

Studies of less familiar birds

126. Parrot Crossbill

By *Viking Olsson*

(Plates 13-16)

THE PARROT CROSSBILL *Loxia pytyopsittacus* is normally only a rare vagrant to the British Isles, although it is likely that a number of these birds reached Scotland and England in late September and early October 1962, when a total of 36 were examined in the hand on Fair Isle and a few others were identified elsewhere (Davis 1963)*. The

*Whether or not the Parrot Crossbill is regarded as a rare vagrant in the British Isles depends on the species in which the Scottish Crossbill is placed. The authors of *The Handbook of British Birds* (1938) and the most recent *Check-list of the Birds of Great Britain and Ireland* (1952) both treated the latter as a race of the Crossbill, *L. curvirostra scotica*, but in 1956 the Taxonomic Sub-Committee of the British Ornithologists' Union (*Ibis*, 98: 167) considered it should be regarded as an isolated form of the Parrot Crossbill, *L. pytyopsittacus scotica*. Individual authors—for example, R. Meinertzhagen and K. Williamson in 1953 (*Ibis*, 95: 369)—have gone further and treated *curvirostra* and *pytyopsittacus* as conspecific, giving ecological isolation as the reason why there seems to be little hybridisation (see A. P. Gray, 1958, *Bird Hybrids*, p. 267) in spite of a wide overlap in breeding area in northern Europe. Neither of these courses has found general favour with systematists, however. For instance, C. Vaurie (*Amer. Mus. Novitates*, 1786: 25-26) preferred to continue to regard *scotica* as a large-billed race of *curvirostra*, citing the complication of the even slightly larger *L. curvirostra guillemardi* of Cyprus as an additional reason, and this is the course he adopted in his *The Birds of the Palearctic Fauna* (1959). More recently, Peter Davis (*Bird Migration*, 2: 260-264) has proposed that it might be more realistic to group all the red crossbills under *curvirostra* as 'emergent interspecies', but this only serves to drive home the complex nature of the problem and for the present it is probably best to recognise two species with *scotica* as a race of *curvirostra*. In any case, the Parrot Crossbills of Continental Europe are normally rare vagrants to the British Isles and so we have purposely left the nomenclature in this paper as it appeared in Dr. Olsson's typescript.—EDS.

breeding range of the species extends from Scandinavia eastwards into Russia. Nesting depends very much on the size of the cone crop of the Scots pine *Pinus sylvestris*, and as this varies considerably from year to year the nesting population also fluctuates (Svärdson 1955, 1957; Olsson 1960). The observations on which this paper is based were made chiefly at three nests (referred to here as A, B and C) in Östergötland, Sweden; the photographs shown on plates 13-16 were taken at two of these (A and C) which were studied from hides at distances of less than a yard for a total time of about a hundred hours in 1954 and 1963 respectively.

Plate 16b shows particularly well the very heavy bill which gives the bird its English name and it should also be noted that the male and female of this pair (nest C) had their beaks crossed in opposite directions. As is the case with the Crossbill *L. curvirostra*, the mandibles

may be crossed in either direction in both sexes and the pair in plate 16a (nest A) both had the upper mandible turned to the left. It can be seen from plate 15a that the bill of the nestling is not crossed at all at the age of a fortnight and the young actually leave the nest with straight beaks.

Plate 14a illustrates a typical habitat of the kind in which breeding usually takes place. Normally the tree selected as the nest site is close to a clearing, glade, forest-ride or path, and it is never in dense woodland. The nest is generally built rather high in the tree and when in a pine it is placed in a fork amid dense needles some feet or even yards from the main trunk. The arrow in plate 14a points to the position of nest A, while plate 13 illustrates the actual site of nest C and the untidy appearance of the whole structure. Nests A and C were about 30 feet above the ground in Scots pines, the most common site, but nest B was more exceptional in that it was built 60 feet up in a Norway spruce *Picea excelsa*; all were quite near to the tops of the trees concerned.

