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An annotated checklist of scale insects (Hemiptera: Coccoidea) of Saint Lucia, Lesser Antilles

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Abstract

An annotated list of 83 scale insect species (Hemiptera: Sterorrhyncha: Coccoidea) recorded from Saint Lucia is presented, based on data gathered from UK quarantine interceptions, samples collected in an urban coastal habitat in the North West of the Island in 2013, and published records. Thirty-three species (40%) are recorded for the first time for the country, including *Dysmicoccus joannesiae* (Costa Lima), a South American mealybug, and *Poliaspoides formosana* (Takahashi), an Asian armoured scale insect pest of bamboo, which are new for the Caribbean region. The economic, environmental and social impacts caused by introduced exotic species of scale insect are discussed. Two predatory midges *Diadiplosis* ?*coccidivora* (Felt) and *Diadiplosis multifila* (Felt) (Diptera: Cecidomyiidae) are recorded for the first time from Saint Lucia. The latter species was observed causing 90% mortality of a large infestation of passion vine mealybug *Planococcus minor* (Maskell) on soursop fruit.

Key words: Caribbean, West Indies, *Poliaspoides formosana*, *Dysmicoccus joannesiae,* exotic introductions, impact

Introduction

Scale insects (Hemiptera: Sterorrhyncha: Coccoidea) are plant parasitic bugs closely related to aphids, whiteflies and psyllids. They are one of the most commonly transported groups of insects in plant trade and one of the most successful invasive insect groups (Miller & Miller, 2003; Pellizzari & Dalla Montá, 1997; Smith *et al*., 2007; Thomas, 2006). Stocks (2013) reviewed 19 species of exotic scale insect that had recently invaded Florida (USA) and the Caribbean Region. Several of these species have had a high economic, environmental and social impact in the Caribbean region: For example, pine tortoise scale *Toumeyella parvicornis* (Cockerell), has devastated the pine forest in the Turks and Caicos Islands since 2004 (Malumphy *et al*., 2012); lobate scale *Paratachardina pseudolobata* Kondo & Gullan has damaged woody dicotyledonous plants in Florida and the Bahamas since the 1990s (Kondo & Gullan, 2007); croton scale *Phalacrococcus howertoni* Hodges & Hodgson has become a major pest of croton and other ornamentals in Florida since 2008, and is spreading in the Caribbean (Hodges & Hodgson, 2010); papaya mealybug *Paracoccus marginatus* Williams & Granara de Willink has become a serious pest of tropical fruits and ornamentals in the Caribbean since the 1990s (Miller *et al*., 1999; Walker *et al*., 2003); and the pink hibiscus mealybug *Maconellicoccus hirsutus* (Green) has spread widely in the Caribbean since 1994 (Williams, 1996). The latter species attacks more than 330 plant species (Chong, 2009), including many agricultural and horticultural crops, and has caused significant economic losses (Kairo *et al*., 2000). Yet despite the negative economic, environmental and social impact of invasive scale insect species, the scale insect fauna of the majority of territories within the Caribbean are poorly known.

Saint Lucia is an island country in the eastern Caribbean Sea on the boundary with the Atlantic Ocean. It forms part of a chain of islands known as the Lesser Antilles, and lies between 13°42' to 14°07' N latitude and 60°52' to 61°05' W longitude. It is located 40 km north/northeast of the island of St. Vincent, and 30 km south of Martinique. It is roughly tear-drop in shape, with a length of 43.5 km and is 22.5 km at its widest (in the southern half). It is a mountainous volcanic island, 616 km² in area, with a maximum elevation of 950 m. It is a lush tropical island heavily altered by agriculture, but with a significant area of undisturbed sub-montane rainforest in the island's

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plants (most samples collected by the author in 2013 were from the grounds of a single hotel and neighbouring area (32 spp.)), and there appears to have been no study of scale insects in the extensive sub-montane rainforest in the interior of the island or specifically on plants endemic to Saint Lucia (9 species) or those endemic to the Lesser Antilles (108 taxa). It is highly probably therefore, that many other scale insect species remain to be discovered, and other species currently spreading in the Caribbean (e.g., most notably *Paratachardina pseudolobata* and *Phalacrococcus howertoni*) are likely to be detected in Saint Lucia in the future.

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