

The successful nesting of the Piping Plover at Sauble Beach marks a return to the Canadian Great Lakes after 30 years

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Introduction

The soft piping and plaintive call of the Piping Plover (*Charadrius melodus*) was once heard on many beaches throughout the lower Great Lakes and Lake of the Woods in northwestern Ontario.

The Piping Plover is a small shorebird with a single black neck band, white collar across the nape, pale sand coloured upperparts, a complete white band across the upper tail coverts and orange legs. The two recognized subspecies (the Atlantic coastal *C. m. melodus* and the

inland or Prairie *C. m. circumcinctus*) are distinguished by the respective absence or presence of a complete neck band (Moser 1942, AOU 1945), as well as their geographic distribution. Great Lakes birds align more closely with the Prairie population rather than Atlantic birds, based on recent mitochondrial DNA analyses (Elliot-Smith and Haig 2004). Experience with colour-banded birds suggests that there is no mixing between these two subspecies on the breeding grounds (Haig and Oring 1988).

Figure 1. Adult male Piping Plover with 32 day old juvenile at Sauble Beach on 26 July 2007.

Photo: Brendan Toews



The Piping Plover was declared an endangered species in Ontario in 1977, and in Canada, by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), in 1985 (Lambert 1987). The 2001 total estimated species population was 5,945 adults, with 1,454 in Canada, and the Northern Great Plains/Great Lakes population (*C. m. circumcinctus*) was estimated to be 3,026 adults, with 974 in Canada (Ferland and Haig 2002, Haig *et al.* 2005). The recovery goal for this subspecies in Canada is a minimum of 1626

adult birds found on three consecutive censuses (Environment Canada 2006).

Breeding is restricted to North America along the Atlantic coast from Newfoundland, Saint Pierre and Miquelon, and the Maritime provinces, south as far as North Carolina; inland breeding extends from Kansas and Nebraska in the Great Plains to the southern Prairie Provinces, and the western Great Lakes in Minnesota, Wisconsin and Michigan, and the Rainy River District of western Ontario (Haig 1992).

It winters in the southern United States, from North Carolina south along the coast to Texas, and into Mexico. Occasional sightings and surveys suggest that small numbers also winter on the Caribbean islands.

The Piping Plover has bred historically in Ontario on Lake Huron at Ipperwash Beach (1928-1953), Oliphant (1966-1972), Wasaga Beach (1913-1938) and Manitoulin Island (1970); on Lake Erie at Point Pelee (1906-1938), Pelee Island (1933), Holiday Beach (1909), Eriau (1946), Rondeau Provincial Park (1926-1947), Turkey Point (1924), Long Point (1905-1977), Long Beach (1938), Sherston (1933-1944), Crystal Beach (1934) and Crescent Beach (1936); on Lake Ontario at Hamilton (1934), Toronto (1907-1934), Presqu'île Provincial Park (1915-1916) and Prince Edward County (1924-1930); on the St. Lawrence River at Rockport (1894); in eastern Ontario on Collins Lake (1903); and in Rainy River District (1929-2007) in southeastern Lake of the Woods.

Historical breeding records of the Piping Plover in Ontario

The discovery of a pair of Piping Plovers at Sauble Beach, on 13 May 2007, by Brendan and Kimberly Toews, marked the first documented breeding record for Bruce County in 35 years, the first nest record on the Canadian Great Lakes in 30 years, and the only pair known to nest successfully in Ontario in 2007 (Figure 1). The purpose of this paper is to out-

line what is known of the historical breeding status of the Piping Plover in Ontario, and to provide behavioural and chronological observations of the 2007 nesting.

Historically, the Ontario breeding population of the Piping Plover was estimated to be 152-162 pairs (Russell 1983). This may have been an over-estimation based on the extrapolation of known birds to the entire potential available habitat. Many remote beaches were never surveyed, and few sites were checked consistently for breeding pairs, even when the species was known to be in decline. See Table 1 for a summary of the confirmed historical breeding records of the Piping Plover in Ontario. The large number of records for Long Point in the 1960s and 1970s is due to the presence of the Long Point Bird Observatory and its concerted census efforts, in addition to the availability of large tracts of undisturbed habitat. The extensive beaches of Long Point once hosted the largest breeding concentration of the Piping Plover anywhere on the Great Lakes (Snyder and Logier 1931, Shepard 1935, Hussell and Montgomerie 1966, Cartar 1976, Bradstreet *et al.* 1977, Lambert and Nol 1978, McCracken *et al.* 1981). The beaches at Oliphant were not regularly checked after 1968, due to few local volunteers. The entire available beach habitat at Point Pelee, where they summered and may have nested as late as 1953 (Alan Wormington, pers. comm.), was likely inadequately surveyed after the 1930s as well.

Table 1: Summary of confirmed breeding records of the Piping Plover in Ontario (all records involving nests unless otherwise noted).

