THE NESTING OF THE PINK-EARED DUCK

by John Warham

SUMMARY

1. An account is given of the nesting of the Pink-eared Duck (*Malacorhynchus membranaceus*) in a swamp at Moora, Western Australia, during 1956.

2. Nests were in holes or crotches in trees and lined solely with down, which is unusually oily, clings to itself and appears to be a most efficient insulator.

3. Both sexes swim to the nesting site at the beginning of an incubation spell, but it is unknown whether both incubate.

4. The birds perch readily and climb sloping limbs without difficulty.

5. Adults use three calls: a disyllabic whistle serves as a flight note and alarm; a rattling cry is associated with success after territorial disputes; a soft purring note used on approaching the nest and at the time of hatching probably serves as an integration note once the chicks are on the water.

6. Distress and contentment notes are given by the newly hatched chick.

7. After hatching, the young are induced to descend by the calls of both parent birds circling in the water below the nest site.

8. During inter- and intra-specific threat displays neck and head are stretched along the surface towards the antagonist and the beak opened and closed. The presumed female is very aggressive at the time of hatching.

ACKNOWLEDGMENTS

I am grateful to Mr P. T. Sandland of Burrabidgy, near Moora, for introducing me to the breeding-grounds of this species of duck, and to Mr and Mrs Cook of Lake View, Moora, both for ready access to their property and for other favours received during my stay there.

The Pink-eared Duck is one of the most peculiar of the Anatidae and one whose relationships to other ducks are still somewhat obscure. Only scattered references to the bird occur in the literature, the most recent observations on its general behaviour and nesting being those of H. J. Frith, incorporated in Vol. II of Delacour's *The Waterfowl of the World* (1956).

Malacorhynchus membranaceus is a smaller and rather handsome teal-like duck with brown wings and back and fine bars of creamy-white and blackish on underparts, flanks and throat; a dark brown triangle encloses the eye behind which lies a small patch of pink feathers justifying the vernacular name. The bill is very long, spatulate, and the edges of the upper mandible extend down-

wards as a curtain of skin which broadens towards the tip to form a membraneous flap. The sexes are alike. In contrast to young Shovelers, Pink-eared ducklings also possess spatulate bills with their attendant curtains. Food of both adults and young is believed to be wholly of an animal nature.

In Western Australia the bird is commonest in inland salt lakes, where estherids and allied animals are abundant, and it appears to favour warm, shallow waters rather than deep ones. In the south of the state nesting takes place from August to November, the birds often being rather late breeders, but in the tropical Kimberley Division they apparently nest in and during the summer wet season. According to Shilling (1948), they are numerous in the Liveringa swamps in the wet, and young birds were seen there in April 1947.

The Pink-ear is tamer than most Australian ducks, and Campbell (1900) refers to a pair in Victoria that attacked a man on horseback by diving at his head!

The present observations were made on the property of Mr G. Cook of Moora during November 1956, observation hides being sited in a swamp overlooking two of the three occupied nests discovered there. The birds were quite tame and readily accepted hides erected gradually over several days, so that close observations were supplemented by a good series of photographs in black and white and in colour. Unfortunately the study period coincided with a run of heavy thunderstorms which broke on three consecutive afternoons, and these hindered observations since it was necessary to leave the hides beforehand in order to ensure that eggs or young were not unattended during the subsequent downpours.

THE BREEDING GROUND

The Moora swamps consist of a group of shallow, saline lakes that are generally filled by winter rains falling between May and August. These lakes lie in the coastal plain of Western Australia and are about fifty miles from the sea. Some of them are interconnected after good rains, but by the end of the summer many have dried out completely. Several have no surrounding cover, being edged only with a few dead trees; but Marada swamp, where the present observations were made, is fringed with thickets of tall *Kunzia* trees and tangles of 'bottlebrushes' (*Leptospermum*), while in the water grow numerous paper-barks (*Melaleuca*) and a few casuarinas, some of which grow to a height of about 50 feet.

In November 1956 this lake was approximately circular, about 400 yards in diameter and about 4½ feet deep towards the centre. Although the bottom was covered with a layer of mud from 2 to 4 inches deep, wading was easy. Vegetation in the water was very limited and consisted mostly of a growth of green algae. There were no reeds, lilies or similar plants. Great quantities of small Cladocerans were seen in the water and these were believed to form the principal food of the Pink-eared Ducks at the time.

