

Åhlund, Matti. 2001. Female reproductive tactics in the Common Goldeneye

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Abstract. Conspecific brood parasitism (CBP) as an alternative female breeding tactic is particularly common in ducks, where hosts often receive eggs laid by parasitic females of the same species and raise their offspring. Detailed analysis of this alternative reproductive tactic has been hampered by difficulties of detection. This thesis explores CBP with new techniques in a population of the common goldeneye *Bucephala clangula*, a cavity-nesting duck in which CBP is common.

Egg-laying patterns of individual females and maternity of eggs were determined by non-destructive egg albumen sampling and protein fingerprinting. CBP occurred in two-thirds of the nests, and more than one third of the eggs were laid by females other than the incubating host. There were three major female tactics: non-parasitic nesting, pure parasitism (laying in the nests of other females), and parasitism followed by nesting ("nesting parasites"). The tactics had similar frequencies in the population, about one third each, but they yielded remarkably different reproductive success. By combining parasitism with normal nesting later in the season, nesting parasites greatly increased their reproduction compared to the other tactics, a female parallel to the large fitness gains that some males can obtain through extra-pair fertilisations in many other species.

Normal nesting and parasitism was usually a result of distinctly different behavioural tactics, and the behaviour of parasites and hosts-to-be differed in several ways during most of their egg-laying sequences. Hosts deposited down and greatly increased their time spent in the nest over the laying sequence, whereas parasites did not do so. In a few nests, however, 'parasitism' was apparently a consequence of two females behaving similarly, competing for the same nest site.

The cost of raising extra, parasitic young may not be large in ducks, as their young find food themselves and are well insulated already at hatching. Effects of clutch size on offspring survival and recruitment rate were small, except at extremely small and large clutch sizes, helping explain the high frequency of CBP in goldeneyes and other waterfowl.

In ducks, unlike most birds, females (not males) return to the birth area. This philopatry makes some local females closely related. Propagation of genes also through relatives other than own offspring therefore might favour CBP among female ducks. Relatedness between host and parasite may reduce the fitness cost of being parasitised for the host. Bandsharing analysis of protein fingerprints revealed that host and primary parasite were indeed often related. Additional results showed that philopatry alone cannot explain this pattern: kin discrimination through recognition of birth nestmates also plays a role.

Individual recognition and association with females from the birth nest may be how parasites find nests of related hosts. Adult nestmates (social mother-daughter or sisters), who are usually genetically related, were seen together in the field more often than expected by chance. Also, joint visits by nestmates were observed among females prospecting for nests late in the breeding season, and at hatching nests.

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