



Citizen Science – Motivations, Progression and Accreditation

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Table of contents

1. Overview	3
2. Citizen Science Motivations	3
2.1 Summary	3
2.2 Motivations	5
3. Citizen Science Progression	6
3.1 Routes for new Citizen Scientists to get involved	6
3.2 Examples of Specific Routes for Progression	7
3.3 Example of Accreditation and Progression – OPAL (Open Air Laboratories)	8
3.4 Summary of the Main and Suggested Routes for Progression	9
4. Citizen Science Skills and Competencies	9
4.1 General benefits	9
4.2 Skills and competencies	10
5. Integrating Accreditation into Citizen Science	10
5.1 Summary	10
5.2 'Citizen Science and Accreditation' Survey Methodology	10
5.3 Strengths and Weaknesses of Integrating Accreditation into Citizen Science Activities	17
5.4 Conclusion	18
Appendix A: list of Citizen Science surveys and links to the organisations	19
Appendix B: Citizen Science and Accreditation survey questions and all responses	37
References	51



1. Overview

Citizen Science can be simply defined as the involvement of volunteers in scientific research.

As described in TCV's previous work, across the scientific community, there is widespread recognition that Citizen Science "offers a means of doing substantial, thoughtful public outreach and of tackling otherwise intractable, laborious or costly research problems" (Gura, 2013). Participation in Citizen Science is increasingly recognised as a valuable tool for connecting people with nature and influencing the adoption of sustainable lifestyles. At a community level Citizen Science has been shown to be an agent for empowering communities to act as environmental stewards, protecting and improving their local and global environment.

This report has been produced by The Conservation Volunteers (TCV) as part of the Scotland Counts project with the support of Scottish Natural Heritage (SNH), Scottish Government, Scottish Environmental Protection Agency (SEPA) and Forestry Commission Scotland (FCS). It aims to provide an insight into citizen scientist motivations, progression routes and investigates whether formal accreditation would benefit Citizen Science participants and add value to the data collected.

We summarise the motivations and drivers behind involvement in Citizen Science activities. It is important for organisations to understand what initially attracts Citizen Scientists and what motivates them to continue to participate. This can range from the desire to learn and develop new skills, to the chance for social interactions, or to feel they are giving something back to society. Recognising this range of motivations is significant for all involved in Citizen Science projects though it is important to acknowledge that many of the motives for getting involved in Citizen Science may not be helped by progression and accreditation.

However for those citizen scientists who desire to progress we summarise what are the options for progression at the moment. One such channel for progression may lie in formal accreditation – with certification of competency, authority, or credibility. The report therefore also delves into the skills and competencies Citizen Science demonstrates.

We discuss whether Citizen Science activities could be formulated into accreditation. TCV conducted research with an array of local partners, organisations, community groups, educational establishments, youth awards, citizen scientists and other Citizen Science practitioners. We summarise the motivations, progression options and if accredited Citizen Science activities may add value to the activity of data collection, providing an opportunity for citizen scientists to demonstrate achievement and gain recognition for activity and progress.

2. Citizen Scientist Motivations

2.1 Summary

Citizen Science projects across the world are more popular than ever. Thousands of people of all ages, backgrounds, occupations and locations take part in these activities. Citizen Science activities are diverse according to their scope and target audience and can range from individuals, community groups, schools, families and students. The Citizen Science activities vary from those that can be done at home in your back garden for instance taking part in the RSPB Big Garden Birdwatch or at the comfort of your computer helping identify and classify far away galaxies on Zooniverse to simply recording wildlife at your local parks and greenspaces.

Citizen scientist involvement in science projects is also supported by new advances in technology, namely internet-based and mobile connectivity, which brings scientists, scientific research, and citizen scientists closer than before.



Citizen scientist motivations are complex and can relate to both individual and social backgrounds and motivations will change over time (D. Rotman *et al.*, 2014).

To support and sustain citizen scientist involvement in Citizen Science projects it is crucial that organisations respect and understand citizen scientist motivations. Understanding citizen scientist motivations can help guide and tailor projects. Citizen scientists are effectively the backbone of a wealth of scientific projects.

However it is recognised and worth noting that not all citizen scientists feel the need to progress onto another level of recording. For some, the progression from taking part in an engagement session to them actively doing a wildlife survey on their own is progress enough for the individual.

Below we summarise some reasons why citizen scientists become involved in Citizen Science projects. These points derive from a short report written by one of our volunteers on their point of view of why they got involved in Citizen Science.

- University:
 - Offered module in biodiversity/conservation lectures
 - Advertised survey days open to volunteers with Butterfly Conservation and Ecological consultants
 - Advertised work days with Wildlife Trusts and trips to RSPB sites which led to more interest in the organisations and their events and long term volunteering
- Conservation organisations:
 - Effective advertisement of events like Big Garden Birdwatch, etc
 - Surveys as part of residential volunteering programme
- Other influences:
 - Media – Springwatch TV programme and websites promote Citizen Science as ‘fun things to do’
 - Local natural history society carries out and promotes lots of biological recording. Opportunity to learn from more experienced recorders
 - Being around others who record - peers
 - Made simple, not intimidating. Citizen Science has embraced technology and has moved with modern day trends
 - Effective media coverage has made biological recording and science exciting and attractive
 - The advance in film quality has made natural history documentaries very watchable and popular and scientists are often featured, being championed and their work promoted, it’s become cool to be a geek
 - Papers from iSpot and the Natural History Museum suggest the research carried out by citizen scientist and information from apps has been invaluable
 - More people feel they have a responsibility towards the preservation of our biodiversity. They regard conservation of biodiversity as a personal and collective duty

In summary these points from a short report written by one of our citizen scientist indicate that there are a number of reasons why citizen scientists become involved in projects from personal experiences to being provided varied opportunities at University. Another element that is strongly conveyed is that Citizen Science has embraced new technology and has moved with modern day trends thus making Citizen Science projects more accessible to get involved than ever.



2.2 Motivations

The choice to participate in Citizen Science activities is influenced by a number of factors such as level of education, interest, access to technology and independence.

Studies suggest a broad range of motivations amongst participants (B.J. Alender., 2015). We have summarised these points which can include:

- **Help the environment:**
 - Concern for the environment
 - Protecting natural areas from disappearing
 - Do something for a cause that is important to the participant
 - See improvements to the environment
 - Ensure future natural areas for participant enjoyment
 - Help preserve natural areas for future generations
- **Learning**
 - Nature observation
 - Learn about specific animals / plants
 - Learn about the environment
 - Learn new things
 - Recording skills
 - Submitting data sets and where the information goes
 - Progression into new recording avenues
- **Social**
 - Meet new people
 - Work with friends
 - See familiar faces
 - Have fun
 - Enjoyment
 - Get outside
- **Participant**
 - Work in local areas where participants live and visit
 - Enrich participant future recreation experiences
 - Enhance the activities participants enjoy doing
 - Stay active
- **Value and esteem**
 - Participants feel better about themselves
 - Ability to express values through taking part
 - Feel needed
 - Valued feedback and thanks
- **Reflection**
 - Opportunity to work at participants pace
 - Feeling peace of mind contributing



- **Project organisation**
 - Work with a good leader
 - Know what is expected
 - Be part of a well organised project
- **Career**
 - Get a foot in door where participants would like to work
 - Make contacts that might help participants career
 - Explore possible career options
 - Gain hands on experience
 - Learn new skills

This lengthy and varied range of motivations emphasises that individuals have a variety of reasons for getting involved with Citizen Science. Key elements are making volunteers feel that they are valued members of the team, know what is expected, receive feedback and thanks and are able to work at their own pace. However, whilst some of these motivations may be linked to, or indirectly lead to progression, new career opportunities and learning, it is also noticeable that many of the reasons are not related to a desire to progress - we need to appreciate that every citizen scientist is different and have their own drivers to take part. For some it is to gain skills to explore possible career options and for others it is more of social activity where they enjoy being outdoors seeing familiar faces. However for those citizen scientists who want to progress that may be in the form of further training and/or accreditation.

In the next section we explore routes for new citizen scientist to become involved and what are the current options for progression in Citizen Science.

3. Citizen Science Progression

3.1 Routes for new Citizen Scientists to get involved

There are hundreds of ways to get involved and thousands of projects available. Here we summarise a few ideas for new citizen scientists to get involved.

- **Working with existing projects** – participants can get involved through their Local Nature Reserves, managed through the Local Authority Ranger Service or an area of parkland, woods, moorland or a stretch of river or coast managed by a charity such as the Scottish Wildlife Trust, Woodland Trust or RSPB.
- **Working with local Biological Records Centres** – these are focal points for recording wildlife and regularly run training and surveys that participants can join.
- **National Citizen Science Surveys** (Appendix A) - Many conservation charities have established UK wide Citizen Science surveys that the public and citizen scientists are encouraged to participate in. Online support, identification guides and resources are available and many of these charities hold local training courses organised through their network of volunteers and supporters that can help individuals or groups build confidence and progress in their recording abilities.

It is essential to maintain the interest of new and current citizen scientists and for some opportunities to progress are seen as critical to engaging and sustaining the involvement of citizen scientist (Grove-White *et al.*, 2007).



Training is a common method of ensuring the skills progression of new citizen scientists. It also gives people confidence in taking part, especially if protocols are relatively demanding or complex, and can enhance the reliability of the records received (Roy, H.E., Pocock, M.J.O., Preston, C.D., Roy, D.B. & Savage, J., 2012).

The UK Environmental Observation Framework identifies the necessity to provide regional training and is acknowledged by the UK Butterfly Monitoring Scheme (UKBMS) which facilitates training through local branches of Butterfly Conservation. The UK BMS also offers mentoring “on the job” by allowing new recruits to shadow more experienced volunteers.

The Framework also considers the most widely used method of enabling skills progression is the provision of online resources and Smartphone mobile apps. For example The OPAL Bugs Count project provided support through a mobile phone app and survey packs. It is suggested that there is certainly scope to share knowledge on best practice in Citizen Science, particularly guidance on the most effective means of delivering on-line training and resources. The training and support needs to be fit-for-purpose and tailored to specific audiences.

