

Carp Hills –South March Highlands Bio-blitz 2011



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Financial assistance for this project was provided by the Ottawa Stewardship Council

Acknowledgements

Prior to this experience, I had not participated in a bio-blitz; nor do I have a background in biology. Therefore, I am intensely grateful to the support and assistance I received from the individuals and groups listed below. They made the event possible.

The Ottawa Stewardship Council provided financial support and its members reviewed this report. The Council is part of the Ontario Stewardship Program, an initiative of the Ontario Ministry of Natural Resources. It is mandated to assist environmental groups, community associations, and other groups in Ottawa developing projects that promote and maintain a healthy environment (<http://www.ottawastewardship.org/>).

Heather Hamilton from the Canadian Bio-diversity Institute generously shared her time and expertise. She imported the concept of the bio-blitz to North America a number of years ago and her enthusiasm for this method of promoting the natural environment is infectious.

Nick Stow from the City of Ottawa provided support and assistance. He coordinated the design and production of maps of City-owned property for bio-blitz.

Members of the Protect the South March Highlands Coalition promoted the bio-blitz, set up the Nature Fair, provided operational support during the bio-blitz and coordinated a dinner for participants.

The Ottawa, Mississippi Valley and McNamara Field Naturalist Clubs promoted the event on their websites and in emails to their members. Members volunteered their time to participate in the Nature Fair and share their expertise.

I am very grateful to all of the residents who allowed their property to be included in the bio-blitz, but am especially thankful that Chris Busby, Barbara Hope and Ian Campbell volunteered their time to act as guides.

Thanks also to Emery Signs who were kind enough to print the bio-blitz signs at a discount.

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Executive Summary

The Carp Hills – South March Highlands Bio-blitz took place May 28, 2011. It was supported by local residents and a number of organizations. The Ottawa Stewardship Council provided financial support. Twenty-eight experts in a variety of disciplines participated in the event.

The weather was not optimum as drizzle and fog were frequent until late afternoon, when it became partly cloudy. Temperature was in the low teens (10-14°C) until noon. The high for the day was 18.0 °C. As a result, few herpetofauna were reported even though the area is known to be densely populated. Residents report frequent sightings of Blanding's Turtles, Snapping Turtles, Painted Turtles, many species of frogs, and a variety of snakes including milk snakes. Their observations include juveniles, adults and nesting sites.

The Carp Hills constitute the largest Canadian Shield outcrop in the region and the only substantial "island" of Precambrian bedrock south of the Canadian Shield in south-eastern Ontario. Accordingly, it supports a number of vegetation-landform complexes which are unique to the south-eastern Ontario region. A number of candidate Areas of Scientific and Natural Interest (ANSI) are located in and around the Carp Hills, including the South March Highlands which has been the source of much controversy.

The area of the bio-blitz included approximately 840 hectares owned by the City of Ottawa in the Carp Hills and South March Highlands. Additionally, 13 private land owners granted bio-blitz participants access to their properties (ranging from 3 to 190 acres).

Because of poor weather conditions and early season, species observed by the private landowners in the preceding 12 months as special features on their property were included in the total number of species recorded in this bio-blitz. Some of these added species were important to note as they included species at risk or provincially significant species reported in widely distributed locations. Residents reported an additional 60 species not observed by participants during the bio-blitz.

Local field naturalist clubs, conservation authorities and other organizations having an interest in the natural environment set up information booths in the Hall to promote their organization and present educational materials on the characteristics of the environment. These organizations (listed on the following page) have generously provided funding, expertise and/or volunteers that helped create a successful fair. Specimens borrowed from the Canadian Museum of Nature's, *Specimens to Go Program*, were placed around the Hall to stimulate discussion and draw the public in from the Farmer's Market.

Results from the Bio-blitz

No. of species from Bio-blitz: 521
No. of species by Residents: 60
Number of individual species: 582
Regionally and/or Provincially
Significant Species: 26
Field experts: 28
Volunteers: 29
Landowners: 19

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Introduction

The purpose of the bio-blitx was two-fold: to add more data to existing inventories and to showcase the biodiversity of the forest to naturalists, scientists and other interested people. It was sponsored by the Ottawa Stewardship Council. Assistance was provided by a number of organizations.

