

***PERISTENUS HENRYI* (HYMENOPTERA: BRACONIDAE,
EUPHORINAE), A NEW SPECIES PARASITIC ON THE HONEYLOCUST
PLANT BUG, *DIAPHNOCORIS CHLORIONIS*
(HEMIPTERA: MIRIDAE)**

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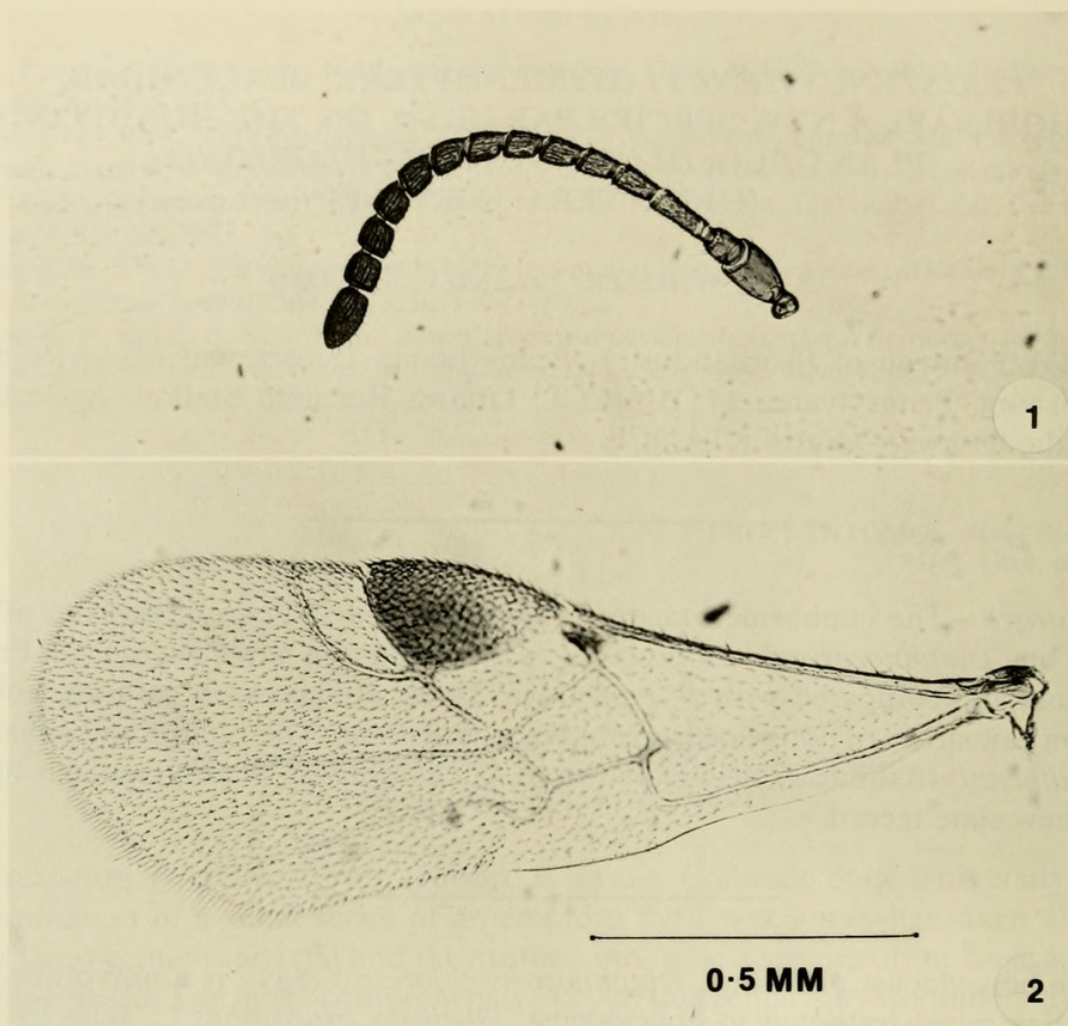
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Abstract.—The euphorine braconid *Peristenus henryi* Loan, a parasite of the plant bug *Diaphnocoris chlorionis* (Say), is described as a new species from Pennsylvania and compared with *P. reidi* Loan. Notes are given on parasite biology and on parasitism of honeylocust plant bug populations. The euphorine *Leiophron maculipennis* (Ashmead), also reared from *D. chlorionis* in Pennsylvania, is listed as a new state record.

