

FB&BE: 4A&F – an international open access journal on the taxonomic and functional biodiversity in the soil

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Biodiversity change and the identification of the underlying drivers are in the focus of ecological research and public and political debate (IPBES 2019). Soil biodiversity has thus far rarely entered this discussion and analyses (Cameron et al. 2018), and substantial gaps in soil biodiversity and function data exist (Cameron et al. 2019). Furthermore, we know exceptionally little about temporal changes in soil biodiversity (Phillips et al.

2017), although soil biodiversity is thought to be essential for critical ecosystem functions and services (Bardgett & van der Putten 2014, Wall et al. 2015) but threatened by anthropogenic impacts (Veresoglou et al. 2015). At the same time, taxonomic expertise of soil biodiversity may be at risk, while novel molecular information still needs to be linked to species and functions (Geiger et al. 2016).

At this time of major changes in earth's biodiversity (e. g. Dornelas et al. 2014, Newbold et al. 2015, Ceballos et al. 2016, Maxwell et al. 2016, IPBES 2019), and repeated calls to assess soil biological responses to anthropogenic environmental change (e. g., Phillips et al. 2017, Eisenhauer et al. 2019), we believe that an **open access** journal on taxonomy and functional biodiversity in the soil is particularly relevant to address some of the major knowledge gaps that limit management and political decisions (Cameron et al. 2019). Notably, in order to



provide an independent picture of the drivers and consequences of soil biodiversity, publication decisions have to be based on the **scientific soundness** of the work, rather than by potential impact and significance of effects. At SOIL ORGANISMS, we thus encourage submission of well-designed studies with neutral/non-significant effects to **combat the publication bias**. Subsequent syntheses and meta-analyses can only be as good as the quality of the data they are based on. As open access journals often have publication charges, this might select against publication of work from regions of the world with lower levels of research funds; very often, these are the areas of the globe where our information on (soil) biodiversity is particularly low (Cameron et al. 2018). This is why SOIL ORGANISMS is proud to offer open access publication of scientifically sound work **without any charges for publication and download**.

Soil biodiversity research needs to **integrate expertise** from a broad range of scientists from biogeographical, taxonomic, innovative methodological and experimental approaches to modern morphometric, molecular, model-based, and statistical tools as well as the complete variety of organisms from soil macro-, meso-, and microfauna to fungi, algae, and bacteria. We note the loss of taxonomic expertise (e. g. Hopkins & Freckleton 2002, Wägele et al.

2011, Wheeler 2014), which is particularly alarming in a field of research where <10% of the species have been described (Phillips et al. 2017). Thus, SOIL ORGANISMS wants to provide a forum where organismic researchers in the widest sense can publish their research and gain scientific visibility as well as response from their specific community and beyond.