The Bio-blitx challenged experts from a number of fields to identify as many species as possible within a 24-hour period on May 28-29, 2011. The resulting inventory of species is published in this report and posted to a website (<http://carphills.wordpress.com/>) that summarizes the bio-blitx activities and describes the areas surveyed. All species at risk species observations will be recorded in the Natural Heritage Information Center database. Food and drinks were provided throughout the day for bio-blitx participants and a dinner was held on Saturday evening for field experts.

The second component included educational activities. The facilities rented for the bio-blitx base camp were setup as a Nature Fair. Local field naturalist clubs, conservation authorities and other organizations having an interest in the natural environment were offered display space for outreach activities free of charge.

A news release (Appendix: 1) was sent to local papers prior to the event to stimulate interest and publicize the bio-blitx. Local landowners were notified that the bio-blitx was happening and invited to include their property in the inventory (Appendix: 2). Signs were posted at the entrance to the village of Carp and at the access points where participants were directed to park their vehicles.

Originally, the bio-blitx planned to include: a geological component, activities for high school students, assessment of archaeological potential and a Sky Quality Measurements.

The City of Ottawa owns a significant amount of land in the Carp Hills and the South March Highlands. These publicly owned lands were the focus of the bio-blitx. Thirteen private landowners also granted permission for participants to study their land for the period of the bio-blitx.

Before discussing the results of the bio-blitx, this report will outline a description of the site location, its history and its significance to the region which will help put the results into context.

Bio-blitx Site

The Hazeldean bedrock fault (Appendix: 3), a significant structural geological feature, runs northwest from Kanata to the Ottawa River. It defines the boundary of the feature locally know as the Carp Hills. The fault marks the contact between the near surface Precambrian bedrock to the northeast, and the thick deposits of unconsolidated sediment to the west/southwest. With the exception of the Carp Hills, the City of Ottawa is relatively flat.



The Carp Hills constitute the largest Canadian Shield outcrop in the region and the only substantial "island" of Precambrian bedrock south of the Canadian Shield in southeastern Ontario. It has extremely complex bedrock geology, containing a variety of gneissic, granitic and marble substrates. Accordingly, it

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supports a number of vegetation-landform complexes which are unique in the region and much of southeastern Ontario.

There is a number of candidate ANSI's in the Carp Hills. More information on these ANSIs is available on the Ontario Ministry of Natural Resources' Natural Heritage Information Centre's website: <http://nhic.mnr.gov.on.ca>. The bio-blitz focused on two ANSIs which include several areas having particularly exceptional ecological value.

The Carp Barrens is dominated by the most extensive, best-expressed complex of granite bedrock barrens on the Carp Ridge, in the site district, and in southern Ontario east of the Frontenac Axis. Scattered individuals and clumps of trees (White Pine, Red Maple, Trembling Aspen, White Birch, Large-toothed Aspen, Red Oak) occupy depressions where a thin layer of soil has formed. The effects of the huge fires of the late 19th century are clearly evident in the burned stumps and roots of dead trees throughout. Common Juniper forms dense, low shrub thickets on the outcrops with patches of blueberry (*Vaccinium spp.*) and staghorn sumac (*Rhus typhina*). Shallow beaver ponds and thicket swamp-dominated wetlands are common throughout. Emergent vegetation and marsh habitats are common in late summer and fall in and around these wetlands, providing feeding habitat and shelter for resident and migrant birds and mammals alike. An extensive sub-mature white pine forest on bedrock dominates the south-western edge of the candidate; few older forest stands are present as a result of past fires. These older forests are dominated by light and drought tolerant deciduous species such as trembling aspen, red oak and red maple. Given the drought experienced in this upland area in most summers, frequent fire was likely a natural element of the ecology of the Carp Barrens before human settlement occurred (Brunton 1992).

The southern end of the Carp Ridge is locally known as the South March Highlands. It has similar high rolling terrain with highly irregular drainage, typically thin to absent soil and a complex and rich geology which is unique in site district 6E-12. It supports unsurpassed representatives of a number of landform vegetation complexes for the site district, including mature deciduous and mixed upland forest and mixed and coniferous lowland forest on thinly to deeply buried granite bedrock, sandstone rockflats, granite-based escarpment forest, and bedrock barren and beaver pond complexes (Brunton 1992).

