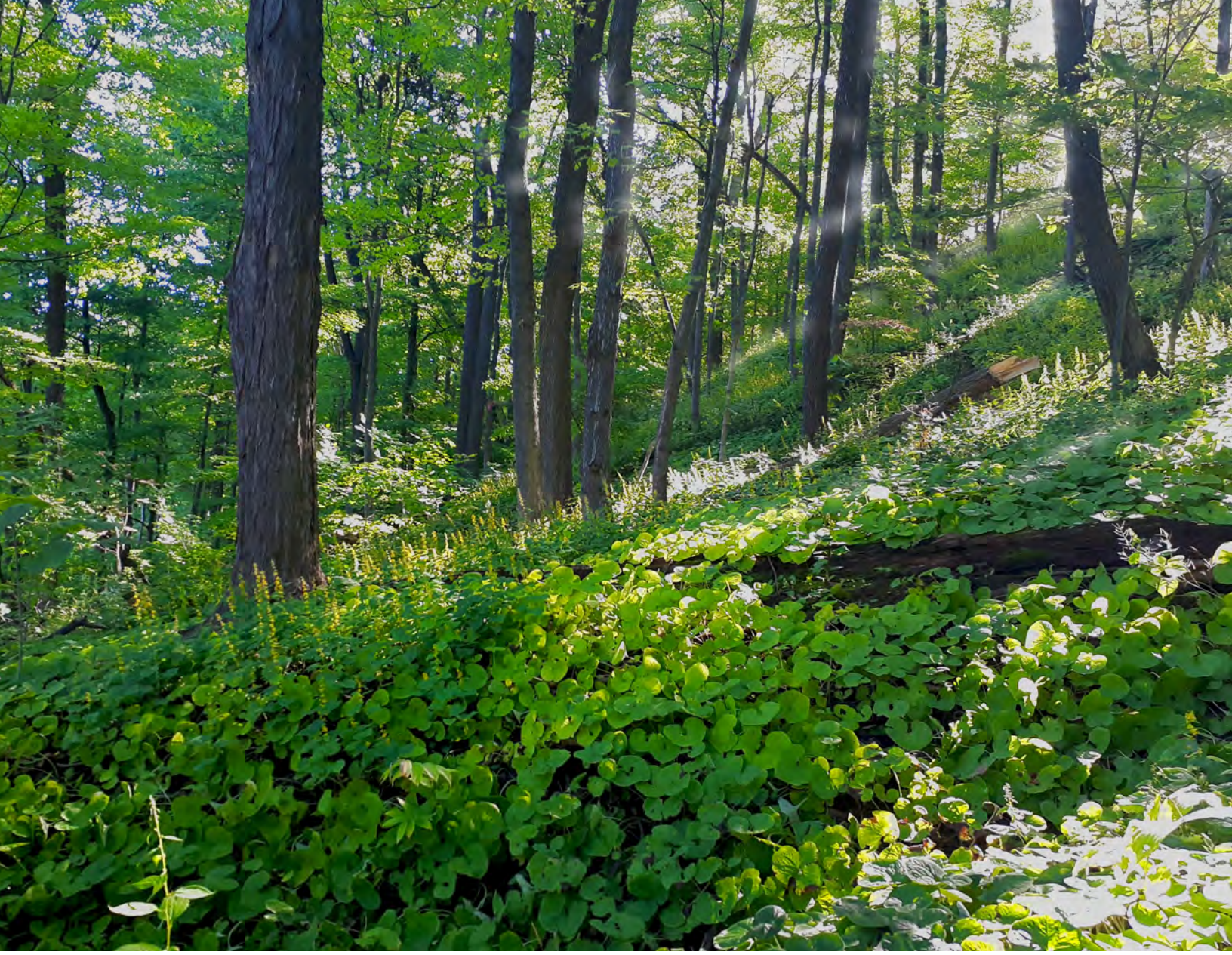

Winona and Vinemount Conservation Areas Management Plan

Draft - February 2023

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Prepared by: Hamilton Region Conservation Authority (HCA)

Photo Credits: HCA Staff; James Lees.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Draft – February 2023

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1.0 APPROVAL STATEMENT

We are pleased to approve the Winona and Vinemount Conservation Areas Management Plan 2022 as the official policy document for the Hamilton Region Conservation Authority (HCA).

This management plan supports HCA's current Strategic Plan and reflects our Vision of a healthy watershed for everyone and Mission to lead in the conservation of our watershed and connect people to nature.

Moving forward over the next ten years this plan will provide guidance for management of Winona and Vinemount Conservation Areas in support of these goals.

_____ _____

Lisa Burnside
Chief Administrative Officer
Hamilton Conservation Authority

Date

_____ _____

To be named
Chair, Board of Directors
Hamilton Conservation Authority

Date

2.0 INTRODUCTION

2.1 Area Summary

HCA acquired these Escarpment tracts of land to protect them from changes that could be detrimental to their sensitive features and functions. The north facing Escarpment slope is steep and tree covered, and exhibits significant plant communities unique for this area of Southern Ontario. When HCA acquired the lands, the Bruce Trail was in place below the Escarpment crest. The Bruce Trail is the official recreational trail for these conservation areas. The major land use surrounding the conservation areas are farm related with a scattering of rural residences along the adjacent roadways. The study area for this plan is shown in *Figure 1. Context Map.*

The original Master Development Plans for Winona and Vinemount Conservation Areas (WVCA) were prepared by HCA staff in 1979. This Management Plan is intended to replace both of those plans, consolidate all available information on file, add new information on current conditions, and recommended best management practices to help guide land management decisions for the next ten years.

In preparing this updated plan for both conservation areas, HCA reviewed the current Niagara Escarpment Parks and Open Space System (NEPOSS) Planning Manual concept of grouping multiple parks into one management plan. The following considerations noted in the manual guided this decision:

- The conservation areas are in close proximity with a shared trail system (Bruce Trail)
- They both have the same environmental features and ecological functions.
- They both have the same level of planning complexity.
- Both areas have the same levels of service, operation and management.

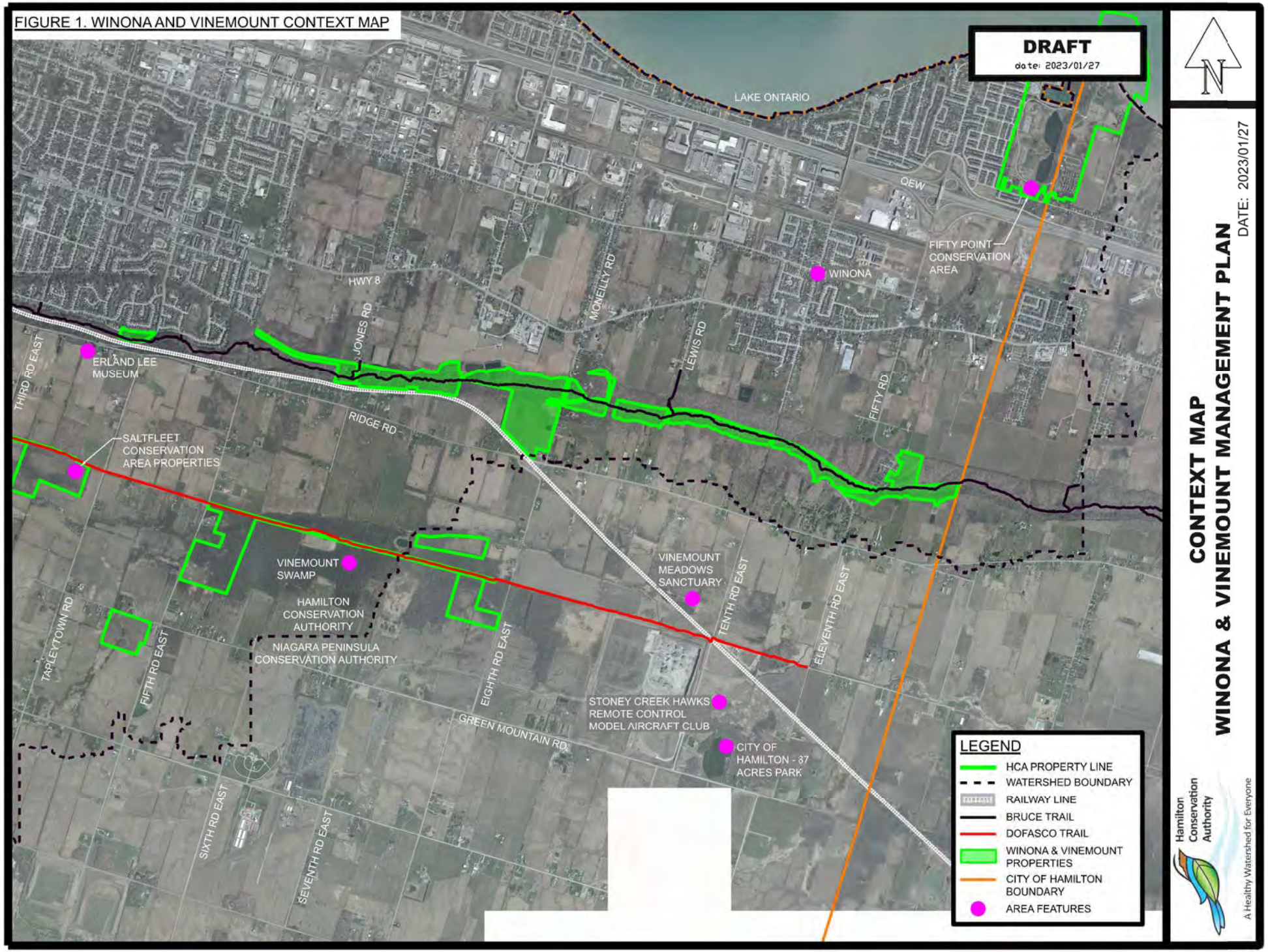
Winona Conservation Area

The 55 ha (137 acres) Winona Conservation Area is located on the Niagara Escarpment in Stoney Creek. It is situated between Devil's Punchbowl Conservation Area 6km to the west, and Vinemount Conservation Area 3 km east. The Bruce Trail runs through the property and is accessible from Macdui Drive, Jones Road, and McNeilly Road.

Vinemount Conservation Area

The 36 ha (90 acres) Vinemount Conservation Area is located on the Niagara Escarpment in Stoney Creek. The Bruce Trail runs through the property and is accessible from Lewis Road, Winona Road, and Fifty Road. Fifty Point Conservation Area is located 2.5km to the north.

FIGURE 1. WINONA AND VINEMOUNT CONTEXT MAP



2.2 Key Items

The majority of the lands are designated by the province or the municipality as Environmentally Significant Areas (ESAs) or as Areas of Natural and Scientific Interest (ANSIs). The actual designation is determined by many reasons, including significant hydrological function, rare habitat, escarpment land, or species at risk to name a few.

HCA's ownership and management of these lands provides protection of their sensitive features and functions. Access to these lands is restricted to the Bruce Trail, and no other visitor amenities (such as parking) to access the trail are proposed in this plan. These lands contribute to the larger natural heritage system in the City of Hamilton and surrounding municipalities, and contribute to the watershed's biodiversity.

2.3 Goals and Objectives

In 1968, Professor L.O. Gertler of the University of Waterloo prepared a study identifying sensitive Niagara Escarpment lands threatened by urban sprawl. The report made recommendations to the Ontario government to protect these lands through acquisition on a priority basis or through the use of easements and lease agreements.

As a result of the Gertler report, HCA developed a comprehensive Escarpment land acquisition program to help preserve the character of the Niagara Escarpment within its area of jurisdiction. As a part of this program, HCA acquired the Winona and Vinemount lands with a view to establishing recreational nodes at five to eight - kilometer intervals. The purpose of this program was two-fold:

1. To preserve the landscape character of significant features of the Niagara Escarpment.
2. To provide recreational access at specific locations along the Escarpment.

This Management Plan supports this Vision for the land acquisition, as well as the following long-term goals as outlined in HCA's current strategic plan:

Vision

- A healthy watershed for everyone.

Mission

- To lead in the conservation of our watershed and connect people to nature.

Commitment and Corporate Values

- Provide excellent customer service and a solution-oriented approach.
- Be accountable, transparent, and responsible in the use of resources.
- Embrace new technologies to help develop new ways of doing business and foster innovation.
- Promote teamwork internally and externally to achieve common goals, support existing

relationships and build new partnerships.

- Maintain trust, act with integrity, and treat others with respect.
- Value knowledge to continually learn and improve, in an effort to achieve best solutions.

Organizational Excellence

- Ensure corporate and financial viability and the HCA's relevance in the community.
- Identify opportunities to engage the community, adjacent landowners and Indigenous Peoples.

Water Management

- Protect the watershed for people, property, flora and fauna, and natural resources through flood and erosion control, water quality programs, low flow augmentation and adaptation strategies to adapt to changing climatic conditions.

Natural Heritage Conservation

- Conservation, restoration and enhancement of watershed natural areas and ecology.
- Continue on-going ecological restoration projects and monitoring programs.
- Identify invasive species strategies and natural heritage plans in the Master plan.

Conservation Area Experience

- Provide high quality, diverse conservation areas that promote outdoor recreation, health, and well-being and strengthen public awareness of the importance of being in or near our conservation areas.
- Update and develop Master and management plans, and implement priorities to further
  enhance conservation areas for current and future generations.

Education and Environmental Awareness

- Provide outdoor learning experiences for students, teachers and the community, increasing knowledge and awareness of the value of our environment and heritage.

Objectives

In addition to the above, and through further consultation and analysis during this Management Plan process, HCA supports the following long-term objectives for Winona and Vinemount Conservation Areas:

1. To preserve and protect the Niagara Escarpment.
2. To provide Bruce Trail through access.
3. That recreational facilities be passive, low density uses centred primarily on nature appreciation and trail-oriented activities.
4. To maintain the current agricultural land use agreements, and upon the expiry of those agreements actively restore the lands back to natural areas.

3.0 BACKGROUND

3.1 Study Area

HCA acquired these tracts of land for natural protection, water conservation, and recreational use. Residential land uses in the area consist of scattered rural residences and estates. The lands in the study area are used for passive recreational activities including hiking and nature study. See the appended maps for more information.

3.2 Property History

HCA recognizes that First Nations inhabited this area before European contact. Respect for the history and stories of indigenous peoples and communities are supported in this management plan.

Non-indigenous settlement is noted in historic records of the formation of Upper Canada in 1792. Settlement of the area increased in 1786, with loyalist immigrants arriving from New York State in the years following the American Revolutionary War. Crown patents were granted to United Empire Loyalists who settled at first below the escarpment but then spread south creating small hamlets.

Following are key highlights of property history know to HCA at the time of land acquisition for the creation of the conservation areas.

.1 Bruce Trail History

The Bruce Trail Conservancy (BTC) is one of Ontario's largest land trusts and the steward of Canada's longest marked footpath. The **"**Bruce**"** of the Bruce Trail refers to the Bruce Peninsula through which the northern-most section of the Trail passes. In the early 1960's as the trail was being conceived, the thought was that this footpath along the full length of the Niagara Escarpment would be a trail "to the Bruce", a popular vacation destination.

The BTC was established in 1960 and by 1963 Regional Clubs were in operation. The Regional Clubs were responsible for organization, landowner approvals, construction and maintenance of portions of the trail. The Iroquoia Bruce Trail Club was formed in Hamilton on September 5, 1963 to build and maintain the BTC main and side trails from Grimsby to the Kelso Conservation Area near Milton.

