

***UTM ENV232H5F - ENVIRONMENTAL
SUSTAINABILITY PRACTICUM***

PROMOTING OLDFIELD

ALEX POMORSKI

CINAR GURSEL

TAO WANG

TERRY CHUNG

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Abstract

The purpose of our project was to gain an in depth understanding of the Oldfield ecosystem through research and then to use this knowledge to promote the existence and importance of a local Oldfield site at the University of Toronto Mississauga (UTM) to the student body. We determined that the best way to do this was to emphasize the environmental, economical, and student research potential of the UTM Oldfield. One of the ways that we sought to do this was through a marketing campaign which includes an informational sign design that would provide long term exposure of our message to the UTM community.

Introduction

The focus of our course work has been the long term and short term promotion of the Oldfield site. We determined that this approach would allow us to reach as much of our target population (the UTM student body) as possible given the resources and time at our disposal. In the short term we could promote the Oldfield site directly to the UTM student body using classroom presentations and an academic article in the UTM student newspaper (The Medium). In order to raise awareness of the Oldfield site to UTM students and others beyond the 2010 academic fall term (thus increasing exposure of the benefit of the Oldfield), we decided that an informational sign to be placed on site was the best use of our resources (see Findings: The Informational Sign). Then an optimal location or locations for this sign was determined along with costs for creating this sign.

Background

What is an Oldfield?

As a result of European Settlement, the landscape of Southern Ontario was altered due to farming with over 70 percent of the original forests and wetlands that were present having disappeared (Cramer et al. 18). Since antiquity, conscious and persistent manipulation of the landscape was an essential part of agriculture, and where natural grasslands were not available, forests were cleared and swamps were drained to create fields for crops (Cramer et al. 18). The term 'Oldfield' is actually a technical one and is used to describe lands that were cleared for agriculture but later abandoned due to a variety of reasons. These reasons can include ecological factors such as declining soil fertility due to land degradation resulting from mismanagement of land from overgrazing or inappropriate cultivation techniques (Cramer et al. 8). Changing local and global economics that are the result of current trends in globalization of markets and increased technological advancement can also lead to farmland abandonment (Cramer et al. 8). Also, increases in the price of land for nonagricultural uses leading to the declining economic viability of smaller local farms, and changing social and political settings such as the depopulation of rural areas will lead to farmland abandonment (Cramer et al. 8). It should be noted that Oldfields did not arise strictly because of European contact. There has been recorded evidence of vegetation changes going as far back as 300 BC (Cramer et al. 19).

During the late Woodland period in southern Ontario (from 900 AD until European Contact in 1600 AD) the native population cultivated tobacco, maize, beans, and squash and as much as 403,000 ha, or 3.2%, of the land area of Southern Ontario was comprised of Oldfields (Campbell 26). Agricultural land abandonment has occurred for as long as humans have been farming for various reasons. The pace of abandonment has sped up in Canada during the 20th century and, as of 1990, there were 10 million ha of abandoned croplands in Canada (Cramer et al. 9). The land abandonment that leads to the creation of Oldfields in Canada started in the late

1800's AD and early 1900 AD (Cramer et al. 10). It should also be noted that Oldfields are not static environments and change with time.

Agricultural systems that replace natural ecosystems are often, relatively, short-lived and are abandoned in as little as a few years, leading to the rapid development of a secondary forest in a process called succession (Cramer et al. 15). Succession is a process of vegetation change that is comprised of a sequence of changes in plant communities leading to a stable climax community (the endpoint of the succession process) (Cramer et al. 18). With respect to our project, succession refers to the transition of Oldfield into forest. Shrubs and trees will slowly invade an Oldfield that is dominated by grasses and a variety of herbaceous plants and in a few hundred years a stable community, such as a maple-beech forest, can evolve (Management Options for Abandoned Farm Fields 2). This process of succession needs to be mentioned in order to understand the dynamics of Oldfields, and will be shown to be relevant to our project.

The UTM Oldfield

The Story of the UTM Oldfield is intertwined with the story of the UTM campus, which opened as Erindale College in September 1967 with a 224-acre campus on the banks of the credit river (Riendeau 111). The Oldfield is 3.5 hectares in area and has been left largely undisturbed for at least 80 years (Maycock et al. 2193). It is located 1 km northeast of the intersection of Mississauga Road and Dundas Street (see Appendix 1, Figure 3) in the city of Mississauga, Ontario (Maycock et al. 2193). It was a part of the Schreiber family holding, was probably cleared in the mid 1800's, and used for pasture or as a hayfield or as a combination of both (Maycock et al. 2194).

Our Task

Succession (See Appendix 2)

The different plant communities that grow into an area over time follow successional stages and this is important because different plant species support different wildlife (Management Options for Abandoned Farm Fields 2). The endpoint of succession is called the climax stage and, in the case of an Oldfield, is the surrounding forest. The exact causes of succession are uncertain. One view holds that one species or set of species modifies the environment and paves the way for other species to follow (called facilitation), or that the species that take part in successional change are present immediately following a disturbance, and a third possibility is that species inhibit their neighbors, but any of these three interactions can occur at any point in the successional process meaning that succession is not simply deterministic and predictable (Cramer et al. 20).

Why the UTM Oldfield Matters

What happens after land is abandoned? Some view land abandonment as an opportunity for redevelopment of an ecosystem back to its prior state before Agricultural development while another view holds that abandonment is a threat resulting in a loss of specific ecosystem types that depend on ongoing agricultural management (Cramer et al. 9). Certain ecosystems, like Oldfields, are often rich in species but these species depend on certain conditions to exist, and once conditions change, other species are able to become dominant and the ecosystem may lose species while being transformed into another ecosystem type especially if woody species are able to establish (Cramer et al. 10).

The Oldfield site offers educational, research, economical, environmental and time related benefits to the UTM community. From one perspective, the uniqueness of the Oldfield as a teaching and research resource is the main argument for preserving it (Nick Collins, personal communication, 2010). Although the usefulness and importance of Oldfield may be known to the professors that utilize it, either for research or for classes, this may not be the case for students who are not exposed to the Oldfield through lectures and yet may one day be interested in using it in a research opportunity. So, it is our task to provide all with an opportunity to learn about the Oldfield.

Methods

Our primary goal is to promote the environmental, educational, and time benefits of the Oldfield to the UTM student body through an informational sign, a presentation, and an article in the UTM student newspaper (The Medium). In this section we will go through our strategy for accomplishing this task.

Academic Articles, Books, & Other Documents

Using various databases we were able to find resources relating directly to our UTM Oldfield, other Southern Ontario Oldfields, and Oldfields in general. A research article from 1983 concerning the vegetation in our particular Oldfield and comparing it to the Management Plan for our Oldfield written up in 2007 by Evergreen Associates, we were able to gain an insight into the history of Oldfield. From an Interview, with Professor Darryl Gwynne, an insect ecologist at UTM, we were able to obtain academic articles detailing research conducted on the Oldfield site about the crickets that live in Oldfield vegetation. We also obtained a book titled 'Oldfields: Dynamics and Restoration of Abandoned Farm Lands' that described the history of

Oldfields and provided in depth information on Oldfields in general. In addition, we also found a document released by The Rideau Valley Conservation Authority's Land Owner Resource center on Oldfields in Southern Ontario which was a useful source of visuals for our presentation. We then tried to be extremely selective in pinpointing information that we thought was interesting and could be utilized to grab the attention of our fellow students. We asked ourselves what we as an audience would find interesting out of all the data we collected.

Besides conducting research on Oldfields, we also completed research into signage design for the Informational Sign Component of our project. Fortunately, one of our group members, Terry Chung, has a working knowledge of visual design. We acquired a number of articles and books on signage that we could draw on in the sign design phase. In terms of data, for our sign, we tried to pick out only the most useful and interesting information that we felt could be translated well graphically and with minimal text, because our research into sign design strongly suggested that we do so.

Field Work

Although our data gathering was mainly research based we did do some fieldwork in the form of photography of the Oldfield location. Using a digital camera, we photographed different parts of the Oldfield using the map provided in the UTM Oldfield Management Plan as a guide (see Appendix 1, Figure 1). The photographs were organized by location. We also took photographs of research setups on the Oldfield site that we utilized to emphasize the role of research during our presentation.

Interviews

Another aspect of our research involved interviews of UTM students conducting or who have conducted research on the Oldfield site. We also interviewed professors who either

conducted research on the Oldfield site or who utilize it as a teaching resource. From the student interviews, we were able to obtain aerial photographs of the Oldfield site dating back 50 years from a student doing a thesis on invasive species there. Another interview with a student who completed a Research Opportunity Program project on the Oldfield site provided us with mammal trapping information for Oldfield.

