

Citizen Science in the community

– a guide to getting involved



There are many ways we can all make a difference for the environment, from recycling our waste to putting up a birdbox, organising a community clean-up, planting trees, or developing a wildflower meadow. As well as practical environmental actions such as these, increasing numbers of people are getting involved in Citizen Science, the term used to describe public participation in scientific research. For example, if you take part in RSPB's Big Garden Birdwatch – you're a Citizen Scientist!

TCV's Scotland Counts project provides a wide range of opportunities for individuals and communities to develop their knowledge, skills and confidence to engage in Citizen Science, beginning with this guide. There are helpful links to many Scottish projects and agencies in the details below, but also ones that are relevant to the wider UK. We hope the content of this guide will be of use more widely to TCV Community Network members too!

Why is it important?

Amateur enthusiasts have been collecting information (or data) about the natural world for hundreds of years, which has supported our knowledge of the cycles of nature. Taking part in Citizen Science is one of the most useful ways you can help expand our scientific knowledge to understand the environment and to influence decisions on how to protect and improve it. Nearly 90% of all the species and habitat records collected in the UK come from Citizen Scientists. Citizen Science isn't restricted to finding and monitoring rare or unusual species – it's also about recording the everyday and the commonplace. And Citizen Science involves measuring things like air quality, pollution, rainfall and river levels.

The internet, smartphones and other digital technologies have opened up a host of new opportunities for the input of vital data from casual and dedicated observers alike.

Other benefits

Citizen Science is much more than just about the science. It's an enjoyable and sociable activity, helps develop people's skills and knowledge, encourages people

to be more active outdoors, and helps us feel more connected to the community and environment around us.

Who?

It can be something you do on your own, with friends or family, or with your local conservation group, with many belonging to TCV's **Community Network**. And you **don't** have to be an expert to get involved! That's the great thing about Citizen Science – we can all join in whatever our level of knowledge or experience. However, once you are involved and 'get your eye in', it's amazing how much you can pick up about your chosen areas of interest, and in time you may become an expert in your own right!

Citizen Science can be great fun, so there's plenty of scope to involve children and young people, whether at home, school, community events, or through schemes such as The Duke of Edinburgh's Award.

Where?

The good news is that Citizen Science can take place anywhere, from your back garden to a local park, woodland, nature reserve, river or beach.



How?

A good starting point is to take part in a national survey, and there are plenty to choose from! The Big Garden Birdwatch is massively popular and involves over half a million people each year. As this is an annual event it allows RSPB to monitor trends and helps it to better understand how birds are faring across the UK. If birds aren't your 'thing', then what about butterflies, flowers, lichens, pond life, trees, squirrels, invasive non-native species, plastic pollution, or even the stars? There are surveys available to monitor and record just about every aspect of nature and the environment.

Here's a selection of surveys to consider, covering a wide range of subjects, some year-round and some seasonal:

Multiple species

Nature's Calendar – What effect has recent weather patterns had on wildlife? Does climate change affect timings in nature? Join the Woodland Trust's Nature's Calendar and help scientists discover answers to these questions.

PTES – The People's Trust for Endangered Species has various surveys to record different wildlife species and habitats.

The Wildlife Trusts – Find out if your local wildlife trust needs help in recording the wildlife on its reserves.

Mammal Society – There are a number of surveys available to help scientific research on Britain's mammals.

Open Air Laboratories (OPAL) – OPAL was a UK-wide Citizen Science initiative founded and led by Imperial College London (2007 – 2019) enabling people to get hands-on with nature while contributing to important scientific research. The surveys are now closed for data entry, but you can still use the surveys to investigate the health of the environment in your local area. The surveys cover the following topics: Water, Air, Biodiversity, Bugs Count, Tree Health, Soil and Earthworm, Polli-Nation.

Scottish Wildlife Trust – You can help SWT better understand the wildlife on its reserves by noting down any sightings of unusual, protected or local interest species, or by listing all the species you see when visiting a reserve. Even records of common species can be useful.

Scottish Invasive Species Initiative – SISI works with local organisations and volunteers to control invasive non-native species along riversides in Northern Scotland. Members of the public can help SISI by recording sightings of six key species – American mink, Giant hogweed, Japanese knotweed, Himalayan balsam, American skunk cabbage and White butterbur.

For any other species that are non-native in Scotland you can report them via the non-native species reporting form on [Scotland's environment website](#).