The Bruce Trail took seven years to complete and was officially opened in 1967, Canada's Centennial Year. The trail runs almost 700km from Queenston to Tobermory, passing along the Escarpment face through the conservation area lands. See *Figure 2. Bruce Trail Map.*

HCA has a partnership agreement with the BTC and the Iroquoia Bruce Trail Club for the maintenance of the Bruce Trail crossing HCA lands. Representatives of the BTC were consulted in the writing of this management plan.

Figure 2. Bruce Trail Map

Map source: Bruce Trail Conservancy

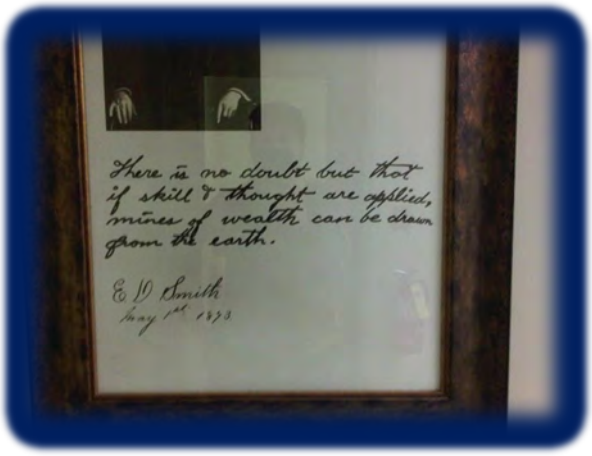
.2 Winona History:

The property was, at one time, in vineyard production but was not known to be a commercial operation. In the early 1970's the area was cleared in preparation for residential development but that idea was turned down by the regional government. When HCA acquired the 3.8ha parcel in 1976 natural succession had taken over much of the lands, with escarpment woodlands surrounding the property. HCA acquired the lands with the intent of preserving the Escarpment plateau, 105 meters of road frontage along Fifty Road, and access to the Bruce Trail. The objective was to allow the land to re-generate to a point where the vegetation was of natural composition matching the surrounding Escarpment woodlots.

In addition to the preservation goal, another key goal was land acquisition, especially Escarpment tableland, to provide recreational areas for picnicking, parking, and scenic lookouts. The major land uses nearby at that time were fruit farming (apple, pear, plum and cherry) and grape vineyards. Some estate residential development was occurring along the Escarpment brow. And a quarry on the Tenth Sideroad East was extracting dolostone, limestone and shale for the building and construction trades.

Although little in the way of history is on file for the conservation area property, much history is available for the surrounding lands. The village of Winona, in the years before Confederation, was known as 'Ontario' and before that 'The Fifty' taken from the creek of the same name. The Great Western Railroad Company built a station in 1850 along the rail line from Hamilton to Vinemount west of what is now Winona Road, and called the stop 'Ontario.' In 1867 when the act of Confederation was passed, the Province of Canada West became the Province of Ontario. The railroad station and area post office as a result, changed their names to 'Winona' after Winonah, the daughter of the Shawnee Indian Chief, Tecumseh. The first area post office was located just to the north of the conservation area on the northeast corner of Fifty Road at Highway 8.

The forests on the Escarpment supplied wood for Piott's basket factory in Stoney Creek in the 1800's. The village of Winona has had many firsts in the history of the Township of Saltfleet including the first community park, watermains, and street lights.



Perhaps the village's most famous citizen, Ernest D'Israeli Smith (1855-1948) introduced Saltfleet's first fruit farming industry in 1875. He was not only a grower but a buyer and shipper of fruit as well as initiating Saltfleet's (and Winona's) first industry in 1882, with the development of the E.D. Smith and Sons food processing plant. This plant remains in use today on Highway 8.

.3 Vinemount History:

In 1972 the Hamilton-Wentworth Planning Area Board and HCA studied the Vinemount area and selected a suitable site on McNeilly Road for establishing a conservation area. In 1972 HCA secured an option on a 16ha farmstead atop the Escarpment. The property was acquired in

three installments between 1972 and 1973. The Vinemount Conservation Area was adopted by HCA in 1973 with the acquisition of Part 9, Concession 3 in the former Township of Saltfleet. HCA requested and received financial assistance with a grant from the provincial Ministry of Natural Resources, amounting to approximately 75% of the estimated cost of the acquisition. Further acquisitions were anticipated subject to land becoming available and as funding and priorities permitted.

Major land uses in the area at the time of acquisition included farming and residential scattered along Ridge Road. The land for the most part was in fruit production. This production supplied the E.D. Smith and Sons Limited fruit canning and preserving factory below the escarpment in the village of Winona, 1 km west of the McNeilly Road/Highway 8 intersection. The Vinemount General Store was located on the northwestern corner of McNeilly Road and Regional Road 25 and functioned as the area post office. The T.H. & B. Railway Line ascended the Escarpment west of HCA property on Lot 10, Concession 3.

For the first ten years of HCA ownership, site development was limited to the following:

- Continued operation of the fruit farm
- Approximately 0.5ha of tableland area at McNeilly Road was developed for day-use with an HCA sign, gravel parking lot for twenty cars, pit privy, split rail fencing, grassed picnic area, and a footpath to viewing areas at the brow of the Escarpment amidst a former cherry orchard.
- HCA and the farmer had service access to the interior of the property via two farm lanes.

HCA entered into a lease agreement to maintain the agricultural operation, the agreement exists to this day for the agricultural land parcel at McNeilly Road / Eighth Road.

The day use facilities that were developed near the escarpment crest, due to their remote rural location at the time, were vandalised and eventually removed. Remnants of the parking area are still visible from McNeilly Road. The physical constraints to reach the Bruce Trail from this location, combined with a lack of municipal services such as sewage systems, limits HCA's development and use of this property for visitors. Accordingly, no visitor facilities are in place for the conservation area other than the Bruce Trail.

.4 Land Acquisition Notes:

HCA acquired most of the lands for the conservation areas from the early 1970's to the late 1990's. Due to the intensive agriculture on the plain above and below the escarpment, the escarpment face and slope were the land parcels HCA focused on acquiring. These lands had multiple constraints to development including the lack of available municipal services, shallow soils, and sensitivity of the Escarpment terraces. A few recent and notable land acquisitions by HCA include:

Llewellyn Smith and Helderleigh Holdings Inc., formerly E.D. Smith Fruit Farms donated 58 acres of forest and fields along the escarpment face by McNeilly Road to HCA in 2010. This donation was comprised of 15 acres of escarpment land by the Smith family home, known as Helderleigh House, and 43 acres of field and slope behind the former E.D. Smith food plant. The donation was made public at HCA's board meeting of November 2010.

In 1976 HCA purchased 9.55 acres in the former Township of Saltfleet for escarpment preservation purposes, and to potentially establish a link below the escarpment to Fifty Point Conservation Area. Natural area inventories of the land at that time noted the significance of the escarpment lands and forest complex for this portion of the Niagara Section of the escarpment.

3.3 Planning and Development Controls

The conservation areas are located in Wards 9 and 10 – Stoney Creek and subject to the planning and development controls of the City of Hamilton.

The conservation areas lands are also subject to additional planning and development controls being within the Greenbelt Plan – Protected Countryside, and the Niagara Escarpment Plan – Escarpment Protection Area. The conservation areas are also classified by the Niagara Escarpment Commission as Natural Environment Areas in the Niagara Escarpment Parks and Open Space Systems (NEPOSS).

The policies of the Niagara Escarpment Plan and guidelines of the NEPOSS 2021 planning manual have been observed in the preparation of this Management Plan.

HCA recognizes that certain public infrastructure such as utility corridors, trails or transportation links may be required to cross conservation area lands. HCA policy for planning review and regulation of these features adheres to the Conservation Authority Act, R.S.O. 1990 c.27; see Section 6.5 for more information.

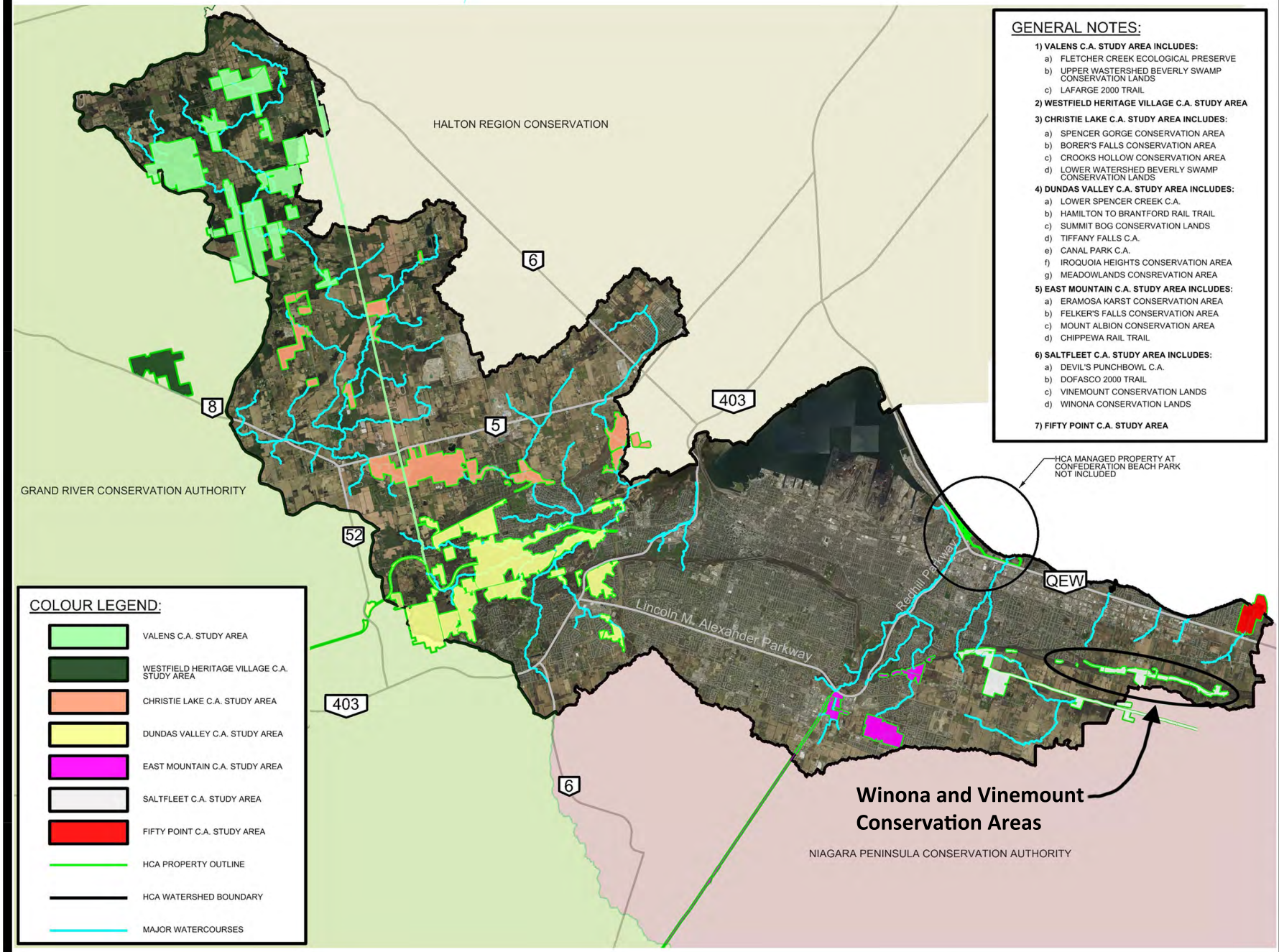
The City of Hamilton planning and development departments, as well as representatives from the Niagara Escarpment Commission; Ministry of Northern Development, Mines, Natural Resources and Forestry; and the NPCA have been consulted in the preparation of this Management Plan.

3.4 Management Plan Zones

The appended maps show the Management Plan Zones for the Winona and Vinemount Conservation Areas.

HCA has approached this management plan with the mind-set that conservation areas in the HCA portfolio requiring master or management plans and updates follow a consistent methodology as set out in HCA's 10 Year Master Plan Update Strategy. The Map shown in *Figure 3.* is from this Strategy.

FIGURE 3. HCA 10-YEAR MASTER PLAN STUDY AREA



MASTER PLAN STUDY AREA MAP

DATE: 2023/01/27

Hamilton Conservation Authority

A Healthy Watershed for Everyone

HCA's 10 Year Master Plan Update Strategy was recently updated by staff and approved by HCA's Board of Directors in 2022. This Strategy applies to all properties that HCA owns and manages. As per this document, guidelines are set out for the completion of HCA Master Plans including Management Plans and Study Areas. This strategy notes that HCA lands that lie within the boundary of the Niagara Escarpment Plan will need Master Plan approval from the Niagara Escarpment Commission (NEC) for HCA to formally ratify them. Consequently, HCA strategically decided to develop all HCA Master Plans within the guidelines of the Niagara Escarpment Parks and Open Spaces System (NEPOSS), which is a requirement of the NEC for any public agency NEPOSS park Master Plans. The NEPOSS policy framework ensures HCA follows a consistent methodology for all plans, and the plans are developed to an appropriate level of detail with sufficient public consultation for all proposed land improvements and uses.

This Management Plan follows the NEPOSS planning manual and identifies two land use zones for Winona and Vinemount Conservation Areas. These zones are intended to help guide future planning, development, and management of the conservation area. The zone boundaries are shown in more detail the appended Conservation Area Zone Maps.

Zones are intended to fulfill a variety of functions in the conservation area, including the following as outlined in the current NEPOSS manual:

- Identification and recognition of the features and attributes (values).
- Protection of key natural heritage features and cultural heritage resources.
- Confirmation of the appropriate locations for activities (i.e. directing activities with higher impacts to the least sensitive areas and low impact activities to areas that are more sensitive, if appropriate).
- Delineation of areas based on their requirements for management (e.g. management plan objectives).
- Standardization to support management objectives and actions, based on values (e.g. Nature Reserve Zones supports protection of sensitive natural heritage features and cultural heritage resources).
- Balancing of public use with the preservation of the natural environment.

The two land use zones identified are:

- Natural Environment Zone
- Resource Management Zone

The following sections briefly describe each zone.

.1 Natural Environment Zone

Natural environment zones include natural, cultural and scenic landscapes in which minimum development is permitted to support recreational activities that have minimal impacts on the Escarpment environment.

This zone is also intended to protect in perpetuity sensitive natural heritage features and values of selected life and earth science areas such as:

- Environmentally Significant Areas (ESA)
- Habitat of endangered, threatened, and rare species or species of special concern.
- Significant Wildlife and fish habitat.
- Hydrological systems (e.g. streams, wetlands, ponds)
- Significant Woodlands
- Areas of Natural and Scientific Interest (ANSI)
- Significant landforms or escarpment features

Management guidance should maintain and enhance the scenic resources and landscape character of the environment.

Sustainable low-impact activities may be permitted such as: recreational trails; wayfinding signs; scientific research and supporting facilities; conservation and restoration practices.

.2 Resource Management Zone

Resource management zones provide for sustainable resource management of agricultural lands, previously disturbed sites, forest products, and land that has a long-term resource agreement such as a managed forest. Recreation uses in this zone are subject to HCA policies and management planning.

This zone is intended to provide for sustainable resource management of forests, fisheries, watersheds, wildlife, or flood control.

Management guidance should support ecosystem structures and functions through effective conservation and stewardship practices. Areas in this zone may be used to demonstrate ecologically sustainable resource management practices.

Permitted management activities include: forest management; research monitoring; fisheries and wildlife management; watershed and flood control management.

4.0 NATURAL AREA INVENTORY

4.1 Natural Features

These conservation lands protect one of the more extensive continuous Escarpment features in the Niagara Peninsula.

