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Notes on the breeding ecology and seasonality of some Brazilian birds

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RESUMO: Notas sobre biologia reprodutiva e sazonalidade de algumas aves brasileiras. São apresentadas algumas informações sobre a biologia reprodutiva e sazonalidade de 52 espécies de aves brasileiras, incluindo 12 espécies endêmicas, baseadas em observações de campo realizadas desde o ano de 2000. As observações foram feitas principalmente na Mata Atlântica e no leste da Amazônia brasileira. A maioria foi realizada em três localidades: Parque Nacional do Itatiaia (Estado do Rio de Janeiro), Cristalino Jungle Lodge (Mato Grosso) e o mosaico das áreas protegidas em Carajás (Pará). São descritas plumagens dos jovens de *Porzana albicollis* e *Neocrex erythrops*, e os primeiros ninhos de *Picumnus temminckii*, *Phylloscartes difficilis* e *Dacnis nigripes*, além dos primeiros dados sobre sazonalidade, ninhos e/ou os jovens de *Veniliornis maculifrons*, *Celeus torquatus*, *Carpornis cucullata*, *Hylopezus nattereri*, *Lamprospiza melanoleuca* e *Thraupis cyanoptera*. Também são apresentadas informações sobre espécies ameaçadas ou pouco conhecidas, como *Hemitriccus furcatus*, *Contopus nigrescens* e *Sporophila schistacea*.

PALAVRAS-CHAVE: reprodução, ninhos, sazonalidade, *Porzana albicollis*, *Neocrex erythrops*, *Veniliornis maculifrons*, *Celeus torquatus*, *Carpornis cucullata*, *Hemitriccus furcatus*, *Contopus nigrescens*, *Hylopezus nattereri*, *Lamprospiza melanoleuca*, *Thraupis cyanoptera*, *Sporophila schistacea*.

KEY-WORDS: breeding ecology, nests, seasonality, *Porzana albicollis*, *Neocrex erythrops*, *Veniliornis maculifrons*, *Celeus torquatus*, *Carpornis cucullata*, *Hemitriccus furcatus*, *Contopus nigrescens*, *Hylopezus nattereri*, *Lamprospiza melanoleuca*, *Thraupis cyanoptera*, *Sporophila schistacea*.

In his review of Brazilian ornithology prior to the middle of the 20th century, Sick (1997) could point to relatively few workers who had published extensively on the nests and eggs of the country's birds. Particularly important among these were Karl Euler and Hermann von Ihering in the late 19th and early 20th centuries, Emilie Snethlage in the first third of the 20th century, and Olivério Pinto's work pertaining to the collections made by Carlos Estevão around Belém, Para. To this list can be added several of Sick's own publications (although these generally dealt with single species for which few or no previous data had been published), Ruschi's various publications on hummingbirds, and Yoshika Oniki and Edwin Willis's papers covering breeding seasons of birds around Belém and Manaus. Despite these efforts, the spate of recent monographs of bird families around the world and the ongoing *Handbook of the birds of the world (HBW)* series reveal numerous gaps in our knowledge of the breeding biology of Neotropical species in general, amongst them many in Brazil. However, it might be noted as an aside that coverage by authors of the *HBW* series has been rather uneven, and has frequently overlooked many of the papers just mentioned. For instance, Oniki and Willis (1983c) found three nests of the very poorly known Buff-browed Chachalaca *Ortalis superciliaris*, but

their breeding data (the most detailed available) were overlooked by del Hoyo (1994) and del Hoyo and Motis (2004) in their accounts for the species. Here I present anecdotal data on the breeding and seasonality of 52 species of Brazilian birds, amongst them 12 country endemics.

METHODS

All of the observations presented herein were made opportunistically, mainly whilst leading bird tours in both east Amazonian and south-east Brazil, and were made since 2000. In large part because of these constraints, it proved impossible to 'follow' nests, weigh eggs, or to spend long periods observing adult behaviour, e.g. to gain 'snapshot' examples of adult provisioning rates etc. My fieldwork has been concentrated in the period August to March, which covers the main breeding periods for birds in the Atlantic Forest region and in the Serra dos Carajás, Pará, two regions from which many of the records presented herein come. All measurements of distance are estimates. Taxonomy and nomenclature follows that of Gill and Wright (2006). My observations are mainly set within the context of previously published information

collated in general reference works. Few efforts have been made to uncover all available data for the species included here, but most readily available sources of information have been covered.

Species Accounts

Grey Tinamou *Tinamus tao*

I was shown a recently abandoned nest of this species, containing three greenish-blue large spherical eggs, at Cristalino Jungle Lodge, northern Mato Grosso, on 17 August 2007. The nest and eggs matched descriptions in the literature (Davies 2002).

Brown Tinamou *Crypturellus obsoletus*

An adult with a small young, probably just a few days old, and still in down, were observed on a road within Parque Estadual Intervalas, São Paulo, on 28 November 2008. Little has been published concerning breeding season: Cabot (1992) mentioned September to November in southeast Brazil, and Davies (2002) repeated the same, as well as October in southeast Peru. Basic information on clutch size and incubation period are also available (Euler 1900, Davies 2002); whether the single young observed at Intervalas was really the only surviving member of the clutch cannot be determined.

Bare-faced Curassow *Crax fasciolata*

Together with H. Shirihai, I observed a pair with a single small young (sexed as a female, based on the white-tipped crest) in tall gallery forest on the north bank of the rio Pixaim, in the Pantanal of Mato Grosso, on 3 November 2006 (Figure 1). At Emas National Park, Goiás, on 22 December 2008, I observed a pair with two similar-sized young, one obviously male based on the largely black plumage and yellow bill, and the other female; generally the male young closely followed the adult male and the young female stayed close to the adult female. Despite this curassow's comparatively wide distribution and relative abundance, published breeding data are surprisingly few, as already noted by del Hoyo and Motis (2004) and Bruno *et al.* (2006).

Ash-throated Crake *Porzana albicollis*

On 1 February 2002, together with D. Beadle, A. Grosset and J.C. Minns, in the Serra dos Carajás, Pará, our local guide, Joraci José Grigilo, caught a small chick, presumably of this species, on a grassy slope adjacent to a dirt road within a mosaic of forest and grassland. The chick was *c.* 7 cm in total length. Most of the down on the underparts, head and nape was buffy-brown, but with an obvious pale grey-white chin and upper throat, much darker area around the eye and line of very dark feathers from the bill, over the centre of the crown to the mantle.



FIGURE 1: Family of Bare-faced Curassows *Crax fasciolata*, rio Pixaim, Pantanal, Mato Grosso, November 2006 (Hadoram Shirihai).

The rest of the upperparts were generally dark grey, especially on the wings, which were still in pin. The legs were quite bright pink and the bill was generally flesh-pink with dark tip to the upper mandible; the irides were dark (Figure 2). Because there was a Rufous-sided Crake *Laterallus melanophaius* singing c. 20 m away at the foot of the slope, we originally assumed that the chick was also of this species, but Taylor and van Perlo (1998) mention that all of the described chicks of the genus *Laterallus*, including *L. melanophaius*, are all black. Based on the habitat in which the chick was found, and some similarities between the downy young we found and the description of the juvenile of Ash-throated Crake (Taylor and van Perlo 1998), especially the pale chin and throat, I believe that the species involved was *P. albicollis*. The only other rallid to occur in such open habitats in the Serra dos Carajás is Russet-crowned Crake *Anurolimnas viridis* (Pacheco *et al.* 2007). The downy young of both Ash-throated and Russet-crowned Crakes are undescribed, and the only detailed information concerning the breeding ecology of the former is based on observations from Trinidad and Guyana (Taylor and van Perlo 1998). Based on these latter data, it appears that breeding might be expected at any time of the year across the Ash-throated Crake's wide range.

