

2018 PECFN BIOBLITZ
Charwell Point area,
Point Petre Provincial Wildlife Area



Prince Edward County

9-10 June 2018 S.M. McKay- Kuja et al.

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Front cover: Snapping Turtle (*Chelydra serpentina*) at Lighthall Marsh. Photo by Brenda Kostiuk. 10 June 2018.

Back cover: Lighthall Marsh Pond at daybreak. This site once had one of the largest heronries in Prince Edward County. Photo by Peter Fuller, 10 June 2018.

2018 PECFN BIOBLITZ at the Charwell Point area of the Point Petre Provincial Wildlife Area, Prince Edward County, Ontario

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On behalf of the Prince Edward County Field Naturalists and sponsors



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N.B. Photographs of organisms in this report were taken at the study site during the BioBlitz unless otherwise indicated. Any errors or omissions in the report are solely the responsibility of the first author.

INTRODUCTION

The Prince Edward County Field Naturalists (PECFN) organized their fifth annual BioBlitz in association with the Prince Edward Point Bird Observatory at Point Petre Provincial Wildlife Area (PPPWA) on June 9-10, 2018. A BioBlitz is described as a snapshot in time of the biota (plants and animals) observed over a 24 hour period. The prime objective was to conduct a biological survey including both experts and non-experts, to document the flora and fauna of this area from noon on Saturday (9th) to noon on Sunday (10th) and give members of the community an opportunity to investigate and discover for themselves the natural values of the study area.

In 2015, PECFN conducted a BioBlitz on June 20-21, also within the PPPWA, with Base Camp located on the west side of Simpson Rd. south of Army Reserve Rd. At that time, due to the size of the PWA (1,276 ha), much of our effort was centred on the western portion of the PWA. It was decided that further studies could provide a greater knowledge of the biota in the eastern section of the area.

This year our Base Camp was located just west of Charwell Point Rd. in an open limestone barren that had been bulldozed and the soil used to form part of the berm for the pond constructed by Ducks Unlimited (now referred to as the Lighthall Marsh Pond) which was completed in the fall of 1983 and was referred to as occurring in Block F within the Crown Land Block.

Base Camp was situated on the north side of the trail leading to this wetland. Our registration tents were erected at the more accessible area along Army Reserve Rd. at the south west corner of Charwell Point Rd. and Army Reserve Rd. We provided transportation for those who did not want to drive their vehicles down Charwell Point Rd. to Base Camp where most of the walks began. As usual, both independent studies and walks led by experts were part of our BioBlitz protocol. Each participant was provided with a “package” with maps and sheets to list the species they observed.

Registration opened on Saturday at 11 AM. Reference books were provided here as well as photos and specimens of some of the more common species that would be encountered. Another set of reference books and a dissecting microscope were located at Base Camp for identification of aquatic organisms primarily, but also available for any identifications required.

LOCATION: The eastern boundary of the PWA, running south from Dainard Rd. to Lake Ontario, formed the eastern limit of the 2018 BioBlitz study area while Lighthall Rd. was the western limit. Charwell Point Rd. was more or less in the centre. Lake Ontario formed the southern boundary and Army Reserve Rd. the northern boundary. The area is centred on 43.8764, -77.0876 (at Base Camp). These lands comprise Lots 1-4, Conc. V, Athol Twp., and Lots 7-8 and the western half of Lot 6 in Block 15, South Marysburgh Twp., PEC.



Figure 1. Map of the study area showing Base Camp to the west of Charwell Point Rd., north of the road to the Lighthall Marsh Pond, which extends in an arc to Lighthall Rd. further west. At its southern end, Charwell Point Rd. runs parallel to the shoreline, turning west toward the Gull Pond area. Gull Pond is visible at the base of Charwell Point, along the Lake Ontario shore.

The Site: History: A description of the Provincial Wildlife Area’s history can be found on pages 6 and 7 of the 2015 BioBlitz report, as well as Kuisma (1993) and Enright and Hall (1991) who also include several sources.

Most of the original forest was cut by early settlers to build homes, barns and clear land for crops or cattle grazing. By the 1860’s most of the forest had been removed. Commercial fishing and farming became more important than logging as a livelihood.

The remnants of an old homestead NE of Gull Pond can be identified with cement steps still in situ, but farming was probably not very productive here due to the poor, thin soil and extremes in moisture levels (either too wet or too dry or both at different times of year).

In 1951 most of the lands in the fifth concession were expropriated for an Army Artillery School by the Federal Government (actually by His Majesty the King in the Right of Canada). In 1969 Point Petre and all of the development on the property were declared surplus excluding approx. 64 ha in the southwestern corner of Point Petre which is still retained by the Department of National Defense.

In 1972 the lands were granted to the Agricultural Rehabilitation and Development Directorate of Ontario (ARDA) (PEC Archives at the Wellington Library). According to Kuisma (1993), surveys and habitat improvement programs were funded by ARDA until 1975 when ownership was transferred to the Ontario Ministry of Natural Resources (OMNR).

OMNR had been managing the lands since the early 70's. After 1975 they both funded and conducted the management programs. Beginning in 1971, trees and 7000 shrubs were planted; the following year 4000 Silver Maples were planted. In 1973, 1500 Dogwood shrubs, 5500 Cedar, 1000 Autumn Olive, 250 Mountain Ash and 10,000 Multiflora Rose were planted. Also, pot hole dredging and a pheasant release took place. In 1974, dams and/or impoundments were built as well as experimental wildlife crop production. Pheasant stock were released this year as well. In 1975, a controlled burn was conducted and Sharp-tailed Grouse (a prairie species, once known from southwestern Ontario) were introduced. All this (planting thousands of shrubs and trees, ploughing fields and dispersing seed, conducting controlled burns, preparing impoundments, pot hole blasting and waterfowl nest box placements) was done in an effort to manage the land as habitat to benefit wildlife.

Gull Pond was formerly open to Lake Ontario and was judged to be an extremely interesting formation along the Lake Ontario shore (Kuisma, 1993) but has been closed off from the lake for at least several years and boats can no longer enter from Lake Ontario.

In addition, Kuisma indicates that in 1982 Ducks Unlimited began construction of a pond in Block F (east of Lighthall Rd. then referred to as Tower Rd.). In 1983, the pond and dam were completed and an area of 52 ha was flooded. The following year 15 ha of timber was removed from the flooded pond area but the berm was washed-out and had to be repaired. Licences for trapping were issued during the 1983-84 season with a harvest of 115 muskrats reported. In 1985 the berm was leaking during the spring and the pond was drained to repair the damage. Licenses for trapping were again issued in 1984-85 with a harvest of 130 muskrats and 6 beaver recorded (p.25) and in 1986 the harvest was 65 muskrats and 8 beaver (p. 16). Garbage removal had been an ongoing project from 1971 to 1987 but this may refer mainly to the western area of the PWA along the shoreline west of Point Petre Rd. which had been opened for public picnicking (p. 23).

Previous studies:

In the Appendix of the Kuisma report (1993), a 1973 inventory of the trees, shrubs and herbaceous cover of the PWA is given. A more generalized list of the fauna is provided as well

but this includes PEC as a whole. No author is identified as the source of this information but it may have come from Whitecombe et al. (1973). A bird list is also provided with information extracted from The Birds of Prince Edward County (T. Sprague and R. Weir, 1984) and The Atlas of Breeding Birds of Ontario (Cadman, M., P. Eagles and F. Helleiner, 1987).

The introduced Sharp-tailed Grouse is indicated as a possible breeder in this list, and Ring-necked Pheasant as probable breeder, however neither were observed in the 1991 Flora and Fauna Inventory of the Point Petre Provincial Wildlife Area by Lisa Enright and Tara Hall, done for The Prince Edward Region Conservation Authority and the Quinte Field Naturalists.

It is worthwhile to make comparisons of the flora and fauna over more than 25 years and encouraging to see that many of the rare birds are still present e.g. Least Bittern (2015, 2018), Black Tern and Caspian Tern (2015). The Red-shouldered Hawk is no longer present in the PWA but it is interesting that it was still here in 1991. In my experience, in woodlots closer to Toronto this hawk had already disappeared by at least the early 80's. The European Hare has also disappeared from the PWA but Blanding's Turtles recorded then, are still flourishing here.

Although some of the plant identifications might be incorrect (e.g. *Carex praegracilis* which is a salt-loving sedge from the prairies, now found along highways such as the 401, seems to have been confused with *Carex sartwellii*. *Polygonum orientale* (p.24) is a tall garden escape referred to as Prince's Feather, rather than Water Smartweed), it is interesting to note that the Small Purple-fringed Orchid was recorded. This orchid occurs at Ostrander Point (2014) and may still be present here in a swampy area that wasn't surveyed, as is also true for the occurrence of Four-leaved Milkweed, in damp woods. The latter, an endangered species, is definitely worth searching for, although we haven't encountered it during either of the BioBlitzes in the PWA.

The presence of a number of characteristic alvar plants (Bluets, False Pennyroyal, etc.) indicate that alvar remnants existed in 1991 and have survived or possibly increased over the 27 year period to 2018. Many aquatic plants, such as the White-flowered Buttercup also persisted.

From June 5 - 25, 2000 Chris Harris did a breeding bird survey of Prince Edward Point, Ostrander Point and Point Petre Provincial Wildlife Area, setting up transects or point counts at these areas. Among the species he noted for the Lighthall Marsh area were Great Blue Herons (see next paragraph), Turkey Vulture, Osprey nesting in the same tree as a Great Blue Heron, Bald Eagle, Ruffed Grouse, Belted Kingfisher, Tree Swallow, Grasshopper Sparrow, and Purple Finch. Chimney Swifts as well as Bank Swallows and Northern Rough-winged Swallows were seen foraging over Gull Pond and a Warbling Vireo was singing near Gull Pond. He also recorded Snapping Turtles and Blanding's Turtles in the Charwell Point area.

In 2000 and 2001 Donald Craighead conducted King Rail surveys from Presqu'ile Provincial Park to the Catarqui River. Although the study was primarily for Rails he also recorded other marsh species and one of his sites was Lighthall Marsh Pond (described as Charwell DU impoundment). On June 7, 2000, he noted 9 Coot/Moorhens, 4 American Coot, 3 Pied-billed Grebes, 10 Virginia Rails, 6 Least Bitterns, 1 American Bittern, but of special interest were the 107 nests and 400 individuals of Great Blue Herons (described by Harris as one of the largest heronries in Prince Edward County) in the dead trees killed during the creation of this marsh. On

June 18, 2001, he recorded only 200 Great Blue Herons with 8 Black Terns and 5 Virginia Rails. This heronry has declined over the years as the trees began to deteriorate and fall into the water. By 2015 only one Heron nest and one Osprey nest were active.

