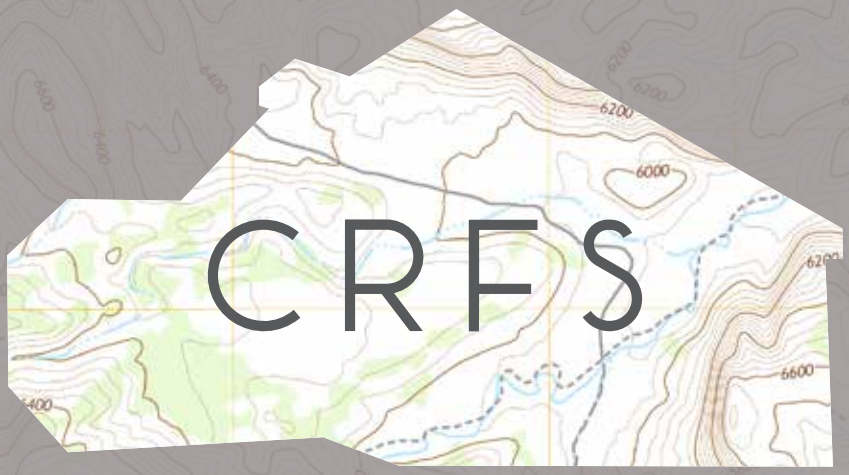
UVU



CAPITOL REEF FIELD STATION ANNUAL REPORT 2022-2023

DIRECTOR'S INTRODUCTION

The word "campus" means "field" in Latin. In current usage, a campus is a field (or quad) surrounded by university buildings. This definition typifies the main campus of Utah Valley University (UVU), which has 48 mostly-connected buildings surrounding a relatively small field. In contrast, the campus of Capitol Reef Field Station (CRFS) has a relatively small number of buildings surrounded by a national park, a "field" that's nearly 250,000 acres. If 250,000 acres somehow feels limiting, you can expand your campus to include the entire Colorado Plateau, which spans nearly 50,000,000 acres of some of the most remote and beautiful landscapes in the United States. So, if you're looking for more "field" in your campus, it shouldn't surprise you that the field station is a great place to look.

CRFS is a center for engaged learning and mentored research and creative work. The field station is a venue where students can see, do, and try out things they've only talked about in their classes. More and more undergraduates are benefiting from our program. In fact, this year was our busiest year ever in terms of visitation. In keeping with UVU's mission, CRFS is focused on providing access to opportunities for hands-on learning and scholarly work to a wide range of students. The research and creative work happening at the field station includes a variety of studies spanning the natural, physical, and social sciences, as well as the arts.

Our visitors learn about conservation and environmental ethics while living in harmony with the desert. We compost, recycle, use the sun to make electricity, and keep track of every gallon of water used. As a result, CRFS visitors become more aware of their personal environmental impact and also learn new conservation techniques they can apply at home.

Consider this your invitation to CRFS where you can teach and learn, live sustainably, and link your research and creative work to Capitol Reef National Park and the Colorado Plateau. When you tire of a campus with lots of buildings surrounding a small field, remember the contrast that CRFS provides. We may only have a few buildings, but the field that surrounds us is vast.

- Dr. Michael Stevens
Director, Capitol Reef Field Station

CONTENTS

ABOUT CRFS

OUR MISSION

Capitol Reef Field Station, 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.

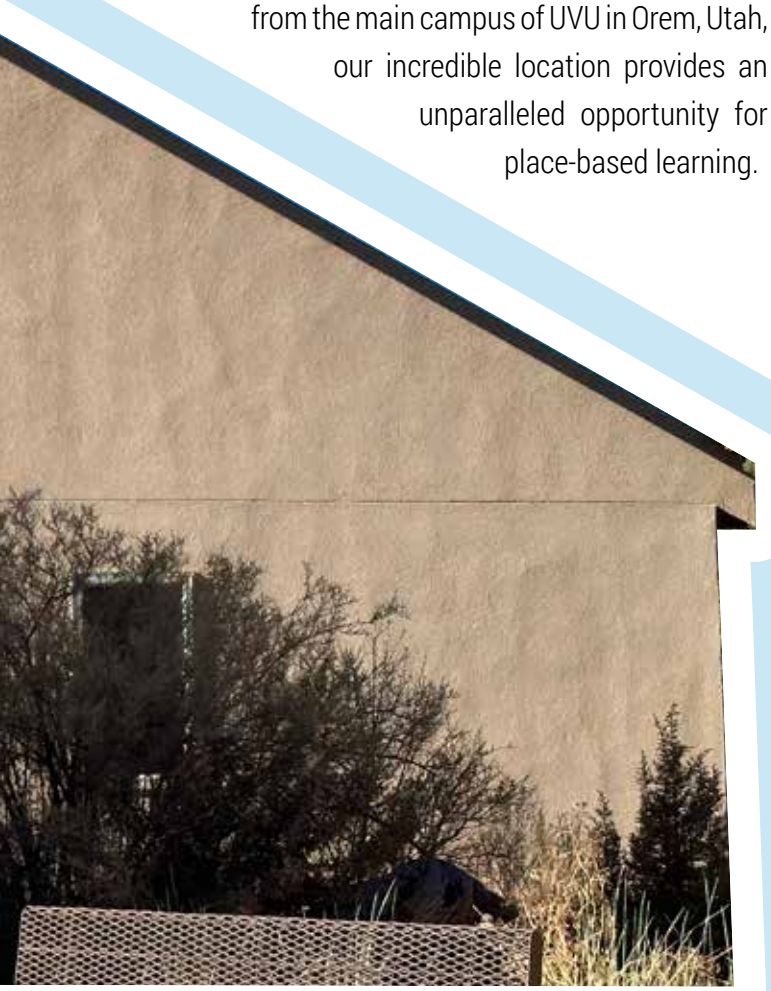
OUR VISION

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.

ABOUT CRFS

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 last mountain range in the continental United States to be mapped, the Henry Mountains, 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.

VISITATION SUMMARY

2,959 USER DAYS

This was our busiest year ever! Our total number of user days was 2,959. User days are calculated by multiplying the number of visitors by the number of calendar days they spent at the station.

789 VISITORS

During the 2022-23 fiscal year, 789 people (including 377 undergraduates) visited CRFS in 52 groups. The average group size was 15 and the average stay per group was 4 days.

VISITATION SUMMARY

Our busiest year ever!

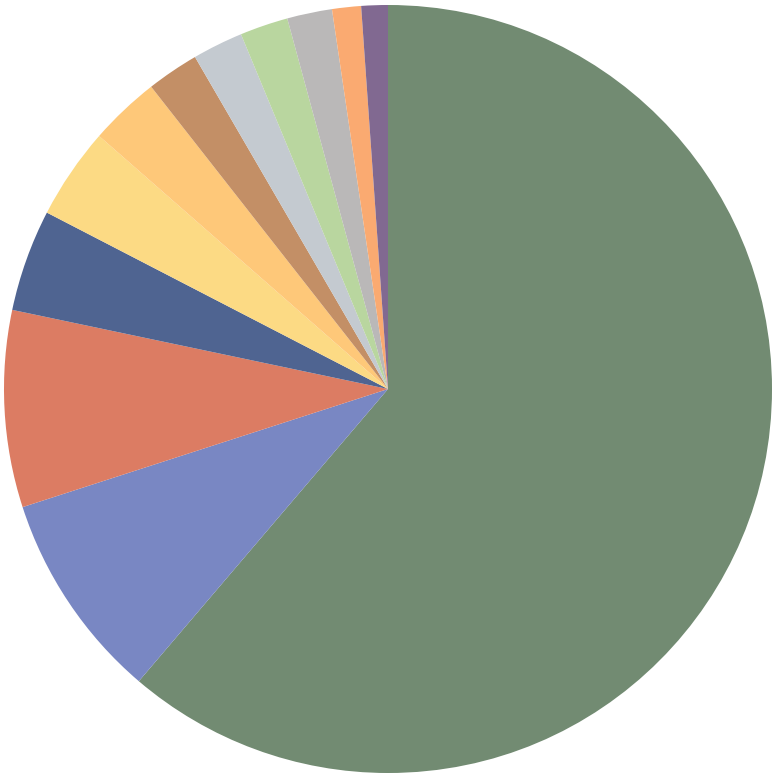
61%
UVU

Sixty-one percent of our user days were associated with UVU this year. The University of Kansas and University of Utah were other leading sources of visitation (Fig. 1).

Visitors from UVU represented four different colleges and schools including the College of Science, the College of Humanities and Social Sciences, the School of the Arts, and the College of Health and Public Service (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 16% of our user days this year.

4
COLLEGES
& SCHOOLS

VISITATION SUMMARY

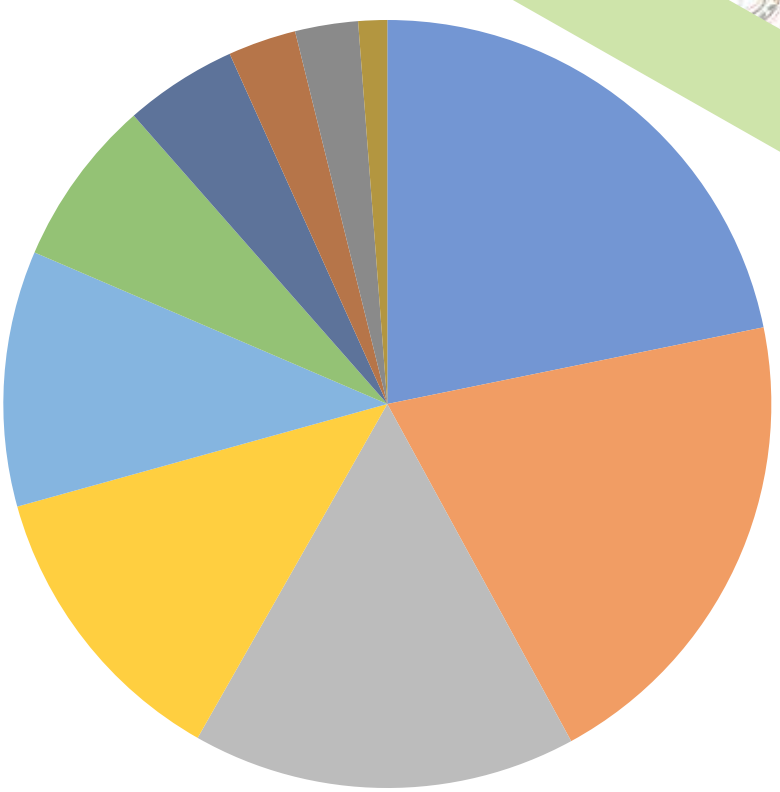


Utah Valley University	(61%)
University of Kansas	(9%)
University of Utah	(8%)
Brigham Young University	(4%)
Wasatch High School	(4%)
Summit High School	(3%)
Westminster College	(2%)
Utah State University	(2%)
WILD	(2%)
The Traveling School	(2%)
Snow College	(1%)
Weber State University	(1%)

FIGURE #1

Percentages of CRFS user days from various institutions.

