Action Plan
for the Development of Citizen Science

Report

in the frame of Project Conservation of Natural Heritage for Life in Ukraine, acronym ConNaturLIFE Ukraine, (101148569 — LIFE23-PRE-CZ-ConNaturLIFE Ukraine)

Authors:	Oleksii Vasyliuk Natalia Matushkina
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Work Package name:	WP4. Promotion of Natura 2000 network in Ukraine: moving from knowledge to application
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Goal: To create an integrated citizen science system in Ukraine for the collection, quality enhancement, and official use of citizen science open data on biodiversity in decision-making; to increase the engagement of Ukrainian citizens in using citizen science tools (iNaturalist, e-Bird, @plantNet, Merlin etc.).

Aim: To provide a comprehensive and accessible process for the collection, analysis, and integration of biodiversity data in Ukraine, which will allow for identifying current threats, responding to them in a timely manner, and effectively conserving valuable natural areas, as well as animal and plant species.

What is meant by "citizen science" (CS):

The Oxford Dictionary describes it as "**citizen science** n. scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions".

Abbreviations Used:

CEABC - in this context, refers to the Ministry of Environmental Protection and Natural Resources of Ukraine or another central executive authority responsible for biodiversity conservation following administrative reform.

NASU - National Academy of Sciences of Ukraine.

MES - Ministry of Education and Science of Ukraine.

SFA - State Forest Agency of Ukraine.

SALRF - State Agency of Ukraine for Land Reclamation, Fisheries, and Food Programmes.

CS - Citizen Science.

Problems:

Currently, citizen science is not institutionalized in Ukraine, meaning it is not reflected in legislation, and the use of its findings in any decision-making processes is not regulated and may face challenges.

Insufficient popularity of citizen science among professionals hinders their engagement in data verification, as well as the promotion of citizen science itself and the collection of biological data through its methods.

The absence of any modern biodiversity databases in Ukraine that have legal status and are funded by the government; existing databases, nominally provided for by legislation, either require significant modernization or need to be completely created from scratch.

1. Creation of a legal framework for citizen science in Ukraine.

- Make amendments to legislation: Develop amendments that will allow the use of citizen science data (verified open databases) as auxiliary sources for making environmental protection decisions and define the scope of issues where such data can be applied (management and development plans, zoning of protected areas, monitoring of the Emerald Network, EIA, SEA, etc.). Additionally, such tools can enable the indirect recording

not only of the locations of plant or animal species (their traces, remains, nests, etc.) but also of violations of environmental legislation (e.g., animals killed or plants destroyed, documented through citizen science tools).

Responsible: relevant CEABC. Timeline: 6 months.

- Officially integrate CS into state programmes, procedures, and decision-making processes at the national level (including EIA and SEA), as well as into monitoring programmes for species requiring reporting to the EU, maintaining cadasters, etc.

  Responsible: relevant CEABC, NASU, SFA, SALRF. Timeline: 6 months after amendments to the legislation are made.

2. Development of Infrastructure for Data Collection and Storage.

- Create a national platform for the accumulation and storage of verified biodiversity data, including the transfer of data from valid open databases, which would be accessible to scientific institutions, organizations, and government agencies. Data that undergo specific selection and verification and are recognized as valid by this platform may subsequently be accepted by state authorities. Such a national platform will serve as a "trust base" for government institutions (a "clean" database where validated observations have a special status and can be used in official reports and decisions) but not as the primary source of data.

  Responsible: relevant CEABC. Timeline: 1 year after amendments to the legislation are made.

- Approve a list of valid sources that can be officially used for these purposes.

  Responsible: relevant CEABC. Timeline: 1 year after amendments to the legislation are made.

- Introduce certification for employees of central executive authorities responsible for the selection and validation of data for the "trust base."

  Responsible: relevant CEABC, NASU, MES. Timeline: 1 year after amendments to the legislation are made.

- Ensure the integration of animal and plant world cadastres and biodiversity monitoring with international platforms such as GBIF to facilitate data exchange and collaboration with other countries. Specifically, officially join GBIF, enabling its use as a tool for verifying SC data and as a secondary source of scientific biodiversity data, avoiding more labor-intensive procedures for collecting data from primary sources.

  Responsible: relevant CEABC. Timeline: 6 months after amendments to the legislation are made.