Habitats: open pond, marsh, fen, wet shrubland, swamp, meadow, alvar, lakeshore, mixed conifer-deciduous woods



Figure 2. People gathered at base camp for an amphibian and reptile tour to be led by Kari Gunson and Ewa Bednarczuk. Photograph by Brenda Kostiuk.

ACKNOWLEDGEMENTS: We are very appreciative of staff at OMNRF especially A. Margetson at the Kingston office for directing us to Tamara Dolan, Lands and Water Technical Specialist and Julie Formsa, Fish and Wildlife Technical Specialist, both at the Peterborough

office, who kindly provided us with letters granting us access to the area overnight (the area is closed to camping from 10 PM to 4 AM but a moth study was to be conducted overnight at the Base Camp location) and giving us authority to conduct aquatic studies in the two ponds: Lighthall Marsh Pond and Gull Pond within the Provincial Wildlife Area.

Appreciation is extended to everyone who helped and took part in the event. First and foremost, we thank our excellent leaders - Ewa Bednarczuk, David Beadle, David Bree, Peter Fuller, Kari Gunson, Dale Kristensen, Les Stanfield and Katie Thomas - for volunteering their time and expertise to provide enjoyable, educational programs, either walks or demonstrations, during the BioBlitz, thus contributing to the success of the event. Les Stanfield, Robin Lauer, Wallace Rendell and Abigail Leavens, on both days, did an amazing and enthusiastic job surveying the aquatic habitats around the Lighthall Marsh and Gull Pond: sampling outflows, catch ponds and the ponds themselves for fish and invertebrates. It was exciting for participants to help with the minnow count and identification on Saturday afternoon. Matt Christie is thanked for setting up and monitoring the moth equipment that David Bree again kindly lent us for a study west of Base Camp on Saturday night. David Beadle's moth equipment was set up south of Base Camp. We thank Don and Gerry Jenkison for bringing their gas-powered generator, again this year, to power David's light source for the night's moth survey.

As well as leading an evening bird walk, Peter Fuller kayaked through Lighthall Marsh very early Sunday morning surveying for birds and plants; Paul Catling and Brenda Kostiuk working as an independent team, surveyed for leeches and snails as well as aquatic plants and amphibians on both days. Tom Wheatley conducted an independent bird survey on Sunday morning and John Foster worked both independently and with others collecting data for almost all groups of organisms on both days. Ewa kept excellent notes during David Bree's insect walk which was extremely helpful. Paul Catling provided photos of leeches and David Beadle sent moth photos, adding considerably to this report. Peter Fuller, Brenda Kostiuk and Ramesh Pooran are thanked for their contribution of excellent photographs. Sue Banks, Dave Weaver and Mary Kay Morris provided additional photo documentation that will kept on file.

The participation of the BioBlitz committee (Peter, Amy, Sheena, Agneta, Gerry, Lorie and Sheila) and other club members is gratefully acknowledged and most appreciated. Peter Fuller, representing PEPtBO, prepared our poster, organized registration on the PEPtBO website, prepared maps and information for participants and was helpful throughout the planning process as were the other members of the Committee. Terry Sprague graciously advertised our event on his website. Amy Bodman is particularly thanked for her help arranging newspaper advertisements and going on the local radio station to publicize the event. We appreciate Cheryl Anderson looking after rental of the portable toilets and allowing us to borrow tents, microscopes and signs from PEPtBO as well as delivering them to the site. Elizabeth Cowan was very helpful in arranging on-line advertising for the BioBlitz. Dick Bird kindly allowed us to borrow his tent and table as well as the BioBlitz signs he made last year to place at strategic locations to direct the public to the event. A special thank you to Lorie Brown who realized that tent pegs could not feasibly be used on the limestone pavement. Lori, of course, had the pails (she has everything) and a donor with sand, and with a good deal of effort by Lorie, Mike Carmody and Allen Kuja,

many pails were filled with sand and transported to the site to secure the tents in place for the BioBlitz. Bob Morris kindly described how to prepare twig bundles to be placed in the ponds to act as substrates for the aquatic invertebrate study. He and Mary Kay also provided reference material for insect identification. Frank Morahan kindly lent us his BBQ for Sunday lunch.

Many thanks for the help on Saturday morning of Cheryl, Borys Holowacz, Doug Smith, Lisa Martell and Bert Jenkins for erecting tents and use of their tables at the Registration Area and at Base Camp. Sheena Kennedy and Agneta Sand were outstanding registrars and ambassadors for the club both days at the Registration Tent at Army Reserve Rd. and Charwell Point Rd. Amy Bodman very kindly spent most of Saturday driving participants along Charwell Point Rd. between Army Reserve Rd. and Base Camp where activities were centred. A huge thank you is extended to Gerry Jenkison for again so capably looking after food for the Saturday dinner and Sunday BBQ: Gerry's curry was delicious, as was Myrna Wood's chili, in fact all the food was excellent and we appreciate everyone's contributions to our meals. John Sanders and Don Genkison expertly barbecued lunch on Sunday despite strong winds playing havoc with their efforts. Lorie Brown provided each person with a plastic mug for their use during the two days for the water and lemonade she also provided. She took the mugs home for cleaning, ready for use at our general meetings. We applaud and appreciate her environmental conscientiousness. The clean-up crew of Amy and John, Gerry and Don, Cheryl, Lorie, John Foster, Paul Catling and Brenda Kostiuik and Sue Banks and Dave Weaver did a remarkable job, leaving the two sites minimally disturbed, possibly cleaner than when we arrived since previous debris was removed.

PECFN gratefully acknowledges a grant of \$500.00 from the Biodiversity Education and Awareness Network which is administered through the Federation of Anglers and Hunters. These funds helped cover our advertisements in the local papers, copying of maps and kits for participants, food and the reproduction costs for this report.

Finally, Ramesh Pooran provided excellent photos and an informative article in The Times on June 13, 2018 (Vol. 25, No. 14. www.wellingtontimes.com) summing up the BioBlitz.

Participants:

Cheryl Anderson
Sue Banks
David Beadle
Ewa Bednarczuk
Amy Bodman
David Bree
Lorie Brown
Mike Carmody
Paul Catling
Elizabeth Cowan
Anne Dumbrille
Carmela Evangelista
John Foster
Peter Fuller

Don Genkison
Gerry Genkison
Kari Gunson
Borys Holowacz
Anne Inglis
Cayley Inglis
Jamie Inglis
Michael Inglis
Sarah Inglis
Bert Jenkins
Sheena Kennedy
Brenda Kostiuik
Dale Kristensen
Sheila Kuja

Robin Lauer
Abigail Leavens
Lisa Martell
Benjamin Morris
Bob Morris
Darcy Morris
Mary Kay Morris
Mirabelle Morris
Ramesh Pooran
Wallace Rendell
Agneta Sand
John Sanders
Junko Shimura
Doug Smith

Gaye Smith
Les Stanfield
Katie Thomas

Mike Turner
Dave Weaver
Tom Wheatly

Candace Wilkins
Myrna Wood
Makiko Yanagiya

RESULTS:

SUMMARY REPORT – The number of species recorded during the BioBlitz was 659, including Vascular Plants – 284, Damselflies – 6, Dragonflies – 7, Butterflies – 19, Moths – 159, Leeches – 6, Terrestrial Snails – 10, Aquatic invertebrates – 33, Other Insects – 26, Fish – 14, Amphibians – 5, Reptiles -5, Birds - 74, Mammals – 11.

NOTEWORTHY RECORDS:

Threatened Species

Of utmost significance were the four species with Threatened Status (in Ontario or by COSEWIC) which were observed: the Blanding's Turtle, the Whip-poor-will, the Least Bittern, and the Canada Warbler. The PWA offers excellent habitat for these species, especially the Charwell Point area that was surveyed. Three living Blanding's turtles were noted, as well as unfortunately, a large female which had most likely been crushed by a vehicle driving through the deep puddle where the turtle had been resting. It was found late Saturday afternoon near the Lighthall Marsh (several eggs were salvaged and taken by K. Gunson to the Ontario Turtle Conservation Centre in Peterborough). This accident highlights how vulnerable this species is to vehicular traffic. Cars are a real threat to the Blanding's Turtle, even within the PWA.

On Sunday, Dale Kristensen located, what he was fairly certain, was a Blanding's Turtle nesting site. We will return in the spring to see if this is correct and possibly protect nests from predation with Turtle ICUs.

On Saturday evening five Whip-poor-wills were calling within the BioBlitz area: the one just south of Base Camp could be seen sitting on a branch while calling. It was thrilling to be surrounded by the calls, knowing what a privilege it was to be in such a special environment.

Beginning soon after daybreak, while kayaking through Lighthall Marsh Pond, Peter observed six Least Bitterns. It is excellent news that these secretive, Threatened, marsh birds, continue to use this area and almost certainly breed here. The larger American Bittern was noted as well and is another species of special concern recognized in Ontario, as its numbers are declining. Common Gallinule and Pied-billed Grebe were observed, so that four of the five species which the Ontario Marsh Monitoring program conducts surveys for, were found during the BioBlitz, only the Virginia Rail wasn't seen or heard although it often has been seen here in other years.

An unexpected and exciting discovery was a singing male Canada Warbler, south of Lighthall Marsh on Sunday morning (June 10). (On August 14, four individuals were seen near Simpson Rd. and Army Reserve Rd. and might represent the first breeding record in the area for this Species of Special Concern in Ontario that is recognized as Threatened by COSEWIC.)

Fish

During the aquatic survey, another exciting discovery was made. The Bridle Shiner, a species of Special Concern in Ontario was found at both sites sampled: Lighthall Marsh Pond and Gull Pond. Eight species of fish, mainly minnows, were identified in the Lighthall Marsh area, while twelve species were found at Gull Pond, including Small-mouthed and Large-mouth Bass, Northern Pike and Pumpkinseeds as well as a number of minnow species.

Plants

Although no plant Species at Risk were found, an array of interesting species were present including Sartwell's Sedge; many species characteristic of alvars such as Bluets, False Pennyroyal, and Hairy Beard's-tongue, as well as Craw's Sedge and other sedges; the rare Limestone Hedge-hyssop; and two species of native orchids: Yellow Lady-slipper and Shining Ladies-tresses. The unusually high water levels in the Bog Bean Fen, immediately to the south of Base Camp, resulted in that area not being included in the surveys during the twenty-four hour period. Unusual plants from the fen are not included on the plant list.