Sign Creation Methods

When it comes to searching for information, convenience and user-friendliness is a crucial consideration (Jacobsen 150). Thus, we minimized the amount of texts, and sign size in a way that does not exceed a person's vision from the viewing distance of a meter. Moreover, the background color being white will have benefits such as improved visibility since it is contrary to that of the vegetations in Oldfield. It is divided into two sections with one being heavily visual, and the other being more information oriented. We decided to place an arrow overlapping the text-graphics boundary in order to reduce the effort that it takes to search for more detailed information. Also, the phrase, "You can look for..." implicitly provides the readers with a goal to look for desired information, which according to Smith-Jackson et al. (479-490), effectively catches their attention. The sign was created using graphics design software Adobe Illustrator and Photoshop. If the sign design is approved, it should be printed on a plastic board with a type of ink that could withstand harsh weather and UV rays from the sun. The printed sign will be attached to an aluminum pole that is 1.5 meters long since the sign is most likely to be viewed while one is standing up.

Presentation Creation Methods

The slides for our presentation promoting Oldfield to the general student population were created using similar methods as our informational sign. The same principles researched for the informational sign were applied to making slides for this presentation. The same selectivity was used in selecting data for inclusion in our informational sign was applied to choosing what data to include in these slides. Generally, we tried to minimize text as much as possible and deliver the bulk of the data in our presentation through speech.

UTM Student Newspaper Article Creation Methods

For our article, we tried our best to squeeze all of our research results on the Oldfield itself and the information we gathered about research conducted there into length less than one page single spaced with normal margins. We did so by being even more selective than when choosing data for our presentations and the informational sign. The themes of this article were that Oldfield has a story to tell, it presents some fun research opportunities, and that it is more than just a field.

FINDINGS: The Informational Sign

Why A Sign?

The effective design of a sign can support protecting the environment and encouraging visitor enjoyment (Smith-Jackson et al. 480). For instance, when the impact of informational feedback on the depositing of aluminum cans in recycling receptacles at a medium-sized university was investigated, there was a 65% increase in the number of aluminum cans deposited in recycling receptacles with the informational signs present; removal of the informational signs was observed to reliably decrease the number of aluminum cans deposited (Larson et al. 111). Different environmental alterations to encourage environmental protection behaviors have been

examined by researchers, such as the study where interventions included providing prompts to recycle, and signs were found to be effective (Larson et al. 111). The general consensus is that signs cost little and provide a good return on investment (Arata et al. 79). The actual costs of implementing our sign design will be covered later under Estimation of Costs.

Sign Design Considerations Determined From Research

There are several factors that we have taken into consideration when designing our informational sign layout. An effective sign will be easy to read and accomplish the purpose it was created for (in our case the promotion of the educational and environmental importance of the UTM Oldfield). An effective sign should draw people's attention, be read and understood, and take into account its readers' cognitive abilities (Smith-Jackson et al. 480). People use cognitive shortcuts (or rules of thumb) for processing information when they view informational signs that require less cognitive-processing resources than detailed, systematic analysis (meaning that they prefer to go through a minimum numbers of thinking processes to receive the information which the sign contains that is relevant to them) (Smith-Jackson et al. 480). For instance, if visitors to a park are seeking recreation, they want information about recreation to be apparent otherwise their attention might easily get diverted to other activities or objects. This implies that an informational sign placed on the UTM Oldfield needs to target the UTM student body with information that is relevant to them. So, there needs to be a part of the sign that emphasizes some of the uses UTM students have for the Oldfield such as research.

It was found that with informational signs in parks, that viewers will not apply a systematic approach to processing information and will attempt to extract the smallest amount of relevant information that is interesting to them (Smith-Jackson et al. 481). The goal of wilderness

sign designers should be to optimize sign design (known as designing for performance support) so that they increase the likelihood that signs will be read, comprehended, and complied with by users (Smith-Jackson et al. 481). Signs not designed in a way consistent with users' expectations, will not achieve their intended purpose (Smith-Jackson et al. 481).

It has been established that the structure of the information displayed on signs needs to be ordered to make it as easy to read as possible. The structure of information displayed on signs consists of content, order, and format. This structure affects notice ability, search time, comprehension (Smith-Jackson et al. 480). This design principle is known as exhibit efficiency (Jacobson 146).

For the viewer, the time and effort it takes to process a display's content are affected by a number of factors, including personal circumstances (like fatigue) and the viewer's interest in seeking out and learning something new from the displays (Jacobson 146). The physical attributes that reduce exhibit efficiency need to be reduced. Some of the negative text based attributes include: label texts that are hard to read or find because of tiny type or poor designer fonts, long and poorly spaced paragraphs lacking resulting in a lack of chunking and white space, and ambiguous and abstract headings that do not refer to actual objects or to interests viewers may have (Jacobson 147). Graphical attributes that reduce exhibit efficiency include information overload from visual clutter (scattering attention), and labels and graphics that disconnect from the sign subject (Jacobson 147).

The strategy that must be employed to maximize exhibit content focuses on maintaining a low ratio of needed to unneeded information displayed on the Informational Sign (Jacobson 147). Also, there needs to be information free spaces, known as "cognitive rest areas", that separate areas of the sign and help visitors absorb what they have seen (Jacobson 147). For this

purpose, and to distinguish our design from other informational sign designs, we have chosen to utilize vector illustrations, completed in Adobe Photoshop and Adobe Illustrator, as cognitive rest areas spaced all over the sign (see Appendix 3, Figure 4). We also will utilize these illustrations as exploratory graphics. Exploratory graphics refers using graphics along with words and phrases and it has the advantage of making relationships among data more apparently where they might have been obscured by text otherwise (Jacobson 204). Detecting patterns, a visual phenomenon, is almost impossible in a field of text (Jacobson 204). This is vital because our informational sign will cover a variety of different topics about the UTM Oldfield. When information is presented in graphic form, relationships, among the various elements we researched will be easier to see (Jacobson 204). We would like our informational sign to draw those passing by, and this requires considering factors besides informational sign structure.

Structure isn't the only thing that is important. The informational sign must first grab the attention of those passing by. One of the most important factors that must be considered is colour. The colours used in a sign depend on the message it is trying convey. For instance, vibrant colors such as red, yellow, and fuchsia are optimal for conveying serious, important messages, and mild colors such as blue and green are good for less aggressive messages (Arata et al. 79). The whole background of the sign will be white, which stands out during the summer, reflecting sunlight. Colors making up the content of the sign will made up from colors that stand out in a autumn time photograph of the Oldfield itself. This will be visually attractive and stand out during the winter months.

Content itself can also grab attention from a distance. For instance, if a two dimensional picture has a strong spatial characteristic (z-axis coordinate) the human eye immediately spots them and scans this part of the picture more often (Jacobson 229). This is how the human visual

system tries to make sense of distance cues, shapes, and overlaps (Jacobson 229). It is for this reason that we intend some of the illustrations we utilize in our Informational sign to be drawn three dimensionally (see Appendix 3, Figure 5).

Finally, the actual content, data, in our informational sign needs to maximize holding power. Holding power is defined as the ratio of the time spent looking at one or more segments of the informational sign to the minimum time required for targeted viewer to absorb the intended message (Jacobson 158). Holding power is maximized by maximizing the frequency of appropriate use of display space (Jacobson 158). So, what this means in terms of the data in our sign is that only what absolutely needs to be present or is interesting should be displayed. This means, highlighting the conclusions of our research in our information sign.

Concerning Other Viewers of the Informational Sign besides UTM Students

There are other peoples who make use of the natural trail bordering the UTM Oldfield besides students attending UTM (UTM Oldfield Management Plan 3). In either case, the design principle of reflecting the needs and interests of viewers and holding their attention still applies. In this case, the general information given about the Oldfield will draw their attention because they are visiting it most probably of their own free will (Jacobson 131-41). Messages delivered in such settings require the voluntary cooperation of potential receivers while they are surrounded by distraction and choices (Jacobson 131). Visitors will have the option to pay attention but can, ignore, or distort the messages being communicated (Jacobson 131). However, the same design principles utilized to maximize exhibit efficiency to UTM Students will also apply to other types of visitors to the Oldfield when presenting the information about the Oldfield.

The Physical Sign itself

A good sign is made with a material that will remain unchanged in different types of weather and temperature (Arata 78). A sign placed outdoors is going to have certain physical characteristics or no matter how effective its design is it won't achieve its intended purpose and degrade with time. Optimally, the sign should be made from quarter-inch-thick fiberglass with letters impregnated into the sign or be made of rustproof sheet metal and a rustproof pole with fasteners made of sturdy clips, clamps, or screws (Arata 78). These materials are all chosen taking into account changing weather conditions. A long lasting sign will withstand all the elements that it can be exposed to, and will not fade due to weathering. Fortunately, there are companies in the Greater Toronto Area that can be turned to for the actual sign creation, which we have considered (see Estimation of Costs). The size of the actual sign needs to be considered as well.

