Is there an undescribed martin (Hirundinidae: *Riparia*) in Ethiopia?

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Y a-t-il une hirondelle (Hirundinidae: *Riparia*) non décrite en Éthiopie? Nous rapportons la découverte d'une hirondelle en Éthiopie qui pourrait représenter une espèce jusqu'ici non décrite. Il y a des observations d'au moins 27 individus de huit sites différents entre mai 2013 et septembre 2019. Les oiseaux ressemblent à l'Hirondelle paludicole *Riparia paludicola*, mais ont les parties inférieures, du menton jusqu'aux couvertures sous-caudales, entièrement blanches, les parties supérieures plus grises et un masque sombre devant les yeux. Elles diffèrent des espèces de *Ptyonoprogne* par leur taille plus petite et l'absence de taches blanches à la queue. La sympatrie avec *R. paludicola* et de nettes différences vocales suggèrent également qu'il s'agit d'une espèce différente. Nous recommandons fortement d'entreprendre des études taxonomiques et moléculaires, ainsi que la collecte de spécimens.

Summary. We report the discovery of a martin from Ethiopia that may represent a hitherto undescribed species. There are observations of at least 27 individuals from eight different sites between May 2013 and September 2019. The birds are similar to African Plain Martin *Riparia paludicola*, but distinguished from the latter by the all-white underparts from the chin to the undertail-coverts, greyer upperparts and a dark mask in front of the eyes. They differ from *Ptyonoprogne* species by their smaller size and lack of white tail spots. Sympatry with *R. paludicola* and pronounced vocal differences likewise suggest specific differentiation. We strongly encourage further taxonomic and molecular studies, including the collection of specimens.

The martins (genera *Riparia* and *Ptyonoprogne*) resident in Ethiopia are represented by three or four species depending on taxonomic treatment in different checklists. Consequently, both their English and scientific names differ, resulting from different species delimitations, subspecific assignment or recognition of nomenclatural synonyms. According to del Hoyo & Collar (2016) these are African Plain Martin *R. paludicola* (represented by subspecies *minor* and *schoensis*), Banded Martin *R. cincta* (represented by subspecies *erlangeri*), Pale Rock Martin *P. obsoleta* (represented by subspecies *pusilla*) and Red-throated Rock Martin *P. rufigula* (represented by subspecies *rufigula*).

In May 2013 we observed an odd martin in the Ethiopian Bale Mountains that did not match the descriptions of known species in the most recent field guide (Redman *et al.* 2011). Based on our interpretation at the time, the bird was provisionally assigned to the non-resident subspecies *obsoleta* of Rock Martin *Ptyonoprogne fuligula* (now usually regarded as a separate species, Pale Rock Martin *P. obsoleta*), and a photograph was published (*Bull. ABC* 21: 99) under this name. However, doubts remained. During focused searches in subsequent years, we found several other birds with the same phenotypic characters in different regions of Ethiopia. They lacked white tail spots and nested in burrows in earth banks, and therefore belonged to the genus *Riparia*, rather than *Ptyonoprogne*. Furthermore, we consider that these birds belong to a hitherto unknown species of (plain) martin. We deliberately refrain from formally describing a new taxon without molecular or physical proof (i.e. a type specimen), but present our findings here to enable a future description and scientific naming of a potential new species. In the absence of a valid name, we use the term 'new martin' herein to refer to the birds in question.

Methods

Between May 2013 and September 2019 we visited Ethiopia four times, making observations of martins (genus *Riparia* and *Ptyonoprogne*). Numerous photos and videos were taken, as well as sound-recordings. The latter were made in the field using a SONY PCM-D50 digital recorder. Recordings were cleaned (to reduce background noise and to correct contrast and resolution) and sonograms were prepared of selected vocalisations using Adobe Audition 3.0. Because of extensive background noise, we deleted all frequencies below 2 kHz in the sonograms. We compared our

Table 1. Records of the new martin *Riparia* sp. from Ethiopia in 2013–19.

Tableau 1. Observations de la nouvelle hirondelle *Riparia* sp. d'Éthiopie en 2013–19.

