

often gathered over intruders calling frequently, which attracted more gulls and frightened more Brown Pelicans off their nests. Productivity, as measured by nesting success, was found to be markedly (52-100%) decreased in Brown Pelican subcolonies which received frequent human visitation.

The extent of predation under undisturbed conditions is unknown. Micronesian Starlings could be a substantial factor in reducing Black Noddy breeding success in conjunction with human disturbance. Presently only about 50 pairs of Black Noddies nest on inhabited islands in the Marianas while approximately 3000 nest on uninhabited islands (Reichel in press). While this distribution is thought to have resulted primarily from direct human exploitation, predation by Micronesian Starlings during human related disturbances may have contributed to losses.

These are the first published accounts of Micronesian Starling egg predation. Previous authors regarded these indigenous birds as exclusively (Baker 1951) or predominantly fruit and seed eaters and occasional insect eaters (Marshall 1949; Marshall 1975; Jenkins 1983; Engbring & Ramsey 1984). Eggs may be an important food for Micronesian Starlings, especially on islands which are small and have simple forest bird and vegetative communities.

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Archbold's Bowerbird *Archboldia papuensis* (Ptilonorhynchidae) Uses Plumes from King of Saxony Bird of Paradise *Pteridophora alberti* (Paradisaeidae) as Bower Decoration

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Archbold's Bowerbird *Archboldia papuensis* (*Archboldia* hereafter) is a little-known large (37 cm) bowerbird patchily distributed in the central ranges of Irian Jaya and Papua New Guinea at altitudes of 2300-2900 m, rarely to 1800 m (Beehler *et al.* 1986). Due to inaccessibility, it remained

unknown except for a 'mat' type bower and a 'grovelling' male courtship display (Gilliard 1959, 1969) until the discovery of its nest and egg (Frith & Frith 1988).

The bower of adult males consists of several square

metres of forest floor, beneath horizontal perches, covered with a thick 'mat' of fern fronds and decorated with piles of snail shells, pieces of fungus and charcoal, tree exudates and beetle elytra (Gilliard 1969; Cooper & Forshaw 1977; Coates 1990). Perches above the 'mat' are decorated with scrambling and epiphytic orchid stems, dead and dry below, green and fresh (often in flower) on top, which form dense hanging 'drapes'.

This note reports the use of head plumes from adult male King of Saxony Bird of Paradise *Pteridophora alberti* by male *Archboldia* as bower decoration. A detailed account of bower form, dispersion and male behaviour at them is in preparation (Frith & Frith unpubl.).

During studies of *Archboldia* in moss forests at Tari Gap, Southern Highlands Province, Papua New Guinea (8 September-29 October 1986, 14 October-5 December 1987 and 19 December 1988-10 February 1989) we discovered twenty bowers in use. Of these six had their central 'mat' decorated with 1-6 (mean = 2.8) head plumes of adult male *Pteridophora*. We moved some of these feathers to the edge of several bower mats and returning males immediately replaced them in a more central location, indicating a sensitivity to the location of these plumes.

Male Satin Bowerbirds *Ptilonorhynchus violaceus* decorate their avenue bowers with, among other things, blue feathers of Crimson *Platycercus elegans* and Eastern *P. eximius* Rosellas (Psittacidae). Borgia & Gore (1986) eloquently demonstrated that male *Ptilonorhynchus* steal these feathers from each other at a rate correlated with the number of feathers on their bowers, suggesting that this competition is significant in determining bower decoration. Borgia (1985) demonstrated that bower decoration numbers, particularly of feathers, closely correlated with male mating success, females selecting males with most feather decorations. Females might select males with decorations that were rare (difficult to obtain/retain) because these represented time invested in their attainment/defence and, thus, were indicative of male fitness and/or dominance, at least with respect to relative success in conflict with conspecific males (Borgia 1986).

Borgia (1985) observed that blue feathers and snail shells, preferred as bower decorations by female *Ptilonorhynchus*, appeared rarer in the habitat than other decorations. This can well be imagined considering that the parrots concerned moult their 12 blue tail feathers and blue primary coverts only once a year. Borgia (1986) found that because blue feathers used by male *Ptilonorhynchus* are

rare, stealing from other bowers is the principle means of males obtaining them. These feathers are, however, relatively abundant compared with the display plumes of *Pteridophora*. What we know of other birds of paradise suggests that each male takes between four to seven years to first attain them, only two such feathers are grown which are moulted, presumably once a year, into the dense wet moss forests habitat of *Archboldia*.

Male Golden *Prionodura newtoniana* and Tooth-billed *Scenopoeetes dentirostris* Bowerbirds steal decorations from conspecifics' bowers and courts respectively. At least one *Prionodura* bower decoration appears relatively rare in its habitat (Frith & Frith unpubl. data). It is doubtful that leaves used to decorate *Scenopoeetes* courts are rare in the habitat (pers. obs.) to the extent that some decorations of true bower building species are.

Three open, more arid-habitat dwelling *Chlamydera* bowerbirds in Australia include dry white bones, sparkling and/or red objects and snail shells as bower decorations, some of which may have been relative rarities prior to non-aboriginal presence. Subsequent to Australian colonisation, domestic grazing stock and innumerable technological productions have changed this situation.

It is probable that *Pteridophora* plume decorations on *Archboldia* bowers indicate the same rarity-seeking phenomenon operating in this bowerbird as in *Ptilonorhynchus*.

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