



Citizen Science

What is citizen science?

Citizen science engages the general public in data collection and knowledge generation and informs decision making and policy. This method is being implemented around the world by governments, research institutions, and environmental organizations, to involve citizens in research and scientific activities. To ensure that the results from citizen science are useful, the data collected needs to be of sufficient quality and comparable to other data sets. It is best to collaborate with stakeholders that have experience organizing and conducting citizen science and use established, trustable methodologies.

Citizen Science as part of Community Action for Fresh Water

Some examples of citizen science as part of Community Action for Fresh Water (CAFW) may include:

- Working with an organization to collect water quality data. This may include taking water samples or using equipment (e.g. data sondes, flow meters) and recording the data.
- Collaborating with researchers to engage in the collecting of biological data (such as macroinvertebrates, mussels, fish, aquatic plants, etc.)
- Working with an organization to monitor the flow or volume of your local waterbody. This requires training and calibration of instruments to make sure that the data are accurate.

Why is it important for fresh water?

Conserving and restoring freshwater ecosystems is vital and urgent. Despite freshwaters importance for human life, biodiversity and climate change mitigation, our freshwater ecosystems are being degraded and threatened at alarming rates.

Citizen science data provides evidence-based information for conservation and restoration efforts and may help inform a CAFW project by identifying priority areas, potential outcomes and meaningful impacts. Data collected before and after project activities are important for measuring the outputs and success of a CAFW project.

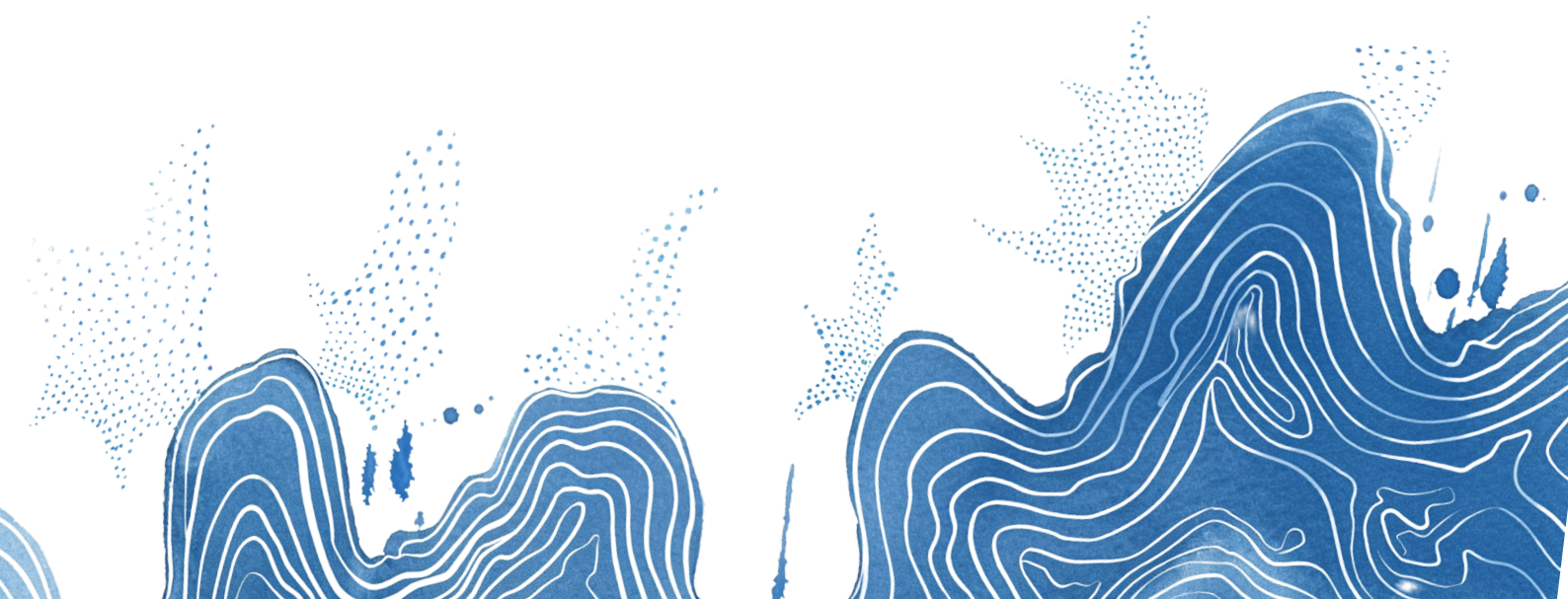
Citizen science brings ownership of the local waterbody to the community and raises awareness about the general health of the freshwater ecosystem. Rotary members trained to collect scientific data on their local waterbody provide local communities with valuable knowledge which can be used to advocate for improved or sustained management.

