

DISTRIBUTION AND PLANT ASSOCIATION RECORDS FOR HOMALODISCA COAGULATA (HEMIPTERA: CICADELLIDAE) IN FLORIDA

Authors: Hoddle, Mark S., Triapitsyn, Serguei V., and Morgan, David J. W.

Source: Florida Entomologist, 86(1) : 89-91

Published By: Florida Entomological Society

URL: [https://doi.org/10.1653/0015-4040\(2003\)086\[0089:DAPARF\]2.0.CO;2](https://doi.org/10.1653/0015-4040(2003)086[0089:DAPARF]2.0.CO;2)

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

DISTRIBUTION AND PLANT ASSOCIATION RECORDS FOR *HOMALODISCA COAGULATA* (HEMIPTERA: CICADELLIDAE) IN FLORIDA

MARK S. HODDLE¹, SERGUEI V. TRIAPITSYN¹ AND DAVID J. W. MORGAN²

¹Department of Entomology, University of California, Riverside, CA 92521

²California Department of Food and Agriculture, Mt. Rubidoux Field Station
4500 Glenwood Drive, Riverside, CA 92501

The glassy-winged sharpshooter, *Homalodisca coagulata* (Say) is the focus of a major classical biological control program in California. This insect presents a serious threat to several agricultural commodities and potentially native plants as well because of its ability to vector the xylem-inhabiting bacterium *Xylella fastidiosa*, the causative organism of “scorch like” diseases such as Pierce’s Disease of grapes and oleander leaf scorch, a serious malady of oleanders (Purcell & Saunders 1999). *Homalodisca coagulata* is an invasive pest in California and its native range is the southeastern and northeastern regions of the USA and Mexico, respectively (Triapitsyn & Phillips 2000). *Homalodisca coagulata* probably was translocated to southern California as egg masses via the movement of ornamental plants in the late 1980’s (Sorensen & Gill 1996) and without an accompanying natural enemy fauna; inordinate populations of glassy-winged sharpshooters have resulted.

During foreign exploration by MSH and SVT for *H. coagulata* and associated egg parasitoids in Florida in August 2001, the authors visited the Florida State Collection of Arthropods, Bureau of Entomology, Florida Department of Agriculture and Consumer Services in Gainesville. Following discussion with colleagues there, specimen receipt vouchers for *H. coagulata* were provided that had been sent in for identification by lay people, ornamental, horticultural, and agricultural growers from around Florida. A total of 229 receipts were catalogued for adult *H. coagulata* over the period 1958-2001 inclusive, and chits contained information on date of collection, locality, host plant, and sex of specimens. These data were used to determine possible host plant records, distribution densities, and submission frequencies for *H. coagulata* for different areas of Florida.

Homalodisca coagulata was collected from at least 72 plant species in 71 genera contained in 37 families and *Citrus* spp. were the most common plants from which adult *H. coagulata* were captured (Table 1). Of these plant association records in Table 1 it is uncertain which can support development of *H. coagulata* from egg to adulthood. Adult *H. coagulata* are vagile and known to be highly polyphagous while the relatively immobile immature stages have a narrower host range (Turner & Pollard 1959). Citrus may be over-represented in this dataset because of regular pest surveys in this economically im-

portant crop. To determine if regional differences in numbers of *H. coagulata* specimens sent in for identification existed, Florida was divided into thirds: (1) top third was north of 29° Latitude; (2) middle third was 27°-29°; and (3) the bottom third was south of 29°. Specimen receipts for each county in each section of the state were assumed to have been submitted for identification according to a poisson distribution and proportions were compared using a Log-likelihood Ratio Test (i.e., G-test). Pair-wise comparisons between regions from which specimens were received were made using χ^2 as sample sizes were large (Sokal & Rohlf 1995). The G-test was also used to determine if the frequency with which samples were submitted from each region significantly differed. Significant differences in the number of specimens received by region existed ($\chi^2 = 11.03$; $df = 2$; $P = 0.004$). Significantly more specimens were received for identification from north Florida, intermediate numbers from central Florida, and fewest specimens came from south Florida (Fig. 1). No signifi-

