

## Curriculum Vitae

Dr. Maarten van Hardenbroek  
Lecturer in Physical Geography  
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## Education / Experience

2017- Lecturer in Physical Geography, Newcastle University  
2015-2016 Postdoctoral Researcher, Palaeoenvironmental Laboratory, University of Southampton  
AHRC standard grant "Crannogs and Celtic Connections" (PI: Brown)  
2013-2015 Postdoctoral Researcher, Palaeoenvironmental Laboratory, University of Southampton  
NERC standard grant "Lakes and the Arctic Carbon Cycle" (PI: Anderson)  
2013 Postdoctoral Researcher, Aquatic Palaeoecology, University of Bern  
City of Zürich archaeology grant "Parkhaus Opéra" (PI: Bleicher)  
2011-2013 Postdoctoral Researcher, Aquatic Palaeoecology, University of Bern  
ERC starting grant "Reconstruction of methane flux from lakes" (PI: Heiri)  
2007-2011 PhD Palaeoecology, Utrecht University  
2005-2006 MSc Quaternary Science, Royal Holloway University of London (distinction)  
2002-2005 BSc Environmental Science, Utrecht University

## Peer reviewed publications (28 publications, H-index = 10)

- Schilder J, **van Hardenbroek M**, Bodelier P, Kirilova EP, Leuenberger M, Lotter AF, Heiri O (2017) Trophic state changes can affect the importance of methane-derived carbon in aquatic food webs. *Proceedings of the Royal Society B*
- Monteath A, **van Hardenbroek M**, Davies LJ, Froese DG, Langdon PG, Xu X, Edwards ME (in press) Chronology and glass chemistry of tephra and cryptotephra horizons from lake sediments in northern Alaska, USA. *Quaternary Research*
- Heiri O, Tóth M, **van Hardenbroek M**, Zweiffel N (2017) Chironomiden- und Cladocerenfossilien. In: Bleicher N, Harb C (eds.), Zürich-Parkhaus Opéra. Eine neolithische Feuchtbodenfundstelle. Band 3. *Monographien der Kantonsarchäologie Zürich, Zürich*, p 30-50.
- Rinta P, Bastviken D, Schilder J, **van Hardenbroek M**, Stötter T, Heiri O (2017) Higher late summer methane emission from central than northern European lakes. *Journal of Limnology* 76: 52-67.
- Morlock MA, Schilder J, **van Hardenbroek M**, Szidat S, Wooller MJ, Heiri O (2017) Seasonality of cladoceran and bryozoan resting stage  $\delta^{13}\text{C}$  values: Implications for their use as palaeoecological indicators of lacustrine carbon cycle dynamics. *Journal of Paleolimnology* 57: 141-156.
- Rinta P, **van Hardenbroek M**, Jones RI, Kankaala P, Rey F, Szidat S, Wooller MJ, Heiri O (2016) Land Use Affects Carbon Sources to the Pelagic Food Web in a Small Boreal Lake. *PLoS One* 11(8): e0159900.
- Webb M, Barker PA, Wynn PM, Heiri O, **van Hardenbroek M**, Pick F, Russell JM, Leng MJ (2016) The interpretation of carbon isotope ratios in freshwater diatom silica. *Journal of Quaternary Science* 31(4): 300-309.
- Schilder J, Bastviken D, **van Hardenbroek M**, Heiri O (2016) Spatiotemporal patterns in methane flux and gas transfer velocity at low wind speeds: Implications for upscaling studies on small lakes. *Journal of Geophysical Research - Biogeosciences*.
- McGowan S, Anderson N, Edwards M, Langdon P, Jones V, **van Hardenbroek M**, Whiteford E, Wiik E (2016) Long-term perspectives on terrestrial and aquatic carbon cycling from palaeolimnology. *WIREs Water* 3: 211-234.
- van Hardenbroek M**, Leuenberger M, Hartikainen H, Okamura B, Heiri O (2016) Stable carbon and hydrogen isotopes in freshwater bryozoans and their statoblasts – experimental and field data. *Hydrobiologia* 765:209–223.

