

Western Regional IPM Grants Research/Extension Accomplishments Report

INSTRUCTIONS: PLEASE PROVIDE ONLY THE ESSENTIAL COMPONENTS OF ACCOMPLISHMENT WHICH ARE:

1. A CLEAR IDENTIFICATION OF THE PROBLEM/ISSUE ADDRESSED BY THE RESEARCH/EXTENSION.
2. A CONCISE EXPLANATION OF HOW THE RESEARCH/EXTENSION ACHIEVEMENT CONTRIBUTED TO THE SOLUTION OF THE PROBLEM/ISSUE BEING RESEARCHED.
3. THE IDENTIFICATION OF OTHER BENEFITS RESULTING FROM THE RESEARCH/EXTENSION, EVEN IF UNPLANNED.
4. PLEASE ATTACH A SUMMARY OF THE PAST YEARS PROGRESS, ONE PAGE MINIMUM.

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PROJECT NUMBER: Proposal 05-R-02

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PROJECT TITLE: Mechanisms and Impacts of Integrated Pest Management for Sustainable Dalmatian Toadflax Control in the Western US

PRINCIPAL INVESTIGATOR: Stephen F. Enloe

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CO-PIs or TEAM MEMBERS: Tim Collier, University of Wyoming, Andrew Norton and Paul Meiman, Colorado State University

THE PROBLEM, ISSUE, OR REASON FOR CONDUCTING THE RESEARCH/EXTENSION:

Dalmatian toadflax is a highly invasive creeping perennial forb that threatens rangelands throughout the Western U.S.; this exotic forb is classified as a noxious weed in every Western state except Utah, Alaska, and Hawaii and impacts many different private and government land managers. Dalmatian toadflax is very difficult to control. Cultural control is largely ineffective and impractical on many invaded rangelands. Chemical control has shown promise, though herbicides can have detrimental effects on non-target plants. Biological control of Dalmatian toadflax with the weevil, *Mecinus janthinus*, has also shown promise but suppression is slow or insufficient under some conditions. Very little is known about IPM (integrated pest management) of Dalmatian toadflax, though this approach is clearly warranted. Our research seeks to evaluate IPM strategies for Dalmatian toadflax control using a combination of reduced-rate applications of one of two herbicides currently used for toadflax control (imazapic or picloram) and releases of the Dalmatian toadflax stem mining weevil (*Mecinus janthinus*). The overall objective of our approach is to minimize risk to non-target species, while achieving rapid, long-term and economical Dalmatian toadflax management.

THE SINGLE MOST IMPORTANT ACCOMPLISHMENT OR BENEFIT RESULTING FROM THIS RESEARCH/EXTENSION:

Over the spring and summer of 2007, we extensively sampled the plots at each site for Dalmatian toadflax cover, density and productivity and the rest of the plant community for cover and productivity. We also sampled the plots for *Mecinus* establishment and damage to the toadflax. While our analysis to date is only preliminary, we have found several noteworthy items. First, we found that *Mecinus* alone did not have a consistent impact on toadflax across sites in the year after release and that the impact was not generally improved when integrated with either commercial or reduced rates of picloram or imazapic. This may have to do with differing *Mecinus* establishment and we are still analyzing that part of the data. However, to

date, we cannot recommend an herbicide rate reduction when utilizing *Mecinus*. Second, we are finding considerable differences in plant community productivity at each site due to the herbicide treatments. Desirable cool season grass and cheatgrass productivity were often reduced by imazapic treatment while desirable forb productivity was greatly reduced by picloram treatment across sites. Warm season grass productivity was not strongly impacted by imazapic or picloram.

We have requested and received a one year no cost extension to continue this project into 2008. We feel that it is very important to continue collecting data from the sites to better understand the implications of *Mecinus* establishment and herbicide treatment for Dalmatian toadflax control.

ADDITIONAL BENEFITS, SUCH AS:

SOCIAL BENEFITS – The social benefits have yet to be determined.

ECONOMIC BENEFITS – The full economic benefits have yet to be determined. At this point, we cannot readily recommend integrating *Mecinus* and reduced herbicide rates and expect similar levels of control. We will continue to follow this into 2008. In the short term, we have found that there may be a trade off in cool season grass and forb productivity depending upon which herbicide was used. This information will be useful for ranchers who depend upon grass production for their livelihood.

ENVIRONMENTAL BENEFITS – Our findings on the differences in productivity of cool season grasses and forbs depending upon the herbicide used may allow land managers to change strategies depending upon their management goals. For example, a manager desiring higher forb productivity may switch from picloram to imazapic and expect less negative impacts.

OTHER –

PLEASE SUBMIT A HIGH RESOLUTION DIGITAL IMAGE REPRESENTATIVE OF YOUR RESEARCH/EXTENSION PROJECT THAT WE CAN USE TO HIGHLIGHT YOUR PROJECT!

When you have completed this form, return to both:

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