



ACSA Publications Listing

No. 7 – February 2019

List moderator: Colleen Foelz

Journal Articles - Conference Proceedings Articles Dissertations - Books & Chapters

From the moderator

Thank you to everyone who contributed to this issue of the ACSA Publications Listing.

The ACSA Publication Listing is a quarterly electronic listing of publications in the field of citizen science within the Australian community. The listing is intended to share information with those interested in the Australian citizen science community. The deadline for contributions is announced two weeks prior to the listing.

Contributions may be submitted at any time.

Please only submit those publications where you are the author (to prevent duplication) and only include those that have been accepted for publication.

Colleen Foelz

Abstracts of recently published journal articles

Promoting Environmental Education for Primary School-aged Students Using Digital Technologies

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As demands on the environment continue to intensify, it becomes increasingly urgent to act sustainably, responsibly and respectfully, to protect and restore environments. Digital technologies, including videoconferencing, mobile apps and virtual and augmented realities, can provide new ways of engaging students in environmental stewardship. Such technologies can pique student interest, while enabling them to capture experiences of local and distal environments, to collect data and share their findings with broader audiences. This article critically explores innovative, formal and informal learning practices in experiential environmental education approaches among schools, families and communities, such as citizen science projects. It draws on qualitative case study vignettes, as well as the authors' previous work and broader literature, to consider the potential and limitations of such technologies and approaches. The key question concerns how existing and emerging technologies might serve as bridges or barriers to apprenticing young people into globally-minded, environmentally responsible and respectful behaviours.

Brokering Trust in Citizen Science

Matt Gilfedder^{1,2}, Cathy J Robinson^{1,2,3}, James EM Watson^{2,4}, Thomas G Campbell^{5,6,7}, Brian L Sullivan⁹ and Hugh P Possingham¹⁰

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CS information requires systematic review that incorporates a range of interests and concerns yet there has been little research on what might constitute reviewing best practice to ensure CS is trusted by contributors and users of the data. Insights from a survey of all 1134 reviewers who curate the global eBird Project highlight the knowledge-brokering work involved to ensure CS data are trusted by both citizens and science. Drawing on scholarship focused on key drivers of useable knowledge for natural resource decision-making we consider CS reviewing best practice to ensure CS can be useful to the producers and users of this knowledge. We find that CS reviewers need to be motivated to provide appropriate feedback to improve CS data, commit to reviewing practice that is respected by citizens, and ensure the information published is credible, and be reviewed by a supportive and accountable network of fellow reviewers.

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doi: <https://doi.org/10.1080/08941920.2018.1518507>

Management of Pet Cats: The Impact of the Cat Tracker Citizen Science Project in South Australia

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Domestic cats (*Felis catus*) are popular pets worldwide and play an important role in the lives of many of their owners; however, there is growing awareness of the potential negative impacts of cats. Accordingly, there is increasing interest in pet cat management, including changing the attitudes and behaviours of cat owners. The Cat Tracker citizen science project was conducted in South Australia to better understand domestic cats, their movement, and related community views. The project was deliberately designed to engage cat owners and assist them to make informed decisions about the management of their pet cats. The project collected data through an online social survey ($n = 3192$) and GPS tracking of pet cats ($n = 428$), conducted between February 2015 and September 2016. A public report was published in February 2017 and an evaluation survey ($n = 410$) was conducted between March and May 2017. This study evaluates the project and examines its impact on participant knowledge, attitude, and behaviour. We found that participation in the tracking activity had a statistically significant influence on participant-reported learning. For participant cat owners, we recorded statistically significant increases in the level of importance placed on containing cats (both during the day and at night). Participants reported that they changed their behaviour with existing pet cats and reported intentions to change behaviour with future pet cats. We discuss impacts beyond what we set out to measure, including impacts on project onlookers, profound impacts on participants, and how the rebound effect (which can generate negative impacts) may be avoided. We describe social science applied to citizen science and advocate for further research in this area to understand how projects can drive positive changes in knowledge, attitudes, and behaviours.