- Rinta P, Bastviken D, **van Hardenbroek M**, Kankaala P, Leuenberger M, Schilder J, Stötter T, Heiri O (2015) An inter-regional assessment of concentrations and  $\delta^{13}\text{C}$  values of methane and dissolved inorganic carbon in small European lakes. *Aquatic Sciences* 77: 667-680
- Schilder J, Tellenbach C, Möst M, Spaak P, **van Hardenbroek M**, Wooller MJ, Heiri O (2015) The stable isotopic composition of *Daphnia ephippia* reflects changes in  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$  values of food and water. *Biogeosciences* 12: 3819–3830
- Schilder J, Bastviken D, **van Hardenbroek M**, Leuenberger M, Rinta P, Stötter T, Heiri O (2015) The stable carbon isotopic composition of *Daphnia ephippia* in small, temperate lakes reflects in-lake methane availability. *Limnology and Oceanography* 60: 1064-1075
- Nazarova L Self AE, Brooks SJ, **van Hardenbroek M**, Herzsuh U, Diekmann B (2015) Northern Russian chironomid-based modern summer temperature data set and inference models. *Global and Planetary Change* 134: 10-25
- van Hardenbroek M**, Lotter AF, Bastviken D, Andersen TJ, Heiri O (2014) Taxon-specific  $\delta^{13}\text{C}$  analysis of chitinous invertebrate remains in sediments from Strandsjön, Sweden. *Journal of Paleolimnology* 52: 95-105
- Schilder J, Bastviken D, **van Hardenbroek M**, Kankaala P, Rinta P, Stötter T, Heiri O (2013) Spatial heterogeneity and lake morphology affect diffusive greenhouse gas emission estimates of lakes. *Geophysical Research Letters* 40: 5752-5756.
- Ammann B, van Raden UJ, Schwander J, Eicher U, Gilli A, Bernasconi SM, van Leeuwen JFN, Lischke H, Brooks SJ, Heiri O, Nováková K, **van Hardenbroek M**, von Grafenstein U, Belmecheri S, van der Knaap WO, Magny M, Eugster W, Colombaroli D, Nielsen E, Tinner W, Wright HE (2013) Responses to rapid warming at Termination 1a at Gerzensee (Central Europe): primary succession, albedo, soils, lake development, and ecological interactions. *Paleogeography Paleoclimatology Paleoecology* 391B: 111-131.
- Nováková K, **van Hardenbroek M**, van der Knaap WO (2013) Response of subfossil Cladocera in Gerzensee (Swiss Plateau) to early Late Glacial environmental changes. *Paleogeography Paleoclimatology Paleoecology* 391B: 84-89.
- van Hardenbroek M**, Heiri O, Parmentier, FJW, Bastviken D, Ilyashuk BP, Wiklund JA, Hall RI, Lotter AF (2013)  $\delta^{13}\text{C}$  of chitinous invertebrate remains provides evidence for past variations in methane availability in a Siberian thermokarst lake. *Quaternary Science Reviews* 66: 74-84.
- van Hardenbroek M**, Gröcke DR, Sauer P, Elias SA (2013) North American transect of stable hydrogen and oxygen isotopes in water beetles from a museum collection. *Journal of Paleolimnology* 48: 461-470.
- Heiri O, Schilder J, **van Hardenbroek M** (2012) Stable isotopic analysis of fossil chironomids as an approach to environmental reconstruction: state of development and future challenges. *Proceedings of the 18th International Symposium on Chironomidae, Trondheim 4-6 August 2011. Fauna Norvegica* 31: 7-18
- van Hardenbroek M**, Lotter AF, Bastviken D, Duc NT, Heiri O (2012) Relationship between  $\delta^{13}\text{C}$  of chironomid remains and methane flux in Swedish lakes. *Freshwater Biology* 57: 166–177.
- van Hardenbroek M**, Heiri O, Wilhelm MF, Lotter AF (2011) How representative are subfossil assemblages of Chironomidae and common benthic invertebrates for the living fauna of Lake De Waay, the Netherlands? *Aquatic Sciences* 73: 247–259.
- Gröcke DR, **van Hardenbroek M**, Sauer P, Elias SA (2011) Hydrogen Isotopes in Beetle Chitin. In: Gupta SN (ed.) *Chitin: formation and diagenesis*. Springer. p 105-116.
- van Hardenbroek M**, Heiri O, Lotter AF (2010) Efficiency of different mesh sizes for isolating fossil chironomids for stable isotope and radiocarbon analyses. *Journal of Paleolimnology* 44: 721-729.
- Kirilova E, **van Hardenbroek M**, Heiri O, Cremer H, Lotter AF (2010) 500 years of trophic-state history of a hypertrophic Dutch dike-breach lake. *Journal of Paleolimnology* 43: 829-842.
- van Hardenbroek M**, Heiri O, Grey J, Bodelier PLE, Verbruggen F, Lotter AF (2010) Fossil chironomid  $\delta^{13}\text{C}$  as a proxy for past methanogenic contribution to benthic food-webs in lakes? *Journal of Paleolimnology* 43: 235-245.
- Heiri O, Wooller MJ, **van Hardenbroek M**, Wang Y (2009) Stable isotopes in chitinous fossils of aquatic invertebrates. *PAGES News* 17: 100-102.

