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Major range extension for Orange-fronted Plushcrown *Metopothrix aurantiaca* in the central Amazon of Brazil

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SUMMARY.—Orange-fronted Plushcrown *Metopothrix aurantiaca* is a unique, but easily overlooked, small furnariid found in the midstorey and canopy of riverine areas in the Amazon. The species' previously published distribution includes parts of southernmost Colombia, eastern Ecuador, eastern Peru, northern Bolivia and western Brazil. In the easternmost part of its distribution (Brazil), *M. aurantiaca* occurs in the states of Acre, Amazonas and Rondônia, east to 64°W. We present nine new records of the species in Brazil, all of them east of its previously known distribution and together extending the range by c.750 km. These new records derive from sampling that includes collecting expeditions, exhaustive *várzea* surveys, and incidental observations. We propose a new continuous distribution for this species restricted to white-water river floodplains with known occurrences.

Orange-fronted Plushcrown *Metopothrix aurantiaca* is a unique, small furnariid with bright plumage and tarsal coloration, distinct from other members of its family (Fig. 1; Remsen 2003). This warbler-like bird forages in pairs or small groups and often associates with mixed-species flocks, feeding mainly by gleaning arthropods from vegetation, even



Figure 1. Orange-fronted Plushcrown *Metopothrix aurantiaca*, Careiro da Várzea, Amazonas, Brazil, 20 October 2018 (Robson Czaban)

