Parental care in the Shelduck

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Summary

The behaviour of Shelduck during the brood season is described and discussed. Attacks by adults on their own broods, and the behaviour of ducklings and of birds assumed to be 'failed breeders' seem to provide a mechanism of crêche formation.

Introduction

The brood behaviour of the Shelduck (*Tadorna tadorna* (L.)) is unlike that of most species of ducks. The crêche system, in which many broods of ducklings gather together under the care of one pair of adults, is well known, as is the fact that this system leaves the majority of adults free to make their moult migration. However, the mechanism of crêche formation is obscure, and observations described in this paper suggest that it may not be as haphazard as previously supposed. All the observations were made in North Kent during 1961-63 inclusive. Other aspects of adults' behaviour with broods are also described and discussed. All times are G.M.T.

Leaving the nest

Both parents lead ducklings from the nest: drakes accompany females back to the nest during incubation and consequently are present at the final visit. At the latter the male waits near the nest, outside a barn or derelict building, at the foot of a tree, or beside a hole. The female leads the brood out and both parents then take them on or close to salt water: traditional nursery areas are used. In North Kent broods generally leave the nest before 0630 hrs. and travel to nursery areas very quickly: they do not pause on the grazing marshes.

In difficult nest locations the female may carry ducklings out in her bill and whilst I have not witnessed this personally it has been reported to me several times by reliable farm workers. A nest under observation in 1962 was in a hollow bough of a tree, approximately 15 feet off the ground, accessible only from inside the hollow trunk. Probably the trunk was hollow to the ground, but it had filled with natural debris to a level about 6 feet below the nest chamber. The interior was quite smooth and had an internal diameter of some 2 ft. 6 in. At 0515 hrs. on 5th June all 10 ducklings were found out of the nest and standing in the bottom of the trunk: because it was anticipated that the parents would have difficulty in getting them out I retired to the nearest cover to watch. The pair returned at 0533 hrs. and the female went into the nest at once. The male was unusually agitated and contrary to usual behaviour remained at the foot of the tree running backwards and forwards and circling it; possibly anticipating the descent of the ducklings. During the next 42 minutes the female went in and out of the nest hole four times, remaining inside for periods up to 16 minutes. Each time she emerged from the nest she would lead the male in running round the base of the tree or in short circling flights. These activities attracted another pair who, in spite of aggression by the brood drake, hung around near the base of the tree. Twice the second female actually flew up to the nest hole and peered down into the trunk whilst the brood female was inside. At 0629 hrs. the birds were disturbed by the commencement of farming activities and flew off towards the grazing marshes; no ducklings had then been removed.

I was unable to return to this nest until 1400 hrs. on 6th June when there were no adults in the vicinity. Five ducklings had been left in the bottom of the trunk and although they were later found to be adept climbers they were unable to scale the smooth interior of the trunk. Three were rescued and one other was recovered by farmworkers late that evening. I consider that the five ducklings which had escaped from the hole could only have been taken out in the female's bill.

Tolling and distraction display

Tolling, as described by Sowls (1955) for surface-feeding ducks, is by far the most common behaviour when family parties are threatened by approaching danger. One or both adults attempt to attract attention away from the brood by flying in circles and calling. The drakes uses a variety of whistling notes and the female a monosyllabic nasal version of the more usual 'ak-ak-ak' which might be rendered 'arrnk, aarnk'. The latter is repeated slowly and regularly and has an anxious quality. The drake's calls appear to vary with the emotional stress. When the threat to a brood is not severe a soft clear whistle is used. Greater danger evokes either an increase in the volume or the number of calls, sometimes both; *e.g.* a double whistling note 'whee-chew, whee-chew' and occasionally long phrases of trilling whistles which have an almost passerine quality.

