APPENDIX A ENVIRONMENTAL PROTECTION PLAN SUGGESTED TABLE OF CONTENTS

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APPENDIX B HUMAN HEALTH AND WIND FARMS – A LITERATURE REVIEW

In support of the Environmental Assessment (EA) for the Whynotts Community Wind Project, a review was completed of current available literature on the potential effects on human health related to wind energy. Several key health-related issues were identified, and Project-specific studies were completed to address shadow flicker and sound. Details of these studies are provided in Section 12.0 of the "Environmental Assessment Registration Document".

The following sections provide additional background information on the potential effects of electromagnetic fields (EMFs), air quality, ice throw/shedding and infrasound on human health.

Electromagnetic Fields

EMFs are a type of energy that occurs naturally and is also created through the use of electrical appliances and equipment (i.e. cell phone usage, radio towers, etc.) (City of Toronto 2011). A guidebook to Wind Energy Development was produced in 2011 and identified transmission lines, wind turbine generators, generator transformers and underground cables as the four potential sources of EMFs as a result of wind farm operations (Canadian Wind Energy Association [CanWEA] 2011). The guidebook goes on to suggest that EMF exposure is not significant due to low emission levels produced by wind farm operations and indicates that generator transformers likely generate the highest levels of EMFs. Similar conclusions have been made by Health Canada and the World Health Organization (Chief Medical Officer of Health of Ontario 2010).

In 2007, a study was completed to assess the possible effects of EMFs on human health. The study concluded that there is little evidence to support the theory that EMFs cause long term health issues (Scientific Committee on Emerging and Newly Identified Health Risks 2007). As well, a study led by the National Institute of Environmental Health Sciences assessed scientific evidence spanning over six years, to determine whether exposure to EMF could result in a potential risk to human health. Results indicated that there were no consistent patterns of biological effects with animals or with cells (Electric and Magnetic Fields Research and Public Information Dissemination Program 2002).

Health Canada states that "research has shown that EMFs from electrical devices and power lines can cause weak electric currents to flow through the human body. However, these currents are much smaller than those produced naturally by your brain, nerves and heart, and are not associated with any known health risks" (Health Canada 2010). Health Canada goes on to state that EMFs are strongest when close to the source so that at greater distances, the strength of the field fades rapidly and humans need not engage in specific actions to minimize risk including those who are located just outside the boundaries of power line corridors (Health Canada 2010).

Air Quality

The development and construction phases of a wind energy project may affect local air quality by increasing air borne dust associated with on-site equipment, and vehicles. Emissions from vehicles and equipment can also contribute to a reduction in local air quality.

The American Wind Energy Association (AWEA) states that the generation of electricity from the wind does not result in any air emissions (AWEA 2010). Similarly, the US Environmental Protection Agency (EPA) recognizes that the emissions associated with wind technology are negligible because no fuels are combusted. Therefore, wind energy production offsets more polluting forms of energy generation and can actually improve air quality and our health.

Ice Throw and Ice Shedding

Under appropriate temperature and humidity conditions, ice can build up on the rotor blades, nacelle and tower of a wind turbine, which can lead to two types of risk:

- ice fragments dislodge and are shed from the rotor of the operating turbine due to aerodynamic and centrifugal forces; and
- ice fragments dislodge from the structure and fall to the ground when it is shut down or idling without power production (CanWEA 2007).

A recent German paper provides a formula for a safe setback distance assuming that the turbines will be shut down in icy conditions (Seifert et al. 2003). The turbines selected for the Project will be equipped with turbine deactivation technology, which detects rotor imbalance caused by ice formation on blades, and triggers the turbine to automatically shut down in icy conditions. The use of this technology will significantly reduce the risk of ice throw, though ice may still fall from the blades and be blown by the wind some distance. The following equation is used to calculate a safe setback distance, accounting for this possibility:

d = ((D/2 + H) / 15)v

where:

d = the best practice setback distance

D = the rotor diameter of the turbine

H = the hub height of the turbine

V = wind speed (m/s)

Turbines for the proposed Project have been located 185 m from the nearest provincial road (Mullock Road) and 561 m from the nearest residence. Based on these setback distances, the only potential risk from ice throw would be at Mullock Road. Though a final decision has not been made on the turbine model to be employed by the Project, it will likely be a model with a 95 m hub height, and a 55 m rotor diameter. Based on the above equation, the 185 m setback distance from Mullock road would be suitable up to a wind speed of about 80 km/h. The most recent record of sustained hourly wind speeds reaching or exceeding 80 km/h at the closest meteorological station (Lunenburg) was in September 1969 when hourly wind speed reached 84 km/h (The Weather Network 2012). Based on available data, the combination of wind speed and direction that would result in ice being thrown to Mullock Road is very unlikely to occur.

The risk of ice throw has been taken into account during Project planning and will continue to be monitored during the operational phase of the Project. With appropriate setbacks and on-sight safety awareness, hazards are minimized (Colby 2008; Massachusetts Department of Environmental Protection & Massachusetts Department of Public Health 2012). Hazard signs may also be affixed along Mullock Road, warning drivers of falling ice under high-wind (>80 km/h) conditions. These mitigative strategies will decrease and/or eliminate the risk of injury from ice to nearby workers and drivers on Mullock Road. In addition, the following additional mitigation strategies will be implemented:

- physical and visual warnings (i.e. signs and fences);
- · turbine deactivation during periods of ice accumulation; and
- restriction of site access to trained personnel (Wahl and Giguere 2006).

Infrasound

General Background - Sound

Humans detect sound from changes in pressure that travel through the air and cause the eardrum and small bones of the middle ear to vibrate. The vibrations are transmitted to the inner ear where sensory hair cells then change the vibrations into nerve impulses, which travel to the brain where they are perceived and interpreted.

The magnitude (loudness) of sound is described as "pressure level", "sound level" or "noise level" and is measured as decibels (dB). Typical sound levels, measured in decibels, are shown in Table A.

Table A: Typical Sound Levels

Source	Distance f	Distance from Source			
Source	feet	meters	Levels (dBA)		
Freight train	100	30	70		
Vacuum Cleaner	10	3	70		
Freeway	100	30	70		
Wind in trees	40	12	55		
Light traffic	100	30	70		
Average home			50		
Soft whisper	5	2	30		
Quiet bedroom			20		

Source: AWEA 2011

The tonal quality or pitch of the sound is related to its frequency and is measure in hertz (Hz). The normal frequency range of sounds that humans can hear (known as audible sound) extends from about 20-50 Hz (a rumbling sound) up to high frequency of about 10,000-15,000 Hz (hissing sound) or even higher for some people. Humans generally hear best in the mid-frequency range of 500-4,000 Hz.

General Background - Infrasound

Infrasound is very low-frequency sound, that is typically defined as being between 1-20 Hz, which is below what human ears can normally hear.

Infrasound is everywhere in the environment. It is emitted from natural sources (e.g. wind, rivers) and from artificial sources including road traffic, aircraft, and ventilation systems. The most common source of infrasound that humans encounter is vehicles (CMOH 2010).

When evaluating potential effects of infrasound, it is important that these frequencies be discussed in the context of the sound pressure levels, or in other words, the loudness of the sound. For instance, very loud sounds at very low frequencies (i.e. 165 dB at 2 Hz, reducing to 145 dB at 20 Hz) may result in pain (Leventhall 2006) and infrasound has been shown to cause annoyance, when the sound level exceeds the threshold of hearing (i.e. the lowest sound levels that a listener can detect)

(HGC 2010). Further, research shows that to be physically felt, infrasound must exceed 100–110 dB (Ellenbogen *et al.* 2012).

While there is some variation in the literature and between individual sensitivities, there is fairly good agreement on the level of the threshold of hearing among the various studies that have been completed (Figure 1).

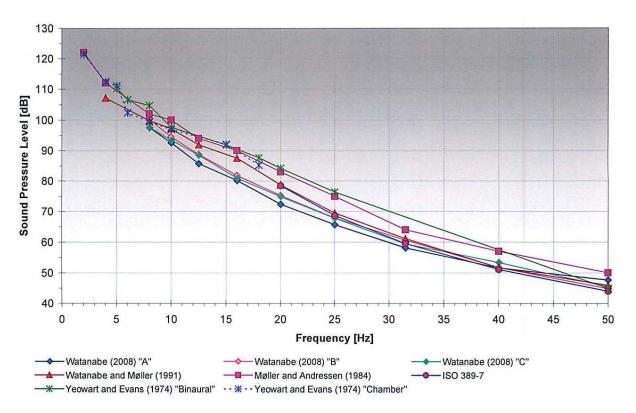


Figure 1: Threshold of Hearing Data from Various Papers (HGC 2010).

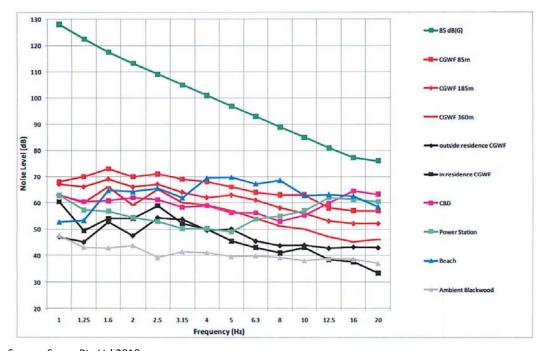
What these results show is that the lower the frequency of the sound, the louder the sound needs to be in order to be perceived.

Measured Infrasound Levels

In 2010, Sonus, an acoustic consulting firm based in South Australia, completed a study to measure infrasound produced by a range of natural and manmade sources using a methodology specifically designed to measure infrasound (Table B, Figure 2). The G-weighting network was applied to the measured infrasound pressure levels as it has been standardized to determine the human perception (i.e. threshold of hearing) and annoyance due to noise that lies within the infrasound frequency range. By comparison, when measuring audible sound levels, meters are usually equipped with weighting circuits to simulate the frequency response characteristics of the human ear. The A-weighting filter is normally used as it correlates well with the human perception of most sounds. Sound levels measured using the G and A-weighting filters are expressed as dBG and dBA, respectively.

Table B: Measured Levels of Infrasound from Natural and Manmade Sources

Source	Infrasound Level (dBG)
Threshold of hearing	85 dBG
Wind Farm (360 m downwind) (CGWF)	61 dBG
100 m downwind from wind farm (CBWF)	66 dBG
200 m downwind from wind farm (CBWF)	63 dBG
Ambient infrasound (100 m from nearest turbine with	62 dBG
negligible wind and no turbine operation) (CBWF)	
Inside a residence (fridge operating) (1200m from nearest	
turbine)	51 dBG
Outside a residence (1200m from nearest turbine)	58 dBG
Adjacent to the beach (25 m from high water mark)	75 dBG
Cliff face (250 m from the coastline)	69 dBG
Inland forest (8 km from the coastline)	57 dBG
Gas fired power station (350 m)	74 dBG
Business District (70 m from two major road corridors)	76 dBG



Source: Sonus Pty Ltd 2010

Figure 2: Summary of Measurement at the Clements Gap Wind Farm and Other Sources (Sonus Pty Ltd 2010)

The results of the study indicate that while turbines do produce infrasound, levels are well below established levels that can be perceived by humans and are comparable to natural and urban sources that are common in the environment.

Another recent Australian report also measured levels of infrasound within typical environments in South Australia, with a particular focus on comparing wind farm environments to urban and rural environments away from wind farms. The study concluded that measured infrasound levels at rural locations both near to and away from wind farms were no higher than infrasound levels measured at the urban locations (Figure 3). Human activity and traffic were the main sources of infrasound at

urban locations, while localized wind conditions were found to be the main source of infrasound in rural locations. All measurements were below the levels that can be perceived by humans, with most by a significant margin (Evans *et al.* 2013).

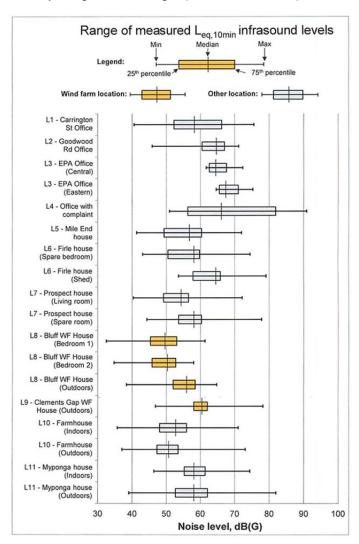


Figure 3: Range of Measured Infrasound Levels (Evans et al. 2013).

An investigation was also completed at a wind farm in Pubnico, Nova Scotia to, in part, evaluate infrasound levels at a residence within 330 m of the closest turbine (HGC 2006). Similar to other results from wind farms, infrasound levels were found to be well below the level of sound that can be perceived by humans, as shown in Figure 4.

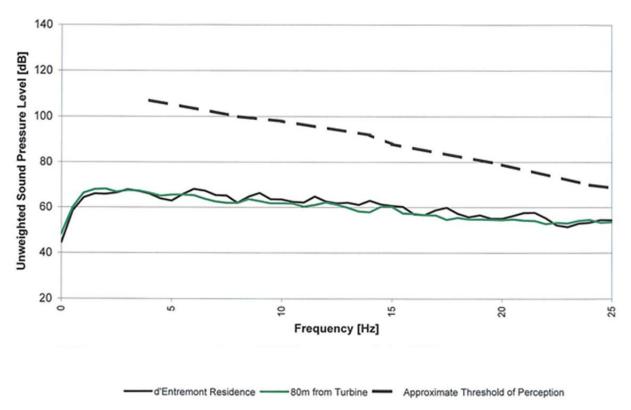


Figure 4: Infrasound Measurements at Pubnico Wind Farm (HGC 2006).

Infrasound and Health Concerns

Concern about infrasound from wind turbines may have originated from the experience of neighbours of early wind turbine designs with downwind rotors (rotors downwind of the tower). In contrast, all modern utility scale wind turbines have upwind rotors that produce significantly lower infrasound emissions (Bastasch *et al.* 2006).

Several studies and panels have been assembled to evaluate the perceived health effects associated with wind turbines.

A scientific advisory panel with expertise in audiology, acoustics, occupational/environmental medicine, and public health was assembled by the wind industry in early 2009 to conduct a review of current literature available on the issue of perceived health effects of wind turbines (Colby *et al.* 2009). Following their review and analysis of the information, the panel reached consensus on the following conclusions:

- There is no evidence that the audible or sub-audible sounds emitted by wind turbines have any direct adverse physiological effects.
- The ground-borne vibrations from wind turbines are too weak to be detected by, or to affect, humans.
- The sounds emitted by wind turbines are not unique. There is no reason to believe, based
 on the levels and frequencies of the sounds and the panel's experience with sound
 exposures in occupational settings, that the sounds from wind turbines could plausibly have
 direct adverse health consequences.

The Chief Medical Officer of Health in Ontario also conducted a review of papers and reports (from 1970 to date) on wind turbines and health from scientific bibliographic databases, grey literature, and from a structured Internet search. The report concluded that "low frequency sound and infrasound from current generation upwind model turbines are well below the pressure sound levels at which known health effects occur. Further, there is no scientific evidence to date that vibration from low frequency wind turbine noise causes adverse health effects" (CMOH 2010).

The Massachusetts Department of Environmental Protection in collaboration with the Massachusetts Department of Public Health recently convened a panel of independent experts to identify any documented or potential health impacts of risks that may be associated with exposure to wind turbines, and, specifically, to facilitate discussion of wind turbines and public health based on scientific findings. The panel concluded that "measured levels of infrasound produced by modern upwind wind turbines at distances as close as 68 m are well below that required for non-auditory perception". Further, the panel concluded that "the weight of the evidence suggests no association between noise from wind turbines and measures of psychological distress or mental health problems" (Ellenbogan *et al.* 2012).

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APPENDIX C WETLAND METHODOLOGY AND CHARACTERIZATIONS

Wetlands and Watercourses in Nova Scotia

Wetlands in Nova Scotia are regulated by NSE under Section 105 of the *Environment Act*. Under the Act, wetlands are:

Land referred to as a marsh, swamp, fen, or bog that either periodically or permanently has water table at, near, or above the land surface or that is saturated with water, and sustains aquatic processes as indicated by the presence of poorly drained soils, hydrophytic vegetation, and biological activities adapted to wet conditions.

Watercourses are defined in the Environment Act as:

Any creek, brook, stream, river, lake, pond, spring, lagoon, or any other natural body of water, and includes all the water in it, and also the bed and the shore (whether there is actually any water in it or not). It also includes all groundwater.

Watercourses are defined in Halifax Regional Municipality (HRM) land use by-laws as:

A lake, river, stream, ocean, or other natural body of water.

Delineation Methodology

In order for a wetland determination to be made, the following three criteria were assessed the field:

- Presence of hydrophytic (water loving) vegetation;
- Presence of hydrologic conditions that result in periods of flooding, ponding, or saturation during the growing season; and
- Presence of hydric soils (anaerobic conditions in upper part).

Although detailed data point analysis was not completed within the study areas, soil pits were completed frequently to confirm the presence/absence of wetland hydrology and hydric soils, as per the methodology below. A general vegetation survey was also completed within the wetlands to confirm hydrophytic vegetation.

Identification of Hydrophytic Vegetation

Hydrophytic vegetation is defined as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanent or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present (Environmental Laboratory 1987). Hydrophytic vegetation should be the dominant plant type in wetland habitat (Environmental Laboratory 1987).



WETLAND DELINEATION IDENTIFICATION METHODOLOGY

Dominant plant species observed in each wetland were classified according to indicator status (probability of occurrence in wetlands), in accordance with the U.S. Fish and Wildlife Service (USFWS) National List of Vascular Plant Species that Occur in Wetlands: NE Region (Region 1) (Reed 1988). Please refer to Table 1 (below) for these classifications. These indicators are used as this region most closely resembles the flora of Nova Scotia and climate regime. Further relevant information was reviewed in Flora of Nova Scotia (Zinck, 1998).

Table 1: Classification of Wetland-Associated Plant Species¹

Plant Species Classification	Abbreviation ²	Probability of Occurring in Wetland
Obligate	OBL	>99%
Facultative Wetland	FACW	66-99%
Facultative	FAC	33-66%
Facultative Upland	FACU	1-33%
Upland	UPL	<1%
No indicator status	NI	Insufficient information to determine status
Plants That Are Not Listed	NL	Does not occur in wetlands in any region.
(assumed upland species)		

¹ Source: Reed 1988

If the majority (greater than 50%) of the dominant vegetation at a data point is classified as obligate (OBL), facultative wetland (FACW), or facultative (FAC), then the location of the data point is considered to be dominated by hydrophytic vegetation.

Identification of Hydric Soils

A hydric soil is a soil that has formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA-NRCS 2010). Indicators of the presence of a hydric soil include soil colour (gleyed soils and soils with bright mottles and/or low matrix chroma), aquic or preaquic moisture regime, reducing soil conditions, sulfidic material (odour), soils listed on the hydric soils list, iron and manganese concretions, organic soils (histosols), histic epipedon, high organic content in surface layer in sandy soils, and organic streaking in sandy soils.

Soil pits were excavated to a maximum depth of 40 cm or refusal. The soil in each was then examined for hydric soil indicators. The matrix colour and mottle colour (if present) of the soil were determined using the Munsell Soil Colour Charts.

Determination of Wetland Hydrology

Wetland habitat, by definition, either periodically or permanently, has a water table at, near, or above the land surface or that is saturated with water. To be classified as a wetland, a site should have at least one primary indicator or two secondary indicators of wetland hydrology, as shown in Table 2.



² A '+' or '-' symbol can be added to the classification to indicate greater or lesser probability, respectively, of occurrence in a wetland.

WETLAND DELINEATION IDENTIFICATION METHODOLOGY

Table 2: Indicators of Wetland Hydrology

Examples of Primary Indicators	Examples of Secondary Indicators			
Water marks	Oxidized Root Channels in the Upper 30 cm			
Drift Lines	Local Soil Survey Data			
Sediment Deposition	Dry season Water Table			
Drainage Patterns	Stunted or Stressed Plants			
Water-stained leaves				
Visual Observation of Saturated Soils				
Visual Observation of Inundation				

Wetland habitat is assessed for signs of hydrology, via visual observations across the area and through assessment of soil pits.

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WETLAND ID	WETLAND	LANDSCAPE	LANDFORM	WATER FLOW	SOIL TYPE	SURFACE/HYDROLOGIC	WETLAND	DOMIN	ANT VEGETATION	N
WEILANDID	TYPE	POSITION	LANDFORW	WATER FLOW	SOIL TIPE	CONDITIONS	BOUNDARY	Herbs	Shrubs	Trees
1	Treed swamp	Lotic stream confined	Flat with pit and mound undulations throughout	Throughflow (intermittent)	` `	1) Saturated at surface 2) Groundwater at 10 cm 3) Water stained leaves 4) Surface water (< 5 cm deep)	Gentle	fringed sedge (Carex crinita); sensitive fern (Onoclea sensibilis); cinnamon fern (Osmunda cinnamomea)	None	None
2	Treed swamp	Terrene	Flat with pit and mound undulations throughout	Outflow (assumed)	redox soils (S5 -	1) Saturated at surface 2) Groundwater at 10 cm 3) Water stained leaves 4) Surface water (< 5 cm deep)	Gentle	cinnamon fern; three seeded sedge (Carex trisperma); bunchberry (Cornus canadensis)	None	None
ЗА	Herbaceous Fen	Lotic stream confined	Basin	Throughflow	Ihedrock (A-1	Saturated at surface Groundwater at 10 cm	Gentle to moderate	cinnamon fern	speckled alder (Alnus incana); mountain holly (Nemopanthus mucronata)	None
3B	Treed swamp	Terrene	Basin	Throughflow (entrenched)	9	Saturated at surface Groundwater at 15 cm Water stained leaves	Gentle	three-seeded sedge;	balsam fir (<i>Abies</i> balsamea); mountain holly; speckled alder	black spruce (Picea mariana); red maple (Acer rubrum)
4	Treed swamp	Lotic stream confined	Basin	Throughflow		1) Saturated at surface 2) Groundwater at 15 cm 3) Surface water (5 to 15 cm deep)	Gentle	Infinchperry:	mountain holly; specled alder	black spruce; red maple



APPENDIX D ACCDC AND PROJECT SITE PLANT LISTS

	g 2012 i ielu Surveys				
Scientific Name	Common Name	NSDNR Status	COSEWIC Status	SARA Status	NSESA Status
Abies balsamea	Balsam Fir	Green	Not Listed	Not Listed	Not Listed
Acer pensylvanicum	Striped Maple	Green	Not Listed	Not Listed	Not Listed
Acer rubrum	Red Maple	Green	Not Listed	Not Listed	Not Listed
Acer saccharum	Sugar Maple	Green	Not Listed	Not Listed	Not Listed
Acer spicatum Alnus incana	Mountain Maple	Green	Not Listed	Not Listed	Not Listed Not Listed
Amelanchier arborea	Speckled Alder Downy Serviceberry	Green Green	Not Listed Not Listed	Not Listed Not Listed	Not Listed
Anaphalis margaritacea	Pearly Everlasting	Green	Not Listed	Not Listed	Not Listed
Aralia nudicaulis	Wild Sarsaparilla	Green	Not Listed	Not Listed	Not Listed
Betula alleghaniensis	Yellow Birch	Green	Not Listed	Not Listed	Not Listed
Betula papyrifera	Paper Birch	Green	Not Listed	Not Listed	Not Listed
Betula populifolia	Gray Birch	Green	Not Listed	Not Listed	Not Listed
Bidens frondosa	Devil's Beggar-Ticks	Green	Not Listed	Not Listed	Not Listed
Brachyelytrum septentrionale	Bearded Short-Husk	Green	Not Listed	Not Listed	Not Listed
Calamagrostis canadensis	Blue-Joint Reedgrass	Green	Not Listed	Not Listed	Not Listed
Carex crinita	Fringed Sedge	Green	Not Listed	Not Listed	Not Listed
Carex echinata	Little Prickly Sedge	Green	Not Listed	Not Listed	Not Listed
Carex folliculata	Long Sedge	Green	Not Listed	Not Listed	Not Listed
Carex gracillima	Graceful Sedge	Green	Not Listed	Not Listed	Not Listed
Carex intumescens	Bladder Sedge	Green	Not Listed	Not Listed	Not Listed
Carex lasiocarpa	Slender Sedge	Green	Not Listed	Not Listed	Not Listed
Carex leptalea	Bristly-Stalk Sedge	Green	Not Listed	Not Listed	Not Listed
Carex Iurida	Shallow Sedge	Green	Not Listed	Not Listed	Not Listed
Carex triangerma	Pointed Broom Sedge	Green	Not Listed	Not Listed	Not Listed
Carex trisperma Centaurea nigra	Three-Seed Sedge	Green	Not Listed	Not Listed	Not Listed
<u> </u>	Black Starthistle	Exotic	Not Listed	Not Listed	Not Listed
Challeng glabra	Leatherleaf White Turtlehead	Green Green	Not Listed	Not Listed	Not Listed Not Listed
Chelone glabra Clintonia borealis	Clinton Lily	Green	Not Listed Not Listed	Not Listed Not Listed	Not Listed
Coptis trifolia	Goldthread	Green	Not Listed	Not Listed	Not Listed
Cornus canadensis	Dwarf Dogwood	Green	Not Listed	Not Listed	Not Listed
Cypripedium acaule	Pink Lady's-Slipper	Green	Not Listed	Not Listed	Not Listed
Dactylis glomerata	Orchard Grass	Exotic	Not Listed	Not Listed	Not Listed
Danthonia compressa	Flattened Oatgrass	Green	Not Listed	Not Listed	Not Listed
Danthonia spicata	Poverty Oat-Grass	Green	Not Listed	Not Listed	Not Listed
Dennstaedtia punctilobula	Eastern Hay-Scented Fern	Green	Not Listed	Not Listed	Not Listed
Doellingeria umbellata	Parasol White-Top	Green	Not Listed	Not Listed	Not Listed
Drosera rotundifolia	Roundleaf Sundew	Green	Not Listed	Not Listed	Not Listed
Dryopteris cristata	Crested Shield-Fern	Green	Not Listed	Not Listed	Not Listed
Dryopteris intermedia	EverGreen Woodfern	Green	Not Listed	Not Listed	Not Listed
Epilobium ciliatum	Hairy Willow-Herb	Green	Not Listed	Not Listed	Not Listed
Equisetum sylvaticum	Woodland Horsetail	Green	Not Listed	Not Listed	Not Listed
Erechtites hieraciifolia	Fireweed	Green	Not Listed	Not Listed	Not Listed
Eriophorum virginicum	Tawny Cotton-Grass	Green	Not Listed	Not Listed	Not Listed
Eurybia radula	Rough-Leaved Aster	Green Green	Not Listed Not Listed	Not Listed Not Listed	Not Listed Not Listed
Euthamia graminifolia Fagus grandifolia	Flat-Top Fragrant-Golden-Rod American Beech	Green	Not Listed	Not Listed	Not Listed
Festuca rubra	Red Fescue	Green	Not Listed	Not Listed	Not Listed
Fragaria virginiana	Virginia Strawberry	Green	Not Listed	Not Listed	Not Listed
Fraxinus americana	White Ash	Green	Not Listed	Not Listed	Not Listed
Galium mollugo	Great Hedge Bedstraw	Exotic	Not Listed	Not Listed	Not Listed
Galium trifidum	Small Bedstraw	Green	Not Listed	Not Listed	Not Listed
Gaultheria procumbens	Teaberry	Green	Not Listed	Not Listed	Not Listed
Gaylussacia baccata	Black Huckleberry	Green	Not Listed	Not Listed	Not Listed
Glyceria canadensis	Canada Manna-Grass	Green	Not Listed	Not Listed	Not Listed
Glyceria striata	Fowl Manna-Grass	Green	Not Listed	Not Listed	Not Listed
Gnaphalium uliginosum	Low Cudweed	Exotic	Not Listed	Not Listed	Not Listed
Goodyera tesselata	Checkered Rattlesnake-Plantain		Not Listed	Not Listed	Not Listed
Gymnocarpium dryopteris	Northern Oak Fern	Green	Not Listed	Not Listed	Not Listed
Hamamelis virginiana	American Witch-Hazel	Green	Not Listed	Not Listed	Not Listed
Hieracium aurantiacum	Orange Hawkweed	Exotic	Not Listed	Not Listed	Not Listed
Hieracium canadense	Canada Hawkweed	Green	Not Listed	Not Listed	Not Listed
Hieracium lachenalii	Common Hawkweed	Exotic	Not Listed	Not Listed	Not Listed
Hieracium pilosella	Mouseear Tall Hawkweed	Exotic	Not Listed Not Listed	Not Listed	Not Listed
Hieracium piloselloides Hydrocotyle americana	American Water-Pennywort	Exotic Green	Not Listed Not Listed	Not Listed Not Listed	Not Listed Not Listed
Hypericum perforatum	A St. John's-Wort	Exotic	Not Listed	Not Listed	Not Listed
llex verticillata	Black Holly	Green	Not Listed	Not Listed	Not Listed
Impatiens capensis	Spotted Jewel-Weed	Green	Not Listed	Not Listed	Not Listed
Iris versicolor	Blueflag	Green	Not Listed	Not Listed	Not Listed
Juncus effusus	Soft Rush	Green	Not Listed	Not Listed	Not Listed
Juncus tenuis	Slender Rush	Green	Not Listed	Not Listed	Not Listed
Juniperus communis	Ground Juniper	Green	Not Listed	Not Listed	Not Listed
Kalmia angustifolia	Sheep-Laurel	Green	Not Listed	Not Listed	Not Listed
Larix laricina	American Larch	Green	Not Listed	Not Listed	Not Listed
Leucanthemum vulgare	Oxeye Daisy	Exotic	Not Listed	Not Listed	Not Listed
Linnaea borealis	Twinflower	Green	Not Listed	Not Listed	Not Listed
Lobelia inflata	Indian-Tobacco	Green	Not Listed	Not Listed	Not Listed
Lonicera canadensis	American Fly-Honeysuckle	Green	Not Listed	Not Listed	Not Listed
Luzula acuminata	Hairy Woodrush	Green	Not Listed	Not Listed	Not Listed
Lycopodium clavatum	Running Pine	Green	Not Listed	Not Listed	Not Listed
Lycopodium dendroideum	Treelike Clubmoss	Green	Not Listed	Not Listed	Not Listed
Lycopus uniflorus	Northern Bugleweed	Green	Not Listed	Not Listed	Not Listed
Maianthemum canadense	Wild Lily-of-The-Valley	Green	Not Listed	Not Listed	Not Listed
Maianthemum trifolium	Three-Leaf Solomon's-Plume	Green	Not Listed	Not Listed	Not Listed
Medeola virginiana Mitchella repens	Indian Cucumber-Root	Green	Not Listed	Not Listed	Not Listed
инспона герено	Partridge-Berry	Green	Not Listed	Not Listed	Not Listed



