ENV232
April 2010

UTM Self-Guided Tour

University of Toronto Mississauga

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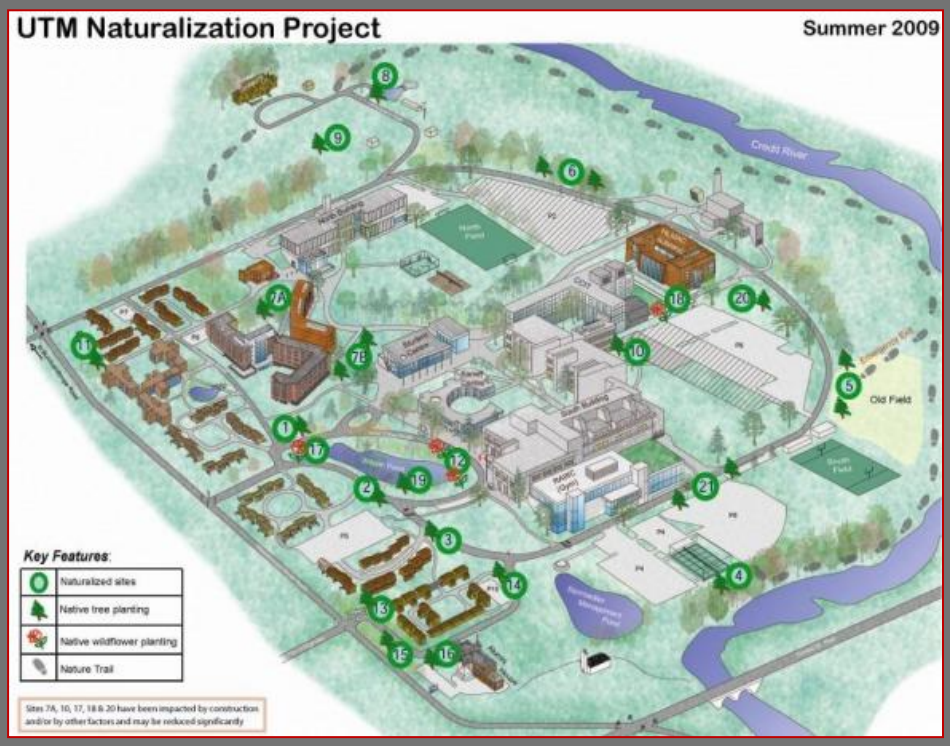

"In wildness is the preservation of the world."
- Henry David Thoreau

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"A city should be seen as a functioning system not in terms of its parts, but in terms of its whole. Cities should be integrated into local ecosystems rather than imposed on them."

- Richard Register, author of Rebuilding Cities in Balance with Nature.
Quoted from Lester Brown's Plan B 4.0.

EXECUTIVE SUMMARY

The University of Toronto Mississauga campus is surrounded with natural environments and the school goes out of its way to protect it. UTM's conserving of naturalized sites started in 2003 and today there are twenty-one naturalized sites surrounding our campus. The objective of this project was to create a self-guided tour of these naturalized areas to raise awareness of their existence, teach students about our local ecosystems, and to promote the mental and physical health benefits of spending time in the outdoors.

We conducted a quantitative survey involving 100 UTM students located over multiple areas of campus. Our results showed that 39% of students show an interest in learning about local ecosystems, and 43% show an interest in campus-based nature walks. Although our results display interest, we concluded that 82% of the students surveyed did not know of the 21 naturalized sites around campus. This demonstrates a huge lack of awareness and disconnection from our local environment. Due to the student interest in campus-based nature walks and local ecosystems, the potential for the UTM self-guided tour to be successful is high.

By installing informational plaques at the unique sites, this will encourage students to use these areas, as well as increase awareness of their existence. Aside from their intrinsic value, these sites can also act as a valuable research resource, and carbon offset falling under UTM's banner of growth, "Grow Smart, Grow Green." As UTM continues its push to become a leader in sustainability, it is increasingly important that the care, appreciation, and protection of these beautiful areas is not taken for granted, but rather kept to enjoy.

