Engaging the public in bat research

Be aware that any new project will likely need permits and ethics approvals before work can take place, particularly if it is on public land or involving wildlife.

Citizen scientists – how to get involved in science research programs

Find the project that's right for you

- There are a wide range of projects that you can get involved in! A few bat research examples are listed at the end of this fact sheet. A simple internet search on "Citizen Science" will bring up many other opportunities.
- Read project descriptions carefully and ask questions if you are unsure what will be expected of you and whether this volunteer role would be suitable for you.
- Monitoring and research programs may be long term (for example, the Grey-headed Flying-fox survey has been running in Melbourne since the mid 1990s), or they may be short-term (for example, a Field Naturalists Club of Victoria fauna survey over a weekend).
- Ask questions or participate in discussions while you are on the project. This is a great chance for you to learn something new, and also to contribute to science through your own observations.

Are you inspired enough to start your own project?

- If you're thinking of starting a research or monitoring program, be sure to first find out if there are existing programs to which you could contribute.
- If you're more interested in asking a science question than monitoring, it is important to seek the advice of a professional scientist to ensure experimental design is sound.
- It's very helpful to have regular contact with a scientist who can provide advice along the way. Getting sound advice up front may save you a huge amount of time and energy and ensure your project meets its goals.

A volunteer tracks down a male Gould's Wattled Bat in its roost using radio-telemetry. Photo: Earthwatch

Fun Fact!

Despite the myth of bats getting caught in your hair, their echolocation is actually so good that they can detect a single human hair!

Opportunities to contribute to research on bats in Victoria!

Links to each of these programs are on the ABS website **(www.ausbats.org.au)**

- **Earthwatch Institute Australia**
  Ecotourism expeditions that involve volunteers in current science research.
- **Friends of Wilson Reserve**
  Volunteers are needed to help check bat boxes each month.
- **Friends of Organ Pipes**
  Volunteers are needed to help check bat boxes every two months.
- **Field Naturalist's Club of Victoria**
  Victoria's oldest conservation group which runs field trips and surveys and holds information nights on everything from bats to fungi.
- **Melbourne Monthly Flying-fox Count**
  The bat count is held once a month at dusk when the whole colony of up to 40,000 bats fly out to feed around Melbourne's suburbs. New counters are welcome, with training provided on the night.

Gathering data on the bats, including identification, measuring, weighing and banding individuals. Photo: Robert Bender

When members of the public participate in scientific research, they become "citizen scientists," and everyone benefits!

Volunteers can contribute to research and long-term monitoring programs, assisting in the collection of valuable data for the conservation of bats.

What are the benefits of citizen science programs for bat research?

For scientists:

- Directly involving non-scientists is a great way to deliver key messages on conservation and management issues to the general public, which will be spread via enthusiastic volunteers.
- Involving people of diverse backgrounds can provide new perspectives and input into research goals and methods.
- Research projects that rely on labour-intensive data collection over long periods of time can be achieved more cost-effectively by involving volunteers, producing large data sets and more meaningful research results.
- Conservation efforts are more effective when the public understands and supports the science behind them.

Researchers have been conducting monthly fly-out counts of Grey-headed Flying-Foxes (Pteropus poliocephalus) *in Melbourne since 1990. These surveys, which need a minimum of ten observers per session, would not have been possible without the participation of keen volunteers.*

For the public:

- Volunteers have the opportunity to speak directly with an expert. This helps dispel common myths and misconceptions about bats.
- Interacting with scientists breaks down stereotypes and makes science more relevant and accessible.
- Citizen science promotes communication and learning opportunities for the public so that their contributions are valued as part of the environmental conversation.
- Volunteering on research projects creates opportunities for participants to develop new skills.
- Participants are granted access to areas normally restricted for the public, such as closed water catchments or the Royal Botanic Gardens at night!

Volunteering is a great way to meet new people! Participants in bat projects have been between 6 and 86 yrs old and include automotive engineers, wildlife activists, TV producers, teachers, tradies, students, social workers, corporate professionals, and even a couple on their honeymoon!

Thinking about flying. Photo: Robert Bender

Looking for more information about bats?
Please see our fact sheets on a range of issues, available for download from:
www.ausbats.org.au

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Case studies of citizen science in Melbourne

Earthwatch Melbourne Microbats Program, Melbourne, Victoria

Research aim

To study the microbat populations found in parks around Melbourne and document the resources required by these bats to survive in the urban environment.

Who can volunteer?

Approximately 90 volunteers from the general public have participated in a series of overnight programs (Scientist for a Day), and 28 younger volunteers (16-17 yrs) in the week-long Student Challenge teams.

What do volunteers do?

Volunteers assist with all aspects of the project except for animal handling, which is restricted to trained staff with a current vaccination against Australian Bat Lyssavirus. In addition to setting traps and data recording, volunteers also participate in other field-based activities such as tracking animals using radio signals, measuring vegetation characteristics, and observing bats emerge from roosts at dusk.

Student Challenge team members sorting and classifying insect prey collected the night before. Photo: Earthwatch

What the volunteers say

Volunteers benefit from the experiential learning aspect of the program. The participants enjoy the instant feedback while being involved in the research – they set the traps themselves and see how many bats are caught, while discussing the research and wider conservation issues with the scientists. Students in the week-long programs also enjoy the opportunity to master some skills over the week, while developing new friendships with their teammates.

