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Red-capped (Papuan) Flowerpecker *Dicaeum geelvinkianum* calls Australia home

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Summary. We present the first evidence that the Red-capped (Papuan) Flowerpecker *Dicaeum geelvinkianum* breeds in Australia, and provide detailed descriptions of the plumage and morphometrics which confirm that the subspecies *D. g. albopunctatum* is present on the northern Torres Strait islands of Saibai and Boigu. A review of all previous sightings and our repeated field sampling trips (across different seasons) demonstrates that this species is resident in these areas.

Introduction

The Red-capped (Papuan) Flowerpecker *Dicaeum geelvinkianum* is a small brightly coloured passerine that is widespread within New Guinea. It was first detected in Australia on Saibai Island in the northern Torres Strait on 18 July 1996 (Lansley 2004). Since that time all observations in Australia have been made on either Saibai or nearby Boigu Island. Despite a recent increase in the frequency of sightings, the status of the Flowerpecker within the region has remained uncertain, and it has been suggested variously that it is a vagrant, regular visitor or resident within Australia (Clarke 2004; Lansley 2004; Higgins *et al.* 2006). A paucity of records and uncertainty regarding its status have also meant that it was not considered in a review of threatened and near threatened taxa that occur within this important avian bioregion (Garnett & Crowley 2000; though see Garnett *et al.* 2011 for a revised approach to threatened species assessments on these islands).

Our current research on Saibai and Boigu Islands involves mist-netting birds within the areas of mangroves and vine thickets adjacent to the townships on both islands (using call lures of various species, including the Red-capped Flowerpecker). We have made four 10-day trips to the islands, two in the dry season and two in the wet season. Additional birds seen and any breeding activity detected were also recorded during these visits. One of us (RHC) has made three additional trips to these islands, when mist-netting was not conducted.

Despite the close proximity of Saibai and Boigu Islands to Papua New Guinea (PNG), and a fauna that demonstrates that the area falls within a zone of considerable bioregional overlap, interest in the avian ecology of the north-western island group in the Torres Strait is surprisingly recent. As a consequence, our understanding of the avian communities is poor. Our aim here is to provide details on a species previously considered a vagrant to Australia, and so contribute to the growing body of knowledge concerning the avifauna in the Torres Strait.

Figure 1. Nest of Red-capped Flowerpecker, Saibai Island, 30.11.06. Left: female perched nearby with a (largely obscured) piece of nesting material in her bill. Right: female at nest-entrance with head inside the nest-chamber. Photos: Rohan H. Clarke

Figure 2. Adult male Red-capped Flowerpecker *D. g. albopunctatum*, Saibai Island, captured in a mist-net on 18.9.07. Photos: Rohan H. Clarke

Figure 3. Adult male Red-capped Flowerpecker *D. g. albopunctatum*, Saibai Island, captured in a mist-net on 19.9.07. Photo: Rohan H. Clarke

Figure 4. Immature male Red-capped Flowerpecker *D. g. albopunctatum*, Saibai Island, captured in a mist-net on 5.12.06. Photos: Rohan H. Clarke

Sightings and behaviour

Since early 2002 we have made seven trips to each of Saibai and Boigu Islands, and have recorded the presence of Red-capped Flowerpeckers on at least one of the islands on each trip (Table 1). Our sightings and a review of sightings made by others demonstrate that this species is present in both the wet and dry seasons in northern Torres Strait and, further, that it has been detected in all nine calendar months where extended (5 days or more) ornithological surveys have been conducted (Table 1). Red-capped Flowerpeckers were most often observed alone but occasionally small groups of two to four have been observed. Our highest count for a single day involved a total of eight individuals on Saibai Island on 24 February 2010: four (three males and one female) observed together in tall mangroves surrounding the cemetery and another four individuals (all males) observed at the other end of town (~2.5 km from the cemetery) several hours later. As males appeared to be holding territory and involved in much chasing at this time, we believe it is unlikely that individuals observed at one end of the town had then travelled 2.5 km through the intervening largely unsuitable habitat to be observed at the other end of town several hours later.

