

Citizen, where art thou?

It's time to get the **public directly engaged** with saving threatened species



National Environmental Science Programme



IMAGE: CLAIRE FULLER

Citizen science has been steadily increasing in recent years, both in terms of number of projects and people involved. Environmental research has been the focus of many citizen-science projects, and now the TSR Hub has launched a project to help improve outcomes for threatened species. What's the connection between citizen science and threatened species? Dr **Rochelle Steven** from the University of Queensland sets out the arguments.

Australia's threatened species are facing numerous threats across the continent. The vast area this beautiful land occupies makes for a unique and diverse fauna and flora, but its sheer vastness also creates a major challenge for our efforts to track and manage the decline of those species facing imminent extinction. That vastness makes monitoring difficult and getting around very expensive. So how do we maximise efficiency while also learning more about the species whose very existence is under threat?

Many have touted 'citizen science' as a strategy to alleviate the cost burden on conservation managers and researchers. At the same time, citizen science is touted as increasing the engagement between the public and nature.

So, what is citizen science and what is its potential? There are a few definitions around but, generally speaking, citizen science involves getting volunteers (citizens) to participate in the collection of data that can be used to answer scientific questions. At a minimum, citizen science involving the environment and

conservation gets people thinking about nature. But it can achieve much more as well; with citizens collecting valuable biological data that will contribute to better conservation outcomes.

Mixing threatened-species conservation and citizen science presents a few challenges. First, many threatened species do not occur in urban areas, where the greatest pool of potential participants reside. How do we overcome this mismatch? Finding ways to connect urban citizen scientists to projects in regional areas that need additional human resources is a start. This could assist regional projects and provide rich experiences to people from cities.

One citizen-science platform that is already established and regularly contributing to the published scientific literature is Redmap. It's a citizen-science reporting tool for recording the sightings of uncommon marine species. With 55 species of fish currently listed on the *Environment Protection and Biodiversity Conservation Act (1999)* and numerous grey nomads and regionally based citizens enjoying

'Citizens' collecting data out in the field may be an effective way of obtaining information in a vast country.

fishing as their recreational pastime, this link presents an exciting opportunity for threatened-species monitoring.

The second challenge is that threatened species may be 'sensitive' or 'vulnerable' to the potential disturbance of direct monitoring activities. A strategy to deal with this is to recruit citizen scientists to monitor species remotely. That is, to review images and footage

Key messages

Citizen science has enormous potential to help gather information on threatened species and the threats they face

The TSR Hub is building a framework of best practice for citizen science that maximises the impact of citizen science for threatened species recovery

The citizen and the cassowary

The southern cassowary (*Casuarius casuarius johnsonii*) is an enigmatic species found in the Wet Tropics World Heritage Area (<http://www.wettropics.gov.au/cassowaries>) of North Queensland. It is hard to look at a cassowary and not think 'dinosaur', because they truly look like something that walked out of a Jurassic Park movie set.

This 'keystone' species plays a critical role in maintaining ecosystem processes in the rainforests as they are the key disperser of large-fruited rainforest plants throughout the region. Unfortunately, the species is facing multiple threats in the form of habitat loss, car strikes and attacks from dogs. They are currently classified as Endangered under the national EPBC Act.

The more we can learn about these extraordinary birds the better placed we will be to protect them, and this is where citizen science can play a role. Visitors and residents alike can assist local conservation work by reporting sightings of all cassowaries throughout the Mission Beach (<http://www.missionbeachcassowaries.com/cassowary-id-and-tracking.html>) and Daintree (<http://www.daintreecassowary.org.au/>) areas, two of the main hotspots for the species. Recording every sighting is important to understand how the birds move through the landscape through time, and can inform where corridor plantings and additional signage are needed to ensure the species safety and survival.



IMAGE: ROCHELLE STEVEN

from camera monitors to identify occurrences of threatened species (all done without setting foot in their habitat).

One network combining several of these types of projects into a central portal is called Wildlife Spotter. Wildlife Spotter is administered by the Australian Broadcasting Corporation (ABC) and provides citizens with the chance to contribute to science by identifying threatened species remotely. Species that have been worked with so far include malleefowl, bandicoots, bettongs and feral cats. Feral cats, of course, are not threatened species but they are a key threat to many native mammals.

Aside from preventing disturbance to threatened species, the additional benefit of remote monitoring is the reduced logistical cost for the participant (ie, no travel) and health and safety risks are also largely removed. It also enables urban citizen scientists to contribute to the conservation of regional and remote threatened species.

With increasing interest in the use of remote technology like cameras, drones and acoustic recorders, this approach is likely to really take off in the years to come.

Researchers in the Threatened Species Recovery Hub are currently reviewing the link between citizen science and threatened species in Australia. We are working on building a framework for best practice that maximises the

positive impact that citizen science might have for our nationally-listed threatened species.

To develop this best-practice framework, we will be talking with practitioners and project officers associated with citizen science and threatened species in Australia. We will be asking them how they measure their successes, what impact their citizen-science projects are having and what challenges they have faced in the past and continue to deal with. Essentially, we are hoping to create a recipe for success for how citizen science is best done for threatened species.

By sharing experiences and developing a generic framework that can be applied to multiple situations, we hope to give practitioners peace of mind about their day-to-day operations. Often they are doing their work with little guidance on what is a good benchmark to work towards. Or it might be that we can provide guidance on how they can implement strategies for dealing with obstructions to them achieving their goals.

Our citizen-science project has only recently started. We are eager to hear from anyone with knowledge of citizen-science programs actively involved in threatened-species monitoring and recovery. If you can help us or would like more information about our project, please get in touch.

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IMAGE: ROCHELLE STEVEN

The lesser swamp-orchid (*Phaius australis*) was once found along the east coast from north Queensland to north-east New South Wales. Citizens can assist in the recovery of the lesser swamp-orchid by working with local NRM groups to monitor the remaining populations of the species and protect them from weed invasion and illegal collection by orchid enthusiasts. Plants can also be purchased from licensed and reputable nurseries which may assist in supplementing local populations.