



Photo: Angela Massey

Black Terns in the Dryden District of Northwestern Ontario, 2001-2010

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The Black Tern (*Chlidonias niger*) is a small dark tern which nests in emergent vegetation in marshes. Its main breeding range in Ontario is along the Great Lakes up to the southern edge of the Canadian Shield. There are scattered nesting areas in northern Ontario (Cadman *et al.* 2007) but these have received very little study or documentation. The main purpose of this article is to report on nestings by Black Terns in one area of the Dryden administrative district of the Ministry of Natural Resources (MNR) in northern Ontario during the period 2001-2010.

My first encounter with Black Terns in the Dryden district occurred in June 2000 while scouting a potential Breeding Bird Survey Route southeast of Eagle

Lake. We were checking out a stream crossing at Km 4 on Century Road when we heard sharp kik-kik calls overhead. Six Black Terns were crossing the road as they followed the stream to a marsh south of Century Road. In 2001, I volunteered to survey squares for the 2001-2005 Ontario Breeding Bird Atlas. Square 15WR00 included the stream and the marsh where I saw the Black Terns in 2000. In the spring of 2001, while looking for breeding evidence for Black Terns and other species within the square, we found an access into the marsh. A side road took us to a site where we could view most of the large wetland. Beavers (*Castor canadensis*) had dammed an abandoned 50 year-old wooden bridge spanning the

stream, creating a large beaver pond upstream from the dam and an expansive cattail marsh on both sides of the stream. From our lookout, we could see at least two dozen Black Terns foraging in the marsh and entering possible nest sites in the emergent vegetation. Using a canoe on our next visit, we were able to explore the marsh and confirm nest sites.

Confirming a nest site proved to be easy. Black Terns are not shy around humans. While foraging, they remain focused on their prey, hovering, dipping and wheeling about until we paddle too close to a nest site. Then shrill alarms are sounded and all the available Black Terns join in the effort to chase us away. Once we paddle a safe distance away from the nest site, the terns resume feeding until we near another nest site and then the alarm is sounded again. We always make a conscious effort not to disturb the nest sites for too long and endanger the eggs or chicks. Photographing the structure and contents of one or two nests is all we try

to accomplish while being dive-bombed. The location of the photographed nests and other sites of agitation are recorded using a Garmin GPS unit.

The Black Tern marsh at Km 4 south of Century Road was named the Nabish Cattail Marsh because it is part of the extensive Nabish Lake wetlands. Nabish Lake is a unique marshy lake fed by five major streams. Water from the Nabish wetlands eventually reaches Rice Bay in Eagle Lake through the Rice River. Rice River derives its name from the Wild Rice (*Zizania palustris*) found in the river and bay. From a bird's eye view, the Nabish wetland complex looks like a giant octopus with the round Nabish Lake forming its head. During the month of July, Fragrant White Water Lily flowers (*Nymphaea odorata*) cover most of the shallow lake's surface. A floating mat of fen and marsh plants extends from the shoreline providing nesting habitat for a high diversity of wetland birds including Lincoln's Sparrow (*Melospiza lincolnii*), Le Conte's

Figure 1. Location of Kuenzli Bay, Bottle Bay, Nabish Lake and Nabish Cattail Marsh Nest Sites.



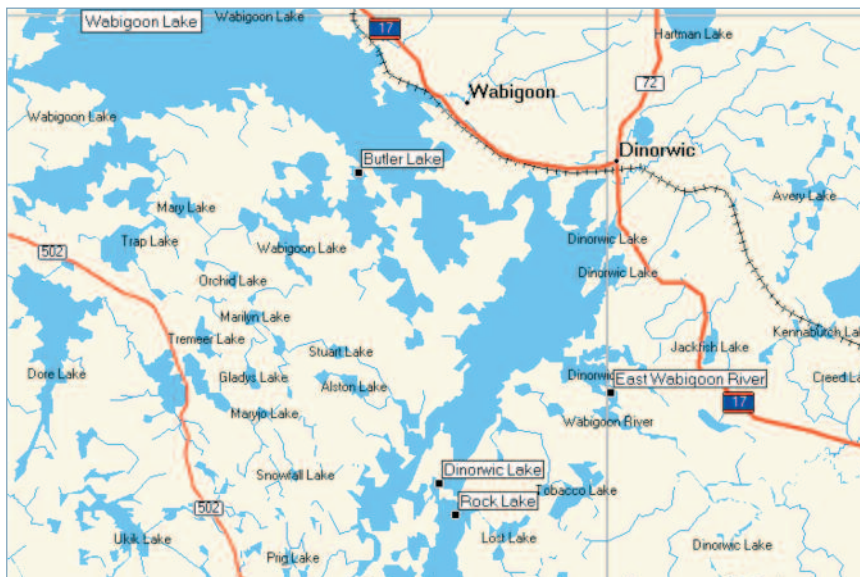
Sparrow (*Ammodramus leconteii*), Sedge Wren (*Cistothorus platensis*) and even Yellow Rail (*Coturnicops noveboracensis*). Following the stream, the Black Terns fly back and forth between Nabish Lake and the Nabish Cattail Marsh (Figure 1).