Paint-billed Crake *Neocrex erythrops*

In the early evening of 24 October 2000, along the entrance road to Fazenda Angelim, just north-east of the town of Ubatuba in the littoral of north-east São Paulo state, I observed a pair of this infrequently seen rallid with three small, still down-covered young, feeding on the edge of the dirt road. Because the young soon scattered into the roadside vegetation, followed by the adults, it proved impossible to accurately determine the coloration of the bare parts, but the down appeared grey-black and I



FIGURE 2: Ash-throated Crake *Porzana albicollis* chick, Serra dos Carajás, Pará, February 2002 (Arthur Grosset).

estimated them to be less than five days old. At this time, the area immediately surrounding Fazenda Angelim was largely unpopulated and there was much relatively undisturbed, c. 50 cm tall, rank, wet grassland. More recently, the area has become steadily more built-up, whilst houses now more or less completely line this dirt road and grassy areas are much reduced. Paint-billed Crake has not subsequently been recorded in this area (*pers. obs.*). Taylor and van Perlo (1998) collated published breeding data from several South American countries, but my datum appears to be the first to be published from Brazil, and the first indication as to the appearance of the downy young. The species is rare in the state of São Paulo, with just one documented record (Silva e Silva and Olmos 2007).

Ocellated Poorwill *Nyctiphrynus ocellatus*

On 19 August 2007, at Cristalino Jungle Lodge, northern Mato Grosso, I was shown a typical ground nest of this species with two eggs, being incubated by the female, < 1 m from a regularly used trail very close to the lodge buildings (Figure 3). Anderson (2000) had already noted the apparent propensity of this species to nest near trails or other partially open areas in forest. Cleere and Nurney (1998) and Holyoak (2001) summarised available breeding data for *N. ocellatus*; although relatively few nests of the species appear to have been described in the literature, from Brazil (Bokermann 1978), Honduras (Anderson 2000) and Paraguay (Madroño and Esquivel 1997), it is obvious that Sick (1997) found nests in both Espírito Santo and Mato Grosso, Brazil, and Robbins and Ridgely (1992) suggested that the species might be expected to breed in July to September across South America. In the Atlantic Forest biome (*e.g.* in the lowlands of Espírito Santo and Bahia, vocal activity appears to peak in the last third of the year (*pers. obs.*), suggesting that the season might be even later there, as also evidenced by the date of the Paraguay nest (27 October).



FIGURE 3: Ocellated Poorwill *Nyctiphrynus ocellatus*, on nest, Cristalino Jungle Lodge, Mato Grosso, August 2007 (William Price).

**Pauraque *Nyctidromus albicollis* |
Blackish Nightjar *Caprimulgus nigrescens***

On 30 August 2004, in the Serra dos Carajás, Pará, I found a nest of Blackish Nightjar with one pinkish-buff egg, within 150 m of a nest of Pauraque *Nyctidromus albicollis* (with two eggs), both of them atop a 30 cm-high sandy bank heavily strewn with dead leaves. Breeding behaviour of both species is quite well known relative to other Neotropical Caprimulgidae, being summarised by Cleere and Nurney (1998) and Holyoak (2001), for *C. nigrescens* based primarily on observations of Ingels (1981), Ingels *et al.* (1984) and Haverschmidt and Mees (1994), but also diverse other observations from across the range. The nests of both species in the Serra dos Carajás were typical; as noted by Oniki and Willis (1982a, 1983d) and Holyoak (2001), *C. nigrescens* does not always nest on bare rock. For Blackish Nightjar my observation accords well with seasonality known from the Belém and Manaus regions (Pinto 1953, Oniki and Willis 1982a), although at the former Oniki and Willis (1983d) found nests in six months between April and December. Surprisingly, breeding seasonality for Pauraque in Amazonian Brazil appears to be surprisingly poorly known, except around Belém, where Oniki and Willis (1983d) found a total of 30 nests in all months between May and December, albeit with a clear peak in June to October. At Manaus, the same observers found single nests in late August and mid September (Oniki and Willis 1982a). I have a record of a nest with an incomplete clutch of one egg in the northeast Peruvian Amazon in late September. In the Atlantic Forest, I have breeding records (nests with eggs or small young) for Pauraque between at least September and February (*pers. obs.*). Euler (1900) already mentioned nests of Pauraque in this region with recently hatched chicks in late September, and eggs in October and January.

Great Dusky Swift *Cypseloides senex*

On 29 September 2002, from the base of the Casca D'Anta waterfall, in the Serra da Canastra National Park, Minas Gerais (one of the species' relatively few known breeding sites), I observed at least two pairs at nests (of an estimated 400-500 individuals present). The first pair was seen to 'change over' at the nest, which was situated in a narrow cleft in the horizontal rock wall < 5 m from the main body of water. Through a telescope, the top of the cone-shaped nest appeared to be a grassy pad a few centimetres high and *c.* 10 m long (estimated when the bird was perched on it). One bird replaced the bird initially seen on the nest, bringing some additional fresh grassy material, which it added to the structure once it was settled on the nest. The material was collected from an area immediately nearby (< 2 m below the nest), and

other individuals of the same species also appeared to be engaged in taking material from the same patch of vegetation. The second nest to be located was much nearer the falls and was sited in a quite large natural grass hummock, making it impossible to ascertain the proportions of the actual nest itself. Neither nest was located directly behind the waterfall. Chantler and Driessens (2000) were unable to provide much information about the breeding of this species, all of it based on Sick (1997), although de la Peña (1994) had already provided nest and egg dimensions based on observations at Iguazú, Misiones, Argentina, in mid October 1981. Together with J. Mazar Barnett, J.C. Minns and H. Remold, I observed an adult Great Dusky Swift on a nest behind a waterfall at Parque Provincial Salto Encontrado, Misiones, Argentina, on 21 November 2002. From my observations and those of Pichorim and Lorenzetto (2004), it seems that at least some Brazilian populations breed at the same season as that in northeast Argentina (*i.e.* the austral spring).

Black-throated Mango *Anthracothorax nigricollis*

On 17 August 2007, at Cristalino Jungle Lodge, northern Mato Grosso, I observed a nest of this species placed on the branch of a broken tree that was just *c.* 1 m above the surface of the rio Cristalino and *c.* 5 m from the bank of the river, almost in mid stream. It was thus well exposed to direct sunlight for long periods of each day. Schuchmann (1999) already noted the propensity of this species to nest in exposed situations, albeit usually much higher above the ground. The small, open-cup nest contained two young, their feathers still in pin. The nest's structure and coloration closely matched that recently described and photographed by Greeney and Merino (2006) in eastern Ecuador, which nest was also in August and was also placed low over water, albeit still not flowing. Oniki and Willis (1982b) found an August nest built over a swimming pool at Manaus, and they also found an August nest at Belém (Oniki and Willis 1983d). Snelhage (1935) found a nest with two eggs in Amazonian Brazil *c.* 2 m above the surface of the rio Iriri in the first half of July. Schuchmann (1999) stated the breeding period to occupy December to July, but Hilty and Brown (1986), in summarising breeding data for Colombia, suggested that the species might be expected to nest virtually year-round.

