

First data on breeding ecology of Red-billed Pied Tanager *Lamprospiza melanoleuca*, including the nest and egg

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Red-billed Pied Tanager *Lamprospiza melanoleuca* is a monotypic species of Mitrospingidae. It is sexually dimorphic, with the female having the hindneck, mantle, rump and uppertail-coverts grey, rather than blue as in males (Hilty 2011). *L. melanoleuca* occurs in Amazonia, from south-east Peru, across northern Bolivia and Brazil to the Guianas, in the canopy of *terra firme* forest, where it is typically observed in monospecific groups of 3–8 individuals, although the species does join mixed-species flocks; it is uncommon and occurs at low density, in part due to its large territories (Hilty 2011). The only data on breeding period were presented by Kirwan (2009), who observed adults with two or three young in August in Mato Grosso and in September at Manaus, Amazonas. We present the first information on the species' breeding behaviour.

Our observations were made at the Museu da Amazônia (MUSA; 03°00.197"S, 59°56.382"W), north-east of the city of Manaus, Amazonas, Brazil. The MUSA area covers 200 ha within the Adolpho Ducke Forest Reserve, a 10,000-ha fragment of *terra firme* forest. The wet season is between November and May, and the dry season is in June–October. Mean annual temperature is 26°C (Baccaro *et al.* 2008). The MUSA has a tower, 42 m tall, surrounded by forest, which permits the observation of bird species that are otherwise little studied without the access to the forest canopy (Melo 2015, Melo & Xavier 2016). To document some behaviours, we made videos using a Canon SX50 with 50× zoom lens. Our videos have been deposited in the Internet Bird Collection (IBC; www.hbw.com/ibc). Seventeen hours of observations were made monitoring the nest.

On 7 January 2017, a flock of *L. melanoleuca* comprising two males and a female were observed several times carrying nest material to the canopy of a rubber tree *Hevea brasiliensis* (Euphorbiaceae) adjacent to the tower. The nest was in the early stages of construction, on a horizontal branch 28 m above ground. When depositing material, the birds constantly lay down in the centre in the nest, apparently to give it shape (T. Melo; www.hbw.com/ibc/133966). Twice a male was observed passing material to the female, which was in the nest. The birds were observed carrying material and adding spider webs to the nest's walls until 28 January. The behaviour did not appear to follow a strict pattern, but the birds were more active during the morning and late afternoon, and would disappear for up to four hours.

On 29 January, the female was observed in the nest making unusual circular movements with the tail raised, but no egg was seen. The nest could be categorised as a low cup type (*sensu* Simon & Pacheco 2005). Although it was impossible to precisely identify the components of the nest or to measure it, some materials could be identified, such as white filaments similar to a type of fungi, wire-like mammal hair, spider webs and green 'leafy' lichen, which was the most abundant material and camouflaged the nest (Fig. 1). When viewed from above, the nest could be seen to be placed on the widest point of the horizontal branch supporting it.

On 30 January, the nest held one egg, which was white with brown spots (Fig. 2). The female alone was observed incubating (T. Melo; www.hbw.com/ibc/133992), which



Figure 1. Female Red-billed Pied Tanager *Lamprospiza melanoleuca* on nest, Museu da Amazônia, Manaus, Amazonas, Brazil, January 2017 (Renata da Silva Xavier)



Figure 2. Nest of Red-billed Pied Tanager *Lamprospiza melanoleuca*, with single white egg spotted brown, Museu da Amazônia, Manaus, Amazonas, Brazil, January 2017 (Tomaz Nascimento de Melo)

departed the nest, leaving the egg exposed, for more than two hours. When the adults arrived in the nest tree they vocalised frequently, whereas the female remained silent when alone at the nest, vocalising only when she departed. On the nest, the female sometimes raised the tail, arranged the interior with her bill and changed position. The only agonistic behavior that we observed was during the nest's construction. The female several times attacked a Lineated Woodcreeper *Lepidocolaptes albolineatus* foraging on a nearby branch, forcing the woodcreeper to depart the tree.

On 5 February the nest had completely disappeared. It was impossible to define the cause, but predation appears the most likely. The trees around the tower are constantly used as perches by potential nest predators, e.g. Channel-billed Toucan *Ramphastos vitellinus* and Green Aracari *Pteroglossus viridis*, and also constitute a foraging route for groups of Pied Tamarins *Saguinus bicolor* and Capuchin Monkeys *Sapajus apella*.

There are very few data concerning the breeding biology of any of the four species of Mitrospingidae, with nothing being known for Olive-backed Tanager *Mitrospingus oleagineus* and for Olive-green Tanager *Orthogonys chloricterus* the only published information available involves an observation of birds carrying nest material to a bromeliad within a tall tree (Hilty 2011). In contrast, two nests of Dusky-faced Tanager *Mitrospingus cassinii* have been described and, unlike the nest of *L. melanoleuca*, these comprised a cup slung between narrow vertical branches (Skutch 1972, Hilty 2011, Ocampo & Montoya 2014). Also in contrast to the nest of Red-billed Pied Tanager, lichens were not used as material. Clutch size in the latter species is stated to be 1–2 eggs (Hilty 2011) and these are similar in coloration to that we observed for Red-billed Pied Tanager. For *L. melanoleuca* cooperation was observed during the nestbuilding period, with all three individuals participating, but only the female was witnessed incubating the single egg. The presence of helpers, although rare among most birds, is known from several families (Cockburn 2006) and appears to be a comparatively frequent phenomenon among species traditionally classified as tanagers, embracing genera such as *Tangara*, *Neothraupis*, *Cypsnagra* and *Habia* (e.g., Skutch 1954, 1961, Willis 1961, Snow & Collins 1962, Long & Heath 1994, Sick 1997, Isler & Isler 1999, Gelis *et al.* 2006). In addition, at one nest of *Mitrospingus cassinii* the two nestlings were fed by at least three (and possibly as many as seven) adults (Skutch 1972). It is possible that in *L. melanoleuca*, helpers also participate in parental care, although this must be confirmed or refuted by future observations. The sum of all available breeding data for *Mitrospingus cassinii* (Ocampo & Montoya 2014) suggests a relative lack of obvious seasonality and, given our observations and those of Kirwan (2009), the same might be true for *L. melanoleuca*.

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