CURRICULUM VITAE

Dr. Mario Brauns

Head of the Research Group “Food web ecology”

Dept. River Ecology

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Research focus

Lotic ecosystem processes, freshwater food webs, benthic secondary production, functional assessment, stable isotopes, invasive species

Summary of qualifications

PhD (Dr. rer. agr.). Humboldt-University Berlin and Leibniz-Institute of Freshwater Ecology and Inland Fisheries. Berlin, Germany Thesis title: *Human impacts on the structure and ecological function of littoral macroinvertebrate communities in lakes*	2003–2009
Dipl.-Ing. (FH, Landscape planning). Anhalt University of Applied Sciences. Bernburg, Germany Thesis title: *Longitudinal zonation and recolonisation of the River Holtemme, a heavily modified river in the Harz Mountains*	1996–2000

Employment history

Research group leader (tenured), Department River Ecology, Helmholtz-Centre for Environmental Research– UFZ	Since 2017
Post-doc (Tenure track), Department River Ecology, Helmholtz-Centre for Environmental Research– UFZ	2010-2016
Post-doc, Department of Ecosystem Research, Leibniz-Institute of Freshwater Ecology and Inland Fisheries. Berlin, Germany	2009-2010
PhD Student, Humboldt-University and Leibniz-Institute of Freshwater Ecology and Inland Fisheries. Berlin, Germany	2003–2009

Research funding

"THROW - Thesholds for a sustainable water resource management" Federal Ministry of Education and Research, Principal investigator together with Bernd Klauer, 166,388€	2017-2018
"Revitalisation of a dynamic riverine landscape in Central Germany", Federal Ministry of Education and Research, Leader of work package *"Organic matter dynamics"* together with Markus Weitere, 939,757€	2015-2020
"Homogenisation of ecosystem functioning between Temperate and Neotropical streams due to agricultural land use" German Research Foundation & Research Foundation of Minas Gerais, Brazil, Principal investigator together with Björn Gücker, Iola Boëchat, 487,587€	2012–2018
"*Initiation of bilateral cooperation with Brazil*" International Bureau of the Federal Ministry of Education and Research, Principal investigator, 1,070€	2011
"*Travel grant ASLO/NABS Meeting*" German Academic Exchange Service, 1,394€	2010
"Validation of biological and morphological approaches for the assessment of lakes" Senatsverwaltung für Stadtentwicklung Berlin, principal investigator, 6.264€	2010
"*Development of a method to assess the ecological status of lakes using littoral macroinvertebrates"* Länderarbeitsgemeinschaft Wasser, principal investigator together with J. Böhmer, M. Pusch, 128,400€	2009–2010
"Development of an assessment method for lakes in Schleswig-Holstein" Landesamt für Landwirtschaft, Umwelt, ländliche Räume Schleswig-Holstein, principal investigator together with M. Pusch, 110,408€	2008–2009

"Assessment of the ecological status of lakes in Sachsen-Anhalt" Landesbetrieb für Hochwasserschutz und Wasserwirtschaft Sachsen-Anhalt, principal investigator together with X.-F. Garcia, M. Pusch 59,576€	2007–2008
"Developing of a method for the ecological assessment of lakes" NaFöG & FAZIT Foundation, PhD fellowship, 26,400€	2003-2006

Publications

Refereed journal articles

[34] Kamjunke, N., Hertkorn, N., Harir, M., Schmitt-Kopplin, P., Griebler, C., Brauns, M., von Tümpling, W., Weitere, M. & Herzsprung, P. Molecular change of dissolved organic matter and patterns of bacterial activity in a stream along a land-use gradient.- *Water Research* https://doi.org/10.1016/j.watres.2019.114919

[33] Brauns, M., Brabender, M., Gehre, M., Rinke, K. & Weitere, M.: Organic matter resources fuelling food webs in a human-modified lowland river: Importance of habitat and season.- *Hydrobiologia* 841: 121–131.