INTRODUCTION

Surrounding the University of Toronto Mississauga Campus (UTM) there are 21 unique sites that have been naturalized over the past years beginning in 2003. These sites are vital to our campus ecosystems, and play an important role in UTM's banner of growth, "Grow Smart, Grow Green." Every year prior to 2003 approximately 2000 native tree saplings have been planted in partnership with the UTM community and its partners.

Through our efforts we would like to first and foremost increase students' awareness of these 21 sites, make them realize the benefits of being outdoors, connecting with nature. Finally we would like to provide the opportunity for the entire UTM community to appreciate these natural areas not only for their intrinsic values to the UTM campus, but also for the capacity they hold as valuable research sites and as a carbon offset. Creating a self guided tour of these naturalized areas to raise awareness in the university community, as well as for future prospective students, is our goal. In addition to improving the overall student experience, the success of our project would translate into an increased enrolment of students at UTM, which is one of the mandates in the "Towards 2030 Initiative at UofT."

The heightened awareness could help protect these areas, and attract an increased amount of visitors to admire and understand the importance of our ecosystems on campus, and provide a means of connectivity between the UTM community and our surrounding campus.

BACKGROUND INFORMATION

What are the mental and physical health benefits of connecting with natural areas?

One of the major points we have been using to attract attention to our UTM self-guided tour has been the health benefits of being outdoors. By promoting these benefits, we can raise awareness of not only the sites around campus, but also get students to enjoy the wonderful campus of the University of Toronto Mississauga. Studies done by professors Rachel and Stephen Kaplan of the University of Michigan, Professor Rachel Kaplan in the School of Natural Resources and Environment and psychology and Professor Stephen Kaplan in psychology and electrical engineering/computer science, have shown that natural settings can have a positive effect on mental and physical health[1].

Professors Rachel and Stephen Kaplan of University of Michigan

According to Professor Stephen Kaplan, the effects of outdoor activity on mental health originate from how the brain functions. When a person undergoes long periods of direct concentration, such as long periods of study, classes, work, or assignments, the brain gets fatigued easily due to the mental strain of the direct attention. If watching television or reading a book, the activity might be stimulating and amusing, however it still requires focused attention,

[1] http://www.ns.umich.edu/MT/06/Fal06/story.html?awalk

not allowing the brain to rest[2]. On the other hand, a walk in a natural setting does not overwhelm one's concentration, allows the mind to wander, and ultimately allows better mental recuperation[3]

Other students who have worked under the Kaplan Professors supervision have gone on to further pursue their own studies in the mental benefits of the outdoors. For example, Dr. Bernadine Cimprich of the University of Michigan School of Nursing studied the effects of spending time outdoors on the recuperation of cancer patients. Her studies showed that her cancer patients who took part in twenty minute activities, such as gardening, or taking a walk in the woods, three times a week had much better psychological improvements than her control group, who opted not to participate in the activities[4].

Dr. Bernadine Cimprich and Dr. Lisa Canin

Dr. Lisa Canin of the University of Texas Medical Branch has done similar research and also proved results of mental benefits of outdoor activity. Her studies concluded that the best means to avoid stress-related burnouts were by undergoing physical activities outdoors. Due to natural environments being "rich" in the characteristics necessary for restorative experiences, these activities can theoretically lead to recovery from mental fatigue[5].

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[2] **Kaplan, S.** 2001. Meditation, Restoration, and the Management of Mental Fatigue. Environment and Behaviour, Vol 33, No. 4, pp. 480-506

[3] **Kaplan, S.** 1978. Attention and fascination: The search for cognitive clarity. Humanscape: Environments For People, pp. 84-90

[4] **Bernadine, C. PhD, et Al.** 2003. An Environmental Intervention to Restore Attention in Women With Newly Diagnosed Breast Cancer. Cancer Nursing. Vol 24 (4), pp. 284-292

[5] **Kaplan, S. et Al.** 1995. The Restorative Benefits of Nature: Toward an Integrative Framework. Journal of Environmental Psychology. Vol 15 (3), pp. 169-182

METHODS

Conducting research on the philosophy of self-guided tours:

From our research we have found out what makes an effective thematic stop. This can include the containing of short sentences, using simple active verbs whenever possible, avoiding unfamiliar language and technical terms, encouraging questions, and suggesting to visitors to search for something. We have implemented these guidelines in creating designs for our plaques. We would like to see our recommended plaques include a title, theme of the site, site number and date of naturalization, descriptions of local flora and fauna, invasive species, fun facts, as well as warnings for plants such as poison ivy. The plaques would use simple language without jargon to make it easy and fun to read for all. In the case of printing on high pressure laminate, the plaques can also include illustrations and a map of the surrounding sites with suggested path for visiting surrounding sites.

