

## ***A Field at Risk:*** **The Impact of COVID-19 on Environmental and Outdoor Science Education**

Melissa Collins, Rena Dorph, Jedda Foreman, Aparajita Pande, Craig Strang, Aujanee Young

### **INTRODUCTION**

During April 2020, the Lawrence Hall of Science at the University of California, Berkeley, conducted a survey to learn about the impact of the COVID-19 pandemic on the environmental and outdoor science education field nationwide. This policy brief describes the importance of this field, the findings of our survey, and recommendations for mitigating the potentially devastating threats facing this field. These recommendations were developed based on conversations with individuals at the North American Association for Environmental Education (NAAEE), the California Environmental Literacy Initiative (CAELI), and Ten Strands, as well as other organizational leaders.



### **WHAT COULD BE LOST**

Every year, millions of people participate in environmental and outdoor science education programs (such as residential outdoor science schools, nature preschools, nature centers, parks, zoos, aquariums, science centers, and museums) that are integral to both their pre-K–12 school and their out-of-school learning. These programs engage youth in meaningful and memorable hands-on, experiential learning that is not available within traditional classrooms, resulting in myriad academic, social, and health benefits summarized here. These programs also play a significant role in providing professional development to classroom teachers nationwide that increases their content knowledge, skills, and pedagogical expertise.



***Besides the loss of revenue, the primary concern is the number of students and teachers who will NOT have the experiential opportunity to learn about the natural world. Our program engages students in a manner not normally taught at their [own] school.***

***- Program Leader***

Participation in informal environmental and outdoor science education programs results in positive cognitive/academic, dispositional, social-emotional, and health outcomes.<sup>1</sup> Environmental education programs in informal settings increase content knowledge and skills,<sup>2</sup> including understanding how human actions contribute to climate change and sustainability.<sup>3</sup> This learning may be magnified when outdoors, because youth learn quickly and demonstrate better attention and longer retention of skills when learning takes place in outdoor environments.<sup>4</sup> Moreover, youth who participate in residential outdoor science programs show positive short-term as well as long-term gains in their attitudes toward school<sup>5</sup>; toward their own connection to nature<sup>6</sup>; and toward the environment.<sup>7</sup> Exposure to nature through these programs enhances learner's cognitive functioning, self-discipline, and character development.<sup>8</sup> In addition, numerous physical and mental health benefits accrue from spending time in the outdoors, such as reduced stress and loneliness, and increased physical activity and resilience.<sup>9</sup> In fact, certain medical professionals have spoken out against the closure of outdoor spaces during the present public health crisis because of their innumerable health benefits.<sup>10</sup>

Beyond providing benefits for individuals, these programs also address key societal and environmental challenges. Environmental and outdoor science

education programs increase the awareness of climate change among hundreds of millions of people.<sup>11</sup> Participants in these programs are more receptive than the general public to climate change communication, show more concern about climate change, and are less likely to discount the threat of climate change.<sup>12</sup> Learners see the impact of human activities on individual species and ecological systems firsthand through experiential activities, improving their knowledge, awareness, motivation, and critical thinking about climate change.<sup>13</sup> These changed dispositions may translate into behavioral changes related to environmental stewardship and responsibility,<sup>14</sup> and may even result in decreased carbon emissions as long as five years after learners participate in the programs.<sup>15</sup> Environmental and outdoor science education programs thus have been shown to have direct impacts on the environment, with documented ecological indicators such as improved water and air quality, and even increased biodiversity.<sup>16</sup>

Over the past decade, significant efforts have focused on increasing the capacity of environmental and outdoor science education organizations to remove systemic barriers that have prevented communities of color from benefiting from these programs in the ways described above. The closures and financial losses the field now faces threaten to undo these gains and even perhaps to dismantle the infrastructure of the entire field.

# DESCRIPTION OF SURVEY RESPONDENTS

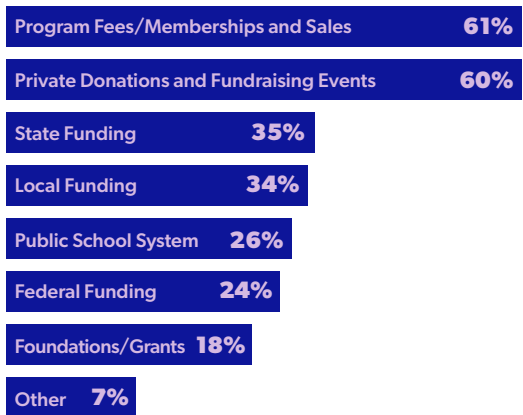
## STUDY METHODS

During April 2020, the Research Group and *Better Environmental Education, Teaching, Learning, and Expertise Sharing* (BEETLES) at the Lawrence Hall of Science, with the support of the California Environmental Literacy Initiative (CAELI) and the North American Association for Environmental Education (NAAEE), among other organizations, distributed a brief survey to environmental and outdoor science education programs nationwide.

