SFE² GfÖ EEF

Joint meeting, International Conference on Ecological Sciences

"Ecology and Evolution: New perspectives and societal challenges"

21-25 Nov 2022 Metz (France)

Ecology & Evolution: New perspectives
and societal challenges

PROGRAMME

Organized by :

LIEC & North Eastern France Labs in Ecology & Evolution — Université de Lorraine — cnrs — sfé² — GfÖ The Ecological Society of Germany, Austria and Switzerland — eef European Ecological Federation

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J1 - 21/11/22

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14:00 - 18:00	Room 08
An introduction to modeling and synthesizing Integral Projection Models using the R packages ipmr and Rpadrino	

14:00 - 18:00	Room : 11 + 12
Transfer of anthropogenic stress from aquatic to terrestrial ecosystems – perspectives from young researchers	

14:00 - 18:00	Room 07
Comparing non-systematic and systematic review methods for environmental evidence: an introduction to different literature review approaches, their advantages and limitations	

14:00 - 18:00	Room 09 + 10
How to better manage your data - and thereby enrich research	

14:00 - 18:00	Room 13
e-Tools and resources to address key ecological questions on Non-indigenous and Invasive Species	

14:00 - 16:00	Room 02
“Who owns my data? On our way to open data - Nagoya and beyond!	

14:00 - 16:00	Room 03
Telling ecological stories through photography	

18:15 - 19:45	Hall 2.1
Welcome reception	

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Ecology & Evolution: New perspectives
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J2 - 22/11/22

Organized by :

LIEC & North Eastern France Labs in Ecology & Evolution — Université de Lorraine — cnrs — sfé² — GfÖ The Ecological Society of Germany, Austria and Switzerland — eef European Ecological Federation

08:30 - 09:00	Auditorium
Opening ceremony	

09:00 - 09:45	Auditorium
Urban evolutionary ecology: new perspectives on (mal)adaptation in a rapidly changing world There is a rising tide of interest in urban environments: with the world's human population still growing and UN habitat predictions forecasting that by 2050, 7 people out of 10 will be living in urban areas, the urban space is of intrinsic focal interest to humans worldwide, biologists included. With its conspicuously altered ecological dynamics, the urban environment stands in stark contrast to the natural environment that has been used as research ground for virtually all long-term studies of vertebrates investigated in the wild and used as cornerstones in evolutionary ecology research. In this talk, Dr Charmantier will present a nascent, yet fast-growing field of research: Urban Evolutionary Ecology. She will present a diversity of studies in a large range of taxa, including work of her group on forest and urban great tits. She will argue that the city offers unique opportunities to study fundamental eco-evolutionary processes and will show how this work can provide novel insight for urban conservation planning.	
	A. Charmantier

09:45 - 10:15	Halls 1 & 2
Coffee break	

09:45 - 10:15	Room 13
Free discussion with Anne Charmantier	

10:15 - 12:15	Auditorium
Pollinator conservation in urban and agricultural environments: comparison of management practices Main organizer (applicant) of the symposium: Alice Michelot-Antalik, Laboratoire Agronomie et Environnement, alice.michelot@univ-lorraine.fr Co-organizers of the symposium: Isabelle Dajoz, Institut d'écologie et des sciences de l'environnement de Paris, isabelle.dajoz@univ-paris-diderot.fr Session description: Within the next 30 years, the land-cover of anthropized habitats such as agricultural and urban habitats is scheduled to increase by at least 50%. Assessing how the management practices of these habitats impact on their biodiversity and ability to provide ecosystem goods and services is therefore critical. Among pivotal ecosystem functions, pollination is partly provided by insects like Hymenoptera, Diptera, Lepidoptera and Coleoptera in temperate ecosystems. Maintaining pollinating insects is essential in agricultural landcapes, as crop production depends on pollination for 75% of cultivated plants. Pollinator conservation in urbanized habitats is also important, because of the increasing need for local food production and the risk of parallel declines between pollinating insects and flowering plants, in a context of growing need of citizens for nature and biodiversity in their surroundings. In these two examples of ecosystems, pollinator conservation requires changes in management practices, including less pesticides use. It also seems essential to rethink composition and structure of landscapes and the connectivity of favourable habitats, while preserving the diversity of floral resources for pollinator feeding and nesting spaces for their reproduction. The aim of this symposium is to gather knowledge on how changes in the management practices and landscape structure of anthropized environments impact on the diversity of pollinating insects and the maintenance of	

the pollinating function. We will discuss about the effectiveness of these management changes for pollinator conservation, in a context of agro-ecological transition and conciliation between human activity and biodiversity conservation.

Sponsorship: This symposium is supported by GDR Pollineco, which is a research network of 200 researchers, postdoctoral researchers and PhD students of France, Belgium and Switzerland (financed by INEE and the Ministry of ecological transition). The GDR would be taken in charge the travel expenses of invited speakers.

	Wild bee conservation in the city and countryside	**T. Tscharntke**
	Ecological and social drivers of wild bee conservation in urban gardens	**M. Egerer**
	Contribution of floral resources provided by crops, weeds and wild plants in supporting wild pollinating insects in agricultural landscapes	**S. Aviron**
	Understanding and managing the functional floral diversity of agrosystems and urban environments to conserve pollinating insects	**A. Michelot-Antalik**
	How does urbanization impact on wild bees taxonomic and functional diversity? a large-scale study on three European countries	**A.-F. Fauviau**
	Wild bees benefit from low urbanization levels and suffer from pesticides in a tropical megacity	**A. Wenzel**
	The misplaced management of bees in urban environments	**B. Geslin**

10:15 - 12:15 — Room : 11 + 12

Behavioural and dispersal ecology (1/2)

Chair
J. Eccard

10:15	Don't worry be wormy: no anxiety-like behavior in amphipods infected by a manipulative parasite	**C.-S. Cozzarolo**
10:30	Worker presence and number favour the success of colony foundation in ants	**B. Finand**
10:45	Incubation behaviour and importance of extended recesses in an Arctic shorebird: The Sanderling (Calidris alba).	**L. Etchart**
11:00	Resource-Dependent Disruption of Spatial Foraging Dynamics in a Seed-Caching Bird	**V. Graf**
11:15	Water deprivation interacts with chemoreception and anti-predator behaviors in a Lacertid lizard	**C. Chabaud**
11:30	Ecology and Evolution of a highly invasive spider (Mermessus trilobatus)	**M. Entling**
11:45	State-space models show that functional replacements of extinct megafauna have distinct habitat preference in a European rewilding area	**E. Berti**

10:15 - 12:15 — Room 01

Forest ecology in a context of global change (1/3)

Chair
F. Lloret

10:15	The contribution of insects to global forest deadwood decomposition	**S. Seibold**
10:30	Aboveground impacts of a belowground invader – earthworm invasion alters aboveground arthropod communities in a northern North American forest	**M. Jochum**
10:45	A silvicultural manipulation experiment on microclimate and regeneration in European beech forests	**D. Thom**
11:00	What processes lie behind the recent changes of forest vegetation ? An insight on thermophilization and B-diversity	**J. Borderieux**
11:15	Interactive effects of abiotic factors and biotic agents on Scots pine dieback : A multivariate modeling approach in southeast France	**J. Lemaire**
11:30	Tree species, soil texture and landscape fragmentation shape ant communities in urban Mediterranean woodlands	**A. Mautuit**
11:45	How do tree size, functional traits and climate drive disturbance-induced tree mortality across European forests?	**J. Barrere**
12:00	Biodiversity and carbon sequestration in forests along a management intensity gradient	**M. Meyer**

10:15 - 12:15 — Room 02

Phenotypic plasticity, epigenetic, and environmental change

Chair
A. Koussoroplis
A. Sentis

10:15	Temporal dynamics of multiple phenotypic traits and the meaning of reaction norms	L. Dupont
10:30	A story of individuals: leaf trait variation is driven by interdependent species diversity and soil nutrients	A. Davrinche
10:45	Thermal generalism and underlying phenotypic plasticity mediate response to thermal fluctuations in microcosms	S. Jacob
11:00	Food quality effects on ectotherm performance in thermally fluctuating environments	M. Van Baelen
11:15	Thermal plasticity of insecticide sensitivity in an invasive pest species	P. Gibert
11:30	Acute temperature variation and extreme starvation involved two divergent but successful stress response strategies in the sea anemone Nematostella vectensis	A. Poquet
11:45	Reproductive plasticity of the shrimp Palaemon serratus	J.-B. Baudet
12:00	Long term eco-evolutionary impact of the Chernobyl nuclear accident on tree frog populations	C. Car

10:15 - 12:15 — Room 03

Conservation biology (1/2)

Chair
J. Deter

10:15	Behavioral adjustments of Barbary macaques (Macaca sylvanus) inhabiting an agricultural landscape	E. Neves
10:30	Relationships between plant community structure and forage quantity and nutritive quality in semi-natural grasslands	C. Blaix
10:45	Identification of key foraging resources to support diverse pollinator communities in habitat plantings	U. Müller
11:00	The White-backed Woodpecker as an umbrella species for threatened saproxylic beetles in Central Europe.	R. Angeleri
11:15	Identifying suitable habitats for Nigeria-Cameroon chimpanzees in Kom-Wum Forest Reserve, Cameroon	C. Fotang
11:30	Using environmental DNA to study the critically endangered angelshark (Squatina squatina) distribution in Corsica by	J. Deter
11:45	Hunting for sustainability? Impacts and trends of the trophy hunting business in Tanzania	A. Treydte
12:00	Modulating effects of succession on flying insect biomass along an elevational gradient	L. Geres

10:15 - 12:15 — Room 05

Integrating narratives, cognitive maps and modelling to explore socio-ecosystems plausible futures with stakeholders.

· Main organizer (applicant) of the symposium (Name, institution, email):
This person is the point of contact for the session, is responsible for communicating with speakers, and will play the role of moderator during the symposium (possibly with another person to be identified).

Hélène Soubelet
Foundation for research on biodiversity (FRB)
helene.soubelet@fondationbiodiversite.fr

· Co-organizers of the symposium (Names, institutions, emails):

Aurélie Delavaud
Foundation for research on biodiversity (FRB)
aurelie.delavaud@fondationbiodiversite.fr

· Session description

Ambitious biodiversity policies within the framework of “transformative change” (Ipbes, 2019) require convincing “desirable” scenarios, supported by robust modelling, related with stakeholders cognition and imaginaries, aspirations.
Scenarios consider multiple plausible, alternative, futures, based on 1/ present decisions and actions of societies, 2/ relationships within socio-ecosystems and 3/ uncertainties. They can, in turn, help to build future responses and solutions, to consider the necessary decisions and actions.

This symposium, organized as a round table, will discuss the conceptual and methodological issues of an interdisciplinary program focused on participatory construction of exploratory and/or targeted scenarios (Ipbes, 2016). Their development requires the use of qualitative and

quantitative methods based on data and participatory methods (Oteros-Rozas et al., 2011) (Kok and Van Delden, 2013).

From this perspective, we plan, with stakeholders, to connect qualitative / quantitative data collected via narratives / cognitive maps and quantitative models:
•Narratives: science-fiction, projection into a desirable future but also dystopia, interaction of stakeholders, management of “common goods”, anticipation of lock-ins… with perspective to establishing a platform for the exchange of practices (protocols, case-studies, achievements).
•Cognitive maps: representation of biodiversity-science-society relations or coevolution, convergences or contradictions between individual and collective representations and actions, role of scientists, decision-makers, social movement and media in collective decision-making…
•Modelling: inclusion of societal aspects (e.g. organization, values, technologies), of mechanisms and interactions within socio-ecosystems, prioritization of direct and indirect pressures, responses and adaptations, uncertainties…

Practical cases, based on natural-based solutions, their promises and limits, could be considered.

At the end, this program will help to:
•Scientifically explore biodiversity complexity: dynamics, interactions and non-linearities, uncertainty.
•Move towards a shared stewardship of biodiversity issues with stakeholders: awareness, knowledge, responsibilities assumption, democratic debate, collective organization…
•Identify and prioritize levers and leverage points proficient to initiate transformative changes.

	Cognitive maps to bring into play individual and collective representations	**J. Young**
	Considering the Ipbes scenarios context and the role of a science-society interface	**D. Couvet**
	Narratives, including science-fiction, in the construction of desirable / undesirable futures	**A.-C. Prevot**
	An interdisciplinary program on participatory scenarios at the time of transformative changes: why and how?	**A. Delavaud**
	Modelling the mechanisms and interactions governing biodiversity dynamics	**C. Albert**

10:15 - 12:15 **Room 06**

Trophic and non-trophic interactions in the heterogeneous and opaque soil matrix

Main organizer of the symposium
Amandine, UMR Eco&Sols, IRD, Montpellier, France,
amandine.erktan@ird.fr

Co-organizers of the symposium
Jingzhong Lu, University of Goettingen, Animal ecology group, Goettingen, Germany,
jlu@gwdg.de

Abstract:
Soil is a heterogeneous and opaque environment that limit interactions between soil organisms. Trophic interactions determine the transformation of organic matter and the flux of energy across trophic levels. Biomarkers enabled to describe complex soil food webs with increasing precision, but what determine interactions remains largely unknown. Soil structure may be an important determinant of trophic interaction but was little studied yet. In addition, non-trophic interactions co-occur with trophic ones, and are also crucial to determine soil functioning, but trophic and non-trophic interactions rarely studied together in soils. For example, ecosystem engineers that modify the soil structure interact with numerous soil organisms by shaping their habitat, modifying their mobility and dispersal. Ecosystem engineers modify the pore structure and connectivity, and thus the renewal of gas and transfer of liquid phase, which is essential for the activity of soil organisms. Changes in soil pore connectivity is also thought to drive encounter probabilities between soil organisms, and thus trophic interactions.
To better understand what drives interactions in soil and how it affect soil functioning, a spatial approach is needed. We envision that interdisciplinary work at the interface between soil ecology and soil physics (that enable to describe the soil structure/microhabitats) will provide clues to advance this research frontier. This symposium aims to provide an overview of methods (experimental, modelling) to study trophic and non-trophic interactions in soil, and recent conceptual advance on the topic.

Speakers:

- Melanie Pollierer
J.F. Blumenbach Institute of Zoology and Anthropology, University of Goettingen, Untere Karspüle 2, 37073, Goettingen, Germany, Melanie.Pollierer@biologie.uni-goettingen.de

- Elly Morriën, S.E. Hannula, L.B. Snoek, W.H. van der Putten
Department of Ecosystem and Landscape Dynamics, Institute of Biodiversity and Ecosystem Dynamics (IBED-ELD), University of Amsterdam, P.O. Box 94240, 1090 GE Amsterdam, The

Netherlands.