Rusty-breasted Nunlet *Nonnula rubecula*

Some 11 km south of Pirapora, in northern Minas Gerais, on 5 December 2008, I found a pair of this nunlet, which is common in tropical dry deciduous forest beside the Rio das Velhas, feeding two fledged young perched on branches less than 2 m above ground. The young were effectively identical to the adults in plumage,

but possessed obviously shorter bills and marginally more striking pale eye-rings. Only once was it possible to identify any of the food items brought for the young, namely a large insect larva. All four birds remained in close proximity to an abandoned termitarium suspended in a bush *c.* 1.5 m above the ground at a forest edge, which at least one of the adults was seen to enter. It is possible that the nest had been sited in this termitarium, although it is equally plausible that the adult that visited it was merely foraging. The very few previous nesting data for this species were summarised by Rasmussen and Collar (2002): the nest is suspected to be a hole in a bank or a tree, and an immature has been observed in Amazonia in November. My data indicate that the species breeds at a similar season in southeast Brazil, and also raise the possibility that the species might, at least occasionally, use arboreal termitaria for nesting, like some other puffbirds (*e.g.* Russet-throated Puffbird *Hypnelus ruficollis* and Chestnut-capped Puffbird *Argicus macrodactylus*). Rasmussen and Collar (2002) could point to very few breeding data for any of the *Nonnula*, but the nest of the Brown Nunlet *N. brunnea*, in a hole at the base of a tree, has recently been described from Peru (Dauphiné *et al.* 2007).

White-barred Piculet *Picumnus cirratus*

Three nests found at the same locality, near Sumidouro, in north-central Rio de Janeiro, all very close to a dirt road in a relatively dry forest fragment with a canopy height of *c.* 10–15 m and a rather open understorey. On 19 October 2004, an adult was observed bringing small white larvae to a nest hole, 2 m above ground, in an unidentified narrow-trunked tree species, which judging from the sounds emanating from within contained more than one young. The nest hole was shielded from above by a *c.* 10 cm-wide fungal growth. In the morning of 24 October 2005, in the same general area, I watched a male excavating a nest hole just 2.5 m above ground in a tree. Finally, on 3 October 2007, a pair was observed entering a hole in a tree just a few metres from the 2005 nest, being sited < 6 m above ground in a broken-off tree fork. Breeding is comparatively well known for this species (*cf.* Winkler and Christie 2002), although information on incubation and fledging periods is lacking, but it is interesting to note that all three nests faced west to north-west, and were within a total radius of < 10 m, indicating strong site faithfulness by what was presumably the same pair or their offspring.

Ochre-collared Piculet *Picumnus temminckii*

Together with H. Shirihai, I found an adult male attending a nest at the southern end of Ilha Comprida, in southern São Paulo state, on 22 October 2007. The nest was sited in a small grove of trees isolated on all sides

from the *restinga* forest characteristic of this island. The nest tree's canopy was slightly lower than the rest of the grove of trees, which reached 5–6 m above ground, and the nest hole itself was *c.* 2.5 m above the ground. It was impossible to see into the nest from the ground, making it impossible to establish whether young were present, although the male was observed taking food inside (no female was seen). For this species, Winkler and Christie (2002) were only able to state that it 'presumably nests in Oct-Mar', making mine the first definite breeding data for this southern Atlantic Forest endemic.

Yellow-eared Woodpecker *Veniliornis maculifrons*

On 17 August 2004, in foothill Atlantic Forest, at a locality known as Garrafão, below Teresópolis, Rio de Janeiro, I found a pair of this Brazilian endemic with at least one well-grown young in an unidentified tree, *c.* 30 m tall. The nest hole (diameter *c.* 7 cm) was in the main trunk of the tree, at *c.* 18 m above ground. Winkler and Christie (2002) were unable to present any concrete breeding data and simply stated 'Presumably breeds in Sept-Oct.' My discovery of a nest in mid August indicates that the breeding season is, unsurprisingly, more protracted. To date, there seems to be no species of *Veniliornis* for which incubation or fledging periods are known (Winkler and Christie 2002).

Yellow-browed Woodpecker *Piculus aurulentus*

On 1 August 2005, on a narrow trail at *c.* 1,200 m, in Itatiaia National Park, Rio de Janeiro, I observed a pair excavating a nest hole, 5 m up in a canopy-height tree. Published breeding data for this species are very few (Winkler and Christie 2002), and apparently solely based on a nest found in northeast Argentina, 7 m up, in September (Hartert and Venturi 1909, de la Peña 1994).

Ringed Woodpecker *Celeus torquatus*

On 7 October 2003, in the Reserva Biológica de Sooretama, Espírito Santo, I observed a lone Ringed Woodpecker apparently prospecting a nest site in the upper midstorey (*c.* 15 m above ground) of a canopy height tree. Nothing is apparently known concerning the breeding of this species (Winkler and Christie 2002), making it particularly surprising that the first (albeit anecdotal) data to become available should be for the highly range-restricted taxon *C. t. tinnunculus*, which is found only in the lowlands of eastern Brazil in the states of Espírito Santo and Bahia. Together with the nearby CVRD (now simply Vale) Linhares reserve, the Reserva Biológica de Sooretama must represent an important site for this rare taxon, despite that Parker and Goerck (1997) did not register the species during their surveys of the biological reserve.

Hooded Berryeater *Carpornis cucullata*

On 10 March 2006, at the Estrada da Graciosa, Paraná, I observed two fledged young accompanying at least one adult, soliciting food. Unfortunately, this intriguing observation was rather brief and it was impossible to confirm whether two adults were definitely present or their sex, although I initially had suspected that a pair of adults was involved. The genus *Carpornis* is represented by two closely related species that are confined to the forested belt of eastern and southeast Brazil. The predominance of black, green and yellow in the plumage points to their being ecological counterparts of the *Pipreola* fruit-eaters of the Andes, and these two genera are amongst the very few cotingas known or speculated to indulge in courtship feeding (Snow 1982). Furthermore, those data available indicate that *Pipreola* are amongst the relatively few cotingas in which males also take some share of nestling care (Snow 2004a). Further observations are clearly desirable to prove or deny the possibility that *Carpornis* might be similar in this respect. The nest of this, the commoner of the two berryeaters, is apparently unknown. Belton (2003) mentioned a male with enlarged testes collected in Rio Grande do Sul in July, whilst the Museu Nacional Rio de Janeiro has examples of both sexes in breeding condition dated mid June (which seems exceptional) to early February (*pers. obs.*). Moulting data suggest that birds lay in September–October. That males (like most cotingas) moult slightly earlier than females suggests that they take little part in nesting duties (Snow 1982). Ihering (1900) described the eggs of this species as being ashy-yellow with grey-brown spots and blotches, but as at least some of his identifications have proven erroneous with time, confirmation of this is desirable.

Flame-crested Manakin *Heterocercus linteatus*

Snow (2004b) was unaware of any published information on breeding, but there is a less than half-grown chick, collected from a nest by H. Sick, in the Museu Nacional, Rio de Janeiro (MNRJ 1375). It was taken on 2 August 1949, with the female tending it, at a locality known as Diauarum, on the upper rio Xingu, in northern Mato Grosso (11°12'S, 53°14'W). The chick still had extensive downy feathers over the breast, head and upperparts, but the wing feathers were no longer in pin. No further details are known.

Green-backed Becard *Pachyramphus viridis*

A pair of this distinctive becard was observed on 17 November 2006 at a nest in a small patch of Atlantic Forest (mean canopy height *c.* 10 m), at the Reserva Particular

do Patrimônio Natural do Caraça, Minas Gerais. They repeatedly chased an Orange-eyed Thornbird *Phacellodomus ferrugineigula* that landed close to the nest, which was the typically untidy-looking globular structure constructed by *Pachyramphus*. It was sited *c.* 5 m above the ground. I found another nest of *P. viridis* in the early stages of construction, *c.* 4 m above the ground in a *c.* 20 m-high jatobá tree beside a seasonal-flowing stream, near the Rio das Velhas south of Pirapora, in northern Minas Gerais, on 6 December 2008. Both adults were bringing material (straw, dead leaves and other soft items) at regular intervals, and usually in tandem, although the male typically arrived first. Several species of tyrannids were nesting in the same tree at the same season. The nesting of this species is well known in Argentina (Fitzpatrick *et al.* 2004), but there seem to be remarkably few published breeding data for Brazil since the detailed description by Euler (1900), who mentioned a nest initiated in late September that had two eggs by November, although Mitchell (1957) discovered a nest in a Paraná Pine *Araucaria angustifolia* at Itatiaia National Park on 6 November 1957.

