
BIRDS

“DUMP” NESTS OF THE REDHEAD DUCK: ANECDOTAL COMPARISONS OF FACULTATIVE AND OBLIGATE BROOD PARASITISM AT DELTA MARSH, MANITOBA

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Introduction

Some avian brood-parasites lay their eggs in other nests of their own or of other species. People living in North America are familiar with the parasitic habits of the Brown-headed Cowbird (*Molothrus ater*). Cowbirds and about 100 species worldwide are obligate brood parasites that never build their own nests; instead, they lay all of their eggs in nests of other species, called the hosts, which rear their young for them. Another type of parasite found among birds is the facultative brood parasite. These species often lay some of their eggs in other nests of the same or related species, then build nests in which they lay and incubate clutches of their own. Not surprisingly, the facultative parasites have been more difficult to identify and study because their eggs are often identical in size and appearance with those already in the nests, as often those eggs were laid by another female of the same species. Radio-telemetry and molecular genetic techniques have facilitated studies of facultative brood parasitism and the determination of the importance of this breeding strategy for the species' reproductive success.^{1,2} The Redhead (*Aythya americana*) is one of the most comprehensively studied species of facultative brood parasite among the ducks of North America,^{1,3,4,5,6} but several other studies have revealed high levels of parasitic egg laying among other species of duck.^{5,6,7,8}

The most comprehensive studies of the Redhead's parasitic egg laying were conducted by Milton Weller in southern Manitoba and in Utah in the 1950s, before radio telemetry was available for use in studies of birds,³ and by Rodney Sayler and Michael Sorenson in southern Manitoba in the 1980s.^{1,6} The latter researchers used time-lapse photography to study the behaviour of parasites at the nest^{6,9} and Sorenson employed radio telemetry to track individual females to nests in which they laid eggs parasitically, and also in their own nests.¹ Results of these studies revealed that individual females choose one of three egg-laying strategies to maximize their reproductive output: females may (1) lay all of their eggs in their own nests — producing a “normal-sized” clutch, i.e., the “typical” pattern (Fig. 1), (2) lay eggs in other females' nests before building their own nests in which they lay and incubate their own eggs, or (3) lay all of their eggs in other females' nests, thus being completely parasitic. High water levels in spring, and the resulting production of abundant food spread among a large number of wetlands, and reduction in the risk of mammalian predation, influence the egg-laying strategy used by females in a particular year.^{1,3}

An interesting behavior that is occasionally recorded involves multiple Redhead females and sometimes



Figure 1 - "Typical" nest of Redhead constructed over water at the edge of a clump of bulrushes, about 10 km south of Battleford, Saskatchewan, 14 June 1960.

also females of other species laying in the same nest until there are, in many cases, dozens of eggs piled in several layers. These nests, often referred to as "dump" nests,^{6,10} begin as active nests and, hence, attract laying females. Eventually the host female cannot incubate any more eggs and, not knowing which ones to discard, abandons the nest; usually most or all of the eggs do not hatch.^{3,6} Dump nests have puzzled biologists because so many eggs appear to be wasted. Here I describe a Redhead "dump" nest at Delta Marsh, Manitoba and compare anecdotally aspects of multiple laying by facultative and obligate brood parasites, using examples from the work of me and my students on cowbird parasitism at Delta Marsh.

Observations and Discussion

I recorded a Redhead dump nest in a small marsh near the southern edge of Delta Marsh, Manitoba (50°09'N, 98°18'W), in 2004, during a study of

reactions of Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*) to experimental cowbird parasitism. I flushed a female Redhead off 13 Redhead eggs plus one Canvasback (*A. valisineria*) egg on 3 June (Fig. 2, top). On 9 June, no adult flushed and the nest appeared abandoned, but there were 19 eggs — 16 Redhead eggs and two Canvasback eggs in the nest bowl plus one Redhead egg that had rolled out of the nest on to flattened vegetation but was still visible to one side (Fig. 2, bottom). Canvasback eggs are slightly larger and olive-green in colour compared with the ivory-coloured and glossy Redhead eggs (shown by arrows in Fig. 2). There were no eggs under the nest or in the water. The excluded Redhead egg may have been displaced during a struggle between the host female and a would-be parasite, or between two parasitic females attempting to lay at the same time.³ The nest bowl was empty on 14 June, when I next inspected the nest. Redhead

