

NOTES ON THE DISTRIBUTION AND BIOLOGY OF THE FLAMMULATED OWL IN CALIFORNIA

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Although the Flammulated Owl (*Otus flammeolus*) is thought to be considerably more common than once suspected (Marshall 1939; Winter 1974, 1979), new data are scarce. Winter (1974, 1979) has provided an excellent analysis of the species' distribution and seasonal occurrence in California, but much remains to be learned about other aspects of its biology. This paper provides data on four previously unpublished distributional records, three nesting attempts in nest boxes, and further information on body weight and molt.

Observations of Flammulated Owls during this study were largely incidental to data collection for other field surveys: the Point Reyes Bird Observatory's Beached Bird Survey; and the American Kestrel Nest Box Program of the Susanville District of the Bureau of Land Management. However, the two observations of birds in the Warner Mountains were obtained by deliberately setting mist nets for the species in suitable habitat.

RESULTS

On 1 July 1974, approximately 1 km north of the mouth of the Santa Margarita River, Camp Pendleton Marine Corps Base, San Diego County, I found a badly decomposed, partially feathered, headless specimen (California State Univ. Long Beach 5546) on the beach. The bird was found in the surf and is thought to have died at sea within 2 weeks prior to my finding it. Positive identification was made by a comparison of the skeletal remains with those of all small southwestern owls, including the Flammulated Owl. The habitat directly adjacent to where the owl was found is coastal sage with no suitable nest trees.

On 12 September 1976, approximately 4.8 km north of Fandango Pass on the east side of the Warner Mountains, Modoc County, I captured two Flammulated Owls at night with mist nets. The dominant tree species at this location were White Fir (*Abies concolor*) and Ponderosa Pine (*Pinus ponderosa*). The area had been previously logged and the majority of the trees present were 5-10 inches in diameter breast height (DBH).

Both birds were weighed, banded and examined for molt. The larger of the two owls, 1143-02434, had a body weight of 70 g and was undergoing extensive molt of the body and flight feathers. On both wings primaries 8-10 were ensheathed and growing in. Primaries 1-7 had been recently replaced and were new and unworn. Secondary molt was also symmetrical except for number 9, which was new on the left wing and growing in on the right wing. Secondaries 1,2,3,5,6 and 10 were new, and 4,7 and 8 were growing in on both wings. All rectrices were new and the bird was undergoing a heavy body molt of contour feathers.

To my knowledge, no species of the genus *Otus* molts flight feathers during its first fall. Since this bird was undergoing an extensive body and flight feather molt, it was almost certainly an adult (after hatching year) and probably a female. Sex determination was based on its relatively large size with respect to the second individual.

I caught the second individual several hours later, 20 m away. It was not molting any flight feathers, but was undergoing a heavy body molt. The bill was smaller compared to the presumed female; the body weight was 63 g. This bird was felt to be recently fledged (hatching year) and most likely a male.

NOTES

On 11 July 1978, 2.4 km north of the shore of Eagle Lake, Lassen County, I found an adult female Flammulated Owl incubating 3 eggs. The nest was 6 m above the ground in a south-facing nest box, attached to a Ponderosa Pine (Figure 1). The dominant tree in the area, which had been previously logged in 1959, and pre-commercially thinned in 1968, was Ponderosa Pine with occasional Western Junipers (*Juniperus occidentalis*). The topography in the immediate vicinity of the nest tree was flat, but with nearby low rolling hills. Most trees within 200 m of the nest tree had a DBH of approximately 10 inches but ranged up to 48 inches. On 22 July 1978 I reexamined the nest box and banded the adult female (1143-73994). The box contained 3 young approximately 10 days old, indicating that the eggs were near hatching when the box was first checked.

When checked again on 3 August 1978, the 3 young were near fledging and capable of 1.5 m flights. On approximately 10 August, the nest box was empty and the young were presumed to have fledged. The nest site was reexamined several times during the 1979 breeding season but no activity was noted.

When banded, the adult female weighed 69 g and was initiating molt of the primaries. Primaries 2 and 3 were growing in while primary 1 had been recently replaced. Primaries 4-10 were old and worn. All secondaries were new. No rectrix or body molt was observed.

