Appendix E

Fullarton Conservation Area
Vegetation and Bird Inventory 2015

Sept 29, 2016 DRAFT

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UPPER THAMES RIVER
CONSERVATION AUTHORITY

Document #781

Published by and Project Management by

Upper Thames River Conservation Authority
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London, ON N5V 5B9
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Cover Photos

Fullarton Pond in the summer of 2015. Photo by Cathy Quinlan.
Canada Goose. Photo by Brenda Gallagher

Cite as:

Upper Thames River Conservation Authority. 2016. *Fullarton CA Vegetation and Bird Inventory 2015.*

Executive Summary

This study examined the vegetation and bird and wildlife of Fullarton CA to flag any rare or sensitive species that might be impacted if the Fullarton Dam and reservoir are decommissioned and the creek restored. It is part of the Fullarton Dam Class Environmental Assessment report.

A three-season botanical inventory was completed in 2015 of a 9 ha study area, that included lands up to 100 m of the pond's edge. There were nine inventory days from June 1st to September 2nd. Incidental sightings of wildlife were recorded on each day.

Vegetation

The study area consisted of five terrestrial vegetation communities (cultural woodland, coniferous plantations, shallow marsh and cultural meadow) and the pond. Of the 228 plant species found, 36% are non-native, a moderate number. The overall quality of the vegetation was moderate as well. Only the shallow marsh (Community 4) at the upstream end of the pond/reservoir will be affected by the potential removal of the dam/reservoir. However, wetland plants are likely to re-establish along the restored creek, especially since this is an area of groundwater discharge.

The Fullarton Pond/Reservoir was not surveyed specifically for aquatic plants. A common native plant, White Water Buttercup, was present in large numbers in 2016. If the dam was removed and the creek restored, pond plants such as the White Water Buttercup would not remain. However, these plants are not uncommon and a diversity of riverine plants as seen in Community 1 would soon establish.

No plant species at- risk were found in the study area or within 2 km of the study area. No plants with a high Coefficient of Conservatism score were found, indicating most plants are generalist species found in a wide variety of habitats, including disturbed or young sites. Hispid Buttercup was the only plant found with an SRANK of S3 (rare to uncommon), however, it is relatively common in the Upper Thames watershed.

Birds and Wildlife

Incidental bird and wildlife observations were made over the six field days (spring, summer and fall) of 2015. Some 43 bird species, all native, were recorded. Most were common breeding species and/or permanent residents. Two uncommon breeding species (Bald Eagle and Green Heron) were seen but not breeding and one uncommon breeding species or common winter resident (Red-breasted Nuthatch) was seen. The Great Egret and Trumpeter Swan, both uncommon visitors, were seen also.

None of the 43 bird species seen are exclusively pond dwellers. Species such as Canada Goose, Mallard, Belted Kingfisher, Bald Eagle, and Killdeer feed in or by standing water but these species utilize rivers and streams as well. Use of the pond/reservoir by native waterfowl seemed to be on an occasional basis for feeding and resting, only occasionally for nesting and rearing young. Most of the songbirds seen use the wooded habitats and nearby fields.

Eight herptiles (reptiles and amphibians), seven Lepidoptera (butterflies) and five mammals were seen. All species are common to our area. The Green Frog, American Bullfrog, Red-spotted Newt and Snapping Turtle are the only animals with a strong affiliation to permanent water bodies/ponds. Their overwintering habitat in pond sediment will be lost if the dam/reservoir is removed.

Rare or Sensitive Wildlife Species

One threatened species, the Barn Swallow, was seen in the study area. There was no breeding evidence at Fullarton CA. Since it nests in old buildings, its nesting habitat will be unaffected by changes to the dam/reservoir.

Three Special Concern species were seen: Bald Eagle, Snapping Turtle and Monarch. Special concern species do not receive provincial species or habitat protection, but they are important to recognize.

Bald Eagles were not breeding at the Fullarton CA and they likely forage throughout the North Thames River corridor for fish. Thus, there is no action that is needed for this species.

Snapping Turtles were seen in the Fullarton Reservoir and there are records of this species within the nearby Thames River as well. Habitat will be lost if the reservoir is drained and restored since cold water creeks are only occasionally used by Snapping Turtles due to the lower temperature. Harm to individual turtles can be avoided during dam deconstruction by slowly releasing water in the summer period, allowing enough time for the turtles to find new hibernation areas.

The Monarch butterfly was seen and while it is a commonly seen summer species, the Monarch populations have fallen drastically over the last decade or so, likely due to the elimination of milkweeds along its migration route in the USA and Canada (e.g., herbicide use) and threats to its overwintering areas in Mexico. There is no specific action at Fullarton CA that is required. Establishment of more riparian vegetation, including its host plant milkweeds, and other nectar plants, will help support this butterfly locally.

Significant Woodlands, Wetlands and ANSIs

The woodland communities within Fullarton CA are deemed Significant Woodlands in Perth County as they are over 1 ha in size. They will not be altered by the possible removal of the dam and reservoir. In time, the former pond will likely fill in with herbaceous and then woody plant communities, thus providing an enlarged area of significant woodland cover.

Fullarton CA is part of an unevaluated wetland that extends along the Neil Drain up to the reservoir. Most of this wetland will be unaffected by any changes to dam/reservoir. Hydrogeological information indicates this is a groundwater-dependent wetland and not influenced to any great degree by backwater from the reservoir. The shallow marsh at the upstream end of the Fullarton Reservoir may decrease or increase in size if the dam is removed, depending on topography. The wetland vegetation is very likely to colonize the area around the restored creek as in the upstream sections of this unevaluated wetland.

The North Thames Valley Earth Science ANSI and candidate Fullarton Moraine ANSI that occur in the Fullarton CA area would be unaffected by changes to the dam/reservoir as no major changes to the topography will be made.

Recommendations

1: Survey the aquatic plants in the pond to ensure no rare species are impacted.

2: If the dam is decommissioned, the drawdown of the reservoir should be done very slowly over summer providing time for Snapping Turtles and other amphibians to find new sites prior to hibernation.

3. If the dam/reservoir is decommissioned, examine the benefits and feasibility of constructing an off-line pond to accommodate snapping turtles and other aquatic wildlife species.

4: If the dam/reservoir is decommissioned, examine the road culverts along the Neil Drain after drawdown to see if any are perched as a result of the water level changes. Correcting perched culvert problems will allow the creek to flow unobstructed.

5: If the dam is decommissioned, monitor the plant species that colonize the former pond bed and augment with seed/plants of native wetland species if needed.

6. If the dam is decommissioned and the creek restored, maintain the trail where it is currently, away from the sensitive creek edges and the unconsolidated sediments from the pond

bottom. Consider providing viewing points to the creek that elevates the visitor above the shoreline vegetation height (e.g., a mound or a wooden viewing platform).

Photo of the creek and Cultural Woodland habitat below the Fullarton Dam

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1.0 Purpose of the Vegetation and Bird Study

This study is a component of a larger Environmental Assessment study on the Fullarton Dam and Reservoir. The purposes of this study are to:

- document the vegetation communities within approximately 100 m of the Fullarton Pond/Reservoir to establish baseline conditions and to flag any unique or rare species that need protection or consideration prior to any potential changes to the Conservation Area, dam and reservoir; and

- record the bird and wildlife species (incidental observations) that use the aquatic and terrestrial habitats of Fullarton Conservation Area (CA), either year round, seasonally or infrequently, to establish baseline conditions and to flag any unique or rare species that need protection or consideration prior to any potential changes to the CA (i.e., the dam and reservoir).

2.0 Vegetation Inventory

2.1 Methodology

A study area was delineated that included an area up to 100 m from the pond's edge or the edge of the property or natural vegetation (i.e., farm fields were not included). The study area is 9 ha in size.

A three-season vegetation inventory was carried out in study area in 2015 by Brenda Gallagher, Vegetation Specialist and Forestry Technician with the Upper Thames River Conservation Authority (UTRCA). The area was inventoried in June, again in July and lastly in August. Each season's inventory spanned three field days. Table 1 summarizes the survey effort.

Table 1. Vegetation Survey Dates in 2015

Dates Inventoried	No. Days
June 1, 2, 3	3
July 13, 15, 16	3
August 31, September 1, 2	3
Total days	**9**

After walking the entire site once, the ELC (Ecological Land Classification) vegetation communities were mapped onto 2010 colour orthoimagery. Vascular plant species in each vegetation community were recorded on field sheets. At the end of the study, the plant lists were entered into the UTRCA plant database to produce a full checklist of vascular plants by community. Statistics on vegetation/habitat quality were generated also.

While undertaking the vegetation inventories, Brenda Gallagher recorded incidental wildlife sightings, especially of birds, amphibians, reptiles and mammals.

No aquatic plants in the pond/reservoir were sampled.

2.2 Results and Discussion

Figure 1 shows the ELC vegetation communities with the Fullarton CA study area. Table 2 shows the area of each community. ELC communities less than 0.5 ha in size are usually merged with neighbouring vegetation communities, as per Lee *et al*. 1998. A full annotated checklist of vascular plants found in the five terrestrial communities (excluding Community 6) is provided in Appendix A.

