

SHORT COMMUNICATION

A PRELIMINARY SURVEY OF THE POPULATION OF PEREGRINE FALCONS IN VICTORIA

The decline in numbers and breeding success of the Peregrine Falcon *Falco peregrinus* in Britain and the United States has been attributed mainly to the effects of persistent organochlorine pesticides (e.g. Ratcliffe 1973; Peakall *et al.* 1975). The continued use of these persistent pesticides threatens the long-term survival of the species in those countries and perhaps elsewhere in the world.

In 1975, the Fisheries and Wildlife Division, Victoria, initiated a survey of Peregrine Falcons in Victoria. We hope eventually to compare our results with those of similar studies conducted in Britain during 1962 and 1971 (Ratcliffe 1963, 1971). This paper presents preliminary results obtained during 1975.

Before 1975 few nesting territories of the Peregrine Falcon had been documented in Victoria and most of our time was spent finding areas with one or more adult Peregrines present. This was done by searching for possible nesting areas and by obtaining information from amateur and government organizations and other interested individuals. Eyries reported to us during the 1975 breeding season were visited as soon as practicable.

We tried to obtain the following data for each eyrie: dates of occupancy, clutch size, hatching success, brood-size and fledging success. We could get them for only a few nests. Most eyries were visited twice: while parents were incubating eggs and when the young were large enough to band. Our survey covered a wide area, including both coastal and inland sites, from Traralgon in south-eastern Victoria to Mildura in the north-west but it was difficult to be sure that we found all eyries in this area and certainly some were missed.

RESULTS

Thirty-four sites in areas where birds occurred were examined one or more times during the 1975 nesting season. The occurrence of these is shown in Figure 1 in the study-areas of the Land Conservation Council of Victoria.

Twenty-five of the eyries were on cliffs, including two in quarries; five were in hollows in trunks or branches of trees; and four were in disused nests of Wedge-tailed Eagles *Aquila audax* in trees. Eyries on cliffs were the easiest to find and to examine and the results are biased in their favour. Two of these have

been used by Peregrine Falcons since about 1900 and one eyrie, in a tree occupied in 1975, had been used in the 1940s. We also examined three sites (not included above) that had been occupied at some time during the past ten years but were unoccupied in 1975.

The breeding season for 1975 may generally be summarized as: laying in September, hatching in October and fledging in November.

During 1975 Peregrine Falcons laid eggs in twenty-six of the thirty-four sites examined. In the other eight the adults either failed to lay or laid eggs that were lost before we found the eyrie or we did not find the nest. We recorded eight completed clutches: three of two eggs, four of three and one of four (average 2.8).

Young were hatched in nineteen of the twenty-six nests where eggs were laid. We found broken or deserted eggs or both at five of the seven eyries where the eggs failed to hatch. The other two clutches disappeared without a trace; one of these was being incubated in November and may have been a second laying.

Nesting mortality was low; one brood of two disappeared during the first two weeks of development and another chick was found dead beneath a tree eyrie in which a single young remained.

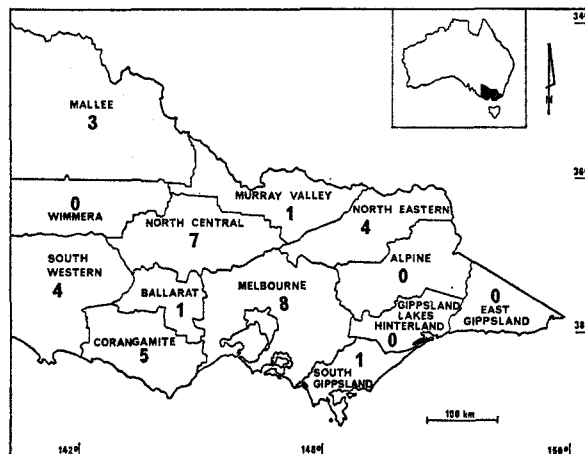


Figure 1. Distribution of territories of Peregrine Falcons in Victoria in 1975.

Chicks fledged successfully from eighteen eyries. From fourteen of these, an average of 2.0 chicks fledged (six broods of one chick, three of two, four of three and one of four). We suspect that chicks were illegally removed from two eyries, reducing the two broods to a single bird in each, included in the broods of a single young. The other four eyries were discovered only after the young had fledged; the fledgelings were near the eyries but their number could not be estimated.

If two chicks are fledged from each of the successful nests, thirty-six fledgelings would have been reared at thirty-four sites or 1.1 young per occupied site.

Two eggs laid during the 1975 breeding season were analysed for DDE by G. J. Bacher (Environmental Studies Section, Fisheries and Wildlife Division, Victoria). One egg, dislodged from a clutch of three (the remaining two hatched) in an eyrie forty kilometres north of Melbourne, had a DDE level of 12.6 ppm wet weight. The other abandoned egg (containing a well-developed embryo) had a DDE level of 9.6 ppm wet weight; this egg came from an eyrie eighty kilometres north of Melbourne and remains of other eggs were found beneath the nest site.

DISCUSSION

The total number of Peregrine Falcons in Victoria is unknown but we suspect that there are many more nesting pairs than we found. Most of those found were in the central and western parts of the State mainly because there were more observers in those areas.

Failure to rear young was partly because eight pairs probably did not lay and partly because seven clutches did not hatch. The number of chicks lost during rearing was small. The average of 1.1 young per occupied site in this survey compares favourably with the results (1.5 young) of a similar survey of twenty-six eyries in South Australia (Flinders Ranges and Eyre Peninsula), southern New South Wales and the Australian Capital Territory (Woollard and Olsen pers. comm.). We had little evidence of the reasons for losses but doubtless these were among those recognized elsewhere: disturbance by man, wet nests, effects of DDT, illegal egg collecting, illegal removal of young, natural predation and age or experience of adults.

Only two eggs were analysed for pesticide levels and these were not selected at random from the eyries. Obviously, considerably more work needs to be done on pesticide levels and thinning of egg-shells of Peregrine Falcons in Victoria before any definite statement can be made about the effect of DDT on reproduction of the species in the State. However, the levels of DDE (12.6 and 9.6 ppm wet weight) are higher than those found in three eggs (2.2–3.3 ppm wet weight) from the South Flinders Ranges, SA (Woollard and Olsen pers. comm.) but lower than the suggested critical DDE level of 20 ppm wet weight, above which Peregrine Falcons in Alaska cannot maintain normal levels of population (Peakall *et al.* 1975). It is noteworthy that the eggs from the South Flinders Ranges were collected in an area where the use of DDT was negligible, whereas the eggs from north of Melbourne were collected in or near areas of medium use (1–4 lb/ac./annum) (Australian Academy of Science 1972: 14).

Our preliminary survey does not allow us to compare our results with the more extensive overseas surveys but the non-breeding, breakages of eggs, desertions of nests, total disappearances of clutches and pesticide levels in fertile eggs indicate that the Peregrine Falcon population ought to be studied further. We hope to increase our sample in the future and individuals and organizations are asked to report to us any sightings of Peregrine Falcons or the sites of possible eyries in Victoria.

We are grateful to the many people who provided information on possible locations of Peregrine Falcon territories; members of the Bird Observers' Club and of various government departments were particularly helpful in this respect. We also thank H. F. Archer for his assistance with various aspects of this study.

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