



23 May 2018

Senator the Hon Michaelia Cash
Minister for Jobs and Innovation
PO Box 6100
Senate
Parliament House
Canberra ACT 2600

Dear Hon Michaelia Cash

Re: Citizen Science in Australia

We are writing to follow up on your request for a briefing note about citizen science in Australia. In February 2018, you were presented with an Australian Citizen Science Association t-shirt by the Director of Questacon Graham Durant, where you expressed interested in receiving more information.

The Australian Citizen Science Association (ACSA) is a member-based community that supports, informs and develops citizen science. Citizen science involves public participation and collaboration in scientific research with the aim to increase scientific knowledge. Currently the association has over 250 paying members and a large social media following of over 4,000. ACSA was the primary organiser of the recent citizen science conference in Adelaide where Australian Chief Scientist Dr Alan Finkel gave the opening plenary for over 250 delegates. The conference was a huge success and demonstrated the breadth of citizen science projects available in Australia and the level of enthusiasm within the community for growing citizen science in Australia.

Please see attached briefing note with more information about ACSA and citizen science more broadly. Please do not hesitate to contact us if you would like more information or a follow up conversation.

Yours Sincerely,

A handwritten signature in cursive script that reads "Erin Roger".

Erin Roger (Chair) on behalf of the Australian Citizen Science Association

AUSTRALIAN CITIZEN SCIENCE ASSOCIATION

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CITIZEN SCIENCE IN AUSTRALIA

PURPOSE

To provide an update on the status and trends of citizen science in Australia.

RECOMMENDATIONS

1. Note the Australian Citizen Science Association's role in fostering a community that supports, informs and develops citizen science.
2. Note the outcomes from the 2nd Australian Citizen Science Conference.
3. Note the status and trends of citizen science in Australia and globally.
4. Note areas of potential partnership between government and citizen science.

BACKGROUND

What is citizen science & what are its benefits?

Citizen science involves public participation and collaboration in scientific research with the aim to increase scientific knowledge. Citizen science can involve but is not limited to:

- identifying research questions,
- designing/conducting investigations,
- collecting and analysing data,
- developing data applications, communications and other technologies for science, and
- solving complex problems.

By involving members of the public in authentic scientific research, citizen science helps test new concepts, accelerates discovery, and involves the public in evidence-based decision-making to create an informed and active society (see also Chief Scientist 2015 Citizen Science Occasional [Paper](#)). Citizen science can also provide hands-on STEM learning outside of the classroom and can increase scientific literacy and awareness. It has been demonstrated to have the capacity to augment and enhance traditional scientific research and monitoring approaches by: increasing spatial and temporal frequency, increasing geographic extent or temporal scale, reducing time and labour costs. Citizen science harnesses the power of communities across a wide range of disciplines from microbiology, biodiversity, medicine, public health through to astronomy.

Citizen science as a growing and connected community in Australia and internationally

The [Australian Citizen Science Association \(ACSA\)](#) was formed in May 2014 to advance citizen science through the sharing of knowledge, collaboration, capacity building and advocacy. ACSA is a member-based community that supports, informs and develops citizen science. ACSA was seed funded by an Inspiring Australia grant for three years (2016-2018) for a total of \$ 123,750. In 2016 ACSA finalised its strategic plan (Annex A). Currently the association has over 250 paid members, 3 new state-based chapters (WA, SA, Vic), a number of working groups including a Data & Metadata working group, as well as a large social media following (over 4,000 across Twitter and Facebook) and a newsletter with over 1,200 subscribers. ACSA works closely with its three sister [associations](#): the United States [Citizen Science Association](#), the [European Citizen Science Association](#), and the emerging CitSciAsia. Most recently ACSA has been collaborating on a global scale to help advance citizen science for a sustainable world and is working with the [United Nations](#) to advise on how citizen science can be used to address the UN's Sustainable Development Goals, taking part in the global initiative to have 1 billion global citizens engaged in citizen science by 2020.

In February 2018 the 2nd Australian Citizen Science Association [conference](#) was held in Adelaide. The conference brought together citizen science practitioners, participants, thought leaders and decision-makers. The conference also featured international keynote speakers along with Australia's Chief Scientist Dr Alan Finkel, South Australia's Chief Scientist Dr Leanna Read and the [2017 Eureka citizen science prize](#) winner Dr Emilie Ens from Macquarie University and the Indigenous Ngukurr Wi Stadi bla Kantri (We Study the Country) Research Team. The aim of the conference was to showcase best practice in citizen science and share project outcomes from across Australia and globally. Over 250 delegates attended from across Australia, New Zealand, Asia, Africa, Europe and the United States.

