EGG PARASITOIDS OF *HOMALODISCA COAGULATA* (HOMOPTERA: CICADELLIDAE)

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The glassy-winged sharpshooter, *Homalodisca coagulata* (Say), is native to the southeastern United States. It has existed in southern California since about 1990 (Sorensen & Gill 1996), and has become an economic problem as a vector of the pathogenic bacterium *Xylella* sp., that is the cause of leaf scorch disease in oleander. *H. coagulata* also feeds on citrus and many other plants.

In October 1995, the mymarid wasp *Gonatocerus ashmeadi* Girault was reared from egg clusters of *H. coagulata* collected on citrus leaves in Santa Paula, California (Triapitsyn & Phillips 1996). This finding prompted us to conduct a limited survey of egg parasitoids of *H. coagulata* in California and also in the southeastern United States to assess the feasibility of a biological control program against this pest. Prior to this study, published information concerning natural enemies of *H. coagulata* was limited to the work by Turner & Pollard (1959) in Georgia.

Egg masses of *H. coagulata* are rather conspicuous and thus easy to locate on the underside of leaves. The female leafhopper covers its eggs with a white, chalky material, which may have a bactericidal effect, and spreads this material over the eggs using the tarsi. Parasitized eggs turn black before parasitoids exit through characteristic emergence holes. To obtain parasitoids, leaves with *H. coagulata* egg masses were collected and held in plastic containers. Upon emergence, parasitoids were placed directly in 70% ethyl alcohol and later identified by the senior author.

In California (1996-1997), parasitized *H. coagulata* eggs were collected on various ornamental plants on the University of California, Riverside campus. Eggs collected early in spring were not parasitized. During summer, *G. ashmeadi* was found in all samples from southern California and in rather large numbers (up to 80% of eggs were parasitized in Riverside in the July 1997 samples). Three other species of *Gonatocerus*—*G. capitatus* Gahan, *G. incomptus* Huber and *G. novifasciatus* Girault—were collected in very small numbers, and only early in spring in Fillmore by University of California Cooperative Extension (Ventura Co.) researchers. *Gonatocerus capitatus* and *G. novifasciatus* have not been previously reared from eggs of *H. coagulata* whereas *G. incomptus* was a known parasitoid of this sharpshooter species in Georgia (Huber 1988).

Earlier studies in Monticello, Florida (R. F. M., unpublished data) estimated average parasitism of *H. coagulata* eggs there at ca. 80%. During July and August 1997, we collected egg masses of *H. coagulata* from crape myrtle (*Lagerstroemia indica* L.) and citrus trees grown at the University of Florida's North Florida Research and Education Center. In July samples, more than 90% of ca. 300 emerged parasitoids were *G. ashmeadi*. One female was identified as *G. morrilli* (Howard), and the rest belonged to an undescribed *Zagella* sp. (Trichogrammatidae). In August samples, however, *Zagella* sp. was by far the dominant parasitoid of *H. coagulata* eggs. The genus *Zagella*

has never been previously reported from a cicadellid host. The minute size of *Zagella* individuals relative to the large size of the egg of their host suggests that this species may be gregarious.

In urban Baton Rouge, Louisiana, sharpshooter egg parasitoid collecting was conducted during a five week period in April and May 1997. Adult *H. coagulata* were captured at a 250 watt mercury vapor light trap set on a white sheet at ground level. They were held overnight in a container with leaves of host plants and then placed on live host plants for oviposition. During the first two weeks of screening, sharpshooters were confined within mesh sleeves around branches of crape myrtle or elderberry (*Sambucus canadensis* L.). During the latter three weeks of screening, sharpshooters were placed in collapsible screen cages containing potted sunflowers (*Helianthus* sp.). Sharpshooters confined within mesh sleeves were held for approximately one week for oviposition. The sleeves were then removed and the egg masses exposed for an additional week. Egg masses were then harvested along with adjacent plant tissue, held individually in covered, one-ounce plastic cups and monitored daily for parasitoid emergence. Sharpshooters were added continually to the cages containing sunflowers. When multiple egg masses were visible on a sunflower plant, it was removed and placed in the yard adjacent to the cage. After one week of exposure, the egg masses were harvested and held in plastic cups for parasitoid emergence. Parasitization of *H. coagulata* eggs in Baton Rouge area was ca. 50%. The samples collected using the method described above revealed two species of *Gonatocerus*: *G. ashmeadi* (ca. 69% of the parasitoids collected) and *G. fasciatus* Girault (ca. 31%). The latter species was reported by Turner & Pollard (1959) from eggs of *H. coagulata* in Georgia but it has not been known from Louisiana or California (Huber 1988).

