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Polyandry in a female Northern Mockingbird.—Though the Northern Mockingbird (*Mimus polyglottos*) is thought to be highly monogamous (Laskey 1935), Breitwisch et al. (1986a) and Logan and Rulli (1981) report cases of bigamous males. Here we report the first clearly documented case of a polyandrous female mockingbird.

In spring 1985, two male mockingbirds (M1 and M2), one of which was color banded, occupied adjacent territories on the campus of the University of North Carolina at Greensboro. A single colorbanded female (F1) ranged over both of the territories throughout the 1985 and 1986 breeding seasons. Thirty-two 1-h focal-animal samples were conducted from 14 March 1985 to 3 August 1985. During each observation period the occurrence of six behavioral patterns was recorded. These included conspecific interactions (either between F1 and either male, or between M1 and M2), song, nestbuilding, the feeding of nestlings, F1's perch sites, and incubation.

M1 was observed nestbuilding on 14 March (Fig. 1), but the nest was never completed. On 8 April, M2 was observed nestbuilding, and F1 was seen sitting on the edge of the half-completed nest. The nest, however, was never completed. F1 was observed incubating a nest of 3 eggs in the territory of M1 on 13 April. During the 2 days prior to her laying in the M1 nest, F1 was seen in both males' territories. Both M1 and F1 fed the 3 nestlings that hatched in the M1 nest. During the time she was feeding her nestlings (from 26 April to 3 May), F1 was repeatedly observed in the territories of both males. On two occasions F1 took food from the territory of M2 to feed her nestlings in the territory of M1. The nestlings from the first M1 nest disappeared on 5 May, probably taken by predators. M2 was observed nestbuilding on 10 May, and on 20 May F1 began incubating eggs in the M2 nest. Prior to laying these eggs, F1 was again consistently seen in both males' territories (on

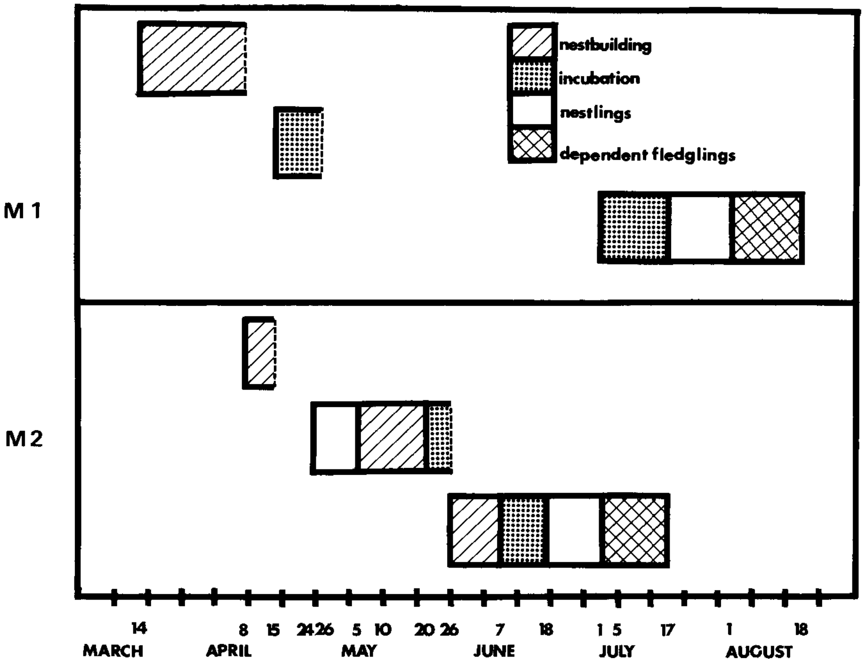

FIG. 1. F1's alternating pattern of activity during the four phases of the breeding cycle: nestbuilding, incubation, nestling, and fledgling, in the territories of two males (M1 and M2) in spring 1985.

15, 17 and 19 May). The first M2 nest was abandoned by 26 May, during a period of heavy rain. M2 immediately began building a new nest. F1 began incubating eggs in the M2 replacement nest on 7 June. Nestlings hatched on 18 June, and both F1 and M2 fed the nestlings. Again, F1 was repeatedly seen in the territories of both males during the nestling phase, and on one occasion she fed her M2 nestlings with food obtained in the territory of M1. Fledging occurred in the first week of July. On 5 July, F1 was found incubating in M1's territory. Though repeatedly sighted in both males' territories while incubating the second M1 nest, during 6 h of observation, F1 was not seen feeding the fledglings from her previous (M2) brood. Eggs from the second M1 nest hatched on 17 July, and both M1 and F1 fed the nestlings. On one occasion F1 fed the M1 nestlings with food obtained in the territory of M2. The 3 M1 nestlings fledged on 1 August; one remained in M1's territory while the other two were found in M2's territory. The mature fledglings from the previous M2 nest had, by this time, left the territory. The young M1 fledglings, now in M2's territory, were fed exclusively by F1. Although M2 was observed perched within 2 m of the fledglings, he was not aggressive toward them, nor did he feed them. The fledgling that remained in M1's territory was fed exclusively by M1.

Although polyandry is thought to be rare in passerines (Jenni 1974, Oring 1982), F1's pattern of alternately nesting with 2 males, the consistent presence of F1 in both males' territories just prior to egg laying, and the lack of aggression by either male directed toward F1 indicate polyandrous mating by this female. The polyandrous strategy of F1 appears to be stable. Although we had not banded the female until 1985, this same pattern had been observed in the behavior of an unbanded female in the territories of the two adjacent males in both 1983 and 1984. Furthermore, the pattern (Fig. 1) occurred in spring 1986, when F1 again mated alternately with 2 males. We conclude, therefore, that a single female has maintained a stable polyandrous relationship with several males over at least 2, and possibly as many as 4, breeding seasons.

F1 might benefit from polyandrous mating in one of several ways. Although brood overlap (thought to be important in the evolution of polyandry [Erckmann 1983]) is common in Mockingbirds (Logan 1983), the average amount of brood overlap seen in F1 in 1985 and 1986 was within the range of that observed for 8 monogamous females during the same period. The interval between hatching of one brood and incubation of the next (excluding unsuccessful attempts) for F1 was 16 days in 1985 and 23 days in 1986. The comparable interval for 12 broods of 8 monogamous females in the same period ranged from 15 to 44 days (Mann-Whitney U-test $P > 0.10$). F1 lost 2 of 4 (50%) of her nests, whereas 12 monogamous females suffered nest losses of 55% during the spring of 1985. F1 may have gained some advantage over monogamous females from increased predator defense provided by two males (Breitwisch et al. 1986b), though we have no evidence of this possibility. The apparent disadvantage to males of accepting an already mated female rather than mating monogamously may be offset by the skewed sex ratio characteristic of this population in spring 1985 (female : male ratio = 3:4).

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