Black-capped Piprites *Piprites pileata*

On 24 February 2006, along the Agulhas Negras road, within the upper part of Itatiaia National Park, at the boundary between Rio de Janeiro and Minas Gerais, I observed a family party of four *Piprites pileata*. One of the young accompanied the male, and the other the green-backed female, both within the same large mixed-species flock, and both juveniles solicited food from the relevant adult. Unfortunately, the observations were insufficiently prolonged to note any salient plumage differences from the adults. The nest of this globally threatened species endemic to the Atlantic Forest biome was only recently described, from northeast Argentina (Cockle *et al.* 2008). Elsewhere, a male has been collected with much-enlarged testes and courtship display (involving wing- and tail-fanning) has also been observed in September, in Rio Grande do Sul, southernmost Brazil (Belton 2003), and subadults have been collected in March and May.

Serra do Mar Tyrannulet *Phylloscartes difficilis*

I found a nest with an unknown number of young in Itatiaia National Park, Rio de Janeiro, on 1 December 2008, at *c.* 1,700 m, sited within a small wet ravine beside the Agulhas Negras road, close to the border with Minas Gerais. It was placed *c.* 1.2 m above ground within a hanging 'tail' of moss, apparently naturally attached to the trunk of an unidentified understorey tree with a dbh of *c.* 20 cm (Figure 4). Although the mossy covering extended around virtually the whole trunk at this point, the pronounced 'tail' was restricted to one side, out of

direct sunlight, and extended up to 7 cm directly away from the tree, and some 12 cm downwards, forming a slight triangular shape. The surroundings of the tree were characterised by a dense understorey with many bamboos. The nest itself comprised a long tubular entrance, of *c.* 10 cm, and a ball-shaped domed cup, thus conforming to the closed/retort/pensile type described by Simon and Pacheco (2005). Other than the outer contents being entirely of moss, it was only possible to ascertain that the small part of the interior that was just visible comprised some dark rootlets. Both adults brought food at frequent intervals, often within a short period (< 10 seconds) of each other, arriving at one of the same few perches within *c.* 2 m of the nest, perching briefly then flying straight into the nest, and exiting within usually < 5 seconds, flying immediately more than 5 m distant and typically uttering the characteristic bill-snapping of this species in flight as they departed. Most food items consisted of unidentified, small arthropods, but once a small white lepidopteran was brought. The nests of many of this species' congeners remain undescribed, and for this species Fitzpatrick *et al.* (2004) were able to state only that the season was likely to be September to January. Mine are apparently the first concrete breeding data for this endemic to the highlands of southeast Brazil.

Drab-breasted Bamboo-Tyrant *Hemitriccus diops*

At *c.* 800 m in Itatiaia National Park, Rio de Janeiro, I observed a fledged but dependent juvenile being periodically fed by an adult. The juvenile differed from the adult in slightly warmer-coloured underparts with more mottling, and a less obvious supraloral. The first truly detailed nesting data for this species were presented recently (Kirwan and Whittaker 2009), but the juvenile was undescribed.



FIGURE 4: Nest of Serra do Mar Tyrannulet *Phylloscartes difficilis*, Itatiaia National Park, Rio de Janeiro, 1 December 2008 (Guy M. Kirwan).

Fork-tailed Tody-Tyrant *Hemitriccus furcatus*

On 22 September 2002, on a narrow trail at *c.* 900 m, in Itatiaia National Park, Rio de Janeiro, I observed a pair of this globally threatened species being followed by a single juvenile, which solicited food from the adults, high within a large area of bamboo. The species is locally common and regularly observed in this same area (*pers. obs.*). The nest of this species has never been found and the only previously published breeding data are my own, from Boa Nova, Bahia, where I also observed a fledged but dependent juvenile with a pair of adults on 17 November 1998 (BirdLife International 2000, Fitzpatrick *et al.* 2004). Compared to adults, juveniles lack an obvious tail fork or prominent pale tips to the rectrices, and the cinnamon-brown tones in the face are much reduced.

Yellow-browed Tody-Flycatcher *Todirostrum poliocephalum*

On 11-12 July 2009, I observed a pair of this species consistently visiting the same part, high, in a densely leafed tall tree at the edge of second growth at Itaipuaçu, near Niterói, Rio de Janeiro. On at least some occasions the birds were observed carrying food, and it seemed that they had a nest, although I was unable to locate it. Fitzpatrick *et al.* (2004) stated that the species' nesting was effectively unknown, but in fact Mitchell (1957) described a nest being built, by one member of a pair, in a garden in Rio de Janeiro in September, and a young bird from a different nest being fed by an adult in mid October. Subsequently, Marini *et al.* (2007) presented additional breeding data, based on observations at a nest in Minas Gerais, also from September to October. My datum appears surprisingly early, and demands confirmation.

Short-tailed Pygmy Tyrant *Myiornis ecaudatus*

Together with C.G. Bradshaw, I found a nest (Figure 5) of this species apparently in the later stages of construction in the Serra dos Carajás, Pará, on 10 September 2007, at a forest border beside a well-used dirt road in *terra firme* forest. The nest was placed *c.* 7 m above ground and *c.* 1 m from the top of a rather open tree. Despite its open position, the nest was comparatively well camouflaged and only obvious when one of the adults flew to it, because all of the surrounding leaves were dust-covered and hence concolorous. As far as could be ascertained, the nest's constituent materials and structure rather closely matched the description in McNeil and Martínez (1968; see also photograph in Fitzpatrick *et al.* 2004:246), and could be categorised as closed/long/pensile, according to the system proposed by Simon and Pacheco (2005). Because the adult was still bringing material, we assume that

the nest did not yet have eggs. Fitzpatrick *et al.* (2004) state that eggs are laid mid June to mid September in Amazonian Brazil; this observation reveals, unsurprisingly, that the season across this region is more protracted.

Olivaceous Flatbill *Rhynchocyclus olivaceus*

On 7 October 2003, in the Reserva Biológica de Sooretama, Espírito Santo, I watched a pair of this tyrannid constructing a nest immediately above the main track through the centre of the reserve. It was sited *c.* 3 m above ground. The nest structure conformed to descriptions in the literature (Euler 1900, Skutch 1960, Fitzpatrick *et al.* 2004), but this appears to be the first published information concerning seasonality for the isolated nominate population of the Atlantic Forest region, despite that the species is locally common and its nests are obvious, since Euler (1900) mentioned a nest with four well-incubated eggs in November. For instance, in the nearby Reserva Natural Linhares, also in Espírito Santo, I observed numerous apparently freshly built nests of this species on 11 December 2008, although I did not observe any more direct breeding evidence. At Manaus, Oniki and Willis (1983a) found a nest of *R. olivaceus guianensis* at the height of the dry season, in June–July.

