D14.7
REPORT ON SUCCESS & IMPACT OF CITIZEN OBSERVATION TRAINING PROGRAM

WORK PACKAGE 14 – CITIZEN OBSERVATORIES AND PARTICIPATIVE SCIENCE

LEADING BENEFICIARY: INGV-EMSO

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Abstract

A Citizen Observation Training Programme was designed and delivered under the ENVRIplus project. The designed training programme was provided at 5 sessions linked to existing meetings and projects to maximise exposure.

Using questionnaire material and general feedback the training sessions were assessed for success and impact. Analysis of the impact of the training workshops suggest that they had a positive impact on the behaviour of participants with the majority of participants not already engaged in citizen science prior to the course, participating in or delivering citizen science initiatives following participation. All participants indicating this change in activity attributed their actions to participation in the workshop. Other feedback was positive with suggestions to develop the course and these were used to produce an online resource. The field of citizen observation was noted to be changing rapidly, which resulted in many changes to the training program and resources demonstrated through the lifetime of the project. These allowed the use of new technological advances, but necessitated that change and development was a key message in the training resources. Environmental Researchers were encouraged to consider options to engage and develop their own ideas and this has resulted in a number of initiatives and activities now in development. Training materials have been placed freely online, following adaptation for an online format and feedback from course participants suggesting the most appropriate format.

Note on timing:

The evaluation report was originally intended to be completed by M36, however due to staff changes internally and alterations to the schedule of training workshops to fit in with external events at which it was felt the workshops should be aligned, the delivery of this report has been delayed with agreement.

The change does not affect the budget or other elements of the project.

Document History & Plan

Date	**Version**
10.05.19	Draft for comments and contributions by citizen science WP Team
26.06.19	Review from Theme 4 Leader, Mairi Best

Document Amendment Procedure

Amendments, comments and suggestions should be sent to the authors (Jack Sewell, jase@mba.ac.uk; Jon Parr jpar@mba.ac.uk)

Terminology

A complete project glossary is provided online here:
https://envriplus.manageprojects.com/s/text-documents/LFCMXHHCwS5hh

Project Summary

ENVRIplus is a Horizon 2020 project bringing together Environmental and Earth System Research Infrastructures, projects and networks together with technical specialist partners to create a more coherent, interdisciplinary and interoperable cluster of Environmental Research Infrastructures across Europe. It is driven by three overarching goals: 1) promoting cross-fertilization between infrastructures, 2) implementing innovative concepts and devices across RIs, and 3) facilitating research and innovation in the field of the environment for an increasing number of users outside the RIs.

ENVRIplus aligns its activities to a core strategic plan where sharing multi-disciplinary expertise will be most effective. The project aims to improve Earth observation monitoring systems and strategies, including actions to improve harmonization and innovation, and generate common solutions to many shared information technology and data related challenges. It also seeks to harmonize policies for access and provide strategies for knowledge transfer amongst RIs. ENVRIplus develops guidelines to enhance transdisciplinary use of data and data-products supported by applied use-cases involving RIs from different domains. The project coordinates actions to improve communication and cooperation, addressing Environmental RIs at all levels, from management to end-users, implementing RI-staff exchange programs, generating material for RI personnel, and proposing common strategic developments and actions for enhancing services to users and evaluating the socio-economic impacts.

ENVRIplus is expected to improve structure and quality of services offered both within single RIs and at the pan-RI level. It promotes efficient and multi-disciplinary research offering new opportunities to users, new tools to RI managers and new communication strategies for environmental RI communities. The resulting solutions, services and other project outcomes are made available to all environmental RI initiatives, thus contributing to the development of a coherent European RI ecosystem.

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Training Workshop Overview

Introduction

Citizen science is an emerging and increasingly utilized discipline. The term is used to describe a situation where non-scientists are engaged in the scientific process, through the collection, interpretation and/ or processing of data. When deployed effectively and appropriately, citizen science has the potential to support the development of scientific knowledge and to engage people with science, both of which have the potential to benefit European Researchers.

The collection of species distribution and life history data is a role which citizens can readily take on with appropriate tools and training and were selected as the key topic area for the workshops undertaken.

Many systems and tools are available to those wishing to set up their own citizen science project, to support the collection of data by non-experts on a large scale. These include online recording, app-based location recording and other IT systems. There is also a plethora of useful guidance covering issues such as good practice, standards for data quality, copyright and ownership, data format and data collection and use. A number of these tools and platforms were used in the development of 'test systems' (D14.5) designed to collect biological data from citizen scientists and these platforms (CrabWatch, Horseshoe Crab Sightings and others) have been used throughout the training workshops as demonstrators and case studies to enhance the value of events.

