# Breeding bird records from the Tambopata-Candamo Reserve Zone, Madre de Dios, south-east Peru

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La reserva de la zona de Tambopata-Candamo (RZTC), que se ubicada en el dpto. Madre de Dios, sureste de Perú, se trata de un espacio famoso por su amplia diversidad de flora y fauna. Aquí yo describo los informes recopilados acerca de los nidos correspondientes a 17 especies de aves subtropicales durante un proyecto ornitológico desarrollado entre mayo de 2001 y mayo de 2002. Estos informes sobre nidos abarcan una amplia gama de familias e incluyen descripciones de varias especies de las que actualmente hay disponible muy poca información. En el caso concreto del *Celeus flavus,* se trata aparentemente de la primera publicación de una descripción de los nidos de esta especie. Esperamos que estos informes sean útiles para avanzar en el conocimiento de la avifauna subtropical.

Information on the breeding of Neotropical birds is important both to increase our cumulative knowledge and for our understanding of their conservation requirements. Though many breeding data have been presented in field guides and other books, and the scientific literature, there are still many species concerning which we know relatively little. Furthermore, although information concerning the breeding ecology of the majority of species is available, it is interesting to record any geographical variation from across the range of a species, in terms of breeding season, nest construction and nesting behaviour, due to the effects of, e.g., altitude, seasonal fluctuation and food availability[19]. Data from sites throughout the Neotropics assist in describing any such differences. This paper presents data concerning the breeding of 17 species in south-east Peru.

## Study site

In May 2001–May 2002, an intensive ornithological research project was conducted in dpto. Madre de Dios, south-eastern Peru. The study site, Bahuaja Lodge, is at the northern edge of the Tambopata-Candamo Reserve Zone (TCRZ). The surrounding area is famous for having some of the most diverse flora and fauna in the world, with over 594 bird species[10], 1,122 species of butterflies[15], and up to 180 species of trees have been recorded in a single 1-ha plot[11].

Bahuaja Lodge is on the north bank of the río Tambopata at 12°49'S 69°26'W. The total area of the study site is 6 km by 2 km which includes a diverse and representative array of habitats that correspond with the area as a whole. Around the lodge compound is a small clearing, containing several groves of *Heliconia*, shrubs and citrus trees. Common species include *Trema micrantha*, *Inga punctata*, *I. edulis* and *Cordia nodosa.* Surrounding this, and accounting for c.50% of the total area of the site, is a large expanse of primary floodplain, fringed by secondary floodplain (selectively logged 20 years ago and thus supporting plant species more typical of disturbed habitats). Species found in primary floodplain include *Iriartea deltoidea*, *Pseudolmedia laevis*, *Dipteryx micrantha* and *Ceiba pentandra.* Secondary floodplain is characterised by such species as *Ficus insipida*, *Jacaritia digitata*, *Cecropia sciadophylla* and *Guazuma crinita.* Located at the centre of the floodplain is a small area of Aguajale palm swamp (c.1 ha[2]), characterised by *Mauritia flexuosa* palms.

On higher ground is primary and secondary *terra firme* forest which accounts for an area roughly equal to that covered by floodplain. This forest is on soft clay (though small patches of sandy soil forest are also prevalent). Primary *terra firme* contains mature specimens of *Bertholletia excelsa* (an economically important tree species), as well as *Pseudolmedia laevis*, *Cedrelinga catenaeformis* and *Eschweilera* spp. This area of forest has remained untouched, with only a small area having being farmed 20 years ago (characterised by *Cecropia sciadophylla* and *Inga* spp.), and some selective logging occurred many years ago in the interior.

Within these two main habitat types, the presence of bamboo is particularly important as it heavily influences habitat structure and provides an important feeding and nesting area for several specialist birds[16]. Bamboo-dominated areas create distinct microhabitats, namely bamboo-dominated floodplain and bamboo-dominated *terra firme.* Riverine habitat is represented by the adjacent, broad río Tambopata and several small, seasonal streams and narrow rivers within the floodplain. The northern part of the study site provides access to Lago Tres Chambadas, a large oxbow lake. The lodge is adjoined on two sides by farmland, creating an oasis of forested land within the agricultural landscape. This combination of habitats results in

high avian diversity, with over 420 species recorded at the lodge[17].

