2013 Biodiversity 6th Form Conference Norwich Castle

Event held on 2nd July 2013 @ Norwich Castle from 09.30 - 16.00 hrs

2013 CONFERENCE REPORT

United Nations Decade on Biodiversity

Organised by Kathryn Moore (pictured right), Museum Development Project Officer for the Norfolk Museums & Archaeology Service, the 2013 6th form Biodiversity Conference took place on the 2nd July at Norwich Castle. The event was held in support of the United Nations International Decade on Biodiversity (2011-2020), to compliment A level studies and promote study, careers and volunteering in the conservation sector, as well as raising awareness and promoting the conservation of biodiversity. The day was introduced by Kathryn after registration of the students. The 60 students attending were given a USB wristband filled with useful resources provided by the workshop facilitators and a name badge with the 3 workshops they had chosen to attend.

Amy Romans (left), a PhD student from the University of East Anglia (UEA) delivered the inspirational keynote speech: '*Biodiversity and Extinction in Norfolk and Beyond*' which gave an overview of the meaning and importance of local and global scales of biological diversity. Amy went on to describe the levels of discovery of new species and highlighted the growing need to conserve areas of high biodiversity and endemism. Students then experienced three out of the of seven interactive workshops and a biodiversity debate, as described below.

Workshop 1: All at sea with biodiversity: why we need to do more to protect the marine environment

Facilitator: David North, Norfolk Wildlife Trust

This workshop provided an opportunity for students to find out more about recent discoveries of rich marine habitats off Norfolk's coast and the campaign to protect these and other areas, as Marine Conservation Zones.

Unfortunately, there is widespread recognition that globally, our seas are not being managed sustainably.

Students learned what they can do, individually, to get involved and help solve issues like over-fishing, pollution, ocean warming and acidification.

Workshop activities included: species identification of a variety of marine biota (as pictured above) including specimens of starfish, crab, sea urchin, razor shell, mussel and others, a question and answer session on marine biodiversity focusing on raising awareness of issues affecting marine biodiversity decline and a worksheet-based questionnaire session with examples, aimed at informing the students of the biological breakdown times of a variety of common litter items and their potential negative impacts and consequences to marine biodiversity.

For example, students learned that it can take 15 years for a cigarette butt to biodegrade in a marine environment, up to an incredible 450 years for a disposable nappy or plastic bottle and up to 600 years for some fishing lines.

Workshop 2: There's an app for that? Recording wildlife through modern technology and citizen science

Facilitator: Sam Neal (NBIS) & Tony Leech (volunteer)

This workshop, run by the engaging NBIS* (Norfolk Biodiversity Information Service) staff, explored how we know, what we know, in terms of where wildlife is distributed in Norfolk and across the UK. Students were shown the modern techniques for recording wildlife such as: online recording, Smartphone and web apps (see photo on left), social media e.g. Facebook, Twitter, Flickr, etc., camera traps, DNA analysis and bioacoustics (e.g. monitoring bats through rapid analysis of their calls). Citizen science; the involvement of volunteers in science, was keenly highlighted and students were shown how this is working in Norfolk and how easy it is to get involved using modern techniques.

NBIS Norfolk Biodiversity Information Service

The workshop included 'hands-on' sessions, illustrating what is involved in recording wildlife and building the evidence base that underpins our conservation efforts, so that we can better protect the important wildlife we cherish.

*NBIS is Norfolk's Local Environmental Records Centre holding and collating information on species, geo-diversity, habitats and protected sites in Norfolk.

Workshop 3: Invasive non-native species: Come and meet an alien!

Facilitator: Mike Sutton-Croft, Norfolk Non-Native Species Initiative

Invasive species are one of the greatest threats to biodiversity worldwide, second only to habitat loss. It has been estimated that they cost the UK economy between two and five billion pounds a year. Some even pose a direct threat to our health!

Yet, most people are completely unaware of the insidious invasion of alien species.

The impacts of some introduced species, such as Japanese knotweed (a plant which is able to grow through concrete and can re-grow from less than a gram of root material) and the grey squirrel have been relatively well covered in the media.

However, these species represent just the 'tip of the iceberg' of what is a huge problem for nature conservation in Great Britain and throughout the world.

This workshop, run by the passionate and enthralling Mike Sutton-Croft (Director of the Norfolk Non-native Species Initiative (NNNSI)), highlighted the impacts that invasive non-native species are having in the UK and particularly in Norfolk. Students investigated the action that is being taken to control invasive plants and animals, and enjoyed the opportunity to view live examples of some of the worst 'offenders'. Mike outlined some of the projects that NNNSI is currently involved in, within the county and gave an overview of some of the successes (of which there have been many) and lessons learned, so far. Students were also given advice on the steps that they can take to help stop the alien invasion!

