# Biodiversity Conservation Trust

# Citizen Science Strategy

**| September 2022**

*Harnessing the passion and efforts*
*of landholders and the community to*
*improve our understanding of biodiversity and*
*the ecological benefits of private land conservation*

# Acknowledgement of Country

The NSW Biodiversity Conservation Trust and the Australian Citizen Science Association acknowledge the Traditional Custodians throughout NSW and recognise their ongoing connection to land, waters, biodiversity and culture.

We pay our respects to their Elders past, present and emerging, and commit to genuinely, collaboratively engage and partner with Aboriginal people in the delivery of our private land conservation programs.

Private land within NSW often contains various forms of significant sites and features within the landscape.

Aboriginal Cultural Values are connected to Country, including waterways, mountains, wetlands, floodplains, hills, sandhills, rock outcrops and the biodiversity within these geological features.

Many of these features are known to have cultural value and contain culturally significant sites. These elements of the landscape can be associated with Dreaming stories and cultural learning.

This document was prepared for the NSW Biodiversity Conservation Trust by the Australian Citizen Science Association (ACSA) in consultation with the BCT

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# Content

# Overview

The Biodiversity Conservation Trust (BCT) Citizen Science Strategy (hereafter the Strategy) provides strategic guidance for designing and implementing a strong citizen science program across the whole of the BCT.

**Scope**

The scope of this Strategy is to guide development of a program that can:

- Advance BCT organisational strategic goals.
- Support local communities with opportunities to gain awareness, measure and monitor biodiversity and conservation efforts.
- Engage landholders with accurately identifying and monitoring biodiversity on their property and supporting annual reporting commitments where applicable.
- Foster local communities to understand the co-benefits of biodiversity conservation for agricultural productivity, through engagement with science.
- Create new avenues for BCT landholders and their communities to interact with peers and experts, through technology use, workshops, and events.
- Align with existing BCT processes and programs relating to ecology, communication, partnerships, data management, and technology use.

**Structure**

The Strategy is divided into two key sections. In Section 1, citizen science is introduced in relation to BCT goals, community, and benefits. Section 2 provides the vision, objectives, and strategic actions to guide the design and development of a strong BCT citizen science program. An implementation overview including identified citizen science pathways is provided in Section 3.

# 1. Introduction - Learning & Working Together

## Why does the BCT need a citizen science strategy?

In 2017, the New South Wales Biodiversity Conservation Trust (BCT) was established with the purpose of "*partnering with landholders to enhance and conserve biodiversity*". The BCT is committed to providing support to landholders to conserve biodiversity on private land across the state. Additionally, the BCT is dedicated to fostering public awareness and knowledge of biodiversity and the importance of conservation. Providing landholders and the community opportunities to engage in citizen science holds promise to advance these organisational goals.

### Citizen science overview

The Australian Citizen Science Association (ACSA) defines citizen science as, "*public participation and collaboration in scientific research with the aim to increase scientific knowledge*" The majority of citizen science is focused on environmental and ecological sciences [1] and is steadily increasing both nationally and globally [2-4]. Across Australia, projects that involve monitoring threatened species are diverse in design and widespread, with a high concentration in NSW [5, 6].

Citizen science can build scientific knowledge and engage the public with taking actions that improve conservation science and natural resource management [7]. Through citizen science, members of the public can be involved with any part of the scientific process. This involvement can include: creating questions; generating hypotheses for study; designing methods; collecting, analysing, and interpreting data; writing up outcomes, and disseminating conclusions [8].

Communities will most readily engage in citizen science that resonates with their values, motivations, and interests. Activities are likely to be appealing if they support enticing opportunities to easily learn, interact with others, receive feedback from contributions, explore data, and understand diverse project outcomes overall.

Landholders - especially those involved in private land conservation - are a specific stakeholder group with a particular incentive to engage in citizen science activities focused on understanding the biodiversity values on their land. Inviting landholders to participate with joint ownership of efforts is an ethical way to conduct ecological monitoring on private land. Particularly when respectful relationships are built with an emphasis on fostering the exchange of ideas and values about the land [9]. Additionally, it is essential to provide landholders with access to data and convey insights to the wider community [9].