The image size at regular viewing distance when passing by needs to be considered before actual creation of the sign. The impact of visual information on the human eye is greatest in a rectangle covering an area roughly 6mm^2 to 8mm^2 wide in typical viewing distances of a few meters (Jacobson 230). Seventy percent of the visual input of the eye occurs in this area so the viewer rarely needs to move their head to see an image from a different point of view (Jacobson 230). What this all means is that the sign itself cannot be so large that it overwhelms the viewer. Our informational sign design will be oriented horizontally (to minimize any issues height may play in viewing it).

Estimation of Costs

One company we have located in the greater Toronto area which can be used to create the Informational Sign in question is Fast Signs (see Appendix 8). Their cost estimate for a sign of our specifications was 300 dollars not including installation.

A Physical Location for the Informational Sign

Informational signs should be posted in locations where the maximum number of people can see them (Arata 79). A sign for Oldfield should be placed in the location where the most students can see it. We believe that there are two ideal locations. The first location is the nature trail located behind the Oldfield and above the banks of the Credit River. This trail is utilized during nature hikes and seems to have a regular user base (UTM Oldfield Management Plan 3). The location of the other sign would be near the entrance to Oldfield facing the UTM campus. UTM classes that utilize the Oldfield for labs will use this entrance because of its proximity to the UTM campus (see Appendix 1). Also, several invasive species removal activities involving UTM students took place in Oldfield, and students participating in any future events would come in contact with a sign placed at this entrance (Monika Havelka, personal communication, 2010).

Findings: The Oldfield

History & Setting

One of the interesting facts that we discovered about the history and setting of the UTM Oldfield site is that its geomorphology is unique because the flattened promontory located there represents an old beach of glacial Lake Iroquois (Maycock et al. 2194). In the 1980s, the field formed a rectangle approximately 5.4 hectares in size (Maycock et al. 2194). Since the 1980s, the forest edge has encroached approximately five meters on Oldfield (UTM Oldfield

Management Plan 2). Today, the Oldfield has an area equal to approximately 3.5 hectares (UTM Oldfield Management Plan 2).

The eastern portion of Oldfield is a steep slope along the Credit River with sugar maple, beech, hemlock, ironwood, paper birch, red oak, and white oak trees present (UTM Oldfield Management Plan 2). The northern boundary of Oldfield is an abrupt wall of southern deciduous forest with a younger fringe composed of hawthorn (*Crataegus cf. punctata*), white ash (*Fraxinus Americana*), sugar maple (*Acer saccharum*), white elm (*Ulmus americana*), largetoothed aspen (*Populus grandidentata*), and other broad-leaved trees (Maycock et al. 2196). The western boundary of Oldfield, beside the athletics field, has often been disturbed due to various construction activities (Maycock et al. 2196). The southern edge of Oldfield is surrounded by a composition of deciduous trees such as basswood, red oak, and black oak (Maycock et al. 2196). All of this is relevant because the pre-settlement vegetation was most likely similar to the surrounding forests which have only been selectively cut or had similar original environmental conditions found nearby along the Credit River (Maycock et al. 2194).

Vegetation

We do not intend to go through a complete plant inventory of Oldfield in this paper, in our presentations, or in our newspaper article. Although there has been a lot of information collected on this topic, it is not relevant to our marketing campaign outside of a portion of our informational sign. It is important to remember that the purpose of our project is to promote the UTM Oldfield site and doing so requires focusing on something that is brief and somewhat interesting to a student not necessarily interested in plant life. What we need for our purposes is something that we can readily point to and summarize in a presentation. So, we have chosen to focus on invasive species removal. It is a topic that can we summarize quickly, and recent work

removing invasive species in Oldfield has been done on as a part of the UTM Oldfield management plan during this decade.

Invasive Plant Species on the Oldfield Site

In 2007, UTM launched a long term management plan to control invasive species and restore Oldfield ecosystem (see Appendix 9, Figure 7). Basically, the long term management plan included removing invasive shrub, replanting Oldfield and Savannah plants and continuing removals for 5 to 10 years (UTM Oldfield Management Plan 1). So far, the main management activities that have occurred on the Oldfield were Tartarian honeysuckle cutting, controlled burning, and native species planting (Monika Havelka, personal communication, 2010).

A controlled burn was seen as the cheapest and effective way to restore the Oldfield grassland habitat and was included in the UTM Oldfield Management Plan as an option to control invasive brush and woody species (UTM Oldfield Management Plan 1). Native species outnumber non-native species, but non-native plants represented a greater area in the field (UTM Oldfield Management Plan 3). Many of the Invasive species introduced in the Oldfield site were brought over from Europe and Asia by European settlers (Monika Havelka, personal Communication, 2010). The Tartarian Honeysuckle for instance was brought by European settlers because it was viewed as an attractive plant to have on property (Monika Havelka, personal Communication, 2010).

Combating the Tartarian Honeysuckle

Thus far, a controlled burn has been conducted on the site two times. The first controlled burn took place at April, 2008, and the second controlled burn took place at April 2010 (Monika

Havelka, personal communication, 2010). The boundaries of the burning area were walking trails and they were cleared before burning (Prescribed Burn Plan for University of Toronto Mississauga Campus 10). The fuels used on site were cured grass and oak leaves and being ignited the fire and the burn took less than one hour to complete (Prescribed Burn Plan for University of Toronto Mississauga Campus 5). Honeysuckles cutting events involving UTM students and classes also targeted the Taritarian Honeysuckle in Oldfield (Monika Havelka, personal communication, 2010).

Research Conducted Utilizing Oldfield

The UTM Oldfield site has been the location of research ranging from PhD Thesis work to Undergraduate projects going back to at least the late 1970s (Nick Collins, personal communication, 2010). For instance, one PhD Thesis used field crickets (*Gryllus pennsylvanicus*) from the UTM Oldfield site to study how female field cricket sexual experience affects the strength and direction of selection on four male field cricket traits like body size (Judge 389). Another PhD thesis tested whether mated male crickets, offspring of fall field crickets collected from Oldfield, were less likely to win in combat against unmated male crickets (Judge et al. 1971). Complete citations of examples of published academic research that utilized crickets from Oldfield site are listed in Appendix 4.

Data Obtained from Student Research Utilizing Oldfield

Our information on the mammal population present in the Oldfield comes from an interview with a UTM undergraduate student, Angela Wang, who conducted a Research Opportunity Program on the Oldfield site from between May to September of 2009. As a part of this research, the student and another group member placed traps at 4 different areas throughout the Oldfield (Angela Wang, personal communication, 2010). The forest surrounding the Oldfield

was sampled last. As a part of their findings it was determined that the ecotone (an overlap of two different plant habitats between the Oldfield and the surrounding forest) had the greatest small mammal species diversity due to there being a greater variety of resources present there. In the ecotone, shrews (*Blarina brevicauda*), jumping mice (*Zapus hudsonius*), voles (*Microtus pennsylvanicus*), and white footed mice (*Peromyscus leucopus*) could be readily found (Angela Wang, personal communication, 2010). In the surrounding forested areas, the white footed mouse was dominant (Angela Wang, personal communication, 2010). Throughout the interview, the student was adamant that she really enjoyed the experience despite rain, the presence of mosquitoes, and raccoons that would eat the trapped animals (Angela Wang, personal communication, 2010). All of this information is highly relevant to our project because we personally believe, based on our own interpretations, that our informational sign viewers and presentation audiences will be far more interested in the small furry mammals that inhabit the Oldfield site than what plant life can be found there. The reason for this assumption on our part is that humans feel surge of tenderness towards living creatures with babyish features (Gould 2). That is not to say that the plant ecology of Oldfield is not interesting and cannot be tied into information about mammals. For instance, the shrubby vegetation present in the climax portion of the site is highly palatable to deer (Darryl Gwynne, personal communication, 2010).

Benefits of Oldfield (Academic, Environmental, Economical, & Time Related Benefits)

All the Professors we interviewed were unanimous in their belief that Oldfield was a useful research tool and teaching tool. Professor Darryl Gwynne confirmed that the proximity of Oldfield to the UTM campus makes conducting research there far more convenient than having to travel to the Jokers Hill Oldfield site located near Newmarket, Ontario (Darryl Gwynne, personal communication, 2010). This represents a time and economical benefit to UTM

researchers. As an insect ecologist, Professor Darryle Gwynne, has completed research on sexual selection in singing insects like crickets taken from Oldfield. The crickets live around successional areas near goldenrods, which are typical Oldfield vegetation (Darryl Gwynne, personal communication, 2010). As a whole, Professor Gwynne believes that one of the reasons it would be extremely sad to lose Oldfield would be the loss of insects living in successional vegetation in the area (Darryl Gwynne, personal communication, 2010). So, Oldfield is also an environmental and academic (teaching and research) boon for UTM.

