

CURRICULUM VITAE

Prof. Dr. Peter Hans Wilhelm Biedermann

Head of Chair for Forest Entomology and Protection
Albert-Ludwigs University Freiburg
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Date of birth June 21st, 1981 (in Leoben, Austria)
Married to Tabea Turrini-Biedermann, 1 daughter (born 14th of August 2019)



-- AT A GLANCE --

RESEARCH INTERESTS

- Plant-insect-microbe interactions, mainly of bark beetles in forest ecosystems
- Fungal plant pathogens and their transmission by insects
- Biotic interactions of native and invasive insects
- Darwinian agriculture: Learning from farming insects to improve human agriculture
- Evolutionary ecology of mutualisms and social behaviour in animals, mainly social insects

MAJOR ACHIEVEMENTS

- 2020** W3-Professorship for Forest Entomology and Protection in Freiburg
- 2018** Discovery of screening by alcohol in bark beetle-fungus symbioses (published in PNAS)
- 2017** Awarded with a DFG Emmy Noether independent research group (grant volume 1.4 Mill. €)
- 2016** Establishment of a laboratory rearing substrate for the coffee berry borer, the major pest of coffee
- 2015** Awarded with an EU Marie Curie postdoc grant (i.a.) at the MPI for Chemical Ecology
- 2015** First successful selection experiment for higher social behaviour in an animal
- 2013** Klaus Tschira Award for excellent science communication
- 2012** Dr. L. Zwillenberg Award for the best Ph.D. thesis in the Life Sciences at the University of Bern (CH)
- 2011** Discovery of division of labour in beetles (published in PNAS)
- 2009** Establishment of a laboratory rearing substrate for fungus-farming bark beetles

PERSONAL SPECIFICITIES

- Passionate field researcher with a broad interest in ecology and evolution of species interactions
- Expert on plant-insect-fungus interactions and in particular insect-fungus mutualisms
- >10-year basic and applied research in lab and field with various herbivorous (pest) insects
- Expert in experimental design and statistical analyses
- Transdisciplinary training in forest ecology, entomology, mycology and molecular biology
- Trained at several research institutions in Europe and the US
- Application of state-of-the-art methods from chemical ecology and molecular biology (i.e., -omics)
- Extensive experience in raising of third-party funds (>2 Mill €; career almost completely self-funded)
- Several years of leadership experience (current research group with 5 members)
- Extensive experience in publishing (>25 articles) and communicating (>80 presentations) research
- Passionate teacher and popular science communicator

Overview

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RESEARCH POSTS (WITH PROJECTS)

W3-PROFESSORSHIP FOR FOREST ENTOMOLOGY AND PROTECTION (FROM 2/2020) – Albert-Ludwigs-University Freiburg, DE

EMMY NOETHER RESEARCH GROUP (FROM 7/2017) – funded by the German Research Foundation (DFG) *Julius-Maximilians-Universität Würzburg, Institut für Tierökologie und Tropenbiologie, Würzburg, DE*

- Projects** (selected)
- Ecology and evolution of cooperative fungiculture in ambrosia beetles.
Major focus of research in my group
 - Darwinian agriculture: Comparing agriculture of insects and humans
 - Chemical ecology of bark beetles and their fungal symbionts.
Collaboration with Prof. T. Schmitt, Univ. Würzburg, DE
 - Role of biotic factors in population dynamics of the spruce bark beetle *Ips typographus*.
Collaboration with Prof. J. Müller, National Park Bavarian Forest, DE
 - Visual orientation of native and invasive forest insects – development of improved traps.
Collaboration with Dr. J. Späthe, Univ. Würzburg, DE
Dr. A. Hammerbacher & Prof. B. Slippers, Univ. of Pretoria, SA

VISITING SCIENTIST (7-8/2017) – funded by the US-Department of Agriculture (USDA) *USDA-Agricultural Research Service, Sustainable Agricultural Systems Lab, Beltsville/MD, USA*

- Project**
- Development of pest management technologies and strategies to control the coffee berry borer
Collaboration with Dr. F. Vega, USDA-ARS, Beltsville, USA
- Acquired skills**
- Laboratory rearing and behaviour of the coffee berry borer, the major pest of coffee worldwide
 - Establishment of a long-term collaboration with the USDA-ARS

MARIE CURIE RESEARCH FELLOW (3/2015 – 6/2017) - funded by the European Union *Max-Planck Institute for Chemical Ecology, Research Group Insect Symbiosis, Jena, DE*

- Projects** (selected)
- Understanding pathogen defence and fertilization of fungal cultivars in fungus-farming beetles.
Collaboration with Prof. M. Kaltenpoth, Univ. Mainz, DE
 - Black poplar, its fungal endophytes and their effects on aphids and other herbivorous insects.
Collaboration with Dr. S. Unsicker, MPI-CE Jena, DE
 - Behavioural responses of insects to fungal volatiles.
Collaboration with Dr. G. Holighaus, Univ. Göttingen, DE
- Acquired skills** (selected)
- Behavioural and olfactory assays with insects
 - Extraction of microbial secondary compounds and bioactivity assays
 - Genomics of bacteria and fungi, plus data handling

ADVANCED SNF POST-DOC FELLOW (1/2014-2/15) - funded by the Swiss National Science Fund (SNF) *Max-Planck Institute for Chemical Ecology, Research Group Insect Symbiosis, Jena, DE*

- Projects** (selected)
- Characterizing fungal crop rotation in nests of ambrosia beetles.
 - Review on defensive bacterial and fungal symbionts in animals.
Collaborations with Prof. M. Kaltenpoth, MPI-CE Jena, DE
 - Fungal endophytes of thistles and their interaction with tortoise beetle herbivores.
Collaboration with Prof. D. Aanen and M. Wisselink, Wageningen Univ., NL
- Acquired skills** (selected)
- Culturing of fungal pathogens and endosymbionts from plants
 - Quantification of fungal and bacterial communities by real-time PCR (qPCR)
 - Defensive symbionts in animals and their chemistry

VISITING SCIENTIST (10-12/2013) - funded by the Swiss National Science Fund (SNF) *Department of Plant Sciences, Laboratory of Genetics, Wageningen University, NL*

- Project**
- Population genetics of fungal cultivars of farming beetles.
Collaboration with Prof. D. Aanen, Wageningen Univ., NL

Acquired skills - Methods in population genetics
- International experience in a mycology lab

PROSPECTIVE SNF POST-DOC FELLOW (9/2012-9/13) - funded by the Swiss National Science Fund (SNF)
Max-Planck Institute for Chemical Ecology, Research Group Insect Symbiosis, Jena, DE

Projects (selected) - *Characterization of bacteria and fungi associated with ambrosia beetles.*
Collaboration with Prof. M. Kaltenpoth, MPI-CE Jena, DE
- *Fungal and bacterial symbionts of parasitic bark beetles.*
Collaboration with Prof. J.C. Gregoire and L. Dohet, Free Univ. Brussels, BE