Amazonian Royal Flycatcher *Onychorhynchus coronatus*

I was shown an active nest of this species at Cristalino Jungle Lodge, northern Mato Grosso, on 18 August 2007. The nest matched previous descriptions for this species (Fitzpatrick *et al.* 2004), being a long but narrow, rather straggly pensile structure, *c.* 1 m in height and up to *c.* 12 cm wide. It was placed *c.* 3 m above the ground, in an understorey tree at the edge of a small, shaded clearing in tall *terra firme* forest. The nest was constructed of

rootlets, fibres and a few small dead leaves, with the chamber being approximately equidistant between the top and bottom. Only one adult, presumably the female, entered the nest, which had an unknown number of nestlings, at intervals of *c.* 5 minutes or more, but the male frequently perched nearby, though it was not seen to perform any distraction flight. Fitzpatrick *et al.* (2004) provided no information concerning seasonality for *coronatus* in the Brazilian Amazon.

Atlantic Royal Flycatcher *Onychorhynchus swainsoni*

At Parque Estadual Intervales, São Paulo, on 27 November 2008, I was shown an active nest of this species, with two eggs, suspended by a narrow 15-cm long tendril from the bough of a tree inclined at a 45°-angle over a small waterfall. The nest was very similar to that previously described above for Amazonian Royal Flycatcher *O. coronatus*, but the lowest part was just 1 m above the ground (lower than described by Fitzpatrick *et al.* 2004 for *O. coronatus sensu lato*), in this case the very shallow pool (*c.* 2 cm deep) below the waterfall, whilst the nest chamber was placed in the very lowest part of the nest and was protected by a rather pronounced overhang. Fitzpatrick *et al.* (2004) considered January or the austral spring to be the nesting season for this taxon, and mentioned that *Onychorhynchus* taxa in general often breed over forest streams. The eggs were as depicted in Mallet-Rodrigues *et al.* (2006), albeit perhaps with a slightly browner cast to the base colour. In October 2009 there were three active nests of Atlantic Royal Flycatcher at Intervales, all of them not quite complete and none of them with eggs. One was sited on exactly the same bough as the previous year, one of the others was placed above the edge of a forest pool and the third beside a fast-flowing narrow forest stream.

Euler's Flycatcher *Lathrotriccus euleri*

At Parque Estadual Intervales, São Paulo, on 28 November 2008, I found an active nest with two eggs being incubated by an adult bird. The nest was placed *c.* 1.5 m above ground on a rock and earth bank within dense mature Atlantic Forest with a canopy height of *c.* 30 m, and was immediately adjacent to a 1-m wide dirt road. The nest was placed on a small ledge *c.* 15 cm long by 5 cm wide (the latter dimension also being the approximate diameter of the nest), and was a small dark cup (dimensions much as given by Fitzpatrick *et al.* 2004) of dry tendrils and rootlets, adorned with live moss and some lichens, and with a few tiny body-feathers in the lining (probably shed by the adult during incubation stints). Some dead fern leaves *c.* 10 cm above the nest provided some natural shade. The eggs were very pale creamy white with dark salmon-pink to slightly cinnamon-coloured blotches,



FIGURE 5: Nest of Short-tailed Pygmy Tyrant *Myiornis ecaudatus*, Serra dos Carajás, Pará, September 2007 (C.G. Bradshaw).

concentrated in a ring around the larger end. The adult would flush from the nest, which was invisible from most angles, when I was just 1 m away, but flew only to the other side of the road and would swiftly return once I had moved a few metres away. The same nest was again occupied and had eggs on 29 October 2009 (*pers. obs.*). Fitzpatrick *et al.* (2004) mentioned that the season is September to November in southeast Brazil, but it is known to extend to at least December; November is probably the height of the breeding season in this region (Aguilar *et al.* 1999, Marini *et al.* 2007). The nest is typically built in a tree fork or on a branch, although both Aguilar *et al.* (1999) and Marini *et al.* (2007) reported nests placed on the sides of gulleys. Clutch size is 2-3 eggs in Minas Gerais (Aguilar *et al.* 1999, Marini *et al.* 2007), as well as on Trinidad and in Argentina (*vide* Fitzpatrick *et al.* 2004).

Black-tailed Flycatcher *Myiobius atricaudus*

On 10 December 2008, at Caetés, in Vargem Alta municipality, southern Espírito Santo, I discovered an occupied nest of this species. The habitat at this site can be characterised as Atlantic Dense Ombrophylous Forest, with a canopy height of up to *c.* 30 m. The forest has many tall trees, covered in epiphytes and abundant *Euterpe* palms, and is sited at 1,100-1,250 m (for further details, see Venturini *et al.* 2005). The nest itself was placed above a roadcut, within an area of dense bamboo that was dying off, and was close to the unseen nest of a pair of Sepia-capped Flycatchers *Leptopogon amaurocephalus* that were feeding young. The nest was suspended from a bamboo stalk and was approximately 7 m above the ground (higher than the range given by Fitzpatrick *et al.* 2004) and was a bell-shaped structure, being much wider at the base than at the top, the whole being *c.* 30 cm top to bottom and perhaps 12 cm wide at the base, but much less than half that at the top. It was pale brown in colour and was constructed primarily of plant fibres and somewhat darker rootlets. Fitzpatrick *et al.* (2004), in their general review of the Tyrannidae, were unable to point to the existence of published breeding data for any part of this species' broad range, other than southern Central America. Apart from being apparently the first published data from southeast Brazil, mine conform well to nest descriptions from elsewhere in the species' range.

Ruddy-tailed Flycatcher *Terenotriccus erythrurus*

I found a nest of this species, still in the process of construction by one adult, at Pakaas Palafitas, near Guajará-Mirim, Rondônia, on 13 November 2006, together with H. Shirihai. The nest was sited *c.* 3 m above ground, in the topmost part an unidentified understory tree close to a forest border and < 2 m from a dirt road. It matched

descriptions in the literature, being a pouch-shaped structure suspended from a tiny branch, constructed of fibres and parts of dead leaves, but also some grasses. The same year, I observed a singleton gathering nest material (up to 10 cm long) in the understory to take to an unseen nest, in dense *terra firme* forest beside the rio Parauapebas, in the Serra dos Carajás, Pará, on 12 September 2006 (Figure 6). Nest described by Skutch (1960), whilst breeding season stated to be March to May in Costa Rica (Stiles and Skutch 1989) and February to August in north-west Colombia (Hilty and Brown 1986), but Fitzpatrick *et al.* (2004) mention nothing concerning seasonality for Brazil.

Blackish Pewee *Contopus nigrescens*

On 1 February 2002, together with D. Beadle, A. Grosset and J.C. Minns, at *c.* 750 m in the Serra dos Carajás, Pará, I observed a pair of *C. nigrescens* feeding a single fledged juvenile on an open branch < 10 m above the ground. The juvenile had narrow pale wingbars and broad pale outer webs to the three outermost pairs of rectrices, as well as pale tips to these same feathers. In the same region, I observed another pair feeding two fledged young on 7 September 2009. Fitzpatrick *et al.* (2004) erroneously stated that no breeding data were available for this poorly known species, but in fact Silva (1993) had already observed copulation and nest building by



FIGURE 6: Ruddy-tailed Flycatcher *Terenotriccus erythrurus*, carrying nest material, Serra dos Carajás, Pará, September 2006 (William Price).

this species, also in the Serra dos Carajás, in July 1984 and 1986. My observations demonstrate that the species' breeding season in this region is apparently protracted.

Dusky-chested Flycatcher *Myiozetetes luteiventris*

On 12 September 2007, at *c.* 800 m in one of the highest parts of the Serra dos Carajás, Pará, C.G. Bradshaw and I observed a pair of this tyrant flycatcher, of which one bird was carrying a *c.* 15 cm-long dry twig crosswise in the mandible, presumably to an unseen nest. Few breeding data available: Olivares (1964) mentioned a male in breeding condition taken in southeast Colombia in May, and Fitzpatrick (2004) that one nest has been described. The altitude of my observation is *c.* 200 m above the altitudinal range reported by Fitzpatrick *et al.* (2004). Based on vocal activity, September probably represents the early breeding season in the Serra dos Carajás (*pers. obs.*), *i.e.* prior to the onset of the wet season in November (Pacheco *et al.* 2007). This period is also the breeding season in the lower Amazon, around Belém (Oniki and Willis 1983c).