[32] Graeber, D, Gücker, B, Wild, R, Wells, N.S., Anlanger, C., Kamjunke, N., Norf, H., Schmidt, C. & Brauns, M. (2019): Biofilm-specific uptake does not explain differences in whole-stream DOC tracer uptake between a forest and an agricultural stream.- *Biogeochemistry* 144: 85-101.

[31] Wild, R., Gücker, B. & Brauns, M. (2019): Agricultural land use alters temporal patterns and the composition of organic matter in temperate headwater streams.- *Freshw. Sci.* 38: 566-581.

[30] Porst, G., Brauns, M., Irvine, K., Solimini, A., Sandin,L., Pusch, M. & Miler, O. (2019): Effects of shoreline alteration and habitat heterogeneity on macroinvertebrate community composition across European lakes.- *Ecol. Indic.* 98: 285–296.

[29] Pätzig, M., Vadeboncoeur, Y. & Brauns, M. (2018): Lakeshore modification reduces secondary production of macroinvertebrates in littoral but not deeper zones.- *Freshw. Sci.* 37: 845-856.

[28] Brauns, M., Boëchat, I.G., de Carvalho, A.P.C., Graeber, D., Gücker, B., Mehner, T. & von Schiller, D. (2018): Consumer-resource stoichiometry as a predictor of trophic discrimination (Δ13C, Δ15N) in aquatic invertebrates.- *Freshw. Biol.* 63:1240–1249.

[27] Inostroza, P.A., Vera-Escalona, I., Wild, R., Norf, H & Brauns, M. (2018): Tandem action of natural and chemical stressors in stream ecosystems: insights from a population genetic perspective.- *Environ. Sci. & Technol.* 52: 7962-7971.

[26] Müller, C., Musolff, A., Strachauer, U., Brauns, M., Tarasova, L., Merz, R. & Knöller, K. (2018): Tomography of anthropogenic nitrate contribution along a mesoscale river.- *Sci. Total Environ.* 615: 773–783.

[25] Lischke, B., Mehner, T., Hilt, S., Attermeyer, K., Brauns, M., Brothers, S., Grossart, H.P., Köhler, J., Scharnweber, K. & Gaedke, U. (2017): Benthic carbon is inefficiently transferred in the food webs of two eutrophic shallow lakes.- *Freshw. Biol.* 62: 1693–1706.

[24] Reinhard, T., Brauns, M., Steinfartz, S., & Weitere, M. (2017): Effects of salamander larvae on food webs in highly subsidised ephemeral ponds.- *Hydrobiologia* 799: 37–48.

[23] Wollschläger, U., Attinger, S., Borchardt, D., Brauns, M., Cuntz, M., Dietrich, P., Fleckenstein, J.H., Friese, K., Friesen, J., Hildebrandt, A., Jäckel, G., Kamjunke, N., Knöller, K., Kögler, S., Kolditz, O., Krieg, R., Kumar, R., Lausch, A., Liess, M., Marx, A., Merz, R., Mueller, C., Musolff, A., Norf, H., Rebmann, C., Reinstorf, F., Rode, M., Rink, K., Rinke, K., Samaniego, L., Vieweg, M., Vogel, H.-J., Weitere, M., Werban, U., Zink, M. & Zacharias, S. (2017): The Bode hydrological observatory: a platform for integrated, interdisciplinary hydro-ecological research within the TERENO Harz/Central German Lowland Observatory.- *Environ. Earth Sci.* 76: 1-25.

[22] Syväranta, J., Scharnweber, K., Brauns, M., Hilt, S. & Mehner, T. (2016): Assessing the utility of hydrogen, carbon and nitrogen stable isotopes in estimating consumer allochthony in two

shallow eutrophic lakes.- *PLOS ONE,* DOI:10.1371/journal.pone.0155562

[21] Brabender, M., Weitere, W., Anlanger, C. & Brauns, M. (2016): Secondary production and richness of native and non-native macroinvertebrates are driven by human-altered shoreline morphology in a large river.- *Hydrobiologia* 776: 51–65.

