

Project Title: Predicting Invasive Potential of Annual Wheatgrass (*Eremopyrum triticeum*) in the Gardiner Basin of Yellowstone National Park

Task Agreement #: P19ACOI071 Modification(s):
Discipline: Natural
Type of Project: Research
Funding Agency: National Park Service
Cooperators: Montana State University
Student Involvement: yes, grad student and field techs
Effective Dates: August 27, 2019 through December 31, 2021
Funding Amount: \$65,605

Investigator and Agency Representatives:

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Project Abstract: Our goal is to determine the invasion capacity of annual wheatgrass and desert alyssum under current and simulated climate change conditions, build predictive population models allowing quantification of the risk of these species becoming invasive, and generate information to adaptively manage annual wheatgrass in the Gardiner Basin restoration sites in YNP.

Project Objectives -

- A. Measure field probabilities of germination, emergence, seedling establishment, seedling survival, seed produced per m² and seed rain for annual wheatgrass in the 22-acre Cinnabar enclosure in the Gardiner Basin. We will use these observations to parameterize our annual wheatgrass population model.
- B. Monitor annual wheatgrass seed and seedling response to simulated climate change conditions in the field. We will determine if elevated temperature has an effect on reproduction and survival rates of annual wheatgrass.
- C. Build a population model for annual wheatgrass using the data collected from Objectives 1 and 2. We will use the model to predict the population growth of annual wheatgrass at current and potential future climate conditions in the Gardiner Basin.
- D. Identify seed dispersal vectors for annual wheatgrass and suggest management that will decrease seed spread across the landscape.
- E. Share findings and modeled predictions with YNP management.