

Limerock COMFIT Wind Project: Environmental Assessment
Affinity Wind LP

Appendix A

Electromagnetic Interference Study Results



July 20, 2012

Your file
Limerock Wind Farm Project
Our file
12-0112

Ms. Lisa Fulton
Affinity Renewables Inc.
796 Dan Fraser Rd.
Westville, NS
B0K 2A0

**RE: Wind Farm: 4 wind turbines - Tanner Hill, NS
(see attached spreadsheet)**

Ms. Fulton,

We have evaluated the captioned proposal and NAV CANADA has no objection to the project as submitted.

While these proposed 4 wind turbines are acceptable, it does not constitute NAV CANADA's approval for any additional wind turbines at this location. The nature and magnitude of electronic interference to NAV CANADA ground-based navigation aids, including RADAR, due to wind turbines depends on the location, configuration, number, and size of turbines; all turbines must be considered together for analysis. The interference of wind turbines to certain navigation aids is cumulative and while initial turbines may be approved, continued development may not always be possible.

In the interest of aviation safety, it is incumbent on NAV CANADA to maintain up-to-date aeronautical publications and issue NOTAM as required. To assist us in that end, we ask that you notify us at least 10 business days prior to the start of construction. This notification requirement can be satisfactorily met by returning a completed, signed copy of the attached form by e-mail at landuse@navcanada.ca or fax at 613-248-4094. In the event that you should decide not to proceed with this project or if the structure is dismantled, please advise us accordingly so that we may formally close the file.

If you have any questions, contact the Land Use Department by telephone at 1-866-577-0247 or e-mail at landuse@navcanada.ca.

NAV CANADA's land use evaluation is valid for a period of 12 months. Our assessment is limited to the impact of the proposed physical structure on the air navigation system and installations; it neither constitutes nor replaces any approvals or permits required by Transport Canada, Industry Canada, other Federal Government departments, Provincial or Municipal land use authorities or any other agency from which approval is required. Industry Canada addresses any spectrum management issues that may arise from your proposal and consults with NAV CANADA engineering as deemed necessary.

Yours truly,

A handwritten signature in black ink, appearing to read "Aleksandar Trandafilovski".

Aleksandar Trandafilovski
for
David Legault
Manager, Data Collection
Aeronautical Information Services

cc ATLR - Atlantic Region, Transport Canada (2011-538)



November 25, 2013

Your file
Limerock Wind Farm Project
Our file
13-4048

Ms. Lisa Fulton
Affinity Renewables Inc.
1383 Mt Thom Road
Salt Springs, NS
B0K 1P0

**RE: Wind Farm: 3 Wind Turbines - Tanner Hill, NS
(See attached spreadsheet)**

Ms. Fulton,

We have evaluated the captioned proposal and NAV CANADA has no objection to the project as submitted.

The nature and magnitude of electronic interference to NAV CANADA ground-based navigation aids, including RADAR, due to wind turbines depends on the location, configuration, number, and size of turbines; all turbines must be considered together for analysis. The interference of wind turbines to certain navigation aids is cumulative and while initial turbines may be approved, continued development may not always be possible.

In the interest of aviation safety, it is incumbent on NAV CANADA to maintain up-to-date aeronautical publications and issue NOTAM as required. To assist us in that end, we ask that you notify us at least 10 business days prior to the start of construction. This notification requirement can be satisfactorily met by returning a completed, signed copy of the attached form by e-mail at landuse@navcanada.ca or fax at 613-248-4094. In the event that you should decide not to proceed with this project or if the structure is dismantled, please advise us accordingly so that we may formally close the file.

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Yours truly,

A handwritten signature in black ink, appearing to read "DL", written over a light blue horizontal line.

David Legault
Manager, Data Collection
Aeronautical Information Services

cc ATLR - Atlantic Region, Transport Canada (2011-538)



TC File No./Ref No. / TC n° du dossier/n° de réf.

AERONAUTICAL OBSTRUCTION CLEARANCE FORM

FORMULAIRE D'AUTORISATION D'OBSTACLE AÉRIEN

TO BE COMPLETED BY APPLICANT - À REMPLIR PAR LE REQUÉRANT

Operator's Name - Nom de l'opérateur AFFINITY RENEWABLES INC	NOV 27 2011 FC 2011-538 NAM
Operator's Address - Adresse de l'opérateur RR#3 WESTVILLE, NS BOX 2AD	

Operator's Contact - Agent de liaison de l'opérateur
LISA FULTON

Contact's Telephone No. - N° de téléphone de liaison 902-759-6626	Contact's FAX No. - N° de télécopieur de liaison 902-925-9464	Contact's Email Address - Adresse électronique de liaison lisa.fulton@eastlink.ca
---	---	---

Applicant's Name - Nom du requérant AFFINITY RENEWABLES	Address - Adresse 796 DAN FRASER RD
---	---

City - Ville WESTVILLE	Province/Territory - Province/Territoire NS	Postal - Code - postal BOX 2AD
----------------------------------	---	--

Applicant's Telephone No. - N° de téléphone du requérant 902-759-6626	Applicant's FAX No. - N° de télécopieur du requérant 902-925-9464	Applicant's Email Address - Adresse électronique du requérant lisa.fulton@eastlink.ca
---	---	---

Nearest city / town to proposed facility Ville la plus proche de la structure proposée NEW GLASSBORO	Geographic coordinates of structure - coordonnées géographiques de la structure ° see N Latitude attachment W Longitude Latitude N Longitude O	<input type="checkbox"/> NAD27 <input checked="" type="checkbox"/> NAD83 <input type="checkbox"/> WGS84
---	--	---

TOWERS / ANTENNAS TOURS / ANTENNES	BUILDING OR OTHER STRUCTURE BÂTIMENT OU AUTRE STRUCTURE	Feet - Pieds	Meters - Mètres
		397	121
		see attachment	

List any tall adjacent buildings and structures which may shield the proposed structure (Attach sketch)
Faire une liste indiquant les structures et bâtiments avoisinants plus haut que le bâtiment projeté (Inclure un diagramme)

New struc. - Nouv. struc. <input checked="" type="checkbox"/> Yes / Oui <input type="checkbox"/> No / Non	Add. to exist. struc. incl. total hght. - Ajout à un bâti. exis. incl. hauteur total	Proposed Construction - Date - de construction proposée DECEMBER 31, 2014
--	--	---

TYPE OF STRUCTURE (narrative description and function) - GENRE DE STRUCTURE (description narrative et fonction)
WIND TURBINE GENERATOR

Signature (of applicant) (du requérant) 	Date (Y/A-M-D/J) 2011-11-11
---	---------------------------------------

TRANSPORT CANADA USE ONLY - À L'USAGE DE TRANSPORTS CANADA

AERONAUTICAL ASSESSMENT - ÉVALUATION AÉRONAUTIQUE

Site acceptable - Emplacement acceptable
 Yes / Oui No / Non (if no, reason) / (si non, pourquoi)

Lighting as per (TP382) required - Balisage lumineux tel que demandé au (TP382)
 Yes / Oui No / Non or

Painting as per (TP382) required - Balisage peint tel que demandé au (TP382)
 Yes / Oui No / Non or

Temporary lighting required - Nécessité d'un balisage lumineux temporaire
 Yes / Oui No / Non (if yes, type) / (si oui, de quel genre)

Advise Transport Canada in writing 90 days before construction
Avertir Transports Canada par écrit 90 jours avant la construction

when construction starts / au commencement de la construction and on completion / et à la fin des travaux Valid to / Valide jusqu'au

Civil Aviation Inspector (as required) - Inspecteur Aviation Civile (si nécessaire)
Comments - Commentaires

	(Y/A-M-D/J) 2011-12-21
Signature	Date

Regional Manager Aerodrome Safety Gestionnaire Régional Sécurité des aéroports		Date (Y/A-M-D/J) 2011-12-21
---	--	---------------------------------------



Subject: Limerock Notifications
From: "Kirk Schmidt" <kirk.schmidt@al-pro.ca>
Date: 21/10/2013 10:20 AM
To: <lisa@rmsenergy.ca>

ForwardedMessage.eml

Subject: RE: Limerock Wind Farm
From: "Weather Radars Contact, National Radar Program [Ontario]" <weatherradars@ec.gc.ca>
Date: 08/10/2013 10:34 AM
To: "Kirk Schmidt" <kirk@nortekresources.com>, "Weather Radars Contact, National Radar Program [Ontario]" <weatherradars@ec.gc.ca>
CC: "Lisa Fulton" <lisa@rmsenergy.ca>

Dear Mr. Kirk Schmidt,

Thank you for contacting the Meteorological Service of Canada, a branch of Environment Canada, regarding your wind energy intentions.

Our preliminary assessment of the information provided to us via e-mail on October 4, 2013 indicates that any potential interference that may be created by the Limerock Wind Farm located in Pictou County, NS will not be severe. Although we would prefer our radar view to be interference free, this is not always reasonable. As a consequence, we do not have strong objections to the current proposal.

If your plans are modified in any manner (e.g. number of turbines, height, placement or materials) this analysis would no longer be valid. An updated analysis must be conducted.

Please contact us at: weatherradars@ec.gc.ca.

Thank you for your ongoing cooperation and we wish you success.

Best Regards,

Carolyn Wilson

Carolyn Wilson (Rennie)
National Radar Program
Meteorological Service of Canada
Environment Canada
4905 Dufferin Street
Toronto, Ontario M3H 5T4
Office : 3N-WS12
NEW Carolyn.Wilson@ec.gc.ca
Phone : 416-739-4931

Carolyn Wilson (Rennie)
Le Programme Nationale de Radar
Service météorologique du Canada

Environnement Canada
4905, rue Dufferin
Toronto, Ontario M3H 5T4
Bureau . 3N-WS12
NOUVEAU Carolyn Wilson@ec.gc.ca
Téléphone . 416-739-4931

From: Kirk Schmidt [mailto:kirk@nortekresources.com]
Sent: Friday, October 04, 2013 8:20 AM
To: Weather Radars Contact, National Radar Program [Ontario]
Cc: 'Lisa Fulton'
Subject: Limerock Wind Farm

To Whom it May Concern:

I am forwarding this message on behalf of Affinity Renewables Inc. which is currently developing the Limerock Wind Farm which is located in Pictou County, Nova Scotia. I have attached the proposed turbine coordinates and pertinent data, as well as a general location map for your perusal. Can I ask you to open a file for this wind turbine project and complete your internal review to determine if you anticipate any interference issues with your existing radar systems.

Please let me know if you have any questions or require any additional data.

Regards

Kirk Schmidt, M.Sc.F., RPF

Manager

Nortek Resource Solutions Inc.

Nova Scotia, Canada

Tel: 902.922.3607

Fax: 902.922.3274

Web: nortekresources.com

Email: kirk@nortekresources.com

- ForwardedMessage.eml

Subject: RE: Limerock Wind Farm
From: "Cook, Norman" <COOKNB@gov.ns.ca>
Date: 08/10/2013 8:02 AM
To: "Kirk Schmidt" <kirk@nortekresources.com>
CC: "Brown, Todd A" <BROWNTA@gov.ns.ca>

Hello, Kirk,

There is insignificant interference from the Limerock Wind Farm into the Province's Sites based on your data submitted to us.

Regards,

Norm Cook, P.Eng.

From: Kirk Schmidt [kirk@nortekresources.com]
Sent: October-04-13 9:14 AM
To: Cook, Norman
Subject: FW: Limerock Wind Farm

Hi Norm:

Please note this project is called the Limerock Wind Farm and it is located in Pictou County. I guess I got caught up in the cut and paste thing.

Kirk

From: Kirk Schmidt [mailto:kirk@nortekresources.com]

Sent: Friday, October 04, 2013 9:11 AM

To: 'cooknb@gov.ns.ca'

Cc: 'Lisa Fulton'

Subject: Limerock Wind Farm

Hi Norm:

I am forwarding this message on behalf of Affinity Renewables Inc. which is currently developing the Greenfield Wind Farm which is located in Colchester County, Nova Scotia. I have attached the proposed turbine coordinates and pertinent data, as well as a general location map for your perusal. Can I ask you to open a file for this wind turbine project and complete your internal review to determine if you anticipate any interference issues with your existing communication systems.

Please let me know if you have any questions or require any additional data.

Regards

Kirk Schmidt, M.Sc.F., RPF

Manager

Nortek Resource Solutions Inc.

Nova Scotia, Canada

Tel: 902.922.3607

Fax: 902.922.3274

Web: nortekresources.com

Email: kirk@nortekresources.com

- ForwardedMessage.eml -

Subject: RE: Limerock Wind Farm

From: Grégoire, Martin <Martin.Gregoire@dfo-mpo.gc.ca>

Date: 04/10/2013 5:51 PM

To: "Kirk Schmidt" <kirk@nortekresources.com>

Hello,

The proposed wind farm (Limerock) is located 115 km away from the Georges Island radar site. Therefore no interference issues are anticipated.

Regards,

Martin Grégoire, P. Eng

Canadian Coast Guard

From: Kirk Schmidt [mailto:kirk@nortekresources.com]

Sent: October 4, 2013 11:58 AM

To: XNCR, Windfarm Coordinator
Subject: Limerock Wind Farm

Martin:

The turbine labels were transposed in the excel sheet we sent out this morning, please use the attached file for your analysis.

Thank you.

Kirk Schmidt, M.Sc.F., RPF
Manager
Nortek Resource Solutions Inc.
Nova Scotia, Canada
Tel: 902.922.3607
Fax: 902.922.3274
Web: nortekresources.com
Email: kirk@nortekresources.com

ForwardedMessage.eml

Subject: FW: Limerock Wind Farm
From: <MARIO.LAVOIE2@forces.gc.ca>
Date: 04/10/2013 1:23 PM
To: <kirk@nortekresources.com>

Hello,

I have reviewed your proposal in respect to DND's radio communication systems, and I have no objections or concerns.

Thank you for coordinating with DND.

Have a good Day.

Mr. Mario Lavoie
Spectrum Engineering Technician
National Defence | Défense nationale
Ottawa, Canada K1A 0K2
mario.lavoie2@forces.gc.ca
Telephone | Téléphone 613-992-3479
Facsimile | Télécopieur 613-991-3961
Government of Canada | Gouvernement du Canada

From: Kirk Schmidt [<mailto:kirk@nortekresources.com>]
Sent: Friday, 4, October, 2013 12:02 PM
To: Lavoie MJ@ADM(IM) J6 Coord@Ottawa-Hull
Subject: Limerock Wind Farm

Mario:

The turbine labels were transposed in the excel sheet we sent out this morning, please use the attached file for your analysis.

Thank you.

Kirk Schmidt, M.Sc.F., RPF
Manager
Nortek Resource Solutions Inc.
Nova Scotia, Canada
Tel: 902.922.3607
Fax: 902.922.3274
Web: nortekresources.com
Email: kirk@nortekresources.com

ForwardedMessage.eml

Subject: Detailed Analysis Results - Limerock Wind Farm - Pictou County, NS - WTA-3050
From: <ADIN.SWITZER@forces.gc.ca>
Date: 04/10/2013 12:07 PM
To: <kirk@nortekresources.com>
CC: <vinceph@navcanada.ca>

Kirk,

Thank you for your patience on this matter and for considering DND radar and airport facilities in your project development process.

We have completed the detailed analysis of your proposed site, Limerock Wind Farm, located in Pictou County, NS (WTA-3050). The results of the detailed analysis and subsequent technical and operational impact assessments have confirmed there is likely to be minimal interference with DND radar and flight operations.

Therefore, as a result of these findings we have no objections with your project as submitted (attached).

If however, the layout were to change/move, please re-submit that proposal for another assessment using the assigned WTA number listed above. The concurrence for this site is valid for 24 months from date of this correspondence. If the project should be cancelled or delayed during this timeframe please advise my point of contact.

It should be noted that each submission is assessed on a case by case basis and as such, concurrence on this submission in no way constitutes a concurrence for similar projects in the same area, nor does it indicate that similar concurrence might be offered in another region.

The issuance of this Letter of Non-Objection shall not constitute a waiver or alienation of any existing or future legal rights of the DND/CF nor shall it be construed to create any exemptions, indemnification, approvals, rights, acceptances in favour of Affinity Renewables Inc. The DND/CF expressly reserves its rights to take legal action or seek remedy for any and all liability, loss, harm, degradation of services or equipment, mitigation costs, damages, judgements or expenses that arise from the adverse effects, whether incidental, indirect or causal, of the Affinity Renewables Inc Limerock Wind Farm upon the DND/CF radars, equipment and its provision of Air Traffic Services.

