

# Memorandum

**TO: Members of the Conservation Areas Advisory Board**

**FROM: Shari Faulkenham, Ecologist**

**DATE: March 31, 2009**

**RE: Deer Monitoring Initiatives 2008 / 2009**

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**This report is for information purposes only.**

## **BACKGROUND**

Land Management and Ecology staff has received numerous complaints over the past 6 years about deer, particularly in the Dundas Valley and Iroquoia Heights Conservation Areas. The primary complaints we have received are the destruction of gardens, ornamental plants, and turf by browsing deer, the fouling of yards, and the presence of loafing and/or aggressive deer on properties.

The overlying issue we are facing is the potential overpopulation of deer in these natural areas due to milder winters in recent years, as well as these populations being artificially sustained by being fed by humans. This issue also extends to their unusual changes in behaviour and perceived domestication due to feeding and property management.

## **STAFF COMMENT**

In order to better address these concerns, Ecology staff initiated a deer monitoring program in the Dundas Valley and Iroquoia Heights conservation areas to help determine whether these areas are overpopulated with deer. This monitoring program consists of two parts – aerial deer censuses undertaken in cooperation with the Ministry of Natural Resources, as well as a long-term deer enclosure monitoring program.

### **Aerial Deer Census - 2009**

In January 2009, Ecology and Ministry of Natural Resources staff undertook an aerial deer census. The study was centered around the western portion of the Dundas Valley bounded by Paddy Green Road, Sulphur Springs Road, Jerseyville Road, and Governor's Road, which is the largest contiguous forested area of interest. Wooded areas within a 10km radius were also surveyed, covering areas where firearm discharge is permitted or restricted by the City's Firearms Discharge Bylaw. A map of the area is attached.

The purpose of this study was to acquire an estimate of deer densities for our study area and each wooded compartment within it. This estimate will help us determine if these areas are overpopulated such that they are unable to sustain the basic life functions of this number of deer. Natural resource managers strive to maintain a healthy number of deer in urban and rural populations to minimize, and if possible prevent, the destruction of significant natural habitats (like those found in the Dundas Valley and along the Escarpment), as well as widespread disease and/or die offs, aggression, nuisance behaviour, and vehicle strikes involving deer. This healthy number is approximately 1 deer per 6 to 7 hectares of habitat.

The information that we will acquire from the collected data will allow us to make recommendations to the CAAB, our Board of Directors and City Council regarding whether population control must be undertaken.

Preliminary results are as follows:

| <b>Natural Area</b>       | <b>Area Surveyed (ha)</b> | <b>No. of Deer</b> | <b>1 deer / # ha</b> |
|---------------------------|---------------------------|--------------------|----------------------|
| Dundas Valley             | 1287.6                    | 505                | 2.5                  |
| Lower Spencer             | 32.8                      | 4                  | 8.2                  |
| Copetown Bog              | 17.6                      | 0                  | n/a                  |
| Borer's Falls-Rock Chapel | 223.1                     | 85                 | 2.7                  |
| Christie Lake             | 91.5                      | 13                 | 7.0                  |
| Spencer Gorge             | 66.6                      | 6                  | 11.1                 |
| Tiffany Falls             | 115.3                     | 40                 | 2.8                  |
| Tiffany Headwaters        | 65.8                      | 40                 | 1.6                  |
| Iroquoia Heights***       | 65.7                      | 102                | 0.6                  |

As anticipated, population numbers at Iroquoia Heights have reached a critical mass, with an estimate of almost 2 deer per hectare. This is double of that found at Sifton Bog in London, which has been in the media as of late.

Further data analysis by MNR has indicated that Iroquoia Heights CA is a “problem area” with respect to its deer populations.

### **HCA Deer Enclosure Monitoring Program**

In the Fall 2008, staff erected four fenced enclosure structures (3 in Dundas Valley Conservation Area, 1 in Iroquoia Heights Conservation Area) to help quantify the effects of deer on forested habitats. Each structure is 4m (16ft) x 4m x 2.5m (8ft), and is constructed of fixed knot high-tensile cattle fencing and 3m (10ft) steel U-flanges. The structure is constructed so that other animals still have free access to the study area, and that deer (and most humans) are the only excluded variables.

The purpose of this study is to determine whether the population of deer in the Dundas Valley and Iroquoia Heights conservation areas is exceeding the carrying capacity of these forested natural areas, thereby detrimentally affecting the forest's overall health and plant biodiversity. As the health of these systems decline, the health of other plant and animal populations decline correspondingly. Once staff has accumulated enough data to draw statistically significant conclusions, recommendations will be made as to how the deer population in these areas should be managed in the future. It is intended that these exclosures will become permanent structures in order for us to monitor changes in the forest community as deer populations fluctuate over time.

The premise behind the exclosures is to prevent deer from accessing a known area of a forest for their everyday activities, therefore preventing browsing and trampling of vegetation. In doing this, changes in the diversity and structure of the vegetation community, in the absence of only deer, can be observed over time. Each exclosure is paired with an unfenced control site that is located immediately adjacent and has the same surface area dimensions.

The monitoring parameters for this program are:

- Annual photo monitoring from an established vantage point;
- Annual measures of diversity in woody species, ground cover species, plant form diversity, and height class diversity in woody species, using the Shannon Index of Diversity;
- Annual measures of floristic quality using the Floristic Quality Assessment Index; and
- Annual estimates of cover-abundance of each present plant species using the Braun-Blanquet Scale of Cover-Abundance.

To acquire the necessary information for these studies, woody plant species have been identified and measured within the entire plot, and all ground cover plant species have been identified and plant species cover-abundance estimated within a 1m x 1m randomly chosen subplot.

It is anticipated that the results of this study will provide us with valuable information about how deer affect the quality and biodiversity of our natural areas, especially if management options are exercised by MNR to control the deer populations in these areas. While our natural areas will never likely exist in the absence of deer, these data can help us understand what changes occur in the plant community over time as deer numbers fluctuate, and will provide us with early warning signs if population numbers do become a problem.

## **FINANCIAL IMPLICATIONS**

If control measures are undertaken to bring the deer population below desired thresholds, it is anticipated that future aerial deer censuses will need to be undertaken to manually enumerate deer numbers in these natural areas. These costs will need to be budgeted for in our annual budget in years when this census needs to take place.

## CONCLUSIONS

Ecology staff will be continuing with the deer exclosure monitoring component of this project in 2009. Once the final report on the 2009 aerial deer census is received from MNR, HCA staff will follow up with a report to the Conservation Areas Advisory Board.