- Edith Hammer
Lund University, Sweden, edith.hammer@biol.lu.se

- Xiaoli Yang, Steffen Schlüter, Nico Eisenhauer, Martin Schädler
Helmholtz-Centre for Environmental Research – UFZ, Halle, Germany, xiaoli.yang@ufz.de
German Centre for Indiversity Research (iDiv) Halle-Jena-Leipzig, Germany

- Sébastien Barot,
IEES-Paris, IRD, France, sebastien.barot@ird.fr

- Maik Lucas, Andrey Guber, Alexander Kravchenko
DOE Great Lakes Bioenergy Research Center, Department of Plant, Soil and Microbial Sciences, Michigan State University, lucasmai@msu.edu
Department of Soil System Sciences, Helmholtz Centre for Environmental Research

	Trophic interactions in soils: overview of current methods and recent advance	**M. Pollierer**
	Networks of soil organisms: methods and interpretation	**E. Morrien**
	How to couple soil food web and ecosystem engineers?	**S. Barot**
	How the interaction of root and soil structure affects the fate of carbon	**M. Lucas**
	Do climate and land-use type affect the relationship between soil structure and nematode communities	**X. Yang**
	Direct investigation of the influence of soil pore space structure and top-down predators on bacterial and fungal functions	**E. Hammer**

10:15 - 12:15 — Room 09 + 10

Landscape ecology (1/2)

Chair
C. Fritsch

10:15	Context matters: the landscape matrix determines the population genetic structure of insect-pollinated forest herbs in European agricultural landscapes	**T. Naaf**
10:30	The new assets of landscape ecology in the face of global challenges	**M. Deconchat**
10:45	Predicting species distributions from sparse survey data and remotely sensed environmental predictors – a how-to guide for everyone with basic knowledge in R	**M. Spangenberg**
11:00	Follow the link(er)	**J.-T. Feigs**
11:15	The older the better? How population age affects the genetic structure of spatially isolated forest herb populations.	**S. Huang**
11:30	Can landscape resistance to gene flow be inferred by genetic distances? A simulation study to evaluate the performances of landscape surface optimization.	**A. Daniel**
11:45	The potential of remote sensing time series for disentangling pollinator community structures in highly heterogeneous low mountain regions	**K. Baumann**
12:00	Upscaling ecosystem services must account for spatial configuration of landscape features	**A.-L. Boesing**

10:15 - 12:15 — Verlaine A

Biodiversity and ecosystem functioning in a changing world (1/4)

Chair
J. Leflaive

10:15	Climate change affects the potential distribution of biotope with consequences for conservation and restoration	**S. Rubanschi**
10:30	Habitat matters: Patterns in phenology and functional traits of herbaceous plant species from Botanical Gardens and natural habitats	**T.-J. Deilmann**
10:45	Sequencing in the dark: unknown groundwater diversity revealed by environmental DNA metabarcoding	**M. Couton**
11:00	From shorebird paradise to white geese heaven: how land use in the south changes life in the Arctic	**J.-L. Martin**
11:15	Community-level responses to land-use and climate change at long and short temporal scales	**T. Montràs-Janer**
11:30	Mycorrhiza in Tree Diversity-Ecosystem Function Relationships: the first seven years of the tree diversity experiment MyDiv	**O. Ferlian**
11:45	Temperature and resource availability shape biomass and richness of flying insects along an elevational gradient	**J. Kerner**
12:00	Eutrophication mitigation in coastal food webs depends on water color	**A. Garnier**

10:15 - 12:15		Verlaine B
Eco-toxicology and environmental pollution (1/2)		**Chair** J. Bleu L. Minguez
10:15	Sublethal exposure to pollutants affects maternal care in an insect with facultative family life	**J. Meunier**
10:30	Meta-transcriptomics reveals stress adaptation processes in microbial communities differing in exposure history	**E. Billoir**
10:45	Indirect effects of stream pollution on riparian food webs: activity and hunting behaviour of terrestrial insectivores	**M. Huszarik**
11:00	DRomics, a workflow to model and make sense of dose-response (multi-)omics data	**M.-L. Delignette-Muller**
11:15	MULTIPAT project: Effects of metal contaminants on fish-pathogen interactions and blood as a biomonitoring tool	**L. Gouthier**
11:30	Current-use organic pesticides in freshwater ecosystems: effects propagating to terrestrial predators of emerging aquatic insects	**A.-P. Roodt**
11:45	Sex-specific responses to aquatic micropollutants affect the fatty acid transport via hemi- and holometabolous aquatic insects	**S. Pietz**

12:15 - 13:45	Halls 1 & 2
Lunch	

12:45 - 13:45	Room : 11 + 12
Promoting your research	

12:45 - 13:45	Room 02
Career outside academia	

13:45 - 15:45		Auditorium
Agro-Ecology (1/4)		**Chair** S. Barot
13:45	Smallholder agricultural landscapes in the African tropics maintain functional insect biodiversity despite seasonal variation	**G. Küstner**
14:00	Aphid conservation biological control in arable crops via flower strips: the predominant role of plant resources over diversity effects	**A. Gardarin**
14:15	Effects of crop management at the landscape scale on biodiversity : a review and research perspectives	**T. Brusse**
14:30	Contrasting effects of landscape composition and configuration on farmland bird and bat communities	**T. Hiller**
14:45	Agroforestry and biodiversity in temperate silvoarable systems	**F. Kletty**
15:00	What are the global effects of agricultural management on biodiversity? Research we know, research we need.	**J. Bonfanti**
15:15	Floral resource diversification promotes solitary bee reproduction and may offset insecticide effects	**I. Grass**

13:45 - 15:45	Room 01
Forest ecology in a context of global change (2/3)	**Chair**

		S. Hotes J. Kreyling
13:45	Local and regional variability in crown dieback of European beech after the 2018 drought depends on climatic and edaphic drivers	**S. Klesse**
14:00	The effects of retention forestry on large terrestrial mammals in Central European forests	**N. Meyer**
14:15	Impacts of tree species conversion on soil fauna and fungi communities in temperate forest.	**V. Moulin**
14:30	Drivers and dynamics of the timing of foliar senescence in temperate deciduous forest trees at their southern limit of distribution in Europe	**P. Zuccarini**
14:45	Patterns of carbon allocation to fine root exudation in monospecific and mixed stands of a temperate forest under drought and after re-watering	**B. Hafner**
15:00	Monitoring saproxylic beetles and fungi in Swiss forest reserves – baseline reveals moderate differences in diversity patterns compared to managed forests	**N. Roth**
15:30	Drivers of tolerance: ash saplings in a reciprocal transplant experiment	**K. Haupt**

13:45 - 15:45 — Room 02

Disturbance and resilience ecology

Chair
C. Máguas

13:45	Ecological dynamic regimes: Identification, characterization, and comparison	**M. Sánchez-Pinillos**
14:00	An operational framework for unifying the study and the implementation of resilience in ecological systems	**F. Lloret**
14:15	The European 2018/2019 drought impacted earthworms but not soil microbes in intensive farmlands - implications for resilience of soil communities	**E. Klingenberg**
14:30	A theory of pulse dynamics and disturbance in ecology	**A. Jentsch**
14:45	Wildfire and post-fire management modulate arthropod diversity and community dynamics in pine forests (Pinus sylvestris) in Germany	**E.-A. Djoudi**
15:00	Can the functional resilience of microbial communities exposed to multiple disturbances of the same nature be predicted?	**J. Leflaive**
15:15	Cork oaks adapt root water uptake if invaded by Cistus shrubs	**M. Cuntz**

13:45 - 15:45 — Room 03

Conservation biology (2/2)

Chair
C. Fontaine
A. Michelot-Antalik

13:45	Exploring a strategy of avoidance for key functional biodiversity areas in land-use planning	**T. Ferraille**
14:00	Bee Goodies – key plant species for wild bees to improve flower strips	**H. Burger**
14:15	Biodiversity on old conventionally restored grassland is driven by small-scale management and habitat connectivity	**L. Ernst**
14:30	Are existing Marine Protected Areas of the Southern Ocean representative of marine phylodiversity ?	**A. Kondratyeva**
14:45	Priorities for area-based conservation of the global diversity of butterflies	**S. Pinkert**
15:00	Integrating niche models and demography for conservation.	**A. Monnier-Corbel**
15:15	Joint spatial modelling of wildlife casualties along major roads of Brittany, France.	**M. Vandroux**

13:45 - 15:45 — Room 05

Theoretical ecology and ecological modelling

Chair
C. Dormann

13:45	Modeling the stoichiometry of N and P fluxes in socio-agroecosystems: prospective scenarios for a sustainable French agriculture.	**A.-S. Lafuite**
14:00	Modelling the Geometric and Demographic Effects of Fragmentation on Biodiversity Across Spatial Scales	**S. Gelber**
14:15	Interactions between foraging and dispersal scales drive the emergence of spatial heterogeneity in abiotic resources in plant-herbivore systems	**I. Gounand**

14:30	A multi-species grassland model for analysing the response of the cover composition to various management regimes and climate	T. Moulin
14:45	Modelling age-class dependent response of the epiphytic lichen Lobaria pulmonaria to climate	P. Porada
15:00	Impact of fecundity-immunity trade-off on host eco-evolutionary dynamics.	E. Djahoui
15:15	IESR: a novel method to analyze species introduction effects in space-time on species range dynamics, and prioritize conservation efforts.	A. Callebaut
15:30	Hibernation niche modelling across 200 years of global warming.	K. Kravchenko

13:45 - 15:45 Room 06

Machine learning for ecological images.

Main organizer of the symposium :
Sakina-Dorothée AYATA, LOCEAN, Sorbonne Université, sakina-dorothee.ayata@locean.ipsl.fr

Co-organizers of the symposium (Names, institutions, emails):
- Martin LAVIALE, LIEC, Université de Lorraine, martin.laviale@univ-lorraine.fr
- Jean-Olivier IRISSON, LOV, Sorbonne Université, jean-olivier.irisson@imev-mer.fr
- Frédéric MAPS, Université Laval, Québec, frederic.maps@bio.ulaval.ca

Session description (max 300 words):
More and more ecologists are now using various types of images to address ecological questions. These images include satellite data of continental landscapes and ocean surface, photos of large organisms taken from camera traps, underwater videos of fish or benthic habitats, individual images of organisms taken in situ or in the lab, plant images taken from a smartphone, etc. Although these images have very different characteristics (automatic vs manual acquisition, homogeneous or complex background, community, population or individual scale, pixel resolution, color vs. back and white, etc.), ecologists are facing common issues and challenges. They include in particular detection and segmentation problems, how to efficiently use transfer learning approaches or how to deal with class imbalance in automatic classification algorithms. This symposium aims at gathering computer scientists interested in ecological applications and ecologists collecting and analyzing ecological images to exchange on common interdisciplinary issues.

· Speakers
Keynote: Kristian Meissner (SYKE, Finland): computer vision and deep learning for aquatic monitoring and decision making (25+10 min) - Confirmed

Regards croisés: Cédric Pradalier (GeorgiaTech Lorraine Metz) & Martin Laviale (LIEC, Université de Lorraine): Using ML for environmental monitoring, different perspectives froma computer scientist and an ecologist.
25 min incl. discussions (7 + 7 + 10min of discussion) -

Short talks:
(10+5 min /speaker)
- Jean-Olivier Irisson: Assisted annotation and EcoTaxa, a tool to support the annotation of large image datasets by supervised machine learning prediction.

- Julien Renoult (CEFE, Montpellier): Using deep neural networks to study the evolution of visual phenotypes. (Remote presentation)

- Jędrzej Świeżewski and Piotr Pasza Storożenko (Appsilon, Poland) Robust ecological analysis of camera trap data labeled by a machine learning model OR/AND ML for ecological applications, example on estimating functional traits in images, the example of copepod lipid sacs.

- Michael Kloster (Univ Duisbourg, Germany): Deep learning-based diatom taxonomy on virtual slides for diatoms.

· Sponsorship:
This symposium is co-organised by several french and international initiatives (SU-ISCDFORMAL, ANR-SmartBiodiv, SN-Artifactz) that can cover for the travel of the invited speakers (secured funding).

	Using ML for environmental monitoring, different perspectives from a computer scientist and an ecologist	C. Pradalier M. Laviale
	Assisted annotation and EcoTaxa, a tool to support the annotation of large image datasets by supervised machine learning prediction	J.-O. Irisson
	Using deep neural networks to study the evolution of visual phenotypes. (Remote presentation)	J. Renoult
	Robust ecological analysis of camera trap data labeled by a machine learning model OR/AND ML for ecological applications, example on estimating functional traits in images, the example of copepod lipid sacs	J. Świeżewski

	Deep learning-based diatom taxonomy on virtual slides for diatoms	**M. Kloster**
	Computer vision and deep learning for aquatic monitoring and decision making	**K. Meissner**

13:45 - 15:45		Room 09 + 10
Landscape ecology (2/2)		**Chair** M. Deconchat
13:45	The influence of habitat properties on sex determination and resource allocation in cavity-nesting Hymenoptera	**K. Wittmann**
14:00	The Prediction of the Biodiversity of Culicidae in association to a gradient of Land use	**L. Rauhöft**
14:15	Beech-dominated forests provide inferior foraging resources for honey bees	**B. Rutschmann**
14:30	Searching for optimal sampling design for landscape-scale biodiversity surveys	**F. Laroche**
14:45	Positive response of flower-visiting insect abundances to landscape context relies on nectar productivity	**A. Alignier**
15:30	Influence of semi-natural habitat quantity and fragmentation on the diversity and abundance of invertebrates and bats at wildflower compensation areas in Schleswig Holstein, Germany.	**D. Bennett**

13:45 - 15:45		Verlaine A
Biodiversity and ecosystem functioning in a changing world (2/4)		**Chair** B. Gauzens
13:45	RegioDiv: Genetic differentiation in mixed-ploidy species and consequences for the design of seed transfer zones	**J. Höfner**
14:00	How does niche differentiation among producers and consumers influence the diversity-productivity relationship?	**A. Amyntas**
14:15	Tree diversity and mycorrhizal fungi co-determine multitrophic ecosystem functions	**H. Yi**
14:30	Climate and land use impacts on pollinator diversity differ among taxa and scales	**C. Ganuza**
15:00	Temporal Dynamics of Global Biodiversity : Controversies, Biases and Challenges	**M. Boënnec**

13:45 - 15:45		Verlaine B
Eco-toxicology and environmental pollution (2/2)		**Chair** J. Bleu C. Fritsch
13:45	Toxicokinetic modelling to understand the influence of exposure pathways on the distribution, toxicokinetic and fate of cadmium in the organs of Gammarus fossarum	**O. Gestin**
14:00	Regime shifts in shallow aquatic systems caused by agricultural run-off and warming – Insights from micro- and mesocosms experiments	**E.-M. Gross**
14:15	Variation in pesticide sensitivity of twenty-eight European spiders	**T. Duque**
14:30	Environmental emergent problems: what's the influence of the reproduction cycle in a freshwater sentinel species submitted to climatic and chemical stressors?	**L. Minguez**
14:45	Anthropogenic noise surprisingly increases fitness of a freshwater zooplankton	**L. Prosnier**
15:00	A temporal perspective on aquatic subsidy: Bti affects the emergence of Chironomidae	**S. Kolbenschlag**
15:15	Linking trait syndromes from diatoms, fishes and invertebrates to micropollutants in streams: a way for identifying relevant model species	**A. Meyer**
15:30	Linking PPP load in blood to life history traits : the Grey Partridge as a bioindicator of agroecosystem health	**A. Gaffard**

14:00 - 15:45		Room : 11 + 12
Behavioural and dispersal ecology (2/2)		**Chair** S. Massemin
13:45	Dietary diversity and variability of food resources: bonobos (Pan paniscus) ecological strategies adapted to a forest-savannah mosaïc habitat.	**C. Gérard**
14:00	The timid invasion	**J. Eccard**

14:15	Harmonic radar tracking reveals far-reaching impacts of light pollution on moths	J. Degen
14:30	Home range overlap between the invasive species Callinectes sapidus and the indigenous Eriphia verrucosa by acoustic telemetry in Acquatina lagoon (Frigole, Lecce)	V. Marrocco
14:45	Overlapping territories in a small wintering population of wandering tattler in French Polynesia	R. Lorrilliere
15:00	Effects of land use intensity on pollinator behavior in agricultural landscapes	M. Birkenbach
15:15	Personality relates to both past and future dispersal in a wild bird population	T. Tamin

15:45 - 16:15 — Halls 1 & 2

Coffee break

16:15 - 18:15 — Auditorium

Agro-Ecology (2/4)

