

Suspected Nest Usurpation of a Spotted Sandpiper by a Common Tern

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On 25 June 2003, I was part of an Ontario Ministry of Natural Resources (OMNR) field crew collecting data on waterbird nesting populations on the islands and shoreline of Lake Abitibi, Cochrane District. The survey was designed to locate and count nests in colonies previously identified from aerial surveys. In a small Common Tern (*Sterna hirundo*) colony of 22 nests, I photographed a nest with an unusual complement of eggs (Figure 1). The nest contained a total of seven eggs. Three eggs were identified in the field as Common Tern, and the remaining four obviously belonged to another species. Consultation with various experts determined that the nest was constructed by a Spotted Sandpiper (*Actitis macularius*), based on the nest size and building material. Furthermore, the four smaller eggs were positively identified as those of a Spotted Sandpiper. The Common Tern had apparently been the latecomer, laying its eggs in the nest after the sandpiper. Although adults of both species were observed in the vicinity of the colony, none were obviously attending the nest.

The colony was located on a small, sparsely vegetated bedrock

island in the northwest basin of Lake Abitibi, part of the Lake Abitibi Islands Provincial Nature Reserve (UTM E 577943, N 5420247), in Ontario Breeding Bird Atlas square 17NQ71. In order to understand the factors which may have contributed to the mixed clutch, a brief survey of the literature follows.

NESTING BIOLOGY

It is not uncommon to find these two species nesting adjacent to one another in Common Tern colonies. Sandpipers (Scolopacidae), Plovers (Charadriidae) and other shorebirds are known to actively seek out nest locations within Common Tern colonies so that they may take advantage of the Common Terns' aggressive nest defense behaviour (Oring et al. 1997, Lauro and Tanacredi 2002).

Spotted Sandpipers nest near water, preferring some cover from herbaceous vegetation (Oring et al. 1997). Nesting generally occurs from mid May to early July. Nests are constructed of dead grass and small woody material, and are approximately 12 cm in diameter when finished (Oring et al. 1997). Clutches generally contain four eggs, but successfully incubated clutches of five

have been observed (Smith 1932).

Common Terns nest on low elevated sites, generally near water (0-5 m above high-water mark), with slightly higher sites being preferred and occupied by early arriving birds (Nisbet et al. 1984). Nest sites near patchy vegetation are preferred (Nisbet 2002), as they provide important sources of cover for chicks (Burger and Gochfeld 1990). Nesting occurs from late April to early June (Nisbet 2002). The male initiates nest building at several sites until the female chooses an acceptable site for egg deposition. Once incubation begins, both parents gradually add to the nest, the material varying with availability near the nest, including sticks, pebbles and shells. The diameter of the completed nest is variable depending on construction material, averaging 18 cm (Nisbet 2002). Clutch size is usually three eggs (90%), although rarely four or more (Nisbet 2002).

Nest Parasitism

Nest parasitism is the intentional laying of eggs in the nest of another bird without contributing to incubation or care of the young. The host and parasite can be the same species (intraspecific parasitism) or different species (interspecific parasitism). Intraspecific nest parasitism has been documented in 234 bird species (Yom-Tov 2001). Intraspecific nest parasitism in Common Terns has been observed rarely, e.g., 0.15% of 4000 nests (Burger) and

0.35% of 2000 nests (Nisbet) checked during laying (*in* Rohwer and Freeman 1989). A survey of the literature failed to turn up any reported instances of interspecific nest parasitism concerning Common Terns, either as host or parasite. Similarly, Spotted Sandpipers are reported to experience intraspecific brood parasitism rarely (<1%), and only two instances of interspecific parasitism (both by Brown-headed Cowbirds, *Molothrus ater*) were observed during 19 years of fieldwork (Oring et al. 1997). Common Terns and Spotted Sandpipers rarely experience supernumerary clutches due to intraspecific or interspecific nest parasitism, and the observed mixed species clutch was not likely due to this behaviour.