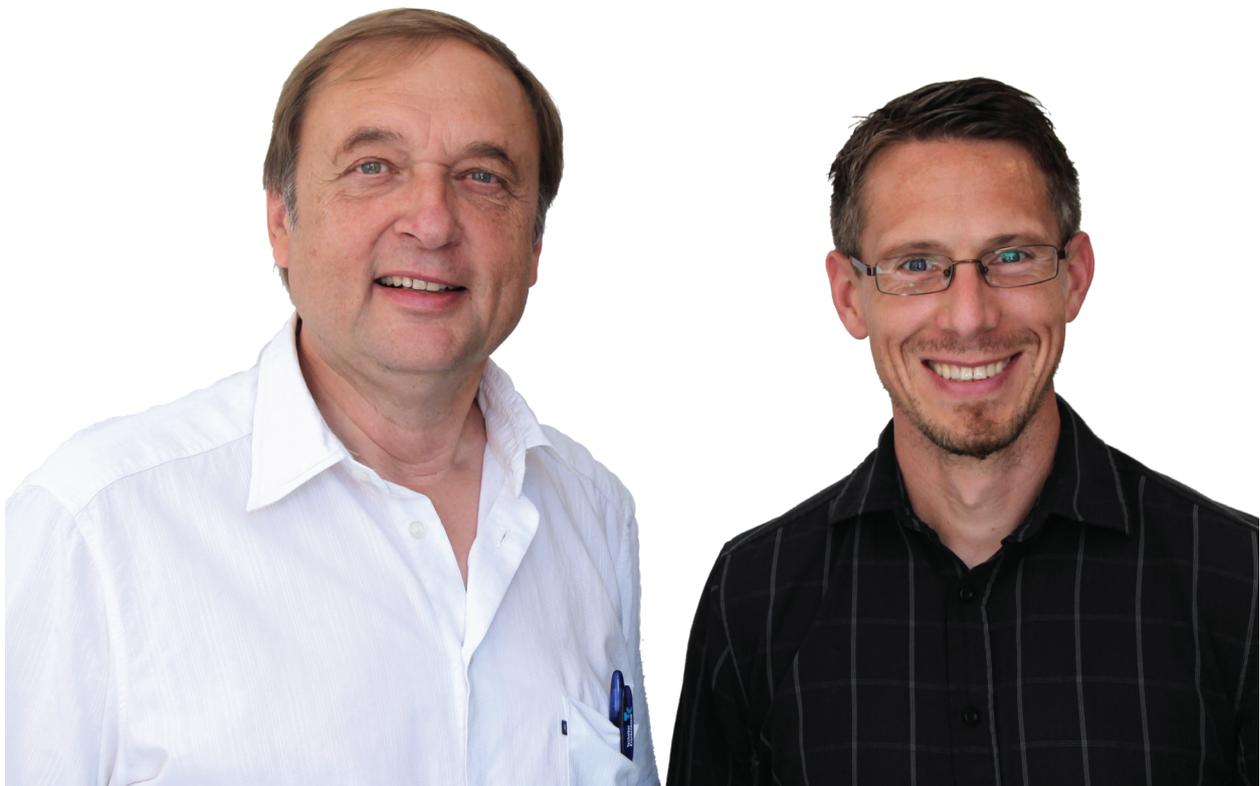
At SOIL ORGANISMS, we follow and foster the principles of **open science**: our papers are open access, we encourage the authors to make their data and statistical code publicly available, and recommend the publication of digital supplementary material, for which we provide specific DOIs for, e. g., relevant raw data, photos or videos, distribution maps, and omics data. Thus, valuable research data are accessible to the scientific community to initiate further exchange and use in research, teaching, and application.

Future paper formats: The majority (and normal format) of publications in SOIL ORGANISMS is the “Research Article”, which is reviewed by two international peers. As in the past, we are, furthermore, planning to publish “Invited Reviews” which reflect a broader field and is summarized by an international expert (e. g. Sikorski 2015). As new formats, we plan “Editors’ Highlights” and “Invited Comments”, which consider most recent, important trends in organismic soil biology, taxonomy,

and ecology, but also e. g. focusing or commenting on conservational legislation or funding politics. Also identification keys on larger taxa of soil fauna may be submitted and published either within the journal or as supplements (e. g. Bingemer & Hohberg 2017, Jordana 2012, Schmelz & Collado 2010). Finally, special issues on focal topics will allow to comprehensively cover certain topics of particular relevance.

Our **international and diverse editorial board** has been enriched within the last months to draw contributions from regions across the globe, comprehending a wide range of taxa, various scientific fields and approaches and from all status groups. We aim to offer a **rapid and constructive review process** with clear editorial recommendations to help the authors to not be stuck with multiple contradictory reviews and/or uncertainty which are the most critical issues to address in a revision. To limit any kind of discrimination, we offer a **double-blind reviewing process**. To **reduce formatting burdens**, we only request the authors to format their manuscript according to the journal’s guidelines after accepting the manuscript. Nevertheless, some basic rules on paper formatting (common structure of scientific papers) should be followed.

Perspective: Within the next 10 years, our goal is that SOIL ORGANISMS will become an internationally well-established and recognized scientific outlet that serves



The Editors-in-Chief of SOIL ORGANISMS: Prof. Dr. Willi Xylander (Görlitz) and Prof. Dr. Nico Eisenhauer (Leipzig).

as a worldwide forum for soil organismic and functional biodiversity researchers by integrating soil microbiology, soil zoology, and soil science. Moreover, given its strong history in soil organismic research, we hope that the journal will be considered as a repository for essential soil biological knowledge. We strongly believe that our approach to **fair open access publishing** will serve as a role model, not only for soil ecology but for scientific publishing in general.