## RESPONDENTS

A total of 995 organizations responded to this survey and indicated the following affiliations and characteristics. Respondents could select multiple characteristics per category:

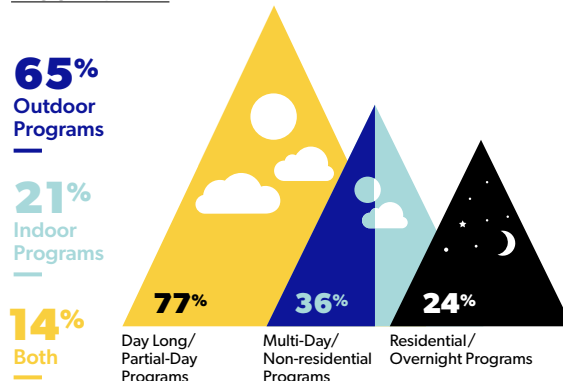
### FUNDING SOURCES



### ORGANIZATION AFFILIATION

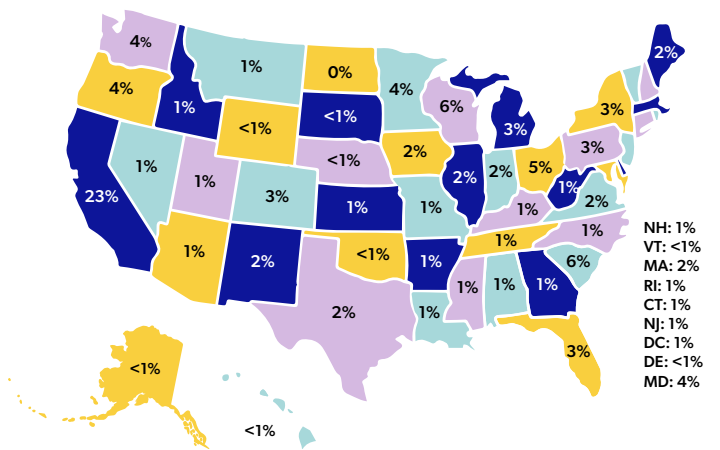


### PROGRAM TYPE



### GEOGRAPHY

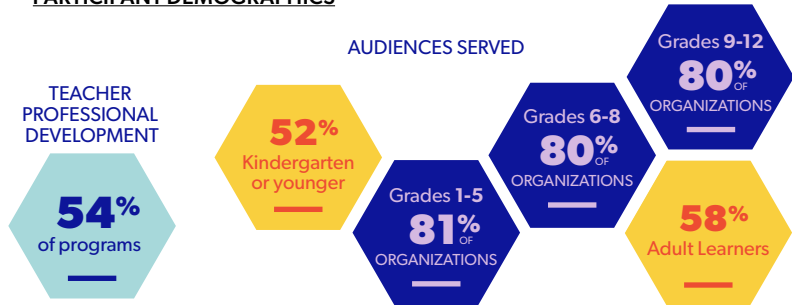
Organizations represented 49 of the 50 states (ND excluded), plus the District of Columbia. These programs reported serving learners in all 50 states, plus Puerto Rico, American Samoa, Guam, Northern Mariana Islands, and the U.S. Virgin Islands. The highest percentage of respondents (23%) were in California.



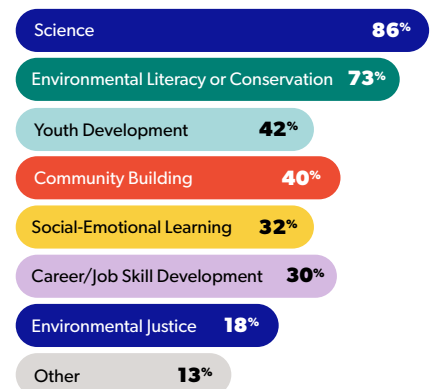
### ORGANIZATION TYPE



### PARTICIPANT DEMOGRAPHICS



### EDUCATIONAL CONTENT AREAS



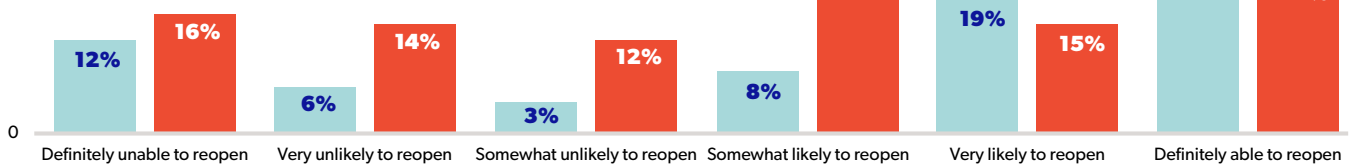
## ESTIMATED LOSSES TO THE FIELD

Virtually all program leaders responding to the survey described COVID-19 as being “devastating” to their operations. Approximately half the organizations were able to estimate potential program losses resulting from the COVID-19 school closures, shutdowns, and social distancing recommendations. Extrapolating from these responses to the full sample, we estimate significant—and potentially catastrophic—effects to the field.

