

## Demographic Matrix Model for Swallow-Wort (*Vincetoxicum* spp.)

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### Abstract

Demographic matrix modeling of plant populations can be a powerful tool to identify key life stage transitions that contribute the most to population growth of an invasive plant and hence should be targeted for disruption (weak links) by biological control and/or other control tactics. Therefore, this approach has the potential to guide the selection of effective biological control agents. We are in the process of parameterizing a five life-stage matrix model in order to generate pre-release agent recommendations for the swallow-wort biological control program. Pale swallow-wort (*Vincetoxicum rossicum* (Kleo.) Barb.) and black swallow-wort (*V. nigrum* L.) are herbaceous, perennial, viny milkweeds introduced from Europe (Apocynaceae-subfamily Asclepiadoideae). Both species are becoming increasingly invasive in a variety of natural and managed habitats in the northeastern United States and southeastern Canada. Black swallow-wort appears restricted to higher light environments, whereas pale swallow-wort infestations occur from the high light environments of open fields to low light forest understories. We are quantifying demographic transitions over 3-4 years of both swallow-wort species in field and, for pale swallow-wort, forest habitats in New York State (N = six populations). Vital rates estimated include seed survival, germination, plant survival to reproductive maturity, and fecundity (viable seeds produced per plant). Data will be presented on model parameters derived to date.