



Into Nature Citizen Science Toolkit

Explore nature
Record biodiversity
Act for nature

Acknowledgement of Country

Victoria's network of parks and reserves form the core of Aboriginal cultural landscapes, which have been modified over many thousands of years of occupation. They are reflections of how Aboriginal people engaged with their world and experienced their surroundings and are the product of thousands of generations of economic activity, material culture and settlement patterns. The landscapes we see today are influenced by the skills, knowledge and activities of Aboriginal land managers. Parks Victoria acknowledges the Traditional Owners of these cultural landscapes, recognising their continuing connection to Victoria's parks and reserves and their ongoing role in caring for Country.

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Front cover image: Peron's Tree Frog

Inside front cover image: Wilsons Promontory National Park

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Introduction: It's not rocket science, it's citizen science

The natural world is constantly changing, and we have the power to make a positive impact. With the human population growing and cities expanding, it's important that we take action to protect our natural environment. Citizen science gives us a better understanding of climate change impacts on the environment and the distribution and abundance of species. Thanks to advances in technology and mobile apps, participating in citizen science projects has never been easier. By joining these initiatives, we can all play an active role in promoting a healthier, more sustainable future for our planet.

This tool kit is a resource for Volunteers and Volunteer group leaders. It will cover the following topics;



Part one: What is citizen science?



Part two: How to conduct citizen science using iNaturalist



Part three: How to organise a BioBlitz activity



Part One: What is citizen science

Are you someone who enjoys participating in surveys, taking photos of nature, or counting wildlife? If so, did you know that you might be participating in citizen science?

Millions of people worldwide are collecting valuable data by taking photos of nature, documenting changes in the environment, and using smartphone apps to help scientists monitor biodiversity, water quality, and air quality. Citizen science projects can involve individuals or groups working together towards a common goal.

Citizen science contributes to the conservation of biodiversity in a number of ways including:

- providing valuable data to land Managers and scientists
- engaging the public and increasing their scientific literacy
- It empowers communities to take ownership of their local environment- citizen science discoveries can inform conservation efforts.


Biodiversity refers to the variety of all living things, including plants, animals, and microorganisms, as well as the genetic information they contain and the ecosystems they form.

One of the most reliable ways to gauge the health of an ecosystem is by monitoring its biodiversity. Citizen science projects help in identifying the different plant and animal species that inhabit a particular area, as well as their population count. Certain countries, known as megadiverse countries, boast exceptionally high levels of biodiversity. In fact, approximately 75% of the planet's total biodiversity can be found in seventeen such countries, with Australia being one of them.

Despite being one of the most biodiverse countries on the planet, there is still so much that we don't know about the flora and fauna living among. This is where citizen science can play a pivotal role. People of all ages and backgrounds participate in citizen science projects across the globe, working alongside scientists to address real-world questions and uncover new insights about our natural world. By taking part in such initiatives, any citizen can make a valuable contribution towards advancing scientific knowledge and promoting environmental conservation efforts.

Citizen science is akin to crowdfunding, but instead of donating money, citizens donate their time and knowledge to support science projects that are important to them.

Preserving habitats and ecosystems is the most effective way to protect biodiversity. As no organism exists in isolation, the potential threat to one species implies a potential threat to the entire ecosystem. This is where citizen science can prove invaluable. By collecting crucial data on habitats and ecosystems, citizen science projects help scientists make informed decisions about land management and conservation efforts. Through these collaborative initiatives, we can work together to safeguard the natural world for future generations.



Did you know?

Citizen science isn't a new concept.

German physician, geographer, and most notably botanist, Baron Ferdinand von Mueller first came to Australia in 1847, hoping to catalogue all of Australia's flora. He began collecting plants, beginning in South Australia and travelling to Queensland and Victoria. He realised it would be more efficient if he could enlist people to send him specimens instead of trying to do all the work himself. He recruited through advertisements in the newspapers, teachers in country schools, and the contacts made on his travels. Over the next forty years, more than 1,300 amateur enthusiasts would contribute to Mueller's flora of Australia.