Insects

Bumblebees

- Bumblebee Conservation Trust

Bugs - Buglife

Butterflies - Butterfly Conservation

Dragonflies - British Dragonfly Society

Pollinators

- UK Pollinator Monitoring Scheme

Beetles - UK Beetle Recording

Plants/trees

Ancient Tree Inventory - Woodland Trust

National Plant Monitoring Scheme

- Various partner organisations

Dead Good Deadwood Survey

- The Conservation Volunteers

Marine/freshwater

Shorewatch

- Whale and Dolphin Conservation

Marine Citizen Science projects

- Marine Conservation Society

The Great Nurdle Hunt - Fidra

Big Microplastic Survey

- Just One Ocean and University of Portsmouth

Shoresearch - The Wildlife Trusts

Rock Pool Citizen Science

- The Rock Pool Project

Riverfly Recording Schemes

- The Riverfly Partnership and Freshwater Biological Association

Birds

Big Garden Birdwatch - RSPB

Bird surveys - British Trust for Ornithology

Mammals

BIG Hedgehog map - Hedgehog Street

National Hedgehog Monitoring Programme

- Various partner organisations

National Bat Monitoring Programme

- Bat Conservation Trust

Squirrels - Saving Scotland's Red Squirrels

Badgers - Scottish Badgers

Reptiles/amphibians

National Reptile Survey

- Amphibian and Reptile Conservation

Dragon Finder App - Froglife

Physical environment

Weather Observation Website (WOW)

- The Met Office is helping to co-ordinate the growth of the weather observing community in the UK, by asking anyone to submit the observations they are taking. This can be done using all levels of equipment.

Galaxy Zoo

- The aim of Galaxy Zoo is to encourage the public to study the shape and form of the galaxies photographed by telescopes and to classify them.

British Geological Survey

- The BGS website has surveys that the public can input their data into, including App based mobile surveys and historic photograph requests.

SCAPE

- SCAPE works with the public to research, investigate, interpret and promote the archaeology of Scotland's coast. This work includes coastal heritage surveys.

SEPA

- SEPA manages a network of volunteers who collect daily rainfall data. They are known as rainfall observers and play an important part in collecting rainfall data in Scotland.



Further recording and monitoring schemes are listed on the [National Biodiversity Network](#)

Linked in

Whilst Citizen Science is usually carried out as a 'standalone' survey or event, it can also be incorporated into other activities. So, whether you're doing some woodland management, wildlife gardening or litter picking, you can also use the opportunity to spend a little time recording the nature you encounter. Even just 15 or 30 minutes can provide a lot of useful information, especially if done on a regular basis. This data can be fed into the many nature surveys and recording schemes, and knowing what species are (or aren't!) present can also influence a site's management.

Where else to share your findings

In addition to the organised surveys listed above, there are other ways to share casual wildlife observations (or biological records) and have them added to the relevant national database. A typical record includes **who** (took the record), **what** (species), **where** (usually a map grid reference, what3words location or GPS coordinate) and **when** (day/month/year).

You can send wildlife records to your Local Environmental Records Centre (LERC) who will also share them with a national database. Scottish LERCs are listed on the [BRISC](#) website, whilst [ALERC](#) lists those throughout the UK.

If there's no LERC for your area and no recording scheme or society, you can add your records to [iRecord](#) or [iNaturalist](#) who then share them with other users to support research and decision-making at local and national levels.

What equipment is needed?

To get started – not much! At its simplest just a keen pair of eyes (and ears!), plus a notepad and pen (or smartphone), and maybe an identification guide or two. What else depends on the aspects of nature you're interested in. For spotting birds, binoculars, even cheap ones, are obviously a great help. For insects, a butterfly or sweep net is handy, as is a little hand lens plus small collecting jars to pop your finds in for a good look. Magnifying insect viewers combine the two and are great for involving children. The bugs and beasties found in ponds, rivers, streams and rock pools can be collected with a pond net and placed in a plastic tray and



water for identification. Remember when capturing live creatures that it's important to always release them back where you found them.

Footprint tunnels can help monitor hedgehogs and other small mammals. The triangular shaped tunnel, about 4 feet long, is placed in a sheltered spot eg the base of a hedge. Animals walk over a wildlife-friendly ink pad to reach bait such as cat or dog food left in the middle of the tunnel. The animals leave their footprints on tracking paper which is used to identify which species the footprints belong to.

Motion activated wildlife (or trail) cameras can be a great way to monitor shy or nocturnal animals. They should be placed in discreet locations which avoid people's images being captured, or where there's a likelihood they would be interfered with or stolen! Other specialised equipment can help with difficult to pin down species, eg bat detectors can identify between different types of these fast-flying mammals. If you're keen to monitor nature at multiple locations, a handheld Global Positioning System (GPS) device can provide accurate location coordinates.

GPS functionality is also available on most smartphones, which can also record 6 figure grid references using the Ordnance Survey's [OS Locate App](#). Most smartphones have versatile cameras, including macro lenses for close-ups, so are great for identifying and recording species 'on the go' using Apps like [iRecord](#) and [iNaturalist](#). And smartphones aren't just handy for identifying things using photos – there are Apps such as [Merlin](#) which can identify individual bird songs. With increasingly powerful features and capabilities, a smartphone is possibly the most useful piece of equipment you can use for Citizen Science.