Professor Nathan Basiliko, an assistant Professor in the UTM Department of Geography, noted several examples of research conducted on the Oldfield site. For instance, Oldfield was used for thesis work completed by a student studying the microbacterial characteristics of soil samples in order to measure green house fluxes to determine if burning was an effective means of controlling the invasive Tartarian Honeysuckle (Nathan Basiliko, personal communication, 2010). A guest scientist from China looked at soil cores to determine how burns effected mercury concentrations in soils (Nathan Basiliko, personal communication, 2010). For Professor Basiliko, the uniqueness of the Oldfield site as a local teaching resource for UTM is the main reason to preserve it (Nathan Basiliko, personal communication, 2010). As an example of the Oldfield site's usefulness as a teaching resource, Professor Basiliko mentioned that he uses Oldfield as a teaching resource for his third year soil science class at UTM (Nathan Basiliko, personal communication, 2010).

Recommendations

We as a group recommend that an informational sign be put in place on the Oldfield site. We have included a completed design in Appendix 7. This will be the long term aspect of our

marketing campaign and complement presentations about Oldfield shown in select classes at UTM, and an article about the UTM Oldfield published in the UTM student newspaper.

Thus far, we have given a short presentation in the beginning of select geography and biology classes at UTM where we felt our information was most relevant (see Appendix 6 for presentation slides and lines). We have given our presentation during a BIO205 and a BIO152 lecture. We chose to present in the beginning of BIO152 since it is a first year class. First year undergraduate students are just beginning their academic studies and will have the most time to consider utilizing Oldfield for research. We chose to present during a BIO205 lecture, because it is an ecology class which utilized Oldfield for a lab (Monika Havelka, personal communication, 2010). We wanted to make sure that the BIO205 students understood this was an actual resource at their disposal and not just some field that the course instructor randomly selected to use. The theme of this presentation and our newspaper article was less about raw data and more focused on what we found to be interesting about Oldfield (see Appendix 5). We also tried to emphasize that most of the data we did include in the presentation and sign it was obtained by research done by alumni and that research continues to this day on the site.

Conclusion

Our primary goal was to promote the UTM Oldfield site to the UTM student body. We chose to do so by emphasizing the usefulness of the Oldfield site and by pointing out some of the activity that has occurred there. The greatest challenge for our project is to dispel any belief by the viewers of our informational signs and our presentation audience that Oldfield is just a field. We believe that it has a story to tell, and we have tried our best to tell that story. Oldfield has served as a useful research and teaching resource for UTM as far back as the late 1970s.

Fortuitously, it has been left largely untouched for the past 80 years, and will hopefully remain so.

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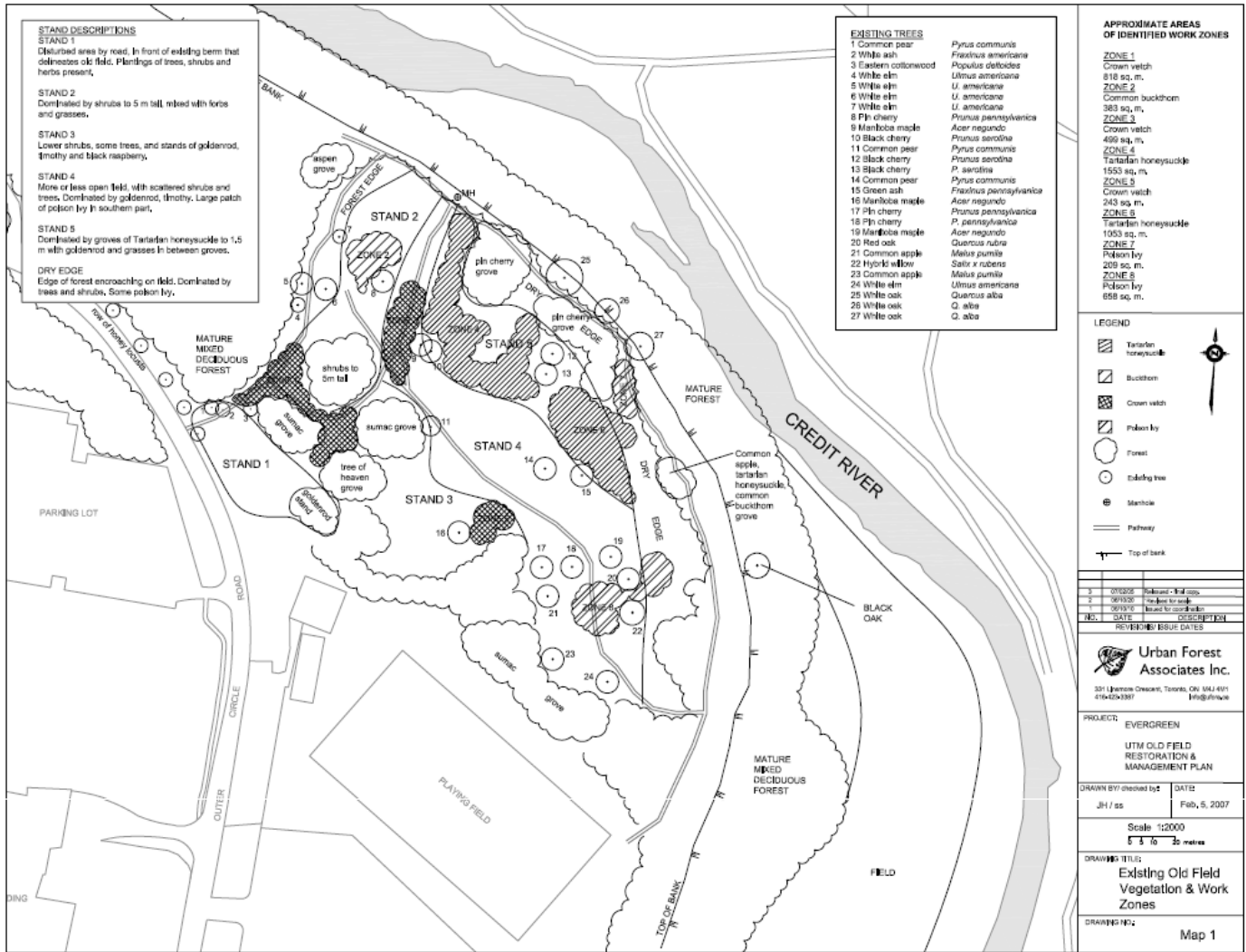
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Smith-Jackson, Tonya , and Troy Hall. "Information Order and Sign Design : A Schema-Based Approach." *Environment and Behavior* 34 (2002): 479-490. *ISI Web of Knowledge*. Web. 5 Nov. 2010.

UTM Oldfield Management Plan. Urban Forest Associates Inc., Feb. 2007. PDF.