Table 2. Area of Ecological Land Classification (ELC) Vegetation Communities

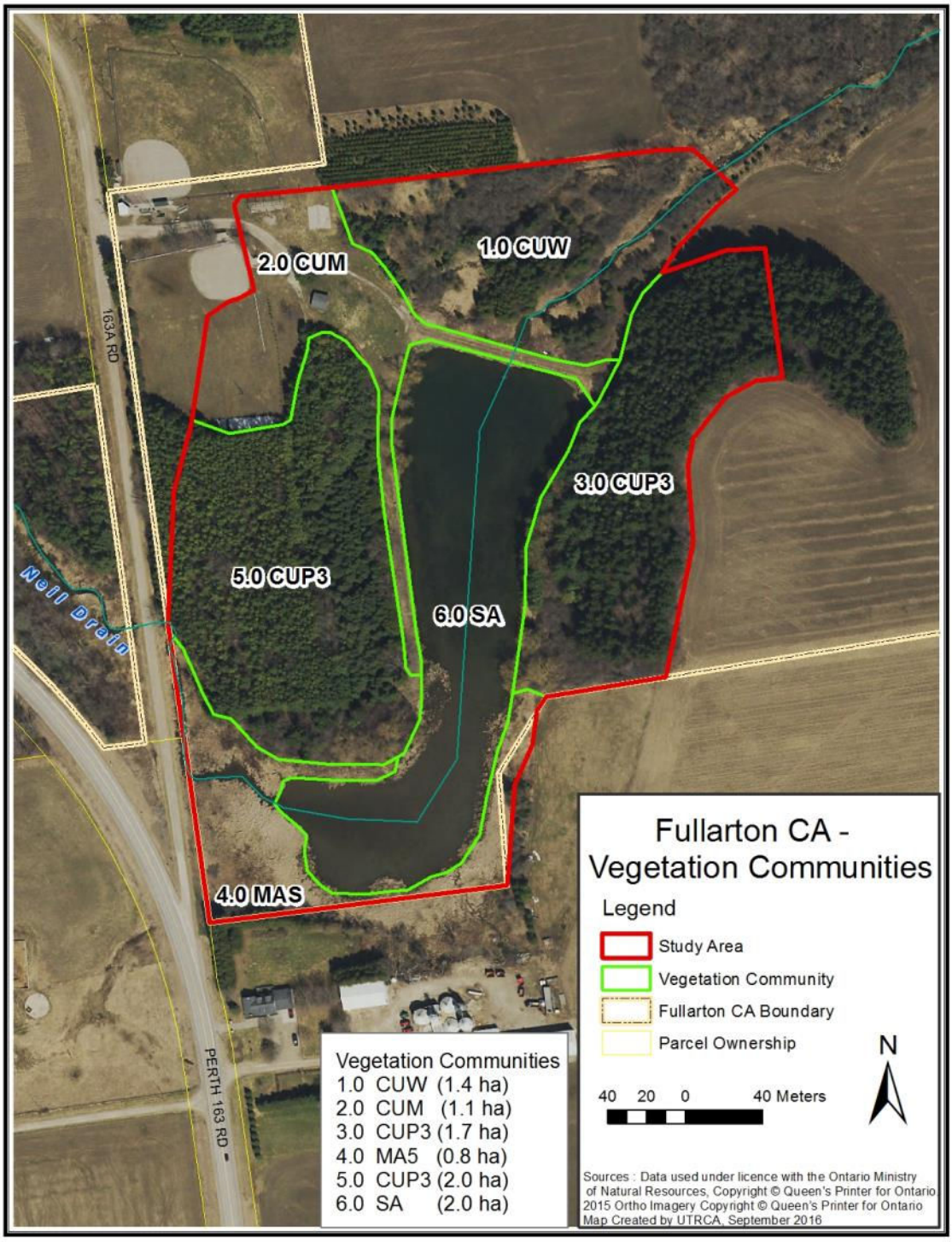
Community	ELC Code	Community Description	Area
1.0	CUW	Cultural Woodland	1.4 ha
2.0	CUM	Cultural Meadow (Lawn)	1.1 ha
3.0	CUP3	Coniferous Plantation	1.7 ha
4.0	MAS	Shallow Marsh	0.8 ha
5.0	CUP3	Coniferous Plantation	2.0 ha
6.0	SA	Shallow Water/Aquatic	2.0 ha
	Total		**9.0 ha**

Table 3 summarizes the number of species, both native and non-native, as well as MCC (Mean Coefficient of Conservatism) and Average Wetness for each plant community (except the pond) and overall. Descriptions of these parameters are provided in Appendix B. While the number of species found (228 species) is high for such a small site, the overall quality of the vegetation is moderate. The overall wetness score is negative, meaning there are more wetland plants than upland. The sections that follow describe the conditions in greater detail for each of the communities.

Table 3. Summary of Plant Statistics

Community Number and ELC		# Species	# Native Species	# Non-native Species	% Non-native Species	MCC	# Species with CC 8-10	Overall Quality	Average Wet-ness
1	CUW	161	104	57	35%	3.36	0	Mod to Mod Poor	-0.9
2	CUM	84	39	45	54%	2.23	0	Poor	0.5
3	CUP3	132	89	43	33%	3.46	0	Moderately Poor	-0.2
4	MAS	133	88	46	35%	3.35	0	Mod to Mod Poor	-2.0
5	CUP3	126	77	49	39%	3.36	0	Mod to Mod Poor	0.1
Overall		**228**	**144**	**84**	**37%**	**3.60**	**0**	**Moderate**	**-0.8 More wet than dry**

Figure 1. ELC Vegetation Communities within the Study Area



CUW – Cultural Woodland, CUM – Cultural Meadow (lawn), CUP3 – Coniferous Plantation, MAS – Shallow Marsh, SA – Shallow Aquatic

2.2.1 Community 1, Cultural Woodland (CUW)

The Cultural Woodland of Community 1 is 1.4 ha in size and encompasses the northern part of the study area downstream of the pond/reservoir. Cultural woodlands are treed areas characterized by canopy coverage between 35 - 60%. These communities often represent the stage of natural succession between cultural thicket and forest. Cultural communities result from, or are maintained by, cultural or anthropogenic-based disturbances. In this case, the trees were planted in the early 1980s.

Community 1 has the largest diversity of plant species of any of the communities in the study area. There is a wide mix of native and non-native plant species that have been either planted or that have self-naturalized over the years. A total of 161 plant species were recorded: 101 native and 57 non-native or adventive species. The number of plant species is relatively large for such a small area, owing to the diversity of micro-habitats within it: creek edge (wetland emergent plants), naturally succeeding thickets and woods and planted conifers. The percentage of non-native plants is 35%, which is about average or moderate for sites like this in the Upper Thames watershed.

The MCC (Mean Coefficient of Conservatism) is 3.36, a moderate to moderately poor score. There is a predominance of wetland plants in this community (average Wetness score is -0.9).

Mature trees include White Cedar, ash, Black Walnut, spruce and pines. There are a variety of shrubs including dogwoods, nannyberry and highbush cranberry. In the sunnier areas along the creek there was a wide range of wildflowers, both native and non-native, including asters, goldenrods, Spotted Joe Pye-Weed, touch-me-nots, Field Mint and a variety of grass species.

Photo 1. Community 1 ─ View looking downstream from the dam crossing, with goldenrods and Joe Pye-weed in bloom.

2.2.2 Community 2, Cultural Meadow (CUM) or Lawn

Community 2 is made up of mown lawn areas (day-use, trail) that include a scattering of trees and the narrow community along the edge of the pond. It is 1.1 ha in size. Cultural meadows are communities that have a sparse or no canopy cover of trees or shrubs. They result from, or are maintained by, cultural or anthropogenic-based disturbances.

Some 84 species were recorded in Community 2, the least diverse of the communities (unsurprisingly). The understory is mostly manicured lawn grass with plantings of drying ash, Norway Spruce, Red Oak. It also includes a narrow fringe of tree willows (White Willow) between the pond's edge and the trail.

Of the 84 species, 39 were native and 45 were non-native. The percentage of non-native species (54%) is high and reflects the human disturbance and manicured nature of the site. The MCC is 2.23, a poor score.

Pond shore plants include Swamp Milkweed, Field Mint, Peppermint, cattails, Joe-Pye-Weed, beggarticks, jewelweeds and the non-native Yellow-Flag (iris). These wetland plants are also represented in the shallow marsh of Community 4.

Photo 2. Community 2 ─ Cultural meadow (lawn) along the edge of the reservoir.

Photo 3. Community 2 ─ Grass and goldenrods grow along the mowed trail over the dam (often very wet).

2.2.3 Community 3, Coniferous Plantation (CUP3)

The Coniferous Cultural Plantation in Community 3 is located on the east side of the Fullarton reservoir and is 1.7 ha in size. According to the ELC, cultural plantations have tree cover > 60%, resulting from, or maintained by cultural or anthropogenic-based disturbances. In this case the trees were planted. The coniferous tree species make up > 75% of the canopy cover.

A total of 132 species were recorded from Community 3, 89 native species and 43 non-native species. The percent of non-native plants (33%) is considered moderate and typical of areas such as this. The MCC score of 3.46 indicates the habitat is of moderately poor quality.

Dominant tree species include Norway Spruce and White Pine. There is a sparse understory of shrubs and herbaceous plants, typical of dark, shaded plantations. Species included hawthorns, apple, dogwoods, Red Elderberry, currants and raspberries. At the southwest end of this community is a low-lying forest consisting of apples, Manitoba Maple, ash, buckthorn, Silver Maple and willow.

Communities 3 and 5, both cultural plantations, are similar. However, Community 3 was planted in the 1960s, and Community 5 in the 1980s.

Photo 4. Community 3 – The large 50-year old pines create a lot of shade, limiting understory plants.

Photo 5. Community 3 – Apple trees dominate the southwest parts of Community 3, likely spread from the former homestead.

2.2.4 Community 4, Shallow Marsh (MAS)

Community 4 is a shallow marsh located at the upstream end of the Fullarton reservoir. According to the ELC, shallow marshes are communities with standing or flowing water up to 2 m deep for much of or all of the growing season, tree and shrub cover ≤ 25% and hydrophytic emergent macrophyte cover (non-woody wetland plants) ≥ 25%.

Some 133 species were recorded in Community 4, quite diverse for a small area. Of the 133 species, 88 were native and 46 were non-native. The percentage of non-native species (35%) is moderate or average. The MCC is 3.46, a moderately poor score.

Dominant plants include cattails, sedges, Purple stem Aster, and jewelweed. There is a scattering of shrubs and trees including nannyberry, willows and dogwoods.

This community has developed along the upstream end of the reservoir where the water is shallow enough to support these emergent plants. As the creek (Neil Drain) enters the pond, it slows down and silt settles out. The pond has been filling up with sediment over the years, especially the lower end.

Photo 6. Community 4 -- Brenda Gallagher in the shallow marsh with asters in bloom

Photo 7. Community 4 – The shallow marsh grows along the inflowing Neil Drain

2.2.6 Community 5, Coniferous Cultural Plantation (CUP3)

The Coniferous Cultural Plantation of Community 5 is located on the west side of the Fullarton reservoir. According to the ELC, cultural plantations have tree cover > 60%, resulting from, or maintained by cultural or anthropogenic-based disturbances (i.e., the trees were planted). The coniferous tree species make up > 75% of the canopy cover.

A total of 125 species were recorded, 76 native species and 49 non-native species. The percent of non-native plants (39%) is considered moderate and typical of areas such as this. The MCC score of 3.36 indicates the habitat is of moderately poor quality.

The trees here were planted in the early 1980s and are 10-20 years younger than the trees in Community 3. However, the vegetation is similar between communities 3 and 5, sharing 100 species in common.

Dominant tree species include White Pine, White Spruce, Norway Spruce with some Eastern White Cedar. A sparse shrub component consisted of dogwoods, young ash, Red Elderberry, and raspberries. The herbaceous layer was very sparse in the centre of the plantation, thickening up towards the edges where there is more sunlight.

Photo 8. Community 5 is dominated by 35 year old White Pines.

Photo 9. Community 5 -- White Cedars were planted along edge of the creek/drain.