### Submitted manuscripts

McGowan S, Anderson N, Edwards M, Hopla E, Jones V, Langdon P, Law A, Soloveiva N, Turner S, **van Hardenbroek M**, Whiteford E, Wiik E (submitted) Vegetation transitions drive the autotrophy-heterotrophy balance in Arctic lakes. *Limnology and Oceanography Letters*

### Papers in preparation

**van Hardenbroek M**, Schilder J, Wiik E, Wooller MJ, Edwards ME, Langdon PG, Heiri O. High methane output from northern lakes during warm early-mid Holocene. *Nature Geoscience*.

**van Hardenbroek M**, Edwards ME, Hopla E, Jones VJ, Langdon PG, McGowan S, Solovieva N, Turner S, Whiteford E, Wiik E, Anderson NJ. Arctic greening and lake browning: external and internal forcings on aquatic lake systems. *Ecology*.

**van Hardenbroek M**, Grey J, Wooller MJ, Schilder J, Rinta P, Stötter T, Heiri O. Comparing stable carbon and nitrogen isotopes of invertebrates and their remains in lake sediments. *PLoS One*.

**van Hardenbroek M**, Rinta P, Wooller MJ, Schilder J, Stötter T, Heiri O. Exploring carbon and nitrogen stable isotope composition of Cladocera and Bryozoa using flotsam from lakes. *Aquatic Ecology*.

### Awards / Grants

- Project grants
  - QRA Quaternary Research Fund for food web stable isotope work (£1,000 in 2016).
  - NERC LSMSF Grant (BRIS/78/0415) for biomarker analysis (£ 14,778 in 2015).
  - Berne University Research Foundation grant for fieldwork campaign in arctic Alaska (CHF 5,000) with match-funding (USD 5,000) from Alaska Stable Isotope Facility (2012).
- Radiocarbon Facility grants
  - NRCF grant (1946.1015) for 11 AMS radiocarbon analyses (£ 4,983 in 2015).
  - NRCF grant (1948.1015) for 19 AMS radiocarbon analyses (£ 8,607 in 2016).
- Outreach grants
  - Arctic Slope Regional Corporation for remote school visit in Alaska (USD 750 in 2015).
  - University of Southampton Researcher Development & Graduate Center grant for masterclass to host/facilitate public discussion meetings (£ 500 in 2015).
- Travel grants
  - Quaternary Research Association (£ 500 in 2015).
  - International Paleolimnology Association (£ 500 in 2015).
  - Swiss society for Hydrology and Limnology (CHF 500 in 2013).
  - Swiss society for Quaternary Research travel stipend for young scientists (CHF 500 in 2012).
  - Molengraaff Fonds for young geoscientists (€ 500 in 2009).
  - Uyttenboogaart-Eliassen Foundation for young entomologists (€ 500 in 2009).
- Studentships
  - Natural Environment Research Council Studentship (£ 1,542 in 2005).
  - Foundation Vrijvrouwe van Renswoude te 's- Gravenhage (€ 900 in 2005).
  - Dr. Hendrik Muller's Vaderlandsch Fonds Studentship (€ 5,000 in 2005).
  - Nederlandse Adelsvereniging (€ 1,000 in 2004, € 2,500 in 2005).
  - Kf Hein Foundation (€ 100 in 2004).

### Oral presentations (selected from 31 oral presentations / 65 abstracts)

van Hardenbroek M, Robson H, Hill G, Wooller MJ (2017) Stable carbon and nitrogen isotopes of invertebrate remains: a glimpse of food web structure change? *Developments in Quaternary Entomology & Environmental Reconstruction, Celebration of the career of Stephen J Brooks*, 1 Jun 2017, Natural History Museum, London, UK

van Hardenbroek M, Cavers G, Crone A, Davies K, Fonville T, Henderson ACG, Langdon PG, Mackay H, McCormick F, Murray E, Whitehouse N, Brown AG (2017) Using sedaDNA alongside palaeoenvironmental proxies for understanding wetland archaeological sites. *PAGES*, 9-13 May 2017, Zaragoza, Spain