In the case of printing on wooden signs, there would be enough space to only put the number of the site and a title, which would limit the effectiveness and usefulness of the signs to the visitors. However combined with the podcasts or binders the wooden signs could still prove very effective as they would complement each other in an interesting combination of media. Please refer to the appendices for excerpt pages for information on the self-guided tour philosophy. And see our recommendations for further details.

Quantitative survey methods:

We have conducted a quantitative survey with 100 participants around UTM. To ensure we retrieved a representative sample of the UTM population, each of the four group members surveyed in different areas of the UTM campus such as: the meeting place, the student center,

outside of the south building, in the hallways of CCIT, and outside the library. This ensured a random sampling of students, from different years and disciplines thereby ensuring the accuracy of our findings from the information concluded in the survey. We have included an analysis of the survey results in the appendices.

Learning about GPS rentals and usage:

By having the ability to rent GPS devices from the UTM Geography Department, our geo-caching event was made even more successful by providing the students that wanted to participate with their own devices. We were also able to successfully teach students new to using a GPS device how to input the geo-cache coordinates correctly to locate the prizes hidden throughout the naturalized sites. For future events, we recommend either using the GPS devices for a smaller group of students, or simply doing a treasure hunt around selected sites for prizes. We found that sometimes the GPS were inaccurate by up to 200 meters, which had students running in the wrong directions and made prize finding difficult. Hence, having a simple treasure hunt event would keep the participants looking around selected sites, and a smaller perimeter.

Raising awareness through a Geocaching event:

The geocaching event itself was held on March 23rd. Prior to the event we tabled in the meeting place and in the CCT atrium to provide students with an opportunity to sign up for the event. We also used Facebook as a means of social networking to tell people about the event also. Going into the future, we would like to see more events such as this one take

place on campus. Geocaching provides a fun, educational, and interactive experience for the UTM community to connect to our naturalized sites.

Fundraising initiatives for geocaching event prizes:

We generously received funding from the Geography Department, a total of $150 towards the sponsoring of event prizes. Providing an incentive to students to visit these naturalized sites is usually necessary to acquire a decent turnout of students.

Promotional materials to provide to other UTM community groups:

We created a promotional package that included information about the importance of naturalized sites, the work we have completed thus far, and our future recommendations for any UTM campus or community groups who are willing to take over our work in the future. This acts as a basic outline for others going into the future. This can be found in our appendices.

Contacting facilities and grounds regarding plaque installations:

We have contacted and met with both Paul Donoghue and Krist Horvath, from Grounds and Facilities at UTM. Mr. Horvath is very enthusiastic about the idea of informational plaques on campus for the naturalized area. However, we have struggled to create a follow-up appointment. The ongoing progress of the plaque selection and installation is dependant up on his approval; therefore we advise that in the future, groups contact Kris Horvath to implement the plaques recommended.