The honeylocust plant bug, *Diaphnocoris chlorionis* (Say), is a univoltine, orthotyline mirid restricted to honeylocust, *Gleditsia triacanthos* L. Wheeler and Henry (1976) studied its life history in ornamental plantings and nurseries in southcentral Pennsylvania. Eggs overwinter in 2- or 3-year-old stems. Their hatch the following spring is well synchronized with leaf flush of host trees, beginning from early to late April in Pennsylvania. Nymphal development requires 4–5 weeks, with adults appearing as early as the second week of May. Peak numbers of adults occur from late May to early June; they usually die off by late June or early July. Plant bug feeding produces severe discoloration and distortion of leaflets, premature leaf fall and, in heavy infestations, defoliation.

Wheeler and Henry (1976) reported large populations of the honeylocust plant bug during 1975–76 (as many as 2500 nymphs and adults on the terminal 36 cm of 4 branches on each of 2 trees). Parasitism was not mentioned in the paper, although a euphorine braconid found parasitizing nymphs of *D. chlorionis* in 1976 appeared responsible for the population crash observed the following year (Wheeler and Henry, unpublished data). Until recently, problems in breaking diapause precluded the rearing and identification of the parasite.

The braconid was not identified until reared specimens were submitted to CCL, who found that the series contained not only *Leiophron maculipennis* (Ashmead), the only euphorine previously known to parasitize *D. chlorionis* (Loan 1974, 1980) but also an undescribed species of the related genus *Peristenus* Foerster. The new species, *P. henryi*, is described and illustrated here, and notes are given on its biology.



Figs. 1-2. *Peristenus henryi*. 1, Antenna of female. 2, Forewing of female.

***Peristenus henryi* Loan, NEW SPECIES**

Figs. 1-2

Female.—Holotype about 2.2 mm long. Reddish black. Clypeus, front legs light tawny, mid and hind legs dark testaceous. Head about as long as width of pronotum, 1.3 times as wide as long. Eyes distinctly convergent on face, temple very weakly receding behind eye. Face in profile view even, without protuberance by clypeus, 0.8 times and temple 0.7 times as wide as eye. Lateral ocelli about in line with posterior margins of eye, POL (postocellar line) = OOL (ocular-ocellar line). Malar space not as long as basal width of mandible. Flagellum as long as head combined with pronotum, short and widened distally, 12-13 articles, with articles 8-12 subquadrate (Fig. 1). Frons finely punctate.

Scutum with shallow punctures, moderately setose. Mesepisternum finely sculptured above and below, medially smooth and polished between front and rear margins. Forewing (Fig. 2): stigma deep with proximal margin a little longer than distal. Hindwing nervellus about as long as basal abscissa of basella.

Tergite 1 with discrete, subparallel striae, nearly as long as midfemur, 0.6 times as long as hindtibia.

Male.—Essentially as for female apart from secondary sexual characters. Flagellum with 14-16 articles.

Table 1. Characters distinguishing *Peristenus henryi* from *P. reidi*.

<i>Peristenus henryi</i>	<i>Peristenus reidi</i>
Flagellar articles 12–13 (♀), 14–16 (♂)	Flagellar articles 13–14 (♀), 15–17 (♂)
Face between eyes not as wide as eye (♀)	Face between eyes wider than eye (♀)
First abscissa of radius obsolete	First abscissa of radius short but discrete
Radial cell at wing margin about 0.5 times as wide as length of stigma	Radial cell at wing margin 0.7–0.8 times as wide as length of stigma
Fuscous habitus with face above clypeus usually dark and coxa III usually infuscated	Testaceous habitus with face above clypeus and coxa III light tawny

Material examined.—Holotype: ♀, USA, PA: York Co., Shiloh Nurs., Emigsville; ex *Diaphnocoris chlorionis* taken on *Gleditsia triacanthos*, deposited in Canadian National Collection, Ottawa (CNC); mirid nymph coll. 5 June 1981, wasp emerged in lab. 30 Mar. 1982, J. F. Stimmel and A. G. Wheeler, Jr. collectors. Paratypes: (deposited in Canadian National Collection, Ottawa, and National Museum of Natural History, Washington, D.C.): 3 ♀, 3 ♂, same data as holotype, adult wasps emerged 29 Mar.–2 Apr. 1982; 1 ♀, 2 ♂, PA: Dauphin Co., Harrisburg, East Hbg. Cemetery, 21–28 April 1976, K. Valley collector.