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Scientific Name	Common Name	NSDNR Status	COSEWIC Status	SARA Status	NSESA Status
Monotropa hypopithys Monotropa uniflora	American Pinesap Indian-Pipe	Green	Not Listed Not Listed	Not Listed Not Listed	Not Listed Not Listed
Myrica pensylvanica	Northern Bayberry	Green Green	Not Listed	Not Listed	Not Listed
Nemopanthus mucronatus	Mountain Holly	Green	Not Listed	Not Listed	Not Listed
Oclemena acuminata	Whorled Aster	Green	Not Listed	Not Listed	Not Listed
Onoclea sensibilis	Sensitive Fern	Green	Not Listed	Not Listed	Not Listed
Osmunda cinnamomea	Cinnamon Fern	Green	Not Listed	Not Listed	Not Listed
Osmunda regalis	Royal Fern	Green	Not Listed	Not Listed	Not Listed
Oxalis montana	White Wood-Sorrel	Green	Not Listed	Not Listed	Not Listed
Oxalis stricta	Upright Yellow Wood-Sorrel	Green	Not Listed	Not Listed	Not Listed
Packera schweinitziana	Robbins Squaw-Weed	Green	Not Listed	Not Listed	Not Listed
Pennisetum glaucum	Pearl-Millet	Exotic	Not Listed	Not Listed	Not Listed
Phalaris arundinacea	Reed Canary Grass	Green	Not Listed	Not Listed	Not Listed
Phegopteris connectilis	Northern Beech Fern	Green	Not Listed	Not Listed	Not Listed
Phleum pratense	Meadow Timothy	Exotic	Not Listed	Not Listed	Not Listed
Picea glauca	White Spruce	Green	Not Listed	Not Listed	Not Listed
Picea mariana	Black Spruce	Green	Not Listed	Not Listed	Not Listed
Picea rubens	Red Spruce	Green	Not Listed	Not Listed	Not Listed
Pinus strobus	Eastern White Pine	Green	Not Listed	Not Listed	Not Listed
Platanthera clavellata	Small Green Woodland Orchid	Green	Not Listed	Not Listed	Not Listed
Poa pratensis	Kentucky Bluegrass	Green	Not Listed	Not Listed	Not Listed
Polygonum arifolium	Halberd-Leaf Tearthumb	Yellow	Not Listed	Not Listed	Not Listed
Polygonum hydropiper	Marshpepper Smartweed	Exotic	Not Listed	Not Listed	Not Listed
Polygonum persicaria	Lady's Thumb	Exotic	Not Listed	Not Listed	Not Listed
Polypodium virginianum	Rock Polypody	Green	Not Listed	Not Listed	Not Listed
Polystichum acrostichoides	Christmas Fern	Green	Not Listed	Not Listed	Not Listed
Populus grandidentata	Large-Tooth Aspen	Green	Not Listed	Not Listed	Not Listed
Populus tremuloides	Quaking Aspen	Green	Not Listed	Not Listed	Not Listed
Potentilla simplex	Old-Field Cinquefoil	Green	Not Listed	Not Listed	Not Listed
Prenanthes trifoliolata Prunella vulgaris	Three-Leaved Rattlesnake-root	Green	Not Listed	Not Listed	Not Listed
Prunus serotina	Self-Heal	Green	Not Listed	Not Listed	Not Listed
Pteridium aquilinum	Wild Black Cherry Bracken Fern	Green Green	Not Listed Not Listed	Not Listed Not Listed	Not Listed Not Listed
Quercus rubra	Northern Red Oak	Green	Not Listed	Not Listed	Not Listed
Ranunculus repens	Creeping Butter-Cup	Exotic	Not Listed	Not Listed	Not Listed
Rhododendron canadense	Rhodora	Green	Not Listed	Not Listed	Not Listed
Robinia pseudoacacia	Black Locust	Exotic	Not Listed	Not Listed	Not Listed
Rosa virginiana	Virginia Rose	Green	Not Listed	Not Listed	Not Listed
Rubus allegheniensis	Allegheny Blackberry	Green	Not Listed	Not Listed	Not Listed
Rubus hispidus	Bristly Dewberry	Green	Not Listed	Not Listed	Not Listed
Rubus idaeus	Red Raspberry	Green	Not Listed	Not Listed	Not Listed
Rubus pubescens	Dwarf Red Raspberry	Green	Not Listed	Not Listed	Not Listed
Rumex acetosella	Sheep Sorrel	Exotic	Not Listed	Not Listed	Not Listed
Salix bebbiana	Bebb's Willow	Green	Not Listed	Not Listed	Not Listed
Scirpus cyperinus	Cottongrass Bulrush	Green	Not Listed	Not Listed	Not Listed
Scutellaria galericulata	Hooded Skullcap	Green	Not Listed	Not Listed	Not Listed
Senecio viscosus	Sticky Groundsel	Exotic	Not Listed	Not Listed	Not Listed
Solidago bicolor	White Goldenrod	Green	Not Listed	Not Listed	Not Listed
Solidago rugosa	Rough-Leaf Goldenrod	Green	Not Listed	Not Listed	Not Listed
Sorbus decora	Northern Mountain-Ash	Green	Not Listed	Not Listed	Not Listed
Sparganium americanum	American Bur-Reed	Green	Not Listed	Not Listed	Not Listed
Spiraea alba	Narrow-Leaved Meadow-Sweet	Green	Not Listed	Not Listed	Not Listed
Spiraea tomentosa	Hardhack Spiraea	Green	Not Listed	Not Listed	Not Listed
Symphyotrichum lateriflorum	Farewell-Summer	Green	Not Listed	Not Listed	Not Listed
Taraxacum officinale	Common Dandelion	Exotic	Not Listed	Not Listed	Not Listed
Thelypteris noveboracensis Toxicodendron radicans	New York Fern	Green	Not Listed	Not Listed	Not Listed
	Eastern Poison Ivy Northern Starflower	Green	Not Listed	Not Listed Not Listed	Not Listed
Trientalis borealis Trifolium repens	White Clover	Green	Not Listed Not Listed		Not Listed
Trifolium repens Trillium undulatum	Painted Trillium	Exotic Green	Not Listed Not Listed	Not Listed Not Listed	Not Listed Not Listed
Tsuga canadensis	Eastern Hemlock	Green	Not Listed	Not Listed	Not Listed
Vaccinium angustifolium	Late Lowbush Blueberry	Green	Not Listed	Not Listed	Not Listed
Vaccinium myrtilloides	Velvetleaf Blueberry	Green	Not Listed	Not Listed	Not Listed
Veronica officinalis	Gypsy-Weed	Exotic	Not Listed	Not Listed	Not Listed
Viburnum nudum	Possum-Haw Viburnum	Green	Not Listed	Not Listed	Not Listed
Vicia cracca	Tufted Vetch	Exotic	Not Listed	Not Listed	Not Listed
Viola sp.	violets	N/A	N/A	N/A	N/A
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Common Name	Scientific Name	NSDNR Status	COSEWIC Status	SARA Status	NSESA Status
Acadian Quillwort	Isoetes acadiensis	Yellow	Not Listed	Not Listed	Not Listed
Alder-leaved Buckthorn	Rhamnus alnifolia	Yellow	Not Listed	Not Listed	Not Listed
Alpine Bilberry	Vaccinium uliginosum	Yellow	Not Listed	Not Listed	Not Listed
American Cancer-root	Conopholis americana	Red	Not Listed	Not Listed	Not Listed
American False Pennyroyal	Hedeoma pulegioides	Yellow	Not Listed	Not Listed	Not Listed
Bearded Sedge	Carex comosa	Yellow	Not Listed	Not Listed	Not Listed
Bebb's Sedge	Carex bebbii	Red	Not Listed	Not Listed	Not Listed
Big-leaved Marsh-elder	Iva frutescens	Yellow	Not Listed	Not Listed	Not Listed
Black Ash	Fraxinus nigra	Yellow	Not Listed	Not Listed	Not Listed
Blood Milkwort	Polygala sanguinea	Yellow	Not Listed	Not Listed	Not Listed
Blue Cohosh	Caulophyllum thalictroides	Red	Not Listed	Not Listed	Not Listed
Blunt Sweet Cicely	Osmorhiza depauperata	Red	Not Listed	Not Listed	Not Listed
Blunt-leaved Bedstraw	Galium obtusum	Red	Not Listed	Not Listed	Not Listed
Bog Willow	Salix pedicellaris	Yellow	Not Listed	Not Listed	Not Listed
Boreal Aster	Symphyotrichum boreale	Yellow	Not Listed	Not Listed	Not Listed
Buttonbush Dodder	Cuscuta cephalanthi	Red	Not Listed	Not Listed	Not Listed
Canada Anemone	Anemone canadensis	Red	Not Listed	Not Listed	Not Listed
Canada Germander	Teucrium canadense	Yellow	Not Listed	Not Listed	Not Listed
Canada Lily	Lilium canadense	Yellow	Not Listed	Not Listed	Not Listed
Canada Rice Grass	Piptatherum canadense	Yellow	Not Listed	Not Listed	Not Listed
Canada Tick-trefoil	Desmodium canadense	Red	Not Listed	Not Listed	Not Listed
Canada Violet	Viola canadensis	Extirpated	Not Listed	Not Listed	Not Listed
Canada Wood Nettle	Laportea canadensis	Yellow	Not Listed	Not Listed	Not Listed
Case's Ladies'-Tresses	Spiranthes casei	Yellow	Not Listed	Not Listed	Not Listed
Chestnut Sedge	Carex castanea	Red	Not Listed	Not Listed	Not Listed
Chinese Hemlock-parsley	Conioselinum chinense	Yellow	Not Listed	Not Listed	Not Listed
Climbing False Buckwheat	Fallopia scandens	Yellow	Not Listed	Not Listed	Not Listed
Clustered Sanicle	Sanicula odorata	Red	Not Listed	Not Listed	Not Listed
Coastal Plain Blue-eyed-grass	Sisyrinchium fuscatum	Red	Not Listed	Not Listed	Not Listed
Coastal Plain Joe-pye-weed	Eutrochium dubium	Red	Not Listed	Not Listed	Not Listed
Coastal Sweet Pepperbush	Clethra alnifolia	Yellow	Special Concern	Special Concern	Vulnerable
Comb-leaved Mermaidweed	Proserpinaca pectinata	Yellow	Not Listed	Not Listed	Not Listed
Common Buttonbush	Cephalanthus occidentalis	Yellow	Not Listed	Not Listed	Not Listed
Common Moonwort	Botrychium lunaria	Red	Not Listed	Not Listed	Not Listed
Cone-cupped Spikerush	Eleocharis tuberculosa	Red	Not Listed	Not Listed	Not Listed
Cursed Buttercup	Ranunculus sceleratus	Red	Not Listed	Not Listed	Not Listed
Cut-Leaved Coneflower	Rudbeckia laciniata	Yellow	Not Listed	Not Listed	Not Listed
Disguised St John's-wort	Hypericum dissimulatum	Yellow	Not Listed	Not Listed	Not Listed
Downy Rattlesnake-Plantain	Goodyera pubescens	Red	Not Listed	Not Listed	Not Listed
Downy Willowherb	Epilobium strictum	Yellow	Not Listed	Not Listed	Not Listed
Drummond's Rockcress	Arabis drummondii	Yellow	Not Listed	Not Listed	Not Listed
Dudley's Rush	Juncus dudleyi	Yellow	Not Listed	Not Listed	Not Listed
Dwarf Bilberry	Vaccinium caespitosum	Yellow	Not Listed	Not Listed	Not Listed
Dwarf Clearweed	Pilea pumila	Red	Not Listed	Not Listed	Not Listed
Eastern Leatherwood	Dirca palustris	Red	Not Listed	Not Listed	Not Listed
Eastern Lilaeopsis	Lilaeopsis chinensis	Yellow	Special Concern		Vulnerable
Eastern White Cedar	Thuja occidentalis	Red	Not Listed	Not Listed	Vulnerable
False Mermaidweed	Floerkea proserpinacoides	Yellow	Not at Risk	Not Listed	Not Listed
Farwell's Water Milfoil	Myriophyllum farwellii	Yellow	Not Listed	Not Listed	Not Listed
Flat-stemmed Pondweed	Potamogeton zosteriformis	Yellow	Not Listed	Not Listed	Not Listed
Fleshy Stitchwort	Stellaria crassifolia	Red	Not Listed	Not Listed	Not Listed
Fries' Pondweed	Potamogeton friesii	Red	Not Listed	Not Listed	Not Listed
Glaucous Blue Grass	Poa glauca	Yellow	Not Listed	Not Listed	Not Listed
Golden Crest	Lophiola aurea	Red	Special Concern	Threatened	Threatened
Grass-leaved Rush	Juncus marginatus	Yellow	Not Listed	Not Listed	Not Listed
Greene's Rush	Juncus greenei	Red	Not Listed	Not Listed	Not Listed
Greenland Stitchwort	Minuartia groenlandica	Yellow	Not Listed	Not Listed	Not Listed
Hairy Goldenrod	Solidago hispida	Red	Not Listed	Not Listed	Not Listed
Hairy Lettuce	Lactuca hirsuta	Yellow	Not Listed	Not Listed	Not Listed
Halberd-leaved Tearthumb	Persicaria arifolia	Yellow	Not Listed	Not Listed	Not Listed
Hayden's Sedge	Carex haydenii	Red	Not Listed	Not Listed	Not Listed
Heart-leaved Foamflower	Tiarella cordifolia	Yellow	Not Listed	Not Listed	Not Listed
Horn-leaved Riverweed	Podostemum ceratophyllum	Red	Not Listed	Not Listed	Not Listed
Houghton's Sedge	Carex houghtoniana	Yellow	Not Listed	Not Listed	Not Listed
Hyssop-leaved Fleabane	Erigeron hyssopifolius	Yellow	Not Listed	Not Listed	Not Listed
Intermediate Mermaidweed	Proserpinaca intermedia	Red	Not Listed	Not Listed	Not Listed



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Inverted Bladderwort	Utricularia resupinata	Red	Not Listed	Not Listed	Not Listed
Large Round-Leaved Orchid	Platanthera macrophylla	Yellow	Not Listed	Not Listed	Not Listed
Large St John's-wort	Hypericum majus	Red	Not Listed	Not Listed	Not Listed
Large Tick-Trefoil	Desmodium glutinosum	Red	Not Listed	Not Listed	Not Listed
Large Toothwort	Cardamine maxima	Red	Not Listed	Not Listed	Not Listed
Least Moonwort	Botrychium simplex	Yellow	Not Listed	Not Listed	Not Listed
Lesser Brown Sedge	Carex adusta	Yellow	Not Listed	Not Listed	Not Listed
Lesser Pyrola	Pyrola minor	Yellow	Not Listed	Not Listed	Not Listed
Lesser Rattlesnake-plantain	Goodyera repens	Yellow	Not Listed	Not Listed	Not Listed
Livid Sedge	Carex livida	Red	Not Listed	Not Listed	Not Listed
Long-bracted Frog Orchid	Coeloglossum viride	Red	Not Listed	Not Listed	Not Listed
Long-branched Frostweed	Helianthemum canadense	Red	Not Listed	Not Listed	Not Listed
Long's Bulrush	Scirpus Iongii	Yellow	Special Concern	Special Concern	Vulnerable
Long's Sedge	Carex longii	Red	Not Listed	Not Listed	Not Listed
Loose-Flowered Sedge	Carex laxiflora	Red	Not Listed	Not Listed	Not Listed
Maidenhair Spleenwort	Asplenium trichomanes	Yellow	Not Listed	Not Listed	Not Listed
Marsh Bellflower	Campanula aparinoides	Yellow	Not Listed	Not Listed	Not Listed
Marsh Horsetail	Equisetum palustre	Red	Not Listed	Not Listed	Not Listed
Meadow Horsetail	Equisetum pratense	Yellow	Not Listed	Not Listed	Not Listed
Nantucket Serviceberry	Amelanchier nantucketensis	Red	Not Listed	Not Listed	Not Listed
Narrow-leaved Panic Grass	Dichanthelium linearifolium	Yellow	Not Listed	Not Listed	Not Listed
Necklace Spike Sedge	Carex ormostachya	Red	Not Listed	Not Listed	Not Listed
Netted Chain Fern	Woodwardia areolata	Yellow	Not Listed	Not Listed	Not Listed
Newfoundland Dwarf Birch	Betula michauxii	Yellow	Not Listed	Not Listed	Not Listed
Nodding Fescue	Festuca subverticillata	Red	Not Listed	Not Listed	Not Listed
Northern Adder's-tongue	Ophioglossum pusillum	Yellow	Not Listed	Not Listed	Not Listed
Northern Bedstraw	Galium boreale	Red	Not Listed	Not Listed	Not Listed
Northern Blueberry	Vaccinium boreale	Red	Not Listed	Not Listed	Not Listed
Northern Bog Violet	Viola nephrophylla	Yellow	Not Listed	Not Listed	Not Listed
Northern Comandra	Geocaulon lividum	Yellow	Not Listed	Not Listed	Not Listed
Northern Maidenhair Fern	Adiantum pedatum	Red	Not Listed	Not Listed	Not Listed
One-sided Rush	Juncus secundus	Red	Not Listed	Not Listed	Not Listed
Orange-fruited Tinker's Weed	Triosteum aurantiacum	Yellow	Not Listed	Not Listed	Not Listed
Ovate Spikerush	Eleocharis ovata	Yellow	Not Listed	Not Listed	Not Listed
Pale Jewelweed	Impatiens pallida	Yellow	Not Listed	Not Listed	Not Listed
Pale-Spiked Lobelia	Lobelia spicata	Red	Not Listed	Not Listed	Not Listed
Parlin's Pussytoes	Antennaria parlinii	Red	Not Listed	Not Listed	Not Listed
Pinebarren Golden Heather	Hudsonia ericoides	Yellow	Not Listed	Not Listed	Not Listed
Pink Crowberry	Empetrum eamesii	Yellow	Not Listed	Not Listed	Not Listed
Poison Sumac	Toxicodendron vernix	Red	Not Listed	Not Listed	Not Listed
Porcupine Sedge	Carex hystericina	Red		Not Listed	Not Listed
Prairie Sedge	Carex prairea	Red	Not Listed	Not Listed	Not Listed
Prototype Quillwort	Isoetes prototypus	Yellow	Special Concern		Vulnerable
Pubescent Sedge	Carex hirtifolia	Yellow Yellow	Not Listed	Not Listed	Not Listed
Purple-veined Willowherb	Epilobium coloratum				Not Listed
Ram's-Head Lady's-Slipper	Cypripedium arietinum	Red		Not Listed Not Listed	Endangered Not Listed
Red Ash Red Pigweed	Fraxinus pennsylvanica Chenopodium rubrum	Red Red	Not Listed Not Listed	Not Listed Not Listed	Not Listed Not Listed
Red Pigweed Redroot	Lachnanthes caroliana	Red	Special Concern	Threatened	Threatened
Redtop Panic Grass	Panicum rigidulum	Yellow		Not Listed	Not Listed
Richardson's Pondweed	Potamogeton richardsonii	Red		Not Listed	Not Listed
Rock Whitlow-Grass	Draba glabella	Red		Not Listed	Not Listed
Roland's Sea-Blite	Suaeda rolandii	Red	Not Listed	Not Listed	Not Listed
Round-lobed Hepatica	Anemone americana	Red		Not Listed	Not Listed
Seabeach Ragwort	Senecio pseudoarnica	Yellow	Not Listed	Not Listed	Not Listed
Seaside Brookweed	Samolus valerandi	Yellow		Not Listed	Not Listed
Sharp-fruited Rush	Juncus acuminatus	Yellow	Not Listed	Not Listed	Not Listed
Shining Ladies'-Tresses	Spiranthes lucida	Red	Not Listed	Not Listed	Not Listed
Short-awned Foxtail	Alopecurus aequalis	Yellow		Not Listed	Not Listed
Showy Lady's-Slipper	Cypripedium reginae	Red	Not Listed	Not Listed	Not Listed
Silky Willow	Salix sericea	Red		Not Listed	Not Listed
Sleepy Catchfly	Silene antirrhina	Red	Not Listed	Not Listed	Not Listed
Slender Blue Flag	Iris prismatica	Red	Not Listed	Not Listed	Not Listed
Slender Cottongrass	Eriophorum gracile	Yellow		Not Listed	Not Listed
Slender Panic Grass	Dichanthelium xanthophysum	Red	Not Listed	Not Listed	Not Listed
Slender Rice Grass	Piptatherum pungens	Yellow		Not Listed	Not Listed
Cichaci Nice Grass	r iptatrioram pangens	1 CHOW	1 tot Listou	I TOL LIBIOU	1 TOL LISIOU



Common Name	Scientific Name	NSDNR Status	COSEWIC Status	SARA Status	NSESA Status
Slender Wood Sedge	Carex digitalis	Red	Not Listed	Not Listed	Not Listed
Small-flowered Bittercress	Cardamine parviflora	Yellow	Not Listed	Not Listed	Not Listed
Smooth Alder	Alnus serrulata	Yellow	Not Listed	Not Listed	Not Listed
Smooth Sweet Cicely	Osmorhiza longistylis	Red	Not Listed	Not Listed	Not Listed
Soapberry	Shepherdia canadensis	Yellow	Not Listed	Not Listed	Not Listed
Southern Mudwort	Limosella australis	Yellow	Not Listed	Not Listed	Not Listed
Southern Twayblade	Listera australis	Red	Not Listed	Not Listed	Not Listed
Spreading Wild Rye	Elymus hystrix	Red	Not Listed	Not Listed	Not Listed
Steller's Rockbrake	Cryptogramma stelleri	Red	Not Listed	Not Listed	Not Listed
Swamp Loosestrife	Decodon verticillatus	Yellow	Not Listed	Not Listed	Not Listed
Swan's Sedge	Carex swanii	Yellow	Not Listed	Not Listed	Not Listed
Swedish Bunchberry	Cornus suecica	Yellow	Not Listed	Not Listed	Not Listed
Tender Sedge	Carex tenera	Yellow	Not Listed	Not Listed	Not Listed
Thread-Like Naiad	Najas gracillima	Red	Not Listed	Not Listed	Not Listed
Triangle Moonwort	Botrychium lanceolatum	Yellow	Not Listed	Not Listed	Not Listed
Triangular-valve Dock	Rumex triangulivalvis	Yellow	Not Listed	Not Listed	Not Listed
Tubercled Orchid	Platanthera flava	Yellow	Not Listed	Not Listed	Not Listed
Tuckerman's Panic Grass	Panicum tuckermanii	Yellow	Not Listed	Not Listed	Not Listed
Tuckerman's Sedge	Carex tuckermanii	Red	Not Listed	Not Listed	Not Listed
Virginia Anemone	Anemone virginiana	Yellow	Not Listed	Not Listed	Not Listed
Water Beggarticks	Bidens beckii	Yellow	Not Listed	Not Listed	Not Listed
Water Blinks	Montia fontana	Red	Not Listed	Not Listed	Not Listed
Water Pennywort	Hydrocotyle umbellata	Red	Threatened	Threatened	Endangered
Water Pygmyweed	Crassula aquatica	Yellow	Not Listed	Not Listed	Not Listed
Wavy-leaved Aster	Symphyotrichum undulatum	Yellow	Not Listed	Not Listed	Not Listed
White Adder's-Mouth	Malaxis monophyllos	Red	Not Listed	Not Listed	Not Listed
White Mountain Saxifrage	Saxifraga paniculata	Yellow	Not Listed	Not Listed	Not Listed
White-stemmed Pondweed	Potamogeton praelongus	Yellow	Not Listed	Not Listed	Not Listed
Whorled Water Milfoil	Myriophyllum verticillatum	Yellow	Not Listed	Not Listed	Not Listed
Wiegand's Wild Rye	Elymus wiegandii	Red	Not Listed	Not Listed	Not Listed
Wild Comfrey	Cynoglossum virginianum	Red	Not Listed	Not Listed	Not Listed
Wild Leek	Allium tricoccum	Red	Not Listed	Not Listed	Not Listed
Wood Anemone	Anemone quinquefolia	Yellow	Not Listed	Not Listed	Not Listed
Woodland Rush	Juncus subcaudatus	Yellow	Not Listed	Not Listed	Not Listed
Yellow Ladies'-tresses	Spiranthes ochroleuca	Yellow	Not Listed	Not Listed	Not Listed
Yellow Lady's-slipper	Cypripedium parviflorum	Yellow	Not Listed	Not Listed	Not Listed
Yellow Spikerush	Eleocharis flavescens	Yellow	Not Listed	Not Listed	Not Listed
Lichens					
Boreal Felt Lichen (Atlantic pop.)	Erioderma pedicellatum	Red	Endangered	Endangered	Endangered
Ghost Antler Lichen	Pseudevernia cladonia	Yellow	Not at Risk	No Status	Not Listed



APPENDIX E MOOSE SURVEY METHODOLOGY

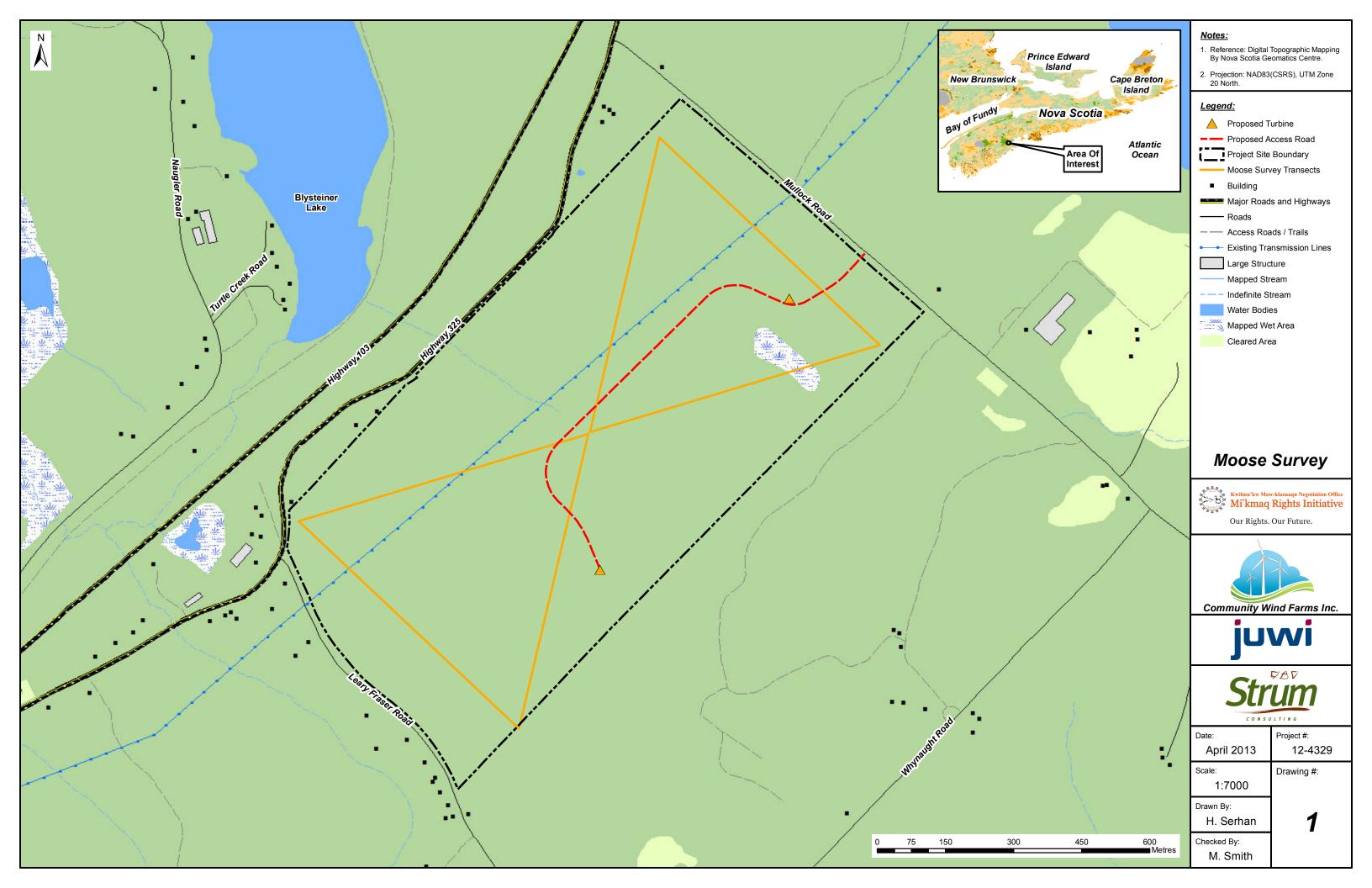
Snow-tracking surveys are an effective method of evaluating the terrestrial fauna community in an area. Survey areas within the Project site were developed with the following considerations:

- Coverage of the Project site: Survey areas were designed to cover as much of the Project site as possible;
- Habitat: Multiple habitats were targeted including mature softwood forest, young hardwood forest, mixed wood forest, and wetlands;
- Development footprint: Survey areas focused on land incorporating the development footprint (access roads and turbines), to the extent possible; and
- Access: The Project site incorporates a large tract of land which is only accessible via a limited number of logging roads. Transects were designed to start and finish at existing logging roads/access roads.

Two pre-construction surveys were completed on January 25 and March 4, 2013 using the snow-tracking methodology, and were conducted 1 to 7 days after $a \ge 10$ cm snowfall. Survey areas were located across the Project site, and included six 0.67 km transects in the configuration of two triangles covering a total distance of 4 km (Drawing E1). Surveys were conducted by a team of biologists with a demonstrable knowledge of mammalian animal sign and the ability to distinguish Mainland moose sign from that of other species.

All surveys were surveyed on-foot. All wildlife sign, primarily tracks but also including foraging sign, scat, and rubs, encountered during the surveys were identified to species, where possible. In addition, the locations of all noteworthy observations were recorded using GPS receivers capable of sub 5 m accuracy, with representative photos taken.





APPENDIX F BIRD SURVEY METHODOLOGY AND RESULTS

Pre-construction (baseline) avian field surveys were completed to complement desktop information and to characterize the pre-construction (baseline) bird community at the Project site throughout the year. These surveys were carried out by an expert birder and were designed with the purpose of collecting data on species presence, abundance, and habitat usage at the Project site during the months coinciding with spring migration, breeding, fall migration and the winter season. All field surveys were designed to conform to protocols outlined in the document "Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds" (CWS 2007).

Surveys were completed in February, April, May, June, July, September, October and November 2012. The following information was recorded at each survey location:

- Weather conditions (temperature, wind speed, cloud cover, and presence of precipitation);
- Date and time of day;
- Habitat description; and
- · GPS coordinates of the survey location.

Surveys employed point count, area search, and stopover count methodologies depending on the season and target species. Regardless of survey methodology, the following elements were consistent among surveys:

- surveys were four hours in duration, commencing as close to sunrise as possible;
- species presence and abundance were recorded based on visual and acoustic observations;
- approximate distance to each bird was recorded using a scale of 0-50 m, 50-100 m and further than 100 m;
- behavioural patterns were noted to determine whether birds flying over the site would be within the future blade-swept area of a turbine; and
- survey locations during each survey were separated by a minimum distance of 300 m, whenever possible, to account for all present habitat types throughout the Project site.

REFERENCES

CWS (Canadian Wildlife Service). 2007. Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds. 33 pp.



				Conditions						i	Distance to
Date		Coordinates		Wind Speed Temperature					!	Number	Observer
	Location	(UTM NAD83)	Habitat	and Direction	°C	Sky	Precipitation	Time	Common Name	Observed	(m)
			Roadside,								`
		0383256E,	young to mid-								
Feb. 29/2012	WHY1	4918431N	mixed	Calm	-8	Overcast	Light flurries	6:47 AM	American Crow	108	FO
									American Goldfinch	2	0-50
									Black-capped Chickadee	26	0-50
									Blue Jay	4	50-100
									Common Raven	1	50-100
									Common Raven	66	FO
									Dark-eyed Junco	6	0-50
									European Starling	48	FO
									Golden-crowned Kinglet	2	0-50
			Powerline, mid-								
			aged								
		0383024E,	mixedwoods,								
	WHY2	4918292N	small wetland	Calm	-8	Overcast	Light flurries	7:22 AM	American Crow	6	100 ⁺
									American Goldfinch	2	50-100
									American Robin	1	0-50
									Black-capped Chickadee	7	50-100
									Blue Jay	2	100 ⁺
									Common Raven	1	0-50
									Common Raven	1	FO
									Dark-eyed Junco	4	0-50
									European Starling	5	FO
									Pileated Woodpecker	1	50-100
		0382839E,	Mature softwood (white pine),								
	WHY3	4918129N	powerline	Calm	-8	Overcast	Light flurries	7:41 AM	American Crow	4	FO
									Black-capped Chickadee	8	100 ⁺
									Common Raven	1	50-100
									Common Raven	8	FO
									Dark-eyed Junco	11	0-50
									European Starling	1	FO
									Herring Gull	1	FO
									Red-breasted Nuthatch	1	50-100
		0382631E,	Mature mixed, powerline, softwood								
	WHY4	4917957N	shrub layer	Calm	-8	Overcast	Light flurries	8:01 AM	American Crow	5	50-100
									Black-capped Chickadee	8	50-100



				Conditions							Distance to
Date	Location	Coordinates		Wind Speed Temperature						Number	Observer
		(UTM NAD83)	Habitat	and Direction	·°C	Sky	Precipitation	Time	Common Name	Observed	(m)
		, ,					·		Blue Jay	4	50-100
									Brown Creeper	2	0-50
									Common Raven	3	FO
									Dark-eyed Junco	2	0-50
									Downy Woodpecker	1	50-100
									Golden-crowned Kinglet	4	0-50
									Red-breasted Nuthatch	1	50-100
			Powerline,								
			mature								
			hardwoods								
		0382470E,	with some								
	WHY5	4917805N	softwoods	Calm	-8	Overcast	Light flurries	8:26 AM	American Crow	8	100 ⁺
									Black-capped Chickadee	16	0-50
									Hairy Woodpecker	2	0-50
									Red-breasted Nuthatch	3	0-50
			Powerline,								
		0382154E,	mature								
	WHY6	4917552N	mixedwoods	Calm	-8	Overcast	Light flurries	8:40 AM	American Crow	6	FO
									Black-capped Chickadee	8	0-50
									Blue Jay	2	50-100
									Common Raven	2	FO
									Dark-eyed Junco	6	0-50
									Greater Black-backed Gull	2	FO
									Herring Gull	1	FO
									Killdeer	1	FO
									Red-breasted Nuthatch	1	50-100
		0382515E,	Mid-aged								
	WHY7	4917477N	mixed	Calm	-8	Overcast	Light flurries	9:01 AM	American Crow	4	0-50
									Black-capped Chickadee	6	0-50
									Brown Creeper	2	0-50
									Hairy Woodpecker	1	50-100
		0382495E,	Mid-aged						•		
	WHY8	4917233N	mixed	Calm	-8	Overcast	Light flurries	9:11 AM	American Crow	2	0-50
									Blue Jay	2	0-50
									Common Raven	1	FO
		0382762E,	Mid-aged								
	WHY9	4917534N	mixed, stream	Calm	-8	Overcast	Light flurries	9:23 AM	American Crow	4	100⁺
									Black-capped Chickadee	6	100 ⁺
									Golden-crowned Kinglet	2	100 ⁺
	1								Red-breasted Nuthatch	1	100 ⁺



					Conditio	ns					Distance to
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Observer (m)
		0382961E,	Mid-aged								
	WHY10	4917688N	softwood	Calm	-8	Overcast	Light flurries	9:39 AM	American Crow	2	50-100
									Red-breasted Nuthatch	1	100 ⁺
		0383045E,	Mid-aged								
	WHY11	4917970N	softwood	Calm	-8	Overcast	Light flurries	9:48 AM	American Crow	3	50-100
									Dark-eyed Junco	2	0-50
									Red-breasted Nuthatch	1	100 ⁺
	WHY12	0383284E, 4917995N	Softwood, edge of shrub swamp	Calm	-8	Overcast	Light flurries	10:03 AM	American Crow	4	100 ⁺
	*******	101700011	owamp	- Cairri	Ŭ	Overeast	Light named	10.007411	American Crow	4	FO
									American Crow	4	0-50
									American Goldfinch	10	0-50
									Black-capped Chickadee	2	100 ⁺
									Black-capped Chickadee	17	0-50
									Blue Jav	4	50-100
									Common Raven	5	FO
									Golden-crowned Kinglet	2	0-50
									Hairy Woodpecker	1	100 ⁺
									Hairy Woodpecker	2	0-50
									Red-breasted Nuthatch	2	50-100
									Red-breasted Nuthatch	2	0-50
	WHY13	0383456E, 4918255N	Roadside	Calm	-8	Overcast	Light flurries	10:35 AM	American Crow	1	FO
									Black-capped Chickadee	4	0-50
									Blue Jay	4	0-50
									Dark-eyed Junco	3	0-50
									Hairy Woodpecker	1	0-50
-									Red-tailed Hawk	1	FO
									Song Sparrow	2	0-50



	0 : 25 1	NSDNR	COSEWIC	SARA	NSESA	Number of Times	Number of Individuals
Common Name	Scientific Name	Status	Status	Status	Status	Observed	Observed
American Crow	Corvus brachyrhynchos	Green	Not Listed	Not Listed	Not Listed	15	165
American Goldfinch	Carduelis tristis	Green	Not Listed	Not Listed	Not Listed	3	14
American Robin	Turdus migratorius	Green	Not Listed	Not Listed	Not Listed	1	1
Black-capped Chickadee	Parus atricapillus	Green	Not Listed	Not Listed	Not Listed	11	108
Blue Jay	Cyanocitta cristata	Green	Not Listed	Not Listed	Not Listed	7	22
Brown Creeper	Certhia americana	Green	Not Listed	Not Listed	Not Listed	2	4
Common Raven	Corvus corax	Green	Not Listed	Not Listed	Not Listed	10	89
Dark-eyed Junco	Junco hyemalis	Green	Not Listed	Not Listed	Not Listed	7	34
Downy Woodpecker	Picoides pubescens	Green	Not Listed	Not Listed	Not Listed	1	1
European Starling	Sturnus vulgaris	Exotic	Not Listed	Not Listed	Not Listed	3	54
Golden-crowned Kinglet	Regulus satrapa	Yellow	Not Listed	Not Listed	Not Listed	4	10
Great Black-backed Gull	Larus marinus	Green	Not Listed	Not Listed	Not Listed	0	0
Hairy Woodpecker	Picoides villosus	Green	Not Listed	Not Listed	Not Listed	5	7
Herring Gull	Larus argentatus	Green	Not Listed	Not Listed	Not Listed	2	2
Killdeer	Charadrius vociferus	Yellow	Not Listed	Not Listed	Not Listed	1	1
Pileated Woodpecker	Dryocopus pileatus	Green	Not Listed	Not Listed	Not Listed	1	1
Red-breasted Nuthatch	Sitta canadensis	Green	Not Listed	Not Listed	Not Listed	9	13
Red-tailed Hawk	Buteo jamaicensis	Green	Not at Risk	Not Listed	Not Listed	1	1
Song Sparrow	Melospiza melodia	Green	Not Listed	Not Listed	Not Listed	1	2



				Conditions								
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs
		0383256E,	Roadside, young to		-	•					` ,	
April 11/2012	WHY1	4918431N	mid-mixed	Calm	1	Clear	None	6:32 AM	American Crow	4	100+	
									American Crow	2	0-50	
									American Goldfinch	18	0-50	
									American Robin	5	50-100	
									Black-capped Chickadee	2	50-100	
									Blue Jay	2	50-100	
									Common Grackle	2	100+	
									European Starling	12	100+	
									Northern Flicker	1	100+	
									Pine Siskin	2	0-50	
									Red-winged Blackbird	2	50-100	
									Song Sparrow	1	0-50	
									Song Sparrow	3	50-100	
		0383006E,							9 .			
	WHY14	4918615N	Field, mixed wood.	Calm	1	Clear	None	6:56 AM	American Crow	2	100+	
			,						American Goldfinch	4	0-50	
									American Robin	12	50-100	
									Mourning Dove	3	0-50	
									Northern Flicker	1	50-100	
									Purple Finch	1	100+	
									Red-breasted Nuthatch	1	100+	
									Song Sparrow	3	50-100	
	WHY2	0383024E, 4918292N	Powerline, mid- aged mixedwoods, small wetland	Calm	1	Clear	None	7:13 AM	American Robin	3	100+	
									Dark-eyed Junco	1	50-100	
	WHY3	0382839E, 4918129N	Mature softwood (white pine), powerline	Calm	1	Clear	None	7:28 AM	American Crow American Goldfinch	2 2	100+ 0-50	1P
											50-100	IP
									American Robin	3	50-100	
									Black-capped Chickadee	4	100+	
									Blue Jay	4		
							1		Common Grackle	1	100+	
							1		Dark-eyed Junco	2	50-100	40
							1		Evening Grosbeak	2	0-50	1P
							1		Golden-crowned Kinglet	4	0-50	2P
							1		Pine Siskin	2	0-50	1P
									Red-breasted Nuthatch	1	0-50	
	WHY4	0382631E, 4917957N	Mature mixed, powerline, softwood shrub layer	Calm	2	Clear	None	7:44 AM	American Robin	2	50-100	
	VVIII-T	701700711	Siliub layer	Juilli		Oloui	140110	, . , , , , , , , , , , , , , , , , , ,	Black-capped Chickadee	2	50-100	1P
							+		Dark-eyed Junco	2	50-100	