From 1857–73 Baron Ferdinand Mueller was director of the Royal Botanical Gardens, Melbourne.

Reference: www.australiangeographic.com.au/topics/science-environment/2018/09/a-history-of-the-biggest-discoveries-by-citizen-scientists/

How does citizen science help to conserve biodiversity?

Citizen science projects are part of a growing global movement to meaningfully engage the community in scientific research. There is no possible way that scientists can do it alone, nature is complicated and requires a lot of data for us to understand it. The discoveries and data collected by citizen scientists help scientists and policy makers decide on what works and projects to prioritize.

Parks Victoria staff undertake research programs in partnership with many different organisations, enabling us to deal with uncertainty or knowledge gaps; understand how ecosystems, communities and species function; and understand and refine management programs. Citizen science enables Parks Victoria scientists to expand the amount of scientific data that can be generated beyond what would be possible by scientists alone.



Did you know?

In 1870, while surveying land across the Moe-to-Bunyip railway line along Brandy Creek in Warragal, Victoria, a group of farmers came across what they initially believed to be a giant snake.

Curious about the 'snake' they'd found, they sent one specimen to the University of Melbourne where Professor Frederick McCoy then described it.

This was the first time anyone had heard of giant earthworms. To this day, the giant Gippsland earthworm (*Megascolides australis*) is regarded as the longest in the world.

Reference: www.australiangeographic.com.au/topics/science-environment/2018/09/a-history-of-the-biggest-discoveries-by-citizen-scientists/

What will you gain from participating in citizen science?

There are many reasons why people participate in citizen science, but here are some of the most common.

- Learn new skills and deepen your connection to nature
- Make a meaningful contribution to society by participating in research that can have real-world applications– like combatting climate change and species extinction
- Join a growing global community of citizen scientists who are collectively advancing scientific knowledge
- Benefit both mind and body getting into nature
- If you are lucky - make a brand-new discovery!

Part Two: How to conduct citizen science using iNaturalist

iNaturalist is a widely-used app that allows you to identify the plants and animals in your surroundings. By contributing your observations, you can provide research-grade data that aids scientists in understanding and preserving nature.

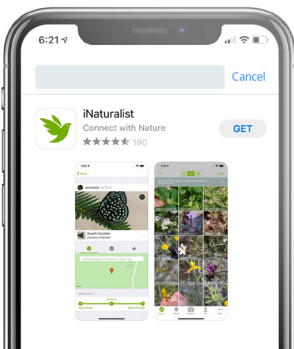
The app enables users to classify a species by entering its common and scientific names, habitat, location (via GPS on their mobile device), and additional descriptive information about the image. These observations are transformed into sharable, records and research grade observations feed into the Atlas of Living Australia platform. This platform provides accessibility and reusability, allowing for the creation of a comprehensive overview of Australia's biodiversity. These records can benefit scientists, policymakers, environmental planners, land managers, industry professionals, and the general public alike.

Three steps for using iNaturalist

Follow the below steps to get started on your iNaturalist journey

1 Download the iNaturalist app

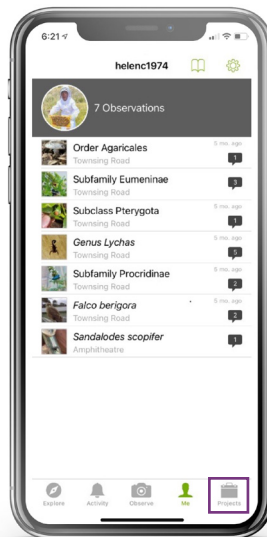
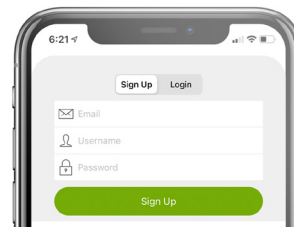
iNaturalist is free to download and is available as an app for use on smartphones or desktop. (available for either Apple or Android). iNaturalist does not belong to Parks Victoria, but Parks Victoria scientists can access the research quality data that you upload helping to inform land management practices.



