Australian National University

AUSTRALIAN NATIONAL CENTRE FOR THE PUBLIC AWARENESS OF SCIENCE

Mapping Citizen Science in Australia

The following report presents findings from an online questionnaire aimed to map citizen science in Australia and determine its diverse goals, stakeholders and practices.

Findings are based on:

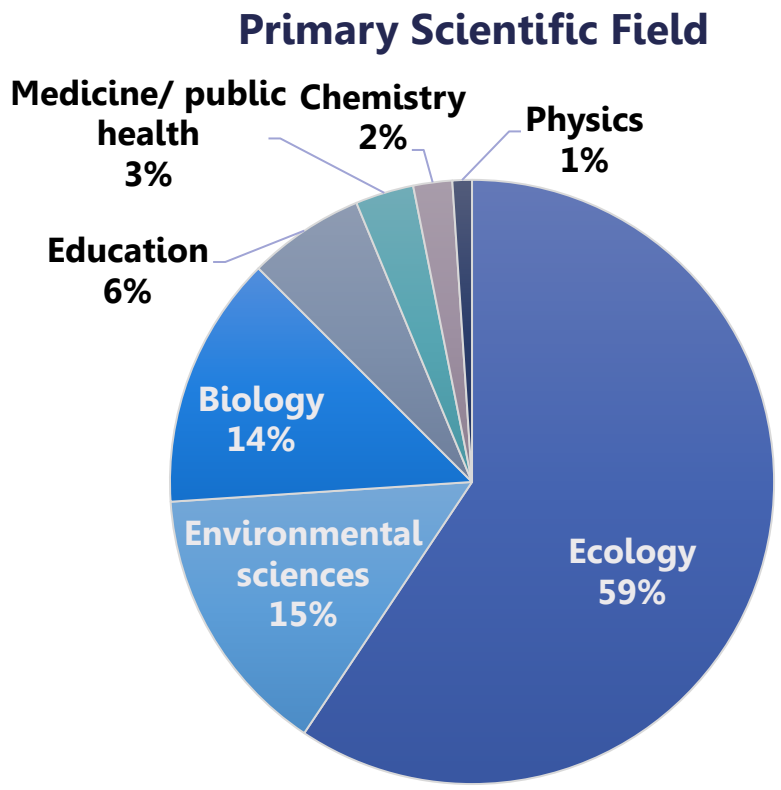
- Survey responses from 96 citizen science project leaders, scientists and practitioners across Australia
- Representation of 89 Australian citizen science projects
- Data collection during Nov-Dec 2019

Project Characteristics

Scientific Field

Ecology, the study of natural biodiversity and distribution of species, was the primary scientific field in most projects and was indicated as either a primary or secondary field in 83% of projects. Environmental sciences, such as monitoring environmental hazards, and biology were next in line. Overall, similar to previous findings in Australia, 87% of projects addressed natural sciences as their main field of interest.

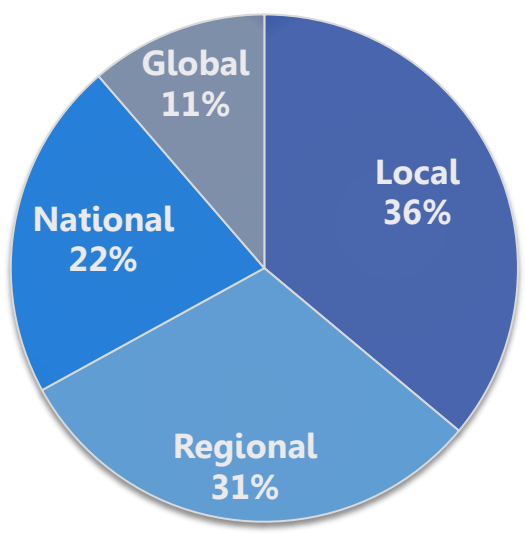
Very few projects participated in the survey from other scientific fields such as physics, chemistry, mathematics etc. However, 26% of projects indicated they address education and 10% indicated they address social sciences as a secondary field of interest.