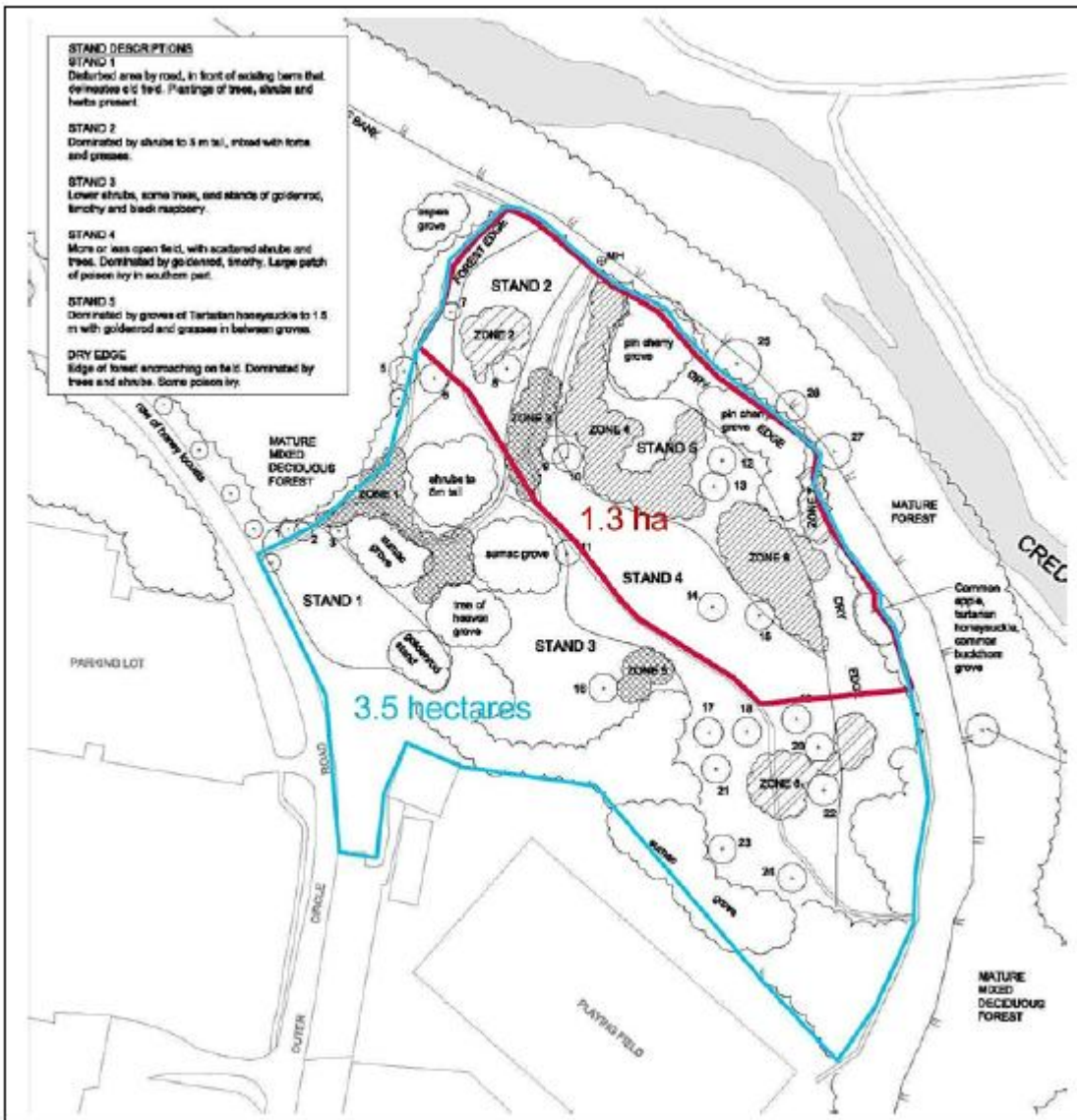
Appendix 1: Oldfield Maps

Figure 1: Oldfield



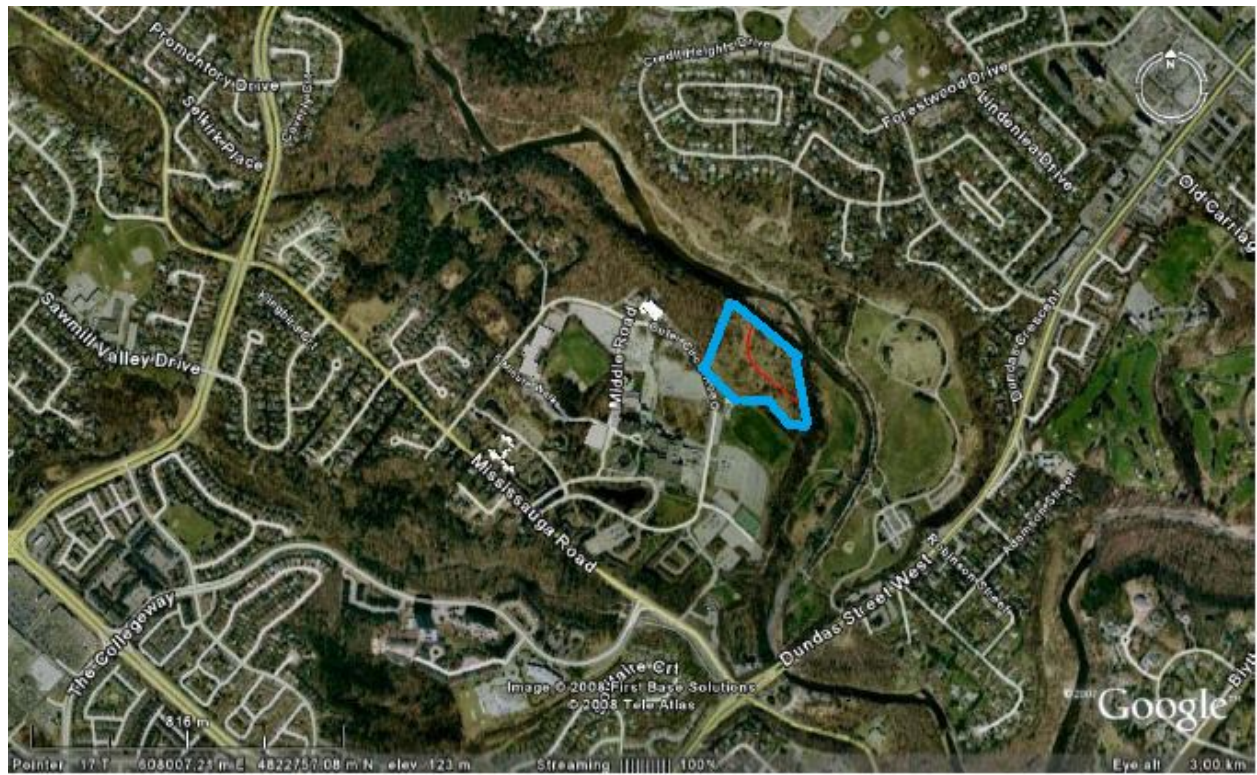
Caption: A map of Oldfield in relation to the Credit River and the UTM campus (UTM Oldfield Management Plan 17). The invasive and native species that are found in Oldfield are shown along with the different tree species found in Oldfield. This map was used to create the map of Oldfield used in our informational sign (see Appendix 7).

Figure 2: Oldfield Boundaries



Caption: This image shows the boundaries of Oldfield outlined in blue along with its approximate area (UTM Oldfield Management Plan 2). The area outlined in red was the area of study for the 2007 Oldfield Management plan prepared by Urban Forests Associates Inc.

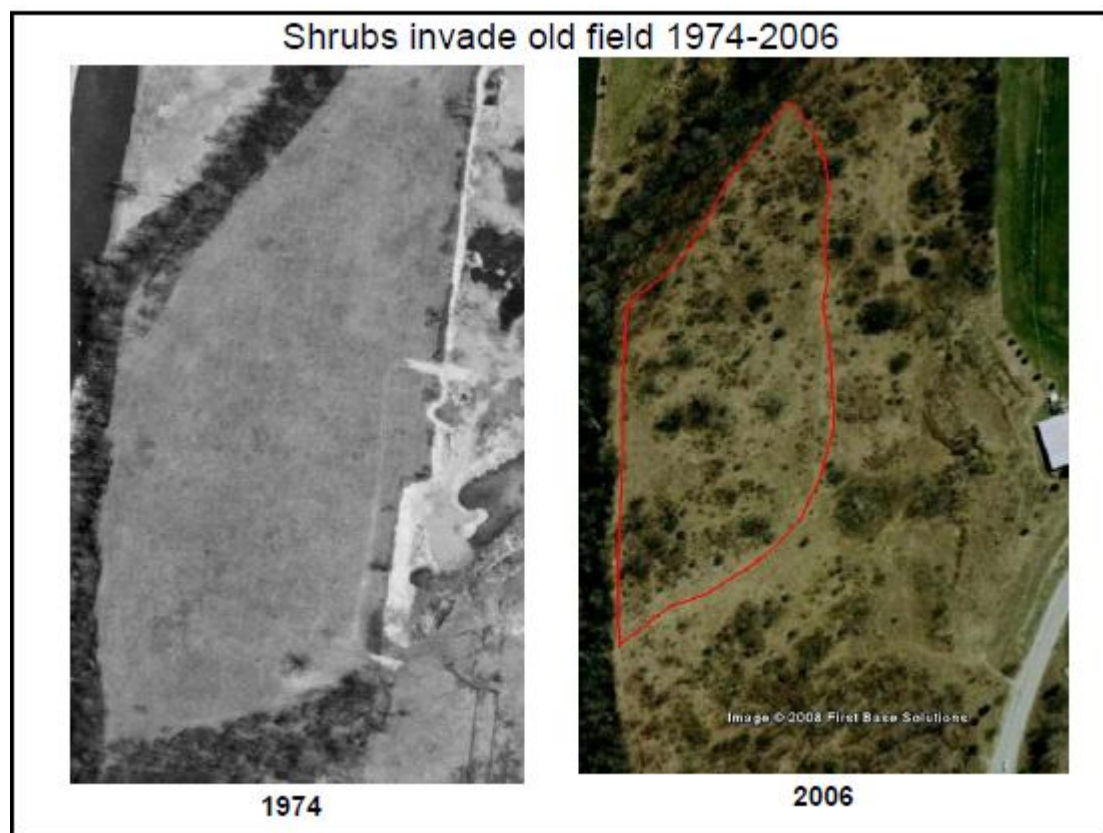
Figure 3:



Caption: Figure 3 shows the boundary of the Oldfield outlined in blue from an aerial view (Old Field Burn Presentation for Posting 3).