Site	Regional state	Coordinates	Elevation (m)	Date	Record	Individuals	Breeding	Observers
Rira (south)	Oromia	06°45'21"N 39°43'29"E	2,818	11 May 2013	photo	2	No	K. Gedeon, T. Töpfer
Ziway	Oromia	07°55'41"N 38°43'41"E	1,639	Jan 2015	photo	1	No	D. Cavey*
Guassa	Amhara	10°17'43"N 39°46'48"E	3,391	18 Oct 2018	photo	2	Yes	K. Gedeon, T. Töpfer
Hululle	Oromia	07°31'01"N 39°18'12"E	3,202	3 June 2019	photo, audio, video	10+	No	K. Gedeon, T. Töpfer
Cotera	Oromia	07°05'08"N 39°41'19"E	3,273	7 June 2019	sight	2	No	K. Gedeon, T. Töpfer
Golja	Oromia	07°48'15"N 39°03'10"E	2,303	8 June 2019	photo	6	No	K. Gedeon, T. Töpfer
Wegera Shet'	Southern Nation	08°09'57"N 38°25'56"E	1,954	9 June 2019	photo	1	No	K. Gedeon, T. Töpfer
Rira (north)	Oromia	06°46'28"N 39°45'11"E	3,430	27 Sep 2019	photo, audio, video	10+	Yes	K. Gedeon, F. Weihe, M. Wadewitz

* http://www.oiseaux.net/photos/dominique.cavey/hirondelle.paludicole.1.html#espece

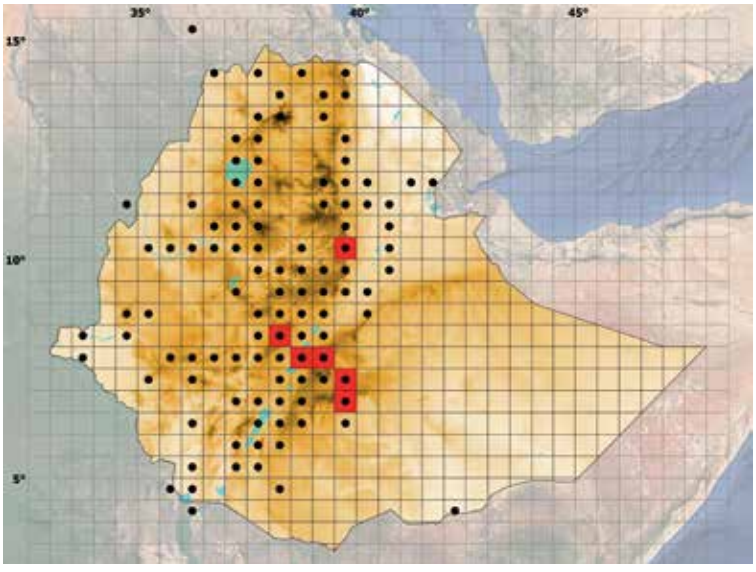

Figure 1. Distribution of the new martin *Riparia* sp. (red squares, from data in this paper) within the range of *R. paludicola* (black circles, data from Ash & Atkins 2009).

Distribution de la nouvelle hirondelle *Riparia* sp. (carrés rouges, d'après les données du présent article) à l'intérieur de l'aire de répartition de *R. paludicola* (cercles noirs, données d'Ash & Atkins 2009).

recordings with those available on xeno-canto.org (XC) for the relevant species. Phenotypical comparisons of our photographic material with specimens were made in the collections of the Museum für Naturkunde, Berlin (KG), the Natural History Museum, Tring (by H. van Grouw) and the Zoologisches Forschungsmuseum Alexander Koenig, Bonn (TT, KG).

