

# OBSERVATIONS ON BREEDING OF THE GREAT-BILLED HERON IN NORTHERN QUEENSLAND

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Received 8 August 1972.

## SUMMARY

SETON, D. H. C. 1973. Observations on breeding of the Great-billed Heron in northern Queensland. *Emu* 73: 9-11.

Three breeding territories were located, in which up to seven nests were found. Any of the nests in a territory may be used from one year to the next, and one has been used recently, twenty years after being found. Two eggs seem to be the usual clutch, although probably only one young is reared. In the Burdekin district laying may begin about September and sometimes birds will lay as late as January. Comment is made on the unusual call.

## INTRODUCTION

The Great-billed Heron *Ardea sumatrana* is scarce throughout its range in the Malaysian and Australasian region (van Bemmelen and Voous 1951). There is little information on its habits and accordingly the following observations from the district of the lower Burdekin River in northern Queensland (Fig. 1) made during 1965-1972 are presented. The territories of at least eight pairs of birds were approximately defined among the extensive tracts of mangroves extending from the Burdekin to the Haughton River.

Access was only possible by boat, but aerial survey by light aircraft proved invaluable. Regular visits to the area were not possible, although a special effort was made to visit nesting sites. Three breeding territories were found, containing a total of thirteen nests.

## HABITAT AND TERRITORIES

The direct distance from Groper Creek (southernmost anabranch of the Burdekin) to the Haughton River is approximately 56 km, but much more along the shoreline. Extensive areas of mangroves, probably amounting to thousands of hectares line most of the shore and all tidal creeks. For example, the distance from the mouth of Barratta Creek to the boat-landing is approximately 19 km via the creek, the entire length being lined with mangroves. Herons were found, usually singly, from time to time along most of the major creeks. Fairly regular sightings were made at two territories on Barratta Creek and two on Plantation Creek, and in territories on Groper, Kalamia and Barramundi Creeks, and Haughton River. At all sites the mangroves were very dense and difficult to enter, with trees up to 12 metres in height. The mud below was flooded regularly by tides and often very soft.

## BREEDING

Some data have no doubt been published, but apparently only scanty information is available for

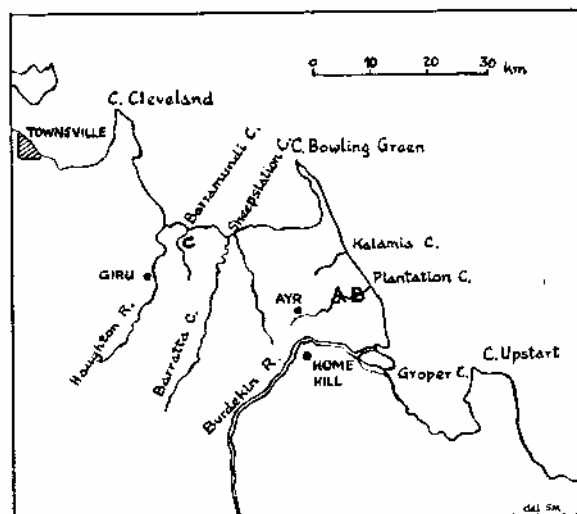


Figure 1. Map of lower Burdekin district, showing approximate position of Territories, A, B and C.

north-eastern Australia (Mathews 1914; North 1914). My records are most simply given separately for each of three nesting territories.

### Territory A

Three nests were known in this area, and during the period each nest was used for breeding. Nest 1 was known to have been in use at least from 1952. All three nests were inspected at regular intervals of two months from October 1965 and a description of each follows:

**Nest 1.** Located some 20 m from edge of tidal creek, but well screened by dense growth of mangroves; placed across a thick fork of a long leaning mangrove about 4 m above the mud. It was a flat-tish structure of coarse dry sticks measuring 1,200 mm in length and 25 mm in diameter, maximum.

This nest was 1,330 x 1,200 mm across at the top and 460 mm deep.

**Nest 2.** Located some 270 m upstream from Nest 1, along the same creek but about 30 m from it, overhanging a narrow gutter that diverged from it; placed across a couple of thin limbs near the outer foliage of a small mangrove about 3 m above the mud. This nest collapsed before I could measure it, probably while still occupied by a young heron, but it was not so bulky as Nest 1.

**Nest 3.** Located on the same small gutter and about 180 m upstream from Nest 2; placed at the top of a small mangrove on a horizontal limb 2.5 m above the mud. This nest appeared to be the most recently constructed of the three and was almost perfectly round, 1,250 mm across and 300 mm deep, constructed of sticks similar in size to those used for Nest 1.

All three nests were in rather open situations and apart from Nest 2, which was the only nest of 13 at all sites that actually overhung a channel, were well concealed behind a screen of fairly dense mangroves. At all three sites seawater, 600–900 mm deep, covered the mud at high tide; at low tide the mud was exposed.

Nests 1 and 3 were used periodically for roosting as evidenced by excreta on leaves and lower limbs that were not regularly flushed by tides. When a bird was disturbed at its nest, usually it climbed somewhat leisurely the limb above the nest until it could launch itself above the tree. Usually it would settle again in another mangrove within 50 m. It returned to the nest via the same limb in reverse procedure.

Breeding in this territory took place as follows:

- 1965 Nil.
- 1966 Nest 2, collapsed Dec.–Jan. 1967.
- 1967 Nest 3, 2 eggs on 9 September.
- 1968 Nest 1, 2 eggs on 22 October.
- 1969 Nil.
- 1970 Nil.
- 1971 Nest 1, 2 eggs on 8 October.

Events in Nest 2 in 1966–67 were recorded and are tabulated below, but unfortunately I could not do this in other years.

- 25 September 2 eggs.
- 8 October 2 eggs, one on point of hatching.
- 15 October Two young, one much larger than other.
- 5 November Only one young.
- 10 December Young bird now approximately nine weeks old, standing on nest; plumage generally rufous-brown. Regurgitated three mullet, two about 200 mm long and one about 150 mm.

- 22 January Nest collapsed, remains found among nearby mangroves in water. No sign of young or adults.
- 12 February No sign of Herons. Nests 1 and 3 inactive.

An adult was at or near the nest on each visit to and including 10 December 1966.

Because a fairly close watch was maintained for signs of breeding in 1965 and 1969 to no avail, one or more nests that were not found could have been used or conditions may not have been satisfactory for breeding or even perhaps one of the pair died.

#### *Territory B*

Three nests were known in this territory but two, partly disintegrated, appeared to have been disused for several years. This area was approximately 1.5 km in a direct line from Territory A and along the same system of tidal creeks. The active nest was found on 15 October 1966 by tracing calls. One bird was standing on the nest while a second that appeared to do all the calling was perched in tall mangroves 50 km away. The bird at the nest was not heard to answer during about one hour.

This nest was not used again up to the end of 1969, although periodic inspections were made and sometimes a roosting bird was flushed. Adjacent extensive mangroves were virtually impenetrable and almost certainly concealed other nests. The site chosen for this nest was rather similar to that of Nest 1 in Territory A, being located in fairly open mangroves behind a dense screen of smaller mangroves, 30 m wide, separating it from a large creek. It was placed some 2.5 m above the mud in a small mangrove and measured about 1,050 mm across by 250 deep.

#### *Territory C*

This was on a different system of creeks about 30 km in a direct line from Territory A. Here I found seven nests. Unlike Territories A and B it was well back from tidal creeks, about 300 m from the nearest in the angle formed by a large creek where it emptied into the sea and a tributary approximately 1 km from its mouth. It was located by fishermen who had heard birds calling at night.

It was considerably isolated by virtue of some tough going to penetrate the 150 metres of stilted mangroves that separated it from either of the creeks. Once through the dense outer perimeter the trees opened up considerably and large old mangroves were spaced further apart allowing easier movement. The area was initially investigated on 22 October 1966 when I found four nests with a pair of birds in attendance at one. The other three were much older but still intact. All were placed on leaning or horizontal limbs of large mangroves 3–5 m above the mud, covered by high tides.

On 19 November 1966 I again visited the area and a Heron flew off the newest of the four nests, which then contained two eggs. I could not visit the area again until 7 January 1967 when the nest was deserted and there was no sign of any birds. On my next visit on 18 February 1967 I found the original four nests unoccupied, but located two additional nests. One of these contained a single large young and was presumably the second breeding attempt of the pair whose nest contained eggs on 19 November 1966. These two nests were about 130 m apart; the greatest distance between any of the nests was about 200 m and the shortest only 30 m. The nest occupied on 19 November 1966 was near the end of a long horizontal limb approximately 4 m above the mud and somewhat supported by another smaller mangrove; it was made of dry sticks up to 600 mm long and 15 mm in diameter with shorter thinner twigs in the centre. The nest measured 1,000 x 900 mm.

On subsequent visits my records were as follows:

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|------------------|--|
| 8 October 1967   | No sign of birds at or near any of the six nests.              |
| 9 November 1968  | As above, but a Heron brooding a single egg in a seventh nest. |
| 24 November 1968 | Single young in nest; adult present.                           |
| 29 November 1969 | No sign of any birds; three older nests fallen.                |
| 1970 and 1971    | No visits.   |
| 11 February 1972 | Single large young on nest used in 1968; no adult.             |

### CALLS

The local vernacular 'Alligatorbird' seems appropriate (Campbell and Barnard 1917). Lasting several seconds, the call is repeated monotonously at irregular intervals over periods of several hours during day or night. It is like the noise made by an angry bull, a kind of resonant roaring that can be quite eerie on a still dark night among dense mangroves.

Calls were heard from August to November between pairs of birds that were later located near a nesting territory and usually not more than about 50 m apart. I could not determine whether both birds of a pair called, but never heard solitary birds or those incubating or brooding calling. Thus, calling may occur only as a prelude to breeding and then from the nesting territory.

### CONCLUSIONS

The species is extremely shy and rarely allows an

approach within 300 or 400 m except when brooding. It was observed only in saline areas, single birds being seen occasionally on mud banks during daylight. In the non-breeding season birds were sometimes perched at or near nests during daytime, so that the species could be partly nocturnal. Its flight is very similar to that of the White-faced Heron *Ardea novaehollandiae* and in general appearance at some distance the two species are much alike.

Although eight occupied nests were found between 1966 and 1972, it was impossible to visit them frequently or regularly to learn more about the incubation and nestling periods because the sites were so far away and hard to reach. Because the only way of visiting these areas was by boat, the time spent on any visit was governed largely by the tides; to be stranded after dark among a maze of shallow waterways in the mangroves was not a pleasant prospect.

However, from the observations made, the Great-billed Heron in the Burdekin district probably begins to breed in September and in some years at least lays eggs as late as January. Two eggs appear to be the usual clutch, but probably only one young is reared. Four nests, when I last saw them, had only a single nestling although in at least one two eggs were hatched. One nestling is known to have been approximately eight and possibly nine weeks old and was last seen perched on a limb a metre or so from its nest. In Territory C there was evidence that the Herons may try to breed again after losing the first clutch. A pair may not breed every year, but it is not certain that the species is monogamous as I have assumed. It was not possible to determine the sex of brooding birds. The species seems to choose nesting sites well concealed from waterways by a dense screen of mangroves and over mud flooded by tides. Three to seven nests occur in what I have taken to be a breeding territory, any one of which may be used from one year to the next.

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