"Fun and informative. Really enjoyed this unique experience." Bridie – Scientist for a Day.

"I now have a new appreciation of bats." Jason – Scientist for a Day.

"It has made me want, even more so, to pursue a career within science." Maddy – Student Challenge.

Volunteers set up a harp trap to survey the bat fauna in their local bushland reserve. Photo: ARCUE

What the scientists say

The data collection process for this project is labour intensive and good outcomes were reliant on large comprehensive data sets. The volunteers made it possible for us to capture and gather data on large numbers of bats and efficiently survey environmental variables such as vegetation structure and insect prey abundance. The week-long programs were particularly valuable from a research perspective, because the volunteers had the opportunity to master skills and form effective working relationships with each other as well as the scientists.

Bat Box Project, Friends of Wilson Reserve, Ivanhoe, Victoria

Research aim

The original aim of the project was to identify suitable box designs for microbats to roost and breed in, but seven years on has expanded to include a banding program to investigate the population dynamics and life history of these animals. So far this site has contributed data to two PhD projects and an Honours project.

Who can volunteer?

Volunteers include scientists, students and members of the public. Over the last seven years, 168 volunteers have been involved, sustained by a regular core group of about five dedicated participants.

Releasing a bat after being measured and weighed. Photo: Robert Bender

What do volunteers do?

The 20 bat boxes are inspected on a monthly basis. Each box is checked by climbing up a ladder, bats are then removed, with the number in each box recorded. Each individual is identified and measurements are taken before the bats are released that night on dusk. Only volunteers who are trained in bat handling and have current vaccinations against Australian Bat Lyssavirus can handle the bats directly and take measurements. Important tasks for other participants include carrying and stabilising the ladder, carrying the bats in cloth holding-bags, and recording data on box contents and animal measurements. All volunteers can also release animals as this doesn't require any direct handling.

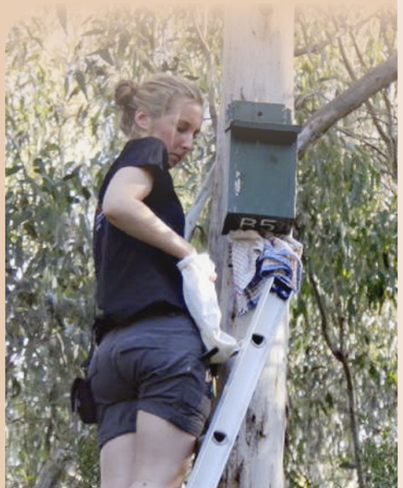
What the volunteers say

Participants take pride in running this long-term project, which is entirely sustained by volunteers. A few volunteers have committed further to the project by becoming vaccinated against Lyssavirus and have since been trained to retrieve bats from boxes as well as identify the animals and take measurements. One regular volunteer was also inspired to set up their own bat boxes in a reserve 1 km away, and the monitoring of these is now incorporated into the Wilson Reserve program.

What the scientists say

This project attracts a large number of volunteers and visitors, even though only a few of these become dedicated, long-term participants in the project. From a scientific perspective, having a regular, knowledgeable core of volunteers helps to ensure data quality. The core group also ensures the project continues running while giving other participants and interested public the freedom to be involved as often as it suits them. This flexibility has also allowed us to utilise the project as an educational tool. The success of this project is in no small part due to the co-ordinator's diligent communication of results back to volunteers.

A vaccinated volunteer collects the bats from one of the bat boxes. Photo: Robert Bender



Scientists – how to involve the public in your research programs

Make the most of your volunteers

- Think carefully about how many volunteers you require, exactly what they will be doing and the skills you'll need to teach them.
- Consider how long volunteers will need to participate in the project to master the new skills. It's unlikely to be efficient to teach a complex skill to a short-term volunteer.
- Clear instructions and structured activities with explicit goals will help things run smoothly.
- Be aware of the physical limitations of your volunteers – if your research requires a certain level of fitness or strength, be sure to specify this from the start.
- Give encouragement as your volunteers master new skills; they have given their time to your project so make sure you acknowledge their efforts.
- Volunteers can be just as effective at processing large volumes of lab-based work as contributing to labour-intensive field work.

Plan for high quality data from the start

- Data integrity is probably the largest barrier to science embracing public involvement; however, careful planning can ensure consistent, quality data are collected.
- It is efficient to retain long-term volunteers so you don't need to teach protocols from scratch at the start of each data collection session. However, keep in mind that it is not always possible to maintain the same volunteer team for the duration of the project.
- If large numbers of volunteers are collecting data, quality checks are needed.
  - Can the data be compared such that outliers are easily identified?
  - Will someone on staff be entering the data and performing checks?
  - Will you assess an individual volunteer's accuracy and repeatability of measurements before they start?
- It is likely that a small group of individuals will contribute the bulk of the information to your project, so consider whether in your case that is a positive factor for data integrity, or if it may introduce bias.
- If your project will be creating large amounts of data, can it be merged with an existing database (for example, Atlas of Living Australia)? Using crowd sourcing for data collection is efficient, but only if that data is being managed properly.

When citizens are collecting data for your project, be sure to make the results available to them too. Motivation stems from knowing the impact their contribution has made to science.