

A close-up photograph of a bumblebee on a purple flower. The bee is positioned on the right side of the flower, facing left. The flower has many small, tubular purple petals. The background is a soft, out-of-focus green.

# SWCA the Wire

News from SWCA Environmental Consultants

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## FOCUS: A NEW CHAPTER

By Joseph J. Fluder, III, CEO



This March, I took over the role of CEO, following in the footsteps of John Thomas, who is retiring.

It doesn't seem that long ago that I was dragging a seine net in the Pecos River of N.M., modeling historic water quality constituents in the Rio Grande, and preparing Environmental Assessments for small habitat restoration projects. I came on board with SWCA in 2003, and have enjoyed several positions with the company, from a water resources and GIS specialist to director, and most recently, Chief Operating Officer.

Working my way up through the ranks, I've been able to see firsthand the hard work and dedication of SWCA's 870+ employees nationwide, their commitment to science and to clients, and their passion. It's thanks to them that SWCA has grown to become one of the premiere environmental consulting firms in the U.S. I see my transition to CEO as a new chapter in the 37-year story of SWCA, opening up new opportunities for more growth, innovation, and continued success in the communities we live, work, and play in.

With new beginnings in mind, we bring you the latest edition of *The Wire*. Last year's listing of the rusty patched bumble bee (*Bombus affinis*), (page 3) opens a new chapter for pollinators and for clients whose projects intersect with their habitat. In the article, we tell you what you need to know to keep your work on track. We also take a closer look at what happens after a wildfire (see page 6) and the post-fire management services we offer. Finally, we're excited to tell you about SWCA's Science Leadership Program and the unique opportunities it affords our clients (see page 9).

Thanks for reading, and please feel free to reach out. I look forward to connecting with you in my new role. ■

Joseph

## TO BEE OR NOT TO BEE? THE LATEST POLLINATOR PROTECTIONS AND WHAT THEY MEAN FOR YOUR PROJECT

By Alyssa Albertone and Kely Mertz

In March 2017, the rusty patched bumble bee (*Bombus affinis*) made history: it became the first bee species in the continental U.S. to land a spot on the endangered species list. The bumble bee joined seven bee species native to Hawaii already on the list. These seven species – all yellow faced bees added to the list in 2016 – were the first bees to be given protections under the Endangered Species Act (ESA).

The rusty patched bumble bee is native to North America and gets its name because of the small, rust-colored patch found on the workers and male bees. The species once was abundant in the Upper Midwest and Northeast, occupying a variety of habitats, including prairies, wetlands, woodlands, agricultural landscapes, and residential parks and gardens. Additionally, the bees like to nest underground in areas with diverse and abundant patches of flowers.

According to the U.S. Fish and Wildlife Service (USFWS), the rusty patched bumble bee population has declined by 87 percent in the last two decades. Habitat loss, intensive farming and pesticide use, climate change, and disease are among the reasons for the massive decline in the bee's population over the years. This decline in the species population, and ongoing threats to the species, culminated in the bee being listed as endangered.

Currently, the rusty patched bumble bee is likely to be present in just 0.1 percent of its historical range, which stretched from Maine south to Tennessee and west to the Dakotas. Since 2000, there have been documented occurrences of the species in 41 counties across 13 states.

With more than 4,000 species in the U.S. – and nearly 20,000 globally – bees are one of the world's primary pollinators. Pollinators are in a global decline, with recent reports suggesting that more than 40 percent of pollinators may be facing extinction. Other pollinators that have faced similar challenges as the rusty patched bumble bee include the Dakota skipper (*Hesperia dacotae*) and the Poweshiek skipperling (*Oarisma poweshiek*), which have been on the endangered species list since 2014.

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Rusty patched bumble bee photos: Johanna James-Heinz for BeeSpotter at the University of Illinois (<https://beespotter.org>). BeeSpotter allows citizen-scientists to contribute to the body of knowledge of honey and bumble bee demographics in several states of the Midwestern region, USA. Cover photo credit: Johanna James-Heinz, BeeSpotter (<https://beespotter.org/beedata/bees/803-2>)

Rusty patched bumble bee photo credit: Johanna James-Heinz, BeeSpotter (<https://beespotter.org/beedata/bees/3144-2>)

## LISTED. NOW WHAT?

With its status as “endangered,” the rusty patched bumble bee is afforded full protections under the ESA. This means that USFWS authorization may be needed for activities that are likely to cause adverse effects to the bee or its habitat. Specifically, the ESA prohibits the “take” of listed animals without a federal permit. Take, as defined by the ESA, is “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such contact.” Activities such as pesticide use or disturbance of vegetation in areas where the bees are known to occur might also require USFWS authorization.