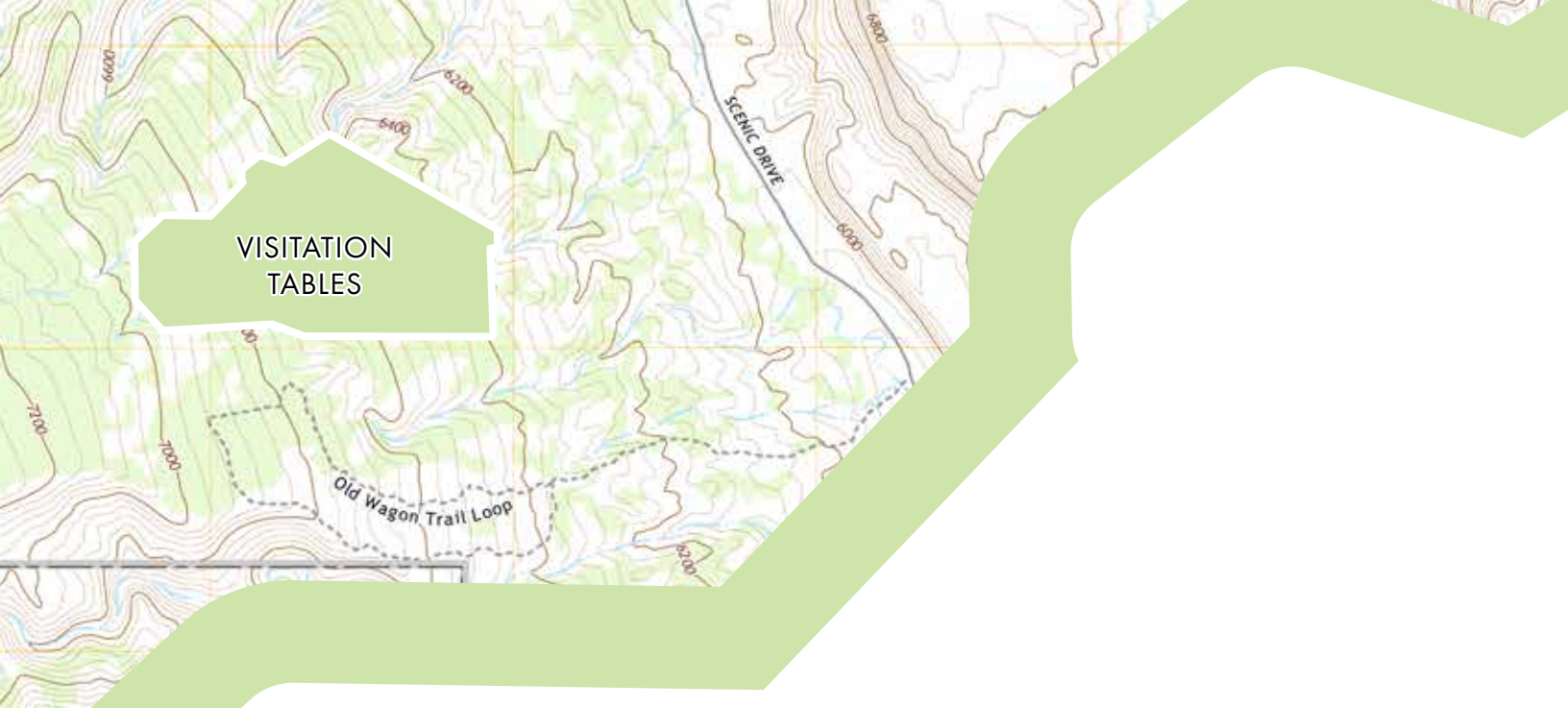
VISITATION SUMMARY



College of Science	(22%)
College of Humanities & Social Sciences	(20%)
Continuing Education	(16%)
School of the Arts	(12%)
Student Affairs	(11%)
College of Health & Public Service	(7%)
Innovation Academy	(3%)
Office of Sponsored Programs	(3%)
Honors	(3%)
People & Culture	(1%)

FIGURE #2

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



VISITATION TABLES

RESEARCH GROUPS WHO VISITED CRFS

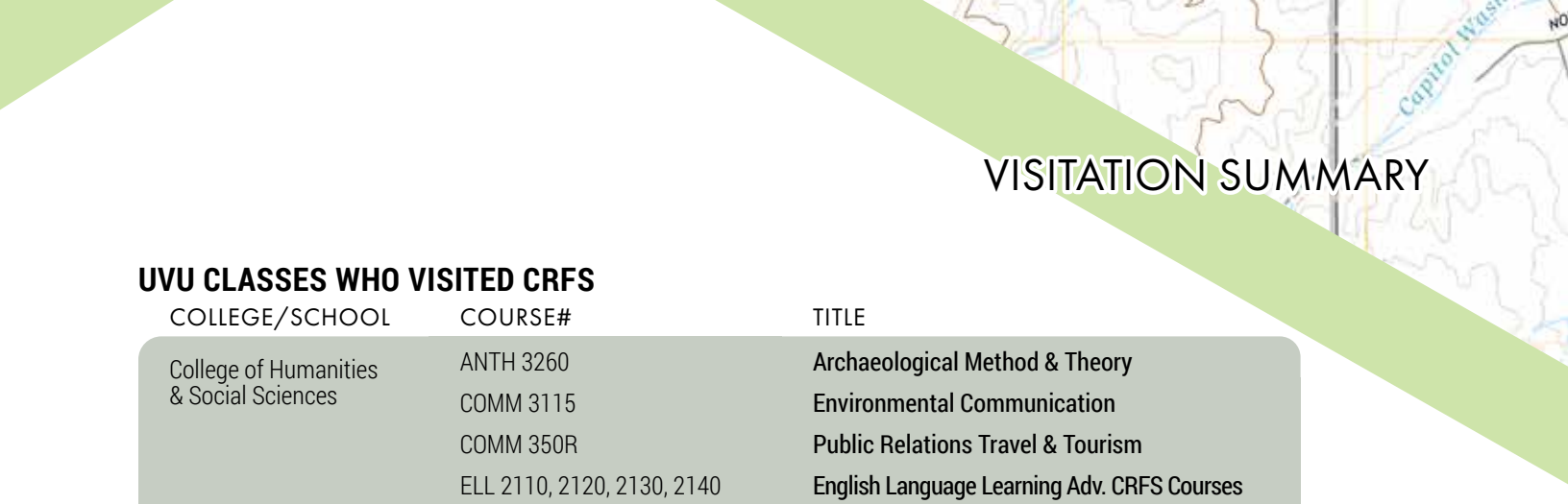
AFFILIATION	PROJECT
University of Utah	Geology Learning Project

OTHER GROUPS WHO VISITED CRFS

GROUP	EVENT
Summit High School	Cross-curricular, Place-based Curriculum (Fall)
	Cross-curricular, Place-based Curriculum (Spring)
The Traveling School	Western United States Semester
Wasatch High School	Wasatch Alternative (Fall)
	Wasatch Alternative (Spring)
Wilderness Individual Leadership Development	Girls' Empowerment Mission
	Next One Up

CLASSES FROM OTHER UNIVERSITIES WHO VISITED CRFS

UNIVERSITY	CLASS
Brigham Young University	Creative Writing MFA
	Expedition Planet Earth
	Field Biology
Snow College	Literature of the Outdoors
University of Kansas	Geology Field Camp
University of Utah	Field Geology
Utah State University	Utah Conservation Corps
Weber State University	Anthropology Field Experience: Utah Rock Art
Westminster College	Outdoor Education & Leadership Field Semester



VISITATION SUMMARY

UVU CLASSES WHO VISITED CRFS

COLLEGE/SCHOOL	COURSE#	TITLE
College of Humanities & Social Sciences	ANTH 3260	Archaeological Method & Theory
	COMM 3115	Environmental Communication
	COMM 350R	Public Relations Travel & Tourism
	ELL 2110, 2120, 2130, 2140	English Language Learning Adv. CRFS Courses
	ENGL 2250	Creative Writing
	HIST 3800	Environmental History
College of Science	BOT 2100	Field Botany
	BOT 4050/4055	Plant Ecology
	GEO 202R	Science Excursion
	REC 4400	Natural Resource and Protected Area Management
Honors	HONR 100R	Honors Colloquium
School of the Arts	ART 300R	Art & Design Photography