Globally citizen science is gaining momentum, with estimates that citizen science projects from around the world involve between 1.3 to 2.3 million people in the biodiversity space alone, and that they make in-kind contributions worth up to US \$2.5 billion annually ([Theobald et al 2014](#)). No current estimates exist for the value of the citizen science contribution for Australia. The Atlas of Living Australia (a NCRIS research infrastructure) in partnership with ACSA have developed an Australian [citizen science project finder](#). The project finder currently has over 360

citizen science projects that people can discover, participate in and contribute data to. In 2017 an Australian federal (Inspiring Australia) citizen science grant round for a total of \$6.3 million over 4 years was announced. The grant round attracted over 380 applications with a total funding request of over \$300 million. With only a 3% [success](#) rate the grant round demonstrated the interest in citizen science nationally and the need for increased citizen science funding opportunities. A seminar held in Canberra in February 2018 with representatives from government, academia and industry highlighted the huge interest nationally and the need for building communities of best practice, including in the research and government agency sectors. Government's important role was also recognised not only through making available specific funding but also its support for underlying infrastructures to help improve citizen science data mobilisation and standards as well as leveraging citizen science to complement and augment the government's investment in policy, science and education.

Citizen science as part of Australian policy delivery

Citizen science provides an opportunity for a new approach in Australian science-society-policy interactions and implementation. Examples of national policy agendas where citizen science can play a role if specifically recognised and/or mobilised include: the *National Innovation & Science Agenda* (e.g. support for e-infrastructures and standards for discovering and aggregating data, including citizen science generated data; digital businesses and entrepreneurs supporting citizen science); *Open Government* (e.g. harnessing the power of the citizen science "crowd" to engage with government data, or building dynamic and inclusive communities by creating through citizen science new interaction channels between policy makers, scientists and citizens); *Closing the Gap* (e.g. Indigenous businesses leveraging their natural and cultural assets in an emerging citizen science tourism market).

The key pillars for the new *Australia 2030 – Prosperity through Innovation* report align strongly with the strategic objectives and outcomes of citizen science: for instance *Education*: citizen science as a stepping stone to and for STEM education, and science literacy; *Culture & Ambition*: imagine if you had 100,000 people to help with national mission research such as those mentioned in the report: genomics (e.g. US crowd citizen science projects such as [Foldit](#) (protein folding) [Eyewire](#) (mapping the brain), [PatientsLikeMe](#) (patients sharing experiences and data) through to Great Barrier Reef management and marine research (see Annex B – work of the Reef Citizen Science Alliance).

The NSW Office of Environment & Heritage is an example of a state government that has expressly committed to citizen science through its [OEH Citizen Science Strategy](#) and position statement, focusing OEH effort on filling priority information gaps through the support and growth of citizen science projects and making data and information provided by the community open and accessible and giving citizen scientists an improved understanding of how that information is used.

What are some of the ways government can support citizen science?

- Continuing and expanding funding through program specific citizen science initiatives such as Inspiring Australia's citizen science grants and its financial support for community building, leadership & convening organisations such as ACSA.
- Supporting a foundational program of work (impact assessment) to measure, track and articulate the value and impact of citizen science in Australia to our society (e.g. wellbeing), the economy (e.g. jobs, businesses, efficiencies, innovation) and environment (e.g. improved water quality).
- Recognising, mainstreaming and articulating the contribution and role citizen science can play in key government policy agendas – from the engagement of citizens with government, STEM education, the use of citizen science data by policy and decision makers, through to co-development of new innovations and even public health outcomes.
- Facilitating interactions and partnerships with emerging actors in citizen science, namely the private sector and business as well as the philanthropic sector.

Erin Roger – Chair, Australian Citizen Science Association - info.acsa01@gmail.com

Stephanie von Gavel - Vice Chair, Australian Citizen Science Association

May 2018

ATTACHMENTS

ANNEX A - The Australian Citizen Science Association's Strategic Plan

ANNEX B – Examples of Australian citizen science initiatives

STRATEGIC PLAN



Overview

A community that supports, informs and develops citizen science.
 To advance citizen science through sharing of knowledge, collaboration, capacity building & advocacy for citizen science.
 • Inclusive • Inspiring • Empowering • Collaborative • Dynamic

VISION	MISSION	VALUES	GOALS	Partnerships	Practice	Impact	Platform
Message	“ACSA’s Strategic Goals are to...	Outcome	Detail				
ACTIONS	Participation	Partnerships	Practice	Impact	Platform		
Year 1 (2015/16) Plan, Initiate continued and built on by...	Develop communication & promote outreach activities via website & social media, building profile and awareness Support national citizen science projects	Develop membership framework & business model to grow a sustainable funding stream for ACSA Identify strategic partnerships & networks and grow interactions	Develop information management protocols and structures for information sharing Create online project database and portal	Hold a national conference Support and promote strategic citizen science activities/projects on local, regional and national scales	Incorporation Governance - AGM & MC & working groups Administration - host organisation & secretariat Website & branding Organisational plans	enabled by ACSA as an effective, trusted and well recognised organisation and hub for citizen science in Australia.”	
Year 2 (2016/17) Build, Grow	Target key sectors to increase participation in citizen science Build awareness of citizen science through practitioner involvement in diverse fora	Grow membership base & interaction Build external partnerships grow international collaborations	Recognise citizen science activities, including awards Support the development of ACSA publications & reports	Review and communicate broad impacts of citizen science	Increase internal participation Deliver citizen science advocacy at all levels e.g. champions Increase visibility of ACSA	to ensure the value and impact of citizen science and its outputs are realised	
Year 3 (2017/18) Deliver, Evaluate	Ongoing activities, including national conference Evaluation of activities, including identification of gaps. Review of plans, approach, strategy and improve as appropriate					Science & Education outcomes	Institutional outcomes

