

ELK ISLAND NATIONAL PARK TRUMPETER SWAN REINTRODUCTION - 2005 UPDATE

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ABSTRACT

Trumpeter Swans (*Cygnus buccinator*) in the Elk Island National Park area have been monitored annually since the first reintroduction in 1987 to locate breeding pairs, to identify marked swans, and to define total population and cygnet production. The number of adult and subadult swans returning to the park has increased in each year of the last 3 years. Cygnet production ranged from 9 to 14 young hatched and a high of 10 cygnets fledged in 2005. In 2005, 27 adults and subadults, including four breeding pairs, were recorded in the spring while, in the fall, 25 adults and 10 cygnets subsequently migrated south from the park area. Trumpeter Swans continue to expand to suitable habitat outside the boundaries of the Park. The yearly increase in cygnet production and adult return rates will help meet the reintroduction program goal of 10 breeding pairs in the Elk Island National Park area.

INTRODUCTION

Trumpeter Swan (*Cygnus buccinator*) reintroduction was initiated in 1987 to restore the Trumpeter Swan breeding population to Elk Island National Park (EINP) and surrounding area, and to expand the species summer range in Alberta. The evolution of this project has been documented, with the most recent published update in 2003 (Beyersbergen and Kaye 2004). The continued successful production of Trumpeter Swan young in the park area resulted in termination of wild cygnet relocation from Grande Prairie and changed the focus of the program to monitoring the breeding and summering swans in the EINP area. Winter and migration monitoring of EINP swans is conducted through partnerships with other jurisdictional wildlife agencies and volunteers in Canada and the United States. This paper provides a review of the current progress of the Trumpeter Swan EINP reintroduction program through to the fall migration in 2005.

METHODS

Monitoring

Spring arrival

Trumpeter Swans were monitored in an area that included Elk Island National Park, Blackfoot Grazing, Wildlife and Provincial Recreation Area, south to Miquelon Provincial Park and numerous lakes and wetlands within several kilometres of the park boundaries (Figure 1). Swans traditionally arrive at the park around mid-April. Between mid-April and mid-May, while large numbers of Tundra

Swans (*Cygnus columbianus*) staged in the area, we conducted our monitoring surveys on foot. Aerial surveys, using a Cessna 185, were conducted after mid-May. Swan observations were ground-truthed and marked birds were identified. Ground monitoring was conducted by one or two personnel on a daily basis for 2-3 weeks until all swans had returned and those marked previously had been identified. Identification of marked adults, returning family groups, pairing of swans (marked individuals) and location of nesting and nonbreeding staging lakes were recorded during monitoring.

Nesting

Monitoring efforts focused on breeding lakes and we accessed them on foot to reduce disturbance. Information was collected on breeding behavior, nest construction, and approximate egg-laying and hatch dates. We recorded initial brood size and monitored cygnet survival throughout the summer.

Nonbreeding swans

In late June, we conducted an aerial survey to determine the number and distribution of nonbreeding adults and yearlings (including those pushed out of the family groups we observed in the spring) in the park and adjacent areas and to identify the lakes being used. Ground monitoring was performed to determine moulting sites.

Fall migration

Monitoring of all occupied lakes continued into the fall. Monitoring was primarily done on foot, but also included a single aerial survey prior to the influx of Tundra Swans in early September. Our primary focus was to determine which cygnets fledged. Fall monitoring continued until swan departure around the time the lakes froze in late October through early November.

Trumpeter Swan banding

During the early years of the reintroduction program, only released swans were banded or marked with colour markers. The increasing EINP Trumpeter Swan population required that the swans be marked to improve monitoring. In late July 2002 and 2003, aerial and ground searches were conducted to identify lakes where moulting non-breeding adults and yearling swans could be captured and marked. Canoes and large fish dip nets (Shandruk and Winkler 1988) were used to capture the swans. Captured swans were sexed, weighed, banded with USFWS metal bands and red plastic tarsal bands (Alpha/numeric/numeric), and then released together on the capture lake.

Migration and winter observations

A co-operative program of observing and reporting marked Trumpeter Swans is ongoing in conjunction with the wintering area program in the Greater Yellowstone Region (Montana, Wyoming, and Idaho). A network of wildlife agency personnel and volunteer observers, in Canada and the United States, report marked swans to the USFWS coordinator who maintains the project database and forwards reports to the appropriate agencies. Winter and migration information on EINP Trumpeter Swans was collected through this program.

