

NOTES

WHITE-WINGED CROSSBILLS BREED IN NORTHERN UTAH

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On 28 June 1977 Stephen B. Vander Wall observed White-winged Crossbills (*Loxia leucoptera*) at an elevation of 2500 m on the crest of the Bear River Range, 13 km west of Laketown, northern Cache and Rich Cos., Utah. Having censused this area monthly since May 1976, I am certain the species was not present before the last week of June 1977. This occurrence in itself is surprising since only two small flocks had previously been reported in Utah (Worthen 1973, Behle and Perry 1975). Subsequently, I suspected breeding activities in early July and made weekly observations to verify breeding. Also, I captured, examined and banded 19 White-winged Crossbills at a small (<75 m²) stock pond adjacent to a subalpine meadow on 28 July (7 captured), 6 August (8) and 16 August (4). The pond was the only source of surface water within several km² during 1977's extreme summer drought in the region. Many species, including Red Crossbills (*L. curvirostra*), regularly visited the pond and were easily mist-netted. The nets were baited with salt to attract crossbills (see Samson 1976). Birds stopped visiting the pond in mid-August when it went dry. However, the addition of 200 l of water on 14 August was effective in reattracting many species including crossbills.

From the number of unbanded birds visiting the pond and from censuses in the area, I estimate the breeding population of White-winged Crossbills was roughly 30 to 50 individuals. All nine red plumaged males captured had large cloacal protuberances [\bar{x} medial length (\pm S.E.)=7.4 \pm 1.1 mm, range=5.8–8.9 mm, measured with a vernier caliper]. Six of seven females had fully-developed brood patches. Each of the three females caught on 16 August had a very wrinkled apterium, a sign of active incubation (Kemper 1959). Two dull-plumaged first year males had smaller cloacal protuberances, 5.1 and 4.9 mm, respectively. Females (n=6) averaged heavier than males (n=9). The weight data for females were \bar{x} =26.9 \pm 2.5 g, range=24.0–30.0 g; for males, \bar{x} =26.7 \pm 2.4 g, range=23.5–31.5 g (measured with a 50 g Pesola scale). No sign of molt was found in any individual, suggesting all birds were in reproductive condition (Tordoff and Dawson 1965, but also see Kemper 1959).

On 13 September during a 2 h period several heavily streaked juvenile White-winged Crossbills were observed at the pond, begging food from adults and drinking water. No White-winged Crossbills were observed on 27 September and 8 October in 4 and 3 h of observation, respectively. Red Crossbills were still present on the latter dates, but in greatly reduced numbers. The area received heavy rain and some snow in mid-September and no birds were seen using the pond thereafter. However, small flocks (~10-40 birds) of White-winged Crossbills were again seen in the forest feeding on spruce cones on monthly censuses from December 1977 through May 1978. An adult and a first year male collected on 16 March 1978 both lacked a cloacal protuberance.

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Casual observations made during many hours of pond watching and nest searching (in which no nests were found) show that the White-winged Crossbill has a breeding system like that of the Cassin's Finch (*Carpodacus cassinii*) recently outlined by Samson (1976). Specific similarities include: 1) all adult males are mated (paired); 2) all females are mated; 3) a population of unmated first year males exists; 4) adult males cease singing when paired while first year males continue to sing; 5) the male's "territory" revolves around the female; 6) first year males are probably physiologically capable of breeding (have cloacal protuberances). This type of breeding system seems adaptive for highly nomadic, irruptive species such as the White-winged Crossbill which depend on a suitable cone crop for breeding.

This report extends the known breeding range of this species more than 400 km farther south than the previous southernmost breeding locality in the Wallowa Mountains of northeastern Oregon (AOU 1957) and is the first confirmation of nesting in the United States Rocky Mountain area. White-winged Crossbills possibly breed in Idaho, but this has never been confirmed (Burleigh 1972), and there is circumstantial evidence of nesting in Montana (Skaar 1975). It is curious that this invasion into Utah occurred after a winter in which White-winged Crossbills were unreported in western North America (Smith 1977). However, the reason behind this invasion seems clear. The year 1977 was the best Engelmann Spruce (*Picea engelmannii*) cone year in 30 years, with some individual spruces having over 4000 cones (T. W. Daniel, Department of Forest Science, Utah State University, pers. comm.). Subalpine Fir (*Abies lasiocarpa*) cones were also abundant, but the White-winged Crossbills seemed to prefer the spruce cones. Another contributing factor may be the apparent cone failure throughout western Canada in 1976 and 1977 (S. Vander Wall, pers. comm.).

Tordoff and Dawson (1965) suggest that food, i.e., cones, could serve as both proximate and ultimate factors (sensu Immelmann 1973) controlling breeding in Red Crossbills. Ligon (1974b) experimentally proved that green cones of the Piñon Pine (*Pinus edulis*) are proximate factors for the breeding of Piñon Jays (*Gymnorhinus cyanocephalus*), a corvid that is ecologically similar to the fringilient Red Crossbill (Ligon 1974a). Although this report does not prove that cones per se elicit the breeding response, the breeding of White-winged Crossbills in such numbers so far south of their usual range supports the hypothesis that food is the proximate factor regulating White-winged Crossbill breeding.

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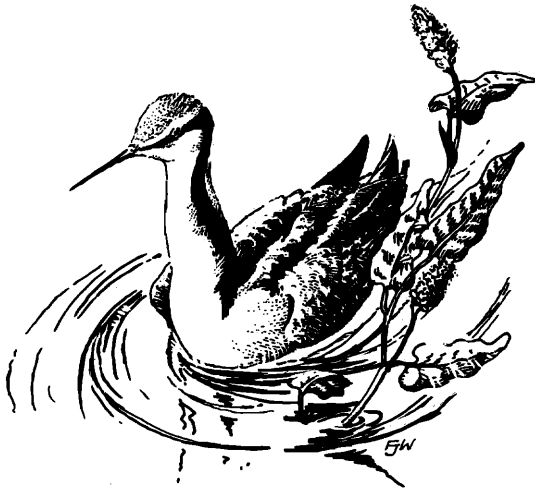
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Sketch by F. J. Watson