Evaluating science identity in youth using BirdSleuth’s Habitat Connections curriculum in afterschool and informal education settings

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Citizen science provides the real-world relevance that can connect kids to the science process in meaningful ways, but can it help them self-identify as scientists? Our Pathways to Science through Nature program trained afterschool and informal educators from across the US in the use of BirdSleuth’s Habitat Connections curriculum. Educators then administered pre- and posttests to participating youth to discover how the use of the curriculum and associated citizen-science projects influenced their science identity. We’ll explore the impacts of citizen science on youth science identity, discuss how evaluating these changes can help educators use citizen science more effectively in formal and informal educational settings.

How can we improve learning about biodiversity and the environment through student engagement in short-duration citizen science events? Lessons from 2016 BioBlitzes

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In 2016, hundreds of BioBlitz events were conducted throughout the United States. These species inventories can engage students who have limited access to natural environments. Through school-based activities and participation in inventories, students are exposed to the natural world, practices of science, and issues of biodiversity. The authors conducted research on school groups at events in multiple parks, with the goal of learning how exposure to scientists, engagement in the practices of science, and being in nature influenced students comfort in nature, appreciation of biodiversity, and interest in environmental stewardship. Data were collected through observations and surveys. This presentation will share the tools and findings. The experience made students more comfortable in nature and increased both appreciation of biodiversity and interest in environmental advocacy. Students described how the experience made them less frightened of certain species, such as insects and bats. They also saw animals they had never encountered before and learned about the connections between the built world and the natural environment. Students came away with a different view of the work of scientists. In addition, professional learning experiences for educators prior to the event helped boost student outcomes. In addition, students’ prior experience with nature and their enjoyment of BioBlitz also made a difference. The authors will discuss the implications for practice and research. Remaining research questions will be posed and gaps in our current knowledge discussed with participants. Particular focus will be given to learning beyond content outcomes and ability of citizen science to empower disadvantaged youth.
Learning from youth-focused community and citizen science (CCS): how do we know the impacts of participation on youth understanding and agency toward environmental science?

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Citizen and community science (CCS) project leaders, educators and scientists have great expectations about what, and how, youth can learn through participating in CCS, particularly regarding science education, environmental stewardship and civic engagement. We have investigated what youth participation actually entails (observed activities and roles youth play in projects irrespective of intended project design) and how young people work to achieve these goals in different ways across different contexts, using a qualitative and ethnographic approach to 12 case studies of youth-focused CCS. We have developed a frame for analysis, environmental science agency (ESA), adapted from the concept of critical science agency. ESA combines not only 1) understanding environmental science content and inquiry practices, but also 2) identifying with those practices and 3) using environmental science as a foundation for change (Ballard, Dixon and Harris 2016). We found that youth developed different aspects of ESA in different contexts and within particular program structures. Our findings suggest that when CCS programs support development of youth learning and agency toward environmental science, they can foster lasting science learning practices and build their capacity for current and future environmental stewardship.

Stepping up: the roles youth play in citizen science projects and their relationship to place

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Investigating two community and citizen science (CCS) projects, one classroom and one community-based, with high school-age youth in Oakland, CA, we ask: (1) What kinds of specialized roles do youth develop in CCS? (2) How do these roles shape development of youth agency and science practice? and (3) When do the places in which CCS is conducted influence the roles youth take up? Using the lens of environmental science agency (ESA) to analyze observational and interview data (Ballard, Dixon and Harris 2016), we found that youth pursue academic, scientific and social roles in ways that may link participation in CCS to long-term identity work. However, student perceptions of what happens and who belongs in urban spaces can disrupt place-based connection. We also describe how the ESA framework can help educators understand and support learning in CCS by looking beyond content while still recognizing the potential of scientific tools to empower students in their lives and communities.