The female alone builds the nest, but she is often accompanied by the male when she is collecting the material. She gathers moss and withered grass from the ground and pulls lichens from the branches of trees. Uncommon for the nest of a passerine, and very characteristic of this species, are the many thin twigs of Norway spruce. The material from nest A, separated and sorted after the young had left, is shown in plate 14b. The ten heaps into which it is divided may be identified as follows:

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|---|--------------------------------------|
| (1) Thin twigs of spruce and pine | (6) Inner bark of juniper |
| (2) Moss (mostly <i>Hylocomium</i> and <i>Drepanocladus</i>) | (7) Dry needles of pine and juniper |
| (3) Lichens (<i>Alectoria</i> and <i>Usnea</i>) | (8) Animal hair and vegetable fibres |
| (4) Grass and a few dead leaves | (9) Feathers |
| (5) Lichens (<i>Parmelia furfuracea</i>) | (10) Hair of Elk <i>Alces alces</i> |

In nest C *Sphagnum* was the dominant moss.

Eggs were laid in the last week of March and the first half of April. There was a difference of two weeks in the time of egg laying in 1954 and 1963, but in each case it turned out to be so well co-ordinated with the development of the pine crop that the seeds became accessible in the cones just at the time the young hatched. During the period of incubation Parrot Crossbills had been seen foraging only in spruce trees, where the seeds were accessible much earlier. After hatching, they changed completely to pines. For various reasons it was difficult to obtain exact data on the duration of incubation, but in the three most closely investigated cases it seemed to be 14, 15 and 16 days respectively. These calculations were based on observations which indicated that true incubation (as against brooding) took place from the laying of the first egg. At nest A the first egg hatched on

26th April, the second on the 27th and the third and fourth on the 28th.

The female alone incubates. During this period she receives all her food from the male at intervals of two to two and a half hours. When not on foraging-trips he mostly stays in the tree-tops near the nest, where one can hear his characteristic contact-note, a weak descending *sve-sve-sve-sve*. I have heard this note only in the immediate vicinity of the nest. Other calls are the well-known *gyp-gyp*, not distinguishable from that of *L. curvirostra*, and in alarm a stuttering *tsu-tsu-tsu-tsu* - - - (the *u* sound as in 'duck').

When the female becomes hungry she apparently tells the male by uttering the *gyp-gyp* call loudly several times. At any rate he then leaves on a foraging-trip which may often take him for a distance of half a mile or more. When he returns, he always feeds the female on the nest after a special ritual which in detail is very similar to that photographed by Hosking (1948) at a nest of the Scottish Crossbill *L. c. scotica*. In the first place it is quite clear that the female can distinguish the calls of her own mate, whether he is returning alone or in the company of other males. She then answers and presses herself flat in the nest with partly extended and quivering wings. As he comes down from twig to twig, she gradually raises her head until it is in a vertical position (plate 16a) and all the time she quivers her wings and her eyes are half shut.

There were several differences in the ways of incubation and of rearing the young at the two nests most closely studied. At nest A the female was not seen to leave the eggs for periods of more than ten minutes. At nest C, however, the female once left the eggs for 40 minutes, and on another occasion for more than 45 minutes in spite of wet and chilly weather with a temperature of only a few degrees above freezing point. There was a similar difference at the two nests after the eggs had hatched. At nest A the female left only for short intervals during the first week, but at nest C the female once left her very feeble three-days-old young for as long as 60 minutes in almost freezing conditions and on 20th March, when the nestlings were only six days old, she left them for 90 minutes in dull and cold weather with a temperature of about 2° C. When she returned on this occasion the young were so chilled that they seemed to be dead. They were quite motionless and not even the slightest breathing movement could be seen from the hide. The female tried to stimulate them to gape, but they did not react at all. After she had brooded them for only seven minutes, however, they recovered and fed quite normally. Later the same day the young were once again alone and uncovered for 75 minutes in a cold drizzle. The young and probably also the eggs of the Parrot Crossbill seem to have an unusual capacity to resist cold.