Moths

Probably the most significant point to make would be the incredible diversity of species documented. With 168 species attracted to two lights, this represents an unusually good night, especially in recent years. David Beadle hadn't observed some of the species for several years in areas studied further north of the county. This diversity may be attributed to the extensive, unique habitats, particularly wetland and alvar, present but also perhaps to the lack of chemical contamination from pesticides etc. since this site is fairly removed from cultivated fields and habitation. Only at Ostrander Point Oak Savannah site did Chris Schmidt find such a complex array of moth species (103 species) reported in the Ostrander Point BioBlitz report (2014).

David prepared an annotated list of some of the most unusual moths that he found:

Olceclostera angelica - Angel Moth. A spectacular Carolinian species that is very local in Ontario, being found in the extreme southwest and eastern parts of the province. The larvae feed on ash and lilac.

Eucosma awemeana is a small tortrix moth in the family Olethreutinae. It is local in Ontario, being found in the extreme southwest and eastern parts of the province.

Paectes abrostolella - Barrens Paectes. A small noctuid moth with a spotty distribution across North America. It is very local and uncommon in Ontario, being found at scattered sites along the north shores of Lake Erie and Lake Ontario. The larvae feed on sumac.

Macaria multilineata - Many-lined Angle. A beautiful geometer moth that is confined to the eastern counties in Ontario, where red cedar (the larval food plant) occurs commonly.

Harrisimemna trisignata - Harris's Three-spot. Not particularly rare, but certainly uncommon and local. The larvae feed on a wide variety of shrubs and trees.

Helcystogramma melanocarpa. - This is a very small Twirler Moth in the family Gelechiidae. There appear to be very few Ontario records and virtually nothing seems to be known about its biology. I personally had not seen it before in 25 years of active field work, so it must be pretty local! Known records show this moth to have a pretty wide range throughout eastern North

America, so perhaps it is overlooked to some extent.

Cochylis dubitana. This small tortrix moth is in the tribe Cochylini. It is a native of Europe and is an introduced species in North America. I had not seen it before in Ontario, but it appeared to be fairly common at this site.

Dragonflies and Damselflies

For dragonflies, Paul Catling felt that the big story was the number of Black Saddlebags (*Tramea lacerata*) flying west. Those numbers might have been expected in directional flight in the fall.

For damselflies, it was the Skimming Bluet (*Enallagma geminatum*) that was common (40 seen in 20 minutes) over the Lighthall Marsh Pond. The Marsh Bluet (*Enallagma ebrium*) was at the stream below the pond as was the Eastern Forktail (*Ischnura verticalis*).

SPECIES OBSERVED

VASCULAR PLANTS

Table 1. Vascular plants of Charwell Point Rd. area within Point Petre Provincial Wildlife Area. The list is in approximate classical taxonomic order beginning with ferns and fern allies proceeding through gymnosperms through monocotyledons then dicotyledons, concluding with the Asteraceae. The family, genus, species and common names are taken from the most recent VASCAN database.

EQUISETACEAE – HORSETAIL FAMILY

Equisetum arvense, Field Horsetail

Equisetum palustre, Marsh Horsetail

Equisetum variegatum, Variegated Scouring-rush

ONOCLEACEAE – SENSITIVE FERN FAMILY

Onoclea sensibilis, Sensitive Fern

DENNSTAEDTIACEAE – BRACKEN FERN FAMILY

Pteridium aquilinum, Bracken Fern

PINACEAE – PINE FAMILY

Pinus strobus, Eastern White Pine

CUPRESSACEAE – CYPRESS FAMILY

Juniperus communis, Ground Juniper

Juniperus virginiana, Eastern Red Cedar

Thuja occidentalis, Eastern White Cedar

TYPHACEAE – CATTAIL FAMILY

Typha latifolia, Broad-leaved Cattail

POTAMOGETONACEAE – PONDWEED FAMILY

Potamogeton crispus, Curly-leaved Pondweed
Potamogeton natans, Floating-leaved Pondweed
Potamogeton pusillus, Small Pondweed

ALISMATACEAE – WATER PLANTAIN FAMILY

Alisma cf. subcordatum, Southern Water Plantain
Sagittaria latifolia, Broad-leaved Arrowhead

HYDROCHARITACEAE – FROG’S-BIT FAMILY

Hydrocharis morsus-ranae, European Frog-bit,
Vallisneria americana, American Eel-grass

POACEAE – GRASS FAMILY

Agrostis scabra, Rough Bentgrass
Agrostis stolonifera, Spreading Bentgrass
Alopecurus pratensis, Meadow Foxtail
Bromus inermis ssp. inermis, Awnless Brome
Bromus tectorum, Cheat Grass
Calamagrostis canadensis, Canada Blue-joint
Dactylis glomerata, Orchard Grass
Danthonia spicata, Poverty Oatgrass
Deschampsia cespitosa ssp. cespitosa, Tufted Hairgrass
Deschampsia flexuosa, Crinkled Hairgrass
Dichanthelium linearifolium, Slim-leaf Witchgrass
Echinochloa crus-galli, Barnyard Grass
Elymus trachycaulus ssp. trachycaulus, Slender Wheatgrass
Elymus virginicus var. virginicus, Virginia Wild Rye
Festuca rubra, Red Fescue
Festuca subverticillata, Nodding Fescue
Glyceria striata var. stricta, Fowl Manna-grass
Leersia oryzoides, Rice Cutgrass
Panicum capillare, Old Witch Panic-grass
Phalaris arundinacea, Reed Canary Grass
Phleum pratense, Meadow Timothy
Phragmites australis ssp. americanus, American Reed
Poa compressa, Canada Bluegrass
Poa palustris, Fowl Bluegrass
Poa pratensis ssp. pratensis, Kentucky Bluegrass
Sporobolus vaginiflorus, Sheathed Dropseed

CYPERACEAE- SEDGE FAMILY

Carex aquatilis, Water Sedge
Carex aurea, Golden-fruited Sedge
Carex bebbii, Bebb's Sedge
Carex blanda, Woodland Sedge



Figure 3. Sartwell's Sedge (*Carex sartwellii*), an unusual sedge known from several places on the south shore. Photograph by Paul Catling.

Carex brunnescens, Brownish Sedge

Carex canescens, Hoary Sedge

Carex comosa, Bearded Sedge

Carex crawei, Crawe Sedge

Carex eburnea, Bristle-leaved Sedge

Carex flava, Yellow Sedge

Carex granularis, Meadow Sedge

Carex hirta, A Sedge

Carex pallescens, Pale Sedge

Carex pellita, Woolly Sedge
Carex pensylvanica, Pennsylvania Sedge
Carex sartwellii, Sartwell's Sedge
Carex vulpinoidea, Fox Sedge
Eleocharis acicularis, Least Spike-rush
Eleocharis compressa, Flat-stemmed Spike-rush
Eleocharis smallii, Creeping Spike-rush
Schoenoplectus tabernaemontani, Soft-stem Club-rush
Scirpus atrovirens, Dark-green Bulrush

ARACEAE- ARUM FAMILY

Arisaema triphyllum, Jack-in-the-Pulpit
Spirodela polyrhiza, Great Duckweed

JUNCACEAE – RUSH FAMILY

Juncus effusus, Soft Rush
Juncus tenuis, Path Rush

XANTHORRHOEACEAE – GRASS TREE FAMILY

Hemerocallis fulva, Orange Daylily
Maianthemum stellatum, Star-flowered False Solomon's Seal

ASPARAGACEAE – ASPARAGUS FAMILY

Yucca cf. glauca, Soapweed Yucca

IRIDACEAE – IRIS FAMILY

Iris versicolor, Wild Blue Iris
Sisyrinchium montanum, Blue-eyed Grass

ORCHIDACEAE – ORCHID FAMILY

Cypripedium parviflorum var. *parviflorum*, Small Yellow Lady-slipper
Spiranthes lucida, Shining Ladies-tresses

SALICACEAE – WILLOW FAMILY

Populus deltoides ssp. *deltoides*, Eastern Cottonwood
Populus tremuloides, Trembling Aspen
Salix bebbiana, Bebb's Willow
Salix cordata, Sand Dune Willow
Salix discolor, Pussy Willow
Salix petiolaris, Meadow Willow

JUGLANDACEAE – WALNUT FAMILY

Carya cordiformis, Bitter-nut Hickory
Carya ovata, Shag-bark Hickory

BETULACEAE – BIRCH FAMILY

Betula papyrifera, Paper Birch
Ostrya virginiana, Eastern Hop-hornbeam

FAGACEAE – BEECH FAMILY

Quercus alba, White Oak
Quercus macrocarpa, Mossy-cup Oak
Quercus rubra, Northern Red Oak

ULMACEAE – ELM FAMILY

Ulmus americana, White Elm

URTICACEAE – NETTLE FAMILY

Urtica dioica, Stinging Nettle

CHENOPODIACEAE – GOOSEFOOT FAMILY

Chenopodium album var. *album*, Common Lamb's-quarters

POLYGONACEAE – KNOTWOOD FAMILY

Persicaria amphibia, Water Smartweed,
Rumex acetosella ssp. *acetosella*, Sheep Sorrel
Rumex crispus, Curly Dock

CARYOPHYLLACEAE – PINK FAMILY

Arenaria serpyllifolia, Thyme-leaf Sandwort
Cerastium arvense ssp. *arvense*, Field Mouse-ear Chickweed
Moehringia lateriflora, Grove Sandwort
Silene vulgaris, Maiden's Tears
Stellaria longifolia, Longleaf Stitchwort
Stellaria media, Common Starwort

NYMPHAEACEAE - POND-LILY FAMILY

Nuphar variegata, Variegated Pond-lily

CABOMBACEAE - WATER-SHIELD FAMILY

Brasenia schreberi, Water-shield

RANUNCULACEAE - BUTTERCUP FAMILY

Anemone canadensis, Canada Anemone
Aquilegia canadensis, Wild Columbine
Clematis virginiana, Virginia Clematis
Ranunculus abortivus, Kidney-leaved Buttercup
Ranunculus acris, Tall Buttercup
Ranunculus cf. *tricophyllus*, White-leaved Water-crowfoot
Ranunculus fascicularis, Early Buttercup
Ranunculus scleratus, Cursed Buttercup

Thalictrum pubescens, Tall Meadow-rue

PAPAVERACEAE - POPPY FAMILY

Corydalis aurea, Yellow Corydalis

BRASSICACEAE – MUSTARD FAMILY

Alliaria petiolata, Garlic Mustard

Arabis glabra, Tower-mustard

Capsella bursa-pastoris, Common Shepherd's Purse

Cardamine pensylvanica, Pennsylvania Bitter-cress

Draba glabella, Rock Whitlow-grass

Hesperis matronalis, Dame's Rocket

Lepidium campestre, Field Pepper-grass



Figure 4. Yellow Corydalis (*Corydalis aurea*), a rare plant. Photographed by Peter Fuller.