Red-capped Flowerpeckers were typically observed in flight above tall mangrove forest, perched in emergent mangrove trees (especially those with dead limbs), and foraging at various heights within mangrove forest and vine-thicket vegetation. Most individuals were quite direct in flight, moving rapidly from perch to perch. When more than one adult male was seen together, they were often observed chasing one another in tight loops around the tree-tops, in which they briefly

perched. They appeared to forage at all heights within the forest strata, including down to heights of ≤1 m on occasions. Most observations of feeding involved the taking of pale berries from Mangrove Mistletoe *Amyema mackayensis* (both male and female Flowerpeckers fed on these berries on Boigu and Saibai Islands, n = 10), gleaning of small invertebrates from among the leaves of mistletoe (n = 2), and apparent taking of nectar from the flowers of Yellow Plum *Ximenia americana* (n = 1). That this latter observation involved the direct consumption of nectar is supported by concurrent observations of Red-headed Honeyeaters *Myzomela erythrocephala* and Dusky Honeyeaters *M. obscura* clearly taking nectar from the same small flowers.

Red-capped Flowerpeckers called frequently. The most common call is very similar to the contact or flight call of the Mistletoebird *D. hirundinaceum*. This call is characterised as a single short sharp high-pitched *dzee* that is easily detected even when the observer is within dense vegetation. It is this call that commonly led to Red-capped Flowerpeckers being detected during our fieldwork. Occasionally observers confuse the twittering calls of Olive-backed Sunbirds *Nectarinia jugularis* with those of the Red-capped Flowerpecker, but with practice the two species are readily separated on call. On several occasions, perched males have also been heard to utter a relatively soft subsong involving a steady stream of melodious twittering and short whistles interspersed with mimicry of other local passerine species.

Records of breeding

Evidence of breeding of Red-capped Flowerpeckers has been observed on three separate occasions on Saibai Island. Firstly, in February 2002, a dependent juvenile was observed in close association with an adult female. Although no parental feeding was observed, this juvenile closely followed the female, and its plumage (including a partially grown tail) suggested that it had fledged only recently. On a second occasion (26 November 2004), a male was observed taking small berries from Mangrove Mistletoe, then flying off with these berries in his bill, and returning a short time later to gather more. This sequence of events was repeated at least four times during ~15 minutes of observation, suggesting that the male was attending either nestlings or recently fledged young nearby. Finally, on 30 November 2006, an active nest was located at a height of ~8 m in an emergent deciduous tree within the vine thicket to the east of the Saibai Island township (Figure 1). From a distance, the nest appeared largely complete. At ~1130 h EST, an adult female Flowerpecker was making regular visits (once every 1–2 minutes) carrying nesting material which was placed inside the suspended structure. This behaviour suggested that she was in the final stages of constructing a nest. A male had been heard calling regularly in the same area over the preceding 2 days, but at no time was he seen to alight on or enter the nest.

The nest was a pear-shaped pensile structure ~15 cm long and 8–9 cm in diameter at the widest point (Figure 1). Nest-material appeared to consist largely of white plant fibres (similar to the fibres obtained from the seed pods of the Kapok Tree *Ceiba pentandra*), but close inspection was not possible to confirm this.

Table 1. Sightings of Red-capped Flowerpeckers on Saibai and Boigu Islands, north-western Torres Strait, Queensland: all sightings known to the authors, though the list may not be exhaustive. Source: BARC = BirdLife Australia Rarities Committee (formerly Birds Australia Rarities Committee); dates refer to sighting-days not the duration of the visit, B-a = Birding-aus list archive, available online: http://bioacoustics.cse.unsw.edu.au/birding-aus/; TS = this study.

