

CV - Bertel Nilsson , GEUS

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Name Bertel Nilsson
Date of Birth 24 October 1959
Nationality Danish
Education 1988: Masters of Science (Geology), University of Copenhagen

Employment Record

| Year | Organisation | Position |
|-----------|---|---------------------------------|
| 2000-date | Geological Survey of Denmark and Greenland (GEUS) | Senior Researcher, |
| 1998 | Clemson University, USA | Research scholar at (Jan-April) |
| 1988 | Geological Survey of Denmark and Greenland (GEUS) | Research Hydrogeologist |

Research interests

- Groundwater-surface water interaction (lakes, wetlands, stream valleys). Hydrogeological and geophysical testing methods and field investigations especially related to ground water quality, protection and remedial action techniques. Hydraulic characterisation, clay properties and fracture characterisation of glacial tills.

Current, recent major projects

- 2011-2016: *Centre for LAKE Restoration (CLEAR2)*, Co-PI, member of steering committee, responsible for the hydrogeological investigations at seepage lakes, funded by Villum Kann Rasmussen Foundation. Total budget of 3.4 mill. Euros.
- 2010-2013: *Nitrate reduction in geologically heterogeneous catchments (NICA)*. Workpackage on geological heterogeneity. Council for Strategic Research, total budget of 2.0 mill. Euros.
- 2009-2013: *Development of rehabilitation technologies and approaches for multipressured degraded waters and the integration of their impact on river basin management (AQUAREHAB)*, funded by EU – FP7, WP on hydrology and modelling of natural attenuation in wetlands, 466.000 Euros.
- 2008-2011: *Innovative remediation and assessment technologies for contaminated soil and groundwater (REMTEC www.remtec.dk)*, work package on characterization and monitoring tools, funded by Danish Council for Strategic Research, total budget of 2.0 mill. Euros.
- 2006-2011: *Centre for LAKE Restoration (CLEAR)*, Co-PI, member of steering committee, responsible for the hydrogeological investigations at seepage lakes, funded by Villum Kann Rasmussen Foundation. Total budget of 3.4 mill. Euros.

Teaching activities

- 1988-present: Co-supervisor for 5 Ph.D. and 5 Master students at DTU and UCPH.

Peer-reviewed publications

Kidmose, J., Engesgaard P, **Nilsson B**, Laier T, and Looms MC (2011). Spatial distribution of seepage at a flow through lake: Lake Hampen, Western Denmark, *Vadose Zone Journal*, HOBE Special Issue, 10, 110-124.

Nilsson B, Tzovolou D, Jeczalik M, Kasela T, Slack W, Klint KE, Haeseler F, Tsakiroglou CD (2011). Combining steam injection with hydraulic fracturing for the in situ remediation of the unsaturated zone of a fractured soil polluted by jet fuel. *Journal of Environmental Management*, 92, 695-707

Christiansen CM, Damgaard I, Broholm M, Kessler T, Klint KE, **Nilsson B**, Bjerg PL (2010). Comparison of delivery methods for enhanced in situ remediation in clay till. *Ground Water, Monitoring & Remediation* 30, no. 4/ Fall 2010/pages 107–122.

Stæhr PA, Sand-Jensen K, Raun AL, **Nilsson B**, Kidmose J (2010). Drivers of metabolism and net heterotrophy in contrasting lakes. *Limnology and Oceanography*, 55(2), 2010, 817–830.

Kidmose J, Dahl M, Engesgaard P, **Nilsson B**, Christensen B, Andersen S, Hoffmann CC 2010. Experimental and Numerical Study of the relation between Flow Paths and Fate of a Pesticide in a Riparian Wetland. *Journal of Hydrology*, 386(1-4), 67-79.

Kidmose, J., P. Engesgaard, B. **Nilsson**, T. Laier, and M.C. Looms, (2010). Spatial distribution of seepage at a flow through lake: Lake Hampen, Western Denmark, *accepted for publication in Vadose Zone Journal*.

Nilsson, B., Engesgaard P, Kidmose J, Karan S, Looms MC, Frandsen MCS (2009). Does groundwater – lake exchange influence the water budget of lake Skærsø in Western Denmark. *Geological Survey of Denmark and Greenland Bulletin*, 17, 45-48. Available at www.geus.dk/publications/bull.

Nilsson, B., Højbjerg, A.L., Refsgaard, J.C. & Trolborg, L. (2007). Uncertainty in geological and hydrogeological data. *Hydrology and Earth System Sciences* 11, 1551-1561.

Dahl, M., **Nilsson, B.**, Langhoff, J.L. & Refsgaard, J.C. (2007). Review of classification systems and new multi-scale typology of groundwater-surface water interaction. *Journal of Hydrology* 344, 1-16.

Harrar, W.G., Murdoch, L.C., **Nilsson, B.** & Klint, K.E.S. (2007). Field characterization of vertical bromide transport in a fractured glacial till. *Hydrogeology Journal* 15(8), 1473-1488.

