

Science & Evidence in Natural England

An update from the Chief Scientist Directorate (CSD) - June 2019

Evaluating the first two years of Countryside Stewardship

Defra has published an evaluation of the first two years of Countryside Stewardship (CS) in England. The project analysed CS option uptake in 2016 and 2017.

The pattern of uptake was characterised by a very small number of popular options. Twelve options accounted for 60% of payments in the first year of the agreement. In contrast, half of the options collectively accounted for less than 2.5% of annual payments. The most common options were primarily those for low-diversity grassland, arable land and water and soil protection.

As expected, uptake patterns varied across farm type, for example, arable options on cereal farms. Uptake was greatest for options with biodiversity and landscape objectives, while 53% of multi-annual agreements had more than one high level objective.

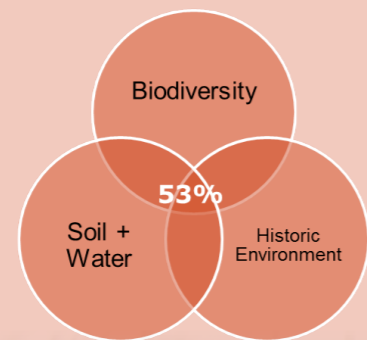
The [full report](#) is on the Defra science webpages. This work was delivered under the Agri-Environment Monitoring and Evaluation Programme which NE delivers on behalf of Defra.

Characteristics of Uptake

53% of multi-annual agreements addressed multiple primary objectives



- Only **12** options accounted for nearly **60%** annual payments
- 1/2 of the **241** options collectively accounted for less than **2.5%** of annual scheme payments



Latest Agri-Environment Monitoring and Evaluation Reports Published

Here is a summary of three recently published reports from the Agri-environment Monitoring and Evaluation Programme. These will be discussed in more detail in our up and coming Annual Report for 18/19.

[Initial Evaluation of the Implementation of Countryside Stewardship in England](#)

The report demonstrates challenges in the early implementation of CS from 2015 & 2016 application rounds. Land owners and stakeholders were broadly supportive of the scheme's aims, however frustrations were reported around scheme complexity, issues with support and a complicated application process. A number of improvements were made in the application process between the first and second years.

[Monitoring of EK21, OK21, HK21 and OHK21 Options: Legume- and herb-rich swards](#)

The majority of agreement holders were positive about these options and most would include them in a future agreement. Compatibility with current farm management was the main driver for option selection, but equally, most agreement holders were positive about the benefits to farm wildlife and soil structure.

[Long-term effectiveness of HLS for conserving the botanical interest of Lowland Wet Grasslands](#)

The results show that within targeted Raised Water Level Areas, grasslands have shifted towards communities that are more tolerant of periodic inundation, and in areas with peat soils, towards communities more characteristic of fen/wetland. This suggests that desired outcomes are being achieved in these cases.

Early-season pollinators and quantification of floral food resources

New locality records for two bee species were recorded in April by Natural England staff and submitted to the Bees, Wasps and Ants Recording Society (BWARS). *Andrena scotica* (Chocolate Mining Bee) and *Nomada marshamella* (Marsham's Nomad Bee) were photographed at a sandstone wall communal nesting site of the former, along the road from the Penrith Natural England office. There is little information on either of these species from northern England, and it may be that the friable New Red Sandstone walls of this area (often looted from Penrith castle!) are key to their local abundance.

A. scotica is one of the group of regular spring agricultural crop pollinators so are of potential importance in agri-environment scheme planning, particularly as their food requirements are missed by conventional sown pollinator strips. *N. marshamella* is a cleptoparasite, or 'cuckoo bee', whereby the females enter their host's nesting burrow and lay an egg in the wall of an unsealed nest cell.

Species locality records form valuable raw data for Natural England's Statistics and Modelling Service - to monitor species distributions, build Habitat Suitability Models, and inform our application of Deep Learning to detect and count pollinator-food producing flowers in images of vegetation quadrats.



Photo: Chocolate Mining Bee (left) and Marsham's Nomad Bee (right). © Natural England / Damian Hicks