## Breeding records

I made detailed observations on all nests discovered during the course of other field work. The breeding records presented below include the following information (where available): how the species was identified, the date of discovery, habitat (as described above), position and description of the nest, its contents, and observed hatching and fledging dates. Taxonomy, order and nomenclature follow those of the SACC[24].

**Undulated Tinamou** *Crypturellus undulatus*

The commonest tinamou, and mainly found in clearings and adjacent second-growth floodplain. Due to their cryptic nature and the fact that they create only rudimentary scrapes, locating tinamou nests is very difficult[4]. An adult was observed accompanied by two chicks on 5 February, in secondary floodplain. Both chicks were c.15 cm tall, highly mobile and dull brown with narrow brown vermiculations on the head. A nest was discovered on 18 March in shrubs bordering a fallow agricultural field of tall grasses. The adult permitted close approach (confirming the identification) before flushing. The nest was a simple, shallow depression in the leaf litter, with two glossy pink eggs (estimated to be 3 cm by 1.5 cm), partially concealed by dead leaves. A third egg was laid on 19 March. The nest was not revisited and, as clutch size in Colombia has been recorded as 4–5 eggs[6], it is probable the clutch was incomplete.

**Crested Eagle** *Morphnus guianensis*

This little-known raptor is considered 'Near Threatened'[3] and is rare throughout most of its range, with only a handful of nests described[24]. At the study site, individuals were only observed twice. On 16 February, a nest was discovered in primary floodplain, just 1 km from a large farm. Whilst such a site may be unusual for this shy and secretive raptor, the species is thought be more tolerant of low-level human disturbance than the closely related Harpy Eagle *Harpia harpyja*[24]. Two adults were present at the nest, an untidy stick platform, 15 m above ground in the fork of a *Dipteryx odorata* (Leguminosae) (Fig. 1). A month later, the nest contained a single large chick, being guarded by the female, which was highly vocal upon my approach. Whilst the clutch size at the nest is unknown, Crested Eagle typically lays two eggs but usually fledges only one chick[24].

**Ruddy Quail-dove** *Geotrygon montana*

Frequent in both floodplain and *terra firme*, and an adult female was found at a nest in *terra firme* on 8 February. Previous records of nesting in Peru (in the Urubamba Valley) were in late August[2]. The nest was little more than a shallow depression consisting of a collection of leaves and a few sticks gathered in a hollow between the roots and trunk of an understorey tree (Fig. 2). This nest appeared to be much less structured than the more typical dove platform described for this species in Ecuador by Greeney *et al*[13]. It was 0.8 m above ground and contained a single, nearly round, pale brown egg. The egg hatched on 14 February and the chick had disappeared from the nest ten days later. The nest appeared undisturbed and, as short nestling periods are typical of *Geotrygon*, it is probable that the nest was successful[12].

**Blue-and-yellow Macaw** *Ara ararauna*

The commonest macaw in the study area. A pair emerged from a nest hole beside the río Tambopata on 8 September. The nest was atop a large dead tree, 10 m above ground (Fig. 3). In Peru, this species has previously been recorded with eggs between November and January but, as macaws often remain close to their nests year-round to defend the site[8], the present nest must be considered of unknown status. A second pair was recorded in courtship at a nest hole on 27 November. The nest was 4 m up atop a dead palm,

Figure 1. Nest of Crested Eagle *Morphnus guianensis* (André F. Raine)

Figure 2. Nest of Ruddy Quail-dove *Geotrygon montana* (André F. Raine)

Figure 3. Adult Blue-and-yellow Macaw *Ara ararauna* emerging from nest hole (André F. Raine)

Figure 4. Adult White-eyed Parakeet *Aratinga leucophthalmus* departing nest hole (André F. Raine)

in a flooded, grassy area. In March, three pairs of adults were seen entering separate nest holes in the same area as that in November. The nests were within 20 m of each other in dead palm trees emerging from the oxbow lake. Nest holes were approximately 10 m above ground level.