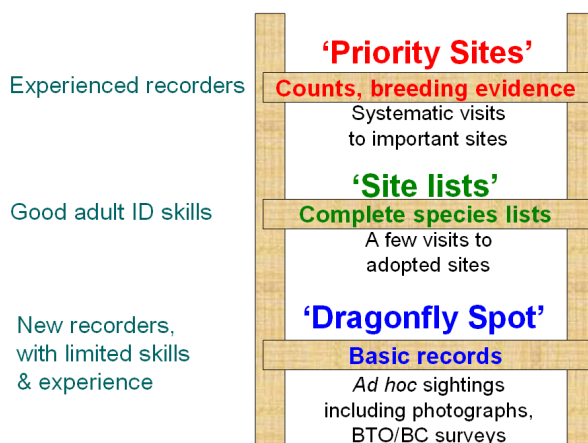
At all times feedback and clear communication is fundamental to direct citizen scientists down these progression avenues.

3.2 Examples of Specific Routes for Progression

It is important to be aware that each organisation may have their own method of development for progression. For example, British Dragonfly Society recording scheme, *DragonflyWatch* framework.

The diagram below shows how citizen scientists can gather different types of records in the knowledge that they will be put to the best possible use. The more time and expertise citizen scientists have, the greater the value of the sightings can be to science and conservation. The *DragonflyWatch* framework allows citizen scientists to ‘climb up the recording ladder’ and make records according to their ability. For example a recorder with limited skills and experience who submit basic records could be trained and mentored through further identification workshops to gradually progress to a recorder with good ID skills and start to record and submit complete species lists of records.

‘The *DragonflyWatch* recording ladder’



Although the *DragonflyWatch* framework is a good and clear method to progress, generally it can be slightly confusing for citizen scientists to identify an obvious route to progress if the options are not conveyed clearly as there is not an all-purpose ‘go to’ resource to seek guidance on progression in the field of Citizen Science.



However depending on the taxonomy of choice there is a great deal of online and offline resources available. The direction and progression could be through a series of training and surveys for example in the table below, British Trust for Ornithology (BTO) entry level survey can either be Birdtrack and/or Nest Recording Scheme. The second stage of progression with further training and mentorship leads to the Birdtrack survey but in more detail then move forwards to the third stage of becoming involved in Breeding Bird Survey or Scottish Raptor Monitoring Scheme depending on interest.

Organisation	Entry level	2 nd stage	3 rd stage
BTO	Birdtrack Nest recording scheme	Birdtrack	Birdtrack Breeding bird survey Scottish Raptor Monitoring Scheme

From our experiences, the main route for citizen scientists to find out about opportunities and progression options is from the various organisations that provided the initial training or engagement session. It is important that organisations communicate these routes clearly and effectively to ensure that participants know where to find this information and resources. This is key to make sure citizen scientists feel needed and valued and will want to undertake surveys that will benefit and increase their skills and in turn produce experienced recorders. For example, participants are usually given information to them to seek out and how they could get involved more. As a result even though there are options to progress, progression is largely reliant on the interest, taxonomy resources and commitment from the citizen scientist to follow up on these opportunities.

3.3 Example of Accreditation and Progression - OPAL (Open Air Laboratories)

An example of accreditation and progression in action is being taken forward by OPAL. OPAL is pioneering their first accredited 'Conducting Environmental Surveys – using Open Air Laboratories (OPAL)' course in partnership with Queen's University Belfast. This is a two day course and there are three levels of accreditation available. The varied level of accreditation allows the participant to choose the route best suited to their needs and abilities. The accredited levels are:

Level 1: Survey completion accreditation

Level 2: Survey leader accreditation

Level 3: Queens University Belfast accredited course (CAT points)

To date the accredited course has been well received by participants with 100% submission of course work though it should be said that trials so far have been with a small group of trainees and professionals. There is a £5 registration fee and amongst this group, the registration and fee did not put any participant off enrolling in the course and it was commented that the course fee is negligible and well outweighed the benefits of gaining an accredited certificate in Citizen Science. However the cost and time in producing the 'homework' after the course is more of a barrier as participants may or may not fulfil this thus not gaining their accreditation.

The accredited course is good for some people, but does introduce considerable cost and time complications. This may be a niche interest for participants which still needs to be explored.

OPAL's accredited course is still in its infancy and there are still a lot of lessons to be learnt through OPAL delivering their accredited course.



3.4 Summary of the Main and Suggested Routes for Progression

Below we summarise some of the current and suggested options for progression:

- Initially participants take part in a Citizen Science activity, event or workshop
- If participants are confident they can undertake the survey themselves and submit records to local record centres
- Sign post citizen scientist to a range of local and national recording surveys. Surveys are at varying levels and participants can progress from beginner, competent to confident (Appendix A)
- Citizen scientists can progress to work with existing projects for example local nature reserves and local biological recording centres regularly run training and surveys that participants can join in
- Citizen scientists should be provided with opportunities to take part in further training courses e.g. identification training, survey techniques, new technologies to aid recording, etc
- Provision of survey packs, materials and equipment
- Offering mentoring opportunities, either virtually (e.g. through iSpot) or through a specific forum such as the Bees Wasps and Ants Recording society or through field meetings and or other face to face contact to increase their skills and confidence
- Allow new citizen scientist to shadow more experienced volunteers
- Link PHD/university students with citizen scientists
- Citizen scientists can progress to join recording groups and societies which can offer support, training and mentoring opportunities
- Offer follow up training and mentoring sessions to touch base with citizen scientists
- Offer trips to data centres, museum and conferences
- Online resources such as iSpot, iRecord and other recording schemes
- Use of Smartphone free mobile apps to collect and submit observations through sharing photos and observations of wildlife
- Citizen Science accreditation certificate and/or short course

4. Citizen Science Skills and Competencies

In order to identify opportunities for accreditation, we first need to be clear about the skills and competencies which can be demonstrated by participating in a range of Citizen Science activities.

We have identified and summarised the main skills, competencies and benefits participants' experience:

4.1 General benefits

Citizen Science is much more than just science. Getting involved is fun; helps develop skills and connection with others. It improves health and wellbeing and helps participants feel more connected to the environment around them. It also enables participants to:

- Be more active outdoors
- Confidence – reassurance that you don't have to be a scientist to help conservation
- Bring people of different ages together
- Work together around a central activity, locally focussed projects
- Develop and share local skills and knowledge
- Work together to tackle environmental or social justice issues



- Gather knowledge about the environment to inform community based environmental projects
- Gather knowledge about the environment to support scientific research and environmental management decisions

4.2 Skills and competencies

- Survey experience and skills
- Gain specific wildlife knowledge
- Analysing data – drawing conclusions – good thinking skills
- Team work and people skills
- Observational skills

These skills and competencies show the potential for skills progression and how Citizen Science can display a wealth of skills and competencies advantageous to participants and organisations seeking skilled and competent recorders to gather data. In our final section we explore the opportunity to integrate Citizen Science with accreditation.

5. Integrating Accreditation into Citizen Science

5.1 Summary

TCV conducted research with an array of local partners, organisations, community groups, educational establishments, youth awards, citizen scientists and other Citizen Science practitioners. This section summarises the responses from these participants to our 'Citizen Science and Accreditation' survey that captured different organisation's thoughts and opinions, to investigate whether an accredited Citizen Science activity may add value to the activity of data collection, providing an opportunity for citizen scientists to demonstrate achievement and gain recognition for activity and progress.

We collected responses to examine if accreditation in Citizen Science would add value and benefit various organisations, learners, community groups and the recording community in general. In addition, accreditation may develop a new route for new citizen scientists to become involved in wildlife recording activities.

5.2 'Citizen Science and Accreditation' Survey Methodology

TCV created a 'Citizen Science and Accreditation' survey (Appendix B) and distributed this through our networks and via partner organisations. In the survey we asked a series of ten short questions relating to the value of accrediting Citizen Science and would it present benefits, barriers and accessibility issues.

Our survey generated a lot of attention and collated interesting and valuable information from numerous organisations including:

- | | |
|--|---------------------------------------|
| • Field Studies Council | • Royal Botanic Gardens Edinburgh |
| • Teachers | • Community Groups |
| • Government Agencies | • Education Scotland |
| • NGOs | • Scientists |
| • University based Citizen Science staff | • Charities / Voluntary Organisations |
| • SEPA | • RSPB |
| • Facilitators of Citizen Science | • John Muir Trust |



Below we review the ten question responses and summarise the overall findings to examine if it is of value to integrate Citizen Science and accreditation.

1. 'Does Citizen Science need accreditation to make it more valuable?'

- 45% of responses indicated 'Maybe'

The majority of participants answered 'maybe' and more or less equally for 'yes or no'. This demonstrates very much a divided opinion on the value of accreditation. The reasons on both sides are shown below:

Participants who thought accreditation would make Citizen Science more valuable said that they believed it would be *'good for employability and show a certain level of competence'*, *'some recognition would provide added value'* and it also *'gives opportunities for progression and recognition for those who want it'*. There is an element that providing accreditation *'will give more clout to data'*. Thus some participants of the survey think accreditation would add value to citizen scientists seeking employment, facilitate confidence building and added value to the data collected from citizen scientists.

Another valuable response captured *'I consider Citizen Science to be a way in which to enhance the teaching and learning delivered in schools across Scotland and beyond. In light of the requirement for all GTCS (General Teaching Council for Scotland) registered practitioners to be actively involved in recording evidence relevant to their Professional Update; I can only see accreditation as a good thing.'*

Respondents also suggested accreditation may be a good way to aid citizen scientist motivations and progression and that it could make some of the data collected more creditable if organisation can show their volunteers have experience of specific training and qualification.

However it was conveyed that some of the participants felt integrating Citizen Science and Accreditation would cause *'unnecessary complications'* and *'the value is in the experience and understanding gained.'* It is suggested that the combination may lead to barriers for some citizen scientists to get involved and feel that it isn't about the accreditation but the experience of taking part in Citizen Science and the learning and understanding gained is enough.

In terms of how accreditation may happen, it was highlighted that *'Distinction between accreditation and certification would be useful. For example the Duke of Edinburgh's Award and the John Muir Award are nationally recognised certificates (accredited internally), and the Youth Achievement Awards are externally accredited through ASDAN and the SCQF. Each has its merits and drawbacks. External accreditation often comes with an increase in bureaucracy which can be a barrier to people getting involved. Citizen Science is about being accessible and encouraging involvement of all people.'*

In order to formulate Citizen Science into accreditation a great deal of thought and further research is required to see if the output would be an official accreditation and/or certificate. Another good point is whether the accreditation is internally or externally assessed. Each way would present issues such as staff capacity, funding and resources all of which can be a barrier for some organisation to uptake accrediting Citizen Science.