Coot (*Fulica atra*) were by far the most abundant birds here, and there were upwards of 50 nests of this species dotted about the shallows or on snags in deeper water. Breeding had nearly ended for them, only two nests being seen with eggs, but their young were being fed everywhere. While paddling quietly around in a rubber dinghy, we would see groups of two or three Pink-eared Ducks and these would allow close approach. Such birds were probably nesting, whereas flocks of up to 400 duck present, many of which were Pink-ears,

were doubtless there simply to rest and feed, and, in contrast to the smaller groups, these left the lake completely if flushed.

A Whistling Eagle (*Haliastur sphenurus*) was nesting high in a paper-bark, Grey Teal (*Anas gibberifrons*) and Black Duck (*Anas superciliosa*) came in to feed, as did occasional Straw-necked Ibis (*Threskiornis spinicollis*), White-faced Herons (*Notophoyx novae-hollandiae*) and many Black-winged Stilts (*Himantopus himantopus*). A few Little Grebes (*Podiceps novae-hollandiae*) were present and several Black Swans (*Cygnus atratus*) had nested; in one of the latter's homes was the remains of a Grey Teal's nest. The only duck currently discovered with eggs, however, were the Pink-ears.

THE NEST

When nesting, the Pink-eared Duck lines a hole in a tree or the empty nest of some other swamp bird with a copious mat of down. In the Moora swamps Coots' nests are commonly used, but C. L. Orton found one using the nest of a White-faced Heron 20 feet up in a tea-tree (Serventy and Whittell 1948), and elsewhere in Australia nests of the Straw-necked Ibis, Black-tailed Native Hen (*Tribonyx ventralis*) and Little Pied Cormorant (*Phalacrocorax melanoleucos*) are used.

A systematic search on 22 November revealed three occupied nests of Pink-eared Duck. Nest A (clutch 7) was inside a hole in a big Casuarina about 5 feet from the water; Nest B (c. 7) was within a similar hole in a paper-bark some 6 feet from the surface; and Nest C (c. 6) was about 50 yards from A and in the crotch of a paper-bark at 4 feet above water-level. None of the eggs—small, creamy-white, somewhat stained and rather glossy—showed any sign of hatching, and in each nest a thick wad of down completely covered the clutch.

Only at the third nest did I glimpse the departure of the sitting bird, although it must have flown on my first entering the water when I passed quite close. This bird must have returned while I was still visible but at the far side of the swamp. None of the sitting birds ever attempted any form of distraction display; the normal procedure when disturbed was for the bird to fly towards its mate and for both to swim leisurely away, to rest on the water at a safe distance until all was quiet once more.

That each of these tree-trunk nests was occupied was indicated by wisps of down adhering to the bark around the hole, and at nests A and B the warmth of the hole indicated immediately whether the bird had been sitting recently; it was quite unnecessary to touch the eggs. This down, which is medium grey-brown with light grey centres, adheres readily to any rough surface; it has an unusually 'tacky' feel. Although the presence of down outside a nest might be thought disadvantageous, at an open site the sticky down clings so well to itself that it forms a springy blanket completely enclosing the eggs, and even in strong winds shows no tendency to blow away. Being so light, adherent and air-trapping, it must act as a very efficient insulator. The first nest of this species found was on top of an old Coot's home; I was quite sure that there must be eggs underneath on account of the way in which the down was piled high, but the nest was empty. The eggs had hatched some time before, but the down had retained its shape despite the open situation in which one would have expected all the down to have been blown away.

In each instance down alone lined the nest. This lining was found to weigh 17·9 grams (Nest A) and 17·5 grams (Nest C).

These three nests are used year after year, and probably more than once a year in good seasons. Mr P. T. Sandland, who has searched the Moora swamps for many years, tells me that Pink-eared Ducks have been using these sites for thirty years to his knowledge; many of the eggs of this species in Australian collections have been gathered here.

INCUBATION

By 24 November a hide had been built in the water about 9 feet from Nest C where most of the subsequent watching was undertaken, and the birds were observed on this date from 8.05 a.m. till 1 p.m. The behaviour of the birds on this occasion was similar to that noted subsequently during incubation.

It was impossible to differentiate the sexes by their plumage patterns, although there were slight differences in the shape of the dark brown triangles on the birds' cheeks. Once or twice I suspected that both sexes might be sitting, but no proof of this was obtained. Nevertheless, solely for convenience, I have referred to the sitting bird as the female or duck in the following account, but this is an assumption for which I have no direct evidence.

