

**Final Report**

**Pre-Construction Monitoring  
Winter and Breeding Birds  
Sable Wind Project**



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This document reports on the results of the pre-construction winter and breeding bird surveys conducted for the Sable Wind Project. The proposed wind farm is located on the Canso Peninsula, an area known for bird concentrations during the migration period (McLaren 2012). Thus pre-construction studies focused on the spring and autumn migration periods. The results of the migration studies are reported separately (Kearney 2013a, c, b, Lightfoot and Taylor 2013b, a).

## **Winter Birds**

### *Methods*

As with the migration studies, the study area was divided into a Project Area and a Control Area. Two survey methods were used to document the birds using the study area in winter: a generalized area search and a standardized area search.

The general area search involved recording any birds seen while walking or driving through the study area.

The standardized area search consisted of walked transects. All birds seen or heard were recorded by their distance from the observer. These distances were placed within four categories: less than 50 meters, 50-100 meters, greater than 100 meters, and flying overhead. Transects were of varying length and specific to one of the two major habitat types in the study area: coniferous coastal forest and mixedwood/brush forest. The minimum transect length was 187 meters and the maximum was 1199 meters. The average length of 13 transects was 429 meters.

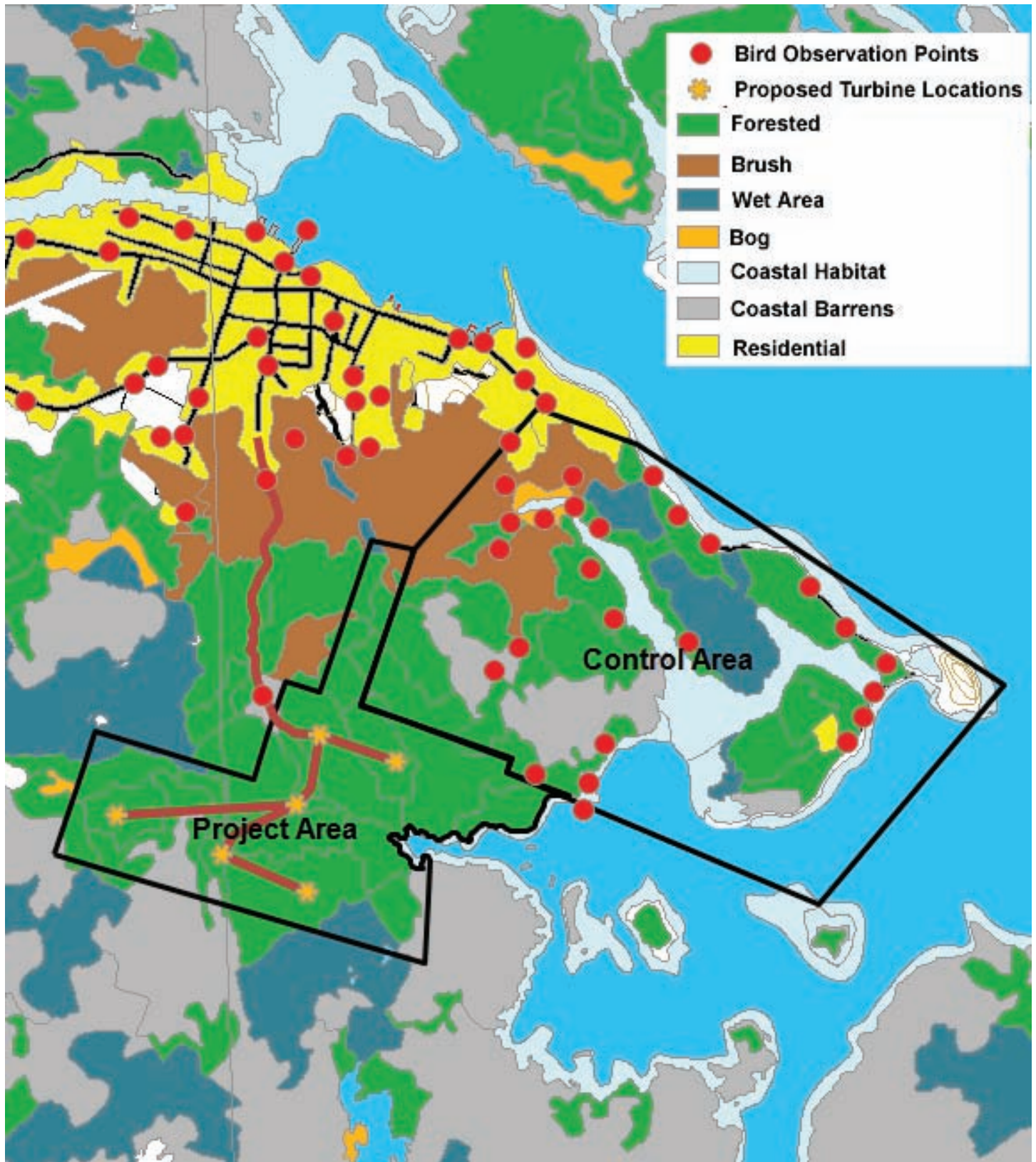
Winter surveys of both types were conducted on nine days from 11 November 2012 to 7 March 2013.