The two areas targeted in this bio-blitz (South March Highlands and Carp Hills) included lands that have been identified as candidate ANSIs for 20+ years and are still awaiting confirmation. In the meantime, significant portions of the South March Highlands have been developed and fragmentation is occurring throughout the Carp Hills.

Much of the land included in the bio-blitz is designated "Natural Environment Area" (NEA) within the City of Ottawa's Official Plan . The NEA applies to areas having high environmental value and identifies sensitive areas where development could unduly stress ecological functions and where careful management is required. The Carp Hills Natural Area was considered to have a high overall significance in the evaluation summary performed as part of the Natural Environment System Strategy by the former region of Ottawa-Carleton. The City of Ottawa's Urban Natural Areas Environmental Evaluation Study (2005, Appendix A) documented 40 regional significant vascular species in the South March Highlands and 22 in the Carp Hills (north of March Road to Morris Island conservation area on the Ottawa River).

The City of Ottawa acquires and conserves Natural Environmental Areas under the Urban Natural Features Strategy. In total, the City has purchased 455.21 hectares or 20% of Carp Hills and 385.66 hectares or 43% of South March Highlands.

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In addition, the Carp Hills has a large provincially significant wetland (PSW) complex comprised of several hundred separate wetland units. This wetland complex was originally evaluated in 1986 & 1987 by the MNR. The wetland file was updated with new information in 1999 by the Ministry of Natural Resources. The South March Highlands Wetland (PSW) Complex boundaries were confirmed at the same time.

Wetland complexes occur where two or more wetlands (termed wetland “units”) separated by a non-wetland area are functionally linked. Functional linkages include wildlife usage (e.g. migration corridors, forage areas), and surface water and groundwater connections. Most wetlands in Ontario are actually wetland complexes. The MNR is responsible for determining which wetlands and wetland complexes are provincially significant. Wetlands can also be identified and evaluated by other qualified individuals, provided they have been trained in and use the approved Ontario Wetland Evaluation System (OWES) methodology.



Figure 1. Photo of typical terrain in the provincially significant wetland complex.

The habitats identified in Brunton’s study of the South March Highlands in 1992 are likely to be similar to those throughout the Carp Hills. The habitats identified in Brunton’s study are listed on the following page.

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UPLAND HABITATS

Late Successional Mixed Forest
Late Successional Deciduous Forest
Early Successional Deciduous Forest
Early Successional Mixed Forest
Early Successional Coniferous Forest
Scrub and Thicket
Bedrock Outcrop
Meadow/Abandoned Cropland
Developed/Severely Disturbed Land

WETLAND HABITATS

Open Water
Marsh
Thicket Swamp
Early Successional Mixed Swamp Forest
Early Successional Deciduous Swamp Forest
Late Successional Deciduous Swamp Forest

Bio-blitz

Designed as part educational event and part scientific endeavour, a bio-blitz brings together scientists in a race against time to see how many species they can count within a set period of time. The official 24-hour count (Blitz) period began at mid-night on May 27th and ended at mid-night on Saturday, May 28th. Only one individual completed their observations at night. The date was chosen to minimize conflicts with other bio-blitz or similar events planned in the region and the typical field work season.

Dr Nick Stow at the City of Ottawa was very helpful. He coordinated the design and production of maps (Appendix: 4) showing vegetation types, property boundaries, provincially significant wetlands, City-owned parcels and road networks super-imposed on aerial photographs. The finished products were digital files. As with all electronic files, file size is a major impediment to easy dissemination. Copies were made available to participants on the website but hardcopies had to be printed for distribution to participants on the day of the bio-blitz.

Thirteen private landowners also granted permission for participants to study their land for the period of the bio-blitz and some provided guiding services to participants. This approach seemed to work well and anecdotal reports indicate both groups derived benefits from the exchange of information.

The second goal of the bio-blitz was to increase awareness of the variety of species in the neighbourhood and the services these various species provide to improve the quality of life of its human residents. "Biodiversity" is usually heard in regard to rainforests with their vast number of species. Yet the diversity of life in our own backyards is phenomenal. The Carp Hills and South March Highlands are working ecosystems filled with species that contribute to clean water, fertile soil and clean air. What better way to convey the message than to invite people to share in this discovery and to experience the vast array of species found in the Carp Hill and the South March Highlands in just one cycle of the day?