The BCT intends to leverage citizen science as a form of cooperative science that supports the organisation and the community to investigate biodiversity and conservation effectiveness together. Citizen science initiatives and associated technologies are created with different types of interaction between scientists and members of the public [8, 10, 11]:

- **Contributory projects** are typically created by scientists, and then members of the public are engaged with contributing data (e.g. submitting or analysing photos, problem-solving);
- **Collaborative projects** are often designed by scientists, with members of the public

contributing, as well as refining additional aspects of the project (e.g. design, data analysis, or dissemination of results); or

- **Co-created projects** are designed jointly by scientists and members of the public, and most aspects of the scientific process are completed together.

Co-creating the BCT citizen science program with our community can maximise relevance and engagement. The BCT also recognises the need for good practice in its Strategy, as outlined in the Australian Citizen Science Association's Ten Principles of Citizen Science [12]:

1. Citizen science projects actively involve citizens in a scientific endeavour that generates new knowledge or understanding.
2. Citizen science projects have a genuine science outcome.
3. Citizen science provides benefits to both science and society.
4. Citizen scientists may participate in various stages of the scientific process.
5. Citizen scientists receive feedback from the project.
6. Citizen science, as with all forms of scientific inquiry, has limitations and biases that should be considered and controlled for.
7. Where possible and suitable, project data and meta-data from citizen science projects are made publicly available and results are published in an open-access format.
8. Citizen scientists are suitably acknowledged by projects.
9. Citizen science programs offer a range of benefits and outcomes, which should be acknowledged and considered in project evaluation.
10. Leaders of citizen science projects consider the legal and ethical dimensions of a project.

The BCT will take a collaborative approach to implementing this Strategy following the above principles. Additional recommendations on designing citizen science for engagement, educational, and ecological goals will be followed to ensure development of a powerful, long-term program.

**Planning for success**

Supporting members of the community to engage in any citizen science activities requires careful strategic planning, evaluation, and adaption as the citizen science program matures. The NSW Department of Planning and Environment (DPE) has demonstrated how citizen science can accelerate agency objectives to increase public awareness of biodiversity and involvement in monitoring and conserving plants, animals, and ecosystems [13]. The success of the state-wide citizen science program is largely attributed to careful planning, support, and adequate resourcing [13].

Since its inception in 2017, the BCT has developed strategic and implementation planning documents to map out and steer organisational activities associated with biodiversity conservation monitoring, education, research, and landholder support. Each of these documents highlights citizen science as a potentially powerful approach for landholders, BCT staff, and the broader public to cooperatively gain biodiversity awareness and insights that can

inform and evaluate private land conservation.

## How can citizen science advance BCT goals?

Citizen science can support BCT organisational goals through diverse avenues (

Table 1).

***Table 1. How BCT strategic goals and actions can be supported by citizen science.***

| Strategic goals | Relevance of citizen science |
|---|---|
| **Strategic Goal 1:**<br>*Increase private land conservation in areas of strategic biodiversity value.* | Citizen science can support raising the profile and reach of BCT broadly.<br>Strategic collaboration, cross-promotion, and partnerships with external citizen science advocacy, project, and community groups can increase the likelihood of landholders entering partnerships with BCT. |
| **Strategic Goal 2:**<br>*Deliver efficient, effective, and strategic biodiversity offset outcomes.* | Citizen science datasets that are seamlessly integrated into BCT practices can reveal biodiversity offset outcomes.<br>Future BCT technologies can be designed for citizen science data management that supports offsetting services to acquit biodiversity offset obligations. |
| **Strategic Goal 3:**<br>*Support participating landholders to conserve biodiversity.* | Citizen science technologies can assist landholders to independently engage with biodiversity conservation, by providing a personalised way to identify and learn about species on their properties and in the region.<br>With guidance, landholders can be empowered with access to citizen science technologies that allow for monitoring biodiversity changes on their property over time.<br>Access to citizen science data allows landholders to explore the effectiveness of conservation efforts on their property and biodiversity variation on surrounding properties or across NSW. |
| **Strategic Goal 4:**<br>*Promote public knowledge, appreciation and understanding of biodiversity and the importance of conservation.* | Citizen science focused on biodiversity can provide both landholders and the broader public opportunities to increase awareness of regional flora, fauna, and ecosystems.<br>Biodiversity insights gained from citizen science can inform conservation actions by landholders and the broader community. |

