



A new genus for three species of tyrant flycatchers (Passeriformes: Tyrannidae), formerly placed in *Myiophobus*

JAN I. OHLSON¹, JON FJELDSAÅ² & PER G. P. ERICSON³

1) Department of Vertebrate Zoology, Swedish Museum of Natural History, P.O. Box 50007, SE-104 05 Stockholm, Sweden. Email: jan.ohlson@nrm.se

2) Zoological Museum, University of Copenhagen, Universitetsparken 15, DK-2100 Copenhagen, Denmark. Email: jffjeldsaa@snm.ku.dk

3) Director of Science, Swedish Museum of Natural History, P.O. Box 50007, SE-104 05 Stockholm, Sweden. Email: per.ericson@nrm.se

Abstract

A new genus, *Nephelomyias*, is erected for three species of Andean tyrant flycatchers (Aves: Passeriformes: Tyrannidae) traditionally placed in the genus *Myiophobus*. An extensive study based on molecular data has shown that they form a well supported clade that is not closely related to other *Myiophobus* species. Instead, they form a small independent lineage in Tyrannidae, together with *Pyrrhomyias*, *Hirundinea* and *Myiotriccus*.

Key words: *Nephelomyias lintoni*, *Nephelomyias ochraceiventris*, *Nephelomyias pulcher*, Tyrannidae, taxonomy, phylogeny

Introduction

Recent phylogenetic studies, based on extensive molecular data (e.g. Ohlson et al. 2008; Tello et al. 2009), have greatly improved our knowledge of the relationships and evolution of the tyrant flycatchers (Tyrannidae). Several unexpected relationships have been revealed and a number of traditional genera have proven to be non-monophyletic, prompting taxonomic rearrangements. Here we erect a new generic name for three species traditionally placed in the genus *Myiophobus*, which were found by Ohlson et al. (2008) to belong to a separate clade within Tyrannidae. Higher level classification generally follows Tello et al. (2009). The tyrant flycatcher genus *Myiophobus* has traditionally been considered to encompass nine species (Traylor 1979): *M. flavicans* (P. L. Sclater), *M. phoenicomitra* (Taczanowski & Berlepsch), *M. inornatus* Carriker, *M. roraimae* (Salvin & Godman), *M. pulcher* (P. L. Sclater), *M. lintoni* Meyer de Schauensee, *M. ochraceiventris* (Cabanis), *M. cryptoxanthus* (P. L. Sclater) and the type species *M. fasciatus* (Stadius Müller). Except for *M. cryptoxanthus* and *M. fasciatus*, all species inhabit humid montane forest in the Andes, with *M. roraimae* also occurring in the Tepui region. All species traditionally placed in *Myiophobus* are small tyrannids with a typical flycatcher physiognomy, coupled to a sallying foraging technique. They are thus similar in external appearance to various members of Contopini, such as *Empidonax* and *Lathrotriccus*, but also to *Myiotriccus* and *Pyrrhomyias* in Hirundineinae. All species traditionally placed in *Myiophobus* share the presence of a semiconcealed coronal patch of bright yellow to orange-red feathers, a feature absent in most other genera traditionally placed in Fluvicolinae (e.g. Traylor 1979).

Myiophobus has long been suspected to be non-monophyletic and Lanyon (1986, 1988a, 1988b) presented anatomical evidence for placing *M. lintoni*, *M. ochraceiventris*, *M. phoenicomitra* and *M. roraimae* in the rather disparate *Phylloscartes* group in his *Elaenia* assemblage, and the other species in the *Myiophobus* group in his *Empidonax* assemblage. He did not have access to any material of *M. pulcher*. Ohlson et al.

