Nest architecture, eggs, nestlings and taxonomic affinities of the Ornate flycatcher *(Myiotriccus ornatus)*

La arquitectura del nido, los huevos, los polluelos y las afinidades taxonómicas del Atrapamoscas Adornado *(Myiotriccus ornatus)*

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Abstract

The taxonomic position of Ornate Flycatcher *(Myiotriccus ornatus)* within the Tyrannidae has long been uncertain. The only nest description available suggested that the nest was an open cup but no formal, detailed description of its nest and eggs has been made. We describe aspects of the breeding biology of Ornate Flycatcher based on four nests found in Ecuador and three in Peru. Nests are spherical, mossy balls with a side entrance which are affixed by the back to a solid substrate, 0.8 to 5 m above the ground. Nest attachment and architecture support a close relationship with *Nephelomyias* and also suggest affinities to the Pipromorphine clade (Tyrannidae), which includes *Corythopis*, *Pseudotriccus*, *Mionectes*, *Leptopogon* and *Phylloscartes*. In particular, the nest and nestling of *Myiotriccus* are most similar to those of *Phylloscartes* and *Pseudotriccus*. Egg coloration, white with cinnamon markings, is also very similar to *Nephelomyias* but suggests possibly closer relationships to other genera in this group. We conclude that available information on the natural history of *Myiotriccus* provides general support for recent molecular data, but note that more complete genetic sampling of some genera could help to better understand its relationships.

Key words: eggs, *Myiotriccus ornatus*, nest architecture, nestlings, taxonomy

Resumen

La posición taxonómica del Mosquerito Adornado *(Myiotriccus ornatus)* dentro de Tyrannidae ha sido incierta por mucho tiempo. La única descripción del nido sugiere que el nido es una copa abierta, sin embargo no se ha presentado una descripción formal del nido y huevos. Describimos aspectos de la biología reproductiva del Mosquerito Adornado con base en cuatro nidos encontrados en Ecuador y tres en Perú. Los nidos son estructuras esféricas de musgo con entrada lateral, fijadas por detrás a un sustrato sólido, entre 0.8 y 5 m sobre el suelo. El anclaje y la arquitectura del nido sugieren afinidades cercanas con *Nephelomyias* y también una afinidad cercana con el clado Pipromorphinae (Tyrannidae), el cual incluye a *Corythopis*, *Pseudotriccus*, *Mionectes*, *Leptopogon* y *Phylloscartes*. En particular, el nido y los polluelos de *Myiotriccus* son más similares a los de *Phylloscartes* y *Pseudotriccus*. La coloración de los huevos, blanco con manchas canela, también es similar a los de *Nephelomyias*, pero sugiere afinidades más estrechas con otros géneros del grupo. Concluimos que la información disponible sobre la historia natural de *Myiotriccus* en general provee un soporte a los datos moleculares publicados recientemente, pero notamos que información genética más completa de algunos géneros podrían ayudar a entender mejor sus afinidades.

Palabras clave: arquitectura del nido, huevos, polluelos, *Myiotriccus ornatus*, taxonomía

Introduction

The flashy and enigmatic Ornate Flycatcher *(Myiotriccus ornatus)* inhabits the understory of montane forests from Colombia to Peru, generally at elevations from 600 to 2300 m (Fitzpatrick

2004). The nominate subspecies occurs in the Central Andes and the west slope of the Eastern Andes of Colombia, *stellatus* occurs in western Colombia and Ecuador, *phoenicurus* is found east of the Andes from southern Colombia to northern Peru, and *aureiventris* replaces *phoenicurus* in eastern Peru south of the Marañón River (Fitzpatrick 2004). The taxonomic affinities of this monotypic genus have long been uncertain, with conflicting molecular, morphological, and natural history data causing authors to continually debate its position within the tyrannid phylogeny (Zimmer 1939, Lanyon 1988, Fitzpatrick 2004; recent genetic data (Ohlson *et al.* 2008, Tello *et al.* 2009) have established that *Myiotriccus* is closely related to the recently described genus *Nephelornis* (Ohlson *et al.* 2009), but its affinities to other possibly related genera remain unclear. Until now, the breeding biology of Ornate Flycatcher was known only from a Colombian nest described as a "moss and fine rootlet cup, well concealed 1.3 m up on steep earth bank" (Hilty & Brown 1986). We provide information from four Ecuadorian and three Peruvian nests which expand upon this description, as well as providing descriptions of the eggs and nestlings, in order to specify in more detail its taxonomic affinities.

Materials and methods

We encountered and studied all nests opportunistically during general searches for avian nests. We found three nests of *M. o. stellatus* in the western Ecuadorian province of Pichincha, two in the vicinity of Mindo (*ca.* 00º04'S, 78º43'W, 1550 m), and the other in Reserva Inti Llacta (00°03'N, 78° 42'W, 1800 m). We found a fourth Ecuadorian nest (ssp. *phoenicurus*) in eastern Ecuador at the reserve of the Proyecto de Conservación del Río Bigal, administered by Fundación Ecológica Sumac Muyu, near Loreto (00°38'S, 77°19'W, 600 m, Napo Province). We studied three additional nests (ssp. *aureiventris)* in eastern Peru, Manu National Park, Tono sector, Cusco Department. The *M. o. aureiventris* nests were found near a station located adjacent to the Tono river (12º 58' S; 71º 34'W, 950 m). In Peru, GAL began nest searching on 15 August 2010, and used a temperature-sensitive data logger to monitor nest activity at several nests. We took linear measurements of the eggs to the nearest 0.1 mm and linear measurements of nests to the nearest 0.5 cm. A nestling from the first Mindo nest was photographed.