Chair
A. Gardarin

16:15	Unearthing the effect of cropping systems on soil biodiversity: indicators to describe disturbances caused by agricultural practices	J. Chassain
16:30	Environmentally friendly landscape management improves oilseed rape yields by increasing pollinators and reducing pests	T. Perrot
16:45	Effects of configurational and compositional crop heterogeneity on farmland birds revealed with national-scale bird monitoring data	C. Frank
17:00	Livestock density affects species richness and ecological traits of butterflies at the national scale	T. Kasiske
17:15	Direct and indirect effects of birds and landscape structure on leaf damage in organic apple orchards	D. Rubene
17:30	Biodiversity of arthropods in viticulture – Influence of management and landscape	M. Kaczmarek
17:45	Does permaculture enable an ecologically sustainable agriculture?	J. Reiff
18:00	Reviewing the evidence base for synergies and trade-offs between agricultural yield and biodiversity	R. Marja

16:15 - 18:15 — Room : 11 + 12

Aquatic Ecology

Chair
A. Bec
T. Ruiz

16:15	Asynchronous recovery of predators and prey mitigates deleterious effects of droughts on litter decomposition in freshwater ecosystems	T. Ruiz
16:30	Does hydrology influence fish communities in canals of reclaimed marshes?	J. Crabot
16:45	Understanding genetic and species diversity patterns across multiple trophic levels in river landscapes	L. Fargeot
17:00	Drivers of fish size spectrum and bioindicators in lentic ecosystems across France.	V. Marin
17:15	Multiple lines and levels of evidence for bird-mediated colonization of isolated lakes by freshwater fish	F. Garcia
17:30	Source and pathways of carbon in lake food webs under anthropogenic perturbations.	V. Essert
17:45	Combined effect of agricultural run-off and warming on agricultural streams: a mesocosm experiment	J. Allen
18:00	How can the hydric stress modify the potential of phototrophic biofilms to sustain secondary production?	C. Courcoul

16:15 - 18:15 — Room 01

Forest ecology in a context of global change (3/3)

Chair
M. Scherer-Lorenzen

16:15	Maturation size in forest trees driven by maximum size, also depending on climate	V. Journé

16:30	The effect of stand species composition on the spring phenology of four common European tree species	T. Heinecke
16:45	Three centuries of changes in fire frequency in Corsican black pine forest inferred from dendrochronology	J. Badeau
17:00	Drought impacts on tree annual growth, vitality, and mortality risk	M. Cailleret
17:15	How do irradiance and leaf phenology influence the carbon storage dynamics along the vertical gradient of mature tree crowns?	C. Zahnd
17:30	Climate change and tree growth dynamics of European beech and Scots pine across strong precipitation gradients in North Germany	R. Weigel
17:45	Successional rates on deadwood resource resemble botanical succession and are not affected by abiotic harshness	J. Schreiber

16:15 - 18:15 — Room 02

Soil ecology

Chair
J. Clause

16:15	Interactive effects of soil moisture, air temperature and litter nutrient concentrations on soil microbial and collembolan population	C. Biryol
16:30	On the phenology of soil organisms: current knowledge and future steps	A.-E. Bonato Asato
16:45	Effect of soil structure on trophic interactions: a modelling approach	A. Erktan
17:00	Effects of summer drought and soil organic carbon content on biotic communities and ecosystem services in agricultural soils across Europe	K. Birkhofer
17:30	Impact of interactions among earthworms species on soil functioning	J. Araujo
17:45	Different approaches to grasp multi-trophic ecology using network methods: models, assumptions and applications on soil eDNA data	M. Ohlmann
18:00	Differential effects of soil trophic networks on microbial decomposition activity in mountain ecosystems	C. Martinez Almoyna

16:15 - 18:15 — Room 03

Population and community ecology, from micro to macroorganisms

Chair
I. Gounand

16:15	Non-target chironomids respond to an anti-mosquito agent - Analysing communities using metabarcoding and joint species distribution modelling	N. Röder
16:30	Stochastic processes, deterministic models. How to deal with process and observation error in microcosm population time series?	B. Rosenbaum
16:45	Climate effects on phenology and morphology often have strong population consequences but no consistent trend across animals globally	V. Radchuk
17:00	Plants and bacteria mutually effect each other's successions in a glacier forefield	R. Junker
17:15	Ground-dwelling arthropods as mobile linkers for phytopathogenic fungi in agricultural landscapes	N. Heitmann
17:30	Reproductive senescence in female polar bears in a variable environment	M. Naciri
17:45	Do elephant carrions benefit other African herbivores through modification of the coupling of populations of a facultative scavenger and its prey?	M. Sidous
18:00	The interplay of natural forest development and elevation in shaping species communities	T. Richter

16:15 - 18:15 — Room 05

Ecological interaction networks for action

Main organizer of the symposium :Franck JABOT, INRAE, franck.jabot@inrae.fr
Co-organizers of the symposium : Pierre QUÉVREUX, INRAE, pierre.quevreux@inrae.fr

Session description
Biodiverse ecosystems harbors numerous and tangled ecological interactions that shape their functioning and dynamics. The study of ecological interaction networks has led to a substantial body of theoretical knowledge. We now understand the general relationships between the structure and dynamics of food webs and mutualistic networks, as well as the main drivers of network assembly. These general advances have been possible thanks to pioneering empirical works that have assembled challenging data on interaction networks. This limiting step of data acquisition is being revolutionized by modern technologies such as DNA meta-barcoding or autonomous devices for sound and image processing. These next generation techniques not

only change our previous understanding of ecological interactions, but also offer the promises of democratizing the collection and use of network data for a wide array of applications. These applications include the integrated management of ecosystems for conservation, the design and monitoring of sustainable fisheries, the ecological intensification of agriculture or the design of biodiversity-friendly productive landscapes, all of these applications being of tremendous relevance to tackle the challenges posed by global changes.
The objective of this symposium is to spotlight recent works that mobilize a network approach for ecological applications, in a wide array of ecosystem types. By gathering scientists belonging to distinct scientific communities, we aim at revealing common trends, challenges and perspectives for the use of ecological interaction networks for action.
Organization of the session: 7 talks of 15 min including questions followed by 15 min of general discussion with the audience on the perspectives of use of network approaches for action.

Meta-food web theory informs landscape planning.	**U. Brose**
The simplification of ecological communities: effects of habitat loss on network structure	**N. Galiana Ibanez**
Indirect effects in plant-pollinator networks: consequences for agricultural systems?	**E. Thébault**
The complex response of plankton food webs to shifts in seasonal forcing.	**S. Wollrab**
Fishing reference points assessed by a marine individual-based food web model.	**M. Travers-Trolet**
Assessing trophic multifunctionality of food webs using energy flux approach	**A. Potapov**
A general ecosystem model to predict soil functioning	**P. Quévreux**

16:15 - 18:15 — Room 06

Racism in ecology and evolution: Lessons from E.O. Wilson's legacy

Main organizer (applicant) of the symposium:
- Philippe Huneman (IHPST, CNRS/Université Paris I Sorbonne, France, philippe.huneman@gmail.com)

- Emanuel A. Fronhofer (ISEM, CNRS/Université de Montpellier, France, emanuel.fronhofer@umontpellier.fr)

Session description:
Racism has been closely entangled with research in ecology and evolutionary biology (EEB) since its beginnings. For instance, eugenics has plagued the birth of population genetics, and is closely entangled with major groundbreaking work, such Galton's work on heritability or Fisher's seminal 1930 book. While many biologists were deeply involved in the fight against racism, first of all by deconstructing the vernacular, phenotypic-based, notion of race, depriving it of any biological significance (e.g., Mayr or Dobzhansky and their contribution to the UNESCO declaration on race), a few others have consistently performed questionable investigations with a clear racist agenda. Scientific racism, intertwined first with the concepts of r-K selection, and now with behavioural genomics, keeps emerging at the margins of ecology and evolution.
Current societal movements such as #BlackLivesMatter or prominent popular scientific publications like Saini's "Superior" have cast a new spotlight on racism (both open and systemic) in EEB. Most recently an intense discussion regarding E.O. Wilson's legacy, sparked by McLemore's highly debated Opinion piece in Scientific American, its answers by prominent evolutionary biologists, and papers by historians (e.g., Borello and Sepkoski in NYRB, which, in the past, has hosted heated debates about sociobiology), who documented controversial unpublished letters by E.O. Wilson, has erupted, putting racism at the center stage of various social media discussions in the EEB social media bubble.
Interestingly, this discussion, which we urgently need to have as a scientific field, has largely taken place outside of scientific societies and, at the same time, has not taken advantage of the existing competence of researchers studying research, that is, historians and philosophers of science. Our symposium is a first attempt at formalizing this discussion in order to help the EEB community face up to its racist past and pave the way for a more inclusive future.

The (at Least) Two Faces of E. O. Wilson	**S. Smith**
The Political Spectrum of Genetics, Evolution, and "Race": E.O. Wilson, R.C. Lewontin or neither/both?	**R. Grønfeldt Winther**
Arthur Jensen and population geneticists (1968-1980): race, genetics and the sociobiology controversy	
Naturalization and its Discontents: Animal and Human Behavior in Historical Perspective	
"Dear Fellow Fascist": Hereditarianism, Scientific Racism and anti-Communism from Robert Cook to Edward O. Wilson	

16:15 - 18:15 — Room 09 + 10

Methodologies and infrastructures for large and long term datasets (1/2)

Chair
A. Basset

16:15	A pipeline for in-situ plankton imaging data: Improving our understanding of ocean particle distribution and carbon fluxes using morphological traits	M. Beck
16:30	Exploring the drivers of past occupancy changes in Central European insects	E.-K. Engelhardt
16:45	The entangled phenology of the olive tree: A compiled ecological calendar of Olea Europaea L. in Sicily over the last two millennia	V. Ferrara
17:00	A sensor-driven approach for analyzing a beehive's state	P. Davidson
17:15	Machine Learning and Deep Learning – A review for Ecologists	M. Pichler
17:30	Automated detection for bird monitoring – the challenges of detection distance and accurate localization	C. Buchmann
17:45	A post hoc observatory of functional trait change: novel spectroscopic methods allow trait measurements and comparisons of historical herbarium and recent field specimens in a resurvey project	P. Kühn
18:00	Artificial intelligence at the service of marine biodiversity: start of an unprecedented scientific challenge	L. Mannocci

16:15 - 18:15 — Verlaine A

Biodiversity and ecosystem functioning in a changing world (3/4)

Chair
J.-L. Martin
K. Wiegand

16:15	Megafauna extinctions over the late Quaternary have strongly reduced mammalian consumption of primary productivity	R.-Ø. Pedersen
16:30	How does food restriction impact nutrient cycles through animal physiology?	S. Charberet
16:45	Avian insectivory is not mediated by bird acoustic and functional diversity along a wide latitudinal gradient	L. Schille
17:00	Uncertainty on migration: selecting predictable resources in unpredictable conditions	E. Dedeban
17:15	The effects of Artificial Light At Night on plant-insect interactions	R. Heinen
17:30	Relationship between microbial diversity and susceptibility to antibiotic resistance invasion in epilithic biofilms	F. Changey
17:45	Tree growth resistance and resilience to the 2018-2020 drought as modulated by tree diversity and mycorrhizal associations	L. Sachsenmaier
18:00	Nomadic ungulate movements under threat: Declining mobility of Mongolian Gazelles in the Eastern Steppe	P. Mendgen

16:15 - 18:15 — Verlaine B

Ecology, functioning and evolution of urban and anthropized systems (1/2)

Chair
V. Klaus
S. Knapp

16:15	Interactions of Functional Traits With Native Status and Ecosystem Novelty Explain the Establishment of Plant Species Within Urban Ecosystems: Evidence From Berlin, Germany	S. Knapp
16:30	Restoring urban ecosystem for nature and people	V. Klaus
16:45	New insights into wasteland ecosystems of the glass industry	J. Jacquet
17:00	Urbanisation as a neutral filter or urban areas as a habitat? A test at the continental scale focused on bird communities.	A. Monchy
17:15	ECOPOLIS project: The transformation of a contaminated industrial wasteland into a living-lab based on a phytomanagement approach	J. Collot
17:30	Living in the city: responses of cavity-nesting bees and wasps and their natural enemies across European cities	J. Casanelles Abella
17:45	The BISES project: Toward a better understanding of urban soil biodiversity	A. Vergnes
18:00	Punching above their weight, the role of small green spaces for biodiversity in cities	K. Vega

18:15 - 19:00 — Room 13

SE6 : Meeting of the SFE² group for landscape ecology

Main organizer: Marc Deconchat marc.deconchat@inrae.fr

18:30 - 20:00	Verlaine A
Meeting of the EEF group Main organizer: Cristina Màguas	

19:00 - 20:00	Auditorium
Valérie Masson-Delmotte, CEA and Co-Chair, Working Group I. IPCC	

SFE² GfÖ EEF

Joint meeting, International Conference on Ecological Sciences

"Ecology and Evolution: New perspectives and societal challenges"

21-25 Nov 2022 Metz (France)

Ecology & Evolution: New perspectives
and societal challenges

J3 - 23/11/22

Organized by :

LIEC & North Eastern France Labs in Ecology & Evolution — Université de Lorraine — cnrs — sfé² — GfÖ The Ecological Society of Germany, Austria and Switzerland — eef European Ecological Federation

08:30 - 08:45	Auditorium
Welcome & informations	

08:45 - 09:30	Auditorium
Giving anthropocene a chance. Ecological restoration to respond to the environmental crisis Global degradation has a negative impact on the well-being of at least 3.2 billion people and represents a cost of more than 10% of the annual gross world product in loss of biodiversity and ecosystem services. Alongside climate change, unsustainable land and ocean uses threaten the survival of a quarter of global species and affect the provision of ecosystem services crucial to our well-being. Ecological restoration can help protect biodiversity, increase the provision of ecosystem services, including carbon sequestration, and improve human well-being. The UN Decade of Ecological Restoration 2021-2030 and the EU Biodiversity Strategy for 2030 define a new framework to meet global environmental challenges and improve the status of European nature. Researchers, practitioners, and policymakers across Europe should join forces to define restoration strategies that are based on a thorough understanding of social-ecological systems. These strategies must address multiple management scales, integrating ecological restoration into land-use planning, and responding to the challenge posed by international commitments. The European proposal of Nature Restoration Law will entail the need to (i) update the proposed guidelines at national and subnational level, (ii) develop prioritization frameworks and define priority areas for restoration, integrating top-down and bottom-up initiatives, (iii) analyze the consequences of different restoration scenarios, (iv) design operational participation protocols in the different phases of restoration programs, and (v) explore business opportunities in urban and rural settings. In this presentation, I will summarize the Nature Restoration Law, review its challenges and opportunities, and propose a multidisciplinary approach for translating the law into national guidelines and priorities for ecological restoration. The approach is structured along 5 main axes: diagnose, prioritization, financing and cost-effectiveness, social impact and participation, and quality, and it is currently being developed in a project led by the Spanish Ministry for the Ecological Transition and the Demographic Challenge, involving ca. 100 experts.	
	J. Cortina-Segarra

09:30 - 10:00	Halls 1 & 2
Coffee break	

09:30 - 10:00	Room 13
Free discussion with Jordi Cortina (Plenary 2)	

10:00 - 12:00	Auditorium
Diversification of agricultural landscapes to promote pollinator biodiversity and pollination service delivery. Main organizer (applicant) of the symposium (Name, institution, email): Thijs Fijen, Wageningen University & Research, thijs.fijen@wur.nl Co-organizers of the symposium (Names, institutions, emails): Catrin Westphal, University of Göttingen / Georg-August-Universität Göttingen, catrin.westphal@agr.uni-goettingen.de Session description : Land use change and agricultural intensification are considered major drivers of biodiversity loss and can impair ecosystem functions and services in agricultural landscapes. At the same time, agricultural production relies on vital agroecosystems and species providing important ecosystem services, such as decomposition, biological pest control and pollination. Hence, we need innovative production systems that sustain agrobiodiversity and promote ecosystem services (e.g. ecological intensification). Moreover, managing agricultural landscapes for heterogeneity could simultaneously enhance agricultural production and agrobiodiversity.	

