

400 mm. telephoto lens. We are also entirely indebted to Mr. George Wallis for the design and construction of the rafts and to the men of his Company for their enthusiastic help.

James and Jeffery Harrison

Observations on nesting Shelduck

THE Shelduck *Tadorna tadorna* remains a considerable enigma. Only during the last twenty years has the fascinating pattern of its moult migration been discovered, and many aspects of its breeding biology remain shrouded in uncertainty. The main reason for this lack of knowledge is that the species usually nests in holes and, whilst its choice is catholic, the difficulty of observing behaviour at such nests is considerable. Full protection and the bird's unpalatable flesh have also helped to limit knowledge insofar as the species is of little interest to wildfowlers and in consequence research prompted by economic and harvesting considerations such as has taken place on other species of waterfowl has been lacking. My own studies on Shelduck have been made in the Thames estuary in Kent, where the species is an abundant winter visitor and also breeds commonly. In this short paper some features of the habits at the nest are described. It is hoped to publish a more complete account of the breeding biology later.

The two most common nesting situations in my study area are in stacked hay and in trees; all the observations described here were made at such sites. Tree sites are especially fascinating and one of the most strangely beautiful experiences for anyone interested in ducks is the sight of a pair of Shelduck circling and flighting through the fresh green foliage of upland tree screens in May and early June, particularly when the presence of a nest is known with certainty. I have described elsewhere the hiding reaction of a female and brood when surprised at the nest (Hori, in press). Since that observation I have recorded a number of identical reactions from incubating birds. Typical was that of a female on 3rd June, 1962. This bird was nesting in a hollow bough of a pollarded elm about fifteen feet from the ground and had been under observation since late May. As is often the case with such trees, not only was the trunk hollow but so were the stumps of old boughs which ringed the top of the trunk forming a series of holes or antechambers off the trunk, with access from inside only. By 3rd June the ten eggs were in an advanced state of incubation. On climbing the tree that morning I detected movement inside and was just in time to see the female finish covering the eggs with down, slip quietly out of the nesting hole and steal into an adjacent hole. She went to the far end of the latter, some two feet long, and flattened herself against the end. This clutch was subsequently hatched on 10th June. Another example of the same behaviour was recorded from a bird nesting in a haystack. This nest was approximately twenty feet above the ground in a "blind" hole some twenty feet long. Here the bird had obtained its hiding place by building the nest fifteen feet from the entrance, thus giving itself another five feet behind. When disturbed the bird would leave the nest and hide in either the approach or the rear tunnels, usually the latter. Only in the event of severe disturbance would it leave the site altogether. When the entrance hole was blocked it would merely slip quietly into the rear hole.

I have now witnessed the hiding and escape behaviour so often that I consider that whenever Shelduck nest in holes they always have an escape tunnel associated with the nest hole. So far, most of the escape holes I have found have been "blind" and the female has left the nest to hide in them whenever danger threatened. A few holes have been alternative exits from which sitting females escaped when necessary and one "open site", inside a building, had a separate hiding tunnel. My observations lead me to believe that as long as the danger is not too great or too sudden, the female covers her eggs before leaving them, as do most of the Anatidae. In a paper by Captain F. W. Dewhurst (*British Birds* 24 : 66-9. 1930), among other interesting but unsubstantiated comments, I was surprised to find the statement "very often a bolt-hole connects with the nest". This referred to nests in rabbit-holes and, although I have not opened any of these for examination, I have very little doubt of the accuracy of the statement.

Birds incubating in stacked hay will accept a remarkable amount of disturbance. One female that I had under observation for most of June, 1962 had 18 eggs in a nest five feet along a hole in hay. To test her attachment I gradually "opened up" this nest until, on 24th June, it was virtually an "open site", i.e. it was about two feet from the face of the stack and when the bird sat she remained in full view from the outside. On 24th June she remained sitting and looking at me while I photographed her from four feet range. Three days later the nest was almost buried when a load of freshly cut hay was stacked on top of the old. An access hole was made through the new stacking to correspond with the previous entrance and the bird continued incubating. Another female with twenty eggs was found during delivery of the same hay. As the eggs were already chipping one of the farm workers made up a "pen" from bales and transferred the clutch and female into it. The bird was given her freedom next evening when she led her brood away as though nothing had happened.

Shelduck can be relatively fearless on the nest. A tree nesting female who was under observation for the whole of her incubation period in 1962 always walked off her eggs to hide in an "escape tunnel" during the first seventeen days of my visits. I last saw her on 30th June when she hissed at me very loudly each time I looked into the hole. I had to push her very hard to move her off the eggs and all the while she banged and buffeted my hand with her wings and bit repeatedly. On examination I found the eggs had not chipped, but the chicks could be heard scraping about inside quite plainly. This was exactly thirty days after the bird started incubating.

Hissing by sitting females is another habit which I have met with commonly and it appears to be the general reaction to predators. An occupied rabbit warren can frequently be identified by listening carefully for the hissing threat of the female. Once caught, the females are generally passive and their gentleness makes them extremely attractive to handle. Indeed some of the birds my wife and I have had under observation in the wild have become great favourites whom we look forward eagerly to meeting again in the future.

John Hori

Additional Note: As the proof of this paper passes through my hands, the incredible has happened. After a moult migration and a winter of unprecedented severity, AJ 62813, the "fearless" female mentioned above, incubates 10 eggs in precisely the same hole as the one she used in 1962. J.H.