### *Results*

Figure 1 shows the observation points for all the birds seen on the general area searches and the standardized area searches. Due to the remote location of the Project Area and snow cover, surveys were limited to its edges. Birds were observed more frequently in the Town of Canso in association with residential bird feeders and residential and commercial waste products.

Table 1 lists the bird species seen during each month from November 2012 to March 2013. Any marine birds, identifiable from shore, are included in the list. Table 2 shows the total number of birds by species and their density as determined by the standardized area searches. Densities were based on the number of birds seen or heard within 50 meters of the observer along the length of the transect. The total densities were similar in the coastal coniferous forest (0.51 birds/hectare) and the mixedwood/brush forest (0.55 birds/hectare). The American Crow was the most abundant bird in the coniferous forest (0.21 crows/hectare) while the Black-capped Chickadee was the most common bird in the mixedwood/brush forest (0.38 chickadees/hectare).

Figure 1: Map of Winter Bird Observation Points





**Table 1: Bird Species Seen by Month near Canso during the Winter of 2012-2013**

	November	December	January	February	March
Snow Goose			X		
American Black Duck		X	X		X
Mallard			X		
Common Eider	X	X	X	X	X
Surf Scoter				X	
White-winged Scoter			X	X	
Black Scoter			X		
Long-tailed Duck		X	X		
Bufflehead			X		
Common Goldeneye			X	X	
Red-breasted Merganser	X		X		X
Ruddy Duck	X				
Ruffed Grouse	X				
Common Loon			X	X	X
Horned Grebe			X	X	
Red-necked Grebe			X	X	
Northern Gannet	X				
Great Cormorant		X	X	X	
Great Egret	X				
Great Blue Heron	X				
Turkey Vulture	X				
Greater Yellowlegs	X				
Black-headed Gull		X			
Bonaparte's Gull	X				
Herring Gull	X	X	X	X	X
Iceland Gull	X	X	X	X	X
Great Black-backed Gull	X	X	X	X	X
Dovekie		X			
Thick-billed Murre				X	
Black Guillemot	X	X	X	X	
Rock Pigeon	X	X	X	X	X
Mourning Dove		X	X		
Hairy Woodpecker	X				
Norther Flicker	X		X		
Gray Jay	X				
Blue Jay	X	X	X	X	X
American Crow	X	X	X	X	X
Common Raven	X		X		
Horned Lark			X		
Black-capped Chickadee	X	X	X	X	X
Boreal Chickadee	X	X		X	
Golden-crowned Kinglet	X	X			
Northern Mockingbird			X		
European Starling	X	X	X	X	X
Yellow-rumped Warbler	X				
Pine Warbler	X				
Palm Warbler		X			
American Tree Sparrow					X
Song Sparrow	X	X	X	X	
Snow Bunting				X	
White-winged Crossbill	X				
Common Redpoll		X	X		X
House Sparrow	X	X	X	X	X