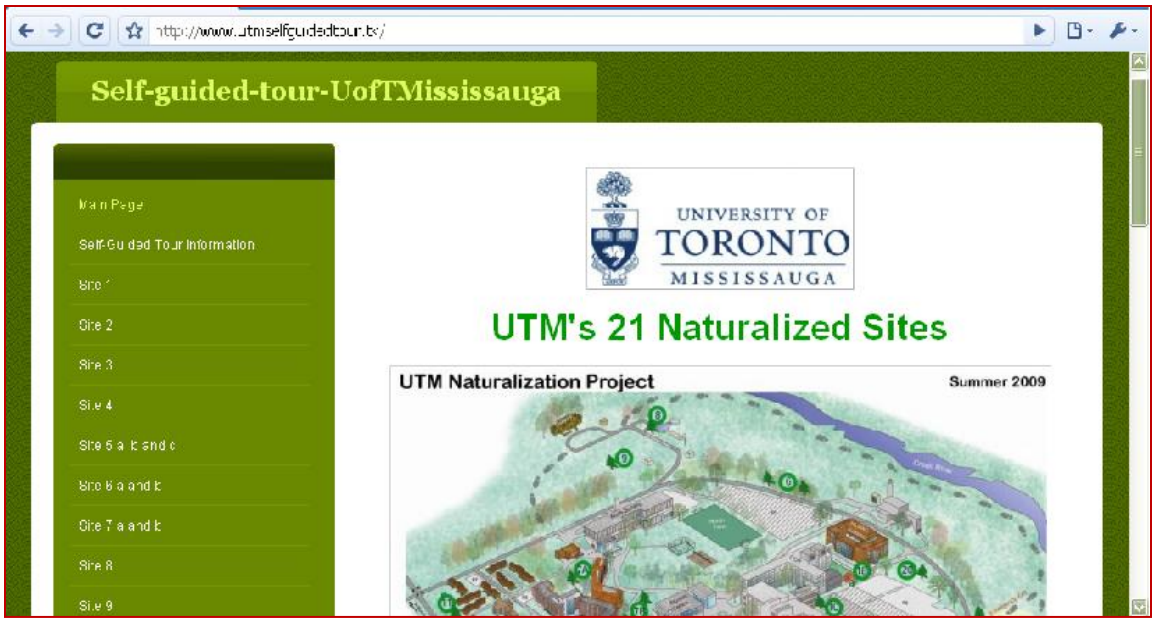
Creation of three mini tour informational binders:

For the more visual learners we decided to create three mini campus tours of different sites which that are located within a close proximity to one another. The three mini tours feature an outer campus tour, main entrance tour, and an inner campus tour. We decided to create three

different tours as it is more convenient for students that do not have enough time to visit all the sites. Also, the binders are of small size so they are also convenient for students to carry and read while visiting the sites. Each binder includes a map of the sites featured which are highlighted, and a recommended tour path. There is detailed description of each site with a map of the site, flora and fauna common to each site, and fun facts. A .PDF copy of the binders can be found int he appendices.

Creation of our own website:

In order to increase awareness and provide an easy flow of the information available about the sites and the tours, we have created a website with our own domain; www.utmselfguidedtour.tk. The web site contains detailed information about each site, pictures, a campus map showing each site, and fun facts. It also contains information about the types of self-guided tours our group is working on, mental and physical health benefits of being outdoors, and how to rent and use a GPS device from UTM. In addition, we also used the website to advertise and provide details about the geo-caching event that we hosted. We believe that the website can be a very helpful tool in providing additional information about the sites and the different types of self-guided tours.

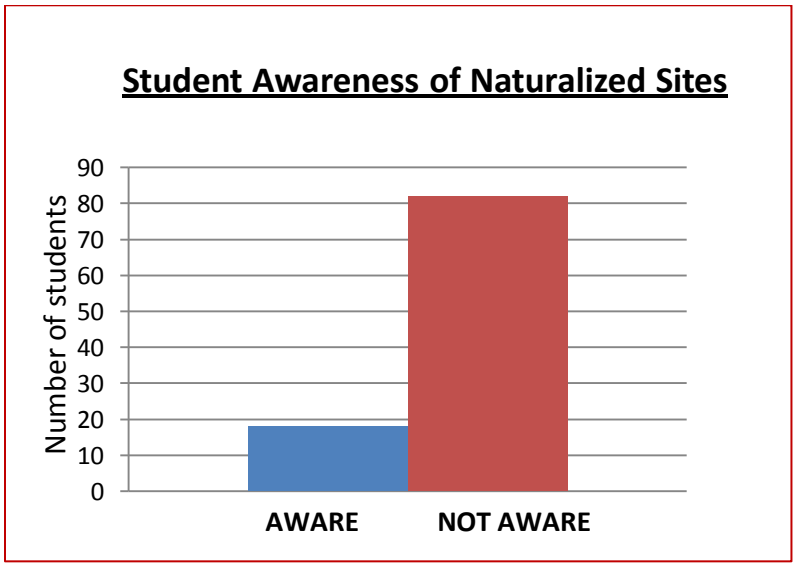


RESULTS

Quantitative survey analysis:

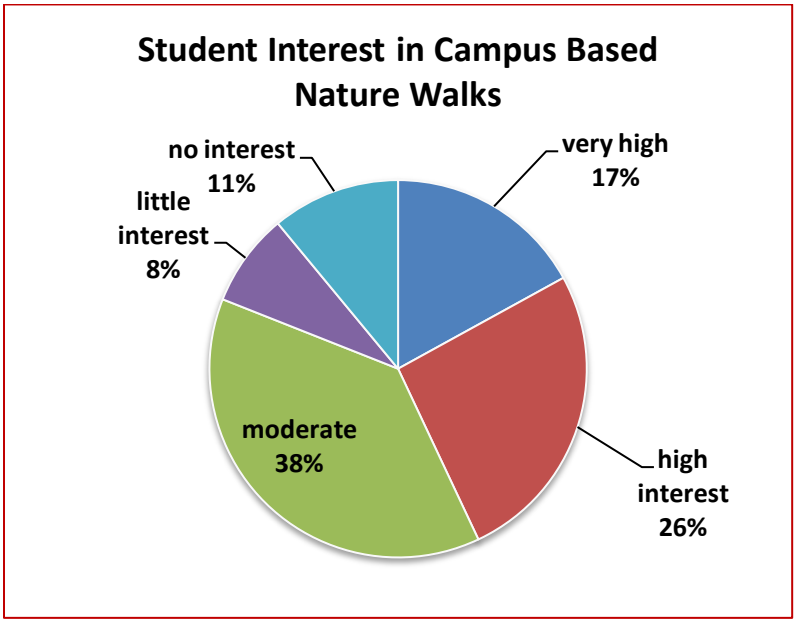
In order to implement a UTM self-guided tour of the twenty-one naturalized sites, we had to conduct a survey to figure out just how interested the students would be in learning about local ecosystems and campus-based nature walks. To do so, we surveyed 100 students around campus, at the Blink Duck pub, meeting place, student centre, CCT building, outside and at the library doors to give us a random sample and quantitative data to analyze.

The first question *(Are you aware of the existence of several 21 protected natural areas around the UTM campus that have been planted and maintained since 2003?)* gave us an idea of the sites' awareness and showed that 82% of students surveyed were not aware of the naturalized sites. The majority gave us a clear message that promotional efforts would have to be a priority to increase the student awareness of the sites around campus to have success with the UTM self-guided tour.



In the second question, *(What month was the last time you visited any of the sites?)* 56% of students surveyed answered they have never visited, there has been an increase in visits over the years, going from 23% of total visits being in 2009 (over a span of five months) to 19% in 2010 (over a span of only three months, keeping in mind those are winter months).

The fifth and sixth questions *(Rate your interest in learning more about the local species and ecosystems on campus, 1 being low and 5 being high; Rate your overall interest in campus based nature walks, 1 being low and 5 being high)* aimed to asses student interest in campus-based nature walks and learning about local ecosystems. Both survey results were similar showing promising interest for both characteristics of the self-guided tour with a combined 39% showing high interest (24% - high interest and 15% - very high interest) in learning about local ecosystems and a combined 43% showing high interest (26% - high interest and 17% - very high interest) in campus-based nature walks.



It is important to note the great amount of students who polled moderate interest with 40% of students showing moderate interest in learning about local ecosystems and 38% for

campus-based nature walks. These high values of students who feel indifferent about these self-guided tour characteristics could show a potential for raised interest with additional promotional efforts combined with fun activities to encourage students to enjoy the sites. A positive note of this survey is that more people show high interest than low interest, indicating that it is the right time to launch a successful UTM self-guided tour.