Endangered pollinator species are likely to be a consideration for several industries, including transmission, oil and gas, land development, and energy. In reality, any project that might include disturbing vegetation in potentially suitable habitat may at least require coordination with the USFWS.

## THE RUSTY PATCHED BUMBLE BEE RED ZONE

The USFWS maintains a map defining zones where the rusty patched bumble bee may be present. High potential zones, shown in purple on the map below, indicate areas where the rusty patched bumble bee is likely present. In fact, within these zones, the general rule is to assume the bee is present in areas with suitable habitat.



These high potential zones occur primarily within the Great Lakes-Big Rivers Region, or USFWS Region 3, which includes Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. USFWS Region 3 is the “lead USFWS region” for the rusty patched bumble bee.

## DETERMINING THE NEXT MOVE

When a project falls within the range of the rusty patched bumble bee, it is necessary to determine whether that project will affect the species. A desktop analysis is a logical first step. Using the best geospatial data available, a desktop analysis can determine the likelihood that the species occurs or has the potential to occur in a given area.

If the rusty patched bumble bee occurs or has the potential to occur in the project area, it is then necessary to determine whether the project is likely to affect the species. This is done by evaluating the potential intersections of the bee with project lifecycles to determine the type and extent of any potential effects to the species.

The questions being addressed at this stage are 1) will the species be exposed to one or more stressors associated with the project? and 2) how will the species respond to those stressors? Project activities that may present stressors to the species include land management activities, development and land-clearing activities, and pesticide use.

## SURVEYS, MINIMIZATION, CONSERVATION, AND PERMITTING

Project proponents can gather data specific to their project area by completing rusty patched bumble bee surveys. Surveys must be completed by a federally permitted individual recognized by the USFWS as qualified to survey for and identify the rusty patched bumble bee. Surveys are used to determine if bees still exist at previously documented locations;

### Rusty Patched Bumble Bee Range of Distribution

- High Potential Zones
- Historical Range



find and document new bee locations; and monitor known populations. Survey results support project-specific effects analyses and discussions with the USFWS.

When the bee occurs, and is likely to be negatively impacted by project work, opportunities to avoid and minimize effects should be explored. Conservation efforts outlined by the USFWS include restoring and maintaining high quality habitat; carefully planning and implementing land management activities; addressing pesticide use; preventing the release of commercial bumble bees into the wild; minimizing competition from non-native honey bees; and conducting surveys to locate unknown colonies.

In cases where potential effects cannot be avoided, a permit can be obtained from the USFWS to authorize incidental take. The process of obtaining take authorization can be tricky, and can trigger compliance requirements with other federal laws, such as the National Environmental Policy Act.

## LOOKING AHEAD

The assessment of project impacts to the rusty patched bumble bee, and other endangered pollinators, will continue to be critical. In fact, there are a number of USFWS listing reviews coming up in the near future for other pollinators, including the Monarch butterfly (*Danaus plexippus*), the western bumble bee (*Bombus occidentalis*), and the yellow-banded bumble bee (*Bombus terricola*). The ranges of these three species cover large areas of the U.S. where oil and gas, energy, and transmission projects proposed in native habitats could be affected.

SWCA tracks the status of these species and is a recognized expert in related impact assessment and permitting issues. We have more than 30 years of combined experience studying and surveying for endangered species in USFWS Region 3, as well as staff federally permitted to survey for the rusty patched bumble bee.



## BUMBLE BEE FACTS

Bumble bees perform “buzz pollination”: the bee grabs the pollen producing structure of the flower in her jaws and vibrates her wing musculature causing vibrations that dislodge pollen that would have otherwise remained trapped in the flower.



Bumble bees don’t die after they sting (honey bees do). But only the female bumble bees have stingers, and they’re not typically aggressive.

Bumble bees produce a small amount of honey, just enough to feed the colony for a couple of days during bad weather.



