

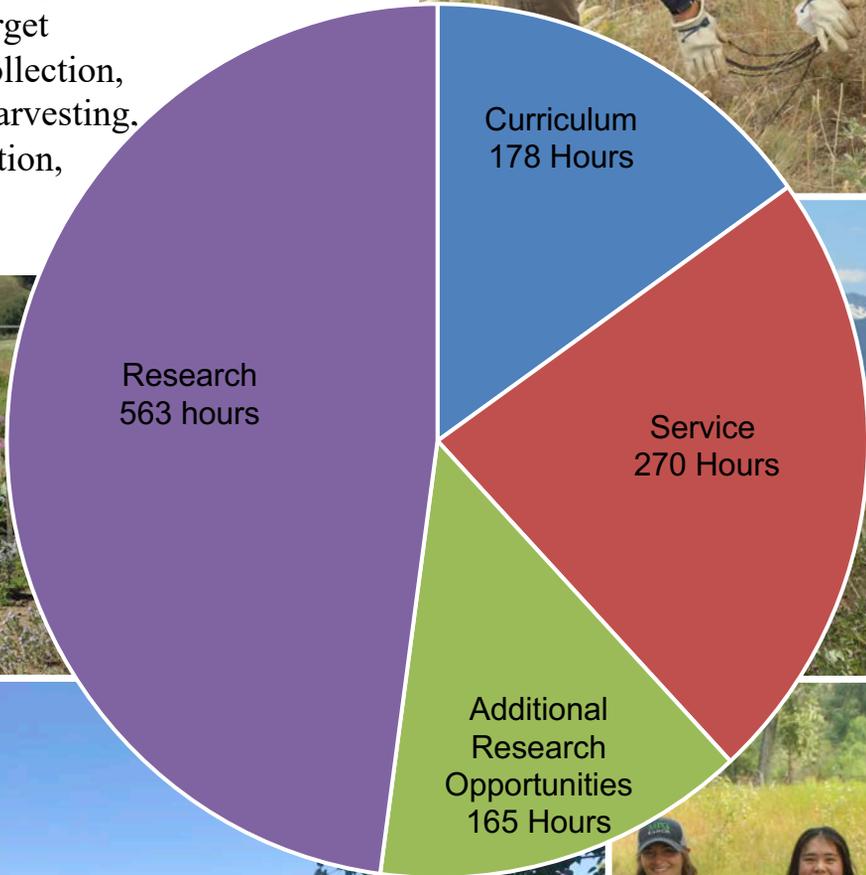
Bitterroot Wildlife Internship 2021 Program Report

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The Bitterroot Wildlife Internship (BWI) is a collaboration between MPG Ranch and Ecology Project International that provides local high school students with field experience and mentorship in conservation and biological science. Interns are paired with research mentors, who guide students through the research process—from developing a research question and designing a research methodology, to collecting and analyzing data and presenting their results. Interns leave the program with a hands-on understanding of the natural world, skills and experiences that support them in pursuing a career in the fields of conservation or ecology, and a desire and the tools to make a difference and support conservation in their communities. In the summer of 2021—the 8th season of BWI—eleven high school students from Missoula, Moscow (ID), Corvallis, and Gardiner MT spent four weeks on MPG Ranch conducting field research, completing service projects in support of the ranch’s conservation mission, and learning about local ecology, place history and science through hands-on lessons and self-guided explorations.

BWI interns spent their summer on the ranch working on a variety of research and service projects designed to build scientific literacy. This summer, interns contributed nearly 1,000 hours to research and conservation projects on the ranch. Of these, 270 hours were spent working on conservation projects, which included invasive species removal and mapping, barbed wire collection, clay target and plastic wad collection, wildflower seed harvesting. Bee Lawn installation, and Educational Garden weeding.



Interns also had an opportunity to participate in and learn about a variety of ongoing research efforts on the ranch, beyond the individual projects they worked on with research mentors. Highlights included butterfly identification, bird banding, bat banding, nighthawk and poorwill tagging, and moth identification.



Interns lived and learned on MPG Ranch for four weeks each session. For some, it was their first experience sleeping in a tent and cooking meals over a camp stove. To relax after service projects and data collection, interns played tennis and basketball at the Top House, swam in the Bitterroot River, and made friendships that will last for years to come. As one intern commented at the end of the program, “For me, [the highlight] was the connections I made. The friendships we have here are unrivaled.”



