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The genus *Dactylopius* (Homoptera: Dactylopiidae) and its hosts in Jalisco, Mexico

Abstract- A preliminary study on taxonomy of dactylopiids and the records of their hosts from Jalisco, Mexico was carried out. Three species of *Dactylopius* are present in this region: *D. coccus, D. confusus,* and *D. opuntiae*. It is necessary to collect additional specimens and from more host plant species to verify the presence of at least another two reported species: *D. ceylonicus* and *D. tomentosus*. This paper is the base to start a nation-wide taxonomic study on Mexican dactylopids.

Key words: Cochineal, scales, *Dactylopius*, hosts, *Opuntia*

INTRODUCTION

Dactylopius Costa is the only genus of the scale insect family Dactylopiidae , and all its nine species live on cactaceous plants (De Lotto, 1974). Some species have been used successfully as biological control agents against invasive plants (cactus-weed belonging to *Opuntia* spp.) in Australia, South Africa, and other countries (Githure *et al.*, 1999), but the main use of these scales, particularly *Dactylopius coccus* (cochineal), is to obtain carminic acid, a red pigment used in industries of foods, drugs, cosmetics, fabrics, and others. In 1999 the world production of dry cochineal was 900 ton per year (Bonilla, 1999), currently is over 1000 ton per year (Victor Flores, personal communication).

The hosts of *Dactylopius* spp. include several species of *Opuntia* (Cactaceae), and Mexico has a great diversity of these plants, with more than 114 species (Bravo & Sanchez-Mejorada, 1989). However, most of the taxonomic papers on *Dactylopius* have not utilized specimens collected from Mexico. Only one paper by MacGregor and Sampedro (1984) listed five species of *Dactylopius* for Mexico: *D. ceylonicus, D. coccus, D. confusus, D. opuntiae* and *D. tomentosus.* Therefore, the aim of this paper is to contribute to knowledge on *Dactylopius* and its hosts in West Mexico, in order to start a nation-wide taxonomic study on this genus in Mexico.

MATERIALS AND METHODS

It was necessary to carry out a bibliographic revision to determine the current status on Dactylopiidae taxonomy and to set the base of the present paper. All specimens used for this study were collected in Jalisco, Mexico, from both wild and cultivated host plants and will be part of the entomological collection (CZUG) of University of Guadalajara. The collection, preservation and preparation of material for study followed De Haro and Claps (1995) and Perez Guerra and Kosztarab (1992). The key used to identify adult females of the species of *Dactylopius* was that presented by De Lotto (1974). Host plants were identified using the key described by Bravo (1978).

RESULTS AND DISCUSSION

Utilizing the key of De Lotto (1974), we have only identified two species from Jalisco: *Dactylopius opuntiae* on *Opuntia ficus-indica, O. megacantha, O. undulata, O, jaliscana, O. atropes, Opuntia sp., Nopalea cochenillifera* and *N. karwinskiana*, and *D. coccus* that is found only under cultivation on *Opuntia ficus-indica* and *O. jaliscana*. When using the key of De Lotto (1974), some specimens from the same colonies of *Dactylopius opuntiae*, appeared similar to *D. ceylonicus,* and the specimens collected from *Opuntia fuliginosa* were identified as *Dactylopius confusus*. These results are according to those from MacGregor and Sampedro (1984), and it is possible that future collections of dactylopiids from cylindrical *Opuntia* in Jalisco might result in the discovery of *Dactylopius tomentosus*, since these types of plants are abundant in this Mexican state. Therefore, it is necessary to collect more specimens and from other host species, specially from cylindrical *Opuntia.*

Species of *Dactylopius* seem to have preferences for some host plants. *D. coccus* is found world wide on *Opuntia ficus-indica*, and only in Mexico is found on other host plant species: *O. atropes, O. hernandezii, O. jaliscana* and *O. tomentosa*, which are very similar to each other and several botanists think these species are a complex of a single species (Hilda Arreola, personal communication). *Dactylopius opuntiae* is found only on plants from North America. *D. tomentosus* is more common on cylindrical *Opuntia* species, and the four new species proposed by De Lotto (1974) seem to be only on South American host plants. In the present paper *Dactylopius confusus* was found on the platyopuntia *Opuntia fuliginosa.* This dactylopiid has also been reported from a cylindrical *Opuntia* in South America (*O. exaltata*) and from other platyopuntias in North America. Since most species of *Opuntia* are native to one of the North or South American regions, it seems interesting to have the same dactylopid species on different host plant types, one from North America and the other from South America. Because of this last statement and the fact that only a few papers deal with specimens from Mexico, which has such great diversity of host plants in the country, it is possible that some Mexican specimens could be something different, new species or just biotypes. The study of Mexican dactylopiids and their host plants, will

help to complete and solve some doubts on the genus *Dactylopius*, in order to support a world wide study on its phylogeny.

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