Enhancing Fieldwork Learning Showcase 2015

Monday 7th September 2015
*registration and refreshments available from 9.30am

10:00	**Introductions-**
10:10	**Derek France (University of Chester) Social media and fieldwork**
11.00	11.00: **Kat Jones (Bangor University)** - "I'm not going to lie, plants bore me". The importance of botany in teaching zoologists field ecology 11.20: **Tim Harris (Staffordshire University)** - The practical experience of using ipads and tablets to enhance the delivery of field work 11.40: **Julia Myatt (University of Birmingham)** - What do get if you mix a cell biologist, microbiologist, sperm physiologist and behavioural ecologist? Interdisciplinary Teaching on field courses. 12.00: **Anna McGregor (University of Glasgow)** - Teaching critical analysis through active learning: use of videos to improve critical reflection on zoological research and develop transferable skills 12.20: **Cath White (Northumbria University)** - Podcasting in Pitlochry 12.40: **EFL Team** "Bring Your Own Device" research
13:00	Lunch
14:00	Plenary: **Twitter Scavenge -** developing a practical social media activity and comparing teacher expectations with student outcomes.
15:30	Coffee
16:00	Interactive Workshops: both workshops will run twice with smaller groups and participants can swap workshops at 17.00. Workshops will last 40 minutes. Workshop 1: **Jason Sawle & Addy Pope (Esri UK)** - Think → Collect → Analyse → Inform – the process of environmental science Workshop 2: **Trevor Collins (Open University) & David Morgan (Field Studies Council)** - Using open data to enhance outdoor learning
18:00	Free time to explore parkland and develop Twitter scavenge activities
19.30	**Buffet Dinner followed by** **Alice Mauchline (University of Reading)** **Motivations for Integrating Citizen Science into Higher Education Curricula**
21.00	Close

Tuesday 8th September 2015

8.30	Twitter Scavenge Briefing
10.30	Coffee
11:00	11.00: **EFL Team –** Microscopy in the field
	11.20: **Hannah Grist (RSPB)** - Science in the City: trying fieldwork in an urban environment
	11.40: **Judith Lock (University of Southampton)** - Using Evernote to create species identification notes
	12.00: **Jason Lock & David Morgan (Field Studies Council)** - Using ESRI Collector App for ArcGIS to Enable Spatial Data Collection
	12.20: **Clare Bowen & Sarah Harrison (Royal Parks Foundation)** - The Regent's Park Hedgehog Research Programme
	12.40: **Chris Atchison (University of Cincinnati**, via Skype) - Defining Rigour in Inclusive Field-Based Instruction
13:00	Lunch
14:00	Interactive Workshops: both workshops will run twice with smaller groups and participants can swap workshops at 14.45. Workshops will last 40 minutes.
	Workshop 3: **Jonathan Mitchley & Alastair Culham (University of Reading)** - Creative approaches to teaching field botany skills
	Workshop 4: **Shailey Minocha (Open University), Steve Tilling (Field Studies Council) & Tom Argles (Open University)** - 3D Interactive multi---user virtual field trips: whether and how they can support physical field trips
15:30	Plenary
16:00	Close of formal programme

Abstracts

Presentations

Opening Plenary: Social Media and Fieldwork

Derek France (University of Chester) and Alice Mauchline (University of Reading)

Fieldwork is signature pedagogy in Geography and Biology and with the rise of affordable and popular mobile and digital devices there is potential to enhance the student learning experience during fieldwork. Whether students are using Smartphones or Tablets to take photographs, video, browse the web, enter raw data or as a tool to aid reflection, through tweets and fieldwork simulation exercises, the potential is endless. This plenary report on research findings from a 3-year UK Higher Education Academy project on *Enhancing Fieldwork Learning* which seeks to evaluate student perception and experiences of incorporating digital technologies into a range of fieldwork settings. The application of social media to enhance student engagement and group interactions on fieldwork is a potentially useful tool not within standing its drawbacks and limitations. A number of fieldwork-based case studies are presented, from Spain, Italy and the UK. In each best practice example, the learning objectives, delivery, platform and student/staff learning experiences of engaging with social media, (as well as any potential mitigation strategies) are considered. It is hoped this plenary will facilitate further audience discussions on effective best practice experiences of applying social media in a fieldwork context.

