

Nathan Jay Baker

CONTACT INFORMATION

Address Akademijos Str. 2, Vilnius LT-08412, Lithuania
Tel. no.: +370 620 250 11
E-mail: nathan.baker@gamtc.lt
orcid.org/0000-0001-7948-106X
researchgate.net/profile/Nathan-Baker-2
linkedin.com/in/dr-nathan-jay-baker-78829ab9/
webofscience.com/wos/author/record/H-9706-2019
nathan93baker.wixsite.com/nathan-jay-baker

EDUCATION AND ACADEMIC DEGREE

- 2018 – 2022 **Doctorate (Ph.D.) in Community Ecology (Magna Cum Laude)**
Institute: University of Duisburg-Essen; Senckenberg Research Institute and Natural History Museum Frankfurt
Dissertation: Disentangling the effects of environmental drivers on the structure and function of macroinvertebrate communities within boreal streams (Advisor: [Peter Haase](#))
Research area: Ecology, Community Ecology, Temporal Ecology, Data Science, Freshwater, Riverine ecosystems, Functional Diversity, Biodiversity Research, Macroinvertebrates
- 2016 – 2018 **Masters (M.Sc.) in Aquatic Science (Cum Laude)**
Institute: University of Johannesburg
Dissertation: An assessment of the aquatic macroinvertebrate diversity within the Nyl River floodplain system, Limpopo, South Africa (Advisor: [Richard Greenfield](#)).
Research area: Ecology, Community Ecology, Spatial Ecology, Riverine ecosystems, Freshwater, Biodiversity Research, Macroinvertebrates
- 2015 **Bachelor of Science Honours (B.Sc. Hons) in Zoology (Cum Laude)**
Institute: University of Johannesburg
Research Project: Metal accumulation in House Sparrows (*Passer domesticus*) from Thohoyandou, Limpopo Province, South Africa (Advisors: [Richard Greenfield](#), [John Maina](#))
Research area: Ecotoxicology, Ornithology, Metal Accumulation, Heavy Metals, Feathers
- 2012 – 2014 **Bachelor of Science (B.Sc.) in Zoology & Environmental Management**
Institute: University of Johannesburg
- 2011 **National Senior Certificate (Matric)**
Institute: The Training Academy (TTA)
Subjects Completed: English, Afrikaans, Mathematics, Physical Sciences, Life Sciences, Computer Applications Technology, Life Orientation.

PROFESSIONAL EXPERIENCE

- 2022 11 – Present **Post-Doctoral Researcher**
Institute: Nature Research Centre
City, Country: Vilnius, Lithuania

2022 03 – Present	Researcher <i>Institute:</i> Nature Research Centre <i>City, Country:</i> Vilnius, Lithuania
2018 06 – 2018 02	Full time PhD candidate <i>Institute:</i> Senckenberg Research Institute & Natural History Museum, Frankfurt <i>City, Country:</i> Frankfurt am Main, Germany
2018 02 – 2018 06	General Assistant (non-research assistant) <i>Institute:</i> University of Johannesburg <i>City, Country:</i> Johannesburg, South Africa
2016 08 – 2016 10	Field Consultant <i>Institute:</i> Natural Science Services (NSS) <i>City, Country:</i> Johannesburg, South Africa
2015 02 – 2017 12	Practical Demonstrator & Tutor <i>Institute:</i> University of Johannesburg. <i>City, Country:</i> Johannesburg, South Africa
2012 01 – 2018 12	Full Time Student <i>Institute:</i> University of Johannesburg <i>City, Country:</i> Johannesburg, South Africa

RESEARCH INTERESTS

Research Area: I investigate how and why riverine invertebrate communities are changing through time and space. The main goals of my research are to (i) integrate taxonomic, functional and [phylo]genetic diversity using statistical models and ecological explorations, (ii) add to our understanding of how anthropogenic processes are driving changes in biodiversity, and (iii) provide updated information as to the status of Lithuanian riverine ecosystems and the biodiversity they harbour, making this data more freely available for use in future meta-analyses. I use biomonitoring data retrieved from the Lithuanian Environmental Agency and other sources as well as the R statistical environment to explore spatial and temporal patterns of biodiversity in an attempt to identify how changes are linked to anthropogenic practices and both known and unknown stressors.

