

The correct authorship of the family-group name Eurostopodinae (Caprimulgidae)

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ABSTRACT: Multi-locus phylogenetic studies of nightjars provide congruent support for a sister-relationship between *Eurostopodus* Gould, 1838a and all other members of Caprimulgidae Vigors, 1825 (nightjars). In rank-based nomenclature, these two groups are best recognised as subfamily taxa. We show that the name Eurostopodidae, used by Sibley, Ahlquist and Monroe in both 1986 and 1988, does not meet Article 13.1.1 of the ICZN Code (1999) in either publication and is unavailable. However, Sibley and Ahlquist (1990) used this name and gave a description of the morphology of this taxon, thereby making the name available for nomenclatural purposes.

KEYWORDS: Eurostopodidae, Eurostopodinae, *Eurostopodus*, nightjars, Caprimulgiformes, subfamily, phylogeny.

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The species of the genus *Eurostopodus* Gould, 1838a have long been considered typical nightjars Caprimulgidae Vigors, 1825 (e.g., Howard & Moore, 1991) and have sometimes been included in the genus *Caprimulgus* Linnaeus, 1758 (Schodde & Mason, 1980). Recent molecular phylogenetic studies have clarified both the contents and relationships of *Eurostopodus*. These studies show that the eared nightjars ("*E.*" *macrotis* Vigors, 1831 and "*E.*" *temminckii* Gould, 1838b) are more closely related to *Caprimulgus* and other nightjars than to the type species of *Eurostopodus* (*E. mystacalis* (Temminck, 1826)) (Braun & Huddleston, 2009; Han *et al.*, 2010; Sigurdsson & Cracraft, 2014). To remedy the polyphyly of *Eurostopodus*, the genus name *Lyncornis* Gould, 1838b was reinstated for the Indo-Malayan eared nightjars, and *Eurostopodus* was restricted to six or seven mostly Australo-Papuan species (Cleere, 2010; Dickinson & Renssen, 2013; Gill *et al.*, 2023). In this note, we review first the evidence for recognition of a subfamily taxon for *Eurostopodus s. str.* and then the correct authorship of the family-group name for this taxon.

SYSTEMATICS

The first study to address the phylogenetic relationships of *Eurostopodus* to other Caprimulgiformes was based on DNA-DNA hybridisation data (Sibley *et al.*, 1988). A dendrogram placed 'Eurostopodidae' as sister to Caprimulgidae, but did not indicate which species were sampled. Sibley and Ahlquist (1990) presented the results of their DNA-DNA hybridisation studies in more detail; their Figure 362 showed *Eurostopodus* as the sister of a clade of eleven species of Caprimulgidae. However, it is not clear which species of *Eurostopodus* were included.

Two studies based on a single mitochondrial locus did not resolve the position of *Eurostopodus* but indicated that it may be distinct from other Caprimulgidae. Mariaux and

Braun (1996) used partial (656 base pairs (bp)) sequences of the mitochondrial cytochrome-*b* gene of 18 caprimulgiform taxa. Two species of *Eurostopodus* (*E. mystacalis* and *E. papuensis* (Schlegel, 1866)) were placed in an unresolved trichotomy with Aegothelidae and Caprimulgidae. Larsen *et al.* (2007) used partial (650-bp) cytochrome-*b* sequences of 14 species of Caprimulgidae. *Eurostopodus mystacalis* and *E. papuensis* did not cluster with other Caprimulgidae but instead were part of a poorly supported clade that also included the genera *Nyctibius* Vieillot, 1816 and *Steatornis* von Humboldt, 1814 as well as the family of Podargidae.

Braun and Huddleston (2009) used a total of more than 2000 bp of DNA sequences of one mitochondrial marker (cytochrome-*b*) and one nuclear marker (c-myc) to reconstruct a phylogeny of 35 species of Strisores, including Caprimulgidae. The two species of *Eurostopodus* (*E. mystacalis* and *E. papuensis*) including in this study were sister to all other nightjars, including *Lyncornis*.

A second multi-locus study comprised 4226 bp of three markers, the mitochondrial cytochrome-*b* marker and the nuclear myc as well as growth hormone (Han *et al.*, 2010). Their study included 55 species of Caprimulgidae. Again, *Eurostopodus* (represented by *E. argus* Hartert, 1892, *E. mystacalis* and *E. papuensis*) was shown to be sister to all other nightjars, including *Lyncornis*.

Sigurðsson and Cracraft (2014) reconstructed the phylogenetic relationships of 67 species of Caprimulgidae using 5298 bp of two mitochondrial markers (ND2 and cytochrome-*b*) and two nuclear markers (RAG-1 and ACO1-19). Their study included three species of *Eurostopodus* (*E. argus*, *E. archboldi* (Mayr & Rand, 1935), *E. mystacalis*), which were sister to all other nightjars, including *Lyncornis*.

