

**Project Summary**  
**Rocky Mountains Cooperative Ecosystem Studies Unit**

<b>Project Title:</b> Fire Effects on Noxious Weeds: Evaluation of Integrated Dalmatian Toadflax Management in Fire-Affected Forest & Range
<b>Type of Project):</b> Research
<b>Project Discipline:</b> Natural
<b>Funding Agency:</b> BLM
<b>Other Partners/Cooperators:</b>
<b>Effective Dates:</b> August 15, 2006 – September 30, 2011
<b>Funding Amount:</b> \$3,500 (FY06); \$4000 (FY07); \$4000 (FY08)
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<p><b>Project Abstract:</b></p> <p>Research objectives supporting the mutual goal of scientifically-informed integrated Dalmation toadflax management to reduce the acres of public lands infested with the invasive species.</p> <p>Objective 1: Characterize the impacts of herbicide treatments and biological control on community composition and dynamics in Dalmation toadflax infested rangeland.</p> <p>Technical Approach: Plant community characteristics sampled in 2000, 2001, 2002, and 2004 will be used as baseline data for this study, and will be compared to measurements taken on field sites during the growing seasons from 2004 through 2010. Trends in vegetation community dynamics will serve as an indicator of agent impact on factors such as community successional trajectories as influenced by selective (=host specific) herbivore pressure. Environmental data including slope, aspect and elevation will be reported for each site, and within non-homogeneous sites to potentially elucidate parameters contributing to the failure or success of biocontrol at specific sites.</p> <p>Objective 2: Characterize the differential responses of Dalmation toadflax to specialized herbivory by an insect biological control agent, using growth parameters and indicators of individual and population fitness.</p> <p>Technical Approach: This aspect of the study will compare growth parameters and indicators of individual and population fitness, in host plants exposed to or protected from the impact of insect herbivory. The experimental design will be a randomized complete block repeated in time with two factor levels: site and treatment. The two treatments will be no herbivory (insecticidal exclusion) and insect herbivory (no insecticide applied). Within each site, each herbivory plots will be treated as necessary throughout the growing season with a broad spectrum systemic insecticide. Dalmation toadflax and indicator species growth and biomass parameters will be analyzed over time to examine the interaction effects of time with competition from desirable grass and forb species, fitness pressures of herbicide and biocontrol treatments, and site-specific factors.</p>
<b>Outcomes with completion dates (reports, publications, workshops, videos, etc.):</b>
<b>Keywords:</b> Dalmation toadflax, management, biocontrols