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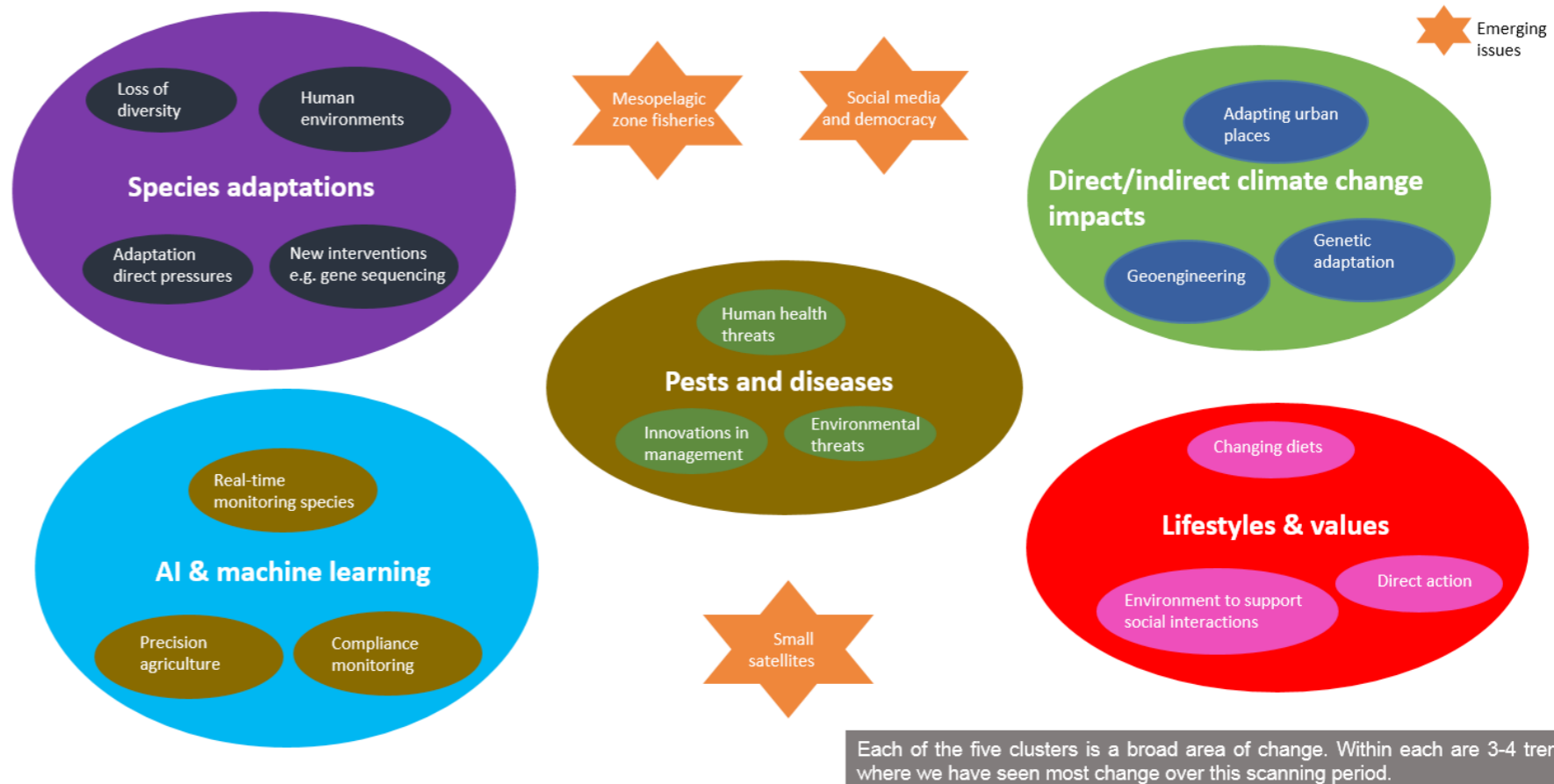
Making sense of an uncertain world

We live in an uncertain world – we often don't know what is over the horizon and what shocks and surprises might be in store. The purpose of horizon scanning is to give us a glimpse over the horizon so we can plan more effective responses and increase resilience to future change. For example, the use of technology to monitor, regulate and manage the natural environment is rapidly changing.

In Natural England we use our specialists knowledge to gather evidence of future change – scanning ongoing mega trends like climate change as well as identifying novel issues such as genome sequencing to help understand the conservation needs of species better. We analyse all the evidence once a year to produce an annual synthesis report. The Jan 18 – Feb 2019 Future synthesis shows 5 broad areas of change and their supporting trends. Inevitably, the pace of change around some of the issues will be faster than others. Some trends may increase in importance, others may decrease and some may disappear altogether. We recognise that all these trends are part of a wider system and will combine and interact in complex and sometimes unforeseen ways. We use this evidence to inform our strategic planning and to understand the external context within which work will need to be delivered.

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Future synthesis – trends & clusters



Natural Capital Initiative Conference 2019 - Valuing our Life Support Systems



Natural England's natural capital work was strongly represented at the [Natural Capital Initiative Conference](#) (21st and 22nd May 2019):

Ruth Waters (Deputy Chief Scientist) helped to organise the conference, hosted the second day's plenary session, and chaired a session on environmental justice.

Tim Sunderland (Economics Principal Specialist) presented our recent Natural Capital Accounts for National Nature Reserves (click [here](#) for slides of Tim's presentation).

Later, Jane Lusardi (Natural Capital Senior Specialist) spoke about our natural capital indicators and our recent work to map them across England (click [here](#) for slides).

Dave Stone (Deputy Chief Scientist) presented a synthesis of evidence on green spaces exploring if they could actually be contributing to health inequalities (click [here](#) for slides).

The conference could be followed on twitter [@NCI_NatCap](#).

Natural England's Natural Capital work also hit headlines recently with a [news story](#) on our research demonstrating the economic value of National Nature Reserves. We also recently published [new data showing how children are engaging with nature](#).

Photo: Tim Sunderland presenting at the NCI Conference 2019

Tim Hill, Chief Scientist, 19 June 2019