The geomorphology of the area contains fine examples of escarpment face, cliff foot talus/side scree slide scars, boulder strewn slopes and narrow sub-escarpment terraces which are somewhat intersected by intermittent stream valleys. Portions of the slopes have very well-developed bedrock-controlled shale terrace which is strongly dissected by valleys.

The area also contains some of the most mature and diverse vegetative species in the Niagara Section of the escarpment. Of particular significance is the excellent slope forest complex which presents a mature array of highly representative features such as forested talus slopes, lower slope forests and others. As well, there is a very well-developed terrace ridge and valley pattern of forests on the narrow sand and shale ridges, similar to those of the Short Hills area in Niagara, or the valley rim forests of the Iroquois Plain.

4.2 Biophysical Inventory Methodology

Biophysical inventories competed at Winona and Vinemount Conservation Areas were mainly restricted to flora, breeding birds and Ecological Land Classification. Surveys completed by HCA staff in 2021 and 2022 are noted in *Table 1*. Ecological Land Classification was completed across the entire property and is shown on Maps 1 and 2 in *Appendix 1.* Species lists are included in *Appendix 4*.

Table 1. Summary of Ecological Field Studies

Survey Type	Dates, Year	Day(s)
Floral Inventory	2021, 2022	Concurrent with ELC surveys
Breeding Bird Surveys	2021, 2022	June 3, June 10, June 21, June 30
Ecological Land Classification (ELC)	2021, 2022	May 12 2021, May 26, June 2, 3 10, 21 and 30, Sept 13, 21 and Oct 6 2022
Incidental Wildlife	Recorded when encountered during all visits – 2021 and 2022	

4.3 Ecological Land Classification

The Ecological Land Classification (ELC) system for Ontario was used to describe the vegetation communities at WVCA. Staff conducted multi-season inventories of the property in 2020-2021. Details on the canopy, sub canopy, shrub and ground layers of each vegetation community were recorded. Vegetation community boundaries were determined using air photo analysis and further refined in the field.

.1 Flora/ Botanical Inventory

Botanical inventories were conducted as a part of the Ecological Land Classification surveys of the property. Specific floristic inventories occurred in the fall of 2022 to further identify asters and goldenrod species as they bloom late in the season. An additional survey in the spring of 2021 was conducted for spring ephemerals (early spring flowers). Species in this group die back by mid-summer and therefore are missed when spring surveys are not conducted. Species nomenclature is based on the Natural Heritage Information Centre (NHIC) Plant Species list (updated yearly). Species and community ranks are determined provincially by the Ministry of Natural Resources and Forestry Natural Heritage Information Centre Database (Sranks) and locally via the Hamilton Natural Areas Inventory (Schwetz 2014)

.2 Fauna Inventory

No specific surveys were conducted for wildlife on the property. All wildlife encounters were incidental while conducting other aspects of field work. These surveys involved general coverage recording all species observations and signs (e.g. tracks/trails, scat, and burrows, dens, browse and vocalizations). Background data including older survey material was used to develop a list of butterflies, mammals and dragonflies that have been recorded by naturalists in the Winona and Vinemount Management Areas over the last 10 years. A summary of the findings is in *Appendix 4*.

Frog call surveys were not conducted on this property due to the lack of suitable habitat.

.3 Breeding Bird Survey

Breeding bird surveys were conducted on June 3, 10, 21 and 30, 2022 and followed the Ontario Breeding Bird Atlas (Cadman 2010) methodology.

4.4 Ecological Land Classification Results

Field surveys occurred on May 12 2021, May 26, June 2, 3 10, 21 and 30, September 13, 21 and October 6 2022. The subject property was delineated into 11 vegetation communities. Details on community classifications can be found in *Appendix 1* on Maps 1 and 2.

.1 Flora/Botanical Inventory Results

Over the course of multiple survey dates including ELC surveys, staff identified 190 species of plants. Of these, 145 are considered native plant species (76%) while 45 are non-native species (24%) and there were an additional 17 species identified to genus only. The Hamilton NAI (HCA 2014) indicates that there are 1496 species of plants in the Hamilton-Wentworth jurisdiction. Plant species within the Winona and Vinemount Conservation Areas represent 13% of that regional flora.

The Floristic Quality Index (FQI) and the Native Mean Coefficient of Conservatism (CC) have been calculated for the entire property. The CC is a measure of the species specificity of habitat requirements, with a coefficient of 0 indicating a plant tolerant of a wide range of conditions and 10 indicating a plant that has the most specific habitat requirements. FQI is a measure of vegetation quality and is based on both the habitat fidelity of each species and species richness. The FQI for both of these Conservation Areas is 52.82 and the mean CC value is 4.39. These are considered moderate to high for FQI and mean CC. This is likely reflective of the rural nature of this conservation area.

Table 2. Floristic Summary and Assessment

FLORISTIC SUMMARY & ASSESSMENT		
Species Diversity		
Total Species:		190
Native Species:		145
Exotic Species		45
Species ID'd to sp. only		17
Total Taxa in Region (NAI 2014)		1496
% Regional Taxa Recorded		13%
% Native species		76%
% exotic species		24%
Co-efficient of Conservatism and Floral Quality Index		
Co-efficient of Conservatism (CC) (average)		**4.39**
CC 0 to 3	*lowest sensitivity*	41
CC 4 to 6	*moderate sensitivity*	90
CC 7 to 8	*high sensitivity*	13
CC 9 to 10	*highest sensitivity*	1
Floral Quality Index (FQI)		**52.82**

4.5 Fauna Inventory Results

.1 Breeding Birds

Breeding bird surveys were conducted within the Winona and Vinemount Management Area in the spring of 2022. These surveys identified 39 species of birds including the Eastern Wood-pewee (*Contopus virens*) which is at risk provincially and federally. Other notable species include the Yellow-billed Cuckoo (*Coccyzus americanus*), Hooded Warbler (*Setophaga citrina*), and Carolina Wren (*Thryothorus ludovicianus*), which are considered rare in the City of Hamilton.

Eastern Wood-pewee

Background data was also collected from the following sources, iNaturalist, Natural Areas Inventory, and eBird. Surveys in 2012 for the NAI identified an additional 46 bird species while eBird and iNaturalist identified an additional 37 species. These were mainly composed of spring and fall migratory species and hawks and owls. These combined data sources have identified 122 species in the area. Of theses 9 are provincial or federal species at risk, 20 are locally rare and 34 are locally uncommon**.**

.2 Butterflies and Dragonflies

Surveys completed for the Natural Areas Inventory in 2012 identified 28 species of Lepidoptera, as well as 10 species of Odonata. One additional species of Lepidoptera was recorded in the area by incidental observation. Observations of Monarch a provincial species at risk occurred in 2012. Three of the butterfly species found in the NAI were locally uncommon. None of the odonatan were provincially or locally rare.

.3 Mammals

All incidental wildlife encounters were recorded while conducting other aspects of field work. Mammal sightings were also recorded during historical surveys conducted for the Natural Areas Inventory. Fourteen mammal species have been recorded for this area by staff and the Natural Areas Inventory. All mammal species recorded are common to the area.

.4 Herpetofauna

Incidental observations by field staff of herpetofauna include 4 different species; the American Toad (*Anaxyrus americanus*), Eastern Gartersnake (*Thamnophis sirtalis sirtalis*), Western Chorus Frog - Carolinian Population (Pseudacris triseriata pop. 2) and Red-spotted Newt (*Notophthalmus viridescens viridescens*). Historical survey data from the Natural Areas Inventory (2012) note an additional 13 species. This includes the Snapping Turtle (*Chelydra serpentine*), Jefferson Salamander and its associated complex (*Ambystoma jeffersonianum*) and Midland Painted Turtle (Chrysemys picta marginata) which are at risk provincially and federally. The Eastern Milksnake (*Lampropeltis triangulum*) is at risk federally.

4.6 Aquatic Inventory

The watercourses of these properties are intermittent in nature some begin as small waterfalls or cascades off the escarpment lip while most begin as groundwater seeps. They contribute to the Stoney Creek Numbered Watercourses 5,6,7,9, and 12(Fifty Creek). Some of the tributaries have sections with deeper gully erosion occurring in the steeper slope areas with the most notable area being the WC#6 features in the area of the Jones Rd. access. These headwater drainage conditions limit their significance on the properties where they occur to being indirect fish habitat. Though they still play an important role in contributing resources to the downstream habitats. Most of the watercourses are small enough that they are forded by tail users, with just a few having culverts or bridge crossings. The city also has road culverts and associated drainage infrastructure adjacent to and potentially extending onto the McNeilly and Fifty Road properties

4.7 Significant Ecological Features

Policies are in place through the City of Hamilton Official Plan and the Provincial Policy Statement to provide for the protection of significant ecological features from development. This section highlights key features and policies of the study area.

.1 Natural Heritage Designations

.1 Significant Woodlands

All of the properties within the Winona and Vinemount Conservation Area are considered by the City of Hamilton to be significant woodland. Significant woodlands for the City of Hamilton mean an area which is ecologically important in terms of features (species composition, age of trees and stand history) and function (contributes to the broader landscape because of its location, size or the amount of forest cover in the planning area) (City of Hamilton, 2019).

.2 Environmentally Sensitive Area

The Devil's Punchbowl Escarpment Environmentally Significant Area (ESA) includes the entire Winona and Vinemount Conservation Areas. The ESA was designated because it meets many of the 2003 ESA criteria including:

1. Significant Earth Science Feature
    a. the area encompasses regionally significant landforms
2. Significant Ecological Function

a. the area contains significant species
b. the area contains rare biotic communities
c. the riparian area serves as a link between natural areas along the Niagara Escarpment
d. the area is representative of the natural features of the Niagara Peninsula section of the Niagara Escarpment

ESA areas are protected within the Rural Official Plan for the City of Hamilton. No new development or site alterations are permitted within or adjacent to ESA's unless it can be shown, through an Environmental Impact Statement (EIS) that there will be no negative impacts on the ecological features or functions of the ESA.

.3 Area of Natural and Scientific Interest (ANSI)

The entire Conservation Area is also part of the provincially significant Niagara Escarpment Section Life Science ANSI. This is one of the largest natural areas on the Niagara Peninsula and includes the talus and forest slopes from McNeilly Road to Regional Road 12 in Niagara. Within this section there are 9 km of moist cliff with extensive talus and clay loam forests of Sugar Maple/Black Maple/Red Elm below. There are a few drier ridges on HCA owed lands close to Fifty Road which support Red Oak forests. This area has a high diversity of plant and bird species and old growth forests.

From Fruitland to McNeilly Road is an additional Provincially Significant Life Science ANSI, Fruitland Escarpment. It has been designated because it is contiguous with the Niagara Escarpment Section ANSI and contributes 65 ha and forms part of a 13.6 km corridor from Hamilton to Niagara.

4.8 Biophysical Inventory – Analysis

.1 Species at Risk and Locally Rare Species

.1 Significant Flora

Butternut, federally and provincially endangered, was the only plant species considered provincially rare that was found in this Conservation Area. There were only a few still surviving the Butternut canker. Of the plant species recorded on the subject lands through the 2020 and 2021 field surveys, one plant species was found to be locally rare, Goldie's Wood Fern by the City of Hamilton.

.2 Significant Fauna

The following eight species recorded at Winona and Vinemount Conservation Areas, listed in *Table 2.* are considered species at risk either federally (SARA) or provincially (ESA). These species were recorded within either Winona or Vinemount Conservation Areas through different data sources all observed during the breeding season except Eastern Whip-poor will which was noted on migration.

Table 3. Federal and Provincial Species at Risk

Common name	Scientific name	SARA status (Schedule 1)	ESA status	Documented
Barn Swallow	*Hirundo rustica*	THR	THR	NAI
Bobolink	*Dolichonyx oryzivorus*	THR	THR	NAI
Eastern Whip-poor-will	*Antrostomus vociferus*	THR	THR	ebird
Wood Thrush	*Hylocichla mustelina*	THR	SC	BBS
Bank swallow	*Riparia riparia*	THR	THR	NAI
Chimney swift	*Chaetura pelagica*	THR	THR	NAI
Jefferson Salamander and complex	*Ambystoma jeffersonianum*	END	END	NAI
Monarch	*Danaus plexippus*	END	SC	NAI

The Barn Swallow and Canada Warbler have been reassessed recently (2020) and Common Nighthawk (2018) by the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) to Special Concern. Neither status has been changed on Schedule 1 of SARA as of the writing of this Management Plan so they will be treated as SAR in this document. Adult Monarchs have been observed throughout the fields and open portions of the forested habitats of this conservation Area. This species is considered a species of "Special Concern" on the Species at risk in Ontario (SARO) list. This means that the species lives in the wild in Ontario but may become threatened or endangered due to a combination of threats and biological characteristics. In 2016 COSEWIC recommended that this species be up listed to endangered on Schedule 1 of the federal SAR listing. This has not occurred. Many of these species at risk noted above are from background documents and their exact location within the Conservation Area is not known. It is likely that the Chimney Swift, Barn and Bank Swallows were seen flying over these Conservation Areas. The Eastern Whip-poor-will was seen on migration. While the Bobolink may have been recorded in the large fields adjacent to these Conservation areas. Although not surveyed for, it is likely that species at risk bats use the conservation areas for parts of their life cycle. Wood thrush was heard in multiple locations within the forested slopes of the Niagara Escarpment. Finally, the Jefferson Salamander records are from the Natural Areas Inventory and likely recorded in the forested talus slopes. This species has been included as it is cryptic species to survey for and it is longed lived. Threatened and endangered species habitat is protected under the Endangered Species Act (provincially) and the Species at Risk Act (federally). Permits may be required for development within the habitat for threatened and endangered species.

There were also a large number of locally rare (23) and uncommon (38) species recorded during field surveys and found in the background research. These include birds, plants and butterflies and are mostly concentrated within the forested sections of the Niagara Escapement. See *Table 3.* for more information.