On 25 June 1980 S. Hawks observed an adult Flammulated Owl incubating 3 eggs in this same box. The adult female banded on 22 July 1978 was recaptured on 21 July 1980 in the nest box with 3 young which were 14-17 days old. When examined in early August, the nest box was empty and the young presumably fledged.

When recaptured, the female weighed 62 g and was completing a molt similar to, but more asymmetrical than, that observed in 1978. Primaries 4-10 were old on both wings. Primary 1 was new on the left wing and primaries 1-3 were new on the right wing. The only primaries growing in were 2 and 3 on the left wing. All secondaries were new except 5 which was old.

I again found the box to be active on 9 July 1981. Although the attending adult was not captured, it responded much like the previous occupant and perched on the same limbs utilized in 1980. I suspect that this was the same owl that was banded here in 1978 and recaptured in 1980.

When checked, the box contained 3 young approximately 2 weeks old. One of these birds was about 1 week behind in development relative to its nest mates and appeared to be ill. It was taken from the nest box, but died in captivity after 8 hours. The probable cause of death was a long strand of horsehair that was lodged deep in the digestive tract with an end protruding 5 cm out of the mouth. Efforts to extract the hair were unsuccessful. Both of the bird's nest mates had fledged by the time the box was rechecked on 23 July. When last observed in July 1982, the nest box had been taken over by Douglas Squirrels (*Sciurus douglassi*; S. Hawks pers. comm.).

DISCUSSION

The Camp Pendleton specimen is the second of only 2 known coastal occurrences, both in San Diego County, of the Flammulated Owl in California (Banks 1964, Winter 1974). This specimen is even more unusual since this particular bird was substantially outside of the normal breeding range in a non-migratory season. Perhaps the best explanation is that it represents an extremely late migrant which wandered out to sea and died before washing ashore.

The two individuals that were mist netted in the Warner Mountains add more documentation to that reported by Johnson (1970) for this mountain range. However, no breeding has been confirmed, despite the fact that these observations range from 11 June (Johnson 1970) to 12 September (this study).

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The three nest records from July 1978, 1980 and 1981 at Eagle Lake represent the first breeding records of this species from Lassen County. A female Flammulated Owl found dead in aquatic vegetation along the west side of Eagle Lake in May 1971 by G. Gould (Humboldt State University 2868) indicates the possibility of other breeding activity in this area.

The three nesting occurrences by the Eagle Lake female in a kestrel nest box are of particular interest. The use of artificial nest boxes by the species has been reported only rarely (Hasenyager et al. 1979). Further, this Eagle Lake observation represents the first documentation of a female Flammulated Owl using the same nest site over several years. A description of the kestrel nest box utilized is presented elsewhere (Bloom and Hawks 1983).

Molt data collected from the adult female banded in the Warner Mountains and from the adult female banded at Eagle Lake indicate the primaries are replaced during the summer and early fall, between approximately 1 July and 25 September. Secondary molt apparently largely precedes the primary molt and is initiated by about 1 June and completed by 30 September. Since all rectrices were new in July, they were presumably replaced in May and June, perhaps simultaneously, as is true of several species of small owls (Mayr and Mayr 1954, Collins 1961). A complete molt of all remiges and rectrices of Flammulated Owls can be expected to last 4 months, between approximately 1 June and 30 September.

Winter (1974) observed a captive juvenile from the central Sierra Nevada that underwent a heavy body molt in mid-September. As this was the same condition that I observed in the male captured in the Warner Mountains, I feel that the age was correctly ascertained.



Figure 1. Adult female Flammulated Owl standing at entrance to the nest box cavity in Lassen County, California, 10 July 1978.

Photo by P.H. Bloom

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ACKNOWLEDGMENTS

For comments on earlier drafts of this manuscript, I would like to thank Charles Collins, Jon Winter, Gordon Gould and Melinda Leach. Robert Walker assisted with the installation of the Eagle Lake nest box and Stephen Hawks provided additional field observations of the adult and young Flammulated Owls. James Northern provided Flammulated Owl skeletons for comparison with the Camp Pendleton specimen; David Bontrager and Charles Collins helped verify its identification. Stanley Harris provided data on the Eagle Lake specimen. This study was funded partially by the U.S. Department of the Interior, Bureau of Land Management, Susanville District.

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Accepted 4 September 1982



Flammulated Owl

Sketch by Cameron Barrows