I trust that you will find this satisfactory. If you have any technical

questions or concerns regarding any aspect of this investigation, please contact the ATESS Liaison Officer at (613) 392-2811 extension 4834, or at +windturbines@forces.gc.ca.

A hard-copy of this response will be mailed separately.

<<Layout_Limerock.xls>>

Sincerely,

Adin Switzer

Capt

AEC Liaison Officer

CCISF/ESICC

ATESS/ESTTMA

Défense nationale | National Defence

8 Wing Trenton, Astra, ON K0K 3W0

TEL: 613 392-2811 Ext4834 (CSN: 827-4834)

FAX: 613 965-3200

Gouvernement du Canada | Government of Canada

ü Please consider the environment before printing this email | S'il vous plaît pensez à l'environnement a

Attachments:

Limerock Wind Farm.eml	13.8 KB
FW: Limerock Wind Farm.eml	8.1 KB
Limerock Wind Farm.eml	8.8 KB
Limerock Wind Farm.eml	31.5 KB
Layout_Limerock_r1.1.xls	15.5 KB
ForwardedMessage.eml	25.3 KB
Layout_Limerock.xls	15.5 KB

Limerock COMFIT Wind Project: Environmental Assessment
Affinity Wind LP

Appendix B

Mi'kmaq Ecological Knowledge Study

Limerock COMFIT Wind Project: Environmental Assessment
Affinity Wind LP

Appendix C

ACCDC and Heritage Screening Results



Communities, Culture
& Heritage
Heritage Division

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

November 21st, 2011

Lisa Fulton
c/o Affinity Renewables Inc.
796 Dan Fraser Road
RR# # Greenhill, NS B0K 2A0

Dear Ms. Fulton:

RE: **Environment Screening 11-09-07b**
Limerock Wind Project
Affinity Renewables Inc.

Further to your request of September 7th, 2011, staff of the Heritage Division have reviewed their files for reference to the presence of heritage resources in the study area. Please be aware that our information is not comprehensive, in that it is incomplete and of varying degrees of accuracy with respect to the precise location and condition of heritage resources.

Archaeological and Historical Site Remains

Staff notes that there are no recorded archaeological sites on file for the study area. There is a recorded site immediately to the south west of the study area., two other sites recorded further south west, one north, one northwest and one east of the study area. The potential for pre-contact archaeological resources for the study area can be considered low. The potential for historic archaeological resources can be considered moderate to high as historic maps indicate settlement.

Staff recommends that an assessment for archaeological resources takes place.

Botany

Staff have reviewed the proposed area with respect to plant species-at-risk. The following plants are known from the vicinity of Limerock and should be considered prior to any development of the turbine sites or access roads:

Campanula aparinoides (provincially Yellow-listed)
Carex hirtifolia (provincially Yellow-listed)
Carex pellita (provincially Red-listed)
Caulophyllum thalictroides (provincially Yellow-listed)
Conioselinum chinense (provincially Yellow-listed)
Cypripedium reginae (provincially Red-listed)
Dichanthelium linearifolium (provincially Yellow-listed)
Elymus wiegandii (provincially Yellow-listed)
Epilobium coloratum (provincially Yellow-listed)

Fraxinus nigra (provincially Yellow-listed)
Hepatica americana (nobilis) (provincially Yellow-listed)
Laportea canadensis (provincially Yellow-listed)
Lilium canadense (provincially Yellow-listed)
Pilea pumila (provincially Red-listed)
Platanthera flava var flava (provincially Yellow-listed)
Polygala sanguinea (provincially Yellow-listed)
Polygonum scandens (provincially Yellow-listed)
Sanicula odorata (provincially Yellow-listed)
Teucrium canadense (provincially Yellow-listed)

The presence/absence of the above species should be determined during field assessment and reported in any submission. Staff recommendation is that field assessment be conducted during the growing season or when the identity can be determine to species or variety.

Zoology

Staff do not have collection records for the study area footprint or for the immediate area. This does not necessarily reflect the bio-diversity of the area, but rather collection efforts in the area.

Staff notes the nesting records for the following bird species:

Northern Oriole (*Icterus galbula*)
Bobolink (*Dolichonyx oryzivorus*) - provincially Yellow-listed
Canada Warbler (*Wilsonia canadensis*) - provincially Yellow-listed
Northern Mockingbird (*Mimus polyglottos*)
Eastern Kingbird (*Tyrannus tyrannus*)
Chimney Swift (*Chaetura pelagica*) - provincially Yellow-listed
Osprey (*Pandion haiaetus*) - Provincial Bird

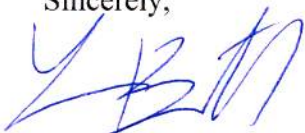
Palaeontology

Staff notes that this project will disrupt rocks of the Mabou Group. The Mabou Group contains known fossils of mollusks, branchiopods, ostracodes, eocarids, xiphosurids, eurypterids, acanthodian fish, chondrichthian fish, sarcopterygian fish, dipnoid fish, amphibians, and plant fossils.

In the event that fossils are found during construction, work should stop and contact be made with the Heritage Division.

If you have any questions, please contact me at 424-6475.

Sincerely,



Laura Bennett,
Coordinator, Special Places



DATA REPORT 4644: Limerock 1-4, NS

Prepared 23 November, 2011
by S.H. Gerriets



CONTENTS OF REPORT

1.0 Preface

- 1.1 Restrictions
- 1.2 Additional Information

2.0 Rare and Endangered Taxa

- 2.1 Flora
- 2.2 Fauna
- Map 1: Flora and Fauna

3.0 Special Areas

- 3.1 Managed Areas
- 3.2 Significant Areas
- Map 2: Special Areas

4.0 Taxa Lists

- 4.1 Fauna
- 4.2 Flora
- 4.3 Range Maps

5.0 Source Bibliography

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (ACCDC) is part of a network of circa 85 NatureServe data centres and heritage programs in 50 states, 10 provinces and 1 territory, plus several Central and South American countries. The NatureServe network is more than 30 years old and shares a common conservation data methodology. The ACCDC was founded in 1997, and maintains data for the jurisdictions of New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador. Although a non-governmental agency, the ACCDC is supported by 6 federal agencies, plus 4 provincial governments, outside grants and data processing fees. URL: www.ACCDC.com.

Upon request and for a fee, the ACCDC reports known observations of rare and endangered flora and fauna, in and near a specified study area. As a supplement to that data, the ACCDC includes locations of managed areas with some level of protection, and also known sites of ecological interest. Data summarised in each report is attached as DBF files which may be opened from within data software (Excel, Access) or mapped in GIS (ArcView, MapInfo, AutoCAD).

1.1 RESTRICTIONS

The ACCDC makes a strong effort to verify the accuracy of all the data that it manages, but it shall not be held responsible for any inaccuracies in data that it provides. By receiving ACCDC data, recipients assent to the following limits of use:

- a.) Data is restricted to use by trained personnel who are sensitive to its potential threat to rare and endangered taxa.
- b.) Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
- c.) The ACCDC requires Data Users to cease using and delete data 12 months after receipt.
- d.) ACCDC data responses are restricted to that data in our Data System at the time of the data request.
- e.) Data is qualified as to location (Precision) and time (SurveyDate); cf Data Dictionary for details.
- f.) ACCDC data reports are not to be construed as exhaustive inventories of taxa in an area.
- g.) The non-occurrence of a taxon cannot be inferred by its absence in an ACCDC data report.

1.2 ADDITIONAL INFORMATION

Please direct biological questions about ACCDC data to: Sean Blaney, ACCDC: (506) 364-2658, and technical data queries to: Stefen Gerriets, ACCDC: (506) 364-2657.

For provincial information on rare taxa and protected areas, or information on game animals, deer yards, old growth forest, archeological sites, fish habitat etc, please contact Sherman Boates, NSDNR: (902) 679-6146.

2.0 RARE AND ENDANGERED TAXA

A 100km buffer around the study area contains 3015 records of 431 taxa from 93 sources, a relatively low-to-moderate density of records (quintile 2): 0.10 rec/km².

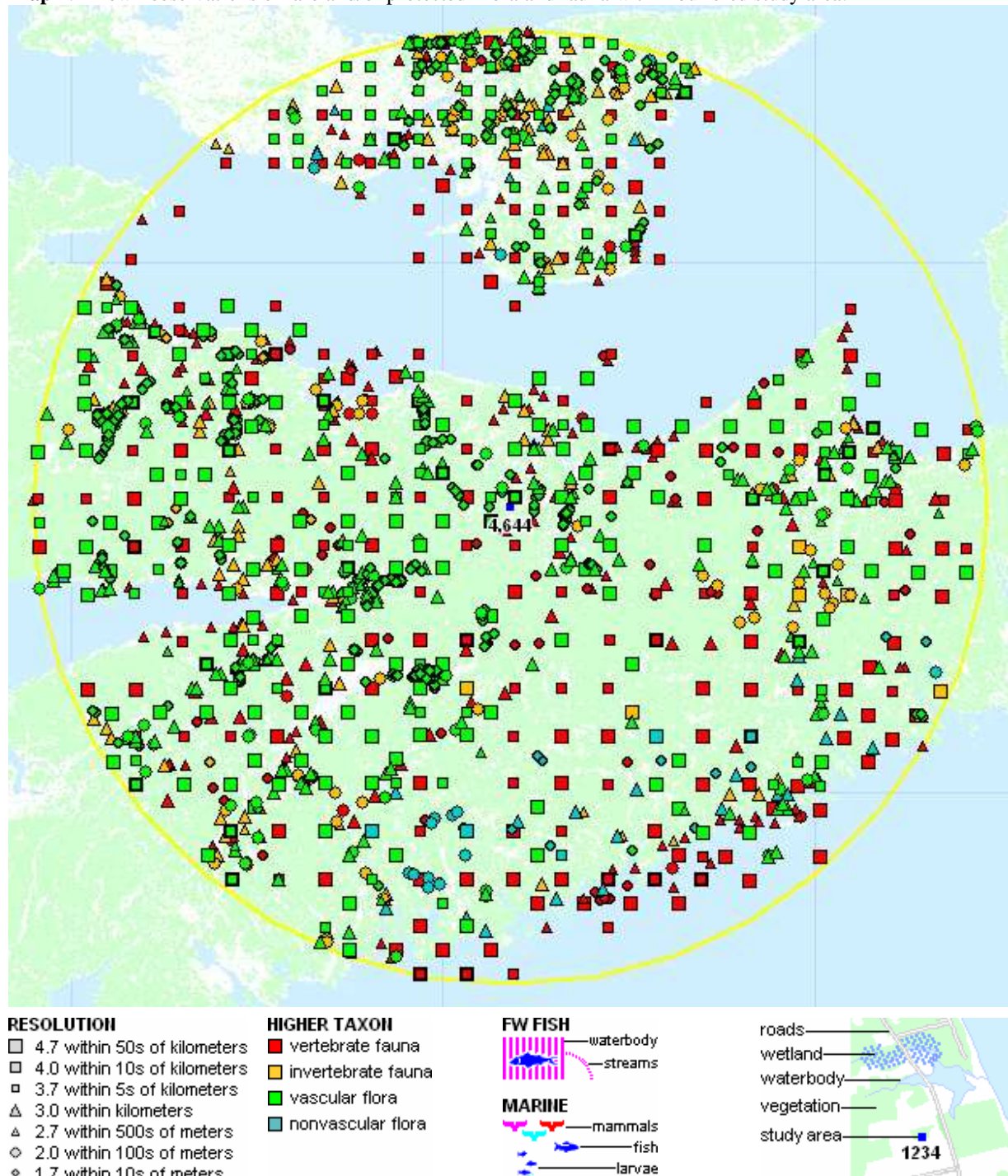
2.1 FLORA

A 100km buffer around the study area contains 1392 records of 263 vascular, 70 records of 19 nonvascular flora (see attached *ob.dbf).

2.2 FAUNA

A 100km buffer around the study area contains 1146 records of 64 vertebrate, 407 records of 85 invertebrate fauna (cf attached *ob.dbf). Sensitive data: Wood Turtles are POTENTIALLY present in the study area (cf attached WOTU.rtf).

Map 1: Known observations of rare and/or protected flora and fauna within buffered study area.



3.0 SPECIAL AREAS

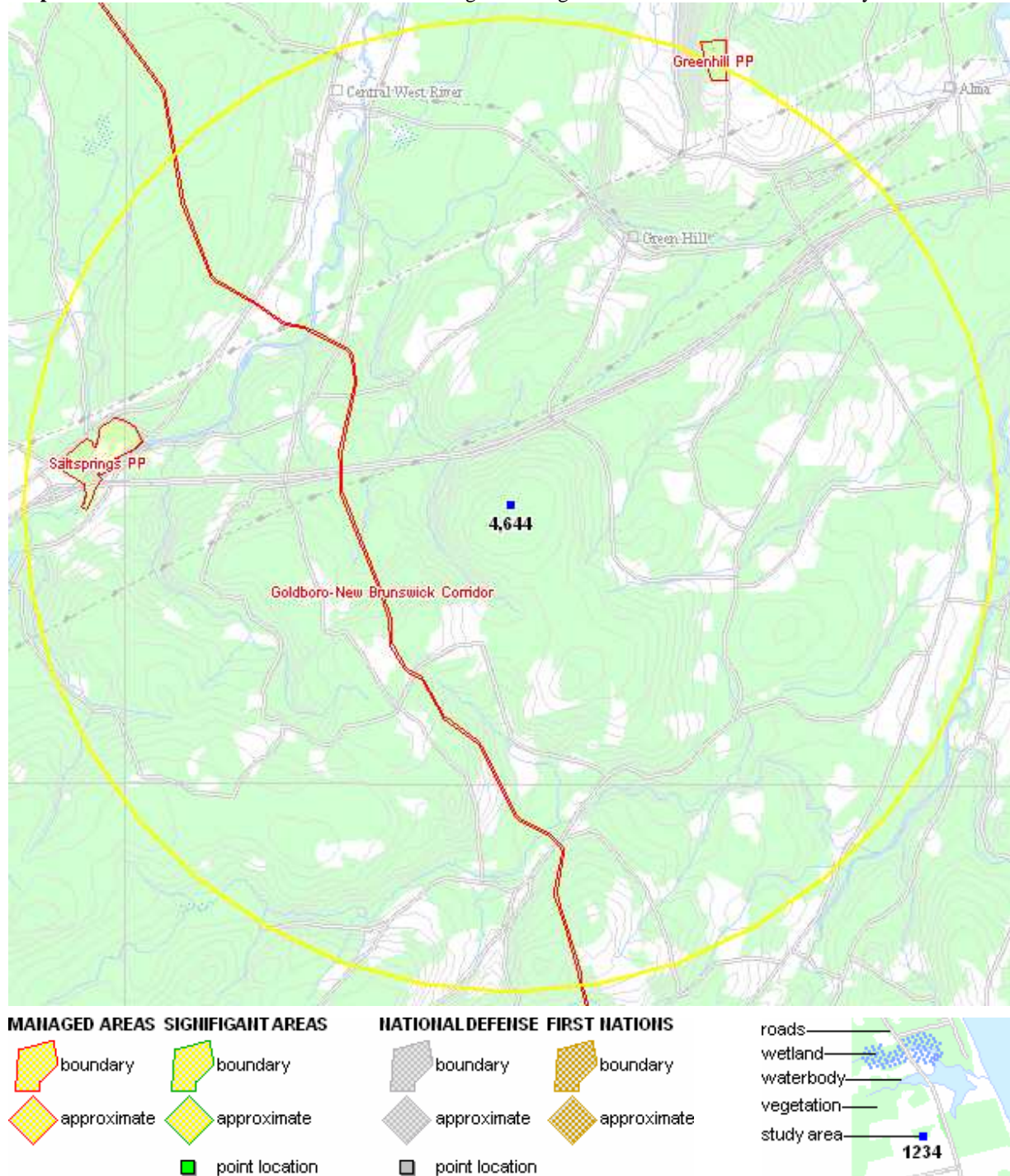
3.1 MANAGED AREAS

The GIS scan identified 3 Managed Areas with some degree of protected status, in the vicinity of the study area (see attached *ma.dbf).

3.2 SIGNIFICANT AREAS

No biologically significant sites were identified.