UVU GROUPS WHO VISITED CRFS

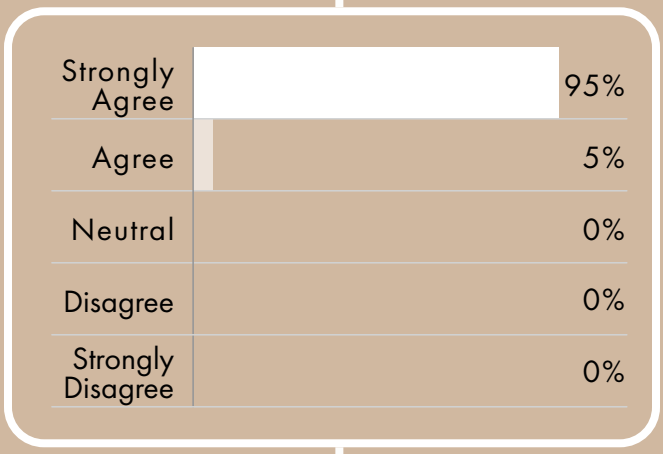
AFFILIATION	GROUP
College of Health & Public Service	Community Health Outreach Clinics (2022)
	Community Health Outreach Clinics (2023)
College of Humanities & Social Sciences	Language & Culture Faculty Workshop
College of Science	Nature to the Classroom (Fall)
	Nature to the Classroom (Spring)
	PRO-STEM
Continuing Education	Creative Writing
	Mindfulness & Meditation (Fall)
	Mindfulness & Meditation (Spring)
	Photography
	Strategic Planning
	Watercolor
	Writers' Weekend
Innovation Academy	CRFS Faculty Workshop
	CRFS Steering Committee/Park Leadership Meeting
	Associate Provost Visit
Office of Sponsored Programs	Grants & Research Management Workshop
People & Culture	Office of Inclusion Executive EID Team
Student Affairs	Inter-club Council Executive Board
	Multicultural Student Services
	Outdoor Adventure Center Mindfulness Weekend
	Outdoor Adventure Center Wilderness First Aid
	TRIO Upward Bound

ENGAGED LEARNING

Engaged learning has been a key part of our mission since the field station opened in 2008. We provide unparalleled opportunities for students and faculty to engage with the Colorado Plateau and enrich the educational experience through hands-on learning. Our highest-ever visitation this year saw visitors from a wide variety of disciplines and institutions.

100%

FIGURE #3



The vast majority of our visitors strongly agreed that they would encourage others to visit the field station (n = 539).

The vast majority of our visitors strongly agreed that their educational experience was enhanced by their visit to the field station (n = 539).

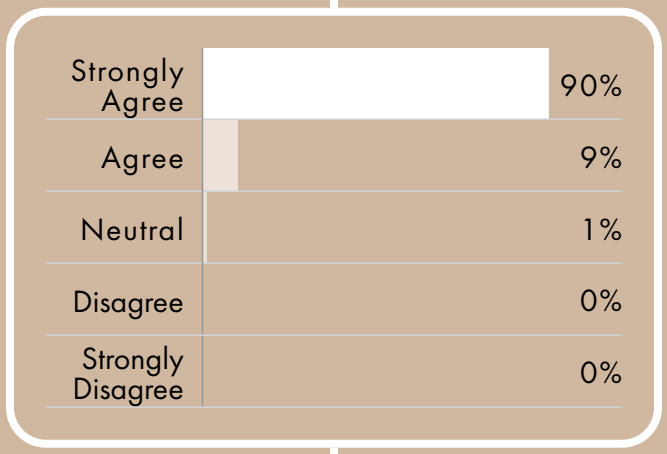


FIGURE #4

99%

Our exit survey data clearly show that students value the experience at the field station, with 100% strongly agreeing (95%) or agreeing (5%) that they would encourage others to visit the field station (Fig. 3). In addition, 99% strongly agreed (90%) or agreed (9%) that the field station visit enhanced their educational experience (Fig. 4). Please take a moment to learn more about a few of our engaged-learning visitor groups.

UVU (REC 4400)

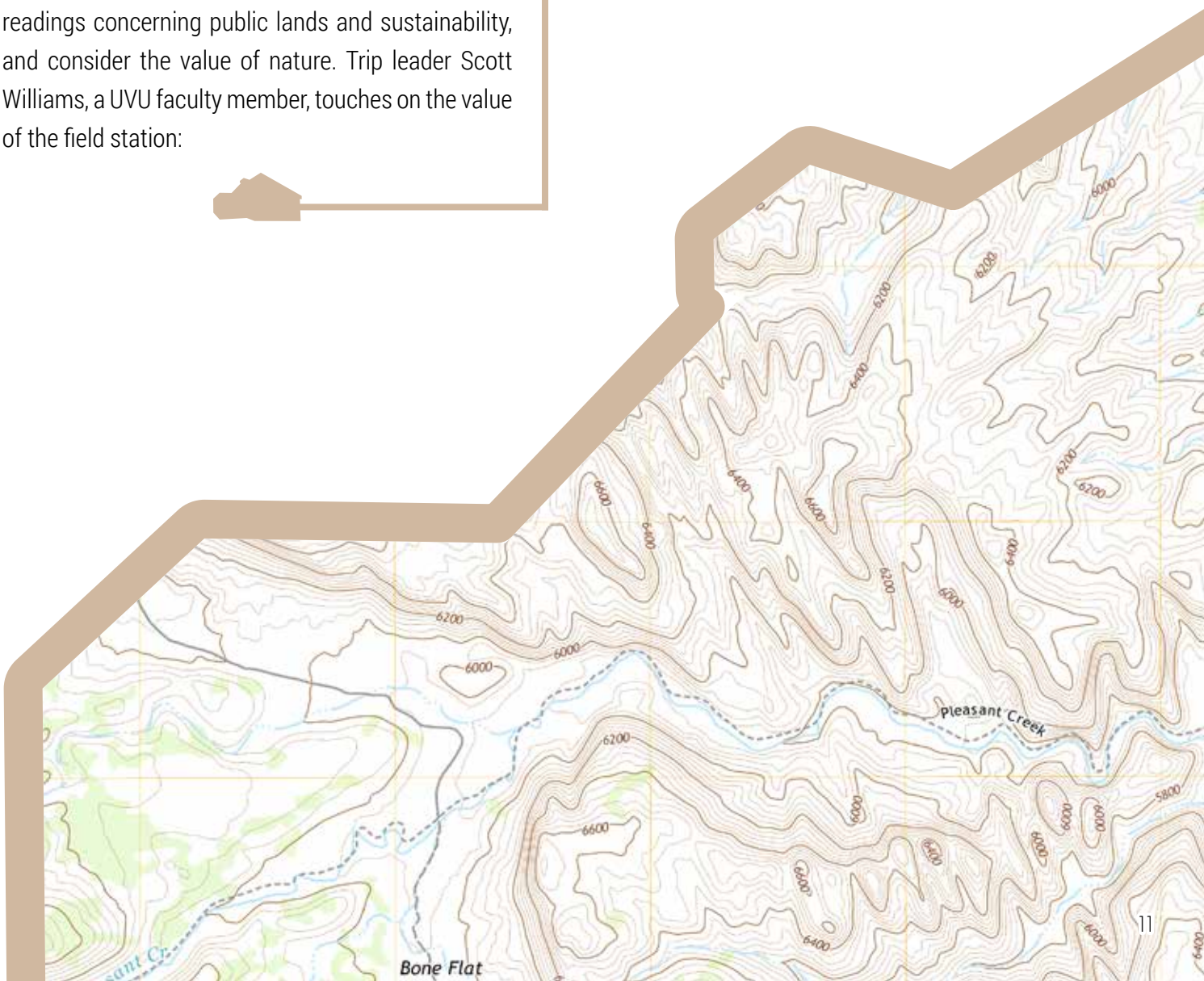
Natural Resource and Protected Area Management

November 4-7, 2022

REC 4400 focuses on the management of public lands and resources with an emphasis on strategies and techniques for addressing common resource and social problems that arise in natural resource recreation management. Surrounded by public lands, CRFS is a perfect venue to host this class as students and faculty explore the park, discuss readings concerning public lands and sustainability, and consider the value of nature. Trip leader Scott Williams, a UVU faculty member, touches on the value of the field station:

"The experience at CRFS was a major component of the course, and the highlight of the semester for the students. What an amazing resource we have."

- Scott Williams



ENGAGED LEARNING

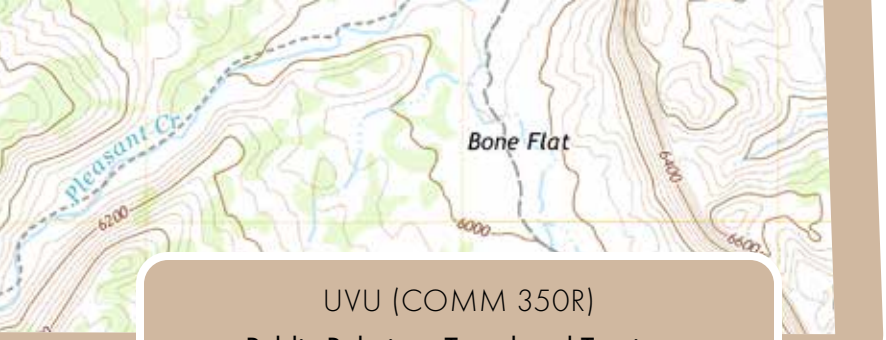
UVU (ANTH 3260)

Archaeological Method and Theory

February 9-12, 2023

UVU Faculty Member Connie Ericksen was able to bring her Archaeological Method and Theory class to the field station for a trip she titled, "UVU Archaeology Seminar." The class had already concluded, having run during the previous fall semester, but students were still excited to visit the field station on a voluntary basis for the rich learning opportunities available there. The trip, which Connie called the "poster child" for engaged learning, allowed students to visit a region with rich cultural history, practice archaeological field methods, and make connections with cultural resource management personnel. Students prepared research proposals for archaeology in the Capitol Reef area that Connie expects will be developed into papers or posters for presentation. She explains the impact of the trip on her students:

"Our experience at CRFS was a perfect capstone to the semester in Archaeological Method and Theory. Though we didn't put a trowel in the ground or brush off a single artifact, immersion in the place once walked by ancient ones provided fresh excitement and perspective for the discipline. The field station is situated in a context with a rich history of archaeological survey, excavation, conservation, artifact and site inventory, mapping, museum studies, research, and publication. Many students came away with solid proposals for their own research of the lifeways of our Utah-area Native Americans. Others were inspired by cultural resource management opportunities we saw in action at the local museums, the park visitor center, and in the education and administrative expertise of the field station site manager. Several participating students have been accepted to a field school or field study this summer. I am pleased that their weekend at CRFS gave them a taste of field experience and prepared them for the details and demands of a working archaeology project." ***- Connie Ericksen***



ENGAGED LEARNING

UVU (COMM 350R)

Public Relations Travel and Tourism

March 1-4, 2023

UVU Faculty Member Kim Hanson took her Public Relations Travel and Tourism class to Capitol Reef National Park for an action-packed four-day visit, including volunteer work, a discussion of visitor communication with NPS staff, writing and photography practice, hikes, and tours of the Fruita Historic District. After the visit, students compiled an in-depth public relations travel and tourism portfolio. The impact of the trip can perhaps best be understood through the words of two of her students:

"My time at Capitol Reef was my favorite memory in college."

