

## Public Monitoring

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**SEWeb MG 12 042**

**SEWeb (LIFE+) Management Group**

**Public monitoring - summary of preparation and recommendations for SEWeb development**

<b>Summary of Paper</b>	<b>This paper summarises the preparation work undertaken for SEWeb (LIFE) Project Action 11 (public monitoring) and makes recommendations for the future development of SEWeb to support the delivery of this action.</b>
<b>LIFE+ Project Action Ref</b>	<b>Action 11 – Public Monitoring with links to actions 4 (identifying public interest, 13 (citizen action) and 25 (project evaluation)</b>
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<b>Author(s)</b>	<b>Rachel Harding-Hill, SEWeb Delivery Team member - public engagement</b>
<b>Management Group requirements</b>	<b>This Paper is for noting the work completed to date for public monitoring (action 11) - and approval, in principle to take forward the products suggested in Section 5.</b>

**1 Introduction**

- 1.1 The purpose of this paper is to summarise the preparatory work undertaken during Jan-July 2012 to define how SEWeb promotes and enables public monitoring – or ‘citizen science’ (SEWeb Action 11). A summary of information that has been gathered through one-to one discussions, workshops and meetings is presented and conclusions drawn on the current ‘landscape’ of citizen science in Scotland. A set of products is suggested for the future development of SEWeb, in order to engage the Scottish public in public monitoring. This paper draws on information presented in paper SEWeb MG 12 041 that discusses identifying public interest (SEWeb action 4).
  
- 1.2 One of SEWeb’s four key objectives is to ‘engage the public by providing access to high quality on-line interactive resources to promote better understanding of the environment, public debate on environmental priorities, public monitoring of the environment and public activity to protect and improve the environment ‘.

- 1.3 There are four actions in the SEWeb (LIFE) project that sit within the public engagement workstream where the responsibility to deliver the above noted objective sits. This paper reports on the preparatory work undertaken under public monitoring (SEWeb Action11) and makes suggestions of products to be taken forward to deliver this action.
- 1.4 Public involvement in data collection and analysis or “citizen science” engages members of the public in the process of collecting and recording environmental data and observations. Engaging the public in this way increases the capacity for scientific research but it also recognises that it can also provide a very powerful mechanism for increasing public enjoyment and understanding of their local environment. In the longer term, this active learning can lead to new skills for the participants and can motivate them to develop personal stewardship of the environment and therefore empowering them to take positive environmental action. It is for all these reasons that citizen science is an important part of the SEWeb project.
- 1.5 The LIFE bid documentation states that the SEWeb project will:
- Undertake preparatory work for the development of this action in order to understand the current position and needs of citizen science in Scotland
  - deliver a list of areas where public could be involved in monitoring
  - set up and run 3 citizen science projects and use these to engage the public in monitoring, building on this interest to engage the public in environmental action.
  - publicity campaigns and documentation to support the 3 citizen science projects
  - Launch website applications and publicity campaigns for the 3 citizen science projects
- 1.6 This paper has been put together by Rachel Harding-Hill but has received input and support from SEWeb partners that are running or involved in citizen science, including the Kerry Riddell (TCV), Alan Cameron (SNH), Anne Conrad (SEPA), Chris Wernham (BTO), Paul Kirkland (Butterfly Conservation) and Keith Westhead (BGS).

## **2. Preparatory work**

- 2.1 Preparatory work has been undertaken to gather information on the existing ‘landscape’ of citizen science in Scotland and establish needs and gaps that SEWeb might fill and add value. This has included a large number of discussions, meetings and workshops with partners that have taken place over the last 6 months.
- 2.2 The activities described in Management Group paper SEWeb MG 12 041 also help provide information and direction for citizen science. Specific questions about the topics of most interest to the public, level of existing involvement in public monitoring and motivational factors for them to do so were specifically included. This helps us answer the following questions that

are referred to in the public engagement evaluation strategy (see section 2 in MG paper SEWeb MG 12 041.

- What citizen science [and citizen action<sup>1</sup>] projects already exist?
- Where are the gaps in citizen science [and citizen action] and what is needed to increase the number of people involved?

