



## Molecular phylogeny and insular biogeography of the lowland tailorbirds of Southeast Asia (Cisticolidae: *Orthotomus*)

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### ABSTRACT

The lowland tailorbirds of Southeast Asia (*Orthotomus*) offer an excellent opportunity for comparative biogeography because of their diversity in the Greater Sunda and Philippine islands. We reconstructed the phylogeny of all species in the genus using maximum likelihood, Bayesian, and coalescent methods on DNA sequences of three gene segments: an autosomal intron (TGF), a Z-linked intron (MUSK), and a mitochondrial coding gene (ND2). Although resolution is low in parts of the phylogeny, several well defined clades emerge. When considered in light of distribution, these clades indicate that the Greater Sunda and Philippine islands were occupied early in *Orthotomus* history by the ancestors of *O. sericeus* in the Greater Sundas and *O. frontalis* in the Philippines. Subsequently, tailorbirds diversified further in each island group: *O. atrogularis*, *O. ruficeps*, and *O. sepium* arose in the Greater Sundas, and *O. castaneiceps castaneiceps*, *O. c. chloronotus*, *O. derbianus*, *O. samarensis*, *O. nigriceps*, and *O. cinereiceps* in the Philippines. Among the continental taxa (including Sundaic birds), the older lineages (*O. sutorius* and *O. sericeus*) are habitat generalists and the recently evolved taxa are more specialized. In the Philippines, several taxa once considered conspecific with *O. atrogularis* turn out to be highly divergent species (>9% in ND2). Indeed, all Philippine allopecies are well diverged from one another. This finding supports the recent assertion of higher-than-appreciated bird endemism in the Philippines.

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### 1. Introduction

Tailorbirds are Old World warblers of gardens, thickets, woodlands, and forests of tropical and subtropical east Africa and southern Asia. Their name derives from the practice in most species of stitching leaves together to hold their nests. These birds are very well known not only because they are common and easy to view, but also because of the prominent role of Darzee the tailorbird in Kipling's famous story of "Rikki-Tikki-Tavi" (Kipling, 1894). Tailorbirds have distinctive morphology, which includes greenish or grayish backs; yellowish, grayish or whitish underparts; rufous (sometimes black) on the head; long bills; and cocked tails. Despite common characteristics of plumage and posture, however, tailorbirds are polyphyletic and consist of three distinct groups (Alström et al., 2006, 2011; Nguembock et al., 2007): the two

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African tailorbirds (*Artisornis moreaui* and *A. metopias*), which stitch their nests (Urban et al., 1997); the two mountain tailorbirds of Southeast Asia (*Phyllergates cucullatus* and *P. heterolaemus*), of which the first (at least) does not stitch its nest (Wells, 2007); and the 11 generally lower elevation tailorbirds of southern and Southeast Asia, which do stitch their nests (Madge, 2006). This paper concerns the phylogeny and biogeography of the last group, the genus *Orthotomus*, which we refer to as the lowland tailorbirds. They can be divided into three distributional groups (Fig. 1): (1) those restricted to the Sunda continental shelf (Sundaland), i.e., the Malay Peninsula and the region of the Greater Sunda Islands of Borneo, Sumatra, Java, and Palawan (*O. sericeus*, *O. ruficeps*, and *O. sepium*); (2) those widespread on the southern Asian mainland and reaching the Greater Sunda Islands (*O. sutorius* and *O. atrogularis*); and (3) those endemic to the Philippines (*O. castaneiceps*, *O. frontalis*, *O. derbianus*, *O. cinereiceps*, *O. nigriceps*, and *O. samarensis*).

Because they comprise both widespread and restricted-range species, the lowland tailorbirds offer an opportunity to compare