South Australia's

Environmental Citizen Science Strategy

SOUTH AUSTRALIA

Government of South Australia

Department for Environment and Water

Acknowledgment of Country

The South Australian Government acknowledges Aboriginal people as the First Peoples and Nations of the lands and waters we live and work upon and we pay our respects to their Elders past, present, and emerging. We acknowledge and respect the deep spiritual connection and the relationship that Aboriginal and Torres Strait Islander people have to Country.

Message from the Minister

The South Australian Government is committed to the long-term protection of our state's environment and its unique biodiversity. One of the best ways we can make informed decisions about sustainable management of our natural assets and ways to restore healthy ecosystems is through science.

There is now strong evidence that citizen science can make a huge contribution to expanding our knowledge of nature. Citizen science has the capacity to generate vast amounts of data that is the lifeblood of contemporary research. This information can cover a wide range of fields and create a wealth of information that cannot be obtained by professional researchers alone.

That's why the government has developed the South Australian Environmental Citizen Science Strategy. The purpose of this strategy is to encourage public participation in environmental science by supporting the development of projects that are engaging for the public and also help to answer priority environmental questions. The development of this strategy is one of the government's key commitments in our overarching plan for biodiversity protection and will be complemented by other activities, including grants programs to support research projects.

This strategy isn't just about collecting data, it's also underpinned by the belief that everyone, regardless of background, can contribute to our collective understanding of the natural world. We know that South Australians from all walks of life are interested in contributing to our knowledge of the environment by volunteering their time and skills to contribute to citizen science projects. We hope that the programs supported by the creation of this strategy can inspire many more people to become involved.

The world of environmental science is full of complex questions and seeking answers to them as a community will undoubtedly help us to achieve better outcomes. I look forward to seeing new citizen science projects come to life through the guidance of this strategy.

The Hon Susan Close, Deputy Premier
Minister for Climate, Environment and Water
Minister for Industry, Innovation and Science
Minister for Defence and Space Industries

Introduction

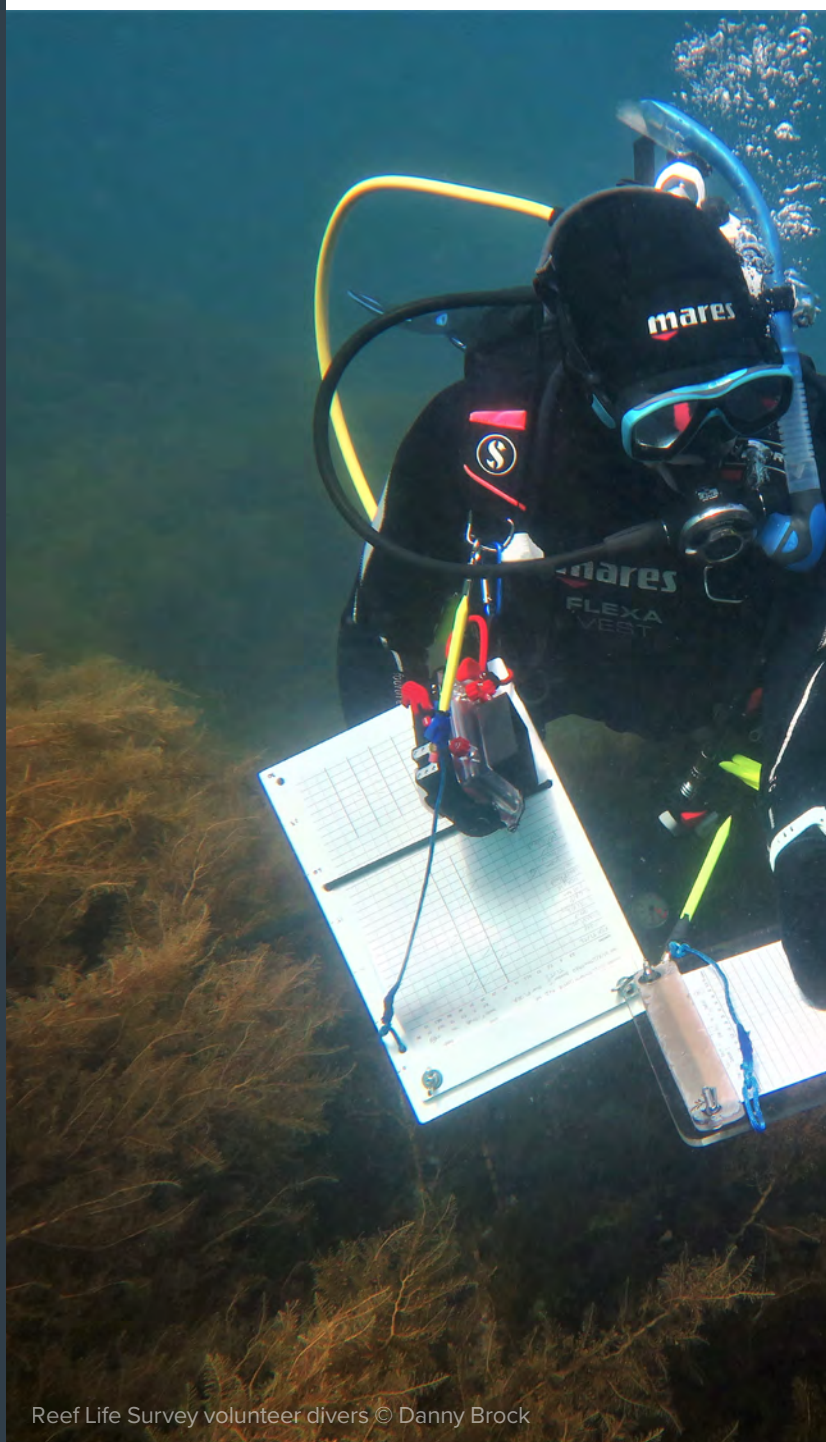
Citizen science has a long and productive history in South Australia. From bats to birds, frogs to fungi, and dolphins to dung – citizen scientists have been contributing valuable information for answering scientific questions. Citizen science regularly contributes to new insights which could not have been generated by professional researchers alone. For example, citizen scientists may enable research into distribution, abundance and persistence of species, and other indicators of environmental change.