2. 'Will accrediting people for their work in Citizen Science make the experience and data more valuable and/or other?'

- 85% of responses indicated it would make 'The experience more valuable'

Whilst this is a strongly positive response this is tempered by some of the comments added regarding this question:

- *Adds additional purpose to the work*



- *If more people are actively involved with Citizen Science, the more rewarding and valuable an experience it would become for a learning community*
- *Maybe- some recorders will enjoy the challenge of gaining qualifications and experience. However, I worry it may deter those who are less confident as they may feel excluded if they are not as competent as others*
- *It may be more valuable for them in terms of employability but not for the people who just join in for the fun*
- *Accrediting citizen science activity will add value for some but not all*
- *Possibly for future employment. Depends how we are defining 'valuable'*
- *Not necessarily, there may be a value for some, but it may put off others who want to participate out of interest and don't want the stress or don't have the confidence to go through an assessment*

Therefore the responses from this question are mixed. Though all agree to accreditation adding value, there is a mixed opinion about how worthwhile this would be. Some participants think accrediting people for their work in Citizen Science will make the experience more valuable for some in terms of employability. If citizen scientists are seeking to gain a recognised qualification this would be an ideal option for them. They would feel that their skills are recognised, important and can be developed upon.

However for the majority it may deter participants from getting involved and taking part as they might stress or don't have the confidence to go through an assessment. It may also exclude people who want to join in for the fun.

In terms of making the experience more valuable again it lies in their motivations for taking part in the first place. As mentioned throughout this report there are varying factors affecting motivations and this will depend on the individuals own motivations.

3. 'Do you think being able to gain an accredited qualification in Citizen Science would draw more participants to take part in Citizen Science activities?'

- 58% of responses indicated 'Maybe'

A large proportion of participants thought it might draw more people to take part in Citizen Science activities depending on their motives. Feedback suggests *'some participants may feel that accreditation demonstrates their learning and commitment'* and this could be linked to progression if they are committed and are being invested in and some feel *'it would draw some people in and put other people off depending on motives and personality'*. It is expressed that *'some people will be attracted to the challenge of gaining qualifications/experience, but others may feel intimidated / deterred by the need to reach a certain level of competency'* and *'maybe put off others, intimidated by certification if they see it as difficult or "like studying"'*.

From the responses it is conveyed that organisations are unsure whether it would actually draw more participants to take part and perhaps it would essentially put off the majority. As discussed throughout the report it all depends on their motivation. If citizen scientists are looking to be more employable then yes an accreditation will attract more participants but it is questioned *'people do citizen science to contribute to the bigger picture, do they need a certificate to say they are qualified to do so?'* For some citizen scientists they want to be involved because they want to and accreditation would not suit their needs.

4. 'Would an accredited qualification in Citizen Science benefit your organisation and/or groups to demonstrate achievement and gain recognition? E.g. employability, competency of ID'

- 67% of responses indicated 'Yes'



In terms of employability it was communicated that *'accreditation will boost some people's CVs and aid with employment'* and *'may also benefit volunteers who are looking to work for us or a similar organisation at some point in the future'*. It was also mentioned that it would be *'useful for the reputation of the organisation in question'* who is offering an accredited qualification in Citizen Science.

On an individual and community scale an *'accredited qualifications would benefit people by helping them gain confidence and self-esteem. This would help to improve our participant's mental health and wellbeing. It would also help with employability and encourage participants to share their skills with others therefore increasing the amount of citizen science undertaken'*.

It was also expressed that *'It depends on the data validation process. Part of the success of Citizen Science projects is that they are easy to take part in and the results can be appropriately interpreted by statisticians'*. This implies that accreditation may over complicate the process of data collection and validation and could make it harder to get involved. However if organisations are *'looking for high quality data that can be used in planning processes'* an accreditation may add value to the data collected by the citizen scientist.

Further to this, the feedback suggests:

- *Yes, more recognition and encouragement from wider audience*
- *Yes, it would demonstrate volunteer 'progression' well*
- *It might be useful to offer as a way of recognising volunteer achievement*
- *Be great for volunteers to feel like they've achieved something on paper rather than just taking part and submitting the data*

5. 'Would accrediting Citizen Science make it less accessible to some people?'

- 41% of responses indicated 'Yes'
- 37% of responses indicated 'Maybe'

There are a lot of good responses to this question. In general most participants feel that accrediting Citizen Science will make it less accessible to people for a number of reasons including:

- *It may put off people who lack confidence, or don't want the stress of going through an accreditation process*
- *It might make it seem too professional, and less 'citizen'*
- *Yes- the costs associated with accreditation/training/certificates could be exclusive. Also some people may feel intimidated by the need to reach a certain level of competency for certification*
- *It is likely to deter people who are less confident - academically or otherwise - and those who don't want to be tested in case they fail but just want to learn about their environment or pick up some skills*
- *It might turn some people off. It might be less inclusive*

From the comments it is expressed that many organisations feel that people might be put off being involved if Citizen Science and accreditation was to be integrated.

In contrast it is worth noting the feedback also suggested that it may be possible to integrate Citizen Science and accreditation and yet still making it accessible to all. It was put across that *'accreditation should be an option not the purpose of Citizen Science. The experience and understanding is more important'*. This is a valid point that offering the means of an accreditation should be an option for the participants progression and not mandatory. However, depending on the structure and project entailed the accredited status maybe compulsory for example incorporating



Citizen Science in SQA modules that need to be completed. Thus some survey participants feel that it shouldn't make it less accessible to people only if *'the award was wrongly structured'* and suggested that *'there could be different levels of accreditation, e.g. Bronze, Silver & Gold depending on the complexity of the Citizen Science project/data collection.'*

6. 'Would you value an accreditation in Citizen Science certificate more than a certificate of achievement in participation?'

- 63% of responses indicated 'Yes'
- 37% of responses indicated 'No'

Once more high quality responses from this survey question and points out that some organisations would value an accreditation in Citizen Science certificate more than a certificate of achievement. The feedback reveals:

- *The certificate would recognise a level of competence rather than simply taking part in the process*
- *Yes- it is valuable to know that an individual has reached a certain level of competency in species identification and recording*
- *Yes, but I work for an organisation that places more emphasis on data quality rather than engagement*
- *shows a level of skill has been achieved*
- *It has more value*

The responses imply that an accredited certificate in Citizen Science would have more value than a certificate of achievement. Some organisations think it would recognise the level of competence and skills that has been achieved by the citizen scientist thus making the data collected by the recorder stronger in terms of identification value.

On the other hand most of these organisations focus more on the data quality rather than engagement and therefore they have different priorities to organisations who concentrate on engagement. This organisation's choice of responses show:

- *I believe it is more important to have people engaged as Citizen Science is not just about the data that is being produced*
- *Depends on individual circumstances; participation can be its own reward*

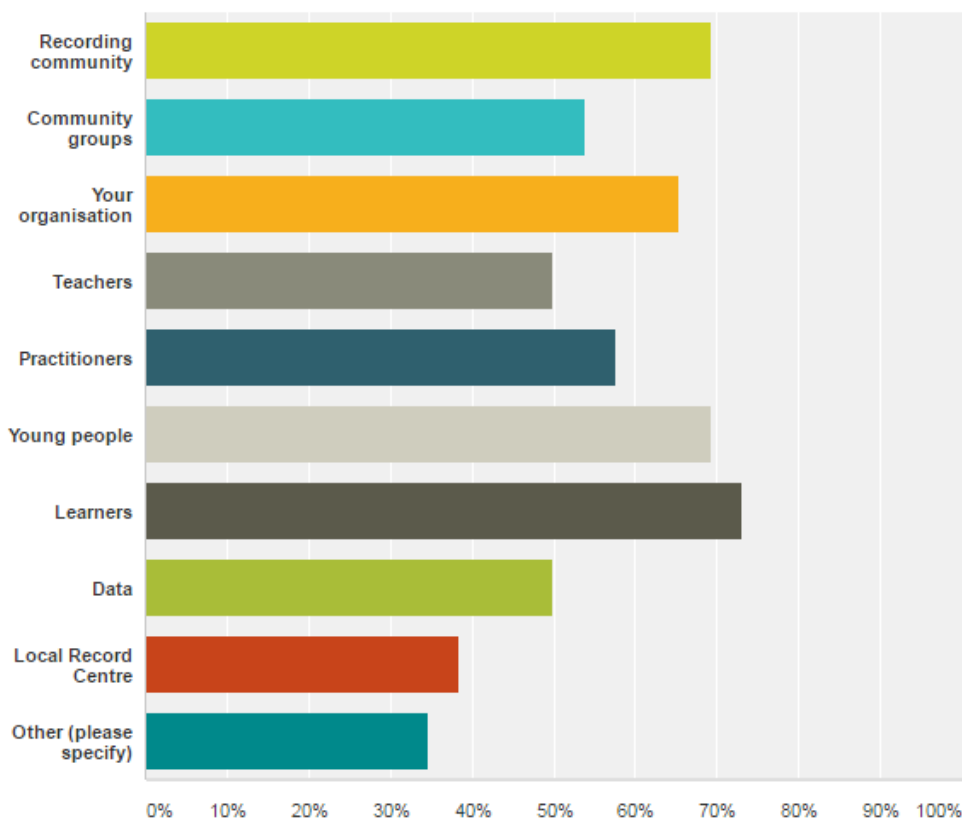
It is important to be aware that each organisation will either focus more on the data quality or engagement and rarely both of these. Most of the organisations who stated 'Yes' focus more on the data quality rather than engagement and therefore they have opposed thoughts than organisations who concentrate on engagement. In general some organisations will be in favour of an accredited Citizen Science certificate to demonstrate that citizen scientists are competent and skilled to record species and their data will be robust compared to simply engaging people in Citizen Science where the data maybe less favoured.



7.

Would an accredited certificate in Citizen Science add value to:

Answered: 26 Skipped: 1



The survey participants were asked if an accredited certificate in Citizen Science add value to specific groups. The responses illustrate it would add the most value to:

- 73% to Learners
- 69% to the Recording Community
- 69% to Young people

Other comments include:

- People out of work and seeking accreditation
- Possibly young people via scouts, guides, schools

By and large it would seem that an accredited certificate in Citizen Science would add value to all the suggested themes above plus it is suggested that *'accreditation provides real worth to Citizen Science. Therefore, those delivering and undertaking CS opportunities are possibly more inclined to reach further into the opportunities relevant to their local community and improve the relevance and reliability of the data recorded'*.

