International Union for Conservation of Nature
EXPLAINER BRIEF
www.iucn.org

January 2026

# CITIZEN SCIENCE

- Citizen science, also called community science, is a common term for a wide range of participatory practices involving scientific data collection and analysis.
- Citizen science is important for science, research and policy, and has multiple benefits for society and for participants themselves by expanding knowledge, increasing awareness and fostering stewardship.
- While some scientists remain cautious about the quality of citizen science data, acceptance within the broader scientific community is steadily growing.
- Measures to strengthen the role and impact of citizen science include enhancing policy and funding support, continued training of educators and leveraging existing data collection technologies.

## What is it?

Citizen science is the practice of public participation in scientific research with the aim of increasing scientific knowledge and contributing to data collection.

The practice of citizen science is a key tool in nature conservation and is present across a wide range of disciplines – from the natural and social sciences to the humanities. Within each, its interpretation and application may vary.

Citizen science can take many forms, including:
- co-developing research questions;
- designing and conducting experiments;
- collecting and analysing data;
- interpreting results;
- developing tools and applications;
- helping solve complex problems; and
- communicating results.

In many cases, citizen science operates through crowdsourcing, where organisations issue open calls for contributions from a broad network of participants to support distributed research and problem-solving. Depending on the objectives and nature of the project, volunteers can be involved.

**Volunteers collecting insects for a biodiversity assessment in California, USA (Photo: Adventure Scientists)**

Modern advances in technology, such as mobile phones, digital cameras, artificial intelligence and chatbots make citizen science more accessible today than ever before. Citizen science apps can turn smartphones into research tools, letting users contribute data for science projects by recording observations. Popular examples include iNaturalist for identifying plants, animals and fungi, eBird for recording bird observations and iSPEX for measuring air and water quality.

The success of any citizen science project depends on the establishment of a well-devised monitoring programme and the dedication of its participants.

## What are the benefits?

Citizen science helps engage citizens in science and inform responses to environmental challenges such as climate change, biodiversity loss and pollution.

Data generated by citizen science can be invaluable to professional researchers, allowing them to survey larger areas and cover longer timeframes than they could achieve on their own. With support from a network of volunteers, scientists and conservationists can document broader ecological patterns and long-term trends, such as changes in wildlife populations, to better inform biodiversity management and policy.

Likewise, data generated through citizen science can help support education initiatives. By enhancing collaboration between the scientific community, the general public and local communities, citizen science fosters public understanding of science and improves science literacy. An example is the #NatureForAll initiative, an IUCN-led coalition of more than 600 partners that is inspiring people to connect with, learn about and experience nature. In countries such as India, Belgium and Nepal, local organisations have launched effective programmes that

**Community participating in a bioblitz in Karnataka, India. (Photo: The Naturalist School, India)**

**Water monitoring in Oregon, USA, for the Adventure Scientists' Wild and Scenic Rivers project (Photo: Josh Daniels)**

empower youth, engage communities and promote conservation, such as the Himalayan Pollinator Patrol, led by the Nature Conservation and Study Centre.

Importantly, citizen science democratises access to data when results are freely available, but it is more than just data collection. It fosters connection, care and collective action, leveraging the diverse knowledge and traditional uses of biodiversity by Indigenous Peoples, local communities, rangers and civil society. Rooted in community and culture, it turns curiosity into stewardship. Initiatives like 'bioblitzes' – intense surveying events conducted by groups of scientists, naturalists and volunteers – help bring people together to learn about biodiversity, share knowledge and build lasting relationships with nature and each other.

## What are the challenges?

Some scientists remain cautious about citizen science, particularly with respect to data quality. Despite these concerns, studies have shown that data collected by trained volunteers can be as useful and credible as that collected by scientists (Cooper et al. 2014).

Citizen science often also lacks formal government and institutional recognition due to concerns about data standards, institutional norms and limited awareness of its policy value. Yet, the practice is gaining recognition across the broader scientific community and represents an emerging area of engagement for IUCN. A recent study looking into citizen science contributions to the IUCN Red List of Threatened Species™ found that the best input came from projects led by recognised experts who championed and validated citizen science data, conferring greater confidence in its accuracy (Gallagher et al. 2024).

The adoption of a resolution on citizen science at the 2025 IUCN World Conservation Congress marks a significant milestone – the first time the topic is formally recognised within IUCN.

## What's next?

Initiatives are underway and need continued support to grow the role and impact of citizen science. These include:

**Enhancing citizen science frameworks and partnerships**, such as the European Citizen Science Association and the IUCN Task Force on Citizen Science.

**Continued training of educators** on citizen science approaches.

**Enhancing policy and funding support**, such as the European Horizon programme.

**Leveraging existing and identifying new technologies** to enhance data collection, strengthen citizen engagement and demonstrate the value and impact of citizen science.

**Supporting global advocacy** through initiatives like the Citizen Science Global Partnership and the 2025 Charter for Citizen Science.

**Collecting and sharing case studies** of impactful applications of citizen science.

### Where can I get more information?

- A 2020 'Citizen-Science' Assessment of the State of the World's Wetlands
- Adventure Scientists
- Citizen science and EU regulations – a new approach
- Foundations of Citizen Science: e-Learning Course on SciStarter
- Global Biodiversity Information Facility
- iNaturalist resources for educators
- Ten Principles of Citizen Science