- Sam Barney

"Our trip didn't exactly encompass the type of tourism that comes to my mind working at a Marriott hotel. However, eco-friendly tourism is a new favorite topic of mine. With no on-site services such as cleaning and cooking, I learned what impact I make on my surroundings with a forced hyper-awareness in a new and resource-conscious environment. After volunteer work, lessons from campaigns to photography, and even cooking and cleaning up after ourselves, I felt very capable as a public relations professional. I believe it was a result of that little bit of immersive learning."

- Cambrie Stacey

ENGAGED LEARNING

BRIGHAM YOUNG UNIVERSITY

Expedition Planet Earth

June 29-July 1, 2023

This study abroad program followed in the footsteps of the highly-acclaimed BBC Planet Earth series, exploring the diversity of life across a wide range of ecosystems, including deserts, coastal forests, glaciers, fjords, rivers, oceans, and volcanoes. Though students traveled to England, Iceland, and Norway, they began their studies in Utah and visited the field station for three days. Trip leader Dr. Sam St. Clair from Brigham Young University details their stay at CRFS:

"BYU's Expedition Planet Earth study abroad program visited Capitol Reef Field Station. We studied the geology and natural history of the park with an emphasis on plant adaptations to desert environments. We identified several key adaptations that result from convergent evolution to arid climates including thickened leaves, spines, reflective leaf waxes, water storage, etc. We did a hike to explore artifacts of human history in the area including petroglyphs and pictographs in the area around the station. We also appreciated the emphasis on conservation and the opportunity to practice living sustainably and the design and comfort of the field station, which really facilitated student learning. A highlight for the students was hiking Sulphur Creek. Our program really enjoyed our time in Capitol Reef and a big part of that was the resources provided by the field station. Thank you!"

- Dr. Sam St. Clair

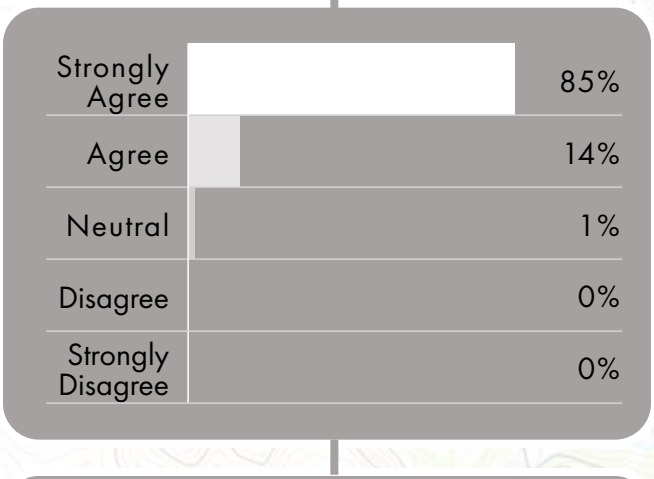
ENVIRONMENTAL ETHICS

The field station always strives to operate in an environmentally-ethical way. We practice conservation and encourage our visitors to do the same, not only while they are at Capitol Reef, but also after they return home. We work to keep our environmental footprint small, and our "conservation footprint" large.

This year, 91% of our visitors reported learning new ways to reduce their personal environmental impact in their day-to-day activities. Additionally, 99% strongly agreed (85%) or agreed (14%) that because of their stay at the field station, they place more value on protected public lands such as national parks (Fig. 5), while 96% strongly agreed (85%) or agreed (11%) that they are more aware of their personal environmental impact (Fig. 6).

99%

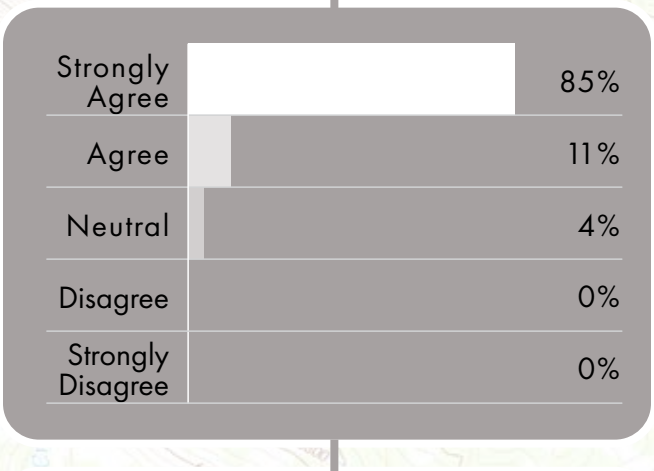
FIGURE #5



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 = 537).

96%

FIGURE #6



The majority of our visitors strongly agreed that staying at CRFS made them more aware of their personal environmental impact (n = 537).

RESEARCH & CREATIVE WORK

Bird banding along Pleasant Creek: An opportunity for outreach, engaged learning, and research

In 2021, Michael Hague (CRFS site manager) received a Quick grant from the Grants for Engaged Learning program at UVU to start a bird banding station in Pleasant Creek. Michael summarizes the research:

"Establishing a Monitoring Avian Productivity and Survivorship (MAPS) banding station along Pleasant Creek has allowed CRFS to integrate hands-on learning into the outreach and education we provide while simultaneously providing Capitol Reef National Park employees and UVU faculty with research opportunities focusing on the neotropical bird migrants that breed in the park.

"This season, in addition to capturing 94 birds spanning 17 different species, we had the opportunity to mentor UVU Natural Resources Intern Joe Fife. Joe joined us for banding every day, learning how to extract birds from mist nets, handle birds safely, and collect data during the bird banding process. We had a blast!"

- Michael Hague

Unpacking the development of science teachers' observational expertise in field settings

In June 2023, Dr. Lauren Barth-Cohen (University of Utah) along with 21 secondary science teachers visited CRFS for a week-long professional learning experience. The trip was part of an ongoing National Science Foundation-funded grant focused on developing science teachers' observational expertise in field settings. Dr. Barth-Cohen elaborates on her research goals:

"The goal of this research project is to unpack how secondary science teachers learn to generate scientific observations in a field-geology setting. The project aims to: 1) deepen research-based knowledge about how expertise in scientific observation develops as a multidimensional skill, and 2) design and implement a high-quality Professional Learning Experience for secondary science teachers. For the 2023 calendar year, we enrolled 21 secondary science teachers from throughout Utah. During the spring of 2023, they enrolled in a virtual geology course and then the visit to Capitol Reef National Park was the opportunity to apply their learning to a field setting.

"The research uses a mixed-methods approach and three distinct theoretical angles to address the following research question: How do teachers develop expertise in scientific observation in a field setting? Specifically, we focus on teachers' knowledge systems, social interactions, and cultural resources related to the development of their expertise with scientific observation. While in Capitol Reef National Park, we collected audio and video data from all teachers and research team members. While in the field, we wore GoPro cameras and external audio recorders. Over the week, the teachers observed different geological formations throughout the park to learn about different depositional environments, with the goal of eventually piecing together the geologic history of the area."

- Dr. Lauren Barth-Cohen

RESEARCH & CREATIVE WORK

Midlatitude Allsky-imaging Network for GeoSpace Observations (MANGO)

Dr. Asti Bhatt of SRI International (an independent, non-profit research institute) uses cameras at CRFS as part of MANGO. CRFS provides an ideal location for imaging because of its location in a national park with very little light pollution. Dr. Bhatt provides more information about the research:

"CRFS hosts two scientific all-sky imagers used to observe faint emissions from the earth's upper atmosphere (557.7 nm from 90-100 km and 630.0 nm from 250-400 km). These emissions create a layer of airglow around the earth at night and are used to study the nighttime upper atmospheric dynamics that get affected by energetic events in the lower atmosphere and on the sun. The imager system at CRFS routinely observes phenomena that are understood and those that are the subject of active research in geospace science. The CRFS imagers are part of a large network of such imagers known as MANGO supported by the National Science Foundation. The data from the imagers are available in near-real time on mangonetwork.org."

- Dr. Asti Bhatt

Understanding Capitol Reef National Park visitor motivations and experiences

An interdisciplinary team of UVU researchers including Dr. Maria Blevins, Dr. Leandra Hernández, Dr. Meaghan McKasy, and Dr. Michael Stevens presented results of their study of park visitors at two conferences and to park staff. The research team summarizes their project below:

"In an ongoing effort to understand what people do when they visit Capitol Reef National Park, a group of interdisciplinary researchers collected both qualitative and quantitative data from park visitors. In the first presentation, at an international conference on sustainable development, our team outlined the challenges and benefits of an interorganizational, interdisciplinary project. In the second presentation, at the International Association for Society and Natural Resources, our team outlined that although visitors did not think the park was crowded per se, they did report the need for more park amenities related to parking, camping, and driving. Additionally, the team found that a variety of methods (qualitative and quantitative) is necessary to capture the whole picture of what people are doing at a park and what they expect from a park experience. The team also presented findings to the town of Torrey and Capitol Reef National Park staff to discuss results and explore the next steps in the research partnership. Future collaborations are anticipated."