While scientific support that these practices should work, examples that show that this works in practice are relatively scarce.
In this symposium, we will focus on how different approaches and measures increase the diversification of cropping systems in agricultural landscapes, and what their effects are on pollinator conservation and pollination services. The two main approaches to enhance diversity in agricultural landscapes are to increase diversity within the agricultural system itself, or to increase diversity in non-productive habitats. For instance, changes in the agricultural system, such as intercropping, mixed-cropping or the diversification of crop sequences, could result in enhanced crop diversity in space and time, and subsequently higher pollinator biodiversity and pollination services. At the landscape level, diversification of biodiversity-friendly land cover types, such as semi-natural habitats or agri-environmental measures, could contribute to increased heterogeneity of the landscape, with positive effects on biodiversity and provisioning of ecosystem services. In this symposium, we will highlight examples of what works and what does not work, and what appears to be success factors or barriers. We will furthermore synthesize evidence on how crop cultivation can contribute to pollinator conservation and discuss future avenues for more pollinator-friendly and productive agricultural landscapes.

	How landscape heterogeneities could contribute to wild bees conservation in agricultural landscapes	**A. Ouin**
	Diversified cropping systems for pollinators	**O. Lundin**
	Promoting pollinators and pollination services through faba bean cultivation	**N. Beyer**
	Crop pollination services: complementary resource use by social vs solitary bees facing crops with contrasting flower supply	**C. Westphal**
	Co-flowering crops: Implications for pollinator conservation and pollination services on farms	**J. Osterman**
	Supporting wild pollinators in agricultural landscapes through increasing cultivar diversity within crops	**M. Eeraerts**
	Options of ecological enhancement of silage maize cultivation for bioenergy to promote pollinating insects	**J. Dauber**
	Identifying future avenues: can crop cultivation benefit pollinator conservation?	**T. Fijen**

10:00 - 12:00 — Room : 11 + 12

Services provided by ecosystems and biodiversity (1/2)

Chair
S. Leonhardt

10:00	Rainforest management effects on trade-offs and synergies among multiple ecological and socio-economic functions	**S. Fiedler**
10:15	Correlations between ecosystem functions of a grassland are temporally variable and driven by plant diversity and plant community identity	**L. Argens**
10:30	Eco-evolutionary dynamics of host-parasite systems in complex landscapes.	**J.-N. Deshpande**
10:45	Crop diversity in the landscape favors bats and biological control of some pests	**A. Tortosa**
11:00	Provision of multiple ecosystem services in extensively and intensively managed organic and conventional grasslands in Switzerland	**F. Richter**
11:15	Evolutionary changes during experimental epidemic waves and their consequences for disease spread	**G. Zilio**
11:30	Vegetation-mediated ecosystem services predicted by plant traits	**M. Kleyer**
11:45	Landscape management strategies for multifunctionality and social equity	**M. Neyret**

10:00 - 12:00 — Room 01

Which management practices for the adaptation of forests to climate change?

Main organizer (applicant) of the symposium (Name, institution, email):
Xavier Morin, CNRS, xavier.morin@cefe.cnrs.fr

Co-organizers of the symposium (Names, institutions, emails):

Joannès Guillemot, CIRAD, joannes.guillemot@cirad.fr
Hervé Jactel, INRAE, herve.jactel@inrae.fr

Session description :
Climate change impacts and related disturbances are strongly affecting forests worldwide. Tree mortality is increasing while forest productivity is declining in many regions, which compromises crucial contributions of forests to people (goods provision such as wood or non-woody products, habitat provision for biodiversity, air and water filtering, protection against natural hazards and soil erosion…), as well as the possibility of using forest conservation and restoration as a Nature based Solution for climate change mitigation. The adaptation of forests to climate change is a tremendous challenge for practitioners, as recognized in recent

ambitious international commitment such as the European Green Deal. Yet, adaptive forest management needs to accommodate multi-dimensional constraints, including the economic aspects. The design of new management guidelines to be adopted in the face of climate change is thus strongly debated. In particular, tree diversity was identified as a crucial leverage for forest adaption, for instance via provenance selection and tree species mixing. Other proposed practices, such as more frequent thinning, increased harvesting intensity or introduction of exotic species, need to be discussed in light of both carbon sequestration and biodiversity objectives. As this topic is now strongly linked to current decision in national and international forest policies, it seems timely to hold this symposium as it will review the current scientific evidence supporting (or not) methods of forest adaption to climate change, and discuss their implications for biodiversity conservation and the forest's contributions to people.

	Beyond mean fitness: demographic stochasticity, species interactions and resilience to disturbance matter at tree species climatic edges	**G. Kunstler**
	Potential and limitations of stand density management to mitigate drought stress in trees	**J. Bauhus**
	Introducing exotic tree species to adapt forests to climate change: a risky business.	**G. Decocq**
	Managing mixed forests: the role of tree species diversity for productivity in a changing climate	**C. Ammer**
	Forest biodiversity and of ecosystem functioning: new insights from modelling studies.	**X. Morin**
	Mixing tree species to improve forest drought resistance? A perspective based on plant hydraulics	**N. Martin**
	The role of forest species diversity in resisting climate change-induced insect outbreaks	**H. Jactel**
	Avoided emissions from wood use are not systematic : a meta-analysis of the substitution potential of wood	**A. Valade**

10:00 - 12:00 — Room 02

Plant Ecology

Chair
S. Klotz

10:00	Frost resistance in herbaceous species: A driving factor for plant performance in response to global change	**D. Adesua**
10:15	Competitive ability and drought escape, rather than drought tolerance, determine fitness of annual plant ecotypes along precipitation gradients in Mediterranean areas	**F. Gade**
10:30	Effects of macrocyclic lactone anthelmintics on seed germination of temperate grassland species	**L. Laber**
10:45	Orchid mycorrhizal networks are more specialized in Mediterranean than in Central Europe	**S. Mennicken**
11:00	Patterns in phenology and functional traits of herbaceous species change along a gradient in species diversity – lessons learnt from a field study in dry grasslands	**J. Ulrich**
11:15	Spatio-temporal scaling of rainfall drives vegetation dynamics of savannas – evidence from a rangeland simulation model	**K. Wiegand**
11:30	Plants stand still but hide: imperfect and heterogeneous detection is the rule when counting plants	**J. Perret**
11:45	Plants response to variation in estuarine constraints: a study in controlled conditions of salinity and inundation gradients	**M. Neupert**

10:00 - 12:00 — Room 03

Chemical ecology

Chair
E.-M. Gross

10:00	Plant chemistry drives aphid preference	**A. Neuhaus**
10:15	The role of chemodiversity in flower-insect interactions of Tanacetum vulgare	**R. Sasidharan**
10:30	Combined effects of food quality and pesticides on bumblebee health	**F. Straub**
10:45	Plant diversity and soil legacy independently affect the plant metabolome and induced responses following herbivory	**C. Ristok**
11:00	Plant and Plot-level Diversity of Chemical Profiles in a Tansy Plant Field Population Influences Aphid Occurrence and Seasonal Aphid Abundance Patterns	**L.-M. Ojeda Prieto**
11:15	Chemistry matters: Pollen nutritional niches of wild bees	**S. Leonhardt**
11:30	Elevational differentiation of warming and drought stress resistance in the world’s highest elevation tree species	**K. Schrieber**

10:00 - 12:00 | Room 05

Arts -Sciences

Main organizer of the symposium:
Clavel Joanne
CR CNRS, UMR7533, LADYSS, Université Paris Cité.
joanne.clavel@cnrs.fr

Session description

Arts are privileged places of individual and collective recomposition of cultural processes. They document the concerns of their time but they also carry new horizons of desires and practices for the future societies. The arts shape ways of seeing, feeling, moving and speaking about the world. In this way they open sensitive paths, symbols, figures, stories, corporalities, thus building collective cultural perceptions that reinvent our relationship to reality.

Artists and scientists cultivate different ways of looking at the world from practices and theoretical frameworks that are often unfamiliar to both. If creativity seems to be common, the investigations, the analyses, the modes of productions or restitution seem very distant, even antinomic and so often hierarchize in terms of knowledges. In the last twenty years, fruitful alliances between Arts and Sciences have been invented and growing on ecological themes. Visual artists, choreographers, sound artists, circus artists… call upon scientists for their projects (Nicolas Floch', Anaïs Tondeur, (n), Jennifer Monson, Andrea Olsen...). Initiatives from scientists emerge also.

Faced with ecological disasters, many scientists who actively contribute to enlighten and disentangle the phenomena in progress, try to make their research known to the general public through art. They estimate that the sensitive and formal character (visual, sensory, immersive) of arts would be promising to the transmissions of knowledge, to the public debate of our collective futures. Facing the current state of the world and the political inaction, they are often themselves taken by feelings of hopelessness and discouragement to which the scientific register, little able to recognize the existence of subjectivation processes, cannot answer. From this form of art instrumentalization sometimes comes experiences full of creative synergies that will be shared, without omitting the difficulties of interdisciplinary work. During this symposium we will also discuss how arts-sciences intersect, for instance in terms of “methods” employed, and how this contributes to a renewal of study corpus. The Symposium welcome scientists mainly from scientific ecology (the SFE2, Gfö, EEF communities) who are engaged in singular approaches with artists, artworks or artistic practices.

11H40 General discussion

	Island journey. Another story of avian parasites	**C. Loiseau**
	Following flows across borders: clams, seaweed and words	**F. Ménez**
	Crossing arts and sciences to raise awareness on environmental issues: solution or illusion ?	**A. Vergnes**
	Thinking and feeling nature: experiment of inner reconciliation and progression towards an introspective ecology	**C. Damesin**
	Aquatic biodiversity in art: significance for historical ecology and nature connectedness	**A.-S. Tribot**

10:00 - 12:00 | Room 06

The Physics of Ecological Interactions

Main organizer of the symposium:
Mehdi Cherif, FRENCH NATIONAL RESEARCH INSTITUTE FOR AGRICULTURE, FOOD AND ENVIRONMENT (INRAE), mehdi.cherif@inrae.fr

Session description:

Ecosystems face massive anthropogenic disruptions. It is thus imperative to develop a predictive approach to the dynamics of populations and communities subjected to changing environmental conditions. The study of the effect of climate-defining physical factors on the biogeochemical processes of the ecosystem is already well developed. But there is no equivalent theory yet on the direct effects of these same factors on intraspecific and interspecific ecological interactions. A theory describing interactions between individuals in a mechanistic way will necessarily be complex, because it must integrate physiological, behavioral and ecological processes. Adding a physical, environmental component can, however, help to simplify it. Indeed, physical laws are ubiquitous and unescapable. All ecological interactions includes physical processes, since they require from the individuals involved to perform mechanical movements or use their physical senses. Many advances have resulted from the use of physical principles in order to predict the existence and intensity of

trophic interactions. New fields of research with more or less overlapping domains have appeared: ecomechanics, physical ecology, mechanoethology, mechanical ecology, among others. This symposium aims to define the potentialities and limits of a mechanistic approach to ecological interactions based on the physical properties of both the environment and the organisms. This analysis will be done through presentations of case studies and theoretical models, followed by a panel discussion with the aim to unify frameworks and methodologies.

	Introduction to the role pf physical factors in ecological interactions	**M. Cherif**
	Integration of environmental factors in a modular theory of trophic interactions	
	Plankton ecosystem functions emerging from first principle constraints of individual cells	**K.-H. Andersen**
	Thermal effects: linking foraging behaviour to energetic budget and species interactions	**A. Sentis**
	The impact of lake physics on benthic and pelagic primary production – a 2-dimensional modelling approach	**S. Diehl**

10:00 - 12:00 — Room 09 + 10

Methodologies and infrastructures for large and long term datasets (2/2)

Chair
S.-D. Ayata

10:00	Classification and detection of collembola from microscope slide images using deep learning for soil bioindication	**T. Oriol**
10:15	Biodiversity time series are biased towards increasing species richness in changing environments	**L. Kuczynski**
10:30	Extracting Information on Plant Species Abundances from Images using Convolutional Neural Networks	**M. Körschens**
10:45	Matching species names across biodiversity databases: sources, tools, pitfalls and best practices for taxonomic harmonization.	**M. Winter**
11:00	Promoting long-term time series on species occurrences by text mining in historical biodiversity literature	**C. Driller**
11:15	Ecotopes and ecopatches: dataprisms for ecological models combining remote sensing and ancillary data	**J. Radoux**
11:30	Skylark's decline in the Long-Term Social Ecological Research Site "Zone Atelier Plaine & Val de Sèvre" and impact of spatial sampling designs.	**T. Schneider-Bruchon**
11:45	Fat chance: estimating the lipid content of Arctic zooplankton from in situ images	**F. Maps**

10:00 - 12:00 — Verlaine A

Biodiversity and ecosystem functioning in a changing world (4/4)

Chair
E. Thébault

10:00	Resource and animal-induced competition jointly drive plant diversity-productivity relationships	**G. Albert**
10:15	Effects of plant diversity on species-specific herbivory – Patterns and Mechanisms	**M. Bröcher**
10:30	It's about timing – Phenological asynchrony in leaf development can improve nitrogen uptake of diverse tree communities	**L. Rose**
10:45	How repeatable are communities in Fomes polypores?	**A. Ardanuy**
11:00	Impact of freshwater shipping on biodiversity is context dependent	**A. Sexton**
11:15	Ambient and substrate energy influence decomposer community diversity differentially across trophic levels	**P. Kriegel**
11:45	Pollen limitation, local resource availability and pollinator community composition affect the fertilization success of Scabiosa ochroleuca	**C. Dominik**

10:00 - 12:00 — Verlaine B

Ecology, functioning and evolution of urban and anthropized systems (2/2)

Chair
V. Klaus
S. Knapp

10:00	Beltway for biodiversity – bats and birds along the Ringgleis in Braunschweig, Germany	**M. Strohbach**
10:15	The effect of design features on biodiversity in urban squares	**A. Fairbairn**

10:30	Multivariate effects of urbanisation on an anthropophilic land snail, Cornu aspersum	M. Dahirel
11:00	Quantitative assessment of nutrient inputs from angling baits in small lake fisheries	A. Imbert
11:15	The secret life of social wasps in urban community gardens	J. Schmack
11:30	Field evaluation of the cotton-strip assay for quantifying organic matter decomposition rates on extensive green roofs	D. Técher
11:45	Reduced grassland multifunctionality as a result of lower precipitation due to climate change – a mesocosm experiment in climate chambers	L.-H. Teixeira

12:00 - 13:45 — Halls 1 & 2

Lunch

12:45 - 13:45 — Room : 11 + 12

Impostor syndrome

12:45 - 13:45 — Room 02

From raw biodiversity data to operational indicators through Essential Biodiversity Variables

12:45 - 13:45 — Room 07

Phenology-trait relationships in plants across different scales

13:45 - 14:25 — Auditorium

GfÖ awardee lecture : 30 years of research in ecosystem ecology, driven by curiosity, grand challenges and opportunities

How to summarize 30 years of research? A challenging task, but as is science. Early on, ecosystems were my objects of research, and they stayed in the focus ever since. From questions how ecosystems responded to N deposition and what the fate of this N within the system was, to questions how terrestrial ecosystems from the boreal zone to the tropics function in terms of their biogeochemistry and biosphere-atmosphere exchange, to questions how climate change, biodiversity loss, and land use affect those processes on the systems scale, the breadth of my research topics over these 30 years has been large. The choice of these topics has always been driven by curiosity and the ambition to work on grand challenges, contributing to science-based, sustainable solutions using observations and experiments. This also meant leaving my comfort zone of existing knowledge of facts, techniques, and ecosystems, challenging at times, but always rewarding. Complementing classical ecological methodology with those from micrometeorology and stable isotope applications opened new windows on those ecosystem processes, offering insights at different time scales, from 20 Hz to centuries. Working with great group members and incredible colleagues in small, national to big, international projects further sparked ideas, taken up in projects, publications or awaiting the reviewers´ decisions.
The Swiss FluxNet, a network of six long-term ecosystem flux measurement sites, is the base of many projects. We quantify greenhouse gas fluxes and their drivers for three major land-use types in Switzerland, i.e., cropland, grassland, and forest. Up to now, we have 111 site-years of flux data, all openly available, ranging from CO2 and H2O vapour fluxes from a cropland with the 2nd longest time- series globally to CH4 and N2O fluxes of grassland and forest at different elevations. Measurements on soil carbon stocks, vegetation phenology, plant ecophysiology or remotely sensed proxies complement these flux studies. In this talk, selected highlights of past and on-going research will be presented.

