

SOCIAL ORGANIZATION OF THE BLUE-BACKED MANAKIN

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THE manakins of the genus *Chiroxiphia* are peculiar in that pairs of males (or in *C. caudata* several males) perform a coordinated courtship dance in which each bird appears to play an equal part. The displays take place on low perches in the undergrowth of secondary forest, and the evidence indicates that the main perches are traditional, though other perches are also occasionally used. In *C. pareola*, *C. lanceolata*, and *C. linearis*, the two displaying males jump up alternately. In the Blue-backed Manakin (*C. pareola*), which has been studied in most detail, each jump is accompanied by a nasal twanging call, so that the two birds jumping alternately produce a rhythmic twanging. If a female lands on the perch, they face her and continue the dance; the jumping bird flutters backwards in the air while the perched bird hitches itself forwards on the perch and jumps up as the other lands, with the result that the two birds form a revolving "cartwheel." The joint dance appears to be an advertising display, whose function is to attract females to the site. Copulation, however, is preceded by a different display in which only one male takes part. In addition to the joint dance, males also call jointly, sitting side by side or on adjacent perches and uttering long series of ringing notes in almost exact unison.

These displays and calls were described in an earlier paper from observations made in Tobago (Snow, 1963*b*). It was found that, at the main display site studied, there was a dominant male which called up other males, using a special "summoning" call; the summoned bird would approach, also calling, and the two birds would then break into a bout of calling in unison from the trees above the display perch. This would regularly be followed by the joint dance on the perch itself. But the most interesting question of the organization of the males was left unanswered. Two possibilities were suggested: (1) that each display perch is "owned" by a dominant male, which is joined by subordinate males that have no display perches of their own; or (2) that each display perch is "owned" by a male, which is joined by neighboring perch-owners for bouts of joint display and in its turn joins its neighbors, as appears to be the case in *Pipra aureola* (Snow, 1963*a*). Gilliard (1959), however, had earlier suggested, also from observations made in Tobago, that a group of perches is the common property of a group of males, and he found evidence of a social hierarchy within the group which he studied.

In 1961 I attempted to decide the question by color-ringing, but without

success, as the season was too far advanced and the two birds which were caught did not reappear. Early in 1970 another opportunity presented itself. From 16 January to 6 April I was camping beside a creek in the foothills of the Kanuku Mountains in southern Guyana, very close to a group of Blue-backed Manakins which occupied a patch of secondary forest just across the creek from the camp clearing. The study was not as successful as was hoped, as display was never at a very high level and for some periods fell off inexplicably, though the breeding season should have been at hand with the onset of the wet season in April or May (no Blue-backed Manakin nests have yet been reported from Guyana). The observations that were made, however, were sufficient to show that the social organization was much as Gilliard suggested for his Tobago birds.

Preliminary observations, soon after our arrival at the camp, showed that at least four display perches were being used, about 30-40 m apart. As in Tobago, the display sites were in thick patches of undergrowth, especially where there was a tangle of woody lianas close to the ground, the horizontal or nearly horizontal portions of the lianas forming the actual perches. Mist-nets were set at three of the display sites, the fourth being on unsuitable terrain, and five male manakins were trapped and color-ringed between 25 January and 16 February: one fully adult male, two subadults which might well have been taken for adults in the field (adult plumage, with greenish wash on the black body plumage and greenish fringes to the wing and tail feathers), and two more immature males with red caps but otherwise mainly juvenile plumage. Two of these were trapped at one perch, two at another, and one at the third perch.

After a gap of three weeks, during which display was very slack, as judged by the lack of calling to be heard from the camp, activity seemed to increase a little and a series of watches was carried out between 10 March and 2 April, totalling 22 hours. The details of the display movements and calls were, as far as could be determined, identical with those of the Tobago birds, and the following account deals only with the social organization.