2.2.6 Community 6 - Shallow Water (SA)

The Fullarton Pond/Reservoir is classified as a Shallow Water/Aquatic community. These communities have water up to 2 m depth, with standing water always present. There may be submerged or floating-leaved plants associated with it.

The submerged and rooted pond plants were not surveyed. However, a native, rooted aquatic plant called White Water Buttercup (*Ranunculus aquatilis (*formerly *R. trichophyllus*) was seen on June 9th of 2016, the flowers blanketing the pond. This flower was not seen in 2015.

Any shoreline vegetation is included in Communities 1 to 5. Aside from the shallow marsh at the south end of the pond/reservoir, there is only a narrow fringe of wetland emergent plants growing along the pond shore. The pond is steep sided and the water level permanent, so this does not permit the establishment of many wetland plants as they often require seasonal mudflats to germinate.

Photo 10. Community 6 – White Water-Buttercups blanket the Fullarton pond, June 9th, 2016.

Photo 11. Community 6 ─ Floating algae is visible on the Fullarton pond/reservoir surface (2015). A narrow fringe of cattails line the bank. Asters and Common Milkweed grow adjacent to the pond on the drier ground in late summer.

2.2.7 Plants with High Coefficient of Conservatism (CC) Scores

No plants with CC scores of 8 to 10 were found. Plants with a CC score of 8, 9 or 10 are considered more specialized in habitat or condition and conserve themselves to very specific environments, usually unaltered communities. Plants with low CC scores are considered generalist species that are found in a wide variety of habitats, including disturbed sites.

2.2.8 Plants with Species At Risk (SAR) Designations

No plant species with at-risk designations were found in the study area. Appendix B lists the various species-at-risk categories.

2.2.9 Plants with Provincial Ranking (SRANK) of S1, S2 or S3

One plant species had a SRANK of S3 (rare to uncommon), Hispid Buttercup (*Ranunculus hispidus* var. *hispidus*). It was found in Community 1 (Cultural Woodland) and Community 4 (Shallow Marsh) in sunny, wet areas. It is relatively common in the Upper Thames watershed. SRANKS do not afford legal protection to species; they are used by the MNRF's Natural Heritage Information Centre to track the population status of Ontario's species and set protection priorities.

3.0 Incidental Wildlife

3.1 Methodology

Incidental bird and animal observations were made by Brenda Gallagher while she was undertaking the botanical inventories. Brenda is also an experienced birder. Table 4 summarizes the dates of each of the visits, coinciding with the botanical work.

Table 4. Bird and Wildlife Observations - Dates visited in 2015

Season	Dates
Late Spring	June 1, 2, 3
Early Summer	July 13, 15, 16
Late Summer	Aug 31, Sept 1, 2
Total	**9 days**

3.2 Bird Sightings

A total of 43 bird species from 24 different orders were seen. Appendix C1 provides a list of the bird species sorted by order and Appendix C2 provides a list of birds sorted alphabetically. Of the 43 native species, there were:

- 38 common breeding species and/or permanent residents,
- 2 uncommon breeding species (Bald Eagle and Green Heron),
- 1 uncommon breeding species or common winter resident (Red-breasted Nuthatch), and
- 2 uncommon visitors (Great Egret and Trumpeter Swan)

Most of the songbirds seen use the wooded habitats and nearby fields. None of the bird species seen are exclusively pond dwellers. Local breeding species such as Canada Goose, Mallard, Belted Kingfisher, Great Blue Heron, and Green Heron feed in or by standing water but utilize rivers and streams as well. None of these species are rare or sensitive in Ontario. Other migrating waterfowl may use the pond temporarily during the migration seasons.

The Trumpeter Swan seen was a juvenile. This species has an interesting history. It was extirpated from Ontario and Eastern Canada over 200 years ago and was reintroduced successfully starting in the 1980s (www.wyemarsh.com/swans). The population is expanding and there are over 335 breeding pairs in Ontario (NHIC database).

Photo 12. Song Sparrow. Photo by Brenda Gallagher

3.2 Wildlife Sightings

Brenda Gallagher recorded incidental wildlife seen while undertaking the botanical inventories. Appendix D lists the seven herptiles (reptiles and amphibians), seven Lepidoptera (butterflies) and five mammals seen. All species are common to our area. In 2014 and 2016, UTRCA staff also found the Eastern Red-spotted Newt in the aquatic larval stage.

The Green Frog, American Bullfrog and Snapping Turtle are the only animals seen with a strong affiliation to permanent water bodies. The Green Frog and Snapping Turtle overwinters in permanent water bodies thus the local population within this CA may decline if the dam is removed.

3.3 Species at Risk and Rare to Uncommon Animal Species

Several species with SARO (Species at Risk in Ontario) status and/or S1-S3 SRANKS were found and are listed in Table 4.

Table 4. Species at Risk and Rare to Uncommon Animal Species

Common Name	SARO Status	SRANK S1-S3	Notes
Barn Swallow	Threatened		No nesting structures nearby
Bald Eagle	Special Concern	S2N,S4B	Likely foraging Thames River corridor
Great Egret	--	S2B	Rare breeder in Ont., not breeding here
Snapping Turtle	Special Concern	S3	
Monarch	Special Concern	S2N,S4B	

The **Barn Swallow** (Threatened), seen at Fullarton CA (not nesting), is a common breeding species found throughout southern Ontario. Barn Swallow is listed as Threatened by SARO (Species at Risk in Ontario), meaning the species lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it. There was no breeding evidence at Fullarton CA. According to the Ministry of Natural Resources and Forestry (http://www.ontario.ca/page/barn-swallow), Barn Swallows often live in close association with humans, building their cup-shaped mud nests almost exclusively on human-made structures such as open barns, under bridges and in culverts. Barn Swallows have experienced a significant population decline since the mid-1980s. While there have been losses in the number of available nest sites, such as open barns, and in the amount of foraging habitat in open agricultural areas, the causes of the recent population decline are not well understood. This bird's nests are often destroyed when old buildings in rural areas are demolished or fall down. Massive pesticide spraying of fields can also reduce the insect population Barn Swallows need for food.

The **Bald Eagle** is a species of Special Concern. Special Concern means the species lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats. Special concern species do NOT receive species or habitat protection, however. Bald Eagle populations has made a come-back since the 1950s and 1960s after certain pesticides and chemicals were banned. They more commonly use large rivers such as the Thames, to forage for fish.

The **Great Egret**, has an SRANK of S2B, meaning it is a very rare breeder in Ontario. It is an uncommon visitor in Perth County. There was no breeding evidence at Fullarton CA (just one individual).

Snapping Turtles, a species of Special Concern (S3) were seen using the reservoir and there are records within the nearby Thames River. It is a long-lived species that takes years to come to sexual maturity and a lifetime to replace itself in the population. Persecution and road mortality are key threats to the population. See sections 4.4 and 5.2 for more information.

The **Monarch** butterfly is also a species of Special Concern. The Monarch populations have fallen drastically over the last decade or so, likely due to the elimination of milkweeds along its migration route in the USA and Canada and threats to its overwintering areas in Mexico.

Photo 13. Snapping Turtle. Photo by Scott Gillingwater, UTRCA.

4.0 Significant Natural Heritage Features

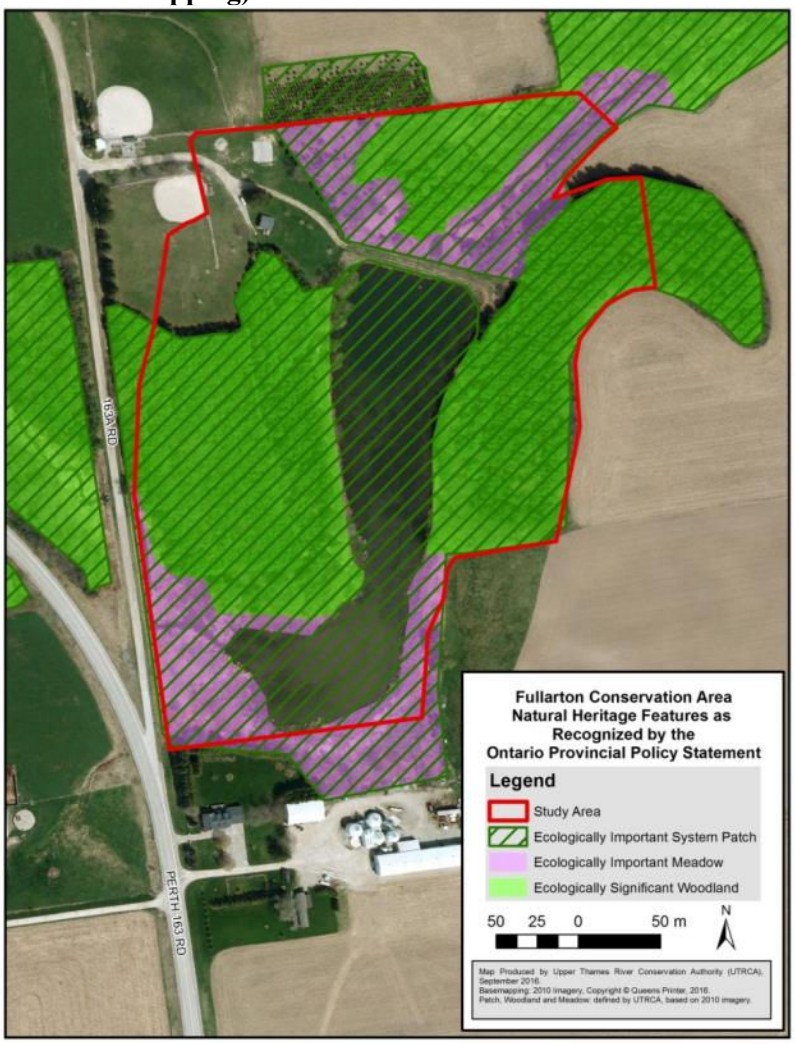
4.1 Woodlands and Natural Heritage Systems

Presently, Perth County designates all woodlands 1ha or larger as significant (see Figure 2). All of the woodland areas within Fullarton CA meet this minimum criterion and are significant.

Perth County does not have a Natural Heritage Systems Study (NHSS), but one is anticipated within the next year or two. The UTRCA has completed the GIS mapping of the natural heritage system using the same methodology and criteria as the draft Oxford Natural Heritage Systems Study (2016). The study includes non-wooded habitats such as meadows, thickets, marshes, and ponds in addition to woodlands/forests. Figure 2 shows the natural heritage patches that meet one or more criteria for ecological importance. All of the non-manicured areas in Fullarton CA are included and deemed ecologically important.

Removing the dam and reservoir and restoring the creek and naturalizing the former pond with native plants will only add to the importance of the area. No existing woodlands will be altered.

