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Nematodes from galls on Myrtaceae. IX. *Fergusobia rosettae* n. sp. on *Melaleuca quinquenervia* and *F. tolgaensis* n. sp. on *Syzygium luehmannii*, from Queensland

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Abstract

Two new species of *Fergusobia*, collected from ‘rosette’ shoot bud galls on *Melaleuca quinquenervia*, and from leaf, stem, leaf and flower bud galls on *Syzygium luehmannii*, both from the Cairns region of Queensland, Australia, are described. *Fergusobia rosettae* Davies n. sp. is characterised by the combination of a small, arcuate parthenogenetic female having a short conoid tail with a bluntly rounded tip, an arcuate, relatively slender, infective female with an almost hemispherical tail tip, and arcuate males with arcuate to angular (not heavily sclerotised) spicules and leptoderan bursa arising at 40–50% of body length from tail tip. *Fergusobia tolgaensis* Davies n. sp. is characterised by the combination of a small open C-shaped parthenogenetic female with a broadly conoid tail, an arcuate infective female with a broadly rounded tail tip, and arcuate males with angular (not heavily sclerotised) spicules and short to mid-length leptoderan bursa. These two species of nematodes are associated with fly larvae that have dorsal shields comprising bars of raised cuticular ridges and spicules, similar to that of fly larvae from the *M. leucadendra* species group. The shield morphologies of these fly larvae and their possible genetic relationships are discussed. Possible evolutionary relationships of the *Fergusobia* nematodes from these galls are discussed, considering their morphology, DNA sequences, and the relationships of the associated *Fergusonina* flies and host plants.

Key words: Galls, *Melaleuca*, *Syzygium*, Neotylenchidae, *Fergusonina*, flies, nematodes, Australia, morphology, taxonomy, DNA sequencing, molecular phylogeny

Introduction

In a mutualistic association, nematodes of the genus *Fergusobia* Currie 1937 (Tylenchida: Neotylenchidae) and flies of the genus *Fergusonina* Malloch 1932 (Diptera: Fergusoninidae) form galls on some Myrtaceae (Malloch 1932; Morgan 1933; Currie 1937; Giblin-Davis *et al.* 2004a, b; Taylor *et al.* 2005; Nelson *et al.* 2014), including *Eucalyptus* L’Heritier 1788 (Tonnoir 1937), *Syzygium* R. Brown ex Gaertner 1828 (Harris 1982), *Melaleuca* Linnaeus 1767, nom. cons. (Taylor 2004; Davies & Giblin-Davis 2004), *Angophora* Cav. 1797 (Colbran 1964; Taylor *et al.* 2005), *Metrosideros* Banks ex Gaertner 1788 (Taylor *et al.* 2007), *Leptospermum* Forster & Forster 1776 (Nelson *et al.* 2014), and *Corymbia* Hill & Johnson 1995 (Currie 1937; Taylor *et al.* 2005). There are more than 30 described species of *Fergusobia* (Currie 1937; Fisher & Nickle 1968; Siddiqi 1986, 1994; Davies & Lloyd

radiation, *i.e.*, with the eucalypts within Australia and with *Syzygium* in the Malesian region. Against this, the British Museum of Natural History apparently lacks any collections of *Fergusonina* (David Yeates, personal communication). While *Fergusobia jambophila* is recorded as galling fruit buds in India (Siddiqi 1986), no fergusoninid flies were found in a survey of insects associated with fruits collected from *S. paniculatum* Gaertn. 1788 or *S. australe* (H.L. Wendl. ex Link) B. Hyland 1983 in central coastal NSW, areas in which both plant species are endemic (Juniper & Britton 2010). This suggests that, if the nematode/fly mutualism does occur on these species of *Syzygium*, it is not common or does not develop in fruits.

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