Scan or click to visit the iNaturalist homepage, or download the app on your handheld device.

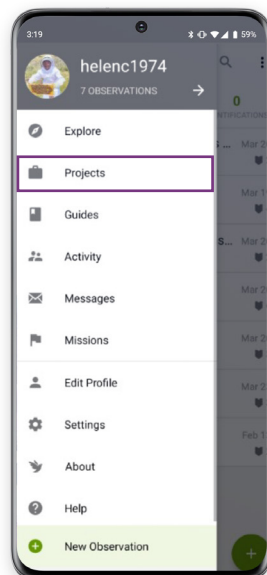
2 Create an account and join projects

Once the app is downloaded, open it up and create an account



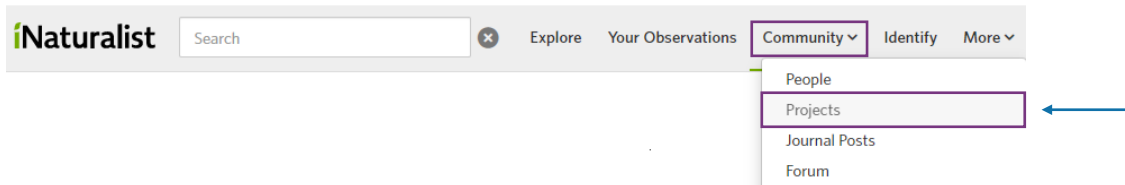
If you're using an iPhone or iPad, select "More..." on the main menu screen.

Then select 'Projects'.



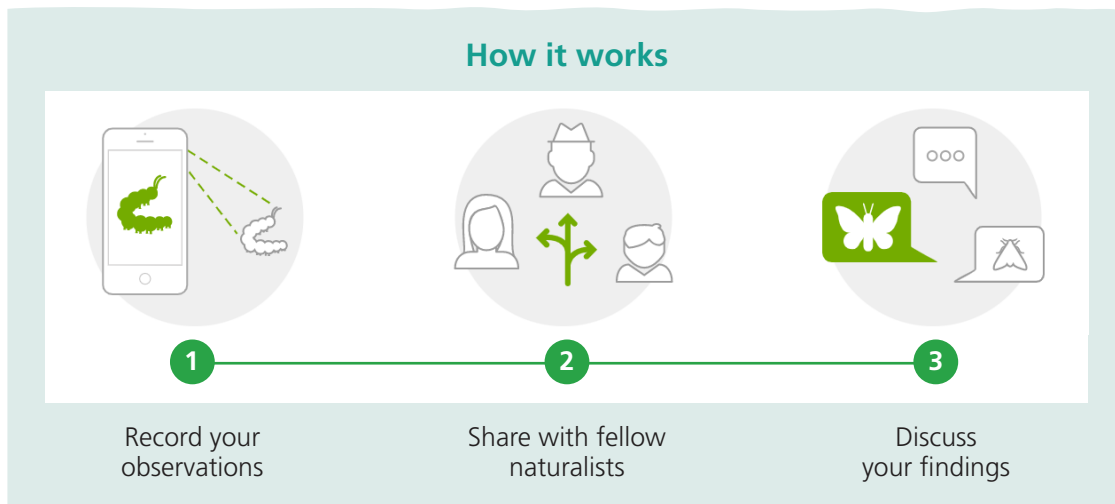
On Android, click on the menu bar in the top left corner and select 'Projects'.

If you're using a desktop computer, in the search bar select the 'Community' tab, then select 'Projects'.



iNaturalist, 'projects' are collaborative initiatives that bring together individuals with shared interests in nature and biodiversity. Projects allow participants to contribute their observations to a specific group effort, which can range from documenting the species present in a particular region to tracking migration patterns or monitoring rare or endangered species. Users can search for and join projects on iNaturalist that align with their interests or geographical location. Participating in a project can offer additional benefits, such as access to expert identification and feedback from fellow enthusiasts.