Figure 2. Natural Heritage Patches that meet criteria for Ecological Importance (UTRCA mapping)



4.2 Wetlands

Figure 3 shows the unevaluated wetland that runs along the banks of the Neil Drain and into Fullarton CA. Unevaluated wetlands are mapped by both the MNRF and UTRCA using aerial photo interpretation in combination with other data layers such as soils, elevation, groundwater, historic forest cover maps, etc. Both agencies define the area as an unevaluated wetland. There has been no on-site wetland evaluation to verify features. (MNRF map shows Fullarton pond is an evaluated wetland…but incorrect)

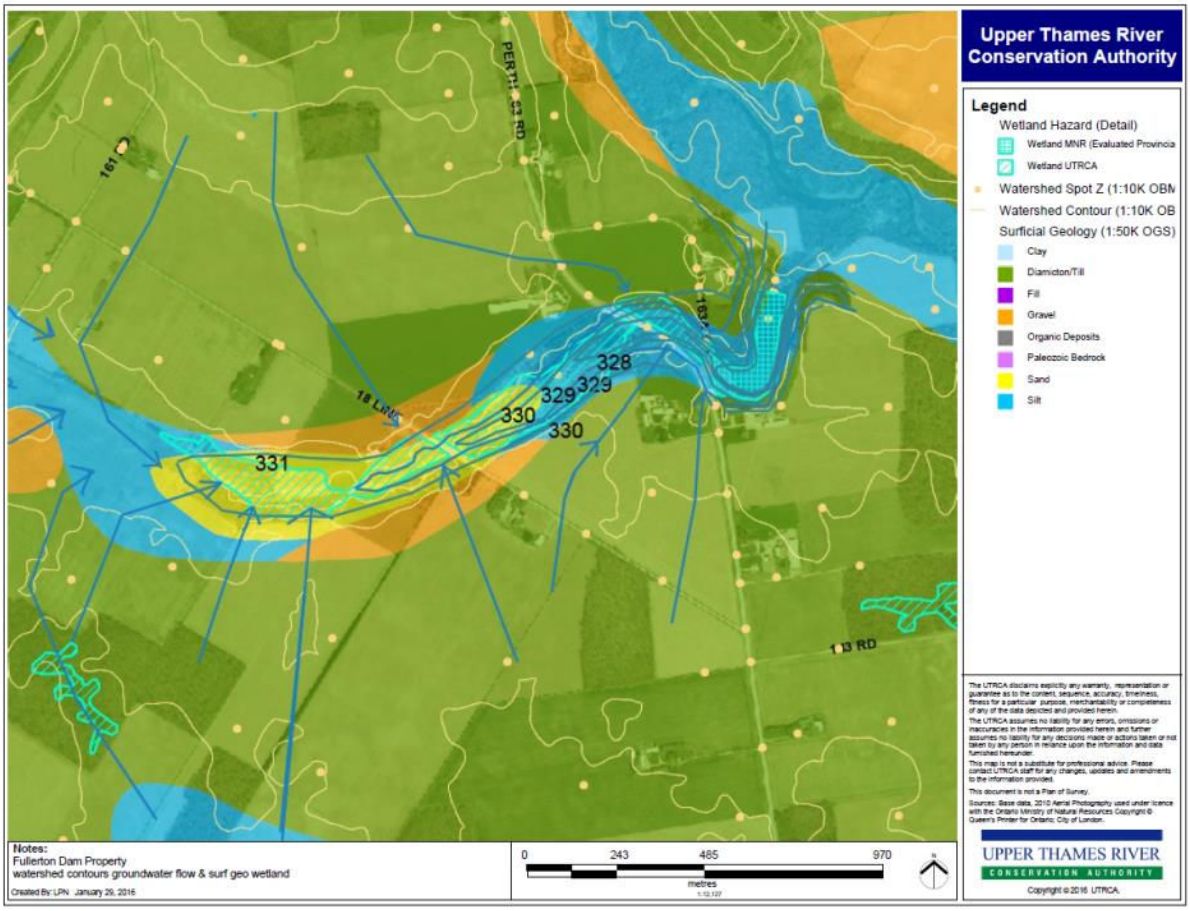
The Neil Drain is a cool/cold water system with groundwater discharge points along the watercourse that create the wetland conditions (see Figure 4). The UTRCA fisheries biologist attempted to sample the benthic organisms at a few spots on the Neil Drain some years back and noted it had a boggy/organic bottom indicating the entire area may have been a swamp historically. There is a shallow aquifer less than 10 m depth in the area as well (see Groundwater report as part of the Fullarton EA). The Neil Drain is a short watercourse with likely good gradient, making it a good site for trout reintroduction.

Aside from the shallow marsh (Community 4) within Fullarton CA, the remainder of this wetland feature is unlikely to be affected by any potential changes to the dam and reservoir. Because of the good gradient on the drain, there is probably no back-water effect from the dam beyond 163 Road. However, if the dam is removed, the road culverts should be examined to ensure they are not perched. Because this is a groundwater dependent wetland, wetland plants will likely reestablish along the restored creek in Fullarton CA (riverine wetland).

There are not many wetlands in the nearby area. The closest evaluated wetland, the Motherwell Blue Heron Swamp, is located 3 kms away east of the North Thames and so is not hydrologically connected.

Figure 3. Unevaluated wetland along Neil Drain (MNRF and UTRCA mapping)

Figure 4. Surficial Geology and Groundwater Flow along the Neil Drain and Fullarton CA



Map Notes:

- The shallow aquifer is in contact with the wetland, thus it is a groundwater dependent ecosystem.
- The long blue arrows indicate shallow groundwater flow and contour lines indicate likely average static level in shallow aquifer
- Water levels are highest in the west (~331 m) and decline towards Fullarton CA
- *Source: Linda Nicks, Hydrogeologist, UTRCA.*

4.3 Areas of Natural and Scientific Interest – Earth and Life Science

Areas of Natural and Scientific Interest (ANSIs) are areas of land and water containing unique natural landscapes or features. These features have been scientifically identified as having life or earth science values related to protection, scientific study or education (www.ontario.ca/page/ontarios-parks-and-protected-areas). There are two kinds of ANSIs:

Life science ANSIs represent biodiversity and natural landscapes. They include specific types of forests, valleys, prairies, wetlands, native plants, native animals and their supportive environments. Life science ANSIs contain relatively undisturbed vegetation and landforms and their associated species and communities. There are no Life Science ANSIs in or near the Fullarton CA.

Earth science ANSIs are geological in nature and contain significant examples of bedrock, fossils, landforms or ongoing geological processes. Figure 5 shows two overlapping earth science ANSIs in the Fullarton area: the North Thames Valley ANSI (orange hatch lines) and the candidate Fullarton Moraine ANSI (olive green hatch lines).

Earth science ANSIs can normally sustain more intensive land uses than life science ANSIs, such as agriculture and more intensive forest management practices. Activities that could impact the integrity of an Earth Science ANSI include aggregate extraction and housing developments requiring extensive re-contouring of the landscape. In general, appropriate activities for Earth Science ANSIs are those that conserve the topography, geological exposures, or other features and processes.

The removal of a man-made dam and restoration of the creek would not interfere with these ANSI features. The Fullarton CA receives tax exemption under the CLTIP (Conservation Land Tax Incentive Program) because it is situated on an earth science ANSI.

Figure 5. Earth Science ANSIs near Fullarton CA

4.4 Species at Risk Records within 2 km of the Study Area

Aside from the species mentioned in section 3.3 (Barn Swallow, Bald Eagle, Snapping Turtle and Monarch) , there are no other Species At Risk records in the UTRCA or NHIC database, either in the Fullarton CA or within 2 kms.

5.0 Discussion and Conclusions

5.1 Vegetation

The vegetation within the Fullarton Conservation Area study area is moderately diverse owing to the mix of habitats including woodland, conifer plantation, marsh, and meadow and pond edge. While the diversity of plants is quite large (229 species) for a small 9 ha site, the overall quality of the five vegetation communities is moderately poor to average. The overall percentage of non-native species is 37%, which is about average and expected for a small, disturbed area. The vegetation communities are early to mid-succession, due to the fact that it has established or restored (planted) since the 1960s and 1980s.

Most of the vegetation communities are unaffected by the existing dam/reservoir or any future alterations to it. The coniferous plantations are located mostly on higher ground as well as the cultural meadow/lawn area. The Cultural Woodland (Community 1) downstream of the dam contains a wetland floodplain community. This community is affected by the natural creek, but has not been influenced by the reservoir above the dam. The creek levels should not change as a result of dam removal. The creek has had natural cycles, overflowing its banks occasionally due to spring flooding or beaver. This, in combination with some groundwater discharge, maintains the wetland features in this vegetation community.

Only the shallow marsh (Community 4) at the upstream end of the pond along Neil Drain is directly tied to the reservoir and would be impacted by changes to the dam. This community has developed within the shallow, calm waters of the reservoir. This small marsh provides diversity to the Fullarton CA, but it not a rare habitat type. If the dam is removed and the creek restored to a flowing regime, the marsh may decrease or increase in size depending on topography and the level of groundwater discharge in the immediate area. Many of the species that occur in the existing marsh would likely grow in the riparian area along the restored creek.

The Fullarton Pond/Reservoir was not surveyed specifically for aquatic plants. White Water Buttercup (uncommon in Perth County but not uncommon in Ontario) was present in large numbers in 2016. If the dam was removed and the creek restored, pond plants such as the White Water Buttercup would not remain.

No plant species at- risk were found in the study area or within 2 km of the study area. No plants with a high Coefficient of Conservatism score were found, indicating most plants are generalist species found in a wide variety of habitats, including disturbed or young sites. Hispid Buttercup was the only plant found with an SRANK of S3 (rare to uncommon), however, it is relatively common in the Upper Thames watershed.

5.2 Birds & Wildlife

Incidental bird and wildlife observations over the six field days (spring, summer and fall) of 2015 were made. Some 43 bird species, all native, were recorded. Most were common breeding species and/or permanent residents. Two uncommon breeding species (Bald Eagle and Green Heron) were seen. The Bald was not breeding but there was evidence that the Green Heron was nesting in the willows. There was one uncommon breeding species or common winter resident (Red-breasted Nuthatch) was seen, but no evidence of breeding. The Great Egret and Trumpeter Swan, both uncommon visitors, also were seen.

None of the 43 bird species seen are exclusively pond dwellers. Species such as Canada Goose, Mallard, Belted Kingfisher and Bald Eagle feed in or by standing water but these species utilize rivers and streams as well. Use of the pond/reservoir by native waterfowl seemed to be on an occasional basis for

feeding and resting but there may be an occasional nesting family. Most of the songbirds seen use the wooded habitats and nearby fields.