Acquired skills (selected) - Molecular techniques (PCR, primer design, FISH)
- Characterization of fungal and bacterial communities using next-generation sequencing
- Supervision of Ph.D., M.Sc. and B.Sc. students

POST-DOCTORAL RESEARCHER (4-8/2012)

Institute for Ecology and Evolution, University of Bern, CH

Project - *Experimental evolution of ambrosia beetles.*
Collaboration with Prof. M. Taborsky, Univ. Bern, CH

Acq. skill - Artificial selection of traits in insects and their symbionts

VISITING SCIENTIST (4-8/2009) - funded by the US Great Lakes Bioenergy Research Centre
Department of Bacteriology, University of Wisconsin, Madison, USA

Project - *Comparing the microbiomes of fungus-farming ants, termites and beetles.*
Collaboration with Prof. C. Currie, Univ. Wisconsin, Madison, USA

Acq. skill - International experience in a bacteriology lab

PRE-DOCTORAL ROCHE RESEARCH FELLOW (1-12/2008) - funded by Roche Research Foundation
Institute for Ecology and Evolution, University of Bern, CH

Project - *Social behaviour of fungus-farming beetles.*
Supervised by Prof. M. Taborsky, Univ. Bern, CH

Acquired skills - Rearing of different beetle species in the laboratory
- Behavioural experiments with beetles and statistical analyses

VISITING SCIENTIST (8-12/2007) - funded by the US-Department of Agriculture (USDA)
USDA Forest Service, Southern Research Station, Pineville/LA, USA

Project - *Characterizing fungal communities of bark and ambrosia beetles*
Collaboration with Dr. K. Klepzig, USDA Forest Service, Pineville, USA

Acquired skills - Different culturing techniques of fungi and bacteria from beetles and their host trees
- Interaction assays between microbes

PRINCIPAL INVESTIGATOR (3-7/2003) - funded by the German Exchange Service (DAAD)
Khan Khentey Reserve, National University of Ulan Bator, Mongolia

Project - *Breeding-ecology of Siberian warblers.*
Collaboration with Prof. M. Mühlenberg, Univ. Göttingen, DE

Acq. skill - Extensive field work under extreme conditions

ACADEMIC EDUCATION

PH.D. IN ECOLOGY AND EVOLUTION (1/2009-3/12) - funded by the Austrian Academy of Sciences (ÖAW)
Institute for Ecology and Evolution, University of Bern, CH

- Project** - *Evolution of cooperative behaviour and fungus farming in ambrosia beetles.*
 Supervised by Prof. M. Taborsky, Univ. Bern, CH
- Awards** - Ph.D. awarded with distinction ("summa cum laude")
 - Prize for the best Ph.D.-thesis in the Life-Sciences at the University of Bern
- Acquired skills**
 (selected) - Behavioural observations and experiments with insects in the lab and field
 - Monitoring (trapping) of insect populations in the field
 - Characterizing and quantifying enzymatic profiles of insects and fungi
 - Supervision of M.Sc. and B.Sc. projects and student internships in Behavioural Ecology

M.Sc. IN ECOLOGY AND EVOLUTION (4/2005-7/07)

Institute for Ecology and Evolution, University of Bern, CH

- Project** - *Social behaviour in sib-mating, fungus-farming beetles.*
 Supervised by Prof. M. Taborsky, Univ. Bern, CH
- Awards** - M.Sc. awarded with distinction ("summa cum laude")
 - Award for best presentation at the meeting of the "Intern. Union for the Study of Social Insects"
- Acquired skills** - Development of a laboratory rearing and observation technique for farming beetles
 - Intense training in experimental design and statistics

B.Sc. IN ETHOLOGY AND NEUROBIOLOGY (9/2001-1/05)

Institute for Zoology, Karl-Franzens University Graz, A

- Projects**
 (selected) - *Predator-prey interactions between honeybees and predatory birds.*
 Supervised by Prof. K. Crailsheim, Univ. Graz, A
- *Breeding-ecology of Sibirian warblers in Mongolia.*
 Supervised by Prof. M. Mühlenberg, Univ. Ulaanbaatar, Mongolia
- *Neurophysiology and behaviour of bush crickets in relation to predation by bats.*
 Supervised by Prof. H. Römer, Smithsonian Tropical Research Institute, BCI, Panama
- Acquired skills**
 (selected) - Behavioural studies on honeybees, crickets, bats and birds
 - Mapping of honeybee drone congregation areas
 - Field work in tropical and boreal forests
 - International experiences in different countries and labs

SCIENTIFIC AWARDS

- STEP AWARD (2016)** USD 2'100.-
by the Entomological Society of America, USA
Award for Early Professionals to be part of the ICE 2016.
- KLAUS TSCHIRA PREIS (2013)** EUR 5'000.-
by the Klaus Tschira Foundation, DE
Award for excellent science communication.
- FÖRDERPREIS DER INGRID WEISS / HORST WIEHE STIFTUNG (2013)** EUR 3'000.-
by the German Society of General and Applied Entomology, DE
Award for outstanding scientific achievements.
- FÖRDERPREIS DER ÖSTERREICHISCHEN ENTOMOLOGISCHEN GESELLSCHAFT (2012)** EUR 500.-
by the Austrian Entomological Society, A
Award for scientific achievements in entomology.
- DR. LUTZ ZWILLENBERG PRIZE (2012)** EUR 10'000.-
by the University of Bern, CH
Award for the best PhD-thesis in the Life-Sciences (Biology and Medicine) at the University in Bern.
- AWARD FOR ACHIEVEMENTS IN BIOSCIENCES (2010)** EUR 100.-
by Oxford University Press, UK
Award for scientific achievements.
- HEINRICH KUTTER PRIZE (2009)** EUR 200.-
by the International Union for the Study of Social Insects
Award for the best presentation at the IUSSI meeting.