N. Buchmann

14:30 - 16:30 — Auditorium

Agro-Ecology (3/4)

Chair
F. Kletty

14:30	Interacting effects of agri-environmental measures and landscape structure on bee biodiversity in agricultural landscapes	**K. Czechofsky**
14:45	Towards sustainable pollen beetle management in winter oilseed rape: the role of flowering time and dynamics in oilseed rape cover	**U. Fricke**
15:00	How semi-natural habitats affect the lifespan and foraging behavior of individual honey bees in farmlands?	**E. Verrier**
15:15	Biodiversity and multifunctionality: insights from rice varietal mixtures in the highlands of Madagascar	**K. Rahajaharilaza**
15:30	Landscape and crop competition are both ways towards more sustainable management and conservation of weeds in oilseed rape fields	**A. Berquer**
15:45	Biodiversity conservation and organic wine production: a glass half-full	**L. Beaumelle**
16:00	Effect of different fertilizer types on edaphic diversity in agro-ecosystems	**I.-C. Kilian**
16:15	Rows make the field: Winter wheat fields with manipulated crop architecture show potential for ecological intensification based on higher natural pest and weed seed control	**S. Blösch**

14:30 - 16:30 — Room : 11 + 12

Services provided by ecosystems and biodiversity (2/2)

Chair
M. Kleyer

14:30	Towards the viability of social-ecological system : modeling approach for multiple ecosystem services related to hedgerows in rural landscapes.	**A. Brias**
15:00	Variations of ecosystem services during vegetation succession following agricultural abandonment in the Massif central region (France)	**M. Weissgerber**
15:15	Evaluation and comparison of pollination service indicators at agricultural landscape level	**T. Gandara**
15:30	Challenges and opportunities for grasslands on river dikes: Reconciling flood security, biodiversity, recreation and management costs	**L.-H. Teixeira**
15:45	Impact of enhanced roadside vegetation and urban landscape on pollinators and pollination	**N.-K. Berger**
16:00	Decomposition of organic matter of farming origins by woodlice Armadillidium vulgare (Latreille, 1804), and quality of fecal pellets for agrosystems	**J. Clause**

14:30 - 16:30 — Room 01

Evolution approaches for understanding ecological features (1/3)

Chair
A. Charmantier

14:30	Links between ecology and evolution of different wound care strategies in ants: leg amputations and use of antimicrobial compounds	**E. Frank**
14:45	Contemporary and historical hybridization between two endangered species	**J. De Meaux**
15:00	Genetic architecture of dispersal and local adaptation drives accelerating range expansions	**E. Fronhofer**
15:15	Holobiont diversity in an heterogeneous and anthropized marine environment	**D. Aurelle**
15:30	"Born with a silver spoon in the mouth has bad sides too": experimentally increasing growth rate enhances individual quality but accelerates reproductive senescence in females of the mealworm beetle, Tenebrio molitor	**A. Crosland**
15:45	Back to the past: rapid adaptation in Viola arvensis using resurrection ecology	**S. Acoca-Pidolle**
16:00	Maintenace of color polymorphism under balanced selection	**P. Lacoste**

14:30 - 16:30 — Room 02

The dynamics of multi-layer ecological networks

Main organizer of the symposium:
Sonia Kéfi, CNRS, Montpellier (France), Sonia.kefi@umontpellier.fr

Co-organizers of the symposium:

Ulrich Brose, iDiv, Leipzig (Germany), ulrich.brose@idiv.de

Abstract:
Networks provide a powerful way to explore ecological complexity and have generated numerous insights into the understanding of the structure, function, and dynamics of ecological communities. While ecological networks have been fundamental to ecological theory, they have mostly been defined at a single point in space and time, and/or aggregated over multiple spatial locations and times. Moreover, they typically describe a single interaction type at a time (e.g. feeding or competition), although species in nature are clearly connected by a myriad of interaction types simultaneously. A few years ago, advances in the theory of 'multilayer' networks have provided a promising approach to incorporate these different facets of complexity in our descriptions of ecological communities. Such an approach allows space, time, multiple organizational levels and multiple interaction types to be incorporated into species interaction networks. The objective of this symposium is to show recent progresses made in the study of multilayer networks and to discuss how these novel approaches have contributed to improving our current understanding of ecological communities.

Speakers:

- Kayla Sale-Hale (1), Elisa Thébault (2), Fernanda Valdovinos (3)
(1) University of Michigan, USA
(2) iEES Paris, CNRS, France
(3) UC Davis, USA

- Virginia Domínguez-García (1,2), Sonia Kéfi (1)
(1) ISEM, CNRS, Univ. Montpellier, IRD, EPHE, Montpellier, France
(2) Estación Biológica de Doñana (EBD-CSIC), Sevilla, Spain

- Barbara Bauer*,1,2,3, Emilio Berti*,1,2, Remo Ryser*,1,2, Benoit Gauzens1,2, Myriam R. Hirt1,2 , Benjamin Rosenbaum1,2 , Christoph Digel4, David Ott5,6, Stefan Scheu7,8, Ulrich Brose 1,2

1Institute of Ecology, Friedrich Schiller University Jena, Jena, Germany
2German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena- Leipzig, Leipzig, Germany
3Zoological Institute and Museum & Institute for Botany and Landscape Ecology, University of Greifswald, Greifswald, Germany
4Umweltbundesamt, Dessau- Roßlau, Germany
5Institute of Landscape Ecology, University of Münster, Münster, Germany
6Centre for Biodiversity Monitoring, Zoological Research Museum Alexander Koenig, Bonn, Germany
7JFB Institute of Zoology and Anthropology, University of Göttingen, Göttingen, Germany

- Christian Guill1,*, Janne Hülsemann1, Louica Philipp1, Toni Klauschies1
* guill@uni-potsdam.de
1Institute of Biochemistry and Biology, University of Potsdam

- Julie Teresa Shapiro1, Alvah Zorea1, Aya Brown Kav1, Itzik Mizrahi1, Shai Pilosof1
1Ben-Gurion University of the Negev, Israel

From correlations among multiple trait axes to a structural model of multiplex networks	**E. Thébault**
The structure and robustness of tripartite ecological networks	**V. Dominguez** **S. Kefi**
From regional to local scale: biotic interactions shape multilayer food-webs	**E. Berti** **R. Ryser** **B. Gauzens** **M. Hirt** **U. Brose** **B. Rosenbaum** **S. Scheu**
Self-organised pattern formation increases functional diversity in metacommunities	**C. Guill** **L. Philipp**
Plasmidome multilayer networks reveal potential pathways of gene transmission across microbiomes	**S. Pilosof**

14:30 - 16:30 Room 03

One Health: why Biodiversity is important?

Main organizer (applicant) of the symposium (Name, institution, email):
Michael Scherer-Lorenzen, University of Freiburg, Germany, michael.scherer@biologie.uni-freiburg.de

Co-organizers of the symposium (Names, institutions, emails):

Aletta Bonn, UFZ, University of Jena, iDiv, aletta.bonn@idiv.de
Hervé Jactel, INRAE, herve.jactel@inrae.fr
Daniela Haluza, Medical University of Vienna, daniela.haluza@meduniwien.ac.at

Session description :

The biodiversity crisis needs to be tackled in unison with the climate crisis and health crisis. The rise of One Health, Planetary Health or EcoHealth concepts also underline the close linkages between the state of ecosystems and human health, and ask for interdisciplinary approaches to tackle these global crises. Biodiversity links to health via four pathways, (i) reducing harm (e.g. provision of food, medicines, regulating climate, air and noise pollution); (ii) restoring capacities (e.g. attention restoration, stress reduction); (iii) building capacities (e.g. promoting physical activity, transcendent experiences); and (iv) causing harm (e.g. dangerous wildlife, zoonotic diseases, allergens). It is often postulated that ecosystem degradation favors both the emergence and the risk of transmission of these pathogens while restoration may contribute to a nature based health solutions. Forests, for example, are the main reservoir of terrestrial biodiversity and are currently threatened by climate change, becoming the object of much attention for the prevention of global sanitary risks. But conversely, forests also deliver ecosystem dis-services related to human health, e.g. through habitat provisioning for vectors of disease pathogens. This symposium will therefore review advances in ecological research on the functional link between biodiversity and human health risk mitigation, in the context of global change. In accordance with the One Health approach, it will adopt a multidisciplinary point of view, welcoming ecologists, physiologists, medical professionals and related disciplines.

Sponsorship
The participation of speakers will be supported by three BiodivERsA projects funded through the 2018-2019 BiodivERsA joint call for research proposals, under the BiodivERsA3 ERA-Net COFUND programme: Dr.FOREST (Diversity of FORESTs affecting human health and well-being, https://www.dr-forest.eu/), DiMoC (Diversity components in mosquito-borne diseases in face of climate change, http://www.dimoc.uni-bayreuth.de/dimoc/) and BioRodDis (Managing biodiversity in forests and urban green spaces : Dilution and amplification effects on rodent microbiomes and rodent-borne diseases, https://www.biodiversa.org/1643) and one ANR project (DiPTiCC, Diversité et Productivité des forêTs impactées par le Changement Climatique, ANR-16-CE32-0003).

	Role of tree species diversity on ticks and tick-borne diseases	**A. Bourdin**
	The more the merrier? Exploring the role of forest biodiversity on mental health and well-being. An experimental field study.	**K. Rozario**
	How forests alleviate human thermal stress	**L. Gillerot**
	Diversity components in Mosquito-borne diseases	**S. Thomas**
	Influence of land-use on the diversity and host-feeding patterns of mosquitoes	
	BioRodDis: Exploring associations between zoonotic pathogens, host community diversity and environmental indicators in forests and urban parks throughout Europe.	
	Impacts of forest anthropisation on the relationships between micromammal biodiversity and zoonoses risks in Europe : A transdisciplinary ecohealth approach	**N. Charbonnel**
	The role of tree species diversity in forest resistance to emerging and invasive insect pests.	**H. Jactel**
	One Health – Is Biodiversity important?	**M. Scherer-Lorenzen**

14:30 - 16:30 Room 05

Microbial communities as units of selection

Main organizer (applicant) of the symposium:

Manuel Blouin, Institut Agro, manuel.blouin@agrosupdijon.fr

· Co-organizers of the symposium:

Silvia De Monte, CNRS, MPI Evolutionary Biology, silvia.de.monte@bio.ens.psl.eu

· Session description:

Microbial communities are increasingly considered as units of selection in experiments and models. However, they differ from traditional units of selection such as individual organisms or genes since they do not exhibit the same degree of cohesion and stability, nor possess easily recognizable life cycles. Their ecological dynamics is thus key to understand their evolutionary dynamics. Experiments on natural or artificial selection of microbial communities are increasingly developed. They are guided by applied objectives, like improving the efficiency to perform a given function (e.g. to degrade a pollutant or improve plant growth), and/or by conceptual ones, such as unraveling their ecological and evolutionary dynamics, and defining their status in terms of selection unit. Some models are trying to mimic experiments and identify strategies to improve experimental protocols, others are focused on describing communities as complex systems. What makes microbial communities legitimate units of selection is a key conceptual question that started to be addressed in a small number of recent papers, with a diversity of perspectives, which reveals a cogent need to discuss the advantages and drawbacks of different modeling and experimental approaches.

The objectives of this symposium are to:
-communicate to the international community of ecology and evolution on this emerging field of research
-strengthen the links between ecology and evolution by gathering people from these disciplines and at their interface
-develop a common culture, encompassing theoretical and applied approaches, to promote the dialogue between experiments and models

· Speakers
15 minutes presentation and 5 minutes discussion for each talk. All the speakers confirmed their interest and presence in the colloquium.
Talk 1. BLOUIN Manuel, Institut Agro (manuel.blouin@agrosupdijon.fr), Artificial selection of microbial communities: when experiments provide theoretical knowledge.
Talk 2. DOULCIER Guilhem, Macquarie University, Max Planck Institute for Evolutionary Biology (guilhem.doulcier@normalesup.org), Theoretical and statistical methods for the experimental selection of collectives.
Talk 3. SHOU Wenying, University College of London (w.shou@ucl.ac.uk), Optimizing the protocol of microbial community artificial selection thanks to models.
Talk 4. DE MONTE Silvia, CNRS, Max Plank Institute Evolutionary Biology (silvia.de.monte@bio.ens.psl.eu), Modelling the feedbacks between community selection and community ecology.
Talk 5. COLLET Pierre, University of Strasbourg (Pierre.Collet@unistra.fr), Evolutionary algorithms.

	Artificial selection of microbial communities: when experiments provide theoretical knowledge	**M. Blouin**
	Theoretical and statistical methods for the experimental selection of collectives	**G. Doulcier**
	Optimizing the protocol of microbial community artificial selection thanks to models	**W. Shou**
	Modelling the feedbacks between community selection and community ecology	**S. De Monte**
	Evolutionary algorithms	

14:30 - 16:30 Room 06

Bridging the Gap - Education for Sustainable Development (ESD) and Environmental Education (EE)

Main organizer (applicant) of the symposium:
Bogner Franz, University of Bayreuth, franz.bogner@uni-bayreuth.de (GfÖ-SiG leader of the EE strand)

Session description

Since generations thousands of teachers of conventional classrooms and educators of informal outreach facilities invested tremendous efforts into educational initiatives to improve environmental attitudes and behaviours of students. When analysing adolescent conceptions in relation to Environmental Education (EE) and Education for Sustainable Development (ESD), responses overlap while statements concerning social and economy contexts contribute to substantial differences in EE and ESD. Under both umbrellas, outreach experience allows kids and adolescents to value nature and environment – and after frequent experience to understand the science behind ecosystems and related dilemmas which we face currently and which we need to cope with in the future. While cognitive issues are likewise conventionally to be monitored, variables such as attitudes and values or even behaviour are not. That is why, from the 1970ies to the 1990ies there were many measurement approaches applied, seemingly with more instruments than researchers were working in the field. Most instruments were developed for adult populations that is why the development of the 2-MEV scale (2 Major Environmental Values) for the age-group of adolescents began and on the basis on a solid theoretical foundation defined to measure on the basis of primary factors two higher order factors labelled as values: Preservation (PRE) and Utilization (UTL). The 2-MEV model received a quite new promotion when further independent research teams also repeatedly confirmed the two factor second order structure. Its increasingly worldwide use allows comparing and fine-tuning programmes of different backgrounds. Up to now several dozen studies were using the scale: Some providers are already satisfied that the measurement basis does not need further defence and numbers are secured. Others present the results on conferences and even invest the effort to publish. The educational efforts must go on to extract essentials out of thousands of programmes applied in the world.