The Citizen Observation Training Programme interactive workshop taught the basic principles of citizen science – including when and when not to use it and provided examples of tools and resources available to help collect data from remotely based citizen scientists (human remote sensors). The workshops also drew on, and signposted participants to the review of existing citizen science tools (D14.6) undertaken for ENVRIplus. The workshops also presented a range of tools, which participants were given the opportunity to consider and trial for their own scenarios.

Citizen Observation Training Workshop objectives

1. Share and discuss best practice for using citizen science to generate **scientifically useful** information.

2. Demonstrate and discuss systems and tools to help citizen scientists share marine biodiversity data.

3. Identify when a citizen science approach is and isn't appropriate.

4. to empower participants to set up their own citizen science data collection scheme

Audience/ Participant Selection

The workshops brought together scientists and representatives of groups interested in getting involved in citizen science and those interested in (or in some cases those who might consider) using citizen science.

The initial primary audience was research scientists and students at all stages in their careers or study. Some shorter workshops catered for a broader range of participants, from older

school-aged students, artists, policy makers and citizen science initiative participants. It was felt that this was an effective way to encourage valuable cross-disciplinary discussions between the different stakeholders in citizen science.

Based on initial planning discussions with researchers and other target participants, it was decided that workshops would be scheduled to take place alongside or as part of existing events, where target participants would be in attendance. (European Marine Biology Symposium, Oostend; European Citizen Science Association conference, Geneva; Young Marine Biologist Summit, London; Community Science in the Natural World Conference; Plymouth)

Workshop Dates and Locations

In all, 5 training workshops were delivered and dates and numbers of participants are given below. 3 of these were shorter 'Bitesize' workshops(*) and 2 were longer workshops.

- Plymouth, England - November 2017* *(40+)*
- Geneva, Switzerland June 2018* *(6)*
- Oban, Scotland - July 2018 (2 day) *(6)*
- Oostend, Belgium- Sept 2018 (1 day) *(6)*
- London, England – November 2018 *(short workshops for under 18s) (60+)

Workshop Content, Style and Format

There were two workshop formats utilized during the project. These were:

1. Bitesize (1-2 hour) workshops: Designed to provide a broad overview of the topic and a broad overview and examples of available tools.
2. 1-2 day workshops: Designed to give a more in-depth look at citizen science tools and give an immersive, interactive experience to participants.

The workshop format and content varied depending on audience, context, available time and feedback/ responses from previous events. The refinement of delivery and content has been used to develop an online training resource.

Bitesize Workshops

Shorter workshops (1-2 hours) took place in London, Geneva and Plymouth. The basic structure of these workshops involved an initial short plenary introducing the concept of citizen, the tools available to support initiative development and some examples of existing schemes and tools. In groups, participants worked through a variety of short, structured activities, largely discussion based and designed to encourage sharing of ideas, thoughts and knowledge of existing tools and projects. The shorter workshops were also intended to promote, collect information and refine activities to develop and improve longer workshops.

INTERACTIVE BITESIZE WORKSHOP BREAK-OUT GROUP WITH 'FUTURE SCIENTISTS' DURING THE YMB SUMMIT, LONDON, NOV 2018. PHOTO ©MARINE BIOLOGICAL ASSOCIATION OF THE UK

1-2 day workshops

Longer workshops took place in Oban, Scotland (2 day) and Oostend, Belgium (1 day). Workshop capacity was limited to ensure a high level of interaction with the workshop lead and to enable participants to develop and discuss their own ideas during and after the events.

Example Workshop Schedule

Pt1: Introduction to Citizen Science

- Brief History, Types and Definitions
- When to Use and When Not to Use
- Human Remote Sensor Networks
- Examples of successful schemes
- European Citizen Science Association – 10 Principles of Citizen Science
- Audience Engagement, Retention and Feedback
- Data Quality and Usability
- Ethical and Legal Considerations (e.g. GDPR, IPR)

Pt2: Tools For Data Collection

- Types of Tools Available to Support Citizen Science
  - General Advice
  - Engagement and Promotion
  - Training
  - Data Tools
- In depth review and demonstration of data collection and processing tools, including: Indicia & i-Record; Scratchpads; iNaturalist; Bespoke apps; Mapping tools; Other platforms.
- Case Study Demonstration, Trial and Critical Review of Crab Watch