Refsgaard JC, **Nilsson B**, Brown J, Klauer B, Moore RV, Bech T, Vurro M, Blind M, Castilla G, Tsanis I and Biza P (2005). Harmonised Techniques and Representative River Basin Data for Assessment and Use of Uncertainty Information in Integrated Water Management (HarmoniRiB). *Environmental Science and Policies* 8 (2005) 267-277

Mortensen AP, Jensen KH, **Nilsson B**, Juhler RK (2004). Multiple tracing experiments in unsaturated fractured clayey till. *Vadose Zone Journal*, 3:634-644.

Broholm K, **Nilsson B**, Sidle RC Arvin E (2000). Transport and biodegradation of creosote compounds in clayey till, a field experiment. *Journal of Contaminant Hydrology*, 41, 239-260.

Nilsson B, Sidle RC, Klint KE, Bøggild CE and Broholm K (2001). Mass transport and scale-dependent hydraulic tests in a heterogeneous glacial till - sandy aquifer system. *Journal of Hydrology*, 243 (3-4), 162-179 .

Sidle RC, **Nilsson B**, Hansen M, Fredericia J (1998). Spatially varying hydraulic and solute transport characteristics of a fractured till determined by field tracer tests, Funen, Denmark. *Water Resources Research*, Vol. 34, No. 10, pp. 2515-2527.

Murdoch L, Harrar WG, **Nilsson B**, Slack W, Siegrist R (1999). In situ measurements in fractured till using sidewall sensors. *Journal of Nordic Hydrology*, Vol. (4/5).

Nilsson B, Jakobsen R, Andersen LJ (1995). Development and Testing of Active Groundwater Samplers. *Journal of Hydrology*, 171, 223 - 238.

Nilsson B, Luckner L, Schirmer M (1995). Field Trials of Active and Passive Samplers in Gravel Packed Wells. *Journal of Hydrology*, 171, 259 - 289.

Brüsch, W.; **Nilsson, B.** (1993). Nitrate transformation and water movement in a wetland area. *In: Hiilbricht-Illkowska, A. & Pieczynska E. (Editors). Nutrient Dynamics and Retention in Land/Water Ecotones of Lowland, Temperate Lakes and Rivers.* Kluwer Academic Publishers, Belgium. *Hydrobiologia*, 251, 103-111.

In review, in press publications

Oliveira Ommen D, Kidmose J, Karan S, Flindt M, Engesgaard P, **Nilsson B**, Andersen F 2011. Groundwater interactions with oligotrophic Lake Hampen, Denmark. *Accepted for publication in Ecohydrology, Feb 2011.*

Frandsen M, **Nilsson B**, Engesgaard P, Pedersen O. Groundwater Seepage Stimulates Growth of Aquatic Macrophytes. *Submitted to Freshwater Biology, May 2011.*

A total of more than 40 scientific contributions, of these 18 published peer-reviewed articles with 210 ISI citations (May 2011).

Other publications

Seuntjens P, Adar E, Cai Z, Carniati L, Engesgaard P, Jensen JK, Nilsson B, Schoups G, Lerner D (2011). Aquarehab: Integration of groundwater remediation technology models in river basin management. EGU General Assembly 2011. Vol. 13, EGU2011-13716 (Poster).

Nilsson B (2011). Geologisk hydraulisk heterogenitet i moræneler. Fagsession: Moræneler state of the art. ATV Vingsted-Vintermødet, 8-9 marts 2011.

Nilsson B, Kidmose J, Engesgaard P, Frandsen M (2011). Effects on long-term lake restoration due to sever exchange between P loaded groundwater and a seepage lake. 3rd International Multidisciplinary Conference on Hydrology and Ecology. Ecosystems interfacing with groundwater and surface water. HYDROECO2011, Vienna, Austria, 2-5 May 2011 (Keynote).

Nilsson B, Engesgaard P, Kidmose J, Frandsen M, Landkildehus F, Jeppesen E, Søndergård M (2010). Når Vængsø nogensinde en kemisk tilstand så sørestaurering vil have længerevarende effekt ? Ferskvandssymposiet, 2-3 marts 2010, Comwell Roskilde. Oral presentation.

Damgaard, Ida ; Christiansen, Camilla Maymann ; Kessler, Timo Christian ; Broholm, Mette Martina ; Bjerg, Poul Løgstrup ; Klint, K.E. ; Nilsson, B. ; Kern-Jespersen, H. ; Jensen, C.B. (2010). Performance of Direct-Push and Hydraulic Fracturing for Enhanced Injection in Clayey

