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McMaster Conservation Corridor Forward with Integrity Funding

In our FWI proposal, we requested funding to use the Smithsonian dynamic forest plot technique to create a permanent tree monitoring plot on the McMaster property on Lower Lions Club. As our proposal acknowledged, this is a large scale project that will take a minimum of 2 years and requires additional funding; the FWI funding would act as seed money. In our FWI proposal, we argued that this project would be transformative; that it would catalyze the creation of an interdisciplinary facility for teaching, research, and stewardship on the McMaster Property.

In this report, we assess our progress in 1) creating the treeplot, 2) locating further funding; and 3) facilitating interdisciplinary teaching, research, and stewardship at the McMaster Property.

1. Treeplot Establishment

Creating a permanent tree monitoring plot following the Smithsonian dynamic forest plot technique project requires us to first survey and create a 20 metre spatial grid, and second to census all the trees within that area, determining their location, species, and diameter.

We started by talking with the Hamilton Conservation Authority about our intentions. They quickly communicated a collaborative perspective and generously provided us with all GIS (Geographic Information System) files they had for the McMaster property, including property lines. We used this information to brainstorm the location and dimensions of the tree plot, in consultation with colleagues who have Smithsonian forest plots. The best plot position included a portion of HCA land. We discussed this positioning with the HCA and picked a mutually convenient orientation - 20 hectare tree plot with about 1/3 hectare in HCA land.

Brian Baetz from Engineering arranged a loan of survey equipment and training on the equipment by Kent Wheeler. Surveying of the grid started in mid-June and still continues. A colleague, Dr. I Fang Sun (National Dong Hwa University, Taiwan) visited our plot in August. He approved our accuracy, but also gave advice on streamlining our procedures to increase efficiency. We generally place 7-20 stakes per field day. As of Tuesday November 19, 2013, we have installed 57% of the 546 stakes needed for the treeplot spatial grid (Figure 1 - see end of report).

2. Further Funding

Seed money from the FWI fund allowed us to initiate the plot setup and leverage for further internal and external funding. We used the money to buy stakes and field equipment. Matching funding from the Faculty of Science has been used for additional field equipment and to host Dr.
Sun. We approached several funding sources for conservation related work. Our first priority was to find funding for graduate students to continue the treeplot work. A second priority is the stewardship of the land. The HCA has identified the large area of invasive buckthorn as a stewardship priority, and suggested that maintaining an open area without trees would add to the overall diversity of the Dundas Valley. The W. Garfield Weston foundation has generously funded us for two projects: a) the permanent tree monitoring plot and b) buckthorn removal and restoration of native prairie. Each project includes funding for graduate student research.

3. Interdisciplinarity, Teaching & Research

During the past year, we have facilitated ecologically sensitive use of the site and promoted it as a site for teaching, research, and stewardship. Classes using the site for coursework have come from Fine Arts, Biology, and Integrated Science. Individual undergraduate students from Arts and Science, Biology, Integrated Science, Arts and Science, and Earth Science are carrying out work on the site, either doing individual research or working as part of the survey crew. Students seem comfortable with travelling by bus or bicycle to the site and can do so in a timely way. We have discussed future use with members of the School of Geography and Earth Sciences and Peace Studies. Students from MacServe and a group of administrative staff have each performed a day of service on the site. At the request of the President, the Dean of Science has been tasked with administration of the property, and will continue to promote interdisciplinary use. We have discussed our proposal and plans with Tys Theysmeyer, RBG and Michael Fischer, Hamilton Naturalists Club.

Our months of surveying have yielded observations and an increased awareness about the site. We have verified the topography and ecological land classifications from the HCA, and find that the transitions between types of communities are often abrupt, not gradual. We have found multiple invasive plants and overabundant deer. More positively, we have identified endangered butternut and eastern flowering dogwood (with possible seedlings) trees, mature and seedling tulip trees, American sycamore, an owl fledgling, signs of beaver, wild garlic, and spring ephemerals including Trillium. The larger trees, dead standing trees and fallen logs on part of the property suggest old growth forest. Older aerial photos, and an oral history from Mr. Al Beattie, a man who, as a teenager, worked on the property in the 1950’s indicate the older woods along Ancaster Creek were not logged and that forest has been present since 1910 (Figure 2).

In the year since obtaining FWI funding we feel we have achieved considerable success in establishing this field site as a McMaster teaching and research facility. This success is indicated by our progress in establishing the treeplot, elucidation of the inherent diversity and value of the property, and securement of further funding. The most significant metric of our success, however, has been how students are affected through experiential learning at this site. The excitement, dedicated work and relevance communicated to us by both our students and those from other courses and events have been overwhelming. With their access to this property, the contact with nature, application of theory and realization of human impacts has shifted student perspective
from ideation to tangible reality. That there is an historical context to the site further enhances this awareness.

Coupling this success with communications involving the Dean of Science and Roger Couldrey, VP Administration, further plans to establish this site as a true, outdoor facility for teaching and learning have been made. The future of the McMaster Conservation Corridor is bright.
Figure 1. Orange circles indicate stakes that we have placed. The red line is the property line, and the green line is the path. Gray lines indicate the grid lines over the property, and the finer grid is the permanent treeplot.
Figure 1. One of our historic aerial photos (here, 1943) that shows previous land use. Orange circles indicate stakes that we have placed. The red line is the property line, and the green line is the path. The points of interest (POI) will allow us to find historic boundaries on the property.