Results

Nesting dates.– On 2 July 2011 at Inti Llacta, ASU found a nest with two eggs, both of which had hatched by our return on 12 July, at which time the nestlings had partially developed contour feathers. On 19 July 2011 HFG found a nest at Mindo which contained a newly hatched nestling (estimated 0-1 days old) and an unhatched egg which we believe to have been addled. Two days later, at the same location HFG found a second nest which was under construction and appeared nearly complete. At Río Bigal, on 2 July 2011, an adult was adding material to a nest which HFG estimated to be about two-thirds complete. GAL found the first *M. ornatus* nest on 8 September with two developed eggs, but it was depredated on 11 September at 21:00. He found the second nest on 16 September with two developed eggs. The eggs hatched on 22 September and GAL observed the young nestlings for the first time on 26 September. The nestlings had their eyes closed, pink skin, and sparse natal down. Also in Peru, GAL found a third nest on 9 September with two developed eggs which was depredated on 21 September at 10:47. Nestling measurements are not available from Peru.

Nests.– (Fig. 1) The Inti Llacta nest was located in a *Cichona* sp. tree, adhered by the back to the main trunk, ca. 3 m above the ground. It was well camouflaged, as the surrounding portions of the tree were covered with dense moss and epiphytes. The nest entrance was 4 cm in diameter and near-

Figure 1. A nest of Ornate Flycatcher *(Myiotriccus ornatus)* 21 July 2011 above Mindo, Pichincha Province, Ecuador, 1550 m (Photo H. F. Greeney).

ly circular. Externally the nest material blended well with the surrounding moss, and we suspect that it was built into a pre-existing, natural cavity in the moss. We did not take any further measurements. The first Mindo nest, found on 19 July, was 5 m above the ground and similarly affixed by the back to a large tree and built into a large clump of mossy epiphytes which was roughly three times the width of the nest. Although the mossy exterior of the nest blended well with the surrounding epiphytes, it was clear that the entire globular nest had been built by the adults. Externally, the nest was 15 cm wide, 12 cm tall, and 8 cm from front-to-back. The entrance was 3.5 cm wide and 3 cm tall, and was shaded by a 3 cm overhang. Internally, the nesting chamber was 5.5 cm wide and 8 cm tall, with a compactly built egg cup measuring 4.5 cm wide by 3 cm deep. The egg cup was also built of moss, but of a different, drier type than the external portions of the nest. The second Mindo nest was 3 m above the ground and built into a clump of moss dangling 15 cm below a large branch. The hanging moss was slightly narrower than the nest, and extended an additional 50 cm below the bottom of the globular nest structure. The Río Bigal nest was 5 m above the ground and attached to the trunk of an *Iriartea deltoidea* palm tree in a similar fashion to the first two nests described above. We were unable to record any further information for this nest. All three Peruvian nests were also mossy domes attached to vertical tree trunks by the back, one on a palm tree near a gap in the forest canopy and the other two along a small creek. The domed nests were externally built of moss, but the inner cup was made of tightly-compacted, fine grasses and fibers. On average (± SD) the measurements of the nest entrances were 3.9 ± 0.3 cm x 3.8 ± 1.1 cm and the walls of the dome portion were 2.6 ± 0.2 cm thick. Internally, the mean distance from the entrance lip to the back of the nest was 5.9 ± 1.0 cm and the egg cups were 3.4 ± 0.2 cm deep. Externally, mean nest measurements were 10.2 ± 2.2 cm front-to-back, 8.2 ± 1.4 cm wide and 11.4 ± 1.9 cm tall. The nests had additional moss hanging below the dome that was, on average, 8.5 ± 3.2 cm in length. The average height above ground of these three nests was 1.9 ± 1.3 m. The mean height of all described nests (n = 8 including that described in Hilty & Brown (1986) is 2.9 ± 1.5 m.

Eggs and nestlings.– All eggs examined closely (n = 9) were cream colored or off-white, with small, sparse, cinnamon flecks and spots, heaviest at the larger end (Fig. 5q). The two eggs from the nest at Inti Llacta measured 17.0 x 12.8 mm and 16.9 x 12.9 mm. The single egg measured from Mindo was 17.0 x 13.4 mm. Peruvian eggs (n = 6) ranged in size from 16.8-19.6 mm long and 13.1-14.2 mm wide (mean ± SD = 18.3 ± 1.0 x 13.8 ± 0.4 mm). Mean measurements of all eggs were 17.9 ± 1.1 x 13.5 ± 0.5 mm.

