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Nest Site Fidelity, Breeding Age, and Adult Longevity in the Vaux's Swift

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ABSTRACT

Vaux's Swifts (*Chaetura vauxi*) were observed using the same nest tree in subsequent years in northeastern Oregon. Seventy percent of 46 nest trees were reused at least once, thereby indicating strong nest site fidelity. Breeding occurred at one year of age. A swift, banded the previous year 3 km away as a juvenile, was recaptured while feeding its young. Two individuals were recaptured at the same nest trees four and five years after the initial captures (minimum ages four and five years, respectively).

INTRODUCTION

Traditional nest site use (defined by Dobkin et al. 1986) as the long-term use of a breeding or colony site) has been documented for White-throated Swifts (*Aeronautes saxatalis*) and several other temperate and tropical zone swifts (Dobkin et al. 1986), for the Black Swift (*Cypseloides niger*) (Collins and Foerster 1995), and for the Chimney Swift (*Chaetura pelagica*) (Dexter 1969). It seems that traditional nest site use may be typical of the family Apodidae.

Vaux's Swifts show strong fidelity to chimneys for roost sites during migration, with some chimneys being used for decades. The majority of nests of Vaux's Swifts reported in the literature have been in chimneys (Griffie 1961, Baldwin and Zaczkowski 1963); little is known of the traditional site use of natural nest sites. In this study, we present data on traditional nest site use of Vaux's Swifts nesting in hollow trees, as well as information on longevity and age at first breeding.

METHODS

We banded Vaux's Swifts at nest and roost trees during the breeding seasons from 1991 to 1995 in the Blue Mountains in northeastern Oregon (Bull

1991, Bull and Cooper 1991). Banding occurred in four study areas: (1) Frog Heaven (42 km southwest of La Grande); (2) Syrup (35 km southwest of La Grande); (3) Goose Creek (42 km southeast of Union); and (4) Sugarbowl (16 km west of Ukiah). The study areas were in older mixed coniferous forests at elevations of 1300 to 1450 m (Bull and Hohmann 1993). The most prevalent tree species were grand fir (*Abies grandis*), Douglas-fir (*Pseudotsuga menziesii*), and western larch (*Larix occidentalis*).

Each June and July we searched each study area for nest trees and trapped at accessible nests (Bull and Collins 1993a). An accessible nest was one that could be reached safely (generally by climbing).

From 1990 through 1995, we located 56 nest trees, eight of which were also used as roosts. All these trees were hollow grand fir, both living and dead. The hollow chamber was created by the heart-rot fungi, Indian paint fungus (*Echinodontium tinctorium*). We checked the majority of these nest trees for repeated nest use in subsequent years (methods described in Bull and Collins 1993a).

RESULTS

Traditional nest site use was 70% of 46 nest trees being reused for nesting in at least one subsequent year, though we did not always know if the swifts using them from year to year were the same birds. However, a high percentage of swifts recaptured in the same nest tree indicated a high degree of nest site fidelity as well.

We banded 520 swifts between 1991 and 1995 and recaptured 25 swifts in at least one subsequent year (Table 1). One swift was captured at the same nest tree five successive years (minimum age five years); another swift for four successive years at the same nest tree (minimum age four years); two swifts for three successive years at the same nest trees, and 11 swifts for two successive years at the same nest trees. Of 15 adults recaptured at nest trees, 14 were in the same tree used previously, and one was in a tree 400 m away.

DISCUSSION

Traditional nest site use and nest site fidelity are high with Vaux's Swifts. Nest trees are used from year to year, and the same birds appear to return repeatedly to the same tree to nest. This behavior is presumably advantageous because the birds know the tree has been suitable and safe from predators (e.g., weasels, squirrels) in the past. In northeastern Oregon, suitable nesting trees (i.e., hollow, large-diameter trees with access to the

Table 1. Number of swifts banded each year from 1991 to 1995 and the number subsequently recaptured.

	Year of Banding				
	1991	1992	1993	1994	1995
No. swifts banded	7	33	175	296	9
No. nests trapped	4	13	11	8	10
No. roosts trapped	0	0	3	3	0
No. recaptured in 1992	3				
No. recaptured in 1993	2	7			
No. recaptured in 1994	2	2	9		
No. recaptured in 1995	1	1	5	3	

Three adults and one juvenile banded at a roost in August 1993 were recaptured at the same roost in August 1994. Four other swifts were captured in nests one year and in roosts another year; nests and roosts used by the same bird were 0.3 to 4 km apart.

Breeding seems to occur at one year of age, as earlier assumed (Bull and Collins 1993b), and at least some of the juveniles return to their natal area for nesting. One juvenile swift, banded at a roost tree, nested the following year in a tree 3 km from the roost. A second juvenile swift that was banded at a roost tree was recaptured at the same roost tree the next year.

Pair bonding seems to be strong among Vaux's Swifts. One swift captured for each of five years had one mate for two successive years, a second mate for another two years, and a third mate the fifth year. Another swift had one mate in 1991, a second mate during 1992-94, and a third mate in 1995. We never captured a bird with a new mate when the old mate was known to be alive.

interior) are relatively scarce (Bull, unpublished data) and may be difficult to locate. Reusing the same tree eliminates the time and energy needed to locate new ones. However, if a nesting attempt failed, the nest tree was not reused. In 1992, three of 15 nesting attempts failed, and none of those three nest trees have been reused.

We suspect adult and juvenile swifts return to the same area each year because they know the location of nest and roost trees, as well as foraging areas, within that area. Based on movements of radio-tagged swifts (Bull, unpublished data), adults seem to show juveniles the locations of numerous nest and roost trees after the juveniles leave the nest and before they migrate. Knowing the location of numerous nest and roost trees would allow the juveniles to choose quickly a nest tree the following May.

At least some Vaux's Swifts nest at one year of age. In the Chimney Swift, the age of first breeding is similarly one year, with some individuals delaying until two years (Fischer 1958, Dexter 1969).

The oldest swift we recaptured was at least five years old, which equals the longevity record reported for *C. v. aphanes* in Venezuela (Clapp et al. 1983). Dexter (1969) reports maximum longevity in the Chimney Swift to be 14 years. Chimney Swifts typically use man-made structures for nesting so are more conducive to long-term studies investigating longevity. The survival rate for the sample of recaptured swifts in this study was 57.5%, which is slightly less than the 62.5-63.0% survival reported for the Chimney Swift (Henny 1972, Fischer 1958). Higher survival rates (81-85%) are reported for the resident tropical Chestnut-collared Swift (*Cypseloides rutilus*) (Collins 1974) and the larger, but also migratory, Common Swift (*Apus apus*) in Europe (Perrins 1971). Additional recoveries of banded Vaux's Swifts in the years to come will allow a more detailed analysis of the survival and mortality patterns of this species.

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