Service work is an integral part of the BWI experience. Working on ongoing conservation projects on the ranch helps interns develop a sense of accomplishment, an accountability to something larger than themselves, and a set of new skills. “The most important part of this experience was the amount of time we spent outdoors and the service projects. Altogether these were the factors that made the internship feel meaningful and like I was both gaining something and contributing to the ranch,” reflected one intern.



This summer, BWI began construction of a new Bee Lawn adjacent to the Educational Garden. Marirose Kuhlman and Mike Ormandy collaborated to design an example ecosystem beneficial to pollinators, specifically to bees. Interns completed stage one of this multi-year project, learning in the process how to lay edging, staple down weed cloth, and work together to haul wheelbarrows full of gravel to line the future pathways. This project will continue through future summers, with successive groups of interns contributing to its completion.





The Bee Lawn wasn't the only project interns worked on this summer. A series of BWI curriculum lessons focuses on how to plan and execute restoration projects successfully. Interns learned about previous studies by researcher Mike McTee and herpetologist Matt Schertz that found that chemicals from broken pieces of sporting clays in an old shooting area deter plant growth, and that the plastic shotgun wads harm turtles in the adjacent wetland. Armed with this information, sharp eyes, and enthusiasm, interns collected and removed multiple buckets full of plastic and broken clay pigeons from the site.



Partridge Alley, Davis Creek, and the Education Garden are home to several invasive plant species. Interns spent 93 hours clearing over 2 acres of henbane, hound's tongue, mullein, and cheatgrass.



Service projects



Collecting wild arrowleaf balsamroot seeds with University of Montana volunteers to dry and use in future restoration projects on the ranch;



Searching for and removing coils of old barbwire to make the ranch safer for wildlife



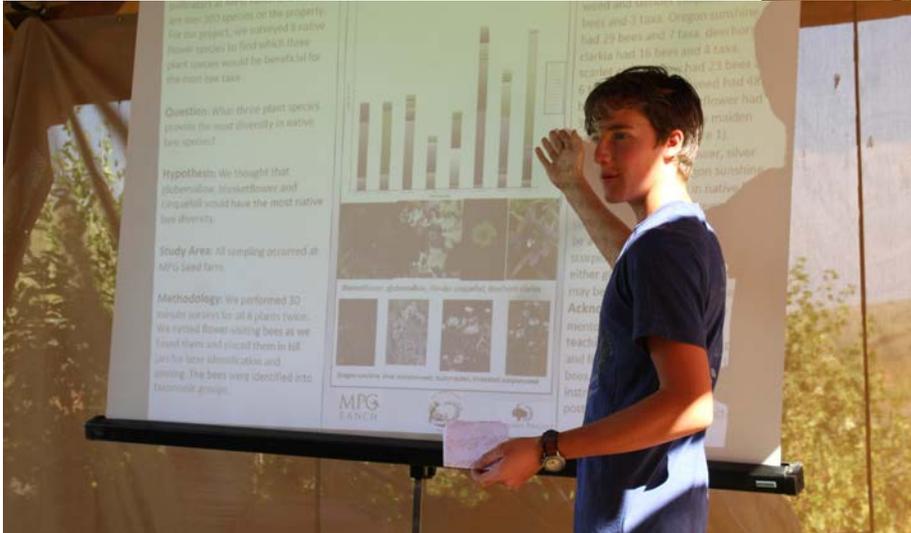
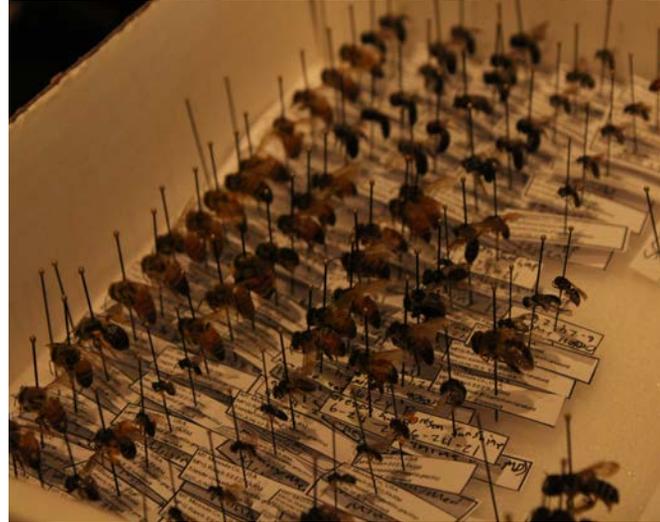
Cleaning seed grown onsite in the Seed Garden.