Rarely, the intensity of tolling increases to a pitch where it borders on or becomes an injury feigning or distraction display. On 24th June, 1962, a close approach was made to a pair with six tiny ducklings. The female began to toll and then settled on the water some 50 yards away. The drake showed much more anxiety than the female and after tolling a few times began to feign. Each time he flew past he would slacken speed, reduce height until only a few inches above the water then drop his body and tail almost to stalling point. With legs dangling he 'wobbled' past as though about to pitch into the water, wing tips alternately touching the surface. Four times the bird did this and each time it dropped its legs into the water several times making a loud splashing sound. A subdued clear whistle, frequently repeated, was uttered the whole time. Even more rarely, distraction display occurs on dry land. I have witnessed it only once, when a female attempted to distract me with a display almost identical to a Mallard's and equally violent.

Brood attacks

The term 'brood attacks' is used here to describe attacks by parents on their own broods. This was first seen on 2nd July, 1962, when a pair were seen with their eight 3- to 6-day-old ducklings on a large fresh water fleet in one of the traditional nursery areas. At this date crêches were beginning to form, but family parties made up the bulk of the 128 ducklings in that area. It was noticed that the drake of the pair in question was making almost non-stop assaults upon his own ducklings, pursuing them incessantly, scattering them and rushing after them with neck stretched over the water in typical aggressive postures. Whenever he got near enough he stabbed the ducklings with his bill, often causing them to dive, but apparently not really hurting them. It was noticeable that he ignored ducklings other than his own brood, even though the former constantly intermingled with the brood. The female floated passively on the water nearby until, after about half an hour, she began to do exactly the same thing and within a short time became more vicious than the male and apparently incited him to more severe attacks. For a further three-quarters of an hour both parents chased and attacked their own ducklings. On several occasions it seemed that the female would drown a duckling when she pecked viciously and repeatedly, waited for it to re-surface after it had dived to escape and then rushed or flew at it again. Once she flew across the water, grabbed a duckling in her bill and 'ducked' it five times in rapid succession. In another case while she was 'ducking' one the male 'stabbed' at it viciously. The female always tried to hold the ducklings in the same way, by grabbing both wings behind their backs. Similar onslaughts may have been responsible for the seven dead ducklings seen floating on the water that day; although there were many large gulls about and a drake Shelduck was seen to mob a Great Black-backed Gull (*Larus marinus* (L.)) which passed over the gathering water. Towards the end of the watching period, attachment of the brood to the parents appeared to weaken and there were periods when only one duckling was anywhere near them. At 1015 hrs. I decided to test the brood attachment by revealing my presence and walking directly towards them. The latter at once gathered together and both parents immediately began tolling (see above). They circled over the brood seven times as I stood beside the water, the female quacking and the male whistling with typical alarm notes.

In 1963, particular attention was paid to this aspect of parental behaviour and four further instances of brood attacks were seen. Two on 7th July were similar to the occurrence described above, but the third and fourth were of even greater interest because they demonstrated conflicting emotions in the parents. On 14th July a female feeding with her brood attacked them twice in half an hour. The ducklings were already giving her a 'wide berth' and it seemed that this was a case where an attack period was ending, or alternatively it was an attack of low intensity. Sporadic attacks continued during the next half hour and one of the young which was caught was repeatedly 'ducked'. After this period the female walked out of the water and stood near her mate; the brood followed. Within a few minutes she was brooding four of the ducklings under her wings, sheltering them from a cold south-west wind! The final case, observed in 1963, has been fully described elsewhere (Hori, in press): in it, parents defeated in their attempts to prevent attacks on their brood by another pair of adults ultimately ended up by themselves attacking their own young.

Discussion

The bond between the parents and brood is strong in Shelduck. However, unlike that of geese, which Shelduck resemble in many ways, the family bond is often broken when the ducklings are at an early age, because most adults make an annual moult migration. The crêche system appears to have definite advantages in connection with the moult migration because females which have spent a month or so incubating

are scarcely in condition to make a migration of some 400 miles. Those broods which reach the nursery areas as early as the first half of June do not necessarily crêche (see also Hori, in press), but later ones do so rapidly. This suggests that as migration time approaches, parents are more likely to desert or otherwise 'lose' their broods. The stimulus to desert is not readily apparent. It may be overcrowding of duckling waters as the season advances or perhaps the visual stimulus of large adult flocks which begin to appear about the third or fourth week in June and gradually move to the open water of the estuary before migrating.

The brood attacks described above lend weight to the hypothesis that in many cases the parents themselves break the family bond by forcing their broods to leave them. This is borne out by observations on adult pairs in the vicinity of duckling broods and crêches in early July. The pairs in question, which tend to remain on the banks of the duckling waters, are distinct from birds assumed to be 'failed breeders' (*i.e.* sexually mature birds which have lost their nests or broods). The females, showing loss of down and breast feathers, have either bred successfully or at least completed most of an incubation. These pairs watch the ducklings from a distance and appear to be in loose contact with them. They are quite passive, unlike 'failed breeders' which follow duckling broods and crêches about, apparently attempting to adopt them (see also Hori, in press). They are considered to be successful breeders which, having driven their own ducklings away, nevertheless remain weakly attached to them for a short time thereafter. Similar conflicting motivation was demonstrated in the field when adults who had been attacking their own brood began distraction display to protect them immediately I appeared.

Other factors probably contribute to crêche formation. One of these is the tendency which ducklings themselves show to join other groups. On 23rd June, 1962, a pair with eleven tiny ducklings was seen to pass close to another pair with four larger ducklings. As they did so, one of the larger ducklings swam towards the brood of eleven. The drake of the latter family attempted to keep the larger duckling away by swimming between it and his brood, whilst the drake who had been with the brood of four swam about nearby. In spite of both the drakes the larger duckling attached itself to the younger brood and the second pair, now with three large ducklings, swam away. On other occasions ducklings were seen to wander away from their parents. Scattering of ducklings also occurs when the parents and sometimes the brood as well are attacked by parents of another brood. This is particularly noticeable when human intrusion causes a dozen or more broods to swim together.

The presence of 'failed breeders' on the duckling waters has already been mentioned. Possibly birds which have laid their eggs in multiple nests come into this category. Such pairs remain in the nesting range, sometimes in contact with the failed nest site. By the third week in June those without nest- or brood-ties withdraw from the nesting areas and territories and gather in flocks on nearby salt water. In the early stages of this withdrawal many failed breeders find their way to the nursery areas, perhaps in loose contact with adult pairs which have bred. Such groups have been discovered to exist within the breeding populations in North Kent and have been called 'communes' (Hori, in press). On the duckling waters birds believed to be 'failed breeders' attempt to join broods and crêches in spite of initial aggression from the adult pairs accompanying them; circumstantial evidence suggests that these are the birds which ultimately assume care of the crêches. Throughout the brood period, particularly before parents part from their young, those adults without broods show considerable interest in ducklings, without being aggressive. Whenever family parties pass near groups of such adults, the latter 'crowd around' as though admiring the young. The latter behaviour and the general atmosphere is reminiscent of a remarkable performance my wife and I once witnessed in our domestic geese. We knew that an egg in one nest was chipping when our attention was drawn to it by a tremendous clamour from the whole flock. We found the parent female astride a newly emerged gosling which was weakly moving; the female and the rest of the flock, which were standing in a close circle round the nest, were trumpeting at the gosling and at each other, stretching their necks over the former and clamouring in each other's faces. This type of behaviour, and that of the assumed 'failed breeders' in general, heavily underlines the strong gregarious tendencies of Shelduck. In this context the 'brood attacks' may not be quite such an anomaly as they appear. Since other adults will readily adopt ducklings there is little danger to the latter if their parents do desert them on the traditional nursery areas and, since adults make a moult migration, the biological advantage of the species may be best served if they force their young to leave them at a time when they themselves can adequately prepare for

the migration. Brood attacks seem to be the only intra-specific behaviour at variance with complete gregariousness within family and other social groupings. I consider that they are not simple aggressive acts and that they serve a group- or population-advantage, as do the mutual stimulation displays between Shelduck pairs which occur in the communes, but which have a superficial resemblance to aggressive displays.

References

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