Eight herptiles (reptiles and amphibians), seven Lepidoptera (butterflies) and five mammals were seen. All species are common to our area. The Red-spotted Newt, Green Frog, American Bullfrog and Snapping Turtle are the only animals with a strong affiliation to permanent water bodies/ponds. They all overwinter in still permanent water bodies (i.e., not fast moving streams), thus the local populations within this CA may decline if the dam is removed.

5.3 Wildlife Species at Risk and Special Concern

One threatened species, the Barn Swallow, was seen in the study area. There was no breeding evidence at Fullarton CA. Since it nests in old buildings, its nesting habitat will be unaffected by changes to the dam/reservoir.

Three Special Concern species were seen: Bald Eagle, Snapping Turtle and Monarch. Special concern species do not receive provincial species or habitat protection, but they are important to recognize.

Bald Eagles were not breeding at the Fullarton CA and they likely forage throughout the North Thames River corridor for fish. Thus, there is no action that is needed for this species.

Snapping Turtles were seen in the Fullarton Reservoir and there are records of this species within the nearby Thames River as well. Habitat for this species will be lost in Fullarton CA if the reservoir is drained and restored to a creek as this species does not usually use cold/cool water streams because of the temperature. However, they are known to use cold water streams on occasion. Snapping Turtles can hibernate in slower-moving streams with deeper pools, but prefer still-water habitats such as ponds (Scott Gillingwater, Species at Risk Biologist, UTRCA, personal communication). Harm to individual turtles and other amphibians can be avoided during dam deconstruction by slowly releasing water in the summer. This timing gives turtles enough time to locate a new area for hibernation before the cold weather arrives. Creation of an off-line pond may provide habitat for this and other reptiles and amphibians that are currently using the reservoir, but there is limited space in the CA.

The Monarch butterfly is also a species of Special Concern. The Monarch populations have fallen drastically over the last decade or so, likely due to inclement weather, the elimination of milkweeds along the migration routes in the USA and Canada and threats to its overwintering areas in Mexico. There is no specific action at Fullarton CA that is required. Establishment of more riparian vegetation, including its host plant milkweeds, and other nectar plants, will help support this butterfly locally.

5.4 Significant Woodlands, Wetlands and ANSIs

The woodlands within Fullarton CA are defined as Significant Woodlands in Perth County as they are 1 ha or larger. They will not be altered by the possible removal of the dam and reservoir. In time, the former pond will likely fill in with herbaceous and then woody plant communities, thus providing an enlarged area of significant woodland cover.

Most of the unevaluated wetland along the Neil Drain will be unaffected by any changes to dam/reservoir. Hydrogeological information indicates this is a groundwater-dependent wetland and not influenced to any great degree by backwater from the reservoir. The shallow marsh at the upstream end of the Fullarton Reservoir may decrease or increase in size if the dam is removed, but wetland vegetation is will colonize the area around the restored creek, similar to upstream.

The North Thames Valley Earth Science ANSI and candidate Fullarton Moraine ANSI that occur in the Fullarton CA area would be unaffected by changes to the dam/reservoir as no major changes to the topography will be made.

5.5 Conclusions and Recommendations

This report examined the vegetation and wildlife of Fullarton CA to flag any rare or sensitive species that might be impacted if the Fullarton Dam is decommissioned and the creek restored.

No plant species-at-risk were found. However, the aquatic plants in the pond were not surveyed and it is recommended that they be. The Barn Swallow (Threatened) was the only animal species at risk found, but it was not nesting in the CA and no action is required.

The Snapping Turtle, a species of Special Concern, may be negatively impacted by changes to the dam/reservoir since they use the pond and rarely use cold water streams. To protect Snapping Turtles that may overwinter in the pond sediments, the drawdown of the reservoir should be done slowly in the summer, allowing them time to find new sites prior to hibernation. An off-line pond could be created to provide overwintering habitat for the Snapping Turtle and amphibian species.

The unevaluated Neil Drain/Fullarton wetland should be unaffected by the proposed dam removal. The pond area may revert to a shallow marsh community and possibly, in time, a wooded habitat. The watercourse will find its own path through the former pond area, fluctuating naturally with the seasons.

No County Significant Woodland features will be affected by the proposed changes to the dam.

Recommendations

1: Survey the aquatic plants in the pond to ensure no rare species are impacted.

2: If the dam is decommissioned, the drawdown of the reservoir should be done very slowly over summer providing time for Snapping Turtles and other amphibians to find new sites prior to hibernation.

3. If the dam/reservoir is decommissioned, examine the benefits and feasibility of constructing an off-line pond to accommodate snapping turtles and other aquatic wildlife species.

4: If the dam/reservoir is decommissioned, examine the road culverts along the Neil Drain after drawdown to see if any are perched as a result of the water level changes. Correcting perched culvert problems will allow the creek to flow unobstructed.

5: If the dam is decommissioned, monitor the plant species that colonize the former pond bed and augment with seed/plants of native wetland species if needed.

6. If the dam is decommissioned and the creek restored, maintain the trail where it is currently, away from the sensitive creek edges and the unconsolidated sediments from the pond bottom. Consider providing viewing points to the creek that elevates the visitor above the shoreline vegetation height (e.g., a mound or a wooden viewing platform).

Photo 14. Beggar Ticks (*Bidens ceruna*) by the creek downstream of dam

Photo 15. Road culvert on the Neil Drain upstream of Road 163A. A marsh/meadow habitat has established close to the water, with woodland farther back.

References

Lee, H., W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. *Ecological Land Classification for Southern Ontario. First approximation and its application.* Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

Ministry of Natural Resources and Forestry, http://www.ontario.ca/page/barn-swallow.

Appendices

A. Annotated Checklist of the Vascular Plants of Fullarton CA

B. Notes on Descriptive Indices and Plant Status

C1. Bird Checklist from Fullarton Study Area sorted by Order

C2. Bird Checklist sorted alphabetically

D. Animal Sightings (Incidental)

E. Historical Notes and Aerial Photographs

Appendix A. Annotated Checklist of Vascular Plants for Fullarton CA

Names		Indices				Rank, Status		Community				
Scientific Name	Common Name	N_A	Weed	CC	C Wet	S-RANK S1-S3	SARO	1	2	3	4	5
Acer negundo	Manitoba Maple	N		0	-2					x		
Acer platanoides	Norway Maple	A	-3					x				
Acer saccharum	Sugar Maple	N		4	3			x		x		x
Acer saccharinum	Silver Maple	N		5	-3			x	x	x	x	x
Achillea millefolium	Yarrow	A	-1					x	x	x	x	x
Actaea pachypoda	White Baneberry	N		6	5					x		
Actaea rubra	Red Baneberry	N		5	5			x		x		x
Agrimonia gryposepala	Agrimony	N		2	2			x		x	x	x
Alisma subcordatum	Water-plantain	N		3	-5			x				
Alliaria petiolata	Garlic Mustard	A	-3					x	x	x	x	x
Amaranthus retroflexus	Redroot Pigweed	A	-1						x			
Ambrosia artemisiifolia	Common Ragweed	N		0	3			x	x		x	
Ambrosia trifida	Giant Ragweed	N		0	-1			x	x			
Anemone canadensis	Canada Anemone	N		3	-3			x	x	x	x	x
Anemone virginiana var. virginiana	Thimbleweed	N		4	5			x				
Apocynum androsaemifolium	Spreading Dogbane	N		3	5					x		
Apocynum cannabinum	Indian Hemp	N		3	0			x	x	x	x	x
Arctium lappa	Great Burdock	A	-2					x		x	x	x
Arctium minus	Common Burdock	A	-2					x	x	x	x	x
Arisaema triphyllum	Jack-in-the-pulpit	N		5	-2			x		x		x
Asclepias incarnata	Swamp Milkweed	N		6	-5					x	x	
Asclepias syriaca	Common Milkweed	N		0	5			x	x	x	x	x
Barbarea vulgaris	Winter Cress	A	-2					x	x	x		
Bidens cernua	Nodding Beggarticks	N		2	-5			x			x	

Names		Indices				Rank, Status		Community				
Scientific Name	Common Name	N_A	Weed	CC	C Wet	S-RANK S1-S3	SARO	1	2	3	4	5
Bidens frondosa	Devil's Beggarticks	N		3	-3			x		x	x	
Bromus inermis	Smooth Brome	A	-3					x	x	x	x	x
Caltha palustris	Marsh-marigold	N		5	-5			x			x	
Capsella bursa-pastoris	Shepherd's-purse	A	-1						x			
Carya cordiformis	Bitternut Hickory	N		6	0			x		x		x
Carex cristatella	Crested Sedge	N		3	-4					x		
Carex lacustris	Lake Sedge	N		5	-5			x			x	
Carex retrorsa	Retrorse Sedge	N		5	-5							x
Carex stricta	Tussock Sedge	N		4	-5			x			x	
Carex utriculata	Beaked Sedge	N		7	-5						x	
Carex vulpinoidea	Fox Sedge	N		3	-5			x		x	x	
Caulophyllum thalictroides	Blue Cohosh	N		6	5			x				
Cerastium fontanum	Mouse-eared Chickweed	A	-1						x			x
Chenopodium album	Lamb's-quarters	A	-1						x			
Chelone glabra	Turtlehead	N		7	-5			x		x	x	
Chenopodiastrum simplex	Maple-leaved Goosefoot	N		0	5				x			
Cicuta bulbifera	Bulb-bearing Water-hemlock	N		5	-5			x			x	
Cichorium intybus	Chicory	A	-1					x	x	x	x	x
Cirsium arvense	Canada Thistle	A	-1					x	x	x	x	
Circaea canadensis	Enchanter's-nightshade	N		3	3			x		x	x	x
Cirsium vulgare	Bull Thistle	A	-1					x		x	x	x
Clinopodium vulgare	Wild Basil	N		4	5			x	x	x	x	x
Convolvulus arvensis	Field Bindweed	A	-1					x	x			
Erigeron canadensis	Horseweed	N		0	1			x				
Cornus alternifolia	Alternate-leaved Dogwood	N		6	5			x		x		x
Cornus amomum	Silky Dogwood	N		5	-4					x	x	

