

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

Mark Sutton *Saturday, 12.09.2009 Aperitif talk*

*Summary: Johanna Gleißner*

Mark briefly presented the career of nitrogen (N) from a fossil N economy (e.g. mining of saltpetre ( $\text{KNO}_3$ ) in Chile) to the extraction of N from the atmosphere to synthetically produce fertilizer (*Haber-Bosch-Synthesis*) that ultimately led to the Green Revolution.

In this context, Martin jumped in wondering whether (gaseous) N as a natural component of the atmosphere was not an ecosystem service. This consideration was seconded by Mark; although he admitted that the real service of N was achieved by the fact that it accounts for the major part (78.09 Vol%) of the atmosphere limiting volume available for pure oxygen (explosive).

He summarized that today, the total amount of reactive N was produced by agriculture (pig and chicken farms, dairy farming), traffic and industry (NOx) and presented exemplified conflicts with nature conservation resulting from N emissions.

At the end of his speech, Martin made another contribution: Based on his experiences with a local bitch and her effect on his lawn, he assumed to find enormous concentration of N at feedlots. This, again, was put into perspective by Mark stating that the major part of organic N is volatilizing up to the atmosphere.

Brooke wanted to know how temperature affected N absorbance or volatilization to the atmosphere, respectively.

Mark explained that gases were typically more soluble at cold temperatures and hence warming promoted N volatilization.

Anne asked about the average range of ammonia deposition?

Mark (*imitating an exponentially decreasing curve*) demonstrated that ammonia is dispersing and diluting within the first kilometres around the source. Still, he added that there are remote threats due to longer-range transport and precipitation of emitted N with rain water. He put forward planting belts of trees to create a buffer zone as a potential way to shield protected areas.

Brooke expressed her concern that, when farms became more industrialized, it would be easier to control N outputs, although the surrounding infrastructure required for such a big enterprise to be run was likely to result in an impact that was net negative.

Diana asked for concrete policy recommendations and wanted to know how Mark ranked the N problem relative to other drivers such as climate change.

A very concrete policy recommendation given by Mark was "Eat less meat!". Moreover, he appealed to the public to make use of the new technologies that exist.

Digging deeper, Diana wanted to know whether there were noticeable differences between meat origins, i.e. whether organic meat had a better balance also in terms of N emitted.

Mark replied that an expert panel on nitrogen and food is just being established to give advice *inter alia* to questions like that. In this context, he stressed the need to raise the profile of N emissions and therefore called for the participants' attendance of the topical side-event at CoP15 in Copenhagen.

In brief, the take-home messages of Mark's talk are:

<p>Eat less meat! Use less fuel! Bury your shit! (suggested by Carina)</p>
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