8. What would be important consideration for making the accredited course of value? E.g. costs, accessibility and barriers.' Survey participants we asked two questions here:

- If a certificate cost £5 would you get certificates for your participants?



Some indicated that if a fee of £5 was in addition to the initial course fee then no, they would not get certificates for their participants. Most responses chose no for a number of reasons but the top reason is due to financial costs to their organisations. It was stated that *'our organisation struggles to finance our present activities'* and therefore would not be able to cope with the additional fee.

In addition in a school setting it *'may be pricey if a secondary school wanted to do a project with a whole year group (up to 300 pupils)'* and *'uncertain that many departments/faculties/schools/settings would be able to fully support the additional budget requirement and so £5 per certificate may be too much, especially if the intention would be for participants to continually participate in CS opportunities'*. If the idea was to continually provide accreditation in Citizen Science the cost may prohibit the number of participants taking part.

Another key point is that costs is a barrier to engagement to all and some groups maybe self-funded and would not have the funds to support this.

Conversely some participants also said yes they would pay £5 if the funds were available to fund Citizen Science and accreditation activities.

Overall there is an assortment of responses to this and it is expressed that *'what is deemed to be an acceptable cost very much depends on the CS project'*. This is a valid point and the costs will vary depending on the structure, size and scope of Citizen Science activities.

- If certification required an hour of additional work in completing forms would you get certificates?

Surprisingly a good number of survey responses said yes, they would still get certificates if it required an hour of additional work in completing forms. It is nice to see that organisations would support the extra work load and cited *'if it encouraged participation yes an additional hour is not a problem'* and *'Yes (Although any more than this would be too much!)'*.

In opposition a few survey participants said no for the following reasons:

- *No. I believe this would be a barrier for many seeking accreditation*
- *Effort is also a factor, but as with cost, what is deemed to be an acceptable amount of effort depends on the individual CS project*
- *From our experience bureaucracy is a significant barrier to engagement*

Yet again, the choice of an organisation to uptake the additional costs and work load will depend on staff capacity, resources, funding and interest in accreditation for their groups and participants.

9. 'If there was a clear route for accreditation in Citizen Science would you go down this route and why?'

- 45% of responses indicated 'Maybe'
- 41% of responses indicated 'Yes'

The choice of answer is almost equal for 'Maybe' and 'Yes'. Feedback indicating 'Maybe' includes:

- *The actual route for accreditation would be the determining factor*
- *Depends on what was needed*
- *For some CS projects, but not all*



- *I would need to know more about it first*

For those survey participants that indicated 'Yes' thought:

- *I can see value for some groups so yes. I would want the flexibility to choose the most appropriate scheme of work for the group. Accreditation will not be for everyone. I'm not sure this would be a 'route to go down' and rather another branch on a large 'citizen science tree'*
- *Yes- It would be really good for future employability and for knowing I can contribute to species recording*
- *If it was flexible enough to allow choice of project and data to be collected.*
- *We would certainly investigate how we can use and share any citizen science accreditation/certification that amplifies activity and encourages more to get involved*

Integrating Citizen Science and accreditation is in its infancy and most organisations expressed that they would need to know more information on what exactly would be involved in the accreditation process and questions 'where the demand would be from... could demand be created?'. The demand could be generated if there was an uptake and again it would depend on the citizen scientists' motivation. It is conveyed that the demand may lie in the route of employability. Throughout the survey employability has been mentioned as a driver however many citizen scientist are purely involved in engagement sessions.

Further to this it is expressed that the accreditation would need to be flexible for a broad range of participants who would want to be involved.

10. 'Final comments – what are your overall thoughts of an accredited Citizen Science course?'

Articulated below and in Appendix B

5.3 Strengths and Weaknesses of Integrating Accreditation into Citizen Science Activities

Here we summarise the overall strengths and weaknesses from the survey participants:

Strengths

- Accreditation will give more clout to data
- It will provide opportunities for progression and recognition for those who want it. For example participants trying to build their career and CV
- Good route for employability and shows a certain level of competency has been achieved
- Accreditation can add purpose to their work
- Some recorders will enjoy the challenge of gaining qualifications and experience of accreditation
- Recorders will feel that their skills are recognised, important and can be developed
- Accreditation might make some of the results more credible and can demonstrate recorders have gone under specific training/qualifications
- The data could be of a better quality as recorders are more invested in
- Accreditation may be an incentive for younger participants looking for formal recognition
- Accreditation can demonstrate that a recorder has reached a certain level of competency in species identification and recording rather than simply taking part in the process

Weaknesses

- The value of Citizen Science is in the experience and understanding and this may be lost if accreditation was integrated



- The accreditation process would cause unnecessary complications for some organisation and participants
- Distinction between accreditation and certification needs to be clear
- Accreditation may put off participants becoming involved – they might feel stressed or lack confidence to go through an assessment/build portfolio. Some participants take part because it is fun and they want to make a difference
- Accredited qualifications have a lot of paperwork, administration and require effort from organisations and participants. It can exclude people and organisations from taking part
- The costs associated with accreditation/training/certification could be exclusive
- If accreditation was the only way to take part in a given project it might exclude some people who want to take part – the accreditation needs to be flexible and structured for all participants
- Accreditation may make it too professional and less ‘citizen’
- There may be a shift that Citizen Science is more for data collection rather than engagement
- An older age group would be less bothered about the qualification but enjoy the participation just the same. The accreditation would depend on the needs and interest of the groups
- Having multiple threads of engagement confuses people and acts as a barrier to engagement

5.4 Conclusion

On the whole the survey responses have been varied, high quality and illustrated that there is a keen interest in integrating Citizen Science and Accreditation whether organisations are in favour or not. A notable response that should be central to developing Citizen Science and Accreditation is that it should be an option for participants not the purpose of Citizen Science. Accreditation could be a progression route for many participants who want to further develop their identification and recording skills and actively want to take their recording to the next level. It can be offered and for those who do not want to take part shouldn't feel obligated. The choice lies with the participant's motivations and for some it really is just about taking part in something fun and engaging. Thus accreditation would have to be something additional that participants could go for if they wanted it, rather than an assumed part of the learning experience for every participant.

It is also highlighted that accreditation could exclude organisations and participants from taking part due to funding constraints, staff capacity and resources. Looking ahead there would need to be funds available to help develop and pay for the accreditation and for the extra workload on staff. Hence this can be seen as a downside as it may be more hassle and costly than it is worth.

On the upside it was communicated that many survey participants did see the value for some groups and believe in order for accreditation to work the process would need to be flexible and offer a range of ‘levels’ participants could undertake depending on their ability, skills and interests. The accreditation could be motivational, offer development routes for some participants and may improve and add clout to the data collected by citizen scientists.

Therefore the key thing is it being optional – both participants and organisations being clear why they are involved in Citizen Science and therefore the role accreditation may play.



Appendix A: list of Citizen Science surveys and links to the organisations

	Organisation(s)	Website	Survey(s)	Detail	Training	Equipment	Entry Level
1	British Hedgehog Preservation Society and people's trust for endangered species	http://www.hedgehogstreet.org/	Hibernation Survey	Record any sightings of hedgehogs when out. Recordings to be logged by website ONLY and would prefer to have a grid reference but postcode/nearest town or county will do. Will need a login to upload sightings onto website.	No training needed	Notebook, pen, GPS.	Beginner
2	Royal Society for the Protection of Birds	http://www.rspb.org.uk/birdwatch/	Big Garden Birdwatch	Record the highest number of each species of bird seen in one hour. This can be done in a garden or at the park. This is an annual survey and is only carried out on one weekend in January. Results are submitted online ONLY but can download a help sheet to use while recording and then upload findings online. Possibly need to become a member to upload data.	No training needed	Download help sheet (or use a notebook), pen.	Beginner
3		http://www.rspb.org.uk/thingsstodo/surveys/	Various bird surveys	Various projects that collect data from birdwatchers, bird recorders, county bird clubs and	No training needed	Download help sheet (or use a notebook), pen.	Beginner



				national datasets that targets bird species or habitat management for birds of conservation concern.			
4	Woodland Trust (Scotland)	http://www.naturedetectives.org.uk/download/hunt_spring_early.htm	Spring Pack, Summer Pack, Autumn Pack, Winter Pack etc.	Free packs available from: http://www.naturedetectives.org.uk/packs/play which gives a list of activities such as nest challenge, texture trail etc that can be done at home or at the park. Great for beginners and children to get involved in nature and perhaps invoke some to become recorders.	No training needed	Packs are emailed then can be printed out.	Beginner
5		https://www.woodlandtrust.org.uk/visiting-woods/ancient-tree-hunt/	Ancient Tree Hunt	Involves people in finding and mapping all the fat, old trees across the UK to become part of the only living archive of ancient, veteran and notable trees.	No training needed	Download help sheet (or use a notebook), pen.	Beginner
6	Open Air Laboratory (OPAL)	http://www.opalexploration.org/bugscout	Bug Count	Record bugs in any area and look out for the six species quest bugs in particular. Recordings can be uploaded online anonymously, by logging in or by posting the findings. Can use a postcode, nearest town or by selecting an area on the map to locate findings. You	No training needed	Download field notebook, pocket ID guide and species quest sheet.	Beginner



				can download the field notebook, pocket ID guide and species quest sheet to use while out.			
7		http://www.opalexploration.org/soilsurvey	Soil and earthworm survey	Earthworms are extremely important and play a vital role in recycling plant nutrients and aerating the soil. By taking part in this survey you'll help improve our knowledge of earthworms and the soils they live in - something we know surprisingly little about. You can download the field notebook, pocket ID guide and species quest sheet to use while out.	No training needed	Download field notebook, pocket ID guide and species quest sheet.	Beginner
8		http://www.opalexploration.org/AirSurvey	Air survey	We can learn much about air quality from the species that live nearby. The OPAL air survey is studying lichens found on trees and also looking for tar spot fungus on sycamore leaves. Both can tell us a great deal about local air quality. You can download the field notebook, pocket ID guide and species	No training needed	Download field notebook, pocket ID guide and species quest sheet.	Beginner



