Nitrogen Newsletter is a summary of recent publications, news and reports related to the cycling, effects and management of nitrogen. Prepared by Mary O’Brien and Jana Compton. Contact Jana Compton with any questions (Compton.jana@epa.gov)

Please note: Most of these links are available to EPA staff through library access – not all links will be available to folks outside EPA, depending on your access to specific journals and websites.

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News

New free, hands-on tool supports sustainable living choices
http://www.n-print.org/node/40
Source: N-Print.org

Using mining by-products to reduce algal blooms
Source: CSIRO

Putting trees on farms fundamental to future agricultural development
Source: World Agroforestry Centre

For BNA subscribers (including EPA staff):

Climate change: Greenhouse gas emissions decreased for second straight year in 2009, EPA says
BNA Daily Environment Report, February 17, 2011
http://news.bna.com/deln/DELNWBSplit_display.adp?fedfid=19625569&vname=dennotalissue s&wsn=496956000&searchid=14105809&doctypeid=1&type=date&mode=doc&split=0&scm=DELNWBB&pg=0

Water pollution: Fourth Circuit returns wetlands case to Corps, citing 'significant nexus' data
For Greenwire subscribers (including EPA staff):

Agriculture: $60 million program launched to assess climate impact on crops and trees
*ClimateWire*, February 18, 2011
http://www.eenews.net/climatewire/2011/02/18/archive/6

Water Pollution: Industry to Congress -- EPA fight with Fla. coming to a state near you
*E&E Daily*, February 16, 2011
http://www.eenews.net/EEDaily/2011/02/16/archive/1

For Inside EPA subscribers (including EPA staff):

SAB criticism of Florida down stream nutrient protection may aid plaintiffs

EPA floats draft guide for setting controversial site-specific nutrient limits
*Inside EPA*, February 25, 2011

Upcoming SAB report could help EPA target integrated nitrogen approach
*Environmental Policy Alert*, February 10, 2011

Special Issues

The carbon balance of European croplands
Edited by Pete Smith, Mike Jones, Bruce Osborne and Martin Wattenbach.
*Agriculture, Ecosystems & Environment*, 139(3, Sp. Iss. SI), November 15, 2010. ISSN 0167-8809.
http://www.sciencedirect.com/science/journal/01678809

Coupled biogeochemical cycles
http://www.esajournals.org/toi/fron/9/1
Soil organic matters

**Articles**

Adamek, Markus, Marife D. Corre, and Dirk Hoelscher.
*Responses of fine roots to experimental nitrogen addition in a tropical lower montane rain forest, Panama*
http://dx.doi.org/10.1017/S0266467410000507

*The role of arctic zooplankton in biogeochemical cycles: respiration and excretion of ammonia and phosphate during summer*
*Polar Biology*, 33(12): 1719-1731, December 2010. ISSN 0722-4060
http://dx.doi.org/10.1007/s00300-010-0789-9

Allgeier, Jacob E., Amy D. Rosemond, and Craig A. Layman.
*The frequency and magnitude of non-additive responses to multiple nutrient enrichment*
http://dx.doi.org/10.1111/j.1365-2664.2010.01894.x

Barton, Louise, Klaus Butterbach-Bahl, Ralf Kiese, and Daniel V. Murphy.
*Nitrous oxide fluxes from a grain-legume crop (narrow-leafed lupin) grown in a semiarid climate*
http://dx.doi.org/10.1111/j.1365-2486.2010.02260.x

Bedoya, David, Elias S. Manolakos, and Vladimir Novotny.
*Characterization of biological responses under different environmental conditions: A hierarchical modeling approach*
http://dx.doi.org/10.1016/j.ecolmodel.2010.10.007

*Nutrient discharges to Biscayne Bay, Florida: Trends, loads, and a pollutant index*
http://dx.doi.org/10.1016/j.scitotenv.2010.10.029

Cross, Alison, and Steven S. Perakis.
*Tree species and soil nutrient profiles in old-growth forests of the Oregon Coast Range*
Advances in nitrogen management for water quality 
http://dx.doi.org/10.2489/jswc.66.1.25A

Deng, Xiangzheng, Yonghong Zhao, Feng Wu, Yingzhi Lin, Qi Lu, and Jing Dai. 
Analysis of the trade-off between economic growth and the reduction of nitrogen and phosphorus emissions in the Poyang Lake Watershed, China 
http://dx.doi.org/10.1016/j.ecolmodel.2010.08.032

