



<http://dx.doi.org/10.11646/zootaxa.3630.2.5>

<http://zoobank.org/urn:lsid:zoobank.org:pub:373402BA-36A9-4323-AE9D-A84D89C47231>

The taxonomy of the Japanese oak red scale insect, *Kuwania quercus* (Kuwana) (Hemiptera: Coccoidea: Kuwaniidae), with a generic diagnosis, a key to species and description of a new species from California

SAN'AN WU¹, NAN NAN¹, PENNY GULLAN² & JUN DENG¹

¹The Key Laboratory for Silviculture and Conservation of Ministry of Education, Beijing Forestry University, Beijing, P. R. China 100083. E-mail: sananwu@bjfu.edu.cn

²Division of Evolution, Ecology and Genetics, Research School of Biology, The Australian National University, Canberra, A.C.T. 0200, Australia. E-mail: penelope.gullan@anu.edu.au

Abstract

The oak red scale insect, *Kuwania quercus* (Kuwana), was described from specimens collected from the bark of oak trees (*Quercus* species) in Japan. More recently, the species has been identified from California and China, but Californian specimens differ morphologically from Japanese material and are considered here to be a new species based on both morphological and molecular data. In this paper, an illustrated redescription of *K. quercus* is provided based on type specimens consisting of adult females, first-instar nymphs and intermediate-stage females, and a lectotype is designated for *Sasakia quercus* Kuwana. The new Californian species, *Kuwania raygilli* Wu & Gullan, is described and illustrated based on the adult female, first-instar nymph and intermediate-stage female. A new generic diagnosis for *Kuwania* Cockerell based on adult females and first-instar nymphs, and a key to species based on adult females are included.

Key words: *Kuwania quercus*, *K. bipora*, *K. raygilli*, new species, lectotype

Introduction

The genus *Kuwania* Cockerell (*in* Fernald, 1903) as currently understood, is mostly Palaearctic and Oriental in distribution and contains six species: *K. bipora* Borchsenius from *Castanopsis* and *Quercus* (Fagaceae), *K. minuta* Borchsenius also from *Quercus*, *K. oligostigma* De Lotto from *Commiphora* (Burseraceae), *K. pasaniae* Borchsenius from several genera of Fagaceae, *K. quercus* (Kuwana) from *Quercus* except one Californian record from *Castanea* (Fagaceae), and *K. rubra* Goux, also from *Quercus* (Ben-Dov, 2005; Wang & Wang, 1986; Wu, 2008). *Kuwania betulae* Borchsenius was synonymised with *Xylococcus japonicus* Oguma by Danzig (1972), and two other species that previously were placed in *Kuwania* by some authors are now in *Neogreenia* MacGillivray, as *N. zeylanica* (Green) and *N. osmanthus* (Yang & Hu) (Yang & Hu, 1994; Wu & Cheng, 2006; Wu & Nan, 2012). All female and male instars of *K. bipora* have been described recently (Wu, 2008), but the other species are poorly known taxonomically and there is variation in the morphology of the type species *K. quercus* in different parts of its reported range.

Kuwania quercus was described based on specimens collected from Tokyo and Kyushu Island in Japan on the bark of oak trees, *Quercus* spp. (Kuwana, 1902). Originally this species was named *Sasakia quercus* Kuwana and was the only species in Kuwana's new genus, *Sasakia*. Cockerell (*in* Fernald, 1903) found that this genus name had been preoccupied by *Sasakia* Moore, 1896, in the family Nymphalidae (Lepidoptera), and replaced Kuwana's genus name with *Kuwania*. The description and illustrations in Kuwana (1902) are very simple, especially lacking in microscopic detail, and cannot be used for correct identification. Ferris (1919) provided further details as well as basic line drawings of the first-instar nymph, an intermediate female nymph and several enlargements of microscopic features, based on preparations from Kuwana's type material. Since then, this species has been described and illustrated by Morrison (1928) based on specimens collected in 1926 from an unspecified locality,