- Drs. Blevins, Hernández, McKasy, and Stevens

UTopia | State of Abstraction: a book and art exhibit highlighting the importance of water conservation in Utah

In 2022, as part of an ongoing series of fine art coffee table books, UVU's Department of Art & Design published *UTopia | State of Abstraction*, which considers how humans interact with their environment. The project took more than a year and involved 53 students and 16 faculty members. Along with publication of the book, a companion exhibit in a new on-campus gallery ran from August 17 - September 20, 2022. Travis Lovell, professor of photography and chair of the Department of Art & Design at UVU, describes how a CRFS grant impacted the project:

"As part of this project, we had written and received a grant from the CRFS grant program to create and exhibit artwork dealing with issues surrounding water usage in Utah. This idea was a strong element of the overall project. As part of the exhibit, and with aid from the CRFS grant, we were able to place fresh sod in the gallery on the opening day of the exhibit with the intention of never watering it. If you returned to the gallery over the course of the month you would see the sod slowly dying off from lack of water. A symbolical gesture to the out of place nature of the large quantities of sod in the desert of Utah. The grant money also aided in printing, matting, and framing other artworks in the exhibit. Much of the artwork from this exhibit was also created while students spent two weeks at Capitol Reef Field Station in the late summer of 2021. This was a wonderful creative collaboration of over 70 UVU faculty and students in the Department of Art & Design in the School of Arts that was made possible in large part through Capitol Reef Field Station and their CRFS grant program."

- Travis Lovell

RESEARCH & CREATIVE WORK

BIBLIOGRAPHY

Barth-Cohen L, Zummo L, Godsey H, Braden S (2022-2025) Collaborative research: Learning to observe: Unpacking teachers' development of expertise in scientific observation. National Science Foundation, EHR Core Research (grant# 2201764; $599,224)

Barth-Cohen L, Zummo L, Braden S, Adams A, Godsey H (2023) Sensemaking about geologic features that are spatially adjacent and chronologically distant. American Educational Research Association annual meeting. Chicago, IL.

Bhatt AN, Harding BJ, Makela JJ, Navarro L, Lamarche LJ, Valentic T, Kendall EA, Venkatraman P (2023) MANGO: An optical network to study the dynamics of the earth's upper atmosphere. Journal of Geophysical Research: Space Physics 128:1-15.

Blevins M, Hernández L, McKasy M, Stevens MT (2022) Bea"Utah"ful collaboration: a case study of a collaborative research project. First International Academic Conference on the Sustainable Development Goals in partnership with the Civil Society Unit and the Academic Impact Initiative of the United Nations Department of Global Communications, Utah Valley University, Orem, UT.

Stevens MT (2022) Building partnerships and restoring public lands. David R. Keller Environmental Ethics Symposium, Utah Valley University, Orem, UT.

Stevens MT (2023) Learning by doing: living sustainably at CRFS. Second Annual UVU Sustainability Summit, Utah Valley University, Orem, UT.

Stevens MT, Blevins M, Hernández L, Hungerford H, Lindley B, McKasy M, Williams S (2022) How many people are too many? A mixed-methods assessment of visitor perceptions at Capitol Reef National Park. International Association for Society and Natural Resources, San José, Costa Rica.

UTopia | State of Abstraction (August 17, 2022 - September 20, 2022) Gallery on 6th, Gunther Technology Building, Utah Valley University, Orem, UT.

SPECIES SPOTLIGHT

Pinyon jays (*Gymnorhinus cyanocephalus*) are a crestless jay that can be found throughout the Colorado Plateau, occupying pinyon-juniper and scrub oak habitat. They are often seen in flocks of over 100 individuals moving across the landscape like a wave, accompanied by a cacophony of laughter-like calls. They live in Capitol Reef National Park year-round, and can survive the harsh, cold winters due to their unique relationship with the two-needle pinyon pine (*Pinus edulis*). Each year, pinyon pines briefly flush the ecosystem with nutrient-dense seeds. Jays, being as smart as they are, take advantage of this food-resource abundance by caching, or hiding, the pinyon pine seeds to consume later, when food is less available. This behavior ensures the jays have a more reliable, year-round food resource. Pinyon jays are well adapted to harvest pinyon pine seeds, as they are the only corvid without feathers around the base of their bill, allowing them to harvest seeds deep within a cone without sticky sap building up on their feathers. Additionally, they can distend their esophagus to carry up to 40 pine seeds at a time, enabling individuals to cache over 20,000 seeds per year. They have an amazing spatial memory, allowing them to recover up to 95% of the seeds they cache! While that recovery rate is impressive, it is not 100%, which results in thousands of cached seeds that are forgotten and left buried to propagate. By leaving these seeds behind, pinyon jays are perhaps unknowingly engineering the ecosystem around them, and have likely played a large role in the expansion and health of pinyon-juniper habitat across the West. Sadly, pinyon jay populations have been declining by ~3.6% per year, on average, since the 1950s, a steeper and more sustained population decline than any other songbird associated with pinyon-juniper habitat. As a result, pinyon jays are considered a species of concern by the U.S. Fish and Wildlife Service. While the direct cause of this decline is unknown, it is thought that historic management of pinyon-juniper woodlands for grazing, fire mitigation practices, and more recently sage grouse conservation, along with shifts in woodland species composition due to climate change, are the causes. Although Capitol Reef National Park is not actively being managed for pinyon jays or pinyon-juniper habitat, large swaths of intact pinyon-juniper habitat persist because of protections put in place by the park. Areas like these could act as source populations should species' decline accelerate.

PINYON JAY

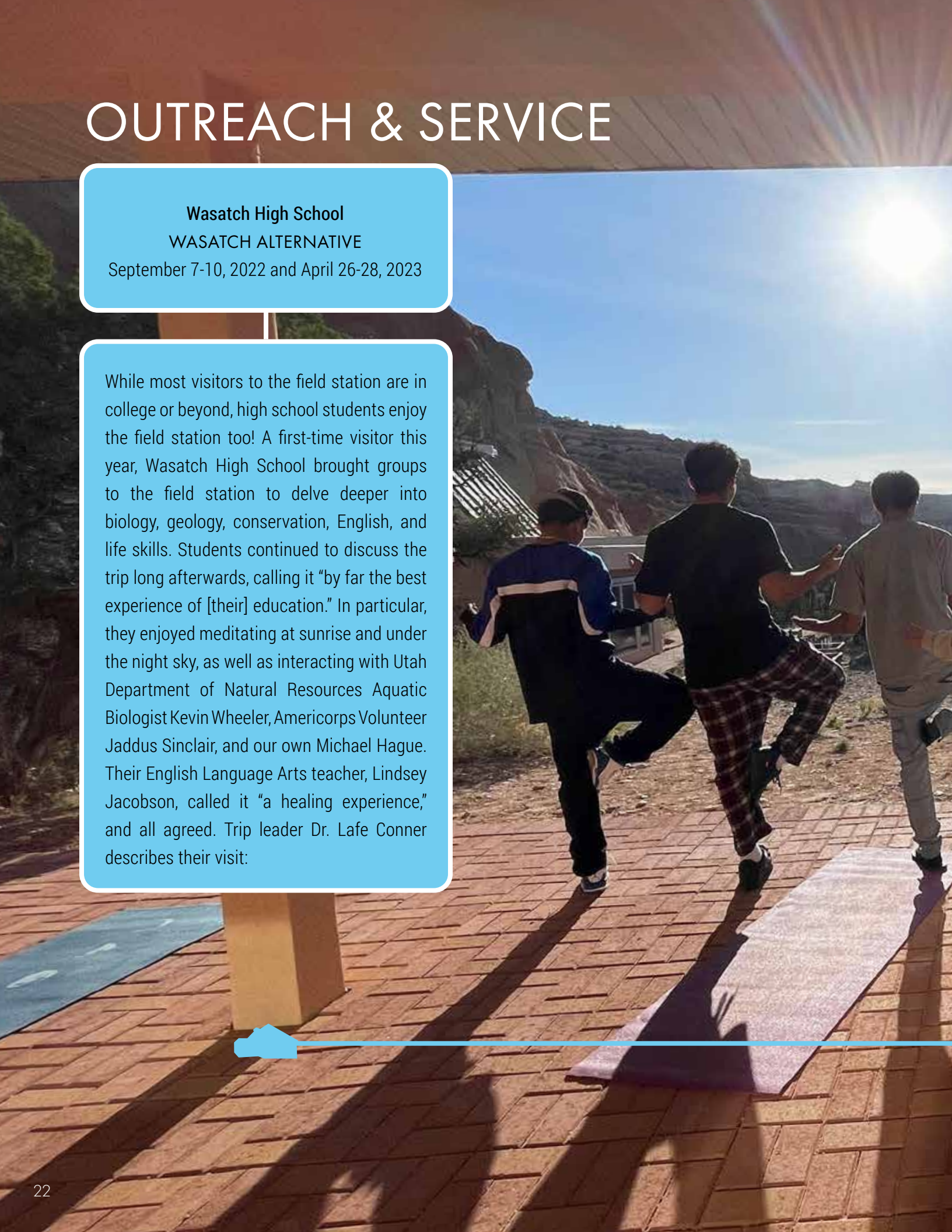
OUTREACH & SERVICE

Wasatch High School

WASATCH ALTERNATIVE

September 7-10, 2022 and April 26-28, 2023

While most visitors to the field station are in college or beyond, high school students enjoy the field station too! A first-time visitor this year, Wasatch High School brought groups to the field station to delve deeper into biology, geology, conservation, English, and life skills. Students continued to discuss the trip long afterwards, calling it "by far the best experience of [their] education." In particular, they enjoyed meditating at sunrise and under the night sky, as well as interacting with Utah Department of Natural Resources Aquatic Biologist Kevin Wheeler, Americorps Volunteer Jaddus Sinclair, and our own Michael Hague. Their English Language Arts teacher, Lindsey Jacobson, called it "a healing experience," and all agreed. Trip leader Dr. Lafe Conner describes their visit:



"Some of the biggest gains for our group were deepened friendships, camaraderie, and relationships; strengthened culture for our school with an identity that it's cool and exciting to be engaged in science, outdoor recreation, conservation, and enjoyment of life in nature; reinforced healthy lifestyle choices, including communication and acceptance of our emotional journeys as opposed to hiding and escaping from the difficult situations and feelings we experience; increased confidence in our abilities as students and as lifelong learners to engage in activities where we can really be open to learning in real-life experiences that teach lasting lessons; and increased enthusiasm for learning and for school, along with a broader vision of what life can offer." ***- Dr. Lafe Conner***

UVU

FACULTY WORKSHOP:
GETTING TO KNOW CRFS

January 20-22, 2023

CRFS staff and steering committee members developed a weekend workshop for UVU faculty interested in learning how to incorporate a visit to the field station into their courses. Participants included nine faculty from the College of Engineering and Technology, College of Humanities and Social Sciences, College of Science, and the School of the Arts. To compensate them for their time, participants received a stipend provided by the Innovation Academy. CRFS Director Dr. Michael Stevens describes the event:

"The workshop started on Friday evening with a welcoming activity, group-member instructions, and a site overview followed by a star show by Site Manager Michael Hague. On Saturday morning, Michael Hague gave a facility tour, I talked about CRFS's uncommon partnership with the NPS, and then Associate Professor Reid Elem, Professor Travis Lovell, Interim Associate Director Dr. Maria Blevins, Lecturer Amber Smith-Johnson, and I gave presentations on how we use the field station in Art, Communication, English, and Biology. After lunch, we hiked to Pleasant Creek and enjoyed the sunshine on a bright January day. In the box canyon along the way, everyone was treated to an impromptu solo by soprano and Associate Professor of Music Dr. Melissa Heath as well as a surprise didgeridoo performance by Associate Professor of Exercise Science Dr. Ellis Jensen. On Saturday afternoon, we focused on field-station logistics, how to do research and creative work in a national park, and experienced a visual tour of the Colorado Plateau prepared by Reid Elem and Travis Lovell. On Sunday, participants were able to ask additional questions, reflect on what they learned, and discuss environmental ethics. Everyone had a great time, bonded, and developed ideas on how to include a visit to CRFS in the wide variety of classes that they teach."

- Dr. Michael Stevens

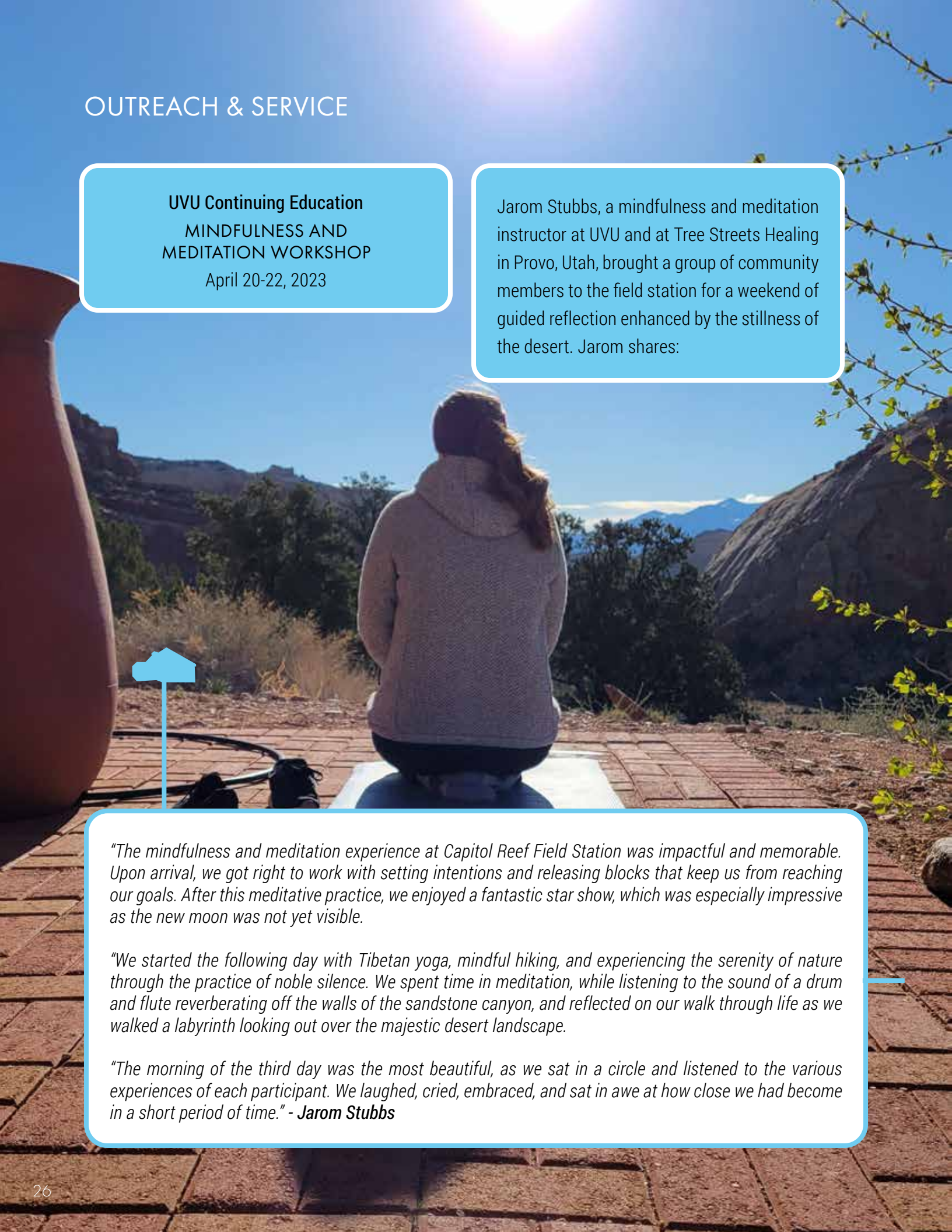
OUTREACH & SERVICE

UVU Continuing Education

MINDFULNESS AND MEDITATION WORKSHOP

April 20-22, 2023

Jarom Stubbs, a mindfulness and meditation instructor at UVU and at Tree Streets Healing in Provo, Utah, brought a group of community members to the field station for a weekend of guided reflection enhanced by the stillness of the desert. Jarom shares:



"The mindfulness and meditation experience at Capitol Reef Field Station was impactful and memorable. Upon arrival, we got right to work with setting intentions and releasing blocks that keep us from reaching our goals. After this meditative practice, we enjoyed a fantastic star show, which was especially impressive as the new moon was not yet visible.

"We started the following day with Tibetan yoga, mindful hiking, and experiencing the serenity of nature through the practice of noble silence. We spent time in meditation, while listening to the sound of a drum and flute reverberating off the walls of the sandstone canyon, and reflected on our walk through life as we walked a labyrinth looking out over the majestic desert landscape.

"The morning of the third day was the most beautiful, as we sat in a circle and listened to the various experiences of each participant. We laughed, cried, embraced, and sat in awe at how close we had become in a short period of time." ***- Jarom Stubbs***

Wilderness Individual Leadership Development

NEXT ONE UP &
GIRLS' EMPOWERMENT MISSION

June 20-21 and June 27-28, 2023

Wilderness Individual Leadership Development (WILD) is a non-profit organization whose mission is "empowering under-served youth by utilizing the natural world to inspire, strengthen, and build knowledge." WILD partners with agencies across the country to bring at-risk youth into the wonderful wilderness of southern Utah to learn healthy life skills and conservation practices. This year, WILD brought groups to the field station on two occasions. WILD Program Manager Allison Moist describes these trips:

OUTREACH & SERVICE

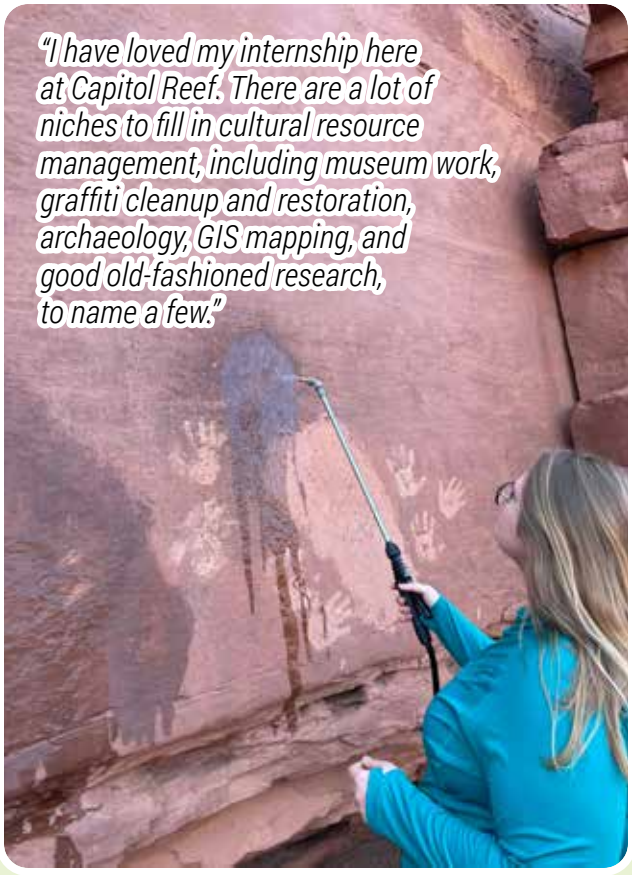
"Wilderness Individual Leadership & Development (WILD) hosted nine youth and two adult leaders from the Next One Up non-profit organization in Baltimore on a six-day trip through the Capitol Reef area and stayed one night at the field station on June 20-21. Helen Peterson from UVU volunteered her time and led a three-hour workshop on leadership, teamwork, and college preparedness. An activity highlight was a blindfolded game through a field of mouse traps to work on communication. [CRFS Site Manager] Michael [Hague] then guided a hike to the petroglyph panel, explaining the local archaeological and natural history. After cooking dinner on the grill during a spectacular sunset, we stayed up late for a stargazing tour with Michael who explained the constellations and showed us many deep space objects in the telescope (this was one of the favorite activities of the trip). After cleaning up the following morning, journaling about our experience, and hiking more along Pleasant Creek, Michael measured the trash and water, and our group was proud to have produced a very low trash output of 0.13 pounds per person per day.

