

# E BIRD INVENTORY REPORT

# WISOKOLAMSON ENERGY PROJECT BIRD INVENTORY REPORT

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APRIL 2018





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**WSP PROJECT NO.: 161-08790-00**  
**DATE: APRIL 2018**


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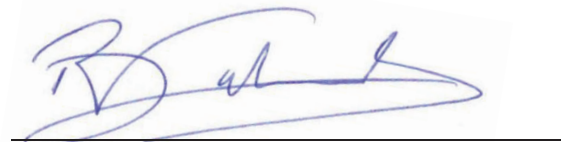
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# 1 INTRODUCTION

In Canada, wind energy development in a commercial context is one of the fastest growing sectors. New Brunswick alone is striving to meet an aggressive target of 40% of the province's electricity needs to be met by renewable energy by the year 2020 (Government of New Brunswick, 2018). Today, there is 294 MW of wind energy on the grid. New Brunswick currently has three operating wind farms but they represent some of the largest such projects in Atlantic Canada (The Maritimes Energy Association, 2018). Even though electrical generation from wind turbines has many environmental benefits, the rapid growth has raised concerns on impacts of migratory and resident wildlife populations.

The Bay of Fundy region is recognized as an important breeding and migration stop-over area for birds. Since a wind energy facility could potentially put birds at risk through collisions with wind turbines, alteration of breeding and stop-over habitats, this requires detailed and comprehensive studies to determine the risk to birds and what mitigation measures may be necessary. The components of this study include surveys of migrating birds, wintering birds, and breeding birds.

## 2 METHODS

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### 2.1 EXISTING INFORMATION

A request has been made to the Atlantic Canada Conservation Data Centre (ACCDC) in February 2018, regarding the presence of rare and endangered species or special areas into the Study Area and in a 100 km buffer around it. Christmas Bird Count data, from the Village of Riverside-Albert in Albert County for the 2010 to 2015 period, were also used to complete the list of wintering birds in the Study Area.

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### 2.2 BIRD SURVEYS

A field program was initiated in 2016 to collect data on birds in the study area, with emphasis on migrating, wintering and breeding birds. Migration surveys were conducted within the area in the fall of 2016, breeding bird surveys were performed in 2016 and 2017, and wintering bird surveys were conducted in 2017.

#### **2.2.1 FALL MIGRATION SURVEYS**

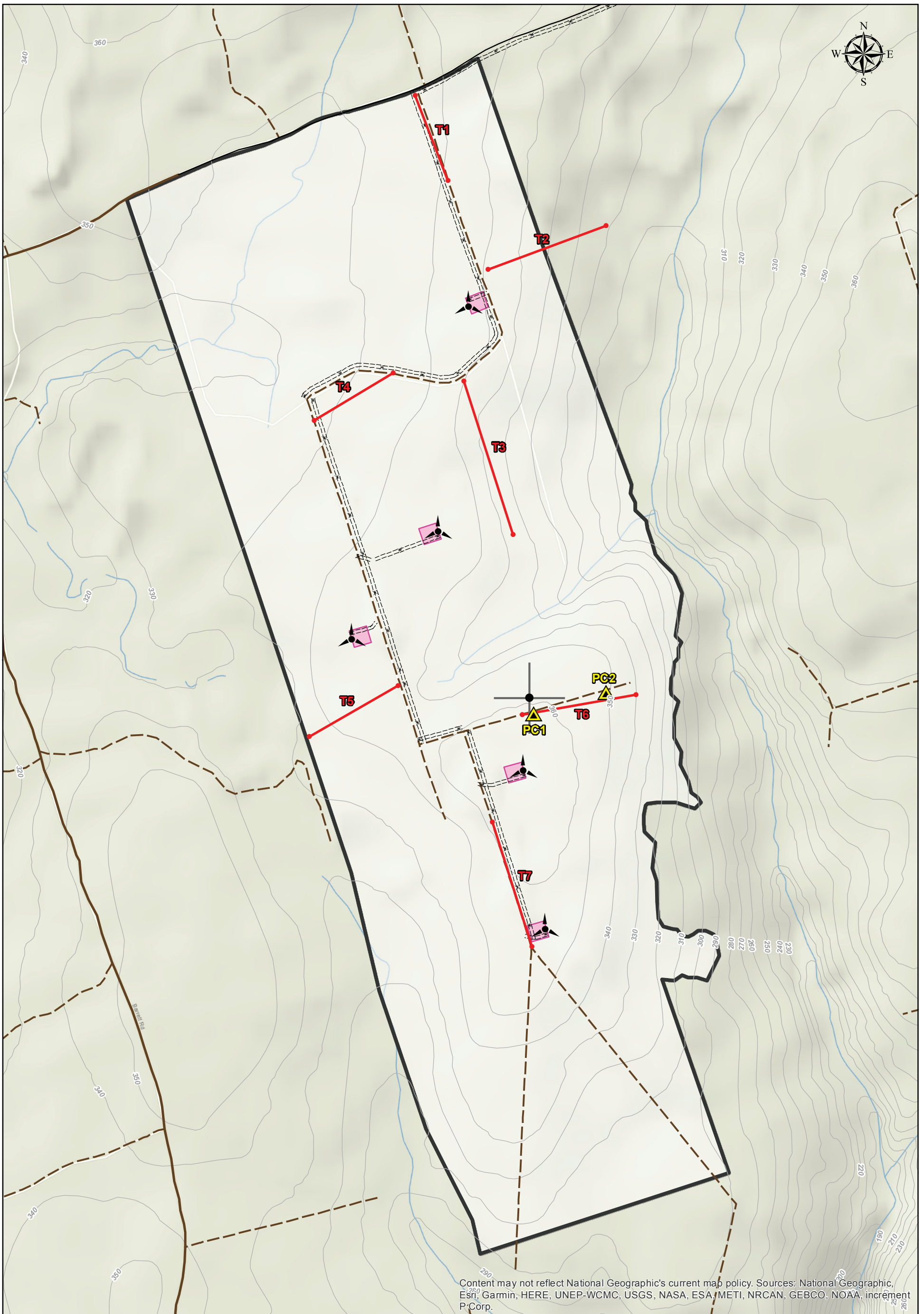
The fall migration survey has been conducted from mid-September to mid-October 2016. Seven transects (T1 to T7) and two observation stations (PC1 and PC2) were selected to reflect habitat availability in the study area. Transect and observation station locations and habitat descriptions are provided in Table 2.1 and on Figure 2.1.

