

Your Cheating Heart... Extrapair Copulations & mate guarding in Warblers

In some animal species, an adult male and an adult female will form a long-term living arrangement or pairing. For example among mammals ~3-5% of species form these long-term social pairing, while among birds ~90% of species are estimated to be socially monogamous. While socially monogamous partners live together, have sex with each other, and cooperatively forage, many of these partnerships are not sexually monogamous. In socially monogamous birds, females often copulate with males other than their social mates. Such extrapair copulations (EPC) can result in extrapair fertilizations (EPF). While these EPFs are good for the female partner's reproductive success, they reduce the reproductive success of the male partner. We therefore expect males to adopt behaviors that prevent their mates from engaging in EPC.

Across the animal kingdom, males have adopted multiple different strategies to prevent their female mates from copulating with other males, which would reduce the focal male's reproductive success. These strategies include (but definitely are not limited to): mating plugs, toxicity in male seminal fluid that make the female feel sick and not want to mate again; and mate guarding where males physically stay with the female to prevent her from mating with other males.

Black-throated blue warblers are small, socially monogamous, migratory birds that breed from May until August. Genetic analyses have demonstrated that EPF are common in this species, and some studies suggest that male black-throated blue warblers (*Dendroica caerulescens*) may practice mate guarding. Recently Chuang-Dobbs et al. (2001) studied a breeding population of black-throated blue warblers at the Hubbard Brook Experimental Forest, West Thornton, NH, USA. They observed that males and females were in close proximity to each other (<20 m) for 49.5% of the scan samples collected during breeding season. This close proximity appeared to be maintained by males, as they were more likely to follow females than the reverse during the female's fertile period. Males spent less time foraging and vocalized more during the breeding period than during incubation, but other male behaviors they recorded did not differ between the two nesting periods.

Here is your challenge:

- 1- Identify the specific question(s) that authors are asking
- 2- What is the hypothesis that they suggest?
- 3- What predictions can you make if the hypothesis were correct?
- 4- How can we test the predictions, i.e., what exactly might we do if we were the authors who had been studying warblers for several years?