[20] Mehner, T., Attermeyer, K., Brauns, M., Brothers, S., Diekmann, M., Gaedke, U., Grossart, H.-P., Köh-ler, J., Lischke, B., Meyer, N., Scharnweber, K., Syväranta, J., Vanni, M. & Hilt, S. (2015): Weak response of animal allochthony and production to enhanced supply of terrestrial leaf litter in nutrient-rich lakes.- *Ecosystems* 19: 311–325.

[19] Mährlein, M., Pätzig, M., Brauns, M., & Dolman, A.M. (2015): Length-mass relationships for lake macroinvertebrates corrected for back transformation and preservation effects.- *Hydrobiologia* 768: 37-50.

[18] Porst, G., Miler, O., Donohue, L., Jurca, T., Pilotta, F., Brauns, M., Solimini, A. & Pusch, M. (2015): Efficient sampling methodologies for lake littoral invertebrates in compliance with the European Water Framework Directive.- *Hydrobiologia* 767: 207–220.

[17] Peipoch, M., Brauns, M., Hauer, F.R., Weitere, M. & Valett, H.M. (2015): Ecological simplification: human influences on riverscape complexity.- *BioScience* 65: 1057-1065.

[16] Miler, O., Ostendorp, W., Brauns, M., Porst, G. & Pusch, M. (2015): Ecological assessment of morphological shore degradation at whole lake level aided by aerial photo analysis.- *Fundam. Appl. Limnol*. 186: 353 – 369.

[15] Pätzig, M., Grüneberg, B. & Brauns, M. (2015): Water depth but not season mediates the effects of human lakeshore modification on littoral macroinvertebrates in a large lowland lake.- *Fundam. Appl. Limnol*. 186: 311-321.

[14] Fornero Aguiar, A.C., Gücker, B., Brauns, M., Hille, S. & Boëchat, I.G. (2015): Benthic invertebrate density, biomass and instantaneous secondary production along a fifth-order human-impacted tropical river.- *Environ. Sci. Pollut. Res.,* 22: 9864–9876.

[13] de Carvalho, A.P.C., Gücker, B., Brauns, M. & Boëchat, I.G. (2015): High variability in carbon and nitrogen isotopic discrimination of tropical freshwater invertebrates.- *Aquat. Sci.* 77: 307-314.

[12] Hilt, S., Wanke, T., Scharnweber, K., Brauns, M., Syväranta, J., Brothers, S., Gaedke, U., Köhler, J., Lischke, B. & Mehner, T. (2015): Contrasting response of two shallow eutrophic lakes to a partial winter-kill of fish.- *Hydrobiologia* 749: 31–42.

[11] Scharnweber, K., Syväranta, J., Hilt S., Brauns, M., Vanni, M.J., Brothers, S., Köhler, J., Knežević Jarić, J. & Mehner, T. (2014): Whole lake experiments reveal the fate of terrestrial particulate organic carbon in benthic food webs of shallow lakes.- *Ecology* 95: 1496-1505.

[10] Kamjunke, N., Büttner, O., Jäger, C., Marcus, H., Von Tümpling, W., Halbedel, S., Norf, N., Brauns, M., Baborowski, M., Wild, R., Borchardt, D. & Weitere, M. (2013): Biogeochemical patterns in a river network along a land use gradient.- *Environ. Monit. Assess.* 185: 9221-9236.

[9] Graeber, D., Pusch, M.T., Lorenz, S. & Brauns, M. (2013): Cascading effects of flow reduction on the benthic invertebrate community in a lowland river.- *Hydrobiologia* 717 147-159.

[8] Brauns, M., Gücker, B., Wagner, C., Garcia, X. F., Walz, N. & Pusch, M. (2011): Human lakeshore development alters the structure and trophic basis of littoral macroinvertebrate food webs.- *J. Appl. Ecol.* 48: 916-925.

[7] Gücker, B., Brauns, M., Solimini, A.G., Voss, M., Walz, N. & Pusch, M. (2011): Urban stressors alter the trophic basis of secondary production in an agricultural stream. *Can. J. Fish. Aquat. Sci.* 68: 74-88.

[6] Schreiber, J. & Brauns, M. (2010): How much is enough? Adequate sample size for littoral macroinvertebrates in lowland lakes.- *Hydrobiologia* 649: 365-373.

