Boot Island
NWA Box

BOOT ISLAND NATIONAL WILDLIFE AREA WILDLIFE SURVEY AND INSPECTION VISIT 8 MAY 2006

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General

Survey date: 8 May, 2006

Survey crew: Colin MacKinnon, Andrew Kennedy, Adam Campbell and Kyle Wellband

Weather: General: sunny and clear skies
Temperature: 15-16 °C
Wind: calm in morning, increasing steadily from the east late in the day.
Excellent survey conditions!

Hantsport Tides;
High Tide at 10:09, 38.7ft/11.8m
High Tide at 22:36, 39.4ft/12.0m
Highest tide for the month (27 May - 46.9ft/14.3m)

Overview

A survey of colonial nesting birds was conducted on 8 May, 2006 in conjunction with the biennial inspection visit to Boot Island National Wildlife Area, Nova Scotia (Figure 1). The survey crew departed Horton Landing at 09:40, near high tide, and arrived on Boot Island at 10:20 (Figure 2). The gull census was carried out between 10:30 and 14:20 (Main Island surveyed from 10:30 – 13:25 and Cyril's Island from 13:45 – 14:20) (Figure 3) while the Double - crested Cormorant and Great Blue Heron colony surveys were conducted from 14:30 – 16:00.

Erosion monitoring was conducted from 16:30 – 17:30. During the evening, 18:00 - 19:00, a beach walk and inspection of the eroding cliffs on the north side of the island was conducted while waiting for the tide to rise. By 20:00, the boat was loaded and the survey crew departed the island on the rising tide (high at 22:36). We returned to Horton Landing at approximately 20:30. A neap tide (nearly 2m below spring tide high water) caused difficulty in landing and unloading field gear. Gear was finally unloaded and secure by 22:30.

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Observations and Discussion

Systematic nest searches were carried out of all habitats occupied by the island's four species of colonial nesting birds: Double-crested Cormorant (DCCO), Great Blue Heron (GBHE), Greater Black-backed Gull (GBBG) and Herring Gull (HERG).

Survey methods for gull nests followed those of previous visits with surveyors walking in a west to east direction and returning east to west. A total of 4 surveyors (MacKinnon, Kennedy, Campbell and Wellband) counted nests and eggs. Kennedy and Campbell marked and maintained the edge of the transect lines while MacKinnon recorded all observations made by the other three observers. Gull nests were identified to species based on nest location, adult attendance and relative egg size (Figure 4).

Only number of nests and location, of DCCO and GBHE, were recorded as these nests were high in the forest canopy and nest contents could not be ascertained. The contents of gull nests were primarily full clutches, with no chicks observed within the main colony or on Cyril's Island. Table 1, below, compares 2006 results with those from previous years. Table 2 shows GBHE nest contents determined during the 2006 survey while Table 3 show nest contents for HERG.

Table 1. Total Nest Counts for Colonial Nesters on Boot Island

Year of Survey	Species			
	DCCO	GBHE	GBBG	HERG
1976	93	25	1005	712
1977	NR	42	NR	NR
1979	50	26	NR	NR
1984	147	44	1314	651
1986	201	61	1284	727
1988	178	38	1358	606
1990	181	46	1351	527
1992	228	40	1467	454
1996	351	47	1184	291
1998	311	50	1322	134
2000	345	55	1060	67
2002	260	73	964	33
2004	277	51	1018	65
2006	151	52	943	22

NR - not recorded

Table 2. Great Black-backed Gull nest contents for the 2006 Boot Island NWA survey

LOCATION	NEST CONTENTS				TOTAL
	EMPTY	1 EGG	2 EGG	3 EGG	
Main Island	205	39	114	353	711
Cyril's Island	63	12	48	104	227
Bank/Cliff	3	0	0	2	5
TOTAL	271	51	162	459	943

Table 3. Herring Gull nest contents for the 2006 Boot Island NWA survey

LOCATION	NEST CONTENTS				TOTAL
	EMPTY	1 EGG	2 EGG	3 EGG	
Main Island	7	1	2	2	12
Cyril's Island	0	2	2	6	10
Bank/Cliff	0	0	0	0	0
TOTAL	7	3	4	8	22

Visit Summary

1) Herring Gull numbers are at an all time low with only 22 nests observed in 2006. The 2006 numbers represent only 3% of the record high of 727 nests in 1986 (Tables 1 and 3). Nests were found generally in three small areas: two locations along the edge of the eastern most depression/ wet seep and one location on Cyril's Island; all nests were within the body of the GBBG colony. No HERG nests were observed along the cliff portion of the island.