Although adult *H. coagulata* appear to prefer new growth and can feed on many hosts, females choose to oviposit onto a somewhat narrower range of plants that includes citrus, crape myrtle, *Euonymus* spp., okra (*Abelmoschus esculentus* [L.] Moench), passion vine (*Passiflora* spp.), sunflower, etc. Apparently, oleander is not a preferred host plant of *H. coagulata* for oviposition, probably due to different feeding requirements of the nymphs (Brodbeck at al. 1995). The fact that most of the damage to oleander is not due to direct feeding but is caused by a plant pathogen makes the prognosis for complete biological control against *H. coagulata* in southern California unlikely. Nevertheless, introduction of several additional species of egg parasitoids from the southeastern United States may be warranted. The obvious candidates are *G. fasciatus* and *Zagella* sp. If established, these parasitoids may enhance the overall natural control of *H. coagulata* in southern California. Partial suppression has already been achieved there during the summer months by the local species *G. ashmeadi*.

Material Examined: *G. ashmeadi*: CALIFORNIA. Riverside Co., Riverside: 18-VI-1997, J. Bethke, 6♀♀, 2♂♂ (on *Passiflora* sp.); 6-VII-1997, M. Gates, 8♀♀, 8♂♂ (on *Passiflora* sp.); 18-VII-1997, S. Triapitsyn, numerous ♀♀, ♂♂ (on *Annona cherimola* Miller); 21-VII-1997, S. Triapitsyn, 5♀♀, 7♂♂ (on *Cocculus* sp.). Ventura Co.: Fillmore, 2-V-1996, P. Phillips, 4♀♀ (on citrus); Piru, 17-IX-1997, S. Triapitsyn, 1♀ (on citrus). FLORIDA. Jefferson Co., Monticello: 2-VII-1997, S. Triapitsyn, numerous ♀♀, ♂♂ (on crape myrtle); 20-30-VIII-1997, R. Mizell, 2♂♂ (on crape myrtle). LOUISIANA. East Baton Rouge Co., Baton Rouge: J. Bossart: 23-30-IV-1997, 3♀♀, 1♂ (on elderberry); 1-22-V-1997, 24♀♀, 5♂♂ (on sunflower). *G. capitatus*: CALIFORNIA. Fillmore, 4-V-1996, P. Phillips, 1♀ (on citrus). *G. fasciatus*: LOUISIANA. Baton Rouge, J. Bossart: 23-30-IV-1997, 9♀♀, 1♂ (on elderberry); 1-22-V-1997, 4♀♀, 1♂ (on sunflower). *G. incomptus*: CALIFORNIA. Fillmore: 4-V-1996, P. Phillips, 2♀♀ (on citrus); 13-III-1997, J. Dyckes, 1♀ (on *Macademia* sp.); 17-IV-1997, J. Dyckes, 1♀ (on *Platanus* sp.). *G. morrilli*: FLORIDA. Monticello, 2-VII-1997, S. Triapitsyn, 1♀ (on

crape myrtle). *G. novifasciatus*: CALIFORNIA. Ventura Co., Bardsdale, 17-IV-1997, J. Dyckes, 2♀♀ (on *Fraxinus* sp.). *Zagella* sp.: FLORIDA. Monticello: 2-VII-1997, S. Triapitsyn, numerous ♀♀, ♂♂ (on crape myrtle); 25-VII-1997, 27-VII-1997, 4-VIII-1997 and 20-30-VIII-1997, R. Mizell, numerous ♀♀, ♂♂ (on crape myrtle, citrus and *Betula* sp.) [all in UCRC]. This is Florida Agricultural Experiment Station Journal Series No. R-06134.

SUMMARY

A survey of egg parasitoids of the leafhopper *Homalodisca coagulata* was conducted in California, Florida and Louisiana. The mymarid wasp *Gonatocerus ashmeadi* was found to be the most common natural enemy in all locations sampled; *G. fasciatus* and the trichogrammatid *Zagella* sp. are recognized as potential biological control agents for introduction into southern California.

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NEWSPAPERS PRESENT ENTOMOLOGY TO THE PUBLIC

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The classic cartoon depiction of an entomologist as a rotund male figure dressed in khaki shirt, shorts and pith helmet chasing bugs with a butterfly net has done little to foster respect for the discipline of entomology. Yet, neither cartoons stressing eccentricity nor the seemingly peculiar affinity of entomologists for everything creepy and crawly can deny the important scientific contributions made by entomologists in agriculture, plant, animal and public health. Although the general public may perceive some insects as beautiful (e.g., butterflies) or beneficial (e.g., lady beetles), the general public does not perceive insects as important; thus, appreciation is limited (Wiggins 1983). In a survey of urban dwellers, Byrne et al. (1984) reported that 38% of people