

NORTHERN FLICKER INCUBATES HOODED MERGANSER EGG

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Abstract — Misdirected incubation has been reported for a few species of secondary cavity-nesting birds, presumably resulting from intense competition for nest sites. Here I report a case of a Northern Flicker pair, primary cavity excavators, incubating an egg of a Hooded Merganser. The flickers probably suffered a high reproductive cost as a result of this behaviour, as they fledged only two young from their own seven eggs. The Hooded Merganser embryo reached an advanced stage of development, but did not hatch. It is unclear why a woodpecker with the ability to excavate a new nest would incubate a foreign egg and suffer high reproductive failure.

Key words: cavity nesting, *Colaptes auratus*, competition, incubation, Northern Flicker.

Numerous birds and mammals in forest ecosystems depend on tree cavities for nesting. Primary cavity nesting species, such as many woodpeckers, excavate their own nests which may be used subsequently by a suite of secondary cavity nesters which cannot excavate. The availability of suitable nests appears to limit the population size of some cavity nesters (Newton 1994), so competition for tree holes or nest boxes may be intense (Simpkin and Gubanich 1991). Excluding cases of brood parasitism, reports of misdirected incubation among cavity nesters are rare and seem to have involved secondary cavity nesting birds in most cases: American Kestrel (*Falco sparverius*) (Sumner 1933; Dawson and Bortolotti 1997), Eastern Screech-Owl (*Otus asio*) (Breen and Parrish 1996), and Ash-throated Flycatcher (*Myiarchus cinerascens*) (Simpkin and Gubanich 1991). Here I report misdirected incubation by a primary cavity excavator, the Northern Flicker (*Colaptes auratus*), and its apparent consequences to reproductive success.

STUDY AREA

I have studied flickers since 1997 at Riske Creek, British Columbia (51° 52' N, 122° 21' W). Each year, about 85 pairs of flickers using natural cavities have been monitored on a 75 km.² area of mixed forest and grassland. For details of the study area and general methods see Wiebe (2000, 2001). Here, as part of a long-term study, colleagues and I have recorded 32 species of birds and 12 of mammals that use cavities. Flickers excavate the majority of nests used by the other species at Riske Creek (see Martin and Eadie 1999).

OBSERVATIONS

On 9 May 2000, I discovered a pair of flickers defending a cavity containing one Hooded Merganser (*Lophodytes cucullatus*) egg measuring 54.4 mm. x 44.3 mm. and resembling the illustration of the egg of this species in Harrison (1984). The nest was checked every second day thereafter, and the first flicker egg appeared one week later, on 16 May. A complete clutch of seven flicker eggs together with the one merganser egg was being incubated by the female flicker on 24 May. As incubation usually begins near clutch completion, and the

eggs are laid one day apart (Wiebe, unpublished data), the flickers probably began incubating on 22 May. The flicker eggs, clustered together on one side of the duck egg, were dwarfed by it. When the nest was visited again on 31 May, the male was incubating, with the woodpecker's eggs scattered around the duck egg. The duck egg was warm, but two of the flicker eggs were only at ambient temperature. Eight days later, the nest contained two 3-day old flicker chicks, one newly hatched chick and its eggshell and one dead 1-day old chick (ages estimated from body mass measurements). The three unhatched flicker eggs were examined on 11 June, when two contained small embryos and one showed no development. The merganser egg was still warm and was left in the nest. By 20 June, the smallest of the three flicker chicks had died, leaving only two, but the merganser egg was still being kept warm by the brooding male flicker. When the two flicker chicks were banded on 26 June, a few days prior to fledging, the duck egg was cold, so was removed and opened. Inside was a merganser embryo almost fully developed with only a small yolk sack, not more than three days from hatching, according to waterfowl biologists on the study area.

DISCUSSION

Of the previous reports of misdirected incubation, none has involved a greater size difference between eggs than this case, and it seems incredible that flickers would attempt to incubate a duck egg. According to Hoyt's (1979) equation, the average volume of the seven flicker eggs in the nest was 7.18 cm.³, while the merganser egg was 52.0 cm.³. Incubating the egg had probably had negative consequences for the pair of flickers, which fledged only two offspring from their seven eggs, a much lower success than average (Wiebe and Swift 2001). Uneven incubation temperatures and the inability to cover eggs may cause extreme hatching asynchrony and development failure (Wiebe and Bortolotti 1993); both problems occurred in this flicker nest.

