

## European Insects as Potential Biological Control Agents for Common Tansy (*Tanacetum vulgare*) in Canada and the United States

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### Abstract

Common tansy (*Tanacetum vulgare* L., Asteraceae), an herbaceous perennial native to Europe, was introduced into North America as a culinary and medicinal herb. Now widely naturalized in pastures, roadsides, waste places, and riparian areas across Canada and the northern USA, tansy is also spreading in forested areas. It contains several compounds toxic to humans and livestock if consumed, particularly  $\alpha$ -thujone, and is listed as a noxious weed in several states and provinces. A biological control program for common tansy is being coordinated by a Canadian-US consortium led by the Alberta Invasive Plant Council and the Minnesota Department of Agriculture, with CABI Switzerland Centre identifying and testing potential agents for efficacy and host specificity. Collection efforts are focused on Eastern Europe (Russia and Ukraine) to maximize the climatic match with the infested areas in North America. Several potential agents are under study, the most promising agent at present being a stem-mining weevil, *Microplontus millefolii* (Schltz.). A root-feeding flea beetle, *Longitarsus noricus* Leonardi, also shows promise, and DNA barcoding is being used to separate this species from morphologically similar species that may emerge as contaminants in host-specificity tests. The leaf-feeding tortoise beetle *Cassida stigmatica* Suffr. is specific to *Tanacetum* but is able to complete development on the North American native *T. bipinnatum* ssp. *huronense* (Nutt.) Breitung; further evaluation of the risk to this species is needed. Life history studies on a stem-mining moth, *Isophrictis striatella* (Denis & Schiffermüller), suggest that it develops mainly in the previous year's dead stems. This may reduce its potential impact as a biological control agent. The effects of chemical and genetic variation in tansy on the feeding and oviposition responses of insects are being studied, and molecular methods are also being used to evaluate the relationships between *T. vulgare* and other species.