The Carp Agricultural Hall (3790 Carp Road) was the base camp and the location of a Nature Fair on the day of the bio-blitz. This facility provides indoor exhibition space, access to washrooms, electricity and a kitchen. In addition, the Hall is located adjacent to the Carp Farmer's Market. The Farmer's Market operates every Saturday from early May until the end of October attracting upwards to 5,000 people a day. Rental for the Hall was \$320 and the foot traffic generated by the Farmer's Market made it a worthwhile expense. The weather played a role again as attendance at the market was down from normal levels.

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The following organizations set up displays at the Nature Fair:

- Canadian Biodiversity Institute
- Kanata Environmental Network
- Mississippi Madawaska Land Trust Conservancy
- Mississippi Field Naturalists
- Ottawa-Carleton Wildlife Centre
- Ottawa Field Naturalists' Club
- Ottawa Geoheritage
- Ottawa Public Health
- South March Highlands – Carp River Conservation Inc

The date of the bio-blitz conflicted with a national geological conference held in Ottawa the week before; which prevented a member of Ottawa Geoheritage to attend in person. As a replacement, Ottawa Geoheritage set up a display of the local geology that is such an important determinant of the Carp Hills and its biodiversity. The display was staffed by a member of the McNamara Field Naturalists' Club.

Local schools were asked to identify students willing to participate as data recorders or to help organize activities in which the students could participate. Three local high schools were approached but conflicts with the time of year and shortness of lead time were cited as obstacles to their participation. No specialists in archaeology were available. Sky Quality Measurements were taken at a later date when weather conditions were more favourable.

The assistance of volunteers from the Ottawa Field Naturalists' Club and South March Highlands - Carp River Conservation Inc was invaluable in setting up the hall for the Nature Fair, contributing to and serving supper for the participants, and providing support during the day of the Bio-blitz.

Flora and Fauna: Bio-blitz Results

Five-hundred and eighty-two species from 7 taxonomic groups were found on the bio-blitz (Appendix: 5). Data was collected for Mammals, Bryophytes (mosses and liverworts), Lichens, Insects, Reptiles and Amphibians, Birds, and Vascular Plants. Twenty-six species were considered to be regionally and/or provincially significant.

Amphibians and Reptiles

Only six species of herpetofauna were observed on the day of the bio-blitz. Not unexpected given the cool temperatures and lack of sun. Residents reported another eleven species as being frequently seen on their properties.

Mammals

Eight species of mammals were observed and residents reported observing another five species as being special interests on their property.

Birds

Forty-five species of birds were observed on the day of the bio-blitz by participants. Residents reported observing forty-four additional species.

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Insects

Thirty-one moths and an American Giant Millipede were observed during the bio-blitz. (No one mentioned the mosquitoes that appeared in great abundance.) Residents reported six butterflies and thirteen dragon flies/ damselflies.

Vascular Plants

The native floristic diversity of this area is exceptional. The observations of almost 180 taxa in relatively few habitats (granitic rock barren, young upland deciduous forest, deciduous swamp, beaver ponds) before the peak season for floristic expression, was unexpected. The abundance of some taxa, including two populations of a provincially rare species and substantial populations of several regionally rare (City of Ottawa) taxa, is also unusually high. One of the regionally significant native taxa had not previously been known to occur in the City of Ottawa.

The ecological integrity of the site, as indicated by the characteristics of its native flora through the average Coefficient of Conservatism (CC) rating of 4.79, is also high for a near-urban landscape. The CC provides a rating of the 'naturalness' of native plant species (i.e. the degree to which each species requires relatively pristine conditions) on a 0 to 10 scale, where 0 species having no requirement for natural habitat and 10 indicating taxa which require pristine habitat (Oldham et al. 1995). Larger areas of eastern Ontario with extensive natural landscape adjacent to development (e.g. roadway corridors) average over 4.0, while eastern Ontario urban natural areas typically average under 4.0. The average CC for this area of the Carp Hills would likely register somewhat higher later into the growing season when a smaller proportion of the native flora would be represented by species favouring woodland edges and open sites.