**Table 2: Total Birds and Density per Hectare of Land by Habitat during Winter of 2012-2013 in Study Area**

Species	Coastal Coniferous		Mixedwood/Brush	
	Total	Density/ha land	Total	Density/ha land
American Black Duck			1	
Common Eider	1			
Long-tailed Duck	2			
Common Goldeneye			2	
Red-breasted Merganser	3			
Common Loon			1	
Great Cormorant	1			
Black-headed Gull	1			
Herring Gull	1		1	
Iceland Gull	2			
Great Black-backed Gull			1	
Black Guillemot	1			
American Crow	15	0.21	2	0.05
Black-capped Chickadee	5	0.13	7	0.38
Boreal Chickadee	2	0.05		
Golden-crowned Kinglet	1	0.03		
Palm Warbler	1	0.03		
American Tree Sparrow	1	0.03		
Song Sparrow	1	0.03		
Snow Bunting			17	0.11
Common Redpoll	1			
Total	39	0.51	32	0.55

### *Species of Conservation Concern*

Table 3 provides an annotated list of the species of conservation concern observed in the study area. The rankings are those of the Nova Scotia Department of Natural Resources (NSDNR), the Species at Risk Act (SARA), and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

### *Discussion*

There are very few birds in the woodlands surrounding the Project Area in winter. These findings are consistent with those reported in an earlier baseline study (AMEC and Barrington Wind Energy Ltd. 2006). While surveys were not conducted deeper into the Project Area due to winter conditions, observations around the periphery of the Project Area indicate that similar conditions exist there.

**Table 3: Species of Conservation Concern during Winter of 2012-2013**

Species	NSDNR Rank	SARA Schedule 1	COSEWIC Listed	COSEWIC Priority Candidates	Annotations
Common Loon	May be at Risk				General area searches, January - March; 1 on transect 16 February
Great Cormorant	Sensitive				General area searches, December to February; 1 on transect 23 December
Turkey Vulture	Sensitive				General area searches, November
Greater Yellowlegs	Sensitive				General area searches, November
Gray Jay	Sensitive				General area searches, November
Boreal Chickadee	Sensitive				General area searches, November, December, and February; 2 on transect 23 December
Golden-crowned Kinglet	Sensitive				General area searches, November - December; 1 on transect 23 December

## Breeding Birds

### *Methods*

During the spring stop-over transects, early breeding birds were recorded along with migrating birds. The transects were 1500 meters in length and all birds observed were classified into one of four distance categories from the observer; <50 meters, 50-100 meters, >100 meters, and flying overhead. Two transects were located in the Project Area and two in the Control Area. Further details with maps can be found in Kearney (2013a). Early breeding birds are here defined as those beginning their breeding activities before the first week of May.

During peak breeding season, nesting birds were surveyed by the use of point counts. All birds seen or heard by the observer were recorded and classified into four distance categories. These are the same as for the transects noted above. Each point count was classified into one of 6 habitat types. These are:

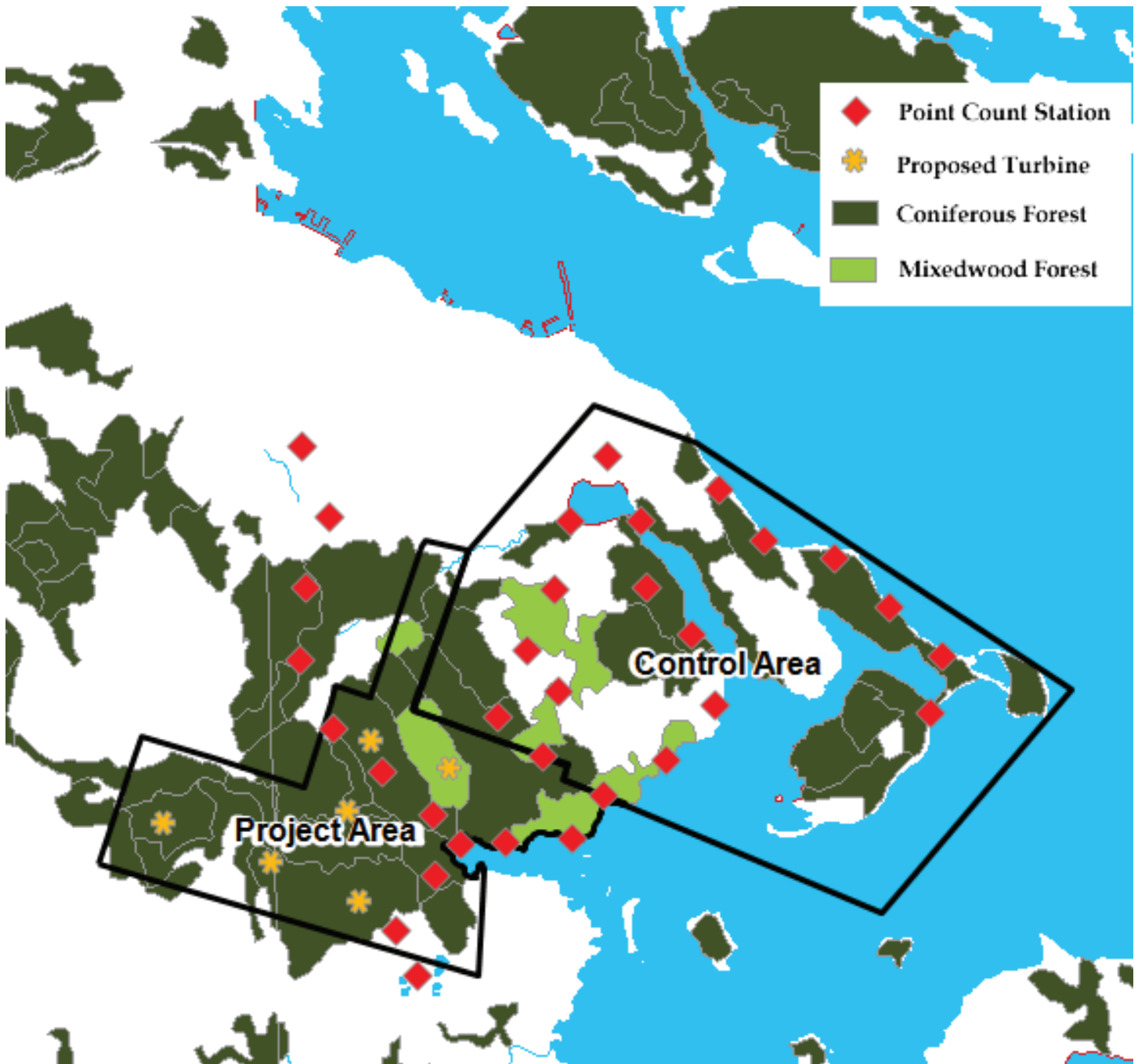
Spruce-Fir Forest

Mixedwood & Brush Forest

Barrens  
 Bog  
 Coastal Spruce-Fir Forest  
 Coastal Mixedwood & Brush Forest

A total of 32 peak breeding point counts were conducted from 13-16 June 2013. The location of each point count is shown in Figure 2.

**Figure 2: Location of Peak Breeding Point Counts**



## Results

Four species of terrestrial birds qualified as early breeders in the study area. These are shown in Table 4. The analysis was based on the repetitive run of 4 transects from 3 April to 7 June 2013 for

**Table 4: Occurrence of Early Breeding Terrestrial Birds in Study Area at All Distances**

Species	Transect		Total	Frequency
	Runs	Mean		
American Crow	21	10.43	219	100.0%
Common Raven	21	1.14	24	57.1%
Hairy Woodpecker	21	0.33	7	19.0%
Gray Jay	21	0.05	1	4.8%

commence nesting activities somewhat later than the terrestrial species so the analysis was based

**Table 5: Occurrence of Early Breeding Aquatic Birds and Raptors in Study Area at All Distances**

Species	Transect		Total	Frequency
	Runs	Mean		
Herring Gull	12	8.25	99	93.7%
Great Black-backed Gull	12	5.50	66	66.7%
Double-crested Cormorant	12	3.00	36	50.0%
American Black Duck	12	.75	9	41.7%
Common Eider	12	3.50	42	32.3%
Northern Harrier	12	.25	3	16.7%
Bald Eagle	12	.08	1	8.3%

on the four transects run repetitively from 30 April to 7 June 2013. The most common aquatic bird was Herring Gull, occurring on 93.7% of the transect runs and the most common raptor was Northern Harrier, occurring on 16.7% of the transect runs. Two species of nocturnal and crepuscular species were detected incidentally. A Northern Saw-whet Owl was heard on 15 June and American Woodcocks were heard regularly throughout the study area in April and May.

