

Aerial scratching, leeches and nasal saddles in Green-winged Teal

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Scratching during flight is rarely seen in most species of waterfowl. Goodwin (1959) noted it once in a Mallard *Anas platyrhynchos*, and McKinney (1965) recorded it for Mallard, Gadwall *A. strepera*, and American Green-winged Teal *A. crecca carolinensis*. In the last species, a very rapid action resembling scratching was commonly seen on the Delta Marsh, Manitoba, Canada, when birds flew away after being flushed. Recent observations near Pine Lake, Alberta (50.0°N, 113.2°W), in April–June of 1976 and 1977, have confirmed that this behaviour is frequent in Green-winged Teal and we suggest that it is triggered by the presence of leeches in the nasal cavity. The evidence (most of it indirect) is presented here and we note possible implications for use of nasal saddles as a marking technique in field studies.

Aerial scratching became such a familiar sight in Green-winged Teal on the Alberta breeding grounds that we stopped keeping systematic records on its occurrence. It was observed more often than not when we flushed single birds and pairs and were able to follow them with binoculars for ten seconds or longer, and quite often it was repeated two or three times. Marked and unmarked birds of both sexes performed aerial scratching, therefore this behaviour was not wholly related to nasal saddles.

This aerial manoeuvre is very distinctive. There is a momentary pause in wing-flapping as the head is turned to one side and often the foot on the same side can be seen to be brought forward. The action is so rapid, however, that it is often impossible to tell whether the foot is involved or if the head or bill is merely rubbed across the leading edge of the wing.

Among the other duck species using the same ponds on our Alberta study area we recorded only one other instance of aerial scratching and this was in an American Wigeon *A. americana*. This species was common in the area, as were Mallard, Gadwall, Blue-winged Teal *A. discors*, Shoveler *A. clypeata*, and Pintail *A. acuta*. We have no records of aerial scratching in the pochards *Aythya collaris*, *A. vallisneria*, *A. americana*, *A. affinis*, nor for sea ducks *Bucephala albeola*, *B. clangula*. I. J. Ball (pers. com.) has one additional record for a female Gad-

wall on the breeding grounds in North Dakota. Perhaps the Green-winged Teal is the only one of these species with sufficient agility to perform aerial scratching effectively. Certainly it is the smallest, lightest, and most buoyant and manoeuvrable in flight.

The reviews by Bartonek & Trauger (1975) and Trauger & Bartonek (1977) have drawn attention to the problems that leech infestation may pose for waterfowl. These authors report that leeches most commonly become attached in the nasal chamber and ducks react to their presence by scratching or by head-shaking and bill-cleaning movements ('sneezing' in water) (see McKinney 1965). They suggest that the birds have difficulty removing attached leeches from the eye and nasal cavity (they never saw successful removal by scratching) but they believe that preening is probably effective for leeches on other parts of the body. Ducks captured for banding and held in pens often lost their leeches within an hour after being out of the water, apparently because the leeches became satiated or desiccated and voluntarily dropped off.

Leeches were abundant in the ponds on our Alberta study area and according to Trauger & Bartonek (1977) waterfowl of many species are very commonly infested in this province. Specimens of *Placobdella ornata* were collected from one pond, and this species is known to infest waterfowl and other waterbirds (Moore 1964, 1966; Bartonek & Trauger 1975) although feeding predominantly on turtles (Sawyer 1972). Specimens of the well known waterfowl parasite *Theromyzon rude* were not collected; however, this species is widely distributed throughout Alberta (Moore 1964; Trauger & Bartonek 1977) and was undoubtedly present on our study area (R. T. Sawyer & D. J. Klemm, pers. com.). Three additional leech species of uncertain significance as duck parasites were also collected: *Glossiphonia complanata* and *Erpobdella punctata* from ponds, and *Helobdella stagnalis* from the gullet contents of Green-winged Teal. According to information summarized by Sawyer (1972) these latter species feed primarily on a variety of invertebrates.

We did not keep systematic records on the

presence of leeches on the Green-winged Teal we trapped for marking but some birds did have leeches on the plumage (mainly the feathers around the belly) when removed from traps, one had a leech attached to its foot and one had a leech in the nares. On several occasions we saw leeches moving on the bill and nares of unmarked birds and we believe that many instances of scratching and foot-pecking were responses to the presence of these parasites.