	Teachers' aesthetic appreciation of nature and environment beyond preservation and utilisation values	
	Behaviour, Attitudes and Knowledge: How Effective Education Fosters Environmental Literacy	**F. Bogner**
	Assessing environmental attitudes and cognitive achievement within 9 years of informal earth education	**T.-M. Baierl**
	The Role of Education Along Our Paths to Survival	**B. Johnson**
	Climate Change Attitudes and Pro-Environmental Behavior of Czech Teenagers	**J. Cincera**

14:30 - 16:30 — Room 09 + 10

Macroecology: lessons from the past, forecasting the future

Main organizer (applicant) of the symposium (Name, institution, email):
DENELLE Pierre, pierre.denelle@uni-goettingen.de, Biodiversity, Macroecology & Biogeography, Georg-August University of Göttingen
Büsgenweg 1, 37077 Göttingen, Germany

Co-organizers of the symposium (Names, institutions, emails):
WEIGELT Patrick, pweigel@uni-goettingen.de, Biodiversity, Macroecology & Biogeography, Georg-August University of Göttingen
Büsgenweg 1, 37077 Göttingen, Germany

Macroecology assesses large-scale, multi-species ecological patterns and the processes driving them. How species distributions and diversity change through time is one of the major questions of this subfield of Ecology. Recent works highlighted how past environmental conditions influenced the current distribution of species through several mechanisms, including shifts of species' ranges and varying rates of speciation and extinction through time. In parallel to these past influences, several ongoing environmental changes are currently at play. Global warming is heavily acting on species' ranges while a massive spread of alien species is altering the diversity in a multi-dimensional way. These major trends are expected to influence all facets of biodiversity, from taxonomic to functional and phylogenetic patterns.
This symposium focuses on notable advances in linking macroecological patterns to changes over time. We specifically aim at synthesizing how past and ongoing changes in environmental conditions are affecting patterns of diversity across taxa and scales by addressing the following questions. What were the main environmental drivers affecting macroevolutionary rates in the past? How were and will species track their suitable conditions and how is it changing their distributions? How are exotic species spreading and changing biodiversity across the globe and how are global changes altering taxonomic and functional biomes?

	Integrating historical and present drivers to understand recent spatial dynamics of species distribution.	**A.-C. Monnet**
	Simulating biodiversity	**O. Hagen**
	Historical plant introductions predict current insect invasions	**A. Bonnamour**
	Climatic forcing of global ecosystem changes from the Last Glacial Maximum to the end of the 21st century	**T. Conradi**
	Consequences of biological invasions on functional diversity worldwide	**B. Céline**
	BioShifts – A database of geographic range shifts for terrestrial and marine taxa under anthropogenic climate change	**J. Lenoir**

14:30 - 16:30 — Verlaine A

Ecological interactions (1/3)

Chair
K. Mccoy

14:30	Invasive species modulate the structure and stability of a multilayer plant-pollinator-seed dispersal network	**A. Vitali**
14:45	Landscape type and floral resources modify plant-pollinator network structure and stability: implications for pathogen exchange	**A. Vanbergen**
15:00	Ecological consequences of temperature-induced body size shifts on aquatic ecosystem	**S. Bazin**
15:15	Isotopic niches and diets of ground-active arthropod predators differ between a post-mining and a natural lakeshore	**L. Feng**
15:30	Temperature variation is the main environmental driver of lake food web structure	**C. Leclerc**
15:45	The structure of plant-pollinator networks is affected by crop type in a highly dynamic agricultural landscape	**C. Gay**
16:00	Mycorrhizal associations shape orchid distributions across an oceanic archipelago	**C. Foucault**

14:30 - 16:30 — Verlaine B

Ecology for Future Cities

Main organizer (applicant) of the symposium:

Monika Egerer, Technical University of Munich, Germany, monika.egerer@tum.de

Joan Casanelles Abella, WSL, Switzerland, joan.casanelles@wsl.ch

Session description:

How will future cities enable urban nature to thrive, mitigate climate change, and maintain ecosystem functions, upon which the livability of the world's cities depends? What can urban ecology and evolution as a science, practice and participatory tool offer to the function and livability of future cities? Cities are faced with fundamental challenges including climate change, urban sprawl and densification and invasion with detrimental impacts on biodiversity, ecosystem functions and nature contributions to people. The city of the future describes a vision of urban environments that enhance the quality of life, while also protecting biodiversity and maintaining ecosystem functioning. Urban ecology has in recent decades vastly improved our mechanistic understanding of urban environments, offering theoretical insights to science while also delivering practical tools to urban planners and policy makers. In this session, we bring together research in urban ecology and evolution that is contributing to our fundamental understanding of urban ecosystems and landscapes to inform their management and design for more biodiverse and environmentally just cities in the future.

The goals of this forward-thinking symposium are to: 1) provide a mechanistic understanding and predictability of urban biodiversity and ecological and evolutionary processes under different global change scenarios, including socio-ecological drivers, trait-based approaches, and evolutionary tools; 2) illuminate drivers of biodiversity, ecosystem functions, natures contribution to people, but also, importantly, of environmental justice in current and future cities; and 3) identify solution-oriented ecologically- and evolutionary-informed urban management and planning geared to preserve biodiversity, ecosystem functioning, and natures contribution to people.

The symposium will be affiliated with the GfÖ-Specialist Group "Urban Ecology" and thus with Group events as well as many opportunities for exchange.

Why should we study urban ecosystems?	**S. Barot**
Urbanisation globally reduces functional diversity across multiple taxa	**M. Moretti**
Adaptation of plants and ecologists to urban environments	**A. Muratet**
How to make cities more biodiverse?	**N. Machon**
Animal-aided design for biophilic cities	**W. Weisser**
Nature's contributions to people in cities: What have we learned from two years in a pandemic?	**L.-K. Fischer**

16:30 - 17:00 — Halls 1 & 2

Coffee break

17:00 - 18:00 — Hall 1

Poster session 1

Palaeo-environmental study of two charcoal-hearth soil sequences in the northern Vosges mountains (Bitche, France)	**A. Gebhardt**
Why raccoon presence is no reason to panic – results of a long-term field study in Germany	**B. Michler**
TEMPERATURE AND BODY SIZE REDUCTION ALTERS FOOD WEB STRUCTURE AND AQUATIC ECOSYSTEM FUNCTIONNING	**J. Morla**
Blackcurrant pollinators or the cost of absence	**M.-C. Anstett**
Is crop emergence influenced by intercropping? Early growth dynamics of spring wheat and faba bean in crop mixtures	**M. Paul**
Challenging the sustainability of urban beekeeping using evidence from Swiss cities	**J. Casanelles Abella**
Fagus sylvatica L. & Quercus pyrenaica Willd.: an odd couple of the sub-Mediterranean ecotone	**S. De Tomás Marín**
Direct and indirect effects of insect diversity on wood decomposition	**J. Zou**
Countrywide wild bee taxonomic and functional diversity patterns reveal a spatial mismatch between alpha and beta diversity components across multiple ecological gradients	**J. Casanelles Abella**
Functional and taxonomic diversity of carabid beetle assemblages in forest fragments and hedges in heterogeneous agricultural landscapes	**R. Marrec**
Impact of the Farming with Alternative Pollinators approach on crop pollinator pollen diet	**A. Sentil**

REGRASS: Re-establishing grasslands in the agricultural landscape to promote insect diversity	M. Peer
The dimension of stability in multiplex ecological networks	I. Lajaaiti
Plant root defence traits mediate yield decline in 19 year old monocultures	L. Bassi
Digital microscopy improves diatom research	M. Kloster
Agroforestery change carabid comunity in composition and space	B. Vanhee
Hydrochory as a means for mediterranean vineyards revegetation	M. Faucher
Fallow strips in agricultural grassland as temporary conservation measures	M. Oponczewski
Aquatic communities in urban micro-ecosystems – The black Bucket Challenge	A. Sommer
Space use of terrestrial invertebrates : phylogenetic, functional and environmental drivers of interspecific variations	G. Auger
Influence of hedgerows and landscape composition on bats in vineyards	F. Chavez
Temporal dynamics of plant available nutrients are affected by mycorrhizal type and tree species richness	E. Bönisch
Impacts of bark beetle infestations on biodiversity and recreation in protected areas of Central Europe	M. Kortmann
Title: Social perception of a freshwater introduced top predator, the European catfish, by angler community in Europe.	P. Castagné
Prospective researches on the long-term trajectories of forest ponds in lowland forests in North-Eastern France	V. Robin
Fungicide reduction enhances beneficial arthropods in grapevine	J.-M. Reiff
Precision grazing for biodiversity? Spatio-temporal scales of grazing effects on vegetation structure and arthropod abundance	F. Jauker
ResBerry – Resilient organic berry cropping systems through enhanced biodiversity and innovative management strategies	C. Becker
Suggestions and requirements for a national biodiversity monitoring in German forests (NaBioWald)	F. Kroiher
Functional traits modifying nutrient loading effects on the productivity of Trapa natans L.	N. Palm
How do tree microhabitats affect bats and birds in cities?	S. Tassoni
Pest Population Status in Eastern German Apple Orchards	I.-A. Bapfubusa Niyibizi
Physiological and behavioural consequences of environmental salinity in a coastal frog	L. Lorrain-Soligon
Biodiversity in agriculture: Sustainable cultivation methods as an opportunity for environment and farmers	L. Kellermann
The Altitudinal Gradient of Pollination Networks	Q. Yang
3-D land-cover-based fine-scale urban connectivity model for bird functional groups	S. Bae
Significant changes in the ground vegetation along an environmental gradient across German forests: results from the intensive forest monitoring sites	I. Krüger
Tracking abrupt shifts in marine fish stock trajectories	M. Pélissié
Blood bacterial diversity of small mammals from different agricultural contexts	G. Perez
Pesticide use on different crops and its impact on wild-bee communities at the landscape level	A. Mayr
Contributions of agroecological infrastructures in developing pesticide-free solutions against the beet yellowing disease	K. Tougeron
A global meta-analysis on the drivers of mosquito host-feeding patterns	M.-L. Wehmeyer
On the restoration of hedgerow ground vegetation: Local and landscape drivers of plant diversity and weed colonization	A. Alignier
Exploring mechanisms of spatial segregation between body size groups within fish populations: a case study in the North Sea	H.-H. Tao
How do local habitat characteristics influence the population of cabbage stem flea beetle larvae in oilseed rape fields?	J. Pigot
Modelling the establishment potential of the brown marmorated stink bug (Halyomorpha halys) in Germany	B. Hess
French agricultural areas: more abundant bird populations where fewer pesticides are purchased	A.-C. Monnet
Semi-natural habitats promote winter survival of wild-living honey bees in an agricultural landscape.	B. Rutschmann
A review of belief-based use of vultures in West Africa	M.-B. Agunbiade
Impact of volcanic sulfur emissions on the pine forest of La Palma, Spain	C. Beierkuhnlein
Two thousand years of boreal disturbances history : a multi-proxy approach	M. Druguet Dayras

The role of small woody landscape features and agroforestry systems for national carbon budgeting in Germany	M. Safaei A. Hanzl
Post-drought rhizodeposition from mature temperate trees defines formation traits of soil organic matter stabilization	M. Brunn
Limited stability of an alternative state - evidence from a field experiment testing volcanic ash effects on mire vegetation	S. Hotes
Former crops have stronger legacy effects than former meadows and pastures on soil conditions, taxonomic and functional composition of plant communities in French montane forests	S. Mollier
Effects of habitat size, landscape context and management on the diversity of true bugs in bush ecotones	F. Klimm
Heterogeneous ornamental-wildlife plantings on semi-extensive roofs : success and interest for novels ecosystems research	T. Louis-Lucas
The global distribution of burrowing mammals	F. Rehling
Toward integration of nutritional and metabolic ecology?: the energetic cost of food quality	T. Ruiz
Participatory project on the ecological impact, economic efficiency and governance of cooperative agri-environmental measures	I. Arimond
Biodiversity in protected areas: priorities for regional biodiversity conservation	C. Zehner
Winter survival of honeybees' colonies: is it also a matter of nutrition? How quality of pollen influences winter survival.	G. Mainardi
From chironomids to climate: environmental control of chironomid assemblages in lakes of northeastern North America and palaeoecological applications	T. Suranyi
Small stream floodplains hold high conservation value for carabid beetles but not for spiders	P. Bauspiess
Study of ecosystem services generated in an experimental design combining green roofs and photovoltaic panels.	M. Belin
sOilFauna - a global synthesis effort on the drivers of soil macrofauna communities and functioning	P. Ganault
Retrospective assessment of the global decline of European bats (1940s-2010s)	E. Afonso
Controls of nitrate leaching in forests of Douglas fir, European beech and Norway spruce and their mixtures: species and site	K. Mrak
Temperature dependency of nutritional requirements : A U-shaped response Unifying divergent stoichiometric viewpoints	T. Ruiz
The potential of metabarcoding plant components of Malaise trap samples to enhance knowledge of plant-insect interactions	B. Gemeinholzer
Existing and future ways to learn and teach Research Data Management with NFDI4Biodiversity	J. Röder
Study of the spatial ecology and terrestrial habitat selection of the green toad (Bufotes viridis) by radio telemetry during the post-breeding period.	M. Alain
Forest history and industrial development interlinks at territorial scale inferred from an innovative combination of wood and charcoal past use evidences	V. Robin
The Hohenheimer Tree-Ring Collection at the Curt-Engelhorn-Center Archaeometry gGmbH – A collection of specimens for dendroecological and dendroclimatological research	H. Knapp
Australian acacias: a showcase for remote sensing-based mapping and impact assessments of invasive trees	A. Hanzl M. Safaei
The paleoecological reconstruction of the Machais peat bog (High Vosges France): an outstanding site	V. Robin
Nature-Positive Agriculture (NaPA): participative, nation-wide, on-farm evaluation of a biodiversity-enhancement strategy	V. Prenzel
Application of null models to evaluate the incorporation of intraspecific variation in habitat suitability models for European beech (Fagus sylvatica L.)	N. Preuk
iPhenology – using open-access citizen science data to track plant phenology at continental scale	Y. Klinger
Identifying bird and bat diversity in intensely used agricultural landscapes of Central Europe using novel passive acoustic monitoring tools	M. Beckmann
Disparate patterns of genetic divergence and environmental adaptation among three Pacific corals across their geographical range	D. Forcioli
Thermal tolerance capacity might differ among longitudinal gradient: a study at individual level in cereal aphid guild	R. Li
Insect habitat features in urban gardens vary across urbanization gradients, and key structures predict bee and non-bee pollinator abundance	A. Neumann
Back introduction of invasive genotypes as an underestimated risk within a species' native habitat – insights from a transplant experiment	L.-Y. Watermann