Map 2: Boundaries and/or locations of known Managed and Significant Areas within 5km of study area.



4.0 TAXON LISTS

Rare and/or endangered taxa within the buffered area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation. [p] = vascular plant, [n] = nonvascular plant, [a] = vertebrate animal, [i] = invertebrate animal, [c] = community.

4.1 FLORA

scientific name	common name	prov. rarity	prov. status	COSEWIC	obs	dist.km
n Erioderma pedicellatum (Atlantic pop.)	Boreal Felt Lichen (Atlantic pop.)	S1S2	Endangered	E	46	52 ±0
p Isoetes prototypus	Prototype Quillwort	S2	Vulnerable	SC	3	67 ±0.1
p Lilaepsis chinensis	Eastern Lilaepsis	S2	Vulnerable	SC	1	80 ±0
n Pseudevernia cladonia	Ghost Antler Lichen	S2S3		SC	1	80 ±0
p Floerkea proserpinacoides	False Mermaidweed	S2		NAR	3	27 ±10
p Cypripedium arietinum	Ram's-Head Lady's-Slipper	S1	Endangered		1	59 ±0.1
p Thuja occidentalis	Eastern White Cedar	S1S2	Vulnerable		8	40 ±0.5
n Ditrichum rhynchostegium	a Moss	S1			1	53 ±0.1
n Bryhnia graminicolor	a Moss	S1			1	69 ±0.5
p Ophioglossum pusillum	Northern Adder's-tongue	S1			6	93 ±0
p Cryptogramma stelleri	Steller's Rockbrake	S1			2	29 ±0
p Adiantum pedatum	Northern Maidenhair Fern	S1			1	42 ±1
p Sparganium fluctuans	Floating Burreed	S1			3	82 ±5
p Potamogeton nodosus	Long-leaved Pondweed	S1			1	88 ±5
p Stuckenia filiformis ssp. alpina	Thread-leaved Pondweed	S1			1	95 ±1
p Stuckenia filiformis	Thread-leaved Pondweed	S1			1	95 ±0
p Sphenopholis intermedia	Slender Wedge Grass	S1			1	95 ±0
p Festuca subverticillata	Nodding Fescue	S1			3	71 ±1
p Elymus hystrix var. bigeloviana	Spreading Wild Rye	S1			4	22 ±1
p Elymus wiegandii	Wiegand's Wild Rye	S1			11	7 ±1
p Cinna arundinacea	Sweet Wood Reed Grass	S1			3	39 ±0
p Bromus latiglumis	Broad-Glumed Brome	S1			6	30 ±0
p Alopecurus aequalis	Short-awned Foxtail	S1			13	35 ±1
p Malaxis brachypoda	White Adder's-Mouth	S1			2	95 ±10
p Allium tricoccum	Wild Leek	S1			2	21 ±0.1
p Juncus vaseyi	Vasey's Rush	S1			3	28 ±0
p Iris prismatica	Slender Blue Flag	S1			2	67 ±10
p Elodea nuttallii	Nuttall's Waterweed	S1			1	95 ±1
p Scirpus pedicellatus	Stalked Bulrush	S1			2	40 ±0
p Cyperus lupulinus ssp. macilentus	Hop Flatsedge	S1			4	16 ±10
p Carex wiegandii	Wiegand's Sedge	S1			2	54 ±5
p Carex tuckermanii	Tuckerman's Sedge	S1			5	7 ±0.1
p Carex tinctoria	Tinged Sedge	S1			2	82 ±1
p Carex plantaginea	Plantain-Leaved Sedge	S1			3	27 ±0
p Carex livida	Livid Sedge	S1			1	97 ±5
p Carex pellita	Woolly Sedge	S1			5	12 ±0
p Carex haydenii	Hayden's Sedge	S1			2	41 ±1
p Carex garberi	Garber's Sedge	S1			3	23 ±0
p Carex chordorrhiza	Creeping Sedge	S1			1	95 ±1
p Carex bromoides	Bromelike Sedge	S1			4	86 ±0
p Carex foenea	Silvery-flowered Sedge	S1			1	59 ±5
p Carex alopecoidea	Foxtail Sedge	S1			1	81 ±0.5
p Viola canadensis	Canada Violet	S1			1	27 ±10
p Pilea pumila	Dwarf Clearweed	S1			7	27 ±10
p Dirca palustris	Eastern Leatherwood	S1			4	62 ±10
p Ranunculus pensylvanicus	Pennsylvania Buttercup	S1			3	62 ±0
p Fraxinus pennsylvanica	Red Ash	S1			1	90 ±10
p Decodon verticillatus	Swamp Loosestrife	S1			1	96 ±0
p Ribes americanum	Wild Black Currant	S1			2	39 ±5
p Desmodium canadense	Canada Tick-trefoil	S1			6	12 ±0
p Cuscuta cephalanthi	Buttonbush Dodder	S1			4	13 ±1
p Crassula aquatica	Water Pygmyweed	S1			2	92 ±5
p Hudsonia tomentosa	Woolly Beach-heath	S1			5	31 ±10
p Suaeda maritima ssp. richii	White Sea-blite	S1			2	74 ±10
p Cochlearia tridactylites	Limestone Scurvy-grass	S1			4	85 ±10
p Ageratina altissima	White Snakeroot	S1			2	74 ±10
p Hieracium umbellatum	Umbellate Hawkweed	S1			1	52 ±5
p Pseudognaphalium obtusifolium	Eastern Cudweed	S1			1	68 ±1
p Bidens hyperborea	Estuary Beggarticks	S1			2	71 ±1
p Antennaria parlinii	Parlin's Pussytoes	S1			3	20 ±0
p Zizia aurea	Golden Alexanders	S1			12	19 ±10
p Sanicula odorata	Clustered Sanicle	S1			5	5 ±10
p Osmorhiza longistylis	Smooth Sweet Cicely	S1			7	6 ±0
n Tetraxis geniculata	a Moss	S1?			1	91 ±0.5
n Dicranum bonjeanii	a Moss	S1?			1	98 ±0.1
n Campylium polygamum	a Moss	S1?			1	91 ±0.5
p Dichanthelium acuminatum var. lindheimeri	Woolly Panic Grass	S1?			1	17 ±0.1
p Schoenoplectus robustus	Sturdy Bulrush	S1?			2	58 ±10
p Viola sagittata var. ovata	Arrow-Leaved Violet	S1?			2	78 ±1
p Rubus pensilvanicus	Pennsylvania Blackberry	S1?			5	54 ±5
p Crataegus submollis	Quebec Hawthorn	S1?			6	45 ±5
p Crataegus robinsonii	Robinson's Hawthorn	S1?			2	13 ±1
p Amelanchier stolonifera	Running Serviceberry	S1?			3	55 ±1
p Polygonum raii	Sharp-fruited Knotweed	S1?			1	99 ±5
p Humulus lupulus var. lupuloides	Common Hop	S1?			5	54 ±5
p Hypericum majus	Large St. John's-wort	S1?			4	86 ±0

p	<i>Suaeda calceoliformis</i>	Horned Sea-blite	S1?	6	18 ±1
p	<i>Chenopodium rubrum</i>	Red Pigweed	S1?	3	23 ±10
p	<i>Atriplex acadensis</i>	Maritime Saltbush	S1?	2	40 ±10
p	<i>Solidago hispida</i>	Hairy Goldenrod	S1?	1	42 ±10
n	<i>Polytrichum formosum</i>	a Hair-Cap Moss	S1S2	1	84 ±1
n	<i>Platydictya subtilis</i>	a Moss	S1S2	1	84 ±1
n	<i>Campylostelium saxicola</i>	a Moss	S1S2	1	84 ±1
p	<i>Platanthera flava</i> var. <i>herbiola</i>	Tubercled Orchid	S1S2	1	26 ±0
p	<i>Juncus greenei</i>	Greene's Rush	S1S2	4	74 ±5
p	<i>Carex tenera</i>	Tender Sedge	S1S2	7	5 ±5
p	<i>Carex pennsylvanica</i>	Pennsylvania Sedge	S1S2	3	45 ±0
p	<i>Carex hystericina</i>	Porcupine Sedge	S1S2	5	28 ±0
p	<i>Gratiola neglecta</i>	Clammy Hedge-Hyssop	S1S2	2	41 ±10
p	<i>Galium labradoricum</i>	Labrador Bedstraw	S1S2	8	38 ±0
p	<i>Hepatica nobilis</i> var. <i>obtusa</i>	Round-lobed Hepatica	S1S2	11	11 ±0
p	<i>Anemone virginiana</i> var. <i>alba</i>	Virginia Anemone	S1S2	3	27 ±10
p	<i>Callitriche hermaphroditica</i>	Northern Water-starwort	S1S2	4	97 ±0
p	<i>Atriplex franktonii</i>	Frankton's Saltbush	S1S2	3	36 ±1
p	<i>Sagina nodosa</i> ssp. <i>borealis</i>	Knotted Pearlwort	S1S2	3	98 ±5
p	<i>Arabis hirsuta</i> var. <i>pycnocarpa</i>	Western Hairy Rockcress	S1S2	1	101 ±0.1
p	<i>Huperzia selago</i>	Northern Firmoss	S1S3	7	35 ±5
p	<i>Carex vacillans</i>	Estuarine Sedge	S1S3	1	81 ±0.5
p	<i>Equisetum pratense</i>	Meadow Horsetail	S2	7	32 ±0.1
p	<i>Woodsia glabella</i>	Smooth Cliff Fern	S2	1	60 ±10
p	<i>Dryopteris fragrans</i> var. <i>remotiuscula</i>	Fragrant Wood Fern	S2	3	24 ±10
p	<i>Asplenium trichomanes-ramosum</i>	Green Spleenwort	S2	2	65 ±10
p	<i>Potamogeton friesii</i>	Fries' Pondweed	S2	1	41 ±10
p	<i>Piptatherum canadense</i>	Canada Rice Grass	S2	5	50 ±1
p	<i>Spiranthes lucida</i>	Shining Ladies'-Tresses	S2	8	12 ±0
p	<i>Platanthera macrophylla</i>	Large Round-Leaved Orchid	S2	5	16 ±5
p	<i>Platanthera orbiculata</i>	Small Round-leaved Orchid	S2	16	10 ±0
p	<i>Platanthera flava</i>	Tubercled Orchid	S2	3	21 ±10
p	<i>Listera convallarioides</i>	Broad-Leaved Twayblade	S2	3	93 ±0.1
p	<i>Listera australis</i>	Southern Twayblade	S2	2	90 ±0
p	<i>Goodyera tessellata</i>	Checkered Rattlesnake-Plantain	S2	3	61 ±0.5
p	<i>Goodyera pubescens</i>	Downy Rattlesnake-Plantain	S2	1	73 ±1
p	<i>Cypripedium reginae</i>	Showy Lady's-Slipper	S2	14	12 ±10
p	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	Yellow Lady's-slipper	S2	4	28 ±10
p	<i>Cypripedium parviflorum</i>	Yellow Lady's-slipper	S2	7	12 ±10
p	<i>Allium schoenoprasum</i> var. <i>sibiricum</i>	Wild Chives	S2	1	36 ±10
p	<i>Vallisneria americana</i>	Wild Celery	S2	4	53 ±1
p	<i>Eriophorum gracile</i>	Slender Cottongrass	S2	8	41 ±10
p	<i>Carex comosa</i>	Bearded Sedge	S2	3	44 ±10
p	<i>Carex castanea</i>	Chestnut Sedge	S2	1	97 ±0
p	<i>Carex atlantica</i> ssp. <i>capillacea</i>	Atlantic Sedge	S2	3	69 ±10
p	<i>Viola nephrophylla</i>	Northern Bog Violet	S2	9	12 ±0
p	<i>Limosella australis</i>	Southern Mudwort	S2	20	55 ±1
p	<i>Tiarella cordifolia</i>	Heart-leaved Foamflower	S2	11	16 ±10
p	<i>Parnassia palustris</i> var. <i>parviflora</i>	Marsh Grass-of-Parnassus	S2	1	56 ±1
p	<i>Salix sericea</i>	Silky Willow	S2	1	90 ±1
p	<i>Salix pedicularis</i>	Bog Willow	S2	5	31 ±10
p	<i>Galium boreale</i>	Northern Bedstraw	S2	3	69 ±5
p	<i>Agrimonia gryposepala</i>	Hooked Agrimony	S2	15	3 ±0
p	<i>Ranunculus gmelinii</i>	Gmelin's Water Buttercup	S2	12	37 ±0
p	<i>Ranunculus flammula</i> var. <i>flammula</i>	Lesser Spearwort	S2	3	27 ±10
p	<i>Caltha palustris</i>	Yellow Marsh Marigold	S2	1	31 ±0.1
p	<i>Anemone virginiana</i> var. <i>virginiana</i>	Virginia Anemone	S2	2	41 ±10
p	<i>Anemone virginiana</i>	Virginia Anemone	S2	3	12 ±1
p	<i>Anemone quinquefolia</i>	Wood Anemone	S2	7	38 ±0.1
p	<i>Anemone canadensis</i>	Canada Anemone	S2	2	99 ±0.1
p	<i>Samolus valerandi</i> ssp. <i>parviflorus</i>	Seaside Brookweed	S2	4	65 ±0
p	<i>Primula mistassinica</i>	Mistassini Primrose	S2	5	23 ±10
p	<i>Plantago rugelii</i>	Rugel's Plantain	S2	5	7 ±0
p	<i>Rumex salicifolius</i> var. <i>mexicanus</i>	Triangular-valve Dock	S2	1	73 ±10
p	<i>Polygonum arifolium</i>	Halberd-leaved Tearthumb	S2	9	48 ±1
p	<i>Oenothera fruticosa</i> ssp. <i>glauca</i>	Narrow-leaved Evening Primrose	S2	3	14 ±10
p	<i>Epilobium strictum</i>	Downy Willowherb	S2	8	79 ±5
p	<i>Myriophyllum verticillatum</i>	Whorled Water Milfoil	S2	2	39 ±0
p	<i>Myriophyllum farwellii</i>	Farwell's Water Milfoil	S2	6	38 ±0.1
p	<i>Chamaesyce polygonifolia</i>	Seaside Spurge	S2	3	47 ±1
p	<i>Vaccinium caespitosum</i>	Dwarf Bilberry	S2	4	23 ±0
p	<i>Vaccinium boreale</i>	Northern Blueberry	S2	4	85 ±1
p	<i>Empetrum eamesii</i> ssp. <i>eamesii</i>	Pink Crowberry	S2	1	80 ±5
p	<i>Empetrum eamesii</i> ssp. <i>atropurpureum</i>	Pink Crowberry	S2	1	99 ±5
p	<i>Empetrum eamesii</i>	Pink Crowberry	S2	2	98 ±0.1
p	<i>Triosteum aurantiacum</i>	Orange-fruited Tinker's Weed	S2	19	11 ±0
p	<i>Stellaria humifusa</i>	Saltmarsh Starwort	S2	6	78 ±1
p	<i>Minuartia groenlandica</i>	Greenland Stitchwort	S2	2	77 ±10
p	<i>Arabis drummondii</i>	Drummond's Rockcress	S2	5	29 ±0
p	<i>Betula michauxii</i>	Newfoundland Dwarf Birch	S2	15	49 ±10
p	<i>Betula pumila</i>	Bog Birch	S2	9	80 ±0.1
p	<i>Caulophyllum thalictroides</i>	Blue Cohosh	S2	15	11 ±10
p	<i>Impatiens pallida</i>	Pale Jewelweed	S2	2	77 ±10
p	<i>Symphotrichum boreale</i>	Boreal Aster	S2	10	36 ±10
p	<i>Senecio pseudoarnica</i>	Seabeach Ragwort	S2	3	36 ±10
p	<i>Rudbeckia laciniata</i> var. <i>gaspereauensis</i>	Cut-Leaved Coneflower	S2	3	19 ±10