Dybzinski, Ray, Caroline Farrior, Adam Wolf, Peter B. Reich, and Stephen W. Pacala. 
Evolutionarily stable strategy carbon allocation to foliage, wood, and fine roots in trees competing for light and nitrogen: An analytically tractable, individual-based model and quantitative comparisons to data 
American Naturalist, 177(2): 153-166, February 2011. ISSN 0003-0147 
http://dx.doi.org/10.1086/657992

Plant diversity surpasses plant functional groups and plant productivity as driver of soil biota in the long term 
http://dx.doi.org/10.1371/journal.pone.0016055

Esser, Gerd, Jens Kattge, and Abdulla Sakalli. 
Feedback of carbon and nitrogen cycles enhances carbon sequestration in the terrestrial biosphere 
http://dx.doi.org/10.1111/j.1365-2486.2010.02261.x

Fang, Yunting, Muneoki Yoh, Keisuke Koba, Weixing Zhu, Yu Takebayashi, Yihua Xiao, Chunyi Lei, Jiangming Mo, Wei Zhang, and Xiankai Lu. 
Nitrogen deposition and forest nitrogen cycling along an urban-rural transect in southern China 
Global Change Biology, 17(2): 872-885, February 2011. ISSN 1354-1013 
http://dx.doi.org/10.1111/j.1365-2486.2010.02283.x

Tracer movement through paired vegetative treatment areas receiving silage bunker runoff
http://dx.doi.org/10.2489/jswc.66.1.18

Gilliam, Frank S., Rebecca L. McCulley, and Jim A. Nelson.
Spatial variability in soil microbial communities in a nitrogen-saturated hardwood forest watershed
http://dx.doi.org/10.2136/sssaj2010.0172

Gilmour, John T., and A. Mauromoustakos.
Nitrogen mineralization from soil organic matter: a sequential model
http://dx.doi.org/10.2136/sssaj2010.0123

Hagan, Donald L., and Shibu Jose.
Interspecific competition enhances nitrogen fixation in an actinorhizal shrub
http://dx.doi.org/10.1007/s11258-010-9803-0

Nonlinear nitrous oxide (N2O) response to nitrogen fertilizer in on-farm corn crops of the US Midwest
http://dx.doi.org/10.1111/j.1365-2486.2010.02349.x

Hogberg, Peter, Christian Johannisson, Stephanie Yarwood, Ingeborg Callesen, Torgny Nasholm, David D. Myrold, and Mona N. Hogberg.
Recovery of ectomycorrhiza after 'nitrogen saturation' of a conifer forest
http://dx.doi.org/10.1111/j.1469-8137.2010.03485.x

Impact of biogenic emission uncertainties on the simulated response of ozone and fine particulate matter to anthropogenic emission reductions
http://dx.doi.org/10.3155/1047-3289.61.1.92

Inoue, Tomomi, Seiichi Nohara, Hiroyuki Takagi, and Yasuharu Anzai.
Contrast of nitrogen contents around roots of mangrove plants
http://dx.doi.org/10.1007/s11104-010-0604-y
Net mineralization of N at deeper soil depths as a potential mechanism for sustained forest production under elevated [CO2]  
http://dx.doi.org/10.1111/j.1365-2486.2010.02240.x

**Climate change effects on nitrogen loading from cultivated catchments in Europe: implications for nitrogen retention, ecological state of lakes and adaptation**  
http://dx.doi.org/10.1007/s10750-010-0547-6

Kaempf, Jochen.  
**On preconditioning of coastal upwelling in the eastern Great Australian Bight**  
http://dx.doi.org/10.1029/2010JC006294

Koho, Karoliina A., Elisa Pina-Ochoa, Emmanuelle Geslin, and Nils Risgaard-Petersen.  
**Vertical migration, nitrate uptake and denitrification: survival mechanisms of foraminifers (Globobulimina turgida) under low oxygen conditions**  
http://dx.doi.org/10.1111/j.1574-6941.2010.01010.x

Laville, P., S. Lehuger, B. Loubet, F. Chaumartin, and P. Cellier.  
**Effect of management, climate and soil conditions on N2O and NO emissions from an arable crop rotation using high temporal resolution measurements**  
http://dx.doi.org/10.1016/j.agrformet.2010.10.008

Liptzin, Daniel, and Timothy R. Seastedt.  
**Regional and local patterns of soil nutrients at Rocky Mountain treelines**  
http://dx.doi.org/10.1016/j.geoderma.2010.09.022

Liu, Lin, Yan Wu, Ning Wu, Junjun Xu, Yu Mao, Peng Luo, and Lin Zhang,  
**Effects of freezing and freeze-thaw cycles on soil microbial biomass and nutrient dynamics under different snow gradients in an alpine meadow (Tibetan Plateau)**  
http://www.pol.j.ecol.cbe-pan.pl/

