



Department
for Environment
Food & Rural Affairs

Understanding Nature's Value

Taxonomy and the work of Defra

11th September 2014

Robert Bradburne
Head of Science
Sustainable Land Management and Livestock Farming
Defra

Summary

- Defra's Priorities
- Evidence Needs
- The role of taxonomy in Defra's work
- Future direction – some thoughts

Defra's Priorities

Defra's four priorities are:

- Growing the rural economy
- Improving the environment
- Safeguarding animal health
- Safeguarding plant health

Running through all of these is the priority of economic growth as the Government's top priority.

Evidence needs

Statutory obligations

- We will aim to deliver statutory obligations in more efficient and innovative ways, seeking to minimise activities where they do not add value.

Applied Evidence Priorities

- Our aim is to reduce risks and maximise opportunities by bringing the most suitable evidence to bear on current priority problems and challenges

Strategic Evidence Priorities

- Enhanced competitiveness and environmental performance in the environmental, food and rural sectors.
- Natural resources managed sustainably and equitably to promote economic growth, public health and healthy ecosystems.
- Greater resilience through well managed risk, and better contingency planning and mitigation of risks associated with the natural environment.



The balance of evidence

- Short Term policy Priorities vs. Long term policy and capacity issues
- Industry-led innovation vs. innovation for policy delivery
- Addressing specific problems vs. integrating evidence
- Monitoring trends and evaluating interventions

Taxonomy in Defra's work 1

Biodiversity and species conservation

- Describing protected areas/species
- Monitoring trade



CITES

Slow to change

Deliberately conservative

E.g., corals – no standard nomenclature

Interim list

Still more to be done to be more definitive in future



Taxonomy in Defra's work 2

Plant Health – know your enemy.

The difficulty with Phytophthora

Ash Dieback –

Managing the pathogen

Developing resistance

Not stopping trade – Karnal Bunt

The importance of
reference collections

KEW

CABI



Taxonomy in Defra's work 3

Understanding Responses to Environmental Change: Carabid Beetles

Journal of Applied Ecology



Journal of Applied Ecology 2012

doi: 10.1111/j.1365-2664.2012.02194.x

Large carabid beetle declines in a United Kingdom monitoring network increases evidence for a widespread loss in insect biodiversity

David R. Brooks^{1*}, John E. Bater¹, Suzanne J. Clark¹, Don T. Monteith², Christopher Andrews³, Stuart J. Corbett⁴, Deborah A. Beaumont¹ and Jason W. Chapman^{1,5}

¹Rothamsted Research, Harpenden, Hertfordshire, AL5 2JQ, UK; ²The NERC Centre for Ecology and Hydrology, Lancaster Environment Centre, Library Avenue, Bailrigg, Lancaster, LA1 4AP, UK; ³The NERC Centre for Ecology and Hydrology, Bush Estate, Penicuik, EH26 0QB, UK; ⁴Porton Down, Salisbury, Wiltshire, SP4 0JQ, UK; and ⁵Environment and Sustainability Institute, University of Exeter, Penryn, Cornwall, TR10 9EZ, UK



One of the best understood taxa of insects, 40,000 species worldwide, 27,000 in Europe.



Carabid populations of exposed upland habitats most affected, decreasing mainly in the north. Increases in different species seen in the south.



Taxonomy in Defra's work 4

Agriculture

- New plant varieties
- Understanding and managing crop pests and diseases



Future Directions – people power

Using volunteers and amateurs to support the work of taxonomists

The National Pollinator Strategy

- Citizen science supported by professionals
- Working with partners
- Building capacity

Tree Health

- Using new ways of engaging with the public
- Training the non-experts
- Understanding the value of non-expert data



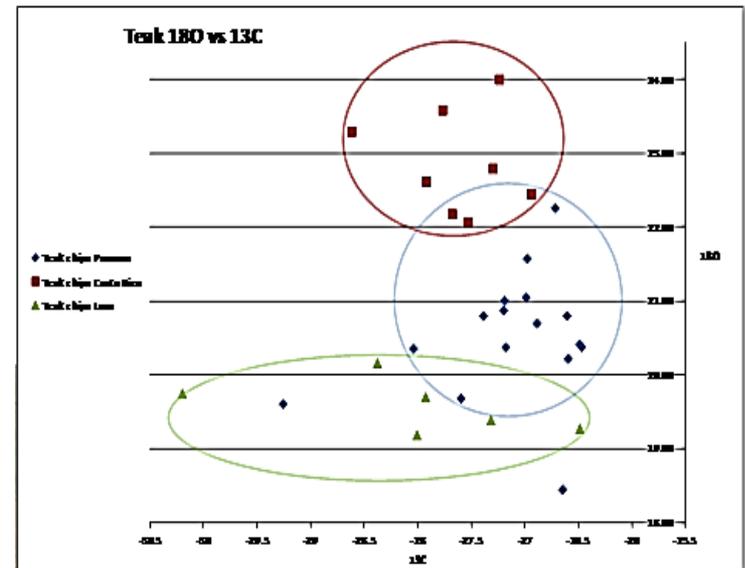
From morphological to molecular

Great Crested Newts-

Environmental DNA using a water sample makes it easier to detect their presence than traditional survey techniques.

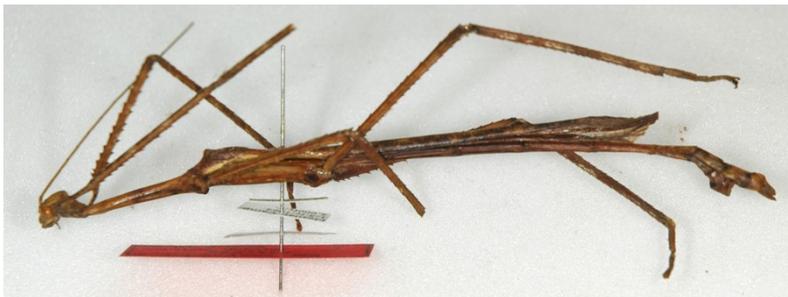


CITES timbers genetic and isotopic fingerprinting:



The digital age

- Preserving information on holotypes
- Access to information
- BUT! Paper doesn't date!
- Can you teach a computer to be a taxonomist?
 - Experts vs automata



Summary

- Taxonomy is valuable to a wide range of Defra's policy priorities
- We will continue to explore new ways of partnership working to gather evidence and support capability
- We are always looking for innovation in the way we work