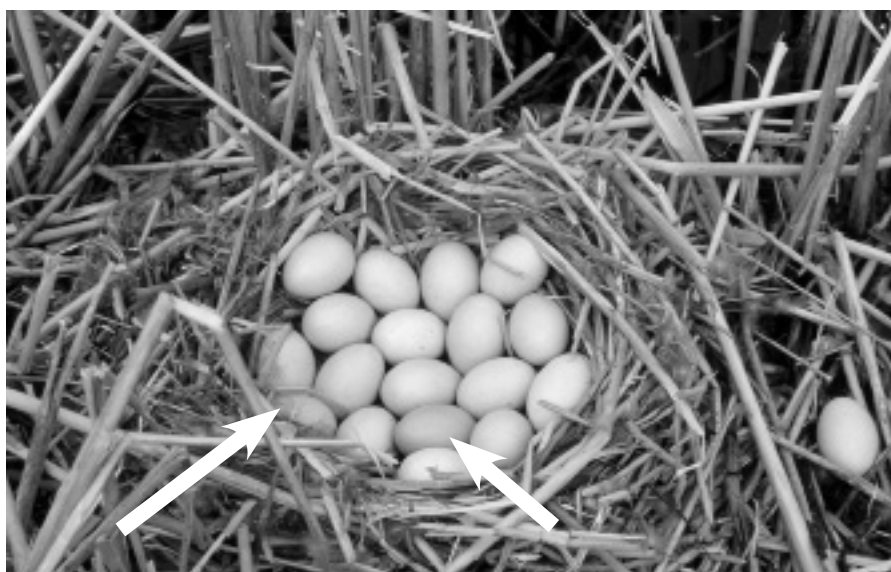
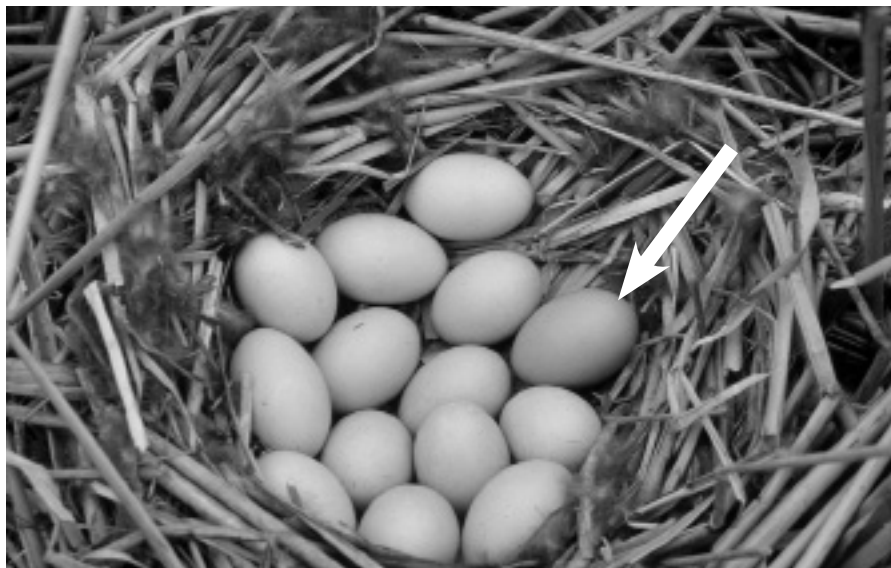


Figure 2 - (top) Nest from which a female Redhead flushed that contained 13 Redhead eggs plus one Canvasback egg (indicated by the arrow), along the southern edge of Delta Marsh, Manitoba, 3 June 2004;

(bottom) The same nest containing 16 Redhead eggs plus two Canvasback eggs (indicated by arrows); another Redhead egg had rolled or was kicked over the side of the nest, 11 June 2004.

dump nests containing even more eggs have been described by other workers.

