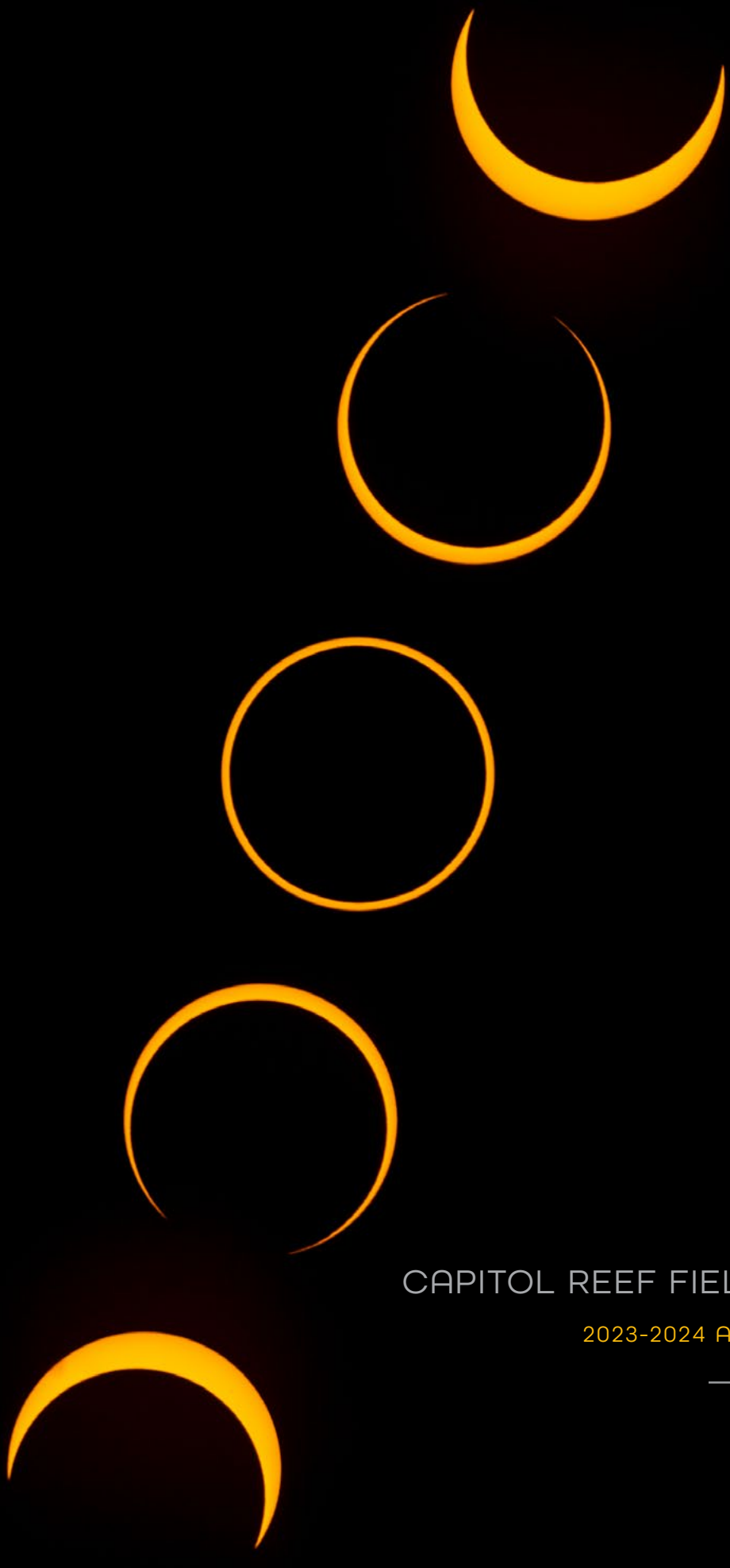

CAPITOL REEF FIELD STATION

2023-2024 ANNUAL REPORT

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CAPITOL REEF FIELD STATION

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DIRECTOR'S INTRODUCTION

With an annular solar eclipse in 2023 and a total solar eclipse in 2024, this fiscal year has been characterized by astronomical events. Additionally, 2023-24 has been a banner year for Capitol Reef Field Station (CRFS) in terms of progress toward facility improvements. We've focused on planning and fundraising for a site manager's residence and an education-focused observatory. The conceptual architectural renderings of the two buildings have been approved by the park and funds for the site manager's residence have been secured through Utah Valley University (UVU).

To garner funds for the observatory, we took full advantage of the annular eclipse's path through Capitol Reef National Park and co-hosted an event at the field station (with UVU's Outdoor Adventure Center) that allowed 18 UVU students to experience a perfect "ring of fire" around the Moon for almost five minutes! Students secured their spot at the field station by using their social-media prowess to crowdsource donations and help spread the word about the need for an observatory at CRFS. The field station is an ideal spot for an observatory that will benefit future UVU students as well as the local community. In fact, Capitol Reef National Park is designated as an International Dark Sky Park. Our innovative crowdsourcing campaign helped us connect with 26 new donors and 148 new followers on Instagram.

As we look forward to astronomical events in the future (total lunar eclipses in 2025 and 2026), we also look forward to connecting with you! Join us as a donor, a social-media follower, a trip leader, or a visitor. CRFS is an excellent venue for placed-based learning, whether your focus is on the Colorado Plateau or the dark sky above it.

Michael T. Stevens, Ph.D.
Director, Capitol Reef Field Station

ABOUT CRFS

Our Mission

CRFS, in partnership with Capitol Reef National Park, promotes and supports engaged learning, environmental ethics, and research and creative work through the exploration of the Colorado Plateau.

Our Vision

Our vision is that visitors leave the field station having learned more than the content of their coursework. Far away from many of life's daily distractions, visitors are able to immerse themselves in educational experiences that are enriched by the natural world surrounding them. Practicing conservation encourages all visitors to think about their role in the environment and deepen their understanding of environmental ethics. We hope that every visitor connects to the landscape and develops an appreciation for the natural and cultural legacies of the Colorado Plateau.

Our Place

Beyond the paved roads, our buildings sit atop a mesa in Pleasant Creek Valley in the heart of Capitol Reef National Park. The field station is surrounded by stunning views of canyon country. The Sun rises over the Henry Mountains, the last mountain range in the continental United States to be mapped, and sets over Boulder Mountain, which was an active volcano tens of millions of years ago and supported glaciers during the last ice age. At night, casual stargazers and serious astronomers alike can see the Milky Way and abundant constellations against an internationally-recognized dark sky. Only 3.5 hours from the main campus of UVU in Orem, Utah, our incredible location provides an unparalleled opportunity for place-based learning.

Our Partnership

The success of CRFS is only possible because of the strong partnership between UVU and Capitol Reef National Park. Only ten other university-operated field stations are located inside U.S. national parks. Our uncommon partnership allows CRFS to provide its visitors with educational experiences that are as remarkable as the landscape in which they occur. CRFS is property of the National Park Service (NPS) and is operated by UVU in accordance with our 10-year general agreement with Capitol Reef National Park.

Google Maps

VISITATION SUMMARY

2,473

Our total number of user days was 2,473 this year, which was one of our busiest years ever, despite road construction on the park's Scenic Drive. User days are calculated by multiplying the number of visitors by the number of calendar days they spent at the station.

73%

Seventy-three percent of our user days were associated with UVU this year. Wasatch High School, University of Kansas, and Summit High School were other leading sources of visitation (Fig. 1).

5

Visitors from UVU represented five different colleges and schools including the College of Science, the College of Humanities and Social Sciences, the School of the Arts, the College of Health and Public Service, and the College of Engineering and Technology (Fig. 2). This is strong evidence that a field-station experience is relevant to a wide variety of academic disciplines. In addition to hosting credit-bearing courses, we engage with the broader community by providing a venue for Continuing Education classes, which represented 17% of our user days this year.

683

During the 2023-24 fiscal year, 683 people (including 324 undergraduates) visited CRFS in 49 groups. The average group size was 14 and the average stay per group was 4 days.