One participant noted that the parcels he examined were not old growth forest, but the rich under story was consistent with land that has never been cultivated. He felt the majority of trees were a similar age, explaining that size differences were likely due to pockets of deeper soil with more consistently available moisture.

Landowners and scientists participating in the bio-blitz both reported evidence of human activity that has compromised the quality of the natural environment. Evidence of wheeled vehicles and waste (washing machines, abandoned vehicles) were noted in portions of the City-owned land. One landowner mentioned having to chase bush parties away from his property that borders an unopened road allowance. Invasive species such as buckthorn and prickly ash were also recorded throughout the area.

Bryophytes

Prior to the Bio-blitz, no inventory of the mosses and liverworts of the Carp Hills existed, the data presented here represents new information. Eighty-two species of bryophytes were found; 13 liverworts and 69 mosses.

Lichens

The data for lichens also represents new information. In total, seventy-five species were observed during the bio-blitz.

Water Bio-Assessment

One participant conducted a bio-assessment of two ponds in the South March Highlands. The ponds were selected as being representative of an impaired water body and one that was less impaired. The participant who conducted the bio-assessment is not convinced that the results from the two sites can be compared using the first site as a reference condition site. The results are inconclusive but they do provide a temporal baseline to which future results (from studies at the exact same location at the same time of year) can be compared.

The reference site (Goose Pond)

The raw data from the site is the following: Leeches: 1; Clam: 2; Scud: 4; Mites: 36; Mayflies: 32; Dragonflies: 2; Damselflies: 8; True Bugs: 8; Caddisflies: 1; Beetles: 5; Snails: 1; Midges: 9; Mosquitoes: 1. These were collected using the Ontario Benthos Biomonitoring Network (OBBN) jab and sweep method for wetlands.

Ten different indices are normally used to interpret these results. By running the numbers through these indices, 8 out of the 10 indices would classify the site as unimpaired. This in turn gives an aggregate result of unimpaired. Most applicable is an index called the Hilsenhoff Biotic Index. This index is a number between 1 and 8 where a score of '1' is more unimpaired and a score of '8' is more impaired. This site has a HBI of 5.6, which is classified as unimpaired.

The classification system used is designed for rivers (lotic systems). It is expected that non-flow water bodies (lentic systems) will score higher because non-flowing water bodies such as ponds are naturally lower in oxygen. Thus, an unimpaired HBI score is a good sign.

Second Site (Shirley's Pond)

The raw data from the site is the following: Roundworm: 2; Leeches: 1; Sow bug: 2; Clam: 4; Mites: 8; Mayflies: 3; Dragonflies: 4; Damselflies: 1; True Bugs: 60; Caddisflies: 2; Beetles: 3; Midges: 16; Horseflies: 1; Mosquitoes: 2. These were collected through the OBBN Jab and Sweep method.

This site had an HBI of 5.33. This is classified as unimpaired.

The biotic index is lower for this site when compared to the first site - whereas overall, this site has fewer indices indicating it to be potentially impaired. As noted for the first site, the criteria for "unimpaired" or "potentially impaired" used is for lotic systems (which this was not). Therefore, this calls into question whether or not the site is actually "potentially impaired". Overall it would seem that this site is worse off than the baseline site, but the suggestion is to continue monitoring both sites.

Sky Quality Measurement

Although the invention and widespread use of artificial light is clearly one of the most important human technological advances, the transformation of nightscapes is increasingly recognized as having adverse effects. Night lighting may have serious physiological consequences for humans, as well as ecological and evolutionary implications for animal and plant populations, and may reshape entire ecosystems. (See [studies](#) available from the International Dark-Sky Association.)

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Animals and plants live by a rhythm which is attuned to our planet's 24-hour cycle. This is an inherited trait, which is passed on through the genes of a species. Humans may notice a change in their circadian rhythm when they travel by airplane between several time zones, characterized by sleepiness, lethargy, or a general sense that something is "off."

Wildlife and fish experience this same disorientation of time when there is too much artificial light at night. Behaviour governing mating, migration, sleep, and finding food are determined by the length of night darkness. Light pollution negatively disrupts these age-old patterns. For details about the ill-effects of light pollution on our environment and wildlife see Royal Astronomical Society of Canada [Guidelines for Outdoor Lighting](#).