Primary Goals

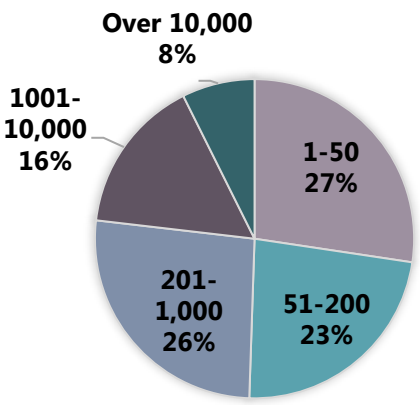
Collect scientific data	**70%**
Raise awareness	**44%**
Conservation	**41%**
Contribute to databases	**30%**
Education	**29%**
Make scientific discoveries	**18%**
Build communities	**15%**
Increase data transparency	**14%**
Encourage use of data	**11%**
Examine data reliability	**5%**

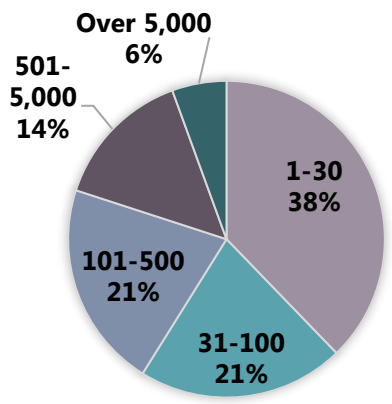
Scope and Scale



Most projects are local in scope operating in only one city, national park, or coastline. A third of the projects are regional, operating in an entire state or other large geographical areas.

Projects tend to be quite small in terms of number of participants, with half of the projects with less than 200 registered participants and less than 100 ongoing participants.
The locational scale of projects was correlated with the number of participants with a tendency for local projects to have a small number of participants (between 1-50) and regional projects, a medium number of participants (between 50-1,000).





Who is an ongoing participant?

Depending on projects' characteristics, different respondents defined ongoing participation in different ways.
These definitions include - participants who have actively collected data, those who participated in the past year, participants engaged in weekly surveying and people using the data. A few projects are in a nature in which participants join a single activity and thus by definition only participate once.

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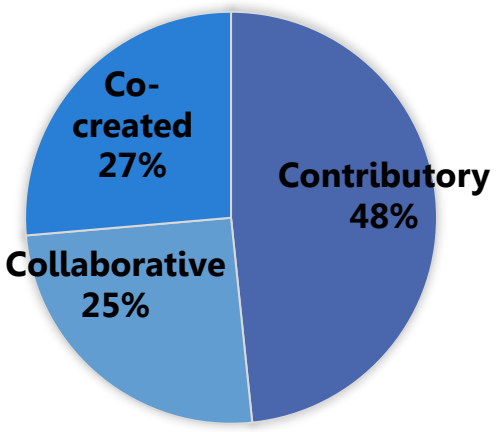
Models of Citizen Science