VISITATION SUMMARY

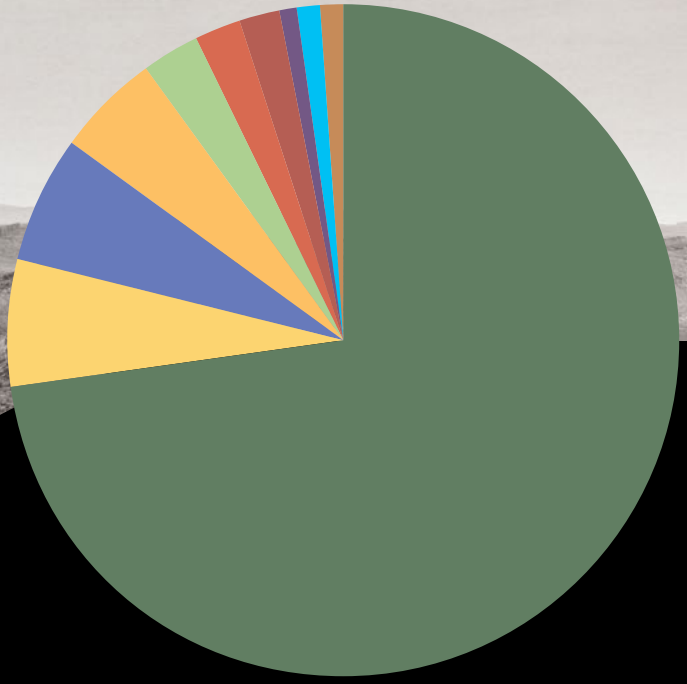


Figure 1
Percentages of CRFS user days from various institutions.

Utah Valley University	(73%)
Wasatch High School	(6%)
University of Kansas	(6%)
Summit High School	(5%)
Wilderness Individual Leadership & Development	(3%)
Utah State University	(2%)
Mt. San Antonio College	(2%)
Weber State University	(1%)
Westminster University	(1%)
National Park Service	(1%)

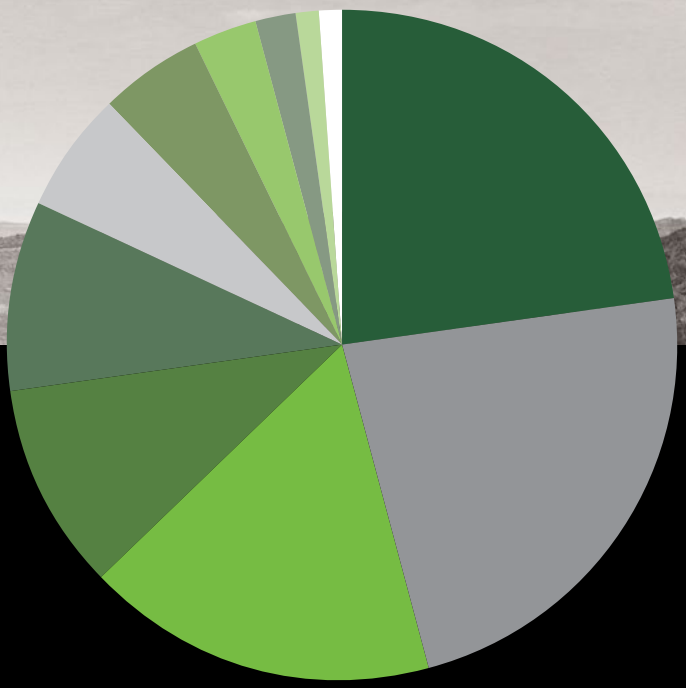


Figure 2
Percentages of CRFS user days from UVU's colleges, programs, or schools.

College of Science	(23%)
College of Humanities & Social Sciences	(23%)
Continuing Education	(17%)
Student Affairs	(10%)
School of the Arts	(9%)
Innovation Academy	(6%)
College of Health & Public Service	(5%)
Smith College of Engineering & Technology	(3%)
Honors	(2%)
Institutional Advancement	(1%)
Finance & Auxillary Services	(1%)

VISITATION SUMMARY

UVU Classes Who Visited CRFS

COLLEGE/PROGRAM/SCHOOL	COURSE	TITLE
Smith College of Engineering & Technology	DWDD 490R	Digital Media Senior Capstone Project (Fall)
	DWDD 490R	Digital Media Senior Capstone Project (Spr.)
College of Humanities & Social Sciences	COMM 3115	Communicating in Environments (Fall)
	COMM 3115	Communicating in Environments (Spring)
	COMM 350R	Public Relations Travel & Tourism
	ELL 2140	English Language Learning
College of Science	BOT 2100	Utah Flora
	BOT4050/4055	Plant Ecology
	GEO 202R	Science Excursion
	REC 4400	Natural Resource & Protected Area Mgmt.
Honors	HONR 100R	Honors Colloquium
School of the Arts	ART 300R	Art & Design Photography

Classes from other Universities Who Visited CRFS

UNIVERSITY	CLASS
Mt. San Antonio College	Special Topics in Field Geology
University of Kansas	Geology Field Camp
Utah State University	Utah Conservation Corps
Weber State University	Field Trip in Rock Art
Westminster University	Desert Mindfulness

Research Groups Who Visited CRFS

AFFILIATION	PROJECT
Utah Valley University	Remote Sensing of Pinyon-Juniper Woodlands
	Pollinator Interactions with Rabbitbrush Subspecies
	The Insects of Capitol Reef
National Park Service	NPS Researchers

VISITATION SUMMARY

UVU Groups Who Visited CRFS

AFFILIATION	GROUP
College of Health & Public Service	Community Health Outreach Clinics
College of Humanities & Social Sciences	American Association of German Teachers
	Creative Writing Workshop
College of Science	Nature to the Classroom (Fall)
	Nature to the Classroom (Spring)
Continuing Education	Mindfulness & Meditation (Fall)
	Mindfulness & Meditation (Spring)
	Oil Painting
	Watercolor
	Writers' Weekend (Fall)
	Writers' Weekend (Spring)
Innovation Academy	Annular Eclipse Event
	CRFS Staff/Park Leadership Meeting
	CRFS Faculty Workshop
Institutional Advancement	Foundation Ambassadors
Finance & Auxillary Services	Auditor Site Visit
Student Affairs	First Year Orientation
	Outdoor Adventure Center Trip Leader Training
	Outdoor Adventure Center Leave No Trace Training
	TRIO STEM

Other Groups Who Visited CRFS

GROUP	EVENT
National Park Service	Regional Meeting
Summit High School	Capitol Reef Curriculum Class (Fall)
	Capitol Reef Curriculum Class (Spring)
Wasatch High School	Wasatch Alternative (Fall)
	Wasatch Alternative (Spring)
Wilderness Individual Leadership Development	Girls' Empowerment Mission
	Next One Up

ENGAGED LEARNING

Even in a rapidly-changing world, some things remain the same. At CRFS, one of those things is our commitment to engaged learning. We mirror the values of UVU and strive to provide an unparalleled platform for engaged-learning opportunities on the Colorado Plateau.

We survey our visitors and compile those results annually. Every year we find that students highly value their field station engaged-learning experience. This year was no different, with nearly 100% strongly agreeing (92%) or agreeing (7%) that a field station visit enhanced their educational experience (Fig. 3). Additionally, 100% of visitors strongly agreed (94%) or agreed (6%) that they would encourage others to visit (Fig. 4).

This year we again hosted hundreds of undergraduates from a wide variety of disciplines. We hope you enjoy learning more about some of our visitors.

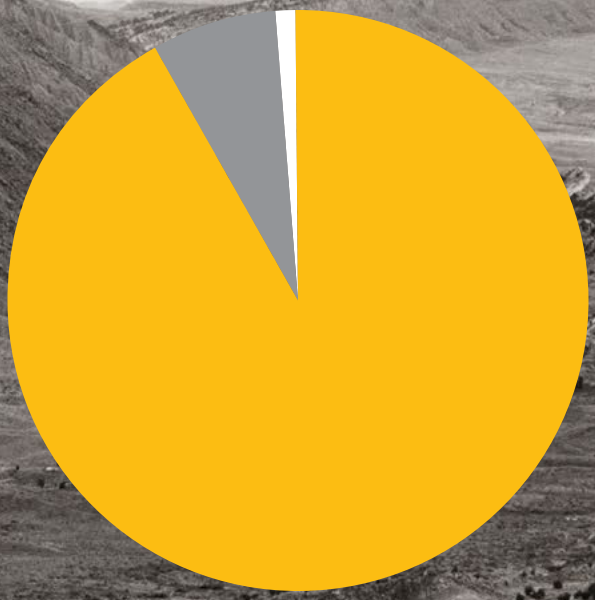


Figure 3
Our visitors strongly agreed (92%), agreed (7%), or were neutral (1%) that their educational experience was enhanced by their visit to the field station (n = 470).

Figure 4
Our visitors strongly agreed (94%) or agreed (6%) that they would encourage others to visit the field station (n = 467).