p	Rudbeckia laciniata	Cut-Leaved Coneflower	S2	9	24 ±0
p	Hieracium robinsonii	Robinson's Hawkweed	S2	2	16 ±10
p	Erigeron philadelphicus	Philadelphia Fleabane	S2	3	44 ±5
p	Panax trifolius	Dwarf Ginseng	S2	8	57 ±5
p	Conioselinum chinense	Chinese Hemlock-parsley	S2	2	5 ±5
n	Timmia megapolitana	a Moss	S2?	1	95 ±1
n	Calliergon giganteum	a Moss	S2?	1	85 ±1
n	Buxbaumia aphylla	Bug On a Stick	S2?	3	80 ±0.5
n	Brachythecium albicans	a Moss	S2?	2	84 ±1
n	Atrichum crispum	a Moss	S2?	2	80 ±0.5
p	Dichanthelium linearifolium	Narrow-leaved Panic Grass	S2?	3	17 ±10
p	Juncus dudleyi	Dudley's Rush	S2?	4	12 ±0
p	Eleocharis ovata	Ovate Spikerush	S2?	2	24 ±0.5
p	Carex peckii	Peck's Sedge	S2?	2	38 ±0.1
p	Carex houghtoniana	Houghton's Sedge	S2?	2	54 ±5
p	Amelanchier fernaldii	Fernald's Serviceberry	S2?	1	93 ±5
p	Epilobium coloratum	Purple-veined Willowherb	S2?	3	20 ±1
p	Hieracium kalmii var. kalmii	Kalm's Hawkweed	S2?	1	24 ±5
p	Hieracium kalmii	Kalm's Hawkweed	S2?	1	17 ±1
n	Sphagnum wulfianum	a Peatmoss	S2S3	1	73 ±0.1
n	Fissidens bryoides	a Moss	S2S3	1	84 ±1
n	Dicranella subulata	Awl-Leaved Fork Moss	S2S3	3	80 ±0.5
n	Amblystegium varium	a Moss	S2S3	1	69 ±0.5
p	Botrychium simplex	Least Moonwort	S2S3	4	21 ±0
p	Botrychium lanceolatum var. angustisegmentum	Triangle Moonwort	S2S3	5	11 ±0
p	Lycopodium hickeyi	Hickey's Tree-clubmoss	S2S3	1	54 ±0.1
p	Potamogeton zosteriformis	Flat-stemmed Pondweed	S2S3	8	40 ±0
p	Potamogeton richardsonii	Richardson's Pondweed	S2S3	2	68 ±1
p	Potamogeton obtusifolius	Blunt-leaved Pondweed	S2S3	8	52 ±1
p	Panicum tuckermanii	Tuckerman's Panic Grass	S2S3	5	61 ±0
p	Calamagrostis stricta var. stricta	Slim-stemmed Reed Grass	S2S3	8	92 ±5
p	Calamagrostis stricta	Slim-stemmed Reed Grass	S2S3	5	80 ±0
p	Spiranthes romanzoffiana	Hooded Ladies'-Tresses	S2S3	9	62 ±5
p	Spiranthes ochroleuca	Yellow Ladies'-tresses	S2S3	2	90 ±1
p	Coeloglossum viride var. virescens	Long-bracted Frog Orchid	S2S3	1	71 ±0.1
p	Lilium canadense	Canada Lily	S2S3	52	2 ±5
p	Triglochin gaspensis	Gaspé Arrowgrass	S2S3	1	98 ±1
p	Eleocharis olivacea	Yellow Spikerush	S2S3	3	39 ±0
p	Carex hirtifolia	Pubescent Sedge	S2S3	22	5 ±0
p	Carex adusta	Lesser Brown Sedge	S2S3	6	41 ±10
p	Rumex maritimus	Sea-Side Dock	S2S3	7	64 ±0.1
p	Polygonum ramosissimum var. ramosissimum	Bushy Knotweed	S2S3	3	79 ±5
p	Polygonum ramosissimum	Bushy Knotweed	S2S3	3	74 ±0.1
p	Polygonum buxiforme	Small's Knotweed	S2S3	4	36 ±10
p	Polygala sanguinea	Blood Milkwort	S2S3	9	14 ±1
p	Fraxinus nigra	Black Ash	S2S3	34	12 ±0
p	Hedeoma pulegioides	American False Pennyroyal	S2S3	6	17 ±5
p	Halenia deflexa	Spurred Gentian	S2S3	1	78 ±1
p	Hypericum dissimulatum	Disguised St John's-wort	S2S3	2	69 ±10
p	Symphotrichum ciliolatum	Fringed Blue Aster	S2S3	8	11 ±0
p	Asclepias incarnata ssp. pulchra	Swamp Milkweed	S2S3	3	60 ±1
p	Schizaea pusilla	Little Curlygrass Fern	S3	3	95 ±1
p	Botrychium dissectum	Cut-leaved Moonwort	S3	4	16 ±1
p	Isoetes acadensis	Acadian Quillwort	S3	1	57 ±1
p	Equisetum variegatum	Variiegated Horsetail	S3	5	12 ±0
p	Sparganium natans	Small Burreed	S3	12	38 ±0
p	Dichanthelium clandestinum	Deer-tongue Panic Grass	S3	5	70 ±0
p	Platanthera hookeri	Hooker's Orchid	S3	2	59 ±0.1
p	Platanthera grandiflora	Large Purple Fringed Orchid	S3	20	22 ±0
p	Goodyera repens	Lesser Rattlesnake-plantain	S3	4	48 ±1
p	Corallorhiza trifida	Early Coralroot	S3	11	11 ±0
p	Juncus subcaudatus	Woodland Rush	S3	4	16 ±10
p	Eleocharis nitida	Quill Spikerush	S3	3	84 ±10
p	Carex rosea	Rosy Sedge	S3	9	6 ±0
p	Carex lupulina	Hop Sedge	S3	4	7 ±0
p	Carex eburnea	Bristle-leaved Sedge	S3	3	60 ±0.1
p	Verbena hastata	Blue Vervain	S3	37	5 ±0.1
p	Laportea canadensis	Canada Wood Nettle	S3	10	5 ±0
p	Geocaulon lividum	Northern Comandra	S3	3	66 ±0
p	Comandra umbellata	Bastard's Toadflax	S3	4	82 ±10
p	Salix petiolaris	Meadow Willow	S3	13	13 ±0
p	Rosa palustris	Swamp Rose	S3	2	38 ±0
p	Pyrola asarifolia	Pink Pyrola	S3	10	24 ±0
p	Polygonum scandens	Climbing False Buckwheat	S3	23	5 ±0
p	Polygonum pennsylvanicum	Pennsylvania Smartweed	S3	11	7 ±0
p	Teucrium canadense	Canada Germander	S3	3	20 ±5
p	Proserpinaca pectinata	Comb-leaved Mermaidweed	S3	2	30 ±10
p	Proserpinaca palustris var. crebra	Marsh Mermaidweed	S3	4	37 ±0
p	Proserpinaca palustris	Marsh Mermaidweed	S3	2	39 ±0
p	Geranium bicknellii	Bicknell's Crane's-bill	S3	2	87 ±0.1
p	Bartonia virginica	Yellow Bartonia	S3	1	83 ±10
p	Viburnum edule	Squashberry	S3	1	12 ±0
p	Stellaria longifolia	Long-leaved Starwort	S3	8	20 ±1
p	Campanula aparinoides	Marsh Bellflower	S3	25	5 ±0
p	Packera paupercula	Balsam Groundsel	S3	7	12 ±0
p	Megalodonta beckii	Water Beggarticks	S3	7	17 ±0.5

p	Erigeron hyssopifolius	Hyssop-leaved Fleabane	S3	3	59 ±0.1
p	Bidens connata	Purple-stemmed Beggarticks	S3	9	64 ±0.1
p	Asclepias incarnata ssp. incarnata	Swamp Milkweed	S3	1	92 ±0.1
p	Asclepias incarnata	Swamp Milkweed	S3	20	40 ±0
p	Polypodium appalachianum	Appalachian Polypody	S3?	4	37 ±0
p	Lycopodium sitchense	Sitka Clubmoss	S3?	3	36 ±5
p	Lycopodium sabinifolium	Ground-Fir	S3?	4	51 ±5
p	Potamogeton praelongus	White-stemmed Pondweed	S3?	10	16 ±5
p	Elodea canadensis	Canada Waterweed	S3?	1	89 ±0
p	Carex tribuloides	Blunt Broom Sedge	S3?	2	28 ±1
p	Carex cryptolepis	Hidden-scaled Sedge	S3?	2	38 ±0
p	Carex bebbii	Bebb's Sedge	S3?	10	29 ±0
p	Carex foenea	Fernald's Hay Sedge	S3?	10	46 ±0
p	Lycopodiella appressa	Southern Bog Clubmoss	S3S4	4	24 ±1
p	Lycopodium complanatum	Northern Clubmoss	S3S4	5	23 ±0.1
p	Equisetum scirpoides	Dwarf Scouring-Rush	S3S4	12	32 ±0
p	Cystopteris bulbifera	Bulblet Bladder Fern	S3S4	6	33 ±0.1
p	Trisetum spicatum	Narrow False Oats	S3S4	5	12 ±0
p	Liparis loeselii	Loesel's Twayblade	S3S4	12	47 ±5
p	Luzula parviflora	Small-flowered Woodrush	S3S4	2	86 ±0
p	Juncus alpinoarticulatus ssp. nodulosus	Alpine Rush	S3S4	1	99 ±5
p	Juncus nodosus	Knotted Rush	S3S4	11	47 ±5
p	Sisyrinchium angustifolium	Narrow-leaved Blue-eyed-grass	S3S4	4	12 ±0
p	Lindernia dubia	Yellow-seeded False Pimperel	S3S4	15	5 ±0
p	Rhamnus alnifolia	Alder-leaved Buckthorn	S3S4	18	37 ±0
p	Polygonum robustius	Stout Smartweed	S3S4	2	39 ±0
p	Sanguinaria canadensis	Bloodroot	S3S4	18	5 ±0.1
p	Utricularia gibba	Humped Bladderwort	S3S4	4	52 ±10
p	Myriophyllum sibiricum	Siberian Water Milfoil	S3S4	1	39 ±0
p	Isoetes lacustris	Lake Quillwort	S4	6	57 ±1
p	Stellaria crassifolia	Fleshy Stitchwort	SH	1	97 ±5
p	Solidago simplex var. randii	Sticky Goldenrod	SH	1	86 ±1
p	Lactuca hirsuta var. sanguinea	Hairy Lettuce	SH	3	81 ±5
p	Lobelia spicata	Pale-Spiked Lobelia	SNR	6	56 ±10

4.2 FAUNA

	scientific name	common name	prov. rarity	prov. status	COSEWIC	obs	dist.km
a	Sterna dougallii	Roseate Tern	S1B	Endangered	E	13	78 ±0.5
a	Calidris canutus rufa	Red Knot rufa ssp	S2S3M	Endangered	E	17	24 ±0.5
i	Gomphus ventricosus	Skillet Clubtail	S1		E	1	88 ±0.5
a	Salmo salar pop. 1	Atlantic Salmon - inner Bay of Fundy pops	S2		E	17	18 ±10
a	Catharus bicknelli	Bicknell's Thrush	S1S2B	Vulnerable	T	1	90 ±5
a	Glyptemys insculpta	Wood Turtle	S3	Vulnerable	T	67	12 ±10
a	Morone saxatilis	Striped Bass	S1		T	3	72 ±10
a	Acipenser oxyrinchus	Atlantic Sturgeon	S1?		T	2	69 ±10
a	Caprimulgus vociferus	Whip-Poor-Will	S1?B		T	4	62 ±5
a	Dolichonyx oryzivorus	Bobolink	S3S4B		T	197	2 ±5
a	Histrionicus histrionicus pop. 1	Harlequin Duck - Eastern pop.	S2N	Endangered	SC	6	81 ±10
a	Passerculus sandwichensis princeps	Savannah Sparrow princeps ssp	S1B		SC	2	84 ±0.1
a	Bucephala islandica (Eastern pop.)	Barrow's Goldeneye (Eastern pop.)	S1N		SC	4	24 ±0.1
a	Asio flammeus	Short-eared Owl	S1S2		SC	4	33 ±5
i	Alasmidonta varicosa	Brook Floater	S1S2		SC	8	43 ±0.1
i	Danaus plexippus	Monarch	S2B		SC	3	40 ±1
a	Euphagus carolinus	Rusty Blackbird	S2S3B		SC	82	13 ±5
a	Aegolius funereus	Boreal Owl	S1B		NAR	3	49 ±0.1
a	Fulica americana	American Coot	S1B		NAR	4	24 ±5
a	Hemidactylium scutatum	Four-toed Salamander	S3		NAR	9	39 ±0.1
a	Sialia sialis	Eastern Bluebird	S3B		NAR	14	10 ±0.1
a	Sterna hirundo	Common Tern	S3B		NAR	99	12 ±5
a	Accipiter gentilis	Northern Goshawk	S3S4		NAR	38	2 ±5
a	Alces americanus	Moose	S1	Endangered		22	9 ±10
a	Sorex dispar	Long-tailed Shrew	S1			2	70 ±10
i	Strophitus undulatus	Creeper	S1			2	86 ±0.1
i	Chromagrion conditum	Aurora Damselfly	S1			3	51 ±1
i	Enallagma signatum	Orange Bluet	S1			1	98 ±0.1
i	Enallagma aspersum	Azure Bluet	S1			4	52 ±1
i	Enallagma minusculum	Little Bluet	S1			3	79 ±0.1
i	Coenagrion resolutum	Taiga Bluet	S1			1	60 ±0.1
i	Leucorrhinia frigida	Frosted Whiteface	S1			1	79 ±0.1
i	Celithemis elisa	Calico Pennant	S1			1	79 ±0.1
i	Williamsonia fletcheri	Ebony Boghaunter	S1			1	59 ±0.5
i	Somatochlora minor	Ocellated Emerald	S1			2	80 ±0.1
i	Somatochlora kennedyi	Kennedy's Emerald	S1			1	85 ±1
i	Somatochlora incurvata	Incurvate Emerald	S1			5	84 ±1
i	Somatochlora franklini	Delicate Emerald	S1			3	68 ±1
i	Somatochlora forcipata	Forcinate Emerald	S1			3	79 ±1
i	Somatochlora cingulata	Lake Emerald	S1			3	78 ±0.1
i	Somatochlora brevicincta	Quebec Emerald	S1			1	98 ±0.1
i	Dorocordulia lepida	Petite Emerald	S1			3	52 ±1
i	Gomphaeschna furcillata	Harlequin Darner	S1			2	77 ±0.1
i	Boyeria vinosa	Fawn Darner	S1			2	79 ±1
i	Basiaeschna janata	Springtime Darner	S1			3	84 ±1
i	Aeshna subarctica	Subarctic Darner	S1			2	52 ±1
i	Ophiogomphus mainensis	Maine Snaketail	S1			1	53 ±0.1
i	Ophiogomphus aspersus	Brook Snaketail	S1			2	84 ±0.1
i	Oeneis jutta ascerta	Jutta Arctic	S1			1	52 ±0.1