For the peak breeding surveys, the most frequently observed bird was Common Yellowthroat at 66.2% of all point counts (Table 6). At 62.5%, Magnolia Warblers and White-throated Sparrows were also encountered on the majority of point counts. On the other hand, the most common birds on the point counts as determined by the mean number per point count were Herring Gull (2.69), White-throated Sparrow (1.16), and American Crow (1.13). This analysis included birds seen or heard at all distances from the observer.

Table 7 indicates that there were more species (9.37 and 7.38) and more total birds (17.74 and 11.54) seen in the Control Area than in the Project Area. These numbers are not statistically significant for total species but significant at the 95% confidence level for total birds ( $p=0.021$ ).

Figure 3 shows the mean number of bird species seen in each habitat type while Figure 4 presents the mean number of total birds in each habitat type.



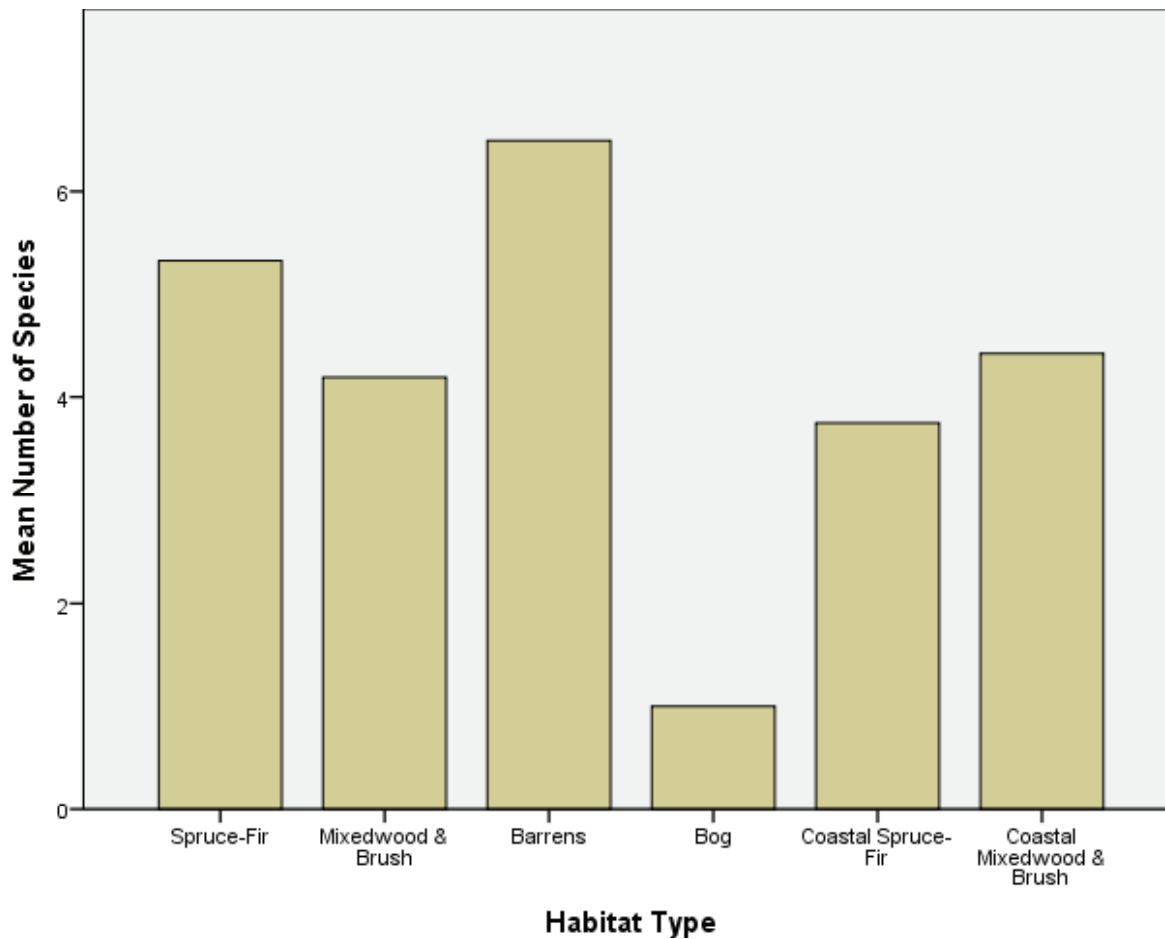
**Table 6: Occurrence of Peak Breeding Birds in the Study Area at All Distances**