					Condition	าร						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs
Date	Location	(UTWINADOS)	парна	and Direction	remperature C	Эку	Precipitation	Time	Golden-crowned Kinglet	1	0-50	
									Hairy Woodpecker	1	0-50	
	_								Mourning Dove	2	0-50	1P
									Northern Flicker	1	100+	IP
	_								Purple Finch	1	0-50	
									Red-breasted Nuthatch	1	100+	
	WHY5	0382470E, 4917805N	Powerline, mature hardwoods with some softwoods	Calm	2	Clear	None	8:00 AM	American Robin	2	50-100	
									Black-capped Chickadee	2	0-50	1P
									Brown Creeper	1	100+	
									Dark-eyed Junco	2	50-100	
									Golden-crowned Kinglet	2	0-50	1P
									Purple Finch	2	50-100	1P
									Red-breasted Nuthatch	1	100+	
									White-winged Crossbill	2	0-50	1P
		0382154E,	Powerline, mature						-			
	WHY6	4917552N	mixedwoods	Calm	2	Clear	None	8:16 AM	American Crow	1	100+	
									American Robin	4	50-100	
									Common Grackle	1	FO	
									Common Raven	3	FO	
									Evening Grosbeak	2	FO	1P
									Mourning Dove	2	0-50	1P
									Purple Finch	1	100+	
									Red-breasted Nuthatch	1	100+	
									Song Sparrow	2	50-100	
	WHY7	0382515E, 4917477N	Mid-aged mixed	Calm	3	Clear	None	8:33 AM	American Robin	3	0-50	
									Black-capped Chickadee	6	0-50	
									Blue Jay	1	100+	
									Brown Creeper	1	100+	
									Dark-eyed Junco	1	0-50	
									Mourning Dove	1	50-100	
									Purple Finch	1	50-100	
		00004055							Red-breasted Nuthatch	1	50-100	
	WHY8	0382495E, 4917233N	Mid-aged mixed	Calm	3	Clear	None	8:50 AM	American Crow	2	100+	
									American Goldfinch	6	0-50	
									American Robin	6	50-100	
									Blue Jay	4	50-100	
									Dark-eyed Junco	2	50-100	
									Pileated Woodpecker	1	100+	
									Red-breasted Nuthatch	1	100+	
	WHY9	0382762E, 4917534N	Mid-aged mixed, stream	Calm	4	Clear	None	9:07 AM	American Crow	1	50-100	
									American Goldfinch	4	0-50	



					Condition	าร						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs
		(0112.00)		4.14 2.1664.611	· · · · · · · · · · · · · · · · · · ·	<u> </u>			American Robin	2	0-50	
									Blue Jay	2	50-100	
									Golden-crowned Kinglet	2	50-100	1P
									Pine Siskin	2	0-50	1P
									Purple Finch	1	0-50	
									Purple Finch	1	100+	
									Red-breasted Nuthatch	1	100+	
	WHY10	0382961E, 4917688N	Mid-aged softwood	Calm	4	Clear	None	9:28 AM	American Crow	2	100+	
			i i i i i i i i i i i i i i i i i i i					01201111	American Goldfinch	6	50-100	
									American Robin	1	50-100	
									American Robin	3	100+	
									Brown Creeper	1	50-100	
									Purple Finch	4	50-100	
									Red-breasted Nuthatch	1	100+	
		0383045E,							Tiod Diodolog Halifatori		1001	
	WHY11	4917970N	Mid-aged softwood	Calm	5	Clear	None	9:45 AM	American Crow	1	100+	
		101101011	ina agoa conneca	• • • • • • • • • • • • • • • • • • • •		0.00.	110.10	01.107	American Goldfinch	2	0-50	
									Blue Jay	5	0-50	
									Brown Creeper	1	50-100	
									Common Raven	1	50-100	
									Golden-crowned Kinglet	2	0-50	1P
									Pine Siskin	4	0-50	
									Red-breasted Nuthatch	2	50-100	
	WHY12	0383284E, 4917995N	Softwood, edge of shrub swamp	Calm	6	Clear	None	10:01 AM	American Crow	1	100+	
									American Goldfinch	2	0-50	
									Black-capped Chickadee	2	0-50	1P
									Blue Jay	3	0-50	
									Common Raven	2	50-100	
									Dark-eyed Junco	1	0-50	
									Herring Gull	2	FO	
									Killdeer	1	FO	
									Purple Finch	4	0-50	
									Red-breasted Nuthatch	1	50-100	
		0383456E,										
	WHY13	4918255N	Roadside	Calm	8	Clear	None	10:19 AM	Song Sparrow	2	0-50	
									American Crow	4	50-100	
									American Robin	5	50-100	
									Common Raven	1	FO	
									Hairy Woodpecker	2	50-100	1P
									Pileated Woodpecker	1	0-50	
									White-throated Sparrow	2	0-50	1P
lay 2/2012	WHY1	0383256E, 4918431N	Roadside, young to mid-mixed	Calm	3	Overcast	None	8:23 AM	American Crow	1	0-50	••
.a, 2/20 12	*****	.01010111	ma mixoa	Juin		J 1010401	110110	J.20 / 11VI	American Crow	4	100+	



					Conditio	15						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs
		(-				,			American Goldfinch	4	0-50	
									American Goldfinch	2	50-100	
									American Goldfinch	2	100+	
									American Robin	4	0-50	
									American Robin	5	50-100	
									American Robin	6	100+	
									Barred Owl	1	50-100	
									Black-capped Chickadee	1	50-100	
									Black-capped Chickadee	1	100+	
									Blue Jay	2	50-100	
									Brown Creeper	1	50-100	
									Common Raven	1	FO SW	
									Mourning Dove	1	50-100	
									Northern Flicker	1	100+	
									Northern Goshawk	1	FO N	
									Purple Finch	1	50-100	
									Red-breasted Nuthatch	1	50-100	
									Sharp-shinned Hawk	1	50-100	
									Song Sparrow	2	0-50	
									Song Sparrow	2	50-100	
									Yellow-rumped Warbler	2	0-50	
									Yellow-rumped Warbler	2	50-100	
									Yellow-rumped Warbler	1	100+	
	WHY2	0383024E, 4918292N	Powerline, mid- aged mixedwoods, small wetland	Calm	3	Overcast	None	8:44 AM	American Crow	2	100+	
									American Robin	2	50-100	
									American Robin	3	100+	
									Black-capped Chickadee	1	50-100	
									Common Raven	1	100+	
									Dark-eyed Junco	1	0-50	
									Dark-eyed Junco	2	50-100	
									Dark-eyed Junco	1	100+	
									Golden-crowned Kinglet	1	0-50	
									Hairy Woodpecker	1	0-50	
									Mourning Dove	1	100+	
									Northern Flicker	1	50-100	
									Purple Finch	1	50-100	
				ļ			ļ		Red-breasted Nuthatch	1	50-100	
									Ruby-crowned Kinglet	1	50-100	
									Ruby-throated Hummingbird	1	0-50	
	1			1			1		Ruffed Grouse	1	0-50	
	1			1			1		Yellow-rumped Warbler	2	0-50	
									Yellow-rumped Warbler	2	50-100	
									Yellow-rumped Warbler	1	100+	



					Conditio	ns						
		Coordinates		Wind Speed	Condition					Number	Distance to	Pairs
Date	Location	(UTM NAD83)	Habitat	and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Observed	Observer (m)	
Duit	20041011	(01111111111111111111111111111111111111	Mature softwood	una Direction	Tomporatare o	O.C.	1 Toolpitation	111110	Common Hamo	O DOC: YOU	Cocci vei (iii)	
		0382839E,	(white pine),									
	WHY3	4918129N	powerline	Calm	3	Overcast	None	9:03 AM	American Crow	2	100+	
		10.0.2011	potroniio	•		0.10.0001	110.10	0.007	American Robin	3	0-50	
									American Robin	3	50-100	
									American Robin	6	100+	
									American Woodcock	2	FO W	
									Black-capped Chickadee	2	0-50	1P
									Blue Jay	1	0-50	
									Brown Creeper	1	50-100	
									Common Loon	2	FOE	
									Common Raven	1	FO NE	
									Common Raven	1	FO W	
									Dark-eyed Junco	1	0-50	
									Dark-eyed Junco	1	50-100	
									Dark-eyed Junco	2	100+	
									Golden-crowned Kinglet	2	0-50	1P
									Hairy Woodpecker	1	50-100	
									Hermit Thrush	1	100+	
									Northern Flicker	1	0-50	
									Northern Flicker	1	100+	
									Northern Goshawk	1	50-100	
									Purple Finch	1	0-50	
									Purple Finch	1	100+	
									Red-breasted Nuthatch	1	50-100	
									Red-breasted Nuthatch	1	100+	
									Swamp Sparrow	1	0-50	
									White-throated Sparrow	1	100+	
									Yellow-rumped Warbler	1	0-50	
									Yellow-rumped Warbler	2	50-100	
									Yellow-rumped Warbler	3	100+	
	WHY4	0382631E, 4917957N	Mature mixed, powerline, softwood shrub layer	Calm	4	Overcast	None	9:26 AM	American Crow	1	50-100	
	VVIII 4	HI I CE I I CH	Siliub layel	Callii	*	Overtast	INUITE	J.ZU AIVI	American Crow American Robin	1	0-50	
	-								American Robin	2	50100	
	-								American Robin	3	100+	
	+						1		Black-capped Chickadee	4	0-50	2P
	-								Blue Jay	2	0-50	1P
	-								Blue Jay	2	100+	17
	+								Common Raven	1	100+	
	+									1	0-50	
	_								Dark-eyed Junco		0-50	
	_								Downy Woodpecker	1	0-50	
	_								Hairy Woodpecker			
		İ				l	<u> </u>		Long-eared Owl	1	50-100	



					Conditio	ns						
		Coordinates		Wind Speed	Condition					Number	Distance to	Pairs
Date	Location	(UTM NAD83)	Habitat	and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Observed	Observer (m)	. u
Duit	2004	(01111111111111111111111111111111111111	Tiubitut	una Birodion	Tomporataro o	Oity	1 rooipitation		Northern Flicker	1	50-100	
									Pine Siskin	1	50-100	
									Purple Finch	1	50-100	
									Red-breasted Nuthatch	1	50-100	
									Yellow-rumped Warbler	1	0-50	
									Yellow-rumped Warbler	1	100+	
	WHY5	0382470E, 4917805N	Powerline, mature hardwoods with some softwoods	Calm	4	Overcast	None	9:41 AM	American Robin	2	50-100	
	WIII3	431700311	30THC 30TW00G3	Cairii	7	Overtast	None	3.41 AW	American Robin	4	100+	
									Blue Jay	1	50-100	
									Common Raven	1	100+	
									Dark-eyed Junco	1	50-100	
									Dark-eyed Junco	2	100+	
									Mourning Dove	1	50-100	
									Northern Flicker	1	100+	
									White-throated Sparrow	2	0-50	
									Yellow-rumped Warbler	1	0-50	
									Yellow-rumped Warbler	1	50-100	
									Yellow-rumped Warbler	2	100+	
	WHY6	0382154E, 4917552N	Powerline, mature mixedwoods	Calm	4	Overcast	None	10:00 AM	American Crow	1	100+	
									Black-capped Chickadee	2	0-50	1P
									Blue Jay	1	0-50	
									Blue Jay	1	50-100	
									Common Raven	1	100+	
									Dark-eyed Junco	1	0-50	
									Dark-eyed Junco	2	100+	
									Downy Woodpecker	1	50-100	
									Golden-crowned Kinglet	1	0-50	
									Hairy Woodpecker	1	0-50	
									Hermit Thrush	1	50-100	
									Hermit Thrush	2	100+	
									Song Sparrow	2	100+	
									Swainson's Thrush	1	0-50	
									Yellow-rumped Warbler	1	0-50	
									Yellow-rumped Warbler	2	50-100	
									Yellow-rumped Warbler	2	100+	
	WHY7	0382515E, 4917477N	Mid-aged mixed	Calm	4	Overcast	None	10:17 AM	American Crow	2	100+	
									American Goldfinch	2	FO NW	
									American Robin	2	50-100	
									American Robin	3	100+	
									Black-capped Chickadee	2	0-50	1P
									Blue Jay	1	100+	
									Brown Creeper	1	0-50	



		ı		ı	0			1		ı	1	
		0		Wind Once d	Conditio	ns				No. and to a se	Distance to	Daine
D.4.		Coordinates	11-12-4	Wind Speed	T	0.	B		O N	Number	Distance to	Pairs
Date	Location	(UTM NAD83)	Habitat	and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Observed	Observer (m)	
									Dark-eyed Junco	1	50-100	
									Dark-eyed Junco	2	100+	
									Hairy Woodpecker	1	50-100	
									Mourning Dove	1	100+	
									Pileated Woodpecker	1	0-50	
									Purple Finch	1	50-100	
									Red-breasted Nuthatch	1	0-50	
									Red-breasted Nuthatch	1	100+	
									Yellow-rumped Warbler	2	50-100	
		20001055							Yellow-rumped Warbler	1	100+	
	WHY8	0382495E, 4917233N	Mid-aged mixed	Calm	4	Overcast	None	10:33 AM	American Crow	1	100+	
									American Robin	1	50-100	
									American Robin	2	100+	
									Black-capped Chickadee	2	0-50	1P
									Blue Jay	1	50-100	
									Brown Creeper	1	0-50	
									Common Raven	1	100+	
									Golden-crowned Kinglet	3	0-50	
									Hairy Woodpecker	1	0-50	
									Northern Flicker	1	100+	
									Pine Siskin	1	0-50	
									Purple Finch	1	100+	
									Red-breasted Nuthatch	2	0-50	1P
	WHY9	0382762E, 4917534N	Mid-aged mixed, stream	Calm	4	Overcast	None	10:51 AM	American Crow	2	100+	
			01100111		•	0.0.000		101017111	American Robin	1	50-100	
									American Robin	4	100+	
									Blue Jay	1	0-50	
									Blue Jay	2	50-100	
									Golden-crowned Kinglet	2	0-50	1P
									Mourning Dove	1	50-100	
									Purple Finch	1	50-100	
									Red-breasted Nuthatch	1	50-100	
		0382961E,							rea breasted (Validator)	'	00 100	
	WHY10	4917688N	Mid-aged softwood	Calm	4	Overcast	None	11:07 AM	American Crow	1	100+	
					· · · · · · · · · · · · · · · · · · ·				American Goldfinch	2	FO SE	
									Blue Jay	1	50-100	
									Blue Jay	1	100+	
									Common Raven	1	100+	
									Downy Woodpecker	1	50-100	
									Hermit Thrush	2	100+	
									Mourning Dove	1	100+	
									Pine Siskin	1	0-50	
									Purple Finch	1	50-100	
									Red-breasted Nuthatch	1	0-50	



					Conditio	ns						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction			Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs
Date	Location	(UTWINADOS)	Парна	and Direction	Temperature °C	Эку	Precipitation	Time	Red-breasted Nuthatch	1	100+	
		0383045E,							Red-breasted Nuthatch	l	100+	
	WHY11	4917970N	Mid agad aafturaad	Calm		0.40.0004	None	11.00 0.01	American Crow		100+	
	VVIII	4917970IN	Mid-aged softwood	Calm	4	Overcast	None	11:26 AM	American Crow American Robin	3	50-100	
									American Robin	4	100+	
									Barred Owl	1	50-100	
									Barred Owl	2	100+	
									Black-capped Chickadee	2	0-50	1P
									Brown Creeper	1	50-100	IF
									Common Raven	1	100+	
									Dark-eyed Junco	1	50-100	
											100+	
									Dark-eyed Junco Hermit Thrush	2		
	_					-			Magnolia Warbler	1	100+ 100+	
	_									1	100+	
									Mourning Dove	1	100+	
	_								Northern Flicker Purple Finch		50-100	
	_								Red-breasted Nuthatch	1	0-50	
									Red-breasted Nuthatch	1	100+	
	_										0-50	
	_								Yellow-rumped Warbler Yellow-rumped Warbler	1		
									Yellow-rumped Warbler	1 2	50-100 100+	
		0383284E,	Softwood, edge of						•			
	WHY12	4917995N	shrub swamp	Calm	4	Overcast	None	11:45 AM		2	100+	
									American Robin	2	50-100	
									American Robin	4	100+	
									Black-capped Chickadee	1	50-100	
									Blue Jay	1	100+	
									Common Raven	1	50-100	
									Dark-eyed Junco	1	50-100	
									Dark-eyed Junco	1	100+	
									Golden-crowned Kinglet	1	0-50	
									Northern Flicker	1	100+	
									Purple Finch	1	50-100	
									Yellow-rumped Warbler	1	0-50	
									Yellow-rumped Warbler	1	50-100	
									Yellow-rumped Warbler	1	100+	
		0383456E,			_					_		
	WHY13	4918255N	Roadside	10 km/h SW	7	Overcast	None	12:03 PM		4	0-50	
									American Robin	5	0-50	
									American Robin	3	50-100	
									American Robin	8	100+	
									Black-capped Chickadee	2	0-50	1P
									Blue Jay	1	50-100	
									Common Raven	1	100+	
									Dark-eyed Junco	1	50-100	



					Conditio	ns						
		Coordinates		Wind Speed	Jonatho					Number	Distance to	Pairs
Date	Location	(UTM NAD83)	Habitat	and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Observed	Observer (m)	
Duit	2004	(01111111111111111111111111111111111111	Tidalitat	una Direction	Tomporataro o	O.C.	. rooipitation		Dark-eyed Junco	1	100+	
									Hermit Thrush	1	100+	
									Northern Flicker	1	100+	
									Purple Finch	1	50-100	
									Red-breasted Nuthatch	1	100+	
									Song Sparrow	2	0-50	
									Song Sparrow	1	100+	
									White-throated Sparrow	1	50-100	
									Yellow-rumped Warbler	3	0-50	
									Yellow-rumped Warbler	1	50-100	
									Yellow-rumped Warbler	1	100+	
		0383006E,							Tellow Tumped Warbler	'	1001	
	WHY14	4918615N	Field, mixed wood.	Calm	3	Overcast	None	8:07 AM		2	100+	
									American Goldfinch	2	0-50	
									American Goldfinch	4	50-100	
									American Robin	3	0-50	
									American Robin	3	50-100	
									American Robin	4	100+	
									Black-capped Chickadee	2	0-50	1P
									Common Grackle	2	100+	
									Mallard	2	FO N	1P
									Northern Flicker	1	0-50	
									Red-winged Blackbird	1	100+	
									Song Sparrow	2	0-50	
									Song Sparrow	1	100+	
									White-throated Sparrow	1	0-50	
									Yellow-rumped Warbler	2	0-50	
									Yellow-rumped Warbler	1	50-100	
									Yellow-rumped Warbler	1	100+	
		0383256E.	Roadside, young to						•			
May 25/2012	WHY1	4918431N	mid-mixed	10 km/h SE	8	Overcast	None	5:20 AM	American Crow	2	100+	
-,					-				American Goldfinch	1	0-50	
									American Redstart	2	0-50	
									American Redstart	2	50-100	
									American Redstart	4	100+	
									American Robin	4	0-50	
									American Robin	9	100+	
									Black-capped Chickadee	2	0-50	1P
									Black-throated Blue	_	0 00	
									Warbler	1	0-50	
									Black-throated Green		0 00	
									Warbler	2	0-50	
									Black-throated Green		0 00	
									Warbler	3	100+	
									Chipping Sparrow	1	0-50	
									Common Raven	2	100+	



					Condition	ns						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction		Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs
		,				-			Common Yellowthroat	1	0-50	
									Dark-eyed Junco	1	50-100	
									Evening Grosbeak	1	0-50	
									Northern Parula	2	0-50	
									Northern Parula	2	100+	
									Northern Waterthrush	1	100+	
									Red-eyed Vireo	2	0-50	
									Red-eyed Vireo	2	100+	
									Ruby-throated			
									Hummingbird	1	0-50	
									Ruffed Grouse	1	100+	
									Song Sparrow	2	0-50	1P
									Song Sparrow	4	100+	
									Veery	1	50-100	
									Veery	1	100+	
									White-throated Sparrow	4	50-100	
			Powerline, mid-						·			
		0383024E,	aged mixedwoods,									
	WHY2	4918292N	small wetland	10 km/h SE	8	Overcast	None	5:37 AM	American Crow	2	100+	
									American Goldfinch	1	100+	
									American Redstart	3	50-100	
									American Redstart	1	100+	
									American Robin	1	0-50	
									American Robin	3	50-100	
									American Robin	2	100+	
									Black-and-white Warbler	2	0-50	
									Black-and-white Warbler	1	100+	
									Black-capped Chickadee	1	50-100	
									Black-throated Blue			
									Warbler	1	100+	
									Black-throated Green			
									Warbler	4	0-50	
									Black-throated Green	-		
									Warbler	2	100+	
									Blue Jay	1	100+	
									Blue-headed Vireo	1	50-100	
									Blue-headed Vireo	1	100+	
				1			İ		Canada Warbler	1	50-100	
									Chestnut-sided Warbler	1	50-100	
									Common Grackle	1	0-50	
									Dark-eyed Junco	1	50-100	
									Evening Grosbeak	1	50-100	
									Hermit Thrush	2	100+	
				<u> </u>					Magnolia Warbler	2	50-100	
				1			1		Mourning Dove	1	100+	
							1		Northern Parula	1	0-50	



					Condition	ns						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs
		(011				011,9			Northern Parula	2	100+	-
									Ovenbird	1	50-100	-
									Ovenbird	1	100+	-
									Red-breasted Nuthatch	1	100+	-
									Red-eyed Vireo	2	50-100	
									Swainson's Thrush	4	100+	
									Swamp Sparrow	1	0-50	
									Veery	2	100+	
									White-throated Sparrow	2	0-50	
									White-throated Sparrow	2	100+	
									Winter Wren	1	100+	
		0382839E,	Mature softwood (white pine),									
	WHY3	4918129N	powerline	10 km/h SE	8	Overcast	None	5:56 AM	American Crow	4	100+	
									American Goldfinch	2	50-100	
									Black-and-white Warbler	1	0-50	
									Black-and-white Warbler	2	50-100	
									Black-and-white Warbler	1	100+	
									Black-capped Chickadee	2	0-50	1P
									Black-throated Green			
									Warbler	6	0-50	
									Black-throated Green			
									Warbler	4	50-100	
									Black-throated Green			
									Warbler	3	100+	
									Blue-headed Vireo	1	0-50	
									Blue-headed Vireo	1	100+	
									Common Yellowthroat	1	0-50	
									Common Yellowthroat	1	50-100	
									Common Yellowthroat	2	100+	
									Hermit Thrush	2	0-50	
									Hermit Thrush	5	100+	
									Mourning Dove	1	100+	
									Northern Parula	4	0-50	
									Northern Parula	2	100+	
									Pine Siskin	5	0-50	Family
									Red-eyed Vireo	4	0-50	
									Red-eyed Vireo	2	50-100	
									Red-eyed Vireo	2	100+	
									Swainson's Thrush		2	100+
									Tree Swallow	2	0-50	
									Winter Wren	1	100+	
		0382631E,	Mature mixed, powerline, softwood									
	WHY4	4917957N	shrub layer	10 km/h SE	9	Overcast	None	6:12 AM	American Crow	4	100+	



					Condition	ıs						
		Coordinates		Wind Speed						Number	Distance to	Pairs
Date	Location	(UTM NAD83)	Habitat	and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Observed	Observer (m)	
									American Goldfinch	1	50-100	
									American Robin	2	0-50	
									American Robin	3	50-100	
									American Robin	3	100+	
									Black-and-white Warbler	3	0-50	
									Black-and-white Warbler	4	50-100	
									Black-and-white Warbler	3	100+	
									Black-capped Chickadee	2	50-100	1P
									Black-throated Blue			
									Warbler	1	0-50	
									Black-throated Green			
									Warbler	2	0-50	
									Black-throated Green			
									Warbler	5	50-100	
									Black-throated Green			
									Warbler	2	100+	
									Blue Jay	2	0-50	1P
									Blue-headed Vireo	2	50-100	
									Blue-headed Vireo	3	100+	
									Chestnut-sided Warbler	1	50-100	
									Common Loon	1	FO S	
									Dark-eyed Junco	2	0-50	1P
									Dark-eyed Junco	1	100+	
									Hermit Thrush	3	100+	
									Mourning Dove	2	0-50	1P
									Ovenbird	2	0-50	
									Ovenbird	4	50-100	
									Ovenbird	2	100+	
									Red-eyed Vireo	4	0-50	
									Red-eyed Vireo	4	100+	
									Tree Swallow	1	FO SE	
									Veery	2	100+	
		0382470E,	Powerline, mature hardwoods with									
	WHY5	4917805N	some softwoods	10 km/h SE	9	Overcast	None	6:28 AM	American Crow	1	100+	
									American Redstart	4	0-50	
									American Redstart	2	50-100	
									American Redstart	2	100+	
									American Robin	4	0-50	
									American Robin	5	100+	
									Bay-breasted Warbler	1	50-100	
									Black-and-white Warbler	4	0-50	
									Black-and-white Warbler	3	50-100	
	1								Black-and-white Warbler	2	100+	
									Black-capped Chickadee	1	0-50	
									Black-capped Chickadee	1	50-100	



					Conditio	าร						
		Coordinates		Wind Speed						Number	Distance to	Pairs
Date	Location	(UTM NAD83)	Habitat	and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Observed	Observer (m)	
									Black-throated Blue			
									Warbler	1	50-100	
									Black-throated Green			
									Warbler	2	0-50	
									Black-throated Green			
									Warbler	3	50-100	
									Black-throated Green		400	
									Warbler	2	100+	
									Blue Jay	2	0-50	
									Blue-headed Vireo	2	50-100	
									Cedar Waxwing	1	0-50	
									Chestnut-sided Warbler	1	50-100	
									Common Yellowthroat	2	0-50	
									Hermit Thrush	2	100+	
	+								Mourning Dove	1	100+	
	+								Ovenbird Ovenbird	1	0-50 50-100	
									Ovenbird	2	100+	
									Red-breasted Nuthatch	5	100+	
										1	0-50	
									Red-eyed Vireo Red-eyed Vireo	3	50-100	
									Red-eyed Vireo	3 2	100+	
	_	02021545	Dowarling mature						Red-eyed vireo		100+	
	WHY6	0382154E, 4917552N	Powerline, mature mixedwoods	10 km/h SE	9	Overcast	None	6:46 AM	American Crow	3	100+	
									American Goldfinch	4	100+	
									American Redstart	2	50-100	
									American Redstart	6	100+	
									American Robin	4	0-50	
									American Robin	4	50-100	
									American Robin	6	100+	
									Black-and-white Warbler	2	50-100	
									Black-and-white Warbler	4	100+	
									Blackburnian Warbler	1	0-50	
									Black-capped Chickadee	2	50-100	
									Black-throated Blue			
									Warbler	2	100+	
									Black-throated Green			
									Warbler	4	50-100	
									Black-throated Green	_		
									Warbler	4	100+	
									Blue Jay	1	0-50	
									Blue-headed Vireo	2	50-100	
									Blue-headed Vireo	1	100+	
									Common Yellowthroat	1	50-100	
									Magnolia Warbler	2	50-100	
									Magnolia Warbler	4	100+	



					Conditio	ns						
		Coordinates		Wind Speed						Number	Distance to	Pairs
Date	Location	(UTM NAD83)	Habitat	and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Observed	Observer (m)	
		(-				- ,			Northern Flicker	2	100+	
									Northern Parula	1	0-50	
									Northern Parula	2	50-100	
									Northern Parula	2	100+	
									Northern Waterthrush	1	100+	
									Ovenbird	2	0-50	
									Ovenbird	4	50-100	
									Purple Finch	2	50-100	
									Red-eyed Vireo	2	0-50	
									Red-eyed Vireo	4	50-100	
									Red-eyed Vireo	5	100+	
									Red-winged Blackbird	1	100+	
		0382515E,							<u> </u>			
	WHY7	4917477N	Mid-aged mixed	10 km/h SE	9	Overcast	None	7:05 AM	American Robin	1	0-50	
			<u> </u>						American Robin	2	50-100	
									American Robin	5	100+	
									Black-capped Chickadee	6	0-50	
									Black-capped Chickadee	1	100+	
									Black-throated Green			
									Warbler	4	50-100	
									Black-throated Green			
									Warbler	2	100+	
									Blue-headed Vireo	2	0-50	
									Blue-headed Vireo	4	100+	
									Brown Creeper	1	50-100	
									Dark-eyed Junco	2	0-50	1P
									Dark-eyed Junco	1	100+	
									Eastern Wood-pewee	2	0-50	
									Hairy Woodpecker	1	0-50	
									Hermit Thrush	1	0-50	
									Hermit Thrush	2	100+	
									Least Flycatcher	1	100+	
									Mourning Dove	1	100+	
	1								Northern Parula	1	0-50	
	1						İ		Ovenbird	2	100+	
	1						İ		Red-breasted Nuthatch	2	0-50	
	1						İ		Red-eyed Vireo	1	0-50	
									Red-eyed Vireo	2	50-100	
									Red-eyed Vireo	4	100+	
		0382495E,							,			
	WHY8	4917233N	Mid-aged mixed	10 km/h SE	9	Overcast	None	7:22 AM	American Crow	3	100+	
	1				-				American Goldfinch	1	50-100	
	1								American Robin	1	0-50	
	1								American Robin	2	50-100	
	1								American Robin	2	100+	
							1		Black-capped Chickadee	2	50-100	



					Conditio	ns						
		Coordinates		Wind Speed						Number	Distance to	Pairs
Date	Location	(UTM NAD83)	Habitat	and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Observed	Observer (m)	
					-	-			Black-throated Green			
									Warbler	1	50-100	
									Black-throated Green			
									Warbler	3	100+	
									Blue Jay	4	50-100	
									Blue-headed Vireo	2	0-50	
									Blue-headed Vireo	2	50-100	
									Blue-headed Vireo	2	100+	
									Common Raven	1	50-100	
									Common Raven	1	100+	
									Dark-eyed Junco	2	0-50	1P
									Dark-eyed Junco	1	50-100	
									Hermit Thrush	2	100+	
									Mourning Dove	1	100+	
									Ovenbird	1	50-100	
									Ovenbird	2	100+	
									Pileated Woodpecker	1	50-100	
									Red-breasted Nuthatch	2	100+	
									Ruby-throated			
									Hummingbird	1	0-50	
									Winter Wren	1	100+	
									Yellow-rumped Warbler	1	0-50	
									Yellow-rumped Warbler	1	50-100	
		0382762E,	Mid-aged mixed,									
	WHY9	4917534N	stream	10 km/h SE	9	Overcast	None	7:41 AM		1	0-50	
									Black-and-white Warbler	1	100+	
									Black-throated Blue			
									Warbler	1	50-100	
									Black-throated Green			
									Warbler	2	50-100	
									Black-throated Green			
									Warbler	4	100+	
									Blue Jay	2	50-100	
									Blue-headed Vireo	2	0-50	
	1								Blue-headed Vireo	3	50-100	
	1								Blue-headed Vireo	4	100+	
									Brown Creeper	1	50-100	
									Common Raven	1	100+	
									Hairy Woodpecker	1	100+	
	1								Hermit Thrush	1	100+	
									Mourning Dove	1	100+	
									Northern Flicker	1	100+	
									Northern Parula	1	50-100	
									Ovenbird	2	50-100	
	1								Ovenbird	2	100+	
	_1								Red-breasted Nuthatch	1	100+	



					Conditio	ns						
		Coordinates		Wind Speed						Number	Distance to	Pairs
Date	Location	(UTM NAD83)	Habitat	and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Observed	Observer (m)	
		0382961E,										
	WHY10	4917688N	Mid-aged softwood	10 km/h SE	9	Overcast	None	7:59 AM		2	50-100	
									American Robin	1	50-100	
									American Robin	4	100+	
									Blackburnian Warbler	1	0-50	
									Black-capped Chickadee	1	0-50	
									Black-capped Chickadee	2	50-100	
									Blue Jay	2	50-100	
									Blue-headed Vireo	1	0-50	
									Blue-headed Vireo	1	50-100	
									Blue-headed Vireo	2	100+	
									Brown Creeper	1	50-100	
-									Common Raven	1	100+	
									Hermit Thrush	1	100+	
									Ovenbird	2	50-100	
-									Ovenbird	2	100+	
									Ovenbird	1	0-50	
									Red-breasted Nuthatch	2	100+	
									Yellow-rumped Warbler	1	50-100	
		0383045E,										
	WHY11	4917970N	Mid-aged softwood	10 km/h SE	9	Overcast	None	8:19 AM	American Crow	2	100+	
									American Robin	1	0-50	
									American Robin	3	50-100	
									American Robin	6	100+	
									Black-capped Chickadee	1	0-50	
									Black-capped Chickadee	1	50-100	
									Black-throated Blue			
									Warbler	1	100+	
									Black-throated Green			
									Warbler	2	50-100	
									Black-throated Green			
									Warbler	3	100+	
									Blue Jay	2	50-100	
									Brown Creeper	1	50-100	
									Common Raven	1	100+	
									Hermit Thrush	2	50-100	
									Hermit Thrush	2	100+	
									Northern Parula	1	50-100	
									Osprey	1	100+	
									Ovenbird	1	50-100	
									Ovenbird	2	100+	
									Swainson's Thrush	3	50-100	
									Yellow-rumped Warbler	1	50-100	
									Yellow-rumped Warbler	1	100+	
		0383284E,	Softwood, edge of							-		
	WHY12	4917995N	shrub swamp	10 km/h SE	9	Overcast	None	8:36 AM	Alder Flycatcher	1	50-100	



					Conditio	ns						
		Coordinates		Wind Speed						Number	Distance to	Pairs
Date	Location	(UTM NAD83)	Habitat	and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Observed	Observer (m)	
		(01				,			American Redstart	1	50-100	
									American Robin	2	50-100	
									American Robin	4	100+	
									Black-and-white Warbler	1	100+	
									Blackburnian Warbler	2	50-100	
									Black-throated Green			
									Warbler	2	50-100	1
									Black-throated Green			
									Warbler	4	100+	1
									Blue Jay	1	50-100	
									Blue-headed Vireo	2	0-50	
									Blue-headed Vireo	4	50-100	
									Blue-headed Vireo	2	100+	
									Common Raven	6	100+	
									Common Yellowthroat	1	50-100	
									Dark-eyed Junco	1	50-100	
									Mourning Dove	1	50-100	
									Red-eyed Vireo	3	50-100	
									Red-eyed Vireo	7	100+	
									Yellow-rumped Warbler	1	50-100	
		0383456E,							-			
	WHY13	4918255N	Roadside	10 km/h SE	9	Overcast	None	9:00 AM	American Goldfinch	2	50-100	1
									American Redstart	3	0-50	
									American Redstart	2	50-100	
									American Redstart	2	100+	
									American Robin	2	0-50	
									American Robin	5	50-100	
									American Robin	6	100+	
									Black-capped Chickadee	4	0-50	
									Black-throated Green			1
									Warbler	1	0-50	
									Black-throated Green			1
									Warbler	3	50-100	
									Black-throated Green			1
									Warbler	2	100+	
									Blue-headed Vireo	2	0-50	
									Blue-headed Vireo	2	100+	<u> </u>
									Chestnut-sided Warbler	4	0-50	<u> </u>
												Active
				1								nest, 3
				1								adults, 3
									Common Raven	6	0-50	young
									European Starling	2	50-100	<u> </u>
									Killdeer	1	FO E	<u> </u>
									Least Flycatcher	2	50-100	
									Northern Parula	1	0-50	<u> </u>



					Condition	s						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs
					-				Northern Waterthrush	1	100+	
									Ovenbird	1	0-50	
									Ovenbird	2	50-100	
									Ovenbird	3	100+	
									Purple Finch	2	50-100	
									Red-eyed Vireo	5	0-50	
									Red-eyed Vireo	4	50-100	
									Red-eyed Vireo	4	100+	
									Rose-breasted Grosbeak	1	0-50	
									Song Sparrow	2	50-100	
									Song Sparrow	1	100+	
									White-throated Sparrow	2	0-50	1P
•						•			White-throated Sparrow	2	50-100	
			·			·			White-throated Sparrow	1	100+	