Strongly Agree
Agree
Neutral

ENGAGED LEARNING

UVU
DIGITAL MEDIA CAPSTONE PROJECT
December 1-3, 2023 and April 6-8, 2024

UVU digital media students Jacey Davis, Ashley Anderson, and Lauren Deland completed their capstone project by creating a digital scavenger hunt at the field station. The hunt uses NFC (near-field communication) tags to teach visitors more about the field station and the Colorado Plateau through interactive games, displays, and quizzes. Supervising faculty member Dan Hatch, Associate Professor of Digital Media, describes the project:

"Capitol Reef Field Station is a place of engaged learning for those in higher education. When partnered with this facility, we wanted to create an experience that would emphasize the purpose and mission of the facility by creating an engaging, interactive experience that those who visit would learn from. This project was so hands-on, interesting, and provided the opportunity to think out of the box for a good cause.

"It was developed in two sections; the first section was our learning and prep phase and the second section was our implementation and testing phase. In the learning phase, we were able to visit Capitol Reef Field Station for the first time. It was instantly captivating with its breathtaking location tucked away in the valley. There were gorgeous views from every angle. We learned so much about the history, the environment, and everything to do with Capitol Reef Field Station. With all the information, we created this scavenger hunt that taught about four specific topics related to the station. We hope that this has been a fun addition to the visits at the field station."

WEBER STATE UNIVERSITY
ELEMENTARY ANTHROPOLOGY
May 13-14, 2024

The focus of Weber State's Elementary Anthropology course varies from instructor to instructor. This year, the course highlighted Utah petroglyphs and pictographs, archaeology, and history, and included a visit to Capitol Reef National Park and the field station. During the course, students learned more about rock art creation, analysis, and history, as well as studying proper visitor etiquette and issues surrounding vandalism and archaeological site destruction. Trip leader Dr. David Yoder, Associate Professor of Anthropology, relates:

"During our two days in Capitol Reef, student learning was focused on Formative Period rock art, as the archaeological record in portions of the park formed the basis for Noel Morss's definition of the Fremont archaeological culture. Rock art panels like those along the Fremont River and Pleasant Creek near the field station allowed students to view classic petroglyphs and pictographs that have helped to define the Fremont rock art style. Faculty and students also discussed the history of the Euro-Americans and ethnohistoric Native American groups in the area, punctuated by visits to sites like Fruita's historic schoolhouse, Elijah Behunin's cabin, and a Navajo rock art panel. At each stop, discussions were held on the methods and theories used by archaeologists and historians to interpret the past as well as the dangers and negative impacts of vandalism and looting. Students came away from our two days within the park and at the field station with a much better understanding of the amazing archaeology and history of the region, the mission and impact of national parks within the United States, and the importance of sustainability and conservation."

ENGAGED LEARNING

UVU
ENGLISH LANGUAGE LEARNING
June 19-21, 2024

Since the field station's inception, UVU's Department of English Language Learning has been our most frequent visitor, bringing dozens of student groups, often three or four per year. With the program closing, we will miss their visits! UVU faculty member Brooke Bailey, who led their last trip, describes their trip and approach:

"The UVU Department of English Language Learning (ELL) has taken groups of students to CRFS for the past fifteen years as an integrated part of our advanced ESL content-based curriculum. Combining research, language learning, and the outdoor classroom experience at the field station has been transformational for hundreds of our ELL students. In June 2024, I had the privilege of taking our final UVU ELL student group to CRFS. This particular group included students from the Democratic Republic of Congo, Ivory Coast, Cape Verde, Mexico, El Salvador, Honduras, South Korea, Taiwan, and Bolivia. During our trip, we focused on environmental topics related to sustainability, including water conservation, light pollution, noise pollution, and recycling. We also divided our class into peer-teaching groups, each with an assignment (desert varnish, lichen, cryptobiotic soil, packrat middens) to research, and later, to teach each other on the trail. Our students also learned about the unique rock layer formations at Capitol Reef National Park, as many had never before explored a slot canyon nor seen red rock country. We hiked Cohab Canyon, Capitol Gorge, Pleasant Creek, and Hickman Bridge. During our Cohab Canyon hike, our students participated in a wilderness writing workshop by meditating, observing, and writing. While at the field station, students were encouraged to 'unplug' from technology in order to connect with each other and observe their surroundings without distractions. Students also improved their English proficiency–an important objective of the trip–as they conversed, worked in groups, received instruction, and completed tasks in English. The field station provides a context-rich outdoor classroom experience where our students research environmental topics, live sustainability practices, connect with each other, improve language proficiency, and explore a national park. Overall, this was a very rewarding experience for our last group of ELL students at UVU. This also marked my twentieth (plus) trip to the field station. It has been an honor to work with students and faculty at CRFS over the past ten years. Thank you!"

ENGAGED LEARNING

UVU & UTAH TECH UNIVERSITY
PUBLIC HEALTH
June 26-30, 2024

UVU Associate Professor of Public Health Dr. James Bemel led a group of UVU and Utah Tech University students to the field station where they learned about environmental health issues in the park, wilderness survival, the Colorado Plateau, and the field station itself. During their visit, they conducted three health fairs in the area, at the Wayne Community Health Center in Bicknell, the Royal's Food Town in Loa, and the Wayne County Farmers' Market in Torrey. During these fairs, they engaged with more than 500 individuals and performed nearly 200 health assessments. They educated participants on topics including diet/exercise, smoking/vaping, mental health, and cardiovascular health. Health assessments included blood pressure, blood glucose, and body composition, resulting in numerous referrals to primary care physicians. Dr. Bemel describes the impact on students:

"During the drive back, students talked about how much they enjoyed their time at the station and how much they learned from the trip. Several also discussed how much fun they had during the health fairs, particularly at the farmers' market location. … Overall, this was a fantastic learning opportunity for the students."

ENVIRONMENTAL ETHICS

Like engaged learning, environmental ethics remain a critical part of our mission and focus. We work to educate our visitors about the importance of conservation and sustainability so that future generations can enjoy the amazing features of the Colorado Plateau we enjoy today. This year, 95% of our visitors strongly agreed (85%) or agreed (10%) that their field station visit resulted in them placing more value on protected public lands (Fig. 5), and 96% strongly agreed (85%) or agreed (11%) that they became more aware of their environmental impact (Fig. 6).

Our goals go beyond just education. We also seek to effect change in our visitors, and 89% reported that they learned new methods they can use at home to reduce their environmental impact.

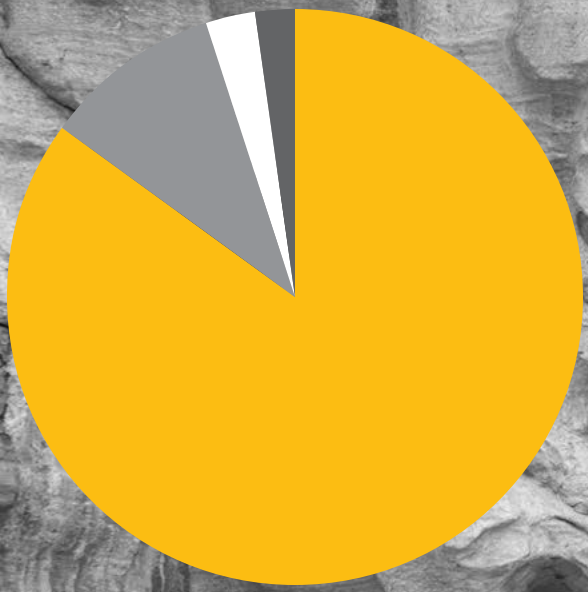


Figure 5
The majority of our visitors strongly agreed that they place more value on protected public lands, such as Capitol Reef National Park, because of their stay at CRFS (n = 469).

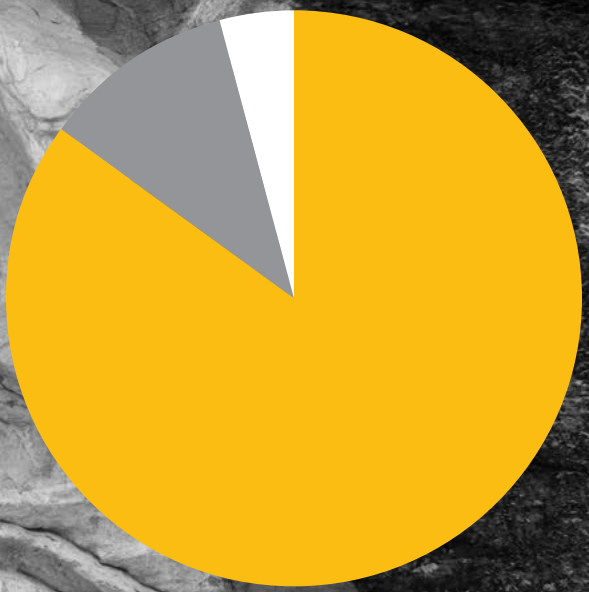


Figure 6
The majority of our visitors strongly agreed that staying at CRFS made them more aware of their personal environmental impact (n = 470).