THIRD-PARTY FUNDS & FELLOWSHIPS

<u>STUDENTS COUNCIL PROJECT (2022)</u>	EUR 23'500.-
<i>Studierendenvorschlagsbudget (SVB), Freiburg, DE</i>	
Project	<i>Conservation and Communicating Biodiversity in Wittental. (Project leaders: Prof. P. Biedermann and O. Fischer, Univ. Freiburg)</i>
<u>BFN PROJECT (2021-23)</u>	EUR 250'000.-
<i>Bundesamt für Naturschutz (BfN), Bonn, DE</i>	
Project	<i>Integration of biodiversity in timber harvesting processes. (Project leaders: Prof. P. Biedermann and Prof. F. Lang, Univ. Freiburg)</i>
<u>DBU PROJECT (2018)</u>	EUR 10'000.-
<i>Deutsche Bundesstiftung Umwelt (DBU), Osnabrück, DE</i>	
Project	<i>An experiment to promote beta-diversity and ecosystem services in managed forests. (Project head: Prof. J. Müller, NP Bavarian Forest)</i>
<u>USDA COOPERATIVE RESEARCH GRANT (2018)</u>	USD 5'000.-
<i>US-Department of Agriculture, Washington, USA</i>	
Project	<i>Behaviour and pathogen defence of the coffee berry borer.</i>
<u>DFG MAJOR INSTRUMENTATION PROGRAMME FOR AN ILLUMINA MISEQ (2017)</u>	EUR 150'000.-
<i>Deutsche Forschungsgemeinschaft (DFG), Bonn, DE</i>	
Project	<i>High-throughput sequencing of plant, insect and microbial samples (Collaborative grant with Prof. I. Steffan-Dewenter & Dr. A. Keller, Univ. Würzburg)</i>
<u>DFG EMMY NOETHER RESEARCH GROUP (2017-2022)</u>	EUR 1'463'000.-
<i>Deutsche Forschungsgemeinschaft (DFG), Bonn, DE</i>	
Project	<i>Ecology and evolution of fungus farming by ambrosia beetles.</i>
<u>MARIE CURIE INTERNATIONAL EXCHANGE FELLOWSHIP (2015-17)</u>	EUR 165'000.-
<i>European Commission, Brussels, BE</i>	
Project	<i>Mechanisms of fungus farming in beetles.</i>
<u>SNF POSTDOC FELLOWSHIP FOR ADVANCED RESEARCHERS (2014-15)</u>	EUR 80'000.-
<i>Swiss National Science Foundation (SNF), Bern, CH</i>	
Project	<i>Mutualistic microbes, their abundances and functions within nests of farming beetles.</i>
<u>SNF POSTDOC FELLOWSHIP FOR PROSPECTIVE RESEARCHERS (2012-14)</u>	EUR 65'000.-
<i>Swiss National Science Foundation (SNF), Bern, CH</i>	
Project	<i>Microbial symbionts and their functions in fungus-culturing beetles.</i>
<u>DOC PH.D. FELLOWSHIP (2010-11)</u>	EUR 60'000.-
<i>Austrian Academy of Science (ÖAW), Vienna, A</i>	
Project	<i>Evolution of cooperation in ambrosia beetles.</i>
<u>ROCHE RESEARCH FELLOWSHIP (2009)</u>	EUR 30'000.-
<i>F. Hoffmann-La Roche Research Foundation, Basel, CH</i>	
Project	<i>Evolution of social behaviour and fungus farming in beetles.</i>
<u>USDA COOPERATIVE RESEARCH GRANT (2007)</u>	USD 10'000.-
<i>US-Department of Agriculture, Washington, USA</i>	
Project	<i>Fungal symbionts of fungus-farming beetles.</i>
<u>>10 OTHER RESEARCH OR TRAVEL GRANTS (2007-PRESENT)</u>	EUR >8'000.-
<i>IUSSI, Univ. Bern, Swiss Zool. Soc., CUSO, Etholog. Ges., DGaaE, GLBRC, ESA.</i>	

LIST OF PUBLICATIONS

ORCID: [0000-0003-4234-5659](https://orcid.org/0000-0003-4234-5659), Scopus ID: [24334393600](https://scopusid.org/24334393600), ResearchGate: [Link](#)
 as of 28th of June 2022 my articles have been cited 1782 times with an h-index of 20 ([Google Scholar](#))

PUBLICATIONS IN INTERNATIONAL PEER-REVIEWED JOURNALS

2022

- (1) Mayers, C. G., Harrington, T. C., & Biedermann, P. H. W. (2022). *Mycangia Define the Diverse Ambrosia Beetle–Fungus Symbioses* (pp. 105-142). Schultz TR, Gawne R, Peregrine PN, eds., *The Convergent Evolution of Agriculture in Humans and Insects*, The MIT Press, Cambridge, MA.

2021

- (2) Biedermann, P. H. W., Rohlf, M., McMahon, D. P., & Meunier, J. (2021). *Microbial Drivers of Sociality—From Multicellularity to Animal Societies*. **Frontiers in Ecology and Evolution**, 637.
- (3) Patwa, N., Ranger, C.M., Lehenberger, M., Biedermann, P.H.W. and Reding, M.E., 2021. *Stability of Nuclear and Mitochondrial Reference Genes in Selected Tissues of the Ambrosia Beetle *Xylosandrus germanus**. **Insects**, 12(12), p.1125.
- (4) Walther, C., Baumann, P., Luck, K., Rothe, B., Biedermann, P.H.W., Gershenzon, J., Köllner, T.G., and Unsicker, S.B. (2021). *Volatile emission and biosynthesis in endophytic fungi colonizing black poplar leaves*. **Beilstein Journal of Organic Chemistry** 17, 1698-1711.
- (5) Gugliuzzo A., Biedermann P.H.W., Carrillo D. et al. *Recent advances toward the sustainable management of invasive *Xylosandrus ambrosia* beetles*. **Journal of Pest Science**, 2021. <https://doi.org/10.1007/s10340-021-01382-3>
- (6) Lehenberger M., Foh N., Göttlein A., Six D., Biedermann P.H.W. *Nutrient-Poor Breeding Substrates of Ambrosia Beetles Are Enriched With Biologically Important Elements*. **Frontiers in Microbiology**. 2021: 12:664542.
- (7) Lehenberger M., Benkert M. and Biedermann P.H.W., *Ethanol-Enriched Substrate Facilitates Ambrosia Beetle Fungi, but Inhibits Their Pathogens and Fungal Symbionts of Bark Beetles*. **Frontiers in Microbiology**. 2021: 13;11:3487.

2020

- (8) Mayers, C.G., T.C. Harrington, D.L. Mcnew, R.A. Roeper, P.H.W. Biedermann, H. Masuya, C.C. Bateman, *Four mycangium types and four genera of ambrosia fungi suggest a complex history of fungus farming in the ambrosia beetle tribe Xyloterini*. **Mycologia**, 2020. Doi: <https://doi.org/10.1080/00275514.2020.1755209>
- (9) Biedermann, P.H.W., *Cooperative breeding in the ambrosia beetle *Xyleborus affinis* and management of its fungal symbionts*. **Frontiers in Ecology and Evolution**, 2020: 8, 363.
- (10) Biedermann, P.H.W., and Jon A. Nuotclà, *Social Beetles*. **Encyclopedia of Social Insects**. 2020: https://doi.org/10.1007/978-3-319-90306-4_108-1
- (11) Ibarra-Juarez, L. A., Burton, M. A. J., Biedermann, P. H. W., et al., *Evidence for Succession and Putative Metabolic Roles of Fungi and Bacteria in the Farming Mutualism of the Ambrosia Beetle *Xyleborus affinis**. **Msystems**, 2020: 5(5).
- (12) Grubbs, K. J., Surup, F., Biedermann, P. H. W., et al., *Cycloheximide-producing *Streptomyces* associated with *Xyleborinus saxesenii* and *Xyleborus affinis* fungus-farming ambrosia beetles*. **Frontiers in Microbiology**, 2020: 11, 2207.
- (13) Biedermann, P.H.W. and F.E. Vega, *Ecology and evolution of insect–fungus mutualisms*. **Annual Review of Entomology**, 2020. 65.