- van Hardenbroek M (2016) Stable carbon and nitrogen isotopes of aquatic invertebrates and their remains in lake sediments: implications for food web studies. Workshop on stable isotopes in fossils and organic compound from lake sediments, 28-29 Jul 2016, Southampton, UK.
- (invited) van Hardenbroek M, Brown T, Langdon P, McCormick F, Henderson A, Whitehouse N, Davies K, McKay H, Murray E, Cavers G, Crone A, Fonville T, 2015. Celtic Connections and Crannogs: A new Study of Lake Settlements Across the Irish Sea. LECA seminar series, 15 Oct 2015, Grenoble, France.
- (invited) van Hardenbroek M, 2015. Understanding carbon cycling, food webs, and climate through stable isotopes in freshwater invertebrates. UCL Geography seminar series, 8 Oct 2015, London.
- van Hardenbroek M, Edwards ME, Jones VJ, Langdon PG, McGowan S, Turner S, Whiteford E, Wiik E, Anderson NJ, 2015. Holocene greening affects productivity and diversity of two Alaskan lakes: implications for a changing Arctic. 14th International Paleolimnology Symposium, 3-7 Aug 2015, Lanzhou, China.
- (invited) van Hardenbroek M, Bastviken D, Heiri O, 2011. Stable carbon isotopes of invertebrate remains reveal past methane availability in lakes. Symposium on methane in lakes and wetlands, 12 September 2011, Bern, Switzerland.
- van Hardenbroek M, Lotter AF, Bastviken D, Heiri O, 2011. Stable carbon isotopes of invertebrate remains: do they reveal past methane release from lakes? 18<sup>th</sup> INQUA congress, 21-27 July 2011, Bern, Switzerland.
- (invited) van Hardenbroek M, Heiri O, Parmentier FJW, Bastviken D, Lotter AF, 2010. Stable carbon isotopes of invertebrate remains: do they reveal past methane release from lakes? 5<sup>th</sup> International workshop on C/H<sub>2</sub>O/Energy balance and climate over boreal and arctic regions, with special emphasis on eastern Eurasia, 11-12 November 2010, Wageningen, NL.

### Teaching – courses

- An introduction to statistics for Postgraduates. 2014; 2015.
- GEOG 2033 - Research design, methods and techniques in physical geography. 2014; 2015; 2016.
- GEOG 3036 - Aquatic Systems and Environmental Change. 2013; 2015.
- Chironomid analysis (module in MSc course). 2011; 2013.
- Chironomid analysis: identification and numerical interpretation (module in BSc course). 2008/9; 2012.
- Palaeolimnology (module in BSc course). 2007; 2009; 2010
- Ecology and Palaeoecology of Shallow Lakes (module in BSc course). 2007; 2009.

### Teaching – individual lectures

- Soils (part of GEOG 1001). 2014
- Research methods and design (postgraduate course). 2014; 2015.
- Stable isotope in invertebrates (part of MSc course Paleoecology). 2011; 2013.
- Introduction palaeolimnology (part of BSc course Environmental Change). 2010.
- Chironomids (part of BSc course Environmental Change, Palaeoecology). 2009.
- Siberian Methane Midges (part of MSc course Freshwater and Coastal Sciences). 2007.

### Supervision / co-supervision

#### PhD students

- Tabea Stötter (University of Bern) 2011-2015.
- Päivi Rinta (University of Bern) 2011-2014.
- Jos Schilder (University of Bern) 2011-2014.

#### Research Assistants

- Charlotte Clarke (University of Southampton) 2015.
- Alistair Monteath (University of Southampton) 2014-2016.
- Sena Akçer Ön (University of Bern) 2012.

#### MSc students

- Daniel Teeling (Royal Holloway University of London) 2015.
- Charlotte Clarke (Royal Holloway University of London) 2014.
- Jos Schilder (Utrecht University) 2010.

#### BSc students

- Alice Warman (University of Southampton) 2016-present

- Ailish Craig (University of Southampton) 2016-present
- Daisy Stephens (University of Southampton) 2016-present
- Rachel Matton (University of Southampton) 2015-2016.
- Matt Hicks (University of Southampton) 2015-2016.
- Luke Price (University of Southampton) 2014.
- Andrea Dellsperger (University of Bern) 2013.
- Tjerk Veenstra (Utrecht University) 2009.

#### Extended research visits to

- Prof. M Wooller, Alaska Stable Isotope Facility, University of Alaska Fairbanks (Aug-Sep 2012).
- Prof. D Bastviken, Linköping University, Sweden (4-27 May 2009).
- Prof. B Okamura, Culturing facility, Natural History Museum, London (10-24 Mar 2009).
- Prof. P Bodelier, Stable isotope facility, NIOO, Nieuwersluis, the Netherlands (4-10 May 2008).
- Prof. J Grey, Stable isotope facility, Queen Mary University of London, UK (1-17 Oct 2007).
- Prof. D Grocke, Stable isotope facility, McMaster University, Ontario, Canada (Jun/Jul 2006).

