

Ecosystem quality and trends in nitrogen availability, 2016

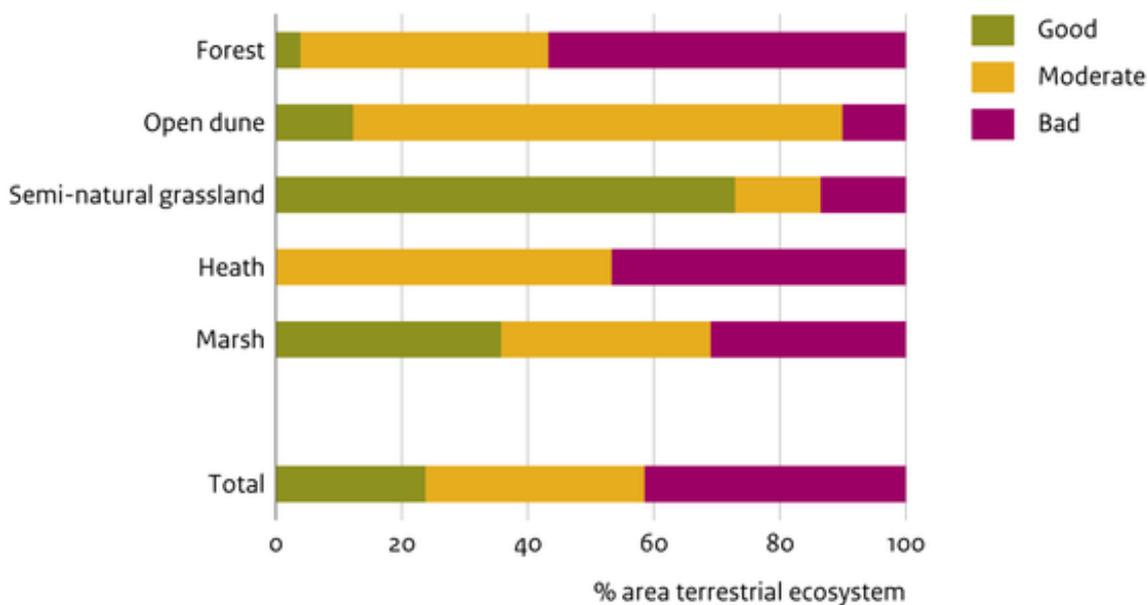
Indicator | 23 November 2017

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In many ecosystems the environmental pressure from nitrogen deposition is still too high. In forest, open dune and heath ecosystems in particular, conditions almost everywhere are moderate to bad due to nitrogen deposition. Trend data show that nitrogen availability in the soil in open dunes and semi-natural grassland has increased.

[figuurgroep]