- (14) Nuotclá, J.A., P.H.W. Biedermann, and M. Taborsky, *Pathogen defence is a potential driver of social evolution in ambrosia beetles*. **Proceedings of the Royal Society B: Biological Sciences**, 2020 doi: <http://dx.doi.org/10.1098/rspb.2019.2332>.
- (15) Vega, F.E., and P.H.W. Biedermann, *On interactions, associations, mycetangia, mutualists and symbiotes in insect-fungus symbioses*. **Fungal Ecology**, 2020 doi: <https://doi.org/10.1016/j.funeco.2019.100909>

2019

- (16) Biedermann, P.H.W., et al., *Bark Beetle Population Dynamics in the Anthropocene: Challenges and Solutions*. **Trends in Ecology & Evolution**, 2019. 34(10): p. 914-924.
- (17) Biedermann, P.H.W., H.H. De Fine Licht, and M. Rohlf, *Evolutionary chemo-ecology of insect-fungus interactions: Still in its infancy but advancing*. **Fungal Ecology**, 2019. 38: p. 1-6.
- (18) Lehenberger, M., et al., – *Take good care of my fungi – Fungus-spore carrying organs in Trypodendron ambrosia beetles*. **Mitteilungen der Deutschen Gesellschaft fuer Allgemeine und Angewandte Entomologie**, 2019. 22: p. 1-4.
- (19) Lehenberger, M., P.H.W. Biedermann, and J.P. Benz, *Molecular identification and enzymatic profiling of Trypodendron (Curculionidae: Xyloterini) ambrosia beetle-associated fungi of the genus Phialophoropsis (Microascales: Ceratocystidaceae)*. **Fungal Ecology**, 2019. doi.org/10.1016/j.funeco.2018.07.010.
- (20) Seibold, S., et al., *Fungi associated with beetles dispersing from dead wood – Let's take the beetle bus!* **Fungal Ecology**, 2019. 39: p. 100-108.

2018

- (21) Ranger, C.M., et al., *Symbiont selection via alcohol benefits fungus farming by ambrosia beetles*. **Proceedings of the National Academy of Sciences**, 2018. 115(17): p. 4447-4452.
- (22) Birkemoe, T., et al., *Insect-fungus interactions in dead wood systems*, in *Saproxyllic Insects*, M.D. Ulyshen, Editor. 2018, Springer. p. 377-427.
- (23) van de Peppel, L.J.J., D.K. Aanen, and P.H.W. Biedermann, *Low intraspecific genetic diversity indicates asexuality and vertical transmission in the fungal cultivars of ambrosia beetles*. **Fungal Ecology**, 2018. 32: p. 57-64.
- (24) Lehenberger, M., et al., *Trypodendron domesticum (Linné) und Trypodendron lineatum (Olivier)(Curculionidae; Scolytinae) als potentielle Vektoren von xylobionten und saproxyllobionten Pilzen*. **Mitteilungen der Deutschen Gesellschaft fuer Allgemeine und Angewandte Entomologie**, 2018. 21.

Before 2017

- (25) Biedermann, P.H.W. and M. Rohlf, *Evolutionary feedbacks between insect sociality and microbial management*. **Current Opinion in Insect Science**, 2017. 22: p. 92-100.
- (26) Vega, F., et al., *Artificial diet sandwich reveals subsocial behaviour in the coffee berry borer Hypothenemus hampei (Coleoptera: Curculionidae: Scolytinae)*. **Journal of Applied Entomology**, 2016.
- (27) Dohet, L., et al., *Bacterial and fungal symbionts of parasitic Dendroctonus bark beetles*. **FEMS microbiology ecology**, 2016. 92(9).
- (28) Mayers, C.G., et al., *Three genera in the Ceratocystidaceae are the respective symbionts of three independent lineages of ambrosia beetles with large, complex mycangia*. **Fungal Biology**, 2015. 119(11): 1075-1092.
- (29) Kirkendall, L.R., P.H.W. Biedermann, and B.H. Jordal, *Evolution and diversity of bark and ambrosia beetles.*, in *Bark Beetles: Biology and Ecology of Native and Invasive Species*, F.E. Vega and R.W. Hofstetter, Editors. 2015, Academic Press. p. 85-156.

- (30) Florez, L.V., et al., *Defensive symbioses of animals with prokaryotic and eukaryotic microorganisms*. **Nat Prod Rep**, 2015. 32(7): p. 904-36.
- (31) Biedermann, P.H.W. and M. Kaltenpoth, *New synthesis: the chemistry of partner choice in insect-microbe mutualisms*. **J Chem Ecol**, 2014. 40(2): p. 99.
- (32) Aylward, F.O., et al., *Convergent bacterial microbiotas in the fungal agricultural systems of insects*. **MBio**, 2014. 5(6): p. e02077.
- (33) Biedermann, P.H.W., *Evolution of cooperation in ambrosia beetles*. **Mitteilungen der Deutschen Gesellschaft für allgemeine und angewandte Entomologie**, 2014. 19: p. 191-202.
- (34) Nuotcla, J.A., M. Taborsky, and P.H.W. Biedermann, *The importance of blocking the gallery entrance in the ambrosia beetle *Xyleborinus saxesenii* Ratzeburg (Coleoptera; Scolytinae)*. **Mitteilungen der Deutschen Gesellschaft für allgemeine und angewandte Entomologie**, 2014. 19: p. 203-210.
- (35) Biedermann, P.H.W., *Fungiculturing beetles: The biology of ambrosia beetles and how to observe them*. **Artenschutzreport**, 2014. 33: p. 43-45.
- (36) Biedermann, P.H.W., et al., *Abundance and dynamics of filamentous fungi in the complex ambrosia gardens of the primitively eusocial beetle *Xyleborinus saxesenii* Ratzeburg (Coleoptera: Curculionidae, Scolytinae)*. **FEMS Microbiology Ecology**, 2013. 83(3): p. 711-723.
- (37) Biedermann, P.H.W., *The evolution of cooperation in ambrosia beetles*. 2012, Ph.D. thesis, University of Bern.
- (38) Biedermann, P.H.W., K. Peer, and M. Taborsky, *Female dispersal and reproduction in the ambrosia beetle *Xyleborinus saxesenii* Ratzeburg (Coleoptera; Scolytinae)*. **Mitteilungen der Deutschen Gesellschaft für allgemeine und angewandte Entomologie**, 2012. 18: p. 231-235.
- (39) De Fine Licht, H.H. and P.H.W. Biedermann, *Patterns of functional enzyme activity in fungus farming ambrosia beetles*. **Frontiers in zoology**, 2012. 9(1): p. 13.
- (40) Grubbs, K.J., et al., *Genome Sequence of *Streptomyces griseus* Strain XylebKG-1, an Ambrosia Beetle-Associated Actinomycete*. **Journal of Bacteriology**, 2011. 193(11): p. 2890-2891.
- (41) Biedermann, P.H.W. and M. Taborsky, *Larval helpers and age polyethism in ambrosia beetles*. **Proceedings of the National Academy of Sciences**, 2011. 108(41): p. 17064-17069.
- (42) Biedermann, P.H., *Observations on sex ratio and behavior of males in *Xyleborinus saxesenii* Ratzeburg (Scolytinae, Coleoptera)*. **ZooKeys**, 2010(56): p. 253.
- (43) Biedermann, P.H.W. and M.H. Kaercher, *Weather-dependent activity and flight height of barn swallows, *Hirundo rustica* Linnaeus 1758, and house martins *Delichon urbicum* (Linnaeus 1758)*. **Egretta**, 2009. 50: p. 76-81.
- (44) Biedermann, P.H.W., K.D. Klepzig, and M. Taborsky, *Fungus cultivation by ambrosia beetles: behavior and laboratory breeding success in three xyleborine species*. **Environmental entomology**, 2009. 38(4): p. 1096-1105.
- (45) Karcher, M.H., et al., *Predator-prey interaction between drones of *Apis mellifera carnica* and insectivorous birds*. **Apidologie**, 2008. 39(3): p. 302-309.
- (46) Delhey, K., et al., *Optical properties of the uropygial gland secretion: no evidence for UV cosmetics in birds*. **Naturwissenschaften**, 2008. 95(10): p. 939-946.
- (47) Biedermann, P.H.W., *Social behaviour in sib mating fungus farmers*, in *Institute for Ecology and Evolution*. 2007, University of Bern: Bern.
- (48) Biedermann, P.H.W., *Hidden leks in the yellow-browed warbler *Phylloscopus inornatus*? - investigations from the Khan Khentey Reserve (Mongolia)*. **Acrocephalus (Ljubljana)**, 2006. 27(128-129): p. 21-35.