## What are the benefits of citizen science?

A BCT citizen science program can have diverse benefits for the community, including:

**Enhancing community learning**

Citizen science can inspire people by providing tools that can support learning about biodiversity, ecosystem processes, and conservation actions that matter to them.

### Empowering landholders

Participation in citizen science can give landholders the opportunity to be rewarded for their efforts in conserving biodiversity on private land, by discovering what plant and animal species they are protecting (see Figures 1 and 2). Citizen science can also offer landholders satisfaction, in knowing they are contributing to a broader BCT effort to improve conservation across NSW, well beyond their property boundary. Citizen science tools can assist such landholders with accurately identifying biodiversity, sharing observations, and documenting landscape attributes in real time.

### Inspiring the next generation

Students participating in a BCT citizen science program can access opportunities to gain hands-on experience learning about the natural world independently and cooperatively, while also contributing to understanding of the plants, animals, and ecosystems around them.

### Advancing cross-cultural ecology

Citizen science tools that support people gaining awareness of biodiversity can support synergies between Traditional Ecological Knowledge and Western science [14]. This can lead to new cross-cultural ecological insights that guide future conservation actions.

### Connecting community

When engaging with citizen science, people are exposed to new opportunities to engage with peers and experts, which allows an exchange of experiences, knowledge, and community connection.

### Strengthening community partnerships

Community members can have opportunities to engage with BCT and strengthen existing partnerships, based on mutual interests in science, biodiversity, or conservation. Our support for citizen science can foster making new connections and partnerships with the community.

### Improving outcomes

Citizen science can provide us with much-needed information about biodiversity data at geospatial and temporal time scales not otherwise possible. Integration of citizen science from the entire BCT community will increase the rigour with which ecosystem integrity and conservation management can be evaluated. Additionally, a BCT citizen science program can improve the accuracy of data provided by anyone in the community, by employing mechanisms to validate biodiversity observation identifications. Citizen science can improve the BCT's ability to be responsive when receiving real-time information of new phenomena (e.g., introduction pest species).

### Contributing to science

When citizen science data is made publicly available, in ways that are respectful of human and biodiversity privacy, community observations can contribute to broader scientific investigations that advance our understanding of biodiversity and conservation from local to global scales.

*LOVE IT!*

*This absolutely made my day.*

*Great results indeed.*

*Thank you so much for sending that variety of shots.*

*Stoked about the quoll, will have to do a closer inspection of the coat pattern and get back to you.*

*Can't believe you even captured an echidna!!*

***Figure 1. Text from a landholder with a BCT conservation agreement***

*You have absolutely made my year for me. I truly thought the magic little phascogales phalangers and antechinus were all burned and gone, and haven't heard an owlet nightjar since the fire either. Also had absolutely no idea we had brush turkeys, or squirrel gliders - only wondered why we hadn't!! This is fabulous news….Will try setting up cameras in the same place as yours, and taking more care at checking the images.*

*Feeling so much better about things now. Thank you.*

***Figure 2. Email from a landholder with a BCT conservation agreement***

## Who is in the BCT's citizen science community?

The BCT engage with a wide range of groups in working towards achieving organisational goals (

Table 1). The benefits of citizen science can be fully realised when projects provide each of the following groups within the BCT community support to raise awareness of biodiversity and take conservation actions on private properties:

**Landholder partners**

Partnering with landholders is at the core of BCT's mission. For this Strategy, landholder

partners include those who are already in partnership with BCT. Landholders not yet in partnership with the BCT however, are included as members of the general public. BCT landholders in agreements with BCT are defined as individuals, family units, trusts, corporates, small businesses, community groups, large and small holdings, and farming and non-farming.