#### Additional training

- Mentoring Early Career Researchers, University of Southampton (4 Feb 2016).
- aDNA metabarcoding spring school, Poland (1-5 June 2015).
- Masterclass in facilitating/chairing public discussion events by Malcolm Love at University of Southampton (26 Feb 2015).
- Public Engagement and Outreach, training course at University of Southampton (9 Feb 2015).
- Data Analysis with R Statistical Software, NERC-funded training course at the Village Hotel, Cardiff (11-17 Sep 2014).
- Multivariate statistical methods in palaeoenvironmental research in R: ordination, hypothesis testing, and quantitative reconstruction, short course at University of Bern (26-28 Sept 2012).
- Datenanalyse mit R, short course at University of Bern (1-2 Mar 2012).

#### International Activities

- Organiser international workshop 'Stable isotopes in fossils and organic compounds from lake sediment records', Southampton, UK (28-29 July 2016)
- Chairing session 'Stable Isotopes in Palaeoenvironmental Reconstructions' at the 14<sup>th</sup> International Paleolimnology Symposium, Lanzhou, China (3-7 August 2015).
- International subfossil chironomid workshop, New Forrest, UK (10-13 June 2013).
- Co-organizer International symposium and workshop 'Methane in lakes and wetlands', Bern, Switzerland (12-13 Sep 2011).
- 5<sup>th</sup> International Limnogeology Congress, Konstanz, Germany (31 Aug-3 Sep 2011).
- 18<sup>th</sup> INQUA congress, Bern, Switzerland (21-27 Jul 2011).
- Workshop Kamchatka project at Natural History Museum, London, UK (Nov 2010).
- 5<sup>th</sup> International workshop on C/H<sub>2</sub>O/Energy balance and climate over boreal and arctic regions, Wageningen, NL (11-12 Nov 2010).
- 11<sup>th</sup> International Paleolimnology Symposium, Guadalajara, Mexico (15-18 Dec 2009).
- International workshop on Eurasian fossil chironomid research, Utrecht, NL (2-4 Dec 2008).
- Co-organizer mini-symposium Methane fuelled Foodwebs, Utrecht, NL (3-4 Jul 2008).

#### Public outreach (selected)

- [Media clip](#) about archaeology and DNA in palaeoenvironmental research (from 1:30 min).
- [News item](#) on local News 13 in Fairbanks about public outreach activities.
- [Radio interview](#) for "Love and Science" on BCfm, March 2015.
- Scientists, the Lake, and You - 12,000 years of environmental change: scientific results and your own personal experience. Discussion meeting, Morris Thompson Cultural and Visitors Centre, Fairbanks, Alaska, 26 March 2015.
- [Bugs, bears, and bushplanes – LAC fieldwork in Alaska](#). Blog post on fieldwork in Alaska

- “Hotspot Furka” biodiversity inventory at the Furka pass, Switzerland, 23-27 July 2012.
- Film clip “[Fieldwork Siberia 2007](#)” gives a taste of the fieldwork I did in Yakutia.
- Public lectures during ‘Science Sunday’ at Utrecht University Museum, 6 Jan 2008.
- “Introduction Palaeoecology” for school group at WWF Reserve, Kytalyk, Yakutia, 18 July 2007.

### **Memberships**

- Quaternary Research Association
- International Paleolimnology Association
- European Association of Archaeologists
- Freshwater Biological Association
- International Bryozoology Association
- Paleobotanical and Palynological Association Utrecht
- Institute for Earth Education

### **Reviewer**

Grant Reviewer for: European Research Council (ERC); French National Science Agency (ANR); Hungarian Scientific Research Fund (OTKA); US National Science Foundation (NSF).

Review editor for: Frontiers in Ecology and Evolution

Reviewer for: Aquatic Ecology; Aquatic Sciences; Arctic Antarctic and Alpine Research; CATENA; Climate Change; Freshwater Biology; Geochimica et Cosmochimica Acta; The Holocene; International Review of Hydrobiology; Journal of Paleolimnology; Journal of Quaternary Science; Journal of Wetland Archaeology; Limnology; Limnology and Oceanography; Oecologia; PLoS ONE; Quaternary International; Quaternary Science Reviews.