Rocky Mountains Cooperative Ecosystem Studies Unit
Project Summary

Project Title: Direct and Indirect Effects of an Invader on Shrubs and Birds

Task Agreement #: G18AC00305 **Modification(s):**
Discipline: Natural
Type of Project: Research
Funding Agency: USGS
Other Partners/Cooperators: Colorado State University
Student Participation:
Effective Dates: 8/16/2018 – 8/15/2019
Funding Amount: $49,617

Investigators and Agency Representative:
USGS Contact: Ian Pearse; ipearse@usgs.gov

Investigator: Ruth Hufbauer, Colorado State University, Fort Collins, CO; ruth.hufbauer@colostate.edu

Project Abstract: The goal of this research is understanding the novel plant-insect interactions that arise when invasive insects associate with new hosts is a crucial part of understanding how deleterious those novel interactions will be. Research includes **4 main objectives:**
1. Survey native, ornamental and invasive fruiting shrubs to understand both the timing and the frequency of attack on different species. Here, focus on collecting fruits throughout the ripening period, and rearing out insect in the laboratory. This objective thus focuses on characterizing just which novel interactions are occurring and when, and at what frequency in the environment. It will also provide data on possible interactions with native insect species within the fruits.
2. Observe frugivory by birds, to characterize which bird species are the dominant frugivores, and the rate at which they take fruits. Frugivory by birds is known to be crucial to successful seed dispersal and to increased germination rates in many species of plant. Fruits also offer an important source of nutrition to birds throughout the summer in temperate regions, as juveniles fledge, adults potentially nest a second time, and as they prepare for winter.
3. Experimentally determine the frequency of *D. suzukii* attack and bird frugivory, with a focus on *Prunus* species. We narrow the focus to a single plant genus for feasibility, and because preliminary results and the literature suggest that *Prunus* are often used by *D. suzukii* as hosts. This experiment will be factorial, with insects excluded using insecticides (or not), and birds excluded using netting (or not).
4. To determine movement and connections between habitats, complement the sampling in objective 1 with additional samples to send to collaborators conducting population genetic analyses of this species. Additional sampling will focus on important agricultural fruits on the farm, and from grocery stores, and winter populations using trapping.