**School educators and students**

BCT's Education Program is actively piloting approaches to accommodate for diverse needs of primary and secondary school students in terms of their cognitive development and interests at different ages. The program has involved trialling approaches to support students in becoming aware of biodiversity, ecosystem services, and conservation. Students engage with BCT materials in urban and rural classroom environments, during field excursions, or through online activities. These materials are also linked to NSW Education Standards Authority (NESA) and Australian curricula to maximise educator engagement with BCT activities.

**Aboriginal and Torres Strait Islander communities**

The BCT recognises that Aboriginal people's cultural obligation of caring for Country overlaps with the BCT's core business of biodiversity conservation. The BCT are looking to increase two-way learning and participation by members of Indigenous communities in BCT programs. To guide the effort, the BCT has recently developed an Aboriginal Engagement Action Plan.

**General public**

The BCT are working to raise public awareness of biodiversity and foster conservation on private lands by sharing information, tools, and resources at public events and on the BCT website.

**External partners**

The BCT relies on a variety of partnerships for biodiversity engagement, ecological monitoring, technical resources and research activities. For example, the BCT are designing and delivering educational projects in partnership with expert organisations including Landcare NSW, Australian Museum, and Petaurus Education Group.

# 2. BCT Citizen Science Strategic Approach

This section outlines BCT's vision and objectives (Figure 3), including strategic actions, implementation directions, and anticipated outcomes (Tables 2- 5).

## Vision and Objectives


***Figure 3. The vision and objectives for the development of a BCT citizen science program.***

## Strategic Actions & Outcomes

The Strategy objectives and actions are reflective of BCT's emerging and evolving maturity in citizen science. To inform the design of the program, whenever possible, the BCT will be guided by understanding prospective community-interest groups, their respective biodiversity interests, social dynamics, learning needs, and technology use practices. To achieve this, people who currently interact with the organisation and those whom the BCT aspire to engage will be given future opportunities to be involved with and steer the development of the BCT program.

Such a collaborative approach will ensure that a range of meaningful, cooperative, supportive, enticing, and empowering citizen science opportunities are offered, which establish a vibrant BCT citizen science community. Additionally, BCT will adapt the program as an increasing number of community-interest groups are engaged, technologies advance and ecological insights are gained. Diverse approaches and activities will be cooperatively trialled, developed, and refined over several years.

The BCT recognise that strategic planning, including careful consideration of resourcing, is required in advance of initiating engagement. The objectives and implementation directions in this Strategy provide the structure to guide decision-making when developing a BCT citizen science program. This Strategy is a living document, allowing new priorities to be incorporated as needed.

A review will be undertaken every three years, including monitoring and evaluation towards achieving intended outcomes. A citizen science implementation plan will be developed to plan and prioritise the steps and projects for the delivery of this strategy. This plan will be used to report on the delivery of the objectives outlined in this Strategy.

### Objective 1 – Design Opportunities

***Table 2.*** *Steps towards designing opportunities that align community interests and organisational goals to inform citizen science development.*

| Strategic Actions | Implementation Directions | Outcomes |
|---|---|---|
| 1.1 Develop an **interest-group framework** that articulates what landholder, school, Aboriginal, public, and external partner groups care about. | Observe and document community interests, as well as motivations, needs, technology practices, etc.<br>Identify themes of citizen science interests and prioritize which BCT community groups to engage. | Effective planning and prioritisation for integrating citizen science by interest groups to maximise engagement. |
| 1.2 Provide **co-creation opportunities** for citizen science landholders, educators, students, Aboriginal groups, and external partners. | Host workshops with relevant interest groups to explore community ideas, opportunities, and barriers.<br>Continually work with community groups and provide responsive support. | Foster engagement, cooperation, and agency, as well as accelerate sustained commitment and investment. |
| 1.3 Create a **science roadmap** articulating anticipated science objectives, impacts, and communication for each project. | Create a workflow for the use of community and ecological monitoring module (EMM) datasets, independently and together, to advance ecological knowledge.<br>Map how computational, social, design, engagement, and learning variables can influence ecological datasets.<br>Plan for strategic and regular community communication of impacts. | Illuminate the authenticity of citizen science participation and that it genuinely advances BCT biodiversity conservation goals. |
| 1.4 Align citizen science activities with **school curricula for NSW** and Australia. | Determine opportunities and limitations for citizen science in diverse school settings.<br>Design project support materials towards curricula for primary and secondary stages. | Amplify uptake of citizen science activities by educators in and out of classrooms. |
| 1.5 Determine **links between reporting requirements** for landholders who received BCT funding and citizen science. | Determine the topics of interest to funded landholders that are appliable to ecology and conservation science.<br>Assess whether topics reported may have broader interest voluntarily.<br>Identify analogous citizen science projects or needs for custom ones. | Increase efficiency, frequency, accuracy, and diversity of data submitted (esp. with digitisation). |