Pt3: Step-by-step Project Development exercise

Pt4: Wrap up, questions and discussions about future planned activity

Project Development Exercise

A core element of the longer workshops - and one which participants found most valuable - was the opportunity for participants to work through scenarios and scientific questions and use these to develop a project from scratch, following protocols and guidance from the workshop lead and provided by tools in Pocock et al (2014). Participants were given the opportunity to bring and use their own project ideas to the 2 day course and during the one day course, in order to save time, hypothetical scenarios were given to participants to work through (See Online Resources). These scenarios were carefully designed to reflect real-life situations, which might or might not be suitably addressed by a citizen science approach. Other scenarios were selected using chance (dice throw) to increase the enjoyment of and interest in the activity, whilst at the same time attempting to reflect the variety of real-life situations and circumstances they might find themselves in.

SEPT 2018 OOSTEND WORKSHOP DISCUSSION, SESSION LED BY JACK SEWELL (MBA) PHOTO ©MARINE BIOLOGICAL ASSOCIATION OF THE UK

Following all workshops, there was an offer of follow-up support given to attendees for anyone needing help with developing initiatives after the course. This was taken up by a very small number of participants and did not form a significant part of any of the workshops.

Evaluation & Impact

Introduction

The workshops were evaluated to identify whether or not the key objectives had been met and to evaluate the impact (and potential future impact) of the workshops on participants. Due to the timeframes of the project, long term impact could not be evaluated, however the future intentions and actions of participants more than two months after the workshop they attended was recorded and can be considered an indicator of impact and future impact. Following initial discussions and feedback requests immediately after the events, to evaluate immediate

reactions to the workshop experience, a Google Form-based questionnaire was circulated to all workshop participants in order to gauge various actions and opinions and how these changed following the workshops.

Evaluation Results

Of the 118 participants contacted, 24 responded with questionnaire responses, which, although less than hoped, provided some useful insights into the impact of the workshops.

General satisfaction with the workshop

Based on a series of questions to gauge how much participants agree with a variety of statements, the following responses were given:

- I enjoyed the workshop **100%**
- I found the workshop useful **100%**
- The workshop made me aware of tools and/ or concepts that I was not already aware of **100%**
- I have a better understanding of what citizen science is following the workshop **100%**
- I feel confident that I could set up a citizen science initiative if I wanted to **91%**
- I know where to go for help, advice or guidance to set up a citizen science initiative **82%**
- I would recommend the workshop to others **100%**
- I am interested in a free online version of the training course resources **86%**

These results reflect the discussions and verbal feedback during and immediately after the workshops.

The survey revealed that 55% of workshop participants had already participated in citizen science initiatives. 27% hadn't previously participated but had following the workshop, whilst 14% hadn't yet but intended to and only 5% hadn't before and didn't intend to (Fig 1). 27% had already set up their own citizen science initiative, whilst 36% had subsequently set up an initiative and another 36% intended to in the near future (Fig 2). Regarding use of citizen science data, 23% of respondents already used it in their own research, whilst 18% had only used citizen science data after attending the workshop and 59% hadn't before but now intend to in the future (Fig 3). On questioning, all of the changes in behaviour or intended behaviour was attributed by the respondents to their attendance at the training workshop. 80% of all respondents answering an optional question asking what aspect of the workshop they found most useful stated that the group working activities and idea sharing aspects of the workshops had been the most useful and informative.

Fig 1: Responses to question regarding respondent's participation in citizen science initiatives

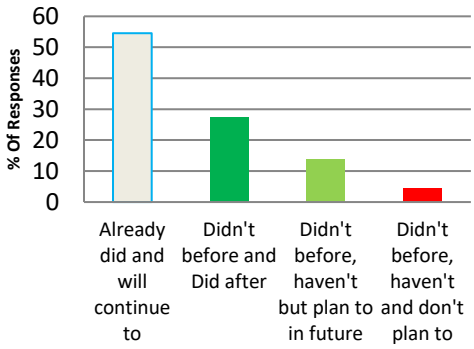


Fig 2: Responses to question regarding respondents setting up a new citizen science initiative

