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Landscape variability impacts of ammonia in relation to the Habitats Directive

Two are the main topics of this lecture: modelling ammonia emissions and depositions to reduce its effects on the environment and the health and a particular application of nature conservation legislation (European Habitats Directive) to address this problem at the local level.

In the last years great efforts have been made to study the effect of ammonia emissions¹.

This way, a control network of ammonia deposition has been established, not only in the United Kingdom- UK- (FRAME model & UK Network) but also at European scale (NEU L1 DELTA Network).

With this tool a widespread ammonia overload was found, whose main source is livestock farming².

Then the “ammonia problem” is mainly located in the same areas that provide ecosystem services: rural areas³.

But the problem of these approaches is the low resolution of the models, that are not able to collect the hug spatial variability and not useful for the assessment.

To sum up, the development of other strategies at the local level becomes necessary. A new approach is illustrated in the following case.

As not all the area can be protected from the threat of ammonia deposition the case is focussed in a Natura 2000 site and based on the precautionary principle.

After solving conflict of interests with the owners of the land and new private farming initiatives, a system of tree- barriers to minimize ammonia deposition was established (woodland buffer zones). The challenge was the movement from the global model level to spatial planning scale.

As a result of these cases and the analysis of the current normative framework it is concluded that:

- The negative effects of ammonia on the environment can be more serious than it seems⁴
- More effort to reduce ammonia pollution needs to be done
- The development of a new framework is needed, able to integrate the strategies to combat all atmospheric pollutants⁵
- Regional and landscape spatial measures are also needed due to the hug spatial variability of the ammonia deposition
- It is essential to reconsider the current amount of livestock farming
- The focus on Special Areas for Conservation (SACs) is an starting point since it is not possible a global control of the pollution

DISCUSSION

Some questions were answered at the end of the lecture.

It was specified that cattle is an important source of ammonia pollution⁶.

It was set out the possibility of the establishment of fertilizer taxes in order to control the application of these products.

It does exist a massive different between inside and outdoor cattle (outdoors cattle is better for ammonia).

Organic farming is focussed on the health of the eater but not on the health of the ecosystem, therefore they don't necessarily have to be a better option in case of ammonia emission.

The critical nitrogen load in ecosystem is determined by using different strategies: field studies, modelling and limits for leaching.

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¹ Reduction on the abundance of some wood flowers, eutrophication, acidification, particulate matter in the air, etc.

² Cattle, pigs and poultry farms.

³ Agriculture is not only a way for protecting biodiversity. From agricultural practices come new pollutants, even when the management follows the so- called good practices.

(examples: leaching of nitrates to soils and water courses and emissions of ammonia to the atmosphere)

⁴ For example, ammonia is now the major air pollution driver of lichen biodiversity. Ammonia is predicted to be the most important contributor to acidification, particulate matter and eutrophication in year 2020

⁵ The UNECE Convention on Long-Range Transboundary Air Pollution (CLRTAP) is developing new critical levels, especially for lichens and bryophytes. Also is in revision the National Emissions Ceilings Directive.

⁶ For example the United Kingdom has duplicated the amount of livestock in only a few years.