- 2.3 SEWeb organised a Scottish workshop on 15<sup>th</sup> May in order for Scottish experience to contribute to a contract commissioned by the UK Environmental Observation Framework (UK-EOF)<sup>2</sup>. The contract is documenting lessons learned for citizen science projects operating worldwide and is reviewing available technology that might be used to facilitate monitoring by volunteers as well as motivating and engaging new volunteers. SEWeb staff sit on the steering group for this project and have been able to ensure that the outputs will be also be useful to citizen science developments in SEWeb. The contract is due to report in September but we are already benefiting from our involvement.
- 2.4 SEWeb has a great deal to learn from the Scotland Counts initiative. Launched in 2011 with support from Scottish Government, SEPA and SNH; Scotland Counts is a Scottish citizen science programme run by TCV (formally BTCV) which seeks to increase opportunities for people to participate in a Scotland wide citizen science movement. Scotland Counts aims to increase the number and diversity of Citizen Scientists across Scotland and develop and promote innovative methods for collecting and recording data as well as responding to the data needs of funding partners. The Scotland Counts steering group have been a valuable forum to establish where SEWeb can add value.
- 2.5 Part of the preparation for this action has been to explore areas where citizen science projects may be needed and, following initial discussions with partners, a series of focussed discussions on local air quality (with SEPA colleagues) and invasive non-native species (SNH, FCS, RAFTS, SEPA, CEH) have taken place.
- 2.6 The role of citizen science in national air, soil and water monitoring action plans that are being produced by CAMERAS is being explored by those involved in their preparation. This will help set up a more strategic identification of where citizen science can augment data collected by public agencies.

### **3. What citizen science projects already exist? The existing Scottish landscape of citizen science projects**

- 3.1 To investigate and present the existing landscape of citizen science in Scotland was an important first step for this action. SEWeb needs to add

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<sup>1</sup> Citizen action will be the subject of a paper to the management group in December 2012

<sup>2</sup> The UK-EOF was launched in 2008 in response to the long term issues that surround environmental monitoring, observations and surveillance. It is a self contained programme of Living With Environmental Change (LWEC), funded by the major sponsors of environmental observations in the UK and delivered via a series of work streams and scoping projects.

value to existing work and ensure the project focuses on engaging the public through on-line information and resources as described in the objectives of the project. The preparatory work illustrated just how much was already happening in Scotland.

- 3.2 A large and diverse number of citizen science projects are already taking place. Projects range from those operating at different geographical level; European, UK, Scotland, regional or local and also complexity – from one off surveys in schools grounds to long-running monitoring programmes such as those run by the British Trust for Ornithology. In Scotland, and Worldwide, there is a long history of biodiversity recording, less so for other aspects of environmental monitoring.
- 3.3 Many organisations are involved with citizen science, from national and local, from funding/enabling to on the ground, to campaigning. Some of these are SEWeb partners. For example, SNH is a long-time funder of biological monitoring through organisations like Butterfly Conservation and Buglife.
- 3.4 Citizen science projects use digital media to a varying extent. Digital media includes both social media (facebook, twitter etc) and digital equipment (tablets, mobile phone apps). Some projects use digital media to input data – either through PC entry or mobile phone technology (such as the BGS soils app). Some projects store the data in such a way so that a Web Map Service can allow for data presentation back to the recorder (such as OPAL). The BirdTrack recording scheme is set up for on-line data entry, there is an android phone app available for entering records and data are stored in a manner that makes a huge range of feedback products (maps, tables, graphs) available to the volunteers that submit data to the scheme and the general public. The use, and innovation, of digital media for citizen science is of great interest to practitioners just now and there are opportunities for SEWeb to both learn, illustrate good practice, test and trail-blaze in this area.
- 3.5 Annex 1 presents a spreadsheet of citizen science projects operating in Scotland.

#### **4 Where are the gaps in citizen science? What is needed to increase the number of people involved?**

- 4.1 The preparatory work undertaken has clarified that there is already a wide and varied landscape of citizen science in Scotland, that any new project requires on-going dedicated support to design, build and implement. A number of gaps have been identified where SEWeb could add value.
- 4.2 There is a need to better explain the *value* of citizen science – both in terms of the data it collects and the benefit to people collecting. This should include how, why and when data produced by citizen science is useful and encourage this type of data collection where appropriate – to both data uses and also to the Scottish public.
- 4.3 There is an opportunity for SEWeb to provide a *gateway* to all the citizen science projects operating within Scotland. This was consistently raised by

those already running projects. There is a need to provide easy, searchable, access to up to date information on which projects are happening where, helping people to find out what projects are going on and how they can get involved.

4.4 There is an opportunity for SEWeb to provide *guidance, tools and a platform* for new citizen science projects, again using a gateway approach. In particular, the use of digital media is a fast growing area and there is potential to provide access to existing it tools and applications that could be used by new citizen science projects.

4.5 There are some *topic areas* where a new citizen science project would be valuable, and where SEWeb could provide a platform, for example, for data input and display. However, in order to ensure buy-in and longer term sustainability, it is important that, while the SEWeb vehicle can be used, these citizen science initiatives will be clearly undertaken by and on behalf of partners. The following have been suggested: local outdoor air quality, environmental reporting, fish barrier reporting, INNS reporting, flytipping, woodland/forestry.