(2008) confirmed the polyphyly of *Myiophobus*, but their results differed markedly from those of Lanyon (Figure 1). Instead, they agreed with relationships suggested by Fitzpatrick et al. (2004). Here, it was demonstrated that (1) *M. fasciatus* and *cryptoxanthus* are sister taxa, constituting *Myiophobus sensu stricto*; (2), *M. flavicans*, *roraimae* and *phoenicomitra* form a well supported clade (probably also including *M. inornatus*, which is very similar to *M. flavicans* and *M. phoenicomitra*). These two groups are part of the subfamily Fluvicolinae, with *Myiophobus sensu stricto* being the sister group to a clade including *Cnemotriccus*, *Empidonax* and *Contopus*, while the “*M. flavicans* group” belongs in a clade together with the Andean *Ochthoeca* (including *Silvicultrix*, see García-Moreno et al. 1998) and *Tumbezia*. The generic affiliation of the “*M. flavicans* group” will be revised, once a more comprehensive analysis of the entire *Ochthoeca* clade has been carried out.

Myiophobus pulcher, *M. lintoni* and *M. ochraceiventris* were found to be far removed phylogenetically from the other *Myiophobus* species, instead belonging in a well-supported deep clade together with *Myiotriccus*, *Pyrrhomyias* and *Hirundinea* (Hirundineinae of Tello et al. 2009). This relationship was found both by Ohlson et al. (2008) and Tello et al. (2009), although the latter only sampled *M. ochraceiventris*. Ohlson et al. (2008) found *Myiophobus lintoni* and *ochraceiventer* to be very close relatives, with *M. pulcher* as their sister species. As they are not closely related to any other *Myiophobus* species, they must either be incorporated in one of the existing genera in Hirundineinae, or be placed in a separate genus. They are morphologically and behaviorally distinctive from their close relatives; therefore, we consider it warranted to place them in a separate genus. All constituent taxa in these three species were originally described in *Myiophobus* or *Myiobius*, except *M. ochraceiventris*, which was described in *Mitrephorus*. That name is a junior synonym of *Mitrephanes*, originally designated for *Mitrephanes phaeocercus* (P. L. Sclater). As there is no name available for this clade, we propose a new generic name for these three distinctive Andean flycatchers:

***Nephelomyias*, gen. nov. Ohlson, Fjeldså & Ericson**

Type species: *Mitrephorus ochraceiventris* Cabanis, 1873.

Included species: *Nephelomyias pulcher* (P. L. Sclater, 1861) comb. nov., Handsome Flycatcher; *Nephelomyias ochraceiventris* (Cabanis, 1873) comb. nov., Ochraceous-breasted Flycatcher; *Nephelomyias lintoni* (Meyer de Schauensee, 1951) comb. nov. Orange-banded Flycatcher.

Diagnosis: *External morphology*—Small passerine birds similar in proportions to several “contopine” flycatcher genera (clade F4 in Ohlson et al. 2008; Contopini in Tello et al. 2009), e.g. *Lathrotriccus* and *Empidonax*, but bill flatter and relatively shorter, barely longer than the surrounding rictal bristles, and with a much smaller distal hook. Distinguished from other species traditionally included in *Myiophobus* by the combination of contrasting wing bars and pale panel on the distal two thirds of the secondaries, rich yellow to ochraceous underparts, and lack of streaking or flammulated pattern on chest and flanks. They are markedly distinct from other members of Hirundineinae, being less derived in both proportions and plumage pattern. They lack the unique colour pattern of *Myiotriccus* and the long wings, weak tarsi and predominantly rufous plumage of *Pyrrhomyias* and *Hirundinea*.

The total length is 12.5–14 cm (*lintoni* and *ochraceiventris*) or 9.5–11 cm (*pulcher*). Plumage predominantly olive above and yellow below, with orange ochre breast in *ochraceiventris* and *pulcher*; head with prominent yellow to orange-red coronal patch (most prominent in males) and pale arched supraloral line and inconspicuous eye ring; wings and tail dusky to blackish with broad pale ochre to bright cinnamon tips of greater and median secondary coverts, forming two conspicuous wing bars; tertials and remiges edged whitish to pale ochre, except on the inner third of the secondaries, which forms a distinct blackish patch in the closed wing. *Nephelomyias pulcher* differs from the other two by being smaller with a proportionally shorter tail. Interspecific variation in plumage coloration involves tone and richness in colour of underparts and wing markings, colour of the supraloral stripe and eye ring and degree of grey tinge on the head. Apart from this

variation, *N. ochraceiventris* has the ochre colour of the underparts extending over the sides of the head, and an all black bill (yellowish lower mandible in the other two); *N. lintoni* has pale iris (dark in the other two species).