PUBLICATIONS

Scientific articles published in journals (books), indexed in „Clarivate Analytics Web of Science“ database (with citation index):

1. **Baker, N.J.**, Welti, E.A.R., Pilotto, F., Jourdan, J., Beudert, B., Huttunen, K., Muotka, T., Paavola, R., Göthe, E., & Haase, P. Seasonal and spatial variation of stream macroinvertebrate taxonomic and functional diversity across three boreal regions. *Insect Conservation and Diversity* (Accepted).
2. Zajicek, P., Welti, E.A.R., **Baker, N.J.**, Januschke, K., Brauner, O. & Haase, P. 2021. Long-term data reveal unimodal responses of ground beetle abundance to precipitation and land use but no changes in taxonomic and functional diversity. *Scientific Reports* 11, 17468. [10.1038/s41598-021-96910-7](https://doi.org/10.1038/s41598-021-96910-7)
3. **Baker, N.J.**, Pilotto, F., Haubrock, P.J., Beudert, B. & Haase, P. 2021. Multidecadal changes in functional diversity lag behind the recovery of taxonomic diversity. *Ecology and Evolution*, 11, 17471–17484. [10.1002/ece3.8381](https://doi.org/10.1002/ece3.8381)
4. **Baker, N.J.**, Pilotto, F., Jourdan, J., Beudert, B. & Haase, P. 2021. Recovery from air pollution and subsequent acidification masks the effects of climate change on a freshwater macroinvertebrate community. *Science of the Total Environment*, 758, 143685. [10.1016/j.scitotenv.2020.143685](https://doi.org/10.1016/j.scitotenv.2020.143685)

5. Haubrock, P.J., Cuthbert, R.N., Veselý, L., Balzani, P., **Baker, N.J.**, Dick, J.T.A. & Kouba, A. 2020. Predatory functional responses under increasing temperatures of two life stages of an invasive gecko. *Scientific Reports*, 10, 10119. [10.1038/s41598-020-67194-0](https://doi.org/10.1038/s41598-020-67194-0)
6. **Baker, N.J.** & Greenfield, R. 2019. Shift happens: changes to the diversity of riverine aquatic macroinvertebrate communities in response to sewage effluent runoff. *Ecological Indicators*, 102, 813–821. [10.1016/j.ecolind.2019.03.021](https://doi.org/10.1016/j.ecolind.2019.03.021)
7. Dahms-Verster, S., **Baker, N.J.** & Greenfield, R. 2018. A multivariate examination of 'artificial mussels' in freshwater ecosystems. *Environmental Monitoring and Assessment*, 190. [10.1007/s10661-018-6764-6](https://doi.org/10.1007/s10661-018-6764-6)
8. Dahms, S., **Baker, N.J.** & Greenfield, R. 2017. Ecological risk assessment of metals in sediment: A case study from Limpopo, South Africa. *Ecotoxicology and Environmental Safety*, 135, 106–114. [10.1016/j.ecoenv.2016.09.036](https://doi.org/10.1016/j.ecoenv.2016.09.036)
9. **Baker, N.J.**, Dahms, S., Gerber, R., Maina, J. & Greenfield, R. 2017. Metal accumulation in House Sparrows (*Passer domesticus*) from Thohoyandou, Limpopo Province, South Africa. *African Zoology*, 52, 43–53. [10.1080/15627020.2017.1293491](https://doi.org/10.1080/15627020.2017.1293491)

Scientific articles published in conference proceedings, indexed in „Clarivate Analytics Web of Science“ database:

1. **Baker, N.J.**, Maina, J. & Greenfield, R. 2015. Zinc and Cadmium concentrations in the House Sparrow (*Passer domesticus*), Thohoyandou, Limpopo, South Africa. *Proceedings of the 7th International Toxicology Symposium in Africa*. Johannesburg, South Africa, 31 August 2015. pp: 51-52. ISBN: 978-0-620-66287-1 (e-book)

Scientific articles published in journals (books), indexed in „Clarivate Analytics Web of Science“ database (without citation index):

1. Haubrock, P.J., Fribbi, I., Balzani, P., Johovic, I., **Baker, N.J.**, Inghilesi, A.F., Tricarico, E. & Nocita, A. 2018. Age determination in the channel catfish *Ictalurus punctatus* (Rafinesque, 1818) using pectoral spines: a technical report. *Fishes in Mediterranean Environments*, 2018.003. [10.29094/FISHMED.2018.003](https://doi.org/10.29094/FISHMED.2018.003)

Scientific articles under preparation:

1. Haase, P., Bowler, D.E., **Baker, N.J.**, ... & Welti, E.A.R. The recovery of European freshwater biodiversity has come to a halt. *Nature* – Under 2nd review.
2. Sinclair, J.S., Welti E.A.R., Altermatt, F., Álvarez-Cabria, M., Dörflinger, G., Aroviita, J., **Baker, N.J.**, ... & Haase, P. Abundance and biodiversity are inconsistent indicators of riverine ecosystem change. *Nature Ecology and Evolution* – Under preparation.
3. Enns, D., Cunze, S., **Baker, N.J.**, Oehlmann, J. & Jourdan, J. Wastewater treatment plants drive changes in aquatic invertebrate communities. *Global Change Biology* – Under preparation.
4. Stoltefaut, T., Haubrock, P.J., Welti, E.A.R., **Baker, N.J.**, Haase, H. A long-term case study of river restoration effects on floodplain biodiversity. *Restoration Ecology* – Under preparation.

