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## Systematic status of *Fejervarya* ((Amphibia, Anura, Dicroglossidae) from South and SE Asia with the description of a new species from the Western Ghats of Peninsular India

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### Abstract

We carried out a large-scale phylogenetic analysis of fejervaryan (dicroglossid frogs with 'Fejervaryan lines' on the ventral side of the body) frogs, distributed in South and SE Asia, using published and newly generated sequences of unidentified individuals from the northern Western Ghats. The results corroborate the presence of a larger fejervaryan clade with a sister relationship to a clade composed of *Sphaerotheca*. Two sister clades could be discerned within the larger fejervaryan clade. The unidentified individuals formed a monophyletic group and showed a strong support for a sister relationship with *Minervarya sahyadris*. The species was found to be highly divergent (16S rRNA–4% and tyr–1%) from its sister lineage *Minervarya sahyadris*, and the clade composed of these two lineages were found to be deeply nested within the larger clade of *Fejervarya*. Based on this, the genus *Minervarya* Dubois, Ohler and Biju, 2001 is synonymized under the genus *Fejervarya* Bolckay, 1915. The unidentified lineage is recognized, based on phylogenetic position, genetic divergence and morphological divergence, as a distinct species and named here as *Fejervarya gomantaki* **sp. nov.** The presence of rictal glands was observed to be a synapomorphic character shared by the nested clade members, *Fejervarya sahyadris* and *Fejervarya gomantaki* **sp. nov.** Based on the presence of rictal gland and small size, *Minervarya chilapata*, a species from a lowland region in the Eastern Himalayas, is synonymized under *Fejervarya* and evidence for morphological separation from the new species, *Fejervarya gomantaki* **sp. nov.** is provided. For the fejervaryan frogs, currently three generic names (Frost, 2015) are available for the two phylogenetic subclades; the genus *Fejervarya* Bolckay, 1915 for the species of fejervaryan frogs having distribution in the South East Asia; the genus *Zakerana* Howlader, 2011 for the species of fejervaryan frogs having distribution in the South Asia and the genus *Minervarya* Dubois, Ohler and Biju, 2001 nested within the 'Zakerana clade'. In the phylogenetic analysis *Minervarya sahyadris*, the new species described herein as *Fejervarya gomantaki* **sp. nov.** are nested within the 'Zakerana clade', if the 'Zakerana clade' for the fejervaryan frogs having distribution in the South Asia is provided a generic status the nomen '*Minervarya*' should be considered as per the principle of priority of the ICZN Code. Taking into consideration the overlapping distribution ranges of members of the sister clades within the larger fejervaryan clade and the absence of distinct morphological characteristics, we also synonymize the genus *Zakerana* Howlader, 2011, a name assigned to one of the sister clades with members predominantly distributed in South Asia, under the genus *Fejervarya* Bolckay, 1915. We discuss the need for additional sampling to identify additional taxa and determine the geographical ranges of the members of the sister clades within *Fejervarya* to resolve taxonomy within this group.

**Key words:** Goa, *Fejervarya*, *Minervarya*, Western Ghats, *Zakerana*

### Introduction

The anuran family Dicroglossidae Anderson, 1871 is represented by 60 species under 13 genera in India (Dinesh *et al.* 2015). In the Western Ghats, there are 25 species belonging to 5 genera *Euphlyctis* Fitzinger, 1843;