Etymology.—The name *henryi* is a patronym to recognize and honor the mirid systematist Thomas J. Henry (Systematic Entomology Laboratory, USDA, Washington, D.C.).

Remarks.—The short flagellum with fewer than 15 articles separates both *Peristenus reidi* and *P. henryi* from other described Nearctic species. This genus is remarkably homogeneous, but the flagellum and other characters, especially venation and landmarks of the face, eyes, and first tergite, permit identification. *P. henryi* differs from *reidi* by the characters listed in Table 1.

Biological notes.—Three adults of *Peristenus henryi* were collected during studies of the mirid complex of honeylocust (Wheeler and Henry, 1976); they were taken on 21–28 April 1976 when the population of *D. chlorionis* consisted mainly of 2nd- and 3rd-instar nymphs. The braconid may have begun to emerge slightly earlier because *Peristenus* spp. parasitize 1st or 2nd instars (Loan, 1974).

By mid- to late May, parasitized 5th instars were common in samples. They were distinguishable externally by the distended, often distorted and discolored (dark brown) abdomens. When parasitized nymphs were dissected, the larva usually was found coiled in the host abdomen, the U-shape taking somewhat different configurations. Of more than 400 nymphs dissected, only 1 contained 2 parasite larvae. Euphorine development is solitary with supernumerary eggs dying or 1st-instar larvae remaining moribund (Loan, 1974).

In the laboratory, the mature larva emerged laterally from the abdomen of a 5th instar (no larvae were found in teneral adults), dropped to the substrate, and spun a cocoon a few cm deep in potting soil. A few cocoons were uncovered in mid-summer and observed to contain adult parasites. Because adults overwinter within cocoons, the rearing technique of Loan (1974) was used to break diapause and to obtain adults. Of the eight specimens that were reared, seven proved to be the new species *P. henryi*, whereas one represented *Leiophron maculipennis*,

known previously from Florida (type locality) and Belleville, Ontario (see Loan, 1974, 1980). Although *P. henryi* may have been the dominant parasite, the relative contribution of the two species cannot be separated in the discussion of parasitism that follows.

An estimate that braconid parasitism of honeylocust plant bug was 75% or more in 1976 was based on field observations when adults outnumbered nymphs 3 or 4:1. Parasitized nymphs take longer to develop, and assessments of nymphal parasitism based on even large numbers of these "stragglers" will be biased. A more accurate estimate of parasitism was made using 4th and 5th instars collected before adults were present. In a sample chosen at random from the weekly collections for 12 May (see Wheeler and Henry, 1976 for details of the sampling technique), parasitism of 100 nymphs on each of two trees was 17 and 21%, respectively. Although numbers of the honeylocust plant bug were much lower the following year (unpublished data), the parasites' contributions to mortality could not be evaluated.

Observations made on native honeylocust suggest that parasitism may have considerable impact on plant bug populations. On heavily damaged trees at Emigsville (York Co.), Pennsylvania, on 5 June 1981, nearly all remaining late instars were parasitized. The following year, 100 late instars were collected at random from the same trees on 19 May before adults had appeared; 93 were parasitized.

The honeylocust plant bug has 2 braconid parasites: *Leiophron maculipennis* and *Peristenus henryi*, described herein from Pennsylvania. These apparently species-specific euphorines at times are important natural enemies of *D. chlorionis* on ornamental honeylocust. Loan (1980) reported that *L. maculipennis* parasitized 65% of 81 nymphs collected 12 June 1970 at Belleville, Ontario. In one collection of 100 nymphs in Pennsylvania, *P. henryi* was responsible for an even higher rate of parasitism (93%). A thorough study of these parasites is needed to clarify details of the life history and the relationship of parasitism to host density.

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