COUNTY	YEAR	LOCATION	OBSERVER	EVIDENCE	OUTCOME
Rainy River District	1929	Sable Islands	James L. Baillie & Lester L. Snyder	Eight young observed	Successful two young collected (ROM# 29.9.9.20 & 29.9.9.21)
	1978	Sable Islands	Alan Wormington	Two nests	Outcome unknown
	1981	Sable Islands	William J. Crins & Ron Ridout	Two nests	Outcome unknown
	1987	Sable Islands	David H. Elder & Leo E. Heyens	Two nests	Outcome unknown
	1987	Sable Islands	Bruce Duncan	One nest	Outcome unknown
	1991	Sable Islands	Leo E. Heyens	One nest	Successful
	2007	Sable Islands	Leo E. Heyens	One nest	Failed due to flooding
	1987	Windy Point	David H. Elder	One nest	Outcome unknown
	1992	Windy Point	P. Allen Woodliffe & Leo E. Heyens	One nest	Outcome unknown
	1992	Windy Point	Leo E. Heyens	One nest	Outcome unknown
	1993	Windy Point	Glenn Coady	One nest	Outcome unknown
	1995	Windy Point	Leo E. Heyens	One nest	Outcome unknown
	1996	Windy Point	Leo E. Heyens	One nest	Successful
	1997	Windy Point	Leo E. Heyens	One nest	Successful
	1998	Windy Point	Leo E. Heyens	Two nests	Both successful
	1999	Windy Point	Leo E. Heyens	One nest	Successful
	2000	Windy Point	Leo E. Heyens	One nest	Outcome unknown
	2001	Windy Point	Leo E. Heyens	One nest	Failed due to flooding
	2002	Windy Point	Leo E. Heyens	Two nests	Failed due to flooding
	2007	Windy Point	Leo E. Heyens	Two nests	Failed due to flooding
Manitoulin	1970	Carter Bay	John C. Nicholson & Christopher T. Bell	Adults with downy young	Successful

COUNTY	YEAR	LOCATION	OBSERVER	EVIDENCE	OUTCOME
Bruce	1966	Oliphant	Malcolm D. Kirk	Two nests	Outcome unknown
	1966	Oliphant	Ken Carmichael	One nest	Outcome unknown
	1967	Oliphant	Eric A. Nasmith	One nest	Outcome unknown
	1968	Oliphant	Eric A. Nasmith	One nest	Outcome unknown
	1972	Oliphant	Donald A. Sutherland	One nest	Outcome unknown
	2007	Sauble Beach	Brendan A. Toews & Kimberly J. Toews	One nest	Successful
Simcoe	1913	Wasaga Beach	Paul Harrington	One nest	Successful
	1921	Wasaga Beach	Paul Harrington & Frederic A.E. Starr	One nest	Collected (ROM# 5274)
	1933	Wasaga Beach	Otto E. Devitt	One nest	Successful
	1934	Wasaga Beach	Otto E. Devitt	One nest	Outcome unknown
	1938	Wasaga Beach	Otto E. Devitt	One nest	Outcome unknown
Essex	1906	Point Pelee	William E. Saunders	Two nests	Outcome unknown
	1907	Point Pelee	William E. Saunders	Two nests	Outcome unknown
	1937	Point Pelee	Otto E. Devitt	One nest	Outcome unknown
	1938	Point Pelee	James L. Baillie	One nest	Outcome unknown
	1909	Holiday Beach	William E. Saunders	One nest (6-8 pairs)	Successful
	1933	Pelee Island	Edgar M.S. Dale	Two nests	Outcome unknown
Lambton	1928	Ipperwash Beach	William E. Saunders	Young observed	Successful
	1953	Ipperwash Beach	<i>vide</i> Alice H. Kelley	Pair with downy young	Successful
Chatham -Kent	1926	Rondeau Provincial Park	Albert A. Wood	Two nests	Collected (ROM# 12558)
	1937	Rondeau Provincial Park	Douglas S. Middleton	One nest	Outcome unknown
	1938	Rondeau Provincial Park	Douglas S. Middleton	One nest	Outcome unknown
	1947	Rondeau Provincial Park	Douglas S. Middleton	One nest	Outcome unknown

COUNTY	YEAR	LOCATION	OBSERVER	EVIDENCE	OUTCOME
	1946	Erieau	Albert A. Wood	One nest	Outcome unknown
Norfolk	1924	Turkey Point	Gerald W. Knechtel	One nest	Outcome unknown
	1905	Long Point	William E. Saunders	Six nests	Outcome unknown for all nests
	1907	Long Point	W.E. Clyde Todd	One nest	Successful
	1908	Long Point	William E. Saunders	Seven nests	One nest collected (ROM# 5277) Outcome unknown for six nests
	1924	Long Point	William E. Saunders	Eight nests	Outcome unknown
	1927	Long Point	Lester L. Snyder	One nest	Successful
	1928	Long Point	Lester L. Snyder	Two nests	Both collected (ROM# 314 & 8026)
	1949	Long Point	Harold L. Lancaster	One nest	Outcome unknown
	1957	Long Point	George Francis	One nest	Outcome unknown
	1961	Long Point	James K. Woodford & David J.T. Hussell	Two nests	One nest successful One outcome unknown
	1962	Long Point	James L. Baillie	One nest	Outcome unknown
	1962	Long Point	Ralph McLeary	Three nests	Outcome unknown for all nests
	1962	Long Point	David J.T. Hussell & Robert D. Montgomerie	Four nests	Outcome unknown
	1963	Long Point	David J.T. Hussell & Robert D. Montgomerie	Five nests	Three nests successful Two outcome unknown
	1964	Long Point	Richard C. Rosche	One nest	Outcome unknown
	1964	Long Point	David J.T. Hussell	Six nests	One nest successful Three nests failed due to predation Outcome unknown for two nests
	1965	Long Point	Tony Davis & Robert D. Montgomerie	One nest	Collected (ROM# 9962)

