

SEDENTARY WELCOME SWALLOWS *Hirundo neoxena* IN THE SOUTH-WEST OF WESTERN AUSTRALIA

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In Australia the Welcome Swallow *Hirundo neoxena* is said to be a partial migrant (Blakers *et al.* 1984), variation in numbers of birds present in summer and winter months are given. In New South Wales it was suggested that different birds were present in winter from those in summer (Lane 1968), and in southern Tasmania all the birds left in the autumn (Park 1981). In this area near Manjimup in the south-west of Western Australia, greater numbers of Welcome Swallows are observed in summer than in winter but some are present all year. A pair has nested in our garage (RJB and MNB) since 1980-81 and roosted there during the winter months. The purpose of this study was to ascertain if their behaviour was typical of the species in this area.

STUDY AREA AND METHODS

The area was originally forested, but the land is now cleared for grazing, orcharding and vegetable growing. The consequent construction of many small irrigation dams has provided a habitat suitable for swallows: there are foraging spaces over water surfaces; roosting sites in emergent vegetation; and nesting sites in man-made structures adjacent to those dams, including pump houses, open-fronted sheds, bridges, culverts, a disused tobacco shed, and our garage. Nest sites were on beams, electric light fittings, or meter boxes. In all but three of these places only one pair of swallows nested in one season. The exceptions were the tobacco shed, one bridge, and one pump house, which had up to three pairs nesting in the same season. The same nest sites were reused in successive seasons, and pairs were usually double brooded. All these places had

overhead S.E.C. wires nearby, which were used for perching by breeding pairs and their progeny. There were also some natural nest sites in cavities in dead trees standing in dams, but these were disappearing through decay, so wooden nest boxes were fixed to remaining stumps. These proved acceptable to breeding swallows. All nest sites were vigorously defended against other swallows. The breeding season lasted from August to December.

Between 1977-78 and 1987-88, 505 nestlings were banded. Before 1986-87 only 63 adults were banded, these birds being caught while mist-netting for other species. During 1986-87 and 1987-88 increased effort was directed towards banding more swallows other than nestlings. A total of 230 juveniles and adults have now been banded, and five males and seven females were individually marked at their nesting places.

Flocks of more than 80 were seen from January to April 1988, and were known to roost in typha beds on the dams; mist-netting was done at three of these typha roosts. From January to April inclusive 135 birds were caught, 47 (35%) were adults and 88 (65%) were juveniles. All the adults were moulting except one male caught on 29 April, whose moult was completed. No juveniles were found moulting before 27 January, and all caught later than this were moulting. No large flocks were seen during the rest of the year, the greatest number of foraging birds seen together was 30, and no flocks were seen roosting in the typha beds. Throughout the year individuals and pairs roosted in some of the places that had been used for nesting.

Nests were recorded during the breeding season and places that held nests were checked with a torch for roosting birds during the months of two winters. Nine nesting places with easy access in the dark were selected for checking. Two maximum and minimum thermometers were used to check temperatures inside roosting places against those prevailing outside.

RESULTS

The places and numbers of birds found roosting in winter months are given in Table 1. Those in the garage were the known marked breeding pair. They were not the same individuals throughout the period; there was a change of both male and female, but not in the same season. In two other places (2 and 5) the roosting birds were found to be the marked breeding pairs. Checks at other places with only one nest site (3, 4 and 6) always found two birds roosting, but they were unmarked. The difference between years at place 8 might be accounted for by death or divorce, as there was only one nest site. At place 7, there were three nest sites used in the first year, and the two marked roosting males were identified with two of those nests. The second year there was only one nest with a marked female and an unknown male, possibly the bird roosting with her in the winter. We could not account for the number of birds roosting at place 9; in one year of checking, there was only one nest site.

TABLE 1

Number of nesting sites and birds roosting during the winters of 1986-87 and 1987-88.

Places	1986-87		1987-88	
	Nesting sites	Roosting birds — winter	Nesting sites	Roosting birds — winter
1 Garage	1	1M 1F		1M 1F
2 Pump House	1	1M 1F		1M 1F
3 Farm Shed	1	2 birds		2 birds
4 Culvert	1	2 birds		2 birds
5 Disused Hut	1	1M 1F		1M 1F
6 Farm Shed	1	2 birds		2 birds
7 Tobacco Shed	3	2M		1 bird 1F
8 Farm Shed		2 birds		1bird
9 Pump House				2-6 birds

Temperature differences between the open air and the interior of roosting places was found to be very small, only 1–2°C. We assumed the advantage was shelter from wind, heat loss being greater in windy conditions (Elkins 1983). The buildings provided a satisfactory roosting microclimate. No signs of torpidity were found except in a pair roosting in a culvert; with fluffed feathers and beak tucked in, they were unresponsive to torch light. The culvert was open both ends, and resulting draught could have been sufficient to encourage conservation of body heat by the birds themselves. Roosting positions varied: inside the nest perching on the nest edge, or on beams or ledges. Variation in position was not found to be related to temperature or consistent in individuals.

CONCLUSIONS

Welcome Swallows that do not leave the breeding area could be disadvantaged in colder periods by reduced foraging, but a pair that remains in the breeding area throughout the year begin the breeding season with a known partner and in possession of a nest site, an advantage over others that move (Rowley 1983). Welcome Swallows in this area could have such an advantage through the availability of suitable winter roosting sites, and some adult breeding birds do exploit this advantage.

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