Each transect was surveyed ten times from September 13 to October 20. Transects were 325 m to 580 m in length, with all birds located (distance and direction from the observer). Bird behaviour and flight height and direction were also recorded. The duration of each transect survey was of 10 minutes on average, and the observation stations surveys were of a duration a 1 hour per visit.

**Table 2.1: Transect and Observation Station Locations and Habitat Descriptions for Fall Migration Stations**

TRANSECT	COORDINATES	HABITAT DESCRIPTION
T1	45.72827 N - 64.88891 W to 45.72547 N - 64.88744 W	Mixed forest to the west (approx. 30-40 years old); coniferous plantation to the east (approx. 30 years old)
T2	45.72255 N - 64.88568 W to 45.72389 N - 64.88013 W	Mic of clear cut & partical commerical thnning (PCT); what remains is immature hardwood forest; has recently been logged
T3	45.71894 N - 64.88689 W to 45.7139 N - 64.88475 W	Across the top of slope - W is higher and E drops off significantly; PCT for 3/4 and clear cut for 1/4
T4	45.71925 N - 64.89018 W to 45.71776 N - 64.8939 W	North - mature mixed wood; S- PCT and regenerating
T5	45.70906 N - 64.89025 W to 45.70746 N - 64.89442 W	W- top of sope- hardwood regeneration changed to mature mixed woods; E - top of slope- PCT - hardwood forest
T6	45.70802 N - 64.8845 W to 45.7086 N - 64.8792 W	PCT - road curls around ridge
T7	45.70456 N - 64.88599 W to 45.70048 N - 64.88427 W	Majority is PCT - some clear cutting
PC1	45.70806 N - 64.88397 W	Open landscape to allow a free view of the surrounding airspace
PC2	45.70871 N - 64.88057 W	Open landscape to allow a free view of the surrounding airspace