				quest sheet to use while out.			
		http://www.opalexploration.org/nzflatworm	New Zealand Flatworm Survey	Look for the New Zealand flatworm in your local patch to see how their number are affecting our native earthworms	No training needed	Download field notebook, pocket ID guide and species quest sheet.	Beginner
		http://www.opalexploration.org/biodiversitysurvey	Biodiversity Survey	Survey 3 metre sections of hedgerow and count invertebrates and specific plant species present. April to November	No training needed	Download field notebook, pocket ID guide and species quest sheet.	Beginner
		http://www.opalexploration.org/treesurvey	Tree Health Survey	Record common native tree pests and diseases between May and September	No training needed	Download field notebook, pocket ID guide and species quest sheet.	Beginner
9		http://www.opalexploration.org/watersurvey	Water Survey	The OPAL water survey is an exciting experiment that everyone can take part in. Learn about water health by looking at freshwater invertebrates, water clarity and PH levels. You can download the field notebook,	No training needed	Download field notebook, pocket ID guide and species quest sheet.	Beginner



				pocket ID guide and species quest sheet to use while out.			
10	Marine Conservation Society (MSC)	http://www.mcsuk.org/what_we_do/Wildlife%20protection/Report%20wildlife%20sightings/MCS%20Jellyfish%20Survey	Jellyfish Survey	Record jellyfish that have become stranded on beaches. Recordings can be uploaded online without registration or by post. Can also download Jellyfish identification guide to help and email pictures to peter@mcsuk.org if unsure.	No training needed	Download jellyfish identification guide, notebook, pen.	Comfortable
11		http://www.mcsuk.org/what_we_do/Wildlife+protection/Report+wildlife+sightings/Alien+species	Alien Species	Working with MarLIN (the Marine life Information Network at the Marine Biological Association) to record invasive non-native species. Record any seen on beaches using the Marine Non-native Species ID Guide which can be downloaded. Results are to be uploaded online at http://www.marlin.ac.uk/rml.php but must log in first.	No training needed	Download marine non-native species guide, notebook, pen.	Comfortable



12	UK Cetacean Strandings Investigation Programme (CSIP)	http://ukstrandings.org/	Report Strandings	Report any strandings of whales, dolphins and porpoises (collectively known as cetaceans), marine turtles and basking sharks that strand around the UK coastline. To report a sighting for live strandings contact SSPCA on 0131 3390111 and for dead strandings contact SAC Veterinary Services on 01463 243030 or 07979 245893 (out of hours).	No training needed	N/A	Beginner
13	Freshwater Habitats Trust	http://freshwaterhabitats.org.uk/projects/clean-water/	Clean Water for Wildlife	A community survey which aims to find wildlife rich, clean water habitats in England and Wales. Take part to find out whether the ponds, streams and rivers in your neighbourhood are really good enough for wildlife.	No training needed	White tray, sieve, survey sheet. Survey kits available on their website.	Beginner
14		http://freshwaterhabitats.org.uk/projects/people-ponds-water/	People, Ponds and Water	A national project that helps people to make a significant difference to protecting our freshwater wildlife. This is the project under which there are the PondNet and Clean water for wildlife citizen science initiatives.	No training needed	White tray, sieve, survey sheet	Beginner

Scotland Counts



15		http://freshwaterhabitats.org.uk/projects/pondnet/	PondNet	Collect information about trends in pond quality and pond species, including rare plants and animals.	No training needed	Can print out form to record, pen.	Beginner
16	Natural History Museum	http://www.nhm.ac.uk/take-part/citizen-science/big-seaweed-search.html	Big Seaweed Search	Explore the UK coastline and record the living seaweeds you find to help us monitor the effects of climate change and invasive species.	No training needed	Survey sheet, pencil/pen, ID sheets to help.	Beginner
		http://www.nhm.ac.uk/take-part/citizen-science/orchid-observers.html	Orchid Observers	Record Orchids growing in your local areas by going on a walk and photographing them. Send you results into the Natural History Museum.	No training needed	Camera, recording sheet, GPS, pen etc.	Beginner
17	The Marine Biological Association of the UK	http://www.mba.ac.uk/recording/about	Sealife Survey	Record sightings of marine life. Recordings are uploaded online however login is needed. Records are sent to the NBN Gateway and a recording guide is available.	No training needed	Notebook, pen etc.	Beginner
18	The Bumblebee Conservation Trust	http://bumblebeeconservation.org/get-involved/surveys/	BeeWalk	Help us monitor long-term changes in bumblebee populations. A familiarity with the common garden species is required. Establish a 1-2km transect along your favourite walk where you are likely to see bumblebees and then survey this once per month between	For details of training courses go to the BBCT events page http://bumbl	Camera, recording sheet, GPS, pen etc.	Beginner



				March and October. Guidelines are made available once you register your interest by emailing beewalk@bumblebeeconservation.org	beebconservation.org/get-involved/events-calendar		
19		http://homepages.abdn.ac.uk/wpn003/beewatch/	Bee Watch - Schools specific bumblebee survey	If you love digital photography and wish to learn more about bumblebees then please upload your bumblebee photos to BeeWatch. Share some basic information about the photo such as the date and location and in return we will teach you how to identify bumblebees yourself through an interactive tool. An expert will then send you feedback with the correct identification and some interesting information about that particular species. BeeWatch allows us to gather more valuable information about the distribution of our 24 species of bumblebee.	No training needed.	Camera, notebook, pen	Beginner



21	British Trust for Ornithology	http://www.bto.org/volunteer-surveys/core-surveys	Bird Track	Record birds seen in a site or sites of choice. Need to register to upload results. Need to read instructions which are available to download online. Enter location, time, date and check off species when filling in survey online.	No training needed	Binoculars, notepad, pen etc.	Beginner
22			Breeding Bird Survey	The survey involves two spring visits to a local 1-km square, to count all the birds you see or hear while walking along two 1-km transects within the square. Each visit should take less than two hours, and it's recommend that you make a reconnaissance visit to set up or check the transect route and access, and complete a habitat recording form. You can download the instructions from the website. Need to contact the Regional Organiser to allocate the 1-km BBS square.	Advised to know common bird species though do provide a number of 1 day and weekend training courses mainly on teaching bird survey techniques. 1 day workshop	Binoculars, notepad, pen etc.	Comfortable



					costs £45, weekend costs £180.		
23			Nest Record Scheme	Watch a single nest box in their garden or finding and monitoring nests in the wider countryside. Online guide to monitoring nests is available. Training courses are also available.	1 day and weekend courses available to teach how to find and monitor nests. 1 day course costs £10 and weekend courses cost £40	notepad, pen etc.	Comfortable
24	Plantlife Scotland	http://www.plantlife.org.uk/scotland/things_to_do_in_scotland/volunteering_in_scotland/florasguardians	Flora Guardians	Allocated sites near to where you live in which you monitor a specific wild plant and its habitat on a regular basis. These include endangered 'Back from	Full training provided by Plantlife	N/A	Beginner
25							
26							
27							



				the brink' species and also non native invasive species such as Japanese knotweed. Download the enrolment form.			
28	Bat Conservation Trust	http://www.bats.org.uk/pages/batmonitoring.html	Batwatch	Contact - Anne Youngman Scottish Bat Officer, BCT Unit 10 RFL House Anderson Street Dunblane, FK15 9AJ Tel: 01786 822107 Email: ayoungman@bats.org.uk	No training needed	Simple online recording process and ID Sheets	Comfortable
29	Whale and Dolphin Conservation Society	http://www2.wdcs.org/hych/volunteer/volunteer.php	Cetacean and pinniped surveys	Contact Bridget Davies-Robertson on 01249 449500 or info@wdcs.org . for more information on volunteering with the WDCS.	Training from WaDCS recommended	Field Training	Comfortable
30	Sea Search	http://www.seasearch.co.uk/	Sea Search Recording	Recording after a dive on an Observation form which requires the main habitat and seabed cover types as well as the main species of marine life. More detailed recording can be done on a Survey form. Can download guidance notes on the observation form and survey form as well as the forms	No training needed	Simple online recording process and ID Sheets	Comfortable



				themselves.			
31	NNSS (GB non-invasive species secretariat)	https://secure.fera.defra.gov.uk/nonnativespecies/index.cfm?sectionid=47	Identification of non-native invasive species	Identification sheets of non-native invasive species available to download. A recording of observed INNS allows you to record what you've seen and where.	No training needed	Simple online recording process and ID Sheets	Beginner
32	The Met Office	http://www.metoffice.gov.uk/climate/uk/wow.html	Weather Observations Website	Recording rainfall and other meteorological phenomena around you. Either record your weather on the go through your smart phone or set your home/work/school up as an observation site recording rain, weather type, temperature and any other conditions you wish. Then see your reports alongside hundreds of others in your area.	No training needed	Simple online recording process	Beginner
33	Buglife	https://www.buglife.org.uk/activities-for-you/wildlife-surveys	Bug Surveys	Take part in a wide variety of insect surveys including pollinator hoverflies and giant aphids surveys. Something there for everyone.	No training needed but worth contacting Buglife	Simple online recording process and ID Sheets	Beginner



					for advice and information on training courses available		
34	Butterfly Conservation	http://www.butterfly-conservation.org/downloads/49/bc_scotland.html	Butterfly Identifier	Record the butterflies you see around you with the butterfly identifier. Clear colour photos of the butterflies and a simple recording online form	No training needed	Simple online recording process and ID Sheets	Beginner
		http://butterfly-conservation.org/110/recording-and-monitoring.html	Various butterfly and moth surveys	Lots of recording and monitoring of Lepidoptera (butterflies and moths) to get involved with! Visit the site to find a survey that suits you.	No training needed	Simple online recording process and ID Sheets	Beginner
36	iSpot	http://www.ispot.org.uk/	iSpot	Not a survey however provides peer to peer review of photographs and description of specimens seen in the field. Gives rapid ID for unknown species and builds up your ability and knowledge to confidently spot things yourself. Mobile App also available turn your mobile phone into a tool for accessing information on the go.	Online instructions	Simple ID and recording tool	Beginner



37	Wild Knowledge	http://www.wildknowledge.co.uk/	Wild Knowledge	Not a survey however provides information on how to turn your mobile phone into a tool for accessing information on the go.	Online instructions	Simple ID tool	Beginner
38	iRecord	http://www.brc.ac.uk/irecord/	iRecord	Not a survey however provides a way of uploading multiple photographs and details of specimens seen in the field. Mobile App also available turn your mobile phone into a tool for recording on the go.	Online instructions	Simple ID and recording tool	Comfortable
39	SCAPE	http://www.shorewatch.co.uk/	Shorewatch	Shorewatch aims to save information about Scotland's archaeological sites before they are lost to erosion. The website contains information on how to get involved in the project and explains how to record archaeological sites. There are pages giving details of some of the current projects and others explaining why they are collecting the data, who it is for and where records will go. There are also forms and guidance notes to download to help you start your own recording project.	Online instructions	Simple ID and recording tool	Comfortable



