

## Discovery of Nests and the Egg of Archbold's Bowerbird *Archboldia papuensis* (Ptilonorhynchidae)

by C.B. FRITH and D.W. FRITH  
'Prionodura', Paluma via Townsville, Queensland 4816

---

### Summary

The discovery of nests and an egg of Archbold's Bowerbird *Archboldia papuensis* was made in moss forest between 2600 and 2800 m above sea level at Tari Gap, Southern Highlands, Papua New Guinea. Five active and three old nests and their situations are described and measurements of all but one given. A single egg clutch description, measurements, weights, and photographs are presented. Twenty-three hours of observation established that only a female-plumaged, presumed female, bird incubated, and was photographed doing so. The nest and egg of Archbold's Bowerbird are most like those of the gardener bowerbirds *Amblyornis* spp. and the catbirds *Ailuroedus* spp.

### Introduction

Archbold's Bowerbird *Archboldia papuensis* was the last bowerbird species to be described (Rand 1940) and remains one of the least known of the eighteen species of the Ptilonorhynchidae (Donaghey et al. 1985). It is patchily distributed in the central ranges of Irian Jaya in the Snow Mountains from the upper Ibele Valley, the Nassau Range at Ilaga, and the Weyland Mountains near Wissel Lakes; and of Papua New Guinea on Mt Hagen, Mt Giluwe, the Lamende Range, and at Tari Gap on the Ambua Range where it was discovered by Mr Robert Campbell (Beehler et al. 1986, Collar 1986). The species is found in coniferous mixed forest and mixed beech forests (Saunders 1965), and perhaps other forest types, between 2300 and 2900 m, rarely as low as 1800 m (Beehler et al. 1986). It is the second largest bowerbird, only the Great Bowerbird *Chlamydera nuchalis* of tropical Australia being larger. For descriptions, plates, and a summary of knowledge of this rare elusive bird see Gilliard (1969), Cooper & Forshaw (1977) and Beehler et al. (1986).

During 11 to 16 November 1985 Roy and Margaret Mackay kindly introduced us to the Tari Gap area (5°58'S, 143°8'E) when we all searched in vain for the first Archbold's Bowerbird bower to be found in this new location for the bird. The present authors returned to Tari Gap to carry out both a general ornithological survey (Frith & Frith 1987, 1988 and in press) and to study Archbold's Bowerbird and several sympatric birds of paradise during the periods 8 September to 29 October 1986 and 14 October to 5 December 1987. During these periods intensive and extensive searches for Archbold's Bowerbird bowers and nests were made. Seventeen bowers were discovered, predominantly between 2600 and 2800 m above sea level, male courtship activity at one was observed, and descriptions of these will be presented elsewhere (Frith & Frith in prep.). In order that the discovery of this bowerbird's nest and egg may be incorporated into the contemporary handbook of Papua New Guinea birds (Coates 1985 and in prep.), we present their descriptions here.

### Results and discussion

On 20 November 1987 the first Archbold's Bowerbird nest, nest 1, was found to be actively under construction and nearly completed, and a female-plumaged bird was seen behaving possessively and nervously in the immediate nest area daily until 25 November. This nest was built into the branch fork of a well-foliaged but conspicuously

leaning young tree, which was growing where a major recent tree fall had created a large open area of sky in the otherwise continuous canopy of mixed beech moss forest directly above the nest site. On 30 November the nest tree was found to be blown down almost to the ground and the nest was presumed to be deserted. It was therefore collected, measured (Table 1), and photographed (Plate 58). This nest consisted of a substantial foundation (Plate 59a) of irregular sticks, some apparently snapped off trees by the nest builder and some covered in lush moss, with some larger leaves and frond pieces within. The sticks were both beneath and around the nest, up to the rim, and woven amongst them were approximately eight or nine green-leaved climbing or scrambling orchids, as are used by males on their bower perches (Frith & Frith in prep.). Also woven loosely into the sticks and orchids were several larger dead leaves and fern fronds (see Plate 58).

Within this nest foundation was a substantial cup nest of larger dry dead leaves and pandanus palm frond pieces, many stronger more leaf-like fern fronds (often long narrow pinnae) and several smaller ribbon fern fronds (Plate 59b). Several of the uppermost of these leaves within the cup were of the smaller size and were still slightly green.

Within the cup nest an egg-cup lining of supple and naturally curved twiglets (Plate 59c) lined the lower two-thirds of the leafy cup nest. Field notes for this nest by CBF read 'a large untidy *Amblyornis*-like nest but with the addition of orchids'.

At 1500 h on 23 November nest 2 was found containing a single elliptical (Prynné 1963), elliptical ovate or long oval (O'Connor 1985) egg being incubated by a female-plumaged bird. This nest was in moss forest with pandanus palms and tree ferns common, but with an uneven, broken, and in places open canopy. A tower of bush materials was built over several days against a pandanus palm trunk close to this nest from which observations and photographs were made (Plate 60). The egg was pale buff in colour without high gloss but a slight gloss or lustre only, and unmarked save for tiny, inconspicuous, irregular, extremely sparse, slightly darker spots. It measured 47.0 x 31.6 mm and weighed 25.4 g, and when re-weighed at 1030 h on 5 December, the termination of our 1987 field work, it weighed 23.5 g with no sign of pipping. This nest also had a substantial under-foundation and sides of sticks many of which were mossy, and within this a substantial cup nest of leaves and pandanus palm frond pieces; and several sprigs of dead dry blackish leaves were incorporated into the outer rim sticks. The uppermost leaves in the cup were green and fresh, and the egg-cup lining was of fine curved twiglets. No orchids were incorporated into this active nest (Plate 61), measurements of which appear in Table 1.

Between 23 November and 5 December inclusive observation watches of 2 to 5 hours duration between the hours of 0700 and 1300 h were made of the incubating bird's activity at this nest from a hide 15 m distant with 8 x 30 field glasses. A total of 23 hours observation was made during which the clear impression was gained that only the single female-plumaged bird attended the nest and incubated the egg. As only the females attend the nest in those bowerbird species in which males build bowers (Diamond 1986; pers. obs.), we assume the bird at this nest (Plate 62) was a female.

Nest 3, found on 27 November, was a nearly completed structure built in the centre of a tree fern (*Cyathea* sp.) crown on the edge of a narrow flowing creek, in tall mixed beech moss forest with abundant pandanus and tree ferns and an uneven, broken canopy and relatively well lit understorey. This nest (see Table 1) had a substantial foundation of sticks, some being mossy and some obviously having been broken off by the bird, with a very substantial cup nest of dead leaves and dry pandanus palm frond pieces, the upper leaves within it being fresh and green. The egg cup was sparsely lined with



**Archbold's Bowerbird nest (nest 1), Tari Gap, Papua New Guinea**

Plate 58

Photo: C. & D. Frith



**Archbold's Bowerbird nest (nest 1), showing the discrete component parts of (a) stick foundation at right, (b) cup nest at left, and (c) twiglet egg-cup lining below; see text.**

Plate 59

Photo: C. & D. Frith

fine curved twiglets. No orchids were incorporated into the nest, but some large, dead black fern pinnae were incorporated into the nest lining, beneath the twiglets and about the nest rim. Two old disused nests (nests 3a and 3b) were located at 5 and 15 m distant from nest 3 in branch forks of small trees. The one of these that could be measured (see Table 1) was like a very large *Amblyornis* nest with a substantial stick foundation beneath and around the structure. Within it was a bulky substantial cup nest of numerous dead leaves and pandanus palm frond pieces and an egg cup lined with fine twiglets.

Nest 4 was found on 2 December nearly completed and was probably built by the same bird that built and lost nest 1 (see above). This new nest was built into the near-vertical forking branches of a sapling 6.5 m tall (see Table 1) with a densely foliated but small canopy. It was standing in a small open area of forest with open sky above and with poor forest and secondary growth about it, and was near a disused native hut. This nest was too inaccessible to measure, but by examination with a mirror many fresh green leaves could be seen in the cup nest which had not yet been lined with twiglets. Three or four orchids were incorporated into the rim of the outer nest cup.

Nest 5 also was found on 2 December in the near-vertical forking branches of a sapling in moss forest with pandanus and tree ferns and an undisturbed canopy. This near-complete nest could not be reached and examined.

Nest 6 was an old nest, of at least the previous nesting season, when found on 3 December. It was built into the near-vertical forking branches of 4.5 m tall sapling with a well-foliaged canopy, but standing in a small cleared area immediately adjacent to a disused native hut in secondary growth immediately adjacent to primary forest. It had a substantial foundation of numerous sticks, a substantial cup nest of dead leaves within and an egg-cup lining of twiglets. It was noted by CBF as being very *Amblyornis*-like in general appearance, except that three or four orchid sprigs were incorporated into the outer structure, and was similar to nest 1 above.

In originally describing Archbold's Bowerbird, Rand (1940) blandly stated that it is 'related to *Amblyornis*' without further comment, and subsequent authors have likewise placed it closest to the gardener bowerbirds of the genus *Amblyornis* in view of the structure and colour of the adult male's crest (Mayr & Gilliard 1950, Rand &



**Archbold's Bowerbird nest 2 (arrowed), with observation tower of bush timber under construction against, and to left of, the Pandanus tree**

Plate 60

Photo: C. & D. Frith



**Archbold's Bowerbird nest 2 and egg, *in situ***

Plate 61

Photo: C. & D. Frith



**First photograph of presumed female Archbold's Bowerbird at nest 2**

Plate 62

Photo: C. & D. Frith

Gilliard 1967, Gilliard 1969, Cooper & Forshaw 1977, Beehler & Finch 1985). The bower of male Archbold's Bowerbird is not, however, a 'maypole' bower as are those of the gardener bowerbirds but is, uniquely, a 'mat' bower (Frith 1985, Borgia 1986). The discovery of the nest and egg of this monotypic bowerbird genus has, therefore, been long awaited in order to further assess the validity of its placement within the family.

Table 1

Measurements (mm) of nests of Archbold's Bowerbird at Tari Gap, Southern Highlands, Papua New Guinea

Nest No.	Nest condition	*1	2	3	4	5	6	7	8	9	10
1	near complete	165	265	125	170	70	6	290	2	160	6000
2	complete with egg	220	400	135	200	70	—	—	1.5	—	4230
3	near complete	220	300	140	220	80	6	450	—	—	3680
3a	old	—	360	130	240	60	—	—	—	—	3285
3b	old	—	—	—	—	—	—	—	—	—	5500
4	near complete	—	—	—	—	—	—	—	—	—	5000
5	near complete	—	—	—	—	—	—	—	—	—	4770
6	old	165	210	125	160	90	5	360	—	—	3230
Mean:		193	307	131	198	74	5.7	367	1.8	160	4462

\*1 = total nest depth. 2 = total nest diameter. 3 = interior cup diameter. 4 = exterior cup diameter. 5 = egg cup depth. 6 = maximum diameter of foundation sticks. 7 = maximum length of foundation sticks. 8 = maximum diameter of lining twiglets. 9 = maximum length of lining twiglets. 10 = height of nest rim above ground.

The senior author of this note is familiar with the egg of the Streaked Bowerbird *Amblyornis subalaris* in the British Museum collection (Harrison & Frith 1970) and we have examined nests and eggs of Macgregor's Bowerbird *A. macgregoriae* in the field (pers. obs., in prep.). We are also familiar with the nests and eggs of the bowerbird genera *Ailuroedus*, *Scenopoetes* (Frith & Frith 1985), *Prionodura*, *Ptilonorhynchus* and *Chlamydera* (Frith & Frith in press) in the field, and make the observation that the nest and egg of *Archboldia* are more like those of *Amblyornis* and, to a lesser extent, *Ailuroedus* than to any other, including *Prionodura* which is a crevice-nesting bird that typically incorporates few sticks into its nest structure and lays a white or whitish, not buff, egg. Thus, Archbold's Bowerbird appears to be less taxonomically isolated and distinctive, in its nesting biology at least, than was recently considered to be the case (Diamond 1986) and the information that we present here clearly supports the traditional view that this bowerbird is most closely related to the gardener bowerbirds *Amblyornis* spp.

### Acknowledgements

We gratefully acknowledge support from Wildlife Conservation International, New York Zoological Society. We thank Roy and Margaret Mackay for kindly introducing us to our study area. Bob and Pam Bates of Trans Niugini Tours provided invaluable assistance in various ways. For permission to study at Tari Gap we sincerely thank the Department of Environment and Conservation, and particularly Mr Karol Kisokau, of the Government of Papua New Guinea.

## References

- Beehler, B.M. & Finch, B.W. (1985), 'Species-checklist of the birds of New Guinea', *Aust. Ornithol. Monogr.* **1**, RAOU, Melbourne.
- Beehler, B.M., Pratt, T.K. & Zimmerman, D.A. (1986), *Birds of New Guinea*, Princeton Univ. Press, Princeton, New Jersey.
- Borgia, G. (1986), 'Sexual selection in bowerbirds', *Sci. Amer.* **254**, 92-98.
- Coates, B.J. (1985), *The Birds of Papua New Guinea*, vol. 1, Non-passerines, Dove Publications, Alderley, Queensland.
- Collar, N.J. (1986), 'Red data bird, the Tomba Bowerbird' *World Birdwatch* **8**, 5.
- Cooper, W.T. & Forshaw, J.M. (1977), *The Birds of Paradise and Bower Birds*, Collins, Sydney.
- Donaghey, R.H., Frith, C.B. & Lill, A. (1985), Article 'Bowerbird' in Campbell, B., Lack, E. (Eds), *Dict. Birds*, Poyser, Calton & Vermillion.
- Diamond, J. (1986), 'Biology of birds of paradise and bowerbirds', *Ann. Rev. Ecol. Syst.* **17**, 17-37.
- Frith, C.B. (1985), Article 'Bowerbirds and birds of paradise', in Perrins, C.N., Middleton, A.L.A. (Eds), *The Encyclopaedia of Birds*, Allen & Unwin, London.
- Frith, C.B. & Frith, D.W. (1985), 'Parental care and investment in the Tooth-billed Bowerbird *Scenopoeetes dentirostris* (Ptilonorhynchidae)', *Aust. Bird Watcher* **11**, 103-113.
- Frith, C. & Frith, D. (1987), 'The Logrunner, *Orthonyx temminckii* (Orthonychidae), at Tari Gap, Southern Highlands Province, Papua New Guinea', *Muruk* **2**, 61-62.
- Frith, C.B. & Frith, D.W. (1988), 'Nests and eggs of Papuan Scrub-wren *Sericornis papuensis* (Acanthizidae) and Grey-streaked Honeyeater *Ptiloprora perstriata* (Meliphagidae)', *Aust. Bird Watcher* **12**, 168-170.
- Frith, C.B. & Frith, D.W. (1989), 'Miscellaneous notes on the bowerbirds *Chlamydera cerviniventris* and *C. lauterbachii* (Ptilonorhynchidae) in Papua New Guinea', *Aust. Bird Watcher* **13**, in press.
- Gilliard, E.T. (1969), *Birds of Paradise and Bower Birds*, Weidenfeld & Nicolson, London.
- Harrison, C.J.O. & Frith, C.B. (1970), 'Nests and eggs of some New Guinea birds', *Emu* **70**, 173-178.
- Mayr, E. & Gilliard, E.T. (1950), 'A new bower bird (*Archboldia*) from Mount Hagen, New Guinea', *Amer. Mus. Novitates* **1473**, 1-3.
- O'Connor, R.J. (1985), Article 'Egg', in Campbell, B. & Lack, E., (Eds), *Dict. Birds*, Poyser, Calton & Vermillion.
- Prynne, M. (1963), *Egg-shells*, Barrie & Rockliff, London.
- Rand, A.L. (1940), 'Results of the Archbold Expeditions no. 25. New birds from the 1938-1939 expedition', *Amer. Mus. Novitates* **1072**, 1-14.
- Rand, A.L. & Gilliard, E.T. (1967), *Handbook of New Guinea Birds*, Weidenfeld & Nicolson, London.
- Saunders, J.C. (1965), 'Forest resources of the Wabag-Tari area', in General Report on Lands of the Wabag-Tari Area, Territory of Papua and New Guinea, 1960-61, *Land Research Series* **15**, CSIRO, Melbourne.