Student research project examples

Bees: Spencer was active during the warm parts of the day, following the bees with his mentor Marirose Kuhlmann at the MPG seed farm. He captured and pinned over 250 different bees and identified them to learn what plants they preferred. Once he was familiar with the requirements of his research, he was able to sample bees independently.



After capturing the bees, Spencer worked closely with Marirose to pin and identify every bee (and a few tricky flies) he had collected. Spencer focused his research project on eight flowers commonly used in restoration plantings. By comparing the overall abundance and diversity of bees found on each flower, he was able to determine which flowers would best support a diversity of native bees. Blanketflower, silver scorpionweed, and Oregon sunshine had the highest bee diversity.



Spencer showed great passion for conducting field research and was eager to share his findings with others. He gained a new appreciation for bees, he was also happy to share his bee pinnings and walk you through who was who.



Restoration plantings: Mason focused his research on the water catchment properties of berms and swales. Working with Morgan McCleod, he explored the potential use of berms as a passive water retention technology in restoration projects for dry climates like the Bitterroot. He measured the moisture levels in the berms against a control plot to determine the berm's effectiveness in retaining water. He then also measured the heights of grasses, forbs, and shrubs to understand the link between water retention and plant growth. He found some evidence that berms helped restoration plantings grow taller and faster, and that berms helped to retain soil moisture, but further research is necessary to support his hypothesis.





Soil: Devon worked with soil ecologist Ylva Lekberg to collect data on the relationship between invasive plant species and biotic soil communities. Data collection included the mundane (labeling bags with sample numbers) and the challenging (running statistical analyses of plant masses between plots). Below, Devon removes protective wire mesh rodent barriers from young plants with researcher Sasha Victor. Seedlings were then harvested and weighed to determine if biomass production of individual native and invasive species differed across plant community and year.



Education



MPG Ranch Education Director Joshua Lisbon met with both intern sessions to tell the story of the Bitterroot Valley. Interns joined Joshua in learning about the material and cultural relationships between the Bitterroot Salish and the landscape, discussing in the process the relationship between traditional knowledge of a place and science. Joshua also shared his knowledge of the valley—and the relationships between its inhabitants—by teaching interns the basics of animal tracking, demonstrating various traditional skills, and guiding the groups on hikes. Highlights of the hikes included seeing a moose, harvesting delicious huckleberries, and later seeing from game camera footage that a wolf had crossed the interns' path merely an hour behind the group.





Butterfly Day with Marirose Kuhlman was a highlight for the whole group! Interns gleefully strode the hillsides with nets in hand while chasing skippers, wood nymphs, whites, and swallowtails. Marirose expertly identified the butterflies, and pointed out other pollinators such as the native bumblebees and introduced honey bees. Interns emerged from the experience with a newfound appreciation for the diversity of pollinators who call the Bitterroot Valley home.





This summer's interns did not miss out on the crepuscular and nocturnal species! First, researcher Mat Seidensticker celebrated International Moth Day with a light screening in camp (pictured at right). Then, avian scientist Kate Stone and technician Mary Scofield invited us to join them for a night of nocturnal insectivore tagging. Nighthawks are notoriously tricky to catch, and poorwills are notoriously understudied, so we were lucky to capture and band both species.



Senior bat ecologist Nathan Schwab also hosted the group for an evening of mist netting for bats, during which interns got to meet a feisty lactating female big brown bat up close.



Presentations



This summer's Bitterroot Wildlife Internship culminated with a research symposium, where interns from both sessions had an opportunity to present their research projects and share their internship experiences with one another, their friends, families, and teachers, research mentors, and MPG and EPI staff. The mix of indoor and outdoor space at Garden City Harvest's community barn allowed for guests to flow from screenings of video projects and photos inside to the flower beds outside, where other interns were set up in front of their final posters. It was an inspiring and energizing event for all, an opportunity to gather together to connect with one another and with the BWI mission of conservation and science education, and a chance for interns to showcase the result of all their hard work this summer.





Students came away with a hands-on appreciation of what it takes to complete rigorous scientific research, and a deeper understanding of their role in regional and global conservation efforts.

One student stated at the end of the program: "I've always felt an urge to protect the natural world, and this experience only furthered my motivation to do so. I am definitely interested in conservation work, and I know I will carry this experience, especially the service work, to my future career."