This is why the Bio-blitx included a component to take sky quality measurements. Unfortunately, the weather didn't provide suitable conditions for taking measurements on the day of the Bio-blitx as haze and clouds prevented a clear view of the sky. Measurements were taken on another night when the conditions were more favourable. Readings were taken along a route following the generally SE-NW grid of major roads. The results are shown in a table in Appendix 6. Measurements ranged from 21.13 SQM indicating a very dark site to 17-18 SQM indicating a light polluted sky.

The best measurements occurred along Dwyer Hill Road. Measurements around 21 indicate the Milky Way would be a major feature in the night sky. Clouds would appear dark grey overhead and appear bright in the direction of one or more prominent city glows.

The sky glow measurements along Carp Road (17-18 SQM) near the intersection with Donald B Munro indicate significantly brighter skies than just a few kilometres away. If one looked at the night sky here stars would appear weak and washed out, and would be reduced to a few hundred. The village of Carp demonstrates the impact of exterior lighting. As part of the town's infrastructure renewal, the current unshielded lights could be phased out.

Participants

All participants were asked to complete a registration form (Appendix 7) and to carry a cell phone. The form included a waiver acknowledging that the terrain was difficult and that they agreed to participate at their own risk. Liability insurance was purchased to provide separate coverage indemnifying the main financial supporter, the Ottawa Stewardship Council. Ottawa Police Services were notified that the bio-blitx was taking place.

All participants signed in at the Carp Agricultural Hall where they received maps of the area, field sheets (Appendix 8), an identification card and an orientation to the access points. Access points were identified by 18 x 18 inch signs mounted beside the road. Participants were asked to introduce themselves to landowners when entering private property.

A total of 28 participants generously shared their knowledge, enthusiasm and time to begin exploring and documenting the flora and fauna of Carp Hills and South March Highlands. Many thanks to the following:

Daniel Bernard
Dan Brunton, Botanist
Chris Busby, Botanist

Davin Charney, Herpetofauna
Natalia Crowe, Watershed planning
Jennifer Doubt, Botany

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| | |
|---|---|
| Donna DuBreuil, Mammals | Serguei Ponomarenko, Botanist, ecologist and a mapper |
| Meaghan Dustin, Student | Roman Popadiouk, Forest Ecology |
| Colin Freebury, Lichenologist | Paul Renaud |
| Gord Henderson | Michele Rodick, CITES Scientific Advisor |
| Bettina Henkelman, Botanist, Herpetofauna | Lynn Scott, Moths |
| D'Arcy Hutton, Mammals | David Seburn, Herpetofauna |
| Linda Ley, Bryologist | Nick Stow, Biologist |
| Kate MacNeil, Mammals | Paul Tucker, Water bio-assessments |
| Mary McGuire, Botanist | Kara Vlasman, Herpetofauna, plants, mammals |
| Cat Millar, Herpetofauna | Martha Webber, Botanist |
| Ted Mosquin, Botanist | Deanna Wright, Bird photography |

Nature Fair

A number of organizations set up information booths in the Hall to promote their organization and present educational materials on the characteristics of the environment. These organizations (listed on the following pages) have generously provided funding, expertise and/or volunteers that helped create a successful fair. Specimens borrowed from the Canadian Museum of Nature's, *Specimens to Go Program*, were placed around the Hall to stimulate discussion and draw the public in from the Farmer's Market.

Canadian Biodiversity Institute

Andrea Howard, aka The Bug Lady, was a featured guest at the Carp Hills Bio-Blitz. She brought her large collection of mounted insects, including beautiful, tropical butterflies, and regaled visitors at the Carp Fairgrounds with tales of adaptation and survival in Eastern Ontario. As The Bug Lady, Andrea has enchanted children and adults alike at the Ottawa Ex, local fairs, and in schools throughout the region. As the former education coordinator for the Eastern Ontario Biodiversity Museum, Andrea developed the popular, curriculum-based travelling science program, *Museum in a Suitcase*. She is a natural storyteller with an amazing natural story to tell!