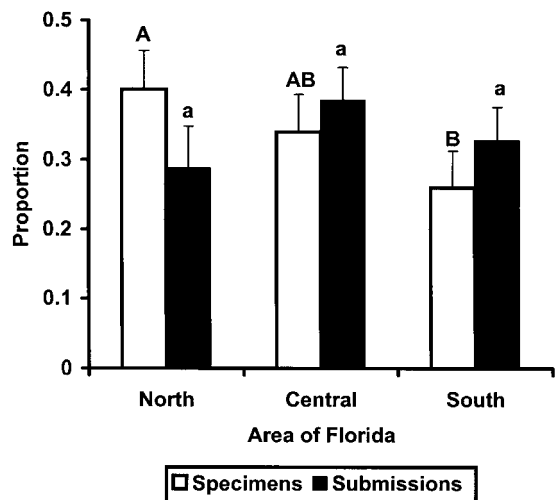


Fig. 1. Proportion ($\pm 95\%$ CI) of specimens and submissions of adult *Homalodisca coagulata* from north, central, and south Florida to the Florida State Collection of Arthropods in Gainesville for identification over the period 1958-2001. Bars with the same letters (upper case [specimen comparisons] or lower case [submission comparisons]) are not significantly different from each other at the 0.05 level of significance.

TABLE 1. HOST PLANT RECORDS AND FREQUENCY OF COLLECTION FOR ADULT *HOMALODISCA COAGULATA* IN FLORIDA.

Plant family	Plant species	No. of collected <i>H. coagulata</i> specimens
Aceraceae	<i>Acer rubrum</i>	1
Agavaceae	<i>Sansevieria</i> sp.	1
	<i>Yucca aloifolia</i>	1
Anacardiaceae	<i>Mangifera indica</i>	1
	<i>Schinus terebinthifolis</i>	1
	<i>Nerium oleander</i>	2
Apocynaceae	<i>Nerium spp.</i>	2
Aquifoliaceae	<i>Brassaia actinophylla</i>	1
Asteraceae	<i>Eupatorium capillifolium</i>	2
	<i>Helianthus annuus</i>	3
	<i>Solidago altissima</i>	3
Begoniaceae	<i>Begonia</i> sp.	1
Bignoniaceae	<i>Catalpa</i> sp.	1
	<i>Spathodea campanulata</i>	1
	<i>Ditremexa occidentalis</i>	1
Caesalpiniaceae	<i>Casuarina spp.</i>	5
Clusiaceae	<i>Clusia</i> sp.	1
Combretaceae	<i>Bucida buceras</i>	1
	<i>Concarpus erectus</i>	1
Convolvulaceae	<i>Ipomaea spp.</i>	3
Cycadaceae	<i>Cycas</i> sp.	1
Euphorbiaceae	<i>Aleurites fordii</i>	1
	<i>Codiaeum variegatum</i>	3
	<i>Ricinus communis</i>	1
Fabaceae	<i>Albizia julibrissin</i>	1
	<i>Bauhinia punctata</i>	1
	<i>Caesalpinia pulcherrima</i>	1
	<i>Cercis</i> sp.	1
	<i>Glycine max</i>	2
	<i>Medicago sativa</i>	1
	<i>Mimosa</i> sp.	2
	<i>Parkinsonia aculeata</i>	1
	<i>Pisum</i> sp.	1
	<i>Psophcarpus tetragonolobous</i>	1
	<i>Tetragonolobous</i> sp.	1
	<i>Wisteria</i> sp.	1
	<i>Quercus laevis</i>	1
	<i>Q. virginiana</i>	1
Gramineae	<i>Pennisetum purpureum</i>	1
Juglandaceae	<i>Carya illinoensis</i>	1
	<i>Juglans regina</i>	1
Lauraceae	<i>Persea americana</i>	1
Lythraceae	<i>Lagerstroemia indica</i>	4
Magnoliaceae	<i>Magnolia grandiflora</i>	1
Malvaceae	<i>Abelmoschus esculentus</i>	1
	<i>Hibiscus rosa-sinensis</i>	9
Meliaceae	<i>Swietenia mahagoni</i>	1
Moraceae	<i>Ficus benjamina</i>	3
Myrtaceae	<i>Callistemon viminalis</i>	1
	<i>Eucalyptus</i> spp.	3
	<i>Melaleuca quinquenervia</i>	2
	<i>Myrtus communis</i>	1
	<i>Psidium</i> spp.	5
Nyctaginaceae	<i>Mirabilis jalapa</i>	1
Oleaceae	<i>Olea</i> sp.	1
Polypodiaceae	<i>Hemionitis arifolia</i>	1
Proteaceae	<i>Leucadendron</i> sp.	1