CRASSULACEAE – STONECROP FAMILY

cf. Phedimus spurius, Two-row Stonecrop

Penthorum sedoides, Ditch-stonecrop

Sedum acre, Mossy Sedum

GROSSULARIACEAE – GOOSEBERRY FAMILY

Ribes cynosbati, Prickly Gooseberry

ROSACEAE – ROSE FAMILY

Amelanchier alnifolia var. *compacta*, Compact Serviceberry

Amelanchier sanguinea var. *sanguinea*, Shadbush

Crataegus cf. punctata, Dotted Hawthorn

Drymocallis arguta, Tall Wood Beauty (Tall Cinquefoil)

Fragaria vesca, European Wood Strawberry

Fragaria virginiana, Virginia Strawberry

Geum aleppicum, Yellow Avens

Malus pumila, Common Apple

Physocarpus americana, Ninebark

Potentilla anserina, Silverweed

Potentilla argentea, Silvery Cinquefoil

Potentilla recta, Sulphur Cinquefoil

Prunus serotina, Black Cherry

Prunus virginiana, Choke Cherry

Pyrus communis, Domestic Pear

Rosa blanda, Smooth Rose

Rosa palustris, Swamp rose

Rubus idaeus ssp. *idaeus*, Common Red Raspberry

Rubus occidentalis, Black Raspberry

Spiraea alba, Narrow-leaved Meadow-sweet

FABACEAE – PEA OR BEAN FAMILY

Amphicarpaea bracteata, American Hog-peanut

Lathyrus palustris, Marsh Vetchling

Lotus corniculatus, Birds-foot Trefoil

Medicago lupulina, Black Medic

Medicago sativa, Alfalfa, FABACEAE

Melilotus altissimus, Tall Yellow Sweetclover

Melilotus officinalis, Yellow Sweetclover

Trifolium pratense, Red Clover

Trifolium repens, White Clover

Vicia cracca, Tufted Vetch

GERANIACEAE – GERANIUM FAMILY

Geranium maculatum, Spotted Geranium

Geranium robertianum, Herb-Robert



Figure 5. Spotted Geranium (*Geranium maculatum*) in a wet woods. Photo by Peter Fuller.

RUTACEAE – RUE FAMILY

Zanthoxylum americanum, Northern Prickly Ash

EUPHORBIACEAE – SPURGE FAMILY

Chamaesyce maculata, Spotted Spurge

ANACARDIACEAE – CASHEW FAMILY

Rhus aromatica, Fragrant Sumac

Rhus typhina, Staghorn Sumac

Toxicodendron radicans ssp. *negundo*, Poison Ivy

SAPINDACEAE – SOAPBERRY FAMILY

Acer Xfreemanii, Freeman's Maple

Acer negundo, Box Elder
Acer rubrum, Red Maple
Acer saccharinum, Silver Maple
Acer saccharum var. *saccharum*, Sugar Maple

BALSAMINACEAE – TOUCH-MET-NOT FAMILY
Impatiens capensis, Spotted Jewelweed

RHAMNACEAE – BUCKTHORN FAMILY
Rhamnus cathartica, Buckthorn

VITACEAE – GRAPE FAMILY
Parthenocissus vitacea, Virginia Creeper
Vitis riparia, Riverbank Grape

TILIACEAE – LINDEN FAMILY
Tilia americana, American Basswood

CLUSIACEAE – ST. JOHN’S-WORT FAMILY
Hypericum punctatum, Common St. John's-wort
Triadenum fraseri, Marsh St. John's-wort

ELAEAGNACEAE – OLEASTER FAMILY
Shepherdia canadensis, Canada Buffalo-berry

VIOLACEAE – VIOLET FAMILY
Viola cuculatta, Marsh Violet
Viola pubescens, Downy Yellow Violet
Viola sororia, Woolly Blue Violet

HALORAGACEAE – WATER MILLFOIL FAMILY
Myriophyllum sibiricum, Siberian Millfoil
Myriophyllum spicatum, Eurasian Water-millfoil

LYTHRACEAE – LOOSETRIFE FAMILY
Lythrum salicaria, Purple Loosestrife

ONAGRACEAE – EVENING PRIMROSE FAMILY
Oenothera biennis, Common Evening-primrose

APIACEAE – CARROT FAMILY
Daucus carota, Wild Carrot
Osmorhiza longistylis, Smoother Sweet-cicely
Pastinaca sativa, Wild Parsnip

CORNACEAE – DOGWOOD FAMILY

Cornus amomum, Silky Dogwood

Cornus foemina, Stiff Dogwood

Cornus sericea, Red-osier Dogwood

PRIMULACEAE – PRIMROSE FAMILY

Lysimachia nummularia, Creeping Yellow Loosestrife

Lysimachia terrestris, Swamp Yellow Loosestrife

Lysimachia thyrsoiflora, Tufted Yellow Loosestrife



Figure 6. Tufted Yellow Loosestrife (*Lysimachia thyrsoiflora*), an attractive and very distinctive species of wetlands. (Photograph by Peter Fuller).

OLEACEAE – OLIVE FAMILY

Fraxinum nigra, Black Ash

Fraxinus pennsylvanica, Green Ash

Syringa vulgaris, Common Lilac

APOCYNACEAE – DOGBANE FAMILY

Apocynum androsaemifolium, Spreading Dogbane

Apocynum cannabinum, Claspingleaf Dogbane

ASCLEPIADACEAE – MILKWEED FAMILY

Asclepias incarnata, Swamp Milkweed

Asclepias syriaca, Common Milkweed

Asclepias tuberosa, Butterfly Milkweed

Cynanchum rossicum, European Swallow-wort

CONVOLVULACEAE – MORNING-GLORY FAMILY

Calystegia sepium, Hedge Bindweed

Convolvulus arvensis, Field Bindweed

BORAGINACEAE – BORAGE FAMILY

Cynoglossum officinale, Common Hound's-tongue

Echium vulgare, Common Viper's-bugloss

Lithospermum officinale, European Gromwell

VERBENACEAE – VERVAIN FAMILY

Verbena hastata, Blue Vervain

Verbena simplex, Narrow-leaved Vervain

LAMIACEAE – MINT FAMILY

Clinopodium vulgare, Field Basil

Hedeoma pulegioides, American Pennyroyal

Leonurus cardiaca, Common Mother-wort

Lycopus americanus, American Water-horehound

Mentha arvensis, Corn Mint

Monarda fistulosa, Wild Bergamot

Nepeta cataria, Catnip

Origanum vulgare, Wild Marjoram

Prunella vulgaris ssp. *vulgaris*, Heal-all

Scutellaria parvula, Small Scullcap

SOLANACEAE – NIGHTSHADE FAMILY

Solanum dulcamara, Climbing Nightshade

SCROPHULARIACEAE – FIGWORT FAMILY

Verbascum thapsus, Great Mullein

LENTIBULARIACEAE – BLADDERWORT FAMILY

Utricularia sp., Bladderwort

OROBANCHACEAE – BROOMRAPE FAMILY

Rhinanthus minor ssp. *minor*, Little Yellow Rattle

PLANTAGINACEAE – PLANTAIN FAMILY

Gratiola quartermaniae, Limestone Hedge-hyssop

Linaria vulgaris, Butter-and-eggs

Mimulus ringens, Square-stem Monkeyflower

Penstemon hirsutus, Hairy Beardtongue

Plantago lanceolata, English Plantain

Plantago major, Nipple-seed Plantain

Plantago rugelii, Rugel's Plantain

Veronica agrestis, Field Speedwell

Veronica anagallis-aquatica, Brook-pimpernell

CAMPANULACEAE – HAREBELL FAMILY

Campanula rotundifolia, American Harebell

Lobelia cardinalis, Cardinal Flower

Lobelia kalmii, Kalm's Lobelia

RUBIACEAE – MADDER FAMILY

Galium boreale, Northern Bedstraw

Galium mollugo, Great Hedge Bedstraw

Galium palustre, Marsh Bedstraw

Galium trifidum, Small Bedstraw

Houstonia longifolia, Long-leaved Bluets

ADOXACEAE – ELDERBERRY OR MOSCHATTEL FAMILY

Sambucus canadensis, Common Elderberry

Viburnum acerifolium, Maple-leaved Viburnum

Viburnum lentago, Nannyberry

Viburnum rafinesquianum, Downy Arrowwood

Viburnum trilobium, Highbush Cranberry

CAPRIFOLIACEAE – HONEYSUCKLE FAMILY

Lonicera dioica, Mountain Honeysuckle

Lonicera hirsuta, Hairy Honeysuckle

Lonicera japonica, Japanese Honeysuckle

Lonicera morrowii, Morrow's Honeysuckle

Lonicera tatarica, Tartarian Honeysuckle

DIPSACACEAE – TEASEL FAMILY

Dipsacus fullonum, Fuller's Teasel

ASTERACEAE – ASTER FAMILY

Achillea millefolium var. *millefolium*, Common Yarrow

Ambrosia artemisiifolia, Annual Ragweed

Anaphalis margaritacea, Pearly Everlasting
Antennaria neglecta, Field Pussytoes
Arctium lappa, Great Burdock
Arctium minus ssp. *minus*, Common Burdock
Bidens cernua, Nodding Beggar-ticks
Centaurea jacea, Brown Starthistle
Cichorium intybus, Wild Chickory
Cirsium arvense, Canada Thistle
Cirsium vulgare, Bull Thistle
Conyza canadensis, Fleabane
Erigeron philadelphicus, Philadelphia Fleabane
Erigeron strigosus, Daisy Fleabane
Eupatorium perfoliatum, Common Boneset
Euthamia graminifolia, Flat-top Fragrant-golden-rod
Eutropium maculatum var. *maculatum*, Spotted Joe Pye Weed
Inula helenium, Elecampagne
Leucanthemum vulgare, Ox-eye Daisy
Pilosella aurantiaca, Orange Hawkweed
Pilosella officinarum, Mouse-eared Hawkweed
Pilosella piloselloides ssp. *praealta*, King Devil Hawkweed
Rudbeckia hirta, Black-eyed Susan
Solidago altissima, Late Goldenrod
Solidago canadensis var. *canadensis*, Canada Goldenrod
Solidago gigantea, Smooth Goldenrod
Solidago juncea, Early Goldenrod
Solidago nemoralis var. *nemoralis*, Gray Goldenrod
Sonchus oleraceus, Common Sowthistle
Symphyotrichum cordifolia, Heart-leaved Aster
Symphyotrichum ericoides var. *ericoides*, White Heath Aster
Symphyotrichum lanceolatum ssp. *lanceolatum*, Panicked Aster
Symphyotrichum novae-angliae, New England Aster
Taraxacum officinale, Dandelion
Tragopogon dubius, Yellow Goat's-beard
Tragopogon pratensis, Meadow Goat's-beard

INVERTEBRATES:

Table 2. LEECHES found at the Charwell Point bioblitz on 9-10 June 2018 by Les Stanfield, Wallace Rendell, Robin Lauer, Abigail Leavens, Paul Catling, Brenda Kostiuk, and others. Identified by P.M. Catling.

