



THE UNIVERSITY OF ARIZONA  
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES

## Southwest Institute for Research on Women



## THE BIO/DIVERSITY PROJECT 2020 Program Report



COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES

Women in Science  
& Engineering



## PROGRAM OVERVIEW

Research shows that creating environmentally, socially, and economically sustainable communities requires the inclusion of all members of society in discussions of environmental problems and the development of their solutions.<sup>i</sup> However, environmental science fields and environmental organizations lack racial, ethnic, and gender diversity on par with the population.<sup>ii</sup> In response, the Bio/Diversity Project harnesses the power of University-community partnerships to create K-16+ and into the workforce pipeline aimed at diversifying the environmental sciences and our local environmental science workforce. Through a combination of K-12 outreach and structured training, mentorship, and paid work experience, we pique student interest in the environmental sciences and provide the support and opportunities necessary to sustain students as they move through their academic journeys and into the environmental science workforce.

Each year, we recruit University of Arizona students from groups traditionally underrepresented in the environmental sciences and train them to serve as environmental science outreach educators in k-12 schools. Over the course of a semester, interns receive training on developing hands-on and culturally-responsive environmental science lessons and then implement these lessons in K-12 schools that serve primarily students of color and students from low-income households. In doing so, we expand access to culturally responsive and place-based environmental science programming, while also exposing K-12 students to a diverse set of college-going mentors and role models. During their internship experience, university students participate in trainings and networking events with local environmental science organizations, enabling them to build career readiness skills and the professional networks necessary to enter and succeed in the environmental science workforce. Group discussions, reflections, and assignments challenge interns to recognize the structural issues that lead to a lack of diversity in the environmental sciences and equip them with skills and strategies they can use to create more inclusive environmental science communities and organizations. Successful interns are transitioned into paid positions with partner organizations, including the Next Generation Ranger Program at Saguaro National Park, in order to help them build additional skills and work experience.

*"I think as a Mexican American woman in science, I myself represent a diverse individual in the environmental workforce. As I go through my path of finding my career and from understanding my own experience, I have found a passion to empower younger individuals of other diverse backgrounds that they can be scientists too. The Bio/Diversity Project helped me to understand diversity in scientific fields and that I myself could be a leader in activating for more inclusivity."*

*--Fall 2018 Intern*

The Bio/Diversity Project is made possible by a broad network of university and community partners. Primary program partners are the University of Arizona's Women in Science and Engineering (WISE) Program, Saguaro National Park, and the Friends of Saguaro National Park. We additionally partner with local environmental organizations including the Arizona-Sonora Desert Museum, Sky Island Alliance, and UArizona's School of Natural Resources and the Environment, in order to provide program participants with robust training in environmental education and biodiversity conservation.

## PROGRAM RATIONALE

Women and people of color are systematically under-represented among environmental science majors at the college level and in the environmental science workforce. According to the National Science Foundation, only 10% of the undergraduate degrees awarded in the Natural Sciences and 7.5% of those awarded in the Earth Sciences were awarded to Hispanic individuals in 2015<sup>iii</sup>, despite making up 18% of the US population.<sup>iv</sup> Simultaneously, women received only 37%



and 45% of degrees awarded in Earth Science and Natural Science, respectively, despite making up more than 50% of those receiving undergraduate degrees. These national trends are mirrored at the University of Arizona where Hispanic students receive on average 11% of the degrees awarded in Environmental Science and Natural Resources despite making up 25% of the student population and 32% of the state's population.<sup>v</sup> At the same time, female students make up only 42% of the environmental science, geoscience, and natural resources majors, despite making up over 52% of the overall undergraduate student population.<sup>vi</sup>

The lack of diversity in environmental sciences at the university level carries over into the environmental science workforce and environmental organizations nationally and locally. A study released in January 2018 by University of Michigan's School for Environment and Sustainability reported that of 2,057 environmental nonprofits examined, 85% of the staff members and 80% of board members were white.<sup>vii</sup> And a similar study done by Green 2.0 found that people of color makeup only 12 % of leadership staff and less than 5 % of NGO boards of directors. When examining diversity among National Park staff, a hub for the country's rangers and conservationists, 83% of NPS staff is white<sup>viii</sup> and 62% is male.<sup>ix</sup>

*"I feel like since I am...Mexican, I was a little fearful a year ago, [about] my place here at the U of A. I think through the program I kind of gained a lot more confidence to say that I have a part of (UA) and that I have a voice and that I can absolutely be a scientist. I can follow my career path."* -Fall 2018 Intern

The lack of diversity in the environmental sciences and environmental organizations is important for it shapes the way environmental problems are understood and addressed. A lack of diversity among environmental scientists, advocates, and policy makers results in environmental policies that most often fail to address the environmental challenges faced by the most marginalized members of society. Moreover, engaging the breadth of the population in environmental efforts is crucial for sustaining environmental movements and conservation efforts. As Marcelo Bonta and Charles Jordan wrote in 2007: "As the nation continues to diversify, the environmental movement is left with one of the greatest challenges it will face this century. In order to become an influential and sustainable movement for generations to come, it needs to successfully address its diversity crisis."<sup>x</sup>