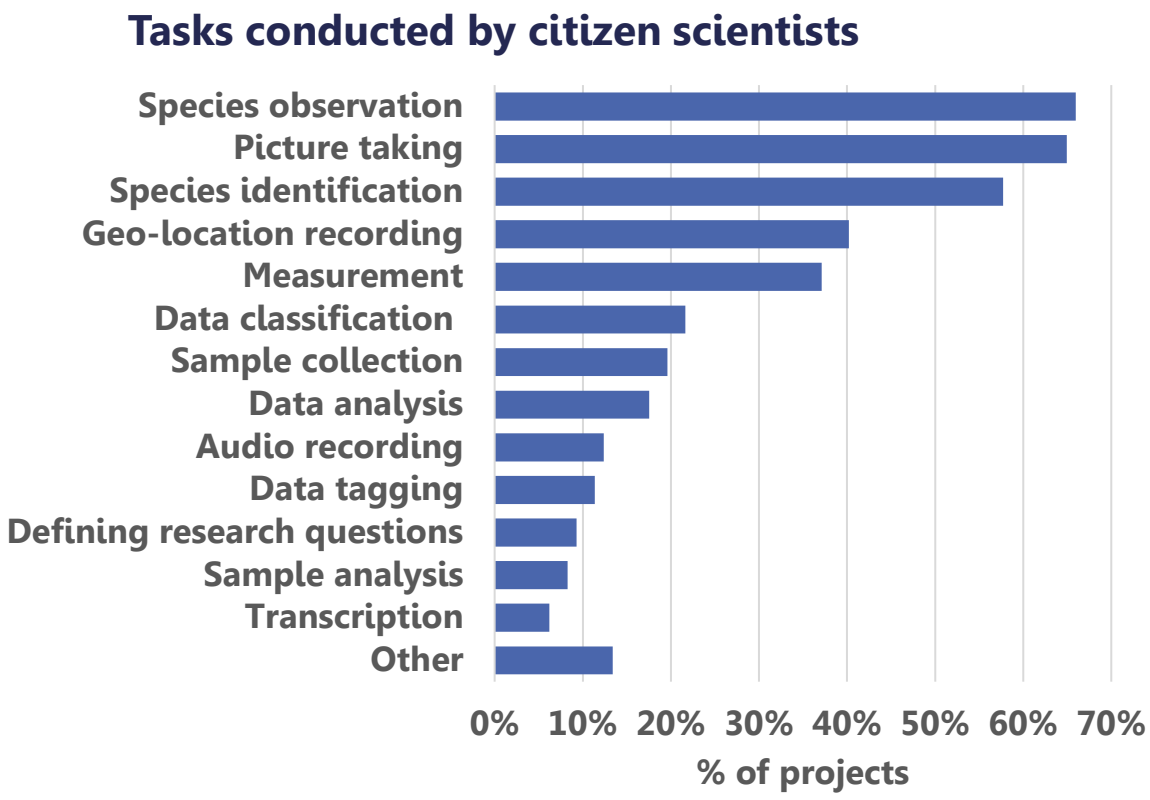
Citizen science projects are often characterised by levels of participation using the following categories:

- **Contributory projects** - designed by scientists, participants primarily contribute data.
- **Collaborative projects** - designed by scientists, participants contribute data and engage in additional research activities.
- **Co-created projects** - designed jointly by scientists and members of the public, participants actively engage in most or all aspects of the research process.

About half of the participating projects identified themselves as contributory projects with the remainder divided almost equally between collaborative projects and co-created projects. This is a very high percent of co-created and collaborative projects relative to common citizen science literature, which estimates 90% of projects are contributory.



Participant Engagement:



Participants in citizen science projects perform a variety of tasks with the majority of participating projects having tasks related to species observation and identification. This is in line with the high number of ecological projects represented in this survey.

A small number of projects engage participants in more complex tasks such as **data and sample analysis** and **defining research questions.** These tasks were largely associated with co-created projects who also tend to engage participants in more tasks relative to collaborate and contributory projects.

Incorporating participant feedback. Projects also reported on new ideas which were raised by participants, and then incorporated in the project. These include, for example, flagging the need to collect additional variables into a dataset, identifying species not anticipated by researchers, suggesting new methods for conducting measurements and providing ideas for improving platform user friendliness. Such cases occurred in about 50% of the projects to various degrees.

Next Steps

This preliminary map of citizen science in Australia is just the beginning! We are working hard to further analyse all the qualitative data derived from this survey and are dedicated to our goal to investigate citizen science project design, assessment and success, and provide insight to the potential benefits of citizen science for multiple stakeholders. Stay tuned!

We would like to thank all project leaders, scientists and practitioners who spent their time and shared their experiences working in citizen science projects in Australia.

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