Bumble bees are covered in an oil that makes them waterproof.

A bumble bee flaps its wings 200 times per second.



Bumble bees can fly between 6-10 miles per hour.

Let us help you navigate the regulatory requirements for these species on your upcoming projects. For more information on pollinators and pollinator surveys, contact **Kely Mertz** ([kmertz@swca.com](mailto:kmertz@swca.com)) or **Jake Powell** ([jpowell@swca.com](mailto:jpowell@swca.com)).

To see a bonus video on this story, visit [www.swca.com](http://www.swca.com).

## KNOW YOUR BEES



Stout, hairy, robust bodies; black, yellow, or red coloration; variable size and color patterns; carry pollen moistened with nectar in specialized pollen baskets called corbicula.



Slender, narrow, mostly hairless bodies; half to one-third the size of most bumble bees; black and honey-colored stripes.



Upper surface of abdomen is hairless and shiny black; carry pollen on their hind legs as a dry powder.

Rusty patched bumble bee photo credit: Johanna James-Heinz, BeeSpotter (<https://beespotter.org/beeData/bees/3144-8>)

# AFTER THE FIRE: WHEN THE ASH SETTLES, THE RECOVERY WORK BEGINS

By Victoria Amato, Cody Stropki, and Paul Burnett

The 2017 wildfire season was arguably one of the worst in history for the American West. In California alone, nearly 9,000 wildfires burned 1.2 million acres of land, destroyed more than 10,800 structures, and killed 46 people. Beyond California, there were significant fires in Oregon, Montana, Idaho, Washington, Utah, and Texas. The scope of 2017's fires drew media attention worldwide, and sparked conversations about wildfire prevention and planning (most of the fires were human-caused).

But what about when the fire is extinguished and the news media go home? For environmental scientists, this is when the hard work begins as we look to bring the ecosystems, cultural resources, wildlife, and affected communities back in balance.

Historically (prior to the arrival of Europeans), wildfires burned much of the United States with very few long-lasting adverse impacts to the environment and ecosystem. However, many modern-day fires burn with uncharacteristically high intensity, which can have long lasting effects on the natural and built environment.

The National Interagency Fire Center's Predictive Outlook for 2018 is forecasting a higher than normal fire potential due to dry conditions, unfavorable weather, and persistent dry fuels. So, as we look ahead, we want to consider not only prevention methods, but also post-fire recovery work. Here, we take a closer look at some of the most prominent impacts of wildfires, and how scientists are working to help ecosystems and communities recover.

## SOIL AND HYDROLOGY



**IMPACTS:** As a fire burns the landscape, it alters the soil and water flows. The fire removes the protective vegetative cover, making the area more vulnerable to severe flooding and erosion. As a result, the impacts following wildfire not only affect communities living in the burned area, but also those living downstream.

Through extreme heating, wildfires alter soil properties, in some cases causing soil to repel water, resulting in increased run-off. Increased runoff leads to greater erosion potential, and sediment is carried downstream and deposited in waterways and reservoirs.

**RECOVERY:** Some of the methods we use to stabilize soils and restore natural hydrologic functioning following wildfires include targeted mulching, seeding, and planting. These initial methods are often only applied to high severity burn areas and are aimed at establishing surface cover to provide protection to soils. Other methods include contour felling of standing dead trees to reduce soil movement on hill slopes, and grade control structures installed in stream channels to reduce erosion and sediment movement downstream. Lastly, riparian restoration treatments are often done in subsequent years following wildfires to rehabilitate stream channels and reduce the drying out of perennial springs.

SWCA has worked with many communities and land managers on assessing and monitoring post-burn impacts on soils and hydrology. The rehabilitation of soils and hydrology are often a critical first step in the long term restoration of natural resources following fire, and are crucial in preventing damaging post-fire events like flooding and mudslides. Ideally, rehabilitation and restoration occurs as soon as possible post-fire; in some instances, teams will assess post-fire conditions while there is still smoke in the air.

