Review of empirical critical loads for nutrient-N: UK contributions

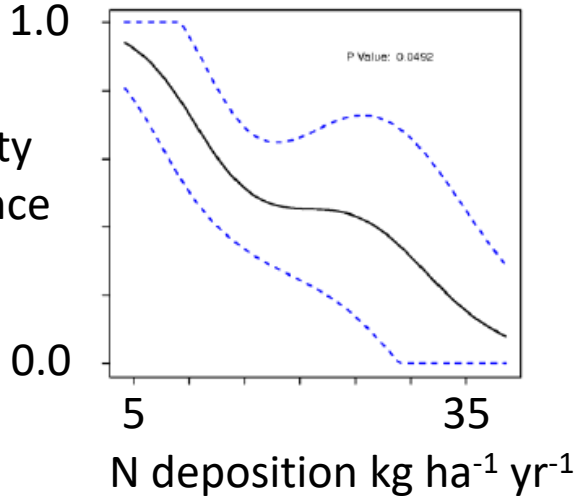
ICP M&M 36th TF meeting
21 April 2020

Ed Rowe

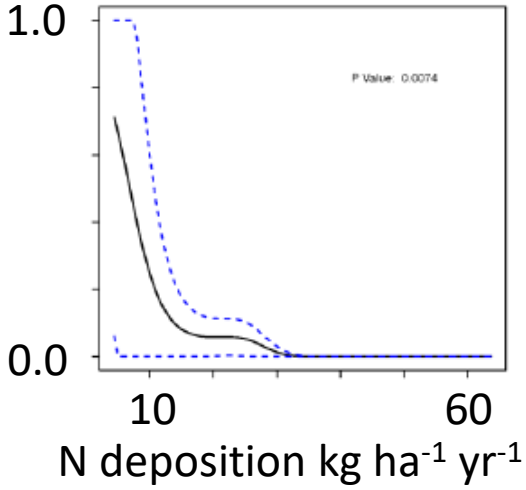
Empirical evidence emerging since 2010

- Analysis of floristic records (vascular plants, bryophytes, lichens) with respect to N deposition showed effects on 91 species (ca. 70% inhibited, 30% stimulated)
- Some effects below CL_{empN}

