

COMMENTARY

The Editor invites letters that comment on articles published in *The Condor* or on matters of current ornithological interest. Letters should be submitted *in duplicate* so that one copy can be forwarded to the person whose work is being discussed. The recipient will be invited to reply. Letters should be as brief as possible; they are subject to editing. They must be *typed double-spaced* and signed.

TO THE EDITOR

Since male birds usually help females at nests, it is challenging to explain the evolution of groups or species in which lek-displaying males do not help. As suggested by David and Barbara Snow (p. 286–292) and previously (Willis, Wechsler, and Oniki, *Auk* 95:1–8, 1978), study of such seemingly intermediate birds as pipromorphas can help to show how male inattention and lek behavior have evolved. One can occur without the other, for care of the nest by females alone has not led to lek behavior of males in such birds as the Plain-brown Woodcreeper (*Dendrocincla fuliginosa*; Willis, *Wilson Bull.* 84:377–420, 1972). The suggestions that seem to emerge from work of the Snows, my own, and that of others I would summarize as follows:

1. High densities (perhaps caused by evolution of frugivory) can lead to high rates of predation on nests in many environments, because predators form search images.

2. High predation on nests leads females that can do so to reject or avoid male help, first in incubation and later throughout:

(a.) if the nest is inconspicuously small and limits the number of young (hummingbirds, manakins, bellbirds), or

(b.) if the nest is on slender leaves or vines, and larger size caused by extra nestlings would cause it to fall (pipromorphas, other small flycatchers?), and

(c.) if exchanges of duties at the nest and behavior patterns to keep male and female together would attract predator attention, especially near the ground or in open areas (grouse, tinamous).

3. Females can also reject male help for reasons not connected with predation on nests:

(a.) Hummingbird nests are small because hummingbirds are small. [If predation is a factor, then I see no reason why it should not apply to hummingbirds.—D. Snow]

(b.) Grouse cannot cover more eggs, nor can the male increase the number unless he incubates another set.

(c.) Female woodcreepers reject male help because

the male hinders female foraging by attracting dominant species over army ants.

4. The rejected males may then try to fertilize several females:

(a.) By sequestering or waiting in sites convenient to females, if sufficient food is available nearby (such as fruit) (pipromorphas, manakins, other lek birds).

(b.) They may be unable to sequester females because they have to move about for food (ducks, many insectivores such as woodcreepers).

Frugivory, in this scheme, is connected with female rejection of male help only if the nest type or some other factor limits brood size or possible help by the male. [Fruit is also an easily regurgitated food; possibly certain insect foods would be difficult to regurgitate.—D. Snow] Frugivory is helpful for lek formation among disenfranchised males, since it allows them to appropriate a site needed by the female or to stay in one area themselves rather than move about as do ant-following male woodcreepers. Perhaps insectivorous tyrannids without male help at nests lack leks because males cannot stay in one place with food and females both present. Lek formation is unrecorded in nine-primaried oscines, even though many are partially frugivorous; oropendolas seem to sequester nesting colonies and thus form harems rather than true leks. Absence of leks in tanagers is especially noteworthy; the reason is likely to be that they generally have thick nest cups and blue eggs, mimicking dark blotches and light flecks on green leaves in edge and canopy areas (Y. Oniki, unpubl. data). Since another egg can always be added to the clutch in such a nest without causing it to be much more conspicuous, help by the male is always an advantage. Absence of leks in partially frugivorous flycatchers related to kiskadees is probably related to the fact that their covered nests are conspicuous and on strong supports and are protected by both sexes.

There seems little evidence that male birds abandon the nest without some limitation on their ability to raise or protect young, unless they can actually sequester nesting sites or female territories (polygamy). A male that leaves a mate has to be able to obtain others in order to increase his genotype, yet this cannot occur when all females are mated. I have evidence in several neotropical woodcreepers (*Dendrocolaptes*) that females either harass their mates (unpubl. data) or dominate them while rejecting their help (Willis 1972). Observations of pipromorphas are still needed to establish if such is the case in tyrannids with primitive forms of lek behavior.—EDWIN O. WILLIS, *Department of Biology, University of Miami, Coral Gables, Florida 33124.*