Fasciated Antshrike *Cymbilaimus lineatus*

At Cristalino Jungle Lodge, northern Mato Grosso, on 8 November 2006, together with H. Shirihai, I observed a pair of this common antshrike nest building, *c.* 5 m above ground in the higher part of a tall sapling. Its open-cup construction matched that of another incomplete nest I found at Junglaven, Amazonas, Venezuela, on 27 December 2006, which was 1.5 m above ground in a sapling beside a trail through *terra firme* forest, being constructed of tiny sticks and fibres, some dead leaves and bound together with mosses and lichens. In both cases, both the male and female brought new material to the nest. Both were sited in horizontal forks and were attached to the narrow supporting branches by the thin-walled rim of the nest, as already described in the literature (*cf.* Wetmore 1972, Oniki and Willis 1982c, Zimmer and Isler 2003). On 8 October 2009, at Atta Rainforest Camp, in central Guyana, I found a third nest, with an adult male apparently incubating, sited *c.* 6 m above ground. It was similarly shaped, constructed of live fibres and vegetable matter, with dead leaves for camouflage, and was suspended from a 45-degree branch. Season previously considered to last July to November in Amazonian Brazil (Oniki and Willis 1982c, Zimmer and Isler 2003), but probably lasts at least until the year-end, especially as nest building can be protracted (Greeney *et al.* 2004). The Venezuelan nest was lower above ground than previously reported in the literature, and indicates that the breeding season is more protracted in the Guianan Shield than was suggested by observations of fledglings being fed in September and October in French Guiana and Suriname, respectively.

Speckle-breasted Antpitta *Hylopezus nattereri*

On 9 November 2009, at *c.* 1,720 m in Itatiaia National Park, on the Rio de Janeiro/Minas Gerais border, H. Shirihai and I found a nest of this species, perhaps from a previous year. The nest was located within a small patch of live bamboo in the bottom of narrow, shallow ditch, beside the Agulhas Negras road. At this point, there were four occupied territories of this species along a *c.* 300-m stretch of the road. The nest was located whilst engaged in playback to one bird in the ditch. Shirihai observed an antpitta carry small items to the nest on *c.* 4 occasions and add them to the rim whilst sitting briefly inside the nest. However, because we observed no other signs that the nest was occupied during several other visits to the vicinity during the following two days, we consider that the bird might not actually have been nesting, but was simply engaged in behaviour designed to 'cement' a hold on its territory in the presence of an apparent intruder. The nest was sited *c.* 2.0 m above ground, its base on the curved narrow, branch of an 18 m-tall tree. The branch emanated from the very base of the tree, and the nest received additional basal and lateral support from *c.* 3 bamboo stems. The cup-shaped nest (Figure 7) was principally constructed of small twigs and many dark vegetable fibres, with some dead leaves 'disguising' the rim and dangling below the nest, forming a slight 'tail' of *c.* 10 cm. The main structure was *c.* 7 cm deep and *c.* 7 cm in diameter. Because of the nature of the site, further inspection of the nest would have been impossible without considerable disturbance, but we can confirm that no eggs or young were present. Despite our doubts as to whether the nest was active, we elected not to disturb the nest further. Krabbe and Schulenberg (2003) considered the breeding of *H. nattereri* to be more or less completely unknown.



FIGURE 7: Nest of Speckle-breasted Antpitta *Hylopezus nattereri*, Itatiaia National Park, Rio de Janeiro, November 2009 (H. Shirihai/copyright Jornvall & Shirihai, The photographic handbook to the taxonomy of birds of the world; reproduced with permission).

**Rufous-tailed Foliage-gleaner *Philydor ruficaudatum* /
Buff-fronted Foliage-gleaner *P. rufum***

On 27 December 2005, in the Serra dos Carajás, Pará, I found what was apparently a nest hole of *P. ruficaudatum*, in an earth bank on a hill slope cloaked in *terra firme* forest at *c.* 700 m. The hole was just 30 cm above ground and rootlets partially framed the entrance. An adult was seen to visit the hole twice, but did not appear to be carrying food and no young could be heard inside the hole. Its size and position recalled nest holes of Buff-fronted Foliage-gleaner *P. rufum* that I have found in southeast Brazil, in September 2004 and December 2008, both at Caetés, Espírito Santo, and both in the same earth bank overhung with rootlets, vines and bamboo, offering some protection from the elements, and sited *c.* 2.5 m above ground. In December the adults were food-carrying indicating the presence of nestlings. The nest of *P. ruficaudatum* has apparently never been described (Remsen 2003), whilst despite that *P. rufum* is a widespread species across southern Central America and South America available breeding data are very few, and with the exception of the recent publication of Marini *et al.* (2007) none seems to have been previously published from Brazil (Remsen 2003). Nest architecture of Furnariidae is well known to be taxonomically informative (Zyskowski and Prum 1999). Thus, given ongoing uncertainty as to the correct generic placement of at least some foliage-gleaners (*cf.* Robbins and Zimmer 2005, Zimmer *et al.* 2008), nest details for the great many species whose nests remain undescribed in the literature should be published promptly.

Sharp-tailed Streamcreeper *Lochmias nematura*

On 3 October and 25 November 2006, along the Agulhas Negras road, at *c.* 1,700 m, within the upper part of Itatiaia National Park, at the boundary between Rio de Janeiro and Minas Gerais, I found a nest being tended by both adults, and on the second date apparently containing more than one young (judging from sounds emanating from the interior), *c.* 2 m above ground in an earth bank directly adjacent to a broad dirt road. No details concerning the structure of the nest could be ascertained, but it was plainly sited at the end of a short tunnel (as described in the literature; Remsen 2003). The pair typically foraged in forest on the opposite side of the road to the nest, flying directly into the hole, or occasionally landing on a small branch immediately below it before entering. The same nest hole was occupied again on 19 September 2007, presumably by the same pair or their offspring, but the birds were apparently absent in December 2008. The nest was occupied again on 10-12 November 2009. Season reported as being mainly during the wet season in Brazil, with eggs in September and early October in Brazil (Euler 1900, Remsen 2003).

Pallid Spinetail *Cranioleuca pallida*

Three nests, all found in Itatiaia National Park, Rio de Janeiro, conformed to the description presented by Remsen (2003). The first was found on 9 November 2002 in the car park of a hotel at *c.* 1,000 m, where a pair was building a nest inside an ornate light stand, *c.* 2.5 m above ground. It was a slightly globular but rather amorphous mass of dead leaves, and live mosses and lichens, which appeared 'constrained' by the clear sides of the light stand. The pair entered and exited the nest rather a poorly defined tunnel and an open side to the light cover. This nest was sited approximately 20 m from the nearest dense forest. The second nest was found on 14 October 2004 at *c.* 1,700 m near the Agulhas Negras road, and close to the border with Minas Gerais, and was placed in the crown of a low (2.5 m high) tree. The final nest was discovered on 11 November 2009. Still under construction, it was sited in a *c.* 25 m-tall canopy tree, at *c.* 1,700 m, and was placed *c.* 9 m above ground at the outer edge of the tree in its lowest branches. Supported by five branches, the nest was a slightly untidy and dome-shaped structure of live moss and vegetable matter, and both members of the pair were bringing *Tillandsia* moss, apparently to line the nest, usually entering via one hole and exiting via another after 30-60 seconds inside. Remsen (2003) presumed that the breeding season would be in the austral spring/summer, which is confirmed by these observations.