POPULAR SCIENCE ARTICLES

- (1) Virchow C & Biedermann PHW (2019) Vogelarten auf dem Campus der Universität Würzburg – Vergangenheit, Gegenwart und mögliche Zukunft. **Jahrbuch der Ornithologischen Arbeitsgemeinschaft in Unterfranken** 2019: 61-62.

- (2) Wühl N & **Biedermann PHW** (2019) Revier- und Habitatkartierung der Nachtigall *Luscinia megarhynchos* am Hubland Campus der Julius-Maximilians-Universität Würzburg. **Jahrbuch der Ornithologischen Arbeitsgemeinschaft in Unterfranken** 2019: 63-77.
- (3) **Biedermann PHW** (2019) Wohnraumgeber wider Willen. Buchrezension zu „Faszinierende Pflanzengallen“. **Biologie in Unserer Zeit** 4: 2-3.
- (4) **Biedermann PHW** (2018) Warum diese Käfer Alkohol lieben – und was wir von ihnen lernen können. **Focus Online** [Link \(11.4.2018\)](#)
- (5) Van de Peppel L, Wisselink M, Aanen DK & **Biedermann PHW** (2017) Genetic diversity in fungal symbionts of ambrosia beetles in Europe. **DGaaE Nachrichten**
- (6) Uhe C & **Biedermann PHW** (2016) Heimische Ambrosiakäfer: Sozialverhalten und Funktion im Ökosystem Wald. **Artenschutzreport** 35: 67-68. Jena, Germany.
- (7) **Biedermann PHW** (2016) Verborgten unter Blattwerk. Buchrezension zu „Bäume und ihre Bewohner“. **Spektrum der Wissenschaften** 9/2016, 86.
- (8) **Biedermann PHW** (2014) Käfer als Pilzzüchter – Biologie und Beobachtungsanleitung von Ambrosiakäfern. **Artenschutzreport** 33: 43-45. Jena, Germany.
- (9) **Biedermann PHW** (2013) Käfer als fleißige Gärtner. **ÖAW Young Science** 30/5/2013, ORF Vienna. science.orf.at
- (10) **Biedermann PHW** (2013) Kinderarbeit bei Gottes Käfern. **Bild der Wissenschaften**, Sonderbeilage.
- (11) **Biedermann PHW** & Kärcher MH (2008) Weather-dependent activity and flying height of Barn Swallows (*Hirundo rustica*) and House Martins (*Delichon urbica*) in southwestern Styria. **Egretta** 50: 76-81. links to newspaper articles about this work: [Neue Züricher Zeitung](#), [Uniaktuell](#), [derStandard](#)
- (12) **Biedermann PHW** (2003) Die Kraniche der Welt. **Zool. Newsletter** 2; Landesmuseum Joanneum Graz.

THESES

- **Biedermann PHW** (2012): Evolution of Cooperation in Ambrosia beetles. Ph.D. thesis, Univ. of Bern
- **Biedermann PHW** (2007): Evolution of Social Behaviour in Ambrosia beetles. MSc thesis, Univ. of Bern
- **Biedermann PHW** (2005): Breeding Ecology of the Yellow-browed Warbler. BSc thesis, Univ. of Graz

EDUCATIONAL COMPETENCES

EDUCATIONAL TRAINING (for details see attached certificates)

- 2021** Management, Leadership and Teaching for Professors (University of Freiburg, DE)
- 2020** Lectures in the Natural Sciences (University of Würzburg, DE)
- 2019** Introduction in Leadership at Universities (University of Würzburg, DE)
- 2018** Course «Systemic guidance of students» (University of Würzburg, DE)
- 2017** 10-day certificate «Leadership in science» (University of Jena, DE)
- 2015** Workshop «Speech and vocal training» (University of Jena, DE)
- 2014** 3-day compact course «Teaching in the natural sciences» (University of Jena, DE)
Workshop «Leadership and conflict management» (University of Jena, DE)
Workshop «Science communication» (Klaus Tschira Foundation, Heidelberg, DE)
- 2013** 2-day course «Communication with the public» (Swiss school of journalism, Luzern, CH)
- 2008** Course «Effective public speaking» (University of Neuchatel, CH)