<b>Species</b>	<b>Mean</b>	<b>Total</b>	<b>Frequency</b>
Common Yellowthroat	.66	21	66.2%
Magnolia Warbler	.97	31	62.5%
White-throated Sparrow	1.16	37	62.5%
Alder Flycatcher	.63	20	46.9%
American Crow	1.13	36	43.7%
Hermit Thrush	.63	20	40.6%
Herring Gull	2.69	86	37.5%
Red-eyed Vireo	.41	13	37.5%
Great Black-backed Gull	.97	31	34.4%
American Redstart	.38	12	34.4%
Song Sparrow	.53	17	34.4%
Willet	.53	17	28.1%
Black-capped Chickadee	.41	13	25.0%
American Robin	.47	15	25.0%
Yellow Warbler	.31	10	25.0%
American Goldfinch	.38	12	25.0%
Swainson's Thrush	.22	7	21.9%
Nashville Warbler	.22	7	21.9%
Yellow-rumped Warbler	.22	7	21.9%
Double-crested Cormorant	.31	10	15.6%
Ruby-crowned Kinglet	.16	5	15.6%
Black-and-white Warbler	.16	5	15.6%
Common Tern	.28	9	12.5%
Dark-eyed Junco	.16	5	12.5%
Purple Finch	.13	4	12.5%
Blue Jay	.09	3	9.4%
Palm Warbler	.13	4	9.4%
Common Eider	.22	7	6.2%
Spotted Sandpiper	.06	2	6.2%
Hairy Woodpecker	.06	2	6.2%
Blue-headed Vireo	.06	2	6.2%
Tree Swallow	.06	2	6.2%
Common Raven	.09	3	6.2%
Black-throated Green Warbler	.06	2	6.2%
Lincoln's Sparrow	.06	2	6.2%
Mourning Dove	.03	1	3.1%
Yellow-bellied Flycatcher	.03	1	3.1%
Golden-crowned Kinglet	.03	1	3.1%
Cedar Waxwing	.09	3	3.1%
Swamp Sparrow	.03	1	3.1%
Pine Siskin	.03	1	3.1%