"WILD also partnered with the Girls' Empowerment Mission to host twelve high school youth and four adult leaders for a nine-day trip through the Capitol Reef area and stayed one night at the field station on June 27-28. We arrived around 4:00 pm and Michael welcomed us with an orientation emphasizing conservation of water and [reducing] trash, which the girls took seriously with a goal to improve from their trip last year (and did achieve this goal). That evening, Michael guided a hike to the petroglyphs discussing ecology and archaeology, then we spent quiet time at Pleasant Creek journaling. That night Michael presented a stargazing tour with a telescope (the moon phase was waxing gibbous but our group was still amazed by the amount of stars compared to Baltimore) that was a highlight of the whole trip. We started the next day with a peaceful yoga session on the field station deck, then played a communication game in the classroom before cleaning up and checking out. Thank you for this wonderful opportunity!" ***- Allison Moist***

INTERNSHIPS

CULTURAL RESOURCES INTERN
Tristan Porter

Tristan Porter, an anthropology major at UVU, was our third cultural resources intern at Capitol Reef National Park! Tristan worked extensively with the park archaeologist on cultural resource documentation and management. She was immersed in both fieldwork and archival work, spending a lot of time recording and remediating modern graffiti, as well as researching historical inscriptions. Additionally, she spent time organizing the park's informational resources, and correcting museum collection information on the Interior Collection Management System. Reflecting on her time in Capitol Reef, Tristan said:



INTERPRETATION INTERN
Kara Green

Kara Green, an outdoor recreation management major and environmental studies minor at UVU, worked with the interpretation division of Capitol Reef National Park. She spent a lot of time in the visitor center, working with interpretation staff to answer visitors' questions and help guide their park experience. As such, she created three interpretive programs on the local pioneer history, geology, and archaeology using the park's extensive library to guide her. Once the structure of her presentation was complete, she leaned into the guidance of her peers and more experienced rangers to engage the crowd and provide a fun flourish of information during her program. In addition to her great work as a park interpretive ranger, Kara was able to use her background as an EMT to assist the search and rescue program when needed. When asked about her internship, Kara said:

NATURAL RESOURCES INTERN
Joe Fife

Joe Fife, a botany major at UVU, worked with the park biologist and ecologist as the natural resources intern. Joe did fieldwork throughout the national park, conducting surveys on a variety of species, including rare cacti, large mammals, and breeding birds. The first two weeks of Joe's internship were dedicated to intensive cactus surveys, focusing on two endemic species found only in the state of Utah, *Pediocactus winkleri* and *Sclerocactus wrightiae*. Cactus monitoring efforts have taken place for the last nine years and help ensure population viability through informed management practices. In addition to using motion-sensor cameras and audio recorders for wildlife monitoring of desert bighorn sheep and Mexican spotted owls, Joe helped operate a bird banding station along Pleasant Creek, where he extracted birds from nets and assisted with data collection. According to Joe, bird banding was the most meaningful scientific endeavor that he participated in throughout his summer internship. When asked about his experience as the natural resources intern, Joe said:

Kara Green and Joe Fife both received the Cordell Roy Scholarship, which allowed them to receive UVU credit for their internship without having to pay summer tuition. The scholarship honors Cordell Roy, a long-time employee of the NPS. It is funded by a generous private endowment from G. Kevin Jones, who was an attorney in the Office of the Solicitor, U.S. Department of Interior, representing the Utah units of the NPS. Cordell Roy also contributed to the endowment.

FINANCIAL REPORT

This year, the operating funds at CRFS came from three sources: 1) institutional support from UVU ($239,385.00), 2) funds generated by user fees and product sales ($32,396.75), and 3) private donations ($17,490.06) (Fig. 7). This funding supported the salaries and benefits of the staff ($225,618.89), student internships ($32,152.62), operations and maintenance ($13,489.40), marketing and outreach ($11,008.06), and research and creative work ($1,185.06) (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 housing for our site manager. 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.

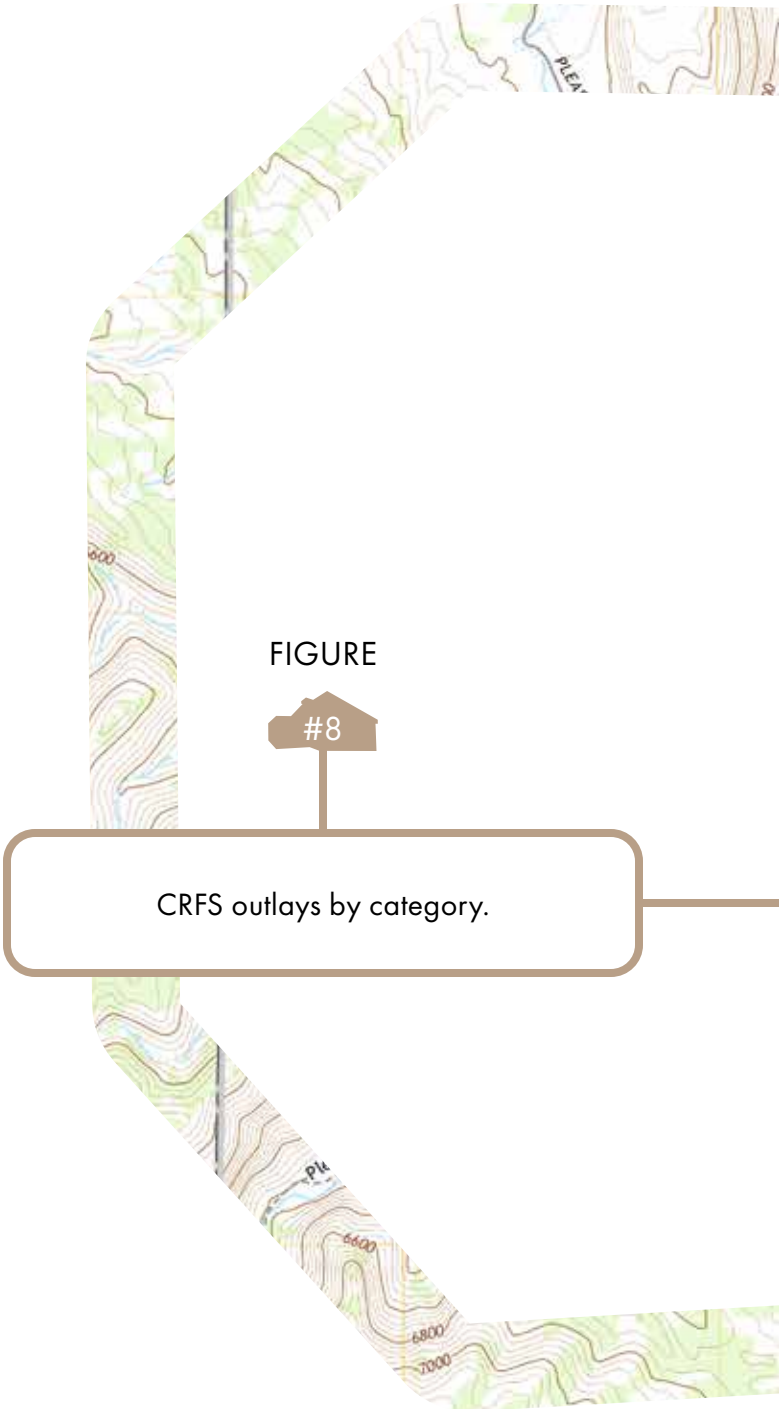
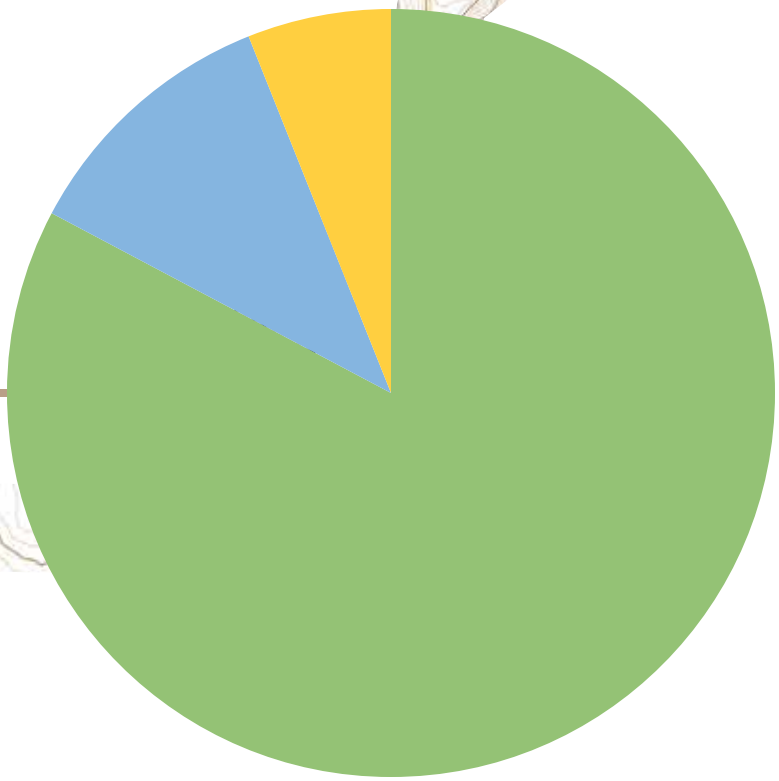