TEACHING ACTIVITIES

<u>Bachelor level</u>	<u>Jahr</u>
2 × <i>Physiology of rats</i> , practical course (with Prof. J.-P. Airoidi), Univ. of Bern, CH	2009-10
2 × <i>Identification of beetles</i> , practical course (with Dr. F. Menzel), Univ. of Bern, CH	2010-11
1 × <i>Native fauna</i> , Excursion (with Dr. S. Leonhardt), Univ. of Würzburg, DE	2018
1 × <i>Evolutionary ecology</i> , 2-week course (with Dr. T. Hovestadt), Univ. of Würzburg, DE	2018
3 × <i>Insect taxonomy</i> , practical course, Univ. Freiburg, DE	Since 2020
3 × <i>Scientific projects in entomology</i> , practical course, Univ. Freiburg, DE	Since 2020
2 × <i>Biology and ecology</i> , whole lecture, Univ. Freiburg, DE	2020-21
2 × <i>Forest entomology and pathology</i> , whole lecture, Univ. Freiburg, DE	2020-21
1 × <i>Biosphere</i> , whole lecture, Univ. Freiburg, DE	Since 2021
1 × <i>Environmental microbiology and biochemistry</i> , lecture, Univ. Freiburg, DE	Since 2021
 <u>Master-Level</u>	
5 × <i>Behavioural ecology</i> , 6-week practical course, Univ. Bern, CH	2007-11
5 × <i>Behavioural ecology</i> , seminar and journal club, Univ. Bern, CH	2008-12
2 × <i>Insect-microbe interactions</i> , lecture (2x 2h), Univ. Jena, DE	2015-16
1 × <i>Evolutionary biology</i> , lecture (2h), Univ. Jena, DE	2016
1 × <i>Animal ecology</i> , lecture (2h), Univ. Würzburg, DE	2017
2 × <i>Biodiversity</i> , 3-week practical course, Univ. Freiburg, DE	Since 2021
2 × <i>Insect dynamics</i> , 3-week practical course, Univ. Freiburg, DE	Since 2020
2 × <i>Ornithology</i> , 2-day excursion and lecture, Univ. Freiburg, DE	Since 2020
2 × <i>Entomology in the laboratory</i> , 3-week practical course, Univ. Freiburg, DE	Since 2020

SUPERVISION OF STUDENTS

Independent Student Projects

- 2015** *Induction of fungal fruiting by ambrosia beetles* (P. Baumann, BSc)
- 2015** *Fungal symbionts of galling aphids* (D. Berthold, BSc)
- 2015** *Gallery structures of ambrosia beetles* (P. Schmidt, BSc)
- 2010** *Analysis of the spatial attack pattern by Xyleborinus saxesenii* (T. Emmenegger & S. Stucki, BSc)
- 2009** *Cooperative behaviour in the ambrosia beetle Xyleborinus saxesenii* (M. Würgler & M. Zeller, BSc)
- 2008** *The flight dynamics and seasonal abundance of two ambrosia beetles* (A. Golizadeh, PhD)
- 2007** *The influence of the observation techniques on ambrosia beetle behaviour* (C. Arnold & S. Knecht, BSc)

Bachelor Theses

- In work** *Absterbende Tannen – eine Gefahr für die Waldschutzsituation?* (J. Schuh)
- In work** *The distribution and interspecific competition of owls in the southern Black Forest* (J.M. Wildraut)
- In work** *Effects of glyphosate use – compared to mechanical weeding – and flowering resource availability on bumble bees in Spanish almond* (E.A. Laskus)
- In work** *Community growth and compositional change of cavity-nesting bees, wasps and their natural enemies in trap-nests* (M. da Silva-Gonçalves)
- In work** *Einfluss von Sandarien auf Wildbienengemeinschaften* (L.K. Steinegger)
- In work** *Vergleich verschiedener Wiesen- und Brachflächen im NSG und CSG "Flugplatz Bremgarten". Wie hängen pflanzliche Diversität und Mahdregime mit der Abundanz von Tagfaltern und Widderchen zusammen?* (P. Nunner)
- 2022** *Patterns of mammal species richness in relation to human-induced factors in Freiburg* (C. Golisch)
- 2022** *Wildtiermonitoring von Hirsch *Cervus élapus* L., Reh *Capréolus capréolus* L. und Wildschwein *Sus crófa* L. – eine vergleichende Aufnahme im Nationalpark Schwarzwald und im Stadtwald Baden Baden* (K. Hyneck)

- 2022** *Analysis of the functional diversity of wild bees in differently managed forests* (M. Maier)
- 2022** *Effects of Semi-Natural Habitat Structures on the Hoverfly (Syrphidae) Abundance and Diversity in Apple Orchards with an Intensive Management* (E. F. Reppert López)
- 2022** *Nachweis der Letalität von Chaetomium globosum, Penicillium commune, Aspergillus flavus und Beauveria bassiana bei Xyleborinus saxesenii Adulten und Larven* (C. Golisch)
- 2022** *Study on biodiversity and composition of small mammals on open land areas at National Park Berchtesgaden* (F. Kraatz)
- 2022** *Behavioural reactions towards antagonistic fungal symbionts in an ambrosia beetle* (D. Kassie)
- 2022** *Mycorrhiza on poplar (Populus sp.) – in-vitro and on city trees* (H. Altena)
- 2022** *Effects of green-leaf volatiles of beech in combination with verbenone on the pheromone attraction of Ips typographus* (K.-U. v. Königslöw)
- 2021** *Response of ambrosia beetles to reduced diversity of symbionts* (V. Heilmann)
- 2021** *Sheep dung on vineyards and their influence of dung beetle communities* (F.-A. Thul)
- 2021** *Effects of SPLAT®Verb on the bark beetles Hylurgops palliatus Dryocetes autographus* (L.C. Leonhardt)
- 2021** *Interactions between biodiversity loss, climate change and zoonoses.* (L. Stapf)
- 2021** *Remains of game as resource for insects* (N. Binder)
- 2021** *Effects of dead wood and flowers on the diversity of pollinating, xylobiont beetles in the Black Forest along a gradient of forest management* (L. Müldner)
- 2020** *Interactive effects of the fungicide Amistar and nutrition on bumblebee body size and colony fitness* (N. Warth)
- 2020** *Movement profiles of Carabus sylvestris in the Black forest* (N. Schütz)
- 2020** *Climatic drivers of diversity of trap nesting bees and wasps in Germany* (M. Mundt)
- 2020** *Entomopathogens in ambrosia beetles* (M. el Gaa)
- 2020** *CHC profiles of ambrosia beetles* (V. Leibold)
- 2019** *Monitoring of territories and breeding habitats of the Nightingale at the Hubland Campus* (N. Wühl)
- 2016** *Interactions between Pseudomonas spp. and ambrosia fungi* (P. Baumann)
- 2013** *Importance of blocking behaviour in the ambrosia beetle X. saxesenii* (J. A. Nuotcla)
- 2011** *Dispersal of different age groups in the ambrosia beetle X. saxesenii* (A. Moser)
- 2010** *Dispersal behaviour in the ambrosia beetle species X. saxesenii* (M. Würgler)

Master Theses

- In work** *A Historic biodiversity analysis on macrobenthic invertebrates in the Traunbachtal system, compared using both conventional and genetic species determination methods* (W. Basson)
- In work** *The Translocation of Nutrients by Fungi in the Galleries of Ips Typographus* (J. Otrebski)
- In work** *The effect of symbiotic fungi on the fitness of Ips Typographus* (N. Uhlenhaut)
- 2022** *Is Connectivity the Key? Analysis of Mammal Diversity in Urban Green Areas* (M. Huber)
- 2022** *Tree species preference of generalist weevils and the influence of tree diversity* (I. Richter)
- 2022** *The Distribution and interspecific competition of owls in the southern Black Forest* (J.M. Wildraut)
- 2022** *Monitoring of red deer Cérvus élapus, roe deer Capréolus capréolus and wild boar Sus scrófa in the Black Forest National park and the communal forest of Baden-Baden* (K. Hyneck)
- 2021** *Assessing the protective potential of non-chemical treatments for Hylobius abietis management* (T. Henson)
- 2021** *Coverage based estimates of facultative saproxylic species underlines the importance of deadwood in the forest for beetles, true bugs and spiders* (M. Graf)
- 2021** *Analysis of the functional diversity of wild bees in differently managed forests* (M. Maier)
- 2021** *Effects of Semi-Natural Habitat Structures on the Hoverfly (Syrphidae) Abundance and Diversity in Apple Orchards with an Intensive Management* (E.F. Reppert Lopez)
- 2020** *Helene Francke-Grosmann – a short biography and translation of her papers* (E. Koch)
- 2020** *Monitoring of the breeding birds on Hubland Campus* (H. Reith)

