

24. Pollinator Citizen Science Outreach

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Location: Arapahoe County, and Fort Collins

County Mentor and Intern Supervisor Contact Arapahoe County Extension Director

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Region Participation - Arapahoe County with the option to participate in Fort Collins pollinator citizen science projects.

Introduction - Native bees, honey bees and other pollinators are crucial for sustainable productivity in natural, agricultural, and urban ecosystems, contributing over \$200 billion worldwide in revenue from vegetable, fruit, nut, meat, and dairy production (Gallai, 2009). Colorado is home to 946 bee species belonging to 66 genera (Scott et al., 2011). Yet, in Colorado and globally, pollinators are facing many challenges including urbanization, pesticide and climate change. More effort is needed to increase public awareness and generate engagement in constructive ways to address the issue (National Research Council, 2007).

Background, Goals, Scope and Objectives - The Horticulture program in Arapahoe County provides classes, workshops, a Master Gardener help desk, sample identification and site visits in the areas of trees, insects, lawns, gardening, and sustainable landscaping. Pollinators are one of the hot topics for county constituents and we are providing pollinator outreach in a variety of ways including citizen science, classes/workshops, and a newly installed pollinator demonstration garden at the office.

Native Bee Watch, a citizen science training program offered through CSU Extension, enables volunteer citizen scientists to identify and monitor bees in urban areas. Citizen scientists are collecting valuable ecological data on local bee populations and trends. From a social science perspective, we are also collecting data on how the volunteers are learning and applying the scientific knowledge they've gained by participating in the program. Native Bee Watch is a mutually beneficial program for volunteers, communities and university researchers.

This internship focuses on pollinator and horticulture programing including outreach and coordination of the Native Bee Watch Citizen Science program; participation in bee keeping demonstrations; and delivery of outreach and education through classes, workshops, informal science writing, and social media. Programming will include planning, implementation, and evaluation. Depending on the interest of the applicant, the internship will also include one of two

focus areas: 1.) a social science emphasis which entails assisting with data collection and analysis on how adults are learning by participating in citizen science (part of a current grant), or 2.) ecological science which can include analysis of the native bee data collected by citizen scientists and/or assisting customers on horticulture diagnostics (identifying plants and insects; diagnosing disease and pest problems).

PRU Involvement - The internship supports priorities in the Environmental Horticulture PRU locally and on a statewide level. The intern will assist with group and individual education and media, including informal science writing on related topics and social media. The intern's work will also support the PRU's Pollinator Work Group committee, which is focused on making science-based pollinator education more readily available.

Learning Outcomes and Professional Development - The intern will gain experience with verbal and written communication, working as a part of a team, teaching and coordinating volunteers, applied research, and problem solving. They will also gain knowledge in the areas of pollinator conservation, horticulture issues as they relate to individuals and communities, and horticulture diagnostics. The skills developed during the internship will be transferrable to other jobs and projects the student may pursue. The intern will also have the opportunity to shadow Extension employees in other program areas, and will leave the internship with a greater understanding of Extension's role at a research level and community level.

Stakeholder Support - The intern will work closely with Arapahoe County and Colorado Master Gardeners. In addition, we are collaborating with the Carson Nature Center on the citizen science program, and with Hudson Gardens on bee keeping. The intern will also have the opportunity to work with citizen scientists in Fort Collins area including the CSU Pollinator Friendly Campus Committee as they begin implementing the citizen science program.

Mentor Team – Lisa Mason in Arapahoe County will be the primary mentor for the intern. If the student is interested exploring the social science part of the internship, Jill Zarestky, Assistant Professor in the School of Education, will serve as the on-campus mentor. If the student has a stronger interest in horticulture or entomology, we will reach out to faculty in those areas.

Travel Funds - Arapahoe County Extension will provide travel funds such as mileage as needed.