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Pygmy Falcon population in the central Namib desert, Namibia

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Summary—Nine pairs of Pygmy Falcons Polihierax semitorquatus were found on the western edge of the species’ range in the central Namib Desert in an area containing 34 Sociable Weaver Philetarius socius nests (26% occupancy rate). The mean inter-pair distance between Pygmy Falcon pairs was 1.84 km (range 0.8-3.4 km). Larger Sociable Weaver nest masses were selected by the falcons. This population density compares favourably with that in the Kalahari, suggesting that the species’ distribution is restricted by the availability of Sociable Weaver nests rather than by other environmental factors.

Introduction

The Pygmy Falcon Polihierax semitorquatus is a diminutive raptor (about 60 g) which occurs in semi-arid to arid habitats. In southern Africa its distribution coincides closely with that of the Sociable Weaver Philetarius socius, in whose communal nest masses it roosts and breeds (Steyn 1982, Maclean 1985). The general biology of this falcon was briefly described by Hoesch (1935), but the only published account of a detailed study is that of Maclean (1970), based on research in the Kalahari Gemsbok National Park. In this note I report on the population density of Pygmy Falcons in the Ganab region of the central Namib Desert in November 1988.

Study area and Methods

The Ganab study area (see Brown 1988) is situated on the eastern border of the Namib-Naukluft Park on the gravel plains between the Kuiseb and Swakop Rivers. Rainfall is highly variable (9-374 mm per annum), with an 11-year annual mean of 86 mm, and decreases sharply westwards; Gobabeb, about 60 km west of Ganab, has a 21-year annual mean of 26 mm (Pietruszka & Seely 1985). The eastern parts of the Ganab study area also receive some run-off from mountains just outside the Park. These factors account for the range of the Sociable Weaver extending from the east into this section of the Namib-Naukluft Park for a distance of up to only about 10 km. Pygmy Falcons have not been recorded in this area to the west of the Sociable Weaver’s range. This population of Pygmy Falcons is therefore on the extreme western edge of the species’ range, representing the most arid environment in which this species occurs.

Two regions were sampled (Fig. 1) in November 1988, these being
in the northeast and southeast of the study area respectively. All river washes large enough to support *Acacia erioloba* trees (the only species in that area on which Sociable Weavers build their nests) were checked from a vehicle. The locality of each Sociable Weaver nest mass was plotted onto a 1:50 000 map, the number of chamber entrances per nest was recorded as well as the number containing whitewash and thus signifying occupation at some stage by Pygmy Falcons. In addition, the nest masses currently occupied by the falcons were identified by the presence of fresh pellets. Shade trees in the Namib are scarce and game animals congregate under these trees during the heat of the day. Pellets are soon destroyed by trampling, and any pellets present were therefore taken to indicate recent occupation of that site. Pygmy Falcons were seen at all but one of these sites, thus substantiating this assumption.

**Results and Discussion**

A total of 34 Sociable Weaver nest masses in four river washes were recorded (Fig. 1). The mean distance between nearest nests within each river wash was 0.96 km (SD 1.37, range 0.2–1.3 km). Sociable Weaver nests were generally large, with an average of 42 chamber entrances per nest (range 5–196). 62% of all nests had whitewash from Pygmy Falcons on one or more of their entrance tunnels (mean = 2, range 0–6); the larger nest masses...
had a higher "occupation" rate than did the smaller nests (Fig. 2). Similarly, the larger nests had, on average, more nest chambers used by the falcons (Fig. 3). The mean size of the nest masses actually occupied by Pygmy Falcons at the time of the survey (74 chambers, range 13-196) was significantly larger (in terms of number of chambers per nest) than the average (42) for the area (Chi-squared test, p<0.001). Pygmy Falcons thus select the larger nest masses in which to nest and roost.

Fig. 2. Percentage of Sociable Weaver nest masses that had one or more entrance tunnels coated with Pygmy Falcon whitewash, within three size classes of nest masses.

Fig. 3. Number of Sociable Weaver entrance tunnels that were coated with Pygmy Falcon whitewash, within four size classes of nest masses.

Nine pairs of Pygmy Falcons were found in the areas surveyed. The mean linear inter-pair distance (within a river wash) was 1.86 km (SD 1.09, range 0.8-3.4 km) and the mean overall inter-pair distance was similar at 1.84 km (SD 0.86, range 0.8-3.4). The occupation rate of Sociable Weaver nests by the Pygmy Falcons was 26%, which is similar to the figures obtained by Maclean (1970) in the Kalahari (25%) and Hoesch (1935) in Damaraland (23%). The distance between pairs of falcons was, however, considerably less in the Namib than in the Kalahari, where Maclean (1970) found 10 pairs along the Nossob R. averaged about 4.4 km apart. This overall figure is biased, however, by stretches of the Nossob R. that contained no Sociable Weaver nests. In areas where nests were abundant, e.g. near St. John's dam, the mean distance between six pairs of Pygmy Falcons was about 2.1 km.
The density of Pygmy Falcons on the arid western edge of their range in the Namib is surprisingly high, and would suggest that environmental conditions are not directly restrictive of their distribution. Rather, their range is dictated by environmental limits to the distribution of their host, the Sociable Weaver. This implies that the advantage gained by using the Sociable Weavers' nests is considerable, even to the extent of restricting their potential distribution. Maclean (1970) states that the 'selective advantages of the association to the Pygmy Falcon are obvious: the weaver nest provides a place in which to roost and to breed, to escape from the heat of summer and the cold of winter. The nest masses of the Sociable Weaver are also relatively well protected from all predators except certain species of snakes'. While this may account for the Pygmy Falcon's use of Sociable Weaver nests in southern Africa, it does not explain why they are restricted solely to these sites; they have never been recorded breeding in other situations in southern Africa. The use of cavities in trees or the nests of other species (as happens in north east Africa) would allow them a far wider distribution. Further investigation into the Pygmy Falcon-Sociable Weaver relationship is clearly needed.


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