2) The GBBG count of 943 nests is comparable with the 2002 survey and slightly lower (7.4%) than that recorded in 2004 (Tables 1 and 2). Only two eggs were noted to contain "piping chicks" and no hatched chicks were observed

3) A total of 52 GBHE nests were observed in 2006 (Table 1); essentially no change from 2004 when 51 nests were recorded. These nests were completely intermixed with the DCCO nests making the survey rather hard to conduct. The main feature used to differentiate between GBHE and DCCO is the tendency of the herons to build larger nests and to situate these nests at the top-centre of trees

3) A total of 151 DCCO nests were recorded in 2006. This is a 45.5% reduction in nests from 277 observed in 2004 (Table 1). The main cormorant colony has vacated the eastern portion of the wooded area; the trees are now all dead. The cormorants are now intermixed with the GBHE and appear presently to be at a greater risk of colony decline due to habitat loss.

After completion of the gull survey, Kennedy and Campbell took measurements from the erosion control stakes (Figure 3) to the cliff edge on the north end of Boot Island (Table 3). The average annual decrease from 2004 to 2006 was 0.85m/year (Table 4).

Table 3. Cliff Erosion at Boot Island National Wildlife Area, 2004–2006.

Stake		Direction to Cliff*	Measurement to Cliff (m)		Decrease (m)	
No.	Name		2004	2006	2004-2006	Annual average
1	Field	68°	17.88	16.46	1.42	0.71
2	Field Edge	60°	22.10	20.12	1.98	0.99
3	Outhouse	58°	16.66	14.94	1.72	0.86
4	Gap	42°	25.30	NR	-	-
5	Forest	40°	15.04	13.72	1.32	0.66
6	Old Chair (Blow - down)	32°	9.75	8.33	1.42	0.71
7	Open Glade	24°	7.62	6.55	1.07	0.54
8	End of Island	18°	8.53	5.51	3.02	1.51
Average					1.71	0.85

* Degrees magnetic north

Table 4. Loss of Shoreline, due to erosion, at Boot Island National Wildlife Area from 1990 – 2006 (see Figure 5 for transect locations).

Stake		Average Annual Decrease Between Surveys (m)						
No.	Name	1990-1992	1992-1996	1996-1998	1998-2000	2000-2002	2002-2004	2004-2006
1	Field	1.25	1.12	0.64	0.89	0.46	0.28	0.71
2	Field Edge	-	0.99	0.84	0.38	1.22	0.08	0.99
3	Outhouse	-	1.37	0.61	2.06	0.05	1.22	0.86
4	Gap	1.42	1.17	0.91	0.97	0.25	1.91	-
5	Forest	-	0.91	0.99	1.73	0	0.98	0.66
6	Old Chair (Blow - down)	1.88	1.57	1.42	1.22	1.09	1.52	0.71
7	Open Glade	-	1.78	1.47	0.76	1.22	0.91	0.54
8	End of Island	1.28	1.93	1.14	0.23	2.59	0.53	1.51
Yearly Average (m) (between survey dates)		0.73	0.34	0.50	0.52	0.43	0.46	0.85

Other Wildlife Observations in 2006

Peregrine Falcon	1 (flying over marsh)
American Black Duck	2, plus remains of 1 adult (probably nesting)
Common Eider	11
Dunlin	35
Purple Sandpiper	6
Piping Plover	1 (on sandy beach)
Bald Eagle	1 Pair (possibly nesting)
American Crow	3, 1 nest with 3 chicks and 1 egg
Common Raven	3
Song Sparrow	25
Common Grackle	1 Pair
Savannah Sparrow	2
American Tree Sparrow	1
Black-capped Chickadee	3
Yellow-rumped Warbler	1

Red-backed Vole - Holes and tunnels were observed throughout the surface of the main gull colony.

Mitigation of Habitat Loss

The forested portion of the island was expected to survive for upwards of 30 – 50 years at the current rate of erosion. What was not taken into consideration was the rapid loss of this forested area due to storm generated 'blow-down'. Large sections of the forested area are now gone with the remaining tangle of dead, blown down, tress providing no nesting habitat for GBHE or DCCO.

In an attempt to mitigate this loss, approximately 200, 6" – 12" high, White Spruce (*Picea glauca*) were planted in the centre of the island, adjacent to the old homestead site and above the 'pond' (Figures 6 and 7). The planted area covers approximately 0.25 ha. Additional plantings will be conducted during future visits to try and provide alternative nesting areas for GTBH and DCCO. However, in all likelihood, available trees suitable for nesting will be exhausted long before the newly planted spruce reach an adequate size and height. Herons and cormorants will nest on the ground; however, coyote frequent the island and may cause significant disturbance to the birds!

Maintenance

The large 2' x 4' NWA sign was replaced at the boat landing. Also, four new metal stakes were placed at the edge of the field marking transects 3, 5, 6 and 7.