- 2020** *Bird list for the Hubland Campus and observations of jackdaws and swifts* (C. Virchow)
- 2020** *Monitoring of mammals on Hubland Campus* (M. Bär)
- 2019** *From forest management to bark beetle-fungus symbioses* (M. Benkert)
- 2018** *Bat response to forest structure and prey activity in beech forests* (V. Zieschak) – 2nd assessor
- 2015** *Genetic variation in fungal symbionts from different geographical locations of two Xyleborine ambrosia beetles* (L. J. J. van de Peppel) – co-supervised by Prof. D. Aanen
- 2015** *Diversity and role of fungal symbionts in tortoise beetles* (M. Wisselink)
- 2014** *Effects of fungi and behaviour of *X. saxesenii** (J. A. Nuotcla)
- 2012** *Social effects of larval manipulations in *X. saxesenii** (M. Würgler)
- 2011** *The microbial community associated with the ambrosia beetle *X. saxesenii** (W. Fabig) – co-supervised by Prof. M. Kaltenpoth
- 2008** *Effects of colony composition on cooperative behaviour in *X. saxesenii** (A. Meister)

Ph.D. Theses

- In work** *Ecology and evolution of symbiont management in ambrosia beetles* (J. Diehl)
- In work** *The role of the anti-attractant verbenone for *Ips typographus** (T. Frühbrodt)
- In work** *Social evolution in wood-boring weevils* (A. Melet)
- In work** *Evolutionary ecology of bark beetles on fir* (S.M. Tanin)
- 2021** *Ecology and evolution of symbiotic microbial communities in ambrosia beetles* (M. Lehenberger)
- 2016** *Bacterial symbionts of *Dendroctonus* bark beetles* (L. Dohet) – co-supervised by Prof. J.-C. Gregoire

Visiting Scholar Projects

- 2022** Erasmus+: *Plant host impact on fitness, development, and behavior of *Xylosandrus germanus* in comparison with *Xyleborinus saxesenii** (L. Castalan, Univ. Besançon,FR)
- 2021** DAAD and Erasmus+: *Multi-mutualistic interactions for optimized management of exotic fungus-farming beetles* (A. Gugliuzzo, Univ. Catania, IT)
- 2019** DAAD: *Fungal symbionts of ambrosia beetles* (G. Criscione, Univ. Catania, IT)

EDITORIAL, REVIEWING & JURY ACTIVITIES

Overview at PUBLONS: publons.com/a/1174275/

EDITORIAL ACTIVITY

- Since 2021** - Editor for **Quarterly Reviews of Biology** (IF 4.9)
- 2020-** - Guest editor for **Frontiers in Microbiology** (IF 5.6) - Special Issue: Microbial symbionts of beetles.
- 2018-20** - Guest editor for **Frontiers in Ecology & Evolution** (IF 4.2)- Special Issue: Social management of microbes.
- 2017-18** - Guest editor for **Fungal Ecology** (IF: 3.2) - Special Issue: From antagonism to mutualism: the chemical basics of animal-fungus interactions.
- Since 2015** - Editor for **Fungal Ecology** (IF: 3.2) - Section: Insect-Arthropod Interactions
- Since 2015** - Editor for **Frontiers in Ecology & Evolution** (IF 4.2)

JOURNAL REFEREE ACTIVITY

- General Journals** - The American Naturalist, - Current Biology, - Frontiers in Zoology, - PlosONE, - Proceedings of the National Academy of Science USA (PNAS), - Scientific Data, - Scientific Reports
- Ecology & Evolution** - Ardea, - Behavioral Ecology, - Behavioral Ecology and Sociobiology, - Chemoecology, - Ecology and Evolution, - Ethology, - Forest Ecology and Management, - Journal of Applied Ecology, - Journal of Chemical Ecology, - Journal of Ethology, - Journal of Evolutionary Biology, - Molecular Ecology
- Entomology** - Agricultural and Forest Entomology, - Arthropod Structure & Development, - Biological Control, - Current Opinion in Insect Science, - Ecological Entomology, - Environmental Entomology, - Florida Entomologist, - Insect Conservation and Diversity, - Insects, - Journal of Asia-Pacific Entomology, - Journal of Insect Science, - Journal of Invertebrate Pathology, Pest Management Science
- Microbiology** - Applied and Environmental Microbiology, - Environmental Microbiology Reports, - Frontiers in Microbiology, - Fungal Ecology, - Journal of Basic Microbiology, - Journal of Invertebrate Pathology, - Microbes & Environments, - Microbial Ecology, - Symbiosis, - The ISME Journal

EXTERNAL REFEREE ACTIVITY

- Since 2021** - NCN (National Science Center Poland)
- Since 2021** - GIF (German Israeli Foundation for Scientific Research and Development)
- Since 2021** - GACR (Science Foundation of the Czech Republic)
- Since 2021** - Alexander von Humboldt Foundation, Germany
- Since 2018** - DFG (German Science Foundation)
- Since 2017** - Reviewer of Ph.D. applications, Graduate School of Life Sciences, Univ. of Würzburg, DE

JURY FOR PUBLIC SCIENCE EVENTS

- 2021** - Member of Jury for 3MT PhD Thesis Communication competition, Univ. Freiburg, DE
- Since 2017** - Member of Jury for „Klartext“, Award for Written Science Communication, Heidelberg, DE
- 2015** - Member of Jury for “Jugend Präsentiert”, Award for Oral Science Communication, Heidelberg

MEMBERSHIPS IN PH.D.-COMMITTEES

- 2022** ... (...von Königslöw, Univ. Freiburg, DE) – head of committee

- 2022** *Drivers of biodiversity along gradient of urbanisation* (M. Sultana, Univ. Freiburg, DE) – head of committee
- 2022** *The phylogeography and microbial ecology of Australian ambrosia beetle taxa (Curculionidae: Platypodinae and Scolytinae)* (J.R.M. Bickstaff, Western Sydney Univ., AUS)
- 2021** *Temporal dynamics of plant-pollinator networks* (B. Schwartz, Univ. Freiburg, DE) – head of committee
- 2021** *Microbial ecology of ambrosia beetles* (J.-C. Cambronero Heinrichs, Univ. of Padova, IT)
- 2020** *Call types of the red crossbill *Loxia curvirosta* in Europe* (R. Martin, Univ. Freiburg, DE) – head of committee
- 2018** *Epichloe grass endophytes and their influence on herbivores* (V. Vikuk, Univ. of Würzburg)

MEMBERSHIP IN HABILITATION (VENIA DOCENDI) COMMITTEES

- 2022** Dr. Sigrid Netherer for the topic Forest Entomology and Protection, BOKU Univ. Vienna, Austria

MEMBERSHIP IN APPOINTMENT COMMITTEES FOR PROFESSORSHIPS

- 2022** Forest Protection (W3), Univ. of Göttingen, Germany
- 2021** Forest Pathology (W1), Univ. of Freiburg, Germany

CONFERENCE & SYMPOSIA ORGANISATION

WORKSHOP “POPULATION DYNAMICS OF THE SPRUCE BARK BEETLE *IPS TYPOGRAPHUS*” (3/2017) *National Park Bavarian Forest, Grafenau, DE.*

Co-organizer with C. Bässler and J. Müller.