Citizen science is rapidly diversifying. Handwritten logbooks are being replaced with websites and applications for mobile devices, digital cameras, audio recordings, and other digital technologies, helping this form of science to grow rapidly. Projects may include the use of motion-activated remote cameras, for example, to photograph wildlife at a particular location over days, months or years, and the citizen science community can then contribute from anywhere on the planet via the internet to help identify the animals recorded in the images.

Beyond informing science, there are broader societal benefits for citizen science. Community members can learn about the natural world and be inspired to be inquisitive. The next generation of scientists can be inspired through hands-on involvement in scientific endeavours. Partnerships and social community connections can be forged and strengthened. And positive wellbeing outcomes for participants may result from connecting to nature and contributing to the greater good.

Specific events, such as natural disasters like bushfires or floods, can give rise to new citizen science projects that allow members of the public to directly engage with science geared towards actions to support the recovery of natural systems. Such engagements with citizen science can empower communities and create opportunities for ongoing connection to each other, and nature.

© Danny Brock



Reef Life Survey volunteer divers © Danny Brock

Defining citizen science

For this strategy, we adopt the Australian Citizen Science Association (ACSA) definition of citizen science, which is: "public participation and collaboration in scientific research with the aim to increase scientific knowledge"[1].

Anyone can engage with citizen science and with diverse aspects of scientific inquiry. Citizen science projects can be designed in a range of ways. Projects may be created by members of the public with scientific guidance; by scientists with members of the public being invited to contribute; or through a cooperative process that involves people with and without professional scientific training working together from the inception of a project.

The language of the term 'citizen science' may be problematic for some audiences. We acknowledge this tension but maintain the terminology for simplicity and consistency with other jurisdictions. Globally, citizen science is synonymous or shares close connections with a variety of activities, such as public participation in scientific research, community science, crowd science, civic science, amateur science, crowdsourced science, volunteer monitoring, or open science.

The South Australian Strategy

This strategy supports the South Australian Government's overarching plan for Biodiversity Protection. The Government has committed to the creation of a $2 million Citizen Science Fund as part of this plan, which will:

- Create and administer new South Australian Citizen Science Grants.
- Re-establish the South Australian Citizen Science Award.

This strategy underpins those initiatives.

This strategy has been developed for South Australia primarily by the Department for Environment and Water (DEW).