[5] Brauns, M., Garcia, X. F. & Pusch, M. (2008): Potential effects of water level fluctuations on littoral invertebrates in lowland lakes.- *Hydrobiologia* 613: 5-12.

[4] Gabel, F., Garcia, X. F., Brauns, M., Sukhodolov, A., Leszinski, M. & Pusch, M. (2008): Resistance to ship induced waves of benthic invertebrates in various littoral habitats.- *Freshw. Biol.* 53: 1567-1578.

[3] Brauns, M., Garcia, X. F., Walz, N &. Pusch, M. (2007): Effects of human shoreline development on littoral macroinvertebrates in lowland lakes.- *J. Appl. Ecol.* 44: 1138-1144.

[2] Brauns, M., Garcia, X. F., Pusch, M. & Walz, N. (2007): Eulittoral macroinvertebrate communities of lowland lakes: discrimination among trophic states.- *Freshw. Biol.* 52: 1022-1032.

[1] Gücker, B., Brauns, M., & Pusch, M. (2006): Effects of wastewater treatment plant discharge on ecosystem structure and function of lowland streams.- *J. North Am. Benthol. Soc.* 25: 313-329.

Refereed journal articles under review

Miler, O., Pusch, M.T. & Brauns, M. Hierarchical response of littoral macroinvertebrates towards hydromorphology and trophic state across and within different types of human shoreline development.- submitted to *Hydrobiologia*

Book chapter

Brauns, M., Von Schiller, D. & Gergs, R. (2013): Stabile Isotopentechniken und ihre Bedeutung für die gewässerökologische Forschung.- In: Hupfer, M., Calmano, W., Fischer, H. & Klapper, H. (Eds.): Handbuch Angewandte Limnologie.- 30. Erg. Lfg. 12/12, 20 pp.

Garcia, X.-F., Brauns, M. & Pusch, M.T. (2006): Makrozoobenthos-Besiedlung in unterschiedlichen Buhnenfeldtypen.- In: Pusch, M. & Fischer, H. (Eds.): Stoffdynamik und Habitatstruktur in der Elbe. Konzepte zur nachhaltigen Nutzung einer Flusslandschaft Bd. 5. Weißensee Verlag, Berlin, 272-277.

Garcia, X.-F., Pusch, M.T., Brauns, M. & Walz, N. (2002): Typologie und ökologische Bewertung von Seen in Brandenburg auf der Grundlage des Makrozoobenthos.- In: Deneke, R. & Nixdorf, B. (Eds.): Ansätze und Probleme bei Umsetzung der EU-Wasserrahmenrichtlinie. Aktuelle Reihe der BTU Cottbus 5: 53-68.

Non-refereed journal articles

Brabender, M. & Brauns, M. (2013): First record of Ametropus fragilis Albarda, 1878 (Insecta: Ephemeroptera, Ametropodidae) in the River Elbe in Saxony-Anhalt (Germany).- *Lauterbornia* 76: 1-3.

Schreiber, J. & Brauns M. (2009): Wiederfund von Gammarus lacustris (Sars, 1863) (Crustacea, Gammaridae) in Brandenburg.- *Lauterbornia* 67: 189-192.

Hohmann, M., Brauns, M., Jährling, M., Kleinsteuber, W. & Tappenbeck, L. (2007): Neu- und Wiederfunde von Köcherfliegen (Insecta, Trichoptera) in Sachsen-Anhalt seit 1994.- *Abhandl. Ber. Naturkunde* 29: 105-124.

Brauns, M., Garcia, X.-F., Pusch, M.T. & Walz, N. (2004): Beitrag zur Litoralfauna der großen Seen in Brandenburg.- *Lauterbornia* 49: 43-72.

Brauns, M., Walz, N. & Brüggemann, R. (2004): Seeufer ein vergessenes Ökoton, Beitrag 4: Ein Bericht von der 1. Seeuferkonferenz in Konstanz, 19. - 21. Juni 2003.- *UWSF-Z. Umweltchem. Okotox.*16: 113-114.