Results

Distribution and co-occurrence with *Riparia paludicola*

At least 27 of the new martin were found at eight different sites in Ethiopia. The observations are scattered across three regional states, Oromia, Amhara and Southern Nations, Nationalities and Peoples' Region (Table 1). Considering that we found the new martin in a variety of habitats and

Figure 2. New martin *Riparia* sp., Hululle, Arsi Mountains, Ethiopia, 3 June 2019. Note the overall greyish upperparts and all-white underparts (Kai Gedeon)

Nouvelle hirondelle *Riparia* sp., Hululle, Monts Arsi, Éthiopie, 3 juin 2019. Noter les parties supérieures grisâtres et les parties inférieures entièrement blanches (Kai Gedeon)

Figure 3. New martin *Riparia* sp., Hululle, Arsi Mountains, Ethiopia, 3 June 2019. The dark mask in front of the eyes is clearly visible, and the wingtips project beyond the slightly forked tail (Kai Gedeon)

Nouvelle hirondelle *Riparia* sp., Hululle, Monts Arsi, Éthiopie, 3 juin 2019. Le masque noir devant les yeux est bien visible, et la pointe des ailes dépasse la queue légèrement fourchue (Kai Gedeon)

Figure 4. New martin *Riparia* sp., Hululle, Arsi Mountains, Ethiopia, 3 June 2019. The scaly pattern on the underwing-coverts, characteristic of many *Riparia* species, is clearly visible (Kai Gedeon)

Nouvelle hirondelle *Riparia* sp., Hululle, Monts Arsi, Éthiopie, 3 juin 2019. Le pattern écailleux sur les couvertures sous-alaires, caractéristique de beaucoup d'espèces de *Riparia*, est bien visible (Kai Gedeon)

Figure 5. New martin *Riparia* sp., dorsal view, Hululle, Arsi Mountains, Ethiopia, 3 June 2019. In this bird, the tips of folded wing just approach the tip of tail, which appears almost square-ended (Kai Gedeon)

Nouvelle hirondelle *Riparia* sp., vue dorsale, Hululle, Monts Arsi, Éthiopie, 3 juin 2019. Chez cet oiseau, les pointes des ailes arrivent juste au bout de la queue, qui apparaît presque carrée (Kai Gedeon)

Figure 6. New martin *Riparia* sp., two individuals with somewhat variable coloration, Hululle, Arsi Mountains, Ethiopia, 3 June 2019. The bird on the left is slightly more brownish, with paler narrow fringes to the wing-coverts, and its primaries and secondaries are not as dark as in the right-hand bird, whose weak cream-coloured supercilium and pale tip to the bill are clearly visible (Kai Gedeon)

Nouvelle hirondelle *Riparia* sp., deux individus au plumage quelque peu variable, Hululle, Monts Arsi, Éthiopie, 3 juin 2019. L'oiseau à gauche est légèrement plus brunâtre, avec les liserés des couvertures alaires plus pâles et plus étroites, et les rémiges primaires et secondaires ne sont pas aussi foncées que celles de l'oiseau à droite, dont le faible sourcil crème et le bout du bec pâle sont bien visibles (Kai Gedeon)

altitudes, we expect it to be even more widespread across the country. All localities are within the known range of *R. paludicola* in Ethiopia (Fig. 1). Twice we found *R. p. schoensis* and the new martin at the same location at the same time. On 8 June 2019, we observed six of the new martin at Golja, Arsi Mountains, along with *c.*20 *R. p. schoensis.* The distance between the two groups was *c.*100 m, and they clearly did not mix. On 27 September 2019, we observed a breeding pair of the new martin feeding at least one newly fledged young north of Rira, Bale Mountains, along with *c.*10 *R. p. schoensis*, which also had fledglings.

Diagnosis

Similar to *R. paludicola*, but distinguished by the white chin, throat and chest, more greyish upperparts and a dark mask in front of the eyes. Separated from *Ptyonoprogne* spp. by smaller size and lack of white tail spots.

Phenotype

The new martin is a small and graceful sand martin-type bird with pointed wings and a short, almost square tail in flight, conspicuously grey above and contrasting off-white over the entire underparts (Figs. 2–6). The upperparts of adults are pale grey to brownish grey, darkest on the forehead, grading into the dark grey crown, then the pale grey nape and mantle to lower back. Forehead and lores are dark blackish grey, giving the impression of a dark mask in front of the eyes. At very close range, there is a hint of an off-white supercilium. The cheeks are pale grey. Primaries, secondaries and rectrices are dark grey with narrow whitish fringes to the outer and inner vanes of the feathers. Wing-coverts appear pale grey, often contrasting with the darker flight feathers, while the greater coverts have whitish fringes. The underparts are entirely off-white from the chin to undertail-coverts, but the breast and flanks may appear slightly darker greyish white. The wings are long with a large primary