Many ideas for inclusion in this strategy were identified at a stakeholder workshop held in Adelaide in October 2022, and via subsequent surveys and conversations. Stakeholders who shared their experiences and ideas, including members of the Australian Citizen Science Association (ACSA) South Australian Chapter, are gratefully acknowledged.

An initial draft for this strategy was reviewed by consultants from ACSA.

[1] citizenscience.org.au

Exploring our Citizen Science

From sea to sky: taking sea lion conservation to new heights


Case study

Australian sea lion (*Neophoca cinerea*). © Dirk Holman, DEW.

The Sea Lion Spotter project is transforming how these magnificent marine mammals are protected, combining cutting-edge technology with the power of public participation.

By utilising state-of-the-art drones, scientists recorded sea lion populations from a safe distance, ensuring the well-being of both researchers and these land-resting aquatic acrobats while gathering vital data about their habitat and populations. This specialist footage was supplied online to a network of citizen scientists who were able to view the material and count the number of sea lions from the comfort of their own home.

This citizen science project offered a valuable advantage of being able to alert scientists to concerning issues such as marine debris entanglements or animals with distinctive marks such as shark bites. More than 1,220 individual volunteers from over 25 countries to contribute their time and expertise. With just a few clicks, these dedicated individuals were able to view the images, and count and categorise sea lions and their pups, playing a crucial role in conservation efforts.

Through the Sea Lion Spotter project, valuable insights into sea lion populations, breeding success, and colony distribution were discovered. This information is crucial for the ongoing management of South Australia's marine parks and ensures that informed decisions are made to safeguard sea lions for generations to come.

www.sealionspotter.com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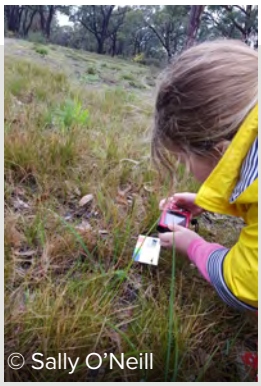
© Sally O'Neill


Case study

© Sally O'Neill

Wild Orchid Watch

An orchid odyssey

The growth of Wild Orchid Watch, a citizen-led project, highlights the power of citizen science and the collective impact of orchid enthusiasts.

The creation of the Wild Orchid Watch project stems from the enthusiasm of nature lovers who were eager to document the wonder of orchids and the diverse ecosystems that they inhabit. By providing a platform for recording observations, citizen scientists can contribute to the collection of essential baseline data.

Wild Orchid Watch has been created with the support of orchidologists, orchid societies and the Terrestrial Ecosystems Research Network at the University of Adelaide, and comprises a network of community members dedicated to protecting and understanding orchids. No prior expertise is required to participate; just a curiosity to explore nature's wonders. Anyone with a love for the outdoors can learn the skills to survey and document orchids.

This collaborative effort is producing a wealth of information, providing insights into the world of orchids. Wild Orchid Watch captures not only the presence of these flowers but also the intricate details that shape their habitats. Over time, this data source will reveal changes in orchid populations, aiding scientists in their quest to conserve these delicate blooms.

www.wildorchidwatch.org

Bremer River Waterbug BioBlitz © Andy Rasheed

Case study

Water warriors unite for a fresh blitz

Waterbug BioBlitz is a community-driven project making waves in creek line conservation. This initiative aims to record as many species as possible within a designated location and timeframe, focusing on the invaluable role of macroinvertebrates (that is, waterbugs) as powerful indicators of water health.

What started from humble beginnings at a single location in the Hills and Fleurieu region along the Angas and Finniss Catchments has rapidly expanded to include eight BioBlitz locations across South Australia. This growth reflects the enthusiasm and engagement of local communities who have eagerly embraced the opportunity to take part. By empowering communities to take an active role in scientific research, the Waterbug BioBlitz nurtures a sense of ownership and stewardship over their local freshwater ecosystems.

Prior knowledge is not a requirement for joining a Waterbug BioBlitz. Expert staff and scientists provide on-site training and guidance to ensure the accuracy and consistency of the collected data. This data serves as a valuable resource, guiding conservation efforts and facilitating evidence-based decision making across the state.

www.landscape.sa.gov.au/hf/get-involved/citizen-science/waterbugbioblitz

Anabat acoustic recorder

Case study

Uncovering the secrets of the night

The Mega Murray-Darling Microbat Project has revolutionised our understanding of microbats by leveraging cutting-edge technology to investigate these nocturnal creatures. By capturing and analysing their distinct calls at night, the project team was able to identify these species and gain insights into their habitat needs.