Brüggemann, R., Walz, N., Brauns, M. & Ostendorp, W. (2004): Seeufer, ein vergessenes Ökoton, Beitrag 3: Gedanken zum Schutzziel "Artengemeinschaften".- *UWSF-Z. Umweltchem. Ökotox.* 16: 48-56.

Hendrich, L. & Brauns, M. (2004): Verbreitung und Bionomie des Schwimmkäfers Hydroglyphus hamulatus (Gyllenhall, 1813) in Deutschland (Coleoptera: Dytiscidae).- *Entomol. Z.* 114: 121-125.

Garcia, X.-F., Brauns, M., Pusch, M.T. & Walz, N. (2003): Selecting potential type- specific lakes of reference in implementing the E.U. Water Framework Directive.- In: Ruoppa, M., Heinonen, P., Pilke, A., Rekolainen, S., Toivonen, H. & Vuoristo, H. (eds.): How to assess and monitor ecological quality in freshwaters.- *TemaNord* 547: 206-211.

Brauns, M. (2003): Die Wasserinsektenfauna (Ephemeroptera, Plecoptera, Coleoptera, Trichoptera) der Buckau, einem Flämingbach in Brandenburg.- *Märk. Entomol. Nachr.* 5: 59-61.

Brauns, M. (2002): Erstnachweis von Ecdyonurus subalpinus (Klapalek, 1907) (Ephemeroptera: Heptageniidae) für Sachsen-Anhalt.- *Entomol. Mitt.* 9 (2001): 53-54.

Brauns, M. & Offinger, W. (2002): Bemerkenswerte Nachweise von Wasserinsekten (Ephemeroptera, Coleoptera, Trichoptera) aus dem Nordharz, Sachsen-Anhalt.- *Lauterbornia* 44: 73-82.

Invited presentations

Brauns, M. (2018): Human regulation of organic matter flows in freshwater food webs.- Seminar at the University of Cologne

Brauns, M. (2016): Effects of human shoreline development on biodiversity and functioning of macroinvertebrates in lowland lakes.- Seminar at the Flathead Biological Field Station, University of Montana

Brauns, M., Brabender, M. & Weitere, M. (2013): Patterns of benthic secondary production in a large lowland river.- XIV Congresso Brasileiro de Limnologia

Brauns, M. (2013): Benthische Nahrungsnetze - Ein Spiegel der anthropogenen Belastung von aquatischen Ökosystemen.- Institute of Landscape Ecology of the University Münster

Brauns, M. (2012): Funktionelle Bewertung von limnischen Ökosystemen anhand von Nahrungsnetzen.- Hydrobiologisches Seminar Technical University of Dresden

Professional awards

Young researcher award of the German Limnological Society 2011

Teaching and supervisory activities

Courses Taught

Lecture “Basic aquatic ecology” Technische Universität Dresden — Since 2015
Lecturing graduate students on fundamentals of aquatic ecology and ecosystem ecology

Lecture “Aquatic food webs – Introduction, methods and applications ”, Technische Universität Dresden — Since 2014
Lecturing graduate students on fundamentals of aquatic food webs, methods to construct stable isotopes based food webs, introducing the application of food webs to assess the functional status of aquatic ecosystems

Field course “*Hydrobiology and Limnology*”, Technische Universität Dresden — Since 2010
Lecturing undergraduate and graduate students on fundamentals of the taxonomy of benthic macroinvertebrates, introducing the basics of the biological assessment of streams using macroinvertebrates, introducing concepts of the hydromorphological assessment of streams

Field course “*Macroinvertebrates*” within the Bodepraktikum, Technische Universität Dresden — Since 2010
Lecturing graduate students on fundamentals of taxonomy of benthic macroinvertebrates and on the biological assessment of streams, supervising the statistical analysis of the data and the writing of a project report