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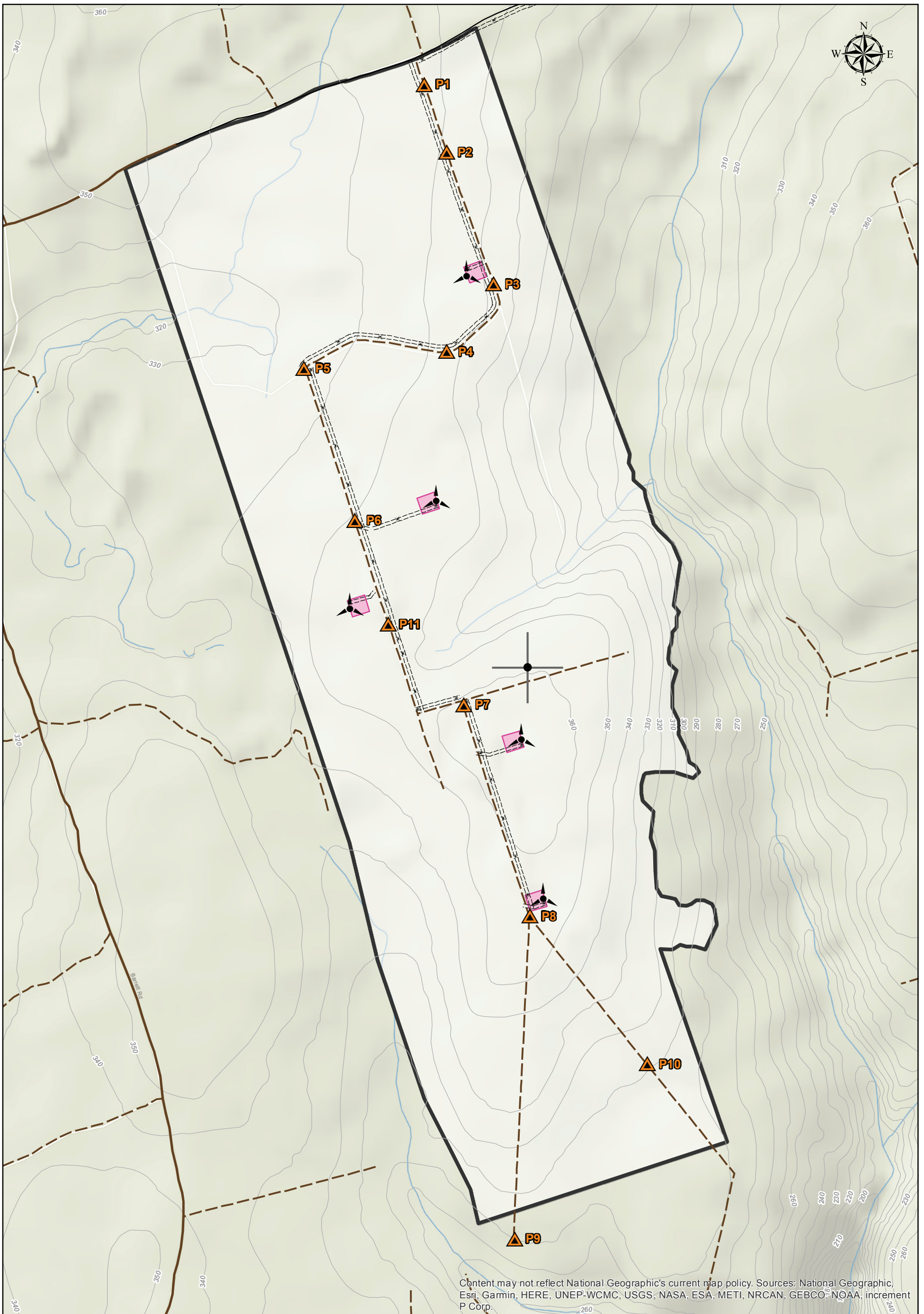
<b>PROJECT:</b> PROJECT: <b>WISOKOLAMSON ENERGY PROJECT ENVIRONMENTAL IMPACT ASSESSMENT</b>		<b>FIGURE:</b> TITLE: <b>TRANSECT AND OBSERVATION STATION LOCATIONS FOR FALL MIGRATION SURVEYS</b>		<b>DATUM:</b> NAD 83 CSRS		OBSERVATION STATIONS (FALL MIGRATION SURVEYS) SURVEY TRANSECTS (FALL MIGRATION SURVEYS) TRANSMISSION LINE ELEVATION CONTOUR (10 metre Interval) WTG ERECTION FOOTPRINT LAND LEASE AREA (1252 ha)	MET TOWER WTG
PROJECT NO.: <b>161-08790 PHASE 19</b>		FIGURE NO.: <b>2.1</b>		PROJECTION: NB STEREOGRAPHIC			
CLIENT: <b>WISOKOLAMSON ENERGY LP</b>				DRAWN BY: T. MOREHOUSE		SCALE:  1:13,000	
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## 2.2.2 BREEDING BIRD SURVEY

The breeding bird survey has been conducted June 24 and July 6 2016 and May 5 to July 3 2017. Besides 7 transects selected for the fall migration inventories, 11 point count survey stations (P1 to P11) were chosen to reflect the turbine locations and habitat availability in the study area. Station locations and habitat descriptions are provided in Table 2.2 and on Figure 2.2. The duration of each point count was ten minutes. A nocturnal nighthawk survey was also performed during the night of July 2/3, 2017.

**Table 2.2: Point Count Survey Station Locations and Habitat Descriptions for Breeding Bird Surveys**

STATION	COORDINATES	HABITAT DESCRIPTION
P1	45.72764 N - 64.8884 W	Mature mixed, coniferous dominated, dry understory
P2	45.72542 N - 64.88743 W	Mature, coniferous dominated on west; E, SE + SW is regen. Approx. 10 years old
P3	45.72109 N - 64.88537 W	West- regen (10-15 years old); S+SE mature mixed; E- regen (10-15 years old)
P4	45.71892 N - 64.88761 W	North - immature; South - mature - hard wood dominated
P5	45.71847 N - 64.89427 W	West + north - mature mixed
P6	45.71348 N - 64.89203 W	East- mature hardwood
P7	45.70741 N - 64.88715 W	Former mature hardwood stand
P8	45.70048 N - 64.88427 W	regen surrounding location, more mature farther in woods
P9	45.68998 N - 64.88529 W	Edges are regen; farther in woods is more mature
P10	45.69559 N - 64.87895 W	Patch of mature woods
P11	45.71008 N - 64.89059 W	Mature hardwood, some wood has been cleared