Figures 7–8. Comparison of juveniles: left African Plain Martin *R. paludicola schoensis*, Hawassa, Ethiopia, 3 October 2019; right the new martin *Riparia* sp., Rira, Bale Mountains, Ethiopia, 27 September 2019 (Kai Gedeon)

Comparaison de juvéniles : à gauche, l'Hirondelle paludicole *R. paludicola schoensis*, Hawassa, Éthiopie, 3 octobre 2019 ; à droite, la nouvelle hirondelle *Riparia* sp., Rira, montagnes du Balé, Éthiopie, 27 septembre 2019 (Kai Gedeon)

projection. At rest, the tips of the folded wing approach or sometimes protrude beyond the tip of the tail. The tarsi are unfeathered and slate-grey like the toes. The bill is greyish black, sometimes with a tiny white tip. The eyes are black without visible irides. Just-fledged juveniles are similar to adults, but have pale brownish feather fringes above, being especially pronounced on the greater coverts and secondaries. The greyish-black bill has a yellow base and tip (Figs. 7–8). All birds differ significantly from *R. paludicola*. Both subspecies in Ethiopia, *R. p. schoensis* and *R. p. minor*, have a brown throat and chest, hence the alternative English name Brown-throated Martin (Fig. 9). Apparently there is some variability within these subspecies, but we did not find any birds that were completely white on the underparts, neither in the field nor in those collections we have checked to date.

Figure 9. Type specimen of *Riparia paludicola schoensis*, collected in Addis Ababa, Ethiopia, in October 1910 (above), and a specimen of *R. paludicola minor* at the Museum für Naturkunde, Berlin (Kai Gedeon)

Spécimen type de *Riparia paludicola schoensis*, collecté à Addis-Abeba, Éthiopie, en octobre 1910 (au dessus), et un spécimen de *R. paludicola minor* au Museum für Naturkunde, Berlin (Kai Gedeon)

Field characters

The following characters distinguish the new martin from known species. In the field, the birds appear pale brownish grey above with contrasting all-white underparts. In comparison, both local subspecies of *R. paludicola* appear much warmer brown above and darker below, with brown throats and breast-bands of variable appearance. However, care is needed when observing birds in flight as the coloration of the throat can change under different light conditions. Pale Rock Martin *Ptyonoprogne obsoleta pusilla* (*P. fuligula pusilla* in Redman *et al.* 2011), although similar to the new martin, has characteristic pale tail spots, not present in the new martin. These spots, however, are visible only if the tail is fanned, and are best seen in slow-flying birds. Body size might give

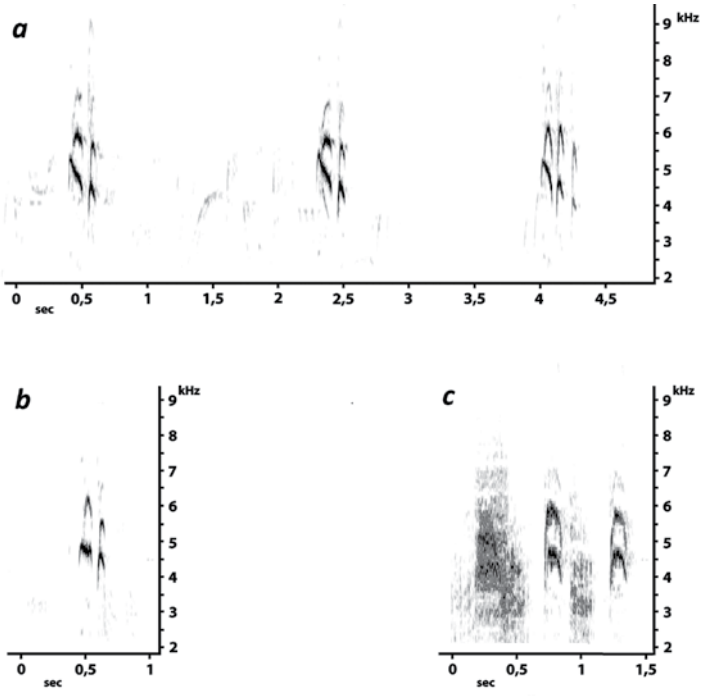

Figure 10. a–b = calls of the new martin *Riparia* sp., Hululle, Arsi Mountains, Ethiopia, 3 June 2019 (Till Töpfer); **c** = calls of African Plain Martin *R. paludicola schoensis*, Kuriftu, Bishoftu / Debre Zeit, Ethiopia, 8 August 2013 (XC195343; Rory Nefdt)