RESULTS

Monitoring

Spring arrival

In the spring, the number of swans returning to the park increased from 20 in 2003 to 27 in 2005 (Table 1). This is the highest number recorded in the 19-year program. Returning swans continued to occupy lakes in the general area of EINP in 2003, but their range expanded southwards in 2004 and 2005 with paired and single swans observed in the landscape surrounding the Ministik Lake Game Bird Sanctuary

(Table 2). In 2003, three yearlings were observed with the adult marked as Yellow 28AC on Astotin Lake and three yearlings were observed on Islet Lake in the Blackfoot Grazing, Wildlife and Provincial Recreation Area indicating 100 percent return rate for two of the three 2002 broods. In 2004, only three yearlings were definitively observed in the park. Due to the limitations of aerial survey observations and absence of ground-truthing, no yearlings were recorded as returning in 2005.

Nesting

Breeding activity by Trumpeter Swans in EINP and surrounding area was documented in 1990, 1995, and 1998-2002 (Beyersbergen and Kaye 2004). Two of the traditional breeding lakes (Running Dog and South Park) were occupied through 2003-05 while two new lakes were selected by nesting pairs in 2004 (Table 3). Although not productive every year, Running Dog has been occupied by a territorial pair for 17 years and South Park for 9 years. In 2003, the pairs on the two traditional lakes hatched and fledged nine cygnets. Of the two new nesting lakes observed in 2004, cygnets successfully fledged from only Lake A in the Blackfoot Lake area. The pair was observed on this lake in 2003 as nonbreeding swans. The nest failed on the other new lake. In 2004, the two pairs on the traditional lakes hatched four and five cygnets and fledged four and one cygnets, respectively. Fourteen cygnets were hatched and 10 were fledged on Running Dog, South Park and Lake A in 2005. Also in 2005, swan Yellow 28AC nested, but failed to hatch any young on a lake in the north area of the park.

Nonbreeding swans

Non-breeding swans were observed during the summer on a minimum of 12 lakes in 2003, 13 in 2004 and 18 in 2005. In 2003, three pairs were observed in EINP and the Blackfoot Grazing, Wildlife and Provincial Recreation Area. These three pairs were possibly in the process of selecting suitable territorial breeding or trial breeding lakes (Table 2). Additionally in 2003, two groups of three and five swans occupied a variety of lakes through the summer months. In 2004, four pairs of non-breeding swans, two singles and two groups (three and five swans) were observed using a number of different lakes throughout the study area. Two of the non-breeding pairs were observed on lakes in the vicinity of the Ministik Lake Game Bird Sanctuary and was the first record of swans this far south of the park complex. Nonbreeding swans were more evenly distributed across the landscape in 2005, with six

nonbreeding pairs and five singles recorded on different lakes during the summer. Swans were again observed in 2005 on lakes around Ministik Lake Game Bird Sanctuary, thus further solidifying the range extension in the area.

Fall migration

The total number of swans migrating from the park each fall during the last 3 years has increased by 20.7 percent from 29 in 2003 to 35 in 2005. Numbers of cygnets migrating in the fall were quite variable between 2003 and 2005, ranging from 7 to 10. Adults accounted for 69.0 percent, 78.8 percent, and 71.4 percent of the total fall migration during 2003 - 2005 (Table 1).

Trumpeter Swan banding

The two lakes where swans were banded in 2002 (West Sawmill Lake and Blackfoot Lake) were unoccupied in 2003. We assume the lakes were deserted because of the previous year's disturbance during banding operations. In 2003, a pair of swans was captured on East Sawmill Lake; however the female was a recapture (A19) from the previous year on West Sawmill Lake. Another swan (A17) marked on West Sawmill Lake in 2002 was observed with a previously marked swan (Yellow 28AC) on Shirley Lake in the north end of the park. In late July 2003, three yearlings were captured on a wetland near Islet Lake and fitted with USFWS metal bands and red plastic tarsal bands (A33-A35). No swans were captured or marked in 2004 or 2005 due to time restraints and potential for possible desertion of these lakes by territorial pairs in the following years.

Migration and winter observations

In the past few years, marked swans in the park have been fitted with red tarsal bands as opposed to the highly visible collars. The last collar was applied in the park approximately 10 years ago and there are currently only two swans with collars breeding in EINP. One of the collared swans, Yellow 28AC, has been observed in Jackson Hole, Wyoming, every winter since 2000/2001. No other EINP swans currently summering in the area have been observed away from the park.

