On the true identity of Bluntschli's Vanga *Hypositta perdita* Peters, 1996, a presumed extinct species of Vangidae

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Peters (1996) described two bird specimens collected at Eminiminy (24°41'S, 46°48'E) in south-eastern Madagascar by the primatologist Hans Bluntschli (1877–1962), which were found during examination of boxes of unidentified bird skins held in the collections at the Forschungsinstitut Senckenberg Frankfurt (SMF). The birds (Fig. 1A–B), which must have been recently fledged young, resemble juveniles and females of Nuthatch Vanga *Hypositta corallirostris* (Vangidae) by plumage and general appearance, but differ in having a proportionately significantly shorter hind-toe than that species and a longer tarsometatarsus. Proceeding from referring the two specimens to the Vangidae, Peters (1996) assumed that they represented a distinct new species, which was named Bluntschli's Vanga *Hypositta perdita*. Since only *H. corallirostris* was found during recent surveys around Eminiminy and in the adjacent lowlands, including Andehalela National Park (Goodman *et al*. 1997, Hawkins & Goodman 1999) it seemed that *H. perdita* represented a potentially extinct form of nuthatch vanga (Peters 1996, BirdLife International 2012). However, Goodman *et al*. (1997) raised doubts concerning the validity of *H. perdita*, and it was not recognised as a valid species by the *Handbook of the birds of the world* project (Yamagishi & Nakamura 2009). For that reason the species was not included in an otherwise complete analysis of the diversification history of the Malagasy Vangidae (Jønsson *et al*. 2012). However, because of the uncertainty surrounding the status of this named taxon, we decided to undertake a genetic analysis based on toepad or skin samples of the type material. Here we present the result of that analysis, and the taxonomic implication.

Molecular data

We initially used the mitochondrial ND2 primers designed by Jønsson *et al*. (2012) to amplify short fragments (around 200 base pairs) from degraded DNA obtained from museum study skins of the Malagasy Vangidae. However, the amplification success of the syntype of *Hypositta perdita* (SMF 80500) was poor using these primers (only one out of six fragments amplified successfully) and the obtained sequence suggested a sylvoid (warbler) affinity. As this result was both surprising and confusing, we subsequently used a set of cytochrome-*b* primers that work well for a broad selection of oscine passerines. The amplification success with these primers was much higher (three out of four fragments worked well) and all of the independent sequences had a nearly complete match (only one base pair mismatch in one fragment) with the cytochrome-*b* sequence of the sylvoid White-throated Oxylabes *Oxylabes madagascariensis* (previously classified as a babbler but now in the endemic Malagasy family Bernieriidae; see Cibois *et al*. 2001, Fregin *et al*. 2012).

As the laboratory procedures were carried out at a facility exclusively used for old degraded DNA from museum samples at the Swedish Natural History Museum in Stockholm, contamination seemed unlikely, especially because *Oxylabes* tissue had never been analysed there. However, to confirm the result we conducted an independent extraction of a skin sample from the *H. perdita* type specimen (SMF 80499). The sequences obtained from the type confirmed the result as they were identical to those obtained from

Figure 1. Type (SMF 80499, A) and paratype (SMF 80500, B) of Bluntschli's Vanga *Hypositta perdita* compared to an adult White-throated Oxylabes *Oxylabes madagascariensis* (SMF 44603, C); all three specimens collected by Hans Bluntschli on 27 September 1931 at Eminiminy in south-eastern Madagascar. D: a juvenile *O. madagascariensis* specimen from Muséum National d'Histoire Naturelle, Paris, in similar plumage to the *H. perdita* specimens but with fresh yellowish feathers emerging on the throat and breast, collected 8 October 1929 (© Eric Pasquet; not to scale with A–C, masked and placed on a white background)

the syntype. In total, we obtained 773 base pairs cytochrome-*b* from the *H. perdita* specimens (429 from the holotype), of which 698 overlapped with the published GenBank sequence of *O. madagascariensis* (GenBank accession nos.: HQ706179 for *O. madagascariensis* and KC190065 for *H. perdita*). The sequence divergence of 0.1% between the *H. perdita* specimens and *O. madagascariensis* is well within the intraspecific genetic variation found in birds in general (Kerr *et al*. 2007). Considering also the high levels of divergence of cytochrome-*b* sequences among the known species of Bernieridae (Cibois *et al*. 2001), it therefore constitutes strong evidence that the *H. perdita* types are fledglings of *O. madagascariensis*.

Morphology

The external morphology of *H. perdita* is well described by Peters (1996), with special emphasis on the shapes of the bill and feet compared to those of *H. corallirostris*. The birds were recognised as fledglings (with remiges and rectrices still not fully grown), with plumages distinct from all other (examined) Malagasy birds, although most similar to the female and juvenile plumages of *H. corallirostris*. The plumage is described briefly as being dull brown with a blackish forehead, and illustrated by photographs. The main focus of the documentation was on demonstrating the differences in bill and x-ray photos of hind extremities compared to those of *H. corallirostris*. The bill was less distinctly hooked, with a shorter and less well marked gonys, a difference attributed to the young age. However, age

would be insufficient to explain the much longer tarsi and shorter toes, as *H. corallirostris* is characterised by distinct adaptations for scansorial habits with long, strongly curved claws and an extremely long hind-toe.

Juveniles of *Oxylabes* are poorly represented in collections, which makes it understandable that Peters (1996) was unable to make the relevant comparison with that species. The best-known juvenile plumage of *O. madagascariensis* resembles that of an adult but is overall more dull brown and has a yellowish-buff throat and central underparts (e.g., Sharpe 1883, Langrand 1990). However, a distinct dull brown fledgling plumage has also been recognised (Sharpe 1883, Benson *et al*. 1976; based on specimens in Tring and Paris, Fig. 1D). This is wholly dingy olive or dark olive-brown with green-yellow fringes to the wing feathers (eventually also a charcoal-grey head: Morris & Hawkins 1998). The pale buffy or buffy-yellow feathers emerge soon on the throat, neck and breast, and dull rufous feathers then appear on the crown and nape, while the green tinge is lost on the wings (*cf*. Yamagishi & Nakamura 2009). This plumage is finally replaced by the adult plumage, which is rufous-brown to dark brown with a short white supercilium and white throat (Fig. 1C). Except for the restricted blackish area on the lores and rather greyish underparts, the *H. perdita* specimens (Figs. 1 A–B) agree well with the dull brown early plumage of *O. madagascariensis* (Fig. 1D). *Oxylabes* and *Hypositta* share fused basal sections of the second and third toes, but differ in other details such as proportions of the feet and scutellation, and in these respects the *H. perdita* specimens resemble *Oxylabes*.

Conclusion

In the light of these new analyses it is evident that the two specimens referred to as *H. perdita* are fledglings of *O. madagascariensis* in a poorly known dull and nondescript brown plumage. For this reason *Hypositta perdita* Peters, 1996, is here synonymised with *Oxylabes madagascariensis* (J. F. Gmelin, 1789). Both *Hypositta corallirostris* and *O. madagascariensis* are widespread and common in the evergreen forests of eastern Madagascar (Goodman *et al*. 1997), including the Eminiminy / Andohalela area. In fact, H. Bluntschli collected an adult *O. madagascariensis* on the same date and at the same locality as the two '*Hypositta perdita*' specimens (Fig. 1C). Bluntschli may have been aware that the adult and juvenile specimens belonged together, but unlike in other cases, a species identity was not noted on the specimen labels.

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