In 2005, on our first entry into the Rice River north of Century Road, we had to haul the canoe over a large mat of vegetation that was blocking the mouth of the river in order to gain access into Nabish Lake. Fragments of the floating vegetative mat along the shoreline break loose during storms and are pushed by the wind to different locations. We made eight visits to the Nabish Cattail Marsh and four canoe trips into Nabish Lake, confirming active Black Tern nests in both wetlands.

Since 2005, we have continued to survey the Nabish Cattail Marsh and Nabish Lake for Black Terns and other bird

species. With the help of CFWIP grants to cover transportation costs, we have expanded our search into other rich wetlands. Using canoes and motors boats, we have located six more Black Tern nesting sites. Two sites, Kuenzli Bay and Bottle Bay, are in sheltered marshes on Eagle Lake (Figure 1). The other four nesting sites are within the Wabigoon/Dinorwic Lakes watershed. Black Tern colonies have been recorded at the entrance into Butler Lake from Wabigoon Lake, at the mouth of the East Wabigoon River into Dinorwic Lake, Dinorwic Lake narrows into Rock Lake (Kaminassassin Bay) and the marsh in Rock Lake (Figure 2). So far no other Black Tern colonies have been found outside of the Eagle Lake, Dinorwic Lake and Wabigoon watersheds. All known Black Tern nesting sites are linked to Eagle Lake, Dinorwic Lake and Wabigoon Lake by large streams or rivers.

Figure 2. Location of Butler Lake, Dinorwic Lake, Rock Lake and East Wabigoon River Nest Sites.



Habitat

The Black Tern's preferred habitat is a "hemi-marsh" (i.e. a wetland with 50:50 open water and emergent vegetation). It breeds in cattail (*Typha* sp.), phragmites (*Phragmites* sp.) and bulrush (*Scirpus* sp.) marshes of at least five hectares (12.5 acres). Fairly extensive stretches of open water adjacent to the marshes are important (Messier and Rail 1996). Black Terns have been known to accept either artificial or restored wetlands provided they are biologically rich and water levels are stable throughout the breeding season (Dunn and Agro 1995). The Dryden district sites are biologically rich marshes. Black Terns share their territory with a high diversity of wetland bird species including: Common Loons (*Gavia immer*), Red-necked Grebes (*Podiceps grisegena*), Pied-billed Grebes (*Podilymbus podiceps*), Virginia Rails (*Rallus limicola*), Soras (*Porzana carolina*), Red-winged Blackbirds (*Agelaius phoeniceus*), Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*), American Bitterns (*Botaurus lentiginosus*) and even the rare Least Bittern (*Ixobrychus exilis*). The terns seem to be tolerant of their non-predatory feathered neighbors. In fact, there may be a mutual benefit of safety in numbers. On Butler Lake, Red-winged Blackbirds rose up with the terns to mob a family of Common Ravens (*Corvus corax*) passing overhead. At Nabish Lake, several Black Terns mobbed a Bald Eagle (*Haliaeetus leucocephalus*) as it made a pass over a pair of loon chicks. Until they learn to dive, loon chicks are easy prey for the growing population of Bald Eagles. Black Terns return to nest in an area year after year as long as the habitat remains suitable, but

once emergent vegetation becomes too dense or too sparse, or the water levels change markedly, the birds move abruptly to new areas (Cadman *et al.* 1987). The abandonment of a nesting site in the Dryden district is a common occurrence.