A key objective of the project was to unravel the mysteries surrounding microbat distribution across different environments. Engaging volunteers as data collectors on their own properties was a game-changer. With little prior knowledge required, volunteers set up Anabat acoustic recorders to capture information about the secretive microbats and provided information about the habitats that they frequent.

Over just two years, the project yielded over 3,000 new microbat species records. This wealth of data has significantly enhanced our understanding of these creatures, paving the way for more microbat conservation initiatives. The project findings have helped in assessing their conservation status, and informative brochures have led to participating landholders improving their properties to create bat-friendly habitats.

The Mega Murray-Darling Microbat Project has also sparked increased awareness, leading government and non-government organisations to conduct additional bat surveys. This concerted effort has bolstered the state's bat data.

www.landscape.sa.gov.au/mr/get-involved/citizen-science/bat-monitoring

The Purpose

The purpose of this strategy is to articulate the South Australian Government's commitment to encouraging strong and meaningful environmental citizen science.

This strategy focuses on environmental citizen science, that is, projects that seek to investigate environmental questions. We seek to encourage citizen science projects that are addressing research questions or gathering data about living things and the natural environment: plants, fungi, animals, ecosystems and ecological communities. This includes the key elements of our natural environment including soil, water, and air.

The Mission

To support the development of citizen science projects which answer priority environmental questions and provide South Australians with opportunities to connect with nature.

The Vision

Enable powerful environmental citizen science in South Australia by supporting citizen science projects that:

1. **Generate high-quality information to answer relevant environmental questions**
2. **Attract diverse volunteers, and build their capacity through training, accessible technologies, and opportunities for cooperative learning**
3. **Provide opportunities for people to connect with and learn about their natural environment**
4. **Increase public awareness about environmental issues by sharing scientific outcomes**

© Martin Stokes

Implementation

There are many individuals and organisations with an interest in citizen science in South Australia. DEW will lead on all actions within this strategy and seek to partner and collaborate with agencies and organisations, both government and non-government, to encourage and promote environmental citizen science.

	GOAL 1: Encourage environmental citizen science projects to focus on priority environmental questions	GOAL 2: Encourage well-designed environmental citizen science projects
ACTIONS	Identify, publish and maintain a list of priority environmental citizen science research questions, aligned with state and national environmental priorities. Prioritise grant funding for projects that address these research questions.	Provide advice and support to project leaders to scope and design projects which generate meaningful scientific data. Provide a portal for sharing information about existing citizen science projects to enable connections and partnerships between project leaders.
OUTCOMES	Projects that answer priority environmental questions are developed. Base-level information about priority environmental questions is increased. New opportunities and gaps in existing environmental knowledge are identified.	Capacity is built in the citizen science community for conducting high quality research with effective community engagement. Collaboration between projects is supported: to share methodology and data, to increase the robustness of the data generated, to amplify collective intelligence, and to prevent duplication of effort. Information and resources (research data, methodology, databases) can be easily accessed by the wider community. Best practice in data management, validation, and governance is supported.

GOALS

ACTIONS

OUTCOMES

GOAL 3: Help people who are interested in citizen science find ways to participate

Ensure there is an online project finder that is publicly accessible, easy to use, curated and up to date, and allows participation in citizen science to be measured.

Prioritise grant funding for projects that are inclusive and target volunteers from under-represented communities.

Continue consultation with First Nations representatives to seek their aspirations for environmental citizen science.

Potential citizen science participants can find and join projects that are well suited to their needs.

Opportunities to participate in citizen science projects are inclusive and tailored to the needs of the participants.

First Nations' aspirations are better understood and considered in project design and promotion.

GOAL 4: Strengthen the sharing of environmental citizen science project data and findings

Prioritise grant funding for projects that commit to data sharing (where appropriate).[2]

Prioritise grant funding for projects that will communicate proactively with participants and the wider community

Research data and findings are shared within the community, to enhance the global understanding of our environment.

Data are shared appropriately with open-access platforms and portals, so they can contribute to new knowledge and understanding about our environment.

Participation in citizen science is inspired by sharing the research outcomes achieved and the benefits to participants.

[2] In some situations, it is not appropriate to release data about certain species or locations. In these circumstances, data should be managed sensitively.

environment.sa.gov.au

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