Graduate scholars supervised/advised

Julia Pasqualini PhD, Technische Universität Dresden, „Biological control of compartmental and whole-stream nutrient uptake along stressor gradients"	2018-2021
Therese Charlotte Martha Nitschke, B.Sc., Technische Universität Dresden "Quantifizierung der Ressourcennutzung des Makrozoobenthos in einem Tieflandfluss mittels stabiler Isotope (δ13C, δ15N)"	2018-2019
Lena Meier, PhD, University of Osnabrück, „Development of a coupled foodweb model for a mechanistic multiple stressors assessment in riverine ecosystems"	2017-2020
Sina Berg, M.Sc., Technische Universität Dresden, „Charakterisierung der Nahrungsquellen der Flussperlmuschel mittel stabilen Isotopen ($\delta^{13}C$, $\delta^{15}N$)	2018
Christin Horn, M.Sc., Hochschule Magdeburg-Stendal, *„Räumlich-zeitliche Variabilität der stabilen Isotopensignatur ($\delta^{13}C$, $\delta^{15}N$) von Primärproduzenten in Fließgewässern des Harzes*"	2016-2017
Romy Wild, PhD, Technische Universität Dresden, *„The influence of agricultural land use on food webs in temperate streams"*	2012–2018
Marlene Pätzig, PhD, Brandenburgische Technische Universität, *„Influence of habitat heterogeneity of modified lakeshores on the diversity and ecological function of macroinvertebrates in a north German lowland lake"*	2010–2015
Sven Schöndube, B. Sc., Hochschule Anhalt Bernburg *„Die Auswirkung von Landwirtschaft auf die Artenzusammensetzung und Diversität von Köcherfliegen in Bächen des Harzes*"	2015
Nicole Oberhoffner, M.Sc., Technische Universität Dresden, *„Effects of stream restoration on benthic macroinvertebrates"*	2014-2015
Marian Brabender, PhD, Technische Universität Dresden, *„The impact of shore types on benthic macroinvertebrate community structure and functioning in a large lowland river"*	2010–2014
Hana Majrada, B. Eng., Hochschule Magdeburg-Stendal, "*Effects of agricultural land use on composition and diversity of caddisfly (Trichoptera) communities in streams of the Harz Mountains*"	2014
Marcus Friese, M.Sc., Universität Potsdam, "*Effects of dietary quality and species identity on discrimination factors ($\Delta^{15}N$ and $\Delta^{13}C$) of macroinvertebrate consumers"*	2009–2010
Marlen Mährlein, M.Sc., Freie Universität Berlin, *„Secondary production of benthic macroinvertebrate in a shallow lowland lake"*	2008–2009
Jürgen Schreiber, M.Sc., Hochschule für nachhaltige Entwicklung Eberswalde (FH), *„Minimum sample areas of littoral macroinvertebrates for the assessment of the ecological status of lakes"*	2008
Ricarda Lehmitz, M.Sc., Universität Potsdam, *„Typology of North-German lowland lakes based on aquatic Coleoptera"*	2007
Daniel Graeber, M.Sc., Georg-August-Universität Göttingen, *„Structure and food resources of the macroinvertebrate community in the „Krumme Spree"- river section (Brandenburg, Germany)*"	2006–2007
Friederike Gabel, M.Sc., Westfälische Wilhelms-Universität Münster, *„Impact of ship-induced waves on benthic invertebrates colonising lake shore habitats - An experimental study"*	2005–2006

Professional memberships

Association for the Sciences of Limnology and Oceanography (ASLO)

German Limnological Society (DGL)
Society for Freshwater Science (SFS, formerly NABS)

Review and Assessment Activities

Research Funding Assessment: Alexander von Humboldt-Foundation, Austrian Exchange Service (OeAD), Bayerisches Klimaforschungsnetzwerk (bayklif), German Academic Exchange Service (DAAD), German Research Foundation (DFG), National Research Foundation (NRF) of South Africa, Netherlands Organisation for Scientific Research (NOW), Rufford Foundation

Review Activities:

Handling editor: *International Review of Hydrobiology, PeerJ*

Reviewer: *Aquatic Ecology*, *Aquatic Sciences*, *Fundamental and Applied Limnology*, *Freshwater Biology*, *Freshwater Science*, *Hydrobiologia*, *International Review of Hydrobiology*, *Journal of Applied Ecology*, *Limnologica*, *Oecologia, Oikos, Science of the Total Environment*