

How useful are biodiversity data for assessing natural capital?

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WOODMEADOW
TRUST

What kinds of data are used to assess natural capital?

- stocks of natural capital – plants, animals, air, water
- flows of ecosystem services
- impacts and dependencies on natural capital
- associated costs and benefits to business and society

NBN website

Why natural capital?

- resonance with government, business and finance
- opportunity to recognise and capture all types of value

“If we don’t value nature, then it won’t be valued at all”

An example: natural capital of our woodmeadow

Present values:

- Recreation £183k
- Educational visits £158k
- Carbon sequestration £50-180k

Annual benefits of £15-20,000 p.a.

eftec
economics for the environment

But what we record at the woodmeadow and send on to the NBN is quite different.....

Nabis rugosus	Nabidae	Hemiptera	SE6239	01.09.2016
Tingis ampliata	Tingidae	Hemiptera	SE62553958	05.05.2016
Tingis cardui	Tingidae	Hemiptera	SE6239	05.05.2016
Corixa punctata	Corixidae	Hemiptera	SE62683992	05.05.2016
Sigara nigrolineata	Corixidae	Hemiptera	SE62683992	04.08.2016
Gerris lacustris	Gerridae	Hemiptera	SE62683992	05.05.2016
Gerris odontogaster	Gerridae	Hemiptera	SE62683992	04.08.2016
Gerris thoracicus	Gerridae	Hemiptera	SE62683992	05.05.2016
Notonecta glauca	Notonectidae	Hemiptera	SE62683992	04.08.2016
Notonecta maculata	Notonectidae	Hemiptera	SE62683992	04.08.2016
Notonecta species	Notonectidae	Hemiptera	SE62683992	05.05.2016
Plea minutissima	Pleidae	Hemiptera	SE62683992	04.08.2016
Saldula saltatoria	Saldidae	Hemiptera	SE62683992	04.08.2016
Cercopis vulnerata	Cercopidae	Hemiptera	SE62593977	02.06.2016
Aphrophora alni	Aphrophoridae	Hemiptera	SE62553958	04.08.2016
Neophilaenus lineatus	Aphrophoridae	Hemiptera	SE62553958	04.08.2016
Philaenus spumarius	Aphrophoridae	Hemiptera	SE62683969	14.08.2016

Most natural capital assessments are based on broad habitats, not species



	Climate regulation	Pollination	Pest control	Water regulation	Water quality	Erosion prevention	Food production	Potable water supply	Genetic resources	Raw materials	Recreation	Aesthetics	Heritage
Urban	2	2		1	1		2		3	1	5	5	4
Agriculture arable		2	1				5		3	5	2	3	2
Agriculture pastoral	2	2		2	2	1	4	2			2	3	2
Plantations	5		2	2	2	3	2		3	5	4	4	3
Rivers and streams	2			5	5		3	5	3	1	5	5	4
Broadleaved woodland	5	3	5	5	4	5	2	2	5	5	5	5	4
Acid grassland	2		1	3		4	4	3	3	2	3	2	1
Calcareous grassland	3	5	2		5	4	3	4	4	2	3	5	3
Neutral grassland	2	4	4	3	2	3	3	3	3	2	4	4	4
Improved grassland	2	1	1	3	1	3	4	4	1	1	4	2	1
Dwarf shrub heath	2	4		4	2	4	2	2	3	2	4	4	4
Fen, marsh and swamp	2	1		3	5	2	1	4	4	2	2	2	2

Raffaelli et al. (2010) *Applying an Ecosystem Approach in Yorkshire and Humber*

Why species are important

- the more species/functional groups present, the greater the rates of processes and flows of services (Biodiversity-Ecosystem Function argument)
- the more species within a functional group, the more the system can cope with species loss (Insurance argument)



Understanding natural capital in practice



Data use in natural capital assessments

Assessing challenges and identifying solutions

Full Report



A Powerful Tool to Map and Value Ecosystem Services

InVEST is a suite of modeling tools that map, measure and value the goods and services that sustain human life.

Nature supports human health, livelihoods and economies in countless ways: ecosystems store carbon to slow climate change, purify and regulate water supplies, and provide foods, medicines and opportunities for spiritual cultural experiences. Despite their value, ecosystem services are not normally included in resource decisions, often because practical, credible information about them is lacking or inaccessible.

InVEST is free and open source. Its modular toolset enables users to quantify, visualize and compare the delivery of ecosystem services under different scenarios of land, water, and marine uses. Model outputs can describe natural resources in terms of their biophysical supply, the service they provide humans, or their projected value.

Who Should Use InVEST?

Governments, companies, non-profits, and multilateral development institutions that manage natural resources employ InVEST to evaluate the impact of their decisions on the environment and on human well-being, and to inform planning efforts.

Using InVEST, decision makers can assess the tradeoffs associated with alternative policy options and identify areas where investment in ecosystem services can enhance human development and conservation of terrestrial, freshwater, and marine ecosystems. InVEST can help inform policy and program designs, such as land use and marine spatial plans, strategic environmental assessments, payment for ecosystem services, climate adaptation strategies, and mitigation and offsets.