DISCUSSION

Local recruitment is essential to the building of the Elk Island National Park Trumpeter Swan flock. Breeding pair survival, successful nesting, high fledging success and return rate for yearlings and

adults have all added to the growth of the EINP flock over the last 3 years to a high of 35 Trumpeter Swans migrating from the park in the fall of 2005. The numerous non-breeding pairs scattered across the landscape in 2005 indicates the potential for additional breeding pairs in future years and increased potential for higher productivity. Each of these successes is taking the program a step closer to its goal of 10 breeding pairs in the EINP population.

The increased number and dispersion of swans returning to remote locations in the survey area resulted in reduced ground observation capabilities and more dependence on aerial counts. The positive identification of some marked birds and age cohorts such as yearlings will become increasingly more difficult with the expanding population.

The abandonment of lakes by Trumpeter Swans the year following banding activities resulted in our ceasing banding operations on lakes with paired birds to reduce the risk of lost breeding effort. The information to be gained from marking birds in this population will need to be evaluated and only lakes with three or more swans will be chosen for future banding operations.

Future recommended actions in the reintroduction project include:

- 1) Monitoring should continue at the current level of effort to ensure that all swans are located and identified where feasible in Elk Island National Park and surrounding area.
- 2) Banding or marking swans within EINP will need to be evaluated with respect to a balance between useful information and harmful effects on resident nonbreeding birds.

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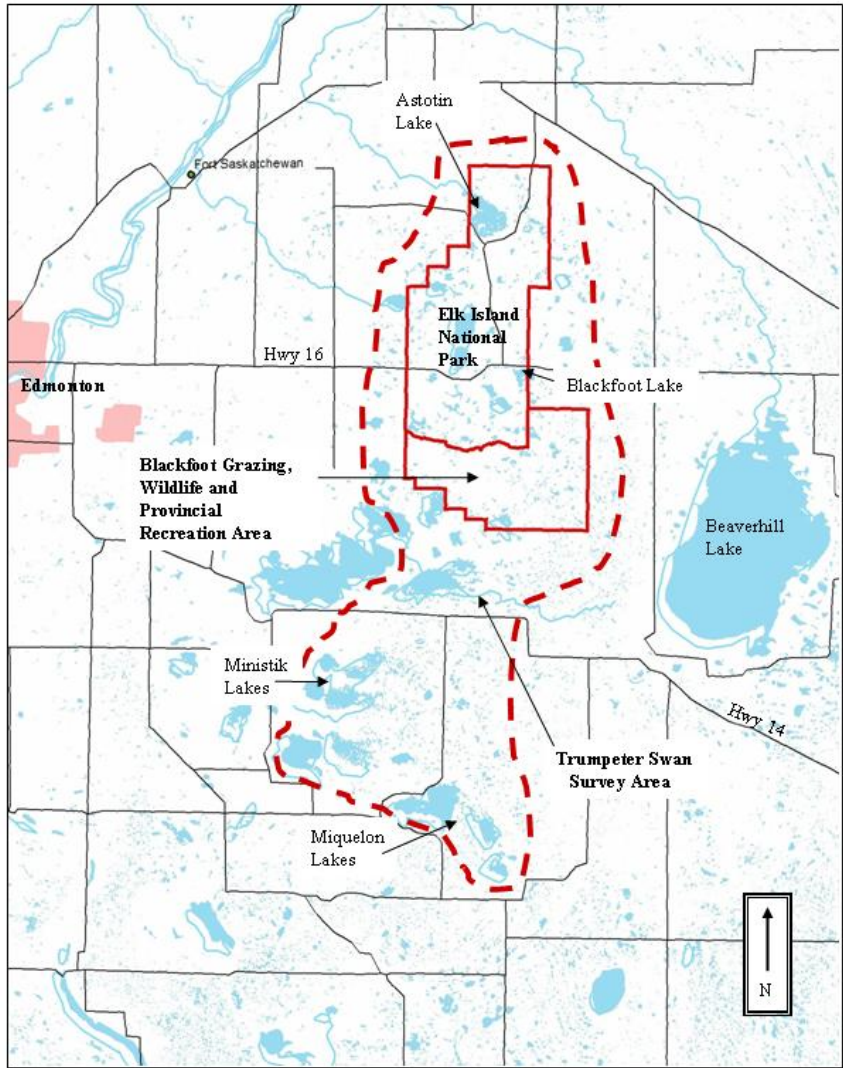


Figure 1. Elk Island National Park Trumpeter Swan reintroduction program area.