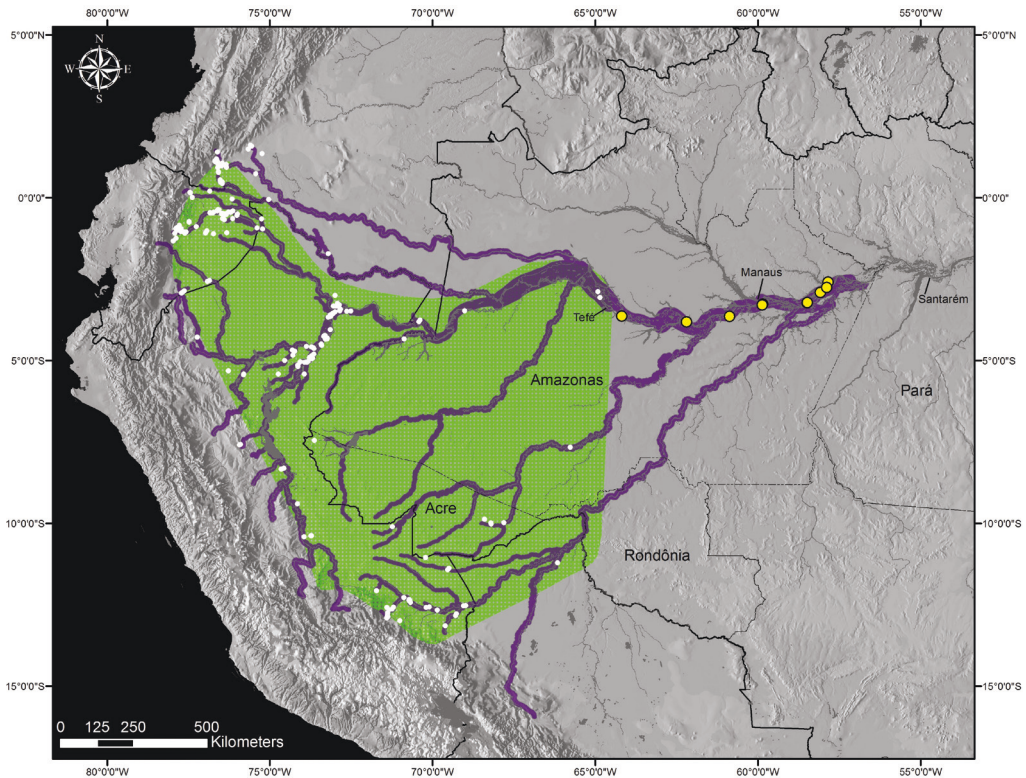


Figure 2. A currently published distribution (green polygon; BirdLife International 2018) of Orange-fronted Plushcrown *Metopothrix aurantiaca* compared to the distribution we propose (purple polygon; see text), based on interpretation of our new records presented here (yellow dots). White dots indicate specific localities within the species' previously known range, derived from eBird (through November 2017), digital vouchers archived at Wikiaves, the Macaulay Library and xeno-canto (June 2018), and specimen localities from the Louisiana State University Museum of Natural Science, Baton Rouge (March 2018), Museu Paraense Emílio Goeldi, Belém (December 2017), and other museums with data archived at the Global Biodiversity Information Facility (July 2018). The shapefile for the revised species distribution we here propose is available on request from the authors.

directly clinging to and hanging from leaves (Remsen 2003, Ridgely & Tudor 2009). Chiefly in the midstorey and canopy of riverine areas in the Amazon, *M. aurantiaca* has also been found in second growth and *terra firme* forest (Hilty & Brown 1986, Parker *et al.* 1996, Schulenberg *et al.* 2010). The species' previously published distribution includes parts of extreme southern Colombia, eastern Ecuador, eastern Peru, northern Bolivia and western Brazil (Ridgely & Tudor 2009). In the easternmost part of its range (Brazil), it occurs in the states of Acre, Amazonas and Rondônia, east to 64°W (Fig. 2). Here, we present nine new records of *M. aurantiaca* in Brazil, all of them east of its previously known distribution and extending the range by c.750 km.

1. 20–23 September 2003, 66 km south-east of Tefé, Amazonas state (AM) (03°37'S, 64°11'W). MCH observed a pair of *M. aurantiaca* on the north bank of the Solimões (Amazon) River; the birds were 500 m from the river edge in the canopy of tall *várzea* forest, which was flooded at the time (3–4 m deep). This and the following record were the only occasions on which the species was noted in 45 days of bird surveys along the full extent of the Amazon in Brazil.

2. 5 November 2003, 15 km east of Itapiranga, AM (02°45'S, 57°53'W). MCH saw, heard and sound-recorded another pair of *M. aurantiaca*, and one was collected on the north bank of the Amazon, at 'Costa do Cucuiari'. The pair was in the canopy of tall *várzea* forest within a mixed-species flock. This record, together with the previous one, within a few weeks of each other, already suggested 15 years ago the full extent of the distribution that our subsequent records have reinforced (Fig. 2, purple polygon).

3. 28 October 2015, 8 km south of Careiro da Várzea, AM (03°15'S, 59°51'W). RC found two birds (apparently a male and female based on plumage differences) beside the BR-319 highway (Fig. 1), south of the town of Careiro da Várzea (<http://www.wikiaves.com/1891099>). The pair was in short-stature *várzea* forest (c.10 m), which was not flooded at the time, but is so during the high-water season (roughly April–August). They were with several Hooded Tanagers *Nemosia pileata*, searching for food under large leaves, where they spent much time hidden from view. Despite this and their superficial similarity to female *N. pileata*, periodic vocalizations confirmed their continued presence in the flock. A similar flock containing both species was seen at the same location more than one month later and again in October 2018 (<https://www.wikiaves.com.br/3152831>).