Appendix 2: Succession in Oldfield

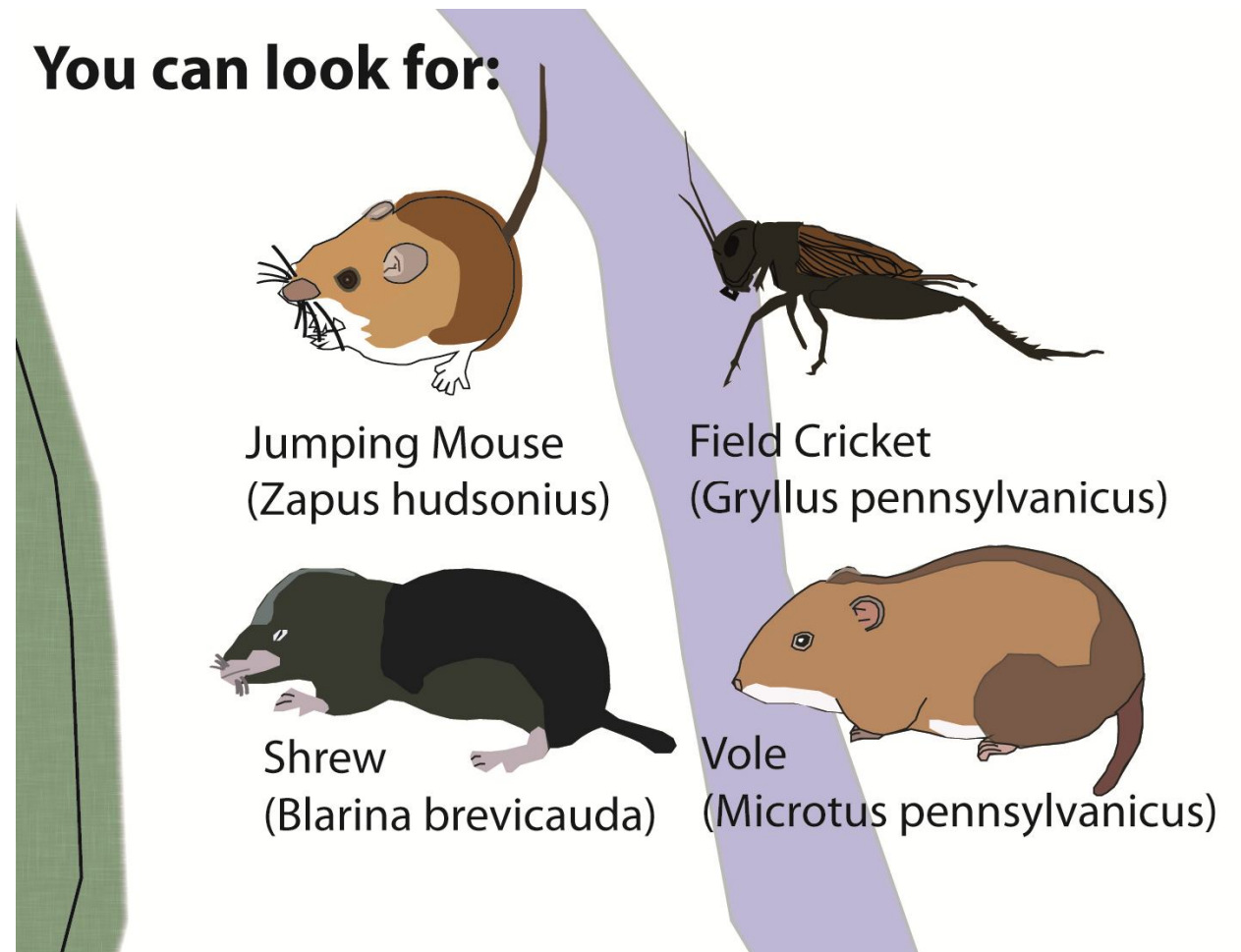
Figure 4: Succession



Caption: Figure 4 shows how an aerial view of how the process of secondary succession has altered the Oldfield from 1974 to 2006 (Old Field Burn Presentation for Posting 4). The area outlined in red was the area that was proposed for invasive species removal in 2007 (UTM Oldfield Management Plan 2).

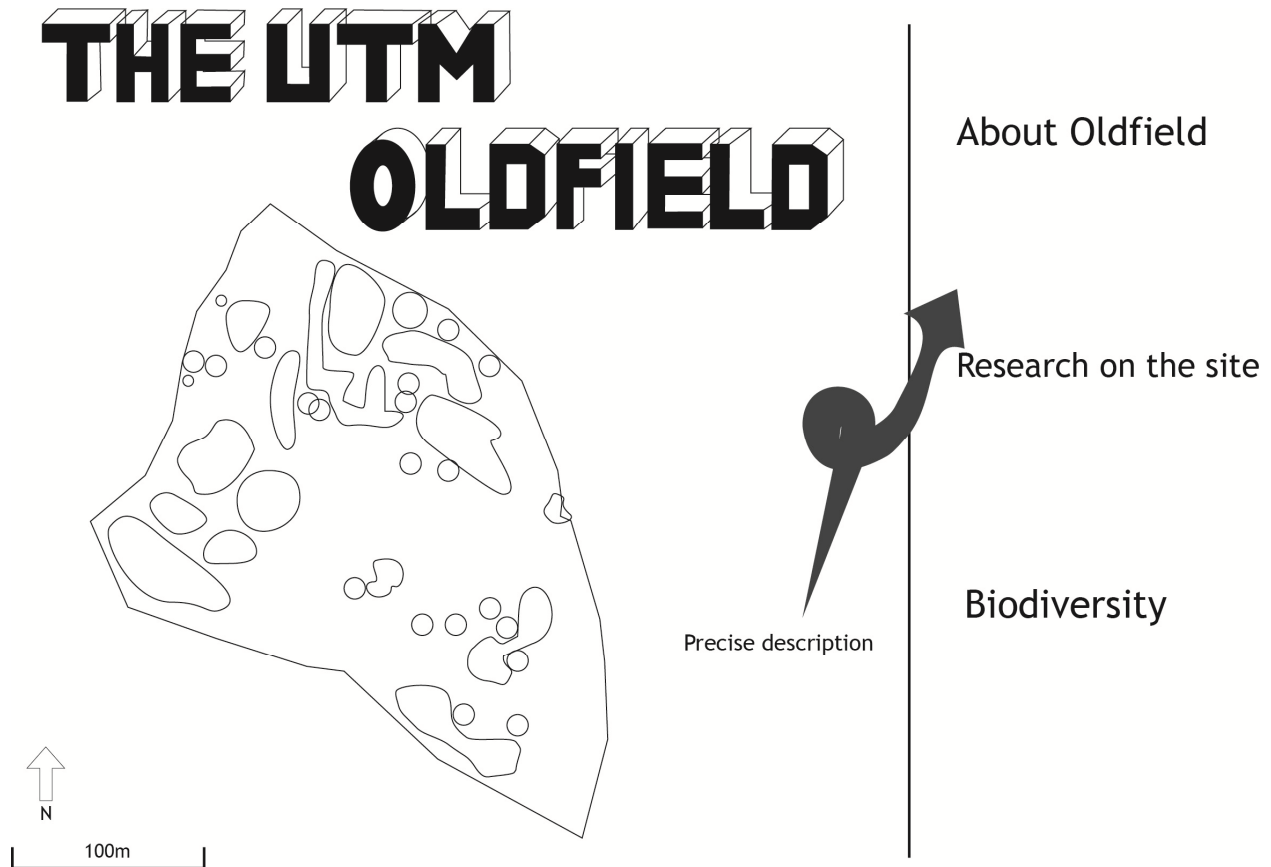
Appendix 3: Illustrations and Sign Design

Figure 4: Vector Illustrations



Caption: Figure 4 shows some of the vector illustrations that were created for our informational sign using Adobe Photoshop and Illustrator.

Figure 5: General Layout of Informational Sign



Caption: Figure 5 shows the general layout and structure of our informational sign. Note the division of text based information from graphical information, the use of three dimensional fonts, and the directional arrow.

Appendix 4: Examples of research that has been conducted on the Oldfield site

KA, Judge. "Female social experience affects the shape of sexual selection on males." *Evolutionary Ecology Research* 12.3 (2010): 389-402. *GoogleScholar*. Web. 1 Nov. 2010.

Judge KA, Ting JJ, Schneider J, Fitzpatrick MJ. "A lover, not a fighter: mating causes male crickets to lose fights." *Behavioral Ecology and Sociobiology* 64 (2010): 1971-1979. *GoogleScholar*. Web. 1 Nov. 2010.

Caption: Above are the citations for academic peer reviewed journals that utilized crickets from the Oldfield site. These articles are listed in order to show that the Oldfield has been used for serious academic research.

Appendix 5: Newspaper Article

Below is the final draft of our newspaper article submitted for publication (in December 2010) in the UTM student newspaper (The Medium).

The Untold Story of Oldfield

It's 3.5 hectares in size. You might have driven by it a few times. If you've taken any ecology themed bio classes then maybe you used it for a lab. If you've ever been on the UTM nature trail then you've probably walked by it. You've probably walked through it if you're a nature lover. It's older than UTM. It was the beach of a glacial lake. At the same time, it's the largest lab UTM has got. Fortuitously, it's been left largely alone for at least 80 years. That's good news for a lot of reasons. It's Oldfield, you may not have heard of it before, but we're lucky to have to it.