<b>PROJECT:</b> PROJECT: <b>WISOKOLAMSON ENERGY PROJECT ENVIRONMENTAL IMPACT ASSESSMENT</b>		<b>FIGURE:</b> TITLE: <b>POINT COUNT SURVEY STATIONS FOR BREEDING BIRDS SURVEYS</b>		<b>DATUM:</b> NAD 83 CSRS		POINT COUNT SURVEY STATIONS (BREEDING BIRD SURVEYS) TRANSMISSION LINE ELEVATION CONTOUR (10 metre Interval) WTG ERECTION FOOTPRINT LAND LEASE AREA (1252 ha)	MET TOWER WTG
PROJECT NO.: <b>161-08790 PHASE 19</b>		FIGURE NO.: <b>2.2</b>		REVISION NO.: <b>0</b>			
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## 2.2.3 WINTERING BIRDS

Wintering birds were surveyed along the same transects (T1 to T7) used for the fall migration and breeding birds surveys. These transects were visited on January 10th, February 21st and March 30th, 2017.

# 3 RESULTS

## 3.1 EXISTING INFORMATION

### 3.1.1 ATLANTIC CANADA CONSERVATION DATA CENTRE DATA

The ACCDC is part of a network of NatureServe data centres and heritage programs serving 50 states in the U.S.A, 10 provinces and 1 territory in Canada, plus several Central and South American countries. The NatureServe network is more than 30 years old and shares a common conservation data methodology.

According to the ACCDC data, the study area contains 28 553 records of 138 vertebrate, including 26 bird species of particular interest which occur within 100 km of the Project study area (Table 3.1). A dozen of them are considered threatened or endangered at the national level, as well as by the New Brunswick authorities.

**Table 3.1: Results Obtained from the Atlantic Canada Conservation Data Centre**

SPECIES SCIENTIFIC NAME	COMMON NAME	COSEWIC	SARA	PROV LEGAL PROT	# RECS	DIST KM
<i>Calidris canutus rufa</i>	Red Knot rufa ssp	Endangered		Endangered	524	11.2 ± 2.0
<i>Charadrius melodus melodus</i>	Piping Plover melodus ssp	Endangered	Endangered	Endangered	327	10.8 ± 7.0
<i>Sterna dougallii</i>	Roseate Tern	Endangered	Endangered	Endangered	1	54.7 ± 0.0
<i>Buteo lineatus</i>	Red-shouldered Hawk	Not At Risk	Special Concern		27	10.5 ± 0.0
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Not At Risk		Endangered	1286	5.9 ± 0.0
<i>Asio flammeus</i>	Short-eared Owl	Special Concern	Special Concern	Special Concern	37	7.7 ± 7.0
<i>Bucephala islandica</i> (Eastern pop.)	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	104	36.7 ± 83.0
<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Special Concern			358	7.7 ± 7.0
<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	723	2.4 ± 7.0
<i>Coturnicops noveboracensis</i>	Yellow Rail	Special Concern	Special Concern	Special Concern	6	22.3 ± 3.0
<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Special Concern	103	2.4 ± 7.0
<i>Falco peregrinus</i> pop. 1	Peregrine Falcon - anatum/tundrus	Special Concern	Special Concern	Endangered	378	0.7 ± 5.0
<i>Histrionicus histrionicus</i> pop. 1	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	2	69.2 ± 1.0
<i>Phalaropus lobatus</i>	Red-necked Phalarope	Special Concern			19	11.5 ± 0.0
<i>Caprimulgus vociferus</i>	Whip-Poor-Will	Threatened	Threatened	Threatened	18	12.4 ± 7.0
<i>Catharus bicknelli</i>	Bicknell's Thrush	Threatened	Special Concern	Threatened	9	18.6 ± 11.0
<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	427	5.6 ± 0.0
<i>Chordeiles minor</i>	Common Nighthawk	Threatened	Threatened	Threatened	285	2.4 ± 7.0
<i>Contopus cooperi</i>	Olive-sided Flycatcher	Threatened	Threatened	Threatened	522	2.4 ± 7.0

SPECIES SCIENTIFIC NAME	COMMON NAME	COSEWIC	SARA	PROV LEGAL PROT	# RECS	DIST KM
<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	Threatened	1337	6.2 ± 0.0
<i>Hirundo rustica</i>	Barn Swallow	Threatened	Threatened	Threatened	1266	2.4 ± 7.0
<i>Hylocichla mustelina</i>	Wood Thrush	Threatened	Threatened	Threatened	95	13.0 ± 0.0
<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Threatened	Threatened	16	5.7 ± 0.0
<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened		656	7.7 ± 7.0
<i>Sturnella magna</i>	Eastern Meadowlark	Threatened	Threatened	Threatened	52	13.5 ± 0.0
<i>Wilsonia canadensis</i>	Canada Warbler	Threatened	Threatened	Threatened	698	1.6 ± 0.0

### 3.1.2 CHRISTMAS BIRD COUNTS

According to the Christmas Bird Count data, more than 80 species occur in the study area during winter (Table 3.2).