Norfolk Non-native Species Initiative

Workshop 4: 'Carry on Collecting'

Facilitators: Dr David Waterhouse (Curator of Natural History)
& Molly Carter (Assistant Curator of Natural History)

The enthusiastic and inspiring David Waterhouse (pictured right and below right), who incidentally, was responsible for the design of this year's conference logo incorporating the little cuttlefish (as depicted above in the header space and larger on the front of the report), led this workshop on taxonomic collections and the recording of biodiversity.

NORFOLK Museums & Archaeology Service

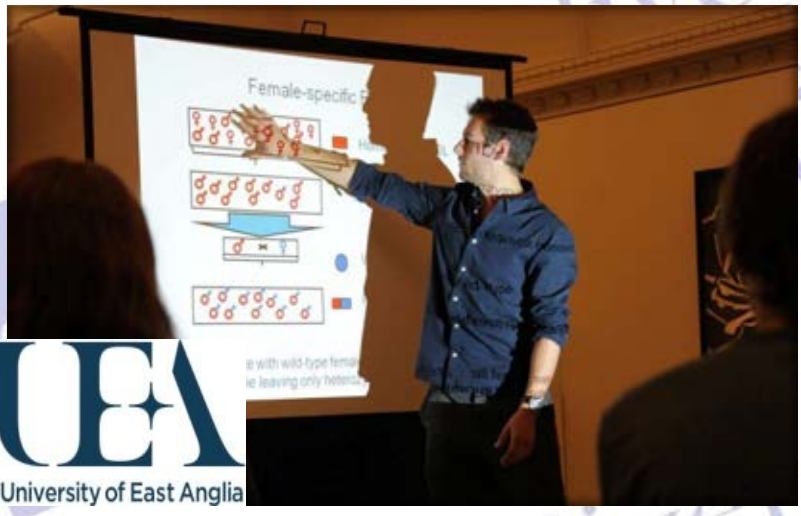
Students were shown snippets of the museum's vast specimen collection with a brief overview of the stored collections, including butterflies, birds, bird eggs, pressed macrophytes (aquatic plants) and mammals, amongst others. Collecting the natural world has always played an important part in the study of biodiversity. From tiny flies to the 6'10" polar bear, Norwich Castle Museum is home to about 1½ million natural history specimens.

Although, most of the collections are over 100 years old, staff at Norwich Castle Museum still actively engage in biological collecting and scientific research. Much can be learned from these preserved specimens and in many cases, the original collectors could not have dreamed of how useful they would be to modern science; DNA analyses for example, were not even possible just 50 years ago.

This workshop provided students with the opportunity to meet the natural history curators that look after the collections, look at how these specimens are collected, preserved and stored, as well as finding out about how useful they are to sciences such as taxonomy, anatomy, ecology and phenology, to name but a few.

Workshop 5: Insect transgenics and its potential role in agricultural and human health

Facilitator: Dr Phil Leftwich (UEA)



50 UEA Fifty Years of the University of East Anglia

This workshop, run by the captivating UEA scientist, Dr Phil Leftwich (pictured above), examined the potentially novel use of genetic modification in insects, and its potential impacts on local ecology. GM is a term commonly associated with crop plants, but some other potential uses were discussed. As, many insects are regarded as agricultural pests and human disease carriers, students were encouraged to discuss the various methods of pest control available and how a new genetic technology aimed at controlling their population size, could revolutionise this practice.

The growing need to reconcile ecosystem preservation and increasing food production was explored and the workshop specifically concentrated on the development of GM technology with a focus on RIDL (Release of Insects carrying a Dominant Lethal) as a potential novel pest insect population control measure. Mechanisms, potential uses and ethics of implementation were enthusiastically discussed and debated in this intriguing workshop that introduced a new way of thinking about GM for most students.

Workshop 6: Can we find new antibiotics in under-explored environments?

Facilitators: Dr Ryan Seipke & Nicole Som, UEA

Most of the antibiotics used in human medicine are natural products made by bacteria and fungi living in the soil. Many of these come from a group of bacteria called actinobacteria which are prolific producers of antibiotics. In recent years the stock of natural product antibiotics found in the soil environment has been exhausted and scientists are turning to new environmental niches such as deep ocean sediments to find new molecules with bioactivity.

The workshop, delivered by the eloquent Dr Ryan Seipke (pictured below), senior research associate at UEA, explored another unusual niche; that of the fungus farming ant. These ants live in symbiosis with a fungus which they grow for food and actinobacteria which provide them with antibiotics that they use as weedkillers in their fungal gardens.

50 UEA
Fifty Years of the University of East Anglia

In this fascinating practical workshop, students were encouraged to explore this unusual niche and get involved in some hands on experimental work, to isolate actinobacteria from the ants and look for antibiotic activity in these bacterial species.

Workshop 7: Warming the Waterland

Facilitators: Andrea Kelly, Maria Conti & Nick Sanderson (Broads Authority)

Broads Authority
The Broads - a member of the National Park family

The Broads have 11,000 species, over 1,500 of these are rare and 66 species depend on the Broads for their survival in the UK. Students learned how species that live in the Broads might respond to climate change and which are new species might arrive in our wetland.