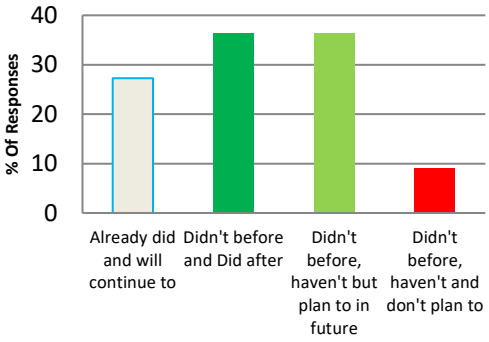
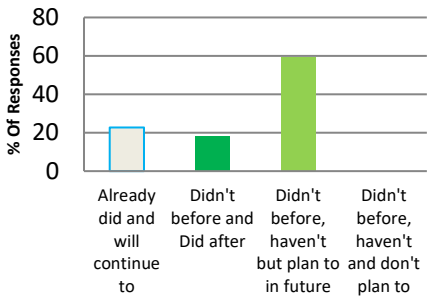


Fig 3: Responses to question regarding respondent using data from citizen science initiatives



Summary

Objective 1: *Share and discuss best practices for using citizen science to generate scientifically useful information.*

All workshop participants actively engaged in discussions, this was facilitated through small group working activities and by the workshop lead actively encouraging and facilitating discussions during the workshops. The increase in willingness to use citizen science data for research suggests an improved understanding and acceptance of the potential of scientifically useful information to be generated by citizen scientists.

Objective 2: *Demonstrate and discuss systems and tools to help citizen scientists share marine biodiversity data.*

A variety of tools were suggested and subsequent communication with participants has indicated that of those who have made contact, all have made use of at least one of the tools presented. During the 'project development' activity, all participants were able to recall and appropriately suggest existing systems and tools that could be utilized to support their citizen science scenarios.

Objective 3: *Identify when a citizen science approach is and isn't appropriate.*

The concept that a citizen science approach might not always be appropriate and guidance to help participants decide either way, was communicated at all workshops. It was only possible

however to observe whether or not the message had been successfully communicated during longer workshops, when all participants seemed to understand and authoritatively discuss whether certain hypothetical and real-life scenarios and scientific questions could be appropriately addressed using a citizen science approach.

Objective 4: *to empower participants to set up their own citizen science data collection scheme*

Responses to the questionnaire suggest that 36% of respondents have been empowered by the workshop to set up their own data collection schemes and a further 36% intended to do so in the future as a result of attending the workshop. Suggesting that the workshops resulted in 72% of the workshop participants being newly empowered set up their own online data collection scheme

Online Training Tools

In order to fulfil the requirements of D14.8 ("See D14.8 Final Report for further details"), presentations and workshop activity guidance has been made available in a Google Classroom format. These resources have been developed based on feedback and experience gained during the physical workshops and bring together adapted versions of workshop presentations with additional training, guidance notes/ commentary and instructional tools, which have been curated to form a training tool for anyone interested in setting up their own citizen science initiative. The resources are currently presented in the Google Classroom format and can be viewed at: https://classroom.google.com Class code: hl2s2xb. The online resource closely follows the format and structure of the workshops (Fig 4) although some changes have been made to make more of the online format and additional training documentation has been included or linked to. In particular, detailed instructional manuals have been included in the Data Collection Tools module to enable the user to set up more complex systems using Indicia and Scratchpad. A range of additional background resources, including online guidance documents (see references) and links to relevant, useful YouTube videos have been curated in the relevant modules to enhance and widen the scope of the resources provided (Fig 5). This classroom resource will provide a long-term legacy for the project.

