

Eurasian Coots Breeding on Irrigation Dams near Manjimup, Western Australia

R. J. BROWN and M. N. BROWN

Observations on Eurasian Coots *Fulica atra*, breeding near Manjimup, Western Australia, between 1975 and 1978, are given together with details of average clutch size, replacement clutches, pedation and mortality. Nest sites, construction and nesting materials are discussed.

Eurasian Coots *Fulica atra* are a common and numerous species throughout Western Australia in suitable localities (Serventy and Whittell 1976). Active birds, they spend much less time 'loafing' during daylight hours than the ducks. Perhaps their wide distribution is why they seem to appear in the literature only as a name on a list or victim of some predator.

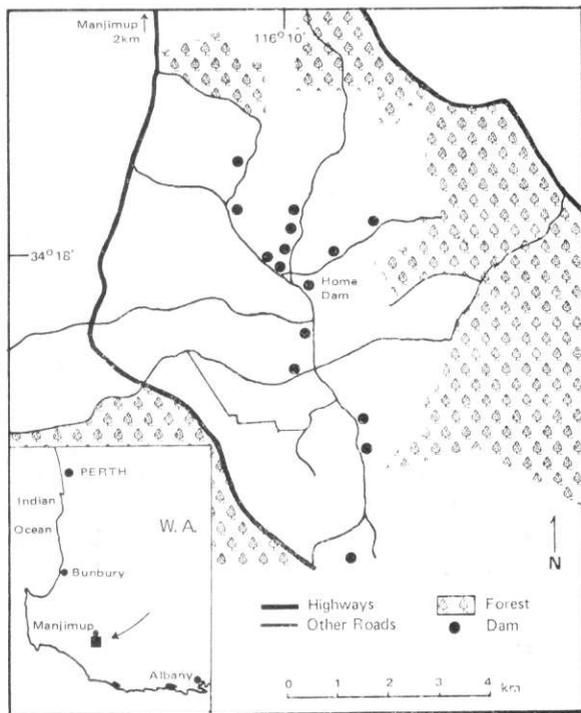
Methods

Between 1975 and 1978 we recorded 96 nests on 15 dams, (Table 1) up to 5 km from home. The dams are used for irrigation purposes and vary in size from one quarter to two hectares with differing suitability of habitat, food and nest sites for breeding coots (Fig. 1). Inspection of nests, at weekly intervals, was carried out by wading or with the use of a one-man canoe; this we found caused minimal disturbance. When a

TABLE 1

Number of nests recorded by year with details of total number of eggs, number of nests predated, clutches hatched and number of young fledged.

Year	1975	1976	1977	1978
No. of nests	20	26	15	35
Total eggs	98	122	69	183
Nests predated	11	14	11	9
Clutches hatched	9	12	4	26
Young fledged	28	42	16	96
Success %	28.6	34.4	23.2	52.5



● Figure 1. Map showing location of study area.

nest was found with one egg, at the commencement of laying, daily visits were made until the clutch was completed.

Results

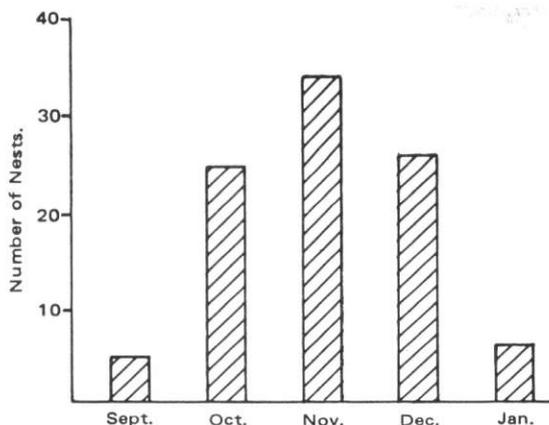
Territory size of breeding pairs was difficult to define. The home dam, the largest, has an irregular shoreline and a good growth of rushes. During the four years under review we recorded 11, 7, 5 and 7 breeding pairs respectively. The smaller dams, with largely regular shorelines and

less rushes, average two breeding pairs annually, although there appeared to be suitable nesting sites, and room for more; presumably the food supply was inadequate. Coots select territories with much calling and fighting, using feet, beak and beating wings, but the pairs later live and nest amicably. Non-breeding coots are chased vigorously by both sexes. Response to human approach to the nest varies, some birds being very aggressive and noisy while others disappear quietly and watch from a distance. Observation of one nest in both 1975 and 1976 revealed only one bird which disappeared so surreptitiously it was impossible to get more than a glimpse. Both years this nest was successful and inevitably that coot became to us 'the single parent'.

Nesting Period

The nesting period was during the months September to January with a peak in November (Fig. 2). The rise in the numbers of nesting pairs to the November peak was matched in the decrease to January. Five nests in September, 25 in October and 34 in November, falling to 26 in December and six in January.

Eggs were laid on consecutive days and incubation commenced before the completion of the clutch. Seven nests, found with one egg and observed from the commencement of incubation to hatching of the first young, showed an incubation period of 24 days in four instances. The other three periods were 23, 25, and 26 days respectively.



● Figure 2. Histogram showing peak and spread of nesting in the Eurasian Coot at Manjimup.

Nest sites

Open situations in rushes were frequently chosen although thicker cover was available. This is unlike the coot in Europe which seeks cover (Sage 1969). Several dams have areas of reed mace apparently avoided by coots for nesting except occasionally when the extreme edges are used; probably because Purple Swamphens *Porphyrio porphyrio* frequently breed there. The majority of the dams contained some drowned dead trees and saplings due to incomplete clearing when the site was originally flooded; on or against these the coots frequently nested. Of the 96 recorded nests 51 used such sites, and all used sticks and twigs in the nest construction. We have not seen this recorded elsewhere and perhaps it is a local preference developed from the availability of these sites and materials. Sixteen of these nests were predated, a predation rate of 31%; eight were flooded, as opposed to the nests built in green or dead vegetation using the same vegetation materials where four were flooded and 17 predated, 38%. All the nests were in water, solidly based not floating, 25 cm to 30 cm above water, varying in depth from 0.5 cm to 150 cm excepting ten nests which were in deeper water, between two and four metres. Pairs shared in nest building. Nursery nests were not always constructed, and it was not invariable practice to make a runway for the young to leave and return to the nest.

Clutch Size

The average clutch size for the coots was 5.7 based on 74 nests with 422 eggs, (this figure differs from Table 1 as incomplete clutches are not included here). This is slightly less than the figures 5 to 7 given by Serventy and Whittell (1976) and also less than the mean clutch of 5.9 of *Fulica atra* in Europe (Sage 1969). Only two larger clutches of nine and ten eggs were recorded by us and appear to be exceptional for this area (Table 2) although up to 15 have been recorded elsewhere (Ripley 1977).

Replacement Clutches

No instances of double broods were recorded. Replacement clutches were laid for eggs and young lost (Table 3). The birds were not individually marked so positive information was not possible except in the case of the pairs on the home dam who are known by their behavioural differences.

TABLE 2
Clutch size of coot recorded at Manjimup.

Number of eggs	Clutches
4	9
5	28
6	21
7	11
8	3
9	1
10	1

Bird A. The first clutch was flooded and the second predated. Bird B had both her first and second clutches flooded. Bird D was also flooded. Bird C completed her clutch of five on 3 Nov. nine days later three eggs were missing; she continued incubating and laid four more eggs, so the nest contained two stained and four clean eggs. At 19:00 hrs on 9 Dec two young were in the nest. Bird E is known to us through having one mis-shapen egg in every clutch. Three of the four young hatched on 26 Nov.; they survived until 11 Dec. but were not seen after that date. On 26 Jan. we found the female using the same nest, sitting on four eggs which she deserted on 4 Feb. Bird F hatched two from her first clutch on 23 Nov. One was found dead near the nest on 23 Dec.; the other was still alive but not seen subsequently. One hatched from the second clutch on 26 Jan. survived. With the exception of birds C and E a new nest was built for successive clutches.

This was too small a sample on which to base conclusions but it would suggest that replacement clutches here are likely to be the same size as the first, unlike the coot in Europe which lays smaller repeat clutches (Sage 1969).

Mortality and Predation

The chief recorded predator was the Marsh Harrier *Circus aeruginosus* taking both eggs and young of the coot. The eggs are eaten at the nest and the young either picked from the water or hunted through the rushes by the raptor. In 1977 there were two Marsh Harriers in the district and during the months of November and December they hunted over the home dam at least once and sometimes twice, morning and evening on 27 days. We watched them rob three nests in succession on 19 Nov. and on 4 Dec. another nest was vigorously defended by an incubating coot, repeatedly flying up at the attacker and dropping back to cover the eggs. Eggs were also taken by Australian Ravens *Corvus coronoides* and rats. Purple Swamphens interfered with coot's nests, using them as preening platforms and usurping them to use as nursery nests for their own young (Brown and Brown 1977). Musk Duck *Biziura lobata* also breed in the reed mace in the dams and have been seen harrying young coots, swimming under water and snapping at their feet. Nests were lost through fluctuations in the water levels, early nests being liable to flooding and late ones being dried out.

TABLE 3
Replacement clutches based on breeding pairs on the Home Dam.

Nest	A	B	C	D	E	F
1st clutch completed	16 Oct	22 Sep	3 Nov	8 Oct	9 Nov	6 Nov
No. of eggs	5	7	5	6	8	5
Young	—	—	—	—	4	2
2nd clutch completed	1 Nov	20 Oct	?	3 Nov	26 Jan	5 Jan
No. of eggs	3	5	4	6	4	4
Young	—	—	2	5	—	1
3rd clutch completed	2 Dec	22 Dec	—	—	—	—
No. of eggs	5	7	—	—	—	—
Young	4	4	—	—	—	—

Discussion

We could come to no conclusion as to the coot's fluctuating success rate; however 1977 was a markedly poor breeding season for the other nesting species sharing the irrigation dam habitat. Table 1). Nests of Australasian Grebe *Tachybaptus novaehollandiae* were only 50% of the numbers in the other three years. Clamorous Reed-Warbler *Acrocephalus stentoreus* 75% and no Dusky Moorhens *Gallinula tenebrosa* were found nesting. On the other hand the Purple Swamphens *Porphyrio porphyrio*, were as successful as in other years. Possibly adverse environmental factors were involved. The annual rainfall during the four years of the study fluctuated. (Table 4). The lowest, 893.5 mm in 1977, coincided with the year of least success for the breeding coots, also the Australasian Grebe, Dusky Moorhen, and Clamorous Reed-Warbler. The year with the most rain, 1978, 1052.1 mm, was the year with the highest success rate for coots. A similar higher successful percentage shows in Australasian Grebe records, less so for Dusky Moorhen and not at all for Clamorous Reed-Warblers. The variation in rainfall does not affect the initial water level in the dams; they are always full in September and subsequent levels depend on irrigation requirements. Perhaps consistent water levels are a factor in breeding success for coots.

TABLE 4

Annual rainfall in mm and breeding success of coot.

	1975	1976	1977	1978
Annual rainfall	926.9	1020.9	893.5	1052.1
Breeding success %	28.6	34.4	23.2	52.5

Acknowledgements

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R. J. & M. N. Brown,
RMB 253 Q.M.S.,
Manjimup, W.A., 6258.

Selective Food Gathering by Australian Magpie

Alley (1979) observed a pair of Australian Magpies *Gymnorhina tibicen*, that fed on cheese while retaining previously selected insects which were later fed to the young.

In the 1972 breeding season, Australian Magpies nested to the north and south-west of Auluba Oval, South Turrumurra. A loose flock of non-breeding birds occupied gardens and open spaces to the north-west of the oval, at a somewhat further distance than the two nests.

On 20 September the northern nest contained advanced young. The adult female from this nest was food gathering in my garden with larvae already held in the bill. She dropped this original bundle of food three times to forage and feed herself, picking up the original bundle of larvae before going on with the food search. After the third drop and retrieval, I had an unimpeded view of her flight to the nest where she fed one nestling.

The observation was made without binoculars at a distance of about 3 metres from the foraging bird. I concluded that Australian Magpies are selective in the food which is offered to nestlings.

Reference

- Alley, T.H. (1979), 'Diet Difference in Adult and Nestling Australian Magpie', *Corella* 3: 4.

Daniel Larkins, 225 Kissing Point Road,
Turrumurra, N.S.W., 2074.