### Objective 2 – Build a Foundation

***Table 3.*** *Steps towards building a foundation that enhances coordination, capacity, and governance to support successful citizen science.*

| Strategic Actions | Implementation Directions | Outcomes |
|---|---|---|
| 2.1 Establish citizen science **selection criteria** for deciding which citizen science projects or initiatives to invest in. | Identify minimum requirements for BCT to promote an existing citizen science project (e.g., activities, tools for landholders, data processes).<br>Determine investment requirements to develop a new project. | Efficient and streamlined evaluation of project relevance, impacts, and resource allocation. |
| 2.2 Identify **methods for coalescing and analysing datasets** from citizen science landholder reports, and ecological monitoring (via EMM surveys). | Assess how pre-existing and BCT citizen science datasets can be integrated into technical systems and scientific analyses.<br>Draft a workflow for long-term data analysis and management.<br>Allot resources for data curation and analysis (e.g., camera photo processing). | Increase biodiversity and conservation science insights by strategically planning data augmentation, ensuring community contributions are valued and used. |
| 2.3 Create a **citizen science implementation plan with the toolkit(s)** that support successful project adoption or development, and delivery. | Develop a BCT implementation plan, including workflows, processes, etc describing the BCT-wide program.<br>Create project resources to foster participation (e.g., guides that support tech use, learning, conservation, etc). | Successful projects, improved skills, and streamlined work processes, with a consistent, BCT-wide approach. |
| 2.4 **Resourcing** to identify, track, incubate, and accelerate BCT citizen science opportunities. | Identify resource requirements to implement each project and sustain the full BCT citizen science program.<br>Evaluate BCT staff capacity to implement and resource needs. | Action and delivery against the Strategy. |
| 2.5 **Coordination and governance** of the Strategy and its implementation | Allocate governance, coordination, and implementation responsibilities, ensuring delivery into broader BCT strategies, plans, and modules (e.g., business, ecological, engagement, support, education, and research). | Identifiable responsibility, accountability, and alignment of plans and strategies. |
| 2.6 **Evaluate and agree on the resources**, tools, and infrastructure that facilitate citizen science. | Adopt or develop resources, tools, and infrastructure for each project that best meet the goals, interests, and needs of the BCT and prospective participants. | Ensures BCT and the community engage and have an impact. |

### Objective 3 – Strengthen Partnerships

***Table 4.*** *Steps towards strengthening partnerships that build collaborations to grow and sustain citizen science engagement.*