a–b = cris de la nouvelle hirondelle *Riparia* sp., Hululle, Monts Arsi, Éthiopie, 3 juin 2019 (Till Töpfer) ; **c** = cris de l'Hirondelle paludicole *R. paludicola schoensis*, Kuriftu, Éthiopie, Bishoftu / Debre Zeit, 8 août 2013 (XC195343 ; Rory Nefdt)

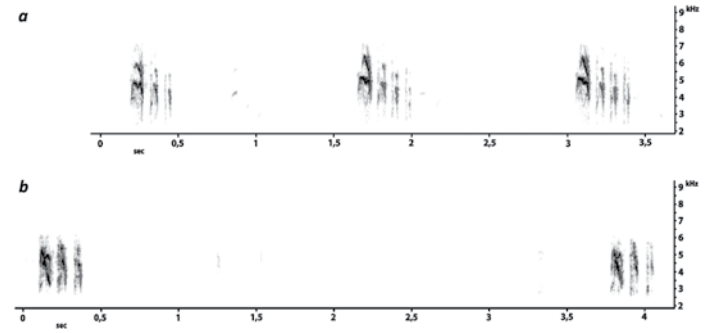

Figure 11a–b. Begging calls of juveniles of the new martin *Riparia* sp., Rira, Bale Mountains, Ethiopia, 27 September 2019 (Kai Gedeon)

Cris d'appel de juvéniles de la nouvelle hirondelle *Riparia* sp., Rira, montagnes du Balé, Éthiopie, 27 septembre 2019 (Kai Gedeon)

another clue for observers familiar with the birds: African Plain Martin, as well as overwintering Common Sand Martin *R. riparia*, are both of similar size and appear small and slender like the new martin, whereas rock martins *Ptyonoprogne* are visibly larger when seen at close range. Banded Martin *R. cincta* is obviously larger.

Vocal characteristics

The vocalisations of the new martin encompass a reduced set of sounds like many other hirundine species. To date, we have identified four different types of vocalisation: call, begging call, trill and squeak. Calls are relatively simple, two-syllable sounds uttered either in short sequences (Fig. 10a) or singly (Fig. 10b). We interpret them to be probably contact or defence calls uttered to conspecifics, as we have recorded them only from perched birds in front of their burrows. Begging calls uttered by fledged juveniles are apparently used to attract adults to feed the young and differ slightly between individuals (Fig. 11). The trill is either a series of single sounds, or accompanied by a few chirping calls, and is uttered by perched birds. There is some variation in the trill as documented by three variants

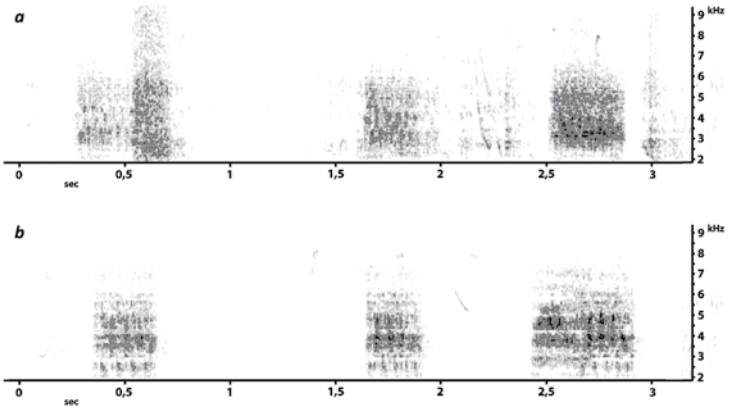

Figure 12. a = begging calls of juvenile African Plain Martins *Riparia paludicola schoensis*, Hawassa, Ethiopia, 3 October 2019 (Kai Gedeon); **b** = Kuriftu, Bishoftu / Debre Zeit, Ethiopia, 8 August 2013 (XC195343; Rory Nefdt)

