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Brief reports

A very long distance between two nests of a polyterritorial Pied Flycatcher male

Osmo Rätti, Matti Hovi, Janne Kilpimaa, Pirkko Siikamäki & Rauno V. Alatalo

Rätti, O., Hovi, M., Kilpimaa, J., Siikamäki, P. & Alatalo, R. V., Department of Biology, University of Jyväskylä, Yliopistonkatu 9, FIN-40100 Jyväskylä, Finland

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The mating system of the Pied Flycatcher *Ficedula hypoleuca* is polyterritorial polygyny (von Haartman 1951, 1956). Most males try to attract a secondary female after having mated with the first one. They do this by establishing a second territory some distance away from the first one (von Haartman 1951, 1956, Alatalo & Lundberg 1984). There are several factors that could promote polyterritoriality of males (reviewed by Alatalo & Lundberg 1990). However, recent debate has highlighted two views. First, males may take over separate territories with the purpose of reducing aggression between their two females (female-female aggression hypothesis, Breiehagen & Slagsvold 1988). Secondly, by being polyterritorial males may be able to hide from females that they are already mated (Alatalo et al. 1981).

In their recent book Lundberg & Alatalo (1992) reviewed the observed distances between the two territories and two nests of polyterritorial males. In most studies the mean internest distances have ranged from 117 m up to 582 m. The longest reported distance between nests of a male is 1300 m (Rätti & Alatalo 1993). Some studies have also reported distances between territories of males trying to attract a second female, but without success. The longest reported distance between such territories is 3.5 km (Silverin 1980). Silverin (1980) has also seen some other males 1–2 km from their first territory and von Haartman (1956) reported a maximum interterritory distance of 1300 m.

In spring 1992 at Konnevesi (62°37′N, 26°20′E) in Central Finland we observed a male having his two nests separated by 2000 m. We observed the male singing at his second nest box at 28 May. On 30 May he succeeded in attracting a female. Three days later we captured and ringed the male with aluminium ring as well as colour bands. Later we saw the male at his first nest while he was feeding young. The primary female started egg laying on 26 May. Thus, the male established his second territory two days after the onset of egg laying at the primary nest. We visited the primary nest briefly on four different occasions (4, 7, 10 and 13 days after hatching). Each time the male was seen feeding the young. During the second visit we captured the male and confirmed the ring number. We observed feeding of young at the secondary nest during a 30 minute period 8 and 10 days after hatching. The male was never seen to feed his second brood. The hatching interval between the two broods was 8 days. From the primary nest fledged 6 young and the secondary female raised successfully 4 fledglings.

It is evident that males do not like their second nest box to be very close, and that they prefer a

nest box at a some distance away from the first one (Alatalo & Lundberg 1984, Lundberg & Alatalo 1992). There may be some ideal distance between a male's territories. This distance should be long enough to take advantage of polyterritoriality, but presumably also short enough to make it easier to defend both territories and feed the young of both broods (see Lifjeld & Slagsvold 1989, 1990, Slagsvold et al. 1992, Rätti & Alatalo 1993). Why then do some males establish a second territory very near to their first one, whilst some males move very long distance away? One important factor might be the probability of finding a nest site at the preferred distance. It might still be better to take a very close or very distant second territory rather than not to take one at all.

Rätti & Alatalo (1993) performed a study in two different nest box densities and in both densities the mean interterritory distance of polyterritorial males was about twice the average distance between nest boxes. Hence, if the possibility of finding a closer nest site was reduced due to sparser nest site density males readily established more distant second territories. In relatively small study plots with high nest box densities males may often be forced to take over a near second territory if there are no alternative nest sites around the study plot.

The finding that the upper limit of the distance between primary and secondary territories can be considerably long is important when interpreting results from nest box studies in study plots with high nest site densities. We should keep in mind that we often underestimate the mean interterritory distance, because the sizes of study plots are usually too small and interplot distances are usually too large to effectively observe long distance polyterritorial males. This can also give an underestimate of the degree of polygyny in a given population.

Some behavioural traits have been found to correlate with the distance between territories. First, the singing activity of polyterritorial males at the second territory is often higher for males with long interterritory distance (Rätti & Alatalo 1993, but see Slagsvold et al. 1992). Secondly, long distance polyterritorial males are more prone to allocate less feeding to the second brood (Lifjeld & Slagsvold 1989, 1990). The underestimation of the interterritory distance may, therefore, bias also the estimates of the average behaviour of polyterritorial males.

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