By May 31, 2020, an estimated 4 million learners will have missed the opportunity to engage in these programs. If organizations are unable to reopen during 2020, estimates indicate that more than 11 million learners will have missed the opportunities they would have had. Youth from marginalized communities are most severely affected. Program leaders estimate that 58% of the youth impacted by the COVID-19 cancellations qualify for free or reduced-price meals, are English learners, or come from other marginalized communities.

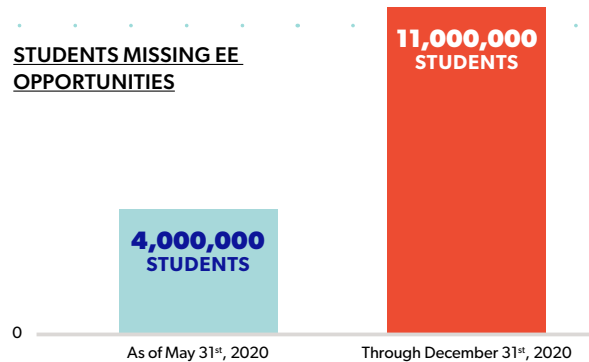
To date, organizations reported they have already experienced significant revenue losses, resulting in significant reductions in their personnel. As of May 2020, estimates indicate that organizations had already lost over \$225 million in revenue and either furloughed or reduced some 12,000 staff. If social distancing continues until the end of 2020, they face over \$600 million in lost revenue by December 31, 2020, with an estimated 30,000 furloughed or reduced staff.

These numbers, in truth, represent only a small subset of the field who were able to respond to the survey. Staff layoffs, furloughs, and reduced work hours or pay will have a disproportionate impact on staff of color who face greater challenges in getting hired in this field due to systemic hiring barriers, implicit bias, and the structure of the positions,<sup>17</sup> and who may be less able to return to their job after the crisis resolves.



***If we can not open for the 2020/2021 school year, we may not survive. We can not endure another school shut down and we can not hibernate through an entire year without laying everyone off [...]***  
***This is a very grim reality.***

**- Program Leader**



Leaders also reported grim estimates about their organizations’ ability to endure an extended closure. Only 22% of program leaders anticipate they will “definitely” be able to reopen if social distancing guidelines are in effect through December 31, 2020, while 30% report they will be definitely unable or very unlikely to reopen. Patterns were similar across organizations regardless of organizational affiliations, structures, or focus areas.

## HOW CAN WE MITIGATE POTENTIAL LOSSES

*Environmental and outdoor science education is critical to our national educational system. Given the impact of this crisis, this field faces the immediate threat of shrinking by more than half and potentially even disappearing in some communities in the absence of proactive federal or statewide relief. The data are clear—in the likely event that the COVID-19 pandemic restrictions continue nationwide through the end of 2020, an alarming 63% of program leaders feel uncertain about their ability to reopen their doors. This highly vulnerable field requires urgent support to preserve the rich, irreplaceable learning experiences it provides to millions of learners every year. Recommendations for mitigating these losses include the following:*

### FUNDING TO KEEP THE “DOORS OPEN.”

Revenue will continue to be lost through at least December. Without financial support, survey respondents are positioned to lose as much as \$600 million in revenue, though the total loss for the field will be much larger than this. These organizations need financial support to rebuild or sustain infrastructure, as well as to redesign their programs and sometimes their facilities to resume operations when they reopen. Currently, organizations need funding to acquire technology and professional learning that will enable them to reimagine their programming so they can provide both high-quality and meaningful online and/or physically distant learning opportunities, especially in lower-income communities.