a = cris d'appel de juvéniles de l'Hirondelle paludicole *Riparia paludicola schoensis*, Hawassa, Éthiopie, 3 octobre 2019 (Kai Gedeon) ; **b** = Kuriftu, Bishoftu / Debre Zeit, Éthiopie, 8 août 2013 (XC195343 ; Rory Nefdt)

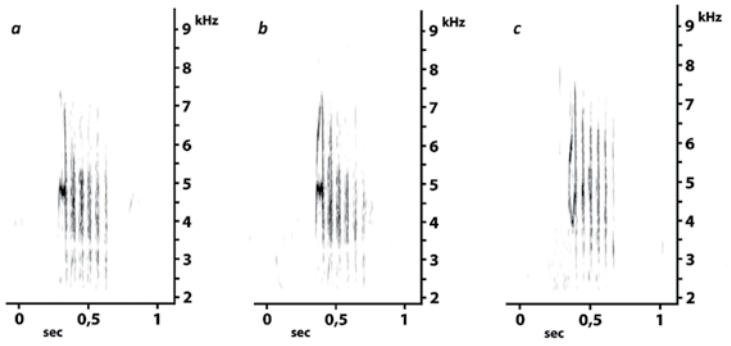

Figure 13. Trills of the new martin *Riparia* sp., Hululle, Arsi Mountains, Ethiopia, 3 June 2019 (Till Töpfer)

Trilles de la nouvelle hirondelle *Riparia* sp., Hululle, Monts Arsi, Éthiopie, 3 juin 2019 (Till Töpfer)

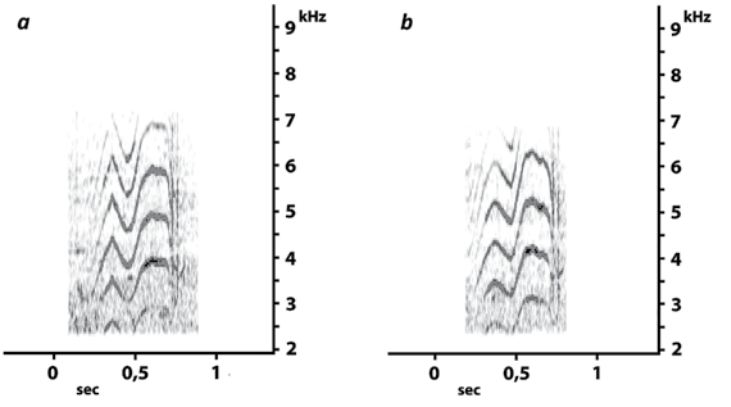

Figure 14. Squeaks of the new martin *Riparia* sp., Hululle, Arsi Mountains, Ethiopia, 3 June 2019 (Till Töpfer)

Cris aigus de la nouvelle hirondelle *Riparia* sp., Hululle, Monts Arsi, Éthiopie, 3 juin 2019 (Till Töpfer)

(Figs. 13a–c). Finally, there is a characteristically ascending squeak, uttered by perched birds in front of the breeding burrows, which is again subject to slight individual variation (Figs. 14a–b). All of these vocalisations differ noticeably from analogous sounds produced by the syntopic *R. paludicola*, particularly in direct comparison of calls (Fig. 10) and begging calls (Figs. 11–12).

