

## Thresholds and Monitoring

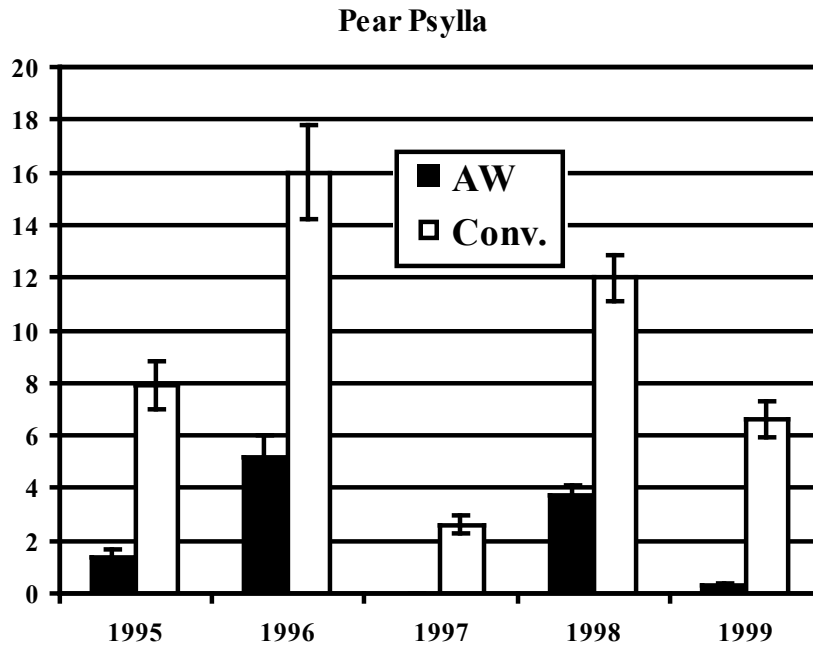
### A COMPARISON OF INSECTS AND SPIDERS OVERWINTERING IN CONVENTIONAL AND CM MATING DISRUPTION IPM PROGRAMS

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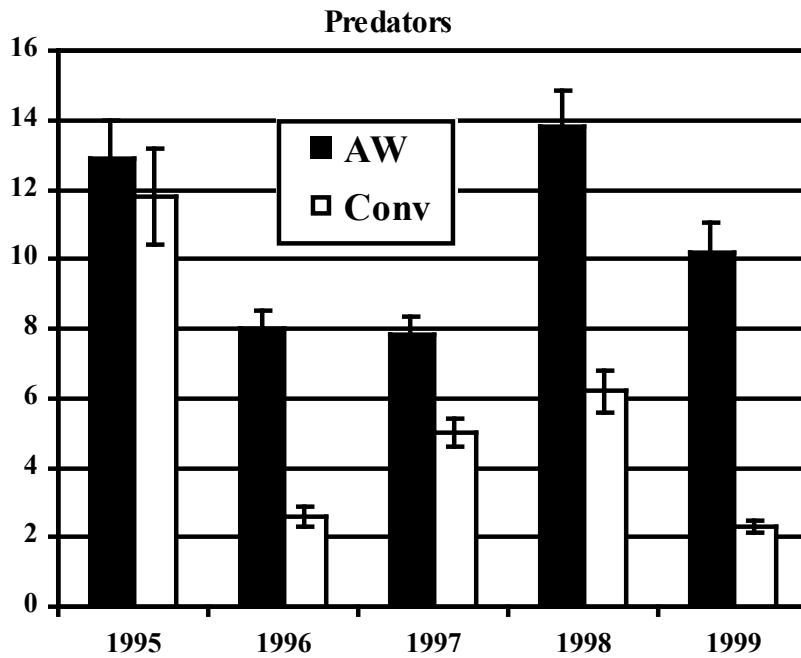
*Keywords:* pear, apple, pear psylla, *Cacopsylla pyricola*, *Anthocoris tomentosus*, *Orius tristicolor*, *Deraeocoris brevis*, *Lygus*, *Stethorus picipes*, overwintering, predators, spiders

Artificial overwintering sites (corrugated cardboard bundles) were placed in the crotches of mature pear and apple trees at conventional and first year CAMP (codling moth areawide mating disruption program) orchards in 1995. Bundles were placed in the trees during September from 1995 to 1999 and retrieved in January of 1996 through 2000. The most numerous insect families recovered from the bundles were Psyllidae (primarily *Cacopsylla pyricola*), Miridae (*Deraeocoris brevis* Uhler), Hemerobiidae (*Hemerobius* spp.), Lygaeidae (*Lygus* spp.), Anthocoridae (*Orius tristicolor* White, *Anthocoris tomentosus* = *melanocerus* Pericart), Coccinellidae (*Stethorus picipes*) and Rhopalidae. Spiders from a number of families were also numerous. There were distinct differences in numbers and composition of species overwintering in orchards with conventional organophosphate-based pest management programs and those with areawide codling moth mating disruption-based programs. Some of these differences increased in magnitude over the course of this 5-year study. Numbers of *C. pyricola* (pear psylla) overwintering in conventional orchards were from 2 to 220 times more numerous in apple and from 3 to 100 times more numerous in pear relative to areawide orchards.

Numbers of all predator species combined were about equal between the two programs in 1995, with *D. brevis* and *Hemerobius* spp. more abundant in IPM orchards while *O. tristicolor* and *S. picipes* were more numerous in conventional orchards. However, from 1996 to 1999, IPM orchards had more overwintering predators than conventional orchards (Fig. 2). Spiders were more abundant in overwintering bundles from IPM orchards in 4 out of the 5 years in the study.



**Figure 1.** Mean numbers per bundle recovered from overwintering sites in apple and pear.



**Figure 2.** Mean numbers per bundle recovered from overwintering sites in apple and pear.