

THE BREEDING BEHAVIOUR OF TEMMINCK'S STINT.

BY

H. N. SOUTHERN AND W. A. S. LEWIS.

(Plate 12.)

IN view of the recent attempt of Temminck's Stint (*Calidris temminckii*) to breed in Scotland (*antea* Vol. XXVIII, p. 97) and of the general paucity of information in regard to the breeding biology of this species, some notes which the authors took concerning courtship, habitat, etc. (though unfortunately incomplete) in Swedish Lapland during June and July, 1937, may be of interest to British ornithologists.

The district in which the observations were made lies about 150 miles north of the Arctic Circle, and is close to the frontier between Sweden and Norway. The general topography is dictated by the vast extent of Lake Torne Träsk, which stretches in a direction roughly east and west for a distance of about 50 miles. The altitude of the lake above sea-level is 1,000 ft. The country to the south consists of a number of large river basins, all emptying into the lake. The particular basin, which was the centre of observations, is that of the Abiskojokk river, and is about 50 square miles in extent, being bounded by a semicircular line of mountains running up to about 5,000 ft. The vegetation consists of silver birch forest from the river banks up to about the 2,000 ft. contour, and open fell from there to the mountains.

The description of the neighbourhood is given in some detail, since the bird seems most often to nest on lower ground fairly near the coast. This would naturally be so farther east in Finland and Russia, where there are no mountains on the scale of the Scandinavian ones, but even in such circumstances they seem to avoid the higher ground as a general rule; Blair [1] found that on the Varanger peninsula the majority of Temminck's Stints nested from sea-level up to 300 ft., while only a few went up as high as 700 ft. This is supported by Hortling and Stuart Baker [2], who found it commonest on grass meadows near farm houses in Finnish Lapland.

For Scandinavia there are records of birds breeding at high altitudes. Gyldenstolpe [3] mentions the species as nesting fairly commonly at Vassijaure not far from Abisko, which is about 1,900 ft. above sea-level, and says that he found small colonies on the fells as well as on the lower swamps and deltas around the river there. In Norway, Chaworth Musters [4]

found Temminck's Stints breeding at "considerable altitudes" near Røros, and Collett [5] in his book mentions breeding at the same place and also at Jonset. The opinion of the last author is, however, that the species is exceptional and rare at any considerable distance from the sea. It appears for the most part to be confined to the coastal districts and to holms and islands in the larger fjords.

In this case it is interesting to note that the highest colony discovered by the authors during 1937 was at 3,000 ft. by the shores of a lake at Lapporten about 12 miles to the SE. of Abisko.

It is possible that there is some correlation with the earliness of the spring, for if the migrants arrive at a fairly regular date, it seems likely that they will nest at once in the areas that are free from snow at the time. Thus, in an early year, such as 1937, it will be possible for them to nest at higher altitudes than in a late year, when the fells are still under snow on their arrival.

HABITAT.

This appears to be somewhat variable. Haviland [6] found that at Golchika, on the estuary of the Yenesei, Temminck's Stint nested only in dwarf willow by running water. This is interesting because on the delta of the Abiskojokk there was a great deal of this type of vegetation, but every scrape that was found was on the shore in fairly short grass growing little more than 9 inches in height, while another small focus of birds occupied a subsidiary island of the delta, which was covered only by this type of vegetation with two small patches of *Salix*. Collett records the commonest Norway habitat as flat ground, either dry with *Empetrum* and sparse grass, or damp with sedge and a few small willow bushes. Hortling and Stuart Baker (*loc. cit.*) mention the bird as nesting in grass fields, while Blair found it in the same kind of situation and also in sallow scrub. The particular point is that in dense scrub, such as Haviland describes, it would seem difficult for a courtship of the kind mentioned below to take place. It would be interesting to know whether in circumstances, such as she relates, the courtship is carried on away from the future nesting site, and whether scrapes are similarly removed from it.

The habitat of the nesting colony found on the fells was surprising enough. Some of the birds were nesting by the lake side, but at least one nest was situated quite 200 yards up the hillside in a dry and comparatively unsheltered patch

of grasses. This was a late nest too, for it contained eggs, while some of the birds farther down had already hatched their young. Thus it could not have been lack of a suitable habitat that had dictated the site.

A further anomaly encountered by the authors may perhaps be mentioned here, and that is the curious desertion of the colony on the Abiskojokk delta, which incidentally prevented the complete working out of the courtship. Trilling flights were going on with great vehemence in the third week of June, scrapes were made and birds were clearly attached to their own particular areas. Then came three days of rain and high winds at the solstice, and no bird was seen afterwards. It is well known that birds in the Arctic are particularly susceptible to weather conditions in their breeding, and the failure of many Arctic birds to breed in some seasons may be due to the restraining influence of weather conditions continuing beyond the normal term. The above case of the Temminck's Stint forms an extension, where breeding was not only inhibited, but was even inhibited after it had commenced.