Students learned to use species profiles and touch screen technology to decide which species will be winners and losers in the Broads of 2050, as potential polar shifts in species range occur. As sea levels rise and climate changes students mapped what future visitors might be able to see from new wildlife watching centres throughout the Broads.

Representing the Broads Authority, Andrea Kelly (senior ecologist) and her colleagues; Maria Conti (strategy & projects officer) and Nick Sanderson (education officer) enthusiastically ran the informative workshop which consisted of a varied and interesting itinerary, including an initial P/Point presentation, a species ID session, a photo-ID and species/habitat mapping activity and a wildlife touch-screen applications session.

Intro to Art activity

Facilitators: Alison Atkins & Cordelia 'Doo' Spalding (Meander workshops)

Specialists in designing and running interactive participatory 3D art installations for events and community-based projects, Ali and Doo (pictured below) were delighted with their commission by the UEA Art & Biodiversity Partnership with the brief of engaging students in this thought-provoking exercise on the importance of biodiversity and the threats to its future prosperity.

Students were encouraged to rank the importance of a variety of issues facing biodiversity and to leave comments or remarks on the media provide (as illustrated in the image below).

An installation is planned to be exhibited at the Sainsbury's Centre, on the UEA campus, later in the year, detailing the findings and students feelings, as well as any changes in perceptions during the course of the day in relation to the exercises.

Students responded with interest and enthusiasm to the activity and according to one particular student that was interviewed and is pictured in the photograph to the left, "it really made me think about my viewpoint on the subject".

The Debate

Chaired by Dr David Bullard (volunteer)

In preparation for the conference, students were furnished with some basic starting points from which to research their standpoints and asked to debate the question:

Arguably, the biodiversity of East Anglia has been in crisis during your life time. Does it have a brighter future?

For and against motions were offered and argued by the opposing parties and an audience of 50 students voted on the validity, conviction and delivery of the motions presented.

Both motions were presented with enthusiastic zeal and were passionately delivered to the absorbed audience. The justification for either side of the debate was quantifiably evidence based and covered varied topics from the pros and cons of government funded agri-environment schemes to the niche exploitation of invasive non-native species and from the eutrophication of water bodies due to diffuse and point source pollution to the question of improper standards in the marketing of fruit and vegetables by the multi-corporate supermarket chains.

It was obvious to all that a great deal of effort had been put into researching the motions on both sides and the results had proved for an engaging, well-argued and closely fought decision. After a full and well responded question and answer session, the audience then voted on the motions.

The Debate (continued)

The result of 31 to 19 votes was a clear and decisive victory, thankfully, for the motion that the biodiversity of East Anglia does have a bright future.

However, it was generally accepted that both motions were presented with equal conviction and depth of reason.

Closing ceremonies

David North & Kathryn Moore

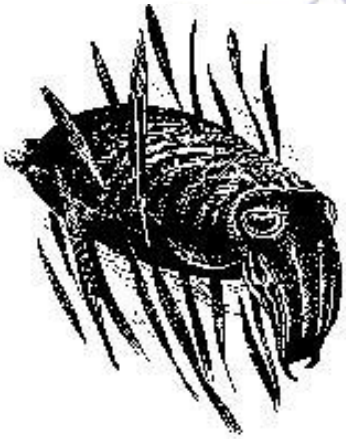
David North (of the Norfolk Wildlife Trust, pictured right) gave the closing speech: Does biodiversity matter? To a totally silent audience, hanging on his every word, he passionately addressed the current trend of global decline in biodiversity, human-induced climate change, the fragility of the earth's biosphere and the unsustainable over-exploitation of the world's resources. In order to promote the audience's adoption of an active, participatory role in the conservation of our biodiversity, he asked the audience to consider the following concept:

If we value nature enough
and if we care enough,
we have to make it our problem
and our responsibility

David finished his speech by reciting Richard Bonfield's charming, yet chilling poem: The Beautiful Alphabet to great applause.

Kathryn Moore announced the end of the conference, by asking what we all can do to care for biodiversity and organising the process of evaluation. As part of the evaluation session, one of the questions referred specifically to Twitter. This revealed about half of the students declaring that they never used Twitter and of the rest, about half of those were considering following and or tweeting about the conference. Molly Carter (assistant curator of natural history at the museum) tweeted the progress of the conference throughout the day. A few students tweeted comments and pictures from the workshops, particularly from the excellent 'Carry on Collecting' session, run by Dave Waterhouse and Molly.

It seems apparent from the feedback received from the students that the conference was very well received and appreciated by the overall majority. Congratulations are due to the organisers and participants of the event. So, another successful biodiversity conference concluded; plans and schemes are now afoot for the planning of next year's event. Can this reach even more students and be an even better experience than 2013's conference?



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