



ACSA Publications Listing

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List Moderators: Julie Banfield & Jessie Cappadonna
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Journal Articles - Conference Proceedings Articles
Dissertations - Books & Chapters

From the moderators

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.

Julie Banfield & Jessie Cappadonna

Abstracts of recently published journal articles

Biodiversity redistribution under climate change: Impacts on ecosystems and human well-being

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Reporting progress against targets for international biodiversity agreements is hindered by a shortage of suitable biodiversity data. We describe a cost-effective system involving Reef Life Survey citizen scientists in the systematic collection of quantitative data covering multiple phyla that can underpin numerous marine biodiversity indicators at high spatial and temporal resolution. We then summarize the findings of a continental- and decadal-scale State of the Environment assessment for rocky and coral reefs based on indicators of ecosystem state relating to fishing, ocean warming, and invasive species and describing the distribution of threatened species. Fishing impacts are widespread, whereas substantial warming-related change affected some regions between 2005 and 2015. Invasive species are concentrated near harbors in southeastern Australia, and the threatened-species index is highest for the Great Australian Bight and Tasman Sea. Our approach can be applied globally to improve reporting against biodiversity targets and

enhance public and policymakers' understanding of marine biodiversity trends.

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News Article: The Guardian "[Climate change: global reshuffle of wildlife will have huge impacts on humanity](#)"

Potential influence of a marine heatwave on range extensions of tropical fishes in the eastern Indian Ocean – Invaluable contributions from amateur observers

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Global changes to fish distributions are expected to continue in coming decades with predicted increases in ocean temperatures and the frequency of extreme climatic events. In the eastern Indian Ocean during the 2010/11 summer, sea surface temperatures 4 – 5°C above average and an unseasonal, anomalously strong, Leeuwin Current (LC) triggered a “marine heatwave” along the west coast of Australia, with elevated water temperatures persisting for a further two years. Peak LC flows in summer/autumn transported pelagic early life history stages of summer-spawning coastal subtropical and tropical fishes southwards. This study examined whether the heatwave enabled the arrival, persistence and reproduction of such species in waters $\geq \sim 32^\circ\text{S}$ using a range of available datasets. Juveniles of *Chaetodon assarius*, *Trachinotus botla*, *T. baillonii*, *Polydactylus plebeius*, *Psammoperca waigiensis* and *Siganus* sp. recruited into nearshore waters at $\geq \sim 32^\circ\text{S}$ in 2011. *Polydactylus plebeius* survived until the summer of 2012/13. *Trachinotus* spp., *P. waigiensis* and *Siganus* sp. survived over consecutive winters, with *Siganus* sp. establishing a self-recruiting, breeding population two years later. A return to more typical summer water temperatures by 2013/14 was associated with an apparent recruitment failure of *Siganus* sp. This is a rare example of a tropical vagrant surviving to breed in temperate regions. Confirmation of range extension beyond existing limits of this and other tropical species will be primarily dependent on either continuous or intermittent recruitment from this recently established southern breeding population. Commercial fisheries catch and effort data were of limited use in this study because they were not designed to record small catches of unusual and/or non-target species. In contrast, fisheries-independent recruitment surveys recorded tropical juveniles and validated amateur observations provided important information on unusual species. The study confirmed the emerging contribution of ‘citizen scientists’ working with researchers to document climate related impacts in the marine environment.

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DuneWatch: launching citizen science for sandy dunes on the Gold Coast, Queensland, Australia

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DuneWatch is a citizen science project established in 2015 by the Griffith Centre for Coastal Management. It provides an opportunity for community members to assist in collecting vital information on the health of the sand dunes. Data are collected at 11 sites along the Gold Coast coastline with each site visited within a 4-week period. The program monitors the impact of BeachCare's community planting days as well as helping to create adaptive management strategies for implementing species density and diversity, through the collection of data – Flora, fauna, human impact and slope measurements. Data collected through the DuneWatch program will expand our knowledge of the local dune system as well as monitor the progress of BeachCare. DuneWatch has the potential to be undertaken as a citizen science program for other coastal community and land care groups nationally.

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Citizen Science Terminology Matters: Exploring Key Terms

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Much can be at stake depending on the choice of words used to describe citizen science, because terminology impacts how knowledge is developed. Citizen science is a quickly evolving field that is mobilizing people's involvement in information development, social action and justice, and large-scale information gathering. Currently, a wide variety of terms and expressions are being used to refer to the concept of 'citizen science' and its practitioners. Here, we explore these terms to help provide guidance for the future growth of this field. We do this by reviewing the theoretical, historical, geopolitical, and disciplinary context of citizen science terminology; discussing what citizen science is and reviewing related terms; and providing a collection of potential terms and definitions for 'citizen science' and people participating in citizen science projects. This collection of terms was generated primarily from the broad knowledge base and on-the-ground experience of the authors, by recognizing the potential issues associated with various terms. While our examples may not be systematic or exhaustive, they are intended to be suggestive and invitational of future consideration. In our collective experience with citizen science projects, no single term is appropriate for all contexts. In a given citizen science project, we suggest that terms should be chosen carefully and their usage explained; direct communication with participants about how terminology affects them and what they would prefer to be called also should occur. We further recommend that a more systematic study of terminology trends in citizen science be conducted.

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