- Till. Seventh International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA, USA, May 24-27, 2010, Platform and Poster Presentation Abstracts. CD-ROM (ISBN:), 2010, Battelle Press, Columbus, OH
- Kessler, Timo Christian ; Klint, K.E.S. ; Renard, P. ; Nilsson, B. ; Bjerg, Poul Løgstrup. (2010). Geostatistical description of geological heterogeneity in clayey till as input for improved characterization of contaminated sites. GQ10: Groundwater Quality Management in a Rapidly Changing World. 7th International Groundwater Quality Conference, Zurich, Switzerland, 13-18 June 2010. Proceeding Papers, CD-ROM, 2010, IAHS
- Kessler T, Nilsson B, Klint KES, Bjerg (2010) Geostatistical description of geological heterogeneity in clayey till as a valuable input for improved characterization of contaminated sites. Groundwater Quality (GQ10), 13-18 June 2010, ETH Zurich, Switzerland, Oral Presentation.
- Damgaard, Ida ; Christiansen, Camilla Maymann ; Broholm, Mette Martina ; Bjerg, Poul Løgstrup ; Klint, K.E. ; Nilsson, B. (2009). Afprøvning og sammenligning af injektionsmetoder til forbedring af oprensning i moræner. ATV-Vintermøde om jord- og grundvandsforurening, Vingstedcentret 10.-11. marts 2009, 169-179.
- Kessler TC, Damgaard I, Klint KES, Broholm MM, Christiansen CM, Bjerg PL, Nilsson B (2009): Geological characterisation and mapping of preferential flow paths at a clayey till site in Denmark. NovCare 2009. Novel methods for subsurface characterization and monitoring: From theory to practice. International conference, 13-16 May, 2009 Leipzig, Germany (ISBN:) , pages: 126, 2009, Helmholtz Centre for Environmental Research - UFZ, Leipzig, Germany
- Looms, M.C., L.O. Boldreel, J. Kidmose, P. Engesgaard, B. Nilsson, H. Lykke-Andersen and B.V. Odgaard. (2009). *Joint use of multiple geophysical methods to map areas of organic matter in lakes*, Geophysical Research Abstracts, Vol. 11, EGU2009-6817, EGU General Assembly 2009.
- Nilsson B, Engesgaard P, Kidmose J, Karan S, Looms MC, Boldreel LO, Hansen AL, Wodschow IKH (2009). Multidisciplinary approach to constrain often inaccurate estimates of groundwater fluxes to and from seepage lakes. 2nd International Multidisciplinary Conference on Hydrology and Ecology. Ecosystems interfacing with groundwater and surface water. Vienna, Austria, 20-23. April 2009 (Keynote).
- Nilsson B, Engesgaard P, Kidmose J, Karan S, Looms MC (2008). Groundwater - Lake Exchange at Lake Skærsø in Western Denmark. IAH2008 Conference, 27-31. October 2008, Toyama, Japan.
- Looms, M.C., L.O. Boldreel, J. Kidmose, P. Engesgaard, R. Rasmussen, and B. Nilsson. (2008). *Lake hydrogeophysics; Estimating areas of potential groundwater seepage using reflection seismic, ground penetrating radar and multiple electrode profiling*, AGU 89(53), Fall Meet. Suppl., Abstract H51G-0914.
- Karan, S., P. Engesgaard, J. B. Kidmose, and B. Nilsson (2008). High-resolution simulation of seepage to and from a flow through lake, MODFLOW and More. Ground Water and Public Policy – Conference Proceedings, Poeter, Hill, & Zheng – www.mines.edu/igwmc, p. 466-468, 2008.
- Kidmose, J., P. Engesgaard, M. Dahl, and B. Nilsson (2007). Simulation of flow dynamics, solute transport and pesticide degradation in a riparian wetland, Proceedings of 6th International conference on Calibration and Reliability in Groundwater Modelling: Credibility in Modelling, ModelCARE 2007, Volume 2, 419-420.
- Nilsson, B., P. Jensen, T. Sonnenborg, J. Kidmose, S. Karan, and P. Engesgaard (2007). Bestemmelse af grundvandstilstrømningen til Skærsø, Danmarks og Grønlands Geologiske Undersøgelse, Rapport, 65.

- Nilsson, B. & Dahl, M. (2006). Kan konceptet til kortlægning af grundvand og overfladevand interaktion anvendes til udpegning og prioritering af områder til naturgenopretning, med henblik på at beskytte grundvand og overfladevand. ATV-møde: Naturgenopretning - betydning for mængde og kvalitet af grundvand og overfladevand. 30 maj, 2006. Odense. ATV-Fonden for Jord og Grundvand & DTU. ATV Jord og Grundvand, 8 pp.
- Nilsson, B., Dahl, M. & Jørgensen, L.F. (2006). Karakterisering af grundvandsforekomstens kontakt til overfladevand -en amtslig oversigt. ATV-Møde: Basisanalysen: Kan "god tilstand" i vandmiljøet opnås i 2015?. 21 November, 2006. Gentofte. ATV-Fonden for Jord og Grundvand & DTU.
- Dahl, M., Nilsson, B., Langhoff, J.H., Christensen, S., Kronvang, B., Hoffmann, C.C., Engesgaard, P. (2006). Typology of groundwater-surface water interaction: GSI typology. HydroEco2006. International Conference on Hydrology and Ecology: The Groundwater/Ecology Connection. 11-14 September, 2006. Karlovy Vary, Czech Republic. IAHS
- Dahl, M., B. Nilsson, F. von Platen-Hallermund, M. Banke, P. Engesgaard, T. Sonnenborg, D-I Wohlfeil-Müller, A. Fuglsang, H. Tornbjerg, N. B. Ovesen, B. Kronvang, S. Christensen (2005). Afslutning af Ådalstypologi (Grundvands-Overfladevand Interaktion), Arbejdsrapport fra Miljøstyrelsen, 17.