In addition to the five birds that had been caught, of which three were seen between 10 March and 2 April, one unringed fully adult bird was regularly present and there may have been another. No unringed immature or subadult birds were seen. Thus there were certainly six, and perhaps seven, males associated with the display perches during the period of the study. Of the four display sites in use in January, one (at which one male had been trapped) was never seen to be used during the later observation period. The others were all used, as was a fifth site which consisted of a rather diffuse cluster of perches. All these display sites were within an

area of about 100×50 m, and from a central position it was easy to hear whether display was taking place at any of them. No dancing displays were recorded anywhere else in the vicinity outside this area, but occasionally a pair of males would call in unison in the forest on the camp side of the creek.

The most active bird in the group turned out, unfortunately, to be the unringed adult male. This bird spent a considerable amount of its time in the trees above one of the central display sites, uttering "summoning" calls, until it eventually gave up or moved off or, on several occasions during observation periods, was joined by another male. With the unringed adult giving the lead, the pair would then break into a bout of calling in unison and might later fly down to one of the display perches and begin to dance. If the pair were disturbed at one display perch they sometimes flew almost directly to another and continued their display. The unringed adult (presumed to be the same bird on each occasion from its behavior and the perches from which it called) certainly went to three of the perches that were in use and probably went to the fourth. On all occasions when the relations between it and another bird could be observed it was dominant, in the sense that it called up the other bird and initiated any movement from one display site to another or from a high perch down to one of the low display perches.

The two younger males that were seen most frequently also both went to three of the four display perches that were in use, either when called up by the adult male or of their own accord if they were alone. The third ringed bird was seen on only one day, when it was engaged in prolonged calling in unison with the unringed adult near the central display perch. No joint displays were seen involving two subordinate males, apparently because each of them tended to associate with the dominant bird if he was about. Probably there was a hierarchy within the group, based primarily on age, the older subordinate birds being able to displace the younger ones as display-partners of the dominant male. Occasionally three or more birds were present at the same time, and the rather fragmentary observations that were made on these occasions suggested that, although males are attracted to other males which are calling or displaying, properly coordinated joint displays are possible only between two males, as the earlier study (Snow 1963*b*) had also indicated. If a newcomer comes close and is persistent, the display breaks up and the birds revert to uttering the initial "summoning" calls.

On no occasion were two pairs of males recorded calling or displaying at different display sites at the same time. Nor did I ever see a solitary male remain at a display site when display was going on at a neighboring

site. In other words the negative evidence, as well as the positive, all indicated that there was a single group of males ranging over the whole display area, with no private ownership of any of the display perches.

The display area in Guyana and the main area watched in Tobago by Gilliard and myself were both in rather small patches of habitat suitable for manakins surrounded by less suitable areas. In more extensive habitats it must often be impossible for one male to be dominant over all the display sites, and in such places it may be that a number of dominant males divide up the area among themselves. Thus in extensive forest on Pigeon Peak in Tobago we found that pairs of males might display simultaneously at neighboring perches, but we were unable to make detailed observations. In such areas the relations between males may well be more complex than in the smaller restricted areas that have so far been studied.

SUMMARY

In the Blue-backed Manakin (*Chiroxiphia pareola*) pairs of males perform joint displays on species perches low in forest undergrowth. The organization of a group of males in southern Guyana was investigated by color-banding. Contrary to the suggestions made as a result of study of the same species in Tobago, but in agreement with Gilliard's earlier observations, it was found that the group of display perches was the common property of the whole group of males.

LITERATURE CITED

- GILLIARD, E. T. 1959. Notes on the courtship behaviour of the Blue-backed Manakin (*Chiroxiphia pareola*). Amer. Mus. Novit., No. 1942.
- SNOW, D. W. 1963a. The display of the Orange-headed Manakin. Condor, 65:44-48.
- SNOW, D. W. 1963b. The display of the Blue-backed Manakin, *Chiroxiphia pareola*, in Tobago, W. I. Zoologica, 48:167-176.

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