Lynn Scott

Local resident, Lynn used a digital camera to capture moths without having to maintain a collection of pinned, spread specimens. She set up a display of information on local habitat, methods of attracting and photographing moths, resources for identification, and brought a few live examples of moths captured at her home. [Lynn Scott's Lepidoptera Images](#) is a wonderful website providing an introduction to the world of moths using photographs taken near her porch light.

Mississippi Madawaska Land Trust Conservancy

The Mississippi Madawaska Land Trust Conservancy (MMLTC) is an independent, non-profit charitable organization that works in and on behalf of the people and communities in the region, both to acquire lands for preservation, and to help landowners preserve their lands for the long term. As a registered charity incorporated under the Canada Corporations Act, it can work directly and flexibly with landowners

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interested in permanently protecting natural and cultural heritage, often bringing the support of a number of tax benefits.

Mississippi Valley Field Naturalists

[Mississippi Valley Field Naturalists](#) encourage the understanding, love and respect for the natural world in the Mississippi Watershed. The club endeavours to do this through a lecture series in the winter, habitat creation workshops, nature walks and canoe outings, environmental education programs, a Bio-blitz program and many other exciting events. Their area includes Mississippi Mills, Carleton Place, Lanark Highlands, Beckwith and surrounding areas. The western slope of the Carp Hills belongs in the Mississippi Valley watershed.

Kanata Environmental Network

The [Kanata Environmental Network](#) (KEN) is a volunteer-run organization in the community of Kanata. At the bio-blitz they set up a display on invasive weeds and gave demonstrations on removing them. The network shares information about practical, ecologically-friendly solutions working towards a green and healthy future for all. Events are open to the public and are usually free. Information on events is distributed by email and in the local media. You do not need to be a member to be on the email list.

Ottawa-Carleton Wildlife Centre (display only)

The [Ottawa-Carleton Wildlife Centre](#) works on behalf of wildlife. It is committed to educating people about wildlife and helping to foster an appreciation for the natural world and the importance of protecting biodiversity as well as give people the basic tools to solve human/wildlife conflicts in a humane and cost-effective way, allowing them to live in greater harmony with nature.

Ottawa Field Naturalists' Club

The club promotes the appreciation, preservation, and conservation of Canada's natural heritage and encourages investigation and dissemination of the results of research in all fields of natural history. The club organizes excursions, speakers, slide show presentations, produces publications and monitors human influences that are damaging to the natural environment. The club [website](#) provides information on upcoming events and membership.

Ottawa Geoheritage

Members of the Ottawa Geoheritage Committee work with governmental agencies, primary and secondary schools, museums, universities, societies and public interest groups to help preserve, protect and promote Canadian geoheritage. The surface morphology of geologic and geomorphic features control the distribution of lakes, wetlands and river systems that in turn exert a major influence on Canada's groundwater resources, agriculture, mineral wealth, biodiversity, building foundations and transportation networks.

Ottawa Public Health

Ottawa Public Health (OPH) delivers public health services including health protection, disease and injury prevention, control of communicable diseases, family health services and responding to public health services.

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Royal Astronomical Society of Canada, Light Pollution Abatement Program

The goal of the RASC [Light Pollution Abatement](#) (LPA) Program is to reduce the levels of **light pollution** in urban and rural areas by advising Federal, Provincial and Municipal governments and departments along with businesses and concerned citizens to take action to reduce unnecessary **glare, uplight** and **light trespass**. It is a constructive and advisory program that encourages the use of practical solutions to reduce obtrusive lighting.

South March Highlands – Carp River Conservation Inc

The objective of [South March Highlands –Carp River Conservation Inc](#) is to protect and preserve the ecological integrity and eco-connectivity of the South March Highlands and the adjacent Carp River floodplain. The ultimate objective is to establish a land trust or park that will ensure its continuation as a single, integrated and unique eco-system for the benefit of future generations.

Financial Statement and Lessons Learned

The Ottawa Stewardship Council subsidized the Bio-blitz by providing funding in the amount outlined in Table 1 below. The Council also provided value-in-kind services such as verifying a listing of species used to create a database and reviewing the draft report.