Annex B – Examples of citizen science initiatives in Australia

Jobs and businesses built around citizen science, especially in the digital economy:

- *Stuart Harris* – a personal transformation story - from garbage collector and amateur photographer to citizen scientist discoverer of new species of peacock spiders, completing study in environmental monitoring, to a job at Questacon as Team Leader of the Questacon Live Exhibit Officers - <http://iview.abc.net.au/programs/maratus/IV1732H001S00#playing>
- *NatureMapr* – software platforms supporting communities - <http://naturemapr.org/NatureMapr>
- *Spatial Vision* – cloud based and app development services - <http://www.spatialvision.com.au/citizenscience/>
- *Questagame* – gamification and the use of AI in citizen science – <https://questagame.com/home>
- *Gaia Resources* – data collection systems and support - <https://www.gaiaresources.com.au/>

Digital transformation in citizen science:

- *Cat tracker* – using GPS tracking devices to track domestic cats to better understand more about cats, their behaviours, and their relationships with their owners, with over 4000 cats tracked in South Australia, and plans for a national survey of over 1400 cats - <https://www.discoverycircle.org.au/projects/cat-tracker/>
- *Digivol* – digitizing collections of specimen and object labels, and historical documents such as explorer journals to make them accessible for scientific and cultural research – through the power of over 2873 on-line volunteers with over 765,000 transcriptions undertaken to date - <https://digivol.ala.org.au/>
- *EchidnaCSI* – collecting data via an app for citizen scientists to record echidna occurrences across Australia but also collect echidna scat for DNA analysis to understand echidna genetics, the plants in the environment, the echidna's food as well as their hormones that indicate stress or pregnancy - <http://grutznerlab.weebly.com/echidna-csi.html>.
- *Wildlife Spotter* – crowd sourcing (human intelligence) of camera trap images (50,000 people and about million images processed in a 2016 event) with an aim to merge further with AI (artificial intelligence) - <https://digivol.ala.org.au/wildlife-spotter>
- *Feralscan* – citizen surveillance of feral animals and biosecurity risks - <https://www.feralscan.org.au/>
- *CoastSnap* - launched eight months ago in New South Wales but has since been replicated globally in Brazil, Spain and the United Kingdom. CoastSnap uses fixed photopoints at beaches and provides a platform via email and social media for image submission. Since its inception scientists have been able to establish a process to stabilise photos and use them to measure and monitor coastal change - <http://www.environment.nsw.gov.au/research-and-publications/your-research/citizen-science/digital-projects/coastsnap>

Communities built around citizen science and **local engagement**:

- *Reef Citizen Science Alliance* - a network of coastal and marine citizen science programs collaborating to amplify citizen science that contributes to the health and resilience of Queensland's reefs. This unique network fosters collaboration, capacity building, advancement and action across 13 member groups and more than 50 partners across Queensland. Activities of member organisations include reef monitoring, assessing impacts of global change such as marine debris and coral bleaching, and monitoring health of coastal habitats (e.g. mangroves, seagrass, saltmarsh). Through collaborative ReefBlitz community events in 2016 & 2017, the network has engaged more than 2,300 people in citizen science activities and collected more than 40,000 data points - <http://greatbarrierreefcitizenscience.org.au/>
- *Atlas of Life in the Coastal Wilderness* – based in the NSW South Coast, this project involves a diverse community wanting to learn more about nature in the region and record their observations (over 190,000 records and 5,560 species identified) and ensuring that information is made available for further research, including through initiatives such as “Bioblitzes” - <http://www.atlasoflife.org.au/>
- *Canberra Nature Map* – an online platform for community discussions and recording of species in the Canberra region, with over 1,154,171 sightings of 4782 species across 648 locations from 1313 members - <http://canberra.naturemapr.org>

Examples of **areas of impact** in citizen science

- *Public health* – Using the Stanford University Our Voice: Citizen Science for Health Equity framework – this work from Queensland is developing a strategy for engaging older people as citizen scientists in order to empower them as agents of change in improving local built environments and ultimately advancing community health – (Tuckett et al <http://med.stanford.edu/ourvoice/publications.html>)
- *Threatened species* – the Threatened Bird Network (Birdlife Australia) of over 5,000 volunteers combines community engagement, citizen science, data surveys and direct recovery management for over 30 threatened bird conservation projects - <http://www.birdlife.org.au/projects/threatened-bird-network>. Note Birdlife Australia is the largest contributor of occurrence records to the national biodiversity information portal the Atlas of Living Australia with over 13M records (out of a total of 73M records - <https://dashboard.ala.org.au/>)
- *Indigenous natural resource management* – Indigenous led and co-developed cross-cultural surveys of country – for example [Yuqul Mangi rangers](#) in SE Arnhem Land and participation in national citizen science initiatives by Indigenous sea and land rangers – for example [Torres Strait MangroveWatch](#). and [Tangaroa Blue](#) marine debris initiative.