**Table 3.2: Results Obtained from Christmas Bird Count Surveys for the Village of Riverside-Albert in Alberta County (2010 to 2015)**

SPECIES SCIENTIFIC NAME	COMMON NAME	SPECIES SCIENTIFIC NAME	COMMON NAME
<i>Acanthis flammea</i>	Common Redpoll	<i>Larus argentatus</i>	Herring Gull
<i>Acanthis hornemanni</i>	Hoary Redpoll	<i>Larus delawarensis</i>	Ring-billed Gull
<i>Accipiter cooperii</i>	Cooper's Hawk	<i>Larus glaucoides</i>	Iceland Gull
<i>Accipiter gentilis</i>	Northern Goshawk	<i>Larus marinus</i>	Great Black-backed Gull
<i>Accipiter striatus</i>	Sharp-shinned Hawk	<i>Loxia curvirostra</i>	Red Crossbill
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	<i>Loxia leucoptera</i>	White-winged Crossbill
<i>Anas acuta</i>	Northern Pintail	<i>Melanerpes carolinus</i>	Red-bellied Woodpecker
<i>Anas platyrhynchos</i>	Mallard	<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker
<i>Anas rubripes</i>	American Black Duck	<i>Melanitta americana</i>	Black Scoter
<i>Anatinae sp.</i>	Duck sp.	<i>Melospiza georgiana</i>	Swamp Sparrow
<i>Ardea Herodias</i>	Great Blue Heron	<i>Melospiza melodia</i>	Song Sparrow
<i>Bombycilla cedrorum</i>	Cedar Waxwing	<i>Mergellus/Lophodytes/Mergus sp.</i>	Merganser sp.
<i>Bombycilla garrulus</i>	Bohemian Waxwing	<i>Mergus merganser</i>	Common Merganser
<i>Bombycilla garrulus/cedrorum</i>	Bohemian/Cedar Waxwing	<i>Molothrus ater</i>	Brown-headed Cowbird
<i>Bonasa umbellus</i>	Ruffed Grouse	<i>Passer domesticus</i>	House Sparrow
<i>Branta canadensis</i>	Canada Goose	<i>Passerculus sandwichensis</i>	Savannah Sparrow
<i>Bubo virginianus</i>	Great Horned Owl	<i>Passerella iliaca</i>	Fox Sparrow
<i>Bucephala albeola</i>	Bufflehead	<i>Perisoreus canadensis</i>	Gray Jay
<i>Bucephala clangula</i>	Common Goldeneye	<i>Phasianus colchicus</i>	Ring-necked Pheasant
<i>Buteo jamaicensis</i>	Red-tailed Hawk	<i>Picoides pubescens</i>	Downy Woodpecker
<i>Buteo lagopus</i>	Rough-legged Hawk	<i>Picoides sp.</i>	Picoides sp.
<i>Cardinalis cardinalis</i>	Northern Cardinal	<i>Picoides villosus</i>	Hairy Woodpecker
<i>Certhia americana</i>	Brown Creeper	<i>Pinicola enucleator</i>	Pine Grosbeak
<i>Circus cyaneus</i>	Northern Harrier	<i>Pipilo erythrophthalmus</i>	Eastern Towhee
<i>Coccothraustes vespertinus</i>	Evening Grosbeak	<i>Plectrophenax nivalis</i>	Snow Bunting
<i>Colaptes auratus auratus/luteus</i>	Northern Flicker	<i>Poecile atricapillus</i>	Black-capped Chickadee
<i>Columba livia</i>	Rock Pigeon	<i>Poecile hudsonicus</i>	Boreal Chickadee
<i>Corvidae sp.</i>	Jay sp.	<i>Quiscalus quiscula</i>	Common Grackle
<i>Corvus brachyrhynchos</i>	American Crow	<i>Regulus calendula</i>	Ruby-crowned Kinglet
<i>Corvus corax</i>	Common Raven	<i>Regulus satrapa</i>	Golden-crowned Kinglet

SPECIES SCIENTIFIC NAME	COMMON NAME
<i>Cyanocitta garrulus</i>	Blue Jay
<i>Dryocopus pileatus</i>	Pileated Woodpecker
<i>Emberizidae sp.</i>	Sparrow sp.
<i>Euphagus carolinus</i>	Rusty Blackbird
<i>Falco columbarius</i>	Merlin
<i>Fringillidae sp.</i>	Finch sp.
<i>Gavia immer</i>	Common Loon
<i>Gavia stellate</i>	Red-throated Loon
<i>Haemorhous purpureus</i>	Purple Finch
<i>Haliaeetus leucocephalus</i>	Bald Eagle
<i>Icterus galbula</i>	Baltimore Oriole
<i>Junco hyemalis hyemalis/carolinensis</i>	Dark-eyed Junco
<i>Lanius excubitor</i>	Northern Shrike
<i>Larinae sp.</i>	Gull sp.