Batracobdella phalera (Graf, 1899) – Lighthall Marsh.
Eriobdella punctata punctata (Leidy, 1870) – one in Lighthall Marsh.

Helobdella stagnalis (Linnaeus, 1758) – two in Lighthall Marsh.

Macrobdella decora (Say, 1824) – four swimming in shallow water at ATV crossing at Gull Pond; one in shallow pool with tadpoles on south side of berm at Lighthall Marsh; one Lighthall Marsh.

Placobdella papillifera (Verrill, 1872) – one at Lighthall Marsh and another at Gull Pond.

Placobdella parasitica (Say, 1824) – one on body beside back leg of 20 cm carapace Blanding's Turtle on Charwell Point Road; one on body beside back leg of 25 cm carapace Blanding's Turtle on Lighthall Road; one on a 15 cm carapace of Snapping Turtle on body in hind leg cavity in a pool south of Lighthall Marsh south of berm.

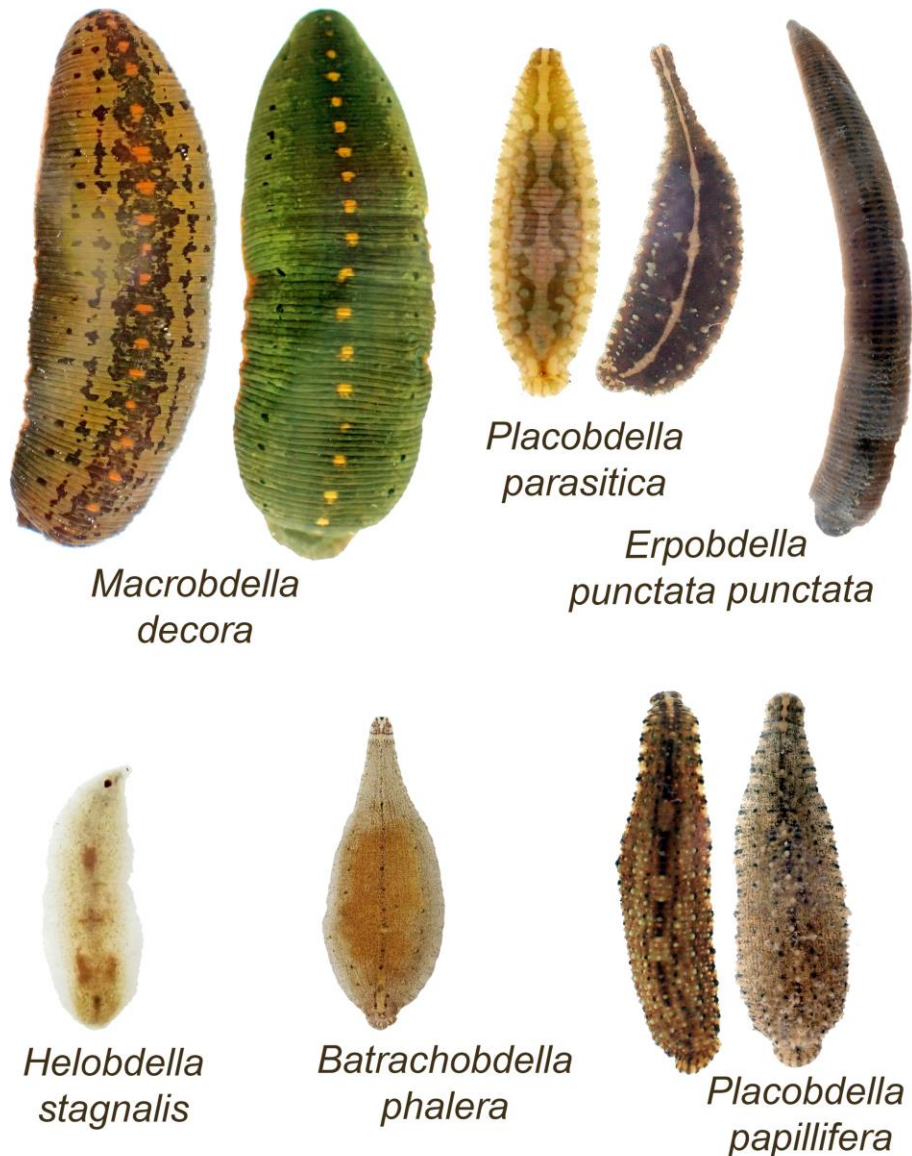


Figure 7. Leeches found during the BioBlitz by Les Stanfield, Wallace Rendell, Robin Lauer, Abigail Leavens, Paul Catling, Brenda Kostiuik, and others. Photos by Paul Catling.

Table 3. Terrestrial snails recorded during the 2018 Charwell Point area BioBlitz by Paul Catling and Brenda Kostiuk.

Anguispira alternata, FLAMED TIGERSNAIL
Cochlicopa lubrica, GLOSSY PILLAR
Cepaea nemoralis, GROVE SNAIL
Gastrocopta similis, GREAT LAKES SNAGGLETOOTH
Neohelix albilabris, WHITELIP
Pupilla muscorum, WIDESPREAD COLUMN
Trochulus striolatus, FURROWED HELICELLID
Vallonia costatata, COSTATE VALLONIA
Vallonia excentrica, THE IROQUOIS VALLONIA
Zonitoides nitidus, BLACK GLOSS



Figure 8. Grove Snail (*Cepaea nemoralis*), an unusual form without spiral stripes. This large introduced species is locally abundant in the Charwell Point area. Photo by Paul Catling.



Figure 9. *Gastrocopta similis*, (Great Lakes Snaggletooth), a small species to 4 mm. Photograph by Paul Catling.

Table 4. List of Odonata (Damselflies and Dragonflies) seen during the 2018 PEC BioBlitz. Observers initials are shown, as well as numbers of individuals seen when provided. (DB – David Beadle; DBr – David Bree; JF – John Foster; PF – Peter Fuller; PMC/BK – Paul Catling & Brenda Kostiuk)

ORDER/FAMILY	Scientific Name	Common Name	Observed by & no.
ZYGOPTERA		DAMSELFLIES	
COENAGRIONIDAE	<i>Coenagrion resolutum</i>	Taiga Bluet	DBr, PF
	<i>Enallagma ebrium</i>	Marsh Bluet	JF, PMC/BK-15



Figure 10. Eastern Forktail (*Ischnura verticalis*), a common species at Charwell Point.
 Photograph by Peter Fuller.

<i>Enallagma geminatum</i>	Skimming Bluet	PMC-40 in 20 min.
<i>Ishnura posita</i>	Fragile Forktail	DBr
<i>Ishnura verticalis</i>	Eastern Forktail	DBr, PMC/BK-10, PF
<i>Nehalennia irene</i>	Sedge Sprite	DBr, PMC/BK-2

ANISOPTERA

AESHNIDAE

Anax junius

CORDULIDAE

Epitheca cynosura

LIBELLULIDAE

Celithemis elisa

DRAGONFLIES

Common Green Darner JF, PMC/BK-2

Common Baskettail DBr, JF, PMC/BK-2

Calico Pennant PF

<i>Leucorrhinia intacta</i>	Dot-tailed Whiteface	DBr, JF, PF, PMC
<i>Libellula quadrimaculata</i>	Four-spotted Skimmer	DBr
<i>Plathemis lydia</i>	Common Whitetail	JF, PF, PMC/BK-35
<i>Tramea lacerata</i>	Black Saddlebags	DB, PMC/BK-20



Figure 11. Calico Pennant (*Celithemis elisa*). Photograph by Peter Fuller.

Table 5. BUTTERFLIES (LEPIDOPTERA) observed during the Charwell BioBlitz.

Family	Scientific Name	Common Name
PAPILIONIDAE		SWALLOWTAILS
	<i>Papilio cresphontes</i>	Giant Swallowtail
	<i>Papilio glaucus glaucus</i>	Eastern Tiger Swallowtail

PIERIDAE

Colias philodice
Pieris rapae

SULPHURS AND WHITES

Clouded Sulphur
Cabbage White

LYCAENIDAE

Celastrina lucia
Glaucopsyche lygdamus
Everes comyntas
Callophrys gryneus

GOSSAMER-WINGED

Northern Azure (Spring Azure)
Silvery Blue
Eastern Tailed Blue
Juniper Hairstreak

NYMPHALIDAE

Coenonympha tullia
Danaus plexippus
Limenitis archippus
Limenitis arthemis arthemis
Megisto cymela
Phyciodes cocyta
Phyciodes tharos

BRUSH-FOOTED BUTTERFLIES

Common Ringlet
Monarch
Viceroy
White Admiral
Little Wood Satyr
Northern Crescent
Pearl Crescent

HESPERONIIDAE

Ancyloxypha numitor
Erynnis juvenalis
Polites thermistocles
Thorybes pylades

SKIPPERS

Least Skipper
Juvenal's Duskywing
Tawny-edged Skipper
Northern Cloudywing



Figure 12. Least Skipper (*Ancyloxypha numitor*) photographed in a marshy area by Peter Fuller.

Table 6. List of the moth species observed overnight on June 9-10 at Charwell Point BioBlitz compiled by David Beadle, with species identified by both Pohl number and Hodges number as references to the taxonomic order which are considered more accurate than family designations (Beadle & Leckie, 2012). The number of individuals seen is recorded in the far right column.