COUNTY	YEAR	LOCATION	OBSERVER	EVIDENCE	OUTCOME
	1965	Long Point	Tony Davis	Six nests	Three nests successful Three nests failed due to predation
	1966	Long Point	Gary W. Page	Two nests	One nest failed due to predation One nest successful
	1967	Long Point	Gary W. Page	Three nests	Two nests successful One nest failed
	1968	Long Point	Michael S.W. Bradstreet	One nest	Nest failed due to predation
	1968	Long Point	Robert Whittam	One nest	Successful
	1969	Long Point	Michael S.W. Bradstreet & Gary W. Page	One nest	Nest successful
	1970	Long Point	George W. North	One nest	Nest successful
	1971	Long Point	Ralph Carter	Young observed	Successful
	1972	Long Point	Alan Wormington	One nest	Outcome unknown
	1973	Long Point	Douglas Nakashima	One nest	Successful
	1974	Long Point	Gary W. Miller	Four nests	Two nests successful Two nests outcome unknown
	1975	Long Point	Will Joyce	One nest	Outcome unknown
	1975	Long Point	Gary W. Miller	Three nests	Two nests failed due to predation One nest successful
	1975	Long Point	Benton Basham	One nest	Outcome unknown
	1975	Long Point	Ron Pittaway	One nest	Outcome unknown
	1976	Long Point	Gary W. Miller	Six nests	One nest successful Four nests failed due to predation One nest failed due to flooding
	1977	Long Point	Gary W. Miller	One nest & six unmated males	Nest failure
Niagara R.M.	1933	Sherkston	Mr. & Mrs. T.M.Kelly	Young observed	Successful

COUNTY	YEAR	LOCATION	OBSERVER	EVIDENCE	OUTCOME
	1934	Sherkston	Mr. & Mrs. T.M. Kelly	One nest	Outcome unknown
	1936	Sherkston	Alice E. Sherman	One nest	Successful
	1938	Sherkston	T.M. Kelly, Lloyd Mansfield <i>et al.</i>	One nest	Outcome unknown
	1944	Sherkston	Robert F. Andrie, John Filor, Arthur Schaffner <i>et al.</i>	Two nests	Outcome unknown
	1934	Crystal Beach	Mr. & Mrs. T.M. Kelly	One nest	Outcome unknown
	1936	Crescent Beach	Winston W. Brockner & Bertha Schwenger	One nest	Outcome unknown
	1938	Long Beach	Thomas L. Bourne	Young observed	Successful
Hamilton	1934	Van Wagners Beach	George W. North & Otto E. Devitt	One nest	Successful
City of Toronto	1907	Fisherman's Island	W.R. Humphreys	One nest	Successful
	1908	Toronto Island	James H. Fleming	Three nests	Two nests successful One outcome unknown
	1910	Toronto	James A. Munro	One nest	Outcome unknown
	1923	Toronto Island	Jack Satterly	Two nests	Outcome unknown
	1928	Fisherman's Island	Frederick H. Emery & James L. Baillie	One nest	Collected
	1928	Fisherman's Island	Paul Harrington & James L. Baillie	One nest	Collected (ROM# 10988)
	1928	Fisherman's Island	Stuart L. Thompson & James L. Baillie	One nest	Collected (ROM# 7637)
	1928	Fisherman's Island	James L. Baillie	One nest	Collected
	1929	Fisherman's Island	K.W. Lomax	One nest	Outcome unknown
	1929	Fisherman's Island	Frederic A.E. Starr	One nest	Outcome unknown
	1934	Hanlan's Point	G. Hubert Richardson	One nest	Downy young collected (ROM# 92484/92485)
Northumb- erland	1915	Presqu'île Provincial Park	Charles J. Young	One nest	Outcome unknown

COUNTY	YEAR	LOCATION	OBSERVER	EVIDENCE	OUTCOME
	1916	Presqu'île Provincial Park	Charles J. Young	One nest	Outcome unknown
Prince Edward	1924	Bald Head Island	Edwin Beaupré	One nest	Collected (ROM# 4466)
	1924	Consecon	Edwin Beaupré & Charles J. Young	Five breeding pairs	Outcome unknown
	1926	Consecon	Edwin Beaupré	One nest	Collected (ROM# 19)
	1930	Sandbanks Provincial Park	Lester L. Snyder	One nest	Adults collected
Frontenac	1903	Collins Lake	Edwin Beaupré	One nest	Collected (ROM# 283)
Leeds	1894	Rockport	Charles J. Young	One nest	Collected (CMN# CMNAV E319)

ROM = Royal Ontario Museum CMN = Canadian Museum of Nature

The Piping Plover has faced many threats in the past 40 years which have led to its endangered status. The increased use of beaches for recreational activities has been a significant contributing factor in its decline. The most frequently recognized problem is the accidental destruction of nests by pedestrians and vehicles and the disturbance of nesting birds. Vehicular use of beaches also damages the delicate ecosystem, contributing to a decrease in insects and microfauna available to foraging birds and the destruction of plant cover. Predator species such as gulls, crows, Merlin (*Falco columbarius*), Northern Raccoon (*Procyon lotor*), skunks and Virginia Opossum (*Didelphis virginianus*), have all increased since the 1960s, likely further contributing to the decline (Lam-

bert 1987, Sauer *et al.* 2003). Sustained high water levels from the mid-1970s, to the 1986 peak levels, either flooded or remodeled much of the suitable beach habitat in the lower Great Lakes. This extensive habitat loss coincided with the timing of the extirpation of the Piping Plover from the lower Great Lakes. High water levels continue to be a problem for stable beach habitat in the Lake of the Woods area today.

