

**A SUMMARY OF OBSERVATIONS OF BREEDING RED
CROSSBILLS (*LOXIA CURVIROSTRA*) IN NORTHEAST
ALABAMA**

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A small population of Red Crossbills (*Loxia curvirostra*; call type 2, verified by J. Groth) totaling between 11 and 20 birds, including several breeding pairs, was observed between June 1998 and May 1999 at two sites five miles (8 km) apart in Cleburne County in northeast Alabama. The first site, where seven crossbills were first discovered on 4 June 1998, was an open seed tree forest on private land 1.5 miles (2.4 km) south of the small rural community of Oak Level. The second site, where a pair was found feeding fledglings on 26 October 1998, was in the Shoal Creek District of the Talladega National Forest. The elevation of the two sites averaged 1,100 feet (335 m). Ninety trips were made to the two study sites between 26 October 1998 and 19 May 1999, 82 to the Talladega National Forest and eight to the Oak Level site. Six other trips were made to the Oak Level site between 4 and 21 June 1998.

Nine species of birds other than crossbills were observed feeding on the seeds of open pine cones, but only the crossbills were seen extracting seeds from closed cones. At both study sites, crossbills foraged only on the seeds of loblolly pines (*Pinus taeda*). In winter this specialized diet was supplemented with the seeds of tulip poplar (*Liriodendron tulipifera*) and in spring the emerging buds and catkins of oaks (*Quercus* spp.). The stomach contents of two nestlings, killed when their nest fell from the tree, contained loblolly seed kernels, seed coats, sand and carbon grit, and numerous oil droplets.

Courtship activities included males singing and chasing females, display flights above the canopy, and males feeding females. Display flights were observed October to January, while males chasing females were witnessed October to February. On several occasions, males were observed physically attacking and driving away intruding males that came too close to the nesting site. These attacks, or pursuits, were accompanied by vigorous singing. This active defense of the nesting area was interpreted as evidence of territoriality.

Both sexes participated in the search for a nesting site, but it was the female that made the final selection. The time spent searching for a site ranged from two to four days. Pairs were observed looking for nesting sites 20 to 21 December, 6 to 10 February, 20 February and 7 April. During the search for a nesting site and during the early stages of nest construction, the male and female would often engage in "gaping," a term coined by the author to describe a ritualistic behavior in which the two birds would sit or stand side by side on a potential nest site, or on the nest platform, hold up their heads with beaks pointed skyward, and open and close their beaks. Gaping was often followed by much "billing," or rubbing and touching the beaks together.

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Of eight nests found, six were in loblolly pines, one in a shortleaf pine (*Pinus echinata*), and an old nest from a previous year was found on the ground under shortleaf pines. All of the nests were well concealed. Five were placed well out on horizontal or upward sloping limbs and two were almost completely hidden from view in the very top of tall loblolly pines. Nest trees averaged 46 cm (18 inches) in diameter, 18 m (60 feet) high and 69 years old. Height of nests from the ground ranged from 13 to 18 m (43 to 60 feet) with an average of 16 m (53 feet).

Nest construction was observed 21 December through 15 April, and time required for construction varied from seven to 13 days. Cold or windy weather had little effect on nest building activities, but a prolonged period of cold rain and freezing rain in December was suspected of causing one pair to stop construction. The shallow, loosely constructed, thick-walled nests (see cover) were made from the twigs of loblolly, shortleaf and Virginia pine (*P. virginiana*), scarlet oak (*Quercus coccinea*) and southern red oak (*Q. falcata*), the racemes and skeletonized leaves of sourwood (*Oxydendrum arboreum*), bark shreds, pine needles, *Usnea* lichens, oak catkins (April) and a few rootlets. Tent caterpillar silk was used to loosely bind the materials together. The lining of the only nest examined in hand was composed of soft, weathered pine needles and bits of *Usnea* lichens. All materials were gathered from trees within a few hundred feet of the nest. The birds were never observed gathering any nesting material from the ground.

Inclusive egg dates were from 18 or 19 February to 20 May. The incubation period, based on behavior of the incubating female, was about 14 days. Two nestlings found dead after their nest fell from the tree were noticeably different in size, suggesting incubation started before the last egg was laid. Only the female incubated the eggs and brooded the young. Incubating females took short three to four minute rest breaks about every two hours.

The male sustained the female while she was on the nest by regurgitating to her food stored in his crop. This whitish, viscous "slurry" of loblolly seed kernels was delivered to the female in "loads" or "wads" containing an estimated 20 or more seeds in each load. After feedings, which were usually untidy, messy affairs, females were observed meticulously cleaning their beaks with their long, wet tongues for up to 20 minutes.

Nestlings were observed from 20 January to 24 May. The feeding interval for the nestlings varied, but tended to increase in frequency as the young grew older. In one nest, the feeding interval for two nestlings within three days of fledging averaged about one hour. For the first week of the nestling period, fecal sacs were ingested by the female. After the first week, both the male and female consumed the droppings. A few days prior to fledging, the fecal sacs were left to accumulate in the cup of the nest or on the rim. Fledging was gradual (as opposed to direct) in the one nest in which fledging was witnessed. After leaving the nest, the young continued to be fed by the parents for up to a month or more. Malocclusion was completed in about the same length of time.

One pair was observed feeding three fledglings from a previous nesting while the female was working on a nest. Although the birds were not marked, this strongly

suggested the same pair of birds remained together for more than one brood. Once incubation was underway, the female discouraged the fledglings from begging food, but the male continued to feed the three young even after he was busy caring for the female and young of the present nest.

There was also convincing evidence of renesting. On 5 April, the nest of one pair fell from the tree, killing the nestlings. On 7 April, the male and female were observed searching for a nesting site in the immediate vicinity of the fallen nest. On 8 April, the female began work on another nest only 46 m (150 feet) from the tree from which the nest fell. She completed the nest in less than a week and was back on eggs in only 11 days. Although unmarked, it is highly unlikely that another pair would move into the area one or two days after the nest fell and build a nest only 46 m away. The male also continued to frequent the same favored singing posts. Interestingly, the female abandoned the nest at the time the eggs were due to hatch, or had already hatched. On 28 April, she was observed removing and discarding a dark object from the nest, wiping off her beak, then flying off. She never returned. Could the object have been a dead Brown-headed Cowbird (*Molothrus ater*) hatchling, causing her to abandon the nest? This is a possibility since cowbirds were present and common in the area, which raises questions about the fate of young cowbirds hatched out in crossbill nests. It was not possible to examine the contents of the nest since it was 30 cm (one foot) from the top of an 18 m (58 foot) pine.

In the Talladega National Forest, Red Crossbills require mature or old growth stands of loblolly pines for foraging and nesting. Conservation and management should be directed toward preserving and maintaining the pine stands, or "recruitment stands," already in place and managed for the endangered Red-cockaded Woodpecker (*Picoides borealis*).

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