## CULTURAL RESOURCES



**IMPACTS:** Wildfires can have a devastating impact to cultural resources. Perishable material such as ancient wood-framed wickiups (Native American huts consisting of an oval frame covered with brushwood or grass) are burned, and even stone tools can be broken apart by the fire's heat. Fragile faunal remains burn and can be rapidly destroyed from subsequent exposure. Furthermore, as the burned sediment containing buried archaeological remains becomes loose and ashy, archaeological material becomes vulnerable to erosion and exposure. Livestock grazing through these burned sites can significantly churn these deposits. Artifacts exposed by wildfire are notoriously susceptible to uncontrolled collection by looters who are trained to look in burned areas.

**RECOVERY:** Since 2009, SWCA has provided the U.S. Forest Service, the National Park Service, and other researchers in the mountains of Wyoming with a series of archaeological probability models to support rapid, targeted post-fire inventories of cultural resources in high probability areas. These models have proved to be very useful in focusing these surveys to the most sensitive areas within what can be massive burned areas covering thousands of acres.

SWCA is also working with the National Park Service in the development of Fire Management Plans and accompanying environmental compliance that analyze the impacts of fuel treatment actions and wildfire suppression strategies on natural and cultural resources within multiple National Park properties across the Country. SWCA has worked with numerous historical parks including Jean Lafitte National Historical Park and Preserve in Louisiana, Chickamauga and Chattanooga National Military Park in Georgia and Tennessee, and Salinas Pueblo Missions National Monument in New Mexico. These Fire Management Plans are designed to enhance the protection of the country's cultural and natural resources from damaging impacts of wildfire.

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## WILDLIFE



Photo credit: National Park Service

**IMPACTS:** In the short term, wildfires can be devastating to some species as a result of injury or direct mortality, or lack of immediate cover and food sources. However, most species have adaptations that enable them to escape or avoid wildfire areas during a burn (for example by fleeing the flames or burrowing underground) and often they return soon after as burn areas recover and provide renewed food sources.

The impacts of fire on wildlife are closely tied to the degree of change to their habitats. Many species, particularly in the dry-mesic forests of the western United States, have evolved with wildfire and require it for their long term survival. For these species, periodic disturbance by wildfire is necessary to create habitat diversity and promote food production.

However, many ecosystems are burning with uncharacteristic severity and impacting greater numbers of acres; as a result, impacts to wildlife are more pronounced than they would have been historically because wildlife species are not able to find suitable habitat close by to act as a refuge until burned areas can recover.

**RECOVERY:** When wildlife is adversely impacted by intense wildfire, rehabilitation efforts are necessary. Recovery focuses on stabilization of soils and promotion of vegetation recovery (for example seeding and planting of sapling trees) to improve the potential for native plant community and increase the pace of wildlife habitat recovery.

SWCA has worked with federal and state agencies on forest restoration and hazardous fuel reduction projects that analyze the adverse impacts that uncharacteristic wildfire has on wildlife, and the beneficial effects that forest restoration projects typically have on wildlife and their habitat. Our biologists work with agency specialists to recommend mitigating actions to reduce wildfire severity and/or promote the reintroduction of fire to fire-adapted ecosystems through the use of prescribed fire so that when wildfires do occur, they provide needed ecosystem services that promote healthy habitat conditions for a wide range of species. In New Mexico, SWCA is working on environmental compliance in support of Forest Service forest restoration projects to reduce wildfire risk to communities and provide protections for the Mexican Spotted Owl (*Strix occidentalis lucida*), a federally threatened species.


## LOOKING AHEAD

Humans and wildfires are becoming ever more entwined as we move further into the wildlands. Fires are a natural ecosystem process, and with projected climate change they are forecasted to become even more prevalent across the landscape. Fire managers are recognizing that humans need to learn to live with fire and adapt to its disturbance.

How? Many national programs promote creating more resilient landscapes, both natural and human, where humans are able to co-exist with wildfire. Community planning and wildfire prevention activities like community wildfire protection planning, agency fire management plans, and hazardous fuel reduction projects are all helping to mitigate the impacts of severe wildfire on vulnerable communities.

SWCA has been working with numerous local governments, and state and federal agencies to develop plans that address increasing wildfire risk. Our Fire Planners have worked with communities from the Silicon Valley in California to the Pine Barrens of Long Island; these plans are tailored to each unique community through extensive public outreach and collaboration, but all have the common goal to reduce the adverse impacts of wildfire on communities.

