



Nematodes from galls on Myrtaceae. I. *Fergusobia*/*Fergusonina* galls on *Corymbia* spp., with re-description of *F. magna* and notes on its phylogenetic relationships

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Abstract

Fergusobia magna (Neotylenchidae: Fergusobiinae), collected from axial bud ('stem') galls on *Corymbia tessellaris* growing in coastal regions of Queensland, Australia, is re-described. It is characterised by having a combination of a relatively large, variably shaped parthenogenetic female with a slender conoid tail; a relatively large arcuate infective female with a long slender tail with a pointed tip and a relatively anterior vulva; and relatively large, arcuate, open C or J-shaped males with angular spicules having manubrium and shaft forming 66% of their length, slender tail and peloderan bursa arising at 30–50% body length. Other known forms of *Fergusobia*/*Fergusonina* galls from *Corymbia* are outlined, and the morphology of nematodes from them and the shield morphology of their associated mutualistic fly species from *Corymbia* spp. are described where known. The possible phylogenetic relationships of these associations from *Corymbia* are discussed.

Key words: 18S rDNA, 28S rDNA D2/D3, COI, DNA sequencing, Australia, Nematoda, Neotylenchidae, galls, Myrtaceae, Fergusoninidae, flies, molecular phylogeny, morphology, taxonomy, coevolution, cospeciation

Introduction

In a mutualistic association, nematodes of the genus *Fergusobia* Currie 1937 (Christie 1941) (Tylenchida: Neotylenchidae) and flies of the genus *Fergusonina* Malloch 1924 (Diptera: Fergusoninidae) are known to form galls on some Myrtaceae (Currie 1937; Giblin-Davis *et al.* 2004b; Taylor *et al.* 2005). Evidence from molecular sequencing of flies and nematodes suggests that each species of *Fergusonina* is associated with a particular species of *Fergusobia*, and that almost all mutualisms are plant host species specific (Goolsby *et al.* 2000; Giblin-Davis *et al.* 2001; Taylor 2004; Ye *et al.* 2007; Scheffer unpub. data). Genera known to be hosts for this association include *Eucalyptus* L'Héritier 1788, *Syzygium* R. Brown ex Gaertner 1788, *Melaleuca* Linnaeus 1767, nom. cons., *Angophora* Cav. 1797, *Metrosideros* Banks ex Gaertner 1788, *Corymbia* Hill & Johnson 1995 (Tonnoir 1937; Harris 1982; Taylor 2004; Davies & Giblin-Davis 2004; Colbran 1964; Taylor *et al.* 2005; Taylor *et al.* 2007) and *Leptospermum* Forster & Forster 1776 (Robin Adair, unpub. data). *Fergusobia* is a speciose genus (Davies *et al.* 2010). The Waite Insect and Nematode Collection (WINC) at the University of Adelaide contains about 250 collections of *Fergusonina* flies and about 200 collections of