Suitability of nitrogen availability for terrestrial ecosystems, 2015

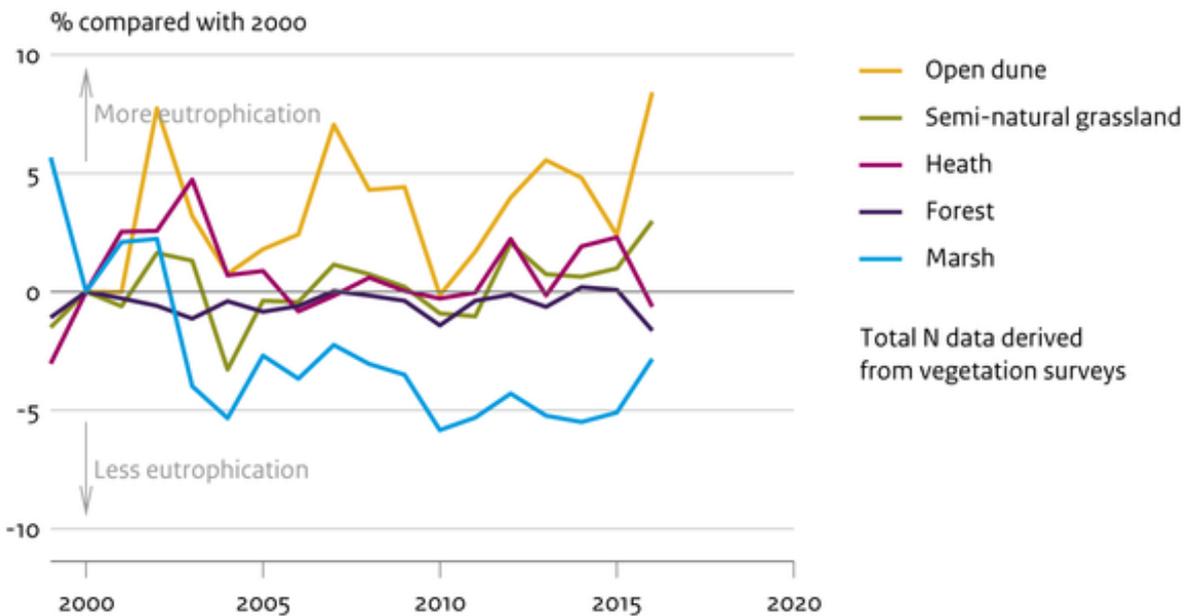


Source: Wageningen Environmental Research; provincial councils; adapted by PBL

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Trend in nitrogen availability



Source: LMF (CBS)

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[/figuurgroep]

Vulnerable plant species disappearing

Too much nitrogen in the soil is a major reason for the loss of rare species in ecosystems. The increase in nitrogen availability in the soil is caused, among other things, by the atmospheric deposition of nitrogen. Two-thirds of the nitrogen deposited on the soil is in the form of ammonia from agricultural emissions; the remainder is from nitrogen oxide emissions from transport, industry and other sources. When nitrogen deposition exceeds the critical deposition level vulnerable plant species will disappear. The higher the exceedance and the longer the period of exceedance, the greater the effects. Nutrient-poor ecosystems are especially sensitive to the effects of nitrogen deposition.

Exceedance of critical nitrogen deposition has the biggest impact on sandy soils

Approximately three-quarters of the total area of terrestrial ecosystems is subject to high levels of nitrogen deposition. In ecosystems that are particularly sensitive to nitrogen deposition, such forest, open dune and heath, conditions almost everywhere are classified moderate to bad. The critical deposition levels are exceeded in almost the entire area of heath, and virtually all this area falls in the quality categories moderate or bad. For forest and open dune the situation is slightly better, although here too most of the surface area falls within the categories moderate to bad.

Eutrophication is particularly problematic on the nutrient-poor sandy soils in areas where ecosystems are highly sensitive to nitrogen deposition and where deposition from intensive livestock farming is high. Many of the ecosystems in the north and west of the country are not so sensitive to nitrogen deposition. Most of these ecosystems are naturally nutrient-rich waters and marsh in areas of sea clay or river clay.

Results of policy to combat eutrophication

Eutrophication policy aims to improve conditions in soil, water and the atmosphere in order to restore and conserve biodiversity. The considerable decline in nitrogen deposition since the early 1990s has not translated into an increase in the area of natural habitat with good conditions. The concentrations of atmospheric ammonia have not declined since 2000, and even increased slightly in the period 2005-2014 (Stolk et al. 2017). This trend has also been observed in the Ammonia Monitoring Network in Natural Areas, which has been operational since 2005. This trend is an indication that the ammonia load in ecosystems (Natura 2000 sites) is no longer declining, whereas this is necessary for the sustainable conservation of these ecosystems. Nitrogen availability as measured by vegetation composition has also on average not decreased significantly in most ecosystems since 2000. In ecosystems such as open dunes and semi-natural grassland, nitrogen availability is even increasing. Nitrogen availability is decreasing slightly only in marsh ecosystems, which are less sensitive to nitrogen deposition. It is possible that improvements in vegetation composition are not materialising, and in some cases are worsening, because environmental pollution is still too high and has not declined at all in recent years. A complicating factor is that vegetation responds later to changes in emissions than, for example, atmospheric concentrations or soil chemistry.

Presence of plants indicative of prevailing environmental conditions

Direct measurements of soil and water can be used to determine the extent to which changes in environmental conditions occur and whether or not current conditions are suitable for the sustainable conservation of ecosystems. However, the availability of measurement data is limited. Environmental conditions can also be estimated indirectly from the presence of certain plant species and changes in species composition, because plants have specific environmental requirements. The vegetation composition found in an area is therefore indicative of the prevailing environmental conditions at site level.