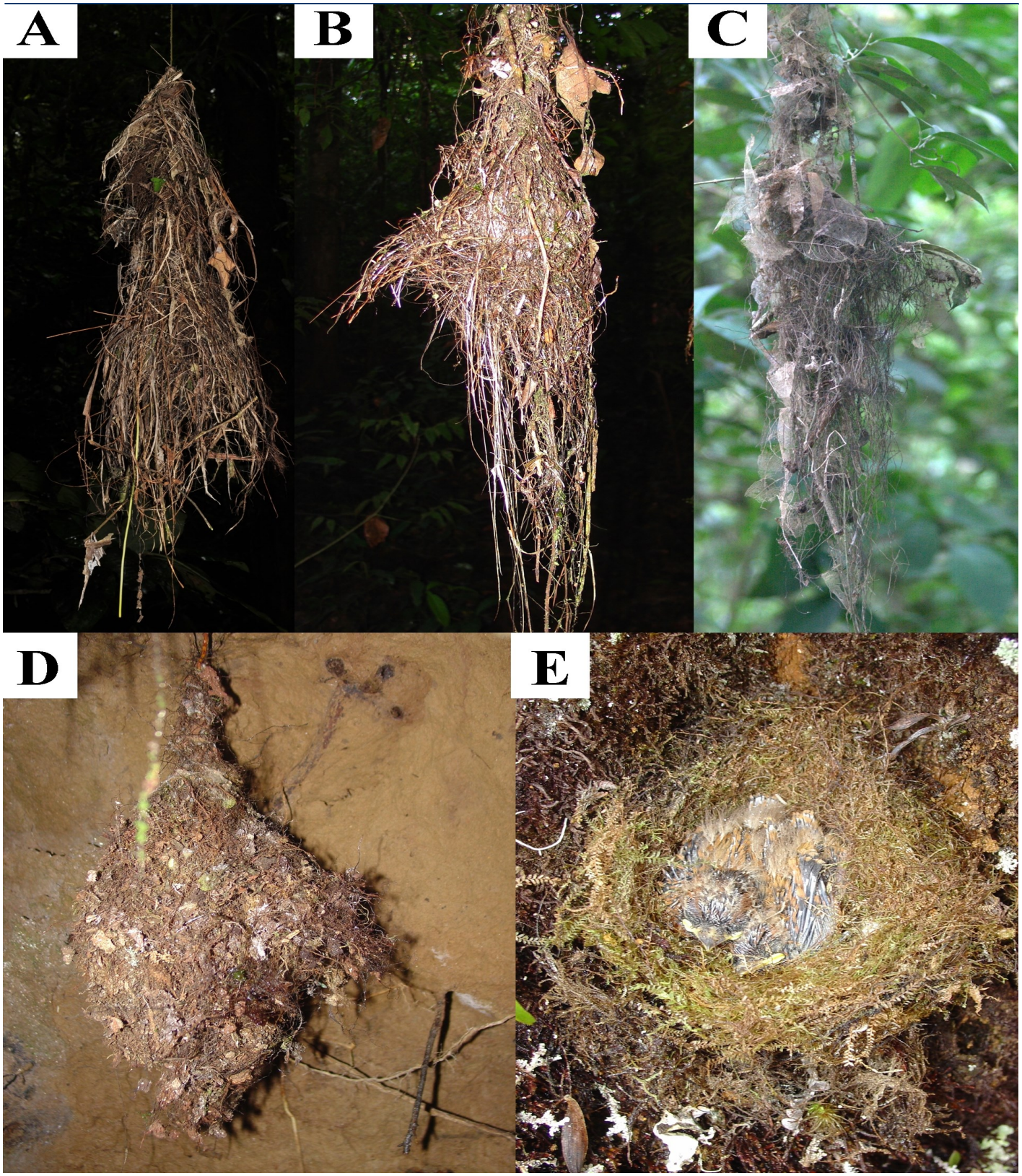

Figure 2. Nests of Neotropical Tyrannidae: **(A)** Sulphur-rumped Flycatcher *(Myiobius sulphureipygius)* 18 May 2011, San Cristobal, Guanacaste, Costa Rica; **(B)** Whiskered Flycatcher *(Myiobius barbatus)* 26 August 2003, Tiputini Biodiversity Station, Orellana, Ecuador; **(C)** Royal Flycatcher *(Onychorynchus coronatus)* 16 April 2011, La Selva Biological Station, Costa Rica; **(D)** Rufous-breasted Flycatcher *(Leptopogon rufipectus)* 15 September 2006, Yanayacu Biological Station, Napo, Ecuador; **(E)** Cinnamon Flycatcher *(Pyrrhomyias cinnamomea)* 29 November 2004, Tapichalaca Biological Reserve, Zamora-Chinchipe, Ecuador (Photos H. F. Greeney).

