

Hybrid Weeds! Agent Biotypes!: Montana's Ever-Evolving Toadflax Biological Control Soap Opera

S. E. Sing¹, D. K. Weaver², S. M. Ward³, J. Milan⁴, C. L. Jorgensen⁵,
R. A. Progar⁶, A. Gassmann⁷ and I. Toševski⁷

¹USDA Forest Service, Rocky Mountain Research Station, 1648 South 7th Avenue, MSU Campus, Bozeman, MT 59717-2780 USA ssing@fs.fed.us

²Department of Land Resources and Environmental Sciences, Montana State University, P.O. Box 173120, Bozeman, MT 59717-3120 USA weaver@montana.edu

³Department of Soil and Crop Sciences, Colorado State University, Fort Collins, CO 80523-1170 USA sarah.ward@colostate.edu

⁴USDI Bureau of Land Management, 3948 Development Avenue, Boise, ID 83705 USA jmilan@blm.gov

⁵USDA Forest Service, Forest Health Protection, 1249 South Vinnell Way, Suite 200 Boise, ID 83709 USA cljorgensen@fs.fed.us

⁶USDA Forest Service, Pacific Northwest Research Station, 1401 Gekeler Lane, La Grande, OR 97850-3368 USA rprogar@fs.fed.us

⁷CABI Europe-Switzerland, Rue des Grillons 1, CH-2800 Delemont, Switzerland a.gassmann@cabi.org osevski_ivo@yahoo.com

Abstract

An exotic toadflax stem mining weevil conventionally identified as *Mecinus janthinus* Germar has become widely established on Dalmatian toadflax [*Linaria dalmatica* (Linnaeus) Miller] in western North America, although agent density and control efficacy are highly variable across release sites (De Clerck-Floate & Miller, 2002; McClay & Hughes, 2007; Van Hezewijk et al., 2010). Naturally-occurring and fertile hybrid toadflax (HT) populations resulting from the cross-pollination of Dalmatian toadflax (DT) and a sister species, yellow toadflax (*Linaria vulgaris* Miller) (YT), have been discovered in Montana (Ward et al., 2009). Genetically distinct, host-specific *Mecinus* species have been confirmed from native range populations (Toševski et al., 2011). In Montana, the DT-associated *M. janthiniformis* Toševski & Caldara sp.n. appears to be abundant and widespread, while the YT-associated weevil confirmed to be *Mecinus janthinus* Germar, 1821 appears to occur much less frequently (Toševski, pers. comm.). Naturally-occurring hybridization of DT and YT coupled with the discovery that the host associated *Mecinus* biotypes were in fact separate species has at the very least increased the complexity of toadflax biocontrol. Strategic implementation of biological control for forests and rangelands affected by widespread, trenchant infestations of both toadflax species in particular seems less straight-forward. Our research results seek to address a range of questions regarding the optimal deployment of the two recently confirmed and host specific *Mecinus* species, and strategies for effective biological control of hybrid toadflax.

References

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