COURTSHIP ACTIVITIES.

The courtship flight and trill of Temminck's Stint have been mentioned and admired by many authors, but there seems to be little reference in the literature to the ground display. Collett remarks that when the male has alighted after the courtship flight upon a stone or sallow bush it often remains there trilling with wings stretched up. A brief mention of ground display in the Little Stint (*Calidris minuta*) is given in a summary by Grote [7] of some Russian literature on the subject, where it is said that in the less frequent ground display the wings are held up and flickered, and apparently the same actions attend copulation. Unfortunately, as explained above, observations at the colony on the delta were cut short at a very critical period, and it was not possible to come to any conclusions as to the meanings of the various courtship actions. The authors give their observations, therefore, rather baldly and in the hope that others will be able to complete the objective record. Until this is achieved it is useless to indulge in speculation.

(a) *The Courtship Flight.* This may last for a long while (1 to 2 minutes), and as far as could be seen was performed by the male only, though this is not absolutely certain. Collett records that hens, subsequently sexed by dissection, have been heard to utter a "fine twittering". It may be performed

the whole time over one small patch of ground (the "territory", *vide infra*), the bird hanging in the air and turning and twisting in complicated spirals, or it may on occasions be performed some distance from the island, when the bird rises and falls in the air in long sweeps, rather like a Snipe during its drumming flight. The whole impression of the flight might be more aptly compared, however, to the roding of the Woodcock, for there is just the same effect of the progress being retarded in some way and of the wings beating frantically to make way against some inhibition. In the flight over the "territory" the quick twists and turns are accompanied by an expansion of the tail, no doubt for mechanical rather than display reasons.

The trill that accompanies this flight is compared by Haviland to a chorus of natterjacks. It is best compared to the Grasshopper-Warbler, however, though it is not, as she remarks, so reminiscent of a mechanical source. In timbre it is just that faint ticking sort of noise. It may perhaps be rendered by "wee . . . trrrr . . . er . . . trrrr", the falling "er" creating a drop in tone somewhat similar to what occurs in the Nightjar's churring. This note is not only limited to the flight, but is given also from the ground when the tail seems to vibrate in unison. Sometimes a low "churr" was heard at the same time as the trill, but it could not be determined whether this was produced by the same bird. If it was, it was a remarkable achievement.

A variation which is interspersed here and there in the trill is a long-drawn-out "cheer, cheer".

The only other note that was heard was a sharp "chit, chit" rather like the "chip-er" of the Snipe, but fainter.

(b) *The Ground Display.* This may occur on the branch of a willow, but more often on a favourite stone or tussock. On the smaller island at the delta, each of the four males had a particular perching place, which was used almost to the exclusion of any other, as the amount of droppings collected round each of them testified. Generally the performance would follow a courtship flight: the male would alight either directly upon the stone, or close by, in which case he would run to it at once. As soon as he was settled upon this perch he would begin to trill, and then gradually to flick his wings in an excited way. The emotional tone of the performance would then rise by stages, the wings being fluttered in a more and more pronounced way, until at last they were being fanned up and down rapidly. Since they were lifted each time to their utmost extent, the effect produced was one of quickly

alternating flashes, as the light axillaries and under-wing coverts were momentarily exposed to view.

The presence of other birds going through the same display always seemed to provide mutual encouragement, and the trills and wing-fanning were of longer duration and greater vehemence under such circumstances.

(c) *Scrape-making*. This was a regular habit with the birds at the delta, and they seemed to increase in number as courtship progressed, though more than two were never found for each "territory". They consisted of small circular depressions evidently excavated by the bird with a rotatory movement, though actual scrape-making was never witnessed. They were generally situated in a fairly thick tuft of grasses about 4-6 ins. in height, and were lined with bents and in one case a feather.

(d) *Relations of these Activities*. It is impossible to do more than relate these activities chronologically, since observations were not sufficient to allow casual connection to be established between all or any of them.

The delta colony consisted of two sections, as already mentioned; on the larger island, which formed the main part of the delta, and where the Stints were confined to the shore, activities were clearly the most advanced, but this was an awkward place for observation. Courtship flights were in full swing on June 18th, and some ground display was noticed; on the 19th the ground was examined and numbers of scrapes were found.