Egg Dumping

Egg dumping differs from parasitism, in that it refers to atypical laying behaviour, rather than a calculated reproductive strategy. Wiens (1971) predicted that egg dumping can occur in three situations: when nest destruction occurs immediately prior to, or during, egg laying; by accidental placement of eggs; or with inappropriate synchronization of nest building and laying. Egg dumping, then, can occur in any species that finds itself in unusual or unfavourable nesting situations. Sealy (1989) described a case of "incidental egg-dumping" by a House Wren (*Troglodytes aedon*) into a Yellow Warbler

(*Dendroica petechia*) nest, and referred to other cases of egg dumping by species which appeared to be anomalies, rather than intentional nest parasitism. Mixed clutches have resulted in situations where unrelated species had similar nesting requirements that were in short supply. This was hypothesized to be the case when an American Kestrel (*Falco sparverius*) pair successfully hatched a Bufflehead (*Bucephala albeola*) egg (Dawson and Bortolotti 1997). Both species are cavity nesters, possibly resulting in competition for nest sites and the unintentional egg dumping incident. As mentioned earlier, Common Tern and Spotted Sandpiper have similar nesting preferences and timing, and perhaps a high local density of Common Tern nests and limited desirable nest sites influenced the nesting sequence in the Lake Abitibi nest. Fournier (2000) suggested that a combination of factors, including island nesting, colonial nesting behaviour and high densities of birds resulted in a mixed nest of scaup (*Aythya* sp.) and Ring-billed Gull (*Larus delawarensis*). These conditions exist on Lake Abitibi, and may have contributed to the observed nest.

Interspecific Nest Usurpation by Common Terns

Paz and Eshbol (2002) described an inferred case of Common Terns usurping a Black-winged Stilt (*Himantopus himantopus*) nest

containing eggs. They observed a pair of Common Terns providing care to three Black-winged Stilt chicks and speculated that the Black-winged Stilt nest was either found abandoned or the Common Terns forcefully evicted the original occupants, then incubated the eggs and "adopted" the chicks. They further speculated that the terns, once incubating the stilt nest, could not identify the original eggs as foreign, as the two species have eggs that are similar in size and colour. Saino and Fasola (1993) reported that Common Terns do not discern their own eggs from foreign ones. The nest I found on Lake Abitibi appears to agree with this statement. Were the Common Terns able to discern their own eggs from those of the original nest occupant, the sandpiper eggs likely would have been ejected from the nest, rather than remaining with the newly added tern eggs. The mixed species clutch suggests that the Common Terns accepted all the eggs in the nest as their own. Paz and Eshbol (2002) also observed Common Terns evicting other species (terns, stilts, and Avocets, *Recurvirostra avosetta*) from nests, but did not report on whether these usurped nests also contained eggs. Midura et al. (1991) reported a Least Tern (*Sterna antillarum*) usurping a nest containing three Piping Plover (*Charadrius melodus*) eggs. The Least Tern added two of its own eggs, then successfully incubated all five. The

young plovers were removed and placed with other Piping Plover adults by the researchers, so subsequent observations regarding brooding were not made.

The cases reported in Paz and Eshbol (2002), along with the Lake Abitibi observation, suggest that Common Terns will occasionally appropriate and lay eggs in the nests of shorebird species.

Discussion

Unfortunately, the Lake Abitibi Common Tern colony was not visited on subsequent days, so no further information about the nest was gathered. For example, were the eggs being actively incubated, how many hatched, and if any hatched, was there any evidence of "adoption" of the Spotted Sandpiper young by the Common Tern adults? Based on the evidence suggesting that the Common Tern pair were latecomers, and the Spotted Sandpiper was the original occupant and builder of the nest, some speculations can be made.

Possibly, the tern pair arrived at the colony late, finding the preferable nest sites occupied. Common Terns are reported to have relatively high colony-site fidelity over seasons, and fledge more young per nest in larger, denser colonies than in smaller less dense colonies (Karwowski et al. 1995). Perhaps for these reasons, the usurping terns were reluctant to settle for another less-populated nesting site. Spotted Sandpipers exhibit a polyandrous

mating system in which one female mates sequentially with up to four males, each of which cares for a clutch and a brood, usually alone (Oring et al. 1997). The single male sandpiper would likely not have been able to fend off the intruding terns, which are known for their aggressive behaviour. Pickett et al. (1988) found that Spotted Sandpiper males were significantly more protective during the brooding period than they were during incubation, when the Common Tern deposited its eggs into the nest. Either the tern forced the sandpiper off the nest, or found the nest recently abandoned, then laid its eggs in the nest. This raises the question of why the Common Tern female accepted a previously constructed nest with a full clutch of another species' eggs, despite the fact that nest parasitism is so rarely observed in the species.

Assuming that the terns were incubating the eggs normally, it is possible that the eggs of both species hatched. The equivalent clutch volume of the observed nest (four Spotted Sandpiper eggs plus three Common Tern eggs) was approximately 96 ml, equivalent to a clutch of 4.8 Common Tern eggs (tern egg volume from Nisbet 2002; Spotted Sandpiper egg volume calculated after Hoyt 1979). Common Terns have been reported incubating four or more eggs, albeit rarely (Nisbet 2002), and therefore, it is possible that both species in the clutch could have been incubated successfully.