4. 6 September 2016, 10 km south-west of Itacoatiara, AM (03°13'S, 58°29'W). During a 15-day survey, TOL observed at least 2–3 individuals, possibly including a juvenile, foraging near the margin (c.60 m from water) of a small channel on the south bank of the Amazon, opposite Itacoatiara (<http://www.wikiaves.com/2415687>). Observations were made at two different points along the same channel (spanning nearly 1 km) and might best be considered separate records. The birds were seen foraging acrobatically in the midstorey and consorting with a mixed-species flock that also comprised Scaled Spinetail *Cranioleuca muelleri*, Green-tailed Jacamar *Galbula galbula*, Chestnut-crowned Becard *Pachyramphus castaneus*, White-winged Becard *P. polychopterus*, Bar-breasted Piculet *Picumnus aurifrons*, Yellow-olive Flatbill *Tolmomyias sulphureus* and Red-stained Woodpecker *Veniliornis affinis*. The habitat was flooded *várzea* forest, 15–20 m tall, with a relatively dense understorey composed of lianas and a few *Cecropia* trees near the channel edge.

5. 28 February 2017, 3 km south-east of São Sebastião do Uatumã, AM (02°35'S, 57°50'W). GAL observed and sound-recorded three birds vocalising in the canopy (www.xeno-canto.org/357168; <https://ebird.org/view/checklist/S34901685>; <http://www.wikiaves.com/3089947>); after playback, they descended to the midstorey and remained there, gleaning insects from the leaves. Habitat consisted of *várzea* forest (20–30 m tall) with an open understorey and *Cecropia* trees on the south bank of the Uatumã River. This is the easternmost record to date.

6. 18 August 2017, 12 km south of Careiro da Várzea, AM (03°17'S, 59°52'W). BRA & CLR found a presumed pair just east of the BR-319 (<https://ebird.org/view/checklist/S38720102>). The birds appeared to be foraging with a very small mixed-species flock that also included three *Pachyramphus castaneus* and two Chestnut-vented Conebills *Conirostrum speciosum*. The relatively short-stature *várzea* forest was no longer inundated at this season and was immediately adjacent to the road, >4 km from the south bank of the Solimões River. One bird was photographed (<http://www.wikiaves.com/2726712>; <http://www.wikiaves.com/2726713>), but neither was detected vocalising during the brief observation.

7. 15 October 2017, 18 km south-west of Itapiranga, AM (02°54'S, 58°05'W). MCH, CLR & BRA photographed and sound-recorded another presumed pair spontaneously vocalising at the outskirts of a small community bordering a south-bank tributary of the Amazon, in a seasonally flooded landscape north of Urucurituba (<https://ebird.org/view/checklist/S40011003>). When first discovered, there was a lot of activity in the vicinity (including species of *Bucco*, *Picumnus*, *Tityra*, *Dacnis*, *Conirostrum*), but it was unclear whether the pair



Figure 3. Recent Orange-fronted Plushcrown *Metopothrix aurantiaca* specimens collected in November 2017 west of Codajás, Amazonas, Brazil (two in background; GRL 3786, GRL 3787) and west of Manacapuru, Amazonas, Brazil (foreground; GRL 3952), housed at the collection at the Instituto Nacional de Pesquisas da Amazônia, Manaus (Cameron L. Rutt)

of *Metopothrix* was part of a cohesive mixed-species flock. The two birds remained high in the canopy of an emergent tree and neighbouring tall trees where mature *várzea* borders a strip cleared for sparse habitation. This area is c.800 m from the nearest large river and was not flooded at the time. We presumed the birds to be a pair as one (the putative male) had a much more saturated orange forehead and more vividly orange legs and feet (<http://www.wikiaves.com/2855507>).

8. 4–5 November 2017, 15 km west of Codajás, AM (03°48'S, 62°11'W). One was collected (GRL 3786) in the Canal do Juanico, Ilha Grande, by G. Thom & E. Schultz. It was with another three or four *M. aurantiaca* in a mixed-species flock, in the canopy of tall *várzea* forest (>30 m) near a lakeshore. Another pair was seen and heard in the canopy on the south bank of the Solimões River, close to the river edge, where a second individual was collected (GRL 3787; Fig. 3).