Names		Indices				Rank, Status		Community				
Scientific Name	Common Name	N_A	Weed	CC	C Wet	S-RANK S1-S3	SARO	1	2	3	4	5
Cornus racemosa	Grey Dogwood	N		2	-2			x		x	x	x
Cornus stolonifera	Red-osier Dogwood	N		2	-3			x		x	x	x
Crataegus sp.	Hawthorn species	N		4	5			x		x		x
Dactylis glomerata	Orchard Grass	A	-1					x	x	x	x	x
Daucus carota	Wild Carrot	A	-2					x	x	x	x	x
Digitaria sanguinalis	Large Crab Grass	A	-1					x	x			
Dryopteris clintoniana	Clinton's Wood Fern	N		7	-4			x				
Echinochloa crus-galli	Barnyard Grass	A	-1						x			
Echinocystis lobata	Wild Cucumber	N		3	-2			x		x	x	x
Echinochloa muricata var. microstachya	Barnyard Grass	N		4	-5			x				
Elaeagnus umbellata	Autumn-olive	A	-3							x		x
Eleocharis acicularis	Needle Spike-rush	N		5	-5						x	
Elymus virginicus var. virginicus	Virginia Wild-rye	N		5	-2						x	
Epilobium ciliatum	Willow-herb	N		3	3			x			x	x
Epipactis helleborine	Helleborine	A	-2							x		x
Epilobium hirsutum	Great Hairy Willow-herb	A	-2					x			x	x
Equisetum arvense	Field Horsetail	N		0	0			x	x	x	x	x
Eragrostis pectinacea var. pectinacea	Tufted Lovegrass	N		0	0			x				
Erigeron annuus	Daisy Fleabane	N		0	1			x	x	x	x	x
Erigeron philadelphicus	Philadelphia Fleabane	N		1	-3			x		x		x
Erigeron strigosus	Narrow-leaved Fleabane	N		0	1			x	x		x	x
Erysimum cheiranthoides	Wormseed Mustard	A	-1					x				

Names		Indices				Rank, Status		Community				
Scientific Name	Common Name	N_A	Weed	CC	C Wet	S-RANK S1-S3	SARO	1	2	3	4	5
Eupatorium perfoliatum	Boneset	N		2	-4			x			x	
Euthamia graminifolia	Grass-leaved Goldenrod	N		2	-2			x	x	x	x	x
Eutrochium maculatum var. maculatum	Spotted Joe-Pye-weed	N		3	-5			x	x	x	x	x
Fagus grandifolia	American Beech	N		6	3					x		
Frangula alnus	Glossy Buckthorn	A	-3					x		x	x	x
Fraxinus americana	White Ash	N		4	3					x	x	x
Fraxinus pennsylvanica	Red/Green Ash	N		3	-3			x	x	x	x	x
Fragaria vesca	Woodland Strawberry	N		4	4			x		x		x
Fragaria virginiana	Wild Strawberry	N		2	1			x	x	x	x	x
Galium mollugo	Wild Madder	A	-2					x	x	x	x	x
Galium palustre	Marsh Bedstraw	N		5	-5			x			x	
Geranium robertianum	Herb Robert	A	-2					x		x		x
Geum aleppicum	Yellow Avens	N		2	-1			x	x	x	x	x
Geum canadense	White Avens	N		3	0			x	x	x	x	x
Geum laciniatum	Cut-leaved Avens	N		4	-3			x			x	x
Geum vernum	Spring Avens	N		7	1						x	x
Glechoma hederacea	Gill-over-the-ground	A	-2						x	x	x	x
Hesperis matronalis	Dame's Rocket	A	-3					x		x		x
Hypericum perforatum	Common St. John's-wort	A	-3					x	x	x	x	x
Impatiens capensis	Spotted Touch-me-not	N		4	-3			x	x	x	x	x
Iris pseudacorus	Yellow-flag	A	-2					x			x	
Juglans nigra	Black Walnut	N		5	3			x		x	x	x
Juncus dudleyi	Dudley's Rush	N		1	0			x				
Juncus effusus	Soft Rush	N		4	-5						x	
Lathyrus latifolius	Everlasting Pea	A	-1					x				
Leersia oryzoides	Rice Cut Grass	N		3	-5						x	

Names		Indices				Rank, Status		Community				
Scientific Name	Common Name	N_A	Weed	CC	C Wet	S-RANK S1-S3	SARO	1	2	3	4	5
Lemna minor	Common Duckweed	N		2	-5						x	
Leontodon autumnalis	Fall Hawkbit	A	-1					x	x		x	x
Leucanthemum vulgare	Ox-eye Daisy	A	-1					x	x	x	x	x
Lilium michiganense	Michigan Lily	N		7	-1							x
Lonicera tatarica	Tartarian Honeysuckle	A	-3					x		x		x
Luzula multiflora ssp. Mulitflora	Common Wood-rush	N		6	3						x	
Lycopus americanus	American Water-horehound	N		4	-5			x		x	x	
Lycopus uniflorus	Bugleweed	N		5	-5			x		x	x	
Lysimachia ciliata	Fringed Loosestrife	N		4	-3			x		x	x	x
Lysimachia nummularia	Moneywort	A	-3					x				x
Lythrum salicaria	Purple Loosestrife	A	-3								x	
Maianthemum racemosum	False Solomon's-seal	N		4	3			x		x		x
Maianthemum stellatum	Starry False Solomon's-seal	N		6	1			x		x		
Malva neglecta	Common Mallow	A	-1						x			
Malus pumila	Apple	A	-1					x		x	x	x
Matricaria discoidea	Pineapple Weed	A	-1						x			
Medicago lupulina	Black Medick	A	-1					x	x	x	x	x
Mentha arvensis	Field Mint	N		3	-3			x		x	x	
Mentha x piperita	(M. aquatica X M. spicata)	A	-1					x		x	x	
Morus alba	White Mulberry	A	-3									x
Nasturtium officinale	Water Cress	A	-1					x			x	
Oenothera biennis	Hairy Yellow Evening-primrose	N		0	3			x	x			
Onoclea sensibilis	Sensitive Fern	N		4	-3			x				

Names		Indices				Rank, Status		Community				
Scientific Name	Common Name	N_A	Weed	CC	C Wet	S-RANK S1-S3	SARO	1	2	3	4	5
Origanum vulgare	Wild Marjoram	A	-2								x	x
Oxalis stricta	European Wood-sorrel	N		0	3			x	x	x	x	x
Panicum capillare	Witch Grass	N		0	0				x			
Parthenocissus inserta	Virginia Creeper	N		3	3			x		x	x	
Persicaria hydropiperoides	Water-pepper	N		5	-5			x				
Persicaria maculosa	Lady's-thumb	A	-1						x			
Phalaris arundinacea	Reed Canary Grass	N		0	-4			x	x	x	x	x
Phleum pratense	Timothy	A	-1					x	x		x	x
Physocarpus opulifolius var. opulifolius	Ninebark	N		5	-2				x	x		
Picea abies	Norway Spruce	A	-1					x	x	x		x
Picea glauca	White Spruce	N		6	3			x		x		x
Pilea pumila	Clearweed	N		5	-3			x			x	
Pinus strobus	White Pine	N		4	3			x		x		x
Pinus sylvestris	Scots Pine	A	-3					x		x		x
Plantago lanceolata	English Plantain	A	-1					x	x	x	x	x
Plantago major	Common Plantain	A	-1					x	x		x	x
Plantago rugelii	Rugel's Plantain	N		1	0			x	x	x	x	x
Poa pratensis ssp. pratensis	Kentucky Bluegrass	N		0	1			x	x	x		x
Populus balsamifera	Balsam Poplar	N		4	-3						x	
Populus deltoides ssp. deltoides	Cottonwood	N		4	-1				x			
Portulaca oleracea	Common Purslane	A	-2						x			
Potentilla recta	Rough-fruited Cinquefoil	A	-2					x	x	x		x
Potentilla simplex	Common Cinquefoil	N		3	4				x	x	x	x
Prunus avium	Sweet Cherry	A	-2							x	x	x
Prunus nigra	Canada Plum	N		4	4							x
Prunus serotina	Wild Black	N		3	3					x		x

Names		Indices				Rank, Status		Community				
Scientific Name	Common Name	N_A	Weed	CC	C Wet	S-RANK S1-S3	SARO	1	2	3	4	5
	Cherry											
Prunus virginiana	Choke Cherry	N		2	1			x		x	x	x
Prunella vulgaris ssp. lanceolata	Heal-all	N		1	0			x	x	x	x	x
Quercus macrocarpa	Bur Oak	N		5	1					x		
Quercus rubra	Red Oak	N		6	3				x			x
Ranunculus acris	Common Buttercup	A	-2					x	x	x	x	x
Ranunculus hispidus var. hispidus	Hispid Buttercup	N		7	0	S3		x			x	
Ranunculus recurvatus	Hooked Buttercup	N		4	-3			x		x		x
Rhamnus cathartica	Common Buckthorn	A	-3					x	x	x	x	x
Ribes americanum	Wild Black Currant	N		4	-3			x		x	x	x
Ribes cynosbati	Prickly Gooseberry	N		4	5			x		x		
Ribes rubrum	Garden Red Currant	A	-2					x		x	x	
Rosa multiflora	Multiflora Rose	A	-3							x		x
Rubus allegheniensis	Common Blackberry	N		2	2			x	x			
Rubus idaeus ssp. strigosus	Wild Red Raspberry	N		0	-2			x	x	x	x	x
Rubus occidentalis	Black Raspberry	N		2	5			x	x	x	x	x
Rumex crispus	Curly Dock	A	-2					x	x		x	
Rumex obtusifolius	Bitter Dock	A	-1					x	x	x		
Rumex orbiculatus	Great Water Dock	N		6	-5						x	
Sagittaria latifolia	Common Arrowhead	N		4	-5			x			x	
Salix alba	White Willow	A	-2					x		x	x	x
Salix interior	Sandbar Willow	N		3	-5						x	x
Sambucus canadensis	Common Elder	N		5	-2						x	x
Sambucus racemosa	Red-berried Elder	N		5	2			x		x		x

Names		Indices				Rank, Status		Community				
Scientific Name	Common Name	N_A	Weed	CC	C Wet	S-RANK S1-S3	SARO	1	2	3	4	5
Sanguinaria canadensis	Bloodroot	N		5	4					x		x
Sanguisorba minor ssp. muricata	Garden Burnet	A	-1									x
Saponaria officinalis	Bouncing Bet	A	-3					x			x	
Schedonorus pratensis	Meadow Fescue	A	-1					x	x		x	
Schoenoplectus tabernaemontani	Soft-stem Bulrush	N		5	-5			x			x	
Scirpus atrovirens	Dark Green Bulrush	N		3	-5			x		x	x	
Scirpus pendulus	Nodding Bulrush	N		3	-5						x	
Scutellaria galericulata	Common Skullcap	N		6	-5			x		x	x	
Setaria viridis	Green Foxtail	A	-1						x			
Silene vulgaris	Bladder Campion	A	-1					x				
Solidago altissima ssp. altissima	Late Goldenrod	N		1	3			x	x	x	x	x
Solidago canadensis var. canadensis	Canada Goldenrod	N		1	3			x	x	x		x
Solanum dulcamara	Climbing Nightshade	A	-2					x		x	x	x
Sonchus arvensis ssp. arvensis	Perennial Sow-thistle	A	-1								x	x
Sonchus asper	Spiny-leaved Sow-thistle	A	-1					x				x
Sonchus oleraceus	Annual Sow-thistle	A	-1					x			x	x
Sorbus aucuparia	European Mountain-ash	A	-2									x
Spiraea alba	Meadowsweet	N		3	-4						x	
Stellaria media	Common Chickweed	A	-1						x			
Symplocarpus foetidus	Skunk-cabbage	N		7	-5			x		x	x	x
Symphyotrichum lanceolatum ssp. lanceolatum	Panicled Aster	N		3	-3			x	x	x	x	x