Common Name	Scientific Name	NSDNR Status	COSEWIC Status	SARA Status	NSESA Status	Number of Times Observed	Number of Individuals Observed
Alder Flycatcher	Empidonax alnorum	Green	Not Listed	Not Listed	Not Listed	1	1
American Crow	Corvus brachyrhynchos	Green	Not Listed	Not Listed	Not Listed	31	64
American Goldfinch	Spinus tristis	Green	Not Listed	Not Listed	Not Listed	25	82
American Redstart	Setophaga ruticilla	Green	Not Listed	Not Listed	Not Listed	14	36
American Robin	Turdus migratorius	Green	Not Listed	Not Listed	Not Listed	71	244
American Woodcock	Scolopax minor	Green	Not Listed	Not Listed	Not Listed	1	2
Barred Owl	Strix varia	Green	Not Listed	Not Listed	Not Listed	3	4
Bay-breasted Warbler	Dendroica castanea	Yellow	Not Listed	Not Listed	Not Listed	1	1
Black-and-white Warbler	Mniotilta varia	Green	Not Listed	Not Listed	Not Listed	16	35
Blackburnian Warbler	Dendroica fusca	Green	Not Listed	Not Listed	Not Listed	3	4
Black-capped Chickadee	Poecile atricapillus	Green	Not Listed	Not Listed	Not Listed	33	69
Black-throated Blue Warbler	Dendroica caerulescens	Green	Not Listed	Not Listed	Not Listed	7	8
Black-throated Green Warbler	Dendroica virens	Green	Not Listed	Not Listed	Not Listed	28	81
Blue Jay	Cyanocitta cristata	Green	Not Listed	Not Listed	Not Listed	31	57
Blue-headed Vireo	Vireo solitarius	Green	Not Listed	Not Listed	Not Listed	25	51
Brown Creeper	Certhia americana	Green	Not Listed	Not Listed	Not Listed	13	13
Canada Warbler	Wilsonia canadensis	Red	Threatened	Threatened	Not Listed	1	1
Cedar Waxwing	Bombycilla cedrorum	Green	Not Listed	Not Listed	Not Listed	1	1
Chestnut-sided Warbler	Dendroica pensylvanica	Green	Not Listed	Not Listed	Not Listed	4	7
Chipping Sparrow	Spizella passerina	Green	Not Listed	Not Listed	Not Listed	1	1
Common Grackle	Quiscalus quiscula	Green	Not Listed	Not Listed	Not Listed	5	7
Common Loon	Gavia immer	Red	Not at Risk	Not Listed	Not Listed	2	3
Common Raven	Corvus corax	Green	Not Listed	Not Listed	Not Listed	24	38
Common Yellowthroat	Geothlypis trichas	Green	Not Listed	Not Listed	Not Listed	7	9
Dark-eyed Junco	Junco hyemalis	Green	Not Listed	Not Listed	Not Listed	35	48
Downy Woodpecker	Picoides pubescens	Green	Not Listed	Not Listed	Not Listed	3	3
Eastern Wood-pewee	Contopus virens	Yellow	Not Listed	Not Listed	Not Listed	1	2
European Starling	Sturnus vulgaris	Exotic	Not Listed	Not Listed	Not Listed	2	14
Evening Grosbeak	Coccothraustes vespertinus	Green	Not Listed	Not Listed	Not Listed	4	6
Golden-crowned Kinglet	Regulus satrapa	Yellow	Not Listed	Not Listed	Not Listed	11	21
Hairy Woodpecker	Picoides villosus	Green	Not Listed	Not Listed	Not Listed	10	11
Hermit Thrush	Catharus guttatus	Green	Not Listed	Not Listed	Not Listed	18	33
Herring Gull	Larus argentatus	Green	Not Listed	Not Listed	Not Listed	1	2
Killdeer	Charadrius vociferus	Yellow	Not Listed	Not Listed	Not Listed	2	2
Least Flycatcher	Empidonax minimus	Green	Not Listed	Not Listed	Not Listed	2	3
Long-eared Owl	Asio otus	Red	Not Listed	Not Listed	Not Listed	1	1
Magnolia Warbler	Dendroica magnolia	Green	Not Listed	Not Listed	Not Listed	4	9
Mallard	Anas platyrhynchos	Green	Not Listed	Not Listed	Not Listed	1	2
Mourning Dove	Zenaida macroura	Green	Not Listed		Not Listed	19	24
Northern Flicker	Colaptes auratus	Green	Not Listed	Not Listed	Not Listed	16	17
Northern Goshawk	Accipiter gentilis	Green	Not at Risk	Not Listed	Not Listed	2	2



Common Name	Scientific Name	NSDNR Status	COSEWIC Status	SARA Status	NSESA Status	Number of Times Observed	Number of Individuals Observed
Northern Parula	Parula americana	Green	Not Listed	Not Listed	Not Listed	13	22
Northern Waterthrush	Seiurus noveboracensis	Green	Not Listed	Not Listed	Not Listed	3	3
Osprey	Pandion haliaetus		Not Listed	Not Listed	Not Listed	1	1
Ovenbird	Seiurus aurocapilla	Green	Not Listed	Not Listed	Not Listed	23	47
Pileated Woodpecker	Dryocopus pileatus	Green	Not Listed	Not Listed	Not Listed	4	4
Pine Siskin	Spinus pinus	Yellow	Not Listed	Not Listed	Not Listed	8	18
Purple Finch	Carpodacus purpureus	Green	Not Listed	Not Listed	Not Listed	23	32
Red-breasted Nuthatch	Sitta canadensis	Green	Not Listed	Not Listed	Not Listed	31	36
Red-eyed Vireo	Vireo olivaceus	Green	Not Listed	Not Listed	Not Listed	22	71
Red-winged Blackbird	Agelaius phoeniceus	Green	Not Listed	Not Listed	Not Listed	3	4
Rose-breasted Grosbeak	Pheucticus Iudovicianus	Yellow	Not Listed	Not Listed	Not Listed	1	1
Ruby-crowned Kinglet	Regulus calendula	Yellow	Not Listed	Not Listed	Not Listed	1	1
Ruby-throated Hummingbird	Archilochus colubris	Green	Not Listed	Not Listed	Not Listed	3	3
Ruffed Grouse	Bonasa umbellus	Green	Not Listed	Not Listed	Not Listed	2	2
Sharp-shinned Hawk	Accipiter striatus	Green	Not at Risk	Not Listed	Not Listed	1	1
Song Sparrow	Melospiza melodia	Green	Not Listed	Not Listed	Not Listed	16	32
Swainson's Thrush	Catharus ustulatus	Green	Not Listed	Not Listed	Not Listed	4	8
Swamp Sparrow	Melospiza georgiana	Green	Not Listed	Not Listed	Not Listed	2	2
Tree Swallow	Tachycineta bicolor	Yellow	Not Listed	Not Listed	Not Listed	2	3
Veery	Catharus fuscescens	Green	Not Listed	Not Listed	Not Listed	4	6
White-throated Sparrow	Zonotrichia albicollis	Green	Not Listed	Not Listed	Not Listed	11	20
White-winged Crossbill	Loxia leucoptera	Green	Not Listed	Not Listed	Not Listed	1	2
Winter Wren	Troglodytes troglodytes	Green	Not Listed	Not Listed	Not Listed	3	3
Yellow-rumped Warbler	Dendroica coronata	Green	Not Listed	Not Listed	Not Listed	37	52



					Conditio	ns						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs/Notes
			Roadside,									
1. 44/0040	14/11/4	0383256E,	young to mid-	0.1		_		- 44 484			50.400	
June 11/2012	WHY1	4918431N	mixed	Calm	8	Foggy	None	5:41 AM	American Crow	2	50-100	
									American Redstart American Redstart	3	0-50	
										2 4	50-100 0-50	
									American Robin American Robin	2	50-100	
									American Robin	2	100+	
									Black-and-white Warbler	1	50-100	45
									Black-capped Chickadee	2	0-50	1P
									Black-throated Blue Warbler	2	0-50	
									Cedar Waxwing	11	0-50	
									Chestnut-sided Warbler	5	0-50	
									Common Raven	2	0-50	
									Mourning Dove	1	50-100	
									Ovenbird	1	0-50	
									Purple Finch	1	0-50	
									Red-eyed Vireo	2	0-50	
									Red-eyed Vireo	2	50-100	
									Ruby-crowned Kinglet	1	50-100	
									Song Sparrow	2	0-50	
									White-throated Sparrow	1	0-50	
									White-throated Sparrow	1	50-100	
									Yellow Warbler	1	0-50	
									Yellow Warbler	1	100+	
	\A/I I\/O	0383024E,	Powerline, midaged mixedwoods,	Colm		Farmi	Links only	0.00 414	American Dakin		0.50	
	WHY2	4918292N	small wetland	Calm	8	Foggy	Light rain	6:00 AM	American Robin	2	0-50	
							-		American Robin	4	50-100	
									American Robin	2	100+	
									Black-and-white Warbler	1	0-50	45
									Black-capped Chickadee Black-throated Green Warbler	1	0-50 0-50	1P
									Black-throated Green Warbler	2	50-100	
									Black-throated Green Warbler	1	100+	
									Common Raven	1	100+	
									Common Yellowthroat	2	0-50	
									Dark-eyed Junco	1	50-100	
									Dark-eyed Junco	1	100+	
									Golden-crowned Kinglet	1	0-50	
									Hermit Thrush	2	0-50	
									Hermit Thrush	2	100+	
									Magnolia Warbler	1	0-50	



					Conditio	ns						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs/Notes
									Magnolia Warbler	2	50-100	
									Magnolia Warbler	2	100+	
									Mourning Dove	1	0-50	
									Mourning Dove	1	100+	
									Ovenbird	1	0-50	
									Ovenbird	1	50-100	
									Red-breasted Nuthatch	2	0-50	
									Red-eyed Vireo	3	0-50	
									Red-eyed Vireo	2	50-100	
									Swainson's Thrush	5	100+	
									Swamp Sparrow	1	0-50	
	WHY3	0382839E, 4918129N	Mature softwood (white pine), powerline	Calm	9	Foggy	Light rain	6:24 AM	American Goldfinch	1	0-50	
	Willia	101012011	porronnio	- Jann	Ŭ	. 099)	Light rain	0.2 17 (17)	American Robin	3	0-50	1P
									American Robin	2	50-100	
									American Robin	3	100+	
	+								Black-and-white Warbler	1	0-50	
									Black-capped Chickadee	2	0-50	1P
									Black-throated Green Warbler Blue Jay	1	0-50 0-50	
									Blue-headed Vireo	1	0-50	
	+								Blue-headed Vireo	1	100+	
									Common Yellowthroat	1	0-50	
									Magnolia Warbler	1	0-50	
									Magnolia Warbler	1	50-100	
	+								Magnolia Warbler	1	100+	
									Northern Parula	2	0-50	
									Pine Siskin	1	0-50	
									Red-breasted Nuthatch	1	50-100	
									Red-eyed Vireo	2	0-50	
									Red-eyed Vireo	1	50-100	
									Red-eyed Vireo	1	100+	
									Swamp Sparrow	1	0-50	
	+	1							Yellow-rumped Warbler	2	0-50	
									Yellow-rumped Warbler	1	100+	
	N/I IV/4	0382631E,	Mature mixed, powerline, softwood shrub	Color	44	F	Linksonia	0:44 AM	·			
	WHY4	4917957N	layer	Calm	11	Foggy	Light rain	6:44 AM	American Crow	1	100+	1
	-								American Robin	2	0-50	
	-								American Robin	3	50-100	
	-								American Robin	2	100+	
	-								Black-and-white Warbler	1	0-50	
									Black-and-white Warbler	1	50-100	



					Conditio	ns						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs/Notes
									Black-capped Chickadee	4	0-50	2P
									Black-throated Green Warbler	3	0-50	
									Black-throated Green Warbler	2	50-100	
									Common Yellowthroat	1	0-50	
									Dark-eyed Junco	1	50-100	
									Hermit Thrush	3	0-50	
									Magnolia Warbler	2	0-50	
									Magnolia Warbler	2	50-100	
									Magnolia Warbler	2	100+	
									Northern Flicker	1	0-50	
									Ovenbird	1	0-50	
									Ovenbird	1	50-100	
									Red-breasted Nuthatch	1	0-50	
									Red-eyed Vireo	4	0-50	
									Red-eyed Vireo	2	50-100	
									Red-eyed Vireo	1	100+	
									Yellow-rumped Warbler	2	0-50	
									Yellow-rumped Warbler	1	100+	
		0382470E,	Powerline, mature hardwoods with some									
	WHY5	4917805N	softwoods	Calm	11	Clearing	None	7:07 AM	American Crow	3	100+	
									American Goldfinch	2	0-50	1P
									American Robin	6	0-50	
									American Robin	2	50-100	
									American Robin	2	100+	
									Barred Owl	1	100+	
									Black-and-white Warbler	1	0-50	
									Black-capped Chickadee	2	0-50	1P
									Black-throated Green Warbler	1	0-50	
									Black-throated Green Warbler	2	50-100	
									Blue Jay	2	50-100	
									Cedar Waxwing	1	0-50	
									Common Yellowthroat	1	100+	
									Hairy Woodpecker	2	0-50	
									Hermit Thrush	2	0-50	
									Ovenbird	2	0-50	
									Ovenbird	1	100+	
			_						Purple Finch	1	0-50	
									Red-breasted Nuthatch	2	50-100	
									Red-eyed Vireo	2	0-50	
									Red-eyed Vireo	2	50-100	



					Conditio	ns						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs/Notes
									Red-eyed Vireo	1	100+	
									Rose-breasted Grosbeak	1	50-100	
									Ruby-throated Hummingbird	1	0-50	
									Swainson's Thrush	1	0-50	
									Winter Wren	1	100+	
	14/11/04	0382154E,	Powerline, mature	0.1								
	WHY6	4917552N	mixedwoods	Calm	11	Sunny	None	7:28 AM	American Robin	2	0-50	
									American Robin	5	50-100	
									American Robin	4	100+	
									Black-and-white Warbler	2	0-50	
									Black-and-white Warbler	1	50-100	
									Black-capped Chickadee	2	0-50	1P
									Black-throated Green Warbler	2	0-50	
									Black-throated Green Warbler	2	50-100	
									Blue Jay	2	100+	
									Dark-eyed Junco	4	0-50	1P
									Dark-eyed Junco	2	50-100	
									Hermit Thrush	3	0-50	
									Hermit Thrush	2	100+	
									Northern Flicker	1	100+	
									Northern Parula	1	0-50	
									Ovenbird	2	0-50	
									Ovenbird	1	50-100	
									Red-breasted Nuthatch	1	50-100	
									Red-eyed Vireo		0-50	
										4		
									Red-eyed Vireo	2	50-100	
									Red-eyed Vireo	2	100+	
									Red-winged Blackbird	1	50-100	
									Song Sparrow	1	50-100	
									White-throated Sparrow	1	0-50	ļ
									White-throated Sparrow	1	50-100	
	WHY7	0382515E, 4917477N	Mid-aged mixed	Calm	11	Sunny	None	7:49 AM	American Robin	1	0-50	
									American Robin	2	50-100	
									American Robin	3	100+	
									Black-capped Chickadee	2	0-50	1P
									Black-throated Green Warbler	1	0-50	
									Black-throated Green Warbler	2	50-100	
									Blue Jay	1	0-50	
									Common Raven	1	100+	
									Eastern Wood-pewee	2	0-50	
									Hairy Woodpecker	2	0-50	1P



					Conditio	ns						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs/Notes
									Ovenbird	2	0-50	
									Ovenbird	2	50-100	
									Red-breasted Nuthatch	1	0-50	
									Red-eyed Vireo	1	0-50	
									Red-eyed Vireo	2	50-100	
									Red-eyed Vireo	2	100+	
		0382495E,	Mid-aged									
	WHY8	4917233N	mixed	Calm	11	Sunny	None	8:05 AM	American Crow	2	50-100	
									American Robin	2	0-50	
									American Robin	4	50-100	
									Black-and-white Warbler	1	50-100	
									Black-and-white Warbler	1	100+	
									Blackburnian Warbler	1	0-50	
									Black-throated Green Warbler	1	0-50	
									Black-throated Green Warbler	2	50-100	
											400	
									Black-throated Green Warbler	2	100+	
									Blue-headed Vireo	1	0-50	
									Dark-eyed Junco	1	50-100	
									Dark-eyed Junco	2	100+	
									Northern Parula	1	100+	
									Ovenbird	2	0-50	
									Ovenbird	2	50-100	
									Pileated Woodpecker	1	100+	
									Red-eyed Vireo	3	0-50	
									Red-eyed Vireo	3	50-100	
									Ruby-crowned Kinglet	1	100+	
									Winter Wren	1	100+	
		0382762E,	Mid-aged									
	WHY9	4917534N	mixed, stream	Calm	11	Sunny	None	8:24 AM	American Crow	1	100+	
									American Goldfinch	4	0-50	
									American Robin	1	0-50	
									American Robin	2	50-100	
									American Robin	4	100+	
									Black-capped Chickadee	1	50-100	
									Black-throated Green Warbler	2	0-50	
									Black-throated Green Warbler	2	50-100	
									Black-throated Green Warbler	1	100+	
									Blue Jay	2	0-50	
									Blue-headed Vireo	1	0-50	
									Brown Creeper	1	50-100	
									Dark-eyed Junco	1	50-100	



					Conditio	ne						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs/Notes
									Dark-eyed Junco	1	100+	
									Eastern Wood-pewee	1	50-100	
									Eastern Wood-pewee	1	100+	
									Magnolia Warbler	1	100+	
									Ovenbird	1	0-50	
									Ovenbird	1	100+	
									Purple Finch	1	0-50	
									Red-breasted Nuthatch	1	50-100	
									Red-eyed Vireo	2	50-100	
									Red-eyed Vireo	2	100+	
		0382961E,	Mid-aged						red-eyed vireo		100+	
	WHY10	4917688N	softwood	Calm	12	Cunny	None	0.45 AM	American Crow	2	100+	
	WHIT	4917000N	SUITWOOD	Callii	12	Sunny	INUITE	8:45 AM	American Crow American Robin	2	50-100	
	-	-					+		American Robin American Robin	2	100+	-
									Black-and-white Warbler	1	100+	
									Blackburnian Warbler	1	0-50	
									Black-capped Chickadee	2	0-50	
									Black-throated Green Warbler	1	0-50	
									Black-throated Green Warbler	2	50-100	
									Black-throated Green Warbler	3	100+	
									Blue Jay	1	0-50	
									Blue-headed Vireo	1	0-50	
									Eastern Wood-pewee	1	100+	
									Ovenbird	1	0-50	
									Ovenbird	1	100+	
									Red-breasted Nuthatch	1	0-50	
									Red-breasted Nuthatch	1	50-100	
									Red-eyed Vireo	2	0-50	
									Red-eyed Vireo	1	50-100	
									Red-eyed Vireo	1	100+	
	WHY11	0383045E, 4917970N	Mid-aged softwood	Calm	12	Sunny	None	9:10 AM	American Crow	1	100+	
						,			American Goldfinch	1	0-50	
									American Robin	2	50-100	
							1		American Robin	2	100+	1
									Blackburnian Warbler	1	0-50	
									Black-capped Chickadee	2	0-50	1P
									Black-throated Green Warbler	1	0-50	11
									Black-throated Green Warbler	2	50-100	
									Black-throated Green Warbler	2	100+	
	1	1							Blue Jay	1	0-50	1



					Conditio	ns						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs/Notes
									Blue-headed Vireo	1	0-50	
									Brown Creeper	1	0-50	
									Cedar Waxwing	1	0-50	
									Common Raven	3	100+	
									Dark-eyed Junco	1	0-50	
									Dark-eyed Junco	2	50-100	
									Hermit Thrush	7	50-100	
									Purple Finch	1	0-50	
									Red-breasted Nuthatch	2	50-100	
									Red-eyed Vireo	1	0-50	
									Red-eyed Vireo	1	50-100	
	14/11/40	0383284E,	Softwood, edge of shrub	0.1	10	•		0.00.444	į	•		
	WHY12	4917995N	swamp	Calm	13	Sunny	None	9:32 AM	American Goldfinch	3	0-50	
									American Robin	1	0-50	
									American Robin	2	50-100	
									American Robin	2	100+	
									Barred Owl	2	50-100	
									Black-throated Green Warbler	1	0-50	
									Black-throated Green Warbler	2	50-100	
									Black-throated Green Warbler	1	100+	
									Blue-headed Vireo	1	0-50	
									Common Raven	2	100+	
									Common Yellowthroat	1	0-50	
									Golden-crowned Kinglet	1	0-50	
									Great Horned Owl	1	100+	
									Ovenbird	1	0-50	
									Ovenbird	1	50-100	
							ļ		Purple Finch	1	0-50	
	1								Red-eyed Vireo	3	0-50	
									Red-eyed Vireo	2	50-100	
									Ruby-crowned Kinglet	2	0-50	
									Swamp Sparrow	1	50-100	
		0383256E,	Roadside, young to mid-									
July 7/2012	WHY1	4918431N	mixed	Calm	15	Overcast	None	5:09 AM	American Robin	1	0-50	
	1								American Robin	2	50-100	
	4								American Robin	1	100+	
									Blackburnian Warbler	1	100+	
									Common Raven	1	50-100	
									Hermit Thrush	1	100+	
									Northern Parula	2	0-50	
									Ovenbird	2	50-100	
									Red-eyed Vireo	1	0-50	



		<u> </u>		Conditions								
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs/Notes
									Song Sparrow	2	0-50	
									Yellow-rumped Warbler	1	100+	
	WHY2	0383024E, 4918292N	Powerline, mid- aged mixedwoods, small wetland	Calm	15	Overcast	None	5:30 AM	American Robin	1	100+	
										_		
									Black-throated Green Warbler		50-100	
									Blue-headed Vireo	1	100+	
									Common Yellowthroat	1	50-100	
									Common Yellowthroat	1	0-50	
									Dark-eyed Junco	1	50-100	
									Golden-crowned Kinglet	1	50-100	
									Hermit Thrush	1	50-100	
									Hermit Thrush	1	100+	
									Mourning Dove	1	100+	
		0382839E,	Mature softwood (white pine),			Cloudy						
	WHY3	4918129N	powerline	Calm	16	breaks	None	5:46 AM	Black-capped Chickadee	2	0-50	
									Black-throated Green Warbler	1	0-50	
									Dark-eyed Junco	1	0-50	
									Hermit Thrush	1	50-100	
									Hermit Thrush	2	100+	
									Mourning Dove	2	100+	
									Northern Parula	1	50-100	
									Ovenbird	1	50-100	
									Ovenbird	1	0-50	
									Pine Siskin	1	100+	
									Red-eyed Vireo	1	100+	
	WHY4	0382631E, 4917957N	Mature mixed, powerline, softwood shrub layer	Calm	16	Cloudy breaks	None	6:03 AM	American Crow	1	100+	
									Black-throated Green Warbler	1	0-50	
			ļ						Brown Creeper	1	100+	1
									Brown Creeper	2	0-50	
			ļ						Common Raven	1	100+	ļ
									Hermit Thrush	1	100+	
									Northern Parula	1	50-100	
									Osprey	1	F/O E	
									Ovenbird	1	100+	
									Ovenbird	1	0-50	
									Red-breasted Nuthatch	1	50-100	
	1							_	Red-eyed Vireo	1	0-50	



				Conditions Wind Speed Temperature								
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs/Notes
									Ruby-throated Hummingbird	1	0-50	
		0382470E,	Powerline, mature hardwoods with some			Cloudy						
	WHY5	4917805N	softwoods	Calm	16	breaks	None	6:26 AM	Black-throated Green Warbler	1	0-50	
									Brown Creeper	1	0-50	
									Cedar Waxwing	1	0-50	
									Dark-eyed Junco	1	50-100	
									Eastern Wood-pewee	1	100+	
									Hermit Thrush	3	0-50	
									Northern Parula	1	0-50	
									Ovenbird	1	0-50	
									Ovenbird	1	50-100	
									Ovenbird	1	100+	
									Red-eyed Vireo	1	50-100	
									Yellow-rumped Warbler	1	0-50	
) A # 1) / O	0382154E,	Powerline, mature	401 // 0	40	Cloudy		0.44.484				
	WHY6	4917552N	mixedwoods	10 km/h S	16	breaks	None	6:44 AM	American Crow	1	50-100	
									American Goldfinch	2	F/O N	
									American Redstart	1	0-50	
									Black-and-white Warbler	1	50-100	
									Black-capped Chickadee	1	0-50	
									Black-capped Chickadee	1	100+	
									Hermit Thrush	1	50-100	
									Northern Parula	1	0-50	
									Ovenbird	1	50-100	
		00005455				01 1			Red-eyed Vireo	3	0-50	
	WHY7	0382515E, 4917477N	Mid-aged mixed	10 km/h S	16	Cloudy breaks	None	7:10 AM	American Robin American Robin	1	50-100 0-50	
	+								Blackburnian Warbler	1	100+	
	+								Diackburnian warbier	1	100+	
									Black-throated Green Warbler	1	50-100	
									Broad-winged Hawk	1	0-50	
	-								Brown Creeper	2	50-100	
	-								Eastern Wood-pewee	1	50-100	
							1		Golden-crowned Kinglet	1	100+	0 (1
	-								Golden-crowned Kinglet	2	100+	2 fledglings
							1		Hermit Thrush	1	50-100	1
							1		Northern Parula	1	50-100	
	-								Ovenbird	2	100+	1P
	-								Ovenbird	1	50-100	
	-								Red-eyed Vireo	1	0-50	
		<u> </u>						<u> </u>	Red-eyed Vireo	1	50-100	



					Conditio	ns						
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)	Pairs/Notes
		0382495E,	Mid-aged	Calm (in								
	WHY8	4917233N	mixed	woods)	16	Cloudy	None	7:28 AM	American Robin	1	50-100	
									Display throated Cross Worklay	_	50.400	
									Black-throated Green Warbler	1	50-100	
									Blue Jay	1	100+ 100+	
									Eastern Wood-pewee Northern Flicker	2	0-50	
									Northern Parula	1	50-100	
									Ovenbird	1	0-50	
								-	Ovenbird	1	50-100	
									Red-breasted Nuthatch	1	50-100	
									Red-eyed Vireo	1	50-100	
								-	Red-eyed Vireo	1	100+	
									Yellow-rumped Warbler	1	50-100	
		0382762E,	Mid-aged	Calm (in					r ellow-rumped warbier	!	30-100	
	WHY9	4917534N	mixed, stream	woods)	16	Cloudy	None	7:53 AM	American Robin	1	100+	
									Black-throated Green Warbler	2	50-100	
									Eastern Wood-pewee	1	100+	
									Golden-crowned Kinglet	2	50-100	
									Ovenbird	2	0-50	
									Ovenbird	1	50-100	
									Purple Finch	1	50-100	
	WHY10	0382961E, 4917688N	Mid-aged softwood	Calm (in woods)	16	Cloudy	None	8:13 AM	Alder Flycatcher	1	100+	
									American Redstart	1	100+	
									Barred Owl	1	0-50	
									Blackburnian Warbler	2	0-50	
									Blue Jay	1	50-100	
									Brown Creeper	1	0-50	
									Common Yellowthroat	1	100+	
									Eastern Wood-pewee	1	0-50	
									Hermit Thrush	1	50-100	
									Hermit Thrush	1	100+	
									Mourning Dove	1	100+	
									Northern Flicker	1	100+	
	WHY11	0383045E, 4917970N	Mid-aged softwood	Calm (in woods)	16	Cloudy	Rain	8:36 AM	Black-capped Chickadee	2	50-100	
									Black-throated Green Warbler	1	50-100	
		0383284E,	Softwood, edge of shrub	Calm (in								
	WHY12	4917995N	swamp	woods)	16	Cloudy	Heavy rain	9:02 AM	Black-capped Chickadee	2	0-50	



Common Name	Scientific Name	NSDNR Status	COSEWIC Status	SARA Status	NSESA Status	Number of Times Observed	Number of Individuals Observed
Alder Flycatcher	Empidonax alnorum	Green	Not Listed	Not Listed	Not Listed	1	1
American Crow	Corvus brachyrhynchos	Green	Not Listed	Not Listed	Not Listed	9	14
American Goldfinch	Spinus tristis	Green	Not Listed	Not Listed	Not Listed	6	13
American Redstart	Setophaga ruticilla	Green	Not Listed	Not Listed	Not Listed	4	7
American Robin	Turdus migratorius	Green	Not Listed	Not Listed	Not Listed	41	93
Barred Owl	Strix varia	Green	Not Listed	Not Listed	Not Listed	3	4
Black-and-white Warbler	Mniotilta varia	Green	Not Listed	Not Listed	Not Listed	12	13
Blackburnian Warbler	Dendroica fusca	Green	Not Listed	Not Listed	Not Listed	6	7
Black-capped Chickadee	Poecile atricapillus	Green	Not Listed	Not Listed	Not Listed	15	29
Black-throated Blue Warbler	Dendroica caerulescens	Green	Not Listed	Not Listed	Not Listed	1	2
Black-throated Green Warbler	Dendroica virens	Green	Not Listed	Not Listed	Not Listed	35	55
Blue Jay	Cyanocitta cristata	Green	Not Listed	Not Listed	Not Listed	9	12
Blue-headed Vireo	Vireo solitarius	Green	Not Listed	Not Listed	Not Listed	8	8
Broad-winged Hawk	Buteo platypterus	Green	Not Listed	Not Listed	Not Listed	1	1
Brown Creeper	Certhia americana	Green	Not Listed	Not Listed	Not Listed	7	9
Cedar Waxwing	Bombycilla cedrorum	Green	Not Listed	Not Listed	Not Listed	4	4
Chestnut-sided Warbler	Dendroica pensylvanica	Green	Not Listed	Not Listed	Not Listed	1	5
Common Raven	Corvus corax	Green	Not Listed	Not Listed	Not Listed	7	11
Common Yellowthroat	Geothlypis trichas	Green	Not Listed	Not Listed	Not Listed	8	9
Dark-eyed Junco	Junco hyemalis	Green	Not Listed	Not Listed	Not Listed	14	20
Eastern Wood-pewee	Contopus virens	Yellow	Not Listed	Not Listed	Not Listed	9	10
Golden-crowned Kinglet	Regulus satrapa	Yellow	Not Listed	Not Listed	Not Listed	6	8
Great Horned Owl	Bubo virginianus	Green	Not Listed	Not Listed	Not Listed	1	1
Hairy Woodpecker	Picoides villosus	Green	Not Listed	Not Listed	Not Listed	2	4
Hermit Thrush	Catharus guttatus	Green	Not Listed	Not Listed	Not Listed	18	35
Magnolia Warbler	Dendroica magnolia	Green	Not Listed	Not Listed	Not Listed	10	15
Mourning Dove	Zenaida macroura	Green	Not Listed	Not Listed	Not Listed	6	7
Northern Flicker	Colaptes auratus	Green	Not Listed	Not Listed	Not Listed	4	5
Northern Parula	Parula americana	Green	Not Listed	Not Listed	Not Listed	10	12
Osprey	Pandion haliaetus	Green	Not Listed	Not Listed	Not Listed	1	1
Ovenbird	Seiurus aurocapilla	Green	Not Listed	Not Listed	Not Listed	34	43
Pileated Woodpecker	Dryocopus pileatus	Green	Not Listed	Not Listed	Not Listed	1	1
Pine Siskin	Spinus pinus	Yellow	Not Listed	Not Listed	Not Listed	2	2
Purple Finch	Carpodacus purpureus	Green	Not Listed	Not Listed	Not Listed	6	6
Red-breasted Nuthatch	Sitta canadensis	Green	Not Listed	Not Listed	Not Listed	12	15
Red-eyed Vireo	Vireo olivaceus	Green	Not Listed	Not Listed	Not Listed	39	70
Red-winged Blackbird	Agelaius phoeniceus	Green	Not Listed	Not Listed	Not Listed	1	1
Rose-breasted Grosbeak	Pheucticus Iudovicianus	Yellow	Not Listed	Not Listed	Not Listed	1	1
Ruby-throated Hummingbird	Archilochus colubris	Green	Not Listed	Not Listed	Not Listed	2	2
Ruby-crowned Kinglet	Regulus calendula	Yellow	Not Listed	Not Listed	Not Listed	3	4
Ruby-throated Hummingbird	Archilochus colubris	Green	Not Listed	Not Listed	Not Listed	2	2
Song Sparrow	Melospiza melodia	Green	Not Listed	Not Listed	Not Listed	3	5



Common Name	Scientific Name	NSDNR Status	COSEWIC Status	SARA Status	NSESA Status	Number of Times Observed	Number of Individuals Observed
Swainson's Thrush	Catharus ustulatus	Green	Not Listed	Not Listed	Not Listed	2	6
Swamp Sparrow	Melospiza georgiana	Green	Not Listed	Not Listed	Not Listed	3	3
White-throated Sparrow	Zonotrichia albicollis	Green	Not Listed	Not Listed	Not Listed	4	4
Winter Wren	Troglodytes troglodytes	Green	Not Listed	Not Listed	Not Listed	2	2
Yellow Warbler	Dendroica petechia	Green	Not Listed	Not Listed	Not Listed	2	2
Yellow-rumped Warbler	Dendroica coronata	Green	Not Listed	Not Listed	Not Listed	7	9

Confirmed Breeder				
Probable Breeder				
Possible Breeder				



					Conditio	ns					
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)
			MET tower,								
		0383211E,	Young to Mixed			. .					
Sept. 24/2012	WHY15	4918398N	Wood	Calm	14	Cloudy	None	7:24AM	Blue-headed Vireo	1	0-50
									American Crow	2	0-50
									American Robin	1	50-100
									Black-capped Chickadee Black-throated Green Warbler	3	0-50 0-50
									Brown Creeper	1	0-50
									Common Yellowthroat	1	0-50
									Downy Woodpecker	1	0-50
									Song Sparrow	1	0-50
									Yellow-rumped Warbler	3	0-50
		0383011E,	Powerline, mid- aged mixedwoods,						·	3	0-30
	WHY16	4918260N	small wetland	Calm	14	Cloudy	None	7:42 AM	Golden-crowned Kinglet	4	0-50
									American Robin	1	50-100
									Black-capped Chickadee	3	0-50
									Blue-headed Vireo	1	50-100
									Blue-headed Vireo	1	100+
									Brown Creeper	1	0-50
									Downy Woodpecker	2	50-100
									Red-winged Blackbird	3	F/O SW
	WHY17	0382862E, 4918149N	Softwood, powerline	Calm	14	Cloudy	None	8:00 AM	American Goldfinch	1	100+
									Black-capped Chickadee	6	0-50
									Blackpoll Warbler	1	0-50
									Blue-headed Vireo	1	0-50
									Brown Creeper	1	0-50
									Dark-eyed Junco	2	0-50
									Golden-crowned Kinglet	5	0-50
									Purple Finch	2	100+
									Yellow-rumped Warbler	1	0-50
	WHY18	0382499E, 4917824N	Powerline, mature mixedwoods	Calm	15	Partly Couldy	None	8:21 AM	American Goldfinch	1	100+
									Blue Jay	1	50-100
									Common Raven	1	0-50
									Downy Woodpecker	1	50-100
									Downy Woodpecker	2	0-50
									Eastern Wood-pewee	1	0-50
									European Starling	1	0-50
									Golden-crowned Kinglet	3	0-50



					Conditio	ns					
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)
									Mourning Dove	2	50-100
									Red-eyed Vireo	2	0-50
									Yellow-rumped Warbler	1	0-50
	WHY19	0382441E, 4917599N	Mid-aged Mixedwoods	5 km/h S gusts 10 km/h	15	Partly Couldy	None	8:49 AM	Blackpoll Warbler	1	50-100
									Brown Creeper	2	50-100
									Downy Woodpecker	1	50-100
									Eastern Wood-pewee	2	50-100
									Golden-crowned Kinglet	2	50-100
									Red-breasted Nuthatch	2	0-50
									White-breasted Nuthatch	1	0-50
	WHY20	0382567E, 4917391N	Mid-aged Mixedwoods	5 km/h S gusts 10 km/h	15	Partly Couldy	None	9:01 AM	Black-capped Chickadee	4	0-50
	1111120		······································			o o a.a.y		0.0.7	American Redstart	1	0-50
									Black-and-white Warbler	1	0-50
									Blackpoll Warbler	1	0-50
									Black-throated Green Warbler	1	0-50
									Blue-headed Vireo	1	0-50
									Golden-crowned Kinglet		
			Mid						Golden-crowned Kinglet	1	0-50
	WHY21	0382485E, 4917215N	Mid-aged Mixedwoods, Road Adjacent	5 km/h S gusts 10 km/h	15	Partly Couldy	None	9:13 AM	Dark-eyed Junco	2	50-100
									Golden-crowned Kinglet	2	0-50
									Purple Finch	1	50-100
	WHY22	0382679E, 4917439N	Mid-aged Mixedwood	5 km/h S gusts 10 km/h	15	Partly Couldy	None	9:26 AM	Black-capped Chickadee	3	0-50
									Blackpoll Warbler	1	0-50
									Black-throated Green Warbler	2	0-50
									Hermit Thrush	1	0-50
	WHY23	0382679E, 4917631N	Mid-aged Hardwood	5 km/h S gusts 10 km/h	15	Partly Couldy	None	9:41 AM	American Crow	1	0-50
						•			Black-capped Chickadee	2	50-100
									Blue Jay	1	50-100
									Blue-headed Vireo	1	100+
	1						1		Common Raven	2	100+
									Golden-crowned Kinglet	3	50-100
		0383033E,	Mid-aged	5 km/h S gusts		Partly	<u> </u>		Soldon Growned Kinglet	 	00 100
	WHY24	4917808N	Mixedwood	10 km/h	15	Couldy	None	9:59 AM	American Crow	1	100+
									Black-capped Chickadee	3	0-50
									Blackpoll Warbler	1	0-50
									Black-throated Green Warbler	1	50-100
									Blue Jay	1	0-50
			<u></u>						Blue-headed Vireo	2	0-50