Table 4. Locally Rare and Uncommon Species

Common Name	Scientific name	City of Hamilton Status	Source
Bald Eagle	*Haliaeetus leucocephalus*	Rare	iNat/eBird
Black-throated Green Warbler	*Setophaga virens*	Rare	iNat/eBird
Broad-winged Hawk	*Buteo platypterus*	Rare	iNat/eBird
Carolina Wren	*Thryothorus ludovicianus*	Rare	BBS
Clay-colored Sparrow	*Spizella pallida*	Rare	NAI
Common Raven	*Corvus corax*	Rare	iNat/eBird
Eastern Whip-poor-will	*Antrostomus vociferus*	Rare	iNat/eBird
Golden-crowned Kinglet	*Regulus satrapa*	Rare	iNat/eBird
Hooded Warbler	*Setophaga citrina*	Rare	BBS
Jefferson Salamander	Ambystoma jeffersonianum	Rare	NAI
Merlin	*Falco columbarius*	Rare	iNat/eBird
Northern Harrier	*Circus hudsonius*	Rare	iNat/eBird
Osprey	*Pandion haliaetus*	Rare	iNat/eBird
Peregrine Falcon	*Falco peregrinus*	Rare	iNat/eBird
Purple Finch	*Haemorhous purpureus*	Rare	iNat/eBird
Red-bellied Snake	Storeria occipitomaculata	Rare	NAI
Red-shouldered Hawk	*Buteo lineatus*	Rare	iNat/eBird
Ring-necked Pheasant	*Phasianus colchicus*	Rare	NAI
Sandhill Crane	*Antigone canadensis*	Rare	iNat/eBird
Sharp-shinned Hawk	*Accipiter striatus*	Rare	BBS
Yellow-billed Cuckoo	*Coccyzus americanus*	Rare	BBS
Alder Flycatcher	*Empidonax alnorum*	Uncommon	NAI
American Kestrel	*Falco sparverius*	Uncommon	NAI
American Redstart	*Setophaga ruticilla*	Uncommon	NAI
Belted Kingfisher	*Megaceryle alcyon*	Uncommon	iNat/eBird
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Uncommon	BBS
Blue-gray Gnatcatcher	*Polioptila caerulea*	Uncommon	NAI
Bobolink	*Dolichonyx oryzivorus*	Uncommon	NAI
Brown Creeper	*Certhia americana*	Uncommon	BBS
Chestnut-sided Warbler	*Setophaga pensylvanica*	Uncommon	BBS
Chimney Swift	*Chaetura pelagica*	Uncommon	NAI
Common Sootywing	Pholisora catullus	Uncommon	NAI
Compton Tortoiseshell	Nymphalis l-album	Uncommon	NAI
Cooper's Hawk	*Accipiter cooperii*	Uncommon	BBS
Eastern Bluebird	*Sialia sialis*	Uncommon	NAI
Eastern Meadowlark	*Sturnella magna*	Uncommon	NAI
Eastern Phoebe	*Sayornis phoebe*	Uncommon	iNat/eBird
Eastern Screech-Owl	*Megascops asio*	Uncommon	iNat/eBird
Herring Gull	*Larus argentatus*	Uncommon	NAI

Common Name	Scientific name	City of Hamilton Status	Source
Least Flycatcher	*Empidonax minimus*	Uncommon	NAI
Mourning Warbler	*Geothlypis philadelphia*	Uncommon	NAI
Nashville Warbler	*Oreothlypis ruficapilla*	Uncommon	iNat/eBird
Northern Mockingbird	*Mimus polyglottos*	Uncommon	NAI
Orchard Oriole	*Icterus spurius*	Uncommon	NAI
Purple Martin	*Progne subis*	Uncommon	NAI
Red-bellied Woodpecker	*Melanerpes carolinus*	Uncommon	BBS
Red-breasted Nuthatch	*Sitta canadensis*	Uncommon	iNat/eBird
Red-tailed Hawk	*Buteo jamaicensis*	Uncommon	BBS
Ruby-throated Hummingbird	*Archilochus colubris*	Uncommon	NAI
Scarlet Tanager	*Piranga olivacea*	Uncommon	NAI
Silvery Blue	Glaucopsyche lygdamus	Uncommon	NAI
Turkey Vulture	*Cathartes aura*	Uncommon	BBS
White-throated Sparrow	*Zonotrichia albicollis*	Uncommon	NAI
Winter Wren	*Troglodytes hiemalis*	Uncommon	BBS
Wood Thrush	*Hylocichla mustelina*	Uncommon	BBS
Yellow-throated Vireo	*Vireo flavifrons*	Uncommon	BBS

.3 Significant Wildlife Habitat

The Significant Wildlife Habitat Technical manual (Ontario 2000) along with the Eco regional criteria tables for Ecoregion 7E (OMNR 2015) were used to determine and define significant wildlife habitat (SWH) on the WVCA properties. Significant wildlife habitat includes broad categories of habitats for flora and fauna. SWH has been identified under the provincial policy statement for Ontario. No new development is allowed within identified portions of significant wildlife habitat unless there will be no negative impact to the form and function of this habitat type (see Section 4.7). The broad categories for significant wildlife habitat include seasonal concentration areas of animals, rare vegetation communities or specialized habitat for wildlife, habitats for species of conservation concern and animal movement corridors.

.4 Seasonal Concentrations of Animals

Seasonal concentrations of animals are areas where wildlife species occur annually in aggregations (groups) at certain times of the year (Ontario 2015). This can include single species concentrations or aggregations of multiple species.

.1 Land bird Migratory Stopover Areas

These are areas with woodlots or forests within 5km of either Lake Ontario or Lake Erie that migratory birds, especially song birds, use as rest stops before or after crossing the great lakes during migration. Land Bird Migration should be studied in woodlots 2-5 Ha in size where woodlots are rare in the area of shoreline (Ontario 2015). Studies are needed to confirm the use of the habitat by > 200 birds/day and with > 35 species with at least 10 bird species recorded on at least 5 different survey dates (Ontario 2015). Winona and Vinemount Conservation Areas are within 5 km of Lake Ontario. HCA staff did not

undertake migratory land bird studies on these properties. It is assumed due to the position on the landscape, both the proximity to Lake Ontario and being some of the remaining forest stands that this area would function as migratory bird habitat. Migration occurs in the spring from April to May and then again from late July to October.

.2 Bat hibernation and Maternity Colonies

Although not surveyed, suitable habitat exists in these conservation areas for both bat hibernation caves and maternity colonies. There are cliffs and talus within these conservation areas that may support bat hibernation. There are also a number of snag trees within the forested communities that would support bat maternity colonies.

.3 Reptile Hibernaculum

This is a difficult type of significant wildlife habitat due to the cryptic nature of snakes. Ecology staff found three eastern gardener snakes near a hole in the talus near Fifty Road. It is assumed this was a hibernaculum. There are likely others along the escarpment that went undetected.

Eastern Garter Snake

.5. Rare Vegetation Communities

These communities include areas that contain a provincially rare vegetation community, as defined by the NHIC and/or areas that contain a vegetation community that is rare within the planning area.

.1 Cliff and Talus Slopes

Cliff and talus slopes occur throughout these Conservation Area. Cliffs are any vertical or near vertical rock that is greater then 3 m in height.

While talus slopes are rock rubble at the base of the cliff. They are rare in the province and sensitive vegetation communities.

.6 Specialized Habitats of Wildlife

This is a community or diversity-based category as many species of wildlife require large areas of suitable habitat for successful breeding. The largest and least fragmented habitats within the planning area will support the most significant wildlife populations.

.1 Seeps and Springs

These are areas where groundwater comes to the surface and are often found within forested areas. The criteria include the presence of two or more seeps or springs. There

are many springs along the talus slope within Winona and Vinemount Conservation Areas. These areas are often used as water sources for wildlife in the winter when other water sources are frozen.

.7 Habitat for Species of Conservation Concern and Rare Wildlife Species

Habitat for species of conservation concern includes wildlife that are listed provincially as species concern or are rare and declining. *Table 4.* provides a list of the six species located within the Winona and Vinemount Conservation Area. This list includes species seen flying over the Conservation Area such as Bald eagle and Peregrine Falcon. Eastern Wood Pewee was noted in several locations within the forested section of the Niagara Escarpment. Midland Painted Turtle, Eastern Milksnake and Snapping Turtle records come from the background materials. These species were likely recorded near small pools or agricultural ponds along the escarpment.

Table 5. Species of Conservation Concern

Common name	Scientific name	SARA status (Schedule 1)	ESA status	Source
Eastern Wood-Pewee	*Contopus virens*	SC	SC	2022
Bald Eagle	*Haliaeetus leucocephalus*	NAR	SC	eBird
Peregrine Falcon	*Falco peregrinus*	NAR	SC	eBird
Midland Painted Turtle	*Chrysemys picta marginata*	NAR	SC	NAI
Eastern Milksnake	*Lampropeltis triangulum*	SC	NAR	NAI
Snapping Turtle	*Chelydra serpentina*	NAR	SC	NAI

4.9 Natural Areas Recommendations

The natural habitat features at WVCA have been evaluated for restoration opportunities and invasive species removals. Restoration in certain areas can assist with buffering the natural habitats from the impacts of moderate to high levels of visitor use.

Priorities for natural areas conservation and restoration in this Management Plan are as follows:

.1 Conservation Targets for Winona and Vinemount Conservation Area (Nature Reserve Zone)

Biodiversity conservation targets are a limited number of species or ecological communities that ecologists select to represent the biodiversity of a protected area, and that therefore serve as the focus for conservation investment. Thus, conservation targets are simply those ecosystems, communities, or species upon which we focus planning and management efforts. Because we use only a handful of targets to plan for biodiversity conservation, selecting the appropriate suite of targets is crucial to successful conservation planning and adaptive management. A course filter/fine filter approach was used when analyzing and describing conservation targets for Winona and Vinemount Conservation Area. Conservation of existing forest and talus habitats and biodiversity is an important target for this Conservation Area. There are few impacts to the Sugar Maple forests, talus and cliffs. A very low level of invasive

species was found and a diversity of species were recorded. These targets and issues were used to provide restoration and enhancement opportunities in the next section.

.2 Restoration/enhancement opportunities in the Nature Reserve, Natural and Resource Management zones

The existing natural habitat features at Winona and Vinemount Conservation Area have been evaluated for restoration opportunities. Restoration in certain parts of this property can assist with enhancing biodiversity and habitat resiliency for the forest and talus along the Niagara Escarpment. Priorities for natural areas restoration are as follows.

1. Enhance biodiversity and long-term forest resiliency

   The talus and forested slopes along the Niagara Escarpment are dominated by Sugar Maple. There is a very low diversity of other species within these forested areas. Butternut and White Ash used to form a canopy along with the Sugar Maple. These two species have been lost to invasive forest pest. In order to ensure these forests are resilient and stable in the long term it is recommended that a diversity of trees and shrubs be planted in these forests. Recommendations would include disease resistant butternut, shagbark and bitternut hickory, basswood and black walnut.

2. Stewardship with private landowners

   These conservation areas form a narrow band of forest through an agricultural and rural landscape. The width of the forested communities is less than 300m wide and HCA generally owns only a portion of this area. Interior forest habitat does not exist within this area. This is reflected in the lack of interior forest birds breeding in these Conservation Areas. Increasing the width of these forested blocks will require work with adjacent private landowners to plant trees in the back portions of unused fields. This would also help add a buffer to these forests as local land uses change. Opportunities for HCA to acquire adjacent lands should also be explored with adjacent landowners, to help conserve the Escarpment habitat.

3. Invasive species should be controlled

   There are low levels of a number of invasive species located within these two conservation Areas. As these populations are low this would be a great opportunity to control these species before large populations establish. More details on this restoration opportunity are outlined in Section 5.2.

5.0 CONSERVATION AREA MANAGEMENT

5.1 Land Management

Land management planning will be accomplished through adherence to the guidelines of the management zones noted in this plan, and through additional resource management plans developed by HCA as necessary. The overall intent will be to ensure protection and conservation of the significant natural areas noted as Natural Zones on the appended maps.

The ecological mapping and species data documented within this plan are provided as a baseline inventory to help guide future land management decisions and project planning. Where active management is required for a particular species, it will be accomplished through an HCA approved resource management strategy considering the guidelines outlined in this plan, and in accordance with policies of all governing agencies.

5.2 Vegetation Management

Additional non-native plant species will not be deliberately introduced into the conservation areas. Introduction of any new plant species by HCA will consider the biodiversity of the site, historical data of species present in the area, research, and additional relevant species inventories and contiguous surroundings within an approved restoration and stewardship strategy. In this plan “non-native” means species not native to Ontario as well as species native to Ontario but not to Hamilton. If established non-native plant species threaten natural heritage values, a program for their eradication will be developed subject to specific guidelines noted in the natural heritage inventory of this plan.

.1 Invasive Species in Winona and Vinemount Conservation Areas

The species detailed below are a threat to the biodiversity and conservation values at Winona and Vinemount Conservation Areas. Trails throughout the Conservation Area are movement pathways for a number of invasive species. The following section details the invasive species that occur in WVCA.

.1 Common buckthorn

Common buckthorn (*Rhamnus cathartica*) is a small tree or shrub that was introduced to Ontario from Eurasia. It was widely planted in farm hedgerows and fencerows as a wind break. It can survive in a wide range of conditions making it very good at invading a variety of habitats (Anderson, 2012). Birds and small mammals feed on the berries of this plant, which has caused it to spread. While the spread of this species is currently limited in the conservation area, an effort will need to be undertaken to prevent future dominance of this species in the community. The focus should begin on all fruiting female trees. These fruiting females can be treated with herbicides and the remaining smaller stems removed through volunteer events and work days. The larger tree-like shrubs may require the cut-stump method of removal. Herbicide should be applied to fresh stumps or girdles or else the tree will re-sprout (Anderson, 2012). This species was low in number throughout the area, except near 50 road where there

are larger polygons of Common Buckthorn close to urban development.

.2 Phragmites

This species of common reed from Eurasia is a perennial grass. It is not clear how it was transported to North America. Phragmites (*Phragmites australis*) is an aggressive plant that spreads quickly and out competes other native species in wetland habitats (Nichols, 2020). It forms large mono cultures that decrease plant biodiversity and create poor habitat for wildlife.

There is currently a small population on HCA property off of Fifty Road. If there is enough water where the population is located (an excess of 30cm), an effective control strategy would include cutting and drowning of stems when water levels are highest in June. If water levels are not favourable for this strategy, pesticide application in the seasonal dry period (September/ October) would be the best option (Nichols, 2020). A combination of these strategies can be employed to best suit the changing conditions within the patch. This population should be prioritized due to its small size which will make control easier and prevent spread into the surrounding community.

.3 Garlic mustard

This species was introduced in the 1800's from Europe as an edible herb for early pioneers in the spring. It is a biennial plant that produces seed in its second year (Anderson, 2012). It can grow in a variety of conditions making it a very good invader in a variety of habitats. It easily outcompetes other native ground cover and can change the soil environments to favour its growth over others. Garlic mustard (*Alliaria petiolata*) can be found throughout much of Vinemount Conservation Area along the Bruce Trail. Removal of this species is fairly straight forward with hand picking between April and June, before the plant goes to seed. With a dedicated effort over 5 years removal of this species can be achieved. Priority should be placed on the removal of second year plants.

.4 Greater Celandine

Greater celandine (*Chelidonium majus*) was introduced to North America from Europe in the 1600s as a medicinal plant (Tree Canada, n.d.). It can grow in dense stands shading out any native diversity, and spreads readily by seed with the help of ants (Invasive Plant Atlas, n.d). There is a small population of Greater Celandine currently growing in Winona and Vinemount Conservation Area along the Bruce Trail. A toxic sap is released when any part of the plant is crushed that could be irritating to the skin and eyes. Therefore, if manual removal is chosen care should be taken by staff to don the appropriate personal protective equipment. It is likely plants will readily grow again from root fragments using manual removal, however this method could be used to limit the spread. In order to fully eradicate the species, it is likely the application of a systemic herbicide will be required to attack the roots of the plant (late fall or early spring) (Tree Canada, n.d.).

.5 Honeysuckle sp.

There are four main species of invasive honeysuckle (*Lonicera*) in Ontario which can be difficult to identify due to their tendency towards hybridization, and the lack of identifying characteristics (flowers and fruits) throughout much of the field season (Tassie and Sherman, 2014). These plants have been brought to North America for three centuries from Europe and Asia as an

ornamental. Invasive honeysuckles can rapidly reproduce, grow quickly, and outcompete beneficial vegetation including our native honeysuckles. Their fruits are attractive to birds and mammals, which aid their spread. Within Winona and Vinemount Conservation Area, there are currently single plants along the Bruce Trails and small polygons throughout other sections of this property. While identification is easiest in the spring during bloom, hand pulling and weed wrenching smaller shrubs should be conducted in the fall as not to disturb the growth of any nearby spring ephemerals. Cutting and girdling larger shrubs should always be paired with the application of herbicide to newly exposed woody material to prevent excessive suckering come next season. Species identification in the spring should be prioritized to ensure only invasive honeysuckles are being treated.

.6 Dame's Rocket

This Eurasian biennial wildflower was introduced to North America in the 1600s and has since invaded many moist woodlands and open spaces (Johnson, 2010). The plant spreads through abundant seed production during its three month long blooming period. There is currently a small population of about 30 plants on the Bruce Trail just west of Fifty Road. Dame's rocket (*Hesperis matronalis*) can be pulled relatively easily from moist soil before the seeds mature in the spring. Alternatively, chemical herbicide can be applied in the late fall to rosettes over the course of a few years until the seed bank is depreciated (Johnson, 2010).