Figure 1: Spotted Sandpiper nest with a full clutch of Spotted Sandpiper eggs and Common Tern eggs, located in a small Common Tern colony, Lake Abitibi, Ontario, 25 June 2003. Photo by Colin Lake.

Once hatched, Spotted Sandpiper chicks are somewhat more precocial than Common Tern young, and may be expected to benefit from their foster parents' aggressive defense of young and perhaps survive to fledge. However, behavioural differences caused problems for the adoptive Common Tern parents and Black-winged Stilt chicks reported in Paz and Eshbol (2002), including the chicks not accepting food and not responding to danger calls made by the adoptive terns. Ultimately, all of the adopted Black-winged Stilt chicks died by 10 days of age, apparently due to inappropriate parent-offspring interactions between the two species.

Presumably, an extra large brood would result in poorer care

per individual chick (less food, poorer vigilance against predators) by the Common Terns, and subsequently lower fledging rates. The Lake Abitibi nest and aforementioned literature suggest that terns can occasionally obtain supernumerary clutches via nest usurpation behaviour. Common Tern adults that adopted foreign chicks in addition to their own brood were thought to be displaying maladaptive behaviour (Saino et al. 1994) by incurring higher than normal parental effort costs. This presumed cost associated with increased brood size might explain why Common Terns do not usurp nests as a rule, even though they certainly have opportunity to do so in most high-density colonial nesting sites.

In the observed nest, it appears that the terns obtained a nest site at the potential cost of increased parenting duties. It would be interesting to know whether any young (of either species) successfully fledged in this instance, or if this unusual situation proved too taxing on the apparently unwitting adoptive parents.

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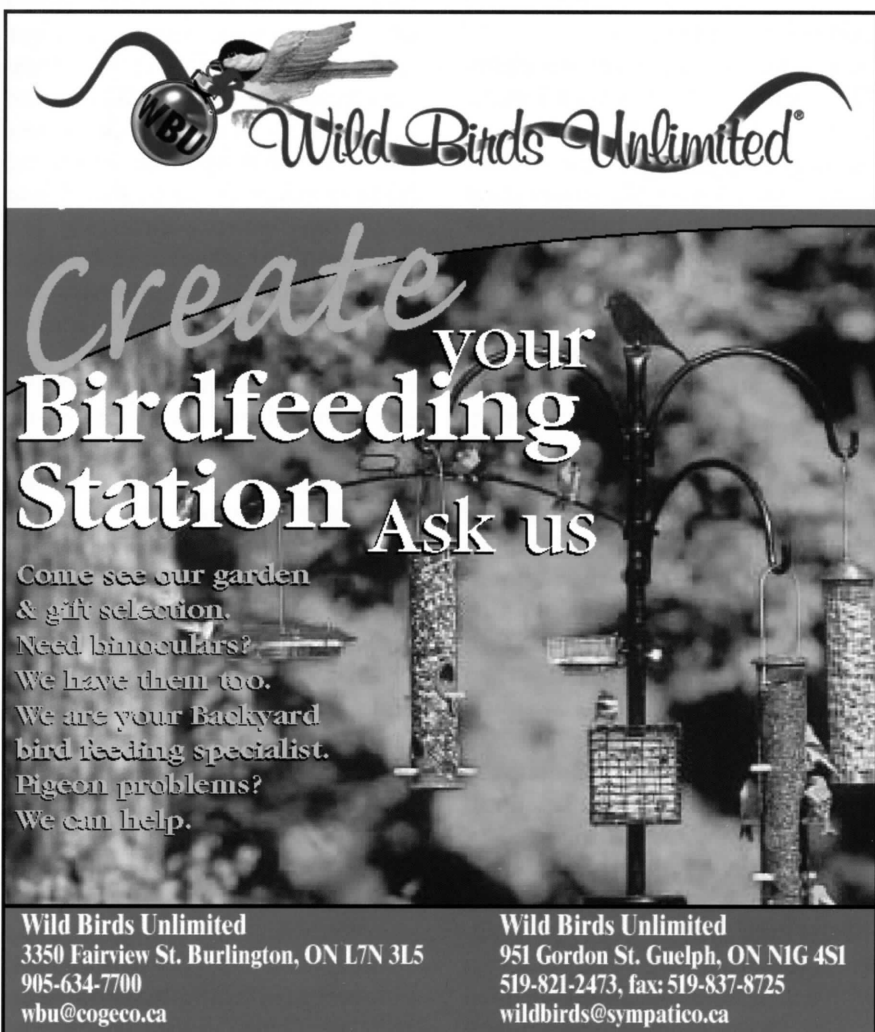
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