

Landscape variability and impacts of ammonia in relation to the Habitats Directive

Mark Sutton. CEH Edinburgh.
2007-09-07 Peyresq.

Sources of N-pollution

- Traditional pollution sources are smog from coal burning, industries and cars – but farming is also a source of N-pollution.
- Of the sources of acidification (SO₂, NO₂, NH₃), SO₂ has decreased since 1980, but NO₂ and NH₃ (ammonia) are the same levels.

Effects of N-pollution

- N-deposit reduces the abundance of woodland flowers.
- In an experiment in N. Wales N-addition showed no effect on *Calluna* cover until heath land was burned.
- Ammonium nitrate emission contributes to particulate matter concentration in the air, which reduces visibility and affects human health.

Monitoring & assessment

- In new monitoring networks (NEU L1 DELTA Network), nitrogen in different forms are measured on sites all over Europe.
- By combining maps of the environmental limits for nitrogen depositions (the maximum deposition the environment can tolerate) and the deposition it is possible to highlight sensible/threatened areas.

Landscape variability

- The heterogeneity and variance in the rural landscape is high.
- Nature areas near farms are more at risk
- Edges of woodland areas at high risk
- The exceedance is so massive that there is no way that realistic national emission strategies will avoid impacts of ammonia

Measures on landscape level

- Trees round the farms to recapture ammonia.
 - Choice of trees, canopy structure and planting area to maximize direct benefits
- Other benefits
 - Screening effect round farms
 - Biodiversity in farm woodlands
 - Increase in “core area” of existing reserves
 - Buffering for aquatic pollutants
- However, it is costly, because the farmer loses land that could otherwise be used for livestock.

Air pollution and the Habitat directive

- The European Union's *Habitats Directive* protects a series of sites across Europe (Natura 2000). For the sites, EU envisages a high level of protection and the precautionary principle is applied.
- Air pollution disperses and therefore has implications for remote developments.

- High degree of uncertainty with air pollution impacts.
- Where doubt – then a plan should be refused (unless “overriding public interest”)
- If critical loads already exceeded what is a significant amount of extra N deposition?
0, 1, 10 kg?

Case studie: “The Barn”

- A farmer wanted to start a free range chicken with only 2 500 chickens farm in Dorset
- The farm is located right next to a Special Area of Conservation (SAC) heathland designated under the Habitats Directive.
- The farmer needed planning permission for a house to live there, but not for the farm.
- Farmer argues that he only needs permission for the house, and, with good practice, emissions are negligible anyway.
- “English nature” argues that the building and farm activity have to be considered as a whole and that *it must be demonstrated that there would be no adverse effect* on the Special Area of Conservation according to the EU Habitats Directive.
- Scientific evidence suggests that there would be negative effects of ammonia emissions on the heathland.
- The Inspector upheld English Nature’s and the Council’s views completely: link between house and the farm. Effects of ammonia are real. Regulation 6 (3) of the Directive: **he had to refuse it.**

Conclusions

- In 2020, ammonia will be the largest contributor to acidification, eutrophication and particulate matter.
- Current ammonia abatement is small compared with other sectors: more effort is required.
- Given costs and spatial variability, it is not feasible to protect all European ecosystems, while maintaining a viable livestock sector.
- Special Areas of Conservation (SACs) are the logical priority for biodiversity protection.
- There is a need for an integrated view of the N-cycle, linking agricultural NH₃, N₂O and NO₃-losses.

Simon Hallstan