| Strategic Actions | Implementation Directions | Outcomes |
|---|---|---|
| 3.1 **Promote the BCT citizen science program** and specific projects to the BCT community via diverse channels. | Determine which groups are likely to have an interest in each project.<br>Identify communication channels used by each target interest group (e.g., via site visits; BCT workshop; sponsor community-led events; articles for Understory and regional newsletters; videos; and social media).<br>Develop appropriate communication materials for each group and project.<br>Execute project targeted promotion campaigns for engaging interest groups. | Successfully recruit and sustain participation in citizen science, whether landholders; educators and students; Aboriginal groups, or members of the NSW public. |
| 3.2 Increase **visibility** of BCT citizen science by cross-promoting initiatives and events related to citizen science, biodiversity, or conservation. | Elevate by cross-promoting others e.g.:<br>***Local*** – Councils, NGOs hosting bioblitzes.<br>***NSW*** – Saving Our Species, local bioblitz events.<br>***Australia*** – National Threatened Species Day, Aussie Back Yard Bird Count, National Science Week, ACSA events.<br>***International*** – Great Southern BioBlitz, Global Citizen Science Month. | Raise awareness and the profile of the Biodiversity Conservation Trust, associated citizen science, biodiversity, and conservation across NSW. |
| 3.3 Forge **synergistic partnerships** and connections with external groups. | Synergise common efforts with others e.g.:<br>***Local*** – Councils, Community Environment Network.<br>***NSW*** – NRC's Forest Monitoring and Improvement Program, Saving Our Species, Local Land Services, Landcare.<br>***Australia*** – Firesticks Alliance, Australian Museum, Atlas of Living Australia, ACSA.<br>***International*** – SciStarter, Zooniverse. | Increase regional visibility, reinforce partnerships, and improve outcomes through synergies. |
| 3.4 Diversify citizen science at BCT by **creating or adopting innovations** | Scout for new projects, tech, and tools to adopt that support the BCT community.<br>Develop tools to support activities under-represented in citizen science globally. | Achieve engaging more diverse audiences in biodiversity and conservation. |

### Objective 4 – Impact Conservation

***Table 5.*** *Steps towards impacting conservation that embed citizen science within BCT to increase biodiversity awareness & conservation efficacy.*

| Strategic Actions | Implementation Direction | Outcomes |
|---|---|---|
| 4.1 **Incubate strategic citizen science projects** across focused impact areas. | Workshop with staff and community to identify measurable aspects of biodiversity, agriculture, conservation that are of most concern to interest groups, conducive to a citizen science approach, and high priority to BCT.<br>Determine how to build capabilities, tools, experience, two-way information exchange, and relationships. | Accelerate sustained engagement with citizen science and BCT overall that ensures the impact of projects across the organisation. |
| 4.2 Explore opportunities to include **citizen science within key BCT programs.** | Integrate such measurable impacts into ecological, landholder support, education, public engagement, internal communications, community building strategies, modules, plans, and activities (e.g., Conservation Champions program via 'Biodiversity on my land' boxes; grazing management tools, Landholder property glovebox guides; EMM surveys; broader site visits, events, workshops). | Increase biodiversity awareness and potential to inspire conservations actions to be taken by the community. |
| 4.3 **Be FAIR and CARE**, by adopting open and ethical governance practices for citizen science data that BCT hosts. | Operationalise FAIR Principles that ensure data is Findable, Accessible, Interoperable, and Reusable, with CARE Principles for Indigenous Data Governance that ensure Collective benefit, Authority to control, Responsibility, and Ethics [32-34]. | Achieve a culture of ethical openness and support others investigating biodiversity in NSW, Australia, or globally. |
| 4.4 **Leverage a suite of technologies** for citizen science. | Evaluate usability, appeal, and applications of citizen science technologies and resources by trialling applications and platforms with target community members.<br>Work with technology and platform creators to design and streamline community and BCT interactions, data access, alerts, and communications. | Innovative solutions that support BCT citizen science. |

# 3. Strategy Implementation Pathways

Four citizen science pathways have been developed to guide Strategy implementation directions. These pathways should inform future projects, tools, events, and communities that may be leveraged as the program matures. Existing experiences with citizen science and related activities that could inform future citizen science are also identified.

## What citizen science can the BCT support?

A BCT citizen science program will be designed to complement, enhance, and extend current and future ecological monitoring, landholder support, education, and broader engagement activities. Integrating citizen science across the BCT offers the community opportunities to engage with the organisation more broadly. Simultaneously, such a program can also engage landholders with projects that contribute to broader state-wide, national, and global efforts to understand biodiversity and conservation effectiveness.