Published 24 October 2018 in *Animals* 8(11): 190

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Beyond Productivity: Considering the Health, Social Value and Happiness of Home and Community Food Gardens

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We are living in an age of concern for mental health and wellbeing. The objective of the research presented in this paper is to investigate the perceived health, social value and happiness benefits of urban agriculture (UA) by focusing on home and community food gardens in South Australia. The results reported in this paper are from “Edible Gardens”, a citizen science project designed to investigate the social value, productivity and resource efficiency of UA in South Australia. Methods include an online survey and in-field garden data collection. Key findings include: dominant home gardener motivations were the produce, enjoyment, and health, while dominant community gardener motivations were enjoyment, connection to others and the produce. Exploratory factor analysis revealed four key factors: Tranquillity and Timeout, Develop and Learn Skills, the Produce, and Social Connection. The key difference between home and community gardeners was an overall social connection. Although home gardeners did not appear to actively value or desire inter-

household social connection, this does not mean they do not value or participate in other avenues of social connection, such as via social learning sources or by sharing food with others. The combined results from this research regarding health and wellbeing, social connection and happiness support the premise that engagement in home or community food gardening may provide a preventative or supportive role for gardener health and wellbeing, regardless of whether it is a conscious motivation for participation.

Published 20 September 2018 in *Urban Science* 2(4): 97

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Typically Diverse: The Nature of Urban Agriculture in South Australia

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In our visions of the future, urban agriculture has long been considered an integral part of the 'sustainable city'. Yet urban agriculture is an incredibly diverse and variable field of study, and many practical aspects remain overlooked and understudied. This paper explores the economic sustainability of urban agriculture by focusing on the physical, practical, and economic aspects of home food gardens in South Australia. New data from the Edible Gardens project online survey is presented on a broad range of current garden setups, including a figure illustrating the statistically typical South Australian food garden. The differences between the survey data and a recent optimized garden model further highlight the gap in knowledge regarding existing home food gardens. With regard to the financial accessibility and economic sustainability of home food gardens, there is also still much more work to be done. Although saving money is a top motivation, with many survey respondents believing that they do succeed in saving money, it remains to be seen whether their current gardening practices support this aspiration. Measurement of the full costs of different gardens would allow for better predictions of whether growing food can save household's money and under what circumstances.

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Older adults using Our Voice citizen science to create change in their neighborhood environment

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Physical activity, primarily comprised of walking in older adults, confers benefits for psychological health and mental well-being, functional status outcomes and social outcomes. In many communities, however, access to physical activity opportunities are limited, especially for older adults. This exploratory study engaged a small sample (N = 8) of adults aged 65 or older as citizen scientists to assess and then work to improve their communities. Using a uniquely designed mobile application (the Stanford Healthy Neighborhood Discovery Tool), participants recorded a total of 83 geocoded photos and audio narratives of physical environment features that served to help or hinder physical activity in and around their community center. In a facilitated process the citizen scientists then discussed, coded and synthesized their data. The citizen scientists then leveraged their findings to advocate with local decision-makers for specific community improvements to promote physical activity. These changes focused on: parks/playgrounds, footpaths, and traffic related safety/parking. Project results suggest that the Our Voice approach can be an effective strategy for the global goals of advancing rights and increasing self-determination among older adults.

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Abstracts of recently published conference proceedings

Visualizations Elicit Knowledge to Refine Citizen Science Technology Design — Spectrograms Resonate with Birders.

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Acoustic sensors offer a promising new tool to detect furtive animals; however, sifting through years of audio data is fraught with challenges. Developing automatic detection software still requires a large dataset of calls that have been accurately annotated by experts. Few studies have explored how people identify species by vocalisations in the wild, and how this skill can be applied to designing technologies for locating and identifying calls in recordings. To explore how birders often find and identify animals by calls and share their observations, we conducted qualitative interviews and a visualization-review activity with nine birders, eliciting insight into their existing practices,

knowledge, and visualisation interpretation. We found that visualisations evoked memories demonstrating birder expertise on the natural history, behaviours, and habitats of birds. Birders were curious and learned from exploring the abstract patterns in visualisations of acoustic data, relying on past experiences with nature to interpret acoustic visualisations. Birders often wanted to corroborate findings with other birders by reviewing acoustic recordings and local bird lists. This study demonstrates how qualitative review of visualisations can elicit a nuanced understanding of community practices, knowledge, and sensemaking, which are essential to improve design of future technologies.

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Abstracts of recently published dissertations