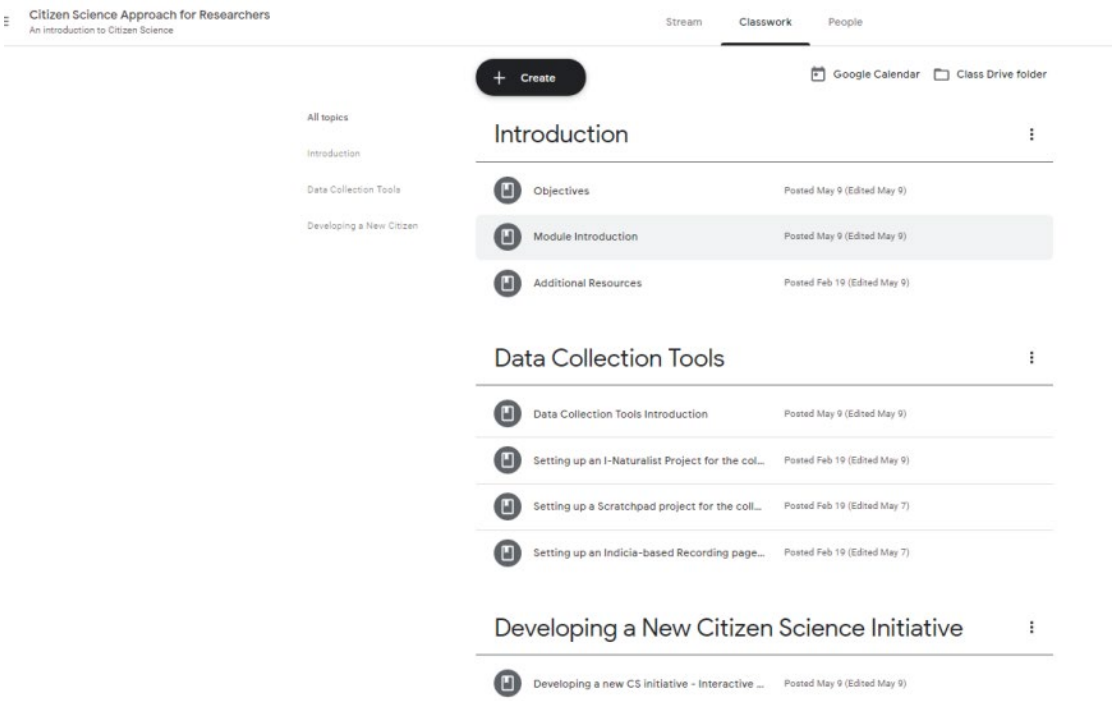


FIG 4. A SCREEN SHOT OF THE GOOGLE CLASSROOM 'CLASSWORK PAGE' SHOWING THE KEY TOPICS AND ORGANIZATION OF MODULES.

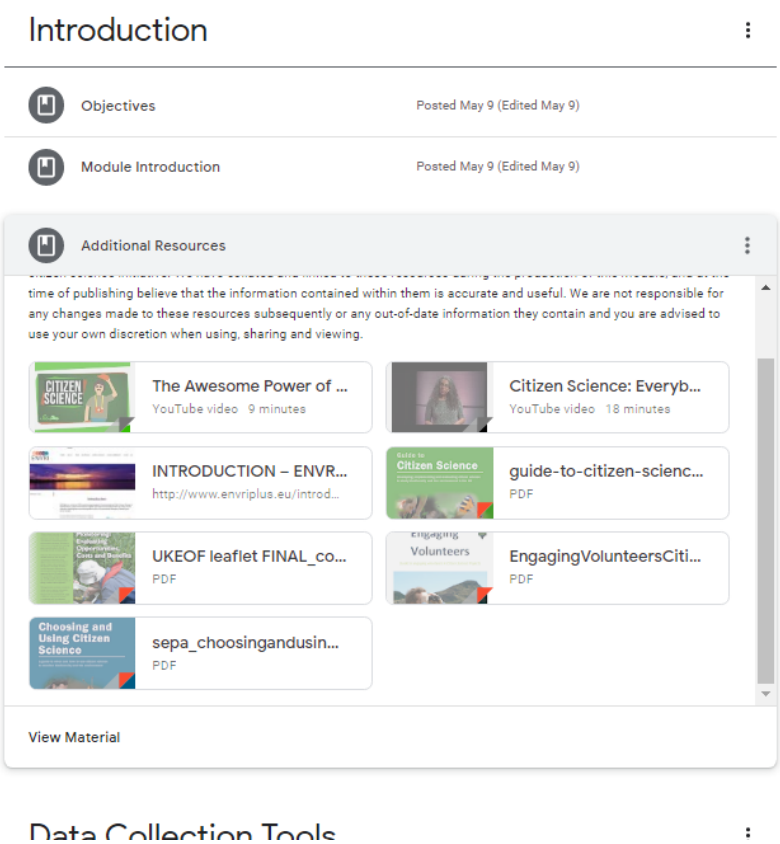


FIG 5: AN EXAMPLE OF SOME OF THE ADDITIONAL TRAINING RESOURCES LINKED TO AND UPLOADED TO THE GOOGLE CLASSROOM PLATFORM TO ENHANCE THE

Conclusions

The Citizen observation and Training programme was successfully delivered under the Envriplus project. The objectives of the programme were met. The programme allowed for new information resources and ideas to be generated and showed the potential for further work to link environmental science and infrastructures to the world of citizen science.

The field is subject to much current innovation and the subject needs to be reviewed in the context of environmental science regularly to ensure research and environmental research infrastructures are maximising the potential. Even during the project period new advances and opportunities opened up.

The workshop's materials have been placed online to maximise exposure. The materials and workshops could be further developed and delivered within the structure of organisations like the European Citizen Sciences Association.

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Online Tools

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