White *et al.* (2016) analysed an aligned dataset of 7104 bp of 30 species of Caprimulgidae, comprising one mitochondrial marker (cytochrome-*b*) and three nuclear markers (growth hormone, c-myc and RAG-1). As in previous multi-locus studies, *Eurostopodus* (here represented by *E. argus*) was again shown to be sister to all other nightjars, including *L. macrotis*.

In a study aimed at resolving higher-level relationships among Strisores, White and Braun (2019) used genomic sequences of 2289–4243 ultraconserved elements for 23 taxa, including three species of Caprimulgidae. They found that *E. mystacalis* was sister to ("*Hydropsalis rufiventris*" [presumably *Lurocalis rufiventris* Taczanowski, 1884] + *L. macrotis*).

NOMENCLATURE

This review of the phylogenetic evidence for the placement of *Eurostopodus* demonstrates that all studies that used two or more molecular markers are congruent in showing a dichotomy within Caprimulgidae between species of *Eurostopodus* and a clade comprising all other genera of nightjars and nighthawks. In rank-based nomenclature, these two groups are best recognised as subfamily taxa. The valid family-group name for the 'large' nightjar clade is Caprimulginae, whereas the family-group name for the genus *Eurostopodus* indicating the sister-clade needs clarification, as presented below.

Sibley *et al.* (1986) presented a preliminary classification of birds based on the results of DNA-DNA hybridisation, which included the new family-group names 'Eurostopodidae' and 'Eurostopodoidea'. Sibley *et al.* (1988) again included 'Eurostopodidae' and 'Eurostopodoidea' in a classification of the birds of the world and indicated that the type genus is *Eurostopodus* Gould, 1838a. Unfortunately, their papers contained neither a description or diagnosis that would satisfy Article 13.1.1 (ICZN, 1999: 17), nor any reference to a source that included such a description or diagnosis (Article 13.1.2; ICZN, 1999: 17), nor were the names proposed as

new replacement names, thereby satisfying Article 13.1.3. Thus, ‘Eurostopodidae Sibley, Ahlquist and Monroe, 1986’, ‘Eurostopodoidea Sibley, Ahlquist and Monroe, 1986’, ‘Eurostopodidae Sibley, Ahlquist and Monroe, 1988’ and ‘Eurostopodoidea Sibley, Ahlquist and Monroe, 1988’ are *nomina nuda* and are not available for nomenclatural purposes (*contra* Bock 1994, whom listed Eurostopodidae Sibley, Ahlquist and Monroe, 1986 as available).

However, Sibley and Ahlquist (1990: 413) used the name Eurostopodidae and gave a brief description of the morphology of this taxon (which included *Lyncornis*). Sibley and Ahlquist did not explicitly state that this was a new taxon name, but this became a requirement only after 1999 (ICZN, 1999: Article 16.1). Therefore, the combination of the name and description satisfies the criteria for making a family-group name available before the year 2000 (ICZN, 1999: Article 13.1 and Article 13.2). Thus, the correct authorship of the name is:

Eurostopodinae Sibley & Ahlquist, 1990: 413.

Redescription: Cleere (2010: 60) characterised the morphology of this clade of nightjars as follows: “Large to medium-sized; sexual dimorphism weak; bill small and hooked or downcurved at tip; rictal bristles short and semi-stiff with filaments along entire length; long, pointed wings; white markings on outer tail feathers absent; legs short and thickly feathered; feet strong; claw on middle toe pectinate.”

Differential diagnosis: Han *et al.* (2010) identified two synautapomorphic insertions or deletions for *Eurostopodus* (and hence Eurostopodinae) among their nuclear DNA sequences but provided no further details. Our alignments, using MUSCLE (Edgar, 2004) as implemented in MEGA7 (Kumar *et al.*, 2016), of the myc and growth hormone data sets of Han *et al.* (2010), as made available on GenBank, show that there is a 7 bp insertion in the myc locus (at position 118) and a 4 bp insertion in the growth hormone locus (at position 424) that are synapomorphic for *Eurostopodus* (and hence Eurostopodinae).

Type genus, by monotypy: *Eurostopodus* Gould, 1838a.

Contents: seven species of *Eurostopodus sensu* Cleere (2010) and Gill *et al.* (2023), i.e., *E. argus*; *E. mystacalis*; *E. nigripennis* Ramsay, E.P., 1882; *E. exul* Mayr, 1941; *E. diabolicus* Stresemann, 1931; *E. papuensis*; and *E. archboldi*.

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