.7 European Privet

European privet (*Ligustrum vulgare*) is a highly invasive ornamental shrub or small tree that is native to Europe, western Asia and northern Africa. It was introduced in the early 1800s, and has since colonized a range of different habitats due to its tolerance for a variety of soil types and environmental conditions (CABI, 2021). Plants may produce 10,000 fruits per tree, which are then spread by wildlife to seed in different areas. European privet also reproduces vegetatively by its roots, so care must be taken not to spread root fragments during control efforts (CABI, 2021). Larger trees or ones difficult to manually remove can receive a basal spray of Garlon (Miller, 2003). There is currently a very small population of European privet in WVCA. This population should be prioritized while it is still small and can more easily be eradicated before it becomes well established.

.8 Multiflora Rose

Multiflora rose (*Rosa multiflora*) is a large perennial shrub that was introduced to North America in the late 1700s for horticultural purposes, and was widely promoted in the 20th century for a variety of uses (Warne, 2018). This plant grows quickly, can self pollinate, produce up to 500,000 seeds a year or more, and forms dense thorny thickets rapidly crowding out native biodiversity. Seeds are widely spread through animal's consumption of the plant's fruits, and can be viable in the seed bank for up to 20 years (Warne, 2018). Hand pulling is an effective control method for seedlings, however larger shrubs will aggressively re-sprout if cut without removing the roots. Therefore, a weed wrench and/or shovels should be used to fully remove the plant. This is a labour-intensive solution, and should prioritize small populations and sensitive areas. Alternatively, glyphosate-based chemical herbicide can be applied in late summer or early fall. A follow up-treatment may be required the following year, with ongoing monitoring to eliminate new seedlings (Warne, 2018).

One large plant has been identified in Vinemount Conservation Area west of Fifty Road. There were also a few scattered stems along the Bruce Trail. Removal or chemical treatment at this location should be prioritized as it can be more easily eradicated and prevent an established population while it is only an individual plant.

An overall invasive species management plan should be developed for the Conservation Area.

5.3 Fish and Wildlife Management

There is no direct fish habitat however the watercourses are still valuable as indirect fish habitat as they transport nutrients and sediment downstream. They should be protected in such a way that this important process is not disrupted.

For Wildlife these lands act as refuge from the largely developed lands around them and as landscape linkages. As such populations should be protected from harvest and harassment on these properties.

For wildlife/human conflict HCA has developed the Hamilton Conservation Authority Wildlife Conflict Management Strategy. This strategy outlines the process and methods staff are to follow when dealing with any animal related issues within all conservation areas. This document was produced by the Hamilton Conservation Authority Wildlife Management Committee (WMC). The WMC was a special committee of the Hamilton Conservation Authority (HCA) that was established in May 2014 based on HCA staff recommendation and at the direction of the HCA Board of Directors. The purpose of the WMC was to develop best management protocols and practices for the management of wildlife on HCA lands.

If already established non-native species threaten the conservation area values, a program for their eradication may be developed if feasible and practical. Missing native species may be reintroduced, and existing populations replenished if feasible and acceptable to HCA.

5.4 Cultural Heritage Management

The following information from the 1979 Winona and Vinemount Master Plans is provided to supplement the property history noted in Section 3.2.

Vinemount is an area rich in history. The first European settlers were the United Empire Loyalists that arrived in the 1780's. E.D. Smith was a pioneer in the production of grapes, having set out vineyards in 1875 on a portion of Lots 7 and 8, concession 1V. Due to the introduction of the grape culture, the small community on the intersection of McNeilly Road and Regional Road 25 was given the name 'Vinemount'.

A house located just south of Ridge Road on the Eighth Road East, Stoney Creek (McNeilly Road) was built around the turn of the 20th century by E.D. Smith and Erland Lee. The building housed a creamery and cheese factory, later to become a spray plant for the fruit industry.

The Women's Institute of Winona bought the building in 1928 for use as a meeting hall. Later the structure became the Vinemount Community Centre and has since been remodeled as a private dwelling.

A frame home built by the late Erland Lee on Regional Road 25 at Tapleytown Road is of provincial historical significance. The home was the site of the first meeting of the Women's Institute of Winona in 1905, the second such women's organization in the world. In 1896, the Toronto, Hamilton and Buffalo Railway was constructed providing rail service from Hamilton to Smithville, in southern Lincoln County. Vinemount was a stopover, but with the advent of the automobile, passenger train service decreased and Vinemounts popularity as a stopover declined.

There are no heritage designations for these conservation areas. However, the City of Hamilton Cultural Heritage Resources Inventory notes a number of properties nearby of heritage designation, historic value, or heritage interest. More historic research and study of the conservation areas is encouraged, to further promote knowledge and understanding about the property and the area cultural history.

Incompatible resource uses and recreational activities will be restricted or prohibited where necessary to protect cultural heritage resources. Any capital projects recommended for the property will require approval by the HCA Board of Directors, and may require approval from the City of Hamilton and the Niagara Escarpment Commission.

Archaeological studies have not been completed for the conservation areas. Archaeological studies in the area have demonstrated that this area of southern Ontario has been occupied by people as far back as 11,000 years ago as the glaciers retreated. More information is noted in HCA's Saltfleet Master Plan from archaeological assessments completed for the Saltfleet constructed wetlands.

Management strategies for any archaeological sites found in the future may range from allowing the sites to remain without interference, to research, excavation, and rehabilitation. Archaeological and historical artifacts may only be removed, and heritage landscapes altered, as part of an HCA approved cultural heritage research or management plan. Protection and management will be undertaken in consultation with all governing agencies and first nations.

5.5 Agricultural

A small field is being actively farmed under a long-standing lease agreement with HCA. The field is on the escarpment tableland at McNeilly Road / Eighth Road. See appended maps for this area.
HCA's long-term vision for active and formerly active agricultural fields is to see the land revert back to natural area. Active management to remove invasive

species, along with restoration planting to enhance these lands is recommended once farming stops. More detailed restoration plans will be required to implement restoration of these lands. HCA will consider restoration strategies when evaluating agricultural lease renewals.

5.6 Managed Forest

The nearest HCA managed forest parcel is the Vinemount Swamp, which is included within the Saltfleet Conservation Area Master Plan. The long-term objective of this plan is to sustain a healthy forest. Invasive species management and restoration projects to help naturalize these areas in support of this objective are noted in Section 4.9.

5.7 Conservation Area Operations

HCA will review the operation plan for these lands and provide staff with information and resources as required to operate the conservation areas on a day to day basis. This will include specific direction for the management and operation of all facilities and activities and address such topics as budgets, staffing, maintenance, enforcement and emergency services. The operation plan will be reviewed annually and updated as required.

Some disturbances to the area lands have been observed by HCA staff over time, including encroachment, unauthorized access (ATV trails), and dumping. The operation plan shall include monitoring of the lands to address these items as they occur. Individual volunteers and partner organizations may also assist in monitoring programs in the conservation area as approved by HCA.

The HCA has the right to suspend operations of any facilities or services due to funding limitations, but in so doing will ensure that heritage values are not impaired and customer service standards are affected as little as possible.

New business practices may be introduced into the conservation area operations in accordance with HCA policy such as:

- Improving operating efficiency and controlling costs.
- Contracting out some operating functions.
- Improving customer service standards.

5.8 Research

HCA’s properties provide, in essence, living laboratories for researchers. HCA staff monitor the health of lands using established protocols as well when needed can develop special research programs to answer resource related questions.

Potential research projects should focus on the natural areas to help guide HCA management efforts for:

- Enhancing forest biodiversity and long-term forest resiliency.
- Improving habitat for breeding birds in stewardship with land areas.
- Invasive species controls for Escarpment lands.

These projects would help support the natural areas recommendations noted in Section 4.9.

Outside Research by qualified individuals that contributes to the knowledge of natural and cultural history and to environmental and recreational management will be encouraged by HCA staff.

All research projects will require authorization from HCA. Authorization is obtained by contacting the staff ecologists who administer the process and issue letters of authorization or permission. This process would also extend to any other activities that could impact the ecological integrity of these lands.

6.0 MANAGEMENT PRACTICES

6.1 Natural Heritage Conservation

This management plan outlines priorities for natural areas conservation and restoration in recognition of the significant ecological features on these lands. As noted in Section 4.7, the conservation areas contain significant woodlands, environmentally sensitive areas, and Areas of Natural and Scientific Interest (ANSI). As noted in Section 4.8, the conservation areas also contain significant flora and fauna species, significant wildlife habitat, rare vegetation communities, and provincially rare cliff and talus slopes of the Niagara Escarpment. Accordingly, HCA supports the recommendations noted in Section 4.9 for natural areas conservation and restoration in this management plan, notably:

- Conservation targets for the Nature Reserve Zone shown on the appended maps.
- Enhancing biodiversity and long-term forest resiliency.
- Stewardship with area landowners to add natural buffer for the forest habitat.
- Control of invasive species.
- Conversion of agricultural/cultivated lands to natural area.

6.2 Water Management

Water crossings of the Bruce Trail are not considered to be navigable under the *Federal Navigation Protection Act* (formerly the *Navigable Waters Protection Act*), thus crossings do not have to provide for navigation.

Under current use the mix of the stream channel crossings is currently sustainable however if traffic on the trails increases there will be a need to formalize more of the forded crossings to structed ones such as bridges to prevent degradation of the stream channels and banks.

Significant gully erosion of some of the WC#6 tributaries in the area of Jones Rd, could impact trail use and location in this area. Given HCA does not own any of the table lands that contribute to these channels we are limited in options to try and reduce this erosion this section of trail should be monitored.

No new trail development is proposed that could adversely affect water resources. Should installation or replacement of culverts, bridges and boardwalk features for water crossings be required, HCA will adhere to federal, provincial and local policies and regulations and any proposed project will be reviewed internally by HCA Ecologists. See Section 4.0 for more information.

6.3 Conservation Area Experiences

HCA acquired these lands on the Niagara Escarpment because of their environmental significance and the overall role they play in the health and natural heritage of the watershed. These properties will continue to remain protected natural areas under HCA control and management.

Public access into the conservation areas is via the Bruce Trail. Property access off trail is only permitted for approved research, see Section 5.8 for more information.

Recreational activities are monitored by HCA and activities may be restricted or prohibited to protect the property, natural resources, and for public safety. During preparation of this plan HCA set up trail counters to monitor the number of visitors entering the conservation area. More information on the trail counts is appended. HCA's trail counter recorded consistent monthly use of the Bruce Trail from May to September. In October, trail visitation doubled with the Thanksgiving holiday and peak of fall colour in this month. Attendance on weekends is typically double over weekdays, with the majority of visitors on the trail mid-day (10am – 3pm).

No visitor parking is provided by HCA for these lands. When offsite parking is found to be causing traffic and safety issues, HCA will enlist the assistance of municipal agencies for traffic control. Traffic control will be evaluated on a case by case basis by all agencies involved. Should this be a persistent problem HCA will work with municipal partners on traffic and visitor management strategies and solutions.

Due to the sensitive nature of the lands, motorized recreational activities are not permitted, with the exception of HCA approved service vehicles and emergency service (EMS) units.

The following recreational activities are currently permitted in the conservation area:

- Hiking
- Nature Appreciation (from trails and designated lookout stations)

To protect the resource and provide a safe recreational experience for all visitors, the following recreational activities are not permitted:

- Cycling
- Horse Riding
- Winter Snowshoeing, Cross Country Skiing
- Unmanned Aerial Vehicle (Drones)
- All-terrain vehicles
- Motor bikes
- Snowmobiling

Approved research activities may be exempt from these restrictions, see Section 5.8.

6.4 Education and Environmental Awareness

HCA encourages further research to provide interpretive and educational information on the natural features and history of this area. Additional signage and rest areas are not anticipated to be required for the trail, however digital opportunities to promote and describe the trail and its features are offered by the Bruce Trail Conservancy. HCA provides online information about the significance of these natural areas and their need for protection. Developing visitors' awareness and appreciation of Ontario's natural and cultural heritage, and fostering a commitment to protect that heritage for all generations is supported in the goals and objectives of this plan.

6.5 Public Infrastructure – Utilities, Trails and Transportation

It is recognized that public infrastructure exists and has historically altered lands in the study area. This section is intended to provide guidance for future HCA management of this land use.

Public infrastructure such as utility corridors (watermains, storm and sanitary sewers, natural gas or oil pipelines, hydro and communication corridors), trails (footpaths, boardwalks) and transportation links may cross conservation area lands. These uses may also have associated rights-of-way, land use agreements, licenses of occupation, permits etc. that are to be considered in the management of the ecological preserve and when implementing items from this management plan.

When new public infrastructure projects are proposed within conservation area owned lands, such uses will be subject, but not limited to, the following criteria:

- The need for the project, area of construction disturbance, and potential site disruption such as soil erosion, flooding, and vegetation loss.
- To maintain or where possible improve or restore key ecological linkages, habitat, and wildlife movement corridors.
- The potential public benefits of the project for research, education, or recreation.

HCA may require detailed environmental assessments, studies, and resource management plans in order to support such land uses.

6.6 Management Guidelines

.1 Permitted Uses

In addition to Section 6.3, leashed dogs are permitted on this portion of the Iroquoia Section of the Bruce Trail. Unleashed dogs anywhere on the Bruce Trail can lead to strained relations with neighbouring landowners. HCA and The Bruce Trail Conservancy review permitted trail uses together, and activities such as dog walking may be banned at their discretion.

.2 Restricted UsesIn addition to the restrictions noted in Section 6.3, no open fires or camping are permitted. Hunting and trapping are not permitted. Foraging is not permitted.

.3 Agreements

HCA has an agreement with The Bruce Trail Conservancy to manage this portion of the Bruce Trail in the conservation area. The HCA may enter into other management agreements to assist with specific management items in the conservation area. HCA values the support from area residents and landowners, businesses, service clubs and volunteer organizations that currently or could contribute in a variety of ways. The HCA will continue to nurture existing support and seek out new opportunities for community partnership agreements.

6.7 Maintenance Guidelines

.1 Bruce Trail Maintenance

The Bruce Trail Conservancy oversees a Land Stewardship Program to maintain the Bruce Trail. The program is administered through the Iroquoia Club Land Steward Director, and volunteer Land Stewards. Land Stewards visit the property at least twice a year, complete annual reports on the conditions of the property, provide input into stewardship plans, and help with stewardship activities such as maintaining trail blazes and signs, trail clearing and maintenance, and removing garbage.

.2 Conservation Area Maintenance

.1 Vegetation Clearing

Vegetation is only to be removed on the Bruce Trail to ensure safe sight lines, reduce hazards and encroachment onto the trail. Any vegetation clearing beyond the trail is subject to review by HCA. Best management practices are to be followed so that maintenance activities, equipment and tools do not spread invasive species.

Trees and brush may be cut and pruned only to enable resource management as supported by this plan, to ensure public safety, and service easements (utility corridors) subject to specific service agreements. Trees and brush cut will be left to deteriorate naturally as close as possible to where they have been felled, or if that is not feasible, may be chipped and used (not on the trails) by HCA in other conservation areas.

Chemical fertilizers, herbicides, pesticides and suppressants will not be used for any vegetation management purpose except: insect and disease control under conditions set out in this plan; and eradication of non-native species where it has been demonstrated other methods are not feasible.

.2 Fencing

Boundary fencing may be considered to protect sensitive ecological areas from public access, for research purposes, or for public safety. Boundary fencing will be maintained by HCA, along with the appropriate signage.