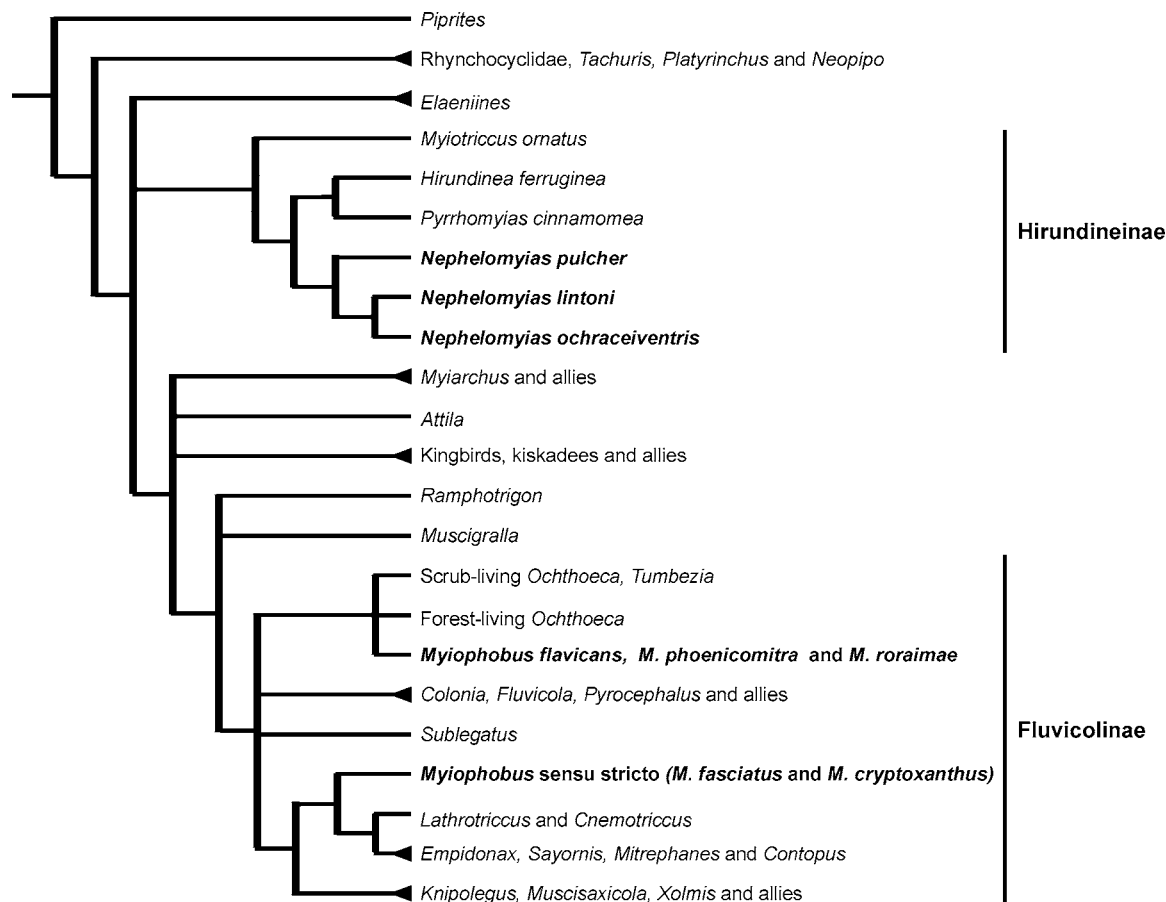


FIGURE 1. Simplified phylogenetic tree of Tyrannidae modified from Ohlson et al. (2008). Nodes supported by Bayesian posterior probabilities <0.95 are collapsed. Clades with several genera have in most cases been condensed and are indicated by arrows at the tip of the branch. All species traditionally placed in *Myiophobus* are in bold type. The three species in *Nephelomyias* form a strongly supported clade with *Myiotriccus*, *Pyrrhomyias* and *Hirundinea* (Hirundineinae), whereas the other *Myiophobus* species belong in Fluvicolinae.