Strongly Agree
Agree
Neutral
Disagree

RESEARCH & CREATIVE WORK

Research at CRFS this year encompassed botany, entomology, and environmental science, and resulted in two presentations at the Botany 2023 conference, a published insect field guide, a peer-reviewed entomology research article, and an honors thesis.

ECOLOGICAL SEPARATION AND POLLINATOR DISCRIMINATION AGAINST SUBSPECIES OF RABBITBRUSH

Dr. Michael Rotter and a recent graduate of UVU's botany program, Sam Ingram, conducted research on two subspecies of rabbitbrush growing in Capitol Reef National Park. They were interested in the role that pollinators play in plant speciation. Dr. Rotter recounts:

"Visitors that spend even a short amount of time at Capitol Reef Field Station might ask themselves 'Why do we have so many species of plants?' Even though this is a simple question it gets at the heart of what evolutionary ecologists ask, including UVU alum and current graduate student Sam Ingram. In conjunction with Dr. Michael Rotter and funding from Capitol Reef Field Station, Sam set out to answer this question through one of the most common plants at Capitol Reef: rabbitbrush.

"Rabbitbrush is a common dryland shrub that contains an explosion of blooms every fall. The blooms hide several secrets. Rabbitbrush contains two large subspecies that grow together known as the 'gray' and 'green' subspecies based on their stem colors. Despite these extreme colors, both subspecies grow intermixed together. Sam thought that if we could see why these two color types can co-exist it might give us hints at how species diverge over time. She also thought that insect pollinators might be behind this.

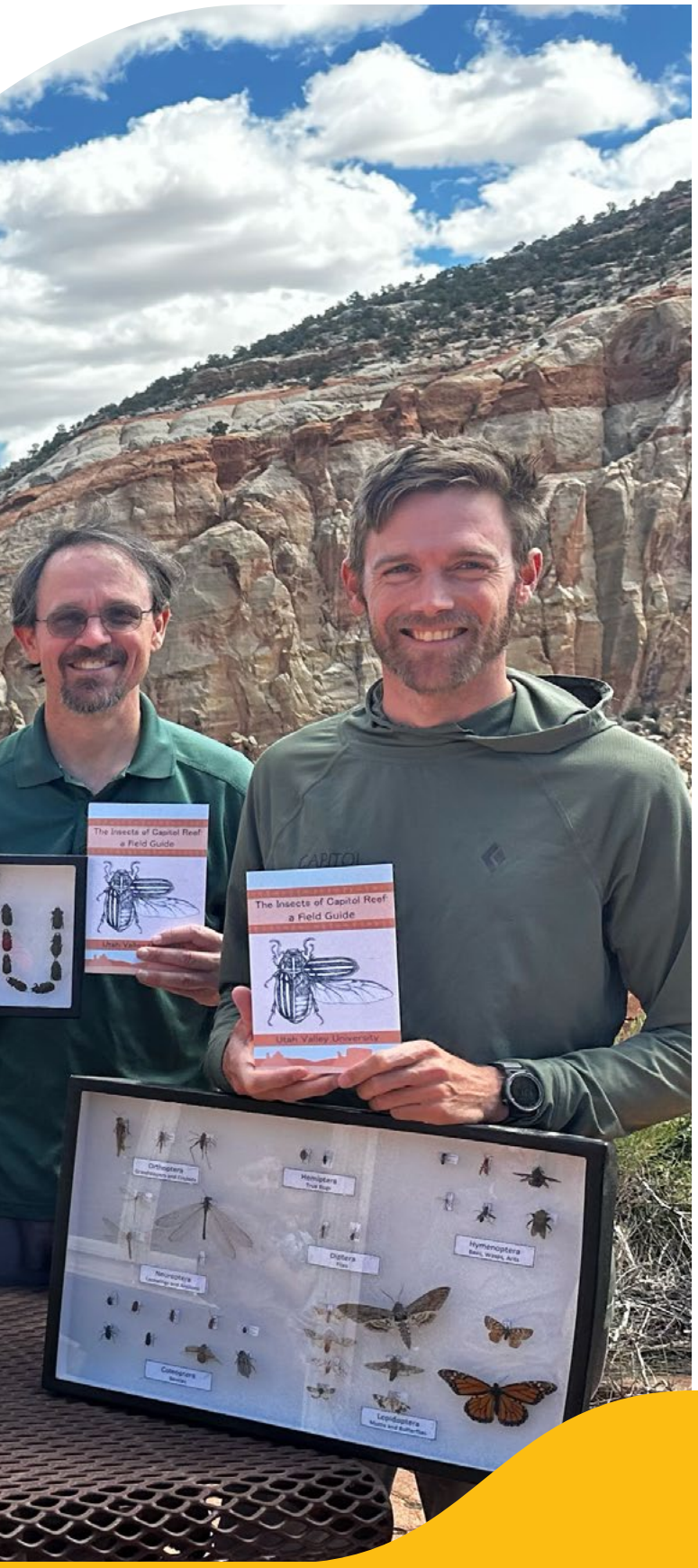
"Sam did a series of pollination studies to look at what insects pollinated the gray and green rabbitbrush subspecies and to see if pollinators might be behind the differences of the subspecies. Sam used fluorescent powders to mark gray and green individuals in flower and let pollinators visit the plants during the day. At night she would go out and find what subspecies pollinators visited and in what order based on the travel of fluorescent pollen. Combined with field observations, Sam found that pollinator species have preferences for either the gray or green subspecies. Although pollinators will occasionally visit different subspecies, we may be observing the start of preferences as insects specialize in one or the other subspecies. According to Sam's research if you visit the field station in another 400,000 years, you may be able to find two new species of rabbitbrush."

RESEARCH & CREATIVE WORK

THE INSECTS OF CAPITOL REEF

After fifteen years of work studying insects in Capitol Reef National Park, Dr. Heath Ogden, along with UVU undergraduates Jeremy Jensen, Kelsey Stone, and Ernie Vilela, published a field guide and a peer-reviewed paper in *Western North American Naturalist*. Dr. Ogden describes his lab group's efforts to produce and share the field guide:

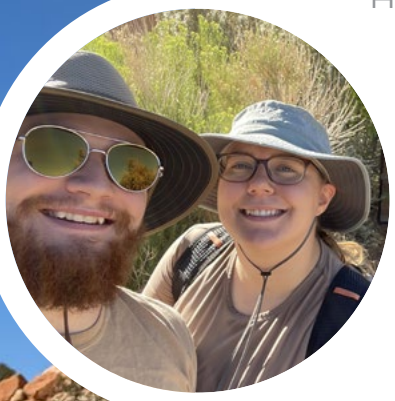
RESEARCH & CREATIVE WORK



"The objective of this project was to create an insect field guide for Capitol Reef National Park, that could be used by specialists and the general public visiting the park or other areas of the Colorado Plateau. Creating a field guide is a multifaceted and complex process requiring work in many different areas. For this project, a collection of insects representing those species that were both unique and common to Capitol Reef National Park were selected. From the collections and published data, it was determined what kinds of insects were relevant to include, and which photographs could highlight the most remarkable and identifiable features. Using published field guides as comparisons, the kind of layout that would be most beneficial was chosen. This model for the guide addressed the kind of information to include in the descriptions, the general size of the insects, and the seasons they are generally present. The field guide was sorted into orders, families (where appropriate), genera, and species.

"We arranged a trip to the field station (with a CRFS grant) to deliver copies to the field station and the national park bookstore. We also delivered copies to the national park scientists. We held a 'book signing' and we were able to talk to a number of park visitors about the insects and even sell some of the guides. We hope that students that visit the field station will use the field guides as they stay and explore the area. Printing the guide was a wonderful culmination to many years of collaboration and support from CRFS, Capitol Reef National Park, UVU, and the Ogden lab."