Pohl No.	Hodges No.	Scientific Name	Common Name	No.
36 0083	2366	<i>Plutella xylostella</i>	Diamondback Moth	1
36 0141	2435	<i>Argyresthia alternatella</i>	Honey-comb Argyresthia	1
42 0466	2235	<i>Battaristis concinnusella</i>		2
42 0501	2267	<i>Helcystogramma fernaldella</i>	Fernald's Helcystogramma	1
42 0505	2268	<i>Helcystogramma hystricella</i>	Lanceolate Helcystogramma	2
42 0506	2269	<i>Helcystogramma melanocarpa</i>		1
42 0552	2308	<i>Dichomeris purpureofusca</i>		4
42 0971	2093	<i>Chionodes mediofuscella</i>	Black-smudged Chionodes	1
42 1030	2075	<i>Chionodes praeclarella</i>		1
41 1647	1388	<i>Coleophora trifolii</i>	Large Clover Casebearer	1
42 1652	1398.2	<i>Coleophora deauratella</i>		1
42 1733	1171	<i>Asaphocrita aphidiella</i>		1
46 0012	6107	<i>Gillmeria pallidactyla</i>		2
46 0087	6186	<i>Hellinsia inquinatus</i>	Black-marked Plume	1
46 0114	6213	<i>Hellinsia lacteodactylus</i>	Milky Plume	1
62 0132	3774	<i>Cochylis dubitana</i>		6
62 0360	3684	<i>Clepsis clemensiana</i>	Clemens' Clepsis	4
62 0362	3686	<i>Clepsis melaleucanus</i>	Black-patched Clepsis	3
62 0539	2770	<i>Orthotaenia undulana</i>	Dusky Leafroller	2
62 0642	3355	<i>Ancylis subaequana</i>		1
62 0647	3359	<i>Ancylis metamelana</i>	Black-marked Ancylis	1
62 0660	3372	<i>Ancylis brauni</i>		1
62 0762	2908	<i>Eucosma radiatana</i>		1
62 0767	2911	<i>Eucosma awemeana</i>		4
620889.1	3038	<i>Pelochrista argentialbana</i>		1
62 1061	3074	<i>Eucopeina tocullionana</i>	White Pinecone Borer	2
62 1383	3494	<i>Cydia latiferreana</i>	Filbertworm Moth	1
80 0232	6005	<i>Moodna ostrinella</i>	Darker Moodna	1
80 0723	4747	<i>Elophila ekthlipsis</i>	Nymphula Moth	3
80 0724	4748	<i>Elophila icciusalis</i>	Pondside Pyralid	4
80 0727	4751	<i>Elophila gyralis</i>	Waterlily Borer	1

80 0729	4755	<i>Elophila obliteralis</i>	Waterlily Leafcutter	3
80 0739	4764	<i>Parapoynx allionalis</i>	Watermilfoil Leafcutter	2
80 0887	5379	<i>Neodactria luteotellus</i>	Mottled Grass-veneer	1
80 0943	5355	<i>Crambus praefectellus</i>	Common Grass-veneer	2
80 0949	5361	<i>Crambus albellus</i>	Small White Grass-veneer	1
80 0966	5378	<i>Crambus laqueatellus</i>	Eastern Grass Veneer	100
80 0982	4716	<i>Scoparia biplagiatis</i>	Double-striped Scoparia	1
80 1005	4739	<i>Eudonia heterosalis</i>		1
80 1071	4897	<i>Evergestis pallidata</i>	Purple-backed Cabbageworm	2
80 1166	5255	<i>Diastictis ventralis</i>	White-spotted Brown	10
80 1230	5079	<i>Udea rubigalis</i>	Celery Leaf-tier	1
80 1254	5176	<i>Anageshna primordialis</i>	Yellow-spotted Webworm	1
80 1325	5226	<i>Palpita magniferalis</i>	Splendid palpita	4
80 1350	5143	<i>Diacme adipaloides</i>	Darker Diacme	1
80 1407	4936	<i>Saucrobotys futilalis</i>	Dogbane Saucrobotys	1
80 1420	4946	<i>Ostrinia penitalis</i>	American Lotus Borer	4
80 1425	4951	<i>Perispasta caeulcalis</i>	Titian Peale's Pyralid	1
80 1427	4953	<i>Anania tertialis</i>	Crowned Anania	2
		<i>Pseudothyatira</i>		
85 0005	6237	<i>cymatophoroides</i>	Tufted Thyatirid	1
87 0003	7687	<i>Phyllodesma americana</i>	Lappet Moth	6
89 0004	7665	<i>Olceclostera angelica</i>	The Angel	1
89 0082	7767	<i>Hyalophora cecropia</i>	Cecropia Moth	1
89 0103	7787	<i>Ceratomia undulosa</i>	Waved Sphinx	2
89 0121	7810.1	<i>Sphinx poecila</i>	Northern Apple Sphinx	2
89 0140	7821	<i>Smerinthus jamaicensis</i>	Twin-spotted Sphinx	2
89 0145	7825	<i>Paonias myops</i>	Small-eyed Sphinx	2
89 0193	7871	<i>Deidamia inscripta</i>	Lettered Sphinx	1
91 0006	7653	<i>Calledapteryx dryopterata</i>	Brown Scoopwing	2
91 0130	7292	<i>Rheumaptera prunivorata</i>	Cherry Scallop Shell	1
91 0234	7390	<i>Xanthorhoe lacustrata</i>	Toothed Brown Carpet	1
		<i>Euphyia intermediata</i>		
91 0244	7399	<i>(unangulata)</i>	Sharp-angled Carpet	4
91 0267	7423	<i>Hydrelia albifera</i>	Fragile White Carpet	1
91 0292	7445	<i>Horisme intestinata</i>	Brown Bark Carpet	3
91 0367	7523	<i>Eupithecia strattonata</i>		2
91 0414	7574	<i>Eupithecia albicapitata</i>		6
91 0578	7169	<i>Scopula inductata</i>	Soft-lined Wave	4
91 0590	7180	<i>Leptostales ferruminaria</i>	Light-ribboned Wave	2
91 0627	7046	<i>Nemoria bistriaria</i>	Red-fringed Emerald	1
91 0629	7048	<i>Nemoria mimosaria</i>	White-fringed Emerald	1
91 0634	7053	<i>Dichorda iridaria</i>	Showy Emerald	1
91 0654	7071	<i>Chlorochlamys chloroleucaria</i>	Blackberry Looper Moth	2

91 0667	7084	<i>Hethemia pistaciaria</i>	Pistachio Emerald	1
91 0683	6270	<i>Protitame virginalis</i>	Virgin Moth	1
91 0772	6353	<i>Macaria multilineata</i>	Many-lined Angle	8
91 0789	6362	<i>Digrammia continuata</i>	Curve-lined Angle	2
91 1009	6590	<i>Anavitrinella pampinaria</i>	Common Gray	2
91 1016	6597	<i>Ectropis cerpuscularia</i>	The Small Engrailed	1
91 1017	6598	<i>Protopoarmia porcelaria</i>	Porcelain Gray	1
91 1062	6640	<i>Biston betularia</i>	Peppered Moth	6
91 1089	6667	<i>Lomographa vestaliata</i>	White Spring Moth	1
91 1099	6678	<i>Cabera variolaria</i>	Vestal Moth	1
91 1182	6753	<i>Pero honestaria</i>	Honest Pero	2
91 1226	6796	<i>Campaea perlata</i>	Pale Beauty	1
91 1252	6820	<i>Metanema determinata</i>	Dark Metanema	1
91 1254	6822	<i>Metarranthis duaria</i>	Ruddy Metarranthis	2
91 1260	6821	<i>Metarranthis warneri</i>	Warner's Metarranthis	1
91 1324	6885	<i>Besma quercivoraria</i>	Oak Besma	1
91 1400	6963	<i>Tetraxis crocallata</i>	Yellow Slant Line	2
91 1401	6964	<i>Tetraxis cachexiata</i>	White Slant Line	6
91 1432	6982	<i>Prochoerodes lineola</i>	Large Maple Spanworm	1
93 0003	7895	<i>Clostera albosigma</i>	Sigmoid Chocolate-tip	1
93 0015	7926	<i>Notodonta scitipennis</i>	Finned Willow Prominent	1
93 0019	7931	<i>Gluphisia septentrionis</i>	Common Gluphisia	1
93 0024	7936	<i>Furcula borealis</i>	White Kitten	1
93 0086	7994	<i>Heterocampa guttivitta</i>	Saddled Prominent	4
93 0091	7999	<i>Lochmaeus bilineata</i>	Double-lined Prominent	2
93 0278	8169	<i>Apantesis phalerata</i>	Harnessed Moth	3
93 0297	8118	<i>Virbia opella</i>	Tawny Virbia	2
93 0307	8124	<i>Virbia immaculata</i>	Immaculate Virbia	8
93 0316	8137	<i>Spilosoma virginica</i>	Virginian Tiger Moth	1
93 0317	8131	<i>Estigme acrea</i>	Salt Marsh Moth	1
93 0319	8140	<i>Hyphantrea cunea</i>	Fall Webworm Moth	1
93 0370	8211	<i>Lophocampa caryae</i>	Hickory Tussock Moth	4
93 0404	8230	<i>Cycnia tenera</i>	Delicate Cycnia	2
93 0405	8231	<i>Cycnia oregonensis</i>	Oregon Cycnia	2
93 0412	8238	<i>Euchaetes egle</i>	Milkweed Tussock Moth	2
93 0435	8262	<i>Ctenucha virginica</i>	Virginia Ctenucha	1
93 0487	8338	<i>Phalaenophana pyramusalis</i>	Dark-banded Owlet	1
93 0508	8357	<i>Macrochilo absorptalis</i>	Slant-lined Owlet	1
93 0520	8370	<i>Bleptina caradrinalis</i>	Bent-winged Owlet	1
93 0547	8393	<i>Lascoria ambigualis</i>	Ambiguous Moth	1
93 0551	8397	<i>Palthis angulalis</i>	Dark-spotted Palthis	1
93 0562	8442	<i>Hypena baltimoralis</i>	Baltimore Snout	2
93 0564	8443	<i>Hypena bijugalis</i>	Dimorphic Snout	1