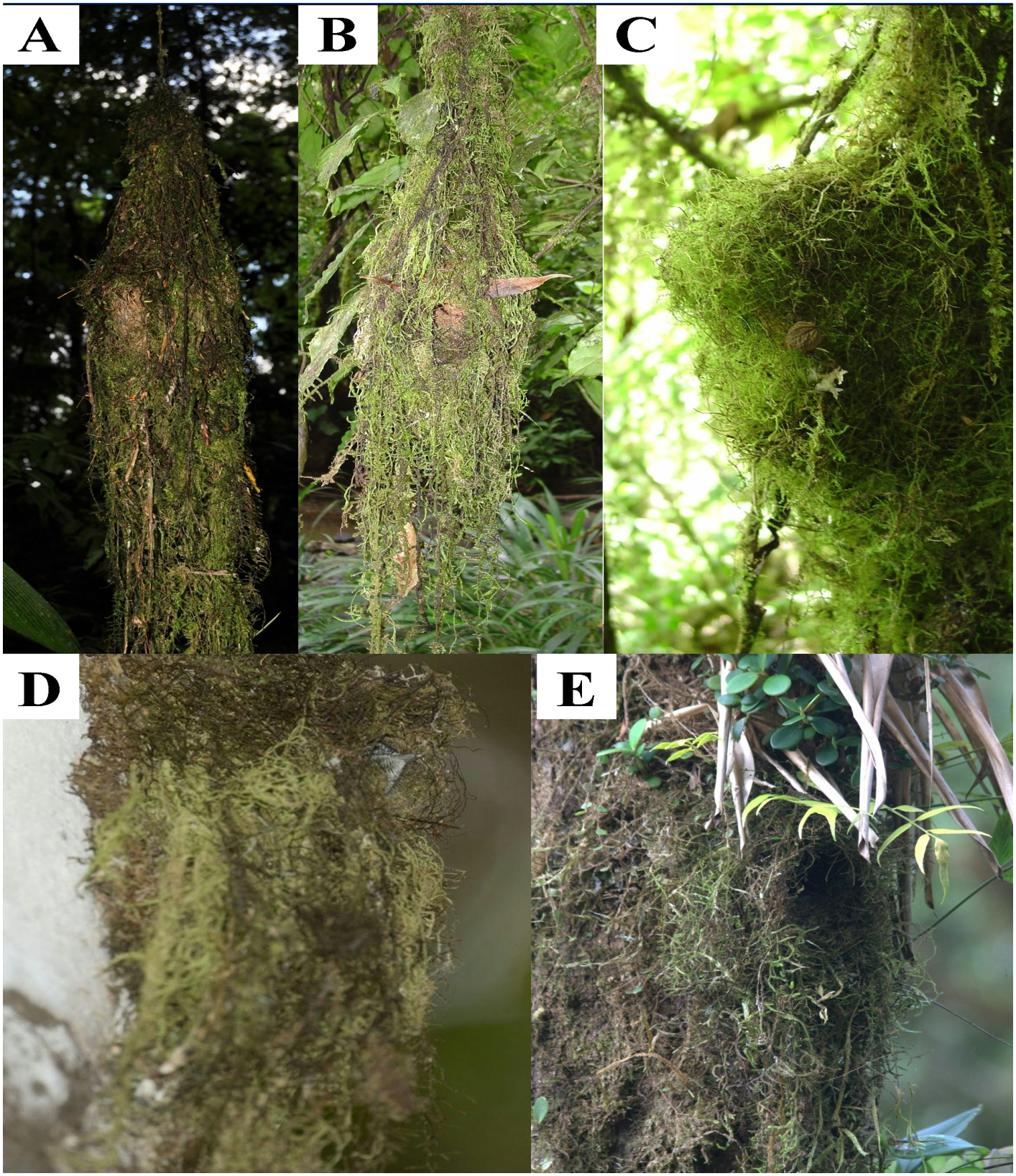

Figure 3. Nests of Neotropical Tyrannidae: **(A)** Ochre-bellied Flycatcher *(Mionectes oleagineus)* 9 March 2011, Río Frío, Costa Rica; **(B)** Olive-striped Flycatcher *(Mionectes olivaceus)* 31 March 2005, Mushullacta, Napo, Ecuador; **(C)** Rufous-headed Pygmy-Tyrant *(Pseudotriccus ruficeps)* 8 October 2004, Tapichalaca Biological Reserve, Zamora-Chinchipe, Ecuador; **(D)** Marble-faced Bristle-Tyrant *(Phylloscartes ophthalmicus)* 30 September 2007, Yanayacu Biological Station, Napo, Ecuador; **(E)** Ornate Flycatcher *(Myiotriccus ornatus)* 21 July 2011, above Mindo, Pichincha Province, Ecuador, 1550 m (Photos H. F. Greeney).

Figure 4. A nest of Ochraceous-breasted Flycatcher *(Nephelomyias ochraceiventris),* 21 October 2008, Centro de Investigación Wayqecha, Cuzco, Peru, 3070 m (Photo G. A. Londoño).

Discussion

Until now, the nest of *M. ornatus* was thought to be cup-shaped, based on the brief description of a Colombian nest in Hilty& Brown (1986). Steve Hilty (pers. comm), however, informs us that his original notes on this nest (17 March 1973) describe it as a "cup formed inside a ball of moss." With this clarified description, it appears that apart from its location on a low bank, this nest was similar in construction to those described here.

