

Differences between Plant Traits and Biological Control Agent Resistance in Rush Skeletonweed Genotypes in North America

M. Schwarzländer¹, B. Harmon¹, A. S. Weed¹,
M. Bennett^{1,2}, L. Collison^{1,3} and J. Gaskin⁴

¹University of Idaho, Moscow, ID USA markschw@uidaho.edu Aaron.S.Weed@Dartmouth.edu

²Eastern University, St. Davids, USA

³University of California, Santa Cruz, CA USA

⁴USDA ARS, Sidney, MT USA john.gaskin@ars.usda.gov

Abstract

Rush skeletonweed, *Chondrilla juncea* L., is a perennial apomictic herb native to Eurasia, which has accidentally been introduced and become invasive in Australia, South- and North America. In Australia rush skeletonweed (RSW) biotypes can be distinguished morphologically and show differential resistance/tolerance to some herbicides and classical biological control agents. Anecdotal data for differences in plant phenology and resistance to biological control agents has also been reported for North American RSW biotypes. Only recently, however, a study using highly variable AFLP (Amplified Fragment Length Polymorphism) markers identified seven distinct genotypes in North America. We compared different plant traits (plant size and architecture, time to bolting and reproduction) and resistance/tolerance to three biological control agents, the RSW gall mite, *Eriophyes chondrillae* Canestrini, the RSW root moth, *Bradysrrhoa gilveolella* Treitschke, and different accessions of the RSW rust, *Puccinia chondrillina* Bubak and Sydenham, for the three dominant North American genotypes under standardized conditions. We found significant differences in plant size and architecture but these were so small that it is not possible to distinguish the three genotypes in the field. We also found differences in the resistance/tolerance to *E. chondrillae* and especially to different accessions of *P. chondrillina*: While one genotype was resistant to all four tested rust accessions, the second was susceptible to all rust accession and the third genotype was resistant to two of the rust accessions. We found no resistance to *B. gilveolella*. At least two strains of *P. chondrillina* were released in North America but there is no information when and where each strain was released, on which genotype and whether or not both strains established. Consequently, we do not know whether RSW genotypes acquired resistance post-release or whether our results are indicative for genotype specific *P. chondrillina*. Our data does, however, illustrate the importance of understanding intra-specific diversity of plant invasions to explain control failures and improve biological weed control programs.