3. Engagement and Training of Participants.

- Include SC in general science popularization processes (e.g., open days, Science Days, etc.), with designated responsible persons from the staff of involved scientific institutions.

  Responsible: relevant NASU, MES. Timeline: ongoing.

- Develop training programmes and educational materials for volunteers on data collection, the use of digital tools (including mobile applications), and species identification methods. These trainings should also be prepared in the form of modern online lessons, both as full-format webinars and in convenient modern formats suitable for social media.

  Responsible: relevant CEABC, NASU, MES. Timeline: Timeline: 1 year after amendments to the legislation are made.

- Engage environmental NGOs in the regions to promote the development of citizen science (through organizing events, competitions, training sessions, contests, quests, etc.), which will help account for the specific features of local biodiversity and facilitate data exchange with local communities.

  Responsible: relevant CEABC in collaboration with MES, NASU, and support projects. Timeline: ongoing.

- Integrate SC technologies into educational programmes, student internships for biological and geographical profiles, as well as practical/laboratory/excursion classes in schools.

  Responsible: relevant CEABC, MES. Timeline: 1 year after amendments to the legislation are made.

- Implement professional development programmes on the use of SC tools in teaching and research for biology/ecology professors at higher education institutions (through the Continuing Education Institute of Kyiv National University).

  Responsible: MES, relevant CEABC. Timeline: 1 year after amendments to the legislation are made.

- Ensure ongoing collaboration between the responsible CEABC and academic institutions regarding joint participation in SC support projects.

  Responsible: Relevant CEABC, NASU. Timeline: ongoing.

- Incorporate elements of SC into the working programmes of disciplines (pedagogy, field practice) and promote SC as a progressive modern element of education.

  Responsible: MES, relevant CEABC. Timeline: 1 year after amendments to the legislation are made.

4. Validation and Legitimization of Data.

- Implement measures to incentivize or engage professional biologists or other specialists in verifying species identification and other parameters (within national projects).

  Responsible: Relevant CEABC, NASU, MES. Timeline: ongoing.

- Elevate the status of data, particularly by recognizing publications on GBIF as official publications in Ukraine (especially in the category of "International publications outside of scientometric databases").

  Responsible: NASU, MES. Timeline: ongoing.

5. Projects Funding.

- Provide the possibility of state budget funding for citizen science projects, ensuring sustainability and support at all stages, from training to data validation.

  Responsible: relevant CEABC. Timeline: 1 year after amendments to the legislation are made.

- Seek grants from international funds and organizations supporting citizen science, such as EU projects, GEF, etc. (including funds from GBIF and organizations managing citizen science tools). In all cases, the relevant central executive authority (CEA) will be a project partner and require the open dissemination of collected data. The project results will be submitted to the CEA and positioned as created with its involvement.

  Responsible: relevant CEABC, NASU, MES. Timeline: ongoing.

- Create grant programmes (within support projects, the National Research Fund, etc.) for public organizations and protected areas willing to participate in SC, which will increase interest in such projects.

  Responsible: relevant CEABC in collaboration with support projects. Timeline: ongoing.

6. Information Campaign and Promotion.

- Engage media and social networks to promote citizen science and applications such as iNaturalist, which citizens can use to collect data (videos, explanations of how useful such applications are for parents of curious children, teachers, educators, tourists, local historians, etc.).

  Responsible: Relevant CEABC. Timeline: ongoing.

- Organize national competitions and award volunteers for their contributions to science and nature conservation to enhance motivation (as well as bio-blitzes and other events).

  Responsible: MES, NASU. Timeline: ongoing.

- Initiate image-building activities for businesses (IT sector, banks, and other business sectors) to foster their interest within the framework of teambuilding and social responsibility initiatives.

  Responsible: Relevant CEABC. Timeline: ongoing.

- Encourage the administrative apparatus of communities (amalgamated territorial communities) to initiate volunteer work and data collection through SC to provide essential information for community leadership. Similarly, engage forestry and fishery enterprises, protected areas, arboretums, botanical gardens, and other natural or artificial territories with their own administrations.

  Responsible: Relevant CEABC. Timeline: ongoing.

- Publish reports on the results of SC, its role in biodiversity conservation, and the use of its data in government decision-making.

  Responsible: Relevant CEABC. Timeline: annually.