The BCT community is already engaged with some regionally relevant citizen science and adjacent activities with guidance from our staff. BCT ecologists and landholder support officers, for example, occasionally use or recommend a diverse range of citizen science and electronic field guides to assist in identifying plant and animal species. Likewise, staff also occasionally deploy remote cameras or audio recorders with landholders to assess what wildlife reside on their private properties. Tools to map property features and track activities are also regularly recommended to landholders based on their specific interests and needs.

Lastly, students are engaged in becoming familiar with biodiversity through the BCT Conservation Champions program, lessons, and resources. Each of these activities has the potential to be augmented and scaled up across the organisation to offer the community innovative tools that support their individual interests.

Developing a citizen science program that will resonate with individuals across the BCT citizen science community can be a challenge. Engaging diverse audiences with multiple projects at once may not be feasible. Instead, the BCT will take a scaffolded approach. The initial focus will be on identifying the interests, needs, and goals of groups within the BCT community. Different projects can then be planned concurrently, with the intent to launch some in the short-term, and others in the intermediate- to long-term. Four pathways for a BCT citizen science program to be launched and grow over time have been identified (Figure ).

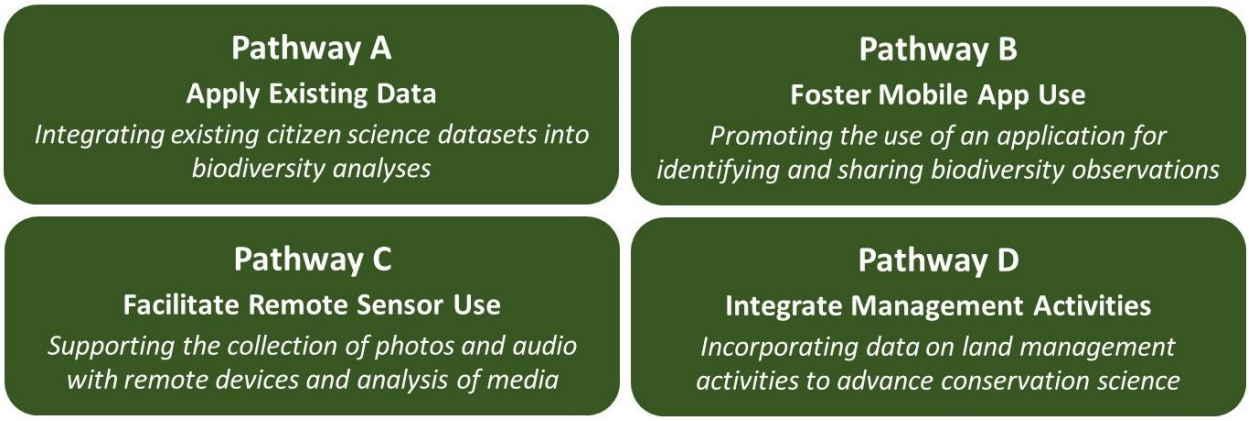


***Figure 4. Pathways that can underpin a BCT citizen science program.***

Each of these citizen science pathways represents a suite of approaches for integrating citizen science into BCT practices and building on existing capacity, which also support the diverse interests of the community. Existing datasets, mobile applications, or remote sensors can be used to find and understand the distribution of a single species, such as koalas or other threatened species.

By contrast, the same pathways can be integrated to identify target biodiversity groups. These may include plants such as natives, weeds, or pasture vegetation, or animal groups, such as birds, frogs, mammals, or invertebrates. Such biodiversity observations can then be used to investigate complex ecological interactions or ecosystem health. All four pathways offer opportunities to evaluate conservation management effectiveness at different scales.

As the BCT begins to develop the citizen science program, it will look to advance the following three cross-cutting implementation goals:

1) Integrating data, streamlining app use, and scaling-up use of selected technologies
2) Diversifying activities and data types over time
3) Developing innovative citizen science to advance the science of conserving biodiversity

The development of each pathway and the citizen science projects that fall within them should be guided by the biodiversity and conservation interests and needs of both the BCT community and staff. Implementation priorities, actions and resourcing needs associated with each identified pathway will be outlined in a citizen science implementation plan that will be developed by the BCT.

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