TABLE 1. HOST PLANT RECORDS AND FREQUENCY OF COLLECTION FOR ADULT *HOMALODISCA COAGULATA* IN FLORIDA.

Plant family	Plant species	No. of collected <i>H. coagulata</i> specimens
Rosaceae	<i>Malus</i> spp.	2
	<i>Photinia</i> sp.	1
	<i>Prunus persica</i>	1
	<i>Pyracantha</i> sp.	1
	<i>Pyrus</i> sp.	1
	<i>Rosa</i> sp.	1
Rubiaceae	<i>Gardenia</i> sp.	1
Rutaceae	<i>Citrofortunella microcapra</i>	1
	<i>Citrofortunella mitis</i>	1
	<i>Citrus</i> spp.	68
	<i>Fortunella</i> sp.	3
Salicaceae	<i>Populus</i> sp.	1
	<i>Salix</i> spp.	2
Sapotaceae	<i>Manilkara roxburghiana</i>	1
Vitaceae	<i>Ampelopsis arborea</i>	1
	<i>Vitis</i> spp.	4

cant differences ($\chi^2 = 3.23$; df = 2; P = 0.20) in frequency of submissions from each region were observed (Fig. 1).

When taken together, these data suggest that more *H. coagulata* were caught and submitted for each identification event from North and Central Florida but the rate of submission was similar across the entire state. These data support MSH and SVT's observations that *H. coagulata* is more abundant and easier to collect in northern Florida in comparison to central and southern Florida. Possible constraints on the southern distribution of *H. coagulata* could be related to temperature, humidity, and rainfall clines or interspecific competition with other proconiine sharpshooters (e.g., *Oncometopia nigricans* [Walker] [Hemiptera: Cicadellidae: Cicadellinae: Proconiini]) that have similar habitat requirements.

This work was supported in part by the California Department of Food and Agriculture. We thank Ruth Vega (UCR) for assistance with data entry. Susan Halbert at the Florida State Collection of Arthropods, Bureau of Entomology, Florida Department of Agriculture and Consumer Services in Gainesville helped with locating *H. coagulata* identification records.

SUMMARY

Information from identification receipt vouchers prepared by the Florida State Collection of Arthropods, Bureau of Entomology, Florida

Department of Agriculture and Consumer Services in Gainesville over the period 1958-2001 for *Homalodisca coagulata* were analyzed for information on host plants and distribution in Florida. *Homalodisca coagulata* was recorded from at least 72 plant species in 37 families and greater numbers of *H. coagulata* were sent in for identification from northern Florida even though there were no significant difference in specimen submission frequencies from north, central, and south Florida.

REFERENCES CITED

PURCELL, A. H., AND S. R. SAUNDERS. 1999. Glassy-winged sharpshooter expected to increase plant disease. California Agric. 53: 26-27.

SOKAL, R. R., AND F. J. ROHLF. 1995. Biometry: the principles and practice of statistics in biological research. Third Edition. W. H. Freeman and Company, New York.

SORENSEN, J. T., AND R. J. GILL. 1996. A range extension of *Homalodisca coagulata* (Say) (Hemiptera: Clypeorrhyncha: Cicadellidae) to southern California. Pan Pacific Entomol. 72: 160-161.

TRIAPITSYN, S. V., AND P. A. PHILLIPS. 2000. First record of *Gonatocerus triguttatus* (Hymenoptera: Mymaridae) from eggs of *Homalodisca coagulata* (Homoptera: Cicadellidae) with notes on the distribution of the host. Florida Entomol. 83: 200-203.

TURNER, W. F., AND H. N. POLLARD. 1959. Life histories and behavior of five insect vectors of phony peach disease. USDA Tech. Bull. 1988: 28.