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A new genus in the tribe Acidoxanthini (Diptera: Tephritidae: Trypetinae) from India, with a discussion of its phylogenetic relationships

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ABSTRACT

Gibbifronta pavoniae David, Hancock and Han, **gen. et sp. nov.**, is described from India. The current status of the subtribe Acidoxanthina is scrutinized based on both morphological characters and DNA barcoding analysis, and this taxon is formally proposed as the tribe Acidoxanthini within the subfamily Trypetinae in order to accommodate the genera *Gibbifronta*, *Acidoxantha* Hendel, *Craspedoxanthitea* Hardy and *Acidoxanthopsis* Hering. We found that the members of the Acidoxanthini possess a unique characteristic within the family Tephritidae, the short and broadly truncate lateral surstylus with reduced prensisetae and 1–3 pairs of strong dorsal setae on epandrium. Even though comparable information is not available for *Acidoxanthopsis*, it is retained in Acidoxanthini. *Gibbifronta* is distinguished from other genera of the tribe by the presence of a high gena and prominent hump-like projection on the frons. Phylogenetic analysis based on DNA barcodes revealed that *Gibbifronta* is closely related to *Acidoxantha* and support its placement in Acidoxanthini. COI sequences of *Gibbifronta pavoniae*, *Nitrariomyia lukjanovitshi* Rohdendorf, *Acidoxantha galibeedu* David and Ramani and an undescribed *Acidoxantha* species have been obtained and reported. A key to the genera of Acidoxanthini is also provided. <http://zoobank.org/100D010D-21D3-4F0B-B38E-1F72DC8E9BF3>.

Introduction

Fruit flies of the subfamily Trypetinae are extremely diverse in their morphology and habits. It is currently regarded as a probably paraphyletic clade that remains after exclusion of the monophyletic subfamilies Dacinae, Zaceratinae and Tephritinae (Korneyev, 1999). Although the larvae of many species are fruit feeders, others feed in flower buds or are leaf miners or seed borers or stem borers (Korneyev, 1999; Han, 1999). The Trypetinae comprise nearly 1250 species in 120 genera and 9 currently accepted tribes, namely Adramini, Callistomyiini, Carpomyiini, Hexachaetini, Nitrariomyiini, Rivelliomimini, Toxotrypanini, Trypetini and Xarnutini (Korneyev, 1999; Hancock and Drew, 2005; Hancock, 2007; Chen et al., 2013; 2015; Han and Chen, 2015), of which 67 species in 29 genera have been recorded from India (Agarwal and Sueyoshi, 2005; David and Ramani, 2011; David et al., 2013, 2020b; 2015a, 2015b, 2020c; David and Singh, 2015; Singh et al., 2014; David and Hancock, 2019). One further genus and species, *Piesotometopon luteiceps* de Meijere, is known from Sri Lanka and SE Asia and

is likely to occur in coastal mangroves. Norrbom et al. (1999) included the subtribes Acidoxanthina, Trypetina, Chetostomatina and Nitrariomyiina within the tribe Trypetini. Korneyev (1996) established Nitrariomyiini to accommodate species of *Nitrariomyia* Rohdendorf and *Kerzhnerella* Richter but suggested it was part of a larger cluster also containing Acidoxanthina and Chetostomatina (Korneyev, 1999); he considered the narrow and needle-like aculeus, elongate taeniae and absence of monodentate scales on the eversible membrane as possible synapomorphies for the group. Han (1999) redefined the Trypetini as a monophyletic group with two subtribes: Trypetina and Chetostomatina, based on both morphology-based and molecular phylogenetic analyses (Han and McPherson, 1999; Han and Ro, 2009). Han (1999) did not agree with the inclusion of Chetostomatina in the Nitrariomyiini, even though it possessed elongate taeniae and lacked monodentate scales on the eversible membrane, since none of the other included taxa shared these characters to the same extent as in Chetostomatina. Han (1999) noted that “similar elongation (or narrowing) of female terminalia appears to have occurred multiple times in tephritid evolution.” Hancock and

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