Anatomical characters—Cranial and syringeal material is only known for one species (*N. ochraceiventris*), so a full evaluation of anatomical characters cannot be made for the genus. Furthermore, cranial and syringeal morphology in Tyrannidae has been shown to be highly homoplastic (Birdsley 2002; Ericson et al. 2006; Ohlson et al. 2008) and any of the individual character states below are found in some other tyrant flycatcher clade. However, at least *N. ochraceiventris* shares with *Myiotriccus*, *Hirundinea* and *Pyrrhomyias* the following unique combination of characters (Lanyon, 1986, 1988a, 1988b):

- 1) Superior interorbital fenestrae obliterated by ossification (found in many members of Elaeniinae and Rhynchocyclidae, but not in Tyranninae or Fluvicolinae other than *Myiophobus flavicans*, *M. inornatus* and *M. fasciatus*);
- 2) Lack of a fork at the posterior end of the trabecular plate in the nasal septum (characteristic for non-fluvicoline tyrant flycatchers, in Fluvicolinae only found in *Myiophobus phoenicomitra* and some specimens of *M. roraimae*);
- 3) 1–2 A elements form completely ossified rings around each bronchus in the syrinx (found in most tyrannids, absent in *Ochthoeca*, *Tumblebees*, *Colorhamphus*, *Fluvicola*, *Arundinicola* and *Alectrurus* in

Fluvicolinae, in the tody-tyrants and *Cnipodectes* in Rhynchocyclidae, and in all members of Elaeniinae except *Inezia* and *Zimmerius*);

4) Bronchi separated by a calcified pessulus (found in many members of Rhynchocyclidae, but absent in all other tyrant flycatchers, except *Sublegatus*, *Colonia*, *Machetornis*, *Zimmerius*, *Inezia*, *Pseudelaenia*, *Myiophobus flavicans*, *M. inornatus* and *M. fasciatus*).

Nephelomyias ochraceiventris further shares with *Myiotriccus* a slightly elevated trabecular plate, resulting in a sagittal ridge at the ventral end of the nasal septum (typical of elaeniines) and the lack of a notch at the anterior end of the nasal septum. Neither of these character states is found in *Hirundinea*, *Pyrrhomyias* or any member of Fluvicolinae, except *Myiophobus phoenicomitra* and *M. roraimae*.

Habitat and behaviour: Distinguished behaviorally both from the other members of Hirundineinae and from their former congeners in *Myiophobus* by being more arboreal, inhabiting the canopy and sub-canopy of humid montane forest. They forage for small arthropods (and possibly some fruit) by short sallies to air or foliage and by perch gleaning. Unlike other members of Hirundineinae, they usually travel in small groups which often accompany mixed foraging parties (Poulsen 1996), a behaviour that sets them apart from most tyrant flycatchers outside Elaeniinae (Ohlson et al. 2008).

Distribution: All three species are restricted to humid forest in the Andes. *Nephelomyias pulcher* has a disjunct range, with populations in the Andean cloud forests (1500–2600 m) of Colombia and northern Ecuador and in the yungas of Bolivia and southern Peru. *Nephelomyias lintoni* and *N. ochraceiventris* are sandwiched between the two populations of *N. pulcher*, replacing each other in the upper montane and elfin forest (2200–3500 m) north and south of the North Peru Low.