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Suppliers

Wildlife survey and monitoring equipment is available from specialist retailers including www.nhbs.com and www.wildcare.co.uk. TCV Community Network members are eligible for a 10% discount from www.forestschoolshop.co.uk



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Improving your identification skills

There are plenty of resources available to help you identify (ID) the plants and animals you come across:

- There are identification guidebooks available to suit all levels, starting with the popular Collins Gem series for beginners, through to more extensive guides or 'keys' for those with more knowledge.
- The [Field Studies Council](#) publishes a colourful set of fold-out identification charts covering a wide variety of subjects, from butterflies and bees to woodland plants and churchyard lichens. These charts are laminated so are ideal when the conditions are a little damp!
- There are a number of Apps and websites where you can upload photos of your observations to be identified by communities of online experts, including [iSpot](#), [iRecord](#), [iNaturalist](#) and [NHM UK Biodiversity Facebook group](#)
- The main nature conservation charities, including [RSPB](#), [Plantlife](#), [Woodland Trust](#), [Bumblebee Conservation Trust](#), [Butterfly Conservation](#), [Mammal Society](#) and [Buglife](#), plus many of the regional/national wildlife trusts, have identification sections on their websites.

- A sociable way to improve your nature identification skills is by attending an 'in-person' event in the company of like-minded learners, led by enthusiastic experts. Most of the major conservation charities and their local branches hold identification field trips, workshops and training courses, as do local natural history societies, Local Environmental Record Centres, plus the [Field Studies Council](#) which offers a 20% discount from many of its courses for TCV Community Network members.
- Each year TCV Scotland runs a number of ID courses eg 'Wildflower Identification' and 'Winter Tree Identification', plus 'Plant and Habitat ID Phase 1' survey training. Visit [Eventbrite](#) for details of any upcoming events. And through our Scotland Counts project (see below) we can provide training on ways you can record the species in your greenspace, or we can run guided walks or survey sessions to improve your identification skills.
- For those who want to get started with serious botany, the annual BSBI [Identiplant](#) programme takes near beginners to an intermediate level. Identiplant is supported in Scotland by TCV.



Organise a BioBlitz

As highlighted previously, you can record your wildlife observations on a casual basis or as part of a national Citizen Science survey. Another approach is to discover as many species of plants and animals as possible within a defined area, during a set period of time. This is called a BioBlitz, from Bio - *life* and Blitz - *burst of activity*. A BioBlitz can be a great activity for groups who care for a particular park, garden, woodland or nature reserve. BioBlitz participants are usually a mix of people from the local community, plus staff and volunteers from conservation organisations whose expert knowledge can help identify whatever is found.

BioBlitzes sometimes last for 24 hours which allows for the identification of species more active at night, eg moths, but you can choose a shorter time depending on your location and who is involved. The information gathered can help guide the site's management and the data can also be fed into your Local Environmental Records Centre, national surveys or recording websites. BioBlitzes tend to be organised in late spring or summer when more species are present.



A BioBlitz can be great fun and help make local people, including youngsters, more aware of the amazing variety of nature on their doorstep. If you're considering organising your own BioBlitz, some useful information is available from the [Natural History Museum](#)



Find out more

There's a wealth of further resources available on Citizen Science, including:

[Biological Records Centre \(BRC\)](#)

[National Biodiversity Network \(NBN\)](#)

[Natural History Museum](#)

[Nature Recording Hub](#) and [Urban Nature Project](#)

[The Darwin Guide to Recording Wildlife](#)
[NatureScot](#)

[Biological Recording in Scotland \(BRISC\)](#)

[Scotland's environment web](#)



Scotland Counts

Through our long-running [Scotland Counts](#) project we offer a broad range of services and support a number of creative, engaging and innovative Citizen Science projects.

Scotland Counts activities include:

- 'Introduction to Citizen Science' training courses for community groups, charities, and other organisations.
- Continuing Professional Development (CPD) training for educators on delivering our hugely successful Hedgehog Friendly School programme.
- Guided nature and species identification walks.
- Training on carrying out surveys in your local greenspace.
- A regular Citizen Science volunteering group based in Glasgow to meet new people, learn new skills, and provide experience carrying out biological surveys.



Through Scotland Counts we have supported other Citizen Science initiatives, including:

The Dead Good Deadwood Survey encourages people to record and value this important micro habitat for wildlife.

HogWatch Scotland aims to understand more about the declining hedgehog numbers in Scotland by working with schools and other groups to implement hedgehog friendly changes in the landscape, conduct surveys, and host a variety of events and training courses.

Raising tick awareness – in recent years TCV has been involved in an initiative to increase public awareness of ticks, small spider-like creatures whose bites can transmit infections and cause illnesses such as Lyme disease.

Further information about TCV Scotland and Citizen Science is available on our [website](#)

Or contact:

Alex Paterson

Senior Project Officer – Citizen Science
TCV Scotland, Unit M1, 143 Charles Street,
Glasgow G21 2QA

Email: citizenscience-scotland@tcv.org.uk

Citizen Science provides opportunities for everyone to get involved. Whatever your age, experience, interests or location, you can contribute something useful to our environmental knowledge and conservation. And Citizen Science can improve your own environmental awareness, is a friendly and fun activity, and gets you out and about in our greenspaces, so has health benefits too. What's not to like?

Get involved now and develop your inner scientist!

The information in this guide is believed to be correct at the time of publication. If you know of a national survey which could be included, or there is an expired web link, please contact g.burns@tcv.org.uk

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