Leucobryum glaucum



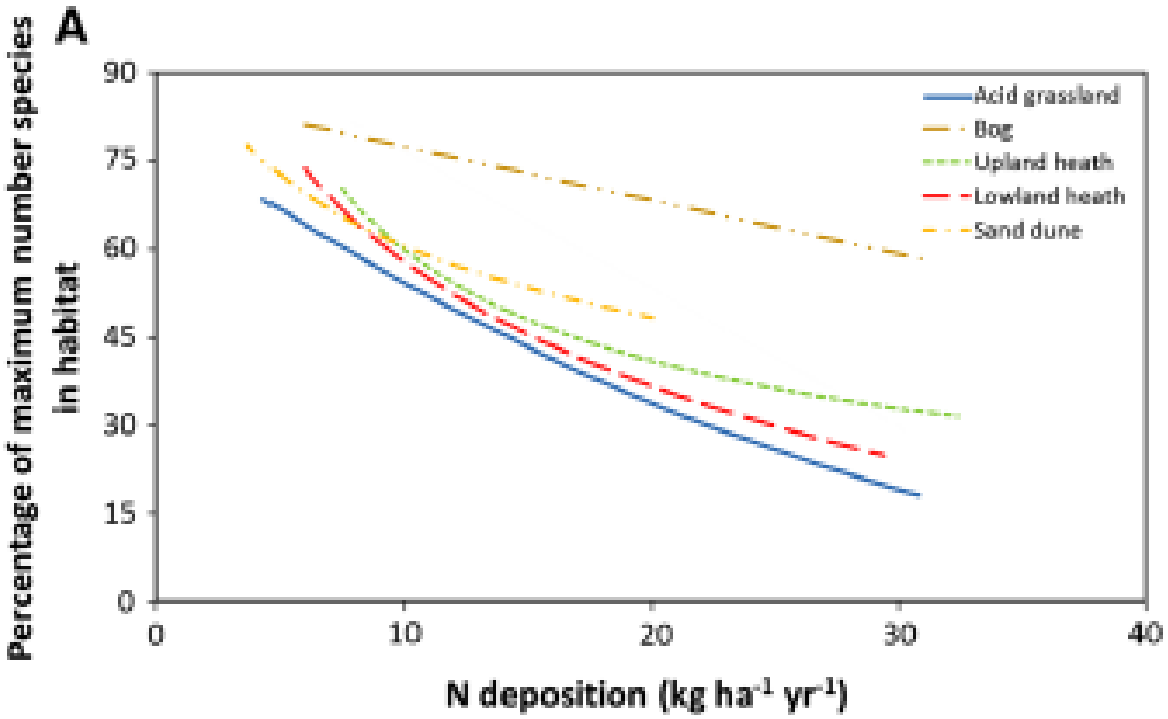
Spiranthes spiralis



Stevens CJ, Smart SM et al. (2012) Ecological Indicators 20: 196-203; Henrys PA, Stevens CJ et al. (2011) Biogeosciences 8: 3501-3518; Stevens CJ, Smart SM (2011) JNCC report 447; Emmett BE, Rowe EC et al (2011) JNCC report 449.

Empirical evidence emerging since 2010

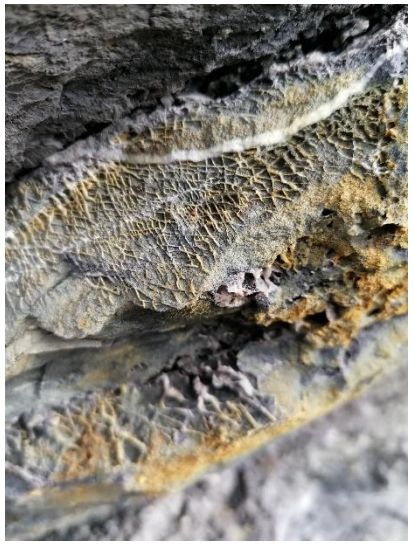
- Other experimental and survey studies and reviews
- Recent data on long-term and cumulative effects, recovery, etc.



Field CD, Dise NB et al. (2014) The role of nitrogen deposition in widespread plant community change across semi-natural habitats. Ecosystems 17, 864-877.

Some considerations

- What size of effect should be seen as “damage”?
- What species are important for each habitat? E.g. bryophytes?
- Does atmospheric N deposition contribute to freshwater eutrophication?
- How does N deposition interact with e.g. P limitations, management?
- Should we include non-UK and cross-border studies?



UK contributors

- 20 volunteers from science, governmental and non-governmental organisations
- Mainly representing inland terrestrial habitats

Who	A) marine	B) coastal	C) inland water	D) mire /bog /fen	E) grassland /montane	F) heathland	G) woodland
Alastair Hotchkiss							
Alistair Crowle							
Andrea Britton							
Carly Stevens							
Christopher Field							
Ed Rowe							
Elena Vanguelova							
Felicity Hayes							
Karen Hornigold							
Iain Diack							
Isabel Alonso							
Jo-Anne Pitt							
Laurence Jones							
Linda May							
Lucy Ridding							
Netty van Dijk							
Robin Pakeman							
Ruth Mitchell							
Sarah Woodin							
Stephen Maberly							
Total	*0*	*4*	*4*	*8*	*12*	*8*	*7*

Next steps

- Establish a workplan for UK participation – what needs to be done by when?
- Feed back on ICP-M&M meeting to UK science / policy people 12th May
- Seek resources, find UK lead scientist(s)
- Establish terms of the review e.g. scope, search terms.