Kat Jones (Bangor University) - "I'm not going to lie, plants bore me". The importance of botany in teaching zoologists field ecology

Field ecology requires an understanding of the relationships between organisms and the environment. Students can sometimes view species in isolation of the environment, yet even the most ardent birdwatcher needs an appreciation for the plants that birds require for foraging or use for nesting. Fieldwork, therefore, provides an opportunity to encourage Zoology students to explore inter-disciplinary boundaries and ask broader scientific questions. Using two cohorts of a second year fieldtrip to Andalucia, I will discuss how, amongst other things, a combination of bad weather, a "strange" fungus and a weevil, created several "teachable moments" that allowed students that are traditionally very animal-centric, to see the importance of plant ecology. This led to an unexpected increase in the use of plant topics or examples in post-field trip essays. I offer some advice for lecturers to embrace field teaching, even when outside their specialism, and make the unpredictable nature of fieldwork a tool for student engagement. I argue that the popularity of Zoology degrees means Zoology lecturers have a key role to play in ensuring students are equipped with a broad understanding of the natural world, and an increased curiosity for life on earth. Zoology lecturers, like students, must not become too taxonomically focussed.

Tim Harris (Staffordshire University) - The practical experience of using ipads and tablets to enhance the delivery of field work

At both Keele and Staffordshire Universities the authors have attempted to integrate the use of tablets into the delivery of fieldwork teaching. A number of teaching environments have been explored that have enabled the authors to garner experience in delivering technology-enhanced field work in both urban and rural settings, in the disciplines of Biology, Geography and Archaeology; one the authors has also had experience of enabling a disabled student to participate remotely in field work.

The multiple aims and potential of tablet use will be demonstrated, and some of the less obvious barriers to effective use will also be discussed.

The session is intended to be collaborative, with comments and experiences invited from others to begin to create a pool of experience

Julia Myatt (University of Birmingham) - What do get if you mix a cell biologist, microbiologist, sperm physiologist and behavioural ecologist? Interdisciplinary Teaching on field courses.

When we think about interdisciplinary working, we often focus on mixing students from different subjects, but what happens when you mix the staff? Somewhat surprisingly it can often be difficult to find enough 'field biology' staff to teach field courses in large Biology departments on a regular basis. At the University of Birmingham we have taken a different approach and put together a diverse set of biologists to teach our week long residential field course in South Wales. This has resulted in multiple successful outcomes; not only can we offer a wider range of mini-projects drawing on our own experiences, but we introduce the students to the benefits of thinking across the subject boundaries they often perceive in modular degree programmes. Furthermore, this cross-subject teaching also provides us with a wider pool of technology on which to draw to enhance our teaching. So what's the answer to the title question? Thinking outside of the box when it comes to staff can have multiple benefits for teaching a more dynamic, diverse field course and also ensure the long-term success of such courses.

Anna McGregor (University of Glasgow) - Teaching critical analysis through active learning: use of videos to improve critical reflection on zoological research and develop transferable skills

Critical analysis and interpretation of scientific literature are key skills emphasised within many undergraduate degree programmes, as shown by their inclusion across Graduate Attributes. Traditional teaching of these skills consists of small discussion or tutorial groups that individually read and then collectively analyse a published piece of work, which frequently yields unequal engagement across individuals and differing levels of skill attainment. This work investigates whether self-directed active learning during a field course can improve learning of these skills, as well as develop several other transferable skills, such as effective communication and digital literacy. During the 2014 Marine Biology residential field course held at FSC Millport, third-year University of Glasgow undergraduate students created 8-minute videos that visually portrayed a published scientific study as part of their field course assessment. After reading the assigned article, students used their own mobile phones, iPads and cameras to present their interpretation of the work, a task requiring critical analysis to determine the main message and key results followed by creative interpretation to present them. Overall, students were much more engaged with the exercise than with traditional critical analysis work, even contributing time outside their coursework to the assignment. Although the quality of the videos differed, all demonstrated in-depth reflection on the scientific messages illustrated and all expressed very positive feedback about this exercise. In conclusion, this exercise simultaneously developed a considerable number of transferable skills in a fun and creative way that could be easily applied as either formative or summative assessments to other scientific disciplines.