Given their high reproductive failure, it is unclear why the woodpeckers chose to use the cavity after presumably evicting the Hooded Merganser. Flickers re-use old cavities more often than other

woodpeckers (Ingold 1994) but are capable of excavating a new nest. Suitable decayed aspen trees are numerous on our site, so nest sites probably are not limiting. Both the male and female flicker were two years old (presumably experienced breeders, as yearlings on the study area commonly breed) and their laying date was early in the season, so there should have been time to search for, or excavate, a different cavity. Abnormally large eggs added to the nests of incubating birds may be a "supernormal stimulus" triggering tenacious incubation behaviour (Tinbergen 1951). However, the duck egg was in the cavity at least two weeks before the flickers began incubating, so the flickers did not succumb to an immediate stimulus to incubate. Flickers often compete with European Starlings (*Sturnus vulgaris*) on our site, but have tossed out foreign starling eggs that appeared in cavities they were attempting to excavate. Lott (1939) reported a flicker feeding a brood of starlings, but it is not known whether or not the woodpeckers incubated the starling eggs. Flickers may evict Tree Swallows (*Tachycineta bicolor*) (Rendell and Robertson 1989) and American Kestrels (Moore 1995) from nests, but destroy the foreign eggs before initiating their own clutch. Perhaps the duck egg was too large to throw out, but flickers seem to have the morphology to puncture and remove large eggs.

Because the incubation period of flickers is 11 days (Moore 1995), while that of Hooded Mergansers is at least 29 days (Ehrlich *et al.* 1988), the duck egg in this situation would be unlikely to hatch. Still, it received about 28 days of at least irregular incubation and reached an advanced stage of development. A similar case of a Bufflehead (*Bucephala albeola*) egg incubated by an American Kestrel was reported by Dawson and Bortolotti (1997). In that situation, the duck egg hatched because its incubation period matched closely that of the kestrel. Intense competition may lead occasionally to maladaptive incubation of foreign eggs by cavity-nesters and perhaps nest-sites might be more limiting than previously thought even for excavators, such as woodpeckers.

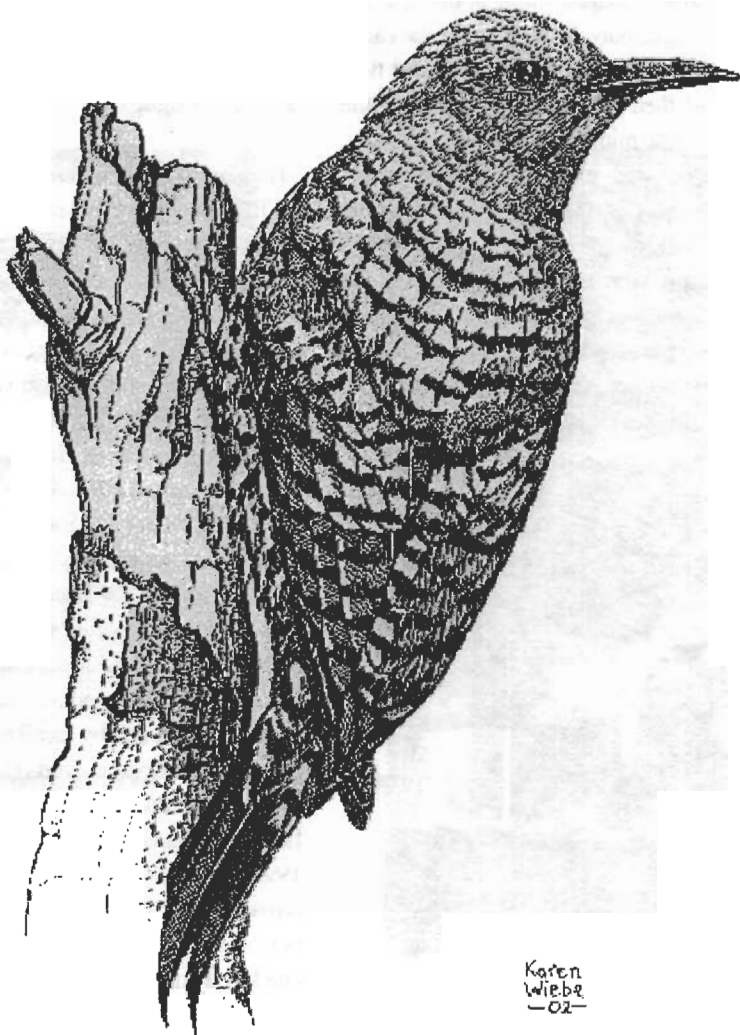
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