9. 5 November 2017, 47 km south-west of Manacapuru, AM (03°38'S, 60°52'W). G. Thom also collected an individual (GRL 3952) along the Paraná dos Mundurucus on the south bank of the Solimões River (Fig. 3). At least two individuals were seen with a large mixed-species flock, foraging in the canopy of *Cecropia* trees, near the border of tall *várzea* forest and a manioc plantation. This specimen and the two from Codajás were all obtained during a 20-day collecting expedition.

The species' previously published distribution (Fig. 2, green polygon) simultaneously over-estimated the extent of occurrence over inappropriate habitat (extensive *terra firme* far from rivers) and under-estimated the true extent east along the Amazon River. The former is a common problem with digital distribution maps for *várzea* birds, which are mapped very unevenly (i.e., some species are restricted to river margins, whereas others are mapped over enormous geographic polygons; Vale *et al.* 2017). All of our records are from tall *várzea* forest in the floodplain of the main Amazon River. Occurrence at *terra firme* sites 'seldom far from rivers' in upper Amazonia (Remsen 2003) may correspond to a phenomenon we have observed in our area, whereby species locally associated strictly with white-water (muddy) floodplains, such as Great Antshrike *Taraba major*, Plain-crowned Spinetail *Synallaxis gujanensis*, and the kapok tree *Ceiba pentandra*, also occur spottily in *terra firme* in pockets of exceptionally rich soils. 'Transition forest' (Terborgh 1971, Remsen & Parker 1983), which

does not flood regularly but is distinctly different from *terra firme* typical of ancient uplands and is virtually absent from the central Amazon, may also account for some records. This apparent variability in habitat selection across the species' range merits future investigation. In any case, at the scale of a range-wide distribution map, tracing the major rivers as we propose (Fig. 2, purple polygon) accounts for virtually all of the plotted localities and, we believe, provides a more accurate and predictive (see below) picture of where the species is found.

Our records extend the species' known distribution eastward by some 750 km. This suggests that *M. aurantiaca* had been overlooked in this region, where it is probably widespread but uncommon in *várzea* forest on both banks of the middle Amazon. This interpretation also leads us to propose a continuous distribution along the rivers where it has been recorded (Fig. 2, purple polygon). Our easternmost records cluster just west of the mouth of the Uatumã River and near the state line dividing Amazonas and Pará, Brazil. It is unclear whether the species can be expected to occur even further downstream along the Amazon. Although *várzea* habitat is relatively continuous along the river and no other species are known to be limited by this tributary, many species are known to occur along only a particular stretch of river, and considerable species turnover of *várzea* birds occurs in the central Amazon (Cohn-Haft *et al.* 2007). We have searched for *M. aurantiaca* between Santarém and the Amazonas state line, to date without success. Thus, we propose treating our records and the state line as the easternmost limit until proven otherwise.

All records to date are from nutrient-rich ('white-water') rivers. Apparent gaps between the numerous records in the headwaters of white-water tributaries near the Andean foothills and those along the Amazon River itself may be an artefact of inadequate sampling or might represent a real phenomenon. Considering our finding of *M. aurantiaca* in localities long visited by ornithologists and birdwatchers, we believe the species is easily overlooked, especially where it occurs at low density. For this reason, we suspect that it indeed occurs in appropriate habitat all along those rivers where it has been found, even when existing records are concentrated in their headwaters, such as the Madeira, Juruá, Purus and Japurá, as mapped in our predicted distribution (Fig. 2, purple polygon).

Future searches for the species should use playback of vocalisations and concentrate on mixed-species flocks in tall *várzea* forest. *M. aurantiaca* can be difficult to spot, high in the forest canopy, where its mostly dull underparts and bright orange legs could be confused for the much commoner *Nemosia pileata*. Its high-pitched vocalisations resemble those of canopy tanagers and the commonest call, a sharp *tss-tss-tss*, sounds almost identical to those of Bar-breasted Piculet *Picumnus aurifrons* and members of the Golden-spangled Piculet *P. exilis* complex (Rêgo *et al.* 2014), with which it can co-occur.

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