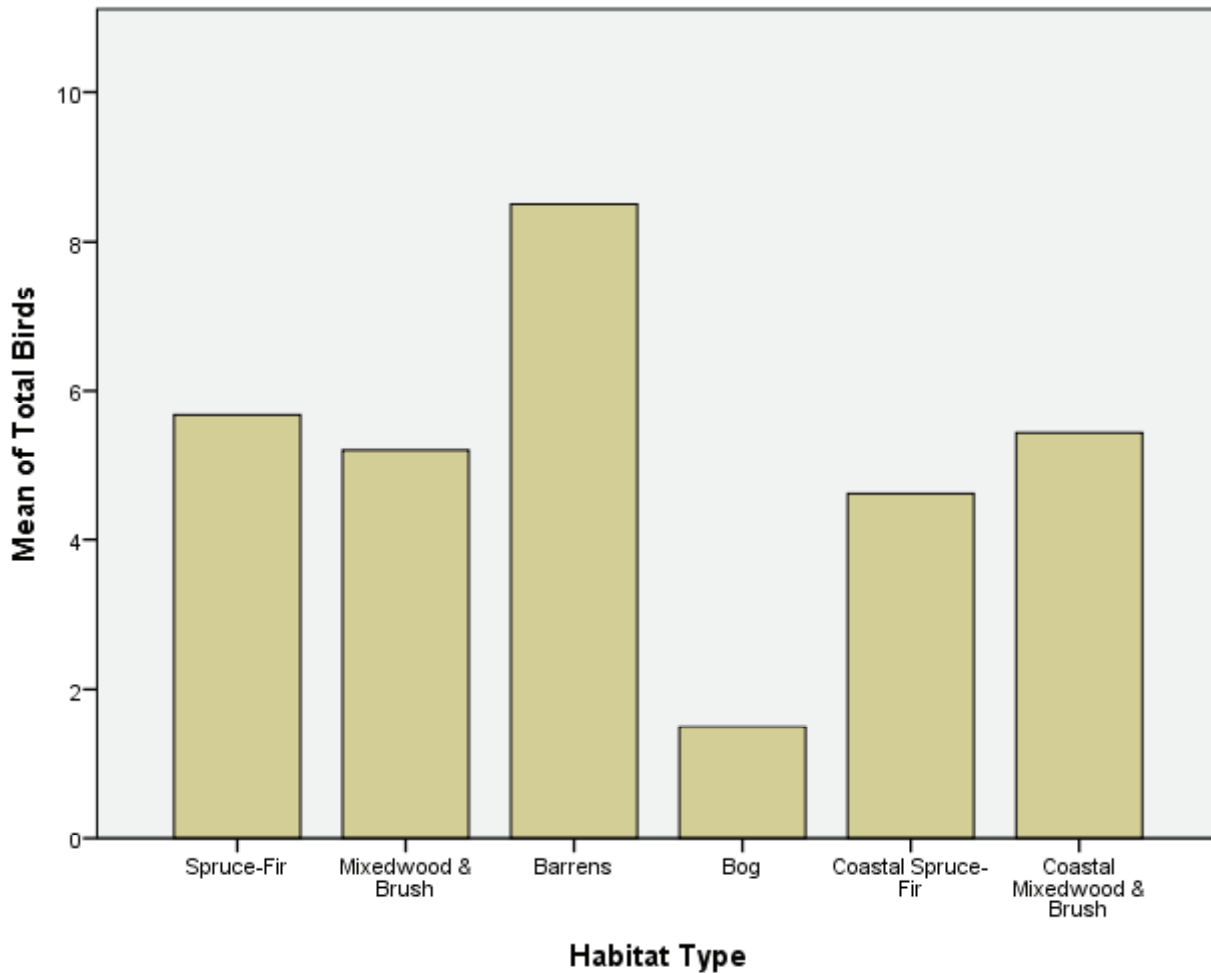
**Table 7: Comparison of Project Area and Control Area for Peak Breeding Birds at All Distances**

	Area	N	Mean	Std. Deviation	Std. Error Mean
Total	Project	13	7.38	3.355	.931
Species	Control	19	9.37	2.985	.685
Total	Project	13	11.54	6.603	1.831
Birds	Control	19	17.74	7.355	1.687

**Figure 3: Mean Number of Species by Habitat Type**



**Figure 4: Mean Number of Total Birds by Habitat Type**



A statistical analysis (Analysis of Variance) indicates these differences are not significant at the 95% confidence level. Similarly, there are no significant differences in the use of these habitats by individual bird species. This result is not unexpected with a relatively small sample size of 32 point counts.

### *Species of Conservation Concern*

Table 8 provides an annotated list of species of conservation concern observed during the early and peak breeding seasons. Figure 5 shows the location of small breeding colonies (about 6 pairs each) of two species of conservation concern; Willet (May be at Risk) and Common Tern (Sensitive).