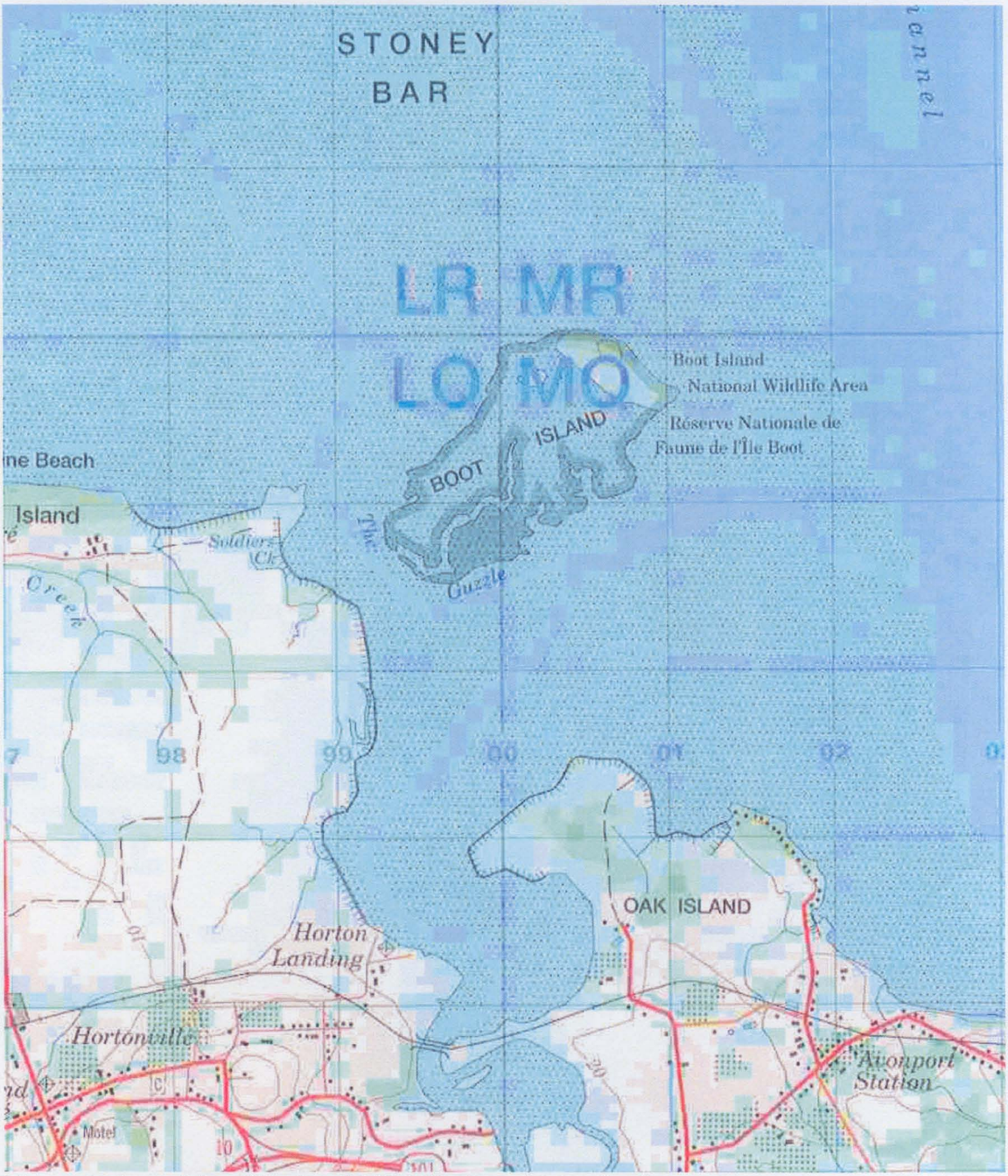

Figure 1. Boot Island National Wildlife Area, Nova Scotia.
Map grid lines are 1 km apart.

Figure 2. Field gear at old highway bridge, Horton Landing; Departing for Boot Island. (A. Kennedy photo)

Figure 3. Gull census on Boot Island, 8 may, 2006. L to R, MacKinnon, Wellband and Campbell. (A. Kennedy photo)

Figure 4. Un-characteristic darkly stained eggs of a Herring Gull, Boot Island NWA, 8 May 2006. (A. Kennedy photo)