93 0590	8411	<i>Colobochyla interpuncta</i>	Yellow-lined Owlet	2
93 0715	8479	<i>Spargaloma sexpunctata</i>	Six-spotted Gray	4
93 0924	8739	<i>Caenurgina erechtea</i>	Forage Looper Moth	1
93 1053	8717	<i>Zale horrida</i>	Horrid Zale	1
93 1108	8959.1	<i>Paectes abrostolella</i>	Barrens Paectes	1
93 1236	8950	<i>Plusia putnami</i>	Putnam's Looper	4
93 1289	9046	<i>Deltote bellicula</i>	Bog Deltote	1
93 1291	9048	<i>Protodeltote albidula</i>	Pale Glyph	2
93 1295	9049	<i>Maliattha synochitis</i>	Black-dotted Maliattha	2
93 1314	9090	<i>Ponometia candefacta</i>	Olive-shaded Bird-dropping	3
93 1418	9663	<i>Balsa tristrigella</i>	Three-lined Balsa	1
93 1425	9205	<i>Acronicta lepusculina</i>	Cottonwood Dagger	1
93 1493	9280	<i>Simyra henrici</i>	Henry's Marsh Moth	2
93 1498	9286	<i>Harrisimemna tertophora</i>	Harris' Three Spot	1
93 1989	9690	<i>Condica videns</i>	White-dotted Groundling	2
93 2228	9678	<i>Elaphria versicolor</i>	Variegated Midget	1
93 2266	9647	<i>Proxenus miranda</i>	Miranda Moth	2
93 2285	9582	<i>Nedra ramosula</i>	Gray Half Spot	1
93 2291	9546	<i>Phlogophora iris</i>	Olive Angle Shades	1
93 2307	9351	<i>Apamea alia</i>	Fox Apamea	1
93 2314	9364	<i>Apamea sordens</i>	Rustic Shoulder-knot	2
93 2875	10293	<i>Melanchra picta</i>	Zebra Caterpillar Moth	1
93 2881	10299	<i>Lacanobia subjuncta</i>	Subdued Arches	2
93 2882	10300	<i>Lacanobia grandis</i>	Grand Arches	1
93 2883	10301	<i>Spirameter lutra</i>	Otter Arches	1
93 2906	10265	<i>Sideridis rosea</i>	The Rosewing	2
93 2933	10436	<i>Aletia oxygala</i>	Lesser Wainscot	1
93 2943	10444	<i>Leucania phragmitidicola</i>	Phragmites Wainscot	2
93 2945	10446	<i>Leucania multilinea</i>	Many-lined Wainscot	1
93 2965	10461	<i>Leucania ursula</i>	Ursula Wainscot	1
93 3044	10397	<i>Lacinipolia renigera</i>	Bristly Cutworm Moth	1
93 3136	10585	<i>Orthodes majuscula</i>	Rustic Quaker	1
93 3138	10587	<i>Orthodes cynica</i>	Cynical Quaker	2
93 3222	10902	<i>Anicla forbesi</i>	Forbes' Dart	1
93 3529	10891	<i>Ochropleura plecta</i>	Flame-shouldered Dart	2
93 3551	11003.1	<i>Noctua pronuba</i>	Large Yellow Underwing	1
93 3589	10942.1	<i>Xestia dolosa</i>	Black-Letter Dart	1
		<i>Acrobasis</i>		
		<i>species</i>		1
		<i>Xanthotype species - either urticatia or sospeta</i>		1
		<i>Metarranthis species - either indeclinata or hypochraria</i>		4
		<i>Probole species - either alienaria or amicaria</i>		1



Figure 13. Some moths observed during the BioBlitz: Nymphula Moth, Twin-spotted Sphinx, Many-lined Angle, Harris' Three Spot, Horrid Zale, Dark Metanema. Photos by David Beadle.

Two additional moth species were observed during the day by David Bree:

Hodges No.	5363	<i>Crambus saltuellus</i>	Pasture Grass Veneer
	8731	<i>Euclidia cuspidata</i>	Toothed Somberwing

Table 7. Aquatic invertebrates collected at Gull Pond and in several habitats at the Lighthall (Ducks Unlimited) Marsh Pond (LP) and identified by Wallace Rendell and Sonya Kranzl.

Order	Family	Life Stage	Gull Pond/LP-Pool/LP-Riffle/LP-Pond/LP-Benthos				
Ephemeroptera	Caenidae		25	3	8	-	16
Ephemeroptera	Baetidae		-	-	-	-	1
Amphipoda	<i>Hyallorella azteca</i>		24	14	9	-	2
Coleoptera	Dytiscidae	larva	-	-	1	-	-
Coleoptera	Dytiscidae	adult	-	-	2	-	-
Coleoptera	Curculionidae	adult	-	-	4	-	-
Coleoptera	Hydrophilidae	larva	1	1	5	-	-
Coleoptera	Hydrophilidae	adult	-	-	1	-	-
Coleoptera	Haliplidae	larva	1	1	3	-	-
Coleoptera	Haliplidae	adult	-	-	2	-	-
Coleoptera	unknown	adult	-	4	1	-	-
Odonata (Zygoptera)	Coenagrionidae		10	-	1	-	1
Odonata (Anisoptera)	Coruliidae		1	-	-	-	-
Odonata (Anisoptera)	Libellulidae		-	-	1	4	2
Hemiptera	Corixidae		5	-	-	-	-
Hemiptera	Gerridae		-	1	-	-	-
Hirudinea	Glossiphoriidae		-	1	1	-	-
Trichoptera	Hydropsychidae		-	4	-	-	-
Trichoptera	Lepidostomatidae		1	-	-	-	-
Trichoptera	unknown		-	-	1	-	-
Gastropoda	Lymnaeidae		-	3	-	-	1
Gastropoda	Physidae		1	1	-	-	1
Gastropoda	Viviparidae		1	-	-	-	-
Gastropoda	Sphaeriidae		-	-	-	-	2
Gastropoda	Valvatidae		1	4	-	-	-
Diptera	Chironomid	larva	5	23	4	-	19
Diptera	Chironomid	pupae	-	1	1	-	-
Diptera	Ceratopognidae	larva	-	-	-	-	1
Diptera	unknown	adult	-	4	-	-	2
Diptera	Oligochaeta		1	4	1	-	-

Isopoda	Asellidae	-	26	136	-	-
Copepoda	Ostrocooda	-	-	-	-	10
	Hydrachnidae	-	-	-	-	7

Table 8. Additional Insects and Arachnids observed during the BioBlitz.

CLASS INSECTA – ORDERS and Families		Scientific Name	Common Name
COLEOPTERA	BEETLES		
Curculionidae	Snout and Bark Beetles	<i>Lixus</i> sp.	Weevil
		cf. <i>Merhynchites bicolor</i>	Rose Curculio Weevil
Cerambycidae	Longhorn Beetles	<i>Clytus ruricola</i>	Longhorn Beetle
Dyticidae	Predacious Water Beetles		Water Beetle
Lampyridae	Fireflies		Firefly
Scarabaeidae	Scarab Beetles	<i>Phyllophaga ferrida</i>	June Bug
DIPTERA	FLIES		
Bombilidae	Bee Flies	<i>Bombylius mexicanus</i>	Bee Fly
Culicidae	Mosquitoes	<i>Aedes</i> sp., <i>Anopheles</i> sp., <i>Culex</i> sp.	Mosquitoes
Muscidae	House Flies		Stable Fly
Tipulidae	Crane Flies	<i>Limnophila</i> sp.	Crane Fly
HEMIPTERA	TRUE BUGS		
Aphrophoridae	Spittle Bugs	<i>Philaenus spumarius</i>	Meadow Spittle Bug
		<i>Euschistus servus</i>	Stink Bug
Gerridae	Striders		Water Strider
Miridae	Plant Bugs	<i>Taedia</i> sp.	Plant Bug

HYMENOPTERA ANTS, BEES, WASPS, AND SAWFLIES

Apidae	Ants, Bees, Wasps	Bombus sp.	Bumble Bee (queen & workers)
		Trogus pennator	Parastic Wasp of Swallowtail caterpillars

MEGALOPTERA ALDERFLIES, DOBSON FLIES, AND FISHFLIES Fishfly

NEUROPTERA NET-WINGED INSECTS

Chrysopidae	Green Lacewings		Lacewing
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ORTHOPTERA GRASSHOPPERS, CRICKETS AND KATYDIDS

Acrididae	Grasshoppers	Chortophagus viridifasciata	Green-striped Grasshopper
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PLECOPTERA	STONEFLIES		Stonefly
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TRICOPTERA	CADDISFLIES		Caddisfly
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CLASS ARACHNIDA ARACHNIDS

ARANEAE SPIDERS

Araneidae	Orb-weaver Spiders		Long-jawed Orb Weaver
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Lycosidae	Wolf Spiders	cf. Pardosa xerampelina	(photo by D. Weaver)
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OPILIONES HARVESTMEN

Phalangiidae		Phalangium opilio	European Harvester (Daddy-long legs)
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VERTEBRATES:

Table 9. Fish species observed at and around the Lighthall Marsh Pond (sampled on June 9) and Gull Pond (sampled on June10). The Species at Risk (SAR) is designated in the list.

Lighthall Marsh Pond: (eight species)

ORDER/Family	Common Name	Scientific Name	No. Seen
CYPRINIFORMES	RAY-FINNED FISH		
Cyprinidae	Minnow or Carp Family		
	Fathead Minnow	Pimephales promelas	8
	Golden Shiner	Notemigonus crysoleuca	5
	Bridle Shiners	Notropis bifrenatus (SAR)	3

	Blackchin Shiner	<i>Notropis heterodon</i>	53
	Blacknose Shiner	<i>Notropis heterolepis</i>	1
	Shiners	<i>Notropis</i> spp.	31
	Carp and minnows	not identified	29
CYPRINODONTOFORMES TOOTHCARPS			
Fundulidae	Topminnow and Killifish Family		
	Banded Killifish	<i>Fundulus diaphanous</i>	5
GASTEROSTEIFORMES STICKLEBACKS, SEAHORSES AND RELATIVES			
Gasterosteidae	Stickleback and Tubesnout Family		
	Brook Stickleback	<i>Culaea inconstans</i>	15
PERCIFORMES PERCH-LIKE FISHES			
Centrarchidae	Sunfish Family		
	Pumpkinseed	<i>Lepomis gibbosus</i>	4
Gull Pond: (twelve species)			
ESOCIFORMES PIKES AND MUDMINNOMS			
Esocidae	Pike Family		
	Northern Pike	<i>Esox lucius</i>	20
CYPRINIFORMES RAY-FINNED FISH			
Cyprinidae	Minnow or Carp Family		
	Bluntnose Minnow	<i>Pimephales notatus</i>	1
	Fathead Minnow	<i>Pimephales promelas</i>	11
	Golden Shiner	<i>Notemigonus crysoleucas</i>	12
	Bridle Shiners	<i>Notropis bifrenatus</i> (SAR)	5
	Blackchin Shiner	<i>Notropis heterodon</i>	9
	Carp and minnows	not identified	500
CYPRINODONTOFORMES TOOTHCARPS			
Fundulidae	Topminnow and Killifish Family		
	Banded Killifish	<i>Fundulus diaphanous</i>	7
PERCIFORMES PERCH-LIKE FISH			
Centrarchidae	Sunfish Family		
	Pumpkinseed	<i>Lepomis gibbosus</i>	50
	Smallmouth Bass	<i>Micropterus dolomieu</i>	12
	Largemouth Bass	<i>Micropterus salmoides</i>	12

Percidae	Yellow Perch	<i>Perca flavescens</i>	120
SULURIFORMES	CATFISH		
Family Ictaluridae	Bullhead and Catfish Family		
	Brown Bullhead	<i>Ameiurus nebulosus</i>	10

The total number of fish species observed at both Lighthall Marsh Pond and Gull Pond is 14.



Figure 14. Young Northern Pike (*Esox lucius*) found in Gull Pond. Photograph by Ramesh Pooran.

Table 10. Reptiles and Amphibians observed during the Charwell BioBlitz, June 9-10, 2018.