In the 'monitoring and evaluation methodology' (WMBN), the provinces and conservation management organisations have set out how environmental conditions can be determined. In anticipation of the first set of monitoring data from the provinces, these and the two indicators below illustrate current environmental conditions.

- [indicator=en1593]
- [indicator=en1594]

Policy focuses on improving environmental conditions

The Netherlands has international commitments to meeting the goals of the Convention on Biological Diversity, the Birds and Habitats Directives (Natura 2000) and the EU Biodiversity Strategy. In the Nature Pact (Natuurpact) the national and provincial governments have agreed to improve ecological quality through the creation of the National Ecological Network and through more intensive restoration and management measures to improve water and environmental conditions. To prevent eutrophication and acidification, Dutch environmental policy focuses on reducing emissions of eutrophying and acidifying substances in the Netherlands and surrounding countries.

Over the last few decades, both national and international environmental policies have led to cleaner air, resulting in lower acid and nitrogen deposition on ecosystems (Buijsman et al., 2010). However, the results achieved are not yet sufficient to create good conditions for ecosystems and species.

- [indicator=en0183]

Restoration measures to combat acidification and eutrophication

In the Nitrogen Reduction Programme (PAS) a combination of generic and area-based policies are being applied to reduce nitrogen deposition on Natura 2000 sites. In addition, resources are being made available for restoration measures in existing natural areas to combat eutrophication and acidification. Many of these measures are also aimed at reducing drying-out of soils and its effects, because the availability of nutrients depends not only on the current deposition of eutrophying substances, but also on the lowering of the water table and on the quality of surface water and groundwater.

References

- BIJ12 (2014). [Werkwijze Monitoring en Beoordeling Natuurnetwerk en Natura 2000/PAS. Versie 05032014](#) [8], BIJ12, Utrecht
- BIJ12 (2014). [BIJLAGE I - bij: Toelichting Werkwijze EHS- en Natura 2000 / PAS Monitoring en Beoordeling](#) [9], BIJ12, Utrecht
- BIJ12 (2014). [BIJLAGE II - bij: Toelichting Werkwijze EHS- en Natura 2000 / PAS Monitoring en Beoordeling](#) [10], BIJ12 Utrecht
- Dobben, H.F. van, R. Bobbink, D. Bal en A. van Hinsberg (2012). [Overzicht van kritische depositiewaarden voor stikstof, toegepast op habitattypen en leefgebieden van Natura 2000](#). [11] Wageningen, Alterra, Alterra-rapport 2397.
- Ministerie EZ (2013). [Kamerbrief Natuurpact](#) [12]. Ministerie van Economische Zaken, Landbouw & Innovatie, Den Haag.
- Ministerie van LNV (1990). Natuurbeleidsplan. Regeringsbeslissing. Ministerie van Landbouw, Natuurbeheer en Visserij. Den Haag.
- Van der Hoek, D-J., M. Smit, S. van Broekhoven, A. van Hinsberg, P. Giesen, H. Bredenoord, R. Pouwels, B. de Knecht, F. van Gaalen, A. de Blaeij, S. Mylius & R. Folkert (2017). [Potentiële bijdrage van provinciaal natuurbeleid aan Europese biodiversiteitsdoelen. Achtergrondrapport bij lerende evaluatie Natuurpact](#) [13]. Den Haag: Planbureau voor de Leefomgeving.

Relevant information

Technical information

Reference for this page

CBS, PBL, RIVM, WUR (2017). [Ecosystem quality and trends in nitrogen availability, 2016](#) [14] (indicator 1592, version 01 , 23 November 2017). www.environmentaldata.nl. Statistics Netherlands (CBS), The Hague; PBL Netherlands Environmental Assessment Agency, The Hague; RIVM National Institute for Public Health and the Environment, Bilthoven; and Wageningen University and Research, Wageningen.

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- [9] <https://www.portaalnatuurenlanschap.nl/assets/BIJLAGEN-I-Monitoring-en-Beoordeling-050320142.pdf>
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- [13] <http://www.pbl.nl/sites/default/files/cms/pbl-2017-potenti%C3%ABle-bijdrage-provinciaal-natuurbeleid-aan-europese-biodiversiteitsdoelen-2766.pdf>
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