PARTICIPATION IN INTERNATIONAL AND NATIONAL SCIENTIFIC PROGRAMMES AND PROJECTS

-
- | | |
|-----------|---|
| 2022 11 – | Project leader in the Lithuanian Research Council (LMT) funded project „How changes in biodiversity change biodiversity: Long-term trends of freshwater invertebrates as vectors for haemosporidian parasites“ (Project no: S-PD-22-72). |
| 2024 11 | |

2022 11 – **Researcher** in the LMT funded project „Reviving fish parasitology in Lithuania: assessing the current helminth diversity in fish and the impact of non-native fish in Lithuanian freshwaters“ (Project no: S-MIP-22-53).
2023 12

INTERNSHIP AND TRAINING

2022 **Data Science Foundations - Data Mining in R** (Online course)
Institution: LinkedIn learning
R Essential Training - Wrangling and Visualizing Data (Online course)
Institution: LinkedIn learning
R Essential Training – Modelling Data (Online course)
Institution: LinkedIn learning

2020 **Graphical Information Systems (GIS) using ArcGIS** (Short course)
Institute: Goethe University Frankfurt Graduate School
Advanced Methods with ArcGIS (Short course)
Institute: Goethe University Frankfurt Graduate School
Transitioning from ArcGIS to QGIS (Short course)
Institute: Senckenberg Research Institute and Natural History Museum Frankfurt
Scientific Visualization with the ggplot Package in R (Short course)
Institute: Goethe University Frankfurt Graduate School
Perfecting Your Figures with Free Software (Inkscape, Gimp, IrfanView)
(Short course)
Institute: Goethe University Frankfurt Graduate School
Nonlinear Regression with R (Short course)
Institute: Goethe University Frankfurt Graduate School

2018 **ANOVA & Linear Regression with R** (Short course)
Institute: Goethe University Frankfurt Graduate School

2016 **Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) training course** (Short course)
Institute: University of Johannesburg

PARTICIPATION IN SCIENTIFIC CONFERENCES

International scientific conferences:

1. 7th International Toxicology Symposium in Africa, Johannesburg, South Africa, August 2015 – Poster presentation: Zinc and Cadmium concentrations in the House Sparrow (*Passer domesticus*), Thohoyandou, Limpopo, South Africa.

National scientific conferences:

1. 12th Water Research Horizon Conference 2022, Essen, Germany, September 2022 – Invited speaker: Things are not always as they seem: a multidecadal trend analysis of freshwater invertebrate communities within Bavarian Forest National Park, Germany.
2. PhD Defence (Online), Vilnius, Lithuania, June 2022 – PhD Defense: Journey Through Time & Space: Disentangling the drivers of macroinvertebrate community structure & function within boreal streams.
3. Annual Grosse Ohe meeting, Grafenau, Germany, September 2021 – Oral Presentation: Eine Reise durch die Zeit: An exploration of the Große Ohe macroinvertebrate diversity and function through time.

4. Senckenberg evaluation 2020, Frankfurt am Main, Germany, June 2020 – Poster Presentation: Complex and nonlinear climate-driven changes in freshwater insect communities over 42 years.
5. Long Term Ecological Research Network – Deutschland (LTER-D) annual meeting 2020, Leipzig, Germany, March 2020 – Oral Presentation: Long-term (>30 years) macroinvertebrate community variability & the drivers thereof: Lessons from an LTER site in the Bavarian Forest National Park.
6. Annual Grosse Ohe meeting, Grafenau, Germany, September 2019 – Oral Presentation: Aquatic invertebrates in the Große Ohe River: A long-term temporal analysis.
7. Annual Grosse Ohe meeting, Grafenau, Germany, September 2018 – Oral Presentation: understanding the role of doc & its effects on macroinvertebrate communities in the mountainous streams of the Bavarian Forest National Park.
8. UJ Postgraduate School's Annual Inter-Faculty Postgraduate Symposium, University of Johannesburg, Auckland Park, South Africa, October 2017 – Oral Presentation: Assessing the water quality of the Nyl and Mogalakwena River system using macroinvertebrate community assemblages.
9. 8th Annual Oppenheimer De Beers Group Research conference, Crown Mines, South Africa, October 2017 – Poster Presentation: Using macroinvertebrate community assemblages to determine water quality within drought conditions.
10. South African Society of Aquatic Scientists (SASAqS), Boksburg, South Africa, June 2017 – Poster presentation: Preliminary MSc results for an assessment of the aquatic macroinvertebrate diversity within the Nyl and Mogalakwena river systems, Limpopo, South Africa – **Prize winner for best student presentation.**
11. 7th Annual Oppenheimer De Beers Group Research Conference, Crown mines, South Africa, October 2016 – Poster presentation: Metal Accumulation in House Sparrows (*Passer domesticus*) from Thohoyandou, South Africa.