Scottish Natural Heritage

IEEM Spring Conference
Ecosystem Services 1: Practical Methods for Demonstrating the
Value of Nature to Decision Makers

SCOTLAND'S NATURAL CAPITAL ASSET INDEX

Ralph Blaney
Scottish Natural Heritage

Plenty of “how to” advice

Natural England Research Report NERR076

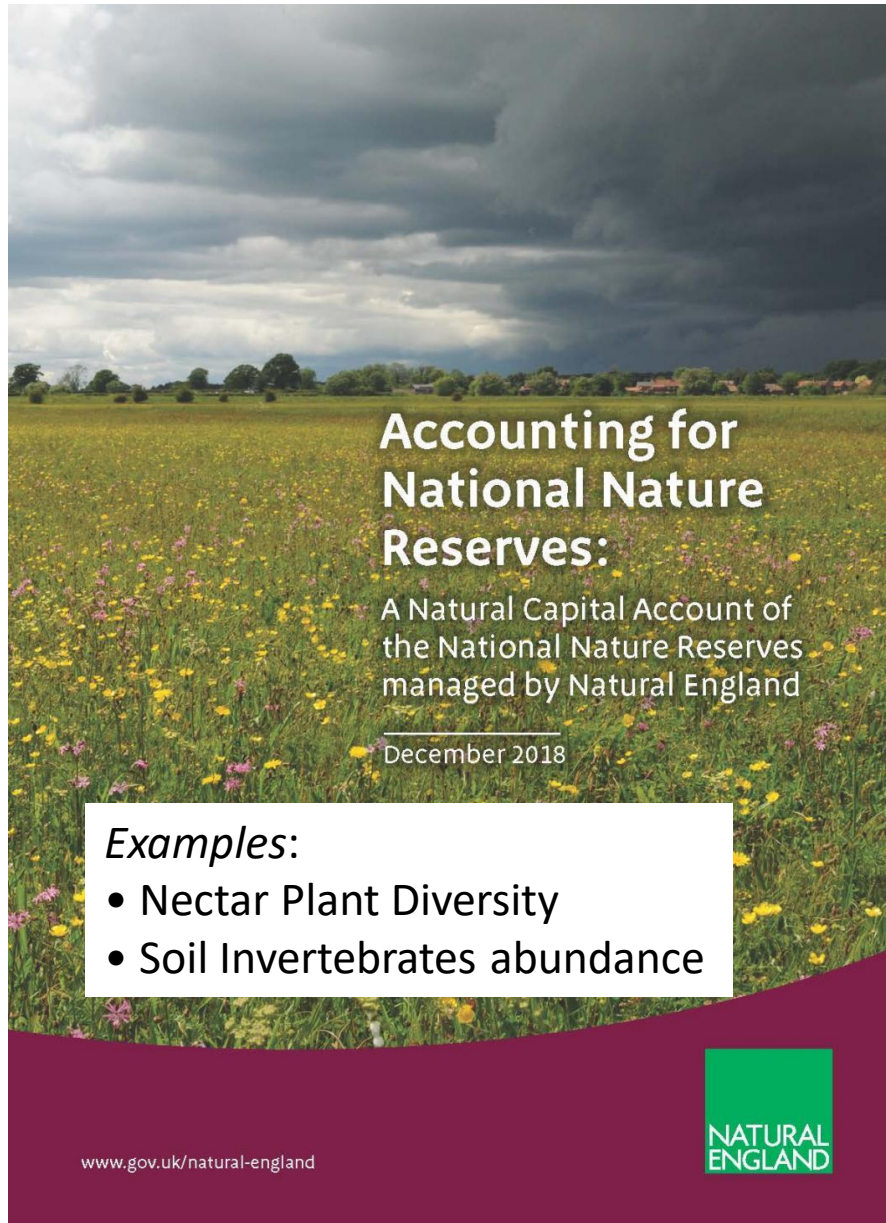
Natural Capital Indicators: for defining and measuring change in natural capital

g. food), life sup-
unities), and the
services are poorly
VEST empowers
being.

www.gov.uk/natural-england



Species-level biodiversity data are finding their way into assessments



Department
for Environment
Food & Rural Affairs

Measuring environmental change: outcome indicator framework for the 25 Year Environment Plan

May 2019

Examples:

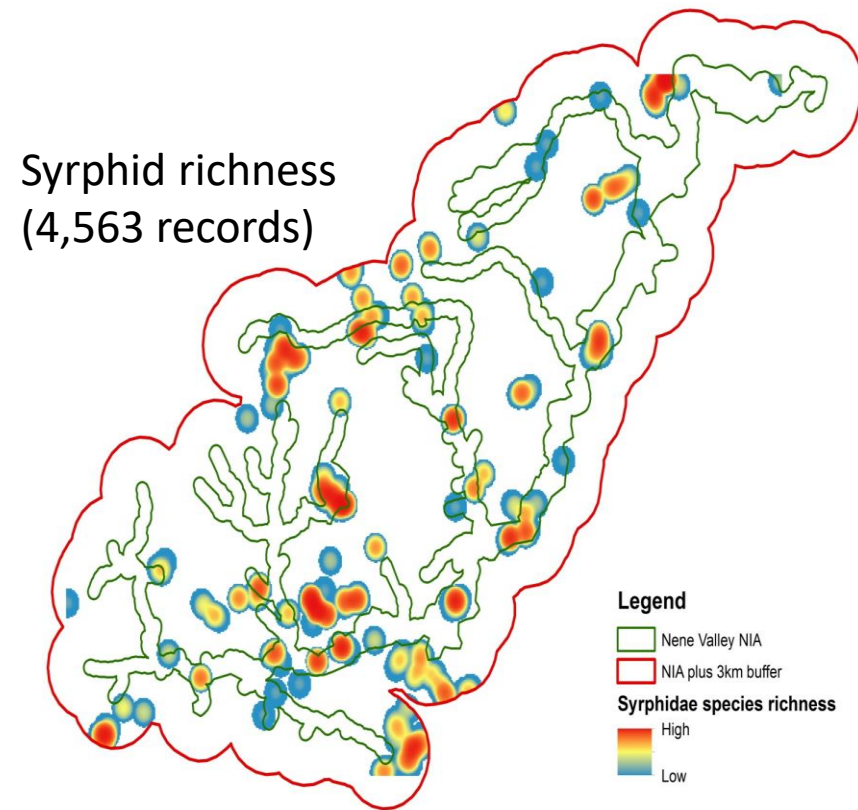
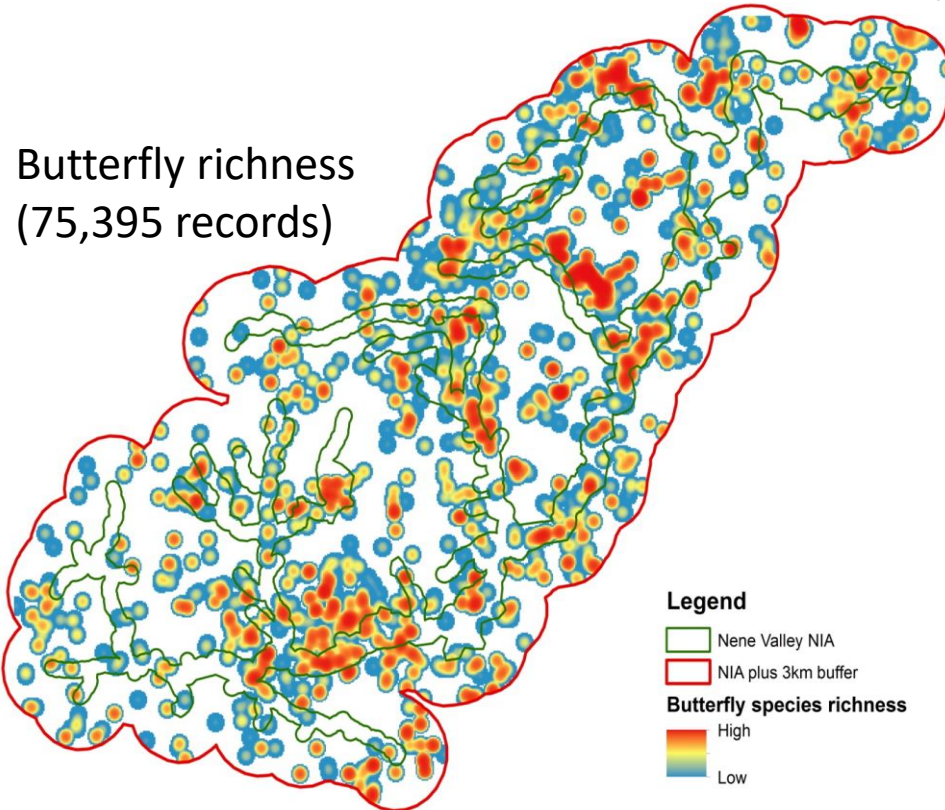
- Relative abundance and distribution of widespread species
- Species supporting ecosystem functions
- Conservation status of native species
- Distribution of invasive species



Species data can be difficult to interpret

With permission from: Roquet, J. (2016) *Mapping natural capital and ecosystem services in the Nene Valley*. Natural Capital Solutions.

- Records from NBN and others
- Records *ad hoc*, no systematic sampling
- Records reflect location/habitat preference of recorders
- Taxonomic biases



Where is the NBN in all this?

- Huge repository of relevant data: 223 million records on Atlas.
- JNCC/LWEC Report 583 (2016) *Monitoring for Biodiversity, Natural Capital and Ecosystem Services*:
 - England specifically want to secure ongoing access to species data to support priority objectives by further rationalising the collective **National Biodiversity Network (NBN)** data infrastructure, built around the **NBN Gateway**, so that it provides the primary means for standardising and sharing data.
 - The **UK National Biodiversity Network (NBN)** is especially valuable as a source of data for local assessments requiring information on the location of biodiversity related assets.