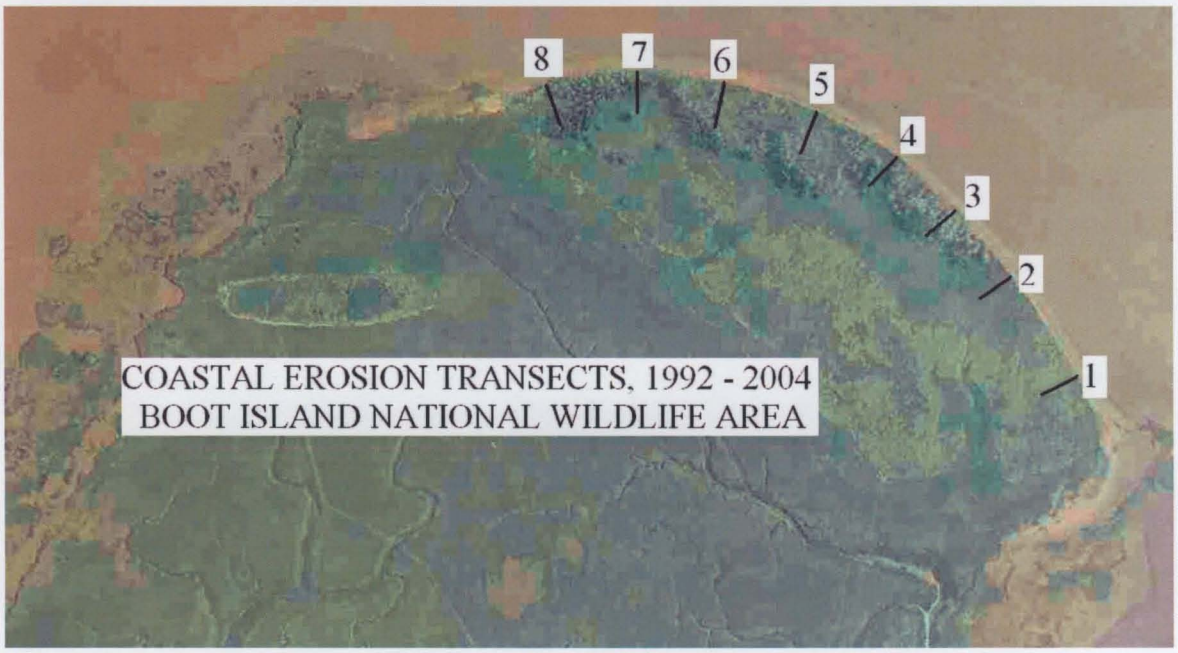

Figure 5. Location of control points 1 to 8, coastal erosion transects, Boot Island National Wildlife Area, Nova Scotia.

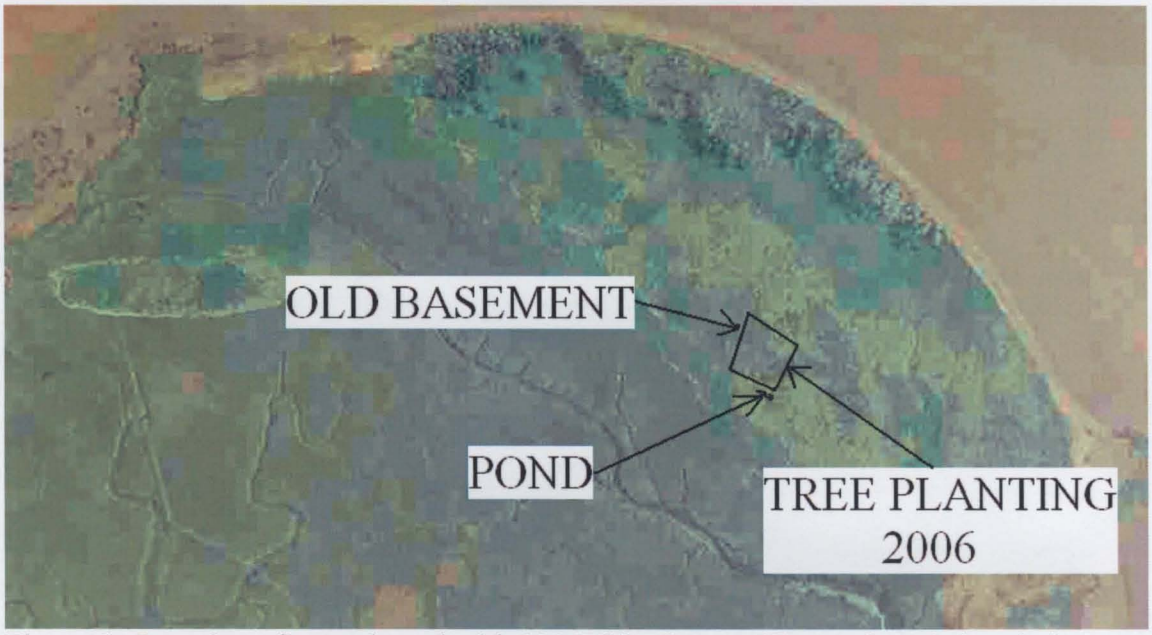

Figure 6. Location of area planted with 200 White Spruce (*Picea glauca*), in relation to the basement of the old homestead, and the pond, on Boot Island in 2006.

Figure 7. Upland portion of Boot Island, in 1946, showing extent of forested area, as well as the location of the farm and pond (right centre of photo).