Date	*Island*	*Total*	*Male*	*Female*	*Juv./imm.*	*Season*	*Observers*	*Source*
16–19 Jul. 1996	Saibai	1+	1+	–	–	Dry	P. Lansley	Lansley (2004)
5 Feb. 2002	Saibai	2	–	1	1	Wet	RHC	TS/BARC case 357
26 Aug. 2002	Saibai	1	1	–	–	Dry	M. Carter *et al.*	BARC case 356
4–5 Sep. 2002	Saibai	2+	2+	–	–	Dry	T. Palliser *et al.*	BARC case 355
15–17 Nov. 2004	Boigu	4+	3+	1	–	Late dry	RHC	TS/BARC case 454
18–26 Nov. 2004	Saibai	4+	3+	1+	–	Late dry	RHC	TS/BARC case 455
25–29 Nov. 2006	Boigu	2	1	1	–	Late dry	RHC & JGE	TS
30 Nov.–5 Dec. 2006	Saibai	5+	4+	–	1	Late dry	RHC & JGE	TS
10–15 Sep. 2007	Boigu	3	2	–	1	Dry	RHC & JGE	TS
16–20 Sep. 2007	Saibai	3	3	–	–	Dry	RHC & JGE	TS
8–10 Oct. 2007	Boigu	2+	1+	?	?	Dry	R. Baxter *et al.*	B-a
10–12 Oct. 2007	Saibai	1	1	–	–	Dry	R. Baxter *et al.*	B-a
17–18 Oct. 2007	Saibai	3+	?	?	?	Dry	R. Baxter *et al.*	B-a
5–10 Jul. 2008	Boigu	3+	?	?	?	Dry	RHC & JGE	TS
12–17 Jul. 2008	Saibai	4+	?	?	?	Dry	RHC & JGE	TS
22–24 Feb. 2009	Saibai	3+	?	?	?	Wet	R. Baxter *et al.*	B-a
27 Feb. 2009	Saibai	1	1	–	–	Wet	R. Baxter *et al.*	B-a
15–21 Feb. 2010	Boigu	4	3	1	–	Wet	RHC & JGE	TS
21–27 Feb. 2010	Saibai	10	7	3	–	Wet	RHC & JGE	TS
16 Jan. 2012	Saibai	1	1	–	–	Wet	J. Weigel	J. Weigel pers. comm.
17 Apr. 2012	Boigu	1	1	–	–	Late wet	R. Baxter *et al.*	B-a
24–27 Aug. 2012	Boigu	4	3	1	–	Dry	RHC *et al.*	TS
27–29 Aug. 2012	Saibai	2	2	–	–	Dry	RHC *et al.*	TS

Figure 5. Male Red-capped Flowerpeckers at the eastern end of the township on Saibai Island. Left: *D. g. albopunctatum*, 26.11.04. Right: Subspecies unknown (see discussion), 19.11.04. Photos: Rohan H. Clarke

There was also some reddish-orange ornamentation on the sides of the nest adjacent to the entrance, apparently also plant fibres.

Description of plumage and morphometrics

Red-capped Flowerpeckers are structurally very similar to the widespread Australian flowerpecker, the Mistletoebird. They are tiny birds with a short bill of moderate thickness, plump body, and a very short, square-ended or weakly notched tail. In the field, they appear fractionally smaller than the Olive-backed Sunbird (an abundant resident in the northern Torres Strait).

All adult male Red-capped Flowerpeckers that we have observed were superficially similar in that they showed a red cap, rump and bib, but there was also some more subtle variation in plumage. One of the most obvious differences was that red plumage tracts varied between individuals, from scarlet (similar to a Scarlet Robin *Petroica boodang*) to a more orange-red (similar to a Flame Robin *P. phoenicea*); the front cover and Figures 2 and 3 demonstrate this tonal difference well. In individuals seen well, or captured in a mist-net, the red cap could be seen to extend from the base of the upper mandible to the rear of the crown. The nape, neck, mantle and back were dark olive-grey, with most feathers here tipped glossy blue-black. The wings and uppertail were very dark grey (almost black), with those areas that remained exposed in the closed wing and tail carrying a distinctive blue gloss. The lower rump and uppertail-coverts were red (nearly identical in colour to the cap and bib of the individual). All adult males showed a distinctive red bib, but there was some obvious variation in the extent to which the red feathering extended onto the breast and sides of the breast. Several individuals showed a reduced bib that was rounded at the base and reached a point just below the shoulder of the closed wing, whereas in others the lower edge of the breast-patch was concave, with the red coloration extending diffusely onto the sides of the breast (front cover, Figures 2–3, 5). In the hand, each red-tipped

Table 2. Morphometric data from Red-capped Flowerpeckers caught in mist-nets during research on Saibai Island, Torres Strait. All measurements other than mass are recorded in millimetres.