The increase in severe weather during migration and on the wintering grounds may influence the remaining population numbers. Development, dredging and beach stabilization projects on the wintering grounds may also be a contributing factor and more research is needed in this area. Additional threats to the Piping Plover include

boats, oil spills, mosquito control, hurricanes and West Nile virus (Stucker and Cuthbert 2006).

Anecdotal evidence from local residents in Bruce County suggests possible historical nesting of Piping Plovers on the beaches at Southampton, Sauble and Oliphant in the first half of the twentieth century, but no specific details or documentation has been located. Prior to daily beach grooming, it is plausible that plovers used these sites due to the availability of suitable habitat. There are five nest records for Bruce County between 1966 and 1972 (see Table 1) in the Ontario Nest Record Scheme (ONRS). Due to a lack of regular surveys and local researchers, the beaches in this area were not routinely checked for Piping Plovers in subsequent years. International Piping Plover surveys conducted in Bruce County in 2001 and 2006 did not locate any birds.

Records of single transient Piping Plovers in Bruce County have occurred at: Singing Sands, Dorcas Bay on 8 May 1989; Oliphant on 26 April 1990 and 21 May 1991 (Bain 1992); Point Clark on 27 May 1991 (Bain 1992); Sauble Beach on 31 May 1991 (Dobos 1999); and Miramichi Bay, Saugeen Shores from 22-23 May 2000 (Roy 2001). On 18 May 2002, a pair was discovered at Oliphant Beach by Don Sutherland, but only a single bird remained until 9 June, before disappearing, possibly disturbed by beach activities (Heyens 2007).

The last known attempted nesting of the Piping Plover on the Canadian

shores of the Great Lakes was a failed nest at Long Point in 1977 (Lambert and Nol 1978). The loss of the long-thriving population at Long Point was attributed to a combination of increased predation from raccoons and a newly expanded population of Ring-billed Gulls (*Larus delawarensis*) and nest destruction and changes in beach structure due to flooding associated with high water levels (Ludwig 1974, Miller 1977, Hussell 1980, McCracken *et al.* 1981).

Since 1977, there have been very few records involving potential breeding evidence for the Piping Plover on the Canadian side of the Great Lakes. In 1978, three unmated, territorial males were seen at Long Point, but no females or nests were located.

On 27 June 1981, a territorial pair was found at Wasaga Beach by Alvaro Jaramillo, but no evidence of nesting was confirmed (Lambert 1987, Wormington 1987). Unmated territorial male Piping Plovers were observed at Long Point from 23 May – 2 June 1989 (Wormington and Curry 1990), 5 June – 15 July 1992 (Bain 1993), 2 June – 15 July 2000 (Roy 2001) and 10 – 15 June 2001 (Crins 2003). The pair found at Oliphant by Don Sutherland on 18 May 2002 apparently failed to nest, with only a single bird remaining until 8-9 June (D. A. Sutherland, unpublished). A territorial pair was observed courting at Wasaga Beach throughout May 2005, but despite very promising indications, the female disappeared thereafter. Although the male remained present

throughout much of June, no evidence of an occupied nest was recorded (Heyens 2005, Jackson 2005).

Recent breeding by the Piping Plover is documented in three Great Lakes states (Michigan, Wisconsin and Minnesota) adjacent to Ontario. The Michigan population of 58 breeding pairs in 2005 is reported to have a self-sustaining rate of fledged young (Cuthbert 2006), and is a potential source of immigration for re-colonizing historical breeding sites in Ontario, since first year Piping Plovers in the Great Lakes basin have demonstrated a range of natal dispersal distances from 2 – 430 kilometres (Price 2002) and an annual adult survival rate of 73% (Wemmer *et al.* 2001). The Great Lakes basin population has more than tripled, from 40 individuals in 1991 to ~125 individuals in 2005 (Environment Canada 2006).

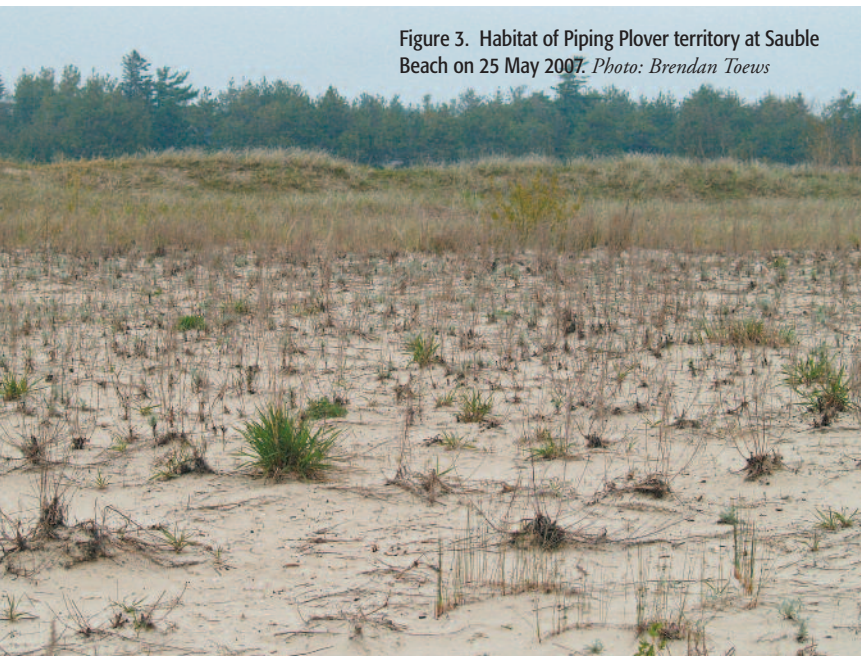
Individual migrant Piping Plovers documented at Beaverton on 2 June 1996 (Dobos 1997), Darlington Provincial Park from 1–4 May 2002 (Worthington 2002, Crins 2003), Burlington Beach on 7 May 2004 (Crins 2005, Curry 2006), Rondeau Provincial Park on 17 May 2004 (Crins 2005), Presqu'île Provincial Park from 21 May – 8 June 2005 (Crins 2007) and 29-30 May 2006, as well as the courting pair documented at Wasaga Beach in May 2005 (Heyens 2005, Jackson 2005), the pair that nested successfully at Sauble Beach in 2007, and the single adult observed at Wasaga Beach on 9 August 2007, were all identified by colour bands as

originating from the growing Michigan population.

