PROC. ENTOMOL. SOC. WASH.
95(2), 1993, pp. 241–244

ON THE HOST RANGE OF THE DELPHACID PLANTHOPPER *STOBAERA PALLIDA* OSBORN (HOMOPTERA)

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Abstract.—The host specificity of *Stobaera pallida* was investigated as part of a biological control program against *Baccharis halimifolia*. This planthopper was collected from *B. halimifolia* and *B. neglecta* in the United States and from *B. conferta* in Mexico. In laboratory studies it oviposited in *B. halimifolia* and *B. neglecta* but not on 31 other plant species. Early instar nymphs survived on *B. halimifolia* and *B. neglecta* but not on five other asteraceous species. The host range for this insect was considered to be confined to the genus *Baccharis* and most probably the section *Baccharis* within that genus.

Key Words: *Baccharis, Stobaera pallida,* biological control

This short paper describes observations and experiments that were undertaken to confirm the host range of the delphacid *Stobaera pallida* Osborn which was investigated as part of our studies to find suitable biological control agents for *Baccharis halimifolia* L. (Asteraceae: Astereae) which is a serious weed in Australia.

Kramer (1973) revised the Nearctic genus *Stobaera* Stål and indicated that all eleven described species fed only on asteraceous plants. Furthermore the host records presented by Kramer indicated that all the species possessed host ranges limited to two plant genera or less.

Stobaera pallida has been reported only from *B. halimifolia* and *B. neglecta* Britton (Kramer 1973). It could reasonably be expected to also utilize the very closely related *B. glomerufolia* Pers. and *B. angustifolia* Michx. that are sympatric with *B. halimifolia* in Florida. In 1989 we also collected *S. pallida* on *B. conferta* Kunth. growing in the state of Morelos, Mexico. All these species of *Baccharis* were placed in the section *Baccharis* by Nesom (1990).

Two experiments were conducted at the North American Field Station to confirm the host range of this insect. The first examined the oviposition preference and the second the ability of early instar nymphs to survive on various hosts.

METHODS

Thirty-three plant species were selected in the first experiment which was conducted in July and August, 1984. Most were representatives of Asteraceae, particularly Astereae. Two replications of each species were used. Twelve potted plants (of 12 species but including *B. halimifolia*) were randomly placed within each 53 × 69 × 84 cm gauzed cage. Wooden planks were placed above the pots so that the foliage and stems of the plants protruded through small holes in these planks. Six cages were so prepared so that each plant species was exposed twice except for *B. halimifolia* (6 exposures) and *B. neglecta* (4 exposures). The cages were housed in an outdoor shade house. Approximately fifty insects (including both adults and nymphs) which had been collected from *B.*

Table 1. The host specificity of *Stobaera pallida* as indicated by ovipositional preference of adults and survival of early instars.

Plant species	Mean Number of Eggs Oviposited in 25 cm of Stem	Mean Number of Early Instars Surviving 3 Days
Asteraceae: Astereae		
Aster noviae-anglae L.	0	0
Baccharis halimifolia L.	18	6
Baccharis neglecta Britton	13	4
Callistephus chinensis (L.) Nees	0	NT
Chrysothamnus nauseosis (Pall.) Britt.	0	0
Conyza canadensis L.	0	0
Dimorphotheca aurantiaca Hort.	0	NT
Gutierrezia microcephala (DC) Gray	NT	0
Gymnosperma glutinosum (Spreng.) Less	0	NT
Haplopappus sp.	0	NT
Isocoma wrightii (Gray) Rydb.	NT	0
Solidago altissima L.	0	0
Asteraceae: Heliantheae		
Dahlia pinnata Cav.	0	NT
Gaillardia pulchella Foug.	0	NT
Helianthus anuus L.	0	NT
Iva frutescens L.	0	NT
Parthenium hysterophorus L.	0	NT
Xanthium strumarium L. (*sensu lato*)	0	NT
Zinnia elegans Jacq.	0	NT
Asteraceae: Tageteae		
Tagetes lucida Cav.	0	NT
Asteraceae: Cynareae		
Carthamus tintoris L.	0	NT
Cynaria scolymus L.	0	NT
Asteraceae: Eupatorieae		
Ageratum houstonianum Mill.	0	NT
Asteraceae: Cichorieae		
Lactuca sativa L.	0	NT
Malvaceae		
Gossypium hirsutum L.	0	NT
Solanaceae		
Lycopersicon esculeatum Mill.	0	NT
Fabaceae		
Vicia faba L.	0	NT
Verbenaceae		
Lantana camara L.	0	NT
Verbena sp.	0	NT
Lamiaceae		
Salvia splendens Sellow	0	NT
Amaranthaceae		
Gomphrena globosa L.	0	NT