40	ASHTAG	http://ashtag.org/	Ash Tag	Provides a way of uploading photographs and details of evidence of Ash Dieback appearing on Ash trees around the country. A mobile phone app and a pc based tool allows for recording on the go.	Online instructions	Simple ID and recording tool	Beginner
41	Clyde Forum	http://clydeforum.com/index.php?option=com_content&view=article&id=64&Itemid=70	Clyde Invasives project	Provides a way of uploading photographs and details of evidence of Invasive non Native Species (INNS) appearing in the busy ports and harbours on the Clyde. A danglebook is available with ID pictures as well as detailed pc based tools allows for ID on the go and upload at your leisure at home.	Online instructions	Simple ID and recording tool	Comfortable
42	Phototrails	http://www.phototrails.org/	Phototrails	Provides detailed accessibility information for trails throughout the UK. Each mapped trail combines photos of every potential hazard and details on surface, gradient, facilities etc so you can ensure the trail is suitable for you before you go. Allows user additions and reporting.	Online instructions	Simple recording and reporting tool	Beginner



43	Scottish Wildlife Trust	http://scottishwildlifetrust.org.uk/what-we-do/scotlands-red-squirrels/squirrel-sightings	Squirrels Survey	Scottish Wildlife Trust is collecting information on the distribution of red and grey squirrels right across Scotland. This allows us not only to identify areas of importance where habitat management or grey squirrel control will benefit red squirrel populations, but also to understand natural changes in their populations. The data will be shared with local biological records centres and the national database of squirrel records. Please help us by reporting your sightings of red or grey squirrels in each new place where you see them.	Online instructions	Simple recording and reporting tool	Beginner
44	Amphibian and Reptile Conservation	http://www.narrs.org.uk/index.php	National Amphibian and Reptile Survey Scheme	Record the amphibians and reptiles in your area and join existing surveys.	Training provided by volunteer groups	Simple recording and reporting tool	Beginner
45	British Dragonfly Society	http://www.british-dragonflies.org.uk/content/recording-dragonflies-and-damselflies-britain	Dragonfly Watch	Help the British Dragonfly Society by searching for dragonflies and submitting records of dragonfly/damselfly	Online instructions and training provided	Simple recording and reporting tool	Beginner

Scotland Counts



					by volunteer groups		
46	FIDRA	http://www.nurdlehunt.org.uk/	The Great Nurdle Hunt	Search for Nurdles, plastic pellets used in the plastic making industry, on your local beach to help see how far they are spreading in our environment.	Online Instructions	Simple recording tool and pot for collecting nurdles	Beginner
47	The Mammal Society	http://1061396120.test.prsitehosting.co.uk/owl_pellet_survey	National Owl Pellet Survey	Wander through woodlands and wild places in search of owl pellets and send them off to the mammal society.	No training needed, online instructions	Simple ID and recording tool	Beginner
48	The Mammal Society	http://www.mammal.org.uk/footprint_tunnel_survey	Footprint tunnel survey	Set up a footprint tunnel to see which small mammal species are living in your local area.	No training needed, online instructions	Footprint tunnel	Beginner
49	Shorewatch	http://www.shorewatch.co.uk/	Shorewatch	With thousands of archaeological sites at risk from erosion around Scotland's coast, Shorewatch aims to get as much information as possible on the sites before it is too late.	Online instructions/Simple recording & reporting tool	Recording sheet that prompts you for all the information necessary to make an archaeological record about	Beginner



						any sites that you find	
50	GalaxyZoo	http://www.galaxyzoo.org/	GalaxyZoo	The aim of Galaxy Zoo is for the public to study the shape and form of the galaxies photographed by the Hubble telescope and to classify them.	No training needed, online instructions	All Online	Beginner
51	British Geological Survey (BGS)	http://www.bgs.ac.uk/citizenScience/home.html	Various Surveys	BGS website has 8 surveys that the public can input their data into; including App based mobile surveys and historic photograph requests.	No training needed, online instructions	Simple recording tool	Beginner
52	Wild Knowledge	http://www.wildknowledge.co.uk/	Wild Knowledge	Not a survey however provides information on how to turn your mobile phone into a tool for accessing information on the go.	No training needed, online instructions	Simple recording tool	Beginner



Appendix B: Citizen Science and Accreditation survey questions and all responses:

1.

Does Citizen Science need accreditation to make it more valuable? Please give details below

Answered: 27 Skipped: 0

Answer Choices	Responses
Yes	25.93% 7
No	29.63% 8
Maybe	44.44% 12

Answer choice 'Yes'

- Some recognition would provide added value
- Yes
- "Need" - probably not, "benefit" - probably yes
- I consider Citizen Science to be a way in which to enhance the teaching and learning delivered in schools across Scotland and beyond. In light of the requirement for all GTCS registered practitioners to be actively involved in recording evidence relevant to their Professional Update, I can only see accreditation as a good thing.
- Yes, accreditation will give more clout to data
- Yes, it gives opportunities for progression and recognition for those who want it.
- Yes - good for employability and shows a certain level of competence

Answer choice 'No'

- I don't think it NEEDS accreditation, but that doesn't mean that having an accreditation scheme available would not be a benefit to some people
- the value is in the experience and understanding gained
- I think it's valuable already without accreditation, however accreditation may help uptake
- No
- This. Although it could be useful - see next answer.
- I don't think it does but it would be a good idea.
- NO
- Unnecessary complication

Answer choice 'Maybe'

- Certainly not essential. But for some schemes and some people this might add value. Different options are needed and progressive projects from basic entry level to advanced monitoring schemes.
- Depends on the body organising the collation of data. Some have a good validation process already in place.
- it depends on an individual's motivation for participating
- Depends on the type of project and who's getting accredited.
- X



- Citizen science is a valuable resource anyway, and is often reliable as the people who conduct it are generally enthusiastic and aware of its importance. However, accreditation might make some of the results more credible if we can show that recorders have undergone specific training/qualifications.
- It depends on the primary objective of each CS project. E.g. if the objective is to generate high quality data that are used to make decisions, then accreditation may be valuable, but less valuable for a mass participation exercise that seeks to engage people with a particular issue.
- It might attract more people looking to gain qualifications but I do not think it will make it more valuable.
- It could be more valuable to the participant for employability and it could be more valuable in regards to data
- It doesn't need it, but may be useful for some people trying to build careers
- Depends on context, a future employer may look at such things, would be better to have a qualification rather than just an interest or experience in doing it
- Distinction between accreditation and certification would be useful. For example the Duke of Edinburgh's Award and the John Muir Award are nationally recognised certificates (accredited internally), and the Youth Achievement Awards are externally accredited through ASDAN and the SCQF. Each has its merits and drawbacks. External accreditation often comes with an increase in bureaucracy which can be a barrier to people getting involved. Citizen Science is about being accessible and encouraging involvement of all people.

2.

Will accrediting people for their work in Citizen Science make: Please give details below

Answered: 27 Skipped: 0

Answer Choices		Responses	
The experience more valuable	Responses	85.19%	23
The data more valuable	Responses	70.37%	19
Other	Responses	25.93%	7

Answer choice 'The experience more valuable'

- NO
- Possibly for future employment. Depends how we are defining 'valuable'.
- Adds additional purpose to the work.
- For some yes.
- not necessarily, there may be a value for some, but it may put off others who want to participate out of interest and don't want the stress or don't have the confidence to go through an assessment
- If training is to a level useful to other projects or organisations
- Yes
- Yes
- If more people are actively involved with Citizen Science, the more rewarding and valuable an experience it would become for a learning community
- For some people, possibly
- Maybe- some recorders will enjoy the challenge of gaining qualifications and experience. However, I worry it may deter those who are less confident as they may feel excluded if they are not as competent as others.



- *Yes - it would give school pupils something to aim for (Crest awards)*
- *Yes*
- *For some people yes, but it depends on their motivations for taking part in the first place. Some people may see it as an obstacle to participation*
- *Yes, people will feel that their skills are recognised, important and can be developed.*
- *it may be more valuable for them in terms of employability but not for the people who just join in for the fun*
- *Yes - people will feel they are making a difference*
- *Possibly. A certificate can help validate what people have learned showing them - and others - that they have learned something of value to a useful level.*
- *This won't be for everyone*
- *NO I don't think so as it can add a competitive edge, and academic edge*
- *For some people*
- *No, just as valuable to the participant*
- *Accrediting citizen science activity will add value for some but not all*

Answer choice 'The data more valuable'

- *NO*
- *Possibly, but accreditation would not be the key driver in this respect.*
- *In some cases.*
- *Maybe, it may help guarantee standards, but as people are participating out of interest they will likely be motivated to do a good job. If getting an accreditation is the motivation, they may be less focussed on the actual work*
- *If it means that the data returned to a live research project is accurate/useful*
- *yes*
- *As above. The more invested a community is in Citizen Science, the more relevant (and valuable) the data acquired becomes.*
- *As above*
- *Yes- accreditation might make some of the results more credible (and the results more widely usable in research) if we can show that recorders have undergone specific training/qualifications.*
- *Possibly, but only if the accreditation process includes training in data quality assurance.*
- *The data could be of a better quality because people are more invested in it.*
- *If they are taken through a training course then yes the data would probably be more reliable and therefore more valuable*
- *Yes - because data should be more reliable*
- *Potentially - if participants are trained in consistent methods to a recognised standards.*
- *This will be the case*
- *NO*
- *Possibly: may incentivise*
- *No, anyone can submit data with a relatively good knowledge of the subject matter*
- *I think this is about whether obtaining accreditation as a main driver for involvement will lesson or improve the quality of data collected? I don't know the answer to this.*

Answer choice 'Other'

- *Again, the accreditation will be helpful to some individuals*
- *Overall there is a risk of disengaging with people if accreditation is perceived as a burden.*
- *It may give participants recognition for their effort*



- Both of the above
- Both. It sets a standard for recording and also for running citizen science educational programmes
- I wouldn't want certification to put off people from learning because they don't see themselves as academic or fear failing the "test".
- The experience and data more confusing

3.