Despite high adult breeding site fidelity of 84% (Wiens and Cuthbert 1988) and natal philopatry of 70% (Haig and Oring 1987), the small breeding population remaining in the Lake of the Woods area of northern Minnesota has declined dramatically from 40 to 50 individuals in the early 1980s (Wiens and Cuthbert 1984) to five adults (and only one breeding pair) in 2003 (Haws 2005). The crash of this population threatens the continued occurrence of the Piping Plover as a breeder in western Rainy River District, and perhaps its extirpation from Ontario entirely. This is of great concern, since this population serves as the only geographical link between the Northern Great Plains/Prairie population and the recovering Great Lakes population (Environment Canada 2006).

Discovery of the Piping Plover pair at Sauble Beach in 2007

The discovery and successful nesting of the Piping Plover pair at north Sauble Beach was an exciting and historical event in 2007. On the afternoon of 13 May, Brendan and Kimberly Toews set out from their summer residence to visit Sauble Beach in Bruce County. The family had been coming to the area since 1989, and knew that the beach was a good site for birds. Brendan brought his binoculars and digital camera, and they walked along the beach observing and photographing Ring-billed Gulls,



Herring Gulls (*Larus argentatus*), Common Terns (*Sterna hirundo*), Caspian Terns (*Hydroprogne caspia*) and Killdeer (*Charadrius vociferus*).

Upon arrival at the north end of the beach, Kimberly observed a small shorebird foraging at the water's edge. This shorebird did not vocalize or act defensively. She brought it to Brendan's attention and he immediately realized that the bird was either a Piping Plover or Snow Plover (*Charadrius alexandrinus*). Although neither observer had previous experience with the species, by working through the field marks, Brendan correctly identified it as a Piping Plover. This was also confirmed by comparing photographs of the bird with several field guides.

There was extensive Piping Plover nesting habitat available at Sauble Beach, since the dunes had been allowed to regenerate and naturalize over several years (Figures 2 and 3). Since 2000, the Friends of Sauble Beach (a non-profit group of volunteers that actively promote respect for this fragile environment) had been engaged in efforts to naturalize this beach. This included planting native flora to rehabilitate the beach dunes and reducing the number of beach access points from nearly two hundred to twelve.

Although finding an endangered species in Canada was the highlight of the Toews' birding season, it was even more exciting that this sighting involved the rarest of Ontario's four breeding plover species in alternate plumage.

Figure 4. Adult female (left) and adult male (right) Piping Plovers at Sauble Beach on 17 May 2007.

Photo: Brendan Toews



Both observers quickly noted that the plover was banded. They knew that the Piping Plover was designated an endangered species in Ontario and Canada, and that they would need to report the bird to authorities. Within moments of Kimberly discovering the male plover, Brendan located a banded female Piping Plover that was heading inland towards the vegetated dunes. He identified it as a likely female because it was much paler in colour compared to the first bird, with reduced amounts of black. The presumed male had more prominent forehead and breast bands and its back



was darker in colour (Figure 4). The sexes of these birds were confirmed subsequently by their colour band combinations. Brendan understood that there had not been a Piping Plover nest record in the general area since the early 1970s.

Nesting chronology of the Piping Plovers at Sauble Beach in 2007

On 14 May, Brendan and Kimberly returned to the north end of the beach to confirm that the Piping Plover pair was still present before reporting the sighting to others. That evening, Bren-

dan completed an on-line rare bird report for the Ontario Bird Records Committee (OBRC). Ian Richards, Secretary of the OBRC, promptly replied to Brendan, thanking him for submitting the online report, and asked him to forward some of his photographs. Ian confirmed that these were Piping Plovers in appropriate habitat, and that he suspected nesting might be likely. Ian contacted Donald Sutherland at the Natural Heritage Information Centre (NHIC) of the Ontario Ministry of Natural Resources (OMNR), and Jeff Robinson of Environment Canada's

Canadian Wildlife Service (CWS), in order to get the Piping Plover recovery team quickly involved in protecting any potential breeding attempt.

On the morning of 15 May, Jeff Robinson contacted the regional Species at Risk staff of Environment Canada to initiate an effort to secure the site in the case of a breeding attempt. He also forwarded Brendan's images to Jack Dingledine, a Michigan biologist with the United States Fish and Wildlife Service (USFWS), to determine the origins of the banded Piping Plovers. The leg band combinations documented in the photographs confirmed that the male (band combination: aluminum on right tibia, blue/orange/blue on right tarsus, orange on the left tibia) had hatched and fledged in 2006 on the shore of Lake Michigan at Ludington State Park, Michigan, making it a first time breeder (Figure 5). The female (band combination: aluminum on the right tibia, very pale green on right tarsus, no bands on the left leg) was four years old, and originally from Sleeping Bear Dunes National Lakeshore, Michigan, on the shore of Lake Michigan (Figure 6).