Above-ground structural complexity of Cymodocea nodosa meadows enhances their role as carbon sinks	S. Oliva
Holocene REVEALS-based diversity changes across Europe	C. Röhm
Flow Cytometry assays for detection and cell-sorting of polyphosphate accumulating bacteria (PABs)	C. Bouquet
How anthropogenic and natural parameters shape plant species richness on European barrier islands	C. Beierkuhnlein
Population and biological characterization of the Invasive Plant species Baccharis halimifolia in South Brittany (France)	M. Peignard
Effects of nutrient enrichment and fishing pressure on top predators on the structure and functioning of aquatic ecosystems: a large-scale experimental approach	G. Lacroix
Seasonal movements of porbeagle sharks (Lamna nasus) in the Northeastern Atlantic Ocean	S. Serre
Impact de la lumière artificielle sur les arthropodes : une vue du sol	A. Cocrelle
Impacts of alien invasive plant species on biodiversity in Central Europe. Impact of Prunus serotina in pine stands on the local entomofauna in the Berlin urban forests (Grunewald area).	K. Pietras-Couffignal
Consistent increase of ecosystem functioning with diversity for two tropical mountain ecosystems	A. Wurz
Intercrops as foraging habitats for bees: Bees do not prefer sole legume crops over legume-cereal mixtures	A. Hass
The influence of artificial light at night on movement activity and predation rates in grassland communities	A. Dyer
Application of a BACI protocol to assess the efficiency of management (or control) of the exotic invasive Myriophyllum heterophyllum in a freshwater yacht harbour	H. Groffier
Can rolling composite wildflower blocks increase biodiversity in agricultural landscapes better than wildflowers strips? I. The effect of shape	V. Kaunath
Spatio-temporal dynamic and global change effects on ant communities of small Mediterranean islands and islets	R. Blaya
Diversity at Giving-up-Density: top-down effects of foraging decisions and of functional trait composition of resource species on the biodiversity of resources after foraging	J. Eccard
Biotic and abiotic drivers of geographic distributions and co-occurrence of Proteaceae species in the South African Fynbos	J. Pagel
Biological validation of European Broad River Types	J. Jupke
Monitoring the effects of climate change on insect-pollinated crops – a field experiment with oilseed rape and strawberry	P. Prucker
Biotope connectivity in intensively used agricultural areas: What do we know about functional landscape connectivity?	A.-K. Schneider
CaMTrAB - Camera Trapping for Mammal Trophic Interactions, Abundance and Biodiversity	M. Müller
Introducing native plant species to increase regional biodiversity on extensive green roofs in northwestern Germany	F. Päsch
Hedges and flower strips promote plant-pollinator interactions without compromising apple flower visitation	A. Mupepele
Assessment of ecosystem services and environmental impacts of agricultural systems: going further than an indicator list	C. Bockstaller
ReCROP : Bioinocula and CROPping systems: an integrated biotechnological approach for improving crop yield, biodiversity and REsilience of Mediterranean agro-ecosystems	N. Delcourt
Toward the discrimination of relic and active microbial communities in lake sedimentary archives: a paleolimnological approach applied to the three domains of life	M. Lacombe
Effects of litter preconditioning on its subsequent decomposition in an intermittent river network	M. Jans
Protected semi-natural grasslands have higher plant species richness next to organic than to conventional arable fields	B. Schöpke
Climate warming compounds plant responses to habitat conversion	A. Auffret
No yield gap in organic grasslands? Soil nutrients and forage production in organic versus conventional permanent grasslands	V. Klaus
On the skin of the dragon – The role of cuticular hydrocarbons for thermoregulation in damselflies (Zygoptera)	K. Jäkle
Impact of farming practices at the landscape scale on aphids vectors of yellows in beet crops	B. Poss
Potential for biological control by carabid beetles follows similar seasonal among five different crops	G. Caro

17:00 - 18:00 — Room 05

Workshop following the symposium “Microbial communities as units of selection: establishing a dialogue between models and experiments”

Main organizers:

Silvia De Monte, CNRS, MPI Evolutionary Biology, silvia.de.monte@bio.ens.psl.eu
Manuel Blouin, Institut Agro, manuel.blouin@agrosupdijon.fr

17:00 - 19:00 — Auditorium

GfÖ Awards and General Assembly

- 17:00 - 17:30: GfÖ Awards (open to all conference participants)
oTobias Sandner, Uni Marburg (Germany), Winner of the GfÖ Award 2022
=> Awardee talk entitled: "Aspects of life in small populations: inbreeding, environmental stress and phenotypic plasticity"

Abstract

Plants growing in small populations face several challenges. When environmental conditions change, plants have to adapt or respond plastically. Moreover, they can only choose their mates from the small pool available, so inbreeding is more frequent than in large populations. When pollinators are declining or not attracted by the few plants of a rare species, plants may even have to completely rely on selfing for reproductive assurance. As a consequence, inbreeding reduces offspring fitness (“inbreeding depression”) and can influence plant functional and reproductive traits. However, environmental change and inbreeding depression usually are not independent, and it is often assumed that inbreeding depression generally increases under stressful conditions. In my research I am taking these aspects of small populations into the greenhouse or common garden to study the effects of inbreeding and environmental stress on various aspects of plant life under controlled conditions. I will present evidence from different plant species to show which types of stress do or do not increase inbreeding depression, and I will explain effects of inbreeding on phenotypic plasticity, and modifying effects of plant size on inbreeding-stress interactions. Finally I will bring these findings back to natural populations and discuss the effects of inbreeding on the success of ex situ plant conservation.

oJulia Ostermann, Uni Halle (Germany), Winner of the Host-Wiehe Award
oAriel Firebaugh, University of Virginia (USA), Winner of the most-cited research paper in Basic & Applied Ecology Award
oBea Maas, University of Vienna (Austria) Winner of the most-cited review paper in Basic & Applied Ecology Award

- 17:30-19:00 General assembly (GfÖ members only)

17:30 - 18:30 — Verlaine A

Meeting of CNU 67 (French National Commission for Universities: section 67 "Biologie des populations & Ecologie")

Changing our relation to publishing in the light of the San Francisco declaration on research assessment

The Declaration on Research Assessment (DORA, https://sfdora.org/about-dora/), which has been signed by quite a few French, German, Swiss and Austrian research organizations since its development 10 years ago, has highlighted ways to improve the process of research assessment. Among all the recommendations featured in DORA, a serious emphasis was given on the publication process, particularly "the need to assess research on its own merits rather than on the basis of the journal in which the research is published" and "the need to capitalize on the opportunities provided by online publication". In the meantime, academia has had to face the rise of predatory publishing, i.e. online journals charging onerous article-processing charges (APC) for very quick and dirty reviewing and easy publication.
The purpose of this discussion, spurred by the work of the 67th section of the CNU (French National University Council, in charge of many assessments regarding professors and lecturers), is to collectively exchange on a few topics linked to publication and research assessment:
* the issue of predatory publishing and its interaction with research assessment;
* acknowledging preprints in research assessment;
* the various new means of publishing and their pros and cons;
* how to improve academia through better research assessment and better publishing practices;

* behaviour of researchers as authors vs. researchers as evaluators: can we cure our collective schizophrenia?

Discussion/debate in English

17:30 - 19:00 — **Room 06**

Atelier SFE2 sur l'éthique des financements

Le groupe « Agir face à la crise écologique » invite toutes les personnes intéressées à venir échanger et travailler en atelier sur l'éthique des financements privés de la recherche en écologie autour de deux questions : Avec qui peut-on choisir de collaborer ? Comment travailler avec un partenaire privé une fois un financement accepté ?

18:00 - 19:00 — **Room 07**

Mixer Theoritical ecologists from GfÖ-SFE²

Main organizer: Sonia Kéfi & Emanuel Fronhofer

18:00 - 19:00 — **Room 13**

Human ecology: "Experimenting introspective Ecology" (in french)

Introspective ecology:

Environmental issues lead us to a collective challenge but also to personal experiences and behaviours.

This workshop proposes to explore our thought patterns, our beliefs, our emotions and even our existential questions raised by the ecological crisis as a possible step towards a readjustment dissolving our internal inconsistencies or discomforts.

Ecologie introspective:

Les problèmes environnementaux nous amènent à un défi collectif mais également à des vécus et comportements personnels.

Cet atelier propose d'aller explorer nos schémas de pensées, nos croyances, nos émotions voire nos questions existentielles suscitées par la crise écologique et ce, comme une possible étape vers un réajustement dissolvant nos incohérences ou malaises internes.

Main organizer: Claire Damesin

18:00 - 19:00 — **Verlaine B**

Art & Ecology (videos)_1

19:30 - 22:30 — **Halls 1 & 2**

Gala Dinner

SFE² GfÖ EEF

Joint meeting, International Conference on Ecological Sciences

"Ecology and Evolution: New perspectives and societal challenges"

21-25 Nov 2022 Metz (France)

Ecology & Evolution: New perspectives
and societal challenges

J4 - 24/11/22

Organized by :

LIEC & North Eastern France Labs in Ecology & Evolution — Université de Lorraine — cnrs — sfé² — GfÖ The Ecological Society of Germany, Austria and Switzerland — eef European Ecological Federation

08:30 - 08:45 | Auditorium

Welcome & informations

08:45 - 09:30 | Auditorium

A toxic cocktail? The response of ecosystems to chemicals

In the Anthropocene, most if not all ecosystems are influenced by multiple stressors including several thousands of toxic chemicals. The quantification of this chemical multiverse remains challenging, which may explain why many studies have focussed on a few “hype” chemicals or simply ignored the issue of chemicals in ecosystems. Interactions between chemicals and between chemicals and non-chemical stressors further complicate prediction of the response of populations, communities and food webs in ecosystems to the cocktail of chemicals. This in turn hampers the evaluation of the role of chemicals as global change drivers and thereby environmental management and conservation. I provide an overview on our current knowledge on the distribution, risks and effects of chemicals and their mixtures in ecosystems. Methods and their pitfalls when aiming to consider the potential effects of chemicals in ecosystems will be discussed. I argue that chemicals represent a systemic problem that can not be captured through a single substance lense and outline how a stronger integration of ecology and ecotoxicology would improve our understanding and capacity for prediction. In this context, I also reflect on how recent advances building on breakthroughs in biomolecular and computational approaches may be useful for ecological studies on non-chemical stressors. The talk ends with a discussion of management solutions to reduce chemical pollution at different scales.

R. Schäfer

09:30 - 10:00 | Halls 1 & 2

Coffee break

09:30 - 10:00 | Room 13

Free discussion with Ralf Schäfer (Plenary 3)

10:00 - 12:00 | Auditorium

Agro-Ecology (4/4)

Chair
L. Beaumelle

10:00	Arthropod diversity in semi-natural habitats relative to habitat age	**T. Frank**
10:15	Effects of biodiversity measures and landscape heterogeneity on the abundance and diversity of bees in different agricultural landscapes in Germany	**J. Kulow**
10:30	Spiders and their prey in integrated pest management and organic apple orchards in Eastern Germany	**B. Schnerch**
10:45	Plant diversity increases multifunctionality in intensively managed grassland leys	**S.-T. Meyer**
11:00	Systematic review of the effects of landscape structures on pollinators in agricultural plains	**C. Gay**
11:15	Where have all the flowers and insects gone? Drivers for abundance and diversity loss in farmland – the Austrian monitoring programme BINATS	**K. Pascher**
11:45	No clear evidence of local effect of organic agriculture on raptor nestlings' health	**E. Fuentes**
12:00	Towards Predictions of Interaction Dynamics between Cereal Aphids and Their Natural Enemies: A Review	**E. Stell**

10:00 - 12:00 | Room : 11 + 12

Biological invasions

10:00	Can invasive species teach us how natives can cope with climate change?	D. Montesinos
10:15	Success of native and alien species varies with trait-environment relationship	M. Milanović
10:30	A call for mixed surveillance strategies for containing the invasion of the Japanese Beetle in Europe	L. Borner
10:45	Do invasive earthworms affect the functional traits of native plants?	L. Thouvenot
11:00	Body size and trophic position of invading species modulate its effects on simple food webs under global change	S. Dijoux
11:15	Is preadaptation to disturbance key to agroecosystems invasions? Empirical evidence, discussion, and future research routes	G. Bellini
11:30	The beginning makes the difference – invasive and native populations of Jacobaea vulgaris exhibit similar performance but different strategies support initial establishment	L.-Y. Watermann
11:45	Ultramafic soils select plant-pollinator interactions in New Caledonia	M. Zakardjian
12:00	Towards an open, zoomable atlas for invasion science and beyond	C. Musseau

10:00 - 12:00 — Room 01

Evolution approaches for understanding ecological features (2/3)

Chair
S. Diehl

10:00	Trophic morphology of goatfishes (Mullidae) from South-West Madagascar	L. Mittelheiser
10:15	Effects of evolution on niche displacement and emergent population properties, a discussion on optimality	R.-P. Rohr
10:30	The necessity to quantify plant drought stress along the soil-plant-atmosphere continuum.	B. Berauer
10:45	Genomic signatures of long-distance dispersal events mediated by megafrugivores in palms in Madagascar	L. Méndez
11:00	Sublethal effects of selective pressures and the measure of plant fitness	H. Frérot
11:15	Eco-evolutionary dynamics in mutualistic metacommunities: Landscape connectivity and heterogeneity delay extinction of declining interaction partners	M. Palmer
11:30	Evolution of parasite virulence in structured metapopulations	J. Lombard

10:00 - 12:00 — Room 02

Advanced facilities for the ecological research: the European Research Infrastructures (organized by LifeWatch ERIC)

Chair
A. Petzold

Main organizer of the symposium: Alberto Basset, University of Salento & LifeWatch ERIC, alberto.basset@unisalento.it

Co-organizers of the symposium: Christos Arvanitidis, LifeWatch ERIC, ceo@lifewatch.eu; Juan Miguel González-Aranda, LifeWatch ERIC, cto@lifewatch.eu; Peter van Tienderen, University of Amsterdam & LifeWatch ERIC, P.H.vanTienderen@uva.nl and Dario Papale, University of Tuscia & ICOS ETC, darpap@unitus.it

Session description: The European Commission is strongly promoting the establishment and operation of European Research Infrastructures (ERIs), funded by the Member States, as key components of the scientific research landscape supporting the global competitiveness of European research communities. ERIs are aimed at offering high quality data and advanced facilities to European scientists, with particular attention towards early career researchers, promoting innovation, technology transfer to industries, and citizen engagement in science.

In the area of Ecology, some ERIs have been already established as European Research Infrastructure Consortia (ERIC), and are currently operational, whilst others are in the process of becoming so. Globally, the landscape of European Research Infrastructures offers monitoring sites and facilities covering all types of environmental domains, i.e., terrestrial, freshwater, transitional and marine waters and key research areas, such as those dealing with biodiversity organization, conservation and recovery, with ecosystem processes and carbon, water and energy fluxes or with agroecosystems.

Here, we propose an expert panel discussion, with leading scientists from LifeWatch ERIC, the European e-Science Infrastructure for Biodiversity and Ecosystem Research, the ecosystem component of ICOS ERIC, the Integrated Carbon Observation System, eLTER RI, the Long Term Ecological Research site network, DiSSCo, the Distributed System of Scientific Collections, Danubius-RI, the International Centre on Advanced Studies on River-Sea Systems, and from the marine Research Infrastructures EMBRC ERIC, EMSO ERIC and Jerico-RI, presenting the key integrated research facilities these infrastructures offer to the EEF ecological research community of practice, running developments, opportunities for

engagement and the possibilities to propose new measurements and services to be implemented in the ERIs.

