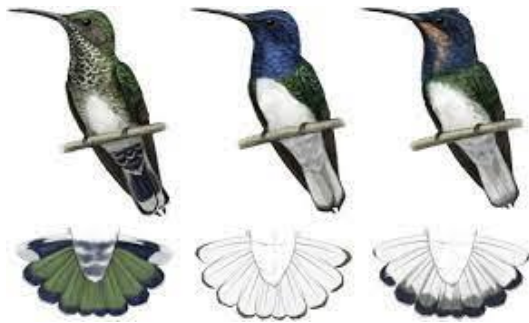


ScienceWatch – An Avian Crossdresser



Left to right: Adult drab female; adult colorful female or male; juvenile male or female, all with tail feathers.

“Because the male-plumaged females experienced less aggression, they were able to feed more often—a clear advantage.” – J. Falk

Evolutionary biologists generally attribute the elaborate, beautiful plumages exhibited by male birds to sexual selection by females. This theory says that colorful, extravagant feathers require energy to produce and sustain, and so they advertise male

robustness. Females choose such males because they have the “good genes” that females want to pass on to their offspring.

Charles Darwin came up with the idea of sexual selection in 1871 to explain male plumage. But his premise was different. He postulated that male birds are beautiful because of what he called “aesthetic selection.” Females choose pretty males because they appreciate beauty, an idea that some evolutionary biologists have come to agree with. Most likely sexual selection in birds operates through a mixture of selection for “good genes” and for “sexy,” good-looking males.

But sex is never straightforward. In contrast to most birds, females of many hummingbird species resemble males. For example, both female and male white-necked jacobins (*Florisuga mellivora*) sport the same colorful plumage as juveniles. As they mature most jacobin females assume a less colorful, drab garb for camouflage during brooding. But some females remain just as colorful as males (see top figure) throughout adulthood, which is true for about 25% of all hummingbird species.

Sexual selection does not explain why young females are colorful at a time when they are not sexually active and why some continue to look like males as adults. Now a study in the October 11, 2021 issue of *Current Biology* shows that the ornamentation exhibited by these females results from social competition for resources.

The research team led by Jay J. Falk, Cornell University, Ithaca, NY, captured over 400 jacobins in Gamboa, Panama over a four-year period. They found that all the males and 29 % of the females were sporting colorful plumage. After using a feature of the bill to age the females, they found that 20% of the colorful females were adults.

To determine the function of the color differences in female white-necked jacobins the team set up three pairs of stuffed, mounted birds on hummingbird feeders and recorded sexual and aggressive behavior of hummingbirds that interacted with the mounts. The pairs were: drab female and colorful male; drab female and colorful female; colorful female and colorful male.

Male hummingbirds exhibited a clear sexual preference for drab females over colorful ones. The first incidence of sexual behavior was always directed to the drab female mount. Conversely,

when both male and female mounts were colorful no preference was observed. “If females having male-like plumage is the result of sexual selection, then the males would have been drawn to the male-plumaged females,” said Falk. “That didn’t happen. The male white-necked jacobins still showed a clear preference for the typically plumed [drab] adult females.” Moreover, drab females are better camouflaged when brooding. So why are many females colorful?

The team found that aggressive behavior was more often displayed toward drab female mounts rather than toward colorful females or males. Drab female mounts were attacked four times more frequently than colorful ones. Evidently colorful females avoid harassment while trying to feed. “So that gave us an indication that it has something to do with social selection and competition for food, rather than competition for mates,” Falk said.

That conclusion was supported by observing chases at feeders. The team put radio frequency tags on 36 drab females, 15 colorful females and 103 males to monitor their behavior at 28 tag-detecting feeders. Drab females were ten times more likely to be chased away than colorful ones. “Our tests found that the typical less colorful females were harassed much more than females with male-like plumage, said Falk.” As a result colorful females were able to feed longer and more frequently without being chased.

Hummingbirds fiercely defend a source of nectar because they must constantly refuel to support their extremely high metabolic rate. Gaining more time to feed allows colorful females to reap a huge advantage and would explain why many hummingbird species include females that resemble males. It can also explain why jacobin juveniles of both sexes are colorful. According to Cornell University, “Female white-necked jacobins retain the male-like plumage of their youth for social reasons. They avoid the bullies by looking like them.”

Why aren’t all the females colorful? Colorful females can better feed themselves and their chicks because they avoid harassment, whereas drab females can better avoid predation on the nest.

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