

Notes on the Nest and Eggs of the Australasian Grebe in north-western Victoria

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A description of the nests and eggs of Australasian Grebes is given, based on a sample of 70 nests recorded in Wyperfeld National Park, north-western Victoria. The results are compared with published data on the breeding of the Little Grebe in Europe.

There is little published information on the breeding biology of the Australasian Grebe *Tachybaptus novaehollandiae*. Tarr (1971) recorded the Australasian Grebe in Wyperfeld National Park as "numerous in Black Flat in 1957", but made no other mention of its occurrence there. In late December 1975 the lake system in the Park filled for the first time since 1957. In 1976 large numbers of Australasian Grebes nested at Black Flat in the Park, and on some smaller lakes further upstream. These lakes filled when the floodwaters from the Wimmera River reached Outlet Creek and flowed through the Park connecting a series of swamps and lakes. This paper reports data collected on nests and eggs at Black Flat (30° 32'S., 141° 58'E.) in February 1976.

Methods

Seventy nests were located in the vicinity of Black Flat between 7-11 February 1976. Eggs were counted, measured to the nearest 0.1 mm with vernier calipers, and weighed to the nearest 0.5 g with a Pesola 50 g spring balance. All visits to nests were made by canoe. Nest dimensions and water depth were measured using a paddle marked with 25 cm graduations. Estimates of the distances of nests from land were made relative to the length of the canoe (2.5 m). Additional data on clutch size were obtained from the RAOU Nest Record Scheme. In the nest record cards, clutch size was determined only from nests whose number of eggs did not change between two consecutive visits, at least 48 hours apart.

Results

Nest structure

The nest was a floating platform of small

branches, twigs and leaves anchored to partially submerged vegetation. The greater part of the nest structure was submerged. The eggs were placed in a central depression in the top of the nest, often with the lower side of the egg in contact with the water. The water within the central egg depression of the nest felt noticeably warmer than the temperature of the water surrounding the nest. The average depth of a nest was approximately 35 cm and the average nest width was approximately 33 cm. A summary of the dimensions of six nests is presented in Table 1.

Nest material

Coarse material, such as twigs and small branches, was placed towards the bottom of the nest, and leaves, grass stems and waterweed comprised the upper section of the nest. The main source of nest material was River Red Gum *Eucalyptus camaldulensis*.

Nest site

The nesting platform was moored to vegetation either by protruding nest material, particularly at the base of the nest, or by the incorporation of the anchoring vegetation into the nest

TABLE 1

The approximate dimensions of six nests of the Australasian Grebe at Wyperfeld.

Nest measurement		Range (cm)
Diameter	: above water	15-25
	: submerged	25-40
Depth	: above water	3-6
	: submerged	20-35
Incubation Depression	: diameter	4-7
	: depth	3-6

TABLE 2

Nest anchorages of the Australasian Grebe at Wyperfeld.

Type of anchorages	Number	Percentage
Sapling	10	18
" (dead)	15	27
Hanging branch	10	18
" (dead)	14	26
Fallen tree	6	11
Total	55	100

structure. The types of nest anchorage used are shown in Table 2. Of 55 nests, 51 were situated within the flooded tree-line around the perimeter of three lakes (including Black Flat) and four were located in a slow-flowing stretch of creek. Long stretches of faster flowing creek with apparently suitable anchorages available were not used.

The mean water depth at 55 nest sites was 1.3 m (s.d. $\pm$ 0.45 m) with a range of 0.5-2.5 m. The mean distance from land was 39.3 m (s.d. $\pm$ 30.2 m) with a range of 10-150 m. Water depths up to 3.3 m were available but the water depth within the flooded tree-line did not exceed 2.5 m.

Description of the egg

Newly laid eggs are pale bluish-white with a limy coating; a brown stain develops as incubation proceeds (Serventy and Whittell, 1965). The dimensions (mean $\pm$ s.d.) of 115 eggs were 36.52 mm $\pm$ 1.22 mm x 25.17 mm $\pm$ 0.63 mm (ranges 33.2-39.4 mm and 23.7-26.6 mm). The weight (mean $\pm$ s.d.) of 115 eggs was 12.3 g $\pm$ 0.85 g (range 9.7-14.5 g). This is not representative of the weight of newly laid eggs because of the weight loss that occurs during incubation.

Clutch size

The number of eggs in all clutches, the number of eggs in nests with only brown eggs, and the number of eggs in 41 clutches obtained from the RAOU Nest Record Scheme are shown in Table 3.

Nesting period

Laying had occurred in 55 of the 70 nests examined in the vicinity of Black Flat; 20 of these nests contained newly laid (white) eggs. In one nest the eggs were hatching. No young were seen in the area.

TABLE 3

A comparison between the number of eggs found in nests at Wyperfeld and the clutch size as determined from RAOU Nest Record Scheme data.

	Number of eggs in clutch									TOTAL
	1	2	3	4	5	6	7	8	9	
Number of clutches (total)	5	11	6	10	7	1	0	0	0	40
Number (containing only brown eggs)	0	5	2	8	4	1	0	0	0	20
Number (nest record scheme)	0	2	3	7	9	12	6	1	1	41

Discussion

The breeding of the Australasian Grebe in large numbers in Wyperfeld National Park soon after the first floodwaters appeared demonstrates an ability to use temporary breeding conditions at short notice within the breeding season. The earliest breeding pair found began egg-laying approximately two weeks after the floodwaters reached the Park. However, since 40% of the nests being used contained newly laid eggs in early February, the majority of the population began nesting in late January. The timing of breeding is consistent with that given by Storer (*In Readers Digest*, 1976) as "mostly September to January".

It was thought that nests containing only brown eggs could be used to estimate clutch size as the absence of white (newly-laid) eggs suggested that laying had finished. A comparison of clutches of all brown eggs and clutch sizes obtained from the nest record scheme (Table 3) indicates differences in both the mean values and ranges of the two samples. Complete clutches from the nest record scheme ranged from 2-9 and the most frequently recorded clutch was six eggs. Clutches containing only brown eggs at Wyperfeld ranged from 1-6 and the most frequently recorded clutch was four eggs. There are several possible explanations for these differences:

1. The assumption that clutches of all brown eggs are complete may be incorrect. The staining process may vary from nest to nest and in some nests the eggs may stain before laying has finished.

2. Egg loss may have been high in the early stages of incubation at Wyperfeld National Park.

3. The clutch size at Wyperfeld may be lower than that of other populations.

Serventy and Whittell (1976) recorded a 4-10°F temperature difference between the nest and the water in which it lay. Although the temperature difference was not measured at Black Flat, it was apparent that the water in the egg chamber was considerably warmer than the water surrounding the nest. Whether this was due to the recent presence of the incubating bird or was a product of decomposition of the plant material in the nest is not known, but warrants further study.

The Australasian Grebe and the Little Grebe *Tachybaptus ruficollis* are thought to form a superspecies (Cramp and Simmons, 1977). The nest structure of the Little Grebe in Europe is similar to that of the Australasian Grebe. The nest diameter at the base was up to 60 cm wide; the average diameter of the nest cup (incubation depression) was four centimeters and the height of the nest above water was four to five centimetres (Cramp and Simmons, 1977). These are similar to the values in Table 1. In Europe, the mean dimensions of 100 eggs of the Little Grebe were 26 mm x 38 mm with ranges of 24-28 mm and 33-44 mm respectively. The mean egg weight was 14 g (presumably at laying). Clutch size is given as four to six, ranging from two to seven with up to ten recorded (Cramp and Simmons, 1977). Thus, egg weights and clutch sizes of the Little Grebe and the Australasian

Grebe are similar. While these features do not represent reliable taxonomic characters, they do illustrate close resemblances in some aspects of the breeding biology of the two species.

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Auxiliary at the Nest of the Blue-faced Honeyeater

Dow (1980, *Emu* 80: 121-140) listed sixty-five species of Australian birds for which communal breeding had been recorded. He mentioned several others that may be possible communal breeders. Although he cited reports of Blue-faced Honeyeaters *Entomyzon cyanotis* exhibiting this behaviour in aviaries, he had no similar reports for wild birds.

On 15th October 1979, we observed this species nesting one kilometre east of Weethalle, N.S.W. (33°5'S., 146°37'E.). The birds were observed in attendance at the nest which was about 4.5 m from the ground in the outer canopy of a low eucalypt. Two had blue facial patches, the other, an olive-green facial patch. One blue

faced individual was sitting on the nest while the other two birds brought food to the young. The young were fed about once a minute. Alexander (1976, *Aust. Bird Bander* 14: 52-53) noted from banding studies that the facial patch retained the olive-green colour for at least six months before obtaining the blue of the adult. We assume that the bird with the olive-green patch was the offspring of the primary pair (the blue-faced pair) and hence satisfies Dow's definition of an auxiliary.

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