(top) Figure 5. Adult male Piping Plover at Sauble Beach on 7 July 2007. *Photo: Brendan Toews*

(right) Figure 6. Adult female Piping Plover at Sauble Beach on 3 July 2007. *Photo: Brendan Toews*

(far right) Figure 7. Male Piping Plover performing aggression display toward a Killdeer at Sauble Beach on 15 May 2007. *Photo: Brendan Toews*







Figure 8. Male Piping Plover performing courtship display for the female at the nest scrape on 17 May 2007. *Photo: Brendan Toews*

Figure 9. Male Piping Plover excavating the nest scrape on 17 May 2007. *Photo: Brendan Toews*



That afternoon, the likelihood of local breeding appeared high, as Kimberly and Brendan witnessed the male Piping Plover performing displays of territorial aggression toward a Killdeer that approached it too closely (Figure 7).

On 17 May, Brendan and Kimberly first noted a nest scrape in a section of dune on the south side of the north end beach access. The male was observed doing courtship displays to the female (Figure 8) and aggression displays towards nearby Ring-billed Gulls near this scrape. The male was photographed excavating this nest scrape (Figure 9), and the pair then took turns sitting on the nest. A second nest scrape was also located.

On this day, Norah Toth, Natural Heritage Education Specialist at MacGregor Point Provincial Park, was the first to organize volunteers to help monitor the plover pair at the request of the OMNR. Along with birder Mike Pickup from Saugeen Shores, she began organizing volunteers from the Bruce Birding Club and the Owen Sound Field Naturalists to help monitor the plovers.

On 19 May, the first volunteers began what would become a nearly continuous stewardship program in aid of these endangered breeding birds. Brendan and Kimberly briefed the volunteer groups on the locations of the nesting and principal foraging areas of the plovers, as well as the various immediate threats they faced from off-leash dogs, stray cats, raccoons, foxes, gulls, beach walkers, cyclists, fireworks, and motor-

ized vehicles (all-terrain vehicles for by-law enforcement, garbage collection vehicles, and tractors for beach grooming). Beach raking operations in the area were suspended so that the birds would not be harmed or disturbed. There was also a moratorium placed on vehicle access and garbage bins were removed from the immediate area to deter scavenging gulls and mammals.

The committed corps of volunteers was drawn from Sauble Beach, (local area residents, cottage owners, local businesses), the Bruce Birding Club, the Owen Sound Field Naturalists, Friends of Sauble Beach, Friends of MacGregor Point Provincial Park, Ontario Parks, the Huron Fringe Birding Festival Committee, Parks Canada, the Ontario Field Ornithologists, as well as many others who made special effort to help with the program. The volunteer guardians monitored the nest site in all types of weather, from dawn until late in the evening, and around the clock on holiday weekends. They observed and photographed behaviours of the birds and recorded daily observations. The guardians wore white shirts with a Piping Plover on the back and the motto "helping one bird at a time". Besides serving to protect the nesting plovers, the volunteer stewards played a valuable role in public relations and visitor education, eventually distributing over 1500 information brochures to more than 3000 interested visitors. They served as knowledgeable interpreters at spotting scopes set up for the public to view the birds from a safe

distance. Stewart Nutt from Southampton was eventually appointed as coordinator of this volunteer group of guardians. This exemplary conservation effort eventually became a popular media story, garnering coverage from the Owen Sound Sun Times, the Toronto Star, the Ottawa Citizen, Rogers Cable television, and the Canadian Broadcasting Corporation, among others.

Copulation by the plovers was first observed by Peter Middleton on the afternoon of 24 May. Plans were being formulated between CWS and OMNR staff to erect a predator enclosure around

any eventual nest site, using trained staff working under the auspices of federal permit.

On the morning of 25 May, the male was vigorously vocalizing and repeatedly throwing sand from one of the nest scrapes. At 0904 hrs, the pair was observed copulating at the nest site (Figure 10). Following copulation, both plovers took turns sitting on the nest. While the female was sitting on the nest, the male displayed and vocalized in front of her with its tail fanned and wings outstretched. Whenever the female vacated the nest, the male immediately either sat in the nest or continued excavating.

Figure 10. Pair of Piping Plovers copulating over the nest scrape on 25 May 2007.

Photo: Brendan Toews





Figure 11. Male Piping Plover foraging on the Lake Huron shoreline at Sauble Beach on 3 July 2007. Photo: Brendan Toews



The Piping Plovers appeared to feed on aquatic insects and larvae gleaned from the dune plants and the lakeshore, crustaceans, larvae from wrack, and various aquatic invertebrates. They would alternately sprint a short distance, abruptly pause, then peck or probe for food in the sand along the water, or on plants. Rarely, the birds would scrape the sand near the water with one foot, and then peck and feed. They foraged in the dunes, on the shoreline, and at the edge of creeks (Figure 11).

Observations of the nest scrape were kept to a minimum and made exclusively by trained staff working under the authority of federal permit. The first pale, buff-coloured, black-speckled egg was detected in this nest at 1159 hrs on 26



Figure 12. Nest and three eggs of the Piping Plover pair on 30 May 2007. *Photo: Brendan Toews*

May (ONRS #191787). The nest still contained one egg at 0654 hrs, and at 2120 hrs on 27 May the nest contained a second egg. On 28 May, both sexes alternated between incubation duties and feeding opportunities.