RESEARCH & CREATIVE WORK



A REMOTE SENSING ASSESSMENT OF LAND COVER CHANGES AND DROUGHT SUSCEPTIBILITY IN PINYON-JUNIPER WOODLAND COMMUNITIES OF CAPITOL REEF NATIONAL PARK

Working on her honors thesis in Capitol Reef National Park, Kayla West, a recent graduate of UVU, used remote sensing techniques to examine effects of climate change on pinyon-juniper communities. Kayla's thesis committee members included Dr. Matt Olson, Dr. Kate McPherson, and Dr. Michael Stevens. Kayla describes her project:

"As an environmental scientist, one of my biggest concerns is climate change. Climate change affects the whole world and doesn't exclude protected areas like national parks. The goal of my research was to better understand climate change within a national park like Capitol Reef by studying a recent drought's effects on vegetation. I visited Capitol Reef three times to collect training data for a remote sensing application that would compare vegetation health and density between 2018 and 2021. These years were picked for the comparison due to the frequency of images taken by the National Agriculture Imagery Program. While the focus of my study was mainly on pinyon and juniper trees, I took all plants into account, finding that the recent drought was having a negative effect on health and growth of vegetation in the park.

"While my research isn't going to solve climate change, it helps us better understand short- and long-term effects that climate change has on areas that are meant to be put aside from human impact. We still have a lot to learn about climate change, but my appreciation of Capitol Reef has grown so much. It's Utah's most underrated beauty and reminds me why I wanted to study environmental science in the first place."

RESEARCH & CREATIVE WORK

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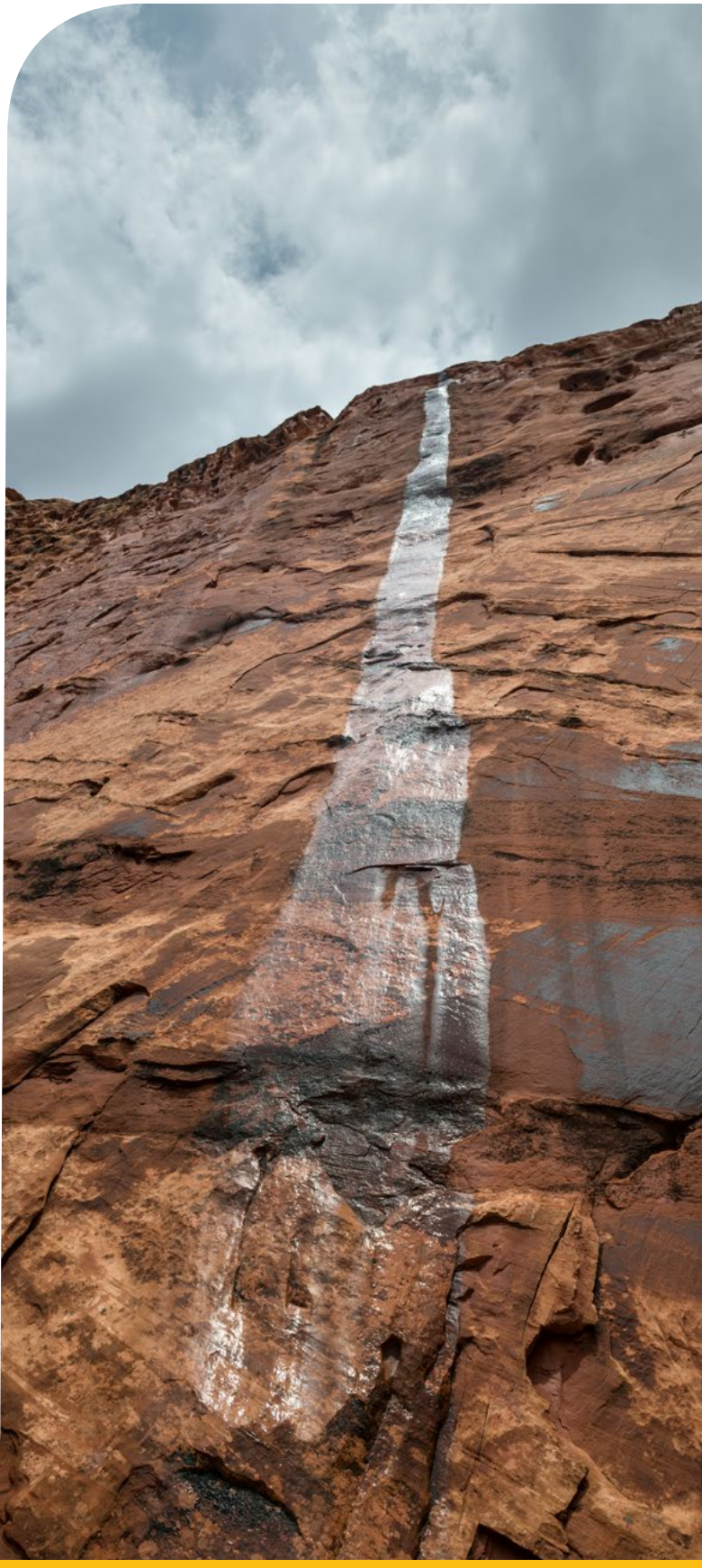
*denotes a UVU undergraduate



OUTREACH & SERVICE

UVU
ANNULAR SOLAR ECLIPSE
October 13-15, 2023

A rare event passed over Capitol Reef and the surrounding area on October 14, 2023. The Earth, Sun, and Moon aligned perfectly to create an annular eclipse, visible from only a small swath of the entire Earth, and CRFS was in that lucky shadow. Eighteen students made the trek down to be part of this natural phenomenon and to get to experience the remote beauty of CRFS.

According to Site Manager Michael Hague, *"The annular eclipse trip was awesome! It's rare to have an undergraduate group visit the field station without a curriculum in place, which seemed to allow students to sink into field station life and engage with the people around them. The trip was punctuated by a rare eclipse event followed by a star party, showcasing the wonders of the sky."*

Trip leader Kim Reynolds added, *"This trip was a great opportunity for students not affiliated with an academic class to visit the station. … It was amazing to see their reaction to not only the field station but also the scenery and the stars! It was also incredible to see the annular eclipse through the telescope. We had a diverse group of 20 who worked together to prep meals, enjoy hikes, and learn how to be more sustainable in everyday living."*

OUTREACH & SERVICE

UVU
NATURE TO THE CLASSROOM
November 10-13, 2023

Nature to the Classroom (NTTC) is an exceptional group that comes every year to CRFS. This is a professional development opportunity for K-12 teachers and administrators across Utah.

One of the standout developments from NTTC this year was the installation of a chronolog station, a tool that allows for continuous monitoring of the landscape toward the Henry Mountains. This feature invites visitors to snap pictures and contribute to a growing database, creating a living timelapse that captures the landscape's changes over time. Participants can observe and document various phenomena, including seasonal shifts, the impact of wildfires, air quality variations, the spread of invasive species, and fluctuations in water levels. We are proud to be involved in a project that leverages technology to enhance our understanding of nature and promote environmental stewardship.

NTTC participants dive deep into environmental education. They read and discuss research about the correlation between health, both mental and physical, and access to nature. They share challenges and ways to incorporate nature even with a paucity of resources. The teachers who attend this training bring out all their knowledge, expertise, and creativity, and are truly inspiring! Here are a few reflections from this year's participants:

"I love Nature to the Classroom! It is such a wonderful program, and I have loved it both times I have gone. I love learning about how to bring nature into my classroom and how to get students more engaged with nature-based lessons. The alumni experience was amazing because I was able to get so many lesson ideas from teachers. I also loved talking with other teachers and learning about the amazing things they are doing to bring nature into their classrooms."

"My experience with NTTC was so informative and inspirational. It was amazing to be around others with such passion for both education and nature. We hiked in Capitol Reef, practiced environmental conservation, had discussions about the need and benefits of connecting with nature as well as very practical ideas and demonstrations on how to implement these practices in our personal classrooms."

"The NTTC conference was an incredible experience. I thoroughly enjoyed all of the workshops, talks, and community building that took place. I left with a lot of ideas and excitement to bring back to my classroom. The first thing I did was start a tea herb garden in my classroom with an Aerogarden (I have always had a tea station for my kids and this was a really fun way to expand that)."

OUTREACH & SERVICE

AMERICAN ASSOCIATION OF TEACHERS OF GERMAN

January 26-28, 2024

A unique group that CRFS had the opportunity to host this year was the Utah chapter of the American Association of Teachers of German (AATG). Fifteen German teachers from all over the state came together for an immersive weekend, sharing food, language, camaraderie, and of course lots of teaching expertise and tips. Jeff Packer, UVU German program coordinator and president of the AATG, explains:

"We had a very simple plan with a limited list of objectives. German teachers tend to be the only ones in our schools who teach German, so we wanted to spend time with each other to share ideas and feel a sense of community that we don't always get in the workplace. German culture places a great deal of importance on sustainability and the environment, so we also wanted to use the fantastic venue to discuss ways to bring environmental issues into our teaching. Finally, we sought a quiet space where teachers could gather and immerse in the German language and refresh our own language skills with our colleagues. The field station proved to be the perfect space for all of these goals.