Lue, Fu-Mei, Xiao-Tao Lue, Wei Liu, Xu Han, Guang-Ming Zhang, De-Liang Kong, and Xing-Guo Han.  
**Carbon and nitrogen storage in plant and soil as related to nitrogen and water amendment in a temperate steppe of northern China**
http://dx.doi.org/10.1007/s00374-010-0522-4

A stoichiometric model of early plant primary succession
http://dx.doi.org/10.1086/658066

McCarty, Jessica L.
Remote sensing-based estimates of annual and seasonal emissions from crop residue burning in the Contiguous United States
http://dx.doi.org/10.3155/1047-3289.61.1.22

Moore, Tim R., J. A. Trofymow, Cindy E. Prescott, and B. D. Titus.
Nature and nurture in the dynamics of C, N and P during litter decomposition in Canadian forests
Plant and Soil, 339(1-2): 163-175, February 2011. ISSN 0032-079X.
http://dx.doi.org/10.1007/s11104-010-0563-3

Munzi, Silvana, Stefano Loppi, Cristina Cruz, and Cristina Branquinho.
Do lichens have "memory" of their native nitrogen environment?
http://dx.doi.org/10.1007/s00425-010-1300-0

Soil nitrous oxide emissions in corn following three decades of tillage and rotation treatments
http://dx.doi.org/10.2136/sssaj2009.0147

Can N2O stable isotopes and isotopomers be useful tools to characterize sources and microbial pathways of N2O production and consumption in tropical soils?
http://dx.doi.org/10.1029/2009GB003615

Peek, James M.
Pattern of Herbivory, Nitrogen Content, and Biomass of Bluebunch Wheatgrass on a Mountain Sheep Habitat in Central Idaho
Northwest Science, 84(4): 386-393, Fall 2010. ISSN 0029-344X.
http://www.bioone.org/doi/abs/10.3955/046.084.0408

Porras-Alfaro, Andrea, Jose Herrera, Donald O. Natvig, Kendra Lipinski, and Robert L. Sinsabaugh.
Diversity and distribution of soil fungal communities in a semiarid grassland
http://dx.doi.org/10.3852/09-297

Quillet, Anne, Changhui Peng, Michelle Garneau.
Toward dynamic global vegetation models for simulating vegetation-climate interactions and feedbacks: recent developments, limitations, and future challenges
Environmental Reviews, 18: 333-353, 2010. ISSN 1181-8700.
http://dx.doi.org/10.1139/A10-016

Riemann, Lasse, Hanna Farnelid, and Grieg F. Steward.
Nitrogenase genes in non-cyanobacterial plankton: prevalence, diversity and regulation in marine waters
http://dx.doi.org/10.3354/ame01431

Ring, Eva, Staffan Jacobson, and Lars Hogbom.
Long-term effects of nitrogen fertilization on soil chemistry in three Scots pine stands in Sweden
http://dx.doi.org/10.1139/X10-208

Coupled cycles of dissolved oxygen and nitrous oxide in rivers along a trophic gradient in Southern Ontario, Canada
http://dx.doi.org/10.2134/jeq2010.0009

Predicting river water quality across North West England using catchment characteristics
http://dx.doi.org/10.1016/j.jhydrol.2010.10.015

Ryrie, Susan C., and I. Colin Prentice.
Herbivores enable plant survival under nutrient limited conditions in a model grazing system
http://dx.doi.org/10.1016/j.ecolmodel.2010.09.024

Sanz-Saez, Alvaro, Gorka Erice, Iker Aranjuelo, Salvador Nogues, Juan Jose Irigoyen, and Manuel Sanchez-Diaz.
Photosynthetic down-regulation under elevated CO2 exposure can be prevented by nitrogen supply in nodulated alfalfa
Shrestha, Minita, Pravin Malla Shrestha, Peter Frenzel, and Ralf Conrad.  
**Effect of nitrogen fertilization on methane oxidation, abundance, community structure, and gene expression of methanotrophs in the rice rhizosphere**  
[http://dx.doi.org/10.1038/ismej.2010.89](http://dx.doi.org/10.1038/ismej.2010.89)

Sigleo, Anne C., Walter E. Frick, and Lourdes Prieto.  
**Red alder (Alnus rubra) distribution influences nitrate discharge to coastal estuaries: Comparison of two Oregon watersheds**  
*Northwest Science*, 84(4): 336-350, Fall 2010. ISSN 0029-344X.  
[http://dx.doi.org/10.3955/046.084.0403](http://dx.doi.org/10.3955/046.084.0403)