As a protective measure, the nest area was widely cordoned off and a restricted perimeter was defined with long metal fence posts, nylon rope, yellow caution tape and Piping Plover signage, on 29 May. All protective measures taken on

behalf of this endangered species were done under the authority of federal permit, and all photographs were limited to being taken from beyond the cordoned area once it was established. At 0630 hrs on 30 May, the nest contained three eggs, and the nest scrape contained some shells, pebbles and sticks (Figure 12). By 1 June, the nest contained a complete clutch of four eggs, and efforts were underway to erect an enclosure to ensure the birds had the best chance

at successful nesting (Nest location: 17 478013 4945121 NAD83; 44° 39' 32.82" N, 81° 16' 38.4" W).

Predator exclosures significantly reduce nest predation by protecting the eggs and birds from gulls, crows, merlins, owls, raccoons, skunks, foxes, dogs, cats, and other predators. Precedent and guidelines for the use of such exclosures are well established (Richardson 1997, Schmelzeisen and Engley 2003). Prior to its construction over the nest, three practice runs were performed further down the beach, to work on reducing the disturbance associated with the time

required to erect it. After flushing the female from the nest, Angela McConnell (CWS), Jessica Jackson (OMNR), Kirk Silver (OMNR), Peter Middleton and Norah Toth completed construction of the exclosure in a mere 17 minutes (Figure 13). During this time, both the male and female plovers remained in the area vocalizing constantly, with the female feigning a broken wing display.

Upon completion of the exclosure, the female returned to the nest without hesitation, and both birds were subsequently observed taking turns at incubation duties (Figure 14).

Figure 13. Newly erected nest exclosure on 1 June 2007. *Photo: Brendan Toews*



This enclosure required no repairs in the 70 days it was left in place, and remarkable plant growth occurred in this undisturbed area (Nutt 2007).

For most of the remainder of the incubation period, the male and female plovers alternated incubation duties every 30–60 minutes, leaving the enclosure periodically whenever disturbed by potential predators such as gulls, foxes and cats. The adults were frequently observed attacking a gull when it ventured too close to the nest. The female also left the nest unattended for short periods, and once for a longer period, when the male was missing for more than a day.

On 20 June, a live trap was set up for a Red Fox (*Vulpes vulpes*) that habitually visited the nesting area, and interpretive Piping Plover signage (donated by Jack Dingle-dine on behalf of the USFWS) was installed at the perimeter of the exclusion area.

By 23 June, the plovers were switching duties at the nest more frequently (every 15 minutes), and spent noticeably more time readjusting the eggs. On 24 June, the female was seen removing a piece of egg shell from the nest. Two hours later, confirmation of the emergence of the first chick was made. This downy chick moved about a metre away from the nest and stayed there for 10 –

15 seconds before running under the adult. By that afternoon, the second and third chicks were seen, and they stayed out for 1 – 3 minutes before moving back to the nest to be brooded under the male. The fourth chick was first seen on 26 June, when it was considerably smaller than the other three chicks.



Figure 14. Male Piping Plover incubating four eggs within the nest enclosure in June 2007.

Photo: Brendan Toews



All four chicks followed the adults to the south end of the cordoned nesting area to forage. The chicks typically moved under the wings of both of the adults and would instinctively freeze in a crouch position in response to alarm notes from either adult. The female brooded all four chicks several times throughout the day (Figure 15). On 27 June, there were very strong winds at the beach, and the chicks remained

high up in the dunes among the thick vegetation for most of the day. Two of the chicks were becoming more independent, foraging by themselves and straying a little further from the adults.

Both the male and female actively defended the chicks from aerial attacks by gulls. Despite their strong defense instinct, however, one of the chicks was lost to unknown causes on 29 June.

Figure 15. Female Piping Plover brooding four day old chicks at Sauble Beach on 28 June 2007.

Photo: Brendan Toews





Figure 17. Piping Plover pair exhibiting defensive display in leading a Ring-billed Gull away from their young on 7 July 2007.

Photo: Brendan Toews

Figure 16. Nine day old Piping Plover chick at Sauble Beach on 3 July 2007.

Photo: Brendan Toews



The rest of the plover family then moved about 250 m north to the river, where they would spend much of their time over the next few weeks.

On 1 July, the Canada Day weekend crowds inevitably meant that the volunteer guardians had to spend more time on crowd control to allow the increasingly mobile plover family to safely move to and from favoured foraging areas.

In the early morning of 2 July, a fox appeared from the north and moved

through the cordoned area three times over forty minutes. When it approached the chicks, they were vigorously defended by the adults, who led the fox away from the young by fly-

ing in front of it, crouching or feigning a broken wing display, and then flying and landing further away to divert its approach.

By 3 July, the young could move quickly on foot, although one of the three chicks was smaller and often lagged behind its siblings. One of the nine day



Figure 18. An 18 day old Piping Plover chick being banded at Sauble Beach on 12 July 2007.

Photo: Brendan Toews



old chicks was observed making an aborted early attempt at flight. It was running around in circles and flapping its wings. With the warmer temperatures, the chicks spent less time being brooded and more time foraging independently (Figure 16).

On 5 July at 0530 hrs, the plover chicks were banded by Martin Wernaart, Madeline Austen (CWS), Jeff Robinson (CWS) and Christine Vance (Parks Canada), aided by Stewart Nutt, and volunteer guardians Peter Middleton, Doug Pedwell and Don Kennedy. When the chicks were being brooded under the male, they were then carefully

directed to an area of open beach and quickly caught. The entire banding process took about 15 minutes from capture to release. The three chicks quickly rejoined the male after the banding operation was complete. Two of the chicks weighed 18 grams and the third weighed 17 grams. All of the chicks were deemed healthy and banded with different combinations of aluminum USFWS band and orange and yellow colour bands (Nutt 2007).