## PROGRAM STRUCTURE

The lack of diversity in the environmental sciences and environmental organizations is related to a range of cultural and economic factors that shape who is interested in and has access to environmental science-related educational and career opportunities and who does not.<sup>xi</sup> Increasing access to innovative and culturally responsive environmental science programming in K-12 schools, in tandem with providing university level students with training, mentorship, and paid work experience, works to create a pipeline of engagement and support crucial for diversifying the environmental sciences. The Bio/Diversity Project addresses inequity and under-representation in the environmental sciences by: 1) piquing K-12 student interest in the environmental science education; 2) providing University students with training and mentorship via a for-credit internship program; and 3) increasing access to paid work experience in the environmental sciences.





**Piquing Student Interest:** Each year we recruit partner teachers from K-12 schools that serve primarily students of color and low-income students. University of Arizona students participating in our for-credit internship program are paired with partner teachers and trained on developing culturally responsive, place-based, and hands-on environmental science lessons. Each semester, UArizona students develop and deliver weekly lessons in partner schools, building knowledge of our local ecosystem,



piquing interest in the environmental sciences, and serving as positive college-going



STEM role models. Each K-12 school is provided access to a free fieldtrip to Saguaro National Park where students can gain greater appreciation for the important role National Parks play in fostering biodiversity conservation, while also interacting with environmental scientists and learning about environmental science and conservation careers.

*"I clearly recall those field trips out to Saguaro National Park being a real game change. It always is, for students in disconnecting them from their phones, being outdoors, and connecting with our Sonoran Desert...It was [also] a big deal to see scientists in the field of biology outside of the classroom...I see and hear how inspired the students are in seeing themselves as potentially playing that role [of environmental scientists]."* - Partner Teacher

**Training and Mentorship:** Each year, approximately 40 University of Arizona students participate in our for-credit internship program. Strategic partnerships with over 17 different academic units enable students to earn academic credit for their participation in the program in a field relevant to their academic plan—making participation accessible for students who are trying to quickly move through their University education and reduce the amount of student loan debt acquired. We partner with cultural centers, student clubs, and units across the University to promote the program and recruit interns from groups traditionally under-represented in the environmental sciences and environmental workforce. Students of color make up over 40% of Bio/Diversity Project interns each semester and over 80% of program participants have been female.



Interns attend weekly trainings where they develop skills in culturally responsive lesson planning, inclusive pedagogical practices, and science communication. Targeted discussions and reflection activities challenge students to examine the structural factors that lead to a lack of diversity in the environmental sciences and how they can proactively intervene to create more inclusive environmental organizations and fields. This provides students with the opportunity to see themselves as agents of social change and to use the experience and knowledge gained through program participation to work towards fostering diversity, inclusion, and social justice more broadly<sup>xii</sup>. Periodic networking events and workshops

provide students with the opportunity to build relationships with members of the local environmental science workforce and gain career readiness skills.





**Paid Work Experience:** Successful interns are provided access to paid work experience through partner organizations to gain additional work experience and career readiness skills. Positions are offered both on the University of Arizona campus with the Women in Science and Engineering Program and off campus with the Next Generation Ranger Program of the Friends of Saguaro National Park. Students are paid a living wage (between \$15-\$16.50 per hour) in order to ensure that the ability to gain valuable work experience is accessible to those with limited economic resources.

*"Through the program I got an internship with the Parks Service, and I'm still doing that, that was something that I love. I love it so much... I felt really honored and blessed to have that opportunity ...so it definitely changed my perspective and really kind of solidified my career goals for me."*

*-Spring 2017 Intern*



## PATHWAYS INTO THE WORKFORCE: THE NEXT GENERATION RANGER PROGRAM

One of the Bio/Diversity Project's partners, Friends of Saguaro National Park, established the Next Generation Ranger Program in January 2015. The NextGen program enables young people to discover Saguaro National Park and its different operational divisions by providing them with a supportive, engaging and educational working opportunities at the park. The program strategically recruits interns from populations underrepresented among park staff, including people of color and women. To date, the NextGen program has employed over 70 interns who receive targeted training, mentoring and work experiences. 70% of the interns have been women, and 48% from racially or economically underserved communities. All of the NextGen program alumni have gone on to work in the environmental field, including 12 currently employed in staff positions at Saguaro National Park. This paid internship is helping



local youth develop the skills and experiences required to actively compete for positions at Saguaro National Park and other federal land management agencies. The NextGen program is the beginning of a lifetime of involvement, in advocacy, and support for national parks, public lands and the environment.



