

**FIRST CANADIAN RECORD OF THREE PARASITOID SPECIES (HYMENOPTERA:
BRACONIDAE: EUPHORINAE) OF THE TARNISHED PLANT BUG,
LYGUS LINEOLARIS (HEMIPTERA: MIRIDAE)**

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The tarnished plant bug, *Lygus lineolaris* (Palisot de Beauvois) is a major pest of many vegetable and tender fruit crops and an occasional pest of forage and greenhouse crops in Canada. Three species of braconid endoparasitoids are known to attack *Lygus* nymphs in eastern Canada: *Peristenus pallipes* (Curtis), *P. pseudopallipes* (Loan), and *Leiophron lygivorius* (Loan) (Loan 1980). However, releases of the European parasitoids, *Peristenus digoneutis* Loan (Day et al. 1990; Day 1996) and *P. conradi* Marsh (Day et al. 1998) into the northeastern US and their subsequent establishment in 1984 and 1988, respectively, created the potential for these species to eventually enter Canada as additional biological control agents of *Lygus* spp.

As part of a Canadian project to investigate the potential introduction of European parasitoids to control *Lygus*, field collections of *Lygus* nymphs made in southern Ontario and southern Quebec during the summers of 1998 and 1999 were brought to the Southern Crop Protection and Food Research Centre (SCPFRC) in London to assess percent parasitism (based on 10–20 dissected nymphs) and to rear parasitoids to the adult stage for species identification. In addition to collections of the native parasitoids, *P. pallipes*, *P. pseudopallipes*, and *L. lygivorius* from *Lygus* hosts, the following three species were collected for the first time in Canada in 1998: *P. digoneutis*, *P. conradi* and *Leiophron uniformis* Gahan (voucher specimens of each species were deposited in the Canadian National Insect Collection, AAFC, ECORC, Ottawa after identification by H. Goulet). Table I lists the collection data: location, geographic coordinates, crop, dates collected, dates of parasitoid emergence and number of specimens emerged. In 1998 the one specimen of *P. digoneutis* collected from *Lygus* entered diapause after exiting from the host and emerged as an adult in June 1999, 13 days after removal from 2°C cold storage. In 1999, 6 adult *P. digoneutis* emerged 19–28 days after collection, as expected because this species is bivoltine. *Leiophron uniformis* is also multivoltine whereas *P. conradi* is univoltine.

Peristenus digoneutis and *P. conradi* were both found south of Montreal, within 50 km of the New York border in a vegetable/forage crop region of Quebec. The farm at St. Constant is approximately 30 km north of the AAFC Research Farm at Ste. Clothilde (20 km north of the US border). Day et al. (1998) had projected, based on widespread collections of *P. digoneutis* in the northeastern states and due to prevailing winds, that this species would likely disperse into Quebec in 1996. However, *P. conradi* had not been collected in as wide an area of the northeast US, and was only first recovered in the southern part of NY in 1993 (Day et al. 1998). *P. conradi* was therefore unexpected in Quebec in 1998. *Leiophron uniformis* is common and widely distributed throughout the US on all major species of *Lygus* and on *Halticus bractatus* (Say), the garden flea hopper, which is thought to be its preferred host (Day and Saunders 1990). This braconid had not been recorded in Canada until our 1998 collection.

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TABLE I. First records for three species of braconid parasitoids collected from *Lygus lineolaris* in eastern Canada in 1998 and 1999.

Species	<i>Leiophron uniformis</i>	<i>Peristenus digoneutis</i>	<i>Peristenus conradi</i>
Location	AAFC, SCPFRC farm, London, ON	AAFC farm, Ste. Clothilde, PQ	Farm, St. Constant, PQ
Geographic coordinates	43°01.77 N 81°12.33 W	45°10.05 N 73°40.53 W	Not recorded
Crop	Weedy alfalfa	Weedy alfalfa	Alfalfa
Date collected	9 June, 24 June, 2 July, 14 July 1998	i) 19 June 1998 ii) 30 June 1999	19 June 1998
Date emerged	26 June – 24 July 1998	i) 16 June 1999 ii) 19–28 July 1999	13 & 14 April 1999
No. parasitoids emerged	1, 6, 3, 3	i) 1 ii) 6	2
No. <i>Lygus</i> nymphs collected	200, 135, 141, 170	i) 400 ii) 1500	60
% Parasitism from <i>Lygus</i> nymph dissection	37.5, 8.3, 0, 0	i) 26.7 ii) 19.4	Not recorded

Future plans include tracking the distribution of *L. uniformis* and the distribution and impact of the two European species on *Lygus* populations in eastern Canada. The introduction of one or both of these parasitoids into Ontario is also planned.

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