On the other hand, on the smaller island, which was little more than a bank, which had been captured by rough grass and a patch or two of sallow, the birds had not settled in so soon. On the 19th there was some courtship flight, but no ground display and no scrapes were found in spite of a careful search. Only one of the four males that occupied this island, seemed to have a female with him, and her reactions to his trilling were inevitably to put her head under her wing and doze.

By the 22nd, however, ground display was frequent and scrapes were made. The courtship of the same pair was watched and the male was evidently exerting his utmost fascinations. Continual trilling and wing-fanning from his stone combined with occasional walks to the scrape seemed as if he was trying to entice the female to it. However, she remained apart and betrayed little interest beyond an occasional flick of the tail or dip of the head.

The final result of watching on this day was the departure

of the two females (the other two males apparently had no mates as yet), and the four males were left trilling and wing-fanning away at each other from their various vantage points. It may be worth noting here that possibly the failure of some Arctic birds to breed in some seasons may have another contributory factor, the failure of the female to come into the receptive phase immediately conditions are suitable for breeding. This would aggravate the inimical effect of weather conditions, if the chance of breeding could not be taken immediately it was offered.

After this date no more birds were seen at the colony at all.

It seems from this that the flight forms the preliminary of the courtship, while ground display and scrape-making follow almost at the same time. The observations suggest that the courtship is conducted largely by the male, but the possibility of mutual activities cannot be excluded since the females were clearly not in breeding condition.

"TERRITORY."

Even the ascription of this name must be considered as tentative, since further observations are needed upon this aspect of behaviour. On the small island, perhaps half an acre in extent, the four males seemed to keep very fixedly to their own corners, dominated in each case by the stone or tussock from which the ground display was conducted. This circumscription, as mentioned above, also applied in some degree to the courtship flight, each bird hovering and diving largely over its own area, any more extended flights being conducted over the lake. No actual aggression was witnessed, though if one male in his flight came near another's ground, the latter would rise and join in, and an extended flight, in which one followed the other, would take place over the lake.

That such areas may represent true breeding territories may be indicated by the strong focal point of the vantage ground, around which the scrapes were always made. There is no question of food value involved, for the island was often deserted, the birds being presumably elsewhere for feeding, and also no resentment was shown to birds feeding round the shore.

OTHER BIOLOGICAL POINTS.

The time of breeding varies greatly according to the wide range of climatic conditions in the bird's breeding area and also from year to year. Hortling and Stuart Baker and Blair found that the second or third week of June was the usual

time in Finland, and Haviland in mid-Siberia the early part of July.

"Injury-feigning" was noted by Haviland only in one instance though this behaviour was common with the Little Stint. It is recorded by other observers, *e.g.*, Hall [8] and Collett, who found that it was more usually evinced if the bird was surprised on the nest. The experience of the authors in regard to Temminck's Stint was similar to that of Haviland. The incubating bird that was found up on the fells did an elaborate performance the first time it was flushed, tumbling about with the white feathers at the side of the tail expanded and the wings drooped. Then it flew away some distance (*c.* 30 yards) and stood in the same sort of attitude, doing a sort of shuffle with its feet and sometimes moving backwards. The contour feathers were at the same time erected, giving the bird a larger appearance.

However, the response soon died out, and the second time the bird was flushed, it was much weaker. After that no reaction at all could be elicited.

With all other birds, even with chicks, no such response was shown. Instead the parents hovered over one's head calling continuously with a short annoyed version of the trill. Haviland mentions a sharp alarm note, when the young are hatched, which she distinguishes from the trill, but to the authors it seemed a clear derivative of it.

It would be very interesting to know more clearly the details of courtship in this species, and it is to be hoped that other ornithologists will be more fortunate in their observations than the authors were.

SUMMARY.

Temminck's Stint was found breeding in small numbers between 1,000 and 3,000 ft. in Swedish Lapland. Such an altitude is not very usual according to observations of other authors, but this may be correlated with the exceptionally early spring.

The habitat was on open grassy ground with stones and sallow bushes as "song posts". The potency of climatic factors in the breeding of Arctic birds was shown in the desertion of a colony after it had reached the scrape-making stage.

The courtship flight and trill is the chief form of courtship activity, but there is also a distinct ground display, which is conducted by a flickering of the wings gradually increasing in vigour, and accompanied by trilling.

About two scrapes were found to each pair, and a sort of

"territory" was evidently claimed, since four pairs on one small island kept to their particular parts for most of the time. No actual aggression was seen, but trespassing was usually for feeding.

"Injury-feigning" was not common, and the response of the one bird that exhibited it well died away quickly, when it was subsequently flushed.

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Temminck's Stint Incubating.
(*Photographed by H. N. Southern.*)