	Date	*Mass (g)*	*Wing*[1]	*Tail*	*Head–bill*	*Tarsus*[2]
Adult male 1	18 Sep. 07	7.5	57	28	24.1	11.8
Adult male 2	19 Sep. 07	7.0	56	29	24.0	12.5
Immature male	5 Dec. 06	6.5	53	24	23.0	11.0

[1]Maximum chord
[2]Tarsus was measured from the bent foot to the notch on the intertarsal joint

(adult) feather on the throat and upper breast of the immature male (see below) showed a broad area of white between the red tip and a dusky base. The vent and undertail-coverts were variably washed pink. Most individuals, including the three males captured, showed pale flanks, and the lower breast and belly clearly displayed an olive wash. Several individuals with a smaller more-rounded red bib, however, lacked the olive tones, and thus displayed colder paler grey underparts (Figure 5, right). In each adult male, the bill was sooty grey (slightly paler towards the base of the lower mandible), the legs and toes were sooty grey, and the eyes were dark brown.

Red-capped Flowerpeckers are strikingly sexually dimorphic in plumage, and the few females observed (see Table 1) were essentially dark olive-grey above and pale olive-grey below. Although we are yet to obtain high-quality images in the field or to capture an adult female, two notable characters in the female's otherwise drab plumage were readily observed in the field: an indistinct reddish-pink cap restricted to the top of the crown and isolated from the bill by a dark olive-grey forehead, and a pale-pink coloration to the vent that extended onto the undertail-coverts. Coloration of bare parts appeared similar to that of adult males.

Juvenile individuals are superficially similar to adult females. An immature male captured in December 2006 had partially acquired adult plumage, yet remnant juvenile plumage demonstrated that it did not yet have a fully red cap or breast but would have shown pale pinkish-yellow on the vent and undertail-coverts (Figure 4). Retained juvenile plumage on this individual was consistent with a much younger (recently fledged) juvenile observed in February 2002, where there was also a notable absence of pink or red on the crown, which instead appeared olive-green. The colour of the bill in the juvenile seen in February 2002 was not noted, but the immature male captured in December 2006 had a pale-orange base to the bill. This indicates that the bill of a young juvenile Red-capped Flowerpecker may be orange (as depicted in, but not referred to in the text of, Cheke *et al.* 2001; also P. Gregory *in litt.* 18 July 2012), as is the case in the closely related Mistletoebird (Higgins *et al.* 2006).

For the three male Red-capped Flowerpeckers that have been caught in mist-nets on Saibai Island (front cover, Figures 2–4) we summarise basic morphometric data (Table 2).

Discussion

Red-capped Flowerpecker as a breeding resident in Australia

Based on the evidence presented here, the Red-capped Flowerpecker should be treated as a resident species in Australia. Multiple visits spanning more than a decade and field surveys during both wet and dry seasons here consistently revealed the presence of this species in the vine thickets and adjacent mangroves near the townships on both Saibai and Boigu Islands (Table 1). Furthermore, we have now recorded breeding activity on multiple occasions. Timing of these observations suggests that breeding commences during the late dry season and continues into the wet season, at least at the southern extreme of the Flowerpecker's distribution. We note, however, that because of the small sample size, further observations are required to confirm the seasonal nature of breeding in the Torres Strait. Nevertheless, these observations are consistent with those of Cheke *et al.* (2001), who reported laying in the months of November to December on Fergusson Island, eastern PNG (Fergusson, Boigu and Saibai Islands are all situated at 9°S).

Field identity

The Red-capped Flowerpecker is the smallest bird species in the Torres Strait and, with a mass of ~7 g, is ~1 g heavier than the Weebill *Smicronis brevirostris,* which is widely recognised as the smallest bird on the Australian mainland (e.g. Higgins & Peter 2002). In most measurements (wing, tail and head–bill lengths), the three male Red-capped Flowerpeckers captured were slightly smaller than the Australian (nominate) subspecies of the Mistletoebird (Rogers *et al.* 1986; Higgins *et al.* 2006). As one of the three male Red-capped Flowerpeckers captured had a slightly longer tarsus than the observed range in Mistletoebirds (12.5 mm c.f. 10.1–12.2 mm, $n = 48$: Higgins *et al.* 2006), it is possible that the species may stand slightly 'taller' in the field when compared with the Mistletoebird.