i	<i>Polygona gracilis</i>	Hoary Comma	S1	2	12 ±1
i	<i>Erora laeta</i>	Early Hairstreak	S1	1	85 ±0.5
i	<i>Callophrys henrici</i>	Henry's Elfin	S1	1	83 ±0.1
i	<i>Satyrum liparops strigosum</i>	Striped Hairstreak	S1	1	81 ±10
i	<i>Satyrum acadica</i>	Acadian Hairstreak	S1	3	18 ±1
i	<i>Lycaena hyllus</i>	Bronze Copper	S1	2	42 ±0
a	<i>Perimyotis subflavus</i>	Eastern Pipitrelle	S1?	4	61 ±5
a	<i>Vireo gilvus</i>	Warbling Vireo	S1?B	4	62 ±5
a	<i>Toxostoma rufum</i>	Brown Thrasher	S1?B	3	11 ±5
a	<i>Tringa solitaria</i>	Solitary Sandpiper	S1?B,S4S5M	4	58 ±0.5
a	<i>Hylocichla mustelina</i>	Wood Thrush	S1B	11	16 ±5
a	<i>Progne subis</i>	Purple Martin	S1B	4	82 ±5
a	<i>Gallinula chloropus</i>	Common Moorhen	S1B	4	43 ±5
a	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron	S1B	1	74 ±5
a	<i>Calidris minutilla</i>	Least Sandpiper	S1B,S5M	1	78 ±5
a	<i>Picoides dorsalis</i>	American Three-toed Woodpecker	S1S2	2	83 ±5
i	<i>Stylurus scudderii</i>	Zebra Clubtail	S1S2	3	76 ±0.5
i	<i>Ophiogomphus rupinsulensis</i>	Rusty Snaketail	S1S2	2	76 ±0.5
i	<i>Nymphalis vaualbum j-album</i>	Compton Tortoiseshell	S1S2	2	40 ±1
i	<i>Callophrys lanoraieensis</i>	Bog Elfin	S1S2	3	81 ±1
a	<i>Passerina cyanea</i>	Indigo Bunting	S1S2B	3	52 ±5
a	<i>Vireo philadelphicus</i>	Philadelphia Vireo	S1S2B	12	37 ±0.1
a	<i>Eremophila alpestris</i>	Horned Lark	S1S2B,S4N	6	62 ±5
a	<i>Charadrius semipalmatus</i>	Semipalmated Plover	S1S2B,S5M	7	29 ±5
a	<i>Loxia curvirostra</i>	Red Crossbill	S1S2B,SNAN	1	78 ±5
a	<i>Myotis septentrionalis</i>	Northern Long-eared Bat	S2	5	55 ±1
a	<i>Salmo salar</i>	Atlantic Salmon	S2	50	2 ±10
a	<i>Asio otus</i>	Long-eared Owl	S2	9	15 ±0.1
i	<i>Lampsilis radiata</i>	Eastern Lampmussel	S2	34	15 ±0.1
i	<i>Lestes eurinus</i>	Amber-Winged Spreadwing	S2	3	52 ±1
i	<i>Leucorrhinia glacialis</i>	Crimson-Ringed Whiteface	S2	11	51 ±1
i	<i>Epietheca princeps</i>	Prince Baskettail	S2	3	59 ±0.5
i	<i>Gomphus spicatus</i>	Dusky Clubtail	S2	7	72 ±0.1
i	<i>Gomphus descriptus</i>	Harpoon Clubtail	S2	2	67 ±1
i	<i>Nymphalis milberti</i>	Milbert's Tortoiseshell	S2	4	58 ±1
i	<i>Nymphalis vaualbum</i>	Compton Tortoiseshell	S2	1	79 ±1
i	<i>Polygona satyrus</i>	Satyr Comma	S2	2	79 ±0.1
i	<i>Boloria chariclea</i>	Arctic Fritillary	S2	2	40 ±1
i	<i>Callophrys niphon</i>	Eastern Pine Elfin	S2	1	81 ±1
i	<i>Satyrum calanus</i>	Banded Hairstreak	S2	1	52 ±1
i	<i>Lycaena dospassosi</i>	Salt Marsh Copper	S2	10	38 ±0.1
i	<i>Pieris oleracea</i>	Mustard White	S2	15	14 ±1
i	<i>Amblyscirtes vialis</i>	Common Roadside-Skipper	S2	3	18 ±1
i	<i>Amblyscirtes hegon</i>	Salt and Pepper Skipper	S2	1	86 ±1
a	<i>Thorybes pylades</i>	Northern Cloudywing	S2	3	14 ±1
i	<i>Lasiurus cinereus</i>	Hoary Bat	S2?	1	87 ±10
a	<i>Piranga olivacea</i>	Scarlet Tanager	S2B	5	12 ±5
a	<i>Myiarchus crinitus</i>	Great Crested Flycatcher	S2B	4	2 ±5
a	<i>Empidonax traillii</i>	Willow Flycatcher	S2B	1	84 ±5
a	<i>Rallus limicola</i>	Virginia Rail	S2B	18	29 ±5
a	<i>Anas strepera</i>	Gadwall	S2B	1	90 ±5
a	<i>Anas acuta</i>	Northern Pintail	S2B	21	47 ±10
a	<i>Bucephala clangula</i>	Common Goldeneye	S2B,S5N	35	18 ±10
a	<i>Calidris maritima</i>	Purple Sandpiper	S2N	12	24 ±0.5
i	<i>Alasmidonta undulata</i>	Triangle Floater	S2S3	11	39 ±10
i	<i>Erynnis juvenalis</i>	Juvenal's Duskywing	S2S3	2	52 ±1
a	<i>Icterus galbula</i>	Baltimore Oriole	S2S3B	27	9 ±0.5
a	<i>Poocetes gramineus</i>	Vesper Sparrow	S2S3B	20	19 ±5
a	<i>Phalaropus lobatus</i>	Red-necked Phalarope	S2S3M	1	59 ±0.5
i	<i>Amphiagrion saucium</i>	Eastern Red Damsel	S3	1	42 ±1
i	<i>Nehalennia gracilis</i>	Sphagnum Sprite	S3	10	51 ±1
i	<i>Sympetrum semicinctum</i>	Band-Winged Meadowhawk	S3	11	72 ±0.1
i	<i>Sympetrum danae</i>	Black Meadowhawk	S3	6	63 ±1
i	<i>Nannothemis bella</i>	Elfin Skimmer	S3	2	97 ±1
i	<i>Somatochlora williamsoni</i>	Williamson's Emerald	S3	5	90 ±0.5
i	<i>Somatochlora walshii</i>	Brush-Tipped Emerald	S3	8	52 ±1
i	<i>Somatochlora tenebrosa</i>	Clamp-Tipped Emerald	S3	2	97 ±1
i	<i>Somatochlora elongata</i>	Ski-Tailed Emerald	S3	14	53 ±1
i	<i>Epietheca spinigera</i>	Spiny Baskettail	S3	5	80 ±0.1
i	<i>Dorocordulia libera</i>	Racket-Tailed Emerald	S3	11	52 ±1
i	<i>Boyeria grafiana</i>	Ocellated Darner	S3	5	60 ±0.1
i	<i>Aeshna eremita</i>	Lake Darner	S3	14	52 ±1
i	<i>Aeshna constricta</i>	Lance-Tipped Darner	S3	8	16 ±1
i	<i>Aeshna clepsydra</i>	Mottled Darner	S3	5	78 ±1
i	<i>Ophiogomphus carolus</i>	Riffle Snaketail	S3	16	23 ±1
i	<i>Lanthus parvulus</i>	Northern Pygmy Clubtail	S3	7	39 ±5
i	<i>Cordulegaster maculata</i>	Twin-Spotted Spiketail	S3	18	73 ±1
i	<i>Enodia anhedon</i>	Northern Pearly-Eye	S3	4	18 ±1
i	<i>Nymphalis milberti milberti</i>	Milbert's Tortoiseshell	S3	3	83 ±0.1
i	<i>Polygona faunus</i>	Green Comma	S3	4	40 ±1
i	<i>Euphydryas phaeton</i>	Baltimore Checkerspot	S3	10	14 ±1
i	<i>Hesperia comma laurentina</i>	Laurentian Skipper	S3	8	18 ±1
i	<i>Hesperia comma</i>	Common Branded Skipper	S3	3	55 ±1
a	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	S3?B	43	2 ±5
a	<i>Mimus polyglottos</i>	Northern Mockingbird	S3B	11	11 ±5
a	<i>Sterna paradisaea</i>	Arctic Tern	S3B	24	67 ±5

a	Anas clypeata	Northern Shoveler	S3B	9	63 ±5
i	Polygonia interrogationis	Question Mark	S3B	6	18 ±1
a	Tringa melanoleuca	Greater Yellowlegs	S3B,S5M	25	21 ±5
a	Mergus serrator	Red-breasted Merganser	S3B,S5N	43	12 ±5
a	Numenius phaeopus	Whimbrel	S3M	9	24 ±0.5
a	Pluvialis dominica	American Golden-Plover	S3M	16	29 ±0.5
a	Cardinalis cardinalis	Northern Cardinal	S3S4	5	13 ±5
a	Cephus grylle	Black Guillemot	S3S4	22	37 ±5
i	Polygonia progne	Gray Comma	S3S4	7	20 ±1
i	Speyeria aphrodite	Aphrodite Fritillary	S3S4	6	40 ±1
i	Callophrys polios	Hoary Elfin	S3S4	2	81 ±1
i	Feniseca tarquinius	Harvester	S3S4	7	14 ±1
a	Sayornis phoebe	Eastern Phoebe	S3S4B	37	2 ±5
a	Limosa haemastica	Hudsonian Godwit	S3S4M	15	58 ±0.5

4.3 RANGE MAPS

The legally protected taxa listed below are linked to the study area by predictive range maps based upon expert estimates of distribution. Taxa listed here but not in the observation data above, are unknown within the study area but perhaps present. Ranges of rank 1 indicate possible occurrence, those of rank 2 and 3 increasingly less probable.

scientific name	common name	prov. rarity	prov. status	COSEWIC	range	
a	Glyptemys insculpta	Wood Turtle	S3	Vulnerable	T	1
p	Listera australis	Southern Twayblade	S2			1
p	Isoetes prototypus	Prototype Quillwort	S2	Vulnerable	SC	1
i	Danaus plexippus	Monarch	S2B		SC	1
a	Alces alces (NS mainland)	Moose	S1	Endangered		1
p	Eriocaulon parkeri	Parker's Pipewort			NAR	2

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Limerock COMFIT Wind Project: Environmental Assessment
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Appendix D

Sound Modeling Study

Project:
794 Limerock

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DECIBEL - Main Result

Calculation: Limerock Sound 7.0 m/s

Noise calculation model:

ISO 9613-2 General

Wind speed:

7.0 m/s

Ground attenuation:

None

Meteorological coefficient, C0:

0.0 dB

Type of demand in calculation:

1: WTG noise is compared to demand (DK, DE, SE, NL etc.)

Noise values in calculation:

All noise values are mean values (Lwa) (Normal)

Pure tones:

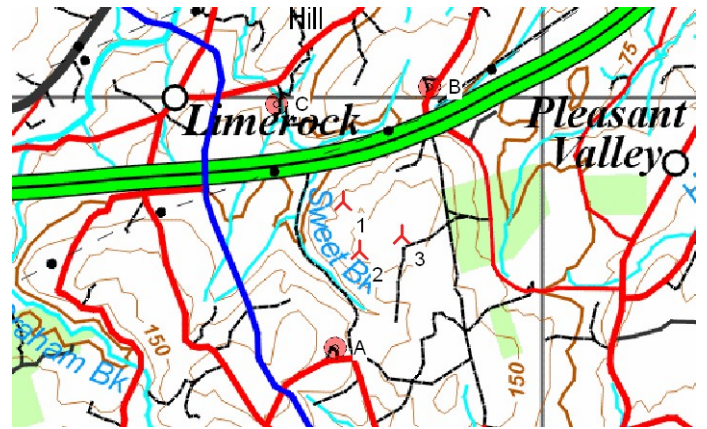
Pure and Impulse tone penalty are added to WTG source noise

Height above ground level, when no value in NSA object:

0.0 m Don't allow override of model height with height from NSA object

Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:

0.0 dB(A)



Scale 1:75,000
New WTG Noise sensitive area

WTGs

	UTM (north)-NAD83 (US+CA) Zone: 20			WTG type		Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Noise data		Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones
	East	North	Z	Row data/Description	Valid					Manufact.	Creator			
1	513,639	5,043,007	170.0	GE WIND ENERGY GE 1.6 1...	Yes	GE WIND ENERGY	1,600	82.5	80.0	USER	06.2 1.6 1.68 -82.5	7.0	106.0	0 dB
2	513,802	5,042,522	180.0	GE WIND ENERGY GE 1.6 1...	Yes	GE WIND ENERGY	1,600	82.5	80.0	USER	06.2 1.6 1.68 -82.5	7.0	106.0	0 dB
3	514,224	5,042,681	190.0	GE WIND ENERGY GE 1.6 1...	Yes	GE WIND ENERGY	1,600	82.5	80.0	USER	06.2 1.6 1.68 -82.5	7.0	106.0	0 dB

Calculation Results

Sound Level

No.	Noise sensitive area Name	UTM (north)-NAD83 (US+CA) Zone: 20			Demands Imission height [m]	Demands Noise [dB(A)]	Sound Level From WTGs [dB(A)]	Demands fulfilled ? Noise
		East	North	Z				
	A Noise sensitive point: (1)	513,569	5,041,556	159.3	0.0	40.0	38.9	Yes
	B Noise sensitive point: (2)	514,496	5,044,155	130.8	0.0	40.0	36.0	Yes
	C Noise sensitive point: (3)	512,977	5,043,970	53.0	0.0	40.0	36.7	Yes

Distances (m)

WTG			
NSA	1	2	3
A	1453	994	1302
B	1433	1774	1499
C	1169	1667	1793

Project:

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Kirk Schmidt / kirk.schmidt@al-pro.ca

Calculated:

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DECIBEL - Detailed results**Calculation:** Limerock Sound 7.0 m/s **Noise calculation model:** ISO 9613-2 General 7.0 m/s**Assumptions**

Calculated L(DW) = LWA,ref + K + Dc - (Adiv + Aatm + Agr + Abar + Amisc) - Cmet
 (when calculated with ground attenuation, then Dc = Domega)

LWA,ref:	Sound pressure level at WTG
K:	Pure tone
Dc:	Directivity correction
Adiv:	the attenuation due to geometrical divergence
Aatm:	the attenuation due to atmospheric absorption
Agr:	the attenuation due to ground effect
Abar:	the attenuation due to a barrier
Amisc:	the attenuation due to miscellaneous other effects
Cmet:	Meteorological correction

Calculation Results**Noise sensitive area: A Noise sensitive point: (1)**

WTG		Wind speed: 7.0 m/s										
No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
1	1,453	1,456	31.97	106.0	3.00	74.26	2.77	0.00	0.00	0.00	77.03	0.00
2	994	999	36.11	106.0	3.00	70.99	1.90	0.00	0.00	0.00	72.89	0.00
3	1,302	1,306	33.20	106.0	3.00	73.32	2.48	0.00	0.00	0.00	75.80	0.00
Sum	38.89											

Noise sensitive area: B Noise sensitive point: (2)

WTG		Wind speed: 7.0 m/s										
No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
1	1,433	1,438	32.12	106.0	3.00	74.15	2.73	0.00	0.00	0.00	76.88	0.00
2	1,774	1,779	29.62	106.0	3.00	76.00	3.38	0.00	0.00	0.00	79.38	0.00
3	1,499	1,505	31.59	106.0	3.00	74.55	2.86	0.00	0.00	0.00	77.41	0.00
Sum	36.00											

Noise sensitive area: C Noise sensitive point: (3)

WTG		Wind speed: 7.0 m/s										
No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
1	1,169	1,185	34.27	106.0	3.00	72.48	2.25	0.00	0.00	0.00	74.73	0.00
2	1,667	1,679	30.31	106.0	3.00	75.50	3.19	0.00	0.00	0.00	78.69	0.00
3	1,793	1,807	29.43	106.0	3.00	76.14	3.43	0.00	0.00	0.00	79.57	0.00
Sum	36.65											

Project:

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Kirk Schmidt / kirk.schmidt@al-pro.ca

Calculated:

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DECIBEL - Assumptions for noise calculation**Calculation:** Limerock Sound 7.0 m/s **Noise calculation model:** ISO 9613-2 General 7.0 m/s**Noise calculation model:**

ISO 9613-2 General

Wind speed:

7.0 m/s

Ground attenuation:

None

Meteorological coefficient, C0:

0.0 dB

Type of demand in calculation:

1: WTG noise is compared to demand (DK, DE, SE, NL etc.)