**Cinnamon-throated Woodcreeper
*Dendrexetastes rufigula***

No direct observation of breeding activity (for which no Brazilian data appear available), but on 31 January 2002, together with D. Beadle, A. Grosset and J.C. Minns, in seasonally flooded forest along the Rio Parauapebas in the Serra dos Carajás, Pará, I observed a Cinnamon-throated Woodcreeper perched *c.* 5 m above ground periodically beating a *c.* 7.5 cm-long frog against a large tree branch. After *c.* 3 minutes the bird flew out of sight, still carrying the frog. Amphibian prey has not previously been recorded in this species' diet (Marantz *et al.* 2003).

**Strong-billed Woodcreeper
*Xiphocolaptes promeropirhynchus***

On 27 August 2007, in rather dry *terra firme* forest (canopy height *c.* 20-25 m) with a particularly open understorey, in the Serra dos Carajás, Pará, I observed a pair of the recently described form *X. p. carajaensis* (Silva *et al.* 2002) feeding a fledged young, *c.* 12 m up in a canopy-height *Cecropia* tree. The birds' behaviour suggested that a nearby hole in the same tree harboured the nest. Because of the distance involved, I was unable to definitely identify any of the prey items being brought,

even using a telescope. Only anecdotal information on breeding exists for this widespread dendrocolaptid. The nest is undescribed and for Brazil the only data appear to be a male in breeding condition collected in Mato Grosso in October (Marantz *et al.* 2003).

Narrow-billed Woodcreeper *Lepidocolaptes angustirostris*

I observed an adult with food entering a nest hole 1 m above ground in a 4-m tall tree situated in a grassy area immediately outside Santos Dumont airport, in the city of Rio de Janeiro, on 26 August 2009. This datum indicates a more prolonged breeding season in this region of Brazil than suggested in Marantz *et al.* (2003).

White-thighed Swallow *Neochelidon tibialis*

On 22 February 2006, at Fazenda Santa Maria, Trindade, southernmost Rio de Janeiro, in foothill Atlantic Forest with a canopy height of *c.* 15 m, I found a nest of this species in an earth bank beside a *c.* 5 m-wide vehicle track, and placed *c.* 1.5 m above the ground. Adults were observed flying in and out of the hole at regular intervals, suggesting that they were feeding young in the nest, but it was not possible to ascertain whether the adults were carrying food, and the nest's situation did not permit close approach. Turner (2004) mentioned that the species' breeding biology is very poorly known, although the season appears to be January to May in Colombia and Ecuador (*cf.* Hilty and Brown 1986, Cisneros-Heredia 2006), and February to September in Panama (*cf.* Wetmore *et al.* 1984). Nests have previously been found in holes in banks, sometimes along rivers, as well as in old woodpecker holes (Wetmore *et al.* 1984).

Thrush-like Wren *Campylorhynchus turdinus*

On 5 September 2004, in the Serra dos Carajás, Pará, I observed a pair bringing unidentified soft nesting material to a disused concrete structure close to a dam. The nest was 8 m above ground at the junction of an upright and a concrete crossbar, in a hollow area within the structure. Nesting surprisingly poorly known for such a large and obvious species (Brewer and MacKay 2001, Kroodsma and Brewer 2005). Short and Morony (1969) found a presumed nest of the species in a natural treehole cavity, in a isolated dead tree within a small marsh, in central Peru, in August; the female, which was collected, had a brood patch. My observation appears to be the first published instance of the species nesting in a non-natural structure and remarkably the first published for the race *C. t. hypostictus*, but matches the season as described for Bolivia (June-October: Kroodsma and Brewer 2005). In northern Peru I have observed breeding behaviour (birds entering nests in trees with food) in November.

Purple-throated Euphonia *Euphonia chlorotica*

On 9 August 2007, at a forest border close to a stream, at a locality known as Portão da Fé, in the Chapada dos Guiramães, Mato Grosso, I found a nest of this species suspended from a relatively narrow, horizontal tree branch, *c.* 5 m above ground. The tree was *c.* 10 m in overall height and the nest was placed < 2 m from the central trunk. The outer wall of the nest was composed of brown and greyer fibres, some small dead leaves and pieces of bark, and the whole structure was more than 60% obscured by a cluster of dead *Cecropia* leaves, which made it far less obvious than might otherwise have been the case. These leaves completely covered that part of the nest attached to the branch, making it impossible to further describe the method of attachment. Both adults were present in the vicinity of the nest, and the female appeared to be bringing food, indicating the presence of chicks. Only the female entered, via a small side entrance, and the nest appeared to also possess a 'false' entrance in the top, as described previously for the species (Bertoni 1904 *in* Isler and Isler 1999). However, the male performed an elliptical distraction flight as the female entered the nest, very similar to that described for some other species of Neotropical birds including Orange-bellied Euphonia *E. xanthogaster* (Cisneros-Heredia 2006). It was not possible to measure the nest's outside dimensions but examination of photographs reveals it to have been *c.* 50% larger from top to bottom than side to side, which perhaps makes it difficult to characterise using Simon and Pacheco's (2005) classification system. Arguably it is closest to closed/globular/pensile, a combination unrecorded by the authors of the system. Nests of the genus *Euphonia* are typically described as globular or domed structures of moss and or fibres, with a side entrance (Hilty 2003), and sometimes placed in nooks, holes or crannies, at least in some species (Isler and Isler 1999). No moss appeared to have been used in the present nest, and neither was any moss component mentioned in a November nest of *E. chlorotica* in Paraguay, which was placed in the crown of a tree (Bertoni 1904 *in* Isler and Isler 1999), or an April nest at Manaus, which was constructed within the upper part of a bromeliad (Oniki and Willis 1983b). Hilty (2003) mentioned that some species of *Euphonia* may repair and adapt the old nests of other species, which might also have been true in this instance. Together with W. Price, I observed a pair of *E. chlorotica* bringing nest material to the crown of a *c.* 10 m-tall tree beside the rio Babilônia, east of Santa Rita do Araguaia, Goiás, on 24 December 2008. The male sang frequently, but the nest was obscured from our viewing position. On 3 November 2009, at Brotas, São Paulo, together with H. Shirihai, I observed a pair of this species observed carrying material to an unseen nest. Other published breeding data for this species involve birds in breeding condition collected in Colombia in April (Hilty and Brown 1986).

Red-billed Pied Tanager *Lamprospiza melanoleuca*

At Cristalino Jungle Lodge, northern Mato Grosso, on 18 August 2007, I observed a small flock of this species including two fledged but dependent young, in tall *terra firme* forest. The young resembled the female in having a grey mantle, but were further distinguished by their much paler (brownier) black feather tracts and pale horn bill. Additionally, on 23-24 September, H. Shirihai and I observed and photographed a pair of *Lamprospiza* with three fledged young feeding in canopy-level *Cecropia* trees from the ZF2 tower north of Manaus, Amazonas. Nothing is apparently known about breeding (Isler and Isler 1999).

Azure-shouldered Tanager *Thraupis cyanoptera*

During a short stay on ilha de Paquetá, in Guanabana Bay, Rio de Janeiro, on 25 September 2004, together with V. Nogueira Gama, I discovered a pair of *T. cyanoptera* constructing a nest within a large epiphytic bromeliad. The birds were regularly bringing grassy and other fine materials to a large, c. 10 m tall, lone tree sited in a very busy and noisy square within the main town on the island. The bromeliad (one of many) was on a heavy horizontal bough c. 2 m from the tree's central trunk and c. 6 m above ground. Isler and Isler (1999) reported that T.A. Parker had witnessed breeding activity in October, in Espírito Santo. My observations suggest that *T. cyanoptera*, like the other southeast Brazilian endemic *Thraupis*, Golden-chevroned Tanager *T. ornata*, might prefer to nest in epiphytic bromeliads, and that it at least occasionally selects nesting sites close to habitation (see summary of published and unpublished data in Isler and Isler 1999). I have also witnessed *T. ornata* nesting in bromeliads, having watched a pair bringing nesting material to an epiphyte growing at 2.5 m above ground on the main trunk of an isolated tree, albeit much closer to undisturbed forest, at Serra dos Órgãos National Park, Rio de Janeiro, on 28 October 2006.