Despite the weather conditions, the bio-blitz was successful. It confirmed that the bio-diversity in the Carp Hills is comparable to the high levels previously documented in the South March Highlands (Brunton). A number of participants expressed an interest in coming back to the area when time permitted. A Bryophytes Workshop in the South March Highlands that took place later in the summer may have been stimulated by exposure to the area during the bio-blitz. Some local residents seem interested in exploring the possibility of taking on a stewardship role for the City-owned properties.

The date of the bio-blitz was a compromise chosen to avoid conflict with another bio-blitz held in the Ottawa area and already planned field work. Personal phone calls or invitations were the most successful method of recruiting volunteers.

The Nature Fair was also successful based on the number of organizations that set up display booths. Their time commitment was reasonable: 4 to 5 hours plus travel time. Following the bio-blitz a short questionnaire was sent to the individuals staffing the display booths. Generally, they found it was a worthwhile experience even though attendance estimated to be between 300-400 was lower than expected. They would be willing to consider participating again, but suggested avoiding the summer period as volunteers are harder to find. Few organizations tried to recruit new members from attendees at the Fair.

A number of helpful suggestions were made to attract more visitors: better signage outside the Hall, co-promotion with the Farmer's Market and a schedule of activities or presentations for the public and better media coverage. Providing information on the area or local interests would enable presentations to be tailored to the local audience.

Holding the Fair in conjunction with another attraction such as the Farmers Market worked out well. In fact the Market manager suggested co-promotion if the event was held again. Later in the season might guarantee a higher attendance, but then problems with volunteer availability may arise. There is a

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significant amount of work to organize the Fair, seeking a partnership with an organization rich in human resources would lighten the load considerably.

The specimens borrowed from the Museum of Nature were great conversation pieces.

Media coverage was limited to an article in one local paper and a radio interview in the afternoon of the bio-blitz. Timing is very important for local papers as their deadlines vary and the competition for space can be high. The news release article was shortened considerably in the one article printed. Also, the major media outlets do not seem to be interested in this type of event. The Field Naturalist Clubs promoted the event on their websites and in emails to members.

Who is in your backyard is just as important as what is in your backyard when it comes to identifying, evaluating and practicing good stewardship. Local residents possess a wealth of knowledge and intimate understanding of their microenvironment. Over the years, they have noted nesting sites, preferred foraging locations and seasonal patterns of movement. They too have their own foraging patterns for nuts, berries, fungi and other wild edibles. From the landowner who never walks the same path through his woods and the ones with extensive archives of nature photographs, to the landowner who guards their land with a baseball bat; they all value the unique assets of the Carp Hills.

Coroplast signs were a very good investment. If the text printed on the plastic is generic they can be used for more than one event. They enabled the participants to find the areas to be inventoried and find a safe parking spot. They also publicized the event. They were only set out the night before the bio-blitz due to concerns over vandalism. Methods to post larger signs well in advance of an event should be explored.

While enjoyable, the dinner required a significant level of effort. Providing snacks and a social period when participants check-in would be a good alternative.

Table 1: Bio-blitz funding and expenditures

| Eligible Expenditure | TOTAL AMOUNT | Payment Claim | Final Payment |
|--|-----------------|-------------------|------------------|
| 1 day hall rental | \$325 | \$320.00 | \$320.00 |
| Food + beverages for volunteers the day of the Bio-blitz event | \$300 | \$212.33 | \$212.33 |
| Printing/Office Supplies | | | |
| Id cards | | \$19.21 | |
| Maps | \$120 | \$128.12 | |
| Field sheets | | \$11.47 | |
| Laminating (large signs posted in advance) | | \$77.07 | \$235.87 |
| Signage (All of which will be sent to OSC after the event and will remain the property of the OSC) | \$280 | \$244.08 | \$244.08 |
| Specimens to Go Program | | \$30.00 | |
| Insurance indemnifying OSC | | \$266.74 | \$266.74 |
| TOTALS | \$1,025 | \$1,296.30 | \$1,025 |

Appendices

Appendix 1: News release

Appendix 2: Landowner Information and Permission Form

Appendix 3: Geology

Appendix 4: Maps

Appendix 5: Bio-blitz Results and Landowner Observations

Appendix 6: Sky Quality Measurement Field recording sheets

Appendix 7: Participant Information and Registration Form

Appendix 8: Field Recording Sheet