Time-budget data compiled on eight marked and several (five to eleven) unmarked Green-winged Teal indicated that scratching was almost three times more frequent in marked birds. Also, marked birds scratched more often while feeding than during spells of preening or resting (Table 1). The birds were fitted with plastic nasal saddles (Sugden & Poston 1968) and with radios and leg bands. Some scratches were probably stimulated by the presence of the saddles or debris trapped under them, but we do not think that these factors alone cause the high rate of scratching in saddled birds. On several occasions birds were observed scratching at high rates (21/hr–30/hr) for short periods (20–30 minutes), suggesting that they had unusually strong irritations. Leeches must be more difficult to reach by scratching when they are under a saddle and this probably makes them especially annoying to the birds. The much higher frequency of scratching in saddled birds during feeding supports this interpretation since this is when leeches have their best chance of becoming attached to a bird's bill. If leeches drop off their hosts after becoming desiccated or having fed, or if they become

easier to dislodge in these conditions, removal would most likely occur when the birds are resting. Bill-cleaning (by blowing or "sneezing" in water) often occurs after a bird wakes up and, as Bartonek & Trauger (1975) suggested, perhaps this forcibly expels leeches from the nares.

It is possible that the Green-winged Teal's feeding methods make it more vulnerable to parasitism by leeches (or perhaps by some species of leeches). As Tamisier (1974) has described in the European race *A.c. crecca*, this species feeds a great deal on the wintering grounds by dabbling while wading in very shallow water. In Alberta breeding birds also probed and dabbled in mud along the shorelines of drying ponds.

Observations by one of us (F.M.) at the Salton Sea National Wildlife Refuge in the Imperial Valley of California in late March 1977 indicated that scratching was rare during feeding and in flight among the Green-winged Teal wintering in that area. No scratches were recorded in individuals watched feeding by wading or swimming with head under water for a total of 420 minutes. Refuge Manager Stephen Vehrs tells us that leeches do not infest waterfowl in these waters.

Thus there is circumstantial evidence of various kinds to suggest that aerial scratching in Green-winged Teal is a response to leeches in the nares, but why is it common in this species and rare in others? There are several possibilities. The presence of leeches in the nasal passages could be especially uncomfortable for this species because of its small size. Perhaps the parasites are more prone to block the nasal

Table 1. Activities associated with scratching in wild Green-winged Teal. The analysis is based on time budget records of the ongoing activity of individuals noted every 15 seconds over periods of at least 10 minutes. Marked birds are fitted with radios, leg-bands and nasal saddles.

	No. birds	Total hours	Scratches		*Main activity during 10 min before scratch			*Main activity during 10 min after scratch		
			No.	Rate/hour	Feed	Preen	Rest	Feed	Preen	Rest
U ♀	315	28	36	1.31	10	4	6	10	4	4
U ♂	2–6	34	40	1.18	6	12	5	4	15	10
M ♀	4	47	150	3.16	110†	23	35	88†	42	33
M ♂	4	52	180	3.45	137†	33	23	116†	40	33

U = unmarked, M = marked

* Only scratches for which information is available on activities before or after the scratch are included.

† χ^2 , $P < 0.001$ (compared with Preen and Rest).

passages and impede breathing in a small duck, and the effects could be especially significant for the birds during flight. Alternatively, or in addition, the feeding methods and aerial agility of these birds may be factors.

We did not document any mortality or disability among our study birds that could be attributed to leech infestation. Apart from the higher rate of scratching during feeding, our marked birds showed no obvious behavioural abnormalities. It is possible, however, that the presence of a saddle makes it easier for leeches to invade the nasal passages and there could be deleterious effects on the birds. Leeches, unlike other debris, may not be expelled easily from under nasal saddles by normal comfort activities. As Trauger & Bartonek have emphasised, more attention needs to be given to the relationship between ducks and leeches. We suggest that this could be especially relevant for researchers using nasal saddles in studies of duck behaviour in areas where leeches are abundant.

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Summary

Scratching in flight was commonly performed by Green-winged Teal *Anas crecca carolinensis* in spring in southern Alberta. Circumstantial evidence suggests that this behaviour was triggered by the presence of leeches in the nasal cavity. This is the only species of duck for which aerial scratching has been reported regularly. Birds carrying nasal saddles scratched more frequently during feeding than during preening or resting. Apparently leeches enter the nares while birds are feeding and are more difficult to dislodge when a saddle is present.

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