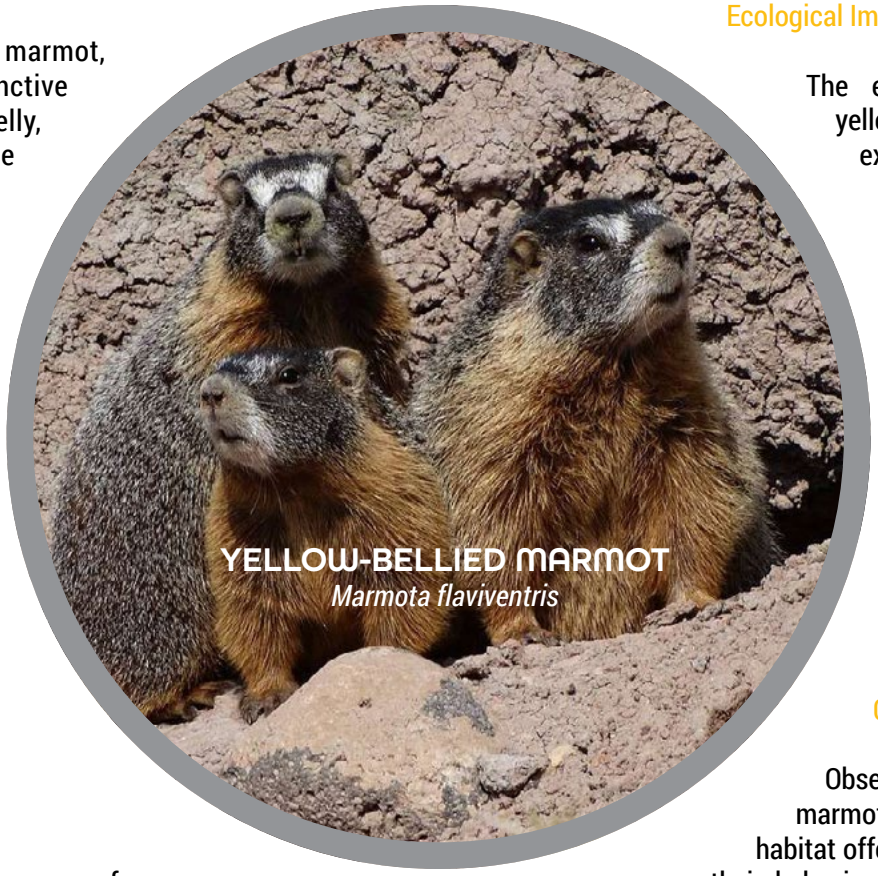
"... It was an overwhelming success, and almost everyone involved has asked me at one time or another when we are going to do it again."

SPECIES SPOTLIGHT

We are proud to highlight one of our region's notable residents: the yellow-bellied marmot, an unofficial mascot of Capitol Reef National Park. This species is an integral part of our high desert ecosystem, and understanding its role enhances our appreciation of the natural world around us.

Species Overview

The yellow-bellied marmot, recognized by its distinctive golden-yellow underbelly, is a key mammal in the mountainous regions of Capitol Reef. Often found in and around the Fruita Picnic Area, these marmots are easily identifiable by their large size and their habit of sunbathing on prominent rocks or ledges. They exhibit a range of vocalizations that contribute to their social structure and interactions.



Behavior and Ecology

Yellow-bellied marmots emerge from hibernation in early spring, as temperatures rise, and snow begins to melt. Their diet consists primarily of grasses, wildflowers, and insects, which provide them with the energy needed to sustain their active lifestyle. Marmots are incredibly social creatures that reside in burrow systems, forming a close-knit group referred to as a "madness." These burrows are complex networks of tunnels and chambers, designed to provide shelter and protection from predators and harsh weather conditions.

The marmots' vocal repertoire includes high-pitched whistles and chirps, which serve to communicate with colony members and signal the presence of potential threats. These vocalizations are particularly prominent during the active spring and summer seasons when marmots are engaged in foraging and social activities.

Ecological Impact

The ecological role of the yellow-bellied marmot extends beyond its social behaviors. Their burrowing activities contribute to soil aeration and create habitats for other small species. Additionally, their foraging influences plant community dynamics, helping to maintain balance in the high desert ecosystem.

Observation and Conservation

Observing yellow-bellied marmots in their natural habitat offers valuable insights into their behavior and the health of their environment. For researchers and visitors alike, spotting these marmots is an opportunity to appreciate their contribution to the biodiversity of Capitol Reef. Their presence is a testament to the richness of the local ecosystem and the importance of preserving their habitat.

We encourage everyone visiting Capitol Reef Field Station to keep an eye out for these remarkable animals and to consider their role in the broader ecological context. By understanding and appreciating species like the yellow-bellied marmot, we contribute to the ongoing effort to conserve and protect the natural world.

INTERNSHIPS

CULTURAL RESOURCES INTERN

Tony Polanowski, an anthropology major at UVU, was the cultural resources intern this year. Tony worked closely with Thann Baker, the park's archaeologist. As part of Tony's internship, he did site assessments of culturally-significant sites inside the park. The tools of the trade included a camera, a compass, maps, and reference books. At each site, he determined if there were any impacts from nature, animals, and/or visitation, and documented his findings. Tony describes his experience:

"The site assessments were my favorite assignment. I felt like I was really helping the team with them. This part of the internship gave me the most active field experience. All parts were important and were building blocks to the information I was learning. It was incredible being able to do the entire process from start to finish. I feel like I learn so much doing it this way. Through school you get a textbook and sometimes pictures, but this hands-on approach has reinforced my learning and allowed me to apply what I've learned to the internship.

"This internship has been a crucial step in my career development. I have decided that working in the national parks will be in my future, if possible. I was treated well and learned so much from my supervisors. I learned so much about the park and its processes from Thann and would work with him again in a heartbeat."

INTERNSHIPS

INTERPRETATION INTERN

The interpretation intern this year was Abigail Kerr. Abigail is a biology education major at UVU. As part of her internship, Abigail staffed the Visitor Center desk and answered visitors' questions. She also wrote and presented programs to visitors including an archaeology talk, a geology talk, and a ranger's choice program in which she focused on invertebrates. Because of her internship, Abigail knows so much more about Capitol Reef National Park, its plants and animal inhabitants, and the importance of preserving national parks. Abigail elaborates:

"The activities I engaged in during my internship had a profound impact on my education and career aspirations. Gaining in-depth knowledge about Capitol Reef was a unique and special opportunity that I deeply cherish. It reinforced the importance of preserving our wilderness and protecting the delicate balance of our ecosystems.

"This internship solidified my desire to educate others about the natural world. The experience ignited a passion within me to teach biology, as I am now equipped with engaging and valuable information about ecology and wildlife that I am eager to share. The knowledge I gained about the park's flora and fauna has provided me with material that I can incorporate into my future lessons, making science education more relatable and exciting for my students."

NATURAL RESOURCES INTERN

UVU biology major Cyrus Nielsen was our natural resources intern. He worked with the park's Division of Resource Management and Science to collect data about the natural resources in the park, especially its plants. The data he collected under the direction of Lead Natural Resources Technician Emily Hagerott and Natural Resources Technician Joe Fife is used to help the park make informed decisions about protecting and managing its resources. While in the field, Cyrus was able to see the principles he learned about in botany, biology, and ecology classes come to life in the real world and made him hungry for additional knowledge. In addition to studying plants, Cyrus worked with U.S. Forest Service entomologists and did fish surveys with the Utah Division of Wildlife Resources. Cyrus was inspired to see how a variety of professionals interact to get work done. Cyrus summarizes his internship in the following way:

"Overall, this internship was an amazing experience for me. I learned so much about myself and have really developed as a person. The work was difficult at times, but so amazing and so worth it. I've amassed many new memories that I will never forget, and my future will be completely different as a result of taking this job. I feel like my education has gained a lot of depth, and I have a better idea of what I'd like to do career-wise moving forward."

FACILITIES REPORT

MINI-SPLITS

As we reflect on the progress and achievements of CRFS over the past year, one development stands out in our commitment to facility sustainability: the installation of four energy-efficient mini-split systems. This upgrade represents a critical step in improving the comfort of our facility while reducing our environmental footprint, complementing other sustainable features like Trombe walls for passive heating, cooling towers, permeable pavers, abundant natural light, and solar power.