Food

The many descriptions of Black Terns foraging are very poetic: "fluttering like a dark butterfly over marshes", "flies swallow-like over surface of water or land" and "acrobats slice through the sky with grace". They perform an aerial ballet as they hover over the water looking for minnows and invertebrates. They dip into the water, plucking minnows and insects from the surface. Insects are also snatched from the air. We recorded Black Terns carrying minnows at all of the nesting sites that were surveyed more than twice. In addition to feeding their chicks, male terns carry minnows to their prospective mates, as part of a courtship display (Anonymous 2006).

Nesting

The Black Tern is loosely colonial or semi-colonial in its nesting habits. In Ontario, colonies are typically small, usually consisting of fewer than 20 pairs (Cadman *et al.* 2007). Estimating the number of pairs can be difficult since we have found from experience that not all adults leave their nests even when their neighbors band together to ward off intruders. Also, Black Terns will forage several kilometers from their colony. I estimated the number of pairs by using the highest number of adults seen together in the air at one time. Locating all the nests would be too great a disturbance.

The Nabish Cattail Marsh was abandoned by the terns for two dry seasons during 2003 and 2006 and then they returned to nest in 2004, 2005 and 2007-2009. In 2005, the marsh had at least 12 adults in the air indicating 6-12 possible nests while Nabish Lake had at least 20 adults in the air at one time indicating 10-20 possible nests (Table 1). On our last 2005 canoe trip into Nabish Lake, on 20 July, eight fledged juveniles were flying with 20 adults. Also in 2005, Black Terns were reported but not surveyed at the south end of Dinorwic Lake and Rock Lake (also called Kaminnassin Bay in Dinorwic Lake). Black Terns were not seen in this area during the 2007-2010 surveys. Two other sites, at Dinorwic Lake and Rock Lake, have been abandoned since 2006.

From the lowest number of two adults on the East Wabigoon River in 2010 and the highest number of 30-32

adults on Kuenzli Bay in 2008-2009, I estimated from 1-20 breeding pairs in each of the known nesting sites in the Dryden district. The number of breeding pairs for each site varies from year to year. The terns had a bad year in 2010 when water levels rose dramatically in June, following monsoon-like rain storms. Only Butler Lake had a healthy Black Tern population with at least 20 adults. There were no Black Tern nests in the Nabish Cattail Marsh, Bottle Bay, Kuenzli Bay, Dinorwic Narrows or Rock Lake, though a single bird was present at Bottle Bay. Only one pair was seen nesting in the East Wabigoon River whereas in 2007 there were at least 24 adults nesting there. As can be seen in Table 1, the number of terns present at the six main sites in 2008-2009 declined by more than 50% in 2010. Hopefully, the numbers will rebound in 2011.

Table 1. Number of adult Black Terns observed during censuses of the indicated marshes, 2001-2010.

See text for interpretation of number of nests. H indicates casual reports of Black Tern activity.

Location	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Nabish Cattail Marsh	24	20	0	12	12	0	2	12	6	0
Nabish Lake					20	3	0	13	12	7
Eagle Lake										
Kuenzli Bay					10	12	16	30	32	0
Bottle Bay								8	3	1
Butler Lake*	H	H	H	H	H	H	H	H	30	20
East Wabigoon River							24	10	0	2
Dinorwic Lake			15	12	H	0	0	0	0	0
Rock Lake				12	H	0	0	0	0	
Total	24+	20+	15+	36+	42+	15+	42+	73+	77	30

* Marilyn Bilsbarrow, my guide and resident on Wabigoon Lake, has seen Black Terns in Butler Lake for 15 years or more. I surveyed Butler Lake for the first time in 2009.



Figure 3. A typical Black Tern nest.

Figure 4. A young Black Tern. They leave their nest at the first sign of any danger or disturbance.