On the Torres Strait islands, the call of the Red-capped Flowerpecker can be considered diagnostic, because of the absence of the Mistletoebird (which has a very similar contact call) there, and is usually the most frequent means of detection. Males and females are readily identifiable on plumage, and juveniles can be separated from adult females by their duller plainer plumage, including the absence of red in the crown. Juveniles have previously been reported to show a reddish bill with a dark tip (Higgins *et al.* 2006), but from our observations on an immature male, and by corollary with the Mistletoebird, we suggest that recently fledged Red-capped Flowerpeckers may show a bright-orange bill. Here we also provide the first description and photographs (Figure 4) of an immature male transitioning to adult plumage (see Higgins *et al.* 2006, who stated that the immature plumage of the Red-capped Flowerpecker was unknown).

Identity of subspecies

The Red-capped Flowerpecker is closely allied to the Olive-crowned Flowerpecker *D. pectorale* and the Louisiade Flowerpecker *D. nitidum*, and previous authorities have treated the three forms as a single species—the Papuan Flowerpecker *D. pectorale* (e.g. Beehler & Finch 1985; Beehler *et al.* 1986; Coates 1990; but

see Rand & Gilliard 1967). Even within the Red-capped Flowerpecker, however, the taxonomy is complex, and Rand & Gilliard (1967), Cheke *et al.* (2001) and Cheke & Mann (2008) recognised 11 subspecies that occupy the lowland and foothill areas of both northern and southern New Guinea. Only two subspecies, however, bear any superficial resemblance to the Torres Strait individuals and, coincidentally, these are also the two subspecies reported to occur within the Trans-Fly region of southern New Guinea: *D. g. albopunctatum* and *D. g. rubrigulare* (Salomonsen 1960; Cheke *et al.* 2001; Higgins *et al.* 2006; Cheke & Mann 2008). These subspecies are distinguished by the differing tone of red on the crown and uppertail-coverts, the size of the red patch on the breast, the colour of the upperparts, uppertail-coverts and vent, and the colour of the base of the red feathers (Salomonsen 1960; Cheke *et al.* 2001). Based on early field observations and known extralimital distribution, Higgins *et al.* (2006) concluded that the subspecies most likely to occur on the northern Torres Strait islands is *D. g. albopunctatum*. Our detailed descriptions of the plumage (including the white areas between the red tips and dusky bases of red plumage tracts) of Red-capped Flowerpeckers captured in mist-nets and photographs of free-flying individuals demonstrate unequivocally that the subspecies *D. g. albopunctatum* occurs on the northern Torres Strait Islands. This is expected, given the putative range of this subspecies just to the north in New Guinea (see Salomonsen 1960 for map). Although data are sparse, the individuals captured in the Torres Strait are also broadly similar, though slightly heavier and larger, than three male *D. g. albopunctatum* sampled from the Trans-Fly region of New Guinea (mass 4, 6 and 6 g; length of wing 51, 54 and 55.5 mm; tail 24, 25.5 and 26 mm; two tarsus measurements of 11.5 mm: Mees 1982).

Surprisingly, in addition to observations of *D. g. albopunctatum,* field observations and photographs of further adult males demonstrate that a second form may also occur in the northern Torres Strait. These individuals show a much reduced red breast-patch and colder grey underparts (lacking the olive wash) when compared with *D. g. albopunctatum* in the region (e.g. Figure 5). These features are apparently largely consistent with *D. g. rubrigulare* (and to a lesser extent with *D. g. rubrocoronatum* in south-eastern PNG), which has been described as having less red on the chin and throat, a reduced red bib that does not extend onto the sides of the breast, and slightly darker underparts (Salomonsen 1960; Rand & Gilliard 1967; Cheke *et al.* 2001; Higgins *et al.* 2006). Because of the small number of observations and poor documentation, however, these sightings raise more questions than they supply answers: for example, is *D. g. albopunctatum* more variable than the limited examination of museum specimens suggests, is the hybrid zone between these two subspecies closer to the northern Torres Strait islands than previously described (also Lansley 2004), or do non-breeding *D. g. rubrigulare* individuals move south and west into the range of *D. g. albopunctatum* at certain times of year? Until more detailed documentation is available through further sightings and, ideally, capture of such individuals in Torres Strait, a resolution is not possible.

Here we have contributed new information concerning a novel member of the Australian avifauna in a poorly studied region. Nevertheless, much remains to be

learnt about this (and other) species in the region, and observers are encouraged to thoroughly document all observations of the Red-capped Flowerpecker so that more can be added to our current knowledge base.

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