Cath White (Northumbria University) - Podcasting in Pitlochry

Pitlochry was used as a learning space for a human geography day of a first year undergraduate field trip. The students observed and synthesised information to create and edit a podcast to explore the term 'sense of place' with particular reference to Pitlochry.

The students used interviews, the academic literature and Gilbert's '8way thinking' to produce a podcast on sense of place in Pitlochry which they edited using the Audacity package on laptops and presented to academic staff for assessment.

Students used technology in the form of internet sources to provide background material for their work together with audio podcasting to present their findings. They practised interviewing skills as well as observing, synthesising and editing. When the podcasts were presented for assessment there was formative assessment by the other students as well as a detailed summative assessment by the staff.

Podcasting combined technology which students found accessible with an innovative way of looking at place and learning new techniques. It fostered an experiential learning style and developed competencies in a variety of ways in an individual as well as a collaborative setting.

Alice Mauchline (University of Reading)/ Derek France (University of Chester) – "Bring Your Own Device" research

We are interested in the concept of BYOD to support in teaching and learning activities in Higher Education fieldwork. Therefore, as part of the Enhancing Fieldwork Learning project, we are researching how and why practitioners use BYOD to support learning during fieldwork and whether any barriers exist. We are also interested in the opinions of practitioners who have not used BYOD for fieldwork to gain an understanding of their perceptions. We will introduce this research and encourage discussion and feedback on the potential for using BYOD in the field.

Monday evening plenary: "Motivations for integrating citizen science into Higher Education curricula"

Alice Mauchline (University of Reading)

This plenary will explore how citizen science approaches can be integrated into Higher Education curricula to advance the skills portfolio of undergraduate students. Two recent examples of integrating citizen science into the curriculum will be described and there will be a chance for discussion about the potential benefits and suitability of a citizen science approach including; motivating students in their learning, integrating Technology-Enhanced Learning, incorporating active-learning in large classes, familiarising students with ecological research and providing examples of field sampling techniques. In addition, citizen science projects often generate large amounts of data which could be used for undergraduate research projects or problem-based learning exercises; therefore the possibility of a HE 'hub' will be presented that could provide student access to existing databases.

EFL Team: Microscopy in the field

As part of the public engagement work undertaken in 2015 and subsequent UG summer school, the BES developed a number of activities related to plant soil interactions in celebration of the International Year of Soils. We will look at how using wifi enabled digiscopes and ipads enabled participants and students to engage with soil complexity and biodiversity.

Hannah Grist (RSPB) - Science in the City: trying fieldwork in an urban environment

With reduced budgets for travel, and less emphasis on practical fieldwork skills, there is increasing pressure to make fieldwork more easily accessible, and get people outdoors. As part of the Giving Nature a Home project, we have been have working with schools, communities groups and universities across inner-city

Glasgow to develop learning in local parks and green spaces. It involves more student-led learning, more innovative techniques and a greater ability to handle the unexpected, but it has been an interesting journey for the students and teachers alike.

Judith Lock (University of Southampton) - Using Evernote to create species identification notes

After previously encouraging students to use their own devices to make short films on the 1st year field course to Spain (as presented at the 2013 showcase event), the Centre for Biological Sciences at the University of Southampton purchased 20 iPads for educational use. Their first outing was to Spain in April 2015.

One of the required assessments for the field course, is to produce species identification notes in small groups – 4 arthropods and 4 plants. Previously these have been completed on card. This year Evernote was used as an alternative, with each student group using an iPad to produce an Evernote notebook, containing 8 notes. The notebooks were sent to the academics on the course for marking and also to all the other iPads, for use as revision guides by all students, in preparation for the course's spotter tests.

In addition, we now have a digital record of arthropod and plant species at the field course location. We can build on this each year, so allows us to use the field course to collect longterm data.

Jason Lock & David Morgan (Field Studies Council) - Using ESRI Collector App for ArcGIS to Enable Spatial Data Collection

The spatial aspect of data is crucial part of fieldwork data. Mobile devices provide the power to embed precise locations alongside photos, numbers, perceptions, observations. GIS gives us the power to display this data spatially.

Collector for ArcGIS brings these two tools together, allowing for the seamless transfer of data collected by multiple fieldworkers, in multiple locations to a single GIS to display and interpret fieldwork data alongside existing data sets.

