

Step by step towards citizen science: Deconstructing youth participation in BioBlitzes.

Lorke, J., Ballard, H.L., Swanson, R.D., Miller, A.E., Pratt-Taweh, S., Jennewein, J. N., Higgins, L., Johnson, R.F., Young, A.N., Ghadiri Khanaposhtani, M. & Robinson, L.D.
[Step by step towards citizen science - Deconstructing youth participation in BioBlitzes.](#)
Journal of Science Communication 20(4), pp. 1-21.

INTRODUCTION

BioBlitzes are wildlife surveys that bring together professional scientists, volunteer naturalists, and members of the public to create a snapshot of biodiversity within a set location over a defined period, often 24 hours. BioBlitzes combine the collection of scientific data with public engagement and are varied in form, described as ‘part contest, part festival, part educational event, part scientific endeavour’. The scientific data collection part of the event usually comprises making biological records, submitting to the organisers via paper forms or using an online platform such as iNaturalist.



AIMS OF THIS STUDY

We aimed to objectively observe young people as they took part in BioBlitz events, to understand how they are participating, how this compares to the intentions of the event designers, and what design features of the setting may be influencing youth participation. We sought to identify patterns in participation that may inform future research. This characterisation of participation will form a foundation for later study into youth learning processes and outcomes through participation in BioBlitz events.

Using ethnographic field notes, we observed the activities of 81 youth (age 5-19 years) across 15 BioBlitz events led by Natural History Museums in the UK and US.

We asked the following research questions:

- *What activities do youth take part in when attending BioBlitzes?*
- *Are there differences in activities between age groups?*
- *How do youth contribute to scientific research at BioBlitz events by making biological records?*

WHAT WE FOUND

- 67 youth were observed participating in one or more steps towards generating a biological record, but seldom all steps.
- Exploring nature to discover organisms was observed in 48 youth, more commonly in younger ages (5-15 years).
- We saw a variety of ways that youth were involved in identification: engaging a knowledgeable person at the event, or using identification tools such as guides, spotter sheets and the iNaturalist app.
- Recording (a.k.a. submitting a biological record), was the least observed step, with only 12 youth undertaking this step; of these, 10 used iNaturalist.
- Youth also participated in other activities during the BioBlitzes which were not directly related to data collection but may have value for supporting learning outcomes, including leading and helping others, sharing science knowledge, skills, and findings, and environmental stewardship behaviours.

TYPES OF PARTICIPATION

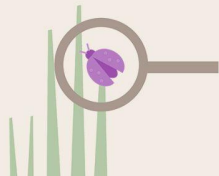
Building on Pocock et al.'s [2015] components of a biological record, we identified five ways youth could potentially contribute to a BioBlitz's scientific goal, as follows:

EXPLORING



Exploring and actively searching the habitat to discover organisms, potentially involving tools such as binoculars or nets

OBSERVING



Observing organisms in nature, using one's senses to find and study organisms

IDENTIFYING



Putting a name to the organism (e.g. taxon or species) that was observed

DOCUMENTING



Documenting the observations by generating evidence of the observation, such as a photograph or writing on a data sheet

RECORDING



Making the documented observation available for biodiversity monitoring or research purposes, ideally providing the Who, When, Where and What aspects of a biological record

YOUTH PARTICIPATION PROFILES

We identified three youth participation profiles:

Citizen Science Profile

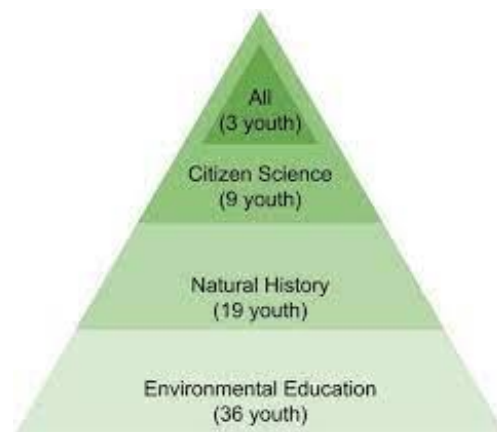
Participated in Recording (sharing/submitting) a biological observation and often one or more other types of participation. This was the least commonly seen profile (12 youth). Participants aged 16–19 fit this participation profile more often than younger participants (Table 4); More research is needed to examine factors such as access to recording tools and awareness of the scientific goals of the BioBlitz to understand these age-related differences.

Natural History Profile

Participated in Documenting their observations alongside any combination of the other types of participation, but not Recording (sharing/submitting) their observations to a wider research project.

Environmental Education Profile

Engaged in Exploring, Observing and/or Identifying, or any combination of these types of participation, without Documenting or Recording.



The high proportion of youth in the **Environmental Education** and **Natural History** profiles bears highlighting and deserves further study regarding the division of labour common in ecological fieldwork, where the person collecting samples or observations may not be the one to record them, or recording equipment must be shared. This may be especially true in family groups where adults do some activities on behalf of young children. However, this division of labour and/or lack of access to tools could also indicate equity challenges, and may inadvertently present barriers to participation in the entire scientific process for youth, potentially removing valuable learning opportunities.

- If the goal of your BioBlitz is for participants to gain understanding of the scientific process, then create opportunities for youth to engage in the entire process of data collection, from Exploring through to Recording.
- Provide additional supports for youth. Our data suggest that programmes need to offer additional support, e.g. framing the BioBlitz as a scientific survey, training, and iNaturalist introductions, to empower young people to take part in biological recording at BioBlitzes.
- When evaluating the scientific, engagement or learning outcomes of youth involved in BioBlitzes, take into account goals of the event and types of participation you are supporting.

Participation profile	Participation cluster	5–10 years (elementary school-age)	11–15 years (middle school-age)	16–19 years (high school-age)	Number of focal youth
Environmental Education	Exploring, Observing, and/or Identifying	19 (53%)	11 (31%)	6 (17%)	36
Natural History	Documenting only or Documenting and Exploring, Observing, and/or Identifying	13 (68%)	4 (21%)	2 (11%)	19
Citizen Science	Recording only or Recording plus any other type	2 (22%)	2 (22%)	5 (56%)	9
Citizen Science	All 5 types of participation	1 (33%)	1 (33%)	1 (33%)	3

FUNDING AND ABOUT US

This material is based upon work supported under a collaboration between the National Science Foundation (DRL 1647276), Wellcome, and the Economic and Social Research Council (Wellcome grant no. 206202/Z/17/Z)

Read more about us on the [LEARN CitSci Legacy Homepage](#)