Brassy-breasted Tanager *Tangara desmaresti*

On 24 February 2006, along the Agulhas Negras road, within the upper part of Itatiaia National Park, at the boundary between Rio de Janeiro and Minas Gerais, I observed a family party of five *T. desmaresti*. The three young appeared to have only just fledged, having still-evident gape flanges and comparatively weak flying abilities, but were, together with the adults, associated with a large mixed-species flock. Furthermore, on 1 December 2008, in the same area I observed several obvious juveniles of this species within a large mixed-species, of which the majority of constituents were this species. None of the juveniles showed evidence of being dependent, but their

plumage was obviously different from the adults, having scarcely any evidence of a breast-band, much paler central and ventral underparts, and weaker face pattern. The first breeding data from the wild were presented by Gonzaga and Castiglioni (2006), who found three nests (two still in the process of construction and the other with two young), all in January and February. Three-egg clutches are known in *Tangara*, including for the Red-necked Tanager *T. cyanocephala* and Green-headed Tanager *T. seledon* of southeast Brazil, and have also been observed in captivity for *T. desmaresti* (Isler and Isler 1999).

Black-legged Dacnis *Dacnis nigripes*

Together with several other observers, I was shown two nests of this rare bird at Parque Estadual Intervales, São Paulo, on 26-28 November 2008, within 200 m of one another, and both close to the administration buildings (altitude 860 m) and a busy road, by G.T. Rodrigues. The first was sited c. 9 m above ground and was apparently complete (insomuch as the birds were never seen to bring material to it), although no eggs had apparently been laid (none could be seen from below, despite the adult male being clearly visible inside the nest). This nest was sited in the crown and outmost part of a narrow-trunked *Rapanea ferruginea* (Myrsinaceae) tree, close to a small marshy area, and was c. 6 m above the ground. It chiefly comprised live *Usnea* lichen of various shades, which 'sprawled' over, above and below the egg chamber obviously to disguise its true identity, was attached to at least two different thin branches, and gave the nest the overall dimensions of approximately 25 cm top to bottom and 8 cm wide. The egg chamber itself was a much more compact structure, constructed of the same material, which hung like a bag and was apparently entirely enclosed other than a small entrance. However, because of the angle of view, it was not possible to identify precisely where the entrance was situated, or whether the egg chamber was definitely fully enclosed, rather than merely largely so. The second was still under construction, by both sexes, in a c. 5 m-tall, moss-clad *Tipuana tipu* (Leguminosae) tree, but clearly closely resembled the first in structure and materials, and was sited in a line of low trees on the edge of a different *Typha* marsh. This nest was placed c. 3 m above the ground on the lowest (horizontal) branch of the tree, and c. 1 m from the central trunk. In all other respects it resembled the first nest. At least two other species had nests in very close proximity to the second nest, Swallow-tailed Cotinga *Phibalura flavirostris* and Mouse-coloured Tyrannulet *Phaeomyias murina*. It seems interesting that all these bird species should choose to nest within such close proximity of one another, which activity one might speculate would increase the chances of predation of one or more nests. Further details of these two and five other nests will be presented by Whittaker

et al. (submitted). On 2 November 2009, again at Parque Estadual Intervales, I observed a pair of Black-legged Dacnis feeding in a small Leguminosae tree close to the site of the first nest described above. The pair engaged in courtship feeding, but no other signs of breeding were observed, either by me or the local guides. Amongst the genus *Dacnis*, the nests of only three species have been described, namely those of Blue *D. cayana* and Scarlet-thighed Dacnis *D. venusta* (Isler and Isler 1999), and, more recently, Yellow-bellied Dacnis *D. flaviventer* (Sheldon and Greeney 2008). Though the materials used in the two nests of Black-legged Dacnis observed at Intervales were quite similar to those from which the other three species are constructed, their architecture was apparently strikingly different; all three other species build simple, open-cup nests, generally supported by branches, rather than being pensile. Such variability in *Dacnis* nest architecture requires further research, to establish whether such closed/ovoid/pensile-type nests (*sensu* Simon and Pacheco 2005) are typical of *D. nigripes*, and to determine the types of nests constructed by those congeners whose nests remain to be described.

Rufous-headed Tanager *Hemithraupis ruficapilla*

On 1 September 2005, at Fazenda Santa Maria, Trindade, Rio de Janeiro state, in foothill Atlantic Forest with a canopy height of *c.* 15 m, I observed a pair of this species collecting *Usnea* moss and carrying it to an unseen nest. The only previously published breeding data involved the observation of a female carrying strips of bamboo into a ball of *Tillandsia* moss in October, in Rio de Janeiro state (T.A. Parker *in* Isler and Isler 1999).

Red-rumped Warbling Finch *Poospiza lateralis*

On 20 October 2000, along the Agulhas Negras road, in Itatiaia National Park, at the boundary between Rio de Janeiro and Minas Gerais, I observed a pair of this common *Poospiza* carrying food to young in a nest situated in an area of 1 m-tall scrub with many ferns and bracken. Although the begging young were just audible, it was not possible to see and examine the nest (without causing excessive disturbance), which was briefly described for this species from Argentina by de la Peña (1989). However, there seem to be few if any data concerning seasonality and the Argentine data concern the form *P. cabanisi*, which was treated as a separate, phylogenetic species, by Assis *et al.* (2007).

Slate-coloured Seedeater *Sporophila schistacea*

On several dates between 27 August and 14 September 2004, in the Serra dos Carajás, Pará, I observed a nesting pair of this poorly known, bamboo-dependent seedeater, along the rio Parauapebas. The nest was

c. 2.5 m above ground and was nestled within a clump of dead leaves, *c.* 3 m from the trunk in the outer part of a *c.* 20 m tall tree in *terra firme* forest, close to an area that is flooded to some extent seasonally and sited less than 2 m from a broad trail. Its structure was not yet readily apparent, indicating that nest construction had only just commenced. Both pair members (the male apparently fully adult) brought small twigs and dead grass stems, occasionally from the ground. In the surrounding area, over a 500 m linear section of trail, the species was common, with males (both adults and immatures) singing and holding territory every 20 to 30 m, usually singing from concealed perches < 10 m above ground and close to the border formed by the trail. No flowering bamboo was immediately evident in the surrounding area, but there were many spiny palms. Other observers (*e.g.* Whittaker 2004) have noted that the species frequently gathers in areas with rice fields, but this was not the case here, although agricultural small-holdings are to be found on the opposite bank of the rio Parauapebas, *c.* 200 m distant. This is the only time I have recorded the species in the Serra dos Carajás during the course of six visits to the area, totalling > 2 months, in August, September, December and February between 2001 and 2009. Stiles and Skutch (1989) already noted, in relation to Costa Rica, that the species rarely seems to occupy the same area for breeding in consecutive years. My breeding data appear to be the first from Brazil, but accord well with previously published information from southern Venezuela (Cherrie 1916) and Panama (Wetmore *et al.* 1984, Stutchbury *et al.* 1996), all in the period June to September. However, in north-west Ecuador, there is an unpublished observation of a pair nest-building north of the río Canandé, Esmeraldas province, on 25 April 2006 (R. Ahlman).

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