

BIOLOGICAL CONTROL OF MILE-A-MINUTE WEED, *POLYGONUM PERFOLIATUM*: FIRST RELEASE OF THE CHINESE WEEVIL, *RHINONCOMIMUS LATIPES*

Judith Hough-Goldstein

Dept. Entomology & Wildlife Ecology, University of Delaware
531 S. College Ave., Newark, DE 19716-2160

ABSTRACT

Mile-a-minute weed (*Polygonum perfoliatum* L.) is an annual vine indigenous to parts of Asia, introduced into the eastern United States in the 1930s and now established throughout much of the Northeast. Infestations can cause failure of tree regeneration and may reduce native plant species in natural areas. A Chinese weevil, *Rhinoncomimus latipes* Korotyaev, was determined to be host specific to mile-a-minute weed, and a permit for field release was obtained from USDA/APHIS in July of 2004. Mass rearing of this insect is currently under way at the Phillip Alampi Beneficial Insects Laboratory, Trenton, NJ.

Small releases were conducted in Delaware and New Jersey in 2004. Adult feeding damage occurred and weevils survived over the winter, appearing in late April to early May, 2005. In 2005, more than 10,000 weevils total were released at two sites in New Jersey. At a third site, 650 weevils were released on ~30 small plants; all of these plants were killed due to adult feeding. Also in 2005, 400 weevils were released at the Ohio Rivers NWR in West Virginia and 610 at Codorus State Park, PA. A standardized monitoring protocol was used at all sites.

To study the dispersal and life history of the weevil, graduate student Ellen Lake released

450 weevils at each of three sites in Chester County, PA, on 9 June 2005. Weevils reproduced and dispersed up to 200 m at these sites, but most remained within 25 m of the release site. Four complete generations occurred in a cage study conducted at the same time. Adult weevils were present on foliage in the field until vines were killed by frost. Overall, weevil numbers at all three sites increased, with multiple generations apparent throughout the summer and fall. A cage study was also conducted in 2005 to determine the impact of various factors on individual mile-a-minute plants. The addition of 20 weevils per plant on 21 July did not reduce seed production. However, there were dramatic differences in seed production and plant dry weight among plants growing in full sun (average of >2300 seeds per plant), partial sun (670 seeds per plant), or full shade (360 seeds per plant). Thus future studies of weevil impacts must standardize sun exposure.

First release of this insect suggests that it will establish easily, producing multiple generations per year, and that adult feeding on small plants can kill mile-a-minute plants. It remains to be seen whether weevil populations will develop in high enough numbers to significantly impact survival, seed production, and spread of this invasive weed.