

WILLIAMS, M.L.

*Department of Entomology, 301 Funchess Hall, Auburn University,
Alabama, 36849-5413*

**SCALE INSECT DIVERSITY IN CENTRAL AMERICA, WITH
EMPHASIS ON THE SOFT SCALES (HEMIPTERA: COCCIDAE).**

ABSTRACT

SCALE INSECT DIVERSITY IN CENTRAL AMERICA, WITH EMPHASIS ON THE SOFT SCALES (HEMIPTERA: COCCIDAE).

Central America, which includes Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama, has provided a continuous land bridge for the mixing of the floras and faunas of North and South America for millions of years. Due to their complex geological and climatic histories, these countries have experienced repeated invasions and establishment of flora and fauna from both North and South America and have served as centres of speciation and biotic diversification. Today, this area boasts one of the highest diversities of insect species and yet little is known about the scale insects of this region. This paper represents a summary of the current understanding of soft scale insect diversity and distribution for these seven countries of Central America, from which only 20 genera and 56 species of Coccidae are recorded.

Key words: biodiversity, Neotropical region.

The soft scale insect family Coccidae contains 1088 species in 144 genera (Ben-Dov, 1993), making it the third largest family of the Coccoidea in terms of species. Kozár and Ben-Dov (1997) list 51 genera and 298 species of Coccidae from the Neotropical Region and state that the scale insect fauna of the Neotropics tends to be specialized and rich, with 20 endemic genera and 247 endemic species. They also indicate a pressing need for further collecting throughout the entire Neotropical Region, as almost all records are restricted to a relatively small area of Brazil.

In terms of land area, Central America, which includes Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama, makes up only a small part of the Neotropical Region, being only about the size of the state of Texas in the USA. However, for millions of years Central America has served as a continuous land bridge for the interchange of flora and fauna between North and South America, and today boasts one of the highest diversities of insect species in the world (Quintero & Aiello, 1992). In spite of this region being a center for speciation and biotic diversification, little is known about the scale insects of any of the countries which make up the Central American region of the Neotropics.

Information on the soft scale insects of Central America is scattered throughout the literature and generally includes information and/or

descriptions of only a few species. Harold Morrison's paper on "Some Neotropical Scale Insects Associated With Ants" (Morrison, 1929) provided coverage of 7 genera and 17 species (including 1 new genus and 8 new species), primarily from Panama. A number of records were also presented in "A Systematic Catalogue of the Soft Scale Insects of the World" by Ben-Dov (1992), but there has not been a comprehensive study of the scale insect fauna for any country within Central America.

Table 1. Coccidae of Central America

<i>Akermes</i> sp. near <i>punctata</i> (Cockerell)	
<i>Akermes cordiae</i> Morrison	
<i>Ceroplastes ceriferus</i> (Fabricius)	<i>Milviscutulus mangiferae</i> (Green)
<i>Ceroplastes cirripediformis</i> Comstock	<i>Neolecanium craspeditae</i> Morrison
<i>Ceroplastes cistudiformis</i> Cockerell	<i>Neolecanium derameliae</i> Morrison
<i>Ceroplastes dugesii</i> Lichtenstein	<i>Neolecanium sallei</i> (Signoret)
<i>Ceroplastes floridensis</i> Comstock	<i>Neolecanium</i> sp.
<i>Ceroplastes giganteus</i> Dozier	
<i>Coccus acutissimus</i> (Green)	<i>Parasaissetia nigra</i> (Nietner)
<i>Coccus capparidis</i> (Green)	<i>Philephedra broadwayi</i> (Cockerell)
<i>Coccus hesperidum</i> Linnaeus	<i>Philephedra lutea</i> (Cockerell)
<i>Coccus longulus</i> (Douglas)	<i>Philephedra tuberculosa</i> Nakahara & Gill
<i>Coccus moestus</i> De Lotto	
<i>Coccus pseudohesperidum</i> (Cockerell)	<i>Protopulvinaria longivalvata</i> Green
<i>Coccus viridis</i> (Green)	<i>Protopulvinaria pyriformis</i> Cockerell
<i>Cryptostigma biorbiculatus</i> Morrison	<i>Pulvinaria elongata</i> Newstead
<i>Cryptostigma inquilina</i> (Newstead)	<i>Pulvinaria floccifera</i> (Westwood)
<i>Criptostigma reticulolaminae</i> Morrison	<i>Pulvinaria peninsularis</i> Ferris
<i>Criptostigma</i> sp.	<i>Pulvinaria psidii</i> Maskell
	<i>Pulvinaria urbicola</i> Cockerell
<i>Cyclolecanium hyperbaterum</i> Morrison	
<i>Eucalymnatus delicatus</i> Hempel	<i>Saissetia auriculata</i> Morrison
<i>Eucalymnatus bempeli</i> Costa Lima	<i>Saissetia coffeae</i> (Walker)
<i>Eucalymnatus tessellatus</i> Signoret	<i>Saissetia miranda</i> (Cockerell & Parrott)
<i>Eucalymnatus</i> sp.	<i>Saissetia neglecta</i> De Lotto
	<i>Saissetia oleae</i> (Olivier)
<i>Inglisia vitrea</i> Cockerell	<i>Schizochlamidia</i> sp.
<i>Inglisia</i> sp.	
<i>Kiliffia acuminata</i> (Signoret)	<i>Tillancoccus mexicana</i> Ben-Dov
	<i>Tillancoccus tillandsiae</i> Ben-Dov
<i>Mesolecanium inquelinum</i> Morrison	<i>Toumeyella</i> sp.
<i>Mesolecanium perditulum</i> Cockerell & Robbins	<i>Vinsonia stellifera</i> (Westwood)
<i>Mesolecanium</i> sp.	

The listing of the soft scale insects of Central America presented in Table 1 has been compiled from searches of the literature; from slide mounted specimens and records in the US National Museum of Natural History, Beltsville, Maryland; from specimens collected by the author in Costa Rica,

Guatemala, and Honduras; and from the collections of Michael Kosztarab from Costa Rica. This list represents our current knowledge of the biodiversity of the soft scale insects of Central America, with the exception of two undescribed genera and approximately five undescribed species known to the author.

The family Coccidae is represented in Central America by 20 genera and 56 species, discounting the undescribed taxa mentioned above. Taxonomic diversity by country is as follows (genera/species): Belize - 5/7; Costa Rica - 15/21; El Salvador - 12/15; Guatemala - 18/27; Honduras - 13/24; Nicaragua - 13/18, and Panama - 18/36. Central America's much larger neighbour to the north, Mexico, is represented by 24 genera and 62 species of soft scales (Miller, 1996). It can be concluded that one only has to compare the above diversity of soft scales known from Central America and Mexico to appreciate the importance of studying this area before habitat destruction eliminates much of the scale insect biodiversity before we can collect, study, identify and catalogue them.

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