SPECIES SCIENTIFIC NAME	COMMON NAME
<i>Sitta canadensis</i>	Red-breasted Nuthatch
<i>Sitta carolinensis</i>	White-breasted Nuthatch
<i>Somateria mollissima</i>	Common Eider
<i>Spinus pinus</i>	Pine Siskin
<i>Spinus tritis</i>	American Goldfinch
<i>Spiza americana</i>	Dickcissel
<i>Spizella passerina</i>	Chipping Sparrow
<i>Spizelloides arborea</i>	American Tree Sparrow
<i>Strix varia</i>	Barred Owl
<i>Sturnus vulgaris</i>	European Starling
<i>Turdus migratorius</i>	American Robin
<i>Zenaida macroura</i>	Mourning Dove
<i>Zonotrichia albicollis</i>	White-throated Sparrow
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow

## 3.2 FALL MIGRATION SURVEYS

The fall migration survey has been conducted from September 13 to October 20, 2016. 29 species, comprising 214 individual birds at heights generally less than 100 m, were observed at the project site (Table 3.3). Dark-eye Junco (*Junco hyemalis*) and Black-capped chickadee (*Poecile atricapillus*) were the most common species among the surveyed stations. Transects T4, T5 and T6 were the richest, with 14 to 19 species each, while transect T3 shows only 3 bird species.

**Table 3.3: Fall migration surveys (13 September to 20 October 2016)**

SPECIES		STATION									NUMBER OF STATION WHERE OBSERVED
SCIENTIFIC NAME	COMMON NAME	PC1	PC2	T1	T2	T3	T4	T5	T6	T7	
<i>Bombycilla cedrorum</i>	Cedar Waxwing	•							•		2
<i>Cathartes aura</i>	Turkey Vulture					•					1
<i>Corvus brachyrhynchos</i>	American Crow	•		•	•	•	•	•		•	7
<i>Corvus corax</i>	Common Raven	•									1
<i>Cyanocitta cristata</i>	Blue Jay	•					•		•	•	4
<i>Dendroica coronata</i>	Yellow-rumped Warbler		•						•		2
<i>Dendroica fusca</i>	Blackburnian Warbler							•			1
<i>Dendroica magnolia</i>	Magnolia Warbler						•	•	•		3
<i>Dendroica virens</i>	Black-throated Green Warbler			•			•	•	•	•	5
<i>Falci pennis canadensis</i>	Spruce Grouse	•						•		•	3
<i>Geothlypis trichas</i>	Common Yellowthroat							•	•		2
<i>Junco hyemalis</i>	Dark-eyed Junco	•	•	•	•	•	•	•	•	•	9
<i>Melospiza melodia</i>	Song Sparrow								•		1

SPECIES		STATION									NUMBER OF STATION WHERE OBSERVED
SCIENTIFIC NAME	COMMON NAME	PC1	PC2	T1	T2	T3	T4	T5	T6	T7	
<i>Mniotilta varia</i>	Black-and-white Warbler		•		•		•	•	•	•	6
<i>Parula americana</i>	Northern Parula								•		1
<i>Parulidae sp.</i>	Unidentified Warbler								•		1
<i>Perisoreus canadensis</i>	Gray Jay	•				•	•				3
<i>Picoides pubescens</i>	Downy Woodpecker					•		•			2
<i>Poecile atricapillus</i>	Black-capped Chickadee	•		•	•	•	•	•	•	•	8
<i>Regulus calendula</i>	Ruby-crowned Kinglet							•			1
<i>Regulus satrapa</i>	Golden-crowned Kinglet			•	•	•	•	•	•	•	7
<i>Setophaga ruticilla</i>	American Redstart						•	•	•		3
<i>Sitta canadensis</i>	Red-breasted Nuthatch			•			•				2
<i>Spinus tristis</i>	American Goldfinch							•	•		2
<i>Turdus migratorius</i>	American Robin			•	•	•	•	•	•	•	7
<i>Vermivora ruficapilla</i>	Nashville Warbler						•	•			2
<i>Vireo olivaceus</i>	Red-eyed Vireo	•						•	•	•	4
<i>Vireo solitarius</i>	Blue-headed Vireo							•			1
<i>Zonotrichia albicollis</i>	White-throated Sparrow			•			•	•	•	•	5
<b>Species diversity (n)</b>		<b>9</b>	<b>3</b>	<b>8</b>	<b>6</b>	<b>8</b>	<b>14</b>	<b>19</b>	<b>18</b>	<b>11</b>	