.3 Lighting

The trail will not be lit and is intended to only be open sunrise to sunset.

.4 Garbage Collection

Garbage cans will not be provided. Trail users are expected to practice “pack in-pack out” trail etiquette.

.5 Washrooms

No washrooms are provided along the trail. Information signs may be used to direct trail users to conservation area parking areas and washrooms.

.6 Winter Maintenance

There will be no snow removal along the trail.

.7 Signage

Five types of signs are permitted along the trail: information, designation/direction, regulatory, warning, and interpretive. All signs are to follow the partners sign standards.

Information signs are intended to provide general information about the trail, identify the trail and may include a map.

Designation/direction signs are for wayfinding and may include maps for orientation. These signs are to be placed at trail heads / entry points and at trail nodes. Entrance signs, map boards, blazes, and trail post markers are some examples of this type of signage.

Regulatory signs are to be placed at roads. Warning signs are to be placed where there are anticipated safety concerns. Municipal traffic signs are an example of this type of signage.

Interpretive signs are intended to provide educational information on the site features and history of the area. Memorial plaques are an example of this type of signage.

.8 Watercourses

Trail maintenance at watercourse crossings is to be reviewed by both HCA and the Bruce Trail Conservancy. This requirement includes reviewing features such as culverts, boardwalks, bridges, and associated structures before maintenance work proceeds.

.9 Invasive Species

Invasive species removal is recommended as high priority, especially where the ESA’s could be threatened. A separate and more detailed invasive species management plan is recommended in order to plan and prioritize this work.

7.0 SUMMARY

7.1 Implementation Priorities

Winona and Vinemount Conservation Areas are unique natural areas with environmentally sensitive lands. The overall intent of this management plan is to ensure protection and conservation of the natural areas, while allowing visitors passive day use recreation opportunities walking through the area on the Bruce Trail.

Continued safe enjoyment of the Bruce Trail requires on-going maintenance. HCA will continue to work with the Bruce Trail Conservancy in support of this goal.

In summary, the following priority items are recommended to be implemented for the life of this management plan:

.1 Environmental Management:
See Section 4.9 Natural Areas Recommendations for more information.

.2 Trail Maintenance:
Conduct maintenance inventory to assess annual requirements for trail clearing, surfacing
and condition reviews. Provide design and maintenance recommendations to the Bruce Trail Conservancy.

.3 Signage Replacements:
Signs are to be replaced by HCA and the Bruce Trail Conservancy in priority sequence to ensure public safety.

8.0 APPENDIX CONTENTS

1. Mapping
2. Capital Development Priorities
3. Trail and Vehicle Counter Data
4. Species Inventories
5. References

APPENDIX 1

Mapping

Map 1	Winona Conservation Area ELC
Map 2	Vinemount Conservation Area ELC
Map 3	Winona Conservation Area Zones
Map 4	Vinemount Conservation Area Zones

MAP 1. WINONA ECOLOGICAL LAND CLASSIFICATION

DRAFT
date: 2023/02/06

HIGHWAY 8
JONES ROAD
DEWITT RD
MACDUFF DR
FODM4
TAPLEYTOWN ROAD
FIFTH ROAD E
FODM2-4
FODM5-1
TATC1-4
FODM4
CLT1-2
NS
EIGHTH ROAD E
WODM4-2
RIDGE ROAD

LEGEND

- HCA PROPERTY LINE
- HCA PROPERTY OUTSIDE STUDY AREA
- HCA WATERSHED LIMIT
- RAILROAD TRACKS
- BRUCE TRAIL
- WATERCOURSE
- ELC AREA

ECOLOGICAL LAND CLASSIFICATION

CLT1-2	SUGAR MAPLE IRONWOOD WHITE ASH TREED CARBONATE CLIFF TYPE
FODM4	DRY-FRESH UPLAND DECIDUOUS FOREST ECOSITE
FODM2-4	DRY-FRESH OAK-HARDWOOD DECIDUOUS FOREST TYPE
FODM5-1	DRY-FRESH SUGAR MAPLE DECIDUOUS FOREST
NS	NOT SURVEYED
TATC1-4	FRESH MOIST SUGAR MAPLE CALCEREOUS TREED TALUS TYPE
WODM4-2	WHITE ASH DECIDUOUS WOODLAND TYPE

ECOLOGICAL LAND CLASSIFICATION
WINONA & VINEMOUNT C.A. MANAGEMENT PLAN

DATE: 2023/02/06

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MAP 2. VINEMOUNT ECOLOGICAL LAND CLASSIFICATION

DRAFT
date: 2023/02/06

HIGHWAY 8
LEWIS RD
WINONA RD
FIFTY RD
RIDGE ROAD
TENTH ROAD E

FODM5-1
TATC1-4
CLT1-2
FODM3-1
CVR
FODM5-3
THDM4-1

LEGEND

- HCA PROPERTY LINE
- HCA WATERSHED LIMIT
- RAILROAD TRACKS
- BRUCE TRAIL
- WATERCOURSE
- ELC AREA

ECOLOGICAL LAND CLASSIFICATION

CLT1-2	SUGAR MAPLE IRONWOOD WHITE ASH TREED CARBONATE CLIFF TYPE
CVR	RESIDENTIAL
FODM3-1	DRY-FRESH POPLAR DECIDUOUS FOREST TYPE
FODM5-1	DRY-FRESH SUGAR MAPLE DECIDUOUS FOREST TYPE
FODM5-3	DRY-FRESH SUGAR MAPLE-OAK DECIDUOUS FOREST TYPE
TATC1-4	FRESH MOIST SUGAR MAPLE CALCEREOJS TREED TALUS TYPE
THDM4-1	NATIVE DECIDUOUS REGENERATION THICKET TYPE

ECOLOGICAL LAND CLASSIFICATION
WINONA & VINEMOUNT C.A. MANAGEMENT PLAN

DATE: 2023/02/06

Hamilton Conservation Authority
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MAP 3. WINONA CONSERVATION AREA ZONES

DRAFT
date: 2023/01/30

HIGHWAY 8
JONES ROAD
JONES ROAD
BRUCE TRAIL
ACCESS POINT
DEWITT RD
MACDUI DR
EIGHTH ROAD E
SEE MAP 4.
VINEMOUNT
ZONE MAP FOR
MORE
INFORMATION
RIDGE ROAD
TAPLEYTOWN ROAD
FIFTH ROAD E
SEE SALTFLEET
CONSERVATION AREA
2022 MASTER PLAN FOR
MORE INFORMATION

N
N
N
N
N
N
N
RM

LEGEND

- HCA PROPERTY LINE
- HCA PROPERTY OUTSIDE STUDY AREA
- RAILWAY
- BRUCE TRAIL
- HCA WATERSHED BOUNDARY

CONSERVATION AREA ZONES*

- N NATURAL
- RM RESOURCE MANAGEMENT

* ZONES FOLLOW CRITERIA SET OUT IN THE NIAGARA ESCARPMENT PLAN AND NIAGARA PARKS AND OPEN SPACE SYSTEM (NEPOSS) PLANNING MANUAL

WINONA CONSERVATION AREA ZONES
WINONA & VINEMOUNT C.A. MANAGEMENT PLAN

DATE: 2023/01/30

Hamilton Conservation Authority
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MAP 4. VINEMOUNT CONSERVATION AREA ZONES

DRAFT
date: 2023/01/30

HIGHWAY 8
LEWIS RD
WINONA RD
FIFTY RD
LEWIS ROAD BRUCE TRAIL ACCESS POINT
SEE MAP 3. WINONA ZONE MAP FOR MORE INFORMATION
RIDGE ROAD
TENTH ROAD E
ELEVENTH ROAD E
N

LEGEND
- HCA PROPERTY LINE
- HCA PROPERTY OUTSIDE STUDY AREA
- BRUCE TRAIL
- HCA WATERSHED BOUNDARY

CONSERVATION AREA ZONES*
- N NATURAL

* ZONES FOLLOW CRITERIA SET OUT IN THE NIAGARA ESCARPMENT PLAN AND NIAGARA PARKS AND OPEN SPACE SYSTEM (NEPOSS) PLANNING MANUAL

VINEMOUNT CONSERVATION AREA ZONES
WINONA & VINEMOUNT C.A. MANAGEMENT PLAN

DATE: 2023/01/30

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APPENDIX 2

Capital Development Priorities

Appendix 2

DRAFT – WINONA & VINEMOUNT CAPITAL PRIORITIES: 2022 - 2032

A.	**Trail Infrastructure Improvements**	***Budget (XX)**
A1	Bruce Trail Improvements by the Bruce Trail Conservancy in agreement with HCA	na
B.	**Conservation Area Improvements**	***Budget (XX)**
B1+	Invasive Species Management	
B2+	Natural Areas Restoration	
B3	Signage	

* Budget costs are in 2022 dollars, projects and budgets to be reviewed annually.
+ Costs subject to ecological findings and recommendations.

APPENDIX 3

Trail and Vehicle Counter Data

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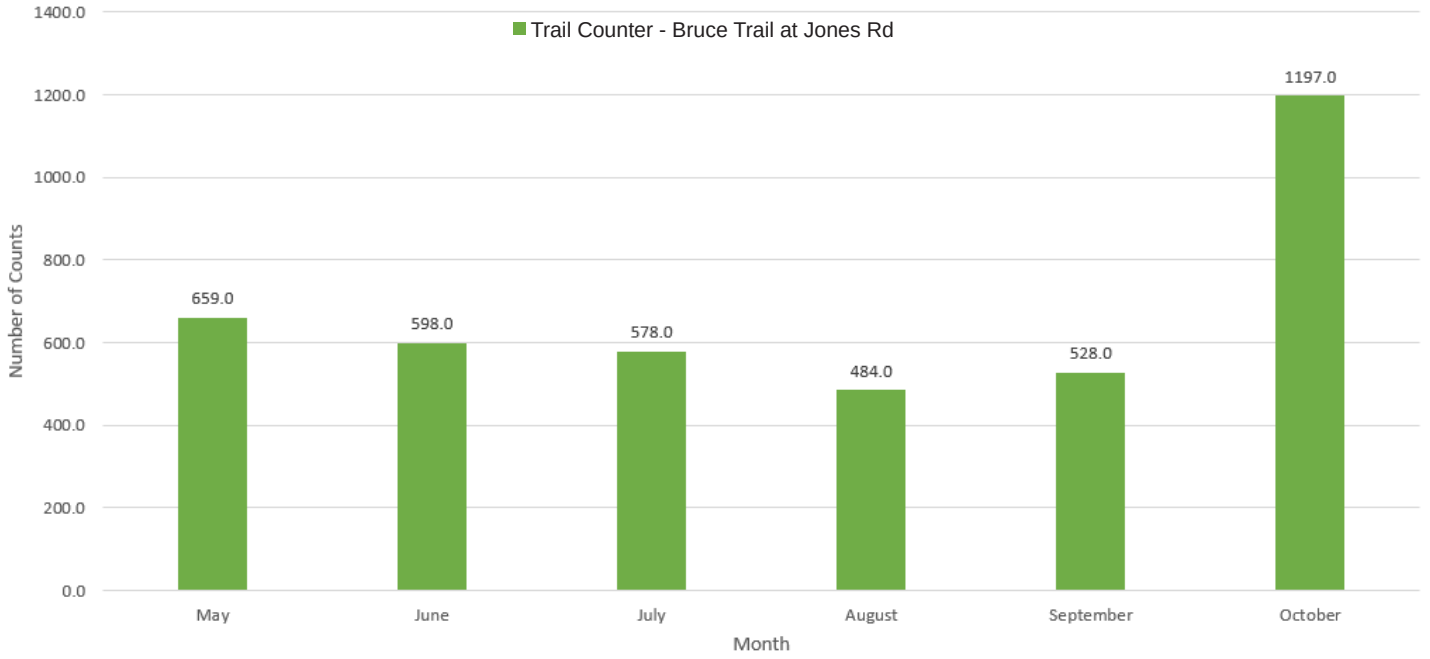
Appendix 3

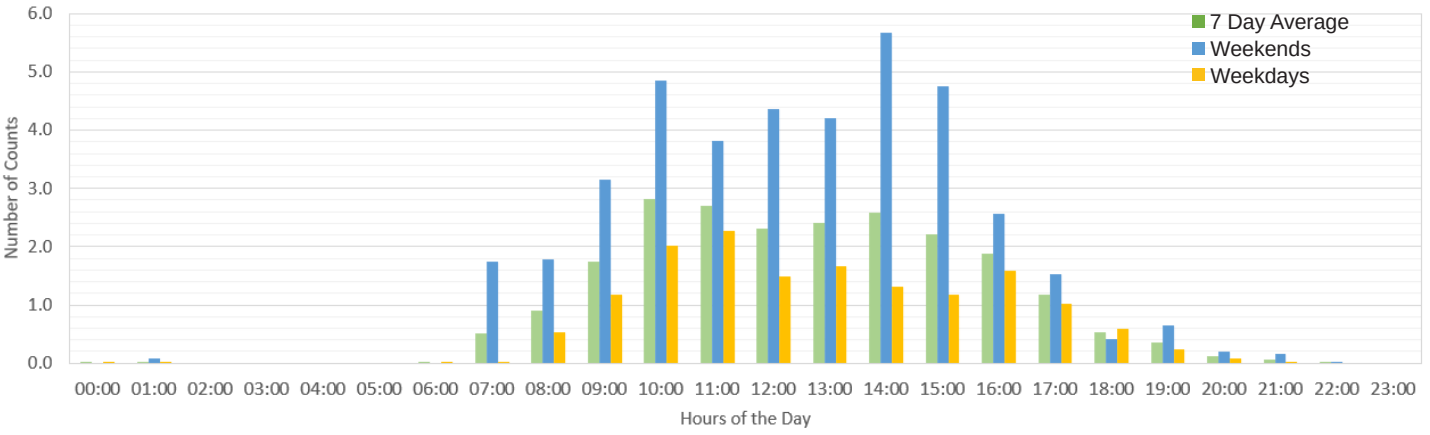
Winona 2022 Trail Counter - Bruce Trail at Jones Road

Trail Counter Summary

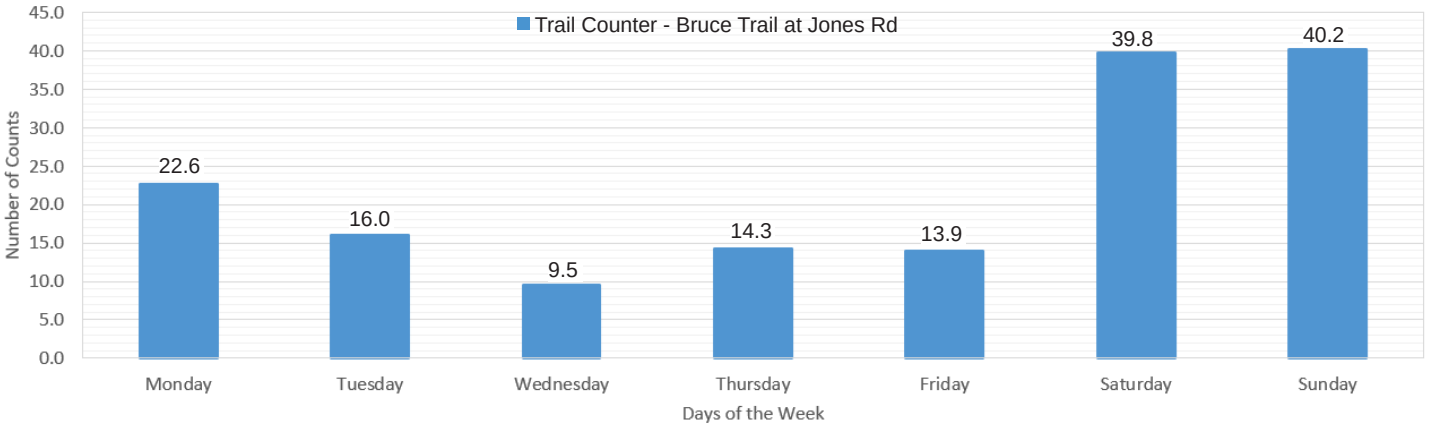
Trail Counter (Bruce Trail at Jones Road) - Monthly Totals 2022