Exit the Recreation, Athletics, and Wellness Centre, head towards the Argo's Practice Facility along Outer Circle Rd, and you'd be forgiven for missing it. Stop and take a moment to look around and you'll see it though. It's a field bordering the Credit River and surrounded by forest on one side and a football field on the other. There's no formal entrance. There's no crosswalk or lights to get you across to it either. But you might have seen students walking in and out of there a few times. Walk through it yourself and you might stumble across someone's research. It's been used for research by UTM going back to at least the late 1970s.

Oldfield is a technical term for abandoned farmland. Back in the mid 1800's, the forest that stood where Oldfield is today was cleared and used for pasture or for a hayfield or for both. It and UTM were part of the Schreiber (think Schreiber residence) family land holding. Sometimes farmland gets abandoned like Oldfield was abandoned around the 1930s. When that happens, the surrounding forests starts to move back in. The result of all this has been the

creation of what is both UTM's largest science lab and something really beautiful at the same time.

There are singing insects, like field crickets, in Oldfield not found anywhere else in the immediate area. Researchers at UTM have used crickets from Oldfield to study sexual selection. Actually all sorts of research has come out of Oldfield. PhD thesis have come out of Oldfield and so have Research Opportunity Program (ROP) projects helping UTM undergrads decide if a career of academic research is right for them. If you're interested in trying out research one day then keep Oldfield in mind, but that isn't the only thing noteworthy about it.

Sometimes, I don't think a lot of us at UTM realize how lucky we are. Even if you ignore the fact UTM is right beside Erindale Park, we've got a really beautiful campus. That's partly because large areas of the UTM are protected against development, and partly because our campus sits overlooking the Credit River surrounded by undeveloped land. Oldfield is part of that beauty. It's a promontory with a breathtaking view of the Credit River Valley. It's something that shouldn't be forgotten or taken for granted as UTM continues to grow. Fortunately, the UTM/Evergreen Naturalization Steering Committee has worked hard to preserve Oldfield and organized events removing invasive plant species in Oldfield. The result is a boon for UTM.

There are nature trails bordering Oldfield and going through it. If you need to get away from the rigors of everyday life then you could do worse than going for a walk along UTM's natural trail and taking a stop at Oldfield. Keep on a lookout for jumping mice, shrews, white footed mice, and voles. According to a mammal trapping ROP project completed by a UTM student earlier this year, you can find them along the forest edge. The vegetation around the

forest edge is also really palatable for deer so keep a look out for them too. Just try not to trample on anyone's research while you're there.

By

Alex Pomorski

Terry Chung

Cinar Gursel

Tao Wang

Works cited For Article (for information not used elsewhere in paper)

"The Environmental Affairs Office: Showcasing Our Commitment to Campus Sustainability." *University of Toronto at Mississauga: Grow Smart, Grow Green*. University of Toronto Mississauga, 13 July 2010. Web. 12 Nov. 2010. <<http://www.utm.utoronto.ca/green.0.html>>.

"University of Toronto at Mississauga: Prescribed Burn Project." *Prescribed Burn Project*. University of Toronto Mississauga: Home, 12 May 2010. Web. 11 Nov. 2010. <<http://www.utm.utoronto.ca/index.php?id=8462>>.

Appendix 6: Presentation Slides and Lines (Note source for aerial photography is: (Nadine Nesbitt, personal communication, 2010) All other photographs were taken by us.)

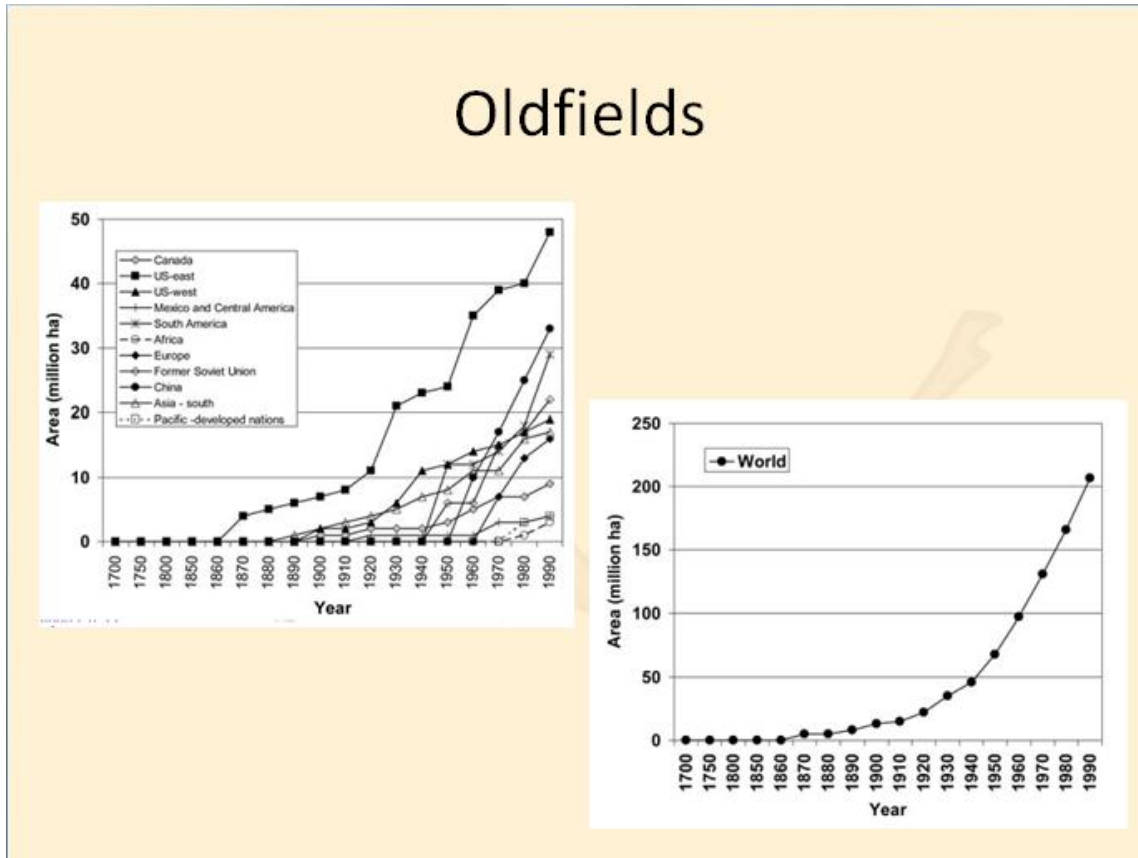
Appendix 6 contains the presentation slides and accompanying lines used for in class presentations to promote Oldfield. The running time for the presentations needed to be less than two minutes because time was being taken away from the main course lecture to give the presentation.

Slide 1:



Slide 1 Lines: Hi, everyone! I'm here today to talk to you quickly about the UTM Oldfield - your Oldfield!

Slide 2 (Source for Graphs is the book: Oldfields: Dynamics and Restoration of Abandoned Farmland. See Works Cited).



Slide 2 Lines: Oldfields are basically abandoned agricultural land. For as long as people have been farming they've been modifying land for that purposes. Land used for farming gets abandoned though for reasons like changing land uses and declining soil fertility. There's close to 10 million ha of Oldfield in Canada and 200 million worldwide.

Slide 3



Slide 3 Lines: We happen to have an Oldfield near to us along the credit river and beside the athletics field. You can see it outlined in red.

Slide 4

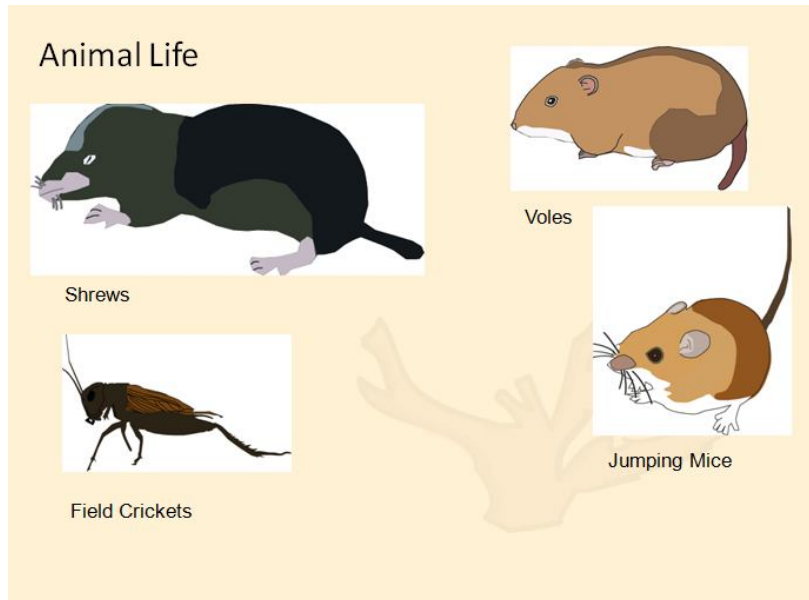
Background Information

- Oldfield on the UTM campus
 - History intertwined with the History of UTM
 - Cleared in the 1800s
 - Part of Schrieber Family holding
 - It was abandoned in the 1930s and left undisturbed for 80 years
 - Today it's a useful resource for UTM

Slide 4 Lines: This old field was cleared in the 1800s. It was part of the Schrieber family land holding. Its history is intertwined with the history of this campus. The name Schrieber should sound familiar to

anyone living on residence here. So, this field, after being used probably for grazing, was abandoned 80 years ago and left largely undisturbed. That's a good thing, because it's a great resource for us today.