Mini-split systems provide a modern and efficient solution for both cooling and heating. Each unit features an outdoor compressor, and one or more indoor units linked by refrigerant lines. In cooling mode, the process begins when the indoor unit draws warm air from the room and blows it over a coil filled with a special refrigerant. As the warm air passes over the coil, the refrigerant absorbs the heat, transforming from a liquid to a gas. This gaseous refrigerant is then pumped outside to the outdoor unit, where it releases the absorbed heat and condenses back into a liquid. In heating mode, the process is reversed: the system extracts heat from the outside air, even in colder temperatures, and transfers it indoors, ensuring a comfortable environment year-round.

The installation of these systems was carried out with careful consideration of our facility's needs. The mini-splits are strategically placed to ensure efficient cooling and heating throughout the main building and the site manager's apartment, providing a refuge from extreme temperatures in all seasons.

FACILITIES REPORT

Mini-split systems are notably energy-efficient compared to conventional HVAC systems. They operate on a ductless principle, eliminating energy losses typically associated with ductwork. In heating mode, they are moving heat rather than burning fuel to create it. The design leads to reduced energy consumption and can function with our current solar setup. Additionally, our mini-split system utilizes a refrigerant with a lower global-warming potential, further minimizing our environmental impact. This aligns with our commitment to reducing our carbon footprint and supporting sustainable practices in our operations.

The addition of the mini-split system marks a significant milestone in our ongoing efforts to enhance the sustainability of CRFS. We are proud of this advancement and excited about the positive impact it will have on our facility and our visitors. As we move forward, we will continue to seek out and implement solutions that balance operational needs with our environmental responsibility. Thank you for your continued support as we work to foster a more sustainable future.

STRATEGIC PLAN

The first three tenets of our strategic plan are tied to our mission of engaged learning, environmental ethics, and research and creative work. We have two additional objectives linked to building partnerships and meeting our visitors' needs.

1 Promote CRFS as a place for engaged learning used by a variety of disciplines and multiple institutions.

This year, visitors from UVU came from five of its seven colleges and schools. We are pleased that such a wide array of disciplines are linking their curricula to the field station. In addition to UVU courses in botany, communication, digital media, public health, and photography, for example, we connected to the broader community through UVU Continuing Education courses such as mindfulness and meditation, painting, and writing. We also hosted visitors from multiple other institutions this year including five other colleges/universities and two high schools who offered engaged-learning experiences centered on conservation, desert mindfulness, geology, and rock art, for example.

2 Develop environmental awareness and engage visitors in sustainable practices to be applied at home.

As a result of their visit to the field station, 446 out of 469 (95%) of survey respondents strongly agreed or agreed that they placed more value on protected public lands such as Capitol Reef National Park. Similarly, 450 out of 470 (96%) of survey respondents strongly agreed or agreed that they became more aware of their environmental impact. This increase in environmental awareness is transferable to visitors' home environments, with 398 of 445 (89%) of survey respondents reporting that they learned new methods for reducing their environmental impact that they can put into action in their everyday lives.

3 Foster research and creative work that utilize CRFS as a venue from which to explore the Colorado Plateau.

Research projects occurring in Capitol Reef National Park this year included work in botany, entomology, and environmental science. The details about these projects are included in the Research & Creative Work section of this annual report. In addition to these projects, prior work on perceptions of crowding among Capitol Reef National Park visitors done by three communication professors (Dr. Meaghan McKasy, Dr. Maria Blevins, and Dr. Leandra Hernández) and a biology professor (Dr. Michael Stevens) resulted in a presentation at the International Association for Society and Natural Resources meeting in Cairns, Queensland, Australia, and a peer-reviewed publication in *The Northwest Journal of Communication*.

STRATEGIC PLAN

4 Continue to collaborate with our NPS field-station partners and build relationships with other relevant organizations.

In January 2024, members of the CRFS staff traveled to the field station to meet with Capitol Reef National Park's leadership team to discuss our shared vision and to plan for future projects. We discussed the value of our internship program, upcoming road construction, the expansion of CRFS facilities, and our shared research priorities. In September 2023, Director Dr. Michael Stevens and Site Manager Michael Hague traveled to La Selva Research Station in Costa Rica to attend the Organization of Biological Field Stations conference and interact with members of the international field-station community. This year, Dr. Michael Stevens continued to serve on the advisory board of Wilderness Individual Leadership Development, a Baltimore-based organization focused on providing underserved high-school students with experiences in nature, including staying at CRFS.

5 Ensure that CRFS facilities, staffing, and services meet visitor needs.

To improve our facilities, we have been planning and fundraising for a site manager's residence and an education-focused observatory. Associate Vice President of Facilities Frank Young hired Range Architecture and Design to produce conceptual drawings of the two buildings that have been approved by the park. Associate Provost of Academic Innovation Dr. Tammy Clark secured funds for the construction of the site manager's residence through UVU. CRFS and the Outdoor Adventure Center co-sponsored a fundraising event for the observatory that engaged UVU students as fundraising ambassadors. Students who helped raise funds and advertised our campaign on social media got to stay at the field station during the annular eclipse visible from Capitol Reef National Park. The students garnered donations from 26 new donors, expanding our list of donors by 78%. We also gained 148 new followers on Instagram, a 21% increase. Finally, in terms of staffing and services, 467 of 470 (99%) of survey respondents strongly agreed or agreed that field station staff were competent, helpful, and professional.

FINANCIAL REPORT

This year, the operating funds at CRFS came from three sources: **1)** institutional support from UVU ($264,476), **2)** private donations ($37,751), and **3)** funds generated by user fees and product sales ($30,751) (Fig. 7). This funding supported the salaries and benefits of the staff ($229,741), student internships ($37,899), operations and maintenance ($20,269), marketing and outreach ($11,224), and research and creative work ($3,685) (Fig. 8). While UVU generously supports the station, CRFS relies on private donations to pay for new building projects and important programs such as student internships and research and creative work. This year, we are seeking donations for an education-focused observatory and a site manager's residence. If you value our mission, please make a donation at: www.uvu.edu/crfs/support.html. Contact Dan Dimond at ddimond@uvu.edu or (801) 863-5112 with questions about making a donation.

Figure 7
Funding for CRFS by source.

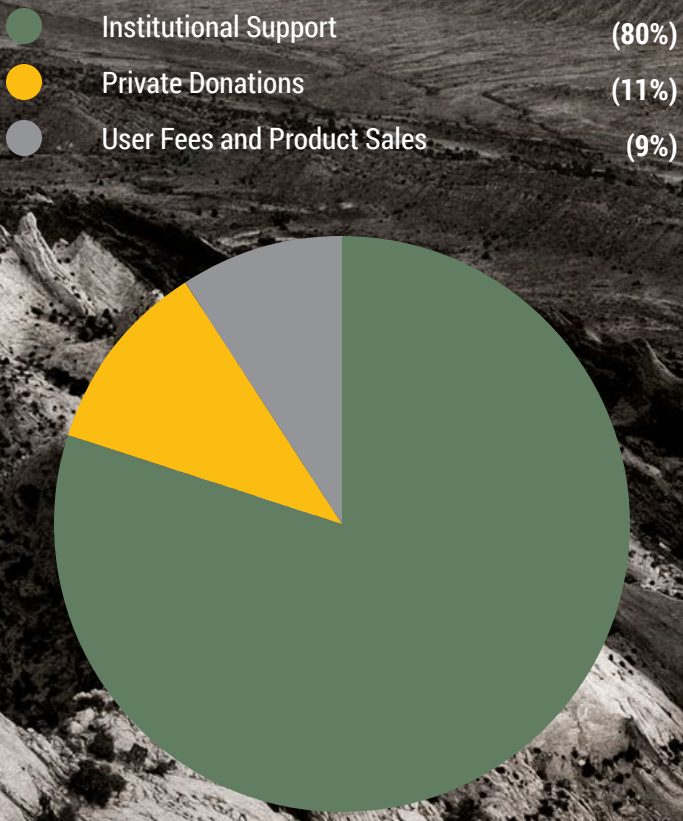
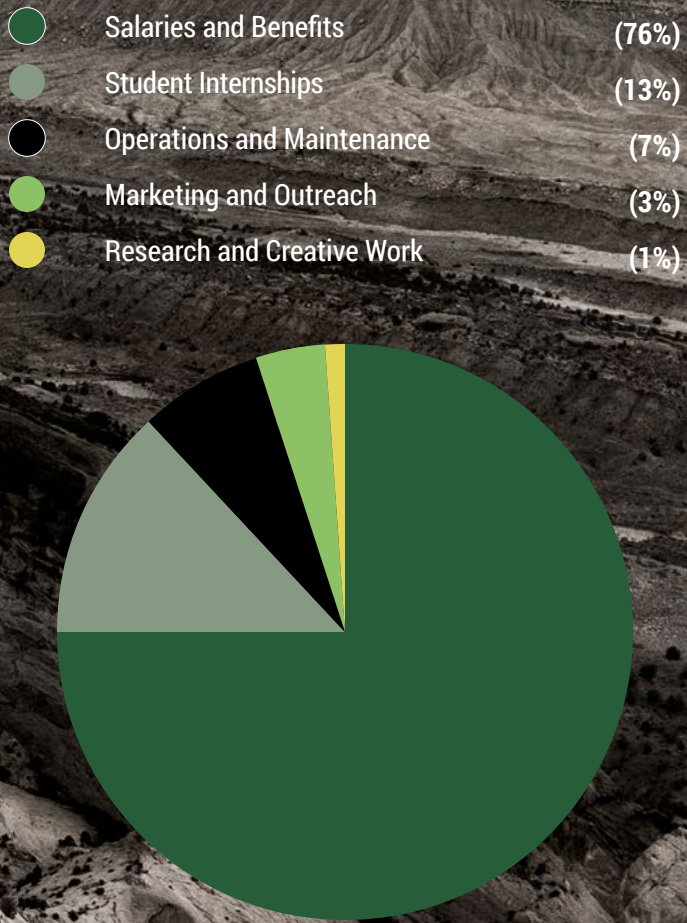