Bruce Trail Counter - 24 Hour Average



Bruce Trail Counter - Average Count by Day for 2022



APPENDIX 4

Natural Areas Inventory – Species List

Appendix 4.1	Plant Species
Appendix 4.2	Bird Species
Appendix 4.3	Mammal Species
Appendix 4.4	Butterflies and Dragonflies
Appendix 4.5	Amphibians and Reptiles

Plant Species Inventoried in Winona and Vinemount Conservation Areas **4.1**

All	SPECIES_CODE	SCIENTIFIC_NAME_NHIC	COMMON_NAME_NHIC
x	P-ACENEGU	Acer negundo	Manitoba Maple
x	P-ACESANI	Acer nigrum	Black Maple
x	P-ACEPLAT	Acer platanoides	Norway Maple
x	P-ACERUBR	Acer rubrum	Red Maple
x	P-ACESASA	Acer saccharum	Sugar Maple
x	P-ACESPIC	Acer spicatum	Mountain Maple
x	P-ACHMILL	Achillea millefolium	Common Yarrow
x	P-ACTPACH	Actaea pachypoda	White Baneberry
x	P-ACTRUBR	Actaea rubra	Red Baneberry
x	P-ADIPEDA	Adiantum pedatum	Northern Maidenhair Fern
x	P-EUPRUGO	Ageratina altissima var. altissima	Common White Snakeroot
x	P-AGR_SP	Agrimonia sp.	Agrimony Species
x	P-AGRSTRI	Agrimonia striata	Woodland Agrimony
x	P-ALLPETI	Alliaria petiolata	Garlic Mustard
x	P-ALLTRIC	Allium tricoccum	Wild Leek
x	P-AMELAEV	Amelanchier laevis	Smooth Serviceberry
x	P-ARCLAPP	Arctium lappa	Great Burdock
x	P-ARITRTR	Arisaema triphyllum ssp. triphyllum	Jack-in-the-pulpit
x	P-ASACANA	Asarum canadense	Canada Wild-ginger
x	P-ASPOFFI	Asparagus officinalis	Garden Asparagus
x	P-BARVULG	Barbarea vulgaris	Bitter Wintercress
x	P-BERTHUN	Berberis thunbergii	Japanese Barberry
x	P-BETPAPY	Betula papyrifera	Paper Birch
x	P-BIDFRON	Bidens frondosa	Devil's Beggarticks
x	P-CARCONC	Cardamine concatenata	Cut-leaved Toothwort
x	P-CARDIPH	Cardamine diphylla	Two-leaved Toothwort
x	P-CARALBU	Carex albursina	White Bear Sedge
x	P-CARPLAN	Carex plantaginea	Plantain-leaved Sedge
x	P-CARRADI	Carex radiata	Eastern Star Sedge
x	P-CAR_SP	Carex sp.	Sedge Species
x	P-CARCORD	Carya cordiformis	Bitternut Hickory
x	P-CAROVAT	Carya ovata	Shagbark Hickory
x	P-CAUGIGA	Caulophyllum giganteum	Giant Blue Cohosh
x	P-CAUTHAL	Caulophyllum thalictroides	Blue Cohosh
x	P-CHEMAJU	Chelidonium majus	Greater Celandine
x	P-CICINTY	Cichorium intybus	Chicory
x	P-CIRLUCA	Circaea canadensis ssp. canadensis	Canada Enchanter's Nightshade
x	P-CIRVULG	Cirsium vulgare	Bull Thistle
x	P-CLAVIRG	Claytonia virginica	Narrow-leaved Spring Beauty
x	P-CLIVULG	Clinopodium vulgare	Field Basil
x	P-CONMAJA	Convallaria majalis	European Lily-of-the-valley
x	P-CORALTE	Cornus alternifolia	Alternate-leaved Dogwood
x	P-CORFORA	Cornus racemosa	Gray Dogwood
x	P-CORRUGO	Cornus rugosa	Round-leaved Dogwood
x	P-CORSTOL	Cornus sericea	Red-osier Dogwood
x	P-CRA_SP	Crataegus sp.	Hawthorn Species
x	P-CYSBULB	Cystopteris bulbifera	Bulblet Fern
x	P-DACGLOM	Dactylis glomerata	Orchard Grass
x	P-DAUCARO	Daucus carota	Wild Carrot
x	P-DICCANA	Dicentra canadensis	Squirrel-corn
x	P-DICCUCU	Dicentra cucullaria	Dutchman's Breeches
x	P-DIELONI	Diervilla lonicera	Northern Bush-honeysuckle
x	P-DIPFUSY	Dipsacus fullonum	Common Teasel

Plant Species Inventoried in Winona and Vinemount Conservation Areas (cont.)

x	P-DRYCART	Dryopteris carthusiana	Spinulose Wood Fern
x	P-DRYGOLD	Dryopteris goldiana	Goldie's Wood Fern
x	P-DRYINTE	Dryopteris intermedia	Evergreen Wood Fern
x	P-DRYMARG	Dryopteris marginalis	Marginal Wood Fern
x	P-ELYREPE	Elymus repens	Creeping Wildrye
x	P-EPIHELL	Epipactis helleborine	Eastern Helleborine
x	P-ERIANNU	Erigeron annuus	Annual Fleabane
x	P-ERIPHIL	Erigeron philadelphicus	Philadelphia Fleabane
x	P-ERYAMAM	Erythronium americanum ssp. americanum	Yellow Trout-lily
x	P-EUOOBOV	Euonymus obovatus	Running Strawberry Bush
x	P-ASTMACR	Eurybia macrophylla	Large-leaved Aster
x	P-EUTGRAM	Euthamia graminifolia	Grass-leaved Goldenrod
x	P-FAGGRAN	Fagus grandifolia	American Beech
x	P-FER_SP	Fern sp.	Fern Species
x	P-FRAVEAM	Fragaria vesca ssp. americana	American Woodland Strawberry
x	P-RHAFRAN	Frangula alnus	Glossy Buckthorn
x	P-FRAAMER	Fraxinus americana	White Ash
x	P-FRAPENN	Fraxinus pennsylvanica	Green Ash
x	P-GALAPAR	Galium aparine	Cleavers
x	P-GAL_SP	Galium sp.	Bedstraw Species
x	P-GERMACU	Geranium maculatum	Spotted Geranium
x	P-GERROBE	Geranium robertianum	Herb-Robert
x	P-GEUALEP	Geum aleppicum	Yellow Avens
x	P-GEUCANA	Geum canadense	White Avens
x	P-WALFRAG	Geum fragarioides	Barren Strawberry
x	P-GEULACI	Geum laciniatum	Rough Avens
x	P-GEU_SP	Geum sp.	Avens Species
x	P-GLEHEDE	Glechoma hederacea	Ground Ivy
x	P-GLYSTRI	Glyceria striata	Fowl Mannagrass
x	P-HACVIRG	Hackelia virginiana	Virginia Stickseed
x	P-HAMVIRG	Hamamelis virginiana	American Witch-hazel
x	P-HEPACTU	Hepatica acutiloba	Sharp-lobed Hepatica
x	P-ANEAMER	Hepatica americana	Round-lobed Hepatica
x	P-HESMATR	Hesperis matronalis	Dame's Rocket
x	P-HIESCAU	Hieracium scabrum	Rough Hawkweed
x	P-HYDCANY	Hydrophyllum canadense	Canada Waterleaf
x	P-HYDVIRG	Hydrophyllum virginianum	Virginia Waterleaf
x	P-IMPCAPE	Impatiens capensis	Spotted Jewelweed
x	P-IMPPALL	Impatiens pallida	Pale Jewelweed
x	P-IRIVERS	Iris versicolor	Harlequin Blue Flag
x	P-JUGCINE	Juglans cinerea	Butternut
x	P-JUGNIGR	Juglans nigra	Black Walnut
x	P-LAPCANA	Laportea canadensis	Wood Nettle
x	P-LAPCOMM	Lapsana communis	Common Nipplewort
x	P-LEE_SP	Leersia sp.	Cut Grass Species
x	P-LIC_SP	Lichen sp.	Lichen Species
x	P-LIGVULG	Ligustrum vulgare	European Privet
x	P-LONCANA	Lonicera canadensis	Canada Fly Honeysuckle
x	P-LONDIOI	Lonicera dioica	Limber Honeysuckle
x	P-LONMAAC	Lonicera maackii	Amur Honeysuckle
x	P-LON_SP	Lonicera sp.	Honeysuckle Species
x	P-LONTATA	Lonicera tatarica	Tartarian Honeysuckle
x	P-LUNANNU	Lunaria annua	Annual Honesty
x	P-LYTSALI	Lythrum salicaria	Purple Loosestrife
x	P-MAICANA	Maianthemum canadense	Wild Lily-of-the-valley

Plant Species Inventoried in Winona and Vinemount Conservation Areas (cont.)

x	P-MAIRARA	Maianthemum racemosum	Large False Solomon's Seal
x	P-MAI_SP	Maianthemum sp.	False Soloman's Seal Species
x	P-MATSTPE	Matteuccia struthiopteris var. pensylvanica	Ostrich Fern
x	P-MENCANA	Menispermum canadense	Canada Moonseed
x	P-MITDIPH	Mitella diphylla	Two-leaved Mitrewort
x	P-MORALBA	Morus alba	White Mulberry
x	P-PREALBA	Nabalus albus	White Rattlesnakeroot
x	P-MOS_SP	no data2	Moss Species
x	P-ONOSENS	Onoclea sensibilis	Sensitive Fern
x	P-OSTVIRG	Ostrya virginiana	Eastern Hop-hornbeam
x	P-OXACORN	Oxalis corniculata	Creeping Wood-sorrel
x	P-OXASTRI	Oxalis stricta	Upright Yellow Wood-sorrel
x	P-PARQUIN	Parthenocissus quinquefolia	Virginia Creeper
x	P-PARINSE	Parthenocissus vitacea	Thicket Creeper
x	P-POLLAPA	Persicaria lapathifolia	Pale Smartweed
x	P-PHAARUN	Phalaris arundinacea	Reed Canary Grass
x	P-PHRAUST	Phragmites australis	Common Reed
x	P-PHRLEPT	Phryma leptostachya	Lopseed
x	P-PILPUMI	Pilea pumila	Dwarf Clearweed
x	P-PIL_SP	Pilea sp.	Clearweed Species
x	P-HIECACA	Pilosella caespitosa	Meadow Hawkweed
x	P-PINSTRO	Pinus strobus	Eastern White Pine
x	P-PLAMAJO	Plantago major	Common Plantain
x	P-POANEMO	Poa nemoralis	Woods Bluegrass
x	P-GRA_SP	Poa sp.	Grass Species
x	P-PODPELT	Podophyllum peltatum	May-apple
x	P-POLACRO	Polystichum acrostichoides	Christmas Fern
x	P-POPDEDE	Populus deltoides ssp. deltoides	Eastern Cottonwood
x	P-POPGRAN	Populus grandidentata	Large-toothed Aspen
x	P-POPTREM	Populus tremuloides	Trembling Aspen
x	P-DUCINDI	Potentilla indica	Mock-strawberry
x	P-PRUVUVU	Prunella vulgaris ssp. vulgaris	Common Self-heal
x	P-PRUAVIU	Prunus avium	Sweet Cherry
x	P-PRUSERO	Prunus serotina	Black Cherry
x	P-PRUVIVI	Prunus virginiana	Choke Cherry
x	P-PYRCOMM	Pyrus communis	Common Pear
x	P-QUEALBA	Quercus alba	White Oak
x	P-QUERUBR	Quercus rubra	Northern Red Oak
x	P-RANRECU	Ranunculus recurvatus	Hooked Buttercup
x	P-RHACATH	Rhamnus cathartica	Common Buckthorn
x	P-RHUTYPH	Rhus typhina	Staghorn Sumac
x	P-RIBCYNO	Ribes cynosbati	Prickly Gooseberry
x	P-ROSCARO	Rosa carolina	Carolina Rose
x	P-ROSMULT	Rosa multiflora	Multiflora Rose
x	P-RUBALLE	Rubus allegheniensis	Allegheny Blackberry
x	P-RUBIDID	Rubus idaeus ssp. idaeus	Common Red Raspberry
x	P-RUBIDME	Rubus idaeus ssp. strigosus	Wild Red Raspberry
x	P-RUBOCCI	Rubus occidentalis	Black Raspberry
x	P-RUBODOR	Rubus odoratus	Purple-flowering Raspberry
x	P-RUDHIRT	Rudbeckia hirta	Black-eyed Susan
x	P-RUM_SP	Rumex sp.	Dock Species
x	P-SAL_SP	Salix sp.	Willow Species
x	P-SAL_SP	Salix sp.	Willow Species
x	P-SAMCANA	Sambucus canadensis	Common Elderberry
x	P-SAMRAPU	Sambucus racemosa ssp. pubens	Red Elderberry

Plant Species Inventoried in Winona and Vinemount Conservation Areas (cont.)

x	P-SANCANA	Sanguinaria canadensis	Bloodroot
x	P-CORVARI	Securigera varia	Common Crown-vetch
x	P-SOLDULC	Solanum dulcamara	Bittersweet Nightshade
x	P-SOLALAL	Solidago altissima var. altissima	Eastern Tall Goldenrod
x	P-SOLCAES	Solidago caesia	Blue-stemmed Goldenrod
x	P-SOLCANA	Solidago canadensis	Canada Goldenrod
x	P-SOLFLEX	Solidago flexicaulis	Zigzag Goldenrod
x	P-SONOLER	Sonchus oleraceus	Common Sow-thistle
x	P-STATRIF	Staphylea trifolia	American Bladdernut
x	P-ASTCORD	Symphyotrichum cordifolium	Heart-leaved Aster
x	P-ASTERER	Symphyotrichum ericoides var. ericoides	White Heath Aster
x	P-ASTLALN	Symphyotrichum lanceolatum ssp. lanceolatum	Panicled Aster
x	P-ASTLATE	Symphyotrichum lateriflorum	Calico Aster
x	P-ASTNOVA	Symphyotrichum novae-angliae	New England Aster
x	P-ASTONON	Symphyotrichum ontarionis	Ontario Aster
x	P-ASTPIPI	Symphyotrichum pilosum var. pilosum	Old Field Aster
x	P-ASTPUPU	Symphyotrichum puniceum var. puniceum	Swamp Aster
x	P-ASTUROP	Symphyotrichum urophyllum	Arrow-leaved Aster
x	P-TAROFFI	Taraxacum officinale	Common Dandelion
x	P-THADIOI	Thalictrum dioicum	Early Meadow-rue
x	P-THUOCCI	Thuja occidentalis	Eastern White Cedar
x	P-TIACORD	Tiarella cordifolia	Heart-leaved Foam-flower
x	P-TILAMER	Tilia americana	American Basswood
x	P-TORJAPO	Torilis japonica	Erect Hedge-parsley
x	P-RHURADI	Toxicodendron radicans	Poison Ivy
x	P-RHURANE	Toxicodendron radicans var. radicans	Eastern Poison Ivy
x	P-RHURARY	Toxicodendron radicans var. rydbergii	Western Poison Ivy
x	P-TRIEREC	Trillium erectum	Red Trillium
x	P-TRIGRAN	Trillium grandiflorum	White Trillium
x	P-TUSFARF	Tussilago farfara	Colt's-foot
x	P-TYPANGU	Typha angustifolia	Narrow-leaved Cattail
x	P-ULMAMER	Ulmus americana	American Elm
x	P-ULMRUBR	Ulmus rubra	Slippery Elm
x	P-UVUGRAN	Uvularia grandiflora	Large-flowered Bellwort
x	P-VIBACER	Viburnum acerifolium	Maple-leaved Viburnum
x	P-VIBLENT	Viburnum lentago	Nannyberry
x	P-VIBOPUL	Viburnum opulus	Cranberry Viburnum
x	P-VICCRAC	Vicia cracca	Tufted Vetch
x	P-VINMINO	Vinca minor	Periwinkle
x	P-VIOCANA	Viola canadensis	Canada Violet
x	P-VIOPUBE	Viola pubescens	Yellow Violet
x	P-VIOSORO	Viola sororia	Woolly Blue Violet
x	P-VIO_SP	Viola sp.	Violet Species
x	P-VITRIPA	Vitis riparia	Riverbank Grape