Nesting sites and habitat

Like other sand martins, for breeding the new martin occupies cavities in either naturally eroded

Figure 15. Habitat of the new martin *Riparia* sp. on the Afro-alpine plain of Guassa, Ethiopia (3,391 m); the breeding site is located on the road cutting to the left, where a pair was feeding its young in a burrow on 18 October 2018 (Kai Gedeon)

Habitat de la nouvelle hirondelle *Riparia* sp. sur la plaine Afro-alpine de Guassa, Éthiopie (3.391 m) ; le nid se trouve dans la berge de la piste à gauche, où un couple nourissait ses jeunes dans un terrier le 18 octobre 2018 (Kai Gedeon)

or man-made earth banks (Fig. 15). Entrance holes are located in the softer parts of an earth bank, avoiding interspersed rocks and the densely root-penetrated uppermost layers. Although we found freshly dug, yet incomplete holes, we did not observe birds digging cavities. Nonetheless, we are convinced they do so because single pairs in highland areas, where no other martin species exist, nest in very similar-looking burrows as in mixed colonies (where the occupation of previously used cavities is also likely). Note that rock martins *Ptyonoprogne* do not breed in burrows but nest on rocks and buildings. We have found breeding sites and potential nesting sites of the new martin at *c.*1,640–3,430 m. Surrounding habitats were therefore very different, and range from Ensete gardens west of the Rift Valley over open agricultural landscapes in Arsi, to Afro-alpine heaths and grasslands in Bale and Guassa (Fig. 15)

Behaviour and phenology

There appears to be no marked behavioural differences between the new martin and *R. paludicola*. They are similarly gregarious and non-aggressive, and we did not observe pronounced intraspecific or interspecific antagonistic behaviour at colonies. They may also be encountered with Little Swifts *Apus affinis* during aerial foraging. We assume the new martin to be an opportunistic breeder that makes use of briefly available food and nesting resources, either solitarily or in larger aggregations. As such, it depends on the course of the annual rainy season(s), which differ spatially and temporally.

Discussion

We assume that the new martin belongs to a hitherto unknown, potentially endemic *Riparia* species, based on the above-mentioned evidence on sympatry, morphology and voice.

The sympatric occurrence and shared habitats with the superficially similar African Plain Martin *R. paludicola* strongly support specific distinctiveness. In particular, in at least one location the two martins used the same breeding colony, side by side, which further solidifies the argument of reproductive isolation (Newton 2003, Price 2008). Mixed colonies without interbreeding have proven species distinctness, e.g. between Common Sand Martin and Pale Martin *R. diluta* (Schweizer *et al.* 2018). The new martin is similar to *R. paludicola*, but differs clearly and consistently in a number of phenotypic characteristics. The possibility that it is a morph of *R. paludicola* cannot be entirely eliminated. Morphs do occur among Passeriformes, albeit rarely (0.9% of species; Galeotti *et al.* 2003). However, to our knowledge morphs are completely unknown to date in the Hirundinidae. Furthermore, we are certain that the new martin is not the enigmatic unknown (cliff) swallow species supposed to occur in Ethiopia (Brewer 2018). According to the morphological information presented with those observations (Madge & Redman 1989, Atkins & Harvey 1994), it apparently does not involve a

Riparia species. Although not very elaborate, the new martin's vocalisations are apparently different from all other hitherto recorded *Riparia* species. In particular, the characteristic squeak and trills are unlike any other sound uttered by known martin species in Ethiopia, particularly from *R. paludicola*: both the calls and the begging calls of *R. paludicola* (termed 'clear, slightly nasal notes' and 'buzzy notes' by Boesman 2016) differ substantially in structure from the new martin, rendering it very unlikely that they would be specifically mistaken by either species. Given the great importance of vocal differentiation for species recognition (Price 2008), this is another strong clue pointing towards specific distinctiveness.

Following intense public debate among taxonomists (e.g. Peterson 2014, Ceríaco *et al.* 2016, Löbl *et al.* 2016, Pape 2016, Raposo & Kirwan 2017) the International Commission on Zoological Nomenclature has determined that, whenever feasible, a new species-group name should be established on the basis of at least one preserved type specimen (International Commission on Zoological Nomenclature 2017). Although exceptions are possible in well-founded cases, they should be handled restrictively. We follow this assessment and consider the collection of a name-bearing type essential. However, the Ethiopian Wildlife Conservation Authority (EWCA) has strong reservations about the collection of specimens and the related killing and keeping of individuals for further scientific studies. Our discussions with them on this topic have not been successful. Knowledge of the country's rich biodiversity, a prerequisite for fact-based conservation, is still incomplete. With respect to mammals, Lavrenchenko & Bekele (2017) describe the situation as follows: 'In view of the fast habitat destruction in the country, taxonomic and evolutionary studies on Ethiopian small mammals are especially important and urgent. There is a high risk that some unknown endemic species will become extinct before they can be described and studied'. The taxonomic status of some bird species also needs to be checked, as the present paper shows. We would therefore encourage the EWCA to reconsider their position and to enable research based on international standards.