Noise values in calculation:

All noise values are mean values (Lwa) (Normal)

Pure tones:

Pure and Impulse tone penalty are added to WTG source noise

Height above ground level, when no value in NSA object:

0.0 m Don't allow override of model height with height from NSA object

Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:

0.0 dB(A)

Octave data not required

Air absorption: 1.9 dB/km

WTG: GE WIND ENERGY GE 1.6 1600 82.5 !O!**Noise:** 06.2 1.6 1.68 -82.5 Prodcut Accoustic Spec

Source	Source/Date	Creator	Edited
GE	11/6/2012	USER	11/6/2013 1:06 PM

Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones
From Windcat	80.0	7.0	106.0	No

NSA: Noise sensitive point: (1)-A**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 40.0 dB(A)**Distance demand:****NSA:** Noise sensitive point: (2)-B**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 40.0 dB(A)**Distance demand:****NSA:** Noise sensitive point: (3)-C**Predefined calculation standard:****Imission height(a.g.l.):** Use standard value from calculation model**Noise demand:** 40.0 dB(A)**Distance demand:**

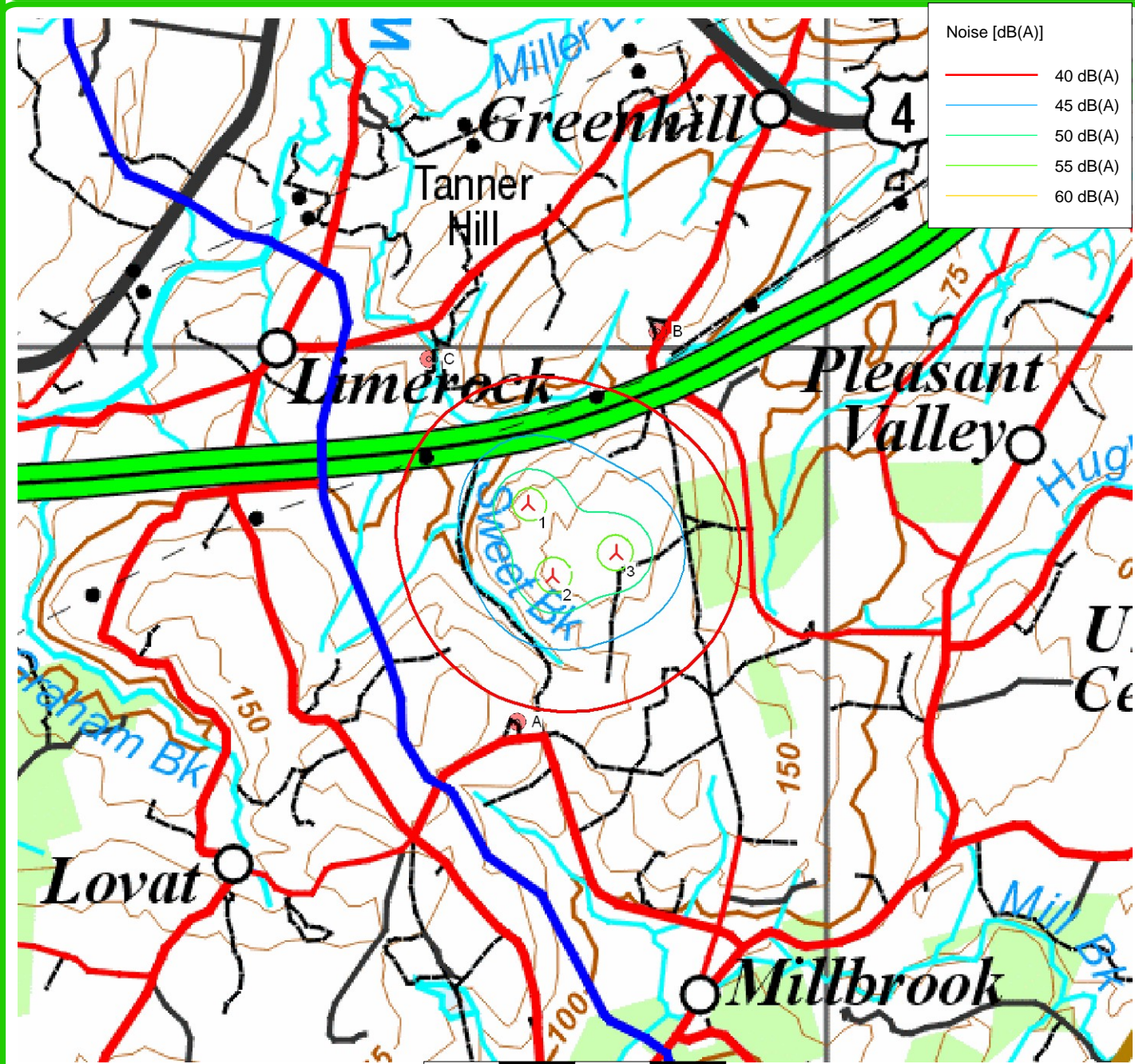
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DECIBEL - Map 7.0 m/s

Calculation: Limerock Sound 7.0 m/s Noise calculation model: ISO 9613-2 General 7.0 m/s



0 500 1000 1500 2000 m

Map: Limerock_map , Print scale 1:40,000, Map center UTM (north)-NAD83 (US+CA) Zone: 20 East: 513,931 North: 5,042,764

▲ New WTG ■ Noise sensitive area

Noise calculation model: ISO 9613-2 General. Wind speed: 7.0 m/s
Height above sea level from active line object

Limerock COMFIT Wind Project: Environmental Assessment
Affinity Wind LP

Appendix E

Public Consultation Materials

L.O.R.D.A.

As a potential beneficiary of a portion of the 'Community Revenue for Local Organizations', as laid out by Affinity Renewables for their proposed Limerock Wind Project, I offer my support to this project.

We play a vital role in the community, both immediate and County-wide. We rely solely on donations. We support wind power, when developed carefully with turbines setback 1500m from the nearest house, as this wind project proposes. Specifically, we support the Limerock project proposed by Affinity Renewables and stand to benefit greatly by the Department of Energy awarding a 6.4mw contract to Affinity Renewables on substation 62N-T1.

Name

Comments

Donna McHane

Margie Ludongie

Theresa C. P. ...

Murray E. ... P. Eng.

Iron in ...

J.R. Bland

Ellen Bland

Robert ...

...

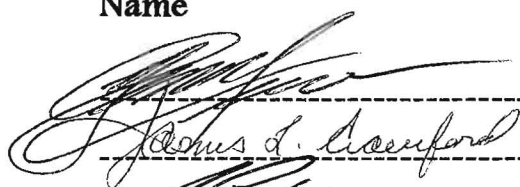
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Name

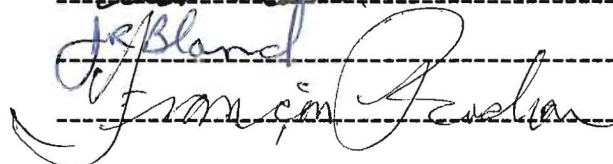
Comments

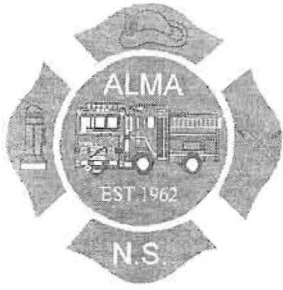

James L. Crawford


Robert L. Lewis


Ellen Bland


J. Bland


Francis J. Fisher



ALMA FIRE DEPARTMENT

RR # 1 Westville, NS B0K 2A0
(902) 396-3588

To whom it may concern.

This is a letter of support for the small wind project. It should be a great benefit for the community, being it is a green project and also will help fund small community projects.

Yours Truly

A handwritten signature in cursive script that reads 'Jack Ross'.

Chief Jack Ross
Alma Fire Department

Community Interests

Affinity Renewables Small Wind Project

Affinity Renewables is a company which is 51% owned by the Nova Scotia Society for the Prevention and Cruelty to Animals (SPCA). The SPCA is a Not-for-Profit organization which relies 100% on donations for its operations.

The Nova Scotia Department of Energy provides a fixed rate price to small renewable energy projects that allows a partnership between Dalhousie Mountain Wind Farm and the SPCA to be possible. Due to the Community Feed in Tariff, as established by the Department of Energy, this small wind project can be built and operated creating reliable revenue to the SPCA without the SPCA investing money into the development. The SPCA will earn an annual income from this small wind project by selling power to NSP on a 20-year fixed-price contract.

Affinity will establish an annual community fundraising account from the sale of power. This account will be managed by the Alma Volunteer Fire Department. The fire department will use 50% of this fund toward their own fundraising events. The other 50% of the funds will go to local community groups that have been identified as eligible by the fire department.

The amount of income generated to the annual fund raising account depends directly on the size and amount of wind turbines Affinity can construct and operate in this community.

Comment below how, as a resident of this community, the proposed wind project will benefit the local economy.

Name	Title	Comments
-------------	--------------	-----------------

Peter McDevitt	Safety officer	
----------------	----------------	--

Mike Lussillo	F.F.	
---------------	------	--

Donald MacKenzie	A.F.D.	
------------------	--------	--

Mike O'Connor	F.F.	
---------------	------	--

Marion J. Campbell	Alma Fire Dept	
--------------------	----------------	--

Shane Foot	Alma Fire Dept	
------------	----------------	--

Carl Wilson	Alma Fire Dept	
-------------	----------------	--

Please see our website www.rmsenergy.ca or email us at lisafulton@eastlink.ca or reubenburge@eastlink.ca

Community Interests

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Comment below how, as a resident of this community, the proposed wind project will benefit the local economy.

<u>Name</u>	<u>Title</u>	<u>Comments</u>
-------------	--------------	-----------------

Bob Rosborough	Treasurer	Good Project
Dave Finney	Captain	Great Idea
Jack Ross	Chief	Excellent Project

This would be a great benefit for the community, both in being a green project + a fund raiser. C.J. Ross

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Community Interests

Affinity Renewables Small Wind Project

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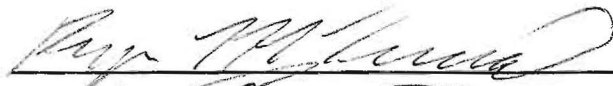

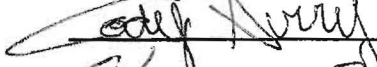
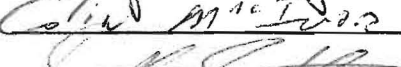


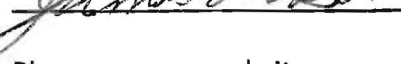
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Comment below how, as a resident of this community, the proposed wind project will benefit the local economy.

Name	Title	Comments
-------------	--------------	-----------------

		
	FF	
	FF	
		
		
		
	A.F.D.	

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Comment below how, as a resident of this community, the proposed wind project will benefit the local economy.

Name	Title	Comments
Jason MacLeod	Deputy Chief	ALMA FIRE DEPT.
Dave Nickerson	Firefighter	ALMA
Richard Bouckean	Trainer	ALMA - GREAT IDEA.

Please see our website www.rmsenergy.ca or email us at lisafulton@eastlink.ca or reubenburge@eastlink.ca

Community Interests

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Comment below how, as a resident of this community, the proposed wind project will benefit the local economy.

Name	Title	Comments
<i>Noel Chisholm</i>	<i>Alma. Dept.</i>	
<i>Taysa McLean</i>		<i>Great Idea</i>

Please see our website www.rmsenergy.ca or email us at lisafulton@eastlink.ca or reubenburge@eastlink.ca

Limerock COMFIT Wind Project: Environmental Assessment
Affinity Wind LP

Appendix F
Vascular Plant Study



*Atlantic Canada Conservation Data Centre
Centre de données sur la conservation du Canada Atlantique*

A vascular plant inventory of the Limerock COMFIT site, Pictou County, Nova Scotia, with notes on breeding birds



October 25, 2013

Conducted by

Sean Blaney, Atlantic Canada Conservation Data Centre
for RMSenergy Ltd.

Methods

AC CDC botanist Sean Blaney conducted 3.5 hours of fieldwork on foot at the Limerock Community Feed-in Tariff (COMFIT) project site in Pictou County, Nova Scotia on June 28, 2013, walking 5.78 km. GPS tracks of site coverage are mapped in Figure 1. Site planning was in an early stage, with turbine sites and road locations not yet finalized, so Reuben Burge of RMS Energy accompanied Sean Blaney to direct field survey toward the areas most suited to final turbine and road construction. Independent biologist Ross Hall was also with the group and contributed to the bird and plant species lists.

I documented full lists of vascular plant and bird species observed while on site with locations documented for the first observation of each species. For provincially rare species (those ranked S3S4 or lower by AC CDC, see Appendix 1), I recorded location by GPS and noted abundance, extent of occurrence and habitat. Breeding evidence for birds was recorded using the categories of the Maritimes Breeding Bird Atlas. I also documented plant communities present within the turbine construction footprints.

Results and Discussion

I. Vascular Plant Species

I recorded 201 vascular plant taxa (157 native, 44 exotic; Table 1), none of which are of conservation significance. Further visits to the site would yield additional species, but based on the nature and condition of the plant communities present, it is not likely that many additional provincially rare plant species would be found in the project footprint.

II. Breeding Birds

I recorded 22 species of breeding birds (Table 2) through incidental observations during plant fieldwork. Earlier morning surveys focused on breeding birds would undoubtedly record a significant number of additional species.

Four bird species of conservation significance were noted (Table 3, locations mapped in Figure 1), all of which are still fairly common in Nova Scotia but are of concern because of major population declines. Canada Warbler is Endangered, and Olive-sided Flycatcher and Eastern Wood-Pewee are Vulnerable under the Nova Scotia Endangered Species Act. Of these species, only one of the two singing Eastern Wood-Pewees observed was present within the footprint of a proposed turbine site (L02). The others were recorded between turbine locations in areas that could be affected by access road construction, although locations of access roads were incompletely defined during fieldwork, so potential impacts on these species are unclear.

The other species of conservation significance was Killdeer (S3S4B – Sensitive), with a pair present and exhibiting agitated behavior strongly suggestive of a nest or young nearby in the large former gravel pit north of (and outside the development footprint of) proposed turbine site L03. Potential impacts of access roads or aggregate extraction on the Killdeer habitat are unclear.

III. Plant Communities

Notes on plant communities at the proposed turbine construction sites are given in Table 4 and photographs of three of the four proposed or potential turbine sites are given in Figures 2 to 4. Potential turbine sites L02 and L03 include mature forest within a portion of the development footprint. In both cases the proposed turbine locations straddle the boundary between property owned by Wagner Forest Management Ltd. to the east and a private landowner to the west. In both cases the Wagner property has been heavily cut within the past 20 years and does not support significant forest communities. A 50m radius development footprint around proposed turbine site L02 reaches back into a high quality mature forest of Sugar Maple (50%), Yellow Birch (20%), Red Maple (10%), Hemlock (10%) and Balsam Fir, White Ash and Red Spruce (10%) with stand age likely exceeding 100 years. A similar development footprint around proposed turbine site L03 reaches into an intermediate to mature stand of Sugar Maple, Yellow Birch, Balsam Fir and Red Maple just beyond which is a nutrient-enriched seepage swamp dominated by mature White Ash estimated at approximately 80 years old.

Avoidance of impacts on these mature forest stands would be desirable from a natural heritage perspective.

Table 1. Vascular plants recorded in the Limerock COMFIT project footprint, with Nova Scotia S-ranks and General Status (GS) ranks (defined in Appendix 1). Taxonomy follows Kartesz (1999) – *Synthesis of the North American Flora*, CD-ROM.