Table 1. Demographics of the Trumpeter Swan population in Elk Island National Park reintroduction program.

Year	<u>Spring</u> Swans Returned	<u>Summer</u> Breeding Adults	<u>Cygnets</u> Hatched	Adults	<u>Fall Migration</u> Cygnets fledged	Total Migrated
1988	2	0	0	2	0	2
1989	2	0	0	2	0	2
1990	5	2	2	5	0	5
1991	2	0	0	2	0	2
1992	5	0	0	5	0	5
1993	8	0	0	8	0	8
1994	8	0	0	8	0	8
1995	12	2	5	11	0	11
1996	8	0	0	8	0	8
1997	7	0	0	6	0	6
1998	6	2	4	6	4	10
1999	8	4	9	8	3	11
2000	8	4	7	8	4	12
2001	9	4	9	9	7	16
2002	18	6	12	17	10	27
2003	20	4	9	20	9	29
2004	26	8	11	26	7	33
2005	27	8	14	25	10	35

Table 2. Trumpeter Swans observed in Elk Island National Park and surrounding area (2003 - 2005).

Year	Marker	Age (Years)	Sex	Lake Name	Comments
2003	Yellow 20 AC	16	M	Running Dog Lake	Bred – Hatched 4 cygnets. Fledged 4 cygnets.
	Unmarked	-	F		
	Yellow 28 AC	10	F	North park lake	Lost mate (53AC) last summer, paired with A17 (red tarsal band) banded on West Sawmill Lake last year. They did not breed. On Shirley Lake most of summer. Hatched and fledged five cygnets.
	Red tarsal A17	2	M		
	Unmarked	-	M	South park lake	
	Red tarsal A23	5	F		
	Unmarked	-	-	Unnamed lakes	On the lakes south of Moss Lake. One of these swans likely offspring of north park pair – possibly 3 years old.
	Unmarked	-	-		
	Red tarsal A30	-	F	Blackfoot Lake area – Lake A	Observed most of the year on an unnamed lake SE of Blackfoot Lake. Assumption this is the pair that were banded on Blackfoot Lake last year and have now deserted the lake due to disturbance.
	Red tarsal A31	-	M		
	Unmarked	1	-	Astotin Lake	Likely the cygnets fledged from north park lake last year. All three were observed with 28AC then observed in early spring on Astotin Lake.
	Unmarked	1	-		
	Unmarked	1	-		
	Red tarsal A33	1	F	Islet Lake, East Sawmill Lake	These 5 swans were observed on various lakes in Blackfoot area and park. Assume they are offspring of breeding pairs in the south park or Blackfoot area. The three yearlings were marked on Islet Lake in July.
	Red tarsal A34	1	M		
	Red tarsal A35	1	F		
	Unmarked	-	-		
Unmarked?	-	-			
Red tarsal A19	2	F	East Sawmill Lake	Also observed on a few other lakes in area. Identity of A36 is unknown – banded in July on East Sawmill in company of A19.	
Red tarsal A36	-	M			
2004	Yellow 20 AC	17	M	East Running Dog Lake	Hatched four cygnets - approx. June 15, all four fledged. Assumed the bird with the metal leg band is 20AC which lost its collar over the winter.
	Unmarked	-	F		
	Yellow 28 AC	11	F	Unmarked lake	Built nest but abandoned nest after about 30 days. Checked nest – no sign of predation or eggs.
	Red tarsal A17	3	M		
	Unmarked	-	M	South park lake	Bred – five cygnets hatched on approx. June 15 but only one cygnet fledged.
	Red tarsal A23	6	F	Blackfoot Lake area – Lake A	Bred – two cygnets hatched on approx. June 18. Fledged 2 cygnets. Pair banded on Blackfoot Lake in 2002, second year on this lake.
	Red tarsal A30	-	F		
Red tarsal A31	-	M			
Unmarked	-	-	Unnamed Lake	South of Moss Lake on south end of Moss Lake trail.	

Table 2, continued.