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References

Ash, J. & Atkins, J. 2009. *Birds of Ethiopia and Eritrea. An Atlas of Distribution*. London, UK: Christopher Helm.

Atkins, J. D. & Harvey, W. G. 1994. Further sightings of an unnamed cliff swallow *Hirundo* sp. in Ethiopia. *Scopus* 18: 52–54.

Boesman, P. 2016. Notes on the vocalizations of Plain Martin (*Riparia paludicola*). *HBW Alive Ornithological Note 412*. In del Hoyo, J., Elliott, A., Sargatal, J., Christie, D. A. & de Juana, E. (eds.) *Handbook of the Birds of the World Alive.* Barcelona: Lynx Edicions. http://www.hbw.com/node/1253813 (accessed 4 December 2016).

Brewer, D. 2018. *Birds New to Science. Fifty Years of Avian Discoveries.* London, UK: Christopher Helm.

Ceríaco, L. M. P., Gutiérrez, E. E. & Dubois, A. 2016. Photography-based taxonomy is inadequate, unnecessary, and potentially harmful for biological sciences. *Zootaxa* 4196: 435–445.

Fry, C. H., Urban, E. K. & Keith, S. 1992. Hirundinidae, swallows and martins. In Keith, S., Urban, E. K. & Fry, C. H. (eds.) *The Birds of Africa.* Vol. 4. London, UK: Academic Press.

Galeotti, P., Rubolini, D., Dunn, P. O. & Fasola, M. 2003. Colour polymorphism in birds: causes and functions. *J. Evol. Biol.* 16: 635–646.

del Hoyo, J. & Collar, N. J. 2016. *HBW and BirdLife International Illustrated Checklist of the Birds of the World.* Vol. 2. Barcelona: Lynx Edicions.

International Commission on Zoological Nomenclature (ICZN). 2017. Declaration 45 – Addition of Recommendations to Article 73 and of the term "specimen, preserved" to the Glossary. *Bull. Zool. Nomencl.* 73: 96–97.

Lavrenchenko, L. A. & Bekele, A. 2017. Diversity and conservation of Ethiopian mammals: what have we learned in 30 years? *Ethiopian J. Biol. Sci*. 16 (Suppl.): 1–20.

Löbl, I., Cibois, A. & Landry, B. 2016. Describing new species in the absence of sampled specimens: a taxonomist's own-goal. *Bull. Zool. Nomencl.* 73: 83–86.

Madge, S. C. & Redman, N. J. 1989. The existence of a form of cliff swallow *Hirundo* sp. in Ethiopia. *Scopus* 13: 126–129.

Newton, I. 2003. *The Speciation and Biogeography of Birds*. London, UK: Academic Press.

Pape, T. 2016. Species based on photography. *Nature* 537: 307.

Peterson, A. T. 2014. Type specimens in modern ornithology are necessary and irreplaceable. *Auk* 131: 282–286.

Price, T. 2008. *Speciation in Birds.* Greenwood Village, CO: Roberts & Co.

Raposo, M. A. & Kirwan, G. M. 2017. What lies beneath the controversy as to the necessity of physical types for describing new species? *Bionomina* 12: 52–56.

Redman, N., Stevenson, T. & Fanshawe, J. 2011. *Birds of the Horn of Africa.* Second edn. London, UK: Christopher Helm.

Schweizer, M., Lui, Y., Olsson, U., Shirihai, H., Huang, Q., Leader, P. J., Copete, J. L., Kirwan, G. M., Chen, G. & Svensson, L. 2018. Contrasting patterns of diversification in two sister species of martins (Aves: Hirundinidae): the Sand Martin *Riparia riparia* and the Pale Martin *R. diluta. Mol. Phyl. & Evol.* 125: 116–126.

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