· Chairperson: Andreas Petzold, Juelich Research Centre a.petzold@fz-juelich.de

Panelists Names, affiliations, emails, and Research Infrastructure

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10:00 - 12:00 — Room 03

Trait-based approaches: from microbes to plants and animals (1/2)

Chair
M. Beck

10:00	Effect of environment and management on Arnica montana traits of economic importance	**J. Locqueville**
10:15	Linking the root economics space to rhizosphere fungal communities in grasslands	**J. Hennecke**
10:30	Copepods true colors: astaxanthin pigmentation as an indicator of fitness	**S.-D. Ayata**
10:45	Stoichiometric plasticity of aquatic hyphomycetes and its functional consequences on decomposition and nutrient cycling	**Z. Wang**
11:00	Mediterranean plant trait response to fire gradient	**B. Leys**
11:15	Plant functional traits and species distribution determine the spatio-temporal variability of phenological events in herbaceous species	**R. Rauschkolb**
11:30	Morphological overdispersion patterns support the role of competitive interactions driving community assembly of dragonflies	**R. Novella Fernandez**
11:45	A bacterial trait-based approach using BactoTraits to evaluate the impact of physico-chemistry and pollutants on shaping soil functional diversity	**A. Cébron**
12:00	Leaf Metal Exclusion or Accumulation is Related to Soil Resource Exploitation Strategy in European Calamine Species: Evidence for a Leaf Elemental and Economic Spectrum?	**F. Delerue**

10:00 - 12:00 — Room 05

Think big: agent-based modelling meets data science

Volker Grimm, Helmholtz Center for Environmental Research-UFZ, Leipzig, volker.grimm@ufz.de

Uta Berger, Technische Universität Dresden, Dresden, uta.berger@tu-dresden.de

Session description
Ecological phenomena result from the behavior of their constituent agents and their interaction with their biotic and abiotic environment. Agent-based modeling aims to capture these processes and is thus an important complement to more aggregate or statistical modeling

approaches. However, the amount of data required to parameterize and test agent-based models (ABMs) often limits them to small areas or specific species and systems. Advances in monitoring (e.g., genetic markers, motion tracking, remote sensing), powerful workflows including machine learning methods to exploit large data sets, and the increasing availability of high-performance computing systems have now enabled agent-based modeling to "go big," i.e., cover large regions and target more general applications and theories. In addition, advances in transferability, scaling, and first-principles theory development through ABM are enabling a mechanistic explanation of the processes behind patterns detected by statistical tools in large data sets. So-called "digital twins" for biodiversity, as envisioned in a recent European Commission funding initiative, appear to be becoming possible: They would allow us to continuously incorporate new data to reduce uncertainty in models and use them for new regions, making them a tool for scenario assessment and policy development. This symposium reviews advances in monitoring, data science, and agent-based modeling, and presents a vision of "big" ABMs that can take ecological application and theory to a new level.

	Combining the forces of data science and agent-based modeling and their perspectives on ecology and environmental management	**U. Berger**
	Improving the realism of predictive systems models with field data-based calibrations: a large-scale study case on honey bees	**F. Requier**
	Energy budget models as tools for understanding population dynamics and predicting disturbance impacts: the harbor porpoise in the North Sea	**C. Gallagher**
	Next generation forest simulation models in sustainable forest management: an integration of remote sensing, machine learning and individual-tree-based modelling	**Y. Lin**
	Predicting desert locust behaviors and outbreaks with agent-based models: from individuals to continents	**C. Piou**
	Agent-based models for predicting range dynamics under global change	**D. Zurell**

10:00 - 12:00 — Room 06

Restoration ecology and ecosystem dynamics

Chair
A. Bischoff

10:00	Seeding and rewilding to counter the negative impact of frugivore loss on forest diversity in the Mascarenes	**S. Albert**
10:15	Habitat restoration and invasive species eradication using specifically trained goats of local breed	**S. Jurjanz**
10:30	Restoration of dike grasslands: finding the right seed–substrate combination	**M. Bauer**
10:45	Intact ecosystems promote temporal population variability in ungulates	**O. Hansen**
11:00	Wetscapes2.0 - rewetting drained fen peatlands	**J. Kreyling**
11:15	RegioDiv: Nationwide assessment of genetic variation in 30 grassland plants and the design of seed transfer zones	**W. Durka**
11:30	RegioDiv: Patterns of isolation-by-distance and effective migration across 30 grassland plant species	**S. Michalski**

10:00 - 12:00 — Room 09 + 10

Biogeography (1/2)

Chair
A. Taylor
M.-L. Tolmos

10:00	Phylogenetic endemism of the world's seed plants	**L. Cai**
10:15	Plant size distribution on islands: from theory to prediction	**H. Bestova**
10:30	Biogeography of alien bird diversity on islands through the lens of functional and phylogenetic diversities	**C. Marino**
10:45	Plant diversity across deserts: towards a synthesis	**P. Denelle**
11:00	Environmental drivers of colour variation in Anurans	**R. Laumeier**
11:15	The environmental stress hypothesis fails to explain the plasticity of seed crop variability	**J. Foest**
11:30	Contrasting effects of productivity and temperature obscure the latitudinal gradient of body size variation in Odonata	**L. Mähn**
11:45	Evolutionary assembly of trees in mountains across the globe	**M.-L. Tolmos**

10:00 - 12:00 — Verlaine A

Ecological interactions (2/3)

10:00	Could trait-matching predict litter consumption rate by detritivores?	T. Marchand
10:15	Insect herbivore - plant interactions: nonlinear specialization along a climatic gradient	S. König
10:30	Spatial turnover of soil food webs along environmental gradients	I. Calderon Sanou
10:45	The effect of earthworm ecological groups on plant-plant interaction	L. Zhong
11:00	Individual phenology and spatial heterogeneity shape plant reproduction through plant-pollinator interactions	L. Audrey
11:15	Exploitative plant strategy: an unexpected link between initial abundance of denitrifying soil community and biological denitrification inhibition (BDI)	C. Beraud
11:30	Interactions between wild bees and flowers regarding floral traits and seed set	K.-C. Heuel
11:45	Plants forming phytotelmata: a model system for discovering new strategies used by plants to tailor a nitrogen-fixing microbiota	A. Vergne
12:00	Spatio-temporal effects of landscape heterogeneity on plant-pollinator interactions	J. Heuschele

10:00 - 12:00 — Verlaine B

Nature and society (1/2)

Chair
S. Fiedler

10:00	There's a place for every animal, but not in my back yard: a survey on attitudes towards urban animals and where people want them to live	F. Sweet
10:15	Covid lockdown walks reflect different modes of relations to urban nature	F. Schneider
10:30	Can automated plant identification apps provide local phenology data?	N. Katal
10:45	The importance of old man-made landscape structures for biodiversity. Case study of the Czech Republic	M. Santruckova
11:00	Perception of the scientific expertise within an environmental controversy due to pesticides contamination: the Cleurie River (France) case study	M. Laviale
11:15	Land-use trajectories for sustainable land system transformations: Identifying leverage points in a global biodiversity hotspot	D. Martin
11:30	How can citizen scientists contribute to stream and aquatic insect monitoring? Comparison of citizen science data with expert data and pesticide measurements	J. Von Gönner
11:45	Connection to nature and time spent in gardens predicts social cohesion	R. Oh
12:00	Drivers of environmental best management practices in agricultural landscapes of south-central Ontario, Canada	M. Drescher

12:00 - 13:45 — Halls 1 & 2

Lunch

12:30 - 13:30 — Room : 11 + 12

Improving PhD supervision

12:30 - 13:30 — Room 02

How to get published

13:45 - 15:45 — Auditorium

The long-term trajectories of the socio-ecosystems: past dynamics and modern legacies

Main organizer of the symposium Vincent Robin, LIEC-CNRS-Université de Lorraine, vincent.robin@univ-lorraine.fr

Co-organizers of the symposium : Oliver Nelle, State Office for Cultural Heritage Baden-Wuerttemberg, Tree-ring Laboratory, oliver.nelle@rps.bwl.de

· Session description

The state of the socio-ecosystems is a key challenge today. The sustainability of natural resources is of first importance and priority for the sustainability of human societies. Over time, the ecological systems have moved from climate/natural driven states to human driven states. This considerable change has been triggered mainly by the growing use of natural resources by humans, including land use and resources use. This has reached a critical level in the Anthropocene, which is facing its sixth extinction crisis. Looking at the origin and long-term dynamics of the socio-ecosystem trajectories might provide significant insights that would be useful in addressing the challenges of future of human societies, the environment, and the sustainability of the ecosystem services. Indeed, it appears to be relevant to look at the trajectory of the relationship between the human use of natural resources, according to the socio-cultural development and the state of the ecosystems that support the natural resources. Dealing with such a long-term scale retrospective, we propose in this symposium to share and discuss research results, and insights, about the assessment of past human use of natural resources and their consequences for socio-ecosystems. We especially welcome contributions that concern the assessment of ecosystem resistance/resilience that are related to human disturbances, identification of state of references, and or legacies on the on-going trajectories. Moreover, innovative and interdisciplinary contributions are highly welcome, as well as more standard researches providing new data/insights.

	The weed flora of Iron Age and Gallo-Roman hulled wheats (Triticum spelta L., Triticum dicoccon Schrank.): changing patterns related to écological conditions of the fields, harvesting techniques, crop processing and storage?	**K.-J. Wiethold**
	Digging further into the past for spatialising forests age ecosystems	
	Evolution of forest stand composition in Pays de Bitche (Moselle, France) from 18th century to present : legacy of past forest management	**P. Montpied**
	Analysing the present to understand the past and scenariorise the future – the contributions of tree ring and charcoal science	**O. Nelle**
	Identifying, characterizing and managing future forest refugia in European mountain ecosystems	**C. Remy**
	Will the human footprint ever disappear? Two millennia of Roman influence on vegetation, soils and seed banks dynamics in Mediterranean grasslands.	**T. Dutoit**
	Beech (Fagus sylvatica) in Northwest France during the Holocene: climatic and anthropogenic distribution processes from botanical remains preserved in sedimentary archives	**D. Marguerie**
	Limestone versus sandstone environments: which heritages from past charcoal making activities in current temperate forest soils?	**A. Poszwa**

13:45 - 15:45 — Room : 11 + 12

Biogeochemical cycles and ecosystem ecology in a changing world

Chair
G. Lacroix

13:45	Impact of mesozooplankton diversity on the ecosystem functioning in the Sargasso Sea, using molecular and imaging data	**M. Perhirin**
14:00	Effect of anthropogenic and biological stressors on methane production, oxidation and emissions in ponds	**C. Ganglo**
14:15	Stoichiometry of spatial flow drives the productivity of aquatic-terrestrial meta-ecosystem	**B. Pichon**
14:45	Extracellular oxidative metabolisms (EXOMET): an emerging concept	**C. Bouquet**
15:00	Pollen-based land-cover change in Europe over the Holocene – exploring the resilience of vegetation communities and species dynamics through time	**M.-A. Serge**
15:15	Are western European oak forests man-made construction? The pedoanthracological’s perspective	**T. Feiss**
15:30	Nutrient distribution by wildlife - insights gained through mechanistic modelling.	**E. Le Roux**

13:45 - 15:45 — Room 01

Evolution approaches for understanding ecological features (3/3)

Chair
A. Prinzing

13:45	Risk factors affecting honey bee thermoregulation as potential mechanisms underlying colony overwintering failure	**E. Minaud**
14:00	Population genomics of Diplolepis rosae causing bedeguar galls in wild dog roses: insights into gall induction by insects	**K. Mozhaitseva**

14:15	An NGS-based approach to investigating the spatial and temporal evolution of myrmecophytism in Southeast Asian Macaranga (Euphorbiaceae) lineages	N. Dixit
14:30	The impact of life history, species ecology and humans on the population decline of extant megafauna	J. Bergman
14:45	Eco-evolutionary dynamics in 2-species mutualistic systems: One-sided population decline triggers joint interaction disinvestment	A. Weinbach
15:00	Genetic resources of the red alga Palmaria palmata exploited along Brittany coast and intertidal differentiation	A. Baud
15:15	Evolutionary assembly of ecological communities and its effects on coexistence mechanisms, community robustness, and productivity	V. Lepori
15:30	Biogeographic rules of arthropod body-size across trees in a forest canopy	A. Prinzing

13:45 - 15:45 — Room 02

Rainforest transformation into agricultural lands: current and future challenges

Main organizer (applicant) of the symposium:
Sebastian Fiedler, University of Göttingen (sebastian.fiedler@uni-goettingen.de)

Co-organizers of the symposium (Names, institutions, emails):
Arne Wenzel, University of Göttingen (awenzel@uni-goettingen.de)
Gustavo B. Paterno, University of Göttingen (gustavo.paterno@uni-goettingen.de)
Kerstin Wiegand, University of Göttingen (Kerstin.Wiegand@mail.uni-goettingen.de)

Session description:
Tropical rainforest loss is mainly driven by the transformation of forests into agricultural lands. This transformation is threatening biodiversity and associated services, as well as jeopardizing vital regulatory ecosystem functions. Ultimately it may endanger whole ecosystem integrity. As such, developing more sustainable strategies to alleviate the negative impacts of rainforest transformation, while reconciling agricultural production and ecosystem functioning is a pressing challenge for past, present, and future ecological research. In this symposium we want to address these challenges. Our overall motivation is to learn and be inspired by each other so that we might synthesize ideas for new projects and think about how to address future challenges.
Specifically, with this symposium we aim (i) to showcase recent advances in ecological research on consequences and sustainable alternatives of rainforest transformation and (ii) to highlight research challenges and future perspectives on rainforest transformation. The symposium will bring together an international research community that has tackled this topic in different locations and with varying perspectives. Talks will range from presenting new methods on how to assess biodiversity at the landscape scale, results from field experiments in tropical regions, and large-scale biodiversity surveys. In addition, two review talks summarizing current knowledge on rainforest transformation and sustainable alternatives for tropical forest conservation will be followed by a moderated discussion panel between all speakers.

	Biodiversity and connectivity in fragmented rainforest landscapes	J. Hill
	Implementing a large-scale assessment of biodiversity and ecological functions in human-modified tropical landscapes	F. Brambach
	Win-win opportunities combining high yields with high multi-taxa biodiversity in tropical agroforestry	A. Wurz
	Mechanical weeding promotes ecosystem multifunctionality and profitability more than herbicide weed control in a large-scale oil palm plantation	N.-A.-A. Iddris
	Restoring multiple facets of biodiversity in oil-palm plantations	G. Paterno
	Investigating management options for more sustainable oil palm: the BEFTA Programme	E. Turner
	Is sustainable management and conservation of tropical forest possible?	P. Sist
	Ecological and Socioeconomic Functions of Tropical Lowland Rainforest Transformation Systems (Sumatra, Indonesia)	S. Scheu

13:45 - 15:45 — Room 03

Trait-based approaches: from microbes to plants and animals (2/2)

Chair
A. Cébron

13:45	Stocking shape the functional characteristics of fish communities in small lakes	M. Gimenez
14:00	Shining a light on bumblebee foraging strategies: bumblebee species niche partitioning is related to visual sensory traits	O. Bartholomée
14:15	Rules of Size and Colour: Responses of Forest Insect communities to Temperature and Solar Radiation	R. Pickert

14:30	The ECOLOPES plant-animal-soil community model	J. Joschinski
14:45	Trait based approaches: e -science tools and new perspectives.	J. Titocci
15:00	Grassland root traits respond rapidly to climate change, while functional type composition explains differences in biomass allocation.	S.-L. Rojas Botero
15:15	Allometric scaling of sustained dispersal speed in flying, running, and swimming animals	A. Dyer
15:30	Plant functional groups to model vegetation dynamics in urban ecosystems: the ECOLOPES project approach	M. Pianta

13:45 - 15:45 Room 05

Biodiversity and ecosystem services in European vineyards

Main organizer (applicant) of the symposium (Name, institution, email):
Armin Bischoff, IMBE Avignon University, CNRS, IRD, Aix-Marseille University, armin.bischoff@univ-avignon.fr

Session description : Vineyards belong to the most intensively used agroecosystems in Europe. Insecticide and fungicide treatments are common, often accompanied by weed control using glyphosate. In particular, regular inter-row tillage has resulted in a loss of plant and related arthropod diversity. Recent approaches to restore vineