

Displays and Postures of the Rainbow Pitta and other Australian Pittas

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Summary

The Rainbow Pitta *Pitta iris* was observed near Darwin, N.T., from July 1992 to March 1995. Territorial display, defensive display and several postures were witnessed. Comparisons were made with the Noisy Pitta *P. versicolor* and the Red-bellied Pitta *P. erythrogaster*, in northern Queensland.

Introduction

Pittas are thrush-like birds of the forest floor, and include some of the most brightly coloured birds in the world. There are 26 species, three of which live in Australia. Little has been documented on the behaviour of pittas, but several authors have described distinctive displays in this group. Lee et al. (1989) and Lansdown et al. (1991) described several displays of the Hooded Pitta *Pitta sordida*. A bowing display of the Red-bellied Pitta *P. erythrogaster* was witnessed by Beruldsen & Uhlenhut (1995). A passive threat display by the Noisy Pitta *P. versicolor* has been observed (Perrins & Middleton 1985, Schodde & Tidemann 1986). Perrins & Middleton (1985) described a similar display in the Blue-rumped Pitta *P. soror*. The courtship of the Noisy Pitta has been observed by Taylor & Taylor (1995).

Study areas and methods

From 1992 until 1995 I studied the ecology of the Rainbow Pitta *P. iris*, a species endemic to monsoon forests in the Kimberley of Western Australia and the Top End of the Northern Territory (Blakers et al. 1984). The main study sites were Workshop Jungle in the Fogg Dam Conservation Reserve, East Point Reserve and Holmes Jungle Nature Park, all located near Darwin. At these sites pittas were caught, measured and banded with metal and coloured bands. Subsequently their territories were mapped. Rainbow Pittas were sexed by their calling frequency; males call significantly more often than females, and this was confirmed by dissecting a road-killed pitta, which had previously been calling frequently.

Behavioural observations were normally made whilst documenting activity patterns of pittas. Two visits to Iron Range National Park on Cape York Peninsula, Mount Whitfield Environmental Park at Cairns and Dunk Island National Park enabled a comparison with the Noisy Pitta and the Red-bellied Pitta. Rainbow Pittas were observed for a total of 80 hours, Noisy Pittas for nine hours and Red-bellied Pittas for three hours.

Results and discussion

Standard posture

The bird stands upright (Figure 1a), the legs are slightly bent and the body is held forward at a 60°-70° angle. Standard postures of the Rainbow Pitta, the Noisy Pitta and the Red-bellied Pitta are very similar to one another. This posture is shown when pittas hop around the rainforest floor searching for food, or when they rest on the ground, on a log or on a branch.

Bowing display

The Rainbow Pitta changes from the standard posture (Figure 1a) to an upright posture (Figure 1c). The legs are straighter, body vertical and neck extended. In this display the bird bows its body slowly toward the ground which takes about 5 seconds. The pitta almost touches the ground with its breast during the bowed posture (Figure 1d). The whole body from tail to head is held in a stiff line. The performing bird constantly moves between upright posture and bowed posture. During this display,

the pitta gives a call reminiscent of the purring of a cat, which was noted on no other occasion.

In northern Queensland, I observed Noisy Pittas during July to August 1994 and December 1994 to January 1995. Over this time I once heard a purring call which was to my ears identical to those of Rainbow Pittas. During observations of Red-bellied Pittas in January 1995, I once saw a display which closely resembled the bowing display of the Rainbow Pitta, but was not accompanied by calls.

This display by Rainbow Pittas was witnessed on more than 30 occasions. Normally, two bowing birds stood parallel to each other on the ground or on a perch, 1-10 m apart. Each pitta displayed for five to 20 seconds, then hopped for a few metres, then displayed again. The display was performed by neighbours along territory boundaries. The performing bird was identified ten times as a male, but never as a female. No other pitta was seen in the vicinity of the performing Red-bellied Pitta, whose sex I could not determine.

Beruldsen & Uhlenhuth (1995) observed a bowing display performed by a female Red-bellied Pitta. The nearby male did not respond. They suggested that the female was attempting to call the perched male to the forest floor. Unlike Rainbow Pittas and Red-bellied Pittas, Hooded Pittas hunch their necks during bowing (Lansdown et al. 1991). Lee et al. (1989) described a tall-stretch display in caged Hooded Pittas, with the bird stretching slowly up to its extreme height, then suddenly lapsing back to normal position; that display was performed by both sexes of the Hooded Pitta during the breeding season. I believe this was a less intense bowing display. Rainbow Pittas also sometimes crouch only slightly lower than the standard position.

The bowing display of the Rainbow Pitta is a social signal, and its performance by neighbours along territory boundaries indicates that its purpose is to establish and maintain territories. The bowing display is clearly visible in the dim light of the monsoon-forest floor. Many territorial displays of other bird species involving less body movement, like the fluffing of the bright, yellow breast feathers of male Yellow Wagtails *Motacilla flava* (Welty 1982), would be hard to see in this environment. The soft purring call that accompanies the bowing display is transmitted over only a short distance so can easily be perceived by nearby neighbours or intruders, but is unlikely to attract ground predators like Feral Cats *Felis catus* over longer distances.

Wing-flicking

Standing in the standard posture (Figure 1a), the Rainbow Pitta flicks its wings at intervals of about five seconds. Each flicking of the wings takes less than one second, and the wings are only partly opened. This behaviour is accompanied by a call, which is a sharp, loud *keow*, repeated at intervals. This call appears to be produced by parents only in situations of alarm when an observer approaches their nestlings or fledglings, and will therefore be referred to as the alarm call. On one occasion a Noisy Pitta was heard to give a call virtually identical to the alarm call of the Rainbow Pitta; this was heard in July, immediately after broadcasting with a cassette recorder a standard 'walk to work' call of the Noisy Pitta (Pizzey 1980, Schodde & Tidemann 1986).

Wing-flicking was performed by Rainbow Pittas on perches near occupied nests when potential egg- or nestling-predators approached. It was observed once when a Sulphur-crested Cockatoo *Cacatua galerita* was close to the nest, but more than 15 times when the observer approached a nest. Wing-flicking in Hooded Pittas is accompanied by alarm calls and the bowing display (Lansdown et al. 1991), whereas in the Rainbow Pitta it was always accompanied by alarm calls, but by the bowing display just once. Wing-flicking is performed by several species of birds when in

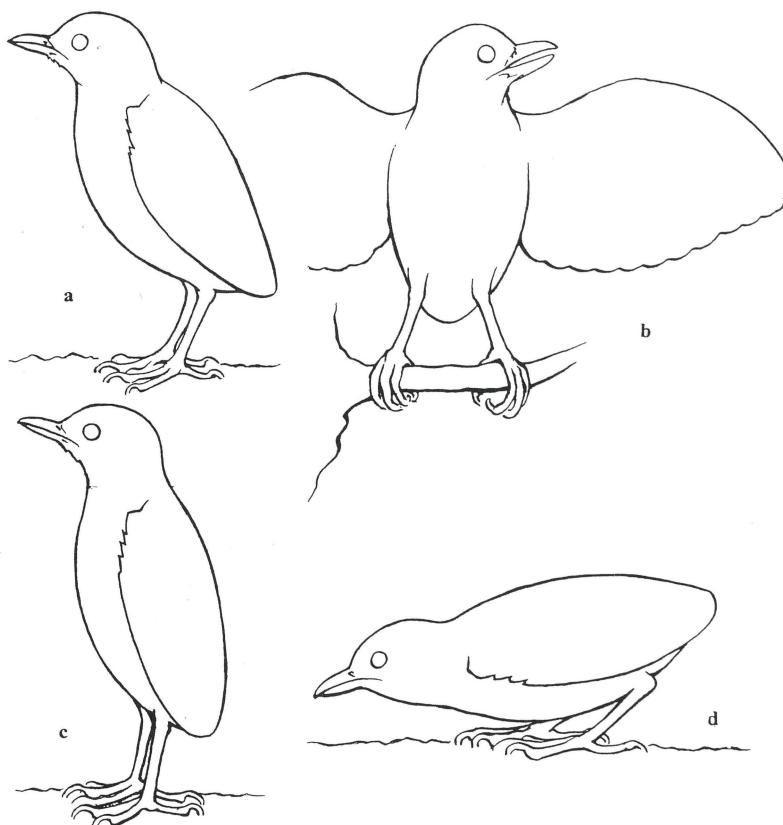


Figure 1. Standard posture (a), wing-spreading display (b), upright posture (c), and bowed posture of bowing display (d) of Rainbow Pitta.

Drawings by David Percival

a state of nervousness (e.g. Common Dipper *Cinclus cinclus*, pers. obs.).

Wing-spreading display

Standing in an upright posture (Figure 1c), the Rainbow Pitta partly opens its wings in the vertical plane for about three seconds (Figure 1b). This display was always accompanied by the same alarm call as described opposite. The wing-spreading display was witnessed three times when the observer was close to a nest with young birds. Once, a Rainbow Pitta was observed to perform bowing and wing-spreading displays alternately. The wing-spreading display has a similar context to wing-flicking. It is performed when potential predators approach nestlings and seems to be a distraction-threat display (Campbell & Lack 1985). The wings are opened suddenly, accompanied by alarm calls, which could easily distract a predator.

Ducking posture

The Rainbow Pitta bends forward with the breast touching or nearly touching the ground and the tail in the air. The head is held backward so that the bill points upward, and the wings are slightly opened. On several occasions I saw up to five Spangled Drongos *Dicrurus bracteatus* perched on shrubs close to foraging Rainbow Pittas.

On one of these occasions, a Drongo dived to catch insects flushed by the scratching pitta, almost colliding with the pitta several times. The pitta responded with a ducking posture. Fledgling Rainbow Pittas within a few hours of leaving nests are clumsy. One fledgling showed a ducking posture similar to the one above, when I approached to within 5 m, before capture by hand. Older nestlings, when collected from nests for examination, showed similar behaviour, differing only in that the head was pointed downward.

Behaviour similar to the ducking posture of the Rainbow Pitta has been described for Noisy Pittas (Perrins & Middleton 1985, Schodde & Tidemann 1986) and Blue-rumped Pittas (Perrins & Middleton 1985). The head of the Blue-rumped Pitta is, however, bent low over the back to expose a triangular white-spotted patch below the throat. Lee et al. (1989) described a similar behaviour in captive nestlings of Hooded Pittas. On each occasion I witnessed the ducking posture, the bird had no chance to flee from the potential predator. This behaviour is almost certainly a defensive anti-predator posture.

Conclusions

This paper provides information about the behaviour of Rainbow, Noisy and Red-bellied Pittas which may be of assistance in interpreting the behaviour of other pitta species. Several pittas like Gurney's Pitta *P. gurneyi* in Burma and peninsular Thailand (Round & Treesucon 1986), Schneider's Pitta *P. schneideri* in Borneo (Hurrell 1989) and the Superb Pitta *P. superba* on Manus Island off Papua New Guinea (Dutson & Newman 1991) are endangered and urgently need behavioural and ecological studies as a basis for conservation actions.

Acknowledgements

I thank Dr Richard Noske for advice and support throughout the study and Don Franklin for comments on a draft of the manuscript. I am also grateful to David Percival for the drawings of Figure 1, the Department of Primary Industry and Fisheries for providing facilities during my visits to Fogg Dam and David Farlam and other staff of the Conservation Commission of the Northern Territory for their support. This study is part of a Ph.D. project funded by the Department of Employment, Education and Training, the Northern Territory University, the M.A. Ingram Trust, the Australian Nature Conservation Agency and the Conservation Commission of the Northern Territory.

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