3 Start making observations



When you enter an 'observation' in iNaturalist it records your observation of an individual organism at a particular time and location. This includes observations with evidence of organisms from their tracks, nests, scat (poo) or things that have died. When you make an observation, you'll record:

1. Who you are
2. What you saw
3. The geographic location of what you saw
4. The date and time of your observation
5. Evidence of what you saw in the form of a photograph or sound recording

For your observation to be used by the science community, you will need to include all of the above components.

If you don't know the species, you could try and identify it as closely as possible, e.g. if you found what you thought was a beetle but didn't know what species you could classify using taxonomy, so 'order' such as beetle or 'class' such as insect.

Any species which you photograph can be identified either by yourself or with the help of iNaturalist and the science community.

You can use the following tips to assist you in making important 'research quality' observations.



Tips for finding wildlife

- Before heading out to observe wildlife, do some research to learn about the behaviour, habitat, and characteristics of the species you want to observe. This will help you to find wildlife and make more accurate and useful observations.
- Choose a warm, sunny day to observe rather than a wet and windy one
- Locate food and water sources and look up and down.
- Wildlife can be elusive, so be patient and wait for the right moment to make your observations.
- Avoid disturbing the animals or their habitat in the process and always keep to the trails.
- Record as many details as possible about the observation, such as the date, time, location, and weather conditions. Also, note any behaviours or interactions you observe.



Tips for photographing wildlife and plants

- Try to get as close to the subject as possible without disturbing it. Use the zoom feature on your camera or phone to get a closer shot.
- Good lighting is essential for capturing clear and detailed photos. Avoid taking photos in harsh or direct sunlight, as it can create harsh shadows or overexpose the image. If possible, shoot in the early morning or late afternoon when the light is softer.
- Make sure the subject of your photo is in focus. Use the autofocus feature on your camera or phone to ensure that the subject is clear and sharp.
- Try to position the subject in front of a clean, uncluttered background that will not distract from the subject.
- Take photos of the subject from different angles to give a comprehensive view of the organism.
- For clear and sharp photos, use a tripod or hold the camera steady with both hands.
- Always respect the wildlife and their environment when taking photos. Do not disturb the animal or its habitat and take photos from a safe distance.



Tip: Read, listen and watch - there are plenty of online resources to help you.

Scan or click to view a good video by *Remember the wild*



Tips for recording sound

- Know where the mic is on your phone
- Practice recording sound before you start your Citizen science project. This will help you get familiar with your equipment and techniques, and allow you to produce higher-quality recordings.
- Get as close as you can without altering your subjects behavior or putting yourself in danger
- Keep your hands and other obstructions away and keep it pointed at your target
- Rest the phone against a stable surface to stop your hand/arm getting tired
- Don't move or talk – even minor movements like shifting your weight or brushing away mosquitoes will create noise
- Minimise background noise – point your phone away from a road, running water, or other sources of background noise
- The length of the recording should be determined by the research question and the goals of the project. A combination of short and long recordings may be ideal for capturing both the presence of specific species and the overall biodiversity of the ecosystem.
- Make a voice announcement at the end stating what you recorded (to the best of your knowledge), and include the date, time and location before you forget
- Record contextual information such as the time of day, weather conditions, and location. This can provide valuable data for researchers to understand the environment in which the sound was recorded.



Tip: Local field guides are great for preparing people for what they might observe!



Scan or click to view the many YouTube videos that iNaturalist have made to assist you. These videos are a great way to improve your skills as a citizen scientist and can be watched at your convenience.



Part Three:

How to organise a BioBlitz activity

A BioBlitz is an event that focuses on finding and identifying as many species as possible in a specific area over a short period of time. A BioBlitz is also known as a biological inventory or biological census. The primary goal of a BioBlitz is to get an overall count of the plants, animals, fungi, and other organisms that live in a singular defined place. There are a number of well known BioBlitz events organised in Victoria each year including the The Big Scouting Bioblitz, the great Southern BioBlitz and the City Nature Challenge.