Slide 5



Slide 5 Lines: Now, here is some of the wildlife found in our Oldfield. The singing insects like crickets would disappear from the area if it wasn't for the vegetation found in Oldfield.

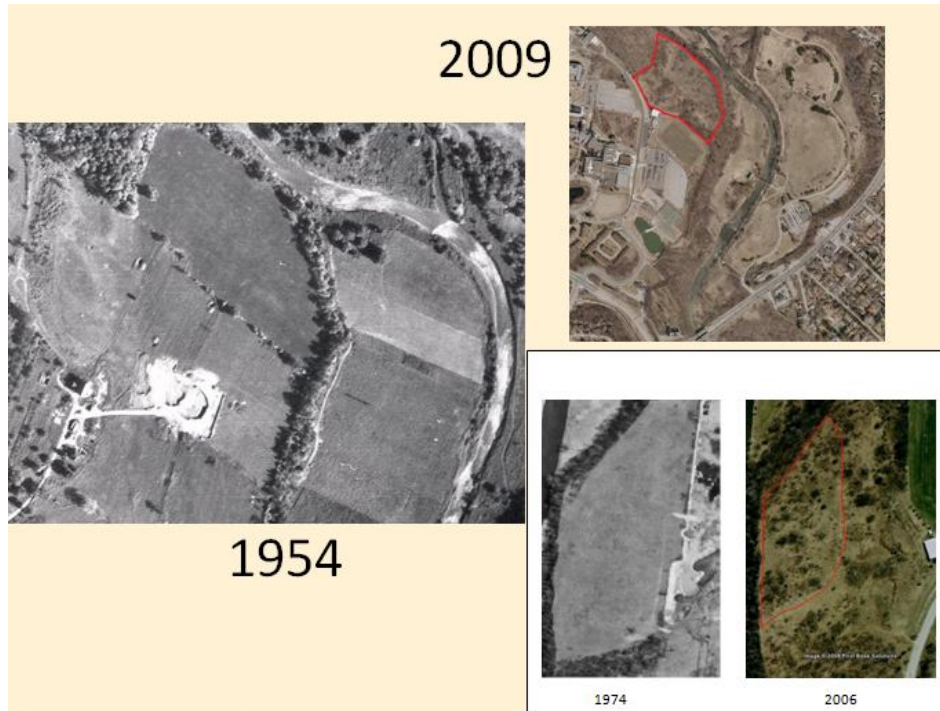
Slide 6



Slide 6 Lines: Why does any of this matter to you? Well, I'm guessing most of you are first/second year students and that means that maybe later on you'll consider trying out doing

research. If you do then the Oldfield site will be a great resource. Simply because of its location and wildlife found there. I mentioned research earlier. PhDs theses have utilized that field for research on sexual selection using crickets. An undergrad student trapped all those small mammals you saw in the previous slide as a part of a Research Opportunity Project. Here on this slide we see a wasp box someone a student is using for their research. Walk through that field and it's not hard to stumble upon someone's research.

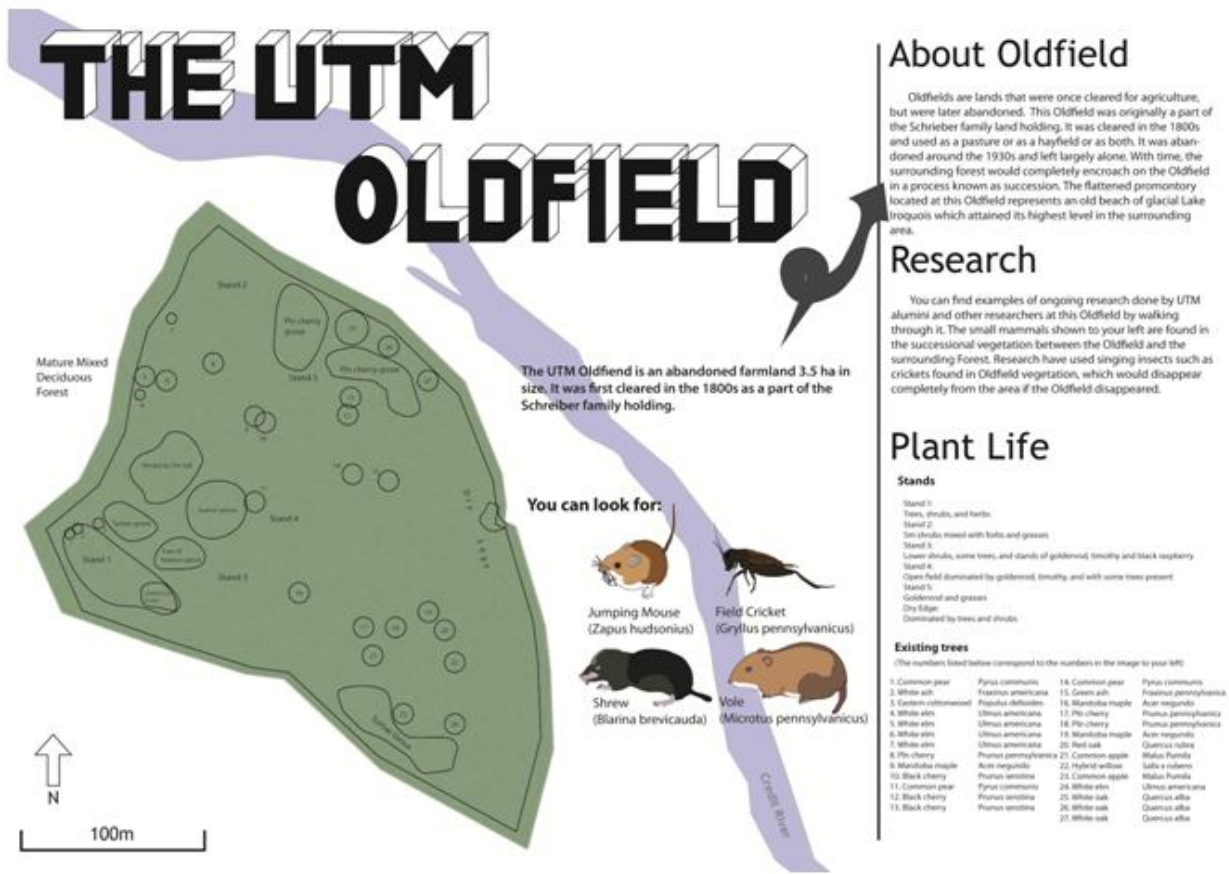
Slide 7



Slide 7 Lines: This is all just something to keep in mind as you go along with your studies here at UTM. If you do decide to give research a try then just remember that you've got yourself an excellent outdoor laboratory. Also, here are pictures showing how the area has changed over time. Fortunately, it has remained largely untouched. Thank you for your time.

Appendix 7: Final Information Sign Design (Note: Fullscale image file provided separately)

Figure 6: Complete Informational Sign Design



Caption: Figure 6 shows our final informational sign design. It is largely graphical, separates graphical and textual data, a minimal amount of text based data is present, and it utilizes attention grabbing techniques like 3d fonts.

Appendix 8: Estimation of Physical Sign Creation Costs

Within the Greater Toronto Area, we were able to find a company called Fast Signs that specializes in outdoor Signage creation. Of course, there are many companies that specialize in signage creation, but we focused on one in the Greater Toronto Area for the sake of simplicity and cost (shipping costs may be avoided since the final sign can be picked up in person). The estimate given for the Informational Sign of our specifications was 300 Canadian dollars.

Company Website:

<http://www.fastsigns.com/>

Appendix 9: Invasive Plant Species Found in Oldfield

Figure 7: Invasive Species Found in Oldfield

Table 1. Work zones and priorities for treatment.

Zone	Description	Area (sq. m.)	Priority for treatment
1	Crown vetch	113	1
2	Common buckthorn	53	2
3	Crown vetch	88	1
4	Tartarian honeysuckle	213	1
5	Crown vetch	34	2
6	Tartarian honeysuckle	144	1
7	Poison ivy	27	3
8	Poison ivy	90	3

Caption: Figure 7 is a table from the UTM Oldfield Management Plan prepared by Urban Forests Inc that identifies the location and extent of different kinds of invasive plant species found in Oldfield (UTM Oldfield Management Plan 4). The Zone number in the first column corresponds to Figure 1 and 2 in Appendix 1.