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Evidence of Aggressive Behavior in Female Blue Grouse

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Historically, studies of territoriality and other forms of spacing behavior have emphasized interactions between males, with little attention being given to the study of similar behaviors in females. Recently, however, work with some tetraonids has demonstrated that females do respond aggressively towards one another and that these behaviors may relate to the spacing of individuals (Stirling 1968, Herzog and Boag 1977) and/or the regulation of breeding densities and production (Robel 1970).

Results from laboratory experiments with Blue Grouse (*Dendragapus obscurus*) indicate that females will attack their mirror images (Stirling 1968). In addition, indirect evidence from field studies suggests that females may space themselves on the breeding range (Hannon et al. 1982), and Hannon (1980) hypothesized that the "cackle" call is an aggressive vocalization that mediates this spacing. Some females have cackled at, and in a few instances have approached, tape recordings of cackles (Hannon 1978); at present, however, no documented cases of females chasing or attacking other females are available. In this note I describe the details of an aggressive interaction between two females, which I observed while conducting studies of Blue Grouse on Hardwicke Island, British Columbia in 1982.

On 30 April I flushed an unidentified female at 1705 and she flew to an area of tall trees approximately 75 m away. Twenty minutes later two females began uttering "whinny" calls (Stirling and Bendell 1970) in the area where the female landed. The females continued calling vigorously, with most of the calls being whinnies; a few cackle calls also were given. As I approached, one flew in my direction and landed in a tree a few meters away. Within seconds the other female flew toward the first hen and landed in a tree 10 m from her. The second female was banded, but the first was not. Both began cackling at each other, with the banded one appearing to be the aggressor. The unmarked hen cackled softly and infrequently and walked slowly along a branch. The banded female cackled, flew to within 5 m of the other female, and walked toward her. When the banded female was 3–4 m away the unmarked hen flew 40 m to the northwest and landed in another tall tree. Again the banded female flew after her and landed in the same area. One cackled, but as I approached the calling stopped, and the unbanded female flushed far down a hill when I disturbed her. I could not relocate the marked female.

The banded female was a known adult and had been seen in the area where the interaction occurred three times before 30 April; she had nested nearby as a yearling in 1981. Later in 1982 she was seen in the same area with a brood, and the age of the chicks indicated that her nest hatched on 13 June. The interaction I observed, therefore, occurred about 13 days before she began laying, that is, at a time when she would have been establishing a home range and preparing to breed (Hannon et al. 1979, Hannon 1980).

An unbanded female in this area began cackling immediately when I played taped cackles to a nearby territorial male on 25 April. Most females (over 85%) on my study area were marked and therefore the unbanded females seen on 25 and 30 April were probably the same individual. The interaction I observed on the latter date was possibly in an area where the home ranges of these two females overlapped, or, alternatively, the unbanded female could have been trying to establish a prenesting home range (Hannon et al. 1982). No unbanded brood females were later seen in this immediate area.

Hens did not attack female models when Hannon (1980) conducted playback experiments in the field. Therefore, she postulated that the mechanism for spacing of females is a combination of warning calls and mutual avoidance rather than one of overt aggression. Although the encounter I observed did not involve direct contact, it does demonstrate that females do interact aggressively and that both the whinny and cackle call are used in such interactions. Presently, the relative importance of mutual avoidance and overt aggression in spacing females cannot be evaluated, however, because female spacing behavior has been implicated only recently as being important in regulating breeding densities of Blue Grouse (Hannon 1980, Hannon et al. 1982), and as yet research on this problem has been limited.

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