Organise a BioBlitz for your volunteer group

If you are a volunteer group leader, setting up a BioBlitz is a fantastic way to introduce citizen science to your community. It is also a terrific method to draw in new volunteers who may be searching for a more flexible, shorter-term volunteering opportunity.

Monitoring the local area through citizen science projects, gives people and communities the chance to take a more active role in protecting the areas they care about deeply. Volunteers gain a deeper understanding of the biodiversity in their area and can observe the phenological changes within the ecosystem, such as breeding cycles, migration movements, and flowering seasons.

1. Planning and preparation

A bioblitz project is specifically designed to document as many species as possible within a set time period, such as 24 hours. Once you have enough observations and feel comfortable using iNaturalist, you can start planning your own BioBlitz.

Observations:

Decide on what kind of BioBlitz you want to organize. You can be very general and ask participants to record everything observed, or you can narrow down to focus on a particular category, for example;

- **Taxon-specific BioBlitz:** These focus on a specific group of organisms, such as birds, butterflies, or fungi. The aim is to document all the species within that group found in a specific area during the BioBlitz.
- **Habitat-specific BioBlitz:** These focus on a specific type of habitat, such as a grassland, wetland, or beach. The aim is to document all the species found in that particular habitat during the BioBlitz.
- **Geographic BioBlitz:** These focus on a specific geographic area, such as a park, nature reserve, or urban area. The aim is to document all the species found in that particular area during the BioBlitz.
- **Virtual BioBlitz:** These are conducted online, where participants can upload photos and observations of species they find in their local area. These observations can then be used to create a comprehensive list of species found in a specific geographic area.
- **Bioblitz with a specific goal:** These BioBlitzes are focused on specific research or conservation goals, such as identifying invasive species or studying the impact of climate change on biodiversity.



Tip: You can search ParkConnect to see some existing Citizen Science Projects and even connect with these groups to share insights on how to set up and run your project.



Log into ParkConnect and perform a search for; "Environmental monitoring, survey, and research".

Scan or click to learn more.

Location:

Decide on the geographic location of your BioBlitz



Times and dates:

Choose a date and time thinking about what kind of bioblitz that you are running. For example, if you are doing a pollinator count, you may be best to try and run your bioblitz during daylight hours and preferably during a time of year when warm and attractive to pollinators to be about. If you are monitoring nocturnal you could begin at sunset and into the night when these animals are most active.

Budget:

The budget for a BioBlitz will depend on the size and complexity of the activity, the number of participants, the location, and the research goals. It is important to plan and budget carefully to ensure the success of the BioBlitz and to maximize the impact of the data collected. Using free apps like iNaturalist certainly helps. Some things to consider include;

- Marketing and Outreach: You may need to advertise the BioBlitz to attract participants, such as printing flyers, posters, and brochures, and creating social media and website content.
- Food and Refreshments: You may need to provide food and refreshments for staff and volunteers, especially if the BioBlitz is taking place over multiple days.
- Permits and Insurance: You may need to obtain permits and insurance to conduct the BioBlitz in certain locations.



Tip: Think about any local experts that you may be able to invite along to your event as this will help to attract participants.

Once you've picked a location and date, you'll need to get to work organizing your BioBlitz. Your responsibilities as the organizer are to:

- Configure iNaturalist to tally the bioblitz count
- Create a run sheet for your activity
- Recruit observers
- Recruit identifiers
- Rehearse an upload plan – make sure you conduct an onsite rehearsal to determine if the area has data, otherwise plan for a manual collection and a venue or time for participants to upload their observations.
- Assess the area and plan ahead to mitigate any potential risks
- Plan how to report back results from the BioBlitz



Tip: Although making observations during a BioBlitz isn't difficult, it can be challenging to familiarize participants with iNaturalist amidst the chaos of the event. To prepare observers, ask them to download the app and make some observations before the bioblitz begins in your pre-activity communications. To lead by example, consider posting observations yourself as the first step to becoming familiar with the app.