Geocaching event qualitative survey analysis:

In order to help generate awareness of the naturalized sites on campus we held a geo-caching event on March 23rd. On the day of the event, we had a turnout of a total of 10 students. We were hoping we would have more participants considering we had about 40 students sign up. We believe that the major factor affecting the turnout was the weather. Tuesday was the only day during this week that was particularly rainy, cloudy, and cold. Also, holding this type of event close to the end of term would have played an impact on a low turnout as it is a very busy time of year. We provided $150 in prizes donated by the Geography Department as an incentive for students to come out.

Before the students could sign out their GPS, if needed, or got started on the event, we asked them to complete a pre-event survey. After the event was over and they would claim their prize, we asked them to complete a post-event survey to get qualitative data to analyse.

The first three questions of the pre-event survey were about the students' stress levels during the school year. The first question showed that 7 out of 10 students suffered from stress. The second question showed the student's stress level on a scale of 1 to 10, ten being the highest, and the students' average stress level before the event was 6.8 out 10. The third question was regarding the students' methods to dealing with stress, the results showed that 5 students used

time management, 4 students get fresh air outdoors, and other mentions were 2 students exercise, 2 keep a positive outlook and 2 ask for help. These first three questions show the high stress levels for the university student participants and the third question shows interest in being outdoors for 40% of participants. With promotion on the health benefits of being outdoors along with UTM's self-guided tour, we could raise awareness of the naturalized sites and increase number of visits and appreciation to UTM's campus.

When observing indicated stress levels, it is vital to note that on a scale of one to ten, (*one being low and ten being high*) the average level of stress prior to the event was 6.8. After the event, the average stress level dropped dramatically to 3.4. This proves the importance of outdoor activity in reducing the stress load of students at the UTM campus.

RECOMMENDATIONS

Plaque Installations:

Our first recommendation is to install informational plaques at each of the 21 sites. We would hope that each plaque display the site number, date of naturalization, flora and fauna located on that site, a simple 'fun fact,' and any additional information regarding invasive species and poisonous plant warnings. The plaque would also include a map of where the site is located on campus in relation to the other sites. Citizen science can also be used here such as citing any deer observed, and helping to remove invasive species also. Having the plaques can also help in acting to keep these sites clean, as when the UTM community sees that these are naturalized areas, they will be more prone to not littering and picking up any litter found.

Below are the options we have researched including photos and approximate pricing for each plaque option.

Option 1: High pressure laminate

These plaques are warranted to be of unsurpassed quality. We recommend 2x2ft plaques (Folia™ plaques from Systeme Huntington). The price per plaque is approximately $400 and would require a steel post which is an additional $200. For a total of 21 plaques with posts the cost would be $14,238 including taxes.

However there is an option of installing only a few plaques on the most prominent or unique sites in order to drastically reduce the costs. In this case, for ten plaques the cost would be $6,780. The Folia™ laminate uses a process of fusing digital output into high pressure laminate,

which allows any incorporation of graphics or images into an architectural product for various uses.


Maintenance: Due to the nature of the material that these plaques are composed of, they are easy to maintain and are stain resistant. Cleaning can be done with a mild all-purpose cleaner such as Windex using a damp cloth. For highly resistant stains, baking soda and water can be mixed to form a paste which then used with a soft brush rubbing in circular motions to remove any stains. Prior to each cleaning method, rinse the plaque with warm water and dry with a clean, soft cloth.

Vandalism-proof: To remove graffiti, use ‘‘Professional’s Choice™ Smooth Max Graffiti Remover and, if shadows persist, use Professional’s Choice™ Shadow Max™’’. Rinse with warm water and dry with a clean, soft cloth. Be careful to not damage the surface or its finish by bearing down too hard or over-cleaning. The Folia™ laminate is waterproof, durable, easy to install and maintain. The products are UV, graffiti, burn and corrosion resistant. In addition, they are guaranteed to last at least ten years from fading and delaminating.