Do you think being able to gain an accredited qualification in Citizen Science would draw more participants to take part in Citizen Science activities? Please give details below

Answered: 26 Skipped: 1

Answer Choices	Responses	Responses
Yes	Responses	42.31% 11
No	Responses	11.54% 3
Maybe	Responses	57.69% 15

Answer choice 'Yes'

- Yes, I think it could be helpful in this respect: we do need more people to be involved
- only if it were of vocational value to the participant
- Yes
- Yes
- Yes. Refer to the answers for previous questions.
- Yes - it would give pupils something to aim for (e.g. Crest Award) and help schools promote wider achievement
- Yes
- Yes
- Yes but only a certain type of participant, like ones looking for careers in science/surveying
- I do as some people like the idea of gaining qualifications
- This is possible; it may be an incentive for younger participants looking for formal recognition.

Answer choice 'No'

- No
- No because the idea of a 'qualification' might intimidate some participants
- Our experience is that accredited qualifications shift significant paperwork on to those getting involved. There is also a danger that you exclude those looking to get involved who don't meet the accredited qualification criteria

Answer choice 'Maybe'

- Only if these schemes were flexible. If accreditation was the only way to take part in a given project you might actually exclude some people who might want to take part but don't want to commit time and effort to a prescribed accreditation scheme.



- Not necessarily, there are other routes to achieving accreditation
- Again, depends very much on the type of person.
- Some participants may feel that accreditation demonstrates their learning and commitment
- I think it would draw some people in and put other people off depending on motives and personality.
- Maybe- Some people will be attracted to the challenge of gaining qualifications/experience, but others may feel intimidated / deterred by the need to reach a certain level of competency.
- Hard to say - may be better for certain surveys but could put other off
- It depends on the combination of the CS project objectives and the motivations of the participants. If this combination of factors is assessed correctly then accreditation may attract more participation, but for some projects it may deter more participants than it attracts.
- Depends on what their motives are? Are they looking to be more employable? Will it event be recognised by employers? People do citizen science to contribute to the bigger picture; do they need a certificate to say they are qualified to do so?
- Not sure
- It may attract people seeking a recognised qualification but may also but may put off others intimidated by certification if they see it as difficult or "like studying."
- I don't know
- Initially and superficially perhaps
- Probably, people like certificates!
- Citizen science activity can be used already to help evidence a plethora of awards and qualifications. From highers biology to Cub Scout badges. Is there a need to have a specific accredited qualification, and where is this need (e.g. teachers, health & youth workers)

4.

Would an accredited qualification in Citizen Science benefit your organisation and/or groups to demonstrate achievement and gain recognition? E.g. employability, competency of ID, etcPlease give details below

Answered: 27 Skipped: 0

Answer Choices	Responses	Responses
Yes	Responses	66.67% 18
No	Responses	3.70% 1
Maybe	Responses	29.63% 8

Answer choice 'Yes'

- I suspect that accreditation will boost some people's CVs and aid with employment
- For some tutors within the FSC this would give a recognisable qualification for CPD and allow them to develop a specialism and perhaps lead citizen science activities with more groups visiting FSC centres
- Recognition of wider achievement is an increasingly important aspect in most schools. Therefore an accredited qualification would probably be welcomed



- *It depends on the data validation process. Part of the success of Citizen Science projects is that they are easy to take part in and the results can be appropriately interpreted by statisticians*
- *Yes. More recognition and encouragement from wider audience*
- *Yes it would help our group especially if accredited groups were listed on TCV website. It would encourage our group to build skills to lead citizen science days*
- *Yes*
- *Yes. Refer to the answers for previous questions*
- *Yes- it would be useful for the future employment of individuals and for the reputation of the organisation in question*
- *Yes*
- *Yes*
- *Accredited qualifications would benefit people by helping them gain confidence and self-esteem. This would help to improve our participant's mental health and wellbeing. It would also help with employability and encourage participants to share their skills with others therefore increasing the amount of citizen science undertaken*
- *Yes, it would demonstrate volunteer 'progression' well*
- *Good for employability*
- *It would show an ability to learn, demonstrate an acquired skill set and boost confidence in those successfully achieving certification. I would expect potential funders to be more willing to support people who have proven competence and commitment. It's also handy on the CV and demonstrates continuing personal development.*
- *For my projects yes as this is another offer*
- *It might be useful to offer as a way of recognising volunteer achievement*
- *Be great for volunteers to feel like they've achieved something on paper rather than just taking part and submitting the data*

Answer choice 'No'

- *It is already easy to interpret the competence and employability based on basic details of a CV or application comments*

Answer choice 'Maybe'

- *I'm not sure this is the case for reasons above*
- *Not directly*
- *In certain circumstances*
- *In some cases yes, where we're looking for high quality data that can be used in planning processes. It may also benefit volunteers who are looking to work for us or a similar organisation at some point in the future.*
- *Would teachers see it as you are better qualified to teach others about citizen science if you are accredited?*
- *I don't think so*
- *It would depend on the shape and accessibility of the accredited qualification. A good example is Forest Schools. Forest Schools is a fantastic approach to learning outdoors and has some deep pedagogical roots, but does a teacher need to complete an extensive and expensive practical and evidence-based course to enable them to take learning outside? No, but having a Forest School qualification is still seen by many as the appropriate approach to outdoor learning. It would be a great shame if an accredited qualification served to confiscate those looking to getting involved. Would an accredited qualification in citizen science be available to nursery children, primary pupils, and adults? If not, then care will need to be taken to demonstrate involvement at all levels with or without accredited qualifications*



5.

Would accrediting Citizen Science make it less accessible to some people? Please give details below

Answered: 27 Skipped: 0

Answer Choices	Responses	Responses
Yes	Responses	40.74% 11
No	Responses	22.22% 6
Maybe	Responses	37.04% 10

Answer choice 'Yes'

- For some people yes
- It may put off people who lack confidence, or don't want the stress of going through an accreditation process
- It might make it seem too professional and less 'citizen'
- Yes- the costs associated with accreditation/training/certificates could be exclusive. Also some people may feel intimidated by the need to reach a certain level of competency for certification
- Inevitably, if it's accredited across the board it could hamper its use in the public forum i.e. outdoor events etc
- No, because only those interested in accreditation need to undertake it. It shouldn't be required for getting involved in citizen science; it would be an added bonus
- Yes, they might be intimidated or daunted by the idea
- It is likely to deter people who are less confident - academically or otherwise - and those who don't want to be tested in case they fail but just want to learn about their environment or pick up some skills.
- Yes I don't believe everyone will be interested in accreditation can it not be at different levels
- It might turn some people off. It might be less inclusive
- Potentially yes - see above

Answer choice 'No'

- Only if somehow or other you had to have accreditation in order to get involved
- Can't think why it would unless the award was wrongly structured.
- Accreditation should be an option not the purpose of Citizen Science. The experience and understanding is more important
- No
- I would not believe so. The only thing that would make it less accessible would be a if there was an excessive amount of paperwork that required completion
- I don't think so. There could be different levels of accreditation, e.g. Bronze, Silver & Gold depending on the complexity of the Citizen Science project/data collection

Answer choice 'Maybe'

- If the project was inflexible. e.g. If accreditation was the only way to take part. Some will not want to commit to achieve accreditation



- People out of work maybe?
- It might make it less attractive to some people (and less accessible to others)
- Maybe
- If made compulsory for a project, then possibly yes, as many people are motivated to participate for a range of reasons that are not connected to accreditation, e.g. health, wellbeing, social aspects. Some people may also possess professional / academic qualifications that are already well in excess of the accreditation requirements for a particular CS project
- Depends if there is a cost involved? Time commitments? portfolio/ evidence required?
- Probably - but could have participation certificate and accreditation certificate
- I don't know
- I would doubt it: as long as it was clearly marketing as an additional extra, not a requirement
- Depends how it was pitched, some people may be scared off from it if they aren't academically minded

6.

Would you value an accreditation in Citizen Science certificate more than a certificate of achievement in participation? Please give details below

Answered: 27 Skipped: 0

Answer Choices	Responses
Yes	62.96% 17
No	44.44% 12

Answer choice 'Yes'

- Maybe; it depends what is in both of these in terms of learning opportunities
- I would. Others might not. Both have their place
- The certificate would recognise a level of competence rather than simply taking part in the process.
- If it were given to those who were leading groups in doing citizen science
- It would be useful for group members leading on days but again it is about understanding
- I'm uncertain. I suppose it would depend who the certificate was for. Perhaps a practitioner would prefer the accredited certificate. Whereas learners could accrue several certificates for participating in various citizen science opportunities?
- Yes- it is valuable to know that an individual has reached a certain level of competency in species identification and recording
- Yes
- Yes
- Yes, but I work for an organisation that places more emphasis on data quality rather than engagement.
- Yes, definitely
- I personally would but I am heavily involved in citizen science already
- Shows a level of skill has been achieved



- *I think it would demonstrate a proven ability, rather than a one-off achievement although I'm not sure that is the case, much less that anyone outside would notice the difference. I would have put this in a "Maybe" column if there had been one for this question.*
- *It has more value*
- *Depends on the group taking part, if it was younger people I think a certificate of accreditation is more apt*
- *I'm not sure. It depends on the purpose and audience of accreditation/certificate.*

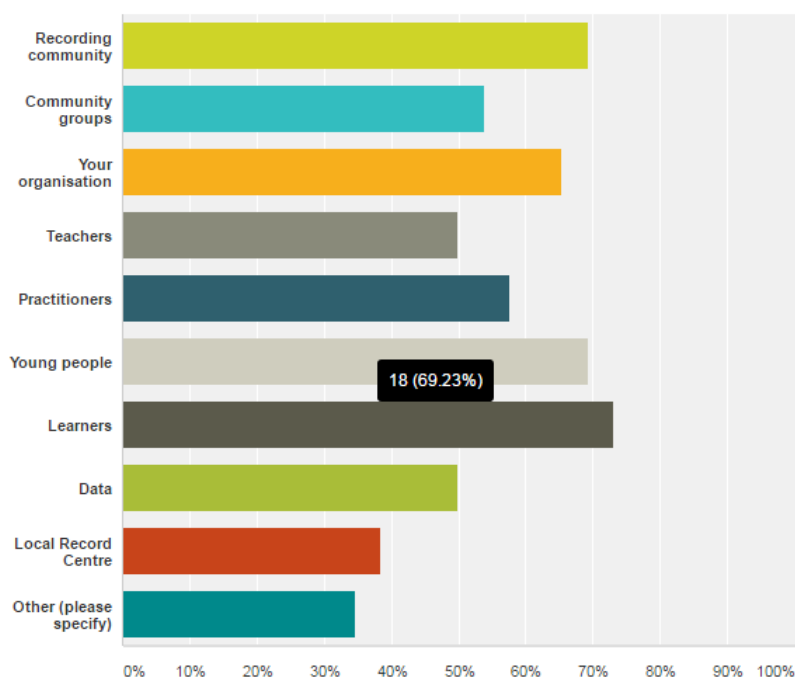
Answer choice 'No'

- *I believe it is more important to have people engaged as Citizen Science is not just about the data that is being produced*
- *Depends on individual circumstances; participation can be its own reward*
- *No*
- *No*
- *I treat all training as part of my personal development whether accredited or not. I don't know if employers worry if training is accredited?*
- *Different offers for different people is essential*
- *NO*
- *No, they are both of some limited value in their own different ways*
- *An older age group would be less bothered about the qualification, but enjoy the participation just the same*
- *I'm not sure. It depends on the purpose and audience of accreditation/certificate*

7.