The new natural history information presented here for *Myiotriccus ornatus* provides us with further evidence concerning its taxonomic affinities. Early authors considered the Ornate Flycatcher a member of the genus *Myiobius* (Taczanowski 1884, Sclater 1888), the members of which share many plumage characteristics with *Myiotriccus*, but it was subsequently placed in the currently monotypic genus *Myiotriccus* (Ridgway 1905, Chapman 1917, Cory & Hellmayr 1927). Traylor (1979) placed *Myiotriccus* near *Onychorhynchus, Terenotriccus* and *Myiobius* in his generic order. Subsequently, Lanyon (1988) placed *Myiotriccus* close to *Myiophobus* within his *Phylloscartes* group. Finally, based on molecular evidence, Ohlson *et al.* (2008) and Tello *et al.* 2009) placed *Myiotriccus* in a clade with *Pyrrhomias* and *Hirundinea,* suggesting a particularly close relationship with the Ochraceous-breasted Flycatcher *(Nephelomyia ochraceiventris),* recently segregated from the genus *Myiobius* by Ohlson *et al.* (2008). Below we discuss these following options in light of the observations presented here.

Nests.– The pendant nests of *Myiobius* (Cherrie 1895, Skutch 1960, Greeney & Gelis 2008; Figs. 2a, b) and *Terenotriccus* (Skutch 1960, Kirwan 2009) are very similar in placement and architecture to each other, and are also similar to *Onychorhynchus* (Haverschmidt 1962, Whittingham 1994; Fig. 2c), but all of these differ considerably from that of *Myiotriccus* (Figs. 1 & 3). Nests of *Myiophobus* are open cups suspended by their rims (Skutch 1960, Greeney *et al.* 2005b). Similarly, the nests of *Pyrrhomias* (Collins & Ryan 1995; Fig. 2e) and *Hirundinea* (Euler 1900), though similar to each other, are strongly divergent in form from those of *Myiotriccus* (Figs. 1 & 3e). The nest of *Myiotriccus* appears most similar to nests of *Phylloscartes* and related genera in the Pipromorphine clade (*sensu* Ohlson *et al.* 2008, Rheindt *et al.* 2008), all of which clearly build enclosed nests (Leptopogon, Belcher &Smooker 1937, Aguilar 2001, Dobbs & Greeney 2006, Fig. 2d; *Mionectes,* Willis *et al.* 1978, Bencke 1995, Aguilar *et al.* 2000, Figs. 3a, b; *Corythopis,* Oniki & Willis 1980, Simon & Pacheco 1996; *Pseudotriccus,* Greeney *et al.* 2005, Greeney

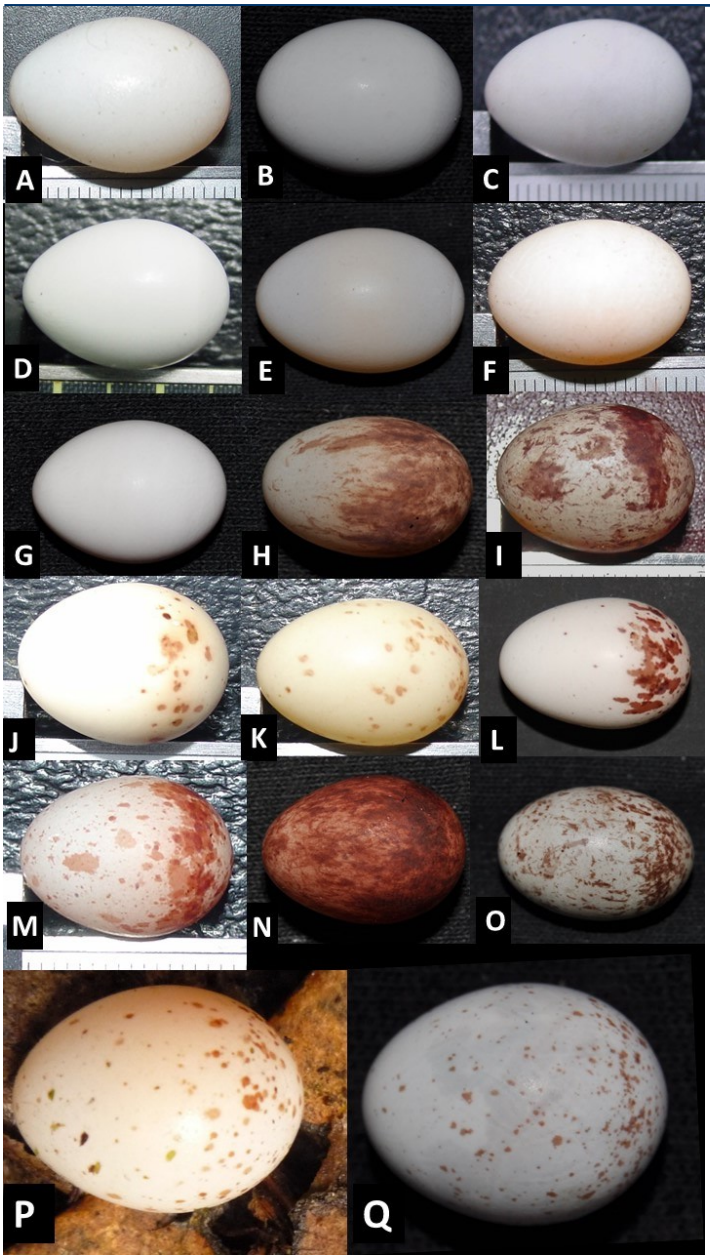

Figure 5. Eggs of Neotropical Tyrannidae: **(A)** Rufous-breasted Flycatcher *(Leptopogon rufipectus)* 31 October 2006, Yanayacu Biological Station, Napo, Ecuador; **(B)** Slaty-capped Flycatcher *(Leptopogon superciliaris)* 17 July 2011, above Mindo, Pichincha Province, Ecuador, 1550 m; **(C)** Bronze-olive Pygmy-Tyrant *(Pseudotriccus pelzelni),* 3 December 2002, Pacto Sumaco, Napo Province, Ecuador; **(D)** Streak-necked Flycatcher *(Mionectes striaticollis)* 24 February 2003, Yanayacu Biological Station, Napo, Ecuador; **(E)** Olive-striped Flycatcher *(Mionectes olivaceus)* 5 November 2012, Narupa, Napo Province, Ecuador, 1100 m; **(F)** Rufous-headed Pygmy-Tyrant *(Pseudotriccus ruficeps)* 8 October 2004, Tapichalaca Biological Reserve, Zamora-Chinchipe, Ecuador; **(G)** Ochre-bellied Flycatcher *(Mionectes oleagineus)* 9 March 2011, Río Frío, Heredia Province, Costa Rica; **(H)** Sulphur-rumped Flycatcher *(Myiobius sulphureipygius)* 18 May 2011, San Cristobal, Guanacaste, Costa Rica; **(I)** Whiskered Flycatcher *(Myiobius barbatus)* 26 August 2003, Tiputini Biodiversity Station, Orellana, Ecuador; **(J)** Olive-chested Flycatcher *(Myiophobus cryptoxanthus)* 19 February 2005, Mushullacta, Napo, Ecuador; **(K)** Bran-colored Flycatcher *(Myiophobus fasciatus)* 17 March 2005, Yungilla, Azuay, Ecuador; **(L)** Tawny-breasted Flycatcher *(Myiobius villosus),* 19 March 1988 (J. M. Carrion; WFVZ-157317 collection), Narupa, Napo Province, Ecuador; **(M)** Cinnamon Flycatcher *(Pyrrhomyias cinnamomea)* 5 January 2004, Yanayacu Biological Station, Napo, Ecuador; **(N)** Royal Flycatcher *(Onychorhynchus coronatus)* 17 May 2011, Santa Rosa, Guanacaste, Costa Rica; **(O)** Ruddy-tailed Flycatcher *(Terenotriccus erythrurus),* 2 October 2012, Shiripuno Research Station, Pastaza Province, Ecuador, 220 m; **(P)** Ochraceous-breasted Flycatcher *(Nephelomyias ochraceiventris),* 21 October 2008, Centro de Investigación Wayqecha, Cuzco, Peru, 3070 m; **(Q)** Ornate Flycatcher *(Myiotriccus ornatus)* 21 July 2011, above Mindo, Pichincha Province, Ecuador, 1550 m (All photos H. F. Greeney except **(P)** *N. ochraceiventris* by G. A. Londoño).

2006, Fig. 3c; *Phylloscartes*, Remold & Ramos-Neto 1995, Kirwan *et al.* 2004, Greeney 2009, Kirwan *et al.* 2010, Fig. 3d). In particular, with respect to mode of attachment (generally affixed to a stable substrate), the nests of *Miotriccus* are remarkably similar to those of *Pseudotriccus* (Fig. 3c), at least some species of *Phylloscartes* (Fig. 3d), and to that described for *Nephelomyias ochraceiventris* (Peralta *et al.* 2011; Fig. 4).

Eggs.– The eggs of *Myiotriccus,* being marked with cinnamon flecking (Fig. 5q), tell a slightly different story. They are very similar to the photograph of the eggs of *N. ochraceiventris* in Peralta *et al.* (2011), supporting the close relationship suggested by Tello *et al.* (2009). However, with the exception of *Corythopis* (Simon & Pacheco 1996), eggs described for *Phylloscartes* and related genera are unmarked (Dabbene 1919, Belcher &Smooker 1937, Greeney 2006, 2009; Greeney *et al.* 2006, Kirwan *et al.* 2010, Figs. 5a-g). In contrast,

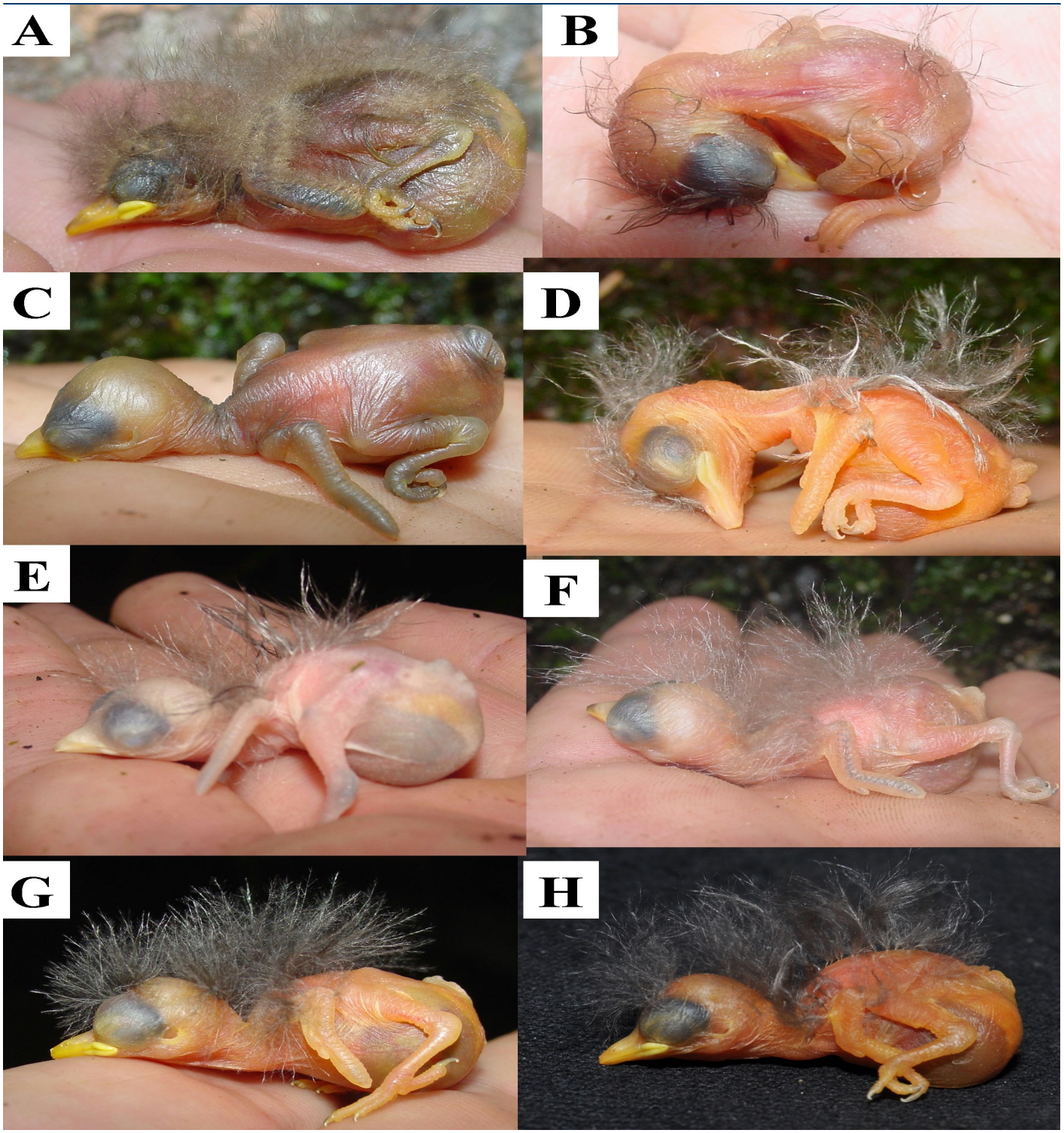

Figure 6. Nestlings of Neotropical Tyrannidae, photographed on the day of hatching except for **(A)** and **(C)**, which are 2 and 1 days old, respectively: **(A)** Cinnamon Flycatcher *(Pyrrhomyias cinnamomea)* 22 October 2003, Yanayacu Biological Station, Napo, Ecuador; **(B)** Bran-colored Flycatcher *(Myiophobus fasciatus)* 21 February 2004, Buenaventura Biological Reserve, El Oro, Ecuador; **(C)** Sulphur-rumped Flycatcher *(Myiobius sulphureipygius)* 10 February 2004, Buenaventura Biological Reserve, El Oro, Ecuador; **(D)** Rufous-breasted Flycatcher *(Leptopogon rufipectus)* 11 November 2002, Yanayacu Biological Station, Napo, Ecuador; **(E)** Olive-striped Flycatcher *(Mionectes olivaceus)* 13 April 2005, Mushullacta, Napo, Ecuador; **(F)** Streak-necked Flycatcher *(Mionectes striaticollis)* 4 April 2004, Yanayacu Biological Station, Napo, Ecuador; **(G)** Rufous-headed Pygmy-Tyrant *(Pseudotriccus ruficeps)* 5 November 2006, Yanayacu Biological Station, Napo, Ecuador; **(H)** Ornate Flycatcher *(Myiotriccus ornatus)* 21 July 2011, above Mindo, Pichincha Province, Ecuador, 1550 m (Photos H. F. Greeney).

eggs of *Myiobius* (Skutch 1960, Greeney & Gelis 2008; Figs. 5h, i, l), *Terenotriccus* (Skutch 1960; Fig. 5o), *Onychorhynchus* (Skutch 1960, Haverschmidt 1962; Fig. 4n), *Myiophobus* (Greeney *et al.* 2005; Figs. 4j, k), *Pyrrhomias* (Collins & Ryan 1995; Fig. 5m), and *Hirundinea* (Euler 1900) are all white (or off-white; *Myiophobus)* and bear varying degrees of cinnamon or brown markings.

Nestlings.– Nestling appearance is the least-documented aspect of the genera in question. For all species with nestling descriptions available, however, all except for *Myiobius* (Fig. 6c), *Terenotriccus,* and *Onychorhynchus* (see Skutch 1960) are born with some amount of natal down. The nestlings of *Pyrrhomias* (Collins & Ryan 1995; Fig. 6a) are born with considerably shorter and denser down plumes than those of other genera under consideration. *Myiophobus* nestlings hatch with long, wispy natal down (Fig. 6b), but it is considerably sparser than on nestlings of *Mionectes* (Skutch 1960, Figs. 6e, f), *Leptopogon* (Fig. 6d), and *Pseudotriccus* (Greeney *et al.* 2005a, Greeney 2006; Fig. 6g). Qualitatively, as illustrated in Figure 6, it appears to us that the natal down of *Myiotriccus* (Fig. 6h) is most similar to that of *Pseudotriccus*. Simon & Pacheco (1996) do not mention down in their description of the nestling of *Corythopis* and, unfortunately, the nestlings of *Nephelomyias* spp. remain unknown (Farnsworth *et al.* 2016).

Conclusions

In summary (see Table 1), following the terminology of Simon & Pacheco (2006), the Ornate Flycatcher builds a "closed/globular/lateral" nest, a qualitative category which also applies to nests of *Pseudotriccus* (Greeney 2006), at least some species of *Phylloscartes* (Bertoni 1901, Greeney 2009) and to that of *Nephelomyias ochraceiventris* (Peralta *et al.* 2011). This architecture is clearly divergent from the "low-cup/base" nests of *Pyrrhomias* (Collins & Ryan 1995) and *Hirundinea* (Euler 1900), and demonstrates that Hilty & Brown's (1986) oft-cited description of an apparently similar low-cup/base nest was incomplete, in fact misleading. For the other genera compared here which also build enclosed nests, the nest of Ornate Flycatcher differs from the "closed/retort/pensile" nests of *Myiobius, Terenotriccus,* and *Ornychorhynchus* (Skutch 1960), the "closed/long/pensile" nests of *Mionectes* (Greeney *et al.* 2005), and the "closed/globular/pensile" nests of *Leptopogon* (Moore 1944, Dobbs & Greeney 2006). Other than *Phylloscartes* and *Pseudotriccus*, the most similar category of closed nest builders are the nests of *Corythopis* (Simon & Pacheco 1996), considered to be in the category "closed/furnace/base" (Simon & Pacheco 2006). It has not escaped our notice, however, that this nest form could also be considered closed/globular in form, and broadly fits into the category of non-pensile, making it somewhat similar to the nest of *Myiotriccus.* Similarly, though relevant characters may not yet have been identified (Collins 2010), the nestlings of *Myiotriccus* described here are qualitatively most similar to those of *Pseudotriccus* (Greeney

Table 1. Comparative table of qualitative similarities and differences between the nest, eggs, and nestlings of Myiotriccus ornatus and putative relatives. The numbers of +/- symbols suggest the relative strength of similarities or dissimilarities; a ? indicates a lack of data for the genus in question.

Genus	Nest architecture	Nest placement	Egg	Nestling
Myiobius	–	–	+	– –
Terenotriccus	–	–	+	– –
Onychorhynchus	–	–	+	– –
Myiophobus	– –	– –	+	+
Pyrrhomyias	– –	– –	+ +	+
Hirundinea	– –	– –	+	?
Phylloscartes	+ +	+	–	+?
Leptopogon	+	–	–	+
Mionectes	+	–	–	+
Corythopis	+	– –	+	?
Pseudotriccus	+ +	+ +	–	+ +
Nephelomyias	+ +	+ +	+ + +	?

2006, Greeney *et al.* 2005a).

Nest architecture is thought to provide useful characters for generating and testing phylogenetic hypotheses at multiple taxonomic scales within the avian phylogeny (Ihering 1904, Sheldon & Winkler 1999, Zyskowski & Prum 1999, Dobbs *et al.* 2003, Miller & Greeney 2008, Zyskowski & Greeney 2010). Similarly, other natural history characters such as vocalizations, behavior, and nestling pterylosis are frequently useful for evaluating and testing taxonomic relatednesss (Prum 1990, Isler *et al.* 1998, 2009; Areta 2007, Collins 2010). Thus, we feel that egg coloration, nest architecture, and nestling appearance support the placement of *Myiotriccus* closest to *Nephelomyias* and, other than egg coloration, suggest phylogenetic affinities to *Phylloscartes* and *Pseudotriccus* (Table 1). However, because nests, eggs and nestlings of many species of *Phylloscartes* remain undescribed, and genetic data are lacking for many species in some putatively related genera, we cannot rule out one or more potential cases of convergence in these characteristics among the genera discussed. While we hope the data presented here are valuable contributions to avian natural history, we acknowledge that a general lack of understanding of the selective forces affecting nest architecture throughout the neotropical avifauna precludes us from reaching more comprehensive taxonomic conclusions.

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