For additional information visit:
http://www.systemeinc.com/folia-eng.html

Option 2: Coroplast and acrylic signs by Staples

This option is highly cost-effective and time efficient. One sign costs only $30, and the printing of the signs is ready through Staples in ten business days. Coroplast is only guaranteed to last two years outdoors, however it is recyclable, making it more environmentally friendly. Coroplast can contribute to reduction of waste on all three aspects:

- By reducing: Coroplast's twin-wall fluted structure produces strength and rigidity at a lower weight, thereby reducing the amount of material required.
- By reusing: The durability in outdoor use and packaging means it can be used longer and reused over and over enabling a longer useful life.
- Recycle: Coroplast is made of polypropylene copolymers that are easy for recycling at the end of their lifespan. Propylene recycles together with plastic milk cartons, and detergent bottles.

Coroplast is also relatively easy to maintain, requiring washing with mild soap detergents when necessary. However it is not vandalism resistant, it is easy to bend, and break, scratch and graffiti paint the signs.

For additional information visit:
http://www.coroplast.com/enviro.htm

Option 3: Wooden plaques

Wooden sign are a very cost effective alternative to the high-pressure laminate plaques. One sign costs only $30 and a total of 21 signs would cost about $712 including taxes. With that in mind, only a very limited amount of information can be placed on wooden signs, such as the

site number, and date of naturalization. If this option was chosen by facilities and grounds for installation, we would recommend increased advertising of the informational binders and podcasts in order to complement these signs.

An advantage of this option however is that they are guaranteed to last at least seven years and can last up to fifteen years. Moreover, because they are made from wood, they are highly biodegradable, and thus are more environmentally friendly. On the other hand, the need to consume more trees for the production of these signs cancels out this positive. For a detailed pricing for any of this option please consult the appendices.

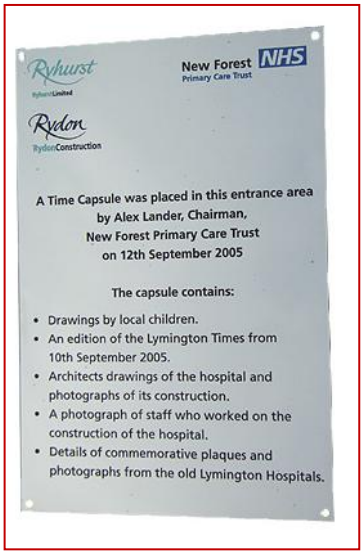
For additional information visit:
www.vanwinklesigns.com

Option 4: Plastic signs

Plastic signs are also a cost-effective option; one sign from Van Winkle Signs cost $55. A total of 21 signs would cost approximately $1,305. They also have a warranty of five years in outdoor use. This option is advantageous because a greater amount of information can be placed on the plastic signs including simple graphics. Another advantage is that because of their plastic composition, recycling is an option once they have been worn out. At the same time, they are also easily susceptible to be vandalised by burning or spray painting, and would need

replacement if the damage covered a more considerable surface area of the sign. This could lead to unexpected costs down the road in maintenance, which would make this option less cost-effective.

Option 5: Stainless steel signs



Stainless steel signs cost $170 per sign and each requires a steel post that costs $150. The total for 21 signs including posts is approximately $7594. The steel signs require posts that are three feet deep into the ground and three feet high, with a bracket to mount the sign on an angle. As with the high pressure laminate plaque option, the costs of having stainless steel signs could be cut down byt installing the plaques only at the most prominent sites. The major advantage of this option is that the steel signs are very durable and are guaranteed to last up to 25 years. They can contain a lot of information, including simple graphics.

For additional information visit:
www.vanwinklesigns.com

Podcasts:

An alternative to the plaques are iTunes podcasts, with pre-recorded audio descriptions of each site. Anybody can download this resource for free from the iTunes store. This is a cost-effective and very current manner of raising awareness of the self-guided tour. We are considering adding background music to the clips, since some students in the survey mentioned music would be something that would make them visit the sites. After the podcasts are ready,

we will add stickers on the tour binders to inform students of that option, as well as advertise it on the Facebook group and website.

The podcasts will feature a short introduction to the entire tour, as well as descriptions of a couple of minutes in length for each of the 21 sites. The audio tour will include fun facts, mention prominent species at the site as well as seasonal plants to search for. The main advantage is that the podcasts are be very accessible to any student, anyone in the community, and even prospective students to listen to from the convenience from their own homes. This would be a good way to promote the tour during Frosh week to new students.