Field Studies Council has been using ArcGIS Online and the Collector App to facilitate the collection, collation, presentation and analysis of field data. Bringing together data from a wide area without the laborious task of collating and digitising data. Hence allowing more time for the important analysis and evaluation.

Clare Bowen & Sarah Harrison (Royal Parks Foundation) - The Regent's Park Hedgehog Research Programme

The Royal Parks Foundation, in partnership with The Royal Parks and the Zoological Society of London, are in the second year of a hedgehog research programme in The Regent's Park. This Park is the only central London Royal Park still home to a small and vulnerable population. With hedgehog numbers declining nationally, the Royal Parks Foundation are seeking to determine the population size, behaviour and habitat preferences of this urban population.

Working with over 100 trained volunteers, Dr Nigel Reeve and Prof. John Gurnell, nocturnal fieldwork was conducted over a period of three weeks in May and September 2014 and May 2015. Hedgehogs were detected using traditional spotlighting techniques as well as high specification thermal imaging cameras. A number of animals were tracked using GPS and radio tags and observed with minimum disturbance thanks to the thermal imaging technology.

This presentation will review the key technologies used during the surveys and discuss the role of and training techniques used with volunteers and supervisors.

Chris Atchison (University of Cincinnati, via Skype) - Defining Rigor in Inclusive Field-Based Instruction

Most field-based science practitioners agree that field competence is an essential skill for undergraduate students and should be emphasized as a primary part of the curriculum. Field studies provide students with opportunities to put theory into practice, developing problem solving skills while formulating scientific interpretations from field-based observations to extend understanding and transfer of classroom content. Field-based research opportunities place students in a many types of field settings, often including remote locations that require physical ability and endurance to traverse difficult terrain, all while working long hours in the unpredictable elements of nature. A mere inconvenience and discomfort for some, uncontrolled field sites often present complete barriers for students with physical and sensory disabilities to participate.

Traditional field-based instructional methods often marginalize those who are physically unable to participate in physically rigorous field environments. Many upper-level field-based learning experiences can be classified as much of a rite-of-passage than an authentic learning experience. Just because this is the way most of us learned our field methods doesn't mean it should continue to be taught this way. This presentation will discuss the difference between field-based learning experiences that places an emphasis on physical rigor and field experiences that are focused on academic rigor through inclusively-designed learning objectives and instructional strategies.

Workshops

Workshop 1: Jason Sawle & Addy Pope (Esri UK) - Think environmental science

☐ Collect ☐ Understand ☐ Analyse ☐ Inform
the process

We will demonstrate how easy it is to engage students with real issues by making them collect the data they need to investigate the issue itself. We will use ArcGIS Online and smartphones/tablets to design a data capture exercise around an issue such as noise pollution, anti-social behaviour or tree health.

We will collect data in the field using handheld tablets and smartphones. The data will be collected as a group similar to the approach of citizen science projects. Users will be able to see where other people are collecting data in real time on a map. This can help enthuse and focus the group to collect more data with a better geographic distribution.

On returning to the classroom we will demonstrate how we can analysis the collected data in GIS using simple tools and combine our data with other datasets to provide insight and provoke discussion with the group. Geospatial analysis which will allow the students to think critically around the issue and provide reasoned action plans to mitigate situations. In doing so, the students will be using their knowledge of geography and their familiarity with technology to "think like a geographer and act like a geographer". This process is not dissimilar to practices undertaken by environmental regulators and professional environmental organisations and will help show how geography and GIS is a relevant toolset in the environment sector.

Workshop 2: Trevor Collins (Open University) & David Morgan (Field Studies Council) - Using open data to enhance outdoor learning

As part of the school curricula or a university degree programme field courses provide opportunities for students to consolidate their learning, but without clear connections to the student's other activities there is a risk that fieldwork can be perceived as distinct independent events. The use of open data within teaching and learning is proposed here as an opportunity to make explicit connections that help students value the contribution of prior fieldwork, and legitimises their work by demonstrating the role their data provides to inform others. The intention of developing field activities that use collated data from comparable or contrasting sites over time is to draw students in to engage with prior work and relate it to their immediate environment.