At the age of seven or eight days the young begin to open their eyes and by the ninth day they appear to have full control of temperature. Up to that time all the actual feeding at both nests A and C was done by the female. If only the male had been away, he would first feed her and then she the young. If both had been away, she would first feed the young, then he would feed her and, as soon as he had finished, she would regurgitate the food just swallowed and give it to the young. Plate 13 shows the female regurgitating pine seeds to the two young in nest C; as she transfers the food, threads of mucous secretion are visible between her beak and that of the nestling.

Feeding is performed quite instinctively, the female turning her head to and fro from nestling to nestling. In spite of this the distribution of food at nest C often turned out to be quite unfair. Several times close observation showed that the female certainly divided her beak movements fairly, left-right, left-right, but often she did not succeed in regurgitating food more than every other time. With only two young, as in nest C, this could result in one getting nearly all the food. This kind of false feeding with repeated beak movements but no food passed was also observed on several occasions at nest A. When the female had given all her food to the young and had been brooding them for a time, they could stimulate her to complete the whole feeding action again, even to the subsequent clearance of droppings, without their getting any food at all from her.

At both nests A and C the male himself began to feed the young on the ninth day after hatching. During the next few days the female would still sometimes sit beside him on the edge of the nest and beg, and he would then still give her some food which she would at once pass to the young. At nest A the male took over more and more of the feeding and from the sixteenth day after hatching I never saw the female give food to the young even when she had followed her mate to the nest. At nest B both were still feeding the young on the eighteenth day and I saw them together at the nest as late as the twenty-fifth day. At nest C, on the other hand, the male was seen for the last time on the sixteenth day and after that the female alone took care of the young. It is difficult to say which of these patterns is typical of the species and whether the differences were the result of unfortunate circumstances.

At nests A and C the young were generally fed at intervals of about $1\frac{1}{2}$ hours. By weighing them both before and after, I was able to estimate that the quantity of food given at each feed was about two grams of partly digested pine seeds. Further calculations—very approximate, of course—showed that the young received about 350 seeds per feed, or about 3,500 seeds a day. The fledging period at nests B and C was 25 days (it was only 19 days at nest A, but it is

probable that the single youngster that reached this age did not leave spontaneously) and so this length of time might mean a total of 85,000 seeds.

The clearing of droppings from the nest was strictly linked to the feeding. As long as the female alone was responsible for the feeding, she alone cleaned the nest by eating all the droppings. As soon as the male began to feed the young, however, he also ate droppings. When both had fed the nestlings, real disputes could arise between them over a dropping. From the eleventh day the young began to defecate on the nest rim, and around the fifteenth day the parents' interest in the droppings began to weaken. Eventually one side of the nest, the twigs and even the ground below were sprinkled white (plate 13).

When the chicks are very young they are no more downy than those of other passerines, in spite of the very low temperatures which they have to endure, and their feathers are slower in developing. Plate 15a shows a nestling at the age of two weeks and yet the young of many other passerines have left the nest by this age. Very soon after this, however, they are all at once fully feathered with a streaky, light brown plumage (*cf.* Olsson 1960, fig. 7, where the age was wrongly printed as 12 days when it should have been 16). When they are about 16 days old one can hear them using the typical *gyp-gyp* note for the first time; a little earlier they utter a trilling sound.

At the age of one week, when their eyes are beginning to open, they have a weight of about 12 grams. At the age of two weeks, when the feather tracts on the body and the primaries are beginning to develop into the pale brown plumage (plate 15a), this figure is doubled. At nest C the maximum weight of 39 grams was reached on the twentieth day and the two young weighed the same on the twenty-second day. On the twenty-fourth day their weight was 38 grams and it was presumably much the same when they left the nest the day after. This weight is considerably less than the figure for adults which Niethammer (1937) put at 52 grams and which Szczepski and Kozłowski (1953) gave as 47.5-56.8 grams. In this connection, however, it is interesting to note that, whereas adult migrants on Fair Isle in October 1962 weighed 37.5-54.7 grams, juveniles weighed only 32.4-41.8 grams (Davis 1963).