The disadvantages are that there is no visual media, and students who prefer to view graphics not likely use this option. Also, those who are unfamiliar with using podcasts are likely to stay away from this option. However, we can provide instructions on accessing podcasts on our website to counter this problem. Due to UTM being a very multi-cultural school, we recommend having the podcasts translated into different languages representative of the school population. This would attract not only students, but community visitors who would prefer to tour the sites with information in their native languages.

Website:

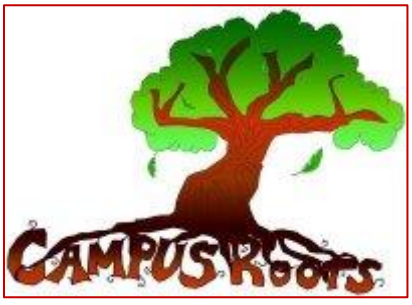
Our future recommendation regarding our website is be to post a link of the web site address on the Geography Department website. We also recommend that whoever chooses to take over this project use the website to advertise and to provide additional information about the status of the sites, tour options, and future events.

Tour binders:

We recommend that more copies of the binders be created, and that they are made available for rent from the library, student services, health and counselling, and UTMSU. This way any student, staff, or faculty member can have access to this excellent resource.

Raising Awareness:

We would like to see a greater amount of the UTM community take advantage of the naturalized sites on campus. This can be accomplished through continued events during the school year held by groups such as Campus Roots, the Green Team, the Staff Experience Team, UTMSU Ministry of Environment, etc. It is important that not only environmentally themes groups promote these events, but also groups whose generally theme does not revolve around an environmental base. This in turn would bring a higher diversity of people outside connecting to our local environment, attracting students from interdisciplinary backgrounds.



CONCLUSIONS

This project is not intended to stop at the end of this semester. Rather, we would like this project to continue gaining momentum with the sustainable growth of UTM.

Continuing into the future we would like to see this project become a priority in the ongoing planning and development of the UTM campus.

The following are methods that can be used in to achieve our future goals:

1. Continue to generate awareness of these naturalized sites to ensure that the UTM community is aware of their existence, the role they play on campus, and how they have come to be.

2. Continue to share the mental and physical health benefits of spending time in natural areas. The UTM Health and Counseling Centre, and Recreation and Wellness Centre would make important resources in doing so.

3. We would like to see newly enrolled UTM students introduced to the UTM campus in a means that a connection and appreciation to the natural beauty our campus holds is developed. This will help to build healthy relationships between the UTM community and our local environment, contributing to a sustainable future for UTM.

4. Continue to create fun, interactive, and educational experiences through the enjoyment of the naturalized sites. This can be done through the use of our recommended plaques, podcasts, mini-tour binders, and awareness initiatives.

5. Make the 21 naturalized sites a priority in future planning under UTM's Banner of Growth, "Grow Smart, Grow Green." It is important to recognize that beyond the intrinsic value of these sites, they are also an excellent research resource, as well as a carbon offset. One of UTM's 'Towards 2030' goals is to increase the enrollment of the undergraduate population, especially in the emerging interdisciplinary fields of environment and media. These programs have been increasing in demand both by students and employers. By having Frosh week activities and events located on or around the naturalized sites during Orientation Week, as well as the March Break Open House, prospective students would become more aware of the sites and perhaps favour the UTM institution as opposed to others.

ACKNOWLEDGEMENTS

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ENV232 Class of 2010

APPENDICES

Consult the Appendices for further details on the following:

- Appendix A: Fun Facts
- Appendix B: UofT "Towards 2030" document excerpt
- Appendix C: Philosophies of a self-guided tour
- Appendix D: Plaque budget options
- Appendix E: Summer 2009 Naturalization map
- Appendix F: Riverwood Conservancy advice on plaque
- Appendix G: Quantitative survey
- Appendix H: How to create a successful podcast
- Appendix I: Using podcasts with iTunes
- Appendix J: UTM Self-Guided Tour binders
- Appendix K: Geocaching event qualitative survey analysis
- Appendix L: Quantitative survey analysis