

Biology, Host Specificity, and Larval Impact of *Hypena opulenta* (Lepidoptera: Noctuidae): A Promising Biological Control Agent of Swallow-Worts (*Vincetoxicum*) in North America

A. S. Weed¹, A. Hazelhurst² and R. A. Casagrande²

¹Department of Plant, Soil, and Entomological Sciences, University of Idaho, Moscow, ID 83844 USA asweed@uidaho.edu

²Department of Plant Sciences, University of Rhode Island, Kingston, RI 02881 USA

Abstract

A classical biological control program has been initiated against the invasive European swallow-worts *Vincetoxicum nigrum* (L.) Moench and *V. rossicum* (Kleopov) Barbarich in North America. After its discovery in southeastern Ukraine attacking leaves of *V. rossicum*, the noctuid moth *Hypena opulenta* (Christoph) was transported to quarantine to initiate studies on its life history, host specificity, and larval impact. In the laboratory, adults of *H. opulenta* begin oviposition two days after emergence and produce approximately 600 eggs. Larvae develop through five instars and overwinter as pupae. Pupal diapause is facultative, resulting in at least two generations per year. Longevity and fecundity of females raised on *V. nigrum* and *V. rossicum* were similar and they showed no oviposition preference among *Vincetoxicum* species. Of the 74 plant species tested (distributed among 43 genera within 9 families), *H. opulenta* larvae completed development only on *Vincetoxicum*. *H. opulenta* averaged over 75% survival on all *Vincetoxicum* species, indicating that both target weeds are suitable hosts. Partial development occurred on two plants in the Urticaceae. In the impact study, feeding by two larvae per plant caused reductions in aboveground biomass to *V. rossicum* resulting in decreased reproductive output (flower, seedpod, and seed production). Only flower production of *V. nigrum* was negatively affected by larval feeding. The results of this study indicate that *H. opulenta* apparently poses little risk to native North American plants and is a promising agent against forested populations of *V. rossicum*. A petition is currently being prepared for release against *Vincetoxicum* in North America.