Photographic evidence of bi-parental nest-building by Schlegel's Asity Philepitta schlegeli (Philepittidae)

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Photographic evidence of bi-parental nest-building by Schlegel's Asity *Philepitta schlegeli* (Philepittidae)

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Summary.—The reproductive systems and nesting biology of the four species of the Madagascar-endemic Philepittidae are poorly known. Some are described as polygynous, with males forming leks, but without supporting evidence. Our photographs show bi-parental nest-building by two pairs of Schlegel's Asity *Philepitta schlegeli*, suggestive of social monogamy. We review and briefly assess reports on the reproductive strategy and nesting biology of all four species of Philepittidae.

Schlegel's Asity *Philepitta schlegeli* is one of the four strongly sexually dimorphic, largely frugivorous, members of the Philepittidae—a family of suboscine passerines endemic to Madagascar. The species is restricted to patches of appropriate remnant habitat in northern and western Madagascar including seasonally dry lowland rainforest, wet deciduous forest and karst canyon forest, from Andavakoera south to *c.*70 km north of Morondava, and from sea level to 800 m (Hawkins 2003). Little is known of the breeding behaviour of the only two genera of Philepittidae, with the two species of *Neodrepanis* even more poorly known than the two *Philepitta*. Rand (1936) wrote of the larger congeneric Velvet Asity *P. castanea* that it was a solitary bird but that two or three were sometimes seen together, and that Schlegel's Asity sometimes associated with mixed-species flocks but not usually with others of its own kind. Langrand (1990) stated that all members of the Philepittidae including Velvet Asity are generally seen 'alone or in pairs', whilst Morris & Hawkins (1998) reported that they are observed singly or in small groups.

Published observations of the nesting biology of the, better known, Velvet Asity are slightly confusing. According to Langrand (1990: 249) 'both parents feed [the] young' and his remarks informed Lambert & Woodcock (1996), who stated that only females nest-build and incubate the eggs. Hawkins (2003: 104) also reported that only the female nest-builds and the male 'takes little or no part in incubation or care of young'. Rakatomanana & René de Roland (2007) observed two female-plumaged Velvet Asities lining the same nest, but also witnessed both sexes building two other nests; incubation being by a female alone. Nest-building by males is contrary to the biology of polygynous species, in which only females typically construct and attend nests. The most significant recent text on the Philepittidae states, however, that at Ranomafana, for Velvet Asity, 'nest construction, incubation, and post-hatching parental care' were exclusively the preserve of the female (Prum & Razafindratsita 2022: 1691).

Lambert & Woodcock (1996) and Hawkins (2003) reported that the Velvet Asity is polygynous, with adult males forming dispersed leks. At Ranomafana National Park, 'Although most males appear not to develop pair bonds with females during [the] breeding season, single adult males were observed near nests in association with female-plumaged birds on several occasions'; and some males 'may establish a pair bond or social association with females outside of the display territory system' (Prum & Razafindratsita 1997: 385, 2022: 1691). This 'territory' is not of the conventional type but is merely a defended

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Figure 1. Female (left) and male (right) of a pair of Schlegel's Asity *Philepitta schlegeli* with fine nest material in the bill tip, Ankarafantsika National Park, Madagascar, 29 October 2008 (Clifford B. Frith)

Figure 2. Suspended Schlegel's Asity *Philepitta schlegeli* nest, with circular side entrance aperture, at the interior-lining stage of construction by the pair in Fig. 1, Ankarafantsika National Park, Madagascar, 29 October 2008 (Clifford B. Frith)

display site (*cf*. Frith 2024). Prum & Razafindratsita (1997) described and illustrated male display postures and, in light of the above, stated that there may be 'significant plasticity to their breeding system' (Prum & Razafindratsita 2022: 1691), without commenting as to how extraordinary this would be or citing any example of other birds exhibiting such a remarkably variable reproductive scenario.

While dispersed lekking is claimed for the Velvet Asity (Prum & Razafindratsita 2022) no convincing evidence of lekking in the Philepittidae, the members of which are apparently predominantly pair-bonding species, exists. To establish that lekking does occur, active adult male display sites should be plotted over an extensive area of appropriate uniform habitat to demonstrate a clumped dispersion of sites that does not merely reflect the use of favoured topography (*cf*. Frith 2024). In discussing lekking in other bird groups Prum

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Figure 3. Adult male Schlegel's Asity *Philepitta schlegeli* (left) adding coarse material to its nest and both sexes (right) perched atop their nest during its construction, Ankarafantsika National Park, Madagascar, 24 November 2019 (Dustin Chen)

& Razafindratsita (2022) erroneously included bowerbirds (family Ptilonorhynchidae), for which no evidence of such behaviour exists (Frith 2016, 2024).

With respect to Schlegel's Asity, Lambert & Woodcock (1996: 244) pointed out that 'there is no evidence that this species is polygynous'. Hawkins (2003: 105) considered it 'Probably polygynous', possibly with 'dispersed male leks'. Safford & Hawkins (2013: 639), however, considered there to be 'Very few data' on the species' breeding habits such that the 'Breeding system [was] poorly documented' while speculating that it might involve dispersed lekking. They also reported that 'Both male and female collect nest material' citing Hawkins (1994) who found a pair building a nest but without further comment or evidence. Lambert and Woodcock (1996: 243) stated that Hawkins (1994) had reported both adults building the nest but Hawkins (2003: 105) subsequently wrote only that the nest is 'built by female, possibly assisted by male'. Prum & Razafindratsita (2022: 1692) noted that both sexes had twice been anecdotally reported nest-building but that 'further research is required to establish the breeding system in *P. schlegeli*'.

The two species of *Neodrepanis* are thought to possibly be monogamous and territorial (Prum & Razafindratsita 1997, Safford & Hawkins 2013, Prum & Razafindratsita 2022). Observations by R. Prum (*in* Lambert & Woodcock 1996) and (*in litt*. 2024) indicated that only female Common Sunbird Asities *N. coruscans* construct the nest, although an adult male was often present nearby. O. Langrand *in* Lambert & Woodcock (1996) suggested that only females incubate. Of the Common Sunbird Asity, Prum & Razafindratsita (2022: 1692) wrote 'The territory and nest were consistently attended and defended by a male and female with an apparently established and enduring pair bond, but the nest was constructed entirely by the female'. This would imply a conventional breeding territory.

Observations made at one Yellow-bellied Sunbird Asity *N. hypoxantha* nest showed that while the female made frequent visits to build it, the male perched nearby much of the time, displaying when she was present, but did not assist in building (Lambert & Woodcock 1996). This is not typical behaviour for polygynous species, but is reminiscent of that of monogamous sunbirds (family Nectariniidae; Cheke *et al*. 2001). Field observations by DC suggest to him that the Yellow-bellied Sunbird Asity is territorial.

We here offer photographic evidence that further helps clarify part of the breeding strategy of Schlegel's Asity. CBF photographed a wild Schlegel's Asity pair as they added lining material to their near-complete nest on 29 October 2008 inside Ankarafantsika National Park (Figs. 1–2). DC photographed another wild pair's nest at an earlier stage of construction, near the entrance to Ankarafantsika National Park on 24 November 2019 (Fig.

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3). As the significance of this bi-parental behaviour was not appreciated at the time, no details of the nest site, tree species or microhabitat were noted.

As described above, the Velvet Asity has been considered to be a polygynous species and this has led some to infer that Schlegel's Asity and the two other members of the family are also polygynous (e.g., Hawkins 2003). In light of the photographic evidence presented here it is, however, clear that Schlegel's Asity is more likely to be a socially monogamous species, as implied by Frith & Frith (2023: 321) and also, by implication, Safford & Hawkins (2013) and Prum & Razafindratsita (2022).

It is clear that the reproductive strategies of all four species of the Philepittidae are inadequately, and in some cases confusingly, understood and require more study at and away from nests. Our review suggests that while appearing possible, it remains to be proven that Velvet Asity, or one or more geographical populations of this species, are polygynous and if so that males of both it and of Schlegel's Asity form leks of any kind.

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