					Conditio	ns					
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)
									Eastern Wood-pewee	1	50-100
									Golden-crowned Kinglet	1	0-50
									Red-breasted Nuthatch	1	0-50
									Yellow-rumped Warbler	1	0-50
	WHY25	0382936N, 4918049N	Regenerating Clearcut, Mid- aged Fir	5 km/h S gusts 10 km/h	16	Partly Couldy	None	10:24 AM	American Goldfinch	2	100+
			J						Golden-crowned Kinglet	5	0-50
									Red-breasted Nuthatch	1	0-50
	WHY26	0383232N, 4918115E	Edge of Shrub Swamp	5 km/h S gusts 10 km/h	16	Partly Couldy	None	10:52 AM	American Goldfinch	1	50-100
									American Robin	1	100+
									Blue-headed Vireo	2	50-100
									Swainson's Thrush	1	100+
									Yellow-rumped Warbler	1	50-100
	WHY27	0383271E, 4918474N	Powerline, Midaged mixedwood	5 km/h S gusts 10 km/h	17	Partly Couldy	None	11:17 AM	American Goldfinch Blue Jay	2 2	100+ 100+
									Golden-crowned Kinglet	_	50-100
									Song Sparrow	3	0-50
									White-throated Sparrow	2	0-50
Oct. 22/2012	WHY15	0383211E, 4918398N	MET tower, Young to Mixed Wood	15 km/h SW	7	Cloudy	None	7:44 AM	American Crow	1	50-100
Oct. 22/2012	WIIII	431033014	vvood	13 111/11 0	,	Oloudy	TVOTIC	7.44 / ((1)	American Robin	1	100+
									Black-capped Chickadee	4	50-100
									Brown Creeper	1	50-100
									Common Raven	2	100+
	WHY16	0383011E, 4918260N 0382862E,	Powerline, mid- aged mixedwoods, small wetland Softwood,	15 km/h SW	7	Cloudy	None	7:59 AM	Common Raven	1	100+
	WHY17	4918149N	powerline	15 km/h SW	8	Cloudy	None	8:16 AM	Black-capped Chickadee	2	50-100
	******	701017011	poworinio	75 1017/11 577	<u> </u>	Jibuay	140110	3.13 AW	Blue Jay	1	100+
									Brown Creeper	1	50-100
							1	 	Golden-crowned Kinglet	3	0-50
	WHY28	0382647E, 4917962N	Powerline, Softwood	15 km/h SW	8	Cloudy	None	8:34 AM	Downy Woodpecker	1	0-50
									Golden-crowned Kinglet	1	0-50
									Pine Siskin	1	F/O S
									Red-breasted Nuthatch	1	100+



	Coordinates				Condition	ons		$\overline{\bot}$			Distance to
Date	Location		Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)
		0382499E,	Powerline,								
	WHY18	4917824N	mixedwoods	15 km/h SW	8	Overcast	None	8:50 AM	Common Raven	3	50-100
		382308E,	Powerline,								
	WHY29	4917681 N	mixedwoods	15 km/h SW	8	Overcast	None	9:07 AM	American Crow	2	100+
									American Robin	1	100+
									Black-capped Chickadee	4	100+
									Blue Jay	1	100+
									Golden-crowned Kinglet	3	100+
		0382441E,	Mid-aged								
	WHY19	4917599N	Mixedwoods	15 km/h SW	8	Overcast	None	9:22 AM	American Robin	1	100+
									Downy Woodpecker	1	100+
		0382567E,	Mid-aged								
	WHY20	4917391N	Mixedwoods	15 km/h SW	8	Overcast	None	9:36 AM	Black-capped Chickadee	8	0-50
									Common Raven	1	50-100
									Golden-crowned Kinglet	5	0-50
									Red-breasted Nuthatch	1	0-50
	WHY21	0382485E, 4917215N	Mid-aged Mixedwoods, Road Adjacent	15 km/h SW	8	Overcast	None	9:50 AM	American Crow	1	50-100
									Black-capped Chickadee	3	0-50
									Blue Jay	1	100+
									Brown Creeper	1	0-50
									Downy Woodpecker	1	50-100
									Golden-crowned Kinglet	3	0-50
									Red-breasted Nuthatch	1	0-50
	WHY22	0382679E, 4917439N	Mid-aged Mixedwood	15 km/h SW	8	Overcast	None	10:06 AM	Bald Eagle	1	100+
									Black-capped Chickadee	2	50-100
									Blue Jay	1	100+
									Common Raven	1	100+
									Golden-crowned Kinglet	3	50-100
									Yellow-rumped Warbler	2	50-100
	WHY23	0382679E, 4917631N	Mid-aged Hardwood	15 km/h SW	10	Overcast	None	10:25 AM	American Crow	2	50-100
									Black-capped Chickadee	1	100+
									Black-capped Chickadee	4	0-50
									Brown Creeper	1	50-100
									Red-breasted Nuthatch	1	0-50
	WHY24	0383033E, 4917808N	Mid-aged Mixedwood	15 km/h SW	10	Overcast	None	10:49 AM	American Crow	3	50-100
									Golden-crowned Kinglet	2	100+
						<u> </u>			Golden-crowned Kinglet	2	50-100



					Condition	ons					
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)
			Regenerating								
		0382936N,	Clearcut, Mid-								
	WHY25	4918049N	aged Fir	15 km/h SW	10	Overcast	None	11:05 AM	American Crow	2	100+
									Black-capped Chickadee	2	100+
									Blue Jay	1	100+
									Golden-crowned Kinglet	1	50-100 100+
		0383232N,	Edge of Shrub						Golden-crowned Kinglet	1	100+
	WHY26	4918115E	Swamp	15 km/h SW	10	Overcast	None	11:28 AM	American Crow	1	100+
-	VVITIZO	4910113L	Swamp	13 KIII/II 3VV	10	Overcasi	None	11.20 AIVI	American Crow	1 1	50-100
									Black-capped Chickadee	3	100+
									Golden-crowned Kinglet	1	50-100
			MET tower,						Colden crowned Kinglet	'	30 100
		0383211E,	Young to Mixed								
11-Nov-12	WHY15	4918398N	Wood	Calm	1	Clear	None	7:14 AM	American Robin	1	100+
					•			71111111	Black-capped Chickadee	5	50-100
									Brown Creeper	1	50-100
									Golden-crowned Kinglet	2	50-100
									White-winged Crossbill	2	F/O N
									White-winged Crossbill	1	F/O S
	WHY16	0383011E, 4918260N	Powerline, midaged mixedwoods, small wetland	Calm	1	Clear	None	7:29 AM	American Goldfinch	1	100+
	WIIIIO	401020014	oman wetana	Odim		Oloui	TVOTIC	7.23 AW	American Robin	1 1	100+
-									Blue Jay	1	100+
									Brown Creeper	<u> </u>	100+
									Golden-crowned Kinglet	2	0-50
									Golden-crowned Kinglet	1	100+
									White-winged Crossbill	1	F/O E
									White-winged Crossbill	1	100+
	WHY17	0382862E, 4918149N	Softwood, powerline	Calm	1	Clear	None	7:45 AM	American Crow	2	100+
									Barred Owl	1	50-100
									Black-capped Chickadee	2	100+
									Brown Creeper	1	100+
									Golden-crowned Kinglet	2	100+
									Red-breasted Nuthatch	2	100+
									White-winged Crossbill	1	100+
	WHY18	0382499E, 4917824N	Powerline, mature mixedwoods	Calm	1	Clear	None	8:09 AM	American Crow	4	F/O NE
	******	701102711	IIIAGGWOOGS	Callii	'	Cicai	140110	3.00 AW	Black-capped Chickadee	6	100+



	Location	Coordinates (UTM NAD83)	Habitat	Conditions							
Date				Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)
									Brown Creeper	1	100+
									Common Raven	1	F/O NE
									Downy Woodpecker	1	100+
									Golden-crowned Kinglet	2	50-100
									Herring Gull	1	100+
									White-winged Crossbill	15	0-50
		382308E,	Powerline,						Transfer of the second		
	WHY29	4917681 N	mixedwoods	Calm	2	Clear	None	8:28 AM	American Crow	4	100+
	111111				_				Brown Creeper	1	50-100
									Common Raven	1	100+
		0382441E,	Mid-aged							·	
	WHY19	4917599N	Mixedwoods	Calm	2	Clear	None	8:41 AM	American Crow	2	F/O SW
	7711113	451755514	Wilkeawoods	Odilli		Olcai	TVOTIC	0.41 AW	Black-capped Chickadee	6	50-100
									Brown Creeper	1	0-50
									Brown Creeper	1	50-100
									Downy Woodpecker	1	100+
									Golden-crowned Kinglet	3	50-100
		0382567E,	Mid agad						Golden-crowned Kinglet	3	50-100
	VA/1 IV/00	4917391N	Mid-aged Mixedwoods	Colm	0	Class	Nissas	0.57 414	Amariaan Craw	0	400.
	WHY20	4917391N	Mixedwoods	Calm	2	Clear	None	8:57 AM	American Crow	2	100+
									Blue Jay	2	100+
			5.40.1						White-winged Crossbill	6	F/O NE
	WHY21	0382485E, 4917215N	Mid-aged Mixedwoods, Road Adjacent	Calm	2	Clear	None	9:12 AM	American Crow	3	100+
	VVIIIZI	4317213IN	Road Adjacent	Callii	2	Cicai	None	9.12 AIVI	Black-capped Chickadee	1	100+
									Ring-necked Pheasant	1	100+
		0382679E,	Mid-aged						King-necked Friedsant	'	100+
	WHY22	4917439N	Mixedwood	Calm	2	Clear	None	9:27	American Crow	1	100+
		1011110011	······································			0.00.		0.2.	American Crow	1	F/O NW
									Black-capped Chickadee	2	100+
									Common Raven	1	F/O NW
									Golden-crowned Kinglet	2	100+
		0382679E,	Mid-aged						Colden Crowned Kinglet		1001
	WHY23	4917631N	Hardwood	Calm	2	Clear	None	9:48 AM	Golden-crowned Kinglet	1	50-100
	VVITIZO	4917031IN	Haluwoou	Callii		Cleai	None	9.46 AIVI	White-winged Crossbill	1	F/O NW
		0202022	Mid agad						Writte-winged Crossbiii	<u> </u>	F/O INVV
	WHY24	0383033E, 4917808N	Mid-aged Mixedwood	Calm	2	Clear	None	10:03 AM	Bald Eagle	1	F/O NW
	Z-T	101700014	MACGINOCA	Jann		O.Oui	1,0110	. 0.00 / 1111	Black-capped Chickadee	3	50-100
								 	Black-capped Chickadee	4	100+
				1			+	+	Brown Creeper	1	100+
				+			+	+	Golden-crowned Kinglet	2	50-100
				-			+	 	Golden-crowned Kinglet Golden-crowned Kinglet	1	100+
								 			
								ļ <u> </u>	Pileated Woodpecker	1	100+



					Conditio	ns					
Date	Location	Coordinates (UTM NAD83)	Habitat	Wind Speed and Direction	Temperature °C	Sky	Precipitation	Time	Common Name	Number Observed	Distance to Observer (m)
									White-winged Crossbill	1	F/O NW
	WHY25	0382936N, 4918049N	Regenerating Clearcut, Mid- aged Fir	Calm	2	Clear	None	10:22 AM	American Crow	1	100+
	WIIIZO	431004314	agcain	Califi	2	Olcai	None	10.22 AIVI	Golden-crowned Kinglet	1	100+
		0383232N,	Edge of Shrub						Colden browned rangier	'	1001
	WHY26	4918115E	Swamp	10 km/h	4	Clear	None	10:43 AM	American Crow	1	F/O SE
									American Goldfinch	1	100+
									Common Raven	1	10+
	WHY27	0383271E, 4918474N	Powerline, Midaged mixedwood	10 km/h	4	Clear	None	11:03 AM	American Crow	3	F/O SE
	***************************************	101017111	agoa mixoawooa	10 1011/11		Oloui	110110	11.007	American Goldfinch	1	100+
									Black-capped Chickadee	4	0-50
									Downy Woodpecker	1	50-100
									White-winged Crossbill	1	F/O SE



Common Name	Scientific Name	NSDNR Status	COSEWIC Status	SARA Status	NSESA Status	Number of Times Observed	Number of Individuals Observed
American Crow	Corvus brachyrhynchos	Green	Not Listed	Not Listed	Not Listed	22	41
American Goldfinch	Spinus tristis	Green	Not Listed	Not Listed	Not Listed	8	10
American Redstart	Setophaga ruticilla	Green	Not Listed	Not Listed	Not Listed	1	1
American Robin	Turdus migratorius	Green	Not Listed	Not Listed	Not Listed	8	8
Bald Eagle	Haliaeetus leucocephalus	Green	Not at Risk		Not Listed	2	2
Barred Owl	Strix varia	Green	Not Listed	Not Listed	Not Listed	1	1
Black-and-white Warbler	Mniotilta varia	Green	Not Listed	Not Listed	Not Listed	1	1
Black-capped Chickadee	Poecile atricapillus	Green	Not Listed	Not Listed	Not Listed	26	90
Blackpoll Warbler	Dendroica striata	Yellow	Not Listed	Not Listed	Not Listed	5	5
Black-throated Green Warbler	Dendroica virens	Green	Not Listed	Not Listed	Not Listed	4	5
Bald Eagle	Haliaeetus leucocephalus	Green	Not at Risk		Not Listed	2	2
Blue Jay	Cyanocitta cristata	Green	Not Listed	Not Listed	Not Listed	11	13
Blue-headed Vireo	Vireo solitarius	Green	Not Listed	Not Listed	Not Listed	8	10
Brown Creeper	Certhia americana	Green	Not Listed	Not Listed	Not Listed	16	17
Common Raven	Corvus corax	Green	Not Listed		Not Listed	11	15
Common Yellowthroat	Geothlypis trichas	Green	Not Listed	Not Listed	Not Listed	1	1
Dark-eyed Junco	Junco hyemalis	Green	Not Listed		Not Listed	2	4
Downy Woodpecker	Picoides pubescens	Green	Not Listed	Not Listed	Not Listed	11	13
Eastern Wood-pewee	Contopus virens	Yellow	Not Listed	Not Listed	Not Listed	3	4
European Starling	Sturnus vulgaris	Exotic	Not Listed		Not Listed	1	1
Golden-crowned Kinglet	Regulus satrapa	Yellow	Not Listed	Not Listed	Not Listed	32	71
Hermit Thrush	Catharus guttatus	Green	Not Listed	Not Listed	Not Listed	1	1
Herring Gull	Larus argentatus	Green	Not Listed		Not Listed	1	1
Mourning Dove	Zenaida macroura	Green	Not Listed	Not Listed	Not Listed	1	2
Pileated Woodpecker	Dryocopus pileatus	Green	Not Listed	Not Listed	Not Listed	1	1
Pine Siskin	Spinus pinus	Yellow	Not Listed		Not Listed	1	1
Purple Finch	Carpodacus purpureus	Green	Not Listed	Not Listed	Not Listed	2	3
Red-breasted Nuthatch	Sitta canadensis	Green	Not Listed	Not Listed	Not Listed	8	10
Red-eyed Vireo	Vireo olivaceus	Green	Not Listed		Not Listed	1	2
Red-winged Blackbird	Agelaius phoeniceus	Green	Not Listed	Not Listed	Not Listed	1	3
Ring-necked Pheasant	Phasianus colchicus	Exotic	Not Listed	Not Listed	Not Listed	1	1
Song Sparrow	Melospiza melodia	Green	Not Listed		Not Listed	2	4
Swainson's Thrush	Catharus ustulatus	Green	Not Listed		Not Listed	1	1
White-breasted Nuthatch	Sitta carolinensis	Green	Not Listed	Not Listed	Not Listed	1	1
White-throated Sparrow	Zonotrichia albicollis	Green	Not Listed		Not Listed	1	2
White-winged Crossbill	Loxia leucoptera	Green	Not Listed		Not Listed	10	30
Yellow-rumped Warbler	Dendroica coronata	Green	Not Listed	Not Listed	Not Listed	6	9



APPENDIX G ARIA RESPONSE LETTER FROM NS COMMUNITIES, CULTURE AND HERITAGE



Communities, Culture & Heritage

1747 Summer Street Halifax, Nova Scotia B3H 3A6 Tel: (902) 424-6475 Fax: (902) 424-0560

November 28, 2012

DEC 0 5 2012

Ms. Laura de Boer Davis, MacIntyre and Associates 109 John Stewart Drive Cole Harbour, NS B2W 4J7

Dear Ms. de Boer:

RE: Heritage Research Permit Report

A2012NS086- Whynott's Settlement Wind Farm

We have received and reviewed your report on work conducted under the terms of Heritage Research Permit A2012NS86 of an archaeological resource impact assessment of the proposed Whynott Wind Farm, Whynott's Settlement, Lunenburg County.

The report details the archaeological resource impact assessment of the proposed Whynott's Community Wind Project area in Whynott's Settlement, Lunenburg County, by Davis, MacIntyre & Associates in the summer of 2012. The assessment included background and historical research as well as a field reconnaissance of the proposed impact zones of the project. In areas where elevated archaeological potential was suspected, reconnaissance was expanded to cover a broad area in order to locate any surface features related to archaeological deposits.

As many as 6 features related to historic settlement activity were identified during the assessment project. However, current development plans do not appear to threaten any of the features. The absence of any significant water features within or near the impact zones, and in fact throughout the defined study area, indicates that significant pre-contact archaeological material has likely not been deposited. No areas of elevated potential for First Nations activity were identified during the assessment.

Based on the above, and the current plans indicating that no significant archaeological material will be disturbed during construction of the wind farm, continued avoidance of the features noted in the report is recommended. Should any archaeological resources be encountered during ground disturbance activities, it is recommended that all activity stop and the Coordinator of Special Places contacted. Particular attention should be paid to the area surrounding the northern turbine because of its proximity

L. de Boer November 29, 2012 Page 2

to the Folkenham farm. Should development plans change, it is recommended that an archaeologist be contracted to review the changes and assess whether or not archaeological materials will be impacted during construction.

Staff agree with the recommendations and find the report acceptable as submitted. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Laura Bennett

Coordinator, Special Places

cc. Melanie Smith, Strum Environmental

APPENDIX H MI'KMAQ ECOLOGICAL KNOWLEDGE STUDY

A MI'KMAQ HISTORICAL AND ECOLOGICAL KNOWLEDGE STUDY FOR: WHYNOTT'S SETTLEMENT WIND FARM

SUBMITTED BY:



NEXUS Coastal Resource Management

103-287Lacewood Drive, Suite 222 Halifax, NS B3M 3Y7

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1 INTRODUCTION

1.1 <u>Indigenous Knowledge and Knowledge Systems</u>

The collective rights of Indigenous Peoples have gained an increased recognition at the international level over the past 25 years. The International Labor Organization Convention-169 recognized the right of Indigenous Peoples to take control over their own institutions, way of life and economic development, as well as to maintain and develop their culture (ILO, 1989). More recently, the United Nations Declaration on the Rights of Indigenous Peoples set out the individual and collective rights of Indigenous Peoples as well as their rights to culture, identity, language, employment, health, education and other issues (UN, 2008). Indigenous knowledge is an integral component of the Indigenous rights movement. Knowledge manifests itself in the Indigenous community's language, identity and culture.

Indigenous Knowledge (IK)¹ fuses the cultural, social and ecological histories of a community. In general, IK systems assume that people are part of the land, they do not own the land and are instead stewards of the land. IK is dynamic, based upon an intimate understanding of the components of non-living (abiotic) and living (biotic) environments. The knowledge is owned by Indigenous Peoples, which differs between peoples. IK is based on four principles (Singh, 2007):

- 1. IK is dynamic in nature.
- 2. IK is tradition based: the way in which knowledge is created, preserved and disseminated.
- 3. IK is collective in nature and is often considered to be the property of the community.
- 4. IK is transferred through cultural specific transmission mechanisms².

The use of IK has been the subject of international discourse. Growing recognition of the limitations of conventional science in solving ecological problems of increasing complexity and magnitude has turned focus back to IK. IK systems are based on the shared experiences, customs, values, traditions, lifestyles, social interactions and spiritual beliefs specific to Indigenous communities. These systems are forever evolving as new knowledge is obtained or generated.

Over the years, the use of Indigenous Traditional Knowledge (ITK) in Environmental Assessments, Environmental Impact Statements and co-management agreements has

¹ Other phrases for Indigenous Knowledge (IK) include Aboriginal Knowledge (AK), Indigenous Traditional Knowledge (ITK) and Aboriginal Traditional Knowledge (ATK).

²Mechanisms include but are not limited to storytelling, ceremonies, dances, traditions, arts and crafts, hunting and trapping, beliefs, medicines, innovations

increased substantially. IK is an accumulation of multiple knowledge sources, one of which is 'Traditional Ecological Knowledge' (TEK) (Stevenson, 1996).

IK studies differ from TEK studies in such that IK includes spiritual, cultural and environmental components in the study, while TEK focuses on the environmental knowledge of an Indigenous Nation. TEK studies have been designed to parallel the western science discipline of ecology (Simpson, 2001). Constructing IK into TEK is a process of 'scientizing' IK for use in Western society. A properly designed TEK includes viewing IK as worldviews, values and processes (Simpson, 2001). It is important to include the context in which gives the knowledge its meaning.

The increased awareness and application of IK through TEK studies in non-indigenous society has brought both opportunities and challenges for Indigenous Nations. Meaningful use of IK can provide Indigenous Nations leverage in pursuing both political and property rights (Stevenson, 1996). With the increased use of IK particular attention has been directed to protect and preserve this knowledge from misappropriation, misuse and theft. Of particular concern to Indigenous Peoples has been the unlicensed use by industry, researchers, artists and authors of traditional knowledge that has been developed over centuries (AFN, n.d.).

In Canada, the application of IK in collaboration with the western approach to resource management has occurred primarily through committees and IK studies. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) established an Aboriginal Traditional Knowledge⁴ Sub-Committee to facilitate access to and gathering of available IK as well as the incorporation of this knowledge into the COSEWIC species assessment process (COSEWIC, 2012). Section 16.1 of the *Canadian Environmental Assessment Act*, 2012, provides authorities the discretion to consider IK in an Environmental Assessment.

In Nova Scotia an IK study is referred to as Mi'kmaq Ecological Knowledge study (MEKs).

1.2 The Mi'kmag Nation

Since time immemorial, Mi'kmaq have used and occupied their traditional territory known as *Mi'kma'ki*, which includes Nova Scotia, Prince Edward Island, New Brunswick, parts of Quebec, Newfoundland and the northeastern parts of Maine. Archaeological sites in Nova Scotia provide evidence of Mi'kmaq occupation for over 10,500 years (Assembly of Nova Scotia Mi'kmaq Chiefs, 2007).

Mi'kma'ki is identified through its seven districts: Kespukwitk, Sikepne'katik, Eski'kewaq, Unama'kik, Piktuk aqq Epetwitk, Sikniktewaq and Kespe'kewaq (Figure 1). Mi'kmaw names for the seven districts came from the geographical characteristics of the area. Traditional socio-political organization consisted of hereditary Local, District and Grand

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³ A review of traditional knowledge sources can be found in Stevensn (1996).

Chiefs. The Local Chief took care of village affairs in a district with advice from a council of Elders. The District Chief presided over all the Local Chiefs in a given district, while the Grand Chief assigned fishing and hunting privileges and was the official spokesperson for the Mi'kmaq Nation. The Grand Chief has the authority to make treaties with other First Nations and governments. Presently, the Grand Chief and Council (Grand Council) are located in *Unama'kik*.

There are 13 Mi'kmaq Bands in Nova Scotia, each occupying specific areas of land, known as reserves. As set forth in the Indian *Act*, *1951*, each Band is led by a Chief and Council.

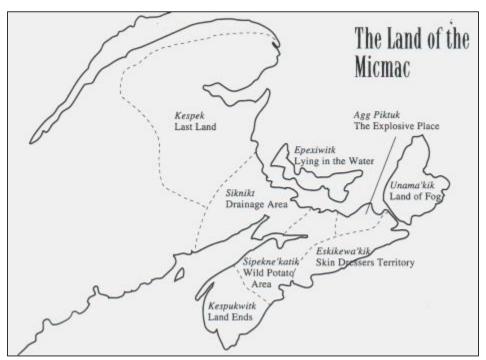


Figure 1: Traditional Mi'kmaq Districts (from http://www.danielnpaul.com/Map-Mi'kmaqTerritory.html)

1.3 Mi'kmaq Ecological Knowledge

The Mi'kmaq approach to resource management is best defined through the word, *Netukulimk*. *Netukulimk* describes the relationship between Mi'kmaq and the Creator in which the Mi'kmaq use the resources provided by the Creator for self-support and wellbeing of the individual and community. *Netukulimk* is achieving adequate standards of community nutrition and economic well-being without jeopardizing the integrity, diversity, or productivity of the environment (UINR, 2011). Simply put, one takes only what he or she needs from the environment to provide a livelihood. *Netukulimk* is expressed through the performance of rituals and the keeping of customary practices (Prosper et al., 2011). While some have argued that the eventual dominance of British

colonial rule eroded traditional Mi'kmaq worldviews, there is strong evidence that Mi'kmaq harvests are still governed by *Netukulimk* principles (Prosper et al., 2011).

Mi'kmaq, like many Indigenous Nations, incorporate cultural and social attributes along with sustenance in resource management. A case study provides insight into the Mi'kmaq relationship with *Ka't* (American Eel- Anguilla rostrata) (Davis et al., 2004). Mi'kmaq would spend the winter months near Antigonish, Nova Scotia fishing for *Ka't*. Mi'kmaq use *Ka't* for food, and it is considered to have spiritual qualities as evident by its frequent appearance in many legends and its use as ceremonial offerings. *Ka't* was also used medicinally as the skin was used as braces and bandages.

Mi'kmaq and Western (Post-Colonial) approaches to resource management are different. This difference can be attributed to Mi'kmaq and Western views of the environment.

In the Mi'kmaq culture, it is understood that Mi'kma'ki is held in communal ownership and does not belong to a particular person as it is believed that the land was inherited from their ancestors and would be passed on to their children (Berneshawi, 1997). Natural resources, renewable or non-renewable are considered as gifts from the Creator and therefore can neither be owned nor sold (Lyons, 1984 in Berneshawi, 1997). Similarly, neither the land nor its resources are viewed as commodities. In contrast Western approaches to resource management employ the control and ownership of land and resources. In Canada, it is understood that the Crown, represented by the federal government owns resources (renewable and non-renewable), lands and waters that fall within state boundaries. The federal government facilitates access to the resources and land through a series of licenses and agreement made between federal departments and individuals or corporations. In the Western approach to resource management, these assets are viewed as commodities that can be sold for profit.

In 2008, the Assembly of Nova Scotia Mi'kmaq Chiefs adopted a Mi'kmaq Ecological Knowledge Study protocol which described MEK as a term that "refers to any knowledge relating to the environment including water, land and resources" (MRI, 2008, 1). This knowledge can be cultural, spiritual or ecological. The concept of MEK is not static, but is instead derived from the cumulative experiences of the Mi'kmaq people, based in their traditional territory. In this manner MEK considers and incorporates emerging resource issues. It is therefore important for any MEKS to accurately include Mi'kmaq knowledge of the affected resources, lands and waters in order to understand the relationship between the Mi'kmaq and the project area. As discussed above (section 1.1), a MEKS must describe the cultural, spiritual and ecological relationship of Mi'kmaq with the proposed project site.

1.4 Project Study Areas

Mi'kmaq Ecological Knowledge studies for four wind farms: Millbrook, Truro Heights, Whynott's Settlement and Pockwock are being conducted simultaneously. NEXUS Coastal Resource Management has been engaged to conduct Mi'kmaq Ecological Knowledge Study for the four Study Areas. The proposed wind turbine farms are located in two Mi'kmaq Districts: *Kespukwitk and Sikepne'katik*

This report deals with the specifics of the proposed Whynott's Settlement wind farm (Figure 2).

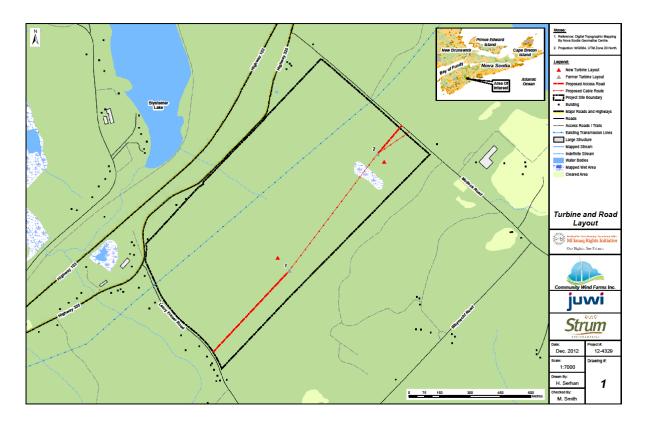


Figure 2: Proposed wind farm in Whynott's Settlement, NS

2 BACKGROUND

2.1 Historical Context

Traditionally the Mi'kmaq Nation was a member of the Wabanaki Confederacy, a loose coalition that included the Maliseets, the Pasamaquoddy, the Penobscots, Wowenock and the Eastern and Western Abenakis (Berneshawi, 1997). The Confederacy influenced tribal life from the Gaspé Peninsula to northern New England. The Confederacy continued to function until the early 1700s, at which time the decimation of its member nations by disease and war with the English caused it to become dormant (Paul, 2006).

Traditional Mi'kmaq social structure consisted of a matrilineal, egalitarian and is family centered with living with extended family being common place (Berneshawi, 1997). The strong family connection ensured that the needs of a community were put ahead of individuals. Sharing and the communal use of resources were important for the survival of the Mi'kmaq. There was no hierarchy authority amongst Mi'kmaq. Decision making was made through a consensus approach. The daily life of the Mi'kmaq centered on finding and preparing food, and the sharing of wealth among members of the village (CMM, 2007). Mi'kmaq depended on their knowledge of the seasons, weather, animals, plants and hunting and preparation skills for survival. This knowledge was passed down from generation to generation. Mi'kmaq education included the teaching of traditional hunting skills, construction techniques, food preparation, etc. Traditional teachings, stories, and histories were collected and passed on through an oral tradition.

Archaeological evidence and oral histories suggest that Mi'kmaq travelled to various camps throughout the year. The proportion of terrestrial mammals, marine mammals, fish and shellfish vary greatly across sites and occupations indicating that Mi'kmaq used camps for specific uses (Barsh, 2002).

In the early 1500s, European fishermen travelled to the coasts of North America to fish the Grand Banks off Newfoundland. These fishermen would occasionally come to shore to dry the fish they caught. In the late 1500s a fur trade between Mi'kmaq and Europeans was established and Europeans begun to create settlements throughout *Mi'kma'ki*.

Prior to the fur trade with Europeans, the Mi'kmaq diet consisted largely of meat, animal fat, fish, berries and nuts and broth (Miller, 1976; Krieger, 2002). Mi'kmaq undertook seasonal migrations which aligned with food sources: wild berries, tubers, nuts and herbs (also used for medicine). During the summer months Mi'kmaq lived in coastal villages to harvest seafood and berries; during the winter months they dispersed into smaller bands and moved inland to hunt big game and fish in the rivers. In addition to being used as food, Mi'kmaq used plants for cures and prevention for many common

ailments (UINR, 2010). The fur trade brought non-traditional foods to the Mi'kmaq in exchange for fur. Trade would have included dried peas, corn, beans, prunes, and wheat flour among other things (Miller, 1976).

The 1600s and 1700s were marked by a series of wars between the French and British. These wars often included alliances made between the Europeans, the Mi'kmaq and other First Nations. One of the first treaties between the Mi'kmaq and the British was signed in 1725 in Boston, later ratified by many Mi'kmaq and Maliseet communities in Annapolis Royal in 1726. This was the first treaty in what is now known as the "Peace and Friendship Treaties". The Royal Proclamation of 1763 reserved a large portion of land in North America as Indian hunting grounds and set out a process for cession and purchase of Indian grounds.

The Grand Council continues to exist, but its authority to govern has been largely transferred by the *Indian Act, 1951*, to the elected Band Chiefs and Councils. There are thirteen Mi'kmaq Bands in Nova Scotia, four of which are located within close proximity of the three proposed wind farms sites. These communities were identified due their proximity to the proposed wind farm sites and their historical and contemporary use of the project area and its resources. The four communities involved in the Mi'kmaq Ecological Knowledge Study include Indian Brook First Nation, Millbrook First Nation, Acadia First Nation and Glooscap First Nation.

Indian Brook First Nation is one of four reserves of the Shubenacadie Band and is the second largest First Nation community in Nova Scotia. In 1848, an Indian Commissioner settled 14 families at Shubenacadie. Indian Brook is located approximately 26km southeast of the proposed wind farm in Millbrook, NS.

In the late 1700's and early 1800's Millbrook First Nation was originally located along the banks of the Salmon River, but were later moved to a property on King Street in Truro (presently St. Mary's school is located on King Street) to make room for the School of Agriculture (Millbrook, 2013). Millbrook Mi'kmaq refer to the King Street location as Christmas Crossing. In 1873 Millbrook First Nation initiated discussions with the Indian Agent to move their reserve from Christmas Crossing to Millbrook. The original Millbrook reserve had a total of 35 acres. Between 1904 and 1910 an additional 120 acres was purchased by the reserve. Millbrook is located approximately 1.7km west of the proposed wind farm in Millbrook, NS.

Acadia First Nation is comprised of five reserves located throughout Southwestern Nova Scotia. The first reserve, Gold River, was established in 1820, and the Yarmouth reserve was established in 1887. Acadia First Nation gained official status from the Canadian Government in 1971 when the Elders of the region decided to form a united Band (Falls, n.d.). Gold River is located approximately 18km northeast of the proposed wind farm in the Whynott's Settlement, 5km northeast of Bridgewater, in Lunenburg County (Strum, 2011b).

The Glooscap First Nation was formed in the 1800s in conjunction with the Micmac Missionary Society. In 1907, the land of the present day reserve was transferred to his Majesty the King for use as an Indian Reserve (Glooscap, n.d.). Glooscap is located approximately 50km west of the proposed wind farm in Pockwock, NS.

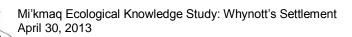
2.2 Environmental Context

The proposed Whynott's wind farm site is located in the community of Whynott's Settlement approximately 5 km northeast of the town of Bridgewater, in Lunenburg County. The site is located within the Lunenburg Drumlins Ecodistrict, which is consists of an undulating to rolling plain that slopes in a southeasterly direction towards the Atlantic Ocean. Shallow, stony glacial till derived from the underlying Cambrian slates dominates this area (Webb and Marshall, 1999). The vegetation surrounding the project site is comprised of mainly coniferous forest, with patches of mixed and hardwood forests occurring in the northwest. The site's vegetation would provide a suitable habitat for a number of species. However, the site is surrounded by varying types of development and multiple roads which may impact the number of species found within the area.

2.3 Mi'kmaq Wildlife Uses

Historically, the Mi'kmaq practiced a nomadic lifestyle, migrating between hunting and fishing grounds throughout their traditional lands (Chute, 1999). These migrations followed the seasonal cycles of the plants and wildlife in region, which formed the basis of a pattern of Mi'kmaq subsistence. Much of this migration was dependent on riverine and coastal transportation, resulting in a heavy dependence on fish and seafood, which represented a significant portion of the Mi'kmaq diet. Large mammals, especially moose, were also particularly important due to annual subsistence pattern of the people. This was linked to the size of the animal, its seasonal availability and the wide variety of uses the people employed from it (food, clothing and various tools).