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References

- Bardgett, R. D. & van der Putten, W. H. (2014): Belowground biodiversity and ecosystem functioning. – *Nature* **515**: 505–511 (2014).
- Bingemer, J. & K. Hohberg (2017): An illustrated identification key to the eutardigrade species (Tardigrada, Eutardigrada) presently known from European soils. – *Soil Organisms* **89** (3): 127–149.
- Cameron, E. K., I. S. Martins, P. Lavelle, J. Mathieu, L. Tedersoo, M. Bahram & J. Siebert (2019): Global mismatches in aboveground and belowground biodiversity. – *Conservation Biology*.
- Cameron, E. K., I. S. Martins, P. Lavelle, J. Mathieu, L. Tedersoo, F. Gottschall & M. Winter (2018): Global gaps in soil biodiversity data. – *Nature Ecology & Evolution* **2**(7): 1042.
- Ceballos, G., P. R. Ehrlich, A. D. Barnosky, A. García, R. M. Pringle & T. M. Palmer (2015): Accelerated modern human-induced species losses: Entering the sixth mass extinction. *Science Advances* **1**(5): e1400253.
- Díaz, S., J. Settele & E. Brondizio (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. – Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).
- Dornelas, M., N. J. Gotelli, B. McGill, H. Shimadzu, F. Moyes, C. Sievers & A. E. Magurran (2014): Assemblage time series reveal biodiversity change but not systematic loss. – *Science* **344**(6181): 296–299.
- Eisenhauer, N., A. A. Bonn & C. Guerra (2019): Recognizing the quiet extinction of invertebrates. – *Nature Communications* **10**: 50.
- Geiger, M. F., J. J. Astrin, T. Borsch, U. Burkhardt, P. Grobe, R. Hand, A. Hausmann, K. Hohberg, L. Krogmann, M. Lutz, C. Monje, B. Misof, J. Morinière, K. Müller, S. Pietsch, D. Quandt, B. Rulik, M. Scholler, W. Traunspurger, G. Haszprunar & W. Wägele (2016): How to tackle the molecular species inventory for an industrialized nation – lessons from the first phase of the German Barcode of Life initiative GBOL (2012–2015). – *Genome* **59**: 661–670.
- Hopkins, G. W. & R. P. Freckleton (2002): Declines in the number of amateur and professional taxonomists: implications for conservation. – *Animal Conservation* **5**: 245–249.
- Jordana, R. (2012): Synopses of Palaearctic Collembola. Capbryinae & Entomobryini. – *Soil Organisms* **84**(1): 1–390.
- Maxwell, S. L., R. A. Fuller, T. M. Brooks & J. E. Watson (2016): J. Biodiversity: The ravages of guns, nets and bulldozers. – *Nature News* **536**(7615): 143.
- Newbold, T., L. N. Hudson, S. L. Hill, S. Contu, I. Lysenko, R. A. Senior & J. Day (2015): Global effects of land use on local terrestrial biodiversity. – *Nature* **520**(7545): 45.
- Phillips, H. R., E. K. Cameron, O. Ferlian, M. Türke, M. Winter & N. Eisenhauer (2017): Red list of a black box. – *Nature Ecology & Evolution* **1**(4): 0103.
- Schmelz, R. & R. Collado (2010): A guide to European terrestrial and freshwater species of Enchytraeidae (Oligochaeta). – *Soil Organisms* **82**(1): 1–176.
- Sikorski, J. (2015): The prokaryotic biology of soil. – *Soil Organisms* **87**(1): 1–28.
- Veresoglou, S. D., J. M. Halley & M. C. Rillig (2015): Extinction risk of soil biota. – *Nature Communications* **6**: 8862.
- Wägele, H., A. Klussmann-Kolb, M. Kuhlmann, G. Haszprunar, D. Lindberg, A. Koch & J. W. Wägele (2011): The taxonomist – an endangered race. A practical proposal for its survival. – *Frontiers in Zoology* **8**: 25 [doi:10.1186/1742-9994-8-25].
- Wheeler, Q. (2014): Are reports of the death of taxonomy an exaggeration? – *New Phytologist* **201**: 370–371.