Scan or click to visit iNaturalist for more detailed information.

2. Safety and emergency planning

To ensure that you and your participants stay safe, always remember that the natural environment can be unpredictable. A bit of planning and foresight can make all the difference.

This includes;

- Conduct a risk assessment of the area to identify any potential hazards such as poisonous flora and fauna, steep terrain, or bodies of water
- Have a first-aid kit and at least one trained first-aider on site in case of accidents or emergencies
- Information about the park you are operating your BioBlitz, including parking, toilets and how to get there
- Monitor local weather conditions ask participants to dress according to the weather
- Food, water to drink, suitable footwear and sun protection
- Obtain the necessary permissions from relevant authorities, including any necessary insurance, licenses, or permits required for activities

Always follow directions from park rangers or park signs. If a park or site is closed, entering the area could endanger you and your companions. Keep to marked tracks and designated visitor areas, be aware of your own limitations. Always remember that wildlife is just that – wild. If you encounter wildlife, don't approach the animal, keep your distance. Be careful when making observations and never put yourself or yourself or your BioBlitz participants at risk.



Tip: Prepare a safety briefing for your BioBlitz and make sure you re-iterate the safety messages to participants prior to starting the BioBlitz.

3. Protecting Aboriginal Cultural Heritage

As part of the oldest living culture in the world, Aboriginal people have lived throughout Victoria for tens of thousands of years. Aboriginal cultural heritage is the continuing record of Victoria's Aboriginal societies. This rich legacy includes physical evidence of past and present occupation and cultural practices, visible through places and objects like shell middens, rock markings, artefacts and culturally modified trees. Equally importantly, cultural heritage can be reflected in the intangible values that have been passed from generation to generation – the practices, expressions, knowledge and skills that have been developed and refined over thousands of years, and that connect Aboriginal people to one another, to their ancestors and to Country. Park users, volunteers and others working in parks also have a responsibility for making sure these core cultural values in parks are protected. An [Aboriginal Heritage Identification Guide](#) has been developed to help people identify and care for tangible cultural heritage. If you see anything that may be tangible cultural heritage whilst you are conducting citizen science, please, make sure you report it to Aboriginal Victoria.

4. Conducting your BioBlitz

This is where the fun begins. You have done all the preparation, so now you should be ready to run your BioBlitz activity.

Follow the run sheet you have prepared for your activity and be prepared for last minute changes.

Having a pre-activity briefing can make all the difference and can include the following;

- Acknowledgement of country to pay respect to the traditional owners and custodians of the land on which a BioBlitz activity is taking place. It is a way to recognize and honor the deep and ongoing connection that First Nations have with the land, which has lasted for tens of thousands of years.
- Safety briefing on potential hazards and information about toilets, water, sunscreen etc
- High level overview of what you want to achieve including the purpose of the activity, the scientific goals, and how the data collected will be used.

- A short training session for participants – this could include the data collection methods and how to use iNaturalist, for participants who may not be familiar with this app.
- A little 'identification training' session can ensure that participants are competent to be collecting accurate data for your BioBlitz.
- Make sure that participants are aware of the guidelines and timeframe for your BioBlitz, before sending them out to record observations. This can include logistics such as meeting locations, transport, equipment needed, and toilet facilities.
- If your activity is being held in a specific timeframe, make sure you are checking in with participants and getting their feedback throughout the BioBlitz.
- Give clear expectations about when data needs to be submitted by to count in your project.
- Run through emergency procedures
- Allow time for questions and answers to clarify any doubts or concerns.



Tip: Give participants some tips for making observations (see above)

5. Interpreting results and planning future actions

Once you've completed your BioBlitz, it's important to reflect on what you observed and insights you gained from running the activity.

It's not just about the number of observations that you made, the individual species that you observed will tell you a lot about the health of an ecosystem and its biodiversity.

