

FEATURE ARTICLES

CALL IMITATION AND CALL MODIFICATION IN RED CROSSBILLS

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Abstract. Open-ended learning of flight calls has been found consistently in the subfamily Carduelinae. Understanding call learning is especially important in Red Crossbills (*Loxia curvirostra* complex) because calls appear to play an instrumental role in assortative mating, perhaps by acting as a marker trait that signals ecological adaptation for foraging on a particular species of conifer. We analyzed flight call recordings from a banded population of the South Hills (call type 9) crossbill to examine whether young birds imitate the calls of their parents and whether, as adults, individuals modify their calls to match those of their mates. The calls of offspring were more similar to the calls of their parents than to the average adult in the population. This indicates that calls are, at least initially, culturally inherited from parents and thereby could act as marker traits. Adults did later modify their calls to match the calls of their mates, which presumably aids in individual and pair recognition. Comparisons within individuals over time also showed that call structure decreased in similarity to the calls of crossbills with another type of call (type 2) that regularly occur in the South Hills of Idaho. This should make it easier for individuals to distinguish between individuals of different call types. However, one of 91 crossbills recorded over more than one year changed the type of its call. This type 2 female bred successfully with a type 9 male for two years and by the second year changed her call to match that of her type 9 mate.

Key words: call learning, call matching, call types, Idaho, *Loxia curvirostra*, marker trait.