

ABOUT THE COVER: WHITE-WINGED CROSSBILL

The White-winged Crossbill (*Loxia leucoptera*) is a tame, enigmatic, and poorly known species because of its nomadic nature and home in remote boreal forests. Males are unmistakable: pinkish red, with contrasting black wings and bold white wingbars. In females the red is replaced by yellowish olive, and immature males are similar in plumage to females but have patches of pink. Juvenile birds are heavily streaked brown. White-winged Crossbills are much smaller than Pine Grosbeaks, which in color pattern they may superficially resemble. Three subspecies are recognized in this circumpolar species, one restricted in distribution to Hispaniola, one in Eurasia, and one in North America. Our North American subspecies, *L.l. leucoptera*, has a substantially smaller and more narrow beak than the other subspecies, and some authorities think that it is sufficiently different to merit full species status.

The breeding range of White-winged Crossbills stretches from Alaska to Newfoundland, and in the United States to the Rocky Mountains and eastern New York through northern New England. They are nomadic and irruptive, spreading south in winter as far as the Carolinas when coniferous cone crops fail in the boreal forest. They often join other irruptive species including Red Crossbills, siskins, redpolls, grosbeaks, and waxwings in areas of concentrated winter food. They arrived in Massachusetts in large flights in the winter of 1933-1934 and in February 1953. More recent, smaller flights occurred in the 1970s and early 1980s. Occasional summer records exist, but no confirmed breeding records exist for Massachusetts.

The breeding biology of White-winged Crossbills is poorly known. They are opportunistic breeders, settling down to nest whenever they locate a major cone crop. They breed throughout the year, and females may leave the fledged young with the male and re-nest. This suggests that the mating system may include serial polyandry, with females mating with different males for the second and later broods (up to four broods a year).

White-winged Crossbills have a variety of calls and displays. Threat displays include tail and wing flicking while crouching toward the competitor. Males courtship feed females and may circle females with slowly beating wings and continuous flight song. Their song has been described as canary-like, *sweet, sweet, sweet* or *trr-tweet-tweet-tweet*. Flight calls consist of a series of harsh *chet* notes, or assorted rattles and chatter.

The nest is usually concealed in dense foliage on a horizontal spruce branch. The female builds the nest, and the male sometimes helps by bringing her nesting material. Nests may be clustered in particularly favorable habitat. The clutch is 2-4 pale bluish to greenish-white eggs, spotted or blotched with brown or lavender. The incubation period is unknown but is probably about two weeks. Females have brood patches and do all the incubating, but are fed by

males during this period. The young are fed seed-pulp boluses by regurgitation. The fledging period is also unknown.

White-winged Crossbills have an esophageal diverticulum, a pouch where seeds may be temporarily stored, thereby serving a function similar to the crop of gallinaeous birds. They can feed from their storage pouch, an adaptation in all probability to harsh northern winters, in sheltered places during long winter nights or during storms. Spruce and tamarack seeds are their favored food. They grasp a cone with one foot and pry it open with their crossed mandibles, removing the seed coat before swallowing the seed. They often feed on cones scattered on the ground, and may eat as many as 3000 seeds in a single day! In addition to coniferous seeds, they eat grass and deciduous tree seeds, buds, berries, and insects, including the larvae of spruce budworms.

White-winged Crossbills have developed the habit of feeding on road salt during the winter, and many have been killed by vehicular traffic. Although they are preyed upon by Sharp-shinned Hawks, predation by other raptors and shrikes is considered a minor mortality factor compared to the periodic failure of coniferous cone crops. The increasing rate of logging in boreal forests and shorter logging rotation periods may pose threats to White-winged Crossbill populations in the future, but at the present time the major factors affecting population levels are natural rather than anthropocentric.

W. E. Davis, Jr.

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