While I was putting the finishing touches to the hide in preparation for entering, the two ducks sat quietly on the water 50 yards away, and no sooner had I disappeared than they drifted nearer to stand for a moment on a half-submerged log. Then one launched itself towards the nesting tree, followed closely by the other. The pair kept swimming up to within 5 feet of the base of the tree, the presumed male with its head retracted somewhat into the shoulders, the other with neck erect. The latter lifted its beak and gazed intently at the nest several times before flying up, climbing at about 45°. It had to make several attempts before obtaining a foothold, and as it flew the bird uttered a soft whistling 'tew-ee', a note that seemed the same as the usual flight call and a little softer than the very similar alarm note.

During the time the pair paddled quietly on the water below the nest, they kept up a soft whispering chorus, a purring 'twit, twit' series of notes. This chorus was invariably used whenever the two birds came up to the nest, but I was never able to determine whether or not both of them used it.

Pink-eared Duck (*Malacorhynchus membranaceus*)

The bird settled down immediately; barely touching the lining with its bill it insinuated its breast through the down on to the eggs, and shuffled itself into position with a series of sideways quiverings of its body. Ten minutes later the bird flew from the nest in alarm, having apparently seen some movement on the bank through the trees, but she was back almost at once, the male again in attendance, and thereafter incubation proceeded without interruption until 1 p.m., when I created a disturbance 100 yards away with the help of a long rope and put the bird off before emerging from the hide.

At about half-hourly intervals the duck changed its position. Frequently it stood up and turned the eggs with its bill. The bird was quite silent, and for much of the time dozed with beak tucked into the scapulars and with the down lapping around its flanks. The lower eyelid covering the eyeball was of a grey-buff colour. The sun shone on the bird for short periods each day, and I noticed that at such times the duck tended to loosen the feathers of the crown so that the pink ear was concealed. Once or twice the heat made the bird gape.

At this close range it was possible to gain a better idea of the bird's colouring. It was really a brown and cream duck rather than grey and white as Scott's plate in Delacour (1956) indicates. The under-tail coverts are buff. The patch of pink feathers grows within the groove in the skull that runs backwards from the eye socket, and since the feathers of the crown can be sleeked or fluffed, the pink patch may be pronounced or completely hidden. Sometimes one side of the head may show the pink ear, while on the other side this is invisible. Since sleeking and raising of the crown feathers often accompanies emotional changes in birds, it seems possible that bringing into prominence of the pink feathers may take place during sexual display in this species, but no information is yet available as to the function of the ear-patch in these birds. The amount of pink showing does not seem to be any indication of the sex of the bird concerned.

As soon as one of the duck had flown to the nest, the other usually swam back immediately to its favoured perch on a submerged limb about 10 yards away. Getting out on to the slippery branch was difficult, and sometimes several attempts were needed before the bird was balanced comfortably. Standing up, it wobbled its tail smartly, preened itself, particularly its breast feathers, with its huge and seemingly incongruous beak. The face was scratched with a foot brought up from under the wing. Mostly the bird slept, standing on one leg with head tucked back into the shoulders, but it would sometimes disappear from view and for part of this time it was feeding.

Aspects of display were occasionally observed. Thus on the morning of the 25 November I was suddenly aware of a Pink-ear close to a Coot sitting on eggs about 15 yards from the hide at Nest C. Both were threatening, the Coot with neck outstretched was reaching down from its nest, uttering the explosive noises characteristic of its kind, while the duck swam with its head and neck outstretched flat on the water, opening and closing its beak. The pink inside of the mouth and lower mandible was visible from the hide. At the same time the male sounded a loud trilling call, which was echoed by the incubating bird now alert and watching. The duck then moved away from the Coot, and I suddenly noticed another Pink-ear on the far side of the bushy tangle in which the Coot had built, and farther over still, another Pink-ear with at least three chicks in tow. This family group moved off in the direction of Nest A. Apparently the disturbance had arisen through the too-close approach of this party, and the Nest C drake in warning them off had incidentally aroused the Coot's antagonism. Later I found that the eggs in Nest A had hatched since the previous

evening, leaving one addled egg behind; probably it was this brood that had been involved in the episode with the drake from Nest C.

Several other disputes between the Coot and the drake Pink-eared Duck were noted. Thus on the morning of 26 November he stood on a log about two feet from the Coot's nest and, despite a few desultory snorts from the latter, began to doze. About ten minutes later the Coot's partner arrived, and the pair converged suddenly on the drake, which swam off hurriedly, making the same soft purring sounds as were used when approaching the nest. The incubating bird could see her mate, but evinced no interest in the incident.