During the early winter the Mi'kmaq hunted spawning seals in coastal areas and near shore islands. As the winter progressed they moved inland to more sheltered areas and hunted large game, such as moose, which moved slowly in the deep snow. Winter was also the time to hunt deer, beaver, otter, muskrat and caribou (Davis, 1997). In the spring the Mi'kmaq moved closer to the coastal areas and estuaries in order to catch fish runs in the rivers, using weirs to catch smaller fish such as smelt, eel or bass, and leisters for larger fish such as salmon. Migratory birds such as ducks and geese also started to return during this period, and were often hunted at night (Davis, 1997). During the summer the Mi'kmaq were able to take full advantage of coastal areas and various species of shellfish available to them such as mussels, clams, whelk, lobster and crab. A variety of salt water fish species, such as the cod, mackerel and plaice also appeared in coastal waters as the summer worn on. In the autumn southward migrations of birds



moved through the area and salmon, eel and other fish species began to move down the rivers. Certain species were hunted year round; while others may have been pursed on an opportunistic basis. This is likely the case with large marine mammals such as whales, which the Mi'kmaq valued for food, as a source of oil and for tool making (Barsh, 2002; Lockerby, 2004).

2.3.1 Woodland Wildlife

Table 1 describes the various uses for the large mammals and other animals found in the forests of Nova Scotia. While many of these animals provided meat for food, they also offered other uses such as furs for clothing, bones for tools and a variety of medicinal purposes. The arrival of Europeans also opened up the fur trade which created an additional use for certain species such as the beaver, which were highly valued in foreign markets (Davis, 1997). The Mi'kmaq also used certain animal parts, such as porcupine quills, as decoration on clothing or other items.

Table 1: Mi'kmag Woodland Wildlife Uses

Species	Common Name, *Mi'kmaw Name ⁵	Habitat	Mi'kmaq Traditional Uses	Source
Alces alces	Moose, *Team' *Tiya:m	Young forests, including wet sites near lakes and swamps. Common in highlands of Cape Breton Island.	Moose meat was a principal food source, as was the oil made from fat which was able to be stored for long periods. Moose also provided a variety of tools such as bone hand tools, bladders for storage and hides for clothing and shoes, shelter, canoes and variety of other purposes.	Barsh, 2002; Bridgland et al, 2007; Caplan, 1978; Davis, 1997; Lockerby, 2004; Maxwell, 1993; VanWart, 1948; Wicken,
Anura (generic)	Toad, *Ěmkŏkchǎjit *Amqoqjaji	Found in a variety of areas near a water source including fields, forests and agricultural lands.	Toads were used for medicinal purposes.	VanWart, 1948
Castor canadensis	Beaver, *Kobet *Kopit	Slow-flowing streams, lakes, rivers, marshes, and coastal wetlands, usually in forested areas near aspen stands.	Beaver offered an important seasonal food source, and were also used to in a variety of clothing, tools and medicines. Upon European arrival the beaver would become the most important source of the fur trade.	Barsh, 2002; Caplan, 1978; Davis, 1997; Krieger, 2002; Lockerby, 2004; Maxwell, 1993; McNab, 1998; VanWart, 1948;

⁵ DeBlois, 1997; Rand, 1888

Species	Common Name, *Mi'kmaw Name⁵	Habitat	Mi'kmaq Traditional Uses	Source
				Wallis, 1922: Wicken, 1994
Cervus canadensis	Elk, N/A	Historic presence in Nova Scotia	Elk were a food source, and were likely used in the same manner as other large game.	Davis, 1997; Maxwell, 1993
Felis lynx	Canada Lynx, N/A	Young, dense softwood thickets and swamps. Most common on the highlands of Cape Breton Island.	Lynx furs were sold in the fur trade and also used for clothing.	Barsh, 2002; Maxwell, 1993
Lepus americanus	Hare, *Able'gŭmocch *Apli:kmuj	Usually found in conifer thickets and alder swamps	Hare were used as a food source	VanWart, 1948
Lutra canadensis	River Otter, *Ňktŭk *Kiw'nik	Marine or freshwater environments, wetlands.	Otter were hunted for food and fur. The pelts were sold and also used in clothing.	Barsh, 2002; Davis, 1997; Krieger, 2002; Maxwell, 1993; VanWart, 1948; Wicken, 1994
Generic (<i>Martes</i>)	Marten, *Abistănāooch' *Apistanewj	Usually found in mature coniferous or mixed forest areas.	Marten furs were sold in the fur trade and used in clothing.	Barsh, 2002; Maxwell, 1993
Hystricomorph Hystricidae	Porcupine, *Năbegŏk *Matuwes	Found in forested areas throughout mainland Nova Scotia, rare in Cape Breton.	Porcupine were used for food and medicine, and the quills were often dyed and used for decoration of clothing.	Davis, 1997; Krieger, 2002; Maxwell, 1993; VanWart, 1948; Wallis, 1922; Wicken, 1994
Mephitis mephitis	Striped Skunk, *Abŭkcheloo *Apikjilu	Semi-open forested areas and agricultural lands.	Skunk furs were sold in the fur trade and parts of the animal were used for medicine.	(Barsh, 2002; VanWart, 1948; Wallis, 1922)
Mustela vison	American Mink, *Moochpĕch' *mujpej	Variety of wetland habitats, including watercourses, lakes, marshes, and sea coasts.	Archeological evidence of mink at Mi'kmaq campsites demonstrates historical use.	Barsh, 2002

Species	Common Name, *Mi'kmaw Name⁵	Habitat	Mi'kmaq Traditional Uses	Source
Odocoileus virginianus	White Tailed Deer, *Lŭntook' *Lentuk	Edge areas between forests and openings, fields and cut overs close to forest cover areas.	Deer offered a valuable food source, and furs could be used or sold in the fur trade. Parts of deer were also used for medicinal purposes.	Parnaby, 2008; VanWart, 1948; Wallis, 1922
Ondatra zibethica	Muskrat, *Keooāsoo *Ki:kwesu	Marshes, lakes, and rivers with roughly equal amounts of open water and above-water vegetation.	Muskrat were trapped for the fur trade; the pelts were also used in clothing.	Maxwell, 1993; McNab, 1998
Procyon lotor	Raccoon, *Amalchoogwěch' *Amaljikwej	Abundant across mainland Nova Scotia and Cape Breton Island. Found in urban areas and edges such as streams, marshes, and field/forest boundaries.	Raccoon furs were sold in the fur trade and parts of the animal were used for medicine.	Barsh, 2002; Wallis, 1922
Rangifer tarandus	Caribou, *Kāleboo *Kalipu	Historic presence in Nova Scotia	Caribou offered another large game food and fur source when migrating through Mi'kmaq territory.	Barsh, 2002; Caplan, 1978; Davis, 1997; McNab, 1998; VanWart, 1948; Wicken, 1994
Serpentes (generic)	Snake, *Mtāāskŭm *Mteskm	Woodlands, agricultural and rocky areas across the province.	Snakes were used for medicinal purposes.	VanWart, 1948
Tamiasciurus hudsonicus	Red Squirrel, *Adoo'dooguech *Atu:tuwej	Common throughout mature softwood and mixed wood forests.	Squirrel fur was used in clothing, and parts of the animal were used for medicine.	Maxwell, 1993; Wallis, 1922
Ursus americanus	Black Bear, *Mooin *Muwin	Forested or wooded areas and swamps. Also settled areas for easy food sources such as bee hives, agricultural crops, and garbage.	Bear were a food source and the hides could be used or sold.	Barsh, 2002; Caplan, 1978; Davis, 1997; Maxwell, 1993; Parnaby, 2008; VanWart, 1948; Wicken, 1994
Vulpes vulpes	Red Fox, *Wokwis *Wowkwis	Found throughout Nova Scotia, usually in agricultural areas intermixed with woods.	Fox were trapped for their pelts, which were sold in the fur trade.	(Barsh, 2002; McNab, 1998)

2.3.2 Freshwater Species

Table 2 represents the freshwater, anadromous and catadromous species utilized by the Mi'kmaq. The majority of these species were used mainly as food sources, however medicinal or other uses were possible. It is also important to note that many animals hold non-utility value, for example the spiritual and cultural significance of Atlantic Salmon to the people of Listuguj or eels to the people of Paq'tknkek.

Table 2: Mi'kmaq Freshwater Species Use

Species	Common Name, *Mi'kmaw Name ⁶	Habitat	Mi'kmaq Traditional Uses	Source
Anura (generic)	Frog, *Ŭchkoolch *Sqolj	Various species found in streams, rivers, brooks and lakes throughout the province.	Frogs were used for medicinal purposes	VanWart, 1948
Alosa sapidissima	American Shad, *Ŭmsamoo *Msamu	Anadromous fish species lives in coastal waters, returning to freshwater rivers to spawn.	Shad were a source of food.	Barsh, 2002; Caplan, 1978
Anguilla Rostrata	American Eel, *Kat *Ka:t	Found in the freshwater streams, rivers, lakes and brackish coastal waters.	Eel were a source of food and parts of the animal were used for medicine.	Barsh, 2002; Caplan, 1978; Maxwell, 1993; McNab, 1998; VanWart, 1948; Wicken, 1994
Coregonus huntsmani	Atlantic Whitefish, N/A	Anadromous species found in lakes, rivers and estuaries.	Whitefish were a source of food.	Barsh, 2002
Esox (generic)	Pike, *Měskilk nŭmāāch	Found in lakes rivers streams and brackish waters.	Pike were a source of food.	Barsh, 2002
Perciformes (generic)	Bass, *Chegaoo *Jikaw	Nova Scotia is home to various species of bass which range from fresh to salt water habitats.	Bass were a source of food.	Barsh, 2002; VanWart, 1948
Salmo/Salvelinus(generi	Trout,	Various species found in streams, rivers,	Trout were a source of food.	Barsh, 2002;

⁶ DeBlois, 1997; Rand, 1888

Species	Common Name, *Mi'kmaw Name ⁶	Habitat	Mi'kmaq Traditional Uses	Source
c)	*Adagwaasoo *Atoqwa:su	brooks and lakes throughout the province.		Caplan, 1978; Maxwell, 1993; VanWart, 1948; Wicken, 1994
Salmo salar	Atlantic Salmon, *Pălămoo *Plamu	Found in the Northern Atlantic ocean, returning to freshwater rivers and streams each year to spawn.	Salmon were an important seasonal food, as well as symbol of cultural identity for Mi'kmaq of Listuguj.	Caplan, 1978; Davis, 1997; Krieger, 2002; Maxwell, 1993; McNab, 1998; VanWart, 1948; Wicken, 1994
Siluriformes (generic)	Catfish, *Ŭtkogwĕch'	Shallow muddy lakes or slow moving streams	Catfish were a source of food.	Barsh, 2002
Testudines (generic)	Turtle, *Mikjikj	Various species found in streams, rivers, brooks and lakes throughout the province.	Turtles were a source of food.	Caplan, 1978

2.3.3 Birds

Table 3 depicts the various bird species harvest by the Mi'kmaq. While the majority of the species were used for food purposes (meat or eggs), other uses included feathers for guides on arrows, or for decorative purposes. It is important to note that some of the birds listed refer to generic groups, the uses and species of which were not always specified. For example, references to eagles as food may refer to the collection of eggs, or may encompass a wide variety of birds such as turkey vultures. The migratory nature of many birds would have limited the Mi'kmaq to seasonal harvests, while other woodland or marine species could be found year round.

Table 3: Mi'kmaq Bird Use

Species	Common Name, *Mi'kmaw Name ⁷	Habitat	Mi'kmaq Traditional Uses	Source
Accipitridae (generic)	Eagle, *Kitpoo *Kitpu	Isolated forested areas near large bodies of water.	Large birds offered a food source, and feathers were used as guides on arrows.	Lockerby, 2004; Maxwell, 1993
Anatidae (generic)	Duck, *Apchechk	Wetlands, lakes, rivers, streams and coastal areas.	Ducks were a source of food.	Barsh, 2002; Caplan, 1978; Davis, 1997; Maxwell, 1993; VanWart, 1948; Wicken, 1994)
Anas (generic)	Teal, *Ŭchŭgwè'ch'	Wetlands, lakes, rivers, streams and coastal areas.	Teal were a source of food.	VanWart, 1948
Anserini (generic)	Goose, *Senŭmkw' *Takli.j	Wetlands, lakes, rivers, streams and coastal areas.	Geese were a source of food.	VanWart, 1948
Branta bernicla	Brant Goose, *Mogŭlaweech	Wetlands, lakes, rivers, streams and coastal areas.	Brant Geese were a source of food.	Lockerby, 2004; Maxwell, 1993
Branta canadensis	Canada Goose, N/A	Wetlands, lakes, rivers, streams and coastal areas.	Canada Geese were a source of food.	Lockerby, 2004
Clangula hyemalis	Oldsquaw, N/A	Wetlands, lakes, rivers, streams and coastal areas.	Oldsquaw were a source of food.	Lockerby, 2004
Columbidae (generic)	Wild Pigeon, *Pŭles' *Ples	Common throughout the province in farmlands and residential or urban areas.	Wild pigeons were a source of food.	VanWart, 1948
Gallinago gallinago	Common Snipe, *Oonŏkpŭdeĕg'isoo *Jijikwatej	Found in coastal areas, particularly wet meadows or bushy swamps.	Snipe were a source of food.	VanWart, 1948
Laridae (generic)	Gull,	Found in coastal areas around the province	Gulls were a source of food.	Lockerby, 2004

⁷ DeBlois, 1997; Rand, 1888

Species	Common Name, *Mi'kmaw Name ⁷	Habitat	Mi'kmaq Traditional Uses	Source
	*Kŭlokŭndeĕch'			
Mergus merganser	Merganser, N/A	Wetlands, lakes, rivers, streams and coastal areas.	Mergansers were a source of food.	Lockerby, 2004
Perdix (generic)	Partridge, *Pŭlowwěch' *Plawej	Hardwood or mixed forest areas, near streams or openings.	Partridge was a source of food.	Maxwell, 1993; VanWart, 1948
Phalacrocoracidae	Cormorant, *Mgatawapu	Coastal areas around the province	Cormorants were a source of food.	Lockerby, 2004
Somateria mollissima	Common Eider, N/A	Coastal areas near shellfish beds.	Eider was a source of food.	Lockerby, 2004

2.3.4 Marine Species

Table 4 summarizes Mi'kmaq use of salt water marine species, as well as anadromous species principally found in ocean environments. Similar to freshwater species, many of the fish listed in this table were used primarily as a food source, although large marine mammals such as whales and seals offered multiple uses. A large portion of the Mi'kmaq diet consisted of seafood, and while the study areas are not directly adjacent to the coast it is important to note these uses as seasonal variations and migrations of these species played a large role in determining how and when the people moved across the land.

Table 4: Mi'kmaq Marine Species Use

Species	Common Name, *Mi'kmaw Name ⁸	Habitat	Mi'kmaq Traditional Uses	Source
Acipenser oxyrhynchus oxyrhynchus	*Komkŭdămoo *Komkotamu	Anadromous fish found in coastal waters and rivers.	Sturgeon were a source of food.	Barsh, 2002; Caplan, 1978; Davis, 1997; Lockerby, 2004; McNab, 1998;

⁸ DeBlois, 1997; Rand, 1888

Species	Common Name, * <i>Mi'kmaw Name</i> ⁸	Habitat	Mi'kmaq Traditional Uses	Source
Alosa pseudoharengus	Alewife, (Gaspereau) *Abit petŭběť' *Segoonŭměkw'	Anadromous species found in lakes rivers and coastal waters.	Alewife were a source of food.	Wicken, 1994 Caplan, 1978; McNab, 1998; Wicken, 1994
Bivalvia (generic)	*Kaspalaw Clam, *Āās; Ā'sŭk *Ŭpkwāāsk *Sebooāās *Boogoonŭmowāās *E:sik	Gravel and sand beaches in protected bays.	Clams were a source of food.	Barsh, 2002; Caplan, 1978; VanWart, 1948
Brachyura (generic)	Crab, *Nŭmjimegĕch' *Jakej	A variety of crab species are found in Nova Scotia's coastal waters.	Crabs were a source of food.	Barsh, 2002; Caplan, 1978; VanWart, 1948
Buccinidae (generic)	Whelk, N/A	Found in coastal waters with muddy or sandy bottoms.	Limpets were a source of food.	Barsh, 2002
Cardiidae (generic)	Cockles N/A	Found in coastal waters on muddy or rocky bottoms.	Cockles were a source of food.	Barsh, 2002
Cetacea (generic)	Whale, *Năbeák' *Put'p	A variety of whales are found in Nova Scotia's coastal waters.	Whales were used as a food source, fat was stored as oil and bones were used for tool making.	Barsh, 2002; Lockerby, 2004
Clupea harengus	Atlantic Herring, *Agoogŭměkw' *N'me:ji:j	Migratory species found in coastal waters of Nova Scotia.	Herring were a source of food.	Barsh, 2002; Caplan, 1978; Krieger, 2002
Cottidae (generic)	Sculpin, *Kŭlok *Klakw	Demersel fish found in waters along the Atlantic Coast.	Sculpin were a source of food.	Barsh, 2002
Echinoidea (generic)	Sea Urchin, N/A	Coastal areas with shallow rocky bottoms	Urchins were a source of food.	Barsh, 2002; Caplan, 1978
Gadus morhua	Atlantic Cod, *Pějoo * <i>Peju</i>	Benthopelagic fish found in coastal waters.	Cod were a source of food and medicine.	Barsh, 2002; Caplan, 1978; Davis, 1997; McNab, 1998;

Species	Common Name, *Mi'kmaw Name ⁸	Habitat	Mi'kmaq Traditional Uses	Source
				VanWart, 1948; Wallis, 1922; Wicken, 1994
Hippoglossus (generic)	Halibut, *'Msâněkw'	Benthic species found in coastal waters	Halibut were a source of food.	Caplan, 1978; Lockerby, 2004
Hippoglossoides platessoides	Plaice, N/A	Benthic species found in coastal waters	Plaice were a source of food.	Caplan, 1978
Homarus americanus	American Lobster, *Wŏlŭmkwĕch'; *Chŭgĕch' *Jakej *Walumkwej	Rocky bottoms in coastal waters.	Lobsters were a source of food, and the claws were used as pipes.	Barsh, 2002; Caplan, 1978; Maxwell, 1993; VanWart, 1948
Mallotus villosus	Capelin, N/A	Migratory species found in coastal waters. Spawn on rock and sand beaches	Capelin were a source of food.	Caplan, 1978
Microgadus tomcod	Tomcod, *Poonămoo *Punamu	Found in coastal waters of Nova Scotia.	Tomcod were a source of food.	Davis, 1997; Caplan, 1978; Davis, 1997
Odobenus rosmarus rosmarus	Atlantic Walrus , N/A	Large areas of shallow, open water with abundant clam community near ice or low, rocky shores with steep subtidal zones.	Walrus were a source of food.	Barsh, 2002; Caplan, 1978
Osmeridae (generic)	Smelt, *Kákpāsow' *kaqpesaw	Anadromous species found in coastal waters, rivers, and streams.	Smelt were a source of food.	Barsh, 2002; Caplan, 1978; Davis, 1997; McNab, 1998; VanWart, 1948
Ostreidae (generic)	Oyster, *Nŭmtŭmoo' *M'ntmu	Marine or brackish intertidal zones	Oysters were a source of food and were also used to polish bows.	Maxwell, 1993; Wicken, 1994
Patellogastropoda (generic)	Limpet, N/A	Found in intertidal rocky zones.	Limpets were a source of food.	Barsh, 2002
Pectinidae (generic)	Scallop, *Sâkskalāās *Sasqale:s	Sea scallops live in deep waters with sandy bottoms, while bay scallops live in sandy bays and estuaries.	Scallops were a source of food.	Barsh, 2002; Caplan, 1978; VanWart, 1948

Species	Common Name, * <i>Mi'kmaw Name</i> ⁸	Habitat	Mi'kmaq Traditional Uses	Source
Pinnipedia (generic)	Seal, *Wŏspoo *Waspu	Found in coastal waters, bays, harbours, estuaries and islands.	Seals offered a source of good and oil, and were also used in medicines.	Barsh, 2002; Caplan, 1978; Davis, 1997; Krieger, 2002; Lockerby, 2004; Maxwell, 1993; VanWart, 1948; Wicken, 1994
Pleuronectidae (generic)	Flounder, *Anagwāāch *Anakwe:j	Benthic species found in coastal waters.	Flounder were a source of food.	Barsh, 2002; Caplan, 1978
Pseudopleuronectes americanus	Winter Flounder, N/A	Benthic species found in coastal waters.	Winter flounder were a source of food.	Caplan, 1978
Pteriomorphia (generic)	Mussel, *Sipuwe:s	Found in rocky intertidal zones.	Mussels were a source of food.	Barsh, 2002; Caplan, 1978; VanWart, 1948; Wicken, 1994
Rajidae (generic)	Skate, *Kĕgŭnălooĕch' *Na'qum	Found in coastal waters of Nova Scotia.	Skate were a source of food.	Barsh, 2002; Caplan, 1978
Scomber scombrus	Atlantic Mackerel, *Agoogŭměkw' *N'me:ji:j	Migratory pelagic fish found in coastal waters and estuaries.	Mackerel were a source of food.	Barsh, 2002; Caplan, 1978
Teuthida (generic)	Squid, *Sedaasoo *Seta:su	Found in deep water coastal areas.	Squid were a source of food.	Caplan, 1978
Xiphias gladius	Swordfish, *Keneskoonĕch' *Kniskunej	Migratory fish found in coastal waters of Nova Scotia.	Swordfish were a source of food.	Barsh, 2002

2.4 Traditional Plant Uses

Plants, alongside other natural resources, continue to have an intricate role within the Mi'kmaq culture, society and community. The uses of plant species ranged from being major food sources, to providing cures for ailments and providing raw the materials for the construction of tools.

2.4.1 Food Plant Species

Since the colonization of the new world Indigenous societies have shared their knowledge of plant species with newcomers. It has been estimated that some fifty plants useful as food have found their way into our diets as a result of earlier cultivation by Indigenous societies (Hamilton, 1974). Indigenous contributions to the modern Western diet include: corn, fiddleheads, potatoes, squash, berries, tobacco and maple syrup. For example, the Mi'kmaq were the first to produce maple syrup by facilitating the sap run using reeds or pieces of bark to collect sap into birch bark containers, which were sealed with pine resin for waterproofing (Hamilton, 1974). Table 5 references plant species that were traditionally consumed for food purposes by the Mi'kmaq.

Table 5: Plant Species Traditionally Consumed for Food by Nova Scotia Mi'kmaq.

Scientific Name	Common Name (* <i>Mi'kmaw Name</i> ⁹)	Habitat	Mi'kmaq Traditional Uses	Source
Abies balsamea	Balsam Fir *Stogn	Various	Bark used for beverage and medicine	Speck and Dexter, 1951; Lacey, 1977
Acer pensylvanicum	Striped Maple; Moosewood; * Mimkutaqo'q	Rocky woods, rich deciduous forests, wooded slopes and along streams	Bark used for tea	Speck and Dexter, 1951, 1952; Lacey, 1977; Wallis and Wallis 1955
Acer saccharum	Sugar Maple; * Snawey	Well-drained soils	Sap boiled into syrup, and a beverage tea was made from the bark and twigs, Used as cooking broth	Speck and Dexter ,1951; Stoddard ,1962

⁹ DeBlois, 1996

Scientific Name	Common Name (* <i>Mi'kmaw Name</i> ⁹)	Habitat	Mi'kmaq Traditional Uses	Source
Acorus americana	Sweetflag ¹⁰ ; * kiw'eswa'skul	Wet places and the borders of quiet streams. marshes, the edges of ponds and wet meadows. Coastal marshes just above high tides.	Rootstocks used to make a beverage and medicinal tea. Tubers eaten raw, or more commonly boiled or roasted	Yanovsky, 1936; Speck and Dexter, 1951; Wallis and Wallis 1955; Lacey, 1977
Allium tricoccum	Wild leek	Rich deciduous forests and intervals	Bulbs, fresh and dried	Speck and Dexter, 1952; Stoddard, 1962
Apios americana	Groundnut	Thickets and along rivers in alluvial soils	Groundnuts used	Speck and Dexter, 1951
Aralia nudicaulis	Wild Sarsaparilla; * Wopapa'kjukal	Dry woodlands and old forests	Used to make a beverage.	Speck and Dexter, 1951
Arctostaphylos uva- ursi	Bearberry * Kinnickick	Sandy or gravelly soils	Berries eaten	Speck and Dexter, 1951, 1952
Asclepias syriaca	Common Milkweed	Light soils	The young shoots, stems, flower buds, immature fruits, and even the roots were boiled and eaten as a vegetable The Mi'kmaq cooked the young pods and flowers with meat	Stoddard, 1962
Betula alleghaniensis	Yellow Birch; * Nimnogn	Various	Drank sap, rendered it into syrup and sugar, made tea from the twigs	Waugh, 1916; Stoddard, 1962; Lacey, 1977
Chenopodium album and closely related species	Lambsquarters; Pigweed; Goosefoot	A weed of cultivated and waste ground	Leaves and plants eaten as green, edible greens and seeds. The young plants were cooked as a potherb	Speck and Dexter, 1951, 1952
Cornus sericea ssp. sericea	Red Osier Dogwood; Red Willow; * Wjkulje'manaqsi	The edges of intervals, brook sides, wet meadows, and ditches along roadsides. Most common in rich, alkaline soils	Mi'kmaq people made a tea from the bark of dogwood probably this species.	Wallis and Wallis, 1955
Corylus cornuta	Beaked Hazelnut; * Malipqwanj	Dry and open woods. Sometimes in climax forests, scattered along roadside	Nuts used	Speck and Dexter, 1951, 1952; Stoddard, 1962

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¹⁰ Many references mention Calamus or Sweetflag, *A. calamus*, which does not occur in the Maritime provinces. The species present in this region is actually *A. americana*.

Scientific Name	Common Name (* <i>Mi'kmaw Name</i> ⁹)	Habitat	Mi'kmaq Traditional Uses	Source
		thickets, along edges of fields and along margins of woods.		
Crataegus spp.	Thornapple; Hawthorn; *kawiksa'qoaqsi	Various, depending on species	Fruit used fresh and to make beverage	Rousseau, 1945; Speck and Dexter, 1951, 1952; Black, 1980; Speck and Dexter, 1951, 1952; Adney, 1944
Erythronium americanum	Trout Lily; Dogtooth Violet	Upland woods of beech and maple, and along the edges of intervals	Bulbs eaten raw, boiled, or baked in the hot ashes of a fire	Stoddard, 1962
Fagus grandifolia	American Beech	Fertile uplands, rarely in swamps	Nuts used	Speck and Dexter, 1951, 1952
Fragaria virginiana , F. vesca	Virginia and Woodland Strawberries * Atuomkminaqsi	Old fields and road sides	Berries used fresh or preserved, or made into beverage	Speck and Dexter, 1951; 1952; Adney, 1944; Rousseau, 1945
Fraxinus pennsylvanica	Red Ash	Near lakes or ponds, or in other low-lying areas	Sap of ash was added to maple and yellow birch sap	Stoddard, 1962
Gaultheria procumbens	Wintergreen; Teaberry; Checkerberry; * Ka'qaju'mannaqsi	Woods, barrens, pastures	Berries eaten , Mi'kmaq were said to make juice from the berries	Stoddard, 1962; Speck and Dexter, 1952; Lacey, 1977
Gaylussacia sp.	Huckleberry	Barrens and bogs	Berries eaten	Waugh, 1916; Speck and Dexter, 1951, 1952
Hamamelis virginiana	Witch-hazel	Rocky woods or near cliffs where there is underground water	A decoction of this plant, sweetened with maple sugar, was used as a tea. Also ate the "nuts". Twigs used for beverage	Waugh, 1916; Stoddard, 1962; Lacey, 1977
Helianthus tuberosus	Jerusalem Artichoke	Waste ground, intervales, rich soils	Tubers eaten.	Speck and Dexter, 1951
Juglans cinerea	Butternut	NOT IN NS	Nuts used	Speck and Dexter, 1951
Juniperus communis	Low Bush; Common Juniper; *Kini'skweji'jik; kinikwejitewagsi	Sandy areas, old pastures, heaths and bogs	Boughs, with or without the fruits, were used to make a beverage tea	Wallis and Wallis, 1955; Lacey, 1977
Lathyrus maritimus	Beach Pea; *Alawey	Coastal, along the strand line, mostly in beach gravel. Occasionally a considerable	Pea used	Speck and Dexter, 1951, 1952

Scientific Name	Common Name (*Mi'kmaw Name ⁹)	Habitat	Mi'kmaq Traditional Uses	Source
		distance from shore		
Matteuccia struthiopteris	Ostrich Fern; * Ma'susi'l	Rich, moist soils, often on floodplains. Occasionally in low-lying areas and swamp borders. Often in pure stands	The young vegetative shoots, or "fiddleheads," and sometimes the entire crown, were traditionally eaten, boiled or	
Mitchella repens	Partridge Berry	Moist places, forest ground cover	roasted, as a spring vegetable Berries were eaten fresh or preserved. Used the plant for a beverage tea	Speck, 1917; Speck and Dexter, 1951, 1952,
Picea glauca	White Spruce; Cat Spruce; * Kawatkw; kawtk	Old fields and along the coast	Bark used for beverage and medicine	Speck and Dexter, 1951; Wallis and Wallis, 1955;Stoddard, 1962; Lacey, 1977
Picea mariana	Black Spruce; Bog Spruce; * Kawatkw	Bogs, swamps and poorly drained areas	The bark of black spruce was used to make a beverage or medicinal tea by the Mi'kmaq of the Maritimes	Speck and Dexter, 1951; Wallis and Wallis, 1955; Lacey, 1977
Pinus strobus	Eastern White Pine	Bogs, swamps and poorly drained areas	Bark used for beverage, Inner bark grated and eaten	Speck and Dexter, 1951; Wallis and Wallis, 1955; Lacey, 1977
Prunus americana	American plum	Does not occur in NS, suspected to be received in trade from outside region (Leonard 1996)	Fruit and beverage	Speck and Dexter, 1951,1952; Leonard, 1996
Prunus spp.	Wild Cherries	Thickets, clearings and open woods	Boiled cherry twigs and bark for tea	Stoddard, 1962; Lacey, 1977; Speck and Dexter, 1951, 1952; Adney, 1944
Quercus sp.	Oak	In light or well drained soils and granitic areas	Nuts used	Speck and Dexter, 1951, 1952
Rhexia virginica	Handsome Harry; Meadow Beauty	Peaty lake margins and swales or wet thickets	Leaves were steeped to produce a sour drink	Speck, 1917; Lacey, 1977
Rhododenrdon (syn. Ledum) groenlandicum	Labrador Tea; * Apuistekie'ji'jit	Bogs, wooded swamps, wet barrens, and poorly-drained clearings and pastures	The leaves, and sometimes the whole leafy twigs and flowers, of both species were used, fresh or dried, for tea	Speck, 1917; Speck and Dexter, 1951,1952; Wallis and Wallis, 1955; Stoddard, 1962; Lacey, 1977
Ribes americanum	Wild Black Currant	Fertile thickets and slopes	Berries eaten fresh or dried and preserved	Speck and Dexter, 1951, 1952

Scientific Name	Common Name (* <i>Mi'kmaw Name</i> ⁹)	Habitat	Mi'kmaq Traditional Uses	Source
Ribes spp.	Wild Gooseberry; Currant	Various, depending on species	Fruit	Speck and Dexter, 1951, 1952
Rubus canadensis	Canada Blackberry; * Ajioqjominaqsi	Clearing, thickets, and the edges of woods.	Berries used fresh or preserved, made into beverage	Waugh, 1916; Gilmore, 1933, Speck and Dexter, 1951, 1952; Arnason et al., 1981
Rubus idaeus	Red Raspberry; * Klitawmanaqsi'k	Roadsides, deforested land, talus slopes, and rocky ground	Berries used fresh or dried, juice made from berries	Speck and Dexter, 1951, 1952; Stoddard, 1962
Rubus sp.	Blackberry	Various, depending on species	Fruit & beverage	Speck and Dexter, 1951, 1952
Sambucus nigra	European Elder; * Pukulu'skwimanagsi'l	Rich soil, open woods, around old fields and along brooks. On damp ground or wet floodplains	Berries were eaten fresh or dried for winter storage	Speck and Dexter, 1951, 1952; Stoddard, 1962
Sambucus racemosa	Red Elderberry; * Pukulu'skwimanagsi'l	Meadows, wet places, rocky hillsides and along streams. In rich soils	The juicy, tart berries were eaten fresh or dried for winter storage	Speck and Dexter, 1951, 1952
Taraxacum officinale	Common Dandelion	An aggressive weed in lawns, pastures, and even cultivated soil.	Young leaves eaten raw or cooked	Rousseau, 1945; Speck and Dexter, 1951, 1952
Taxus canadensis	Canada Yew	Cool damp woods, ravines, climax coniferous forest, and wooded swamps.	Twigs made into beverage	Lacey, 1977
Tsuga canadensis	Eastern Hemlock	Lakesides and swamps or old pastures, northern slopes or ravines	The inner bark of was grated and eaten by the Mi'kmaq of the Maritimes, and the bark was also used as a beverage and medicinal tea	Speck and Dexter, 1951; Wallis and Wallis, 1955; Stoddard, 1962; Lacey, 1977
Vaccinium spp.	Blueberries; Bilberries; Cranberries	Various, depending on species	Berries used fresh or dried and also the Mi'kmaq made juice from blueberries and bilberries for drinking, but did not state which species were involved.	Speck and Dexter, 195 1,1952; Adney, 1944; Lacey, 1977
Vaccinum macrocarpon	Large -fruited Cranberry	Bogs	Berries eaten fresh	Waugh, 1916; Speck and Dexter, 1951,1952; Stoddard, 1962; Black, 1980
Vaccinum. vitis-idaea	Foxberry; Mountain Cranberry;	Cooler regions, such as exposed, coastal headlands	Berries	

Scientific Name	Common Name (* <i>Mi'kmaw Name</i> ⁹)	Habitat	Mi'kmaq Traditional Uses	Source
	* Poqomannaqsi	and barrens		
Viburnum opulus	Highbush Cranberry;	Swamps and along streams	Berries used fresh or in preserve	Speck and Dexter, 1951, 1952
	* Nipanmaqsi'l			

2.4.2 Medicinal Plant Species

Diverse healing systems have developed throughout the world. Although these systems differ greatly in their methods, they are based on the common goal of maintaining the human condition in a state of health (Cook, 2005). Throughout history and today, the Mi'kmaq have learned to use various plant species for medicinal purposes and other uses. This knowledge and use of natural resources is informally passed on from generation to generation. The transfer of knowledge between generations is an important cultural component within Indigenous cultures, in particular amongst the Mi'kmaq. Furthermore, this knowledge acts as a mechanism in which Indigenous communities are able to form a spiritual understanding of the balance between people and their local environment.

Early records indicate that the pre-contact Mi'kmaq society did not require drug therapy as used in modern Western medicine, as good health was generally the natural state of the people (Lacey, 1993). The Mi'kmaq had developed an in-depth and intimate knowledge of local plants, and how they could be used for sustenance, and in some cases, to cure illnesses. Shamans treated serious illnesses, while minor external injuries were dressed with medicines derived from plants, trees and animals parts. Many of these remedies were cures, while others were preventive medicines and others, if not used properly, could be poisonous (TEWC, 1999). As the Mi'kmaq began to experience frequent contact with Europeans they were exposed to new illnesses and their general health conditions began to deteriorate. These harsh conditions drew out the resourcefulness of the Mi'kmaq as they gradually acquired remedies to combat ailments, which were unknown a few generations earlier (Lacey, 1993).

The Mi'kmaq have a long history of territorial occupation by immigrant populations, making them one of the most studied people for the use and knowledge of their traditional medicines (Speck, 1917; Wallis and Wallis, 1955). As a result a number of guidebooks have been published on the subject. Table 6 provides a list of plant species known to be used for medicinal purposes by Mi'kmaq, which may be present in the Study Area.

Table 6: Plant Species Traditionally Used for Medicinal Purposes by Nova Scotia Mi'kmaq.

