Citizen science, the involvement of volunteers from the general community in academic research, has become increasingly important in conservation science and management.

Citizen science can inform decisions

The popularity and scope of citizen science appears almost limitless. For citizens, the motivation is to contribute to science and better conservation outcomes. For researchers and managers, it provides an opportunity to gather field data with limited resources.

Citizen science enables a significant in-kind contribution to survey projects by volunteers, an investment that is unlikely to be possible in most scientific projects. The way in which a citizen science program is designed and delivered is key to whether it can inform conservation and management decisions.

Citizen science has a wide range of applications including:

- Gathering baseline data
- Providing monitoring data
- Tracking the spread of invasive species or diseases

Does citizen science work?

How reliable is volunteer-collected information? Some scientists are sceptical about its utility and accuracy. Our research comparing citizen-science data to systematically collected data suggests citizen science can work, even without control over quality. With appropriate calibration, volunteer-collected and existing atlas data can be used to generate robust datasets - eg, population estimates for many species at a regional scale. See Szabo et al, 2012 and Decision Point issue #64.

Why use citizen science?

- Significant in-kind contribution is possible
- Cost-effective method of data collection
- Data is reliable, with appropriate protocols
- Can inform management decisions
- Can address large-scale ecological issues, such as migration patterns and the impacts of climate change, across countries and continents
- Contributes to:
  - raising public awareness
  - education
  - recreation
  - social and economic research
  - improved monitoring methods
Citizen science does have its challenges. These include survey inconsistencies over time, potential errors in records due to variable observer skills, spatial bias in effort (citizen scientists prefer some places over others), and at the very top, survey design and communication issues.

Critical success factors

To ensure the work of citizen scientists makes a meaningful contribution to scientific research and monitoring, the following must be in place:

- **Objectives**: clear objectives and outcomes established
- **Protocols**: volunteers fully understanding project requirements and collection methodology
- **Infrastructure**: data is stored effectively
- **Coordination**: resources needed for coordination of volunteers
- **Communication**: between researchers and organisations coordinating volunteers is critical
- **Contribution**: volunteers’ contribution is valued and recognised with data or results shared

A growing network

With the emergence of new technologies, greater networking and the rise of open-access science, volunteers will increasingly have the capacity to participate in monitoring and managing biodiversity. This is already becoming possible with programs such as Eremaea-eBird, Fungimap, the Atlas of Living Australia’s Citizen Science portal and recent formation of the Australian Citizen Science Association.

For more information on citizen science:

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Resources

- Australian Citizen Science Association
- Citizen science and conservation (*Decision Point* #89)
- Citizen science and the value of protected areas (*Decision Point* #83).