Species / Family	Common Name	S-rank	GS Rank	ID Notes
Lycopodiaceae	Clubmoss Family			
<i>Lycopodium annotinum</i>	Stiff Clubmoss	S5	Secure	
<i>Lycopodium clavatum</i>	Running Clubmoss	S5	Secure	ID refers to sp. in the broad sense
<i>Lycopodium dendroideum</i>	Round-branched Tree-clubmoss	S5	Secure	
<i>Lycopodium digitatum</i>	Southern Clubmoss	S5	Secure	
Equisetaceae	Horsetail Family			
<i>Equisetum sylvaticum</i>	Woodland Horsetail	S5	Secure	
Osmundaceae	Flowering Fern Family			
<i>Osmunda cinnamomea</i>	Cinnamon Fern	S5	Secure	
<i>Osmunda claytoniana</i>	Interrupted Fern	S5	Secure	
Dennstaedtiaceae	Bracken Fern Family			
<i>Dennstaedtia punctilobula</i>	Eastern Hay-Scented Fern	S5	Secure	
<i>Pteridium aquilinum</i> var. <i>latiusculum</i>	Bracken Fern	S5	Secure	
Thelypteridaceae	Marsh-Fern Family			
<i>Phegopteris connectilis</i>	Northern Beech Fern	S5	Secure	
<i>Thelypteris noveboracensis</i>	New York Fern	S5	Secure	
Dryopteridaceae	Wood-Fern Family			
<i>Athyrium filix-femina</i> ssp. <i>angustum</i>	Common Lady Fern	S5	Secure	
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	S5	Secure	
<i>Dryopteris cristata</i>	Crested Wood Fern	S5	Secure	
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	S5	Secure	
<i>Dryopteris x uliginosa</i>	a Hybrid Wood-fern	SNA	Not Assessed	ID to sp. probable, not confirmed
<i>Gymnocarpium dryopteris</i>	Common Oak Fern	S5	Secure	
<i>Onoclea sensibilis</i>	Sensitive Fern	S5	Secure	
<i>Polystichum acrostichoides</i>	Christmas Fern	S5	Secure	
Pinaceae	Pine Family			
<i>Abies balsamea</i>	Balsam Fir	S5	Secure	
<i>Picea mariana</i>	Black Spruce	S5	Secure	
<i>Picea rubens</i>	Red Spruce	S5	Secure	
<i>Pinus strobus</i>	Eastern White Pine	S5	Secure	
<i>Tsuga canadensis</i>	Eastern Hemlock	S4S5	Secure	
Ranunculaceae	Buttercup Family			
<i>Ranunculus abortivus</i>	Kidney-Leaved Buttercup	S4S5	Secure	
<i>Ranunculus acris</i>	Common Buttercup	SNA	Exotic	
<i>Ranunculus repens</i>	Creeping Buttercup	SNA	Exotic	
Myricaceae	Bayberry Family			
<i>Morella pensylvanica</i>	Northern Bayberry	S5	Secure	
Fagaceae	Beech Family			
<i>Fagus grandifolia</i>	American Beech	S5	Secure	
<i>Quercus rubra</i>	Northern Red Oak	S5	Secure	
Betulaceae	Birch Family			
<i>Alnus incana</i> ssp. <i>rugosa</i>	Speckled Alder	S5	Secure	
<i>Alnus viridis</i> ssp. <i>crispa</i>	Green Alder	S5	Secure	
<i>Betula alleghaniensis</i>	Yellow Birch	S5	Secure	
<i>Betula papyrifera</i> var. <i>papyrifera</i>	Heart-leaved Birch	S5	Secure	
<i>Betula populifolia</i>	Gray Birch	S5	Secure	
<i>Betula x caerulea</i>	a hybrid Birch [<i>papyrifera</i> X <i>populifolia</i>]	SNA	Not Assessed	

Species / Family	Common Name	S-rank	GS Rank	ID Notes
<i>Corylus cornuta</i>	Beaked Hazel	S5	Secure	
<i>Ostrya virginiana</i>	Ironwood	S5	Secure	
Caryophyllaceae	Pink Family			
<i>Moehringia lateriflora</i>	Blunt-leaved Sandwort	S5	Secure	
<i>Stellaria graminea</i>	Little Starwort	SNA	Exotic	
Polygonaceae	Smartweed Family			
<i>Polygonum sagittatum</i>	Arrow-leaved Smartweed	S5	Secure	
<i>Rumex acetosella</i>	Sheep Sorrel	SNA	Exotic	
<i>Rumex crispus</i>	Curled Dock	SNA	Exotic	
<i>Rumex orbiculatus</i>	Greater Water Dock	S5	Secure	
Clusiaceae	St. John's-wort Family			
<i>Hypericum perforatum</i>	Common St. John's-wort	SNA	Exotic	
Violaceae	Violet Family			
<i>Viola blanda</i> var. <i>palustriformis</i>	Sweet White Violet	S5	Secure	
<i>Viola cucullata</i>	Marsh Blue Violet	S5	Secure	
<i>Viola sororia</i>	Woolly Blue Violet	S5	Secure	
Salicaceae	Willow Family			
<i>Populus grandidentata</i>	Large-toothed Aspen	S5	Secure	
<i>Populus tremuloides</i>	Trembling Aspen	S5	Secure	
<i>Salix bebbiana</i>	Bebb's Willow	S5	Secure	
<i>Salix discolor</i>	Pussy Willow	S5	Secure	
<i>Salix eriocephala</i>	Cottony Willow	S5	Secure	
<i>Salix humilis</i>	Upland Willow	S5	Secure	
<i>Salix pyrifolia</i>	Balsam Willow	S5	Secure	
Ericaceae	Heath Family			
<i>Gaultheria procumbens</i>	Eastern Teaberry	S5	Secure	
<i>Kalmia angustifolia</i>	Sheep Laurel	S5	Secure	
Monotropaceae	Indian Pipe Family			
<i>Monotropa uniflora</i>	Indian Pipe	S5	Secure	
Primulaceae	Primrose Family			
<i>Trientalis borealis</i>	Northern Starflower	S5	Secure	
Grossulariaceae	Currant Family			
<i>Ribes glandulosum</i>	Skunk Currant	S5	Secure	
<i>Ribes hirtellum</i>	Smooth Gooseberry	S5	Secure	
Rosaceae	Rose Family			
<i>Amelanchier laevis</i>	Smooth Serviceberry	S5	Secure	ID to sp. probable, not confirmed
<i>Fragaria virginiana</i>	Wild Strawberry	S5	Secure	
<i>Geum</i> sp.	Avens sp.			
<i>Potentilla simplex</i>	Old Field Cinquefoil	S5	Secure	
<i>Prunus pensylvanica</i>	Pin Cherry	S5	Secure	
<i>Prunus virginiana</i>	Chokecherry	S5	Secure	
<i>Rosa carolina</i>	Carolina Rose	S4S5	Secure	
<i>Rosa multiflora</i>	Multiflora Rose	SNA	Exotic	
<i>Rosa virginiana</i>	Virginia Rose	S5	Secure	
<i>Rubus allegheniensis</i>	Alleghaney Blackberry	S5	Secure	
<i>Rubus canadensis</i>	Smooth Blackberry	S5	Secure	
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	Red Raspberry	S5	Secure	
<i>Rubus pubescens</i>	Dwarf Red Raspberry	S5	Secure	
<i>Sorbus americana</i>	American Mountain Ash	S5	Secure	
Fabaceae	Bean Family			
<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	SNA	Exotic	
<i>Medicago lupulina</i>	Black Medick	SNA	Exotic	
<i>Melilotus officinalis</i>	Yellow Sweet-clover	SNA	Exotic	

Species / Family	Common Name	S-rank	GS Rank	ID Notes
<i>Trifolium aureum</i>	Yellow Clover	SNA	Exotic	
<i>Trifolium hybridum</i>	Alsike Clover	SNA	Exotic	
<i>Trifolium pratense</i>	Red Clover	SNA	Exotic	
<i>Trifolium repens</i>	White Clover	SNA	Exotic	
<i>Vicia cracca</i>	Tufted Vetch	SNA	Exotic	
Onagraceae	Evening-Primrose Family			
<i>Chamerion angustifolium</i>	Fireweed	S5	Secure	
<i>Epilobium ciliatum</i>	Northern Willowherb	S5	Secure	
<i>Epilobium leptophyllum</i>	Bog Willowherb	S5	Secure	
<i>Oenothera perennis</i>	Perennial Evening Primrose	S5	Secure	
Cornaceae	Dogwood Family			
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	S5	Secure	
<i>Cornus canadensis</i>	Bunchberry	S5	Secure	
<i>Cornus sericea</i>	Red Osier Dogwood	S5	Secure	
Rhamnaceae	Buckthorn Family			
<i>Frangula alnus</i>	Glossy Buckthorn	SNA	Exotic	
Aceraceae	Maple Family			
<i>Acer pensylvanicum</i>	Striped Maple	S5	Secure	
<i>Acer saccharum</i>	Sugar Maple	S5	Secure	
Oxalidaceae	Wood-Sorrel Family			
<i>Oxalis montana</i>	Common Wood Sorrel	S5	Secure	
Geraniaceae	Geranium Family			
<i>Geranium robertianum</i>	Herb Robert	S4	Secure	
Araliaceae	Sarsaparilla Family			
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5	Secure	
Apiaceae	Carrot Family			
<i>Daucus carota</i>	Queen Anne's Lace	SNA	Exotic	
Lamiaceae	Mint Family			
<i>Galeopsis tetrahit</i>	Common Hemp-nettle	SNA	Exotic	ID refers to sp. in the broad sense
<i>Lycopus uniflorus</i>	Northern Water Horehound	S5	Secure	
<i>Mentha arvensis</i>	Wild Mint	S5	Secure	
<i>Prunella vulgaris</i>	Common Self-heal	S5	Secure	
<i>Scutellaria lateriflora</i>	Mad-dog Skullcap	S5	Secure	
Plantaginaceae	Plantain Family			
<i>Plantago major</i>	Common Plantain	SNA	Exotic	
Oleaceae	Olive Family			
<i>Fraxinus americana</i>	White Ash	S5	Secure	
Scrophulariaceae	Snapdragon Family			
<i>Euphrasia</i> sp.	Eyebright sp.			
<i>Rhinanthus minor</i>	Little Yellow Rattle	S5	Secure	
<i>Veronica officinalis</i>	Common Speedwell	S5	Exotic	
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	Thyme-Leaved Speedwell	SNA	Exotic	
Rubiaceae	Bedstraw Family			
<i>Galium mollugo</i>	Smooth Bedstraw	SNA	Exotic	
<i>Galium palustre</i>	Common Marsh Bedstraw	S5	Secure	
<i>Galium trifidum</i>	Three-petaled Bedstraw	S5	Secure	ID to sp. probable, not confirmed
<i>Galium triflorum</i>	Three-flowered Bedstraw	S5	Secure	
<i>Mitchella repens</i>	Partridgeberry	S5	Secure	
Caprifoliaceae	Honeysuckle Family			
<i>Diervilla lonicera</i>	Northern Bush Honeysuckle	S5	Secure	
<i>Linnaea borealis</i> ssp. <i>americana</i>	Twinflower	S5	Secure	
<i>Lonicera canadensis</i>	Canada Fly Honeysuckle	S5	Secure	

Species / Family	Common Name	S-rank	GS Rank	ID Notes
<i>Sambucus racemosa</i>	Red Elderberry	S5	Secure	
<i>Viburnum nudum var. cassinoides</i>	Northern Wild Raisin	S5	Secure	
Asteraceae	Aster Family			
<i>Achillea millefolium</i>	Common Yarrow	S5	Secure	
<i>Anaphalis margaritacea</i>	Pearly Everlasting	S5	Secure	
<i>Bidens frondosa</i>	Devil's Beggarticks	S5	Secure	
<i>Bidens sp.</i>	Beggarticks sp.			
<i>Cirsium arvense</i>	Canada Thistle	SNA	Exotic	
<i>Doellingeria umbellata</i>	Hairy Flat-top White Aster	S5	Secure	
<i>Erigeron annuus</i>	Annual Fleabane	S4S5	Secure	
<i>Erigeron strigosus</i>	Rough Fleabane	S5	Secure	
<i>Eupatorium perfoliatum</i>	Common Boneset	S5	Secure	
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	S5	Secure	
<i>Hieracium piloselloides</i>	Tall Hawkweed	SNA	Exotic	
<i>Hieracium aurantiacum</i>	Orange Hawkweed	SNA	Exotic	
<i>Hieracium caespitosum</i>	Field Hawkweed	SNA	Exotic	
<i>Hieracium lachenalii</i>	Common Hawkweed	SNA	Exotic	
<i>Lactuca canadensis</i>	Canada Lettuce	S5	Secure	
<i>Leontodon autumnalis</i>	Fall Dandelion	SNA	Exotic	
<i>Leucanthemum vulgare</i>	Oxeye Daisy	SNA	Exotic	
<i>Matricaria discoidea</i>	Pineapple Weed	SNA	Exotic	
<i>Oclemena acuminata</i>	Whorled Wood Aster	S5	Secure	
<i>Packera schweinitziana</i>	Schweinitz's Groundsel	S4	Secure	
<i>Prenanthes trifoliolata</i>	Three-leaved Rattlesnakeroot	S5	Secure	
<i>Senecio jacobaea</i>	Tansy Ragwort	SNA	Exotic	
<i>Solidago bicolor</i>	White Goldenrod	S5	Secure	
<i>Solidago canadensis</i>	Canada Goldenrod	S5	Secure	
<i>Solidago gigantea</i>	Giant Goldenrod	S5	Secure	
<i>Solidago juncea</i>	Early Goldenrod	S5	Secure	
<i>Solidago puberula</i>	Downy Goldenrod	S5	Secure	
<i>Solidago rugosa</i>	Rough-stemmed Goldenrod	S5	Secure	
<i>Solidago uliginosa</i>	Northern Bog Goldenrod	S5	Secure	
<i>Symphotrichum lateriflorum</i>	Calico Aster	S5	Secure	
<i>Symphotrichum puniceum</i>	Purple-stemmed Aster	S5	Secure	
<i>Taraxacum officinale</i>	Common Dandelion	SNA	Exotic	
<i>Tragopogon pratensis</i>	Meadow Goatsbeard	SNA	Exotic	
<i>Tussilago farfara</i>	Coltsfoot	SNA	Exotic	
Alismataceae	Water Plantain Family			
<i>Alisma triviale</i>	Northern Water Plantain	S5	Secure	
Juncaceae	Rush Family			
<i>Juncus articulatus</i>	Jointed Rush	S5	Secure	
<i>Juncus effusus</i>	Soft Rush	S5	Secure	
<i>Juncus filiformis</i>	Thread Rush	S5	Secure	
<i>Juncus tenuis</i>	Path Rush	S5	Secure	
<i>Luzula acuminata</i>	Hairy Woodrush	S5	Secure	
<i>Luzula multiflora</i>	Common Woodrush	S5	Secure	
Cyperaceae	Sedge Family			
<i>Carex arctata</i>	Drooping Woodland Sedge	S5	Secure	
<i>Carex canescens</i>	Silvery Sedge	S5	Secure	
<i>Carex debilis var. rudgei</i>	White-edged Sedge	S5	Secure	
<i>Carex disperma</i>	Two-seeded Sedge	S5	Secure	
<i>Carex gynandra</i>	Nodding Sedge	S5	Secure	
<i>Carex intumescens</i>	Bladder Sedge	S5	Secure	
<i>Carex lurida</i>	Sallow Sedge	S5	Secure	

Species / Family	Common Name	S-rank	GS Rank	ID Notes
<i>Carex novae-angliae</i>	New England Sedge	S5	Secure	
<i>Carex pallescens</i>	Pale Sedge	S5	Secure	
<i>Carex scoparia</i>	Broom Sedge	S5	Secure	
<i>Carex stipata</i>	Awl-fruited Sedge	S5	Secure	
<i>Carex trisperma</i> var. <i>trisperma</i>	Three-seeded Sedge	S5	Secure	
<i>Eleocharis obtusa</i>	Blunt Spikerush	S5	Secure	
<i>Eleocharis tenuis</i>	Slender Spikerush	S5	Secure	
<i>Scirpus cyperinus</i>	Common Woolly Bulrush	S5	Secure	ID refers to sp. in the broad sense
<i>Scirpus hattorianus</i>	Mosquito Bulrush	S5	Secure	
<i>Scirpus microcarpus</i>	Small-fruited Bulrush	S5	Secure	
Poaceae	Grass Family			
<i>Agrostis stolonifera</i>	Creeping Bent Grass	S5	Secure	
<i>Alopecurus pratensis</i>	Meadow Foxtail	SNA	Exotic	
<i>Anthoxanthum odoratum</i>	Large Sweet Vernal Grass	SNA	Exotic	
<i>Calamagrostis canadensis</i>	Bluejoint Reed Grass	S5	Secure	
<i>Danthonia compressa</i>	Flattened Oat Grass	S5	Secure	
<i>Danthonia spicata</i>	Poverty Oat Grass	S5	Secure	
<i>Dichanthelium boreale</i>	Northern Panic Grass	S5	Secure	
<i>Festuca filiformis</i>	Hair Fescue	SNA	Exotic	
<i>Festuca heteromalla</i>	Spreading Fescue	SNA	Exotic	ID to sp. probable, not confirmed
<i>Glyceria striata</i>	Fowl Manna Grass	S5	Secure	
<i>Leersia oryzoides</i>	Rice Cut Grass	S5	Secure	
<i>Lolium arundinaceum</i>	Tall Fescue	SNA	Exotic	
<i>Muhlenbergia uniflora</i>	Bog Muhly	S5	Secure	ID to sp. probable, not confirmed
<i>Phalaris arundinacea</i>	Reed Canary Grass	S5	Secure	
<i>Phleum pratense</i>	Common Timothy	SNA	Exotic	
<i>Poa annua</i>	Annual Blue Grass	SNA	Exotic	
<i>Poa compressa</i>	Canada Blue Grass	SNA	Exotic	
<i>Poa palustris</i>	Fowl Blue Grass	S5	Secure	
<i>Poa pratensis</i>	Kentucky Blue Grass	S5	Secure	
<i>Poa saltuensis</i>	Weak Blue Grass	S4S5	Secure	
Typhaceae	Cat-tail Family			
<i>Typha latifolia</i>	Broad-leaved Cattail	S5	Secure	
Liliaceae	Lily Family			
<i>Maianthemum canadense</i>	Wild Lily-of-The-Valley	S5	Secure	
<i>Medeola virginiana</i>	Indian Cucumber Root	S5	Secure	
Iridaceae	Iris Family			
<i>Sisyrinchium montanum</i>	Mountain Blue-eyed-grass	S5	Secure	
Orchidaceae	Orchid Family			
<i>Platanthera lacera</i>	Ragged Fringed Orchid	S4S5	Secure	ID to sp. probable, not confirmed

Table 2. List of birds recorded incidentally by Sean Blaney on June 27, 2013 at the Limerock COMFIT site, with breeding evidence recorded following the methods of the Maritimes Breeding Bird Atlas. Breeding evidence with codes are: Possible breeding (Poss) - H = adult in suitable nesting habitat; S = singing male in suitable nesting habitat; Probable breeding (Prob) – A = adult exhibiting agitated behaviour. Shaded species are of conservation concern with details of occurrence given in Table 3 and locations mapped in Figure 1.