**Nitrogen deposition, competition and the decline of a regionally threatened legume, Desmodium cuspidatum**  
[http://dx.doi.org/10.1007/s00442-010-1818-7](http://dx.doi.org/10.1007/s00442-010-1818-7)

Smith, Hugh G., Gary J. Sheridan, Patrick N. J. Lane, Petter Nyman, and Shane Haydon.  
**Wildfire effects on water quality in forest catchments: A review with implications for water supply**  

**Rating curve estimation of nutrient loads in Iowa rivers**  
[http://dx.doi.org/10.1016/j.jhydrol.2010.11.006](http://dx.doi.org/10.1016/j.jhydrol.2010.11.006)

Stroia, Ciprian, Christian Morel, and Claire Jouany.  
**Nitrogen fertilization effects on grassland soil acidification: consequences on diffusive phosphorus ions**  
[http://dx.doi.org/10.2136/sssaj2009.0135](http://dx.doi.org/10.2136/sssaj2009.0135)

**Nitrogen balances for New York State: Implications for manure and fertilizer management**  
[http://dx.doi.org/10.2489/jswc.66.1.1](http://dx.doi.org/10.2489/jswc.66.1.1)

Turnbull, Laura, John Wainwright, and Richard E. Brazier.  
**Nitrogen and phosphorus dynamics during runoff events over a transition from grassland to shrubland in the south-western United States**  
Ueda, Miki U., Eri Mizumachi, and Naoko Tokuchi. 
**Winter nitrate uptake by the temperate deciduous tree Quercus serrata**
[http://dx.doi.org/10.1007/s10310-010-0219-4](http://dx.doi.org/10.1007/s10310-010-0219-4)

**Vegetation control on DOC, DON and DIN concentrations in soil water from a montane system, southern Norway**

**Ecological and environmental footprint of 50 years of agricultural expansion in Argentina**
[http://dx.doi.org/10.1111/j.1365-2486.2010.02293.x](http://dx.doi.org/10.1111/j.1365-2486.2010.02293.x)

Waiser, Marley J., Vijay Tumber, and Jennifer Holm. 
**Effluent-dominated streams. Part 1: Presence and effects of excess nitrogen and phosphorus in Wascana Creek, Saskatchewan, Canada**
[http://dx.doi.org/10.1002/etc.399](http://dx.doi.org/10.1002/etc.399)

Yue, Fujun, Xiaolong Liu, Jun Li, Zhaozhou Zhu, and Zhongliang Wang. 
**Using nitrogen isotopic approach to identify nitrate sources in waters of Tianjin, China**
[http://dx.doi.org/10.1007/s00128-010-0156-0](http://dx.doi.org/10.1007/s00128-010-0156-0)

Zang, Ulrich, Norbert Lamersdorf, and Werner Borken. 
**Response of the fine root system in a Norway spruce stand to 13 years of reduced atmospheric nitrogen and acidity input**
[http://dx.doi.org/10.1007/s11104-010-0598-5](http://dx.doi.org/10.1007/s11104-010-0598-5)

Zhang, H., and G. H. Huang. 
**Assessment of non-point source pollution using a spatial multicriteria analysis approach**

Zhang, Ximei, Wei Liu, Yongfei Bai, Guangming Zhang, and Xingguo Han. 
**Nitrogen deposition mediates the effects and importance of chance in changing biodiversity**
[http://dx.doi.org/10.1111/j.1365-294X.2010.04933.x](http://dx.doi.org/10.1111/j.1365-294X.2010.04933.x)
Zhao, Hongxia, Xiao Xu, Yuanbin Zhang, Helena Korpelainen, and Chunyang Li. 
**Nitrogen deposition limits photosynthetic response to elevated CO2 differentially in a dioecious species**
[http://dx.doi.org/10.1007/s00442-010-1763-5](http://dx.doi.org/10.1007/s00442-010-1763-5)

Zhao, Qiong, De-Hui Zeng, and Zhi-Ping Fan. 
**Nitrogen and phosphorus transformations in the rhizospheres of three tree species in a nutrient-poor sandy soil**
[http://dx.doi.org/10.1016/j.apsoil.2010.10.007](http://dx.doi.org/10.1016/j.apsoil.2010.10.007)

### Reports

[http://www.epa.gov/climatechange/emissions/usinventoryreport.html](http://www.epa.gov/climatechange/emissions/usinventoryreport.html)

### Web Pages

**N-Print**  
[http://www.n-print.org/](http://www.n-print.org/)

### Upcoming Events

**Sixth International Symposium on Non-CO2 Greenhouse Gases (NCGG-6) – Science, Policy and Integration, Amsterdam, the Netherlands, November 2-4, 2011**  
[http://www.ncgg.info/](http://www.ncgg.info/)