On 7 July, the adults spent much of the time defending the chicks from Ring-billed Gulls. The male attacked and the female exhibited broken wing

behavior, both leading the gulls away from the chicks. At other times, the pair intercepted individual gulls, walking beside the gull and moving ahead of it, while turning away and crouching on the sand (Figure 17). Both adults were also very aggressive towards a Spotted Sandpiper (*Actitis macularius*) which landed near them. The male chased it about 200 metres down the beach.

In the afternoon, a group of beach partiers set up too close to the plovers and refused requests by the volunteer guardians to move a little further away. They agreed to move when subsequently requested to do so by local bylaw enforcement officials and the Ontario Provincial Police.

At 2120 hrs, the Piping Plover chicks came under attack by a Merlin, and one chick had a particularly close call. Although none of the birds were taken, the chicks could not be located for some time. Both adults flew directly at the Merlin, forced it to the ground twice, and eventually chased it completely out of the area.

On the afternoon of 9 July, Brendan and Kimberly heard the male plover vocalizing a loud “*pipe-pipe-pipe*” call. It was then observed displaying to the female by erecting its feathers and bringing its wings forward and spreading its tail, aggressively facing and moving toward the female.

On 10 July, sixteen days after the hatching of the first chick, the female left the area for good, leaving the family in the care of the male. Females com-

monly desert broods 5-17 days after hatching (Elliott-Smith and Haig 2004). Although the male vocalized for an extended period (even continuously for up to 25 minutes), presumably trying to establish contact with the female, it ultimately concentrated its efforts on guarding the chicks. The first of the chicks was later observed making its first abrupt flight of less than a metre.

On 12 July, a successful effort was made to re-check the bands on all of the chicks, since it was noticed from photographs that one of the bands on a chick had become displaced. The young were corralled toward the beach by Don Kennedy, Ethan Meleg, Peter Middleton, Stewart Nutt, Doug Pedwell, Brendan Toews and Kimberly Toews, and were quickly captured and examined by Martin Wernaart, Christine Vance and Jeff Robinson. All three chicks had their bands checked and their weights measured, and were then quickly released back in the vicinity of the male. All of the chicks had doubled their weight from 18 to 36 grams in the seven days since they were first banded (Figure 18).

From 15–18 July, the juvenile plovers spent the majority of their time foraging and resting, and began to exercise their wings extensively, including taking some short flights. On 19 July, one of the chicks was observed in flight for more than 40 metres. By 21 July, the three juveniles appeared to be similar in size to the male and began to forage further away from the male with greater frequency. On 22 July, the male was



Figure 19. Three 32 day old juvenile Piping Plovers huddled together in a sand depression at Sauble Beach on 26 July 2007. *Photo: Brendan Toews*

observed defending the juvenile plovers from persistent foxes and driving away a Merlin after another unsuccessful attack on the young. Later, all four plovers were observed bathing in the waves. One juvenile was observed running into the water and performing a barrel roll.

By 24 July, the juvenile plovers were flying well and foraging widely up and down the beach (seen as far away as 2.5 km south of the nest area). They were able to keep up with the male, and followed its lead in flying, bathing, foraging and resting. The male continued to vocalize alarm notes to warn them of possible predators.

The last day that the male and all three juvenile plovers were observed together was 26 July. They were all seen foraging along the creek, in the dunes, and on the beach.

The juveniles appeared to be much more independent, and were able to avoid gulls without any assistance from the male. All three juveniles were observed huddling together in a deep impression in the sand (Figure 19). At this point, the juvenile plovers were quite comfortable foraging along the beach in close proximity to people (Figure 20).

On 28 July, the male and one juvenile were observed on the beach, and



Figure 20. Juvenile Piping Plover (32 days old) at Sauble Beach on 26 July 2007.

Photo: Brendan Toews

then seen flying across the Sauble River. They were not seen for the remainder of the day. On 29 July, the male plover and one juvenile were last observed at 0840 hrs flying west over the breakwall at the Sauble River. Although observers were present until 2200 hrs, no plovers were found again. Likewise, no plovers were observed at Sauble Beach from 0645 –

1500 hrs on 30 July. A search by volunteers of beaches from Southampton to Oliphant failed to locate any Piping Plovers (Nutt 2007). As the nesting had come to its successful conclusion, a media event and volunteer appreciation dinner were hosted at the Sauble Beach Community Centre on 2 August by the Friends of Sauble Beach, to celebrate



the experience and thank all those who worked to help ensure the wonderful outcome.

Conclusion

This record represents the first nesting of the Piping Plover on the Canadian shore of the Great Lakes since 1977. It also marks the first nest record in Bruce

County since 1972. This record also involves the only pair of Piping Plovers known to nest successfully anywhere in Ontario in 2007.

Few observers would have imagined that their spring and summer at Sauble Beach would be spent assisting an endangered bird species struggling to keep its place on the planet. The success of these birds was a tribute to both the great skill of the adult plovers and the excellent collaboration and leadership from the community, volunteer organizations and officials from three levels of government, all cooperating in a manner that was timely and unselfish. It was a tremendous success to have three fledged and healthy young result from this nesting. It is hoped that Piping Plovers will return to Sauble Beach in 2008 and help pioneer a return of this species to additional sites on Ontario's Great Lakes shores.

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