This session will demonstrate a system that the Open University and the Field Studies Council (FSC) have been developing to enable the collation of long-term datasets across FSC centres. We will explore some prototype learning activities that challenge students to consider how their fieldwork enquiry compares with and contributes to long-term environmental datasets. We will discuss the envisaged learning benefits of these activities and potential approaches for evaluating and evidencing the impact of open data on fieldwork education.

Workshop 3: Jonathon Mitchley & Alastair Culham (University of Reading) - Creative approaches to teaching field botany skills

Field ID skills are best taught and assessed in the field. Lab tests and online tests cannot fully simulate field based challenges that environmental professionals have to meet day to day.

The graduate decline in plant ID skills observed and lamented by several commentators can only be addressed by highly quality field-based teaching and learning. Such skills are essential for a range of careers including conservation and ecological consultancy.

We describe approaches to the assessment of field ID skills based on our experience of teaching the UK flora and global plant families on two University of Reading masters courses: MSc Plant Diversity and MSc Species Identification and Survey Skills.

We compare assessment based in the lab, glasshouse and in-silico with that in the field and discuss the design of assessments which will motivate the less able students but also challenge the more able. We highlight the importance of teaching recognition (learning to recognise species on sight) and identification (the use of keys to ID unfamiliar plants). We describe some approaches to evaluating student progress over time as well as providing students with self-assessment tools. We consider the value of UK herbarium resources in the development of practical identification skills. Finally we consider the role of new technologies including image capture and electronic keys in the further development of effective methods for assessing field ID skills.

Workshop 4: Shailey Minocha (Open University), Steve Tilling (Field Studies Council) & Tom Argles (Open University) - 3D Interactive multi---user virtual field trips: whether and how they can support physical field trips

The workshop's aim is to discuss with colleagues about the potential of 3D interactive multi---user virtual field trips to support physical field trips, and the challenges for their adoption in schools and higher education institutions (HEIs). At the start of the workshop, we will give a demonstration of the 3D virtual geology field trip1 that we had developed in 2012---2013. Next, we will share our experiences of designing and developing 3D virtual fieldtrips, and the results from evaluations conducted in two projects (Innovate-UK funded and The Open University's eSTEeM programme related to online STEM education). After these initial discussions, our objective would be to capture the views of the colleagues attending the workshop on the following aspects:

> • role of 3D interactive and multi-user VFTs in disciplines such as geology, biology, environmental science/studies and geography - which are founded on field observations, exploration and enquiry;

> • potential of integrating 3D VFTs within the curricula in schools and in HEIs (challenges and opportunities); and

> • perceptions of educators, students and assessment bodies towards 3D VFTs, and virtual fieldwork, in general.

General Information

Getting into the centre

Registration will be available from 9.30am. The Isis education centre is a small gated centre in the middle of the park. We will be on the gates to let you in on both days.

Connecting to the Wifi

There is an open network available to use, please check your Wifi for:

Network: rpf
Password: HydePark

Wifi can be used for a short distance in the grounds of the centre, this is variable

Speakers:

We will be using an interactive whiteboard and the centre has recommended presentations should be on USB, it is likely you will need to bring any adapters if using Macs, ipads etc you wish to connect to the SmartScreen.

Field based activities:

We will spend some time in the field but nothing more than sensible footwear and waterproof jackets are required.

Catering:

Vegetarian and gluten free options will be available for lunch and dinner, please do let Karen@britishecologicalsociety.org know if there are any additional requirements

Getting to Hyde Park:

ARRIVING BY TUBE
The nearest tube stations are:
☐ Marble Arch (Central Line), approx. 7mins walk
☐ Hyde Park Corner (Piccadilly Line), approx. 10mins walk

ON FOOT
From Speakers' Corner:
☐ Head directly south-west
☐ Continue past the site of The Reformer's Tree (large mosaic in the ground), to the Isis Education Centre

From Hyde Park Corner:
☐ Take Serpentine Road heading west
☐ At the Serpentine Bar & Kitchen, take the main path heading north to the Isis Education Centre

From the Triangle Car Park:
☐ Take Policeman's Path heading east
☐ Follow the path round to the right, to the front of the Old Police House
☐ Take the next path left, just past the Old Police House, and continue to the Isis Education Centre