For more information about our fire management and post-fire services, contact **Vicky Amato** at [vamato@swca.com](mailto:vamato@swca.com).

 To see a bonus video on this story, visit [www.swca.com](http://www.swca.com).

## PEOPLE AND COMMUNITIES



Photo credit: Scott Vickers

Wildfires are impacting people and communities with growing frequency. Human populations are increasingly moving into the wildland-urban interface (WUI), and as wildfire frequency and severity increases, the impacts and devastation experienced by WUI populations is also increasing. When a large wildfire occurs in a populated area in the WUI, the social and economic consequences are extensive, complex, and long lasting.

In addition to the emotional toll that wildfire destruction can have on a community, there are numerous social and economic challenges that can have long-lasting impacts, including:

- ☑ the economic burden associated with replacing and rebuilding homes and essential infrastructure
- ☑ heavy restoration costs for rehabilitation activities to stabilize damaged soils and damaged natural resources
- ☑ lost sales tax and revenues from disruption to businesses
- ☑ increased water treatment costs to address contamination and sedimentation resulting from increased run-off and deposition
- ☑ reduced recreation and tourism revenue due to reduced access to public lands and dwindling tourist volumes

In addition, there are the natural disasters that may occur following fires, including catastrophic mudslides that wreak havoc on already vulnerable burned areas.

# LEADERSHIP

## SWCA'S SCIENCE LEADERSHIP PROGRAM

By Gina Wagner

Our company was founded on scientific excellence, and today we continue to hold ourselves to the highest standards and scientific principles.

Our Science Leadership Program (SLP) is unique to SWCA. SLP offers a way for our specialists – including biologists, cultural resource experts, and technical experts – to collaborate and remain on the leading edge of scientific advances and research in their respective fields. This allows us to provide clients with a level of scientific and technical expertise that's unparalleled.

The process to select SLP members is rigorous. Members have advanced degrees and/or extensive training in their technical field. They've demonstrated scientific proficiency and leadership at SWCA, participate in the development and mentoring of junior staff, and regularly present and publish their research.



We provide incentives to employees who publish their work and those who create new ideas that advance science and benefit clients. In this way, we seek to maintain and expand SWCA's scientific and technical capabilities to deliver on our creed of "Sound Science. Creative Solutions."

### WHAT DOES THIS MEAN FOR CLIENTS AND PROJECTS?

- ☑ When you work with SWCA, you have access to the nation's top environmental scientists and technical experts.
- ☑ Through mentorship and collaboration, the Science Leadership team raises the bar for all of SWCA, ensuring that we offer the best, most advanced, scientifically sound solutions to any client challenge.
- ☑ Science Leadership members develop and maintain strong relationships with regulatory agencies and the national scientific community, and those relationships contribute to our success rate on projects.
- ☑ We keep you informed about important environmental and regulatory issues. SLP members offer presentations and lectures on topics that are relevant to clients and their projects – at conferences, via training sessions, and "lunch and learn" seminars.

If there's a topic you'd like to learn more about and are interested in attending a presentation, contact [SLPC@swca.com](mailto:SLPC@swca.com). ■



Recently, SWCA expanded the SLP by adding **24 scientists and technical experts** to the program. Each new member meets our high standard for excellence. With these new additions, our total SLP membership is 74, or 16 percent of our operational staff.

NAME	LOCATION	NAME	LOCATION
Ralph Burrillo	Salt Lake City	Wesley Mattox	Houston
Randy Creaser	Denver	Katie Mohlenhoff	Salt Lake City
Seth Dallmann	Half Moon Bay	Victoria Myers	Austin
Benjamin Davidson	Denver	Sydney Nick	Portland
Benjamin Demchak	Pittsburgh	Tamas Polanyi	Albuquerque
Danielle Frohlich	Honolulu	Ryan Rausch	Phoenix
Anna Gilmer	Chicago	Daniel Rodriguez	Austin
Taylor Guest	Houston	Nicole Smolensky	Houston
Steven L. Johnson	Amherst	Kristina Stelter	Salt Lake City
Allison King	Houston	Justin Streit	Las Vegas
Jonathan Libbon	Pittsburgh	Sue Wilmot	San Antonio
Mandi Martinez	Pasadena	Stephen Zipper	Albuquerque

## NEWS BRIEFS

By Alexis Kuhbander

### NEW HIRES & PROMOTIONS



**Richard Young, COO/President**  
Richard Young has been named SWCA's new Chief Operating Officer and President. Prior to his promotion, he served as Principal for the Salt Lake City and Pacific Northwest offices, as well as Director of SWCA's Sustainability Program. He is a licensed professional engineer and geologist with more than 30 years of consulting and business management experience on a broad range of civil, geotechnical, and environmental projects throughout the United States.