Names		Indices				Rank, Status		Community				
Scientific Name	Common Name	N_A	Weed	CC	C Wet	S-RANK S1-S3	SARO	1	2	3	4	5
Symphyotrichum lateriflorum	Calico Aster	N		3	-2			x	x	x	x	x
Symphyotrichum novae-angliae	New England Aster	N		2	-3			x	x	x	x	x
Symphyotrichum puniceum	Purple-stemmed Aster	N		6	-5			x		x	x	x
Symphyotrichum urophyllum	Arrow-leaved Aster	N		6	5					x		
Taraxacum officinale	Common Dandelion	A	-2					x	x	x	x	x
Thalictrum pubescens	Tall Meadow-rue	N		5	-2			x		x	x	
Thuja occidentalis	White Cedar	N		4	-3			x		x		x
Toxicodendron rydbergii	Rydberg's Poison Ivy	N		0	0					x	x	x
Tragopogon pratensis	Yellow Goat's-beard	A	-1					x	x		x	
Triosteum aurantiacum	Horse-gentian	N		7	5							x
Trillium erectum	Red Trillium	N		6	1			x				
Trillium grandiflorum	White Trillium	N		5	5					x		x
Trifolium hybridum	Alsike Clover	A	-1						x			
Trifolium pratense	Red Clover	A	-2					x	x	x	x	x
Trifolium repens	White Clover	A	-1					x	x	x		x
Typha angustifolia	Narrow-leaved Cattail	A	-3							x	x	
Typha latifolia	Common Cattail	N		3	-5			x			x	
Ulmus americana	American Elm	N		3	-2			x		x	x	x
Ulmus pumila	Siberian Elm	A	-1					x				
Ulmus rubra	Slippery Elm	N		6	0			x				
Urtica dioica ssp. gracilis	Stinging Nettle	N		2	-1					x	x	
Veronica anagallis-aquatica	Water Speedwell	A	-1					x			x	
Veronica arvensis	Corn Speedwell	A	-1					x				
Verbena hastata	Blue Vervain	N		4	-4			x		x	x	
Veronica	Common	A	-2							x		x

Names		Indices				Rank, Status		Community				
Scientific Name	Common Name	N_A	Weed	CC	C Wet	S-RANK S1-S3	SARO	1	2	3	4	5
officinalis	Speedwell											
Veronica polita	Speedwell	A	-1						x			
Verbena urticifolia	White Vervain	N		4	-1			x	x	x	x	x
Viburnum lentago	Nannyberry	N		4	-1			x		x	x	x
Viburnum opulus ssp. Trilobum	Highbush-cranberry	N		5	-3			x		x		x
Vicia cracca	Cow Vetch	A	-1					x	x	x	x	x
Vinca minor	Common Periwinkle	A	-2								x	
Viola blanda	Sweet White Violet	N		6	-2					x	x	x
Viola canadensis var. canadensis	Canada Violet	N		6	5			x		x		
Viola cucullata	Marsh Violet	N		5	-5			x		x	x	x
Viola pubescens var. pubescens	Downy Yellow Violet	N		5	4			x		x		
Viola sororia	Common Blue Violet	N		4	1			x				x
Vitis riparia	Riverbank Grape	N		0	-2			x	x	x	x	x
Total			**-140**	**518**	**-109**							
Count		**228**	**84**	**144**	**144**	**1**	**0**	**161**	**84**	**132**	**133**	**125**
Average/Mean			**-1.67**	**3.6**	**-0.8**							
OVERALL:												
Number of Native Species		**144**										
Number of Adventive Species		**84**										
Total Number of Species		**228**										
Percent Adventive Species		**37%**										
Mean Weediness Score		**-1.7**										
Number of S1-S3		**1**										
Number of CC 8, 9 or 10 species		**0**										
BY COMMUNITY:												
Mean Weediness Score (-1 to -3)								**-1.7**	**-1.5**	**-1.9**	**-1.7**	**-1.9**
NHIC Exotic status (1 to 5)								**4.5**	**4.7**	**4.6**	**4.5**	**4.4**
Mean CC Score by Community								**3.36**	**2.23**	**3.46**	**3.35**	**3.36**
Mean Wetness Score								**-0.9**	**0.5**	**-0.2**	**-2.0**	**0.1**
Number of S1-S3 Species								**1**	**0**	**0**	**1**	**1**

Note: Ranunculus aquatilis, White Water Buttercup, found in the reservoir (Community 6) in 2016

Appendix B. Notes on Descriptive Indices and Species Status

Descriptive indices such as Mean Conservatism Coefficient (MCC) and Wetness Index (CW) can decrease the variability that is caused by misidentification of species (Coles-Ritchie *et al*. 2004). This is because similar dominant species are often ecological equivalents, in that they are found in similar habitats and perform similar ecosystem functions. For this reason, taxonomic differences, which can be difficult to identify in the field, may not be important when trying to understand the functioning of the riparian ecosystem (Coles-Ritchie *et al*. 2004). Descriptive indices have the advantage of minimizing the influence of differences in species that are unimportant for the index. The most useful indices are those with many gradations that are based on scientific information about vegetation.

Code and Measure	Description	Examples
CC **Coefficient of Conservatism**	Each native plant species is assigned a coefficient of conservatism (CC) score between 0 and 10 using the floristic quality assessment system for southern Ontario (Oldham *et al*., 1995) CCs represent an estimated probability that a plant species is likely to occur in a landscape relatively unaltered from what is believed to be pre-European settlement conditions (DNR Wisconsin 2001). Higher CCs are given to plants more specialized in habitat or condition and conserve themselves to very specific environments and communities (i.e., fidelity to a habitat).	0 to 3: Plants found in a wide variety of plant communities, including disturbed sites 4 to 6: Plants that typically are associated with a specific plant community but tolerate moderate disturbance. Most woodland species fall in this category 7 to 8: Plants associated with a plant community in an advanced successional stage that has undergone minor disturbance. 9 to 10: Plants with a high degree of fidelity to a narrow range of synecological parameters or habitat specialists.
MCC **Mean Conservatism Coefficient**	MCC is used as a measure of the pristiness or lack of disturbance of a site (Oldham *et al*. 1995). Communities or sites with high MCCs contain more plants unlikely to be found in disturbed habitat. Middlesex Natural Heritage Study (UTRCA 2003) found MCC scores of 3.0 to 5.0 in woodland sites. Burke *et al*. 2007 found MCC scores of 4.1 to 5.3 at 12 woodlots with 75 km of London. ***Formula***: Add all of the CC scores for a particular site or community and then divide by the number of species (native only).	3.0 to 5.0 MNHS, UTRCA 2003 4.1 to 5.3 Burke 2007 3.3 to 3.8 London Dykes (UTRCA 2013) London Subwatershed Study, thresholds for woodland protection: <4.0 low priority 4.0 to 4.5 medium priority >4.5 high priority

Appendix B continued		
Number of Conservative Species	The number of plant species with a CC of 8 to 10 gives an indication of site quality and highlights species of concern for management. Dr. Jane Bowls (pers. com) indicated that using CC of 8 to 10 for Conservative Plants is a combination of intuition, convention, experience and data. Species with 0 to 2 CC score are generalists, and 8 to 10 are specialists. The rest are the in-betweens. ***Formula***: Count the number of species with CC score of 8, 9 and 10.	CC scores: 0 to 2 generalist species 3 to 7 in-betweens 8 to 10 specialist species
WEED **Weediness Score**	Each non-native plant species has been assigned a weediness score between -1 and -3, where -1 represents a weed with low invasiveness and a -3 a very invasive species (Oldham *et al*, 1995). The Weediness Score represents an estimated probability that a non-native plant is likely to infest and negatively impact a natural area by displacing native plants.	-1 little or no impact on natural areas -2 occasional impacts on natural areas, generally infrequent or localized -3 major potential impacts on natural areas
MWS **Mean Weediness Score**	The mean weediness score can be used like MCC to measure the representation of weedy adventive (alien) species abundance in a site (Moc 2001). In combination with the percentage of non-native plants, this measure can be used as an indicator of disturbance. Also, it is an indication of the threat to native species from highly invasive adventive species. ***Formula:*** Add all the weediness scores from a particular site or community and divide by the number of non-native species.	-1.0 to -1.6 little or no impact on natural areas -1.7 to -2.3 occasional impacts on natural areas, generally infrequent or localized -2.4 to -3.0 major potential impacts on natural areas **The above is an estimation devised by C. Quinlan at UTRCA using equal divisions between -1 and -3.*
CW (CWet) **Coefficient of Wetness**	Each plant species is assigned a value from -5 to +5 based on the probability of being found in a wetland or not. Usually only native species are used, even though a CW exists for adventive species also.	-5 occurs in wetlands under natural conditions (obligate wetland species) -4 to -2 usually occurs in wetlands, but occasionally found in non-wetlands -1 to 1 equally likely to be occur in wetlands or non-wetlands (facultative) 2 to 4 occasionally occurs in wetlands, but usually occurs in non-wetlands 5 almost never occurs in wetlands under natural conditions (obligate upland)

Appendix B continued

Code and Measure	Description	Values, Examples, Assessments
WI **Wetness Index (Mean Wetness Coefficient)**	Wetness Index is an assessment of a plant community as to whether it has a predominance of wetland species or not. It is not an indication of site quality. The MNHS 2003 found mean wetness coefficients from individual woodland patches ranged from -2.5 to +2.1. Formula: Add all the CW scores (native species only) from a particular site or community and divide by the number of native species found (Michigan DNR).	Examples: -0.4 to -1.1 London Dykes -2.5 to 2.1 MNHS 2003 woodlands Overall: <0 site has a predominance of native wetland species >0 site has a predominance of native upland species

Provincial (SARO) Status:
The Committee on the Status of Species at Risk in Ontario (COSSARO), an independent committee of experts, considers which plants and animals should be listed as at risk. There are seven categories:

Extinct	A wildlife species that no longer exists
EXT - Extirpated	A wildlife species no longer existing in the wild in Ontario but exists elsewhere
END - Endangered	A wildlife species facing imminent extirpation or extinction in Ontario
THR - Threatened	A wildlife species likely to become endangered if limiting factors are not reversed.
SC – Special Concern	A wildlife species that may become a threatened or endangered species because of a combination of biological characteristics and identified threats.
NAR – Not at Risk	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances
UNK – Data Deficient	A category that applies when the available information in insufficient (a) to resolve a wildlife species' eligibility for assessment of (b) to permit an assessment of the wildlife species' risk of extinction

SRanks – Provincial Ranks
SRANKS are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities in Ontario.