## **5. Proposed products for SEWeb to engage the Scottish public in citizen science**

5.1 Using the intelligence gathered during preparation for this task, this paper suggests the development of a set of products to engage the Scottish public in environmental monitoring.

### **5.2 Communication**

*The value of citizen science:* Explore the use and value of data produced through citizen science. This could start with a simple visual representation of how different data collected can and is being used for positive environmental protection or improvement. In the longer term, this could link to monitoring strategies, such as the monitoring action plans being produced by CAMERAS to give a strategic overview on how citizen science is contributing to environmental monitoring in Scotland.

A number of partners (Buglife, TCV, Butterfly Conservation, BTO) have already contributed examples of data journeys to be used in an illustration.

### **5.3 Gateway**

*A register of citizen science projects:* Develop and host a register of citizen science projects in Scotland. This would build on the information already gathered in annex 1 (the majority of which came from the Scotland Counts project (see section 2.4) and also use information gathered through the UK EOF contract (section 2.3). The register should be searchable and provide information on the scope of, and direct links to, existing citizen science projects. This was approved at the Management Group meeting on 18<sup>th</sup> May and work on this has started.

5.4 *On-line sharing practice and matching projects with volunteers:* Develop and host an on-line 'space' to:

- share practice (both good and not so good) of citizen science in Scotland. This could be a mapped layer of project 'pen pictures' for completed and active projects that could be uploaded by project leaders (include school projects). An upload of numbers involved would help us assess numbers of existing and new volunteers
- enable projects to 'advertise' for volunteers and for potential volunteers to see what projects are running, both at a national and local level, and make contact with project organisers. This could include schools projects

Partners particularly interested in this product are TCV, BTO.

#### 5.5 **Tools**

*A 'toolkit' of resources for citizen science projects:* Develop a 'toolkit' of resources for citizen science projects. This would include:

- generic good practice guidance for citizen science projects (taken from guidance currently in production by partners (eg outputs of the UK-EOF contract (see section 2.3) and Scotland Counts).
- freely available IT tools and applications that could be used by citizen science projects and links to examples of their best usage (examples taken from technology report from UK-EOF contract e.g. <http://www.indicia.org.uk/>)
- a SEWeb/citizen science framework for linking on-line citizen science tools to and from SEWeb, including web map services, social media and mobile phone apps using standardised technology approaches e.g. OpenGIS Web Map Service e.g. <http://www.opengeospatial.org/standards/wms>
- a teachers 'guide' to SEWeb, including outlining how citizen science projects can help implement the curriculum for excellence (working closely with Scotland Counts).

Partners particularly interested in this product include: BGS and Historic Scotland (IT tools and framework), Education Scotland, Scotland Counts (teachers 'guide'), SNH and TCV (all).

#### 5.6 **Projects**

*Pilot project to incorporate CS data together with agency data:* This would investigate the benefits and issues with splicing together data produced by agencies and Scottish Government (often at national or regional level) with data produced at a local (often community) level. A useful start would be a pilot project in a small area to test approaches, perhaps linked to an existing or planned piece of work where this kind of approach would be valuable. This would test the added value of using SEWeb to bring the different types of data together.

Sniffer and TCV have expressed interest in this product and it was also suggested at the workshop on behavioural change in June 2012.

- 5.7 *Local air quality citizen science project:* Work with SEPA, local authorities and TCV to develop a local air quality citizen science project, encouraging the use of SEWeb as a platform for data input and presentation.

This product will be explored through a CAMERAS air quality monitoring workshop in August.

- 5.8 *A front end for Invasive Non-Native Species (INNS) data input:* Develop a single 'front end' that links directly to existing data recording systems. The 'back room' recording systems exist but there is a gap in INNS data entry in Scotland. Existing systems include: (1) Indicia, which is administered by the Centre for Ecology and Hydrology (2) irecord which affords records a verification step.

Potential partners in this product could be SEPA, SNH, Marine Scotland, FCS and TCV.

- 5.9 A staged way forward is suggested:

Stage 1: develop the gateway and tools outlined above (sections 5.2- 5.5)

Stage 2: Use these tools and resources to encourage, enable and, if appropriate, host new citizen science projects Those outlined in sections 5.6 - 5.8 will be explored further with partners, together with other ideas stimulated by the production of tools and resources.

## **6. Recommendations**

- 6.1 The Management Group are asked to:

- note the preparatory work completed to date under SEWeb Action 11 (public monitoring)
- approve in principle the staged development of the set of products outlined in section 5 in order to engage the Scottish public in environmental monitoring. Following approval, work will start on analysing business needs for product delivery, together with key partners
- approve the role of overseeing the detailed delivery for the products with an "expert group" (see section 1.6 for membership). Updates on progress and any significant new areas of work will be put to the MG for approval via Rachel Harding-Hill.