REPTILES

ORDER/Family	Scientific Name	Common Name
CRYPTODIRA		TURTLES
Chelydridae	<i>Chelydra serpentina</i>	Snapping Turtle
Emydidae	<i>Chrysemys picta marginata</i> <i>Emydoidea blandingii</i>	Midland Painted Turtle Blanding's Turtle (3 and 1 dead)
SQUAMATA		LIZARDS AND SNAKES
Colubridae	<i>Storeria dekayi</i> <i>Thamnophis sirtalis sirtalis</i>	Dekay's Brownsnake (1 dead) Eastern Garter Snake (3)



Figure 15. Searching for amphibians and reptiles near Gull Pond. Photograph by Brenda Kostiuk.

AMPHIBIANS

ANURA		FROGS AND TOADS
Bufonidae	<i>Anaxyrus americanus americanus</i>	Eastern American Toad
Hylidae	<i>Hyla versicolor</i>	Eastern Gray Tree Frog
Ranidae	<i>Lithobates catesbeianus</i>	American Bullfrog
	<i>Lithobates clamitans</i>	Green Frog
	<i>Lithobates pipiens</i>	Northern Leopard Frog

N.B. During a preliminary field trip to the area on May 20, the following two species were observed on the east side of Lighthall Rd. (north of the road to the marsh) but were not seen during the BioBlitz.

SQUAMATA		LIZARDS AND SNAKES
Colubridae	<i>Lampropeltis triangulum</i>	Eastern Milk Snake
CAUDATA		SALAMANDERS
Amystomatidae	<i>Ambystoma laterale complex</i>	Blue-spotted/Jefferson Salamander complex



Figure 16. Mature Blanding's Turtle (*Emydoidea blandingii*). Photograph by Brenda Kostiuk.

BIRDS

Table 11. List of birds seen during the 2018 Charwell BioBlitz with numbers seen and observers indicated with their initials: John Foster (JF), Peter Fuller (PF), Katie Thomas (KT) and Tom Wheatley (TW). Taxonomic order follows the AOU Checklist incorporating changes through the 59th supplement.

Order and Family	Common Name	Scientific Name	Observers
Order Anseriformes			
Family Anatidae	Canada Goose	<i>Branta canadensis</i>	JF,PF
	Mute Swan	<i>Cygnus olor</i>	PF, TW-7
	Wood Duck	<i>Aix sponsa</i>	PF, TW-12
	Mallard	<i>Anas platyrhynchos</i>	PF,TW-3
	Common Merganser	<i>Mergus merganser</i>	TW-1
Galliformes			
Phasianidae	Ruffed Grouse	<i>Bonasa umbellus</i>	JF,PF
	Wild Turkey	<i>Meleagris gallopavo</i>	JF,TW-2
Podicipediformes			
Podicipedidae	Pied-billed Grebe	<i>Podilymbus podiceps</i>	JF,PF
Columbiformes			
Columbidae	Mourning Dove	<i>Zenaida macroura</i>	JF, TW-2
Cuculiformes			
Cuculidae	Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	JF, KT
Caprimilgiformes			
Caprimilgidae	Eastern Whip-poor-will	<i>Antrostomus vociferous</i>	PF-5
Gruiformes			
Rallidae	Common Gallinule	<i>Gallinula galeata</i>	PF, TW-2
Charadriiformes			
Charadriidae	Killdeer	<i>Charadrius vociferous</i>	JF, TW-1
Scolopacidae	American Woodcock	<i>Scolopax minor</i>	PF
	Wilson's Snipe	<i>Gallinago delicata</i>	JF,PF, TW-1
Laridae	Ring-billed Gull	<i>Larus delawarensis</i>	JF,PF, TW-20
	Herring Gull	<i>Larus argentatus</i>	PF,TW-1
Gaviformes			
Gaviidae	Common Loon	<i>Gavia immer</i>	JF

Suliformes

Phalacrocoradidae Double-crested Cormorant *Phalacrocorax auratus* TW-40

Pelecaniformes

Ardeidae American Bittern *Botaurus lentigenosis* PF, TW-2
 Least Bittern *Ixobrychus excilis* PF-6
 Great Blue Heron *Ardea herodias* JF,PF,TW-1
 Green Heron *Butorides virescens* PF, TW-1

Cathartiformes

Cathartidae Turkey Vulture *Cathartes aura* JF,PF, TW-1

Acciptriformes

Pandionidae Osprey *Pandion haliaetus* JF,PF,TW-1
 Northern Harrier *Circus hudsonius* TW-1 male

Piciformes

Picidae Downy Woodpecker *Picoides pubescens* PF
 Northern Flicker *Colaptes auratus* JF,PF

Passeriformes

Tyannidae Great-crested Flycatcher *Myiarchus crinitus* JF,PF
 Eastern Kingbird *Tyrannus tyrannus* JF, TW-2
 Eastern Wood Pewee *Contopus virens* PF
 Alder Flycatcher *Empidonax alnorum* JF, PF, TW-3
 Willow Flycatcher *Empidonax trailii* JF,PF,TW-8
 Least Flycatcher *Empidonax minimus* PF
 Eastern Phoebe *Sayomis phoebe* JF

Vireonidae Red-eyed Vireo *Vireo olivaceus* PF,TW-1

Corvidae Blue Jay *Cyanocitta cristata* JF,PF,TW-1
 American Crow *Corvus brachyrhynchus* JF,PF,TW-2
 Common Raven *Corvus corax* PF,TW-1

Hirundinidae Purple Martin *Progne subis* TW-1 male
 Tree Swallow *Trachycineta bicolor* JF,PF,TW-12

Paridae Black-capped Chickadee *Poecile atricapillus* PF

Sittidae	White-breasted Nuthatch	<i>Sitta carolinensis</i>	TW-1
Troglodytidae	House Wren	<i>Troglodytes aedon</i>	JF,PF,TW-2
	Marsh Wren	<i>Cistothorus palustris</i>	PF,TW-20
Turdidae	Wood Thrush	<i>Hylocichla mustelina</i>	PF
	American Robin	<i>Turdus migratorius</i>	JF,PF,TW-3
Mimidae	Gray Catbird	<i>Dumetella carolinensis</i>	JF,PF,TW-12
	Brown Thrasher	<i>Toxostoma rufum</i>	JF,PF,TW-3
Sturnidae	European Starling	<i>Sturnus vulgaris</i>	JF, TW-1
Bombycillidae	Cedar Waxwing	<i>Bombycilla cedrorum</i>	JF,PF,TW-3
Fringilidae	American Goldfinch	<i>Spinus tristis</i>	JF,PF,TW-3
Passerellidae	Eastern Towhee	<i>Pipilo erythrophthalmus</i>	JF,PF,TW-8
	Chipping Sparrow	<i>Spizella passerina</i>	JF,PF,TW-5
	Clay-coloured Sparrow	<i>Spizella pallida</i>	JF
	Field Sparrow	<i>Spizella pusilla</i>	JF,PF,TW-15
	Vesper Sparrow	<i>Pooecetes gramineus</i>	JF
	Grasshopper Sparrow	<i>Ammodramus savannarum</i>	JF
	Song Sparrow	<i>Melospiza melodia</i>	JF,PF,TW-15
	Swamp Sparrow	<i>Melospiza georgiana</i>	JF,PF,TW-8
	White-throated Sparrow	<i>Zonotrichia albicollis</i>	JF
Icteridae	Orchard Oriole	<i>Icterus spurius</i>	JF
	Baltimore Oriole	<i>Icterus galbula</i>	JF,PF,TW-2
	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	JF,PF,TW-20
	Brown-headed Cowbird	<i>Molothrus ater</i>	PF, TW-3
	Common Grackle	<i>Quiscalus quiscula</i>	JF,PF,TW-8
Parulidae	Ovenbird	<i>Seiurus aurocapilla</i>	JF
	Northern Waterthrush	<i>Parkesia novaoracensis</i>	PF
	Nashville Warbler	<i>Oreothlypis ruficapilla</i>	TW-1
	Common Yellowthroat	<i>Geothlypis trichas</i>	JF,PF,TW-5
	American Redstart	<i>Setophaga ruticilla</i>	JF,TW-1
	Yellow Warbler	<i>Setophaga petechia</i>	JF,PF,TW-40
	Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	JF
	Canada Warbler	<i>Cardellina canadensis</i>	PF-1 male



Figure 17. A Canada Warbler was seen during the BioBlitz by Peter Fuller. It was the first of this threatened species seen on a south shore BioBlitz. Photo by W. H. Majoros, 15 May 2011. CC-BY-SA-3.0.

Cardinalidae

Scarlet Tanager	<i>Piranga olivacea</i>	JF
Northern Cardinal	<i>Cardinalis cardinalis</i>	JF,PF,TW-1
Indigo Bunting	<i>Passerina cyanea</i>	JF,TW-2

MAMMALS

Table 13. List of the Mammals that were observed during the Charwell BioBlitz on June 9-10.

ORDER/Family	Scientific Name	Common Name
RODENTIA		RODENTS
Castoridae	<i>Castor canadensis</i>	Beaver
Cricetidae	<i>Microtus pennsylvanicus</i>	Meadow Vole

	<i>Ondatra zibethicus</i>	Muskrat
Sciuridae	<i>Tamias striatus</i> <i>Tamiasciurus hudsonius</i> <i>Marmota monax</i>	Eastern Chipmunk Red Squirrel Woodchuck
LAGOMORPHA		RABBITS, HARES, PICAS
Leporidae	<i>Sylvilagus floridans</i>	Eastern Cottontail
CARNIVORA		CARNIVORANS
Canidae	<i>Canis latrans</i>	Coyote (scat)
Mustelidae	<i>Mustela frenata</i> <i>Vison vison</i>	Long-tailed Weasel Mink
ARTIODACTYLA		EVEN-TOED UNGULATES
Cervidae	<i>Odocoileus virginianus</i>	White-tailed Deer



Figure 18. A Beaver lodge in Lighthall Marsh Pond. Beavers were extirpated in the county but re-established themselves after trapping declined. Photograph by Peter Fuller.



Figure 19. Part of a 2018 BioBlitz team. From left to right Cayley, Anne, Sarah, Jamie, and Mike Inglis (a family from Cobourg), John Foster of Oshawa and finally Paul Catling of Ottawa. Other participants came from as far away as Montreal in the east and Toronto in the west.

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This is the 5th published BioBlitz covering a part of the south shore. Collectively these events have revealed that the area is a very important place for wildlife. They have also helped hundreds of people to learn about the area and have brought participants from as far away as France (and provided information in both official languages). We take this opportunity to thank our sponsors and participants for their support and encouragement.

Prince Edward County Field-Naturalists