Talk to your Group about your findings using the questions below.

- Were there any observations that you were surprised about?
- Were there any species that you expected to find but didn't observe?
- Can you explain why that might have happened?
- What did you notice about the health of the ecosystems?
- How did the data collected compare with any previous BioBlitz's?





Plains Wanderer,
Terrick Terrick National Park

Choose your top three most observed species and top three least observed. Do some extra research to find out more about their conservation status, i.e. how healthy their population and distribution is across Victoria and Australia.



Scan or click to use this website from the Australian Government to help.

- Arrange to go out once a month, or the first weekend of each new season to build up a picture of how the biodiversity changes with the seasons. This will help you collect more reliable data and a 'bigger picture' of ecosystem health.
- Hold an annual Bioblitz every year and invite and the local community to get involved.
- Consider working towards a special interest area project to raise awareness of a particular issue, such as a pollinator count in conjunction with world bee day.

What next? There are lots of ways that you can make your BioBlitz an ongoing part of your volunteer group's calendar.

- Organise some clean-up or planting projects in your community, particularly if you find specific species that require more habitat protection or planting as a result of your observations.
- Build partnerships with other organizations or groups that share your interest in biodiversity and conservation. This can help you tap into a wider network of volunteers and resources to support your BioBlitz efforts.
- Continue to monitor and record species in your BioBlitz throughout the year, so that you can continue to build up a picture of what species are there and how they might be changing over time.



Tip: Make sure that you log your BioBlitz in ParkConnect!

Remember that citizen science is a global movement allowing you to make observations and contribute to global biodiversity efforts from anywhere in the world. You can explore and join various projects that align with your interests, connecting with a community of like-minded individuals who share a passion for nature.

More citizen science projects that support nature

Here is a selection of Citizen Science projects that help Parks Victoria. You may be drawn to a specific area of interest, such as pollinating insects or fungi, or participate in broader biodiversity collection projects like a nearby BioBlitz. Certain projects require downloading their respective apps, while others utilize an existing platform such as iNaturalist.



ParkConnect

You can participate in a variety of citizen science projects organised by volunteer groups at Parks Victoria, such as butterfly surveys, water monitoring and kangaroo counts.

Register in ParkConnect and use the drop down menu 'activity type' to search for; "Environmental monitoring, survey, and research"



Data Discovery

Parks Victoria's Data Discovery project focuses on specific reserves in need of more data. Recording species from these sites will increase our knowledge of Victoria's biodiversity and potentially identify species that haven't been recorded in those areas before.



ClimateWatch

ClimateWatch is a citizen driven wildlife phenology tracker. Data will help inform how climate change is impacting rhythms of life. Download the ClimateWatch app and monitor changes to your local environment throughout the year.



Frog ID

Take part in Australia's biggest frog count. Australia's frogs are under threat from habitat loss, disease and climate change. Recording frog calls with the Frog ID app will help provide our scientists with valuable data for the protection and conservation of frogs.



WaterWatch

WaterWatch is a citizen science program for monitoring waterway health.



EstuaryWatch

EstuaryWatch is a successful citizen science program that supports community members to actively participate in the monitoring of estuary health.

The EstuaryWatch program has a sister program called Waterwatch.



Great Victorian Fish Count

The Great Victorian Fish Count is a Citizen Science project that aims to gather data about the diversity and distribution of fish species found in Victoria's coastal and estuarine waters. Participants can contribute by observing and recording the types and numbers of fish they see while snorkelling or diving in specific locations during the survey period.





Aussie Backyard Bird Count

This event by BirdLife Australia occurs each October and is a great way to connect with the birds in your backyard, no matter where your backyard happens to be.



Australian Pollinator Count

The Australian Pollinator Count is a Citizen Science Program that collects and provides important data to help scientists better understand the plight of Australia's insect pollinators. The Australian Pollinator Count takes place during Australian Pollinator Week, from 11-19 November.