**Cobalt-winged Parakeet** *Brotogeris cyanoptera*
One of the commonest parrots at Bahuaja, being found in virtually all habitats. There are few published data concerning breeding behaviour, though in the west of the range the species appears to breed in June–July in tree holes[8]. Three individuals were observed emerging from a hole in an arboreal termite mound on 24 October. Arboreal termite mounds are often used by *Brotogeris* as nest sites[5,13]. The termite mound (c.30 cm by 60 cm) was 3 m above ground on a *Lupuna* tree in primary floodplain.

**Dusky-headed Parakeet** *Aratinga weddellii* **and White-eyed Parakeet** *A. leucophthalmus*
These two species were common at the study site and were often observed at the nearby farm, where several nest sites were located. Pairs of both species were observed entering nests throughout March. Six nest holes (two of *A. weddellii* and four of *A. leucophthalmus*) were found in dead *Mauritia flexuosa* palms left standing amidst open rice- and cornfields. The holes were c.10 m above ground and all were in close proximity (being c.10–20 m apart). Psittacids often nest in the hollow trunks of palms and regularly utilise openings in rotting sections of trunk[21]. Dusky-headed Parakeet has been recorded breeding in April–June in Brazil[8], whilst White-eyed Parakeet has been noted nesting in July–August in Peru and January–March in south-west Brazil[8]. As both species often guard nest holes in the non-breeding season, my records should be considered to represent active nests of unknown stage.

**Ocellated Poorwill** *Nyctiphrynus ocellatus*
This species' breeding ecology is poorly documented[7]. At the study site, Ocellated Poorwill was only occasionally noted, vocalising in primary and secondary *terra firme.* A female in a bamboo thicket in *terra firme* in early September was attending a nest consisting of a shallow depression in the leaf litter, and a single white egg (estimated to be 2.5 cm long) was present. The bird, when disturbed by an observer's approach, performed a distraction display (a short flight with one wing held as if broken), before landing 1 m away, where it remained until the observer departed. A second nest, with a small, partially down-covered chick, was found in a shallow depression in leaf litter in primary *terra firme* on 2 November. The female, which had been brooding at the nest, was subsequently trapped in a mist-net set nearby and was immediately replaced by the adult male, demonstrating male participation in nestling care. Previous recorded clutch sizes for this species[1,7] were of two eggs, whereas both of my observations involved only one. Whether the latter is the normal clutch size in this region or whether it reflects

external factors, such as predation or addling resulting in the loss of the second egg, is unknown.

**Reddish Hermit** *Phaethornis ruber*
Common in a variety of habitats, from clearings and *Heliconia*-dominated second growth to primary floodplain and *terra firme*. An adult male was noted in August constructing a small, elongated cup nest in bamboo- and *Heliconia*-dominated *terra firme*. The nest, of plant fibres, was attached by a spider web to the tip of the underside of a *Heliconia* leaf, and was c.1 m above ground. Details were similar to those described by Oniki[15] and Sick[21]. Records of gonadal condition in southern Peru indicate breeding in November, though there are records of breeding activity in northern Peru in June and August[19].

**Pale-tailed Barbthroat** *Threnetes niger*
Common in the study area, where recorded in clearing, *terra firme* and floodplain habitats. A female was found at an elongated cup nest on 24 February. The nest was 1.8 m above ground and consisted of a neat tapering cup nest attached to the underside of the tip of a palm frond (Fig. 5), similar to that described by Sick[21]. The nest, located in primary *terra firme* and constructed of fibrous roots and lichen, contained three very small, naked chicks. This record is of particular interest as the species typically lays just two eggs[19]. However, the nest was predated shortly thereafter, so it is unknown as to whether three chicks could successfully fledge.