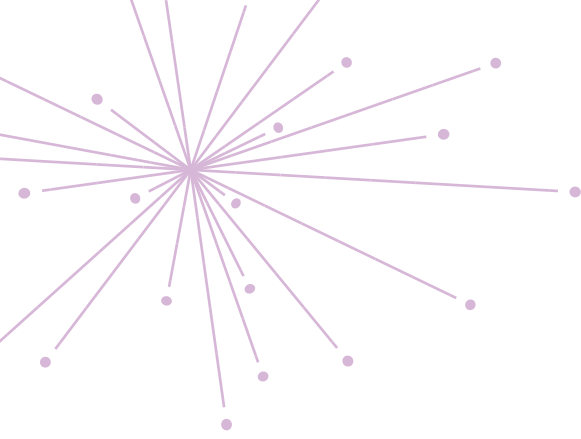


***We are working hard to keep staff employed: growing produce for the community, updating our place-based curriculum, researching new grant opportunities, and developing tools for distance learning. If we survive this crisis, we may come out a stronger organization than we were before.***

***- Program Leader***

### FUNDING TO SUPPORT EDUCATORS AND STAFF BEYOND JUNE 2020.

Support that some organizations received through the federal government’s Paycheck Protection Program or other temporary stimulus packages will likely expire before the need for critical funding ends. Without additional support, many employees who have been laid off or furloughed will be forced to seek work elsewhere. The impact of the loss of this workforce will be felt by millions if they are not able to return. Without these tens of thousands of staff, we will lose nearly 22.5 million hours of science and environmental learning for close to 11 million learners nationwide by the end of the year. That will mean a loss of camps; nature center programs; residential programs; museum, zoo, and aquarium programming; and more.



## FUNDING TO LEAD WITH EQUITY DURING RECOVERY.

Years of efforts to increase access and cultural relevance for marginalized communities could be undone, even if environmental and outdoor science education programs manage to reopen. Resource-strapped organizations may feel the need to forego initiatives to promote equitable and inclusive workplaces, and even perhaps to halt subsidized programming (including scholarships, fee waivers, transportation grants, and community partnerships) in favor of paying customers, which would lead once again to the exclusion of communities of color and other marginalized communities. Future financial aid that is intentionally allocated to such efforts can, however, prevent the loss of gains made toward broadening participation in the field, and can also allow the field to achieve its goals related to equity, inclusion, cultural relevance, and social justice.

## COORDINATED EFFORTS BY LOCAL AND STATE EDUCATION AGENCIES TO REDEPLOY ENVIRONMENTAL AND OUTDOOR SCIENCE EDUCATORS TO WORK IN K-12 SCHOOL SETTINGS.

To increase the capacity of schools to educate learners in-person while safely following local government-mandated social distancing guidelines, outdoor science and environmental educators can, in partnership with school districts, engage more learners in outdoor learning, thus expanding the space limits of school classrooms. Such arrangements would enable social distancing while at the same time allowing learners to spend time in healthier, safer environments than are available in most schools. These efforts would support schools to meet their learning goals, overcome digital-divide equity issues associated with distance learning, allow parents to return to work, and provide myriad health and social/emotional benefits to learners. Such efforts would also preserve the overall capacity of the environmental and outdoor science education field to provide learning experiences once the COVID-19 pandemic resolves. Local school boards and district superintendents could collaborate with community partners to design arrangements that work for their context. Changes to state policies and guidelines could make these arrangements easier to implement.

*We were in a very good place financially, having just paid off all of our debt and ready to start a new capital campaign. Now we are fighting for survival.*

*- Program Leader*



## PROMOTE THE VALUE OF OUTDOOR LEARNING AS SAFE, ENGAGING, EFFECTIVE, AND ESSENTIAL.

This pandemic crisis has highlighted the value of being outside when possible, to achieve the benefits of space, fresh air, engaging learning opportunities, and the calming effect of connecting with nature. With social distancing expected to continue well into the future, it is critical that policy makers, educators, and parents alike understand that learning outdoors is a valuable and even essential opportunity to meet educational, social-emotional, and societal goals in safe, effective ways. Support is thus needed to communicate the value of these outdoor learning spaces in communities—ranging widely from nature centers to parks and zoos—to best deliver high-quality education safely, during this time of social distancing. Investment is needed in a coordinated, nationwide campaign to communicate the role these programs play in meeting educational as well as societal goals.



## CONCLUSION

The data clearly indicate that this is a field at risk. Environmental education and outdoor science organizations are an essential and irreplaceable part of the nation’s larger educational system. These organizations face devastating losses as a result of the COVID-19 pandemic. The field therefore needs targeted, coordinated, and systemic financial support to mitigate the impact of this crisis. Paradoxically, despite its human horrors, COVID-19 shines a light on the value of outdoor education to our society. By connecting schools with nature centers, zoos, parks, camps, and other outdoor learning sites, we can ensure that all learners have access to these memorable places and experiences. These organizations offer solutions to seemingly insoluble challenges faced by schools seeking models to equitably reopen in fall of 2020. Environmental and outdoor science education organizations must have a seat at the table alongside other elements of the U.S. educational system when local, state, and federal conversations occur about funding priorities, health policies, and guidelines for social distancing in education. By acting now, we have a chance to ensure the benefits of environmental and outdoor science education for all.

## NOTES

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**Correspondence to: [beetles@berkeley.edu](mailto:beetles@berkeley.edu)**