Figure 8
CRFS outlays by category.



FINANCIAL REPORT
Figures 7 & 8

SUPPORT CRFS

Capitol Reef Field Station makes a difference—so can you!

Please visit www.uvu.edu/crfs/support.html to contribute. Donations are tax-deductible to the extent allowed by law, and we will honor your contribution by listing your name in our annual report. Contact Dan Dimond at ddimond@uvu.edu or (801) 863-5112 with questions about making a donation.

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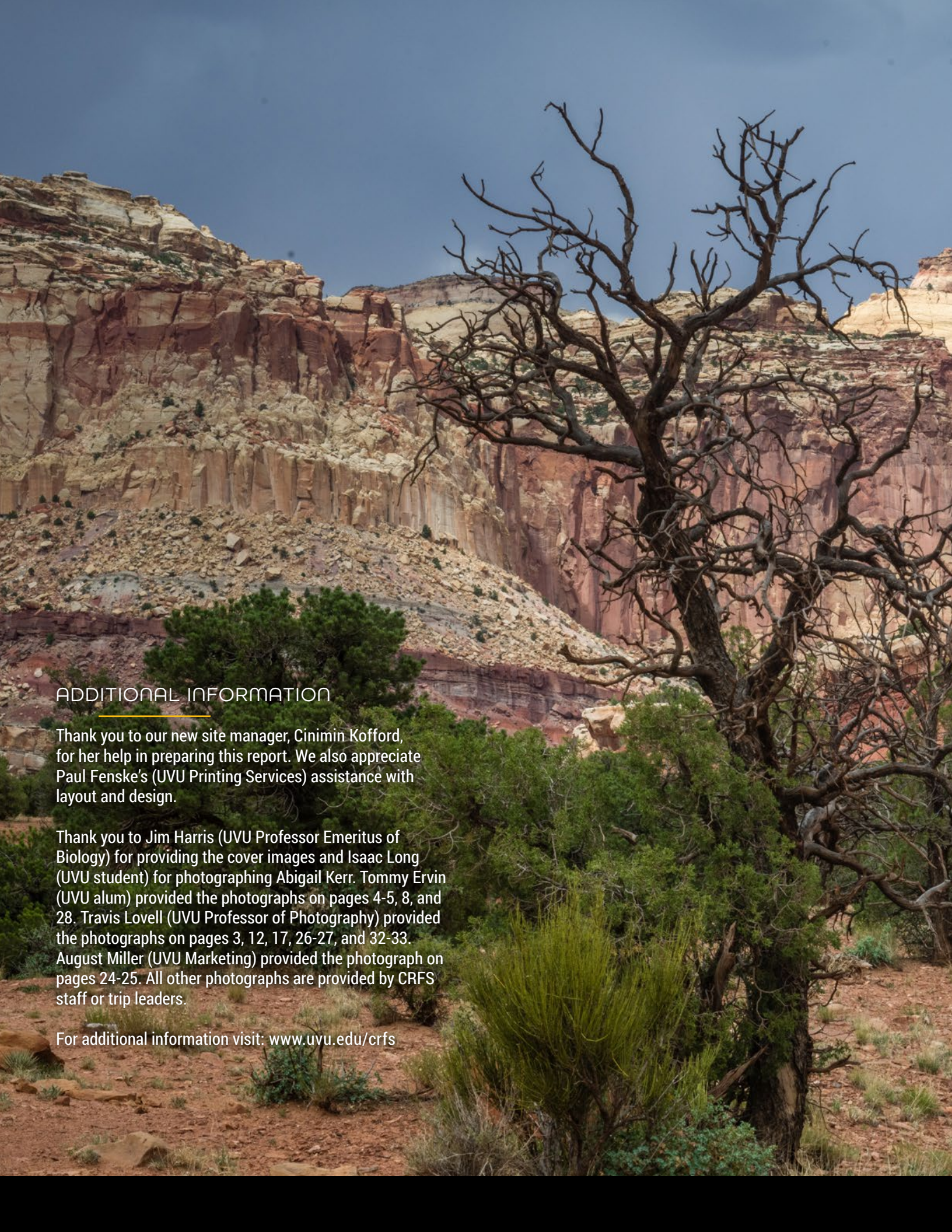
KEVIN EYRAUD MEMORIAL

KEVIN EYRAUD MEMORIAL

Our dear friend and colleague, Dr. Kevin Eyraud, passed away from cancer on November 8, 2023, at the age of 53. Kevin was an Associate Professor of English Language Learning at UVU and served on the CRFS Steering Committee for eight years, from 2015 to 2023. During the last ten years, he brought 20 groups of students to the field station. Kevin's work at CRFS inspired his Ph.D. dissertation, which is titled, *Dwelling Pedagogically: A Place-Based Ecopedagogy in an English for Academic Purposes Intensive English Program.* We have placed a photograph of Pleasant Creek in the classroom building memorializing Kevin and planted a peach tree between the two dormitories in his honor. Kevin's words say it best. In the following, he describes a wilderness writing workshop that he taught at CRFS in 2013:

"The Capitol Reef Field Station (CRFS) is such a unique experience. It's not often that one gets to stay overnight in a national park in such comfortable facilities. There are so many reasons I really enjoy taking students to CRFS. I love when a student sees shooting stars for the first time, marvels at the sandstone cliffs realizing they're ancient sand dunes, laughs at the names of things like 'locoweed,' and stumbles over the pronunciation of 'cryptobiotic soil.' I think it's kind of funny how I sense that they don't quite understand why we learn about geology, and why we read Canaries on the Rim*, and why we go to the Utah Museum of Natural History and I sort of laugh to myself because I also know this: As soon as we get to Torrey, the students start getting interested in their surroundings. They see the multicolored layers of sandstone and they start to understand how beautiful and sweeping the landscape really is and they begin to have a context. There is a section of road into Capitol Reef National Park where the students start seeing the cliffs up close and I see them getting out their cameras and looking out the windows and hear the murmurs of wonder as they talk to each other and I can feel the excitement building up. That's when I know all the work they have done and the teachers have done will pay off in their learning English."*

–Dr. Kevin Eyraud (1970-2023)



ADDITIONAL INFORMATION

Thank you to our new site manager, Cinimin Kofford, for her help in preparing this report. We also appreciate Paul Fenske's (UVU Printing Services) assistance with layout and design.

Thank you to Jim Harris (UVU Professor Emeritus of Biology) for providing the cover images and Isaac Long (UVU student) for photographing Abigail Kerr. Tommy Ervin (UVU alum) provided the photographs on pages 4-5, 8, and 28. Travis Lovell (UVU Professor of Photography) provided the photographs on pages 3, 12, 17, 26-27, and 32-33. August Miller (UVU Marketing) provided the photograph on pages 24-25. All other photographs are provided by CRFS staff or trip leaders.

For additional information visit: www.uvu.edu/crfs

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