In addition, assisting with data collection and reporting can help local stakeholders, including government and policy makers, fill in data gaps and make informed management decisions. To learn how citizen science can be reported and contribute to UN Sustainable Development Goal 6, Clean Water and Sanitation, Target 3 (improving water quality), read this [technical brief](#).

How to get involved?

Before engaging in citizen science, identify stakeholders such as government agencies, non-governmental environmental groups, or scientists, that may collect data and provide insight to the current pollutants and threats on your local waterbody. If there are stakeholders already engaged, ask about specific locations that have data gaps, or what sort of help Rotary could provide to current water ecosystem restoration efforts. There may be citizen science opportunities to pursue working with local stakeholders.

If citizen science activities or programs have not yet started in the area, Rotary clubs may be interested in signing up with Freshwater Watch (EarthWatch Europe) to collect simple parameters such as nitrogen, phosphorus, and turbidity.



Starting a citizen science project with FreshWater Watch

Earthwatch Europe has developed a global citizen science framework through FreshWater Watch, an initiative to collect data on freshwater quality around the world. Rotary clubs can join by signing up as a local group with a subscription package and purchase FreshWater Watch kits. Clubs should nominate 1 to 2 group leaders, who will be responsible for managing the collecting and reporting of the data on behalf of their club (or district).

The subscription package includes having your Rotary Group set up on the online platform, access to the database, app and data visualization tools, online training for group leaders – including on how to select sample sites, engage volunteers and interpret data, as well as resources for volunteers, mainly the detailed FreshWater Watch methodology and a training video.

The water sampling kits include: a Secchi tube to measure turbidity, nitrate test packs, phosphate test packs, color charts, a sample cup, gloves and a protocol sheet.

Find more information about how to join [here](#).

Frequency of sampling

Frequent sampling is key to achieving high quality results on water quality. Monthly sampling is ideal to generate informative results, as it allows to identify changes in water bodies in a specific period. Sometimes measurements will be difficult due to weather conditions, for example heavy rainfall or ice. The safety of citizen scientists should always be prioritized. If monthly sampling is not possible, clubs may consider seasonal or quarterly sampling.

Citizen science has greater impact if implemented on the long-term. Therefore, clubs are encouraged to commit to a minimum of 6 months, and ideally multiple years.

Reporting

Visit www.communityactionforfreshwater.org to register your CAFW project. If collecting samples as part of FreshWater Watch, Earthwatch data will be transferred over to your project on this reporting system. If you are participating in other forms of citizen science, make sure to document the name of your partner and/or kits you are utilizing and where the data are being stored.

Identifying follow-up actions that Rotary Clubs can implement

After the data are reported and the results are reviewed and analysed, Rotary clubs can plan and implement additional actions and mitigation measures.

Some examples are:

- Green buffers along waterways to limit the amount of nitrogen, phosphorus and other pollutants from entering the waterbodies
- Raising awareness and engaging communities in the surrounding areas to reduce the amount of urban or agricultural runoff reaching water bodies
- Cleaning campaigns to remove waste (i.e., trash, garbage, plastics)