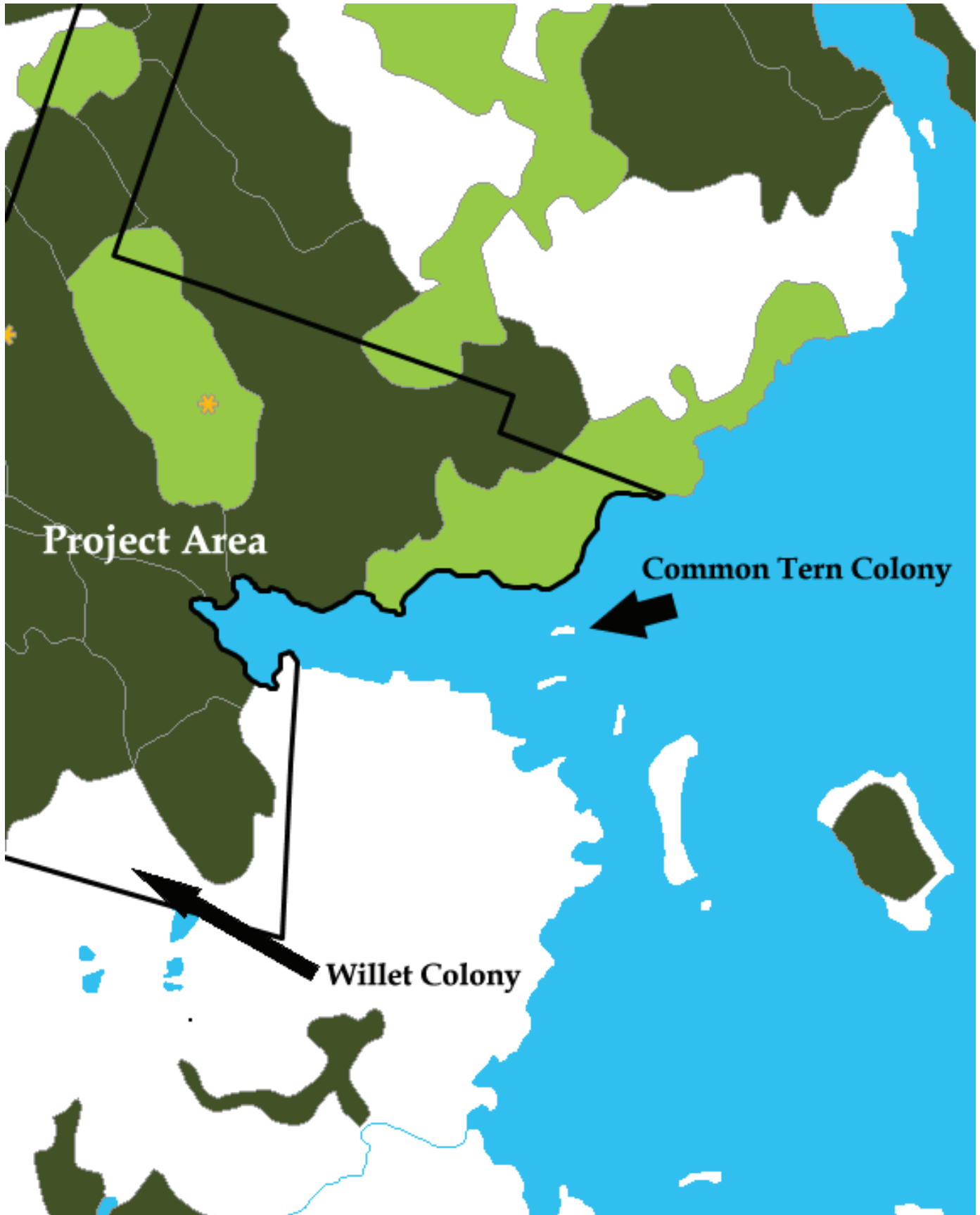
### *Discussion*

The spruce-fir, mixedwood, barrens, and bogs of the Canso Peninsula are not especially productive habitats for breeding songbirds. Common Yellowthroats in the barrens and Magnolia Warblers in the spruce-fir forests are dominant. There are no major concentrations of breeding aquatic birds in the immediate vicinity of the Project Area. However, any developments should be sensitive to the small colony of Common Terns at the mouth of Spinney Gully and an equally small colony of Willets in the large bog just above the head of Spinney Gully.

**Table 8: An Annotated List of Species of Conservation Concern Seen during the Breeding Season**

Species	NSDNR Rank	SARA Schedule 1	COSEWIC Listed	COSEWIC Priority Candidates	Annotations
Willet	May be at Risk				A total of 32 seen on 9 point counts; a small breeding colony on a large bog near the head of Spinney Gully
Spotted Sandpiper	Sensitive				A total of 2 seen on 2 point counts A small colony of about six pairs on a small island near the mouth of Spinney Gully;
Common Tern	Sensitive				a total of 9 birds on 4 point counts
Yellow-bellied Flycatcher	Sensitive				A total of 1 bird on 1 point count
Gray Jay	Sensitive				A total of 1 bird seen on spring transects
Tree Swallow	Sensitive				A total of 2 birds on 2 point counts
Golden-crowned Kinglet	Sensitive				A total of 1 seen on 1 point count
Ruby-crowned Kinglet	Sensitive				A total of 5 seen on 5 point counts
Pine Siskin	Sensitive				A total of 1 seen on 1 point count

Figure 5: Location of Breeding Colonies of Willet and Common Tern





## References

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Cover photo by John Kearney