Species	Common Name	NS End. Sp. Act	S-rank	GS Rank	Breeding Evidence
<i>Charadrius vociferus</i>	Killdeer		S3S4B	Sensitive	Prob-A
<i>Zenaida macroura</i>	Mourning Dove		S5	Secure	Poss-S
<i>Colaptes auratus</i>	Northern Flicker		S5B	Secure	Poss-S
<i>Contopus cooperi</i>	Olive-sided Flycatcher	Vulnerable	S3B	At Risk	Poss-S
<i>Contopus virens</i>	Eastern Wood-Pewee	Vulnerable	S3S4B	Sensitive	Poss-S
<i>Empidonax minimus</i>	Least Flycatcher		S4B	Secure	Poss-S
<i>Certhia americana</i>	Brown Creeper		S5	Secure	Poss-H
<i>Catharus ustulatus</i>	Swainson's Thrush		S4S5B	Secure	Poss-H
<i>Catharus guttatus</i>	Hermit Thrush		S5B	Secure	Poss-S
<i>Turdus migratorius</i>	American Robin		S5B	Secure	Poss-H
<i>Bombycilla cedrorum</i>	Cedar Waxwing		S5B	Secure	Poss-H
<i>Vireo solitarius</i>	Blue-headed Vireo		S5B	Secure	Poss-S
<i>Vireo olivaceus</i>	Red-eyed Vireo		S5B	Secure	Poss-S
<i>Vermivora ruficapilla</i>	Nashville Warbler		S5B	Secure	Poss-S
<i>Parula americana</i>	Northern Parula		S5B	Secure	Poss-S
<i>Dendroica virens</i>	Black-throated Green Warbler		S4S5B	Secure	Poss-S
<i>Seiurus aurocapilla</i>	Ovenbird		S5B	Secure	Poss-S
<i>Wilsonia canadensis</i>	Canada Warbler	Endangered	S3B	At Risk	Poss-S
<i>Spizella passerina</i>	Chipping Sparrow		S4S5B	Secure	Poss-S
<i>Zonotrichia albicollis</i>	White-throated Sparrow		S5B	Secure	Poss-S
<i>Carpodacus purpureus</i>	Purple Finch		S4S5	Secure	Poss-S
<i>Carduelis tristis</i>	American Goldfinch		S5	Secure	Poss-H

Table 3. Species and communities of conservation concern recorded in the Limerock COMFIT site, June 28, 2013 with provincial status, location of observation and description of the occurrence and potential construction impacts.

Common Name	Species	S-rank & [Prov Legal Rank]	GS Rank	Latitude	Longitude	Location Uncertainty (m)	Description
white ash swamp				45.536456	-62.820515	10	~80 years old, with understory flora suggesting fairly rich soils. Probably just outside area of direct impacts of turbine L03.
Mature hardwood forest with some Hemlock				45.539990	-62.824570	10	High quality mature forest of Sugar Maple (50%), Yellow Birch (20%), Red Maple (10%), Hemlock (10%) and [Balsam Fir, White Ash and Red Spruce] (10%) with stand age likely exceeding 100 years. Within western part of potential construction footprint of Turbine 2.
Killdeer	<i>Charadrius vociferus</i>	S3S4B	Sensitive	45.543207	-62.818535	25	Agitated pair in suitable nesting habitat (old gravel pit). Potential impacts unclear; gravel extraction during nesting season could affect birds.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	S3B [Threatened]	At Risk	45.540410	-62.815160	75	Singing male in suitable nesting habitat (regenerating clearcut). Within area potentially affected by access road toward turbine site 3 from main road.
Eastern Wood-Pewee	<i>Contopus virens</i>	S3S4B [Vulnerable]	Sensitive	45.538980	-62.821370	50	Singing male in suitable nesting habitat (hardwood forest). Possibly within area of potential impact from access road construction between turbines L02 and L03.

Common Name	Species	S-rank & [Prov Legal Rank]	GS Rank	Latitude	Longitude	Location Uncertainty (m)	Description
Eastern Wood-Pewee	<i>Contopus virens</i>	S3S4B [Vulnerable]	Sensitive	45.540341	-62.824273	50	Singing male in suitable nesting habitat (mixed age mixedwood stand with numerous tall white pines). Within proposed construction footprint of turbine L02.
Canada Warbler	<i>Wilsonia canadensis</i>	S3B [Endangered]	At Risk	45.539050	-62.822310	10	singing male in suitable nesting habitat (young, dense red maple - white birch - balsam fir - white ash forest). Probably within area of potential impact from access road construction between turbines L02 and L03.

Table 4. Locations, site community descriptions and dominant understory flora of proposed turbine locations at the Limerock COMFIT site.

Turbine #	Latitude	Longitude	Site Description	Dominant Understory Species
L01	45.542383	-62.817470	Upper rim of old gravel pit at margin of 25 year old black spruce plantation with balsam fir - red maple - gray birch mixed in.	Open habitat: <i>Festuca filiformis</i> ; <i>Potentilla simplex</i> ; <i>Solidago juncea</i> ; <i>Doellingeria umbellata</i> ; <i>Anthoxanthum odoratum</i> ; <i>Fragaria virginiana</i> . Shrubby forest: <i>Oclemena acuminata</i> ; <i>Doellingeria umbellata</i> ; <i>Maianthemum canadense</i> ; <i>Solidago rugosa</i>
L02	45.540341	-62.824273	Half is dense 15-20 deciduous forest regeneration (yellow birch - white birch - pin cherry - red maple - white pine - trembling aspen); half is more mature forest of sugar maple5 - yellow birch2 - red maple1 - hemlock1 - (balsam fir - white ash - red spruce)1 reaching up to 100+ years old toward the back of the potential turbine footprint	Younger forest: <i>Dennstaedtia punctilobula</i> ; <i>Maianthemum canadense</i> ; <i>Oclemena acuminata</i> ; <i>Aralia nudicaulis</i> . Older forest: saplings - <i>Acer pensylvanicum</i> ; <i>Abies balsamea</i> ; <i>Picea rubens</i> ; <i>Pinus strobus</i> . Herbs - <i>Dryopteris intermedia</i> ; <i>Maianthemum canadense</i> ; <i>Coptis trifolia</i> ; <i>Trientalis borealis</i> ; <i>Thelypteris noveboracensis</i>
L03	45.536793	-62.819818	E half (Wagner): ~20 year old white birch - gray birch - red maple - yellow birch - white ash with canopy closure fairly open to fairly dense; W half (private): ~60 year old sugar maple - yellow birch - balsam fir - red maple	Younger E forest: <i>Doellingeria umbellata</i> ; <i>Solidago rugosa</i> ; <i>Rubus idaeus ssp. strigosus</i> . Older W forest: Saplings - <i>Abies balsamea</i> ; <i>Acer pensylvanicum</i> . Herbs: <i>Dryopteris intermedia</i> ; <i>Coptis trifolia</i> ; <i>Cornus canadensis</i> ; <i>Maianthemum canadense</i> ; <i>Mitchella repens</i> ; <i>Medeola virginiana</i> ; <i>Lycopodium annotinum</i>
L03 (alt. site)	45.539900	-62.815635	~15-20 year old open balsam fir - white birch - white spruce regeneration from clearcut	<i>Rubus idaeus ssp. strigosus</i> ; <i>Rubus canadensis</i> ; <i>Doellingeria umbellata</i> ; <i>Solidago rugosa</i> ; <i>Fragaria virginiana</i> ; <i>Danthonia spicata</i> ; <i>Solidago juncea</i> ; <i>Potentilla simplex</i> ; <i>Maianthemum canadense</i> ; <i>Hieracium lachenalii</i> . Wetter parts: <i>Carex gynandra</i> ; <i>Scirpus cyperinus</i> ; <i>Calamagrostis canadensis</i> ; <i>Polygonum sagittatum</i>

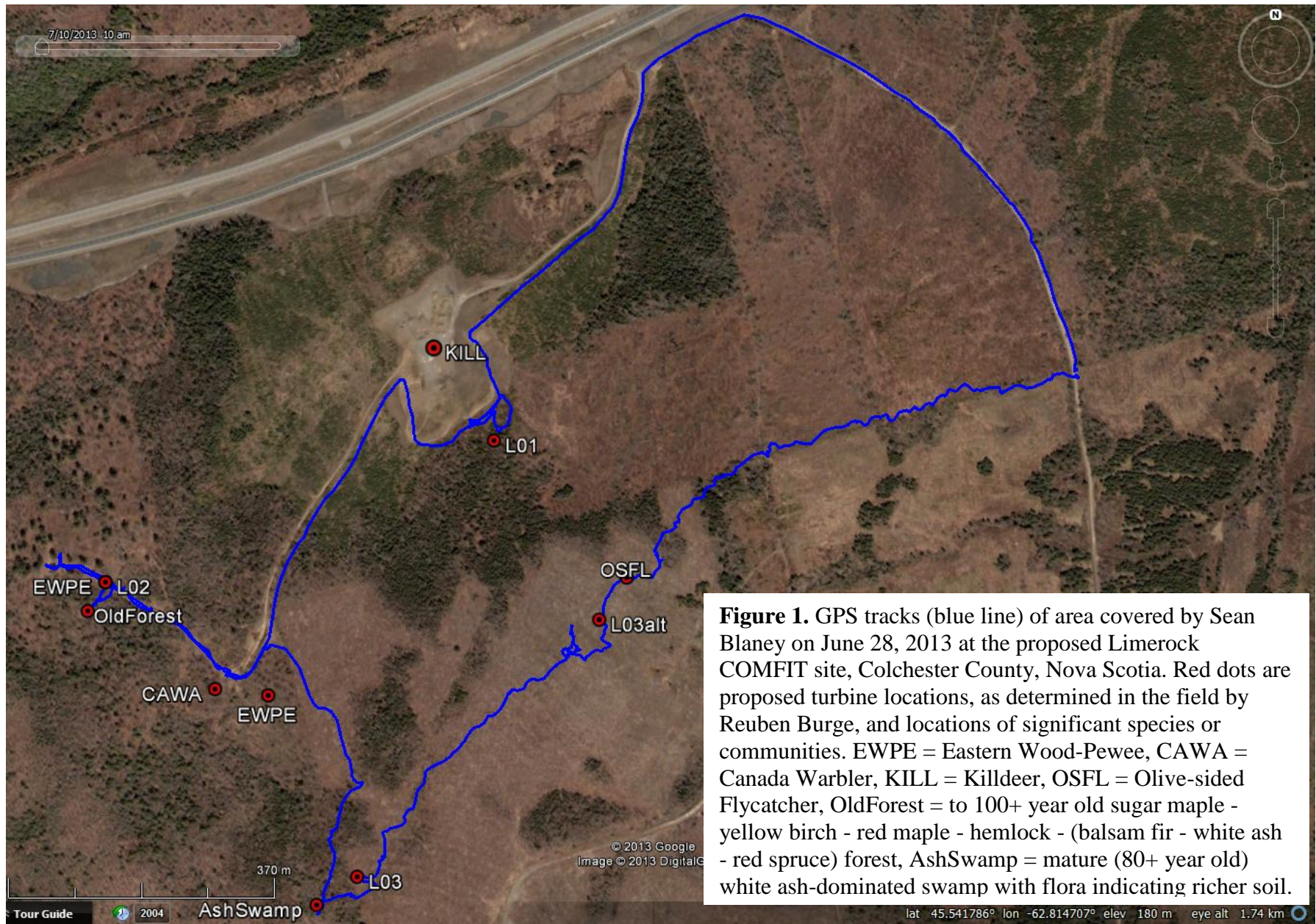


Figure 1. GPS tracks (blue line) of area covered by Sean Blaney on June 28, 2013 at the proposed Limerock COMFIT site, Colchester County, Nova Scotia. Red dots are proposed turbine locations, as determined in the field by Reuben Burge, and locations of significant species or communities. EWPE = Eastern Wood-Pewee, CAWA = Canada Warbler, KILL = Killdeer, OSFL = Olive-sided Flycatcher, OldForest = to 100+ year old sugar maple - yellow birch - red maple - hemlock - (balsam fir - white ash - red spruce) forest, AshSwamp = mature (80+ year old) white ash-dominated swamp with flora indicating richer soil.



Figure 2. Existing logging road adjacent to proposed turbine site L02 with biologists Ross Hall (foreground) and Sean Blaney (background).



Figure 3. Proposed turbine site L03, in young deciduous forest near transition to older forest.



Figure 4. Proposed turbine site L03 (alternate location) in open, young regeneration following clearcut.

Appendix 1. Definitions of Atlantic Canada Conservation Data Centre (AC CDC) provincial ranks (S-ranks) and Nova Scotia Department of Natural Resources General Status Ranks. Both sets of ranks were developed through the consensus of the Nova Scotia Flora Ranking Committee, cooperatively led by Nova Scotia Department of Natural Resources and AC CDC. The ranks reflect the best understanding of plant status at the time of ranking, but are subject to revision as new information becomes available.

Definitions of provincial (subnational) ranks (S-ranks):

- S1 Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.
- S2 Rare throughout its range in the province (usually 6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.
- S3 Uncommon throughout its range in the province (usually 21 to 100 occurrences), or found only in a restricted range, even if abundant in at some locations.
- S4 Usually widespread, fairly common throughout its range in the province (usually 100+ occurrences), and apparently secure, but the element is of long-term concern.
- S5 Demonstrably widespread, abundant, and secure throughout its range in the province, and essentially ineradicable under present conditions (100+ occurrences).
- S#S# Numeric range rank: A range between two consecutive numeric ranks. Denotes range of uncertainty about the exact rarity of the Element (e.g., S1S2).
- SNA Conservation status not applicable: The taxon is exotic, its occurrence in the jurisdiction is not confirmed, or it is a hybrid without conservation value.
- ? Is used as a qualifier indicating uncertainty: for numeric ranks, denotes inexactness, e.g., SE? denotes uncertainty of exotic status. (The ? qualifies the character immediately preceding it in the SRANK).

Definitions of National General Status Ranks (from *Wild Species: the General Status Program in Canada*, Lisa Twolan and Simon Nadeau, 2004, Canadian Wildlife Service, Ottawa)

- *Extirpated*: species that have disappeared from (or are no longer present in) a given geographic area but which occur in other areas
- *Extinct*: species that are extirpated worldwide (i.e., they no longer exist anywhere)
- *At Risk*: species for which a formal detailed risk assessment (COSEWIC assessment or provincial or territorial equivalent) has been completed, and which have been determined to be at risk of extirpation or extinction (i.e., Endangered) or are likely to become at risk of extirpation or extinction if limiting factors are not reversed (i.e., Threatened)
- *May Be At Risk*: species that may be at risk of extirpation or extinction and are, therefore, candidates for a detailed risk assessment by COSEWIC or the provincial or territorial equivalent

- *Sensitive*: species that are believed to not be at risk of extirpation or extinction but which may require special attention or protection to prevent them from becoming at risk
- *Secure*: species that are believed to not belong in the categories At Risk, May Be At Risk, Extirpated, Extinct, Accidental, or Exotic. This category includes some species that show a declining trend in numbers in Canada but which remain relatively widespread or abundant.
- *Undetermined*: species for which insufficient data, information, or knowledge is available with which to reliably evaluate their general status
- *Not Assessed*: species that are known or believed to be present in the geographic area in Canada to which the general status rank applies but which have not yet been assessed
- *Exotic*: species that have been moved beyond their natural range as a result of human activity. In the *Wild Species 2005* report, exotic species have been purposefully excluded from all other categories.
- *Accidental*: species occurring infrequently and unpredictably outside their usual range