### 3.3 BREEDING BIRD SURVEY

The breeding bird survey has been conducted June 24 and July 6 (point count stations) in 2016, and May 5 to July x (transects) in 2017. Including the Common Nighthawk (*Chordeiles minor*), the Eastern Wood-Pewee (*Contopus virens*), and Evening Grosbeak (*Coccothraustes vespertinus*), which were observed out of our survey stations, 55 bird species, comprising 227 individual birds, were observed in the study area during the 2016 and 2017 breeding seasons (Table 3.3). American Robin (*Turdus migratorius*), White-throated sparrow (*Zonotrichia albicollis*), and Dark-eye Junco were the most common species among the surveyed stations. Point count stations P2 and P9 were the richest, with 24 and 23 species each, while transect T6 shows only 5 bird species.

Table 3.2: Breeding Bird Surveys (June 24 and July 6 2016 (•), and May 5 to July 3 2017 (•))

SPECIES		STATIONS											TRANSECTS							# STATIONS WHERE OBSERVED		
SCIENTIFIC NAME	COMMON NAME	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	T1	T2	T3	T4	T5	T6	T7		W-MET	
<i>Bonasa umbellus</i>	Ruffed Grouse							•					•									2
<i>Buteo jamaicensis</i>	Red-tailed Hawk																				•	1
<i>Carpodacus purpureus</i>	Purple Finch		•				•			•		•										4
<i>Cathartes aura</i>	Turkey Vulture																	•				1
<i>Catharus guttatus</i>	Hermit Thrush	••		••	••	•	••	•	•	••	•				•	•	•				•	13
<i>Catharus ustulatus</i>	Swainson's Thrush	•	•	••		••	•	•				•		•	•	•		•	•			12
<i>Coccothraustes vespertinus</i>	Evening Grosbeak		•																			1
<i>Colaptes auratus</i>	Northern Flicker			••				•						•							•	4
<i>Contopus virens</i>	Eastern Wood-Pewee										•											1
<i>Corvus corax</i>	Common Raven		•			•								•							•	4
<i>Cyanocitta cristata</i>	Blue Jay	•				••															•	3
<i>Dendroica caerulescens</i>	Black-throated Blue Warbler				•			•		•	•	•										5
<i>Dendroica castanea</i>	Bay-breasted Warbler							•														1
<i>Dendroica coronata</i>	Yellow-rumped Warbler	••			•	•	•			•		•		•		•	•		•	•	•	11
<i>Dendroica fusca</i>	Blackburnian Warbler									•	•										•	3
<i>Dendroica magnolia</i>	Magnolia Warbler	••	••	•		•				••	••		•	•							•	9
<i>Dendroica palmarum</i>	Palm Warbler	•																				1
<i>Dendroica pensylvanica</i>	Chestnut-sided Warbler		••	••				•	•	•												5
<i>Dendroica virens</i>	Black-throated Green Warbler	••	••	•	•	••	•			••	••	••	•		•	•					•	13
<i>Empidonax alnorum</i>	Alder Flycatcher	•	•						•	•												4
<i>Empidonax minimus</i>	Least Flycatcher			•	•							••				•					•	5



SPECIES		STATIONS											TRANSECTS							# STATIONS WHERE OBSERVED		
SCIENTIFIC NAME	COMMON NAME	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	T1	T2	T3	T4	T5	T6	T7		W-MET	
<i>Gavia immer</i>	Common Loon							•														1
<i>Geothlypis trichas</i>	Common Yellowthroat		••	•				•	••	••	••	•									•	8
<i>Junco hyemalis</i>	Dark-eyed Junco	•	•	•	••		•		•	••	••	•		•		•	•		•	•		14
<i>Melospiza melodia</i>	Song Sparrow						•															1
<i>Mniotilta varia</i>	Black-and-white Warbler		•	•	••	•	•		•	•				•	•					•		10
<i>Oporornis philadelphia</i>	Mourning Warbler			•	•	•				••												4
<i>Parula americana</i>	Northern Parula			•	•			•		•										•		5
<i>Perisoreus canadensis</i>	Gray Jay	•																				1
<i>Picidae sp.</i>	Woodpecker sp.			•				•	•													3
<i>Picoides pubescens</i>	Downy Woodpecker				•						•	•										3
<i>Picoides villosus</i>	Harry Woodpecker		•			•			•													3
<i>Poecile atricapillus</i>	Black-capped Chickadee		•			•	••	•			•									•		6
<i>Poecile hudsonicus</i>	Boreal Chickadee	•																				1
<i>Common Grackle</i>	Common Grackle		•																			1
<i>Regulus calendula</i>	Ruby-crowned Kinglet	••	•			•								•								4
<i>Regulus satrapa</i>	Golden-crowned Kinglet	••	•								••		•				•					5
<i>Scolopax minor</i>	American Woodcock																				•	1
<i>Seiurus aurocapilla</i>	Ovenbird		•	•	••	••	••	••	•	••	••	••				•		•	•	•		14
<i>Setophaga ruticilla</i>	American Redstart		•	••	•	••	••	••	•	•		•		•							•	11
<i>Sitta canadensis</i>	Red-breasted Nuthatch	••	•		•				•	•	••					•						7
<i>Sitta carolinensis</i>	White-breasted Nuthatch							•														1