Would an accredited certificate in Citizen Science add value to:

Answered: 26 Skipped: 1



Answer choice 'Other (please specify)'



- Citizen Science is a "broad church". The people designing a project ought to have an informed basis for creating the project, accredited or otherwise. The participants in my personal opinion do not require accreditation.
- People out of work and seeking accreditation
- I think that accreditation provides real worth to Citizen Science. Therefore, those delivering and undertaking CS opportunities are possibly more inclined to reach further into the opportunities relevant to their local community and improve the relevance and reliability of the data recorded.
- The above all with significant reservations and uncertainty...
- Possibly. Hard to say as we are early days into the process. Would it event be recognised at the moment?
- No, the participation is important and the reward should be in the enjoyment of the taking part, the experience - an accreditation seems like a 'prize' which to me does not support the values that I feel should be promoted & cultivated through taking part in cit sci.
- Possibly young people via scouts, guides, schools
- Perhaps funders may be more likely to fund a project if there was an element of accreditation?
- There is recent evidence of the impact of award schemes - http://www.educationscotland.gov.uk/resources/r/genericresource_tcm4871965.asp?dm_i=LQE,3SK6L,E5KPRX,DNYQM,1 The Awards Network would also be a useful starting point - <http://www.awardsnetwork.org/>

8.

What would be important considerations for making the accredited course of value? E.g. costs, accessibility and barriers Please give details below

Answered: 25 Skipped: 2

Answer Choices	Responses
If a certificate cost £5 would you get certificates for your participants?	88.00% 22
If certification required an hour of additional work in completing forms would you get certificates?	80.00% 20
Other	40.00% 10

Answer choice 'If a certificate cost £5 would you get certificates for your participants?'

- Would this be in addition to costs of a course? If so then no
- Probably not
- No
- Yes
- No our organisation struggles to finance our present activities
- Yes
- I'm uncertain that many departments/faculties/schools/settings would be able to fully support the additional budget requirement and so £5 per certificate may be too much, especially if the intention would be for participants to continually participate in CS opportunities.
- Yes (However, I think any more than £5 would be too much!)
- May be pricey if a secondary school wanted to do a project with a whole year group (up to 300 pupils)



- Yes
- Yes
- *Cost is a factor, but what is deemed to be an acceptable cost very much depends on the CS project*
- Yes
- No
- *Fees might put people off*
- *No because being a small charity funders wouldn't fund it*
- *Yes - if money were available. Some might be able to self-fund but would not want to exclude them*
- Yes
- *We would probably offer, yes*
- No
- Yes
- *From our experience cost is a barrier to engagement*

Answer choice 'If certification required an hour of additional work in completing forms would you get certificates?'

- Yes
- *Probably not*
- *Maybe*
- *If it encouraged participation yes an additional hour is not a problem*
- Yes
- *No. I believe this would be a barrier for many seeking accreditation*
- *Yes (Although any more than this would be too much!)*
- Yes
- Yes
- *Effort is also a factor, but as with cost, what is deemed to be an acceptable amount of effort depends on the individual CS project*
- Yes
- Yes
- *Again, might put people off*
- Yes
- Yes
- Yes
- Yes
- Yes
- No
- Yes
- *From our experience bureaucracy is a significant barrier to engagement*

Answer choice 'Other '

- *To be of value, I feel the accreditation would need to involve more than an hour's form-filling*
- *There are other rewards aside from financial. Feedback to participants is important*
- *The additional administration and costs listed above may be barriers to organisations*
- *my group is based on a Scottish island, so access to training might be difficult*
- *Effective training?*
- *You need to understand the primary motivations for participants*
- *Making things more complex and less accessible can create barriers for individuals*



- Certification would have to be something additional that people could go for if they wanted it, rather than an assumed part of the learning experience for every participant. I would not want anyone to be excluded on cost grounds
- Un unnecessary complication
- From our experience having multiple threads of engagement confuses people and acts as a barrier to engagement

9.

If there was a clear route for accreditation in Citizen Science would you go down this route any why? Please give details below

Answered: 27 Skipped: 0

Answer Choices	Responses
Yes	40.74% 11
No	18.52% 5
Maybe	44.44% 12

Answer choice 'Yes'

- I can see value for some groups so yes. I would want the flexibility to choose the most appropriate scheme of work for the group. Accreditation will not be for everyone. I'm not sure this would be a 'route to go down' and rather another branch on a large 'citizen science tree'
- No, I already have qualifications (I lead a citizen science group)
- If the accreditation route was mapped and made clear how it supports Professional Update for practitioners and wider achievement for learners then it would make more departments/faculties/schools inclined to undertake accreditation
- Yes- It would be really good for future employability and for knowing I can contribute to species recording.
- If it was flexible enough to allow choice of project and data to be collected
- Yes
- Yes, because it offers more opportunities for participants.
- To further my career in Citizen Science
- Yes
- It would be worth the extra time and effort to have formal recognition
- We would certainly investigate how we can use and share any citizen science accreditation/certification that amplifies activity and encourages more to get involved

Answer choice 'No'

- Not at my career stage...
- This poses a question on the control of standards i.e. reaching agreed levels of knowledge. A formal assessment process would be required. Citizen Science is about encouraging people to understand their life through basic science. This is structured education
- I am between no and maybe
- No



- *I don't really think so*

Answer choice 'Maybe'

- *The actual route for accreditation would be the determining factor*
- *It is unlikely as the skill sets are so variable*
- *Not sure, probably not*
- *I'm not sure where the demand would be from... could demand be created?*
- *I would need to know more about it first*
- *Maybe*
- *For some CS projects, but not all*
- *At the moment I don't see a need for it. Perhaps in the future?*
- *It would depend on what individuals wanted*
- *Depending on the client group I was working with*
- *Depends on what was needed*

10.

Final comments

Answered: 26 Skipped: 1

Answer Choices		Responses
What are your overall thoughts of an accredited Citizen Science course? Please give details below	Responses	88.46% 23
Please state what organisation you represent e.g. NGO, Community group, Teachers, etc	Responses	100.00% 26

Answer choice 'What are your overall thoughts of an accredited Citizen Science course? Please give details below'

- *Yes it has a place but should not replace other options for a variety of participants*
- *Potentially valuable idea. Devil will be in the detail. Some sort of front loaded system like the John Muir Award is probably better than a retrospective application*
- *I am not in favour in principal as I believe that validation by the body collating the data is more important.*
- *Overall, I think it would be better not to go down this route, to keep the opportunity to participate open to a more diverse group of people*
- *Not convinced of its value (lots of effort for unclear benefits)*
- *Good idea*
- *At present Citizen Science is about understanding and enjoyment of science. Accreditation in the end may make the accreditation more important than the enjoyment.*
- *A good idea, provided it is accessible (cost and location) and well thought-out*
- *I'm in favour of it*
- *Ambivalent. It might encourage some people, make them feel valued and increase their confidence, but for others it might be seen as an unwelcome and unnecessary intrusion of officialdom into what they see as a hobby or leisure activity*
- *I think it would be a good idea as long as it is kept at an affordable price and accreditation is not a requirement for all surveys. I believe surveys should be open to everyone but that they would benefit from accredited individuals*



- *Good idea as it could support teachers who are not science specialists, and will promote uptake*
- *Could be a good means of attracting young people into science, while also improving their employment prospects through accredited certification*
- *Accrediting recorders will definitely help give results more credibility and would be a great addition to learners CV's*
- *The pitfalls on the other hand could be that accreditation makes Citizen Science less accessible than before. Overall, for me the potential benefits far outweigh the negatives on this one*
- *For certain CS projects accreditation would add value, but not all*
- *It would raise awareness of the importance of Citizen Science offering a framework in which people can understand it would recognise the time and efforts of participants as well as encouraging them to develop their skills and knowledge. This could result in an increased quantity and improved quality of data*
- *It would only appeal to a certain type of person, e.g. students, graduates, teachers looking to use it in their lessons.*
- *more hassle than it is worth perhaps*
- *Good idea to peruse, another unique TCV SQA unit?*
- *I think the most important thing is that people know about the bigger picture, how their action impacts the bigger picture - think global, act local and that people feel empowered. I also think that it is very important that people know why they are doing what they are doing and how the results are being used. I think more effort should be put in the experiential aspects of cit sci and that they have better more comprehensive, understandable, easy to access of the results of any data they have gathered.*
- *Not in favour. Unnecessary*
- *I think it could be a good step for some groups, not so much for others but I would definitely pursue the idea*
- *I think caution is needed when proceeding - citizen science works on lots of different levels for lots of different people. Creating an accreditation/certificate scheme may exclude people from getting involved by devaluing their engagement e.g. John can do a survey and get accreditation/certificated, whereas Sophie can do a survey but can't*



References

Alender, B.J (2015) Understanding Volunteer Motivations to Participate in Citizen Science Projects: A Deeper Look at Water Quality Monitoring.

Grove-White, R., Waterton, C., Ellis, R., Vogel, J., Stevens, G. & Peacock, B. (2007) Amateurs as experts: harnessing new networks for biodiversity'. Lancaster University, Lancaster.

Gura, T. (2013) Amateur experts. *Nature* 496 (11 April): 259–261.

Rotman, D *et al.*, (2014) Motivations Affecting Initial and Long-Term Participation in Citizen Science Projects in Three Countries.

Roy, H.E., Pocock, M.J.O., Preston, C.D., Roy, D.B., Savage, J., Tweddle, J.C., Robinson, L.D. (2012). Understanding Citizen Science and Environmental Monitoring. Centre for Ecology and Hydrology.