Year	Marker	Age (Years)	Sex	Lake Name	Comments
2004	Unmarked	1	-	Unnamed Lakes	Five swans observed on a few different lakes, east of park boundary. The three unmarked yearlings were also observed on Astotin Lake in the spring. A35 and unknown age/sex bird could be a pair.
	Unmarked	1	-		
	Unmarked	1	-		
	Red tarsal A35	2	F		
	Unmarked	-	-		
	Red tarsal A19	3	F		
	Red tarsal A36	-	M		
	Unmarked	-	-	Coyote Lake	On Coyote Lake in spring then observed on Muskrat Lake later in summer.
	Unmarked	-	-		
	Unmarked	-	-		
	Unmarked	-	-	Mackenzie Lake	Alone on South Mackenzie Lake.
	Unmarked	-	-	East Sawmill	Also on Islet Lake in the spring and fall.
	Unmarked	-	-	Lake	Likely offspring from 2002 or 2003.
	Unmarked	-	-	Lake A in	First time swans have been observed south of Blackfoot area. Lake is located in the Ministik Bird Sanctuary.
	Unmarked	-	-	Ministik area	
	Unmarked	-	-	Lake B in	Same as above – this lake is also in the Ministik Bird Sanctuary.
Unmarked	-	-	Ministik area		
2005	Yellow 20 AC	18	M	East Running	Bred - four cygnets hatched (June 12) and fledged two cygnets. Assuming this is still 20AC with the metal leg band.
	Unmarked	-	F	Dog Lake	
	Yellow 28 AC	12	F	Unmarked lake	Bred and nested briefly on a small pond north of where they abandoned their nest last year. Both disappeared about a week into nesting season, not seen all summer but unconfirmed return in September.
	Red tarsal A17	4	M		
	Unmarked	-	M	South park lake	Bred - five cygnets hatched (June 12), fledged three cygnets.
	Red tarsal A23	7	F	Blackfoot Lake area – Lake A	Bred - 5 cygnets hatched (June 12), fledged five cygnets.
	Red tarsal A30	-	F		
	Red tarsal A31	-	M		
	Unmarked	-	-	Alyssa	Also on Birch Island Lake - where they moulted.
	Unmarked	-	-	Lake	
	Red tarsal A35	3	F	Dickson Lake	Lake east of park boundary. No breeding activity.
	Unmarked	-	-	Astotin Lake	Also on Moss Lake and unnamed lake north of Astotin Lake.
	Unmarked	-	-		
	Unmarked	-	-	Unnamed Lakes	On a few lakes in an area 3-4 km. south of Warden Office.
	Unmarked	-	-	Unnamed wetland	Northeast of Blackfoot Lake.
	Unmarked	-	-	Unnamed Lake	South of Flyingshot Lake

Table 2, continued.

Year	Marker	Age (Years)	Sex	Lake Name	Comments
2005	Unmarked	-	-	Flyingshot Lake	Flyingshot Lake and other lakes in general area. Could this be A19 and A36? Did not get a chance to get close enough to verify if they had collars.
	Unmarked	-	-		
	Unmarked	-	-	Islet Lake	Often at south end of Islet Lake. Likely same pair that was also observed on East Sawmill Lake last year.
	Unmarked	-	-		
	Unmarked	-	-	Unnamed Pond	East of East Sawmill Lake.
	Unmarked	-	-	Lake C in	West of Lake A in Ministik Bird
	Unmarked	-	-	Ministik area	Sanctuary occupied last year.
Unmarked	-	-	Lake D in	North of Lake B in Ministik Bird	
			Ministik area	Sanctuary. Likely the same swans observed in area last year.	

Table 3. Trumpeter Swan cygnet production and fledging observed in the Elk Island National Park area.

Lake Site	Pair (Marker Identification)	Year	Number cygnets hatched	Number cygnets fledged
Running Dog Lake	Yellow 20AC – Yellow 03AC Yellow 20AC - Unmarked Female	1990	2	0
		2001	5	3
		2002	4	3
		2003	4	4
		2004	4	4
		2005	4	2
North Park lake	Yellow 53AC – Yellow 33AC Yellow 53AC – Yellow 28AC	1995	5	0
		1999	2	0
		2000	3	3
		2001	4	4
		2002	5	3
South Park lake	Metal band - Male Unmarked Female	1998	4	4
		1999	7	3
		2000	4	1
	Metal band - Male Red tarsal A23 - Female	2001	1	0
		2002	3	3
		2003	5	5
		2004	5	1
		2005	5	3
Lake A - Blackfoot Lake area	Red tarsal A30 – Female Red tarsal A31 - Male	2004	5	2
		2005	5	5
Total			86	53