



A recently discovered species of *Apiomorpha* Rübsaamen (Hemiptera: Coccoidea: Eriococcidae) with unusual gall morphology

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Abstract

Australia has a diverse array of gall-inducing scale insects (Hemiptera: Sternorrhyncha: Coccoidea), most of which feed on eucalypts. Here we describe a recently discovered and previously unrecognised species of *Apiomorpha* Rübsaamen that induces an unusual gall. Galls of the adult females were first found in bushland in South West Rocks, in northern New South Wales (Australia), but the original location has been cleared for housing development. Additional specimens have been discovered in nearby bushland and near the Arakoon Conservation Park, NSW. All specimens observed to date occur on *Eucalyptus racemosa* Cav. The morphology of the adult female and COII mtDNA sequences suggest affinities with the *Apiomorpha minor* (Froggatt) species-group of Gullan (1984), but the gall of the adult female is quite distinct from those of other members of that species-group in that it has two chambers instead of one. In addition, the newly recognised species, *A. nookara* Mills, MacDonald, Rigby & Cook **sp. n.**, has a diploid chromosome complement of $2n = 6$, a count not yet noted for members of the *A. minor* species-group. The description of the species was partly prepared by undergraduates at The University of Queensland, who were helping to overcome the so-called "taxonomic impediment" by describing and naming previously undescribed taxa.

Key words: Scale insects, New South Wales, *Eucalyptus*, *Apiomorpha minor*, taxonomic impediment

Introduction

The habit of gall-induction has arisen multiple times among scale insects (Hemiptera: Coccoidea) (Gullan *et al.*, 2005), including several independent evolutions among the eriococcids (Cook & Gullan, 2004). In Australia, there have been at least two independent origins of galling on the species-rich host genus *Eucalyptus*, giving rise to two major clades: one containing *Opisthoscelis* Schrader, *Tanyscelis* Hardy & Gullan (2010), *Lachnodius* Maskell and a few smaller genera within the "Myrtaceae-feeding clade" of Cook and Gullan (2004), and the other comprising only species of *Apiomorpha* Rübsaamen. Despite a relatively recent taxonomic revision of *Apiomorpha* that recognised thirty-nine species (Gullan 1984), morphologically distinct but undescribed species of this genus are still being discovered in the field (L.G. Cook unpubl.; P. J. Gullan unpubl.; M. Harvey unpubl.; P. J. Mills unpubl.).

Galls of adult females of *Apiomorpha* are complex and distinctive, being among the largest of all insect-induced galls (Gullan *et al.* 2005). They are typically woody with a small apical opening through which the female mates and the first-instar nymphs (crawlers) leave the gall. Adult females do not leave their galls, but feed, mate and reproduce within the gall that each initiated as a crawler. Gall shape is generally species-specific and provides a useful character for differentiating currently recognised morphology-based species. The insect, rather than host plant, controls the shape of the gall (Cook & Gullan 2008) and several species of *Apiomorpha* can induce galls on the one host plant – each inducing its own distinctive gall (Cook & Gullan 2008). Galls are strongly sexually dimorphic (Gullan 1984; Gullan *et al.* 1997), with males of *Apiomorpha* typically inducing small tubular galls on the gall of a female, or on a stem or a leaf.

Apiomorpha is restricted to hosts in the genus *Eucalyptus* (Cook 2001), and most of the described species are moderately host-species specific (Gullan 1984; Cook 2001). However, host-species specificity is likely to be even