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INTRODUCTION TO THE STRUCTURE OF THE WORKSHOP AND THIS VOLUME

2.1 The Context of the Workshop

Atmospheric nitrogen deposition represents a major threat to European biodiversity. Nitrogen emissions to the atmosphere have increased substantially over the 20th century, mainly as ammonia from agriculture and nitrogen oxides from industry. Following atmospheric dispersion and chemical processing, these nitrogen forms are deposited across European landscapes, providing unplanned nitrogen inputs and adversely affecting many sensitive habitats.

The issue represents a serious challenge for the conservation of natural habitats and species under the Habitats Directive (92/43/EEC).

The Habitats Directive is a cornerstone of Europe's nature conservation policy. It promotes the maintenance of biodiversity and requires Member States to take measures to maintain or restore natural habitats at a favourable conservation status. The Directive establishes the Natura 2000 network with the aim to assure the long-term survival of Europe's most valuable and threatened species and habitats. These sites are afforded the highest degree of protection under European legislation: the provisions of the Directive require strict site protection measures and avoidance of deterioration. It introduces a precautionary approach to permitting "plans or projects" which are likely to have significant effect on a site.

Control of emissions to air of reactive nitrogen are regulated under several directives including the National Emissions Ceilings Directive (NECD, 2001/81/EC), the Large Combustion Plants Directive (LCPD, 2001/80/EC), the Air Quality Directive (AQD, 2008/50/EC) and the directive on Integrated Pollution Prevention and Control (IPPC, 96/61/EC). A range of other policies and legislation also influence emissions, such as the Nitrates Directive (91/676/EEC). However, the impacts of nitrogen deposition on the Natura 2000 network (and the habitat and species resource outside of the network), together with the associated impacts due to elevated concentrations of ammonia (NH_3) and nitrogen oxides (NO_x), are often not addressed adequately or systematically; this is despite the strong protection measures in place through the Habitats Directive.

The Habitats Directive does not directly address nitrogen impacts and until now there has been no common European approach for determining the impacts of nitrogen deposition on individual sites or on conservation status. At the same time, the scale of pollution exposure suggests that there are widespread threats to the Natura 2000 network and to conservation status more widely due to the concentrations and deposition of reactive nitrogen species.

Noting these problems, a workshop was organized to bring together scientists, environmental managers and policy makers to clarify the current understanding of the key issues. The workshop

was held in Brussels in 2009 and addressed the different components of science, environmental management and future policy development needs.

2.2 Outline of the workshop

The specific aims of the workshop were to:

- compare case studies of nitrogen (N) impacts on Natura 2000 sites from across Europe,
- compare national criteria for risk assessment between countries,
- develop clear messages that could improve assessment approaches,
- communicate the scale of the nitrogen threat to the Natura 2000 network,
- review the role of cross-compliance on managing Natura 2000 sites,
- link the science with decision making at local to European scales.

Taken together these aims contributed to the overall workshop goal: to harmonize approaches for determining the impacts of atmospheric nitrogen deposition on Natura 2000 sites and review the future policy options.

The workshop was structured into themes addressed by five Working Groups, supported in each case by a background document setting out the issues in detail and the challenges currently faced.

1 comparison of impact assessment and decision making approaches to determine the nitrogen deposition impacts associated with plans and projects in the context of Habitats Directive Article 6.3 obligations (Bealey *et al*., this volume);

2 comparison of approaches to assessing and reporting nitrogen deposition impacts on conservation status (Habitats Directive Article 17) and discussion of harmonising approaches for future reporting rounds (Whitfield and Strachan, this volume);

3 new science on the effects of nitrogen deposition and concentrations on Natura 2000 sites, including bio-indicators, effects of nitrogen form (e.g. reduced nitrogen, NH_x versus oxidized nitrogen, NO_y), and the relationships between critical thresholds and biodiversity loss (Nordin *et al*., this volume);

4 approaches to modelling local nitrogen deposition and concentrations in the regulatory context of Natura 2000 (Hertel *et al*., this volume);

5 options for future policy development to manage and mitigate the impacts of nitrogen deposition on the Natura 2000 network (Sutton *et al*., this volume).

Overall, the workshop encouraged links to be developed between the scientific basis of nitrogen deposition effects, regulatory practice and policy application. A graphical summary of the different themes and their relationships is shown in Figure 2.1. As part of the assessment, nitrogen effects were related to both atmospheric nitrogen deposition and atmospheric concentrations of reactive nitrogen compounds, including the use of critical loads and critical levels as effects thresholds.

The workshop was attended by 73 delegates from 13 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Portugal, Spain, Sweden, Netherlands and the UK. The delegates were scientists, conservation practitioners and policy makers, including representatives from the European Commission DG Environment, and various Government Departments.

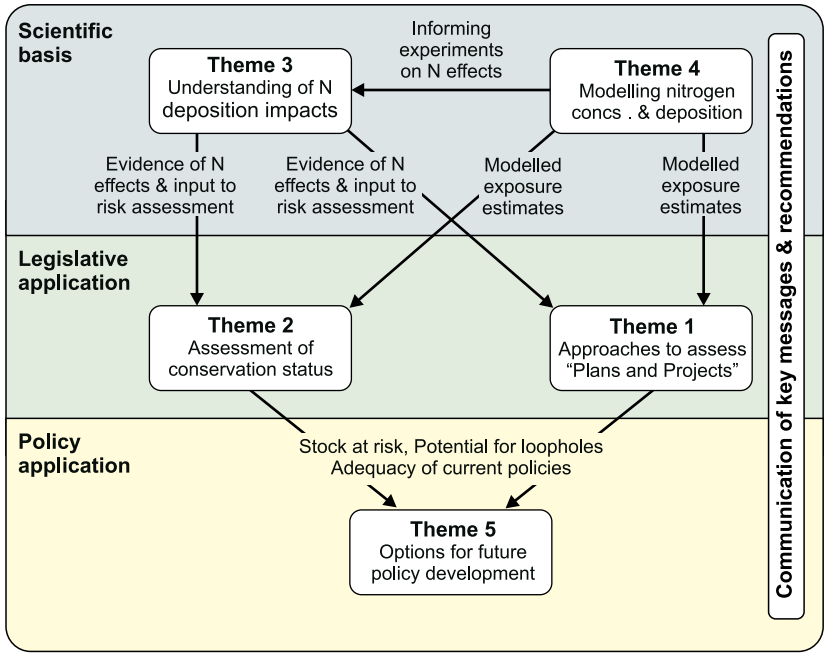

Figure 2.1: Summary of the workshop structure, highlighting the inter-linkages between the five main themes

2.3 Structure of this volume

This volume documents the proceedings of the workshop and is organised into sections that reflect the material prepared for and the discussions held in the five working group themes outlined above. This introductory section is preceded by a section that summarises the conclusions and recommendations from the workshop that were agreed in plenary

The country approaches and/or legislation reported in papers in this volume reflect the status at the time of the workshop, 2009. In some cases there may have been subsequent changes to policy or legislation, which are described where possible.