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Abies balsamea	Balsam Fir;	Various regions including mountains, canyons and valleys	Balsam used as sore and wound dressing	Le Clerc, 1910
	* Stoqn		Balsam used to treat broken bones	Dièreville, 1933
			Bark used for beverage and medicine	Speck and Dexter, 1951; Lacey, 1977
			Buds used as a laxative	Chandler et al., 1979
			Buds, cones and inner bark used for diarrhea	Chandler et al., 1979
			Colic: cones used	Wallis, 1922
			Cones used for colic	Chandler et al., 1979
			Gum used for bruises, sores and wounds	Chandler et al., 1979
			Gum used for burns	Chandler et al., 1979
			Gum used for colds	Chandler et al., 1979
			Sores, swelling: boil inner bark	Speck, 1917
			Used to treat asthma, colds, colic, coughs, congestion, cuts, flu, sores, sore throat, tuberculosis, ulcers	Lacey, 1993
Acer alba	White Maple; Silver Maple; River Maple; Swamp Maple; *Snawey	Planted in urban areas, commonly found on stream banks, flood plains and lake edges.	Bark used as a cough remedy	Chandler et al., 1979

¹¹ DeBlois, 1996; Wallis and Wallis, 1955

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Acer pensylvanicum	Moosewood; Striped Maple; Moose Maple; *Mimkutaqo'q; snawey	Minor component in a hardwood forests, tolerant of shade, responds well to increased sunlight	Bark tea used for colds, coughs, influenza	Wallis, 1922
	wiinkataqo q, shawey		Bark used for colds	Chandler et al., 1979
			Bark used for coughs	Chandler et al., 1979
			Bark used for medicinal tea	Speck and Dexter, 1951; Lacey, 1977; Wallis and Wallis, 1955
			Wood used for kidney trouble	Chandler et al., 1979
			Wood used for spitting blood	Chandler et al., 1979
Acer saccharum	Sugar Maple; *Snawey	Grows in rich, mesic sites, but also occurs in drier upland forests. Commonly found near American beech, American basswood, northern red and white oak, birch and yellow poplar	Bark used	Speck and Dexter, 1951
Acer sp.	Maple; *Snawey	Found in a variety of diverse regions	Cold, congestion, conjunctivitis, swelling	Lacey, 1993
Acer spicatum	Mountain Maple	Found scattered in the shrub layer of climax forests. Common in upper elevations	Bark used for sore eyes	Chandler et al., 1979
Achillea millefolium	Common Yarrow	Dry or sandy soils as well as damp, salty soils. Pastures, meadows, roadsides, streamsides, and disturbed areas	Bruises, cold, fever, sprain, swelling	Lacey, 1993
			Decoction of plant taken with milk to cause a sweat for colds	Wallis, 1922
			Dried, powdered bark or green leaves rubbed over bruises	Wallis, 1922

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
			Dried, powdered bark or green leaves rubbed over swellings	Wallis, 1922
			Herb used for colds	Chandler et al., 1979
			Sprains	Wallis, 1922
Acorus americanus (* frequently misidentified as A. calamus in many references)	Sweet Flag; Flagroot; Muskrat Root; Calamus; *Kiw'eswa'skul; ki'kwesu'sk	Growth in marshes, quiet streams and wet meadows	Root used for beverage and medicine	Speck and Dexter, 1951; Wallis and Wallis, 1955
			Root used for colds	Chandler et al., 1979
			Root used for coughs	Chandler et al., 1979
			Use to treat colic, Cholera, Cough, Belching, Cramps, Preventive, Stomach Cramps, Gastrosis, Preventive	Lacey, 1993
Actaea racemosa var. racemosa	Black Bugbane	Grows in a variety of woodland habitats, found in small woodland openings	Root used for kidney trouble	Chandler et al., 1979
Aletris farinosa	White Colicroot	Low crowing perennial herb, found in open dry habitats associated with tall-grass prairies	Root used as a stomachic	Chandler et al., 1979
			Root used as an emmenagogue	Chandler et al., 1979
			Stomachic tonic, emmenagogue: root used	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Alnus crispa	Alder; *Tupi; Tupsi	Lakeshores and associated swampy areas	Cathartic, cramps, depurative, diptheria, fever, gastrosis, lameness, nephrosis, neuralgia, pain, rheumatism, wounds	Lacey, 1993
Alnus sp.	Alder; *Tupi; Tupsi	Lakeshores and associated swampy areas	Bark and leaves used for festers and bark used for wounds	Chandler et al., 1979
			Bark and leaves used for fevers and festers	Chandler et al., 1979
			Bark used as a physic	Chandler et al., 1979
			Bark used for bleeding	Chandler et al., 1979
			Bark used for cramps	Chandler et al., 1979
			Bark used for retching	Chandler et al., 1979
			Bark used for rheumatism	Chandler et al., 1979
			Bleeding, hemorrhage of lungs, fever, fractures, diphtheria,	Chandler et al., 1979
Anaphalis interecedens	Everlasting	Fields, roadsides, and the border of woods	Fumitory, smoked with tobacco	Lacey, 1993
Angelica sylvestris	Woodland Angelica	Tall plants of moist habitats with dilated sheaths. Found in open or woodland habitats	Infusion of roots and spikenard roots used for coughs	Mechling, 1959
			Infusion of roots and spikenard roots used for head colds	Mechling, 1959
			Root used for cough	Chandler et al., 1979
			Root used for head cold	Chandler et al., 1979
Antennaria neodioica	Everlasting	Fields, roadsides, and the border of woods	Fumitory; dried broken into fine pieces and mixed with tobacco or smoked by themselves	Lacey, 1993

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Apocynum cannabinum	Indian Hemp; Worm Root	Found along roadsides, in thickets, fields, waterways, fields and in disturbed regions	Root used as a vermifuge	Chandler et al., 1979
			Used internally as a tea to treat worms	Lacey, 1993
Aralia nudicaulis	Wild Sarsaparilla;	Shady, wooded areas, ranging from moist to dry regions	Cold, cough, flu, wounds	Lacey, 1993
	* Wopapa'kjukal		Cough: root used	Chandler et al., 1979
			Plant used, ailment not provided	Speck and Dexter, 1951
			Root used as a cough medicine	Chandler et al., 1979
Aralia racemosa	American Spikenard	Grows on rocky but highly fertile riverbanks	Colds: steep roots	Lacey, 1977
			Colds, sore eyes, wounds: root	Wallis, 1922
			Infusion of roots and angelica roots used for coughs	Mechling, 1959
			Infusion of roots and angelica roots used for head colds	Mechling, 1959
			Root used for colds	Chandler et al., 1979
			Root used for coughs	Chandler et al., 1979
			Root used for female pains	Chandler et al., 1979
			Root used for headaches and female pains	Chandler et al., 1979
			Root used for kidney troubles	Chandler et al., 1979
			Root used for sore eyes	Chandler et al., 1979
			Root used for spitting blood	Chandler et al., 1979
			Root used for wounds	Chandler et al., 1979
Arctium lappa	Greater Burdock;	Disturbed sites, roadsides and pastures	Buds and roots used for sores	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
	*Kawiksaw; Kelikwet			
Arctium minus	Lesser Burrdock: *Kawiksaw: Kelikwet	Disturbed sites, roadsides and pastures	Depurative, dermatosis, tonic	Lacey, 1993
	Nawinsaw, Nelikwet		Roots used for boils and abscesses	Chandler et al., 1979
Arctostaphylos uva-ursi	Bearberry *Kinnickick	Gravel type or sandy soils	Fumitory, urinary antiseptic	Lacey, 1993
Arisaema triphyllum	Indian turnip; jack-in-the- pulpit; *Tanaps; Wennju:sukapun	Predominate in loose soils and wet woods	Cold, gastrosis, tuberculosis	Lacey, 1993
	vveririju.sukapuri		Parts of plant used for boils and abscesses	Chandler et al., 1979
			Stomach: root bulb, tuberculosis: root bulb, method not mentioned	Lacey, 1977
Aristolochia serpentaria	Virginia Snakeroot	Found in dry-mesic forests above streams or wetlands	Root used for fits	Chandler et al., 1979
Armoracia rusticiana	Horse Radish, Hot Root, Eptekeway	Old gardens	Digestive, inappetance, stomach	Lacey, 1993
Asarum canadense	Canadian Wildginger	Low growing woodland plants, found in moist, humus rich soils of slowing woodland habitats	Root used for cramps and as a stomachic	Chandler et al., 1979
Asclepias spp.	Milkweeds	Growth in light, sandy soils and an abundant amount of sunlight	Root steeped and used as an emetic	Le Clerc, 1910
Asclepias syriaca	Milkweed	Growth in light, sandy soils and an abundant amount of sunlight	Used to treat poison ivy	Lacey, 1993
Baptisia tinctoria	Horseflyweed	Increases in burnt fields, dry open woods and clearings, sandy acidic soil	Root used for kidney trouble	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
			Root used for spitting blood	Chandler et al., 1979
Betula alleghaniensis	Yellow Birch;	Various regions including mountains, canyons and valleys	Bark tea used for diarrhea	Lacey, 1977
	*Nimnoqn; puku;skw			1077
			Twigs used for tea	Lacey, 1977
			Used for cramps, diarrhea, dyspepsia, gastrosis, cramps, cramps, rheumatism	Lacey, 1993
			Wood used as hot-water bottle	Chandler et al., 1979
Betula populifolia	Gray Birch	Found in dry barren uplands, also moist soils, in mixed woodlands	Inner bark used an an emetic	Chandler et al., 1979
			Inner bark used as an emetic	Chandler et al., 1979
			Inner bark used for infected cuts	Chandler et al., 1979
Brassica hirta	White Mustard	Found in openings in mesic forests, but also in riparian floodplains, margins of fens, marshes and streams, and wet meadows, fields and pastures	Tuberculosis of lungs (no part mentioned)	Chandler et al., 1979
Brassica napus	Wild Turnip, Rape; * tanaps; wennju:- sukapun; wennju:s'pekn	Found in fields, vegetable gardens, mills, roadsides, loading areas, and rubbish tips	Bark used for colds	Chandler et al., 1979
			Bark used for coughs	Chandler et al., 1979
			Bark used to treat colds, cough, grippe, smallpox	Wallis, 1922
Chelone glabra	White Turtlehead	Found in open woodlands in floodplain areas, thickets in floodplain areas, wet prairies, sedge meadows, seeps, springs, marshes and fens	Herb used to prevent pregnancy	Chandler et al., 1979
Chimaphila umbellata	Pipsissewa, Prince's Pine	Found in coniferous and mixed forests with numerous tree species and dry soils.	Herb used as a blood purifier	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
	*Kuwow			
			Herb used for blisters	Chandler et al., 1979
			Herb used for kidney trouble	Chandler et al., 1979
			Herb used for kidney trouble and rheumatism	Chandler et al., 1979
			Herb used for rheumatism	Chandler et al., 1979
			Herb used for stomach trouble	Chandler et al., 1979
			Jsed as stomach medicine and for tuberculosis	Lacey, 1977
			Used for kidney pains	Rousseau, 1948
			Used for tuberculosis	Lacey, 1993
Chrysanthemum	Field Daisy	Found in gardens, grassy temperate climate, rainfall and sunlight	Used for conjunctivitis	Lacey, 1993
Clintonia borealis	Northern Clintonia	Found in rich coniferous and mixed wood stands, thickets	Root decoction used to treat "gravel" (kidney stones)	Speck, 1917
Comptonia peregrina	Sweet Fern; *masoose	Shrub and brushlands, grasslands, and in open or barren soils	Boils, dermatosis, poison ivy, rheumatism, sore, tonic	Lacey, 1993
	- maccocc		Leaf tea used as tonic	Lacey, 1977
			Leaves used for posion ivy	Chandler et al., 1979
			Leaves used for sprains, swellings, poison ivy and inflammation	Chandler et al., 1979
			Leaves used for swellings and poison ivy	Chandler et al., 1979
			Root used for headache and inflammation	Chandler et al., 1979
Coptis trifolia	Goldthread;	Coniferous forests and damp areas such as swamps,	Roots used for sore eyes, root tea uses as stomach medicine	Lacey, 1977
	* wisowtaqjijl;	hummocks on bogs and		

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
	malj:japa:qawey	roadside banks		
			Used for chafing, diabetes, diarrhea, lack of appetiite, stomatosis, stomach cancer, also used as a tonic	Lacey, 1993
Cornus canadensis	Bunchberry, Dwarf Dogwood; * <i>ŭsogomanŭl</i>	Various locations; largely in woodlands and scattered throughout bogs	Berries, roots and leaves used forseizures	Chandler et al., 1979
	usogomanui		Leaf tea used for bed wetting and kidney ailments	Lacey, 1977
			Used for enuresis, gastrosis, hemorrhage, nephrosis, wounds	Lacey, 1993
Cornus sericea ssp. sericea	Redosier Dogwood; Red Willow; *Wjkulje'manaqsi	Commonly found in sandy areas, moist sandy thickets, shrub swamps, shrubby bogs, sand areas along rivers,	Herb used for headache	Chandler et al., 1979
		marshes and sandy ditches	Herb used for sore eyes	Chandler et al., 1979
Cornus sp.	Dogwood;	Sunny moist to wet places, often being the first to colonize wet	Bark of unidentified species for tea	Wallis and Wallis, 1955
	*ŭchkoolchemoose; oojegŭnŭmoose	meadows in floodplains	Fumitory	Lacey, 1993
Cypripedium acaule	Pink Lady Slipper; Moccasin Flower; * 'mtooögwāāch; lipkǔdǎmoon'	Requires acidic soil with a fungus association, but can tolerate a variety of shady and moisture rich areas. Prefers well drained slopes an is usually found in pine and deciduous forests	Nervine, tuberculosis	Lacey, 1993
			Nervousness: root decoction	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Daucus carota	Queen Anne's Lace, Wild Carrot;	Found in fields, meadows, waste places, roadsides, fence rows, and disturbed habitats	Leaves used as a purgative	Chandler et al., 1979
	*enmapet; enmapej			
			Purgative: leaves used	Wallis, 1922
Dirca palustris	Leatherwood, Moosewood	Rich deciduous or mixed woods in moist situations often on calcareous soils	Bark tea used for Colds, coughs, influenza	Wallis, 1922
			Seeds steeped and used as Emetic	Le Clerc, 1910
Eupatorium perfoliatum	Common Boneset	Low meadows and damp grounds such as swamps, bogs, and along streams and ditches	Arthritis, Cold, Insomnia, Gastric ulcers, Pain, Tonic	Lacey, 1993
			Parts of plant used for kidney trouble	Chandler et al., 1979
Euphorbia corollata	Flowering Spurge	Found in mesic to dry black soil prairies, sand prairies, gravel prairies and dolomite prairies; openings in upland forests and sandy forests; various kinds of hill prairies	Root used as an emetic	Chandler et al., 1979
Fagus grandifolia	American Beech; *suwo:musi; munkwaqanemusi	Scattered throughout, mainly in dry forest ridges and atop hills	Used for antiseptic, appetite, enteritis, hepatosis, nephrosis, rheumatism, tonic, tuberculosis	Lacey, 1993
Fragaria virginiana	Virginia Strawberry; *Atuomkminagsi; klitaw	Often found in disturbed areas from dry to moist open woodlands and clearings	Parts of plant used for irregular menstruation	Chandler et al., 1979
	7-7	3-	Plant steeped in water and used for cramps, depurative, dysentery, gastrosis, gingivitis, tonic, urinary antiseptic	Lacey, 1993
Fraxinus americana	White Ash;	Found in moist upland sites	Leaves used for cleansing after childbirth	Chandler et al., 1979
	*elikpetamit			

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Galium aparine	Stickywilly	Found in part shade, shade; moist woods, thickets	Parts of plant used for kidney trouble	Chandler et al., 1979
			Parts of plant used for persons spitting blood and gonorrhea	Chandler et al., 1979
Gaultheria procumbens	Teaberry; *Ka'qaju'mannaqsi; kakaju:man	Requires acidic or sandy soils, forests, woodlands, old pastures, bogs and road banks	Cardiopathy (Heart attack), Preventitive (Heart attack), Stroke	Lacey, 1993
			Leaves used for tea	Lacey, 1977
Geum aleppicum	Yellow Avens	Found in low ground, moist meadows, swamps	Roots used for coughs and croup	Chandler et al., 1979
Geum rivale	, · · · · ·	Found in White Cedar fens, bogs, marshes and soggy meadows	Decoction of root taken, especially by children, for colds	Speck, 1917
			Decoction of root taken, especially by children, for coughs	Speck, 1917
			Decoction of root taken, especially by children, for dysentery	Speck, 1917
			Root used for diarrhea	Chandler et al., 1979
			Root used for diarrhea or dysentery	Chandler et al., 1979
Habenaria dilatata	Tall White Bog Orchid	Found in wet areas, bogs	Root decoction used for kidney stones	Speck, 1917
Hamamelis virginiana	Witch Hazel	Understory of deciduous and mixed forests, rocky woods or near cliffs	Understory of deciduous and mixed forests, rocky woods or near cliffs	Lacey, 1993
			Twigs used for beverage	Lacey, 1977

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Heracleum lanatum	Cow Parsnip; *wabegpagosi; pagosi	On the sides of brooks in alluvial soil and in wet meadows	Root tea used as general preventative medicine	Lacey, 1977
			Used for cold, flu, tuberculosis	Lacey, 1993
Heracleum sphondylium	Eltrot; Hogweed; Rough Cow Parsnip	Common in herbaceous places, along roads, in hedges, meadows and woods, especially in mountain areas, prefers rich in nitrogen, moist soils	Green and light color plant used as medicine for women	Wallis, 1922
			Lighter colour part of plant used as medicine for women, darker coloured part for men (part not explained)	Wallis, 1922
Hierochloe odorata	Sweet Grass; *Kjimskiku; welim'qewe'l msiku	Upper areas of tidal marshes (moist heavy soils)	Vital spiritual and ceremonial purpose, including smudging, cleansing and purification purposes.	Lacey, 1993
Hydrastis canadensis	Goldenseal	Typically found in shady, rich, mesic southern forests, occurs in moist microhabitats near vernal pools, along forested streams	Root used for chapped or cut lips	Chandler et al., 1979
Hylotelephium telephium ssp. telephium	Witch's Moneybags	Found in dry sites with rocky soil: roadsides, railways, old fields, open woods, clearings, shore lines, swamps, forests, waste places	Leaves used for boils and carbuncles	Chandler et al., 1979
llex aquifolium	English Holly	Found in woodland and hedgerows, grows in forests, parks, gardens and in plains and mountain areas	Part of plant used for fevers, root used for consumption	Chandler et al., 1979
			Root used for cough	Chandler et al., 1979
llex verticillata	Black Alder;	Lakeshores and associated swampy areas	Seeds steeped and used as an emetic	Le Clerc, 1910
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Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Impatiens capensis	Jewelweed	Grows in shady ad wet places	Herbs used for jaundice	Chandler et al., 1979
Inula helenium	Elecampane Inula	Found in fields, waysides, waste places, often on moist soils in shade	Root used for colds	Chandler et al., 1979
			Root used for headaches	Chandler et al., 1979
			Root used for heart trouble	Chandler et al., 1979
Iris versicolor	Blue flag; muskrat root; Harlequin Blue flag; *mooskoonamook'	Wet areas along roadsides, in meadows and along streams and wet coastal regions	Root used for wounds and herb used for sore throat	Chandler et al., 1979
			Root used to treat wounds	Wallis, 1922
			Used as antidote and emetic	Lacey, 1993
Juglans cinerea	Butternut	Commonly found in riparian habitats, found on rich, moist, well-drained loams and well-drained gravels	Bark used as a purgative	Chandler et al., 1979
Juniperus communis	Common Juniper; *Kini'skweji'jik; kinikwejitewagsi	Rocky and sandy soil environments, old pastures and heaths	Cones used for rheumatism, ulcers	Chandler et al., 1979
			Decoctions of juniper bark, roots, or needlesused to treat a variety of lung-related disorders, from colds to asthma to tuberculosis	Waugh, 1916; Mechling, 1959
			Gum, bark used for sprains, wounds, tuberculosis	Wallis, 1922
			Part of plant used for rheumatism and bark used for tuberculosis	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
			Stems used in hair wash, gum used for wounds and cones used for ulcers	Chandler et al., 1979
			Used for burns, colds, cuts, flu, gastrosis, nephrosis, rheumatism, sore, sprain, tonic, dysuria	Lacey, 1993
Juniperus sp.	Juniper; *Kini'skweji'jik; kinikwejitewaqsi	Rocky and sandy soil environments, old pastures and heaths	Tips used for beverage	Wallis and Wallis, 1955
Kalmia angustifolia	Lambkill, Sheep Laurel	Bog areas in eastern lowland forests	Coultice of crushed leaves used for headache, leaf decoction used for stomach trouble	Speck, 1917
			Herb used for pain, swellings and sprains	Chandler et al., 1979
			Herb used for swellings, pain and sprains	Chandler et al., 1979
			Plant used as pain killer	Wallis, 1922
			Poultice of crushed leaves bound to head for headache	Speck, 1917
			Used for rheumatism, sore limbs, swelling. Poisonous in large doses	Lacey, 1993
Larix americana	Eastern Larch, Tamarack, Hackmatack	Found in wetlands such as swamps and bogs as well as wet depressions in forests	Bark used for colds	Chandler et al., 1979
			Bark used for suppurating wounds and colds	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
			Boughs brewed into tea and used for sores and swelling, boiled inner bark used as diuretic	Speck, 1917
			Decoction of boughs taken as a diuretic	Speck, 1917
			Poultice of boiled inner bark applied to sores and swellings	Speck, 1917
			Running sores: bark	Chandler et al., 1979
			Used for cold, flu, infections, tuberculosis, wounds	Lacey, 1993
Ledum groenlandicum	Labrador Tea	Thrives in bogs, on wet shores, damp barrens, poorly drained pastures and on rocky alpine slopes	Decoction of leaves taken as a diuretic	Speck, 1917
		Siepes	Used for cold, flu, infections, tuberculosis, wounds Tes, ed lie Decoction of leaves taken as a diuretic Leaf tea used for asthma, cold, scurvy Chandler et al., 1979 Leaves used for kidney trouble and to make a beverage Leaves used for tea Speck and Dexter, 1	Chandler et al., 1979
				Chandler et al., 1979
			1952 1958	Speck and Dexter, 1951, 1952; Wallis and Wallis, 1955; Lacey, 1977
				Chandler et al., 1979
			Tea of plant used for nephrosis, tonic	Lacey, 1993
Leonurus cardiaca	Common Motherwort	Found in open disturbed woodlands, areas along woodland paths, woodland borders and thickets, edges of degraded wetlands	Part of plant used for obstetric cases	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Lilium canadense	Canada Lily	Found in open woodlands, wooded slopes, savannas, woodland openings, and moist meadows	Parts of plant used for irregular menstruation	Chandler et al., 1979
Lilium philadelphicum	Wood Lily	Found in part shade, sun, dry woods, meadows, prairies	Roots used for coughs	Chandler et al., 1979
			Roots used for fever	Chandler et al., 1979
			Roots used for swellings and bruises	Chandler et al., 1979
Lobelia inflata	Indian tobacco; *nutmawey	Found growing naturally in dry pastures, barren areas and meadows	Smoke used to treat earache	Lacey, 1977
			Used for asthma, earache, fumitory	Lacey, 1993
Lycopodium sp.	Club Moss	Found in moist, shaded woodlands	Herb used for fever	Chandler et al., 1979
Maianthemum racemosum	Feather Solomon's Seal	Found in deep, humus-rich, acid soils. Prefers moist, deciduous woods, growing in drier, shallower soils or open spaces	Leaves and stems used for rashes and itch	Chandler et al., 1979
Mentha arvensis	Canadian Mint	Found along forest edge, wet meadows and fields, riparian, swamps/marshes, lakeshores	Herb used for children with an upset stomach	Chandler et al., 1979
Mitchella repens	Partridgeberry, Squaw Vine	Moist and damp regions, and along the ground of forest covered areas	Plant used for beverage and medicine	Speck and Dexter, 1951
			Used for parturition, pregnancy	Lacey, 1993
Myrica gale	Sweet Gale	Found in watersides, bogs, edges of lakes and streams	Roots pounded,soaked in hot water and used for inflammation	Wallis, 1922

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Myrica pensylvanica	Northern Bayberry, Waxberry	Coastal headlands and beaches, swamp and boggy forests, dry rocky forest and semi-open rocky ridges	Headaches: plant, snuff;inflammation: root poultice; exhilarant: tea, berries, bark, leaves	Wallis, 1922
			Used for arthritis, mouthwash, pain, rheumatism, stomatitis	Lacey, 1993
Nicotiana tabacum	Cultivated Tobacco; *nutmawey	For adequate growth found in soils without a high level of nitrogen	Drowning, earache	Lacey, 1993
	namawey	Tillogen	Leaves used for bleeding	Chandler et al., 1979
			Leaves used for earache	Chandler et al., 1979
Nuphar advena	Yellow Pond Lily; *pagose	Found in the floating leaved plant community, found in shallow depths, in less than 1 meter of water, in lakes, ponds, and stillwater	Poultice of bruised root with flour or meal applied to swellings and bruises	Speck, 1917
			Swellings of the limbs: leaves	Chandler et al., 1979
			Swellings, bruises: root with flour, poultice	Speck, 1917
Nuphar variegatum	Yellow Water Lily, Big One Side, Cow Lily; *pagose	Wetlands ranging from lakes, ponds and stillwaters	Root brewed into tea or worn around neck as general preventative	Lacey, 1977
			Used for swelling	Lacey, 1993
Nymphaea odorata	American White Waterlily, Sweet- Scented Water Lily; *pagose	Slow moving rivers, lakes and mucky ponds	Juice of root taken for coughs	Speck, 1917
			Leaves used for colds	Chandler et al., 1979
			Poultice of boiled root applied to swellings	Speck, 1917

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
			Root decoction used for coughs, swellings	Speck, 1917
			Roots used for colds, grippe, swelling; leaves used for suppurating glands	Chandler et al., 1979
			Roots used for suppurating glands and leaves used for colds	Chandler et al., 1979
			Used as preventive, swelling	Lacey, 1993
Panax quinquefolius	American Ginseng	Found in woodlands	Roots used as a "detergent for the blood"	Chandler et al., 1979
Panicum capillare	Witch Grass	Growth in disturbed areas, along roadsides, headlands and on lakeshores	Tonic	Lacey, 1993
Phytolacca americana	American Pokeweed; Pigeon-berry	Found in thickets, fields, roadsides and clearings	Leaves used for bleeding wounds	Chandler et al., 1979
			Leaves used for bleeding wounds	Wallis, 1922
Picea glauca	White Spruce; * Kawatkw; kawtk	Tolerable of a wide range of moisture conditions, mainly found along the coast and in old fields	Bark used as a cough remedy	Chandler et al., 1979
			Bark used for beverage and medicine	Speck and Dexter, 1951; Wallis and Wallis, 1955
			Bark used to prepare a salve for cuts and wounds	Chandler et al., 1979
			Gum and twigs used for scurvy	Chandler et al., 1979
			Gum used for scabs and sores	Chandler et al., 1979
			Parts of plant used for stomach trouble	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Picea mariana	Black Spruce; * Kawatkw	Primarily found on wet organic soils, peat bogs and swamps	Bark used for beverage or medicine	Speck and Dexter, 1951; Wallis and Wallis, 1955;Lacey, 1977
			Bark, leaves, twigs used for colds, cough, grippe; sap used for hemorrh;age, unknown part used for kidney trouble; bark used for wounds	Wallis, 1922
			Colds, cough, grippe, scurvy: bark, leaves, twigs	Chandler et al., 1979
			Cough remedy: bark	Wallis, 1922
Picea spp.	Spruce; *Kawatkw	Found in boreal regions	Used for tuberculosis, infections, cold, tonic, laryngitis, scurvy, warts	Lacey, 1993
Pinus strobus	Eastern White Pine; * kuwow; kuwaq	Thrives on dry/fresh, shallow and stony soils	Bark used for beverage or medicine	Speck and Dexter, 1951; Wallis and Wallis, 1955; Lacey, 1977
			Bark used for wounds and sap used for hemorrhaging	Chandler et al., 1979
			Bark, leaves and stems used for colds	Chandler et al., 1979
			Bark, leaves and stems used for coughs	Chandler et al., 1979
			Boiled inner bark used for sores and swellings	Speck, 1917
			Plant parts used for kidney trouble	Chandler et al., 1979
			Sap used for hemorrhaging	Chandler et al., 1979
			Used for colds, hemorrhage, nephrosis	Lacey,,1993

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Plantago major	Common Plantain	Found in open, disturbed places such as waste areas, as well as in fields and along roads	Leaf poultice used for infected wounds	Lacey, 1977
			Used for gastrosis, sore, infection, sore, ulcer, wound, infection, sore, wound	Lacey, 1993
Polygala senega	Seneca Snakeroot	Found in upland gravel prairies, hill prairies, savannas, wooded slopes along rivers or lakes and abandoned fields	Root used for colds	Chandler et al., 1979
Polypodium virginianum	Rock Polypody	Grows on boulders, cliffs and rocky slopes and does not need well-developed soil	Infusion of plant used for urine retention	Rousseau, 1948
Pontederia cordata	Pickerelweed	Found in shallow water of marshes, swamps, bogs, ponds and protected areas of rivers where the water is slow-moving	Herbs used to prevent pregnancy	Chandler et al., 1979
Populus balsamifera	Balsam Poplar	Found on sites that are relatively rich in nutrients and less acidic, and in relatively small, localized stands	Barked baked, brewed into tea to treat worms	Chandler et al., 1979
			Buds and other parts of plant used as salve forr sores, chancre	Chandler et al., 1979
Populus sp.	Poplar sp.;	A variety of diverse habitats (open disturbed sites to grasslands to floodplain	Used for cold, flu	Lacey, 1993
	Triid	woodlands)		
			Worms: bake bark, make tea	Lacey, 1977
Populus tremuloides	Quaking Aspen	Occurring alongside conifer trees, grow best in fertile, moist loams or well-draining silts or clay loams.	Bark used for colds	Chandler et al., 1979
			Bark used to stimulate the appetite	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Prunus cerasus	Red Cherry; Sour Cherry	Found in moist, open woods	Used for cold, cough, hypertension	Lacey, 1993
Prunus pensylvanica	Pin Cherry	Dry to moist open forests and clearings	Wood used for chafed skin and prickly heat	Chandler et al., 1979
Prunus serotina	Black Cherry	Found in deciduous woodlands, open woodlands, woodland borders, fence rows, powerline clearances, vacant lots, and waste areas	Bark used for colds	Chandler et al., 1979
			Bark used for coughs	Chandler et al., 1979
			Bark used for smallpox	Wallis, 1922
			Cold, cough, depurative, flu, tonic	Lacey, 1993
Prunus spp.	Wild Cherry; * maskwesmnaqsi; maskwe:simanagsi	Open woodland areas, thickets and various clearings	Bark steeped for medicine	Lacey, 1977
	maonino.omanager		Bark used for beverage and medicine	Speck and Dexter, 1951
Prunus virginiana	Bitterberry, Chokecherry	Found along streams, springs and seeps, intolerant of poor drainage, silty or sandy soils	Bark used for diarrhea	Chandler et al., 1979
			Used for cough, diarrhea	Chandler et al., 1979
Pyrola asarifolia	Liverleaf Wintergreen	Found in calcareous woods, thickets and wetlands	Parts of plant used for kidney trouble	Chandler et al., 1979
			Gonorrhoea, kidney trouble, spitting blood: part not mentioned	Chandler et al., 1979
			Parts of plant used for spitting blood	Chandler et al., 1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Quercus alba	White Oak; *mimkwaqanimusi	Found on sandy plains, gravelly ridges, rich uplands, coves and well-drained loamy soils	Bark used to induce thirst; treat bleeding piles	Chandler et al., 1979
	IIIIIIIKWaqariiiIIaSi	Well-drained loanly 30ll3	Nuts used to induce thirst	Chandler et al., 1979
			Plant parts used for bleeding piles	Chandler et al., 1979
Quercus rubra	Northern Red Oak *mimkwaqanimusi	Grows on a variety of dry-mesic to mesic sites, occurs in rich, mesic woods, on sandy plains, rock outcrops, stable interdunes, and at the outer edges of floodplains	Bark and roots used for diarrhea	Chandler et al., 1979
Quercus sp.	Oak; *mimkwaganimusi	Thrive in both lightly and well drained soils and granitic regions	Used for hemorrhage, piles	Lacey, 1993
Ranunculus acris	Tall Buttercup	Found in various locations such as in ponds, along shores and in meadows	Leaves used for headaches	Chandler et al., 1979
		meademe	Used as throat treatment	Chandler et al., 1979
			Used to treat cancer, headache, phobia	Lacey, 1993
Rhexia virginica	Meadow Beauty	Lightly shaded, wet regions such as swamps, higher parts of marshes, peaty lake margins and wet meadows and prairies	Leaves and twigs used as throat cleanser	Wallis, 1922
			Leaves steeped to produce a sour drink	Lacey, 1993
Rhinanthus crista-galli	Yellow Rattle	Typically growth in old fields, along roadsides and in places of prevalent waste	Used for epilepsy, seizures	Chandler et al., 1979
Rhus glabra	Smooth Sumac	Found on the edges of moist to dry black soil prairies, upland forests with a history of disturbance; thickets and woodland borders	Earache: part not mentioned	Lacey, 1993

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
			Used for cough, earache, sore throat	Chandler et al., 1979
Rhus typhina	Staghorn Sumac	Typically found in open areas such as fields, grasslands, along roadsides, hillsides and prairies	Bark and roots used as a physic	Chandler et al., 1979
			Berries and roots used for loss of appetite	Lacey, 1993
Ribes uva-crispa var. sativum	European Gooseberry; *kawaqteik; ka:to:min	Found in rocky hillocks, forest margins, shores	Bark and roots used as a physic.	Chandler et al., 1979
Rubus alleghanensis	Blackberry; * Ajiyoqjimin; kl'muwejimin	Easily grown in well-drained loamy soil in sun and semi shade, specifically dry thickets, clearings and woodland margins, open meadows, roadsides.	Used for canker, diarrhea, sore throat, stomach, stomatosis	Chandler et al., 1979
Rubus chamaemorus	Cloudberry	Found in bogs, wet peaty meadows, and tundra	Roots used for cough	Chandler et al., 1979
			Roots used for fever	Chandler et al., 1979
Rubus fruticosus	Shrubby Blackberry; *Ajiyoqjimin	Found in lower rainfall areas	Bark and roots used for children's diarrhea	Chandler et al., 1979
Rubus hispidus	Bristly Dewberry	Found in conifer swamps, wet hardwood forests, thickets and usually in an areas that are shaded, live in drainage ditches, low woods and swampy meadows	Roots used for cough	Lacey, 1993
			Roots used for fever	Chandler et al., 1979
Rubus idaeus	Raspberry; *Klitawmanaqsi'k; klitaw	Rocky grounds, along roadsides, and in exposed lands from deforestation	Used for canker, diarrhea, sore throat, stomach, stomatosis	Lacey, 1977
Rubus pubescens	Dwarf Red Blackberry;	Grows in shaded environments and is common in the shaded	Parts of plant used for irregular menstruation	Chandler et al., 1979
	*Ajiyoqjimin	understory beneath glossy buckthorn		