SYMPOSIUM ON “BARK AND AMBROSIA BEETLES: BIOLOGY, ECOLOGY, AND MANAGEMENT” (9/2016) *International Congress of Entomology, Orlando, USA.*

Co-organizer with F. Vega and R. Hofstetter.

14TH EUROPEAN MEETING OF PHD STUDENTS IN EVOLUTIONARY BIOLOGY - EMPSEB14 (9/2008) *Monastery, Einsiedeln, CH.*

Member of the Organizing Committee.

SCIENTIFIC PRESENTATIONS

INVITED TALKS & SEMINARS (selected, in total >30)

- 2022**
- Keynote, IUFRO Forest Health, Pathology and Entomology, Lisbon, P
 - Frontiers in Social Evolution (FINE) Seminar, Zurich, CH
- 2021**
- IUFRO Behavioural and Chemical Ecology Seminar, Pretoria, SA
- 2020**
- Keynote, Social Immunity Workshop, Universität Münster, DE
- 2018**
- Presentation to the exhibition „Duftspuren“, Phyletisches Museum, Jena, DE
 - Keynote, 10th Saproxylic Beetle Meeting, NP Bayerischer Wald, St. Oswald, DE
 - Evolutionary Biology seminar series, FU Berlin, Berlin, DE
- 2017**
- Keynote, International Union of Social Insects, Kloster Schöntal, DE
 - Ecology and Evolution seminar series, University of Edinburgh, Edinburgh, SCO
 - Zoological seminar, Universität Bielefeld, Bielefeld, DE
 - Forest Sciences symposium, TU München, München, DE
 - Presentation, Nationalpark Bayerischer Wald, St. Oswald, DE
- 2016**
- Seminar, Instituto Nacional de Investigacao Agraria e Veterinaria, Oeiras, P
 - Evolutionary Ecology Lab seminar series, Universität Bremen, DE

- Seminar, Nationalpark Bayerischer Wald, Grafenau, DE
- 2015**
 - Department of Bacteriology seminar series, University of Wisconsin, Madison, USA
 - Plant pathology seminar series, University of Iowa, Ames, USA
 - Social evolution seminar series, Toth lab, University of Iowa, Ames, USA
 - Keynote, ESA Symposium on Forest Entomology: Synergy from Symbiosis, Minneapolis, USA
 - Behaviour, Ecology and Evolution seminar series, University of Cambridge, UK
- 2013**
 - Department of Plant Sciences seminar series, Wageningen University, NL
 - Biological Control and Spatial Ecology Lab Seminar, Université Libre de Bruxelles, BE
 - Institute of Microbiology seminar series, Czech Academy of Sciences, Prague, CZ
 - Laboratory of Genetics seminar series, Wageningen University, NL
 - Population & Evolutionary Ecology Lab seminar series, Universität Bremen, DE
 - Award presentation DGaE, Universität Göttingen, DE
 - Award presentation Österr. Entomolog. Gesellschaft, Universität Innsbruck, AT
- 2012**
 - Zoological seminar, Universität Würzburg, DE
 - Zoological seminar, Universität Mainz, DE
- 2011**
 - Seminar series, Max-Planck Institute for Chemical Ecology, Jena, DE
- 2010**
 - Department of Environmental Sciences seminar series, ETH Zurich, CH
 - Zoological seminar, Universität Regensburg, DE
 - Ecology & Evolution seminar series, University of Neuchatel, CH
 - Zoological colloquium, Universität Graz, AT
- 2007**
 - Section of Integrative Biology, University of Texas, Austin, USA
 - Department of Bacteriology, University of Wisconsin, Madison, USA

CONFERENCE PRESENTATIONS (selected, in total >50)

- 2016**
 - International Congress of Entomology, Orlando, USA
- 2015**
 - Entomological Society of America, Minneapolis, USA
 - Deutsche Zoologische Gesellschaft (DZG), Graz, A
- 2014**
 - Bark & Ambrosia Beetle Academy, University of Florida, Gainesville, Florida, USA
- 2013**
 - Deutsche Gesellschaft für allgemeine und angewandte Entomologie, Göttingen, DE
- 2012**
 - International Union for the Study of Social Insects (IUSSI), Montecatini, IT
- 2011**
 - Genetics of Bark Beetles and Associated Microorganisms (IUFRO), Sopron, HU
- 2010**
 - International Union for the Study of Social Insects (IUSSI), Kopenhagen, DK
 - COST meeting, Diversity of symbioses in arthropods, Bad Bevensen, DE
- 2009**
 - European Society of Evolutionary Biology (ESEB), Torino, IT
 - 57th Annual Meeting Entomological Society of America, Indianapolis, USA
- 2008**
 - Behavioural Biology, Dijon, F
- 2007**
 - East Texas Forest Entomology Seminar (ETFES07), Nacogdoches/TX, US

MISCELLANEOUS

PUBLIC OUTREACH

- 2022**
 - Biodiversity, open house day at Forest Entomology Institute, Univ. Freiburg
- 2018**
 - Exhibition about "Bark beetles", open house day of Ecological Station, Univ. Würzburg
 - Exhibition about "Ambrosia beetles and Alcohol", Campus day, Univ. Würzburg
- 2017-18**
 - Scientific consulting of exhibition „Duftspur“ (chemical scents), Phyletic museum Jena
- Since 2017**
 - Participation in "Wintervortragsreihe" for communicating research to the public, Univ. Würzburg
- 2016**
 - Participation in "Forsche Schüler" for introducing pupils into science, MPI Chem. Ecol., Jena

CONSERVATION PROJECTS

- 2021** Initiator of conservation project "*Living Wittental – Freiburg*"
- 2018** Initiator of conservation project "*Living Campus – Würzburg*"
Project to monitor, conserve and increase biodiversity at the University Campus and raise public awareness for it

BIRD-MONITORING ACTIVITIES

- 2017-18** Monitoring for breeding bird atlas of Austria
- 2001-05** Monitoring for breeding bird atlas of Graz, AT
- Since 1998** Yearly Austrian bird monitoring
-