SX	Presumed Extirpated	**S1**	Extremely rare in Ontario
SH	Possibly Extirpated (Historical)	**S2**	Very rare in Ontario
SNR	Unranked, or, if following a ranking, rank uncertain (e.g. S3?). S? species are thought to be rare in Ontario but there is insufficient information available to assign a more accurate rank.	**S3**	Rare to uncommon in Ontario
SE	Exotic; not believed to be a native component of Ontario's flora	**S4**	Common and apparently secure in Ontario
SNA	Not Applicable; a conservation status rank is not applicable because the species is not a suitable target for conservation activities (e.g. is exotic or migrant)	**S5**	Very common and demonstrably secure in Ontario
SU	Status unknown		
S2N,S4B	B=breeding, N=non-breeding populations (e.g., breeding area vs. over-wintering area)		

Appendix C1. Bird Checklist from Fullarton Study Area sorted by Order

Common Name	SARO Status	SRANK S1-S3	Regional Status
WATERFOWL			
Canada Goose			Common PR
Mallard			Common BS
Trumpeter Swan			Exotic/Introduced
GALLINACEOUS BIRDS			
Wild Turkey			Common PR
BITTERNS, HERONS & ALLIES			
Great Blue Heron			Common BS or PR
Great Egret		S2B	Uncommon Visitor
Green Heron			Uncommon BS
VULTURES			
Turkey Vulture			Common BS
HAWKS, KITES, EAGLES			
Bald Eagle	SC	S2N,S4B	Uncommon BS
Red-tailed Hawk			Common BS
PLOVERS, SANDPIPERS & ALLIES			
Killdeer			Common BS
PIGEONS & DOVES			
Mourning Dove			Common PR
GOATSUCKERS & SWIFTS			
American Robin			Common BS or PR
HUMMINGBIRDS			
Ruby-throated Hummingbird			Common BS
KINGFISHERS			
Belted Kingfisher			Common BS
WOODPECKERS			
Downy Woodpecker			Common PR
Hairy Woodpecker			Common PR
TYRANT FLYCATCHERS			
Eastern Kingbird			Common BS
Eastern Phoebe			Common BS
Great Crested Flycatcher			Common BS
Willow Flycatcher			Common BS
VIREOS			
Red-eyed Vireo			Common BS

…/2

Common Name	SARO Status	SRANK S1-S3	Regional Status
JAYS, CROWS & RAVENS			
American/Common Crow			Common PR
Blue Jay			Common PR
SWALLOWS			
Barn Swallow	THR		Common BS
Tree Swallow			Common BS
CHICKADEES & ALLIES			
Black-capped Chickadee			Common PR
Red-breasted Nuthatch			Uncommon BS, Common WR
White-breasted Nuthatch			Common PR
WRENS			
House Wren			Common BS
MOCKINGBIRDS & THRASHERS			
Gray Catbird			Common BS
WAXWINGS & SILKY-FLYCATCHERS			
Cedar Waxwing			Common PR
WOOD-WARBLERS			
Common Yellowthroat			Common BS
SPARROWS			
Chipping Sparrow			Common BS
Rufous-sided (Eastern) Towhee			Common BS
Song Sparrow			Common BS
TANAGERS, CARDINALS & ALLIES			
Indigo Bunting			Common BS
Northern Cardinal			Common PR
Rose-breasted Grosbeak			Common BS
BLACKBIRDS			
Common Grackle			Common BS
Northern (Baltimore) Oriole			Common BS
Red-winged Blackbird			Common BS
FINCHES			
American Goldfinch			Common PR
24 orders, 43 species	**2**	**2**	

BS - Breeding Species, PR - Permanent Resident, WR - Winter Resident

SARO Status - Committee on the Status of Species at Risk in Ontario (COSSARO), an independent committee of experts, considers which plants and animals should be listed as at risk. See Appendix B.

SRANK - Provincial Ranks used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities in Ontario. S1 (Extremely Rare), S2 (Very Rare), S3 (Rare to Uncommon).

Appendix C2. Bird Checklist sorted alphabetically

Common Name	Scientific Name	SARO Status	SRANK S1-S3
American Crow	Corvus brachyrhynchos		
American Goldfinch	Carduelis tristis		
American Robin	Turdus migratorius		
Bald Eagle	Haliaeetus leucocephalus	SC	S2N,S4B
Black-capped Chickadee	Parus atricapillus		
Belted Kingfisher	Ceryle alcyon		
Blue Jay	Cyanocitta cristata		
Barn Swallow	Hirundo rustica	THR	
Canada Goose	Branta canadensis		
Cedar Waxwing	Bombycilla cedrorum		
Chipping Sparrow	Spizella passerina		
Common Grackle	Quiscalus quiscula		
Common Yellowthroat	Geothlypis trichas		
Downy Woodpecker	Picoides pubescens		
Eastern Kingbird	Tyrannus tyrannus		
Eastern Phoebe	Sayornis phoebe		
Great Blue Heron	Ardea herodias		
Great Crested Flycatcher	Myiarchus crinitus		
Gray Catbird	Dumetella carolinensis		
Great Egret	Casmerodius albus		S2B
Green Heron	Butorides striatus		
Hairy Woodpecker	Picoides villosus		
House Wren	Troglodytes aedon		
Indigo Bunting	Passerina cyanea		
Killdeer	Charadrius vociferus		
Mallard	Anas platyrhynchos		
Mourning Dove	Zenaida macroura		
Northern Cardinal	Cardinalis cardinalis		
Northern (Baltimore) Oriole	Icterus galbula		
Rose-breasted Grosbeak	Pheucticus ludovicianus		
Red-breasted Nuthatch	Sitta canadensis		
Red-eyed Vireo	Vireo olivaceus		
Rufous-sided (Eastern) Towhee	Pipilo erythrophthalmus		
Red-tailed Hawk	Buteo jamaicensis		
Ruby-throated Hummingbird	Archilochus colubris		
Red-winged Blackbird	Agelaius phoeniceus		
Song Sparrow	Melospiza melodia		
Trumpeter Swan	Cygnus buccinator		
Tree Swallow	Tachycineta bicolor		
Turkey Vulture	Cathartes aura		
White-breasted Nuthatch	Sitta carolinensis		
Willow Flycatcher	Empidonax traillii		
Wild Turkey	Meleagris gallopavo		
Total Birds at Fullarton CA	**43**	**2**	**2**

See Appendix B for descriptions of SARO Status and SRANKs.

Appendix D. Animal Sightings (Incidental)

Common Name	Scientific Name	Exotic	SARO	S-RANK S1-S3	Regional Status
HERPTILES					
American Bullfrog	Rana catesbeiana				Uncommon?
Eastern Garter Snake	Thamnophis sirtalis sirtalis				Common
Green Frog	Rana clamitans melanota				Common
Midland Painted Turtle	Chrysemys picta marginata				Common
Northern Leopard Frog	Rana pipiens				Common
Snapping Turtle	Chelydra serpentina serpentina		**SC**	**S3**	*
Wood Frog	Rana sylvatica				Common
E. Red-spotted Newt	Notophythalmus viridenscens				Common
Total Herptiles	**8**	**0**	**1**	**1**	
LEPIDOPTERA					
Cabbage White	Pieris rapae	SE			Common Exotic
Clouded Sulphur	Colias philodice				Common
Mourning Cloak	Nymphalis antiopa				Common
Monarch	Danaus plexippus		**SC**	**S2N,S4B**	*
Red Admiral	Vanessa atalanta				Common
Red-spotted Purple	Basilarchia arthemis astyanax				Common
Spring Azure	Celastrina argiolus				Common
Total Lepidoptera	**7**	**1**	**1**	**1**	
MAMMALS					
Beaver	Castor canadensis				Common
Eastern Cottontail	Sylvilagus floridanus				Common
Eastern Gray Squirrel	Sciurus carolinensis				Common
Muskrat	Ondatra zibethicus				Common
White-tailed Deer	Odocoileus virginianus				Common
Total Mammals	**5**	**0**	**0**	**0**	
Overall total	**20**	**1**	**2**	**2**	

Note:
Eastern Red-spotted Newt seen in 2014 by Brenda Gallagher and in 2016 by Steve Sauder, UTRCA.

Appendix E. Historical Notes and Aerial Photographs

The 1955 air photo shows the pre-Fullarton CA time frame. The area was mostly farmland except woods by the river. There appears to be a house and barn where the pavilion is today. The Neil Drain was just a narrow watercourse, not well vegetated (likely pastured).

From ***25 years of Conservation*** (1973):

- Initial steps towards creating the Fullarton CA were taken in Oct 1952 when J Wilson Brown reported that 77 acres of property, containing a good trout stream, on the Perth County Road south of the village, were for sale.
- The property was purchased in 1953 from Alonzo Hart estate (or Mr. Allen); development started in September 1955.
- "An earth dam, nine feet high and 300 ft long was built and a five-acre pond created. The dam was completed in November 1955 and the pond in the spring of 1958."
- "In 1962 the county sold the Authority, for the sum of one dollar, 5 ½ acres of land across from the CA for use as a roadside park. Downed timber and weeds were removed and in 1964 the property was used as a test plot for the control of thorn trees, a scourge of farm lands in that section."
- "In 1964 the Authority turned over to the township 4 acres under a 99-yr lease, for creation of a recreation centre as a Centennial project. The Authority also assisted by providing a water supply for the centre and shared in the cost of constructing rest rooms. The centre was officially opened on June 25, 1966 when KE Lantz, Assistant Deputy Minister of Agriculture for Ontario, unveiled an inscribed plaque."
- "During the winter of 1966-67, a large quantity of silt was removed from the pond to increase fish habitat. The pond was deepened and, in the spring of 1967 was restocked with trout. Fullarton is also considered an ideal spot for dog trials."
- Ball diamond #1 put in prior to 1972. Ball diamond #2 put in later by municipality.
- Wildwood crew maintained the site until 1996, after which we handed over management to Fullarton Twp then West Perth. Ongoing agreement.
-
- 1960s UTRCA planted conifer trees on the east side of the pond.
- 1980s UTRCA planted conifers on the west side of the pond.

1955 Aerial Photograph

1972 Aerial Photograph

1978 Aerial Photograph