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Rubus sp.	Blackberry, Raspberry; *Ajiyoqjimin; klitaw	Found in a variety of habitats	Tea from canes used to treat stomach issues, with strawberry runners	Lacey, 1977
Rumex crispus	Curly Dock	Grows as a weed in pastures, hay fields, forages, landscapes, and some crop field areas	Infusion of roots used as a purgative	Mechling, 1959
			Roots used as a purgative	Chandler et al., 1979
			Roots used treat "cold in bladder"	Mechling, 1959
	Heartleaf Willow; Sand Dune Willow; Furry Willow	Found along dunes and lakeshores	Bark used for blisters	Chandler et al., 1979
	11111011		Bark used for colds	Chandler et al., 1979
			Bark used to stimulate the appetite	Chandler et al., 1979
Salix discolor	Pussy Willow;	Swamps, stream banks, marsh borders, floodplains and fens	Bruises, cancer, cold, nephrosis	Lacey 1993
Salix lucida	Shining Willow	Found in wetland habitats	Bark used for bleeding	Chandler et al.,1979
			Poultice of bruised leaves used on sprains and bruises	Wallis, 1922
Salix nigra	Black Willow	Found in marsh areas with standing water and most often seen along rivers and small streams, well suited to a riparian habitat	Poultice of scraped root and spirits applied to bruises and sprains	Speck, 1917
Salix sp.	Red Willow	Found in a variety of habitats	Fumitory	Lacey, 1993
Sambucus canadensis	American Elder; *Pukulu'skwimanaqsi'l	Various locations including wet barrens, swamps and open woodland areas	Berries, bark and flower used as a purgative and bark used as a physic	Chandler et al.,1979
			Berries, bark and flower used as a purgative and bark used as an emetic	Chandler et al.,1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
			Emetic	Lacey, 1993
			Soporific, purgative: cones, berries, flowers; emetic, physic: bark	Chandler et al.,1979
			Used as cathartic, emetic	Lacey, 1993
Sambucus racemosa	Scarlet Elderberry; *Pukulu'skwimanaqsi'l	Grows in riparian environments, woodlands, and other habitat, generally in moist areas	Herbs used as an "emetic (with round wood)"	Chandler et al.,1979
Sanguinaria canadensis	Bloodroot	In or at the edge of rich, moist woods, in the shade	Infusion of roots used for colds	Rousseau, 1948
			Roots used for hemorrhages and to prevent bleeding	Lacey, 1993 Chandler et al.,1979 Lacey, 1993 Chandler et al.,1979 Rousseau, 1948 Chandler et al.,1979 Chandler et al.,1979 Rousseau, 1948 Rousseau, 1948 Lacey, 1993 Chandler et al.,1979 Chandler et al.,1979 Chandler et al.,1979
			Roots used for infected cuts	Chandler et al.,1979
			Used as an abortifacient	Rousseau, 1948
			Used as an aphrodisiac	Rousseau, 1948
			Used for hemorrhage, rheumatism, tuberculosis	Lacey, 1993
Sanicula marilandica	Maryland Sanicle		Roots used for irregular menstruation	Chandler et al.,1979
		Found in rich woods, meadows and shores	Roots used for kidney trouble	Rousseau, 1948 Rousseau, 1948 Lacey, 1993 Chandler et al.,1979 Chandler et al.,1979 Chandler et al.,1979
			Roots used for menstrual pain	Chandler et al.,1979
			Roots used for menstrual pain and slow parturition	Rousseau, 1948 Rousseau, 1948 Lacey, 1993 Chandler et al.,1979 Chandler et al.,1979 Chandler et al.,1979 Chandler et al.,1979
			Roots used for rheumatism	Chandler et al.,1979
Sarracenia purpurea	Northern Pitcher Plant	Bogs	Used to treat dyspepsia, nephrosis, tuberculosis	Lacey, 1993
			Herb used for pain	Chandler et al.,1979
			Herbs used for kidney trouble and consumption	Chandler et al.,1979
			Herbs used for spitting blood	Chandler et al.,1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
			Roots steeped, used for sore throat, spitting blood	Speck, 1917
			Strong decoction of root taken for "spitting blood" and pulmonary complaints	Speck, 1917
			Used for spitting blood	Chandler et al.,1979
Scirpus microcarpus	Panicled Bulrush	Found in course, fine, or medium textured saturated soils. Lowland to middle elevations in mountain riparian, marshes and wet meadow zones	Roots used for abscesses	Chandler et al.,1979
Solanum dulcamara	Climbing Nightshade	In open woods, edges of fields, fence lines, roadsides, and occasionally in hedges and gardens	Roots used for nausea	Chandler et al.,1979
Sorbus americana	American Mountain Ash;	Found along hedgerows and in open wooded areas	Bark used for "mother pains"	Chandler et al.,1979
	*aqamoq' wisqoq		Bark used for boils	Chandler et al.,1979
			Infusion of root taken for colic	Speck 1917
			Parts of plant used as an emetic	Chandler et al.,1979
			Used for stomachache, witchcraft	Chandler et al.,1979
Streptopus amplexifolius	Claspleaf Twistedstalk	Found in wet sub-alpine woods and thickets, rich moist coniferous and deciduous woods at elevations	Parts of plant used for kidney trouble	Chandler et al.,1979
		3.5.5.3.5.0	Parts of plant used for spitting blood	Chandler et al.,1979
Symphoricarpus albus	Waxberry	Commonly found in gardens and surrounding buildings	Used for headache and as tonic	Chandler et al.,1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Symplocarpus foetidus	Skunk Cabbage;	Grows in large, dense stands in wet thickets, woods and swamps	Diabetes, toothache, tuberculosis	Chandler et al.,1979
			Herb used for headache	Lacey, 1993
			Herbs used for headache	Lacey, 1993
Tanacetum vulgare	Common Tansy	Found in pastures, hay fields, riparian habitats and wastelands	Herb used for prevention of pregnancy; leaves used for kidney trouble	Chandler et al.,1979
			Herbs used to prevent pregnancy	Chandler et al.,1979
			Leaves used for kidney trouble	Chandler et al.,1979
Taxus canadensis	Canada Yew		Bark used for bowel and internal troubles	Chandler et al.,1979
			Leaf tea used for fever	Lacey, 1977
		Found in forests, thriving in swampy woods, ravines, riverbanks and on lakes shores	Parts of plant used for afterbirth pain and blood clots	Chandler et al.,1979
		inversaring and on lance oneres	Parts of plant used for afterbirth pain and clots	Chandler et al.,1979
			Parts of plant used for fever	Chandler et al.,1979
Thuja occidentalis	Eastern White Cedar;	Found in swampy regions (both fresh and salt water) and near old pastures	Inner bark, bark and stems used for burns	Chandler et al.,1979
	* qaskusi; qaskusi a:qamikt		Inner bark, bark and stems used for cough	Chandler et al.,1979
			Stems used for headaches	Chandler et al.,1979
			Twigs used for headache; leaves used for swollen feet and hands	Chandler et al.,1979
			Used for swelling	Lacey, 1993
Tiarella cordifolia	Heartleaf Foamflower	Found in rich moist woodlands in the mountains	Roots used for diarrhea.	Chandler et al.,1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Tilia americana	American Basswood	Found in moist soils along stream banks and pond margins. Also in low woods	Bark used for suppurating wounds	Chandler et al.,1979
			Inner bark, bark and stems used for cough	Chandler et al.,1979
			Roots used for worms	Chandler et al.,1979
Tilia sp.	American Basswood	Found in moist soils along stream banks and pond margins. Also in low woods	Used for infections, sores, wounds	Lacey, 1993
Trifolium pratense	Red Clover	Found in open, moist or dry sites like old fields, pastures, roadsides and disturbed areas	Used as tonic	Lacey, 1993
Trifolium sp.	Clover	Found in open, moist or dry sites like old fields, pastures, roadsides and disturbed areas	Used for fever, insect stings	Lacey, 1993
Tsuga canadensis	Eastern Hemlock; *Ksu:skw; kastuk; qast'k	Mountains (northern slopes) and valleys	Bark and stems used for colds	Chandler et al.,1979
			Bark used as cough medicine and for grippe	Chandler et al.,1979
			Bark used for beverage or medicine	Speck and Dexter, 1951; Wallis and Wallis, 1955; Lacey, 1977
			Bark used for stomach troubles, colds, cough, grippe; inner bark used for scurvy	Chandler et al., 1979
			Bowel and internal troubles, colds cough, grippe, bark	Wallis, 1922
			Inner bark used for chapped skin	Chandler et al.,1979
			Inner bark used for diarrhea	Chandler et al.,1979

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
			Parts of plant used for bowel, stomach and internal troubles	Chandler et al.,1979
			Roots and stems used for "cold in kidney"	Chandler et al.,1979
			Used to treat cold	Lacey, 1993
Typha latifolia	Broadleaf Cattail;	Found in full sun, wet conditions and soil that is muddy or sandy	Leaves used for sores	Chandler et al.,1979
	*nukwa:luwejkewey; poqomaqan'skw			
Ulmus rubra	Slippery Elm; *wikpi	Found in moist, rich to dry, limestone soils	Bark used for suppurating wounds	Chandler et al.,1979
Vaccinium macrocarpon	Large-fruited Cranberry;	Bogs and marshes	Tonic to treat urinary and bladder infections	Lacey, 1993
	*Su:n			
Vaccinium myrtilloides (presumed)	Blueberry; *Pkuman; pkwiman	Common in peat covered barrens, dry soil, headlands and sandy regions	Tonic for rheumatism	Lacey, 1993
Vaccinium spp.	Blueberries, Bilberries, Cranberries; *Pkuman; pkwiman; su:n	Flourish in acidic, sandy soils. Found in wetlands, bogs and meadows	Berry juice used, unknown ailment	Lacey, 1977
Verbascum thapsus	Common Mullein	Found in pastures and in gravel plains as well as along roadsides and in light soils	Used to treat asthma	Lacey, 1993
			Parts of plant used for sores and cuts	Chandler et al.,1979
Viburnum lentago	Nannyberry	Found in moist mixed grassland, aspen parkland and boreal transition	Roots used for irregular menstruation	Chandler et al.,1979
Viburnum prunifolium	Blackhaw	Found in rich mesic woodlands, upland woodlands, thinly wooded bluffs, rocky wooded slopes, limestone glades	Infusion of plant taken before and during parturition	Wallis, 1922

Species	Common Name (*Mi'kmaw name ¹¹)	Habitat	Mi'kmaq Traditional Use	Source
Viburnum trilobum	Highbush Cranberry; * Nipanmagsi'l	Predominantly along streams and in swamps	Used to treat adenopathy, swellings	Lacey, 1993
Viola arvensis	Field Pansy	Along roadsides and in fields	Effective in the treatment of sore eyes	Lacey, 1993
Viola sp.	Violet	Found in moist to mesic black soil prairies, open woodlands, wooded slopes along rivers or lakes	Conjunctivitis	Lacey, 1993

2.4.3 Additional Plant Uses

The Mi'kmaq have a long-standing history of utilizing the land for not only food and medicine, but have also harvested resources for aesthetic purposes and/or tool making. Table 7 provides the plant species that were traditionally used by the Mi'kmaq for variety of purposes including tools, construction, clothing, heat, dyes, etc.

Table 7: Plant Species Traditionally Used by Nova Scotia Mi'kmaq

Scientific Name	Common Name (*Mi'kmaw Name ¹²)	Habitat	Mi'kmaq Traditional Uses	Source
Abies balsamea	Balsam Fir; * Stogn	Various regions including mountains, canyons and valleys	Wood used for kindling and fuel;Boughs used to make beds.	Speck and Dexter, 1951; Unama'ki Institute of Natural Resources, 2012
Acer pensylvanicum	Moosewood; Striped Maple; *Mimkutago'q	Rocky woods, rich deciduous forests, wooded slopes and along streams	Thin saplings used in wigwam construction	Nova Scotia Museum factsheet, ND
Acer rubrum	Red Maple	Swamps, alluvial soils, and moist uplands	Used to make basketware.	Speck and Dexter, 1951

 $^{^{\}rm 12}$ DeBlois, 1996; Wallis and Wallis, 1995; Unama'ki Institute of Natural Resources, 2012

Scientific Name	Common Name (*Mi'kmaw Name ¹²)	Habitat	Mi'kmaq Traditional Uses	Source
Acer saccharum	Sugar Maple *Snawey	Well-drained soils	Used to make bows and arrows.	Speck and Dexter, 1951
Acer sp.	Maple	Various	Pins for securing clothing	Wallis and Wallis, 1964
Alnus sp.	Alder *Tupsi	Low ground in alluvial soils	Bark used to make a dye.	Speck and Dexter, 1951
Betula papyrifera	White/Paper Birch *Maskwi	Forests, especially on slopes	Bark used to make baskets; bark used to make boxes, coffins and other containers; bark used to make canoes; bark used to make dishes and cooking utensils; bark used to make house coverings.	Speck and Dexter, 1951; Speck and Dexter, 1951; Rousseau, 1948; Speck and Dexter, 1951; Speck and Dexter, 1951
Betula alleghaniensis	Yellow birch		Branches used as straps and thongs.	Wallis and Wallis, 1960
Betula sp.	Birch	Various depending on species	Bark used to make torches for night fishing. Bark used to make trumpets for calling game. Bark used to construct containers, boxes, and cups Bark sheets used in wigwam construction	Speck and Dexter, 1951; Speck and Dexter, 1951; Wallis and Wallis, 1955; Nova Scotia Museum factsheet, ND.
Corylus cornuta	Hazel root		Basketry	Wallis and Wallis, 1955
Fagus grandifolia	American Beech	Fertile uplands, rarely in swamps	Used to make snowshoe frames.	Speck and Dexter, 1951
Fraxinus americana	White Ash	Intervale forests, low ground, and open woods	Used to make axe and knife handles.	Speck and Dexter, 1951
Fraxinus nigra	Black Ash *Wiskoq	Low ground, damp woods and swamps	Used to make basketware.	Speck and Dexter, 1951
Galium tinctorium	Stiff Marsh Bedstraw/ Small Bedstraw	Low-lying areas, brooks, marshes, and bogs	Roots used to make a red dye for porcupine quills.	Speck and Dexter, 1951
Hierochloe odorata	Sweetgrass *Kjimskiku	Moist heavy soils, generally in the upper reaches of tidal marshes	Used to make baskets. Used to make mats.	Speck and Dexter, 1951
Juniperus sp.	Red Cedar	Various, depending on species	Wood used for kindling and fuel.	Speck and Dexter, 1951
Larix laricina	Eastern Larch/ Tamarack	Bogs and wet depressions in forests	Wood used for kindling and fuel.	Speck and Dexter, 1951

Scientific Name	Common Name (*Mi'kmaw Name ¹²)	Habitat	Mi'kmaq Traditional Uses	Source
	*Apu'tam'kie'jit			
Picea glauca	White Spruce; Cat Spruce; *Kawatkw	Old fields and along the coast	Boughs used to make beds. Wood used for kindling and fuel.	Speck and Dexter, 1951Speck and Dexter (1951)
Picea mariana	Black Spruce; Bog Spruce; *Kawatkw	Bogs, swamps and poorly drained areas	Boughs used to make beds. Roots used as sewing material for canoe birch bark products. Wood used for kindling and fuel.	Speck and Dexter, 1951
Pinus strobus	Eastern White Pine	Bogs, swamps and poorly drained areas	Wood used for kindling and fuel.	Speck and Dexter, 1951
Picea spp.	Spruce	See White and/or Black Spruce	Poles for wigwam construction Root used as twine, for sewing	Nova Scotia Museum factsheet, ND Wallis and Wallis, 1955
Salix sp.	Willow	Various, depending on species	Leaves used as tobacco.	Speck and Dexter, 1951
Taxus canadensis	Canada Yew	Cool damp woods, ravines, climax coniferous, and wooded swamps.	Leaves used to make a green dye.	Speck, 1917
Thuja occidentalis	Eastern White Cedar	Lakesides and swamps or old pastures	Used to make arrow shafts; used to make canoe slats; wood used for kindling and fuel; woven into bags and mats; inner bark used as twine, for sewing	Speck and Dexter, 1951Nova Scotia Museum factsheet, ND Wallis and Wallis, 1955
Tilia spp ¹³ .	Basswood	Not native to NS	Bark woven into bags and mats	Nova Scotia Museum factsheet, ND
Tsuga canadensis	Eastern Hemlock	Northern slopes or ravines	Bark used to make a dye. Wood used for kindling and fuel.	Speck and Dexter, 1951
<i>Typha</i> spp.	Cattails	Marshes, wet depressions	Woven into bags and mats	Nova Scotia Museum factsheet, ND

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 $^{^{13}}$ There may be confusion over this common name, as basswood (*Tilia* species, or Linden) is not native to NS or NB.

2.5 Traditional Mi'kmag Place Names

An investigation of the traditional place names of *Mi'kma'ki* (Figure 1) reveals much about the unique relationship held between the Mi'kmaq and the land and resources on which they depend. The names are versatile and dynamic; they describe where to find resources, features of the landscape or where events took place. The names were descriptive of place but also represent the imagination and interpretation of a people moving through a dynamic and changing landscape. Evidence of this can be found in the language, history and myths of the Mi'kmaq people.

Language is one way cultures structure, give meaning to, and interact with the world around them. This is especially true for indigenous peoples with longstanding connections to a place. "Language is the principal instrument by which culture is transmitted from one generation to another, by which members of a culture communicate meaning and make sense of their shared experience. Because language defines the world and experience in cultural terms, it literally shapes our way of perceiving — our world view" (Canada, 1996). The Mi'kmaq language emerged from the sustained presence of the people in their territory for over 10 000 years. This ancient relationship has resulted in a distinct worldview which is inherently place based due to the cumulative experience of the people interacting with the landscape. The place names that were developed through this process give insight into the changing nature of the landscape, but also the cultural nuances of the people.

Before the arrival of European settlers the Mi'kmaq were a nomadic people, migrating seasonally throughout *Mi'kma'ki*. This freedom from a single dwelling place played a role in the way the Mi'kmaq conceptualized both the physical geography of their territory, and understood their place within it. While the Mi'kmaq frequented certain locations, their interaction with the landscape and conceptualization of space was based on movement through an area, rather than the identification of a single point or location. Unlike European languages, the Mi'kmaw language is verb oriented. Many place names are verbs rather than nouns, describing a sense of 'being from' or 'going to' a given place (Sable and Francis, 2012). The Mi'kmaq relationship to place was more important than any one location; the people interacted with the land through a dynamic interpretation of the landscape as they moved through it. While many names may appear to describe a single location, these names represented cultural indicators which the people interpreted in relation to the surrounding area and the collective memory of the people.

Place names also give insight into the character of the Mi'kmaq and their traditional beliefs and way of life. This is evident in the role that oral history played in the interpretation of landscape and underlying lessons on how they ought to interact with it. Although many names appear to describe a physical characteristic of the landscape, many of these names are tied into cultural practices, concepts or myths (Hornborg, 2008). This is common in many indigenous cultures with oral traditions where place names act as mnemonic devices, providing a framework for cultural identity and memory

(Sable& Francis, 2012). An example of this are the connection between myth and the explanation of place, such as the relationship between the Glooscap myths and many place names along the shores of the Bay of Fundy (Sable and Francis, 2012). These myths and legends held many moral lessons, but also acted as oral maps of the territory.

The Mi'kmaq conceptualization of place is a complex and holistic subject that intertwines the language, culture, myth and territory of the Mi'kmaq people. Unfortunately during the colonial period many aspects of this Mi'kmaq tradition were lost or forgotten. The following tables offer an incomplete account of the place names within a 10km radius of the study area, as well as other prominent places names from within the region. Some of the place names included here occur in multiple instances across the province and are marked with an asterisk. For example, the name Partridge Island most likely refers to Partridge Island in the Bay of Fundy, as described in the Glooscap myths.

Whynott's Settlement place names (Table 8) and corresponding distance markers (Appendix A).

Table 8: Whynott's Settlement Place Names

Place Name	Mi'kmaw Name	Meaning	Source
Partridge Island *	Pŭlowĕchwā, Mŭnegoo	Partridge Island	Rand, 1875
	Pülowecha Mulwego	Partridge Island	Frame, 1892
	Pulōwechāmunēgoo	Partridge Island	Rand,1919
Pine Grove *	Gooöa'gŭmĭkt	White pine grove	Rand, 1875
Mahone By	Mushamush	N/A	Town of Mahone Bay, 2013
Lahave River	Pĭjenooĭskâk	Having long joints	Rand, 1875
	Pijenooiskâk	N/A	Rand, 1888
	Pijelooaskak	Having long joints	Rand, 1919
Lunenburg	Âseedĭk	Clam land	Rand, 1875
	Aseedik	N/A	Frame, 1892
	Asedik	The place of clams	Rand, 1919
Tancook Island	Uktankook	Facing the open sea	Rand, 1919

^{*}Multiple instances retrieved from database

3 METHODOLOGY

The project methodology was developed in accordance with the MEKs Protocol adopted by the Assembly of Nova Scotia Chiefs, through the Kwilmu'kw Maw-klusuagn (KMK). The KMK MEKs Protocol provides a number of key guidelines and standards on suggested practices and procedures relevant to the planning, design, development, implementation and reporting of a MEKs.

The methodology for the MEK Study for the proposed wind farms consisted of three main elements. The NEXUS Team conducted a desktop review to gather all relevant information pertaining to the project study areas, historical Mi'kmaq knowledge and Mi'kmaq resource use. Workshops with local Mi'kmaq knowledge holders enabled the collection of local site-specific knowledge of historical and current Mi'kmaq use of natural resources in the area¹⁴. Field surveys updated the available knowledge of the study areas.

3.1 Literature Review

Archival documents and published works were reviewed for information regarding the past and present Mi'kmaq occupation and use of the Study Areas. The NEXUS Team utilized a range of data sources including historical documents, journal articles, published books, Nova Scotia Public Archives and Records, microfiche scans and local archives. A thorough literature review on existing knowledge and mapped data facilitates the preparation of a concise and accurate MEKs report.

3.2 Mi'kmaq Ecological Knowledge Workshop Preparation and Protocol

NEXUS has adopted the workshop format for conducting MEKs. The process for collecting TEK has moved away from the individual informant interview process to one that brings small groups of community members together in a workshop format. This process enables researchers an opportunity to observe and collect information from a variety of sources (such as youth, elders, women, hunters, community leaders, etc.) during focus group sessions.

The workshop format provides the opportunity to assess the validity of information collected. A participant who is knowledgeable about historical activity or environmental matters is just as concerned about the accuracy of information as any researcher. However, there remains the temptation to embellish certain facts to ensure the final decisions favor the participant's community or agenda (Johannes, 1993). In addition, there is also the risk of having non- MEK experts participating in the study as a means of receiving outside recognition (these individuals have been referred to in Mi'kmaq communities as 'glory seekers'). These individuals do not intend to compromise the reliability of the information gathered in MEKs, however, it does identify the need to integrate a process whereby the information collected is verified.

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¹⁴ Workshops are schedule for mid-April.

This workshop format provides a number of benefits to ascertain the validity of information collected. First, the group dynamic created in a workshop format provides the opportunity to dampen embellishment of stories and information. Second, groups can provide multiple perspectives on past community experience and stories passed down from generation to generation within the community. Third, group sessions allow the opportunity for conversations amongst community members, which may trigger old memories. Fourth, groups can provide greater understanding on the 'systems' used in the community to pass information between community members and between generations. Finally, workshops are a more cost and time effective means to conduct MEK surveys. These benefits are not present in 'one on one' interviews between a researcher and participant.

The workshop format requires engagement of Mi'kmaq knowledge holders at the community level. NEXUS worked with individuals from local Mi'kmaq communities in acquiring information on current use and interest of the Study Areas as well as preparing the workshops.

3.3 Surveys of the Study Areas

In addition to the evidence of Mi'kmaq knowledge of the Study Areas, information on the general area encompassing the site was achieved through the workshop maps, field surveys and habitat modeling exercise.

3.3.1 Mi'kmaq Knowledge Workshop Maps

NEXUS collected Mi'kmaq Ecological Knowledge from workshop participants in relation to the three Study Areas. NEXUS digitized the aggregated data on the maps produced in the workshops. The final MEKs maps were entered into a Geographic Information System (GIS) using ArcGIS to create user-generated maps. Copies of these maps are included in this report.

3.3.2 Field Survey for General Habitats and Plant Species

[This section will be revised upon completion of field survey in June]

Field surveys of the Study Areas will be completed to identify and locate plants and other related resources that may be of importance. Field surveys identified plants used by the Mi'kmaq located within the Study Areas.

A vegetation survey will be conducted. The vegetation survey was used to verify the presence of plant species identified during the desktop review stage in the Study Areas. The survey will consist of optically controlled meanders through habitat polygons identified to potentially contain plants of significance to Mi'kmaq. General locations of significant plants will be identified in the field using GPS and photographs recorded with a digital camera.

3.3.3 Wildlife Habitat Modeling Exercise

Wildlife species potentially located in the Study Area were determined through an analysis of available information. The analysis included information obtained on the historical and contemporary use of wildlife and fish resources by Mi'kmaq (from the literature review and workshop) combined with known wildlife habitat preferences and the results of the habitat surveys.

Information obtained from the literature review, field surveys and workshop were compiled and a habitat modeling exercise conducted. The likelihood of each species' presence on the Study Areas was determined by comparing habitat preferences of NS wildlife species with the habitats known to occur on the Study Areas.

[This section will be updated upon completion of field survey in June]

3.4 Analysis of Primary Data

This report includes an analysis of data achieved through workshop, surveys and the collation of supplementary data. The analysis provides a comprehensive and accurate account of the Mi'kmaq Ecological Knowledge, as well as the Mi'kmaq practices, interests and uses within the Study Areas.

[This section will be updated upon completion of field survey in June]

4 RESULTS

4.1 <u>Mi`kmaq Ecological Knowledge Workshops</u>

A workshop was held with members of Millbrook First Nation in order to discuss current land and resource uses within the four Study Areas. The workshop occurred on Thursday April 11, 2013 at the Glooscap Heritage Centre. Hunters, fishers and harvesters attended the meeting. These participants provided information on the Study Areas (Truro Heights, Millbrook and Whynott's Settlement) and provided considerable insight into the current state of use and knowledge associated to the areas near the Millbrook reserve. While some participants were familiar with the Whynott's Settlement and Pockwock Study Areas, the vast majority of input focused on the Truro Heights and Millbrook Study Areas.

Insightful conversations with the Glooscap First Nation provided information that due to the long distance to the four Study Areas that the majority of hunters, fishers and harvesters in the community were not currently frequenting the Study Areas on a regular basis. Although members of Glooscap First Nation have traditionally travelled to these areas and hold interest in the areas, no community members attended the workshop.

Conversations with individuals from the Acadia First Nation led to the understanding that there has been little recent harvesting activity in the area near the Study Areas, thus participation in a workshop would be unnecessary. Active hunters from the Acadia Band travel to Sheet Harbour, NS and Musquodobit NS to hunt. It is important acknowledge the long-standing relationship the Mi'kmaq have with Mi'kma'ki and locally, the Study Areas. This intimate relationship is not defined solely by the current use and occupation of a geographical area but by the extensive awareness and interests the Mi'kmaq hold of regions resources. Therefore, the current absence of Mi'kmaq from an area should not be mistaken for an absence of interest (current and future) of the area and resources located within the Study Areas.

The general attitude towards the potential wind farm developments was positive; many participants supported development of non-carbon based or 'green' energy sources. Some concern was expressed over the benefits from the project to the local community. Another issue raised was the potential impacts of the turbines on local wildlife migratory patterns, particularly winged species such as birds, bats and insects. Potential impacts on the Millbrook community (ex. noise) were perceived to be minimal due to the distance from the nearest houses to the proposed turbine location and the density of the forested area between these locations.

4.1.1 Whynott's Settlement Study Area

The Whynott's Settlement study area was noted as a particularly good fishing area due to the density of rivers, streams, lakes and ponds. Species noted were trout and bass. The region was also noted as having higher than average deer populations, visible along the 103 Highway and most roads.

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4.2 Results of General Habitats and Plant Species Survey

A site assessment was completed to identify and locate potential medicinal plants and other related resources located in the Study Areas.

[This section will be updated upon completion of field survey in June]

4.3 Wildlife Habitat Modeling Exercise

Wildlife species potentially occurring in the Study Areas were determined from an analysis of the historical use of wildlife and fish resource by Mi'kmaq (Section 2.3), combined with known wildlife habitat preferences and the habitat surveys.

[This section will be updated upon completion of field survey in June]

5 DISCUSSION & CONCLUSION

The MEKS demonstrates that there has been a long-standing relationship and interest with the regions in and around the Study area.

The meeting held with Mi'kmaq participants from the Millbrook First Nation highlights the vested interest the Mi'kmaq have with their traditional territory. Many users described learning about the lands, resources, skills and knowledge from their relatives, friends and family members. Elders and the fathers of hunters were often cited as the source of knowledge about a particular region or hunting technique. The knowledge of the study areas demonstrated by meeting participants suggest that the Mi'kmaq ecological and traditional knowledge associated to these areas is still accessible in the communities and is being utilized by a wide range of community sectors, from youth to elders. While some activities and areas are more commonly cited than others, the level of community interest in the lands and resources remains active and relevant.

In keeping with the principles and statements of the United Nations Declaration of the Rights of Indigenous Peoples, future planning and collaboration between the project proponent and Mi'kmaq should be implemented and maintained through the application of Mi'kmaq Ecological Knowledge.

[This section will be updated upon completion of field survey in June]

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Appendix A: Whynott's Settlement Place Names

Centre Point: Whynotts Settlement 44° 24′ 47″ N, 64° 28′ 18″ W

Place Name	Feature Type	Distance (km)
Arenburg Island	Island	6
Auburndale	Unincorporated area	10
Aulenbach Brook	River	5
Aulenbach Point	Cape	9
Back Centre	Unincorporated area	10
Bare Hill	Mountain	8
Barry Corner ** ‡	Unincorporated area	2
Barrys Corner	Unincorporated area	2
Bear Hill ** ‡	Mountain	8
Beaver Brook	River	8
Beaver Pond	Lake	7
Beaverdam Brook	River	13
Beck Lake	Lake	9
Big Lots	Unincorporated area	5
Big Lots Hill	Mountain	4
Big Mushamush Lake	Lake	11
Big Rock Pool	River feature	8
Birch Island	Island	11
Black Swamp	Low vegetation	3
Block House ** ‡	Unincorporated area	6
Blockhouse	Unincorporated area	6
Blockhouse Mill Brook	River	6
Blysteiner Lake	Lake	2
Bridgewater	Town	5
Broom Island ** ‡	Island	10
Bruhm Island	Island	10
Bruhms Bridge Pool	River feature	10
Bucks Cove	Bay	6
Burns Cove	Bay	6
Cantalope Lake ** ‡	Lake	10
Cantelope Lake	Lake	9



Place Name	Feature Type	Distance (km)
Centre	Unincorporated area	10
Clay Bank Pool	River feature	7
Clearland	Unincorporated area	9
Clearland Lake	Lake	8
Cleverseys Point	Cape	11
Conquerall Bank	Unincorporated area	6
Cook Brook ** ‡	River	6
Cook Point	Cape	6
Cooks Brook	River	7
Cooks Falls	Falls	6
Cooks Falls Pool	River feature	6
Cookville	Unincorporated area	7
Cosmans Meadows	Low vegetation	10
Covey Lake	Lake	2
Cross Lake	Lake	8
Crouse Brook	River	7
Crouse Lake	Lake	7
Crouses Settlement	Unincorporated area	9
Dares Lake	Lake	8
Darrs Falls	Falls	10
Darrs Marsh	Low vegetation	9
Dayspring	Unincorporated area	5
Demone Cove	Bay	12
Demone Lake	Lake	12
Doreys Marsh	Low vegetation	7
Eisenhauers Point	Cape	10
Ernst Brook	River	8
Fancy Lake	Lake	12
Fancy Lake Provincial Park	Conservation area	11
Farmville	Unincorporated area	6
Fauxbourg ** ‡	Unincorporated area	6
Fauxburg	Unincorporated area	7
Feener Brook	River	11
Feener Brook	River	1
Feener's Corner ** ‡	Unincorporated area	11



Place Name	Feature Type	Distance (km)
Feeners Corner	Unincorporated area	11
Feeners Lake	Lake	9
Fire Pool	River feature	6
First South	Unincorporated area	11
Flat Island	Island	12
Fralig Cove	Bay	9
Frideaux Falls	Falls	10
Frideaux Pool	River feature	9
Front Centre	Unincorporated area	10
Goodwater Brook	River	5
Goose Rock	Shoal	5
Governors Island	Island	6
Great Ridge	Mountain	9
Green Point	Cape	6
Grimm Lake	Lake	10
Grimms Settlement	Unincorporated area	10
Grouse Brook	River	6
Hall Pool	River feature	10
Hansons Cove	Bay	10
Hartmans Lake	Lake	12
Hebb Brook	River	5
Hebb Lake	Lake	11
Hebb Mill Pond	Lake	10
Hebbville	Village	8
Heckman Brook	River	6
High Head **	Unincorporated area	5
Hirtle Cove	Bay	10
Hirtle Hill	Mountain	11
Hirtles Mill Pool	River feature	9
Horseshoe Cove	Bay	5
Horseshoe Point	Cape	5
Huckleberry Point	Cape	5
Inchcape Rock	Shoal	9
Irvington Island	Island	5
Johnnys Hole	River feature	9



Place Name	Feature Type	Distance (km)
Joudrey Brook	River	9
Juniper Brook	River	9
Kaulbacks Peninsula	Cape	11
Keddy Pond	Lake	9
Langille Lake	Lake	5
Langille Little Lake	Lake	3
Lantz Brook	River	9
Lennys Hole	River feature	10
Line Fence Pool	River feature	9
Little Cooks Lake	Lake	8
Little Island	Island	7
Little Lake	Lake	9
Little Lake	Lake	3
Little Langille Lake ** ‡	Lake	4
Long Bridge Brook	River	9
Long Hill	Mountain	7
Loon Island	Island	11
Lower Branch	Unincorporated area	8
Lower New Cornwall	Unincorporated area	8
Lower Northfield	Unincorporated area	9
Mader Cove ** ‡	Bay	10
Mader Cove ** ‡	Unincorporated area	10
Maders Cove	Bay	10
Maders Cove	Unincorporated area	10
Mahone Bay	Town	8
Mahone Harbour	Bay	9
Mailmans Pool	River feature	9
Maitland	Unincorporated area	2
Maitland ** ‡	Unincorporated area	2
Maitland Forks	Unincorporated area	3
Maitland Station **	Unincorporated area	2
Marsh Brook	River	9
Marsh Brook	River	4
Marsh Cove	Bay	5
Marsh Point	Cape	5



Place Name	Feature Type	Distance (km)
Martin Brook ** ‡	River	10
Martin Brook ** ‡	Unincorporated area	10
McDonalds Cabin Pool	River feature	8
McKean Point	Cape	6
Moore Island	Island	13
Mossman ** ‡	Unincorporated area	9
Mossman **	Unincorporated area	10
Mossman Corner	Unincorporated area	9
Mud Lake	Lake	9
Mushamush River	River	9
Naas Lake	Lake	4
Naugler Brook	River	5
New Cornwall ** ‡	Unincorporated area	11
Northwest	Unincorporated area	9
Nubble ** ‡	Island	9
Oak Hill	Mountain	8
Oak Hill ** ‡	Unincorporated area	3
Oak Hill Lake ** ‡	Lake	10
Oak Run	River	9
Oakhill	Unincorporated area	3
Oakhill Lake ** ‡	Lake	10
Oakland	Unincorporated area	10
Oakland Lake	Lake	10
Oickle Island	Island	9
Partridge Island	Island	12
Pine Grove	Unincorporated area	4
Pinegrove Lake	Lake	4
Piney Point	Cape	9
Pleasantville	Unincorporated area	8
Railway Bridge Pool	River feature	5
Randall Lake	Lake	5
Rhodeniser Brook ** ‡	River	3
Rhodeniser Lake ** ‡	Lake	3
Rhodenizer Brook	River	10
Rhodenizer Brook	River	4



Place Name	Feature Type	Distance (km)
Rhodenizer Lake	Lake	3
Rhodes Corner	Unincorporated area	6
Rhodes Lake	Lake	8
Round Lake	Lake	8
Rudolf Cove	Bay	6
Rum Brook	River	2
Sandy Brook	River	9
Sarty Pool	River feature	6
Schoolhouse Pool	River feature	7
Sebastopol **	Unincorporated area	6
Sellars Brook	River	7
Seller Brook ** ‡	River	7
Shankle Cove	Bay	10
Silver Island	Island	12
Silver Mill Brook	River	10
Slaughenwhite Island	Island	8
Smelt Brook	River	10
Smith Mountain	Mountain	5
Spectacle Lakes	Lake	8
Spectacle Lakes	Unincorporated area	8
Sperry Cove	Bay	8
Strum Shoal	Shoal	10
Stuart Brook	River	5
Sucker Brook	River	12
Sucker Lake	Lake	13
Swamp Brook	River	9
Sweetland	Unincorporated area	7
Tanners Settlement	Unincorporated area	11
The Long Swamp	Low vegetation	11
The Narrows	Channel	11
The Piers Pool	River feature	6
The Pinchgut	Channel	10
The Sheerdam Pool	River feature	6
The Shoals	Shoal	10
Town Pond	Lake	6



Place Name	Feature Type	Distance (km)
Upper La Have ** ‡	Unincorporated area	5
Upper LaHave	Unincorporated area	6
Upper Lahave ** ‡	Unincorporated area	5
Veinot Brook	River	6
Veinots Pool	River feature	7
Wagner Brook	River	6
Weagle Brook	River	5
Weagle Cove	Bay	5
Weagle Island	Island	5
Weagle Point	Cape	5
Webster Lake ** ‡	Lake	11
Wentzell Brook	River	9
Wentzell Lake	Lake	9
Wentzell Lake	Lake	10
West La Have River ** ‡	River	9
West LaHave River	River	10
West Lahave River ** ‡	River	9
West Northfield ** ‡	Unincorporated area	9
West Northfield	Unincorporated area	11
West Weagle Island	Island	5
Whitman Pond	Lake	6
Whynotts Settlement	Unincorporated area	0
Wildcat Brook	River	9
Wiles Brook	River	5
Wiles Lake	Lake	9
Wileville	Unincorporated area	8
Wilkies Cove	Bay	8
Zwicker Lake ** ‡	Lake	8
Zwicker Long Lake	Lake	8
Legend	1	•
** Indicates a former name		
‡ Indicates that the official i	name is available	
	s available in another languag	le e
Indicates a Pan-Canadiar		