**David Brown, Salt Lake City/Pacific Northwest Principal**  
David Brown has been selected as the new Salt Lake City and Pacific Northwest Principal. Dave joined SWCA in 2005 and has successfully served in a number of roles, including Las Vegas Office Director, Strategic Growth Director, and most recently as Salt Lake City's Natural Resources Program Director.



**Scott Slessman, VP Business Development Resources**  
Scott Slessman has been promoted to Vice President of Business Development Resources, a new role on SWCA's Executive Leadership Team. During his 14+ years with SWCA, Scott has been a successful Program Director, Office Director, Business Development Director, and Principal.

### NEW DIRECTORS

SWCA has named several new cultural and natural resources program directors at the regional level:

- **Kim Parker** was promoted to Cultural Resources Program Director for SWCA's Albuquerque, Durango, and Carlsbad offices. Kim has been a key member of the Albuquerque CR program since 2013, when she joined SWCA as an architectural historian.
- **Heather Gibson** has been promoted to the California and Pacific Islands Cultural and Paleontological Resources Director position. Heather joined SWCA in 2014 and has been a strong leader in providing cultural resources services.
- **Todd Butler** was promoted to the Houston Cultural Resources Program Director position. Todd joined SWCA in 2012 and has more than two decades of experience in consulting and leadership in the region.
- **Megan Peterson** has been promoted to Director for the San Francisco and Half Moon Bay offices. Megan has two decades of academic and professional experience, specializing in environmental management of multi-disciplinary energy and water infrastructure projects.
- **Amanda Childs** has been named Portland Director. She has served as natural resources team lead and has been instrumental in guiding our Pacific Northwest offices and SWCA's NEPA practice nationwide.

### LAWRENCE S. SEMO AWARD



**Ann Widmer**, an aquatic biologist in our Denver office, was selected as SWCA's Lawrence S. Semo Scientific Achievement Award winner for the fourth quarter of 2017. Ann is a go-to expert for the development of efficient data management tools, rigorous study design and data structure, and high-end statistical analyses and data modeling. She also played a critical role in developing SWCA's avian post-construction mortality models for wind farm projects. The quarterly Semo Award rewards individuals for demonstrating passion, creativity, and scientific excellence.

### STEVEN W. CAROTHERS AWARD



Cultural Resources Principal Investigator, **Jim Railey**, in our Albuquerque office, is the recipient of the 2017 Steven W. Carothers Scientific Merit Award. Jim started his career with SWCA in 2003 and is recognized for his solid track record of completing large, complex, archaeological excavation reports. The Steven W. Carothers award honors a scientist following in the footsteps of our founder by using excellent scientific skills to solve client problems.

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Please visit us on the web at [www.swca.com](http://www.swca.com) and on social media.



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## NEWS BRIEFS (CONTINUED FROM PAGE 11)

### SWCA GIVES BACK: HAVE A HEART AWARD



SWCA awarded the annual Have a Heart Award to its San Antonio office for 2017. The Have a Heart Award is given annually to the office that most demonstrates SWCA's culture of giving by participating in SWCA Gives Back events and fundraisers.



### WE'RE HIRING!

SWCA is dedicated to our purpose of preserving natural and cultural resources for tomorrow while enabling projects that benefit people today. In order to meet this goal, we are constantly seeking smart, talented, problem-solvers to join our teams nationwide. We're looking for skilled individuals in every career phase – from field technicians to seasoned scientists, support staff to management roles.

- Be a part of our Renewable/Permitting Management team in the Rocky Mountain Region.
- Join our ecological restoration team as a stream design engineer, restoration engineer, or mitigation banking specialist.
- Explore the role of a Senior Archaeologist/Principal Investigator in the Gulf Coast.
- Experience nature as a field biologist or Natural Resources Program Director in our western regions.