Photos: Darlene Salter

The nest of the Black Tern is small and very flimsy, nearly flush with the water and usually built on an upturned cattail root, floating vegetation mat, patch of mud, or even flotsam (Figure 3). The majority of egg dates at the Dryden sites occurred between 26 June and 9 July with anywhere from 1 to 3 eggs per nest. These dates are 2.5 to 4 weeks later than the majority of nesting for Black Terns in Ontario (Peck and James 1983). The eggs are beige to brown with dark irregular blotching. The color and pattern is an



effective camouflage, making the eggs difficult to see on the heap of reeds or mud. With the exception of Nabish Lake, all of the nests that I have encountered are in emergent vegetation that conceal the nest. The nest, loosely constructed with aquatic plants, usually reeds, is surrounded by a moat or water channel. I have watched downy chicks slip off the nest and swim off into the emergent

vegetation when the adults cry out in alarm. I have come to the conclusion that the moat surrounding the nest serves as a quick means of escape for the flightless chicks and the nearby emergent vegetation hides the chick from aerial predators and protects them from aquatic predators especially large fish.

Nabish Lake is the exception because the terns have been nesting on rafts of upturned Fragrant White Water Lily roots for two breeding seasons, 2009-2010. The root rafts are in open water with no emergent vegetation to hide in. Nabish Lake has no large fish, only minnows and the downy chicks disappeared under water lily leaves as the adults dive-bombed us (Figure 4). The entire shoreline of Nabish Lake has wide floating mats of emergent vegetation but the terns preferred the open water adjacent to the root rafts to the mats of emergent vegetation. On 28 July 2010, at the Nabish Lake colony, one fledged juvenile, two downy chicks and an adult incubating an egg were observed. This illustrates that Black Terns will nest again if their eggs or chicks are lost to predators. It is possible to record fledged juveniles and downy chicks on the same date and location. The chicks are fed at the nest site until they fledge at 20-24 days. Once they are airborne, they follow the adults and learn to snatch food out of the air and pluck it off the water. They also join the adults in defending other nests.

Discussion

With the exception of Butler Lake none of the Black Tern colonies in the Dryden district are stable from year to year. Water levels and human disturbance seem to be

the controlling factors. A property owner on Kuenzli Bay in Eagle Lake, was issued a permit by the Dryden MNR around 2007 to dredge a boat channel right through the center of the Black Tern colony on Kuenzli Bay. While the Black Terns continued to nest in Kuenzli Bay until 2010, the colony became very agitated whenever any boats passed through the dredged channel in the marsh. Their nesting and feeding activities were disrupted until the boat left the channel.

Heavy precipitation and increased damming by beavers may have resulted in no nesting activity in the Nabish Cattail Marsh in 2010. Instead of placing a beaver baffle into the dam at the cattail marsh, the forestry company that holds the license for the Wabigoon Forest paid to have 15 beavers trapped. With the lack of maintenance, the beaver dam broke on 24 July 2010, draining the cattail channels where the terns nested and we canoed. During October, the Dryden MNR under the guidance of Species at Risk Biologist, John Van den Broeck, reconstructed the beaver dam using boulders and fabric. A beaver baffle was installed into the dam to prevent future flooding. Unless the water levels are restored to fill the cattail channels in the Nabish Cattail Marsh, the Black Terns, Red-necked Grebes, Virginia Rails, Soras, American Bitterns and the documented Least Bittern will not return to nest in 2011. If the beaver baffle maintains the water at an optimal level, then the Black Terns may return to nest.

Black Tern populations in Canada have been declining at a significant rate of 3.1% since 1968 — equivalent to an overall loss of 68% of the population by

2006 (Anonymous 2006). Population surveys of nesting Black Terns along the Great Lakes shoreline indicate an overall decline of 35% between 1991 and 2001 (Cadman *et al.* 2007). While Black Terns are listed as a Species at Risk in Ontario, they are designated as Special Concern, not Threatened. I recommend Black Terns be listed as Threatened so that known Black Tern nesting sites can receive protection from harmful human activities such as dredging boat channels, trapping out beaver and forestry road construction. Beaver activities such as building beaver dams, dredging channels through cattails, uprooting cattails and the use of feeding platforms create Black Tern nesting sites. Beavers and muskrats (*Ondatra zibethicus*) are an essential component in the creation of ideal Black Tern nest sites, a mound surrounded by water but protected within emergent vegetation. The MNR needs to change their nuisance beaver policy in regards to forestry roads. Beaver bafflers should be used to control water levels where possible rather than trapping out the beaver.

This article is based on 10 years (2001-2010) of recorded observations at different Black Tern nesting sites.

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