SPECIES		STATIONS											TRANSECTS							# STATIONS WHERE OBSERVED				
SCIENTIFIC NAME	COMMON NAME	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	T1	T2	T3	T4	T5	T6	T7		W-MET			
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker									•														1
<i>Spinus pinus</i>	Pine Siskin	•																						1
<i>Spinus tristis</i>	American Goldfinch				•			•																2
<i>Troglodytes hiemalis</i>	Winter Wren		••					•	•	•	•				•				•			•		8
<i>Turdus migratorius</i>	American Robin	••	•	••	••	••	••	••	••	••	•	••	•	•	•	•	•	•	•	•	•	•	•	19
<i>Tyrannidae sp.</i>	Flycatcher sp.								•															1
<i>Vermivora ruficapilla</i>	Nashville Warbler		•												•									2
<i>Vireo olivaceus</i>	Red-eyed Vireo			•	•	•	••	••	••	•	•	•				•	•			•		•		13
<i>Vireo solitarius</i>	Blue-headed Vireo	••	•		•	••	•			•	•													7
<i>Zonotrichia albicollis</i>	White-throated Sparrow	••	••	••		•		••	••	••	••	•	•	•	•				•	•		•		15
<b>Species diversity (n)</b>		<b>18</b>	<b>24</b>	<b>18</b>	<b>17</b>	<b>18</b>	<b>14</b>	<b>20</b>	<b>16</b>	<b>23</b>	<b>18</b>	<b>14</b>	<b>7</b>	<b>12</b>	<b>6</b>	<b>10</b>	<b>7</b>	<b>5</b>	<b>16</b>	<b>13</b>				

### 3.4 WINTERING BIRDS SURVEY

Wintering birds surveys were performed on January 10th, February 21st and March 30th, 2017. Only 10 bird species were observed in the study area during the 2017 winter surveys (Table 3.4). American Crow (*Corvus brachyrhynchos*), White-throated sparrow (*Zonotrichia albicollis*), Black-capped Chickadee, and Red-breasted Nuthatch (*Sitta canadensis*) were the most common species among the surveyed stations. Transect T1 was the richest, with 6 species, while transect T6 shows only one bird species.

**Table 3.3: Winter surveys (2017 season)**

SPECIES		TRANSECTS						
Scientific Name	Common Name	T1	T2	T3	T4	T5	T6	T7
<i>Accipitridae sp.</i>	Hawk sp.		•					
<i>Aves sp.</i>	Unknown species	•						•
<i>Corvus brachyrhynchos</i>	American Crow	•	•				•	
<i>Larinae sp.</i>	Gull sp.					•		
<i>Larus marinus</i>	Great Black-backed Gull							•
<i>Perisoreus canadensis</i>	Gray Jay	•						•
<i>Picoides pubescens</i>	Downy Woodpecker		•	•				
<i>Poecile atricapillus</i>	Black-capped Chickadee	•		•	•			
<i>Sitta canadensis</i>	Red-breasted Nuthatch	•			•	•		
<i>Sitta sp.</i>	Nuthatch	•			•			
<b>Species diversity (n)</b>								

## 4 GENERAL DISCUSSION

Although the fact that the Bay of Fundy region is recognized as an important breeding and migration stop-over area for birds, and that the ACCDC data report the presence of 26 bird species of particular interest within 100 km of the Project study area, no important concentration of bird was detected during the field surveys, whether it is during winter, summer or autumn. Only few birds of prey were noted and, as well as three articular status or special concern bird species, namely the Common Nighthawk, the Eastern Wood-pewee, and the Evening Grosbeak.

Common Nighthawk, which two individuals were observed during the field surveys, prefers open or rocky areas as roosting and nesting locations. It is likely that this species is utilizing exposed forest floors or the logging roads themselves as roost or nest locations. These birds were observed during the breeding season, indicating that they are “probable” breeders in the Study area. Eastern Wood-pewee, which was noted only once during the field inventories, is a known associate of mid-aged to mature hardwood or mixed-wood forests. Given that the species was detected during the breeding season, Eastern Wood-pewee should be considered a “possible” breeder within the Study area.

The Evening Grosbeak is for its part an erratic species, what means that its spatial distribution varies considerably from one year to the next. Given it was noted only once during the field inventories, is a known associate of mid-aged to mature hardwood or mixed-wood forests, but it may take advantage of other habitats. The Evening Grosbeak’s spatial distribution varies considerably from one year to the next, therefore may not be a regular breeder within the Project area.

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