Weller recorded nests with up to 30 Redhead eggs at Delta Marsh, Manitoba, and reported other records

from the literature, including one nest with 87 eggs.^{3,11} He published Bernard Gollop's photograph of a nest at Whitewater Lake, southwestern Manitoba, that contained a total of 74 Redhead eggs plus one egg of the Black Tern (*Chlidonias niger*); the latter egg was on top of the duck eggs.³ Weller did not speculate on how the tern's egg got there, but Black Terns are not known to lay parasitically,¹² thus, this may have been a true case of egg dumping, possibly when the tern discovered that its nest had been destroyed during egg laying and it needed a place to lay its next egg. This scenario is reminiscent of Brown-headed Cowbirds and Common Cuckoos (*Cuculus canorus*) occasionally laying eggs in nests of obviously inappropriate hosts, such as ducks and shorebirds.^{13,14,15} Redheads also have been recorded laying in nests of species other than ducks,^{3,16} particularly in nests of the American Bittern (*Botaurus lentiginosus*),^{3,17} whose young are reared at the nest site, unlike the precocial Redheads.

Dump nests among waterfowl are not restricted to the Redhead, but have been recorded frequently in hole- and cavity-nesting ducks such as Wood Duck (*Aix sponsa*) and goldeneyes (*Bucephala* spp.) where individuals may face a shortage of adequate nest sites. In these species, however, reproductive success of the hosts is not always compromised.^{7,8} Gollop wondered whether Eared Grebes (*Podiceps nigricollis*), which are known to parasitize each other's nests,¹⁸ have dump nests, as he discovered several "conglomerations" of Eared Grebe eggs — one with 101 eggs, a second with 94 eggs — at a large slough north of Mantario, Saskatchewan, in 1958.¹⁹ The eggs were laid by multiple females on mats of dead vegetation, not in nests, as Redhead dump nests generally are, and within a few metres of active nests. None of the eggs appeared to have been incubated. Gollop's observations apparently are the only records of such nests reported for the Eared Grebe.²⁰ I have never observed dump nests in any of the 25 or so Eared Grebe colonies



Figure 3 - Portion of a colony of Eared Grebes showing eggs in three nests anchored to new growth in a cattail marsh, about 8 km west of Kindersley, Saskatchewan, late June 1957.

in which I have observed adults and inspected nests at various sites across the southern Prairie Provinces, the first of which was located about 10 km west of Kindersley, Saskatchewan, in late June 1957 (Fig. 3).

It may be misleading, albeit convenient, to call these nests “dump” nests. Time-lapse photography has revealed that individual Redheads continue to lay eggs after the “host” has abandoned the nest, with each female following other females to the nest because they assume that it is still active. This behavior is possibly reinforced by the eggs that females can see in the nest bowl,⁶ therefore, laying continues, even though the nest has been abandoned, because hens perceive the likelihood that the eggs will hatch, rather than laying the eggs on the ground or in the water.

Multiple egg laying occurs frequently among most of the species of obligate parasitic cowbirds (*Molothrus* spp.), but in some cases this would not be considered dump nesting, even if the host’s nest eventually contained only cowbird eggs. To illustrate this point, all Veery (*Catharus fuscescens*) nests parasitized on our study area at Delta Marsh over 16 years (14 of 21 nests, 66.7% parasitized) received more than one cowbird’s egg — one nest had five cowbird eggs plus one Veery egg (Fig. 4), another held seven cowbird eggs and one Veery egg. The first nest was depredated, whereas the second nest produced only cowbirds. More than one cowbird apparently laid eggs in the first nest, as suggested by a comparison of the spot patterns among the five cowbird eggs in the nest (see pointers in Fig. 4): three fairly distinct patterns can be identified, which suggests



Figure 4 - Veery nest containing five Brown-headed Cowbird eggs plus one Veery egg, forested dune ridge, Delta Marsh, 16 June 1980. Note: immaculate Veery egg is the top-most egg; two sets of connected pointers indicate cowbird eggs that were likely laid by the same females; the fifth cowbird egg (apparently laid by a third female) is immediately beneath the Veery egg.

three females laid in this nest.²¹ Taking this farther, using molecular genetic techniques, we identified two strategies female cowbirds apparently use when parasitizing Song Sparrows (*Melospiza melodia*) at Delta Marsh: (1) the same female cowbird may parasitize the same nest again, i.e., lay in the same nest more than once, and (2) two or more females may parasitize the same nest,²² as was apparently the case in the Veery nest highlighted above. Hosts whose nests eventually contained only cowbird eggs have been reported rearing at least some of the parasitic young,²³ having lost their own eggs to cowbirds when the nests were parasitized.²⁴ These observations reveal the variable and complex interactions that ensue between brood parasites and their hosts at the time of eggs laying, of which we are only just beginning to understand.

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Canvasback pair

- Randy McCulloch