Table 1. Continued.

Plant species	Mean Number of Eggs Oviposited in 25 cm of Stem	Mean Number of Early Instars Surviving 3 Days
Apocynaceae		
Vinca minor L.	0	NT
Caryophyllaceae		
Dianthus sp.	0	NT
Poaceae		
Zea mays L.	0	NT

NT = not tested.

halimifolia at Conroe, Texas, were introduced into each cage by scattering them over the wooden planks. Nymphs were not excluded because it was assumed that they would soon eclose to the adult stage.

After 2 weeks, 25 cm of stem from each plant were selected, dissected and the number of eggs oviposited by *S. pallida* counted. In the smaller plants this meant dissecting the whole plant. The eggs were similar to those of *S. tricarinata* (Say) (Reimer and Goeden 1981, 1982) and *S. concinna* Stål (McClay 1983) being smooth, hyaline and fusiform–elliptical in shape and measuring on average 0.98 × 0.22 mm. They were usually laid singly in the pith of the stems with the tapered end of the egg pointing towards the epidermis. Often they could be detected by oviposition scars left on the outer epidermis.

In a second experiment, the ability of nymphs to feed on various hosts was tested. Ten early instars were placed on bouquets of foliage of each of seven species of Astereae. Each treatment was replicated twice. After three days surviving nymphs were counted.

Results and Discussion

In the first experiment eggs were oviposited only in *B. halimifolia* and *B. neglecta* (Table 1) and between these two plants there did not appear to be a preference.

In the second experiment approximately half the nymphs survived on *B. halimifolia* and *B. neglecta* but none survived on any other plant (Table 1).

These experiments clearly supported field observations and indicated that the host range of *S. pallida* is limited to the genus *Baccharis*. As all the known hosts are in the section *Baccharis*, it is probable that the host range is actually limited to this section of the genus.

Permission was obtained to import *S. pallida* into quarantine facilities in Australia. However, attempts to rear the insect in quarantine facilities were unsuccessful and so it has not been released there.

Acknowledgments

Dr. J. P. Kramer of the Systematic Entomology Laboratory, USDA, and Dr. M. R. Wilson of the Institute of Entomology, C. A. B., kindly provided expert identifications of this species.

Literature Cited

Kramer, J. P. 1973. Revision of the American planthoppers of the genus *Stobaera* (Homoptera: Delphacidae) with new distributional data and host plant records. Proceedings of the Entomological Society of Washington 75: 379–402.

McClay, A. S. 1983. Biology and host-specificity of *Stobaera concinna* Stål (Homoptera: Delphacidae), a potential biocontrol agent for *Parthenium*

hysterophorus L. (Compositae). Folia Entomologica Mexicana 56: 21–30.

Nesom, G. L. 1990. Infrageneric taxonomy of North and Central American *Baccharis* (Asteraceae: Astereae). Phytologia 68: 40–46.

Reimer, N. J. and R. D. Goeden. 1981. Descriptions of the immature stages of *Stobaera tricarinata* (Say) (Hemiptera–Homoptera: Delphacidae). Pan-Pacific Entomologist 57: 429–433.

———. 1982. Life history of the delphacid planthopper *Stobaera tricarinata* (Say) on western ragweed, *Ambrosia psilostachya* Décondolle, in southern California (Hemiptera–Homoptera: Delphacidae). Pan-Pacific Entomologist 58: 105–108.