

Burgoyne Woods Forest Regeneration Study

Colleen Middleton, Tawnya D'Alessandro, and Leanne Johnson
Niagara College, NOTL Campus, Ontario

Introduction

We are conducting a study for the City of St. Catharines in Burgoyne Woods, as part of our Ecosystem Restoration program at Niagara College. Burgoyne Woods is a 114 acre park, with areas of recreational usage and large forested areas (Figure 1). It is located near downtown St. Catharines, and owned by the City.

There is concern that the forest ecosystem is composed of an even-aged stand, and therefore at risk of being unsustainable. Also, there is generally a lack of information as to the vegetation at the site.

The Forest Regeneration Study at Burgoyne Woods is summarized on this poster. Information is to date (as of February 24, 2010), and the study is ongoing.

Aim

We will conduct our Forest Regeneration Study in two parts: a vegetation study and a deer study.

The vegetation study consists of systematic quadrat sampling to determine the composition of woody species at Burgoyne Woods in terms of abundance and diversity, as well as average age.

The deer study will focus on determining the number and effect of deer at Burgoyne Woods. We will do this with the use of observations of deer signs, motion sensor cameras, and deer enclosures.

Our goals are to determine:

1. If there is a woody species regeneration problem,
2. What could be the cause of the problem, with emphasis on determining the effect of deer at the site, and
3. How the site can be restored.

We will also be characterizing the vegetation at the site, and producing maps to illustrate our results. Our final goal is to produce a report for our client, the results and conclusions of our study, with illustrated maps of the vegetation communities.

Method

Vegetation & Deer Study

The vegetation study was initiated with the volunteer efforts of our classmates using our winter twig ID skills (Figure 2). The amount of White Tailed Deer present in Burgoyne Woods is an ongoing study.

- Systematic quadrat sampling was used based on the map in Figure 2.
- Twenty two 10 m x 10 m quadrats were analysed for tree species, count, and to measure the Diameter at Breast Height (DBH) (Figure 3). The quadrat was divided into a 5 m x 5 m plot to identify shrubs only.
- Using our tracking skills, we have surveyed the park in its entirety and found deer tracks, scat, urine, rubs and a possible bedding area.
- Trail Cameras were placed in trees at breast height, in areas where deer signs showed their frequent presence (Figure 4). Cameras were left for three days each time. The cameras took pictures when its motion sensor detected movement (Figure 5).

Next Steps:

- Continue quadrat sampling in hopes to classify 10% of the inner forested area at Burgoyne Woods.
- Formulate maps that illustrate our findings as a result of the vegetative analysis.
- Analyse data collected from the deer study in order to estimate the number of deer at the site.
- Erect deer enclosures for future analysis of the effect of deer browsing on vegetation at Burgoyne Woods.



Figure 2. Division of forested area into five polygons, and indication of sampling sites for the vegetative study. Photo credit: Google Earth



Figure 3. Photo of Colleen, Tawnya, and Leanne documenting tree data for the vegetative study. Photo credit: Andrea Sinclair

Results

Vegetation Study

To date, 211 trees in Burgoyne Woods had been sampled and analysed to identify the nearest possible taxonomy, and the average Diameter at Breast Height. Twenty-three species of trees have been observed, and six of those are non-native. The most dominant tree species is Ash (*Fraxinus spp.*), at approximately 25% of the trees surveyed. Maples (*Acer spp.*) were the second most dominant species in the park, at approximately 18% of the forest composition. The average DBH for the ash and maple species was 13 cm and 22.5 cm, respectively.

Deer Study

General observations and motion sensor cameras were used to investigate the presence of deer within the park. Observations include documenting the presence of rubs and ruts, scat and urine, bedding areas and tracks. Observations to date suggest there are multiple deer in the park on most days.

Motion sensor cameras were placed in various areas of the park to monitor for the presence of deer. These cameras were placed in areas that deer were hypothesized to frequent. Three photos have been obtained so far: one photo indicating two deer, and two photos with one deer in each. In addition to the cameras, live deer were also visually spotted on numerous occasions within the park.

Figure 4. Photo of one of our motion sensor cameras erected in the forest. Photo credit: Colleen Middleton



Figure 5. Photo of two deer, taken with one of our motion sensor cameras.



Figure 1. Burgoyne Woods

Conclusion

Results from the vegetation study indicate that there may be a lack of tree species diversity at the site. Low diversity is a sign of poor forest quality. The average diameter at breast height was fairly low, indicating the forest has many young trees as well. This is a positive find, as high diversity in age class is a sign of good forest quality.

Signs of deer, such as photos captured from the motion sensor cameras, rubs, scrapes, scat, and visual encounters, indicate that there are deer in the park. Their number and effect are undetermined as of yet.

We are currently in the process of gathering more data to determine the status of the forest at Burgoyne Woods, and to determine the best management options possible.

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