Bird Species Inventoried in Winona and Vinemount Conservation Areas **4.2**

ebird&iNat	HCA Staff	NAI	Species_Code	OFO_Scientific_Name	OFO_Common_Name
x			B-CORE	Acanthis flammea	Common Redpoll
	x		B-COHA	Accipiter cooperii	Cooper's Hawk
	x		B-SSHA	Accipiter striatus	Sharp-shinned Hawk
		x	B-SPSA	Actitis macularius	Spotted Sandpiper
x			B-NSWO	Aegolius acadicus	Northern Saw-whet Owl
	x		B-RWBL	Agelaius phoeniceus	Red-winged Blackbird
x			B-MALL	Anas platyrhynchos	Mallard
x			B-SACR	Antigone canadensis	Sandhill Crane
x			B-WPWI	Antrostomus vociferus	Eastern Whip-poor-will
		x	B-RTHU	Archilochus colubris	Ruby-throated Hummingbird
	x		B-CEDW	Bombycilla cedrorum	Cedar Waxwing
		x	B-CAGO	Branta canadensis	Canada Goose
x			B-GHOW	Bubo virginianus	Great Horned Owl
	x		B-RTHA	Buteo jamaicensis	Red-tailed Hawk
x			B-RSHA	Buteo lineatus	Red-shouldered Hawk
x			B-BWHA	Buteo platypterus	Broad-winged Hawk
	x		B-NOCA	Cardinalis cardinalis	Northern Cardinal
x			B-HETH	Catharus guttatus	Hermit Thrush
x			B-SWTH	Catharus ustulatus	Swainson's Thrush
	x		B-BRCR	Certhia americana	Brown Creeper
		x	B-CHSW	Chaetura pelagica	Chimney Swift
		x	B-KILL	Charadrius vociferus	Killdeer
x			B-NOHA	Circus hudsonius	Northern Harrier
	x		B-YBCU	Coccyzus americanus	Yellow-billed Cuckoo
	x		B-BBCU	Coccyzus erythropthalmus	Black-billed Cuckoo
	x		B-NOFL	Colaptes auratus	Northern Flicker
		x	B-RODO	Columba livia	Rock Pigeon
	x		B-EAWP	Contopus virens	Eastern Wood-Pewee
		x	B-AMCR	Corvus brachyrhynchos	American Crow
x			B-CORA	Corvus corax	Common Raven
	x		B-BLJA	Cyanocitta cristata	Blue Jay
x			B-TUSW	Cygnus columbianus	Tundra Swan
		x	B-BOBO	Dolichonyx oryzivorus	Bobolink
	x		B-DOWO	Dryobates pubescens	Downy Woodpecker
		x	B-HAWO	Dryobates villosus	Hairy Woodpecker
	x		B-GRCA	Dumetella carolinensis	Gray Catbird
		x	B-ALFL	Empidonax alnorum	Alder Flycatcher
		x	B-LEFL	Empidonax minimus	Least Flycatcher
		x	B-WIFL	Empidonax traillii	Willow Flycatcher
		x	B-HOLA	Eremophila alpestris	Horned Lark
x			B-MERL	Falco columbarius	Merlin
x			B-PEFA	Falco peregrinus	Peregrine Falcon
		x	B-AMKE	Falco sparverius	American Kestrel
		x	B-MOWA	Geothlypis philadelphia	Mourning Warbler
		x	B-HOFI	Haemorhous mexicanus	House Finch
x			B-PUFI	Haemorhous purpureus	Purple Finch
x			B-BAEA	Haliaeetus leucocephalus	Bald Eagle
		x	B-BARS	Hirundo rustica	Barn Swallow
x			B-CATE	Hydroprogne caspia	Caspian Tern
	x		B-WOTH	Hylocichla mustelina	Wood Thrush
		x	B-OROR	Icterus spurius	Orchard Oriole
x			B-DEJU	Junco hyemalis	Dark-eyed Junco
x			B-NSHR	Lanius borealis	Northern Shrike
		x	B-HERG	Larus argentatus	Herring Gull

Bird Species Inventoried in Winona and Vinemount Conservation Areas (cont.)

		x	B-RBGU	Larus delawarensis	Ring-billed Gull
x			B-BEKI	Megaceryle alcyon	Belted Kingfisher
x			B-EASO	Megascops asio	Eastern Screech-Owl
	x		B-RBWO	Melanerpes carolinus	Red-bellied Woodpecker
	x		B-WITU	Meleagris gallopavo	Wild Turkey
		x	B-SWSP	Melospiza georgiana	Swamp Sparrow
	x		B-SOSP	Melospiza melodia	Song Sparrow
		x	B-NOMO	Mimus polyglottos	Northern Mockingbird
	x		B-BHCO	Molothrus ater	Brown-headed Cowbird
	x		B-GCFL	Myiarchus crinitus	Great Crested Flycatcher
x			B-NAWA	Oreothlypis ruficapilla	Nashville Warbler
x			B-OSPR	Pandion haliaetus	Osprey
		x	B-NOWA	Parkesia noveboracensis	Northern Waterthrush
		x	B-HOSP	Passer domesticus	House Sparrow
		x	B-SAVS	Passerculus sandwichensis	Savannah Sparrow
x			B-FOSP	Passerella iliaca	Fox Sparrow
	x		B-INBU	Passerina cyanea	Indigo Bunting
		x	B-RINP	Phasianus colchicus	Ring-necked Pheasant
		x	B-RBGR	Pheucticus ludovicianus	Rose-breasted Grosbeak
		x	B-SCTA	Piranga olivacea	Scarlet Tanager
x			B-SNBU	Plectrophenax nivalis	Snow Bunting
	x		B-BCCH	Poecile atricapillus	Black-capped Chickadee
		x	B-BGGN	Polioptila caerulea	Blue-gray Gnatcatcher
		x	B-PUMA	Progne subis	Purple Martin
	x		B-COGR	Quiscalus quiscula	Common Grackle
x			B-RCKI	Regulus calendula	Ruby-crowned Kinglet
x			B-GCKI	Regulus satrapa	Golden-crowned Kinglet
		x	B-BANS	Riparia riparia	Bank Swallow
x			B-EAPH	Sayornis phoebe	Eastern Phoebe
		x	B-AMWO	Scolopax minor	American Woodcock
		x	B-OVEN	Seiurus aurocapilla	Ovenbird
x			B-BTBW	Setophaga caerulescens	Black-throated Blue Warbler
x			B-BBWA	Setophaga castanea	Bay-breasted Warbler
	x		B-HOWA	Setophaga citrina	Hooded Warbler
		x	B-YRWA	Setophaga coronata	Yellow-rumped Warbler
x			B-PAWA	Setophaga palmarum	Palm Warbler
	x		B-CSWA	Setophaga pensylvanica	Chestnut-sided Warbler
	x		B-YWAR	Setophaga petechia	Yellow Warbler
		x	B-AMRE	Setophaga ruticilla	American Redstart
		x	B-BLPW	Setophaga striata	Blackpoll Warbler
x			B-BTGW	Setophaga virens	Black-throated Green Warbler
		x	B-EABL	Sialia sialis	Eastern Bluebird
x			B-RBNU	Sitta canadensis	Red-breasted Nuthatch
	x		B-WBNU	Sitta carolinensis	White-breasted Nuthatch
x			B-PISI	Spinus pinus	Pine Siskin
	x		B-AMGO	Spinus tristis	American Goldfinch
		x	B-CCSP	Spizella pallida	Clay-colored Sparrow
		x	B-CHSP	Spizella passerina	Chipping Sparrow
		x	B-FISP	Spizella pusilla	Field Sparrow
x			B-ATSP	Spizelloides arborea	American Tree Sparrow
		x	B-NRWS	Stelgidopteryx serripennis	Northern Rough-winged Swallow
		x	B-EAME	Sturnella magna	Eastern Meadowlark
	x		B-EUST	Sturnus vulgaris	European Starling
		x	B-TRES	Tachycineta bicolor	Tree Swallow
	x		B-CARW	Thryothorus ludovicianus	Carolina Wren

Bird Species Inventoried in Winona and Vinemount Conservation Areas (cont.)

	x		B-HOWR	Troglodytes aedon	House Wren
	x		B-WIWR	Troglodytes hiemalis	Winter Wren
	x		B-AMRO	Turdus migratorius	American Robin
		x	B-EAKI	Tyrannus tyrannus	Eastern Kingbird
	x		B-YTVI	Vireo flavifrons	Yellow-throated Vireo
		x	B-WAVI	Vireo gilvus	Warbling Vireo
	x		B-REVI	Vireo olivaceus	Red-eyed Vireo
	x		B-MODO	Zenaida macroura	Mourning Dove
		x	B-WTSP	Zonotrichia albicollis	White-throated Sparrow
x			B-WCSP	Zonotrichia leucophrys	White-crowned Sparrow

Mammal Species Inventoried in Winona and Vinemount Conservation Areas **4.3**

HCA staff	NAI	Species_Code	Scientific_Name_NHIC	Common_Name_NHIC
	x	M-NSTS	Blarina brevicauda	Northern Short-tailed Shrew
	x	M-VIOP	Didelphis virginiana	Virginia Opossum
	x	M-WOOD	Marmota monax	Woodchuck
	x	M-MEVO	Microtus pennsylvanicus	Meadow Vole
	x	M-MINK	Neovison vison	American Mink
x		M-WTDE	Odocoileus virginianus	White-tailed Deer
	x	M-WFMO	Peromyscus leucopus	White-footed Mouse
x		M-RACC	Procyon lotor	Northern Raccoon
x		M-GRSB	Sciurus carolinensis	Eastern Gray Squirrel Black Phase
	x	M-GRSQ	Sciurus carolinensis	Eastern Gray Squirrel
	x	M-EACO	Sylvilagus floridanus	Eastern Cottontail
x		M-EACH	Tamias striatus	Eastern Chipmunk
x		M-RESQ	Tamiasciurus hudsonicus	Red Squirrel
x		M-REFO	Vulpes vulpes	Red Fox

Butterflies and Dragonflies Inventoried in Winona and Vinemount Conservation Areas **4.4**

HCA Staff	NAI	Species_Code	NHIC_Scientific_Name	NHIC_Common_Name
	x	O-GRDA	Anax junius	Common Green Darner
	x	L-LESK	Ancyloxypha numitor	Least Skipper
	x	O-EBJE	Calopteryx maculata	Ebony Jewelwing
	x	L-SPAZ	Celastrina lucia	Northern Spring Azure
	x	L-SUAZ	Celastrina neglecta	Summer Azure
	x	L-WONY	Cercyonis pegala	Common Wood-Nymph
	x	L-CORI	Coenonympha tullia	Common Ringlet
	x	L-ORSU	Colias eurytheme	Orange Sulphur
	x	L-COSU	Colias philodice	Clouded Sulphur
	x	L-ETBL	Cupido comyntas	Eastern Tailed Blue
	x	L-MONA	Danaus plexippus	Monarch
	x	O-FABL	Enallagma civile	Familiar Bluet
	x	L-SSSK	Epargyreus clarus	Silver-spotted Skipper
	x	O-EAPO	Erythemis simplicicollis	Eastern Pondhawk
	x	L-SIBL	Glaucopsyche lygdamus	Silvery Blue
	x	O-EAFO	Ischnura verticalis	Eastern Forktail
	x	O-DTWH	Leucorrhinia intacta	Dot-tailed Whiteface
	x	O-WISK	Libellula luctuosa	Widow Skimmer
	x	O-TSSK	Libellula pulchella	Twelve-spotted Skimmer
	x	L-VICE	Limenitis archippus	Viceroy
	x	L-LWSA	Megisto cymela	Little Wood-Satyr
x		L-MOCL	Nymphalis antiopa	Mourning Cloak
	x	L-COTO	Nymphalis l-album	Compton Tortoiseshell
	x	L-TISW	Papilio glaucus	Eastern Tiger Swallowtail
	x	L-BLSW	Papilio polyxenes	Black Swallowtail
	x	L-COSW	Pholisora catullus	Common Sootywing
	x	L-PHYPAS	Phyciodes cocyta	Northern Crescent
	x	L-PECR	Phyciodes tharos	Pearl Crescent
	x	L-CAWH	Pieris rapae	Cabbage White
	x	O-COWH	Plathemis lydia	Common Whitetail
	x	L-PESK	Polites peckius	Peck's Skipper
	x	L-COMM	Polygonia comma	Eastern Comma
	x	L-QUMA	Polygonia interrogationis	Question Mark
	x	L-BAHA	Satyrium calanus	Banded Hairstreak
	x	L-GSFR	Speyeria cybele	Great Spangled Fritillary
	x	L-EUSK	Thymelicus lineola	European Skipper
	x	O-BLSA	Tramea lacerata	Black Saddlebags
	x	L-READ	Vanessa atalanta	Red Admiral
	x	L-AMLA	Vanessa virginiensis	American Lady

All	Species_Code	SCIENTIFIC_NAME_NHIC	COMMON_NAME_NHIC
x	H-JEFF	Ambystoma (jeffersonianum complex)	Jefferson complex (undetermined)
x	H-JESA	Ambystoma jeffersonianum	Jefferson Salamander
x	H-AMTO	Anaxyrus americanus	American Toad
x	H-SNTU	Chelydra serpentina	Snapping Turtle
x	H-MPTU	Chrysemys picta marginata	Midland Painted Turtle
x	H-TGTF	Hyla versicolor	Gray Treefrog
x	H-MISN	Lampropeltis triangulum	Eastern Milksnake
x	H-BUFR	Lithobates catesbeianus	American Bullfrog
x	H-GRFR	Lithobates clamitans	Green Frog
x	H-LEFR	Lithobates pipiens	Northern Leopard Frog
x	H-EANE	Notophthalmus viridescens viridescens	Red-spotted Newt
x	H-RBSA	Plethodon cinereus	Eastern Red-backed Salamander
x	H-SPPE	Pseudacris crucifer	Spring Peeper
x	H-MICF	Pseudacris triseriata pop. 2	Western Chorus Frog - Carolinian Population
x	H-BRSN	Storeria dekayi	DeKay's Brownsnake
x	H-RBSN	Storeria occipitomaculata	Red-bellied Snake
x	H-EAGA	Thamnophis sirtalis sirtalis	Eastern Gartersnake
x	H-SLID	Trachemys scripta elegans	Red-eared Slider
x	H-UNKNOWN	Unknown sp.	Unknown Herp Species

APPENDIX 5

References

References

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