## PROGRAM OUTCOMES

Post-program surveys (n=55) and participant interviews (n=30) indicate that the program is highly successful at: fostering environmental science motivation and self-efficacy; building greater knowledge of the local environment and community; fostering a commitment to diversity and inclusion; and helping students achieve their career goals.

- ❖ **96%** of interns report that participation made them feel more confident in their scientific abilities and knowledge
- ❖ **100%** report that program participation increased their knowledge of the local ecosystem
- ❖ **100%** reported that program participation motivated them to seek out and foster diversity and inclusivity in the environmental sciences
- ❖ **85%** said that program participation will help them achieve an academic or career goal
- ❖ **65%** report that participation increased their motivation to pursue a career in environmental science
- ❖ **89%** report that program participation increased their motivation to participate in local environmental and sustainability efforts
- ❖ Interns consistently report learning a variety of 21<sup>st</sup> century workforce readiness skills including time management, collaboration, teamwork, science communication, and public speaking.



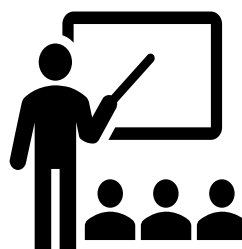
*"This internship afforded me opportunities to work with amazing institutions and individuals, to have measurable impact on the children I've worked with and the communities I have served, and through it I have gained skills and perspective I did not have before." -Spring 2017 Intern*



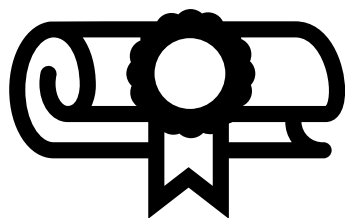
## PROGRAM IMPACT 2017-19



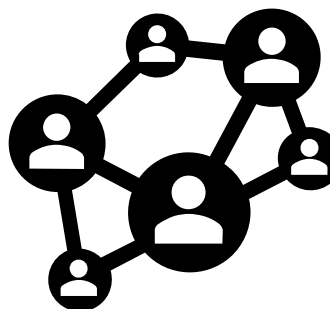
76 UArizona Students  
Trained as Culturally  
Responsive  
Environmental Science  
Educators



1500+ K-12 Students  
Received Weekly  
Environmental Science  
Lessons



225+ Student  
Credit Hours  
Earned



Partnerships  
Established with 17+  
UArizona Departments  
to Offer Academic  
Credit for Program  
Participation



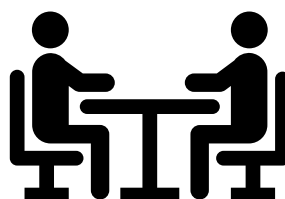
19 Free Field  
Trips to Saguaro  
National Park



14 School Visits by  
Environmental  
Scientists



17 Local Schools  
Supported



16 UArizona Students  
Transitioned into Paid  
Positions with Partner  
Organizations





## BUDGET BREAK DOWN

### Annual Program Costs Met Through Grants and Donations

<b>Program Staff</b>	<b>\$37,000</b>
<b>Paid Student Positions</b>	<b>\$8,500</b>
<b>Transportation</b>	<b>\$2,000</b>
<b>Equipment and Supplies</b>	<b>\$2,000</b>
<b>Teacher Stipends</b>	<b>\$2,000</b>
	<b>\$51,500</b>

The Bio/Diversity Project has been generously funded by the Agnes Nelms Haury Program in Environment and Social Justice (2016-18) and the University of Arizona Green Fund (2018-2020).

In addition to the funds raised through grants and donations, partner organizations— the Women in Science and Engineering Program at the University of Arizona and Friends of Saguaro National Park/Saguaro National Park—contribute in-kind or matching funds of approximately \$48,000 annually to support and sustain the program. Matching funds enable partner organization staff to participate in program administration, supervise and training interns and student workers, and complete robust program evaluations.

The funding provided through grants, donations, and in-kind/matching funds is necessary to provide University level students with training, mentorship, and work experience, while ensuring that the K-12 outreach lessons and activities are scientifically accurate, engaging, and culturally-responsive.

## LOOKING FORWARD

The Bio/Diversity project has been, and will continue to be, sustained through the strong partnership among our collaborators who have made long-term institutional commitments to biodiversity education, developing STEM learning opportunities for under-represented Tucson youth, creating a science-career pipeline for diverse UArizona students, and increasing workplace diversity. Please contact us if you are interested in helping grow and sustain the program through partnerships or donations by emailing Elena Greenberg at [ElenaGreenberg@email.arizona.edu](mailto:ElenaGreenberg@email.arizona.edu).





This report was prepared by Sarah Gruza, Peace Corps Coverdell Fellow and Jill Williams, WISE Director, and reviewed by Bio/Diversity Project partners. Questions about the report can be directed to Jill Williams at [JillMWilliams@email.arizona.edu](mailto:JillMWilliams@email.arizona.edu).

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