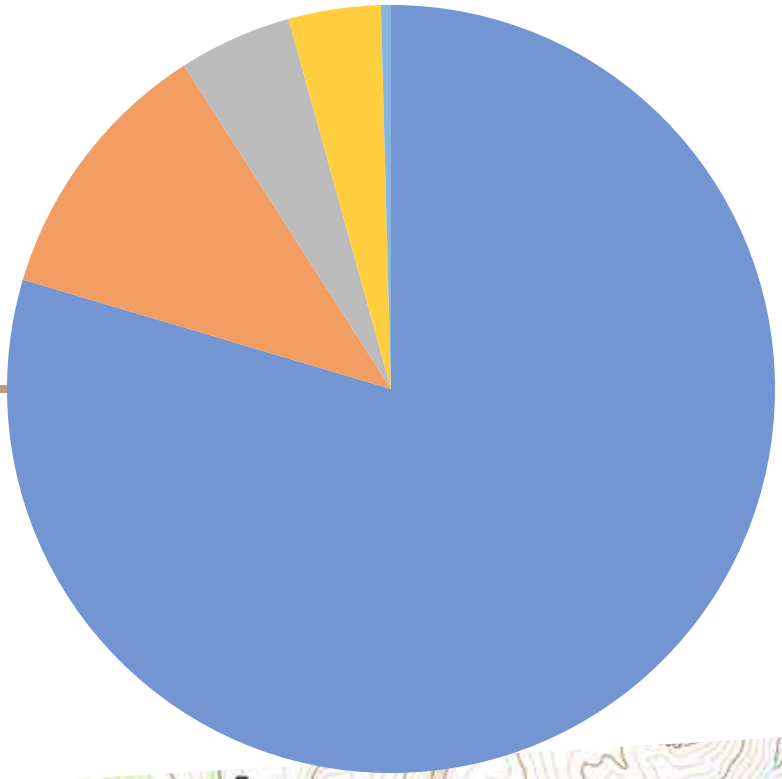
FIGURE #8

CRFS outlays by category.

FINANCIAL REPORT



- Institutional Support (83%)
- User Fees & Product Sales (11%)
- Private Donations (6%)



- Salaries & Benefits (80%)
- Student Internships (11%)
- Operations & Maintenance (5%)
- Marketing & Outreach (4%)
- Research & Creative Work (1%)

STRATEGIC PLAN

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

This year we hosted more visitors than ever before! The majority (61%) of our visitors were from UVU and came from four different colleges and schools including the College of Science, the College of Humanities and Social Sciences, the School of the Arts, and the College of Health and Public Service. In addition to UVU, we hosted visitors from eleven other institutions. The University of Kansas and University of Utah supplied 9% and 8% of our visitors, respectively. To help diverse audiences feel welcome and included at the field station, Dr. Rasha Qudisat, Dr. Michael Stevens, and Dr. Maria Blevins developed and administered an online survey to previous CRFS visitors entitled, "An assessment of sense of belonging and accessibility at Capitol Reef Field Station." Data from the survey will be used to inform ongoing diversity, equity, and inclusion efforts at CRFS.

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

Ninety-six percent of our visitors this year strongly agreed (85%) or agreed (11%) that they became more aware of their personal environmental impact because of their trip to CRFS. Additionally, while at the field station, 91% of visitors reported learning new ways to reduce the environmental impacts of their daily activities. Our expectation is that this increased awareness and the new conservation-minded practices learned have a lasting effect on our visitors and their relationship with the environment.

To share the message of conservation more broadly, Dr. Michael Stevens presented at the David R. Keller Environmental Ethics Symposium and the UVU Sustainability Summit. At the symposium, Michael's presentation showcased how CRFS visitors help restore public lands through graffiti removal, invasive plant removal, and data collection on the region's biodiversity. The talk at the summit highlighted how CRFS visitors learn conservation techniques through an immersive experience in living sustainably while at the field station.

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

CRFS facilitated the creative work of artists and research in the natural, physical, and social sciences this year. These scholarly efforts included an art exhibit highlighting images of Utah, a National Science Foundation-funded grant to study the development of science teachers' field-observation skills, a peer-reviewed paper about the earth's upper atmosphere, and five presentations focused on: 1) making sense of geologic features, 2) understanding interorganizational collaborations, 3) building partnerships and restoring public lands, 4) living sustainably, and 5) assessing the perceptions of national-park visitors. Details about these projects are provided in our Research and Creative Work section.

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

To strengthen our partnership with the park, CRFS staff and steering committee members 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. To network with and learn from members of the international field-station community, Director Dr. Michael Stevens and Site Manager Michael Hague attended the Organization of Biological Field Stations conference held at the Central Michigan University Biological Station at Beaver Island. To help facilitate diverse groups of inner-city youth coming to the field station, Dr. Michael Stevens joined the advisory board of Wilderness Individual Leadership Development, an organization focused on providing underserved high-school students with experiences in nature.

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. In terms of staffing and services, this year, 537 of 538 (99.8%) of survey respondents strongly agreed or agreed that field station staff were competent, helpful, and professional. Similarly, 533 of 534 (99.8%) of surveyed visitors strongly agreed or agreed that the orientation to the field station and its environment was informative.

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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($250,000 and greater)

Bill J. and Margaret M. Pope

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CAPITOL REEF FIELD STATION

STEERING COMMITTEE

Maria Blevins, Ph.D.
Associate Professor of Communication

Doug Czajka, Ph.D.
Assistant Professor of Earth Science

Karen Cloward
Assistant Director, Community Education

Reid Elem
Associate Professor of Art & Design

Kevin Eyraud, Ph.D.
Associate Professor of English Language Learning

Karl Haisch, Ph.D.
Professor of Physics

Kumen Louis
Assistant Director, Multicultural Center, Multicultural Student Services

Amber Smith-Johnson
Lecturer of English & Literature

Ethan Sproat, Ph.D.
Program Director of Proposal Development, Office of Sponsored Programs

Scott Williams
Associate Professor of Exercise Science & Outdoor Recreation

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

STAFF

DIRECTOR
Michael T. Stevens, Ph.D.
Professor of Biology

ASSOCIATE DIRECTOR
Keith White
Professor of Mathematical and Quantitative Reasoning

INTERIM ASSOCIATE DIRECTOR
Maria Blevins, Ph.D.
Associate Professor of Communication

SITE MANAGER
Michael Hague

ASSISTANT SITE MANAGER
Ann Ehler
(July-November 2022)
Chloe Valentine
(March 2023-present)

ADMINISTRATIVE ASSISTANT
Jessamy Bowie

Photographs are provided by CRFS staff or trip leaders unless otherwise noted.

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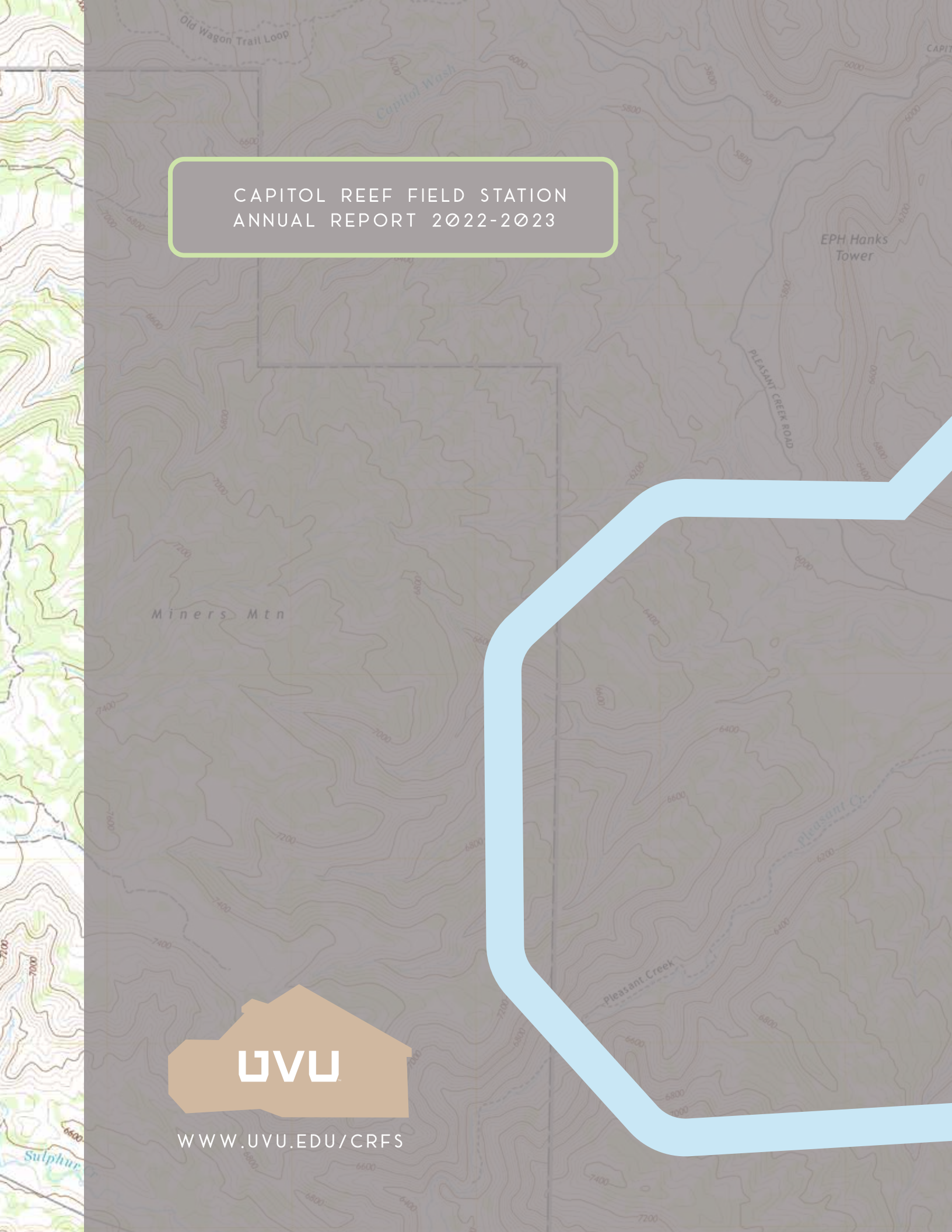
CAPITOL REEF FIELD STATION
ANNUAL REPORT 2022-2023



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