Figure 5. Adult Pale-tailed Barbthroat *Threnetes niger* on nest (André F. Raine)

Figure 6. Juvenile Cream-coloured Woodpecker *Celeus flavus* at nest hole (André F. Raine)

**Cream-coloured Woodpecker** *Celeus flavus*
The nest and other breeding details for this species are apparently unknown[25]. Cream-coloured Woodpecker was only recorded occasionally and appeared restricted to floodplain habitat at the study site. A nest hole, found on 27 November in primary floodplain, contained a large chick loudly soliciting food from two adults. The nest was 5 m above ground in a dead and rotting tree, with the hole partially obscured by a large piece of dry rot protruding above the hole (Fig. 6). The site was at the edge of a small clearing near an oxbow lake, and the presence of humans did not appear to prevent activities at the nest.

**Crimson-crested Woodpecker** *Campephilus melanoleucos*
The commonest large woodpecker at the site and recorded in most habitats. On 23 April, an adult male was observed emerging from a nest hole, 7 m above ground near the top of a dead *Cecropia*, in secondary floodplain beside the río Tambopata. A second nest was located, on 15 May, in a live *Mauritia flexuosa* palm in a fallow maize field. Two adults were observed at the hole, which was 10 m above ground. Both adults are known to brood and provision chicks[25]. In Colombia the species has been recorded breeding in December–May, and May–December in Brazil[25]. The nest was just 40 m distant from a Yellow-tufted Woodpecker *Melanerpes cruentatus* roosting hole.

**Plain-crowned Spinetail** *Synallaxis gujanensis*
Pairs were common in the environs of clearings at the study site and in rice and cornfields at the adjacent farm. On 20 October a pair was observed carrying sticks to a large, untidy nest with a structure typical of *Synallaxis* nests[21]. The nest was 2 m high in an ornamental citrus within a clearing and was 30 cm tall by 50 cm wide, with a long side-entrance tunnel. The nest was constructed of thick, predominantly spiny twigs each 3–8 cm long.

Figure 7. Nest of Plain-winged Antshrike *Thamnophilus schistaceus* (André F. Raine)

Figure 8. Nest of Band-tailed Manakin *Pipra fasciicauda* (André F. Raine)

**Plain-winged Antshrike** *Thamnophilus schistaceus*
Breeding ecology little known, with two previous records from Peru in March and September[26]. The species was common in both primary and secondary floodplain and *terra firme*. An adult male was recorded at a nest on 7 May (brooding by both sexes is known in this species[26]). The nest was a cup constructed of lichen, fibrous roots and twigs, located 1.5 m above ground in the crown of a small sapling. It was positioned between the fork of two branches overhanging a small muddy stream at the ecotone between floodplain and Aguajale swamp (Fig. 7). The nest contained two newly hatched chicks, which disappeared a week later, presumably having been predated.

**Black-spotted Bare-eye** *Phlegopsis nigromaculata*
Occasionally recorded in habitats from clearings and floodplain to bamboo-dominated *terra firme*, and an adult was observed at a nest in bamboo-dominated floodplain on 20 March. The nest was sited within the top of a rotten bamboo stump beside a small stream. It comprised a depression in leaf litter that had collected in the stump and held two spotted eggs. Though this species has been recorded using open cup nests in Colombia and bowl-shaped nests in Ecuador, previous Peruvian records (October, February) involved nests similar to mine, with a few small pieces of palm frond creating a flat lining inside vertical cavities or dead stumps[26].

**Band-tailed Manakin** *Pipra fasciicauda*
Abundant at the study site, with several leks being occupied year-round in primary floodplain. An adult female was observed at a small, very exposed, shallow cup nest on 8 February. The nest was 1.8 m above ground in primary floodplain and was constructed of small twigs and fibrous roots, suspended in the Y-fork of two branches. The nest contained two brown-speckled eggs (Fig. 8). In northern Brazil, the species commences egg laying in December, whilst further south it breeds mainly in August–November[22].

**Black-billed Thrush** *Turdus ignobilis*
Whilst only occasionally recorded in floodplain at the study site, this thrush was common in the town of Puerto Maldonado. An adult was observed at a nest on 21 January, corresponding with the breeding periods in Suriname (January and March) and Colombia (where it breeds almost year-round)[9]. The nest was 3 m above ground in the canopy of an ornamental tree in a busy restaurant garden. The nest was an untidy open cup crudely composed of twigs, leaves and mud.

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