Fungimap

Fungimap is a not for profit, citizen-science organisation dedicated to furthering the conservation and knowledge of Australian fungi. You can make records in iNaturalist from a web browser and/or via apps.



Bush Blitz

Australia's largest nature discovery program that organises expeditions to document plants and animals across Australia.



LitterWatch

Community groups and other organisations put in countless hours to reduce litter. They are cleaning up litter, collecting data and engaging others. We need this data to help understand litter trends and patterns. LitterWatch is bringing these data together for everyone to use.



NatureWatch

This initiative, run by the Victorian National Parks Association, empowers community volunteers with the skills to gather vital data on the fauna and flora of Victoria.



Field Naturalists Club of Victoria

The Field Naturalists Club of Victoria (FNCV) is Victoria's oldest natural history group, established in 1880. Volunteers participate in surveys to collect data which is used to increase scientific knowledge and for environmental issues.



ReefWatch

This marine citizen science initiative is run by the Victorian National Parks Association. It trains volunteers how to gather crucial data on fish, invertebrates, and algae at sites around Victoria.



SWIFFT

Victoria's State Wide Integrated Flora and Fauna Teams (SWIFFT) connects people with events, information and others interested in threatened species and biodiversity conservation.



Scan or click to find more citizen science projects



Lilly Pilly Track,
Wilson's Promontory National Park

Next steps

The future of citizen science is bright, and has the potential to harness the power of millions of people to collect valuable data and insights that can help solve some of the world's most pressing environmental challenges. So don't hesitate, get started on your citizen science journey today.



Useful vocabulary for citizen scientists

The following are some common terms that are used in the context of citizen science.

| Term | Definition |
|---------------------------|--|
| Community science | A term used to describe citizen science projects that are designed and led by community members to address local concerns and priorities. |
| Biodiversity | The variety of life in a given ecosystem or region. |
| Ecosystem | An ecosystem is a complex system of living and non-living components that interact with each other and their environment. It includes all the living organisms, such as plants, animals, and microorganisms, as well as the non-living components, such as air, water, and soil. |
| Phenology | The study of the timing of seasonal events in plants and animals and how they are influenced by environmental factors. |
| Data quality | The accuracy, completeness, and reliability of data collected by citizen scientists. |
| Crowdsourcing | The practice of obtaining information or input from a large number of people, typically through online platforms. |
| Taxonomy | The scientific discipline of identifying, classifying, and naming living organisms based on their shared characteristics and evolutionary relationships. It provides a hierarchical system of classification that helps scientists understand the diversity of life on earth and how different species are related to each other. |
| Project design | The process of planning and organizing a citizen science project, including setting research goals, identifying target populations, and determining data collection methods. |
| Run sheet | This is a document that outlines the timeline and order of events for a particular project, event or activity. A run sheet may include information such as the start and end times of each segment of the event, the order in which speakers will appear, the technical requirements for each segment, and any other relevant details. It serves as a guide to ensure that the event runs smoothly and according to plan. |
| Technology | The tools and platforms used to facilitate citizen science projects, including mobile apps, sensors, and online databases. |
| Impact | The ways in which citizen science projects can contribute to scientific research, education, and public policy, as well as the benefits to participants and communities. |
| Endemic species | Endemic species are species that are native to and found only in a specific geographic location, such as a particular island, region, or ecosystem. Endemic species have evolved in isolation and are often adapted to unique environmental conditions found only in their native range. Some Australian Endemic species include Koalas, Kangaroos and Wombats. |
| Introduced species | Introduced species, also known as non-native or alien species, are species that have been intentionally or unintentionally introduced into a new geographic location by humans. These species may be intentionally introduced for economic or cultural reasons, such as for agriculture or as pets, or they may be accidentally introduced through human activities, such as transport or trade. Introduced species can have significant impacts on the local ecosystem, often competing with native species for resources and potentially causing harm to the environment, economy, or public health. An example of an introduced species is the European Honey bee (<i>Apis Mellifera</i>) which was brought to Australia in 1822. |

References

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