic measurements and photos/videos. These can then become a database of treatment and response plus corresponding visual records. Vegetation management could include both the overstory and understory...and there could be a periodic harvest/tree removal day in terms of pruning, thinning, health management, etc.
- 5) Yes, and the Department of Forest Resources could contribute with \$, say 1-2,000 for a start. I suspect other parts of the U, say grounds, would also be able to contribute.

P.S. This could be even more meaningful if we could include the area between Green, Kaufert and the St. Paul Campus Gym.

Thomas Ritzer, Campus Landscape Architect:

Thanks for asking my opinion about the future **Johnson Memorial Woodland** site

- 1) There is a beautiful display of Siberian squill every spring on the south end of the woods. It would be nice to preserve that. There is currently a dirt path through the site which probably exceeds 5% longitudinal slope. Depending on the scope of your proposal, you might want to consider how you could fit a code-compliant walkway through the space, or how you could avoid it. Also, there is a group that is currently proposing a Living Lab project to develop the site into a Native American community space. Are the two projects compatible?
- 2) The area is one of a few naturalized areas on the campus. It's possible, these areas could be connected to provide a continuous (or at least less-fragmented) green spine or corridor through the campus.
- 3) Probably not.
- 4) I would want to make sure that whatever you do accommodates any academic use already underway. For example, Les Potts, the grounds superintendent, described some management activities conducted by Landcare such as leaving some dead trees standing and some brush piles to encourage wildlife.
- 5) Les Potts/Landcare is currently responsible for managing the area. It might be good to get his feedback on this.

Rebecca Montgomery, Associate Professor, Forest Resources:

- 1) None. I enjoy the area very much especially the spring wildflowers in the forest understory.
- 2) I use rustic path as often as possible. It gives me a sense of a small natural area right on campus. My class uses the site for a lab. They measure the dbh of all trees in the woodland and identify them to species.
- 3) No. I am fine with its current state.
- 4) I don't advocate major changes. Perhaps a looping small/narrow trail through the site to allow people to immerse themselves in the woods to a greater degree. Plantings to diversify the understory and to provide tree regeneration for the future.
- 5) Depending on the changes, I might consider involving my class.

Kristen Nelson, Professor, Forest Resources:

- 1) Most people appreciate this space but don't know what it is or why it is there.
- 2) Viewing it on every walking, driving trip back and forth, from a distance and up close. Beauty from a distance, calming from a distance.

3) Perhaps for enjoyment but want to be sure it is passive activities, not clearing to make active activity spots. Mike use it for a class reflection space with dispersed groups but I can use the lawn around it just as easily.

4) Don't eliminate the blue blanket of woodlot color in the early spring...of course another may see this as problem such as lack of diversity. Possibilities of diversifying the species and structure within the wood lot and on the borders BUT if someone can't see through it, then it will be considered unsafe for women or other users. So mystery through density would not be my desired goal. Address erosion problems, if possible, especially if you anticipate greater use within the woodlot.

5) Unlikely, but perhaps if it is a focused group effort with a clear objective, not chronic maintenance activities.

Stephan Carlson, Professor & Extension Educator, Forest Resources:

1) I have used it briefly but the understory is to open for the nature activities I wanted to do there.

2) The Interpretation class (ESPM 4811) would like to see the trail have some signage along with a well designed trail that meets basic standards, width, box steps etc. Rest stops and even places to teach outside would be really nice. The understory is in need of plants (to open) and an overall edge effect from the lawn areas.

3) n/a

4) I would use it for 2 classes, my Environmental Education class and my Environmental Interpretation class.

5) I would be willing to work on this with the folks who are designing it.

Karen Ballen, Adjunct Assistant Professor, Soil, Water, Climatology dept.

Here are some ideas of ways the wooded area could be used in teaching.

Look for signs of fungal life (mushrooms, nonphotosynthetic plants (which receive organic molecules from fungi))

Decomposition is a critical process in nature – different types of plant material breakdown at different rates. We could use mesh bags (I believe they are called “litter bags”) to study the relative rates of decomposition of different plant materials from the “forest” – bark, leaves and needles from different types of trees, soft-bodied plants – and discuss why some materials resist decomposition more effectively than others.

Comparing the numbers and diversity of bacteria, fungi, earthworms, and insects in soil under the forest compared to soil under lawn would undoubtedly yield useful information about the effects of aboveground biodiversity on belowground biodiversity.

Finally, if we have access to the right equipment: Many plants share nutrients and/or chemical signals underground. If we inject some type of tracer into certain plants, we could see which plants receive the tracer to better understand connections.