Molecular data: Phylogenetic analyses based on DNA sequence data from three nuclear introns of 126 species of Tyrannidae and allies show that *Nephelomyias* species do not belong to Fluvicolinae, where species of *Myiophobus* are placed (Fig. 1; Ohlson et al. 2008). Instead, they group with *Myiotriccus*, *Pyrrhomyias* and *Hirundinea*, forming the small clade Hirundineinae that constitutes an independent deep lineage in Tyrannidae. The relationship of this clade to Elaeniinae, Tyranninae and Fluvicolinae is currently unresolved.

Etymology: The genus name *Nephelomyias* (from Gr. *Nephéle*=cloud, mod. L. *myias*= a flycatcher) highlights the restricted Andean cloud forest canopy habitat of all three species. The name is masculine in gender.

Acknowledgements

Sven Kullander, Magnus Gelang, Terry Chesser and two anonymous reviewers are thanked for useful comments on an earlier draft of the manuscript. This paper is part of a research project funded by the Swedish Research Council (grant no. 621-2007-5280 to P.E.).

Literature cited

- Birdsley, J.S. (2002) Phylogeny of the tyrant flycatchers (Tyrannidae) based on morphology and behaviour. *Auk*, 119, 715–734.
- Cabanis, J. (1873) Protokoll der LV. Monats-Sitzung. *Journal für Ornithologie*, 21, 315–320.
- Ericson, P.G.P., Zuccon, D., Ohlson, J.I., Johansson, U.S., Alvarenga, H. & Prum, R.O. (2006) Higher-level phylogeny and morphological evolution of tyrant flycatchers, cotingas, manakins and their allies (Aves: Tyrannida). *Molecular Phylogenetics and Evolution*, 40, 471–483.
- Fitzpatrick, J.W., Bates, J.M., Bostwick, K.S., Caballero, I.C., Clock, B.M., Farnsworth, A., Hosner, P.A., Joseph, L., Langham, G.M., Lebbin, D.J., Mobley, J.A., Robbins, M.B., Scholes, E., Tello, J.G., Walther, B.A. & Zimmer, K.J. (2004) Family Tyrannidae (Tyrant-flycatchers). Pp. 170–463 in J. del Hoyo, A. Elliot and D. A. Christie (Eds) *Handbook of the Birds of the World. Vol. 9. Cotingas to Pipits and Wagtails*. Lynx Ediciones, Barcelona.
- García-Moreno, J., Arctander, P. & Fjeldså, J. (1998) Pre-Pleistocene differentiation among chat-tyrants. *Condor*, 100, 629–640.

- Lanyon, W.E. (1986) A phylogeny of the thirty-three genera in the *Empidonax* assemblage of tyrant flycatchers. *American Museum Novitates*, 2846, 1–64.
- Lanyon, W.E. (1988a) A phylogeny of the thirty-two genera in the *Elaenia* assemblage of tyrant flycatchers. *American Museum Novitates*, 2914, 1–57.
- Lanyon, W.E. (1988b) The phylogenetic affinities of the flycatcher genera *Myiobius* Darwin and *Terentotriccus* Ridgway. *American Museum Novitates*, 2915, 1–11.
- Ohlson, J.I., Fjeldså, J. & Ericson, P.G.P. (2008) Tyrant flycatchers coming out in the open: phylogeny and ecological radiation of Tyrannidae (Aves, Passeriformes). *Zoologica Scripta*, 37, 315–335.
- Poulsen, B.O. (1996) Species composition, function and home-range of mixed-species bird flocks in a primary cloud forest in Ecuador. *Bulletin of British Ornithologists' Club*, 116, 67–74.
- Tello, J.G., Moyle, R.G., Marchese, D.J. & Cracraft, J. (2009) Phylogeny and phylogenetic classification of the tyrant flycatchers, cotingas, manakins, and their allies (Aves: Tyrannides). *Cladistics*, 25, 429–467.
- Traylor, M.A.Jr. (1979) *Check-list of the Birds of the World*, Vol. 8. Cambridge, Massachusetts: Harvard University Press.