The breeding of Parrot Crossbills in any one region is synchronised and, as a result, broods of fledged young are likely to be seen here and there in the woods during the same period. They are fed by their parents for a long time after they leave the nest. At least to begin with, the food continues to consist mostly of pine seeds. As late as 20th June 1963, however, I came across a pair feeding their grown-up young (which, incidentally, now had a new note, a begging *chit-er, chit-er, chit-er, chit-chit, chit, chit-er*) and to my surprise I saw that the food involved was the larvae of the saw-fly *Lophyrus sertifer*; there was a plague of these insects in that part of Sweden in the summer of 1963.

NOTES

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PLATE 13. Female Parrot Crossbill *Loxia pytyopsittacus* regurgitating pine seeds to the young in nest C, Sweden, April 1963; some food has already been passed and a mucous thread stretches from bill to bill. Note the nest site in a horizontal fork; the untidy mass of twigs, mosses and lichens; and the droppings which the adults stop taking about the fifteenth day (pages 118-123) (photo: Viking Olsson)



PLATE 14. Above, typical open habitat of Parrot Crossbill *Loxia pytyopsittacus* in pines, Sweden, 1954, with site of nest A arrowed 30 feet above ground. Below, sorted material from nest A (ten heaps listed on page 119) (photos: Viking Olsson)

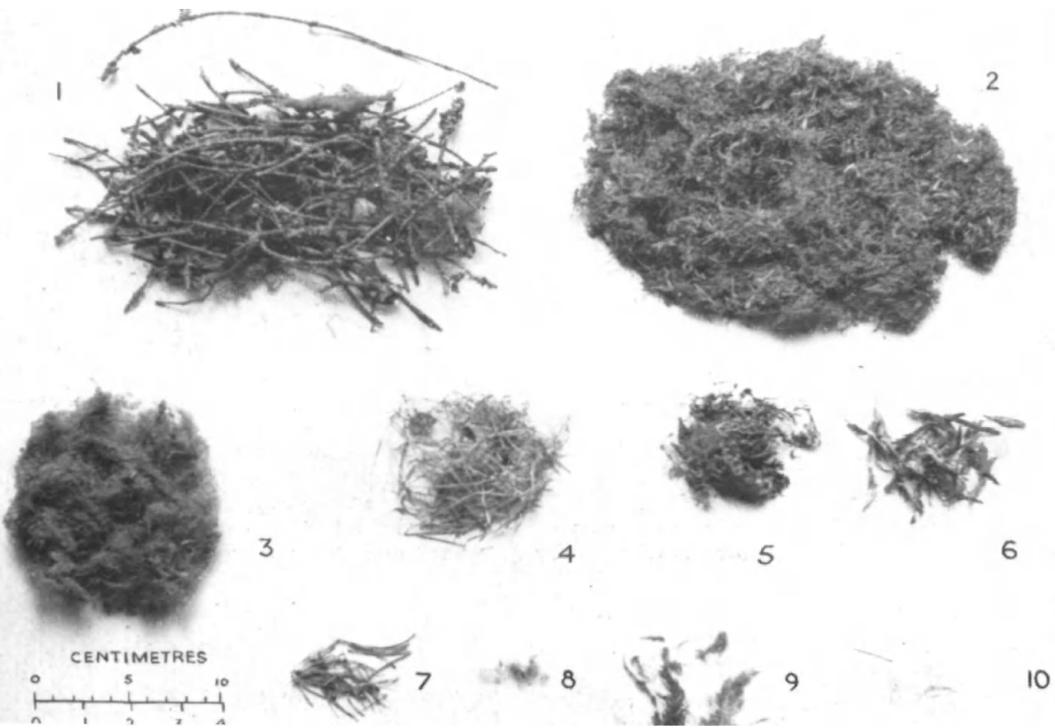




PLATE 15. Above, nestling at two weeks: its mandibles are quite uncrossed and the feathers are less developed than in many passerines of this age, but it can already resist cold (page 121). Below, female on nest A (*photos: Viking Olsson*)