An aggressive encounter involving a Pink-ear probably belonging to Nest A had also been noted on the 24 November, when a bird from this direction suddenly flew at the male from Nest C which had been cruising about feeding near by. The latter shot hurriedly back to its own area, whereupon the defending bird jumped on to a floating branch and with outstretched neck pointed its bill to the sky while it uttered a peculiar and quite loud rattling cry—probably the same call as the Nest C drake had used during its previous encounter.

THE HATCH

Hatching of the eggs and the departure of the young were only seen at Nest C. At 1 p.m. on 25 November one of the eggs was chipping, and by 7 a.m. the following day all were starred but no chicks were out. They could be heard tapping from within, but were not piping. Heavy rain fell that evening and overnight, accompanied by blustery winds and lightning, but the morning of the 27 November was finer and the nest held 4 chicks and 2 chipping eggs. All were covered with down as usual and the young remained motionless and silent until I opened the covering, whereupon one of them jumped straight into the water. Fortunately the others did not follow suit—some were still wet—and covering them over hastily I retrieved the impetuous one, taking it inside the hide with me lest it prove too restless and cause the other ducklings to depart prematurely.

The usual purring sounds accompanied the ducks' return, but for the first time the female continued to call like this as she stood at the nest, and she did so several times while brooding. She settled down quickly, sitting appreciably higher than when she had eggs, the down high around her flapping in a fresh breeze. None of the ducklings was visible, although the duck raised herself a little from time to time, purring quietly on each occasion. I was seldom able to catch the chitterings of the ducklings owing to the noise of the wind and the squawks of numerous young Coot in the area at the time. The duck paid little attention to the eggs and made no attempt to eat yolk remaining in the shells after hatching, as the Mallard sometimes does (Warham 1951). Brooding continued until 11.15 when I had to leave the hide, re-entering an hour later, after

slipping the eldest duckling back beneath the down, where it immediately became quiet once more.

The duck was back at once, unaccompanied by her mate this time, and from then on frequently uttered the purring call; her bill vibrated slightly as she did so. She was very alert and kept looking around. At 1.15 p.m. she stood up and purred loudly as she stood in the crotch before dropping to the water where her mate awaited her. Both swam rather slowly away, with the male purring and the female voicing a loud fluting 'tew-ee'. In the nest nothing stirred and the down had automatically covered the chicks. The pair circled back towards the tree, still calling as before. Suddenly I saw one chick on the water and glimpsed others falling. In a few seconds a group of four ducklings accompanied by the adults had formed, and all began moving away. They stopped about 20 yards from the nest, where the ducklings began feeding, dabbling quickly and eagerly with the tips of their bills immersed in the water. The male now acted as the focal-point for the young ones' activities; he stood on a log preening, shaking and scratching himself. He bathed in the water with the brood scurrying and circling around him.

Meanwhile the duck swam back to the nesting tree, where she paddled around for a few minutes, lifting her bill as she peered upwards, and whistling occasionally. I believe that she gave the purring note also at this juncture. She did not fly up but, giving a wild call, flew back to the brood. The male had taken no part in the other's inspection of the nest; he had simply stood over the young as they scurried around.

The family had apparently encroached on to the territory of another pair of Coot, both of which swam forward with arched wings; the duck accepted their challenge and charged them viciously, and as the Coots fled she gave the same powerful trilling call previously recorded. The drake took no part in this attack. Later the duck attacked yet another Coot that came near, afterwards raising herself from the water to stretch her wings; the male continued to preen, unperturbed by these quarrels.

The group gradually drifted away, and there was no sign of the ducks' reappearance by 3 p.m. when I emerged. The sky was now overcast, and scuds of rain announced yet another thunderstorm which lasted most of the night. In the nest were two eggs, one starred and the other chipped, but both chicks were dead.

The behaviour of the adults at the hatch may be compared with the findings of Collias and Collias (1956) on the Canvasback (*Aythya valisineria*) and Blue-winged Teal (*Anas discors*). Their account of these ducks' behaviour before calling their young from the nest, their alert attitudes and manner of looking around, would serve also as a description of the Pink-ears' manner at this stage of the breeding cycle. Furthermore, the way in which this duck used the purring note at the nest only after hatching had commenced suggests that, as with the Blue-winged Teal, the ducklings are thereby given an opportunity to become conversant with the purring calls though the chicks might never see their parents until they hit the water for the first time, owing to the way in which the down encompasses them. Again, this purring note is clearly akin to the special note described by these observers as used by Canvasback and Blue-winged Teal at hatching: 'relatively soft and low pitched and consisted of brief, rapidly repeated monosyllabic notes of weak intensity'. One difference seems to be that these notes were used regularly by the pair on the water before hatching occurred, and that at the time of departure the duck used a loud version of the

usual whistle in addition to the purring notes, apparently to induce the nestlings to make their descents.

THE CHICK

The downy chick of the Pink-eared Duck was described recently by H. J. Frith (1955). The ducklings examined at Moora agreed with Frith's description in most respects, but the following points may be noted. The bill is just over half

Downy Pink-eared Duck

as long as the head and rather different in shape from that figured in the sketch accompanying Frith's paper: it is short and spatulate, the membraneous flaps, which are wrinkled more or less longitudinally, being very marked. The egg-tooth is white, and the length of the bill in a chick probably 8–12 hours old was $\frac{11}{16}$ inch. The upper mandible was dark grey, the lower pink towards its distal end, dull wine coloured at the base. Breast and belly had a slightly creamy tinge, the down under the tail being suffused slightly with buff, corresponding with the buff under-tail coverts of the adult. My birds showed rather less dark around and below the eye than the bird in Frith's sketch.

The duckling that left Nest C prematurely dived well but was not greatly distressed when retrieved. Placed in a shallow, *Simocephalae*-filled pool, it dabbled eagerly into the mud with its bill; apparently feeding movements are innate. This duckling also exhibited a following response, for although it would run from me when placed in the water, it would run back immediately I moved away again.

The chick had two calls: a rather piping 'shripp shripp' much like the note of any other day-old chick, and a softer, twittering 'tititi'. The first appeared to be a distress call, and was only heard when the duckling was left alone in an empty case or was otherwise out of contact with a warm object; it ceased when the chick was handled gently, to be replaced by the twittering call. This clearly seemed to be a contentment note such as Collias and Collias describe for Canvasbacks and Blue-winged Teal. Furthermore, the distress call invariably ceased at my quite crude imitation of the adults' purrings. The duckling used the distress call when I had it with me in the hide, but the brooding bird gave no sign that it heard the duckling's cries.

NEST B

Bad weather interfered with my observations at this nest and only one four-hour session was possible. This sufficed, however, to confirm the general pattern of events noted at Nest C in that the two birds came to the nesting-tree together, uttered the same soft chirruping undertones while on the water, and the presumed drake's return to a perch near by where he dozed and preened, although occasionally disappearing, probably to feed. Here, before incubation was re-

sumed, both ducks flew on to a limb sloping at about 40° to the horizontal which leaned from the nesting-tree into the water. They alighted some 4 feet above the surface, gaining their balance without very much flapping of wings, and then walked up the limb until the highest bird was at least 8 feet from the water. The nest could not be reached from there so the birds had eventually to re-enter the water; both raised their bills and peered at the nest before one of them finally flew to it in a steep climb.

Aggressive encounters between these Pink-ears and Coot were also noted, and the ducks' attitudes were similar to those seen at the other nest—they stretched their necks and beaks out along the water towards the adversary, the beak slightly ajar.

This pair also gave a momentary glimpse of display while perched side by side on a submerged log: one bobbed its head up and down several times with its bill held stiffly at about 45°, but its partner gave no reaction.

Once when the pair were together on the water one of them indulged in a bout of apparent displacement preening, probing behind the wing and adopting a posture very like that figured by Makkink (1931) for the Shelduck (*Tadorna tadorna*).

FEEDING

Brief observations on the feeding habits of the Pink-eared Duck at Marada swamp were made. The method mostly used is that described by Frith (in Delacour and Scott 1956), as 'cruising with the bill in the water, filtering as they go'. It was noted that the birds paid particular attention to half-submerged limbs along which they would work with their bills slightly submerged. The reason for this was that when the sun was shining Cladocerans concentrated along the edges of the shadows cast by the limbs so that food was most plentiful in such places. The male would sometimes feed like this in full view of their sitting mates. Doubtless Shanks' account (1953) of two birds rotating about a point with their bills submerged and almost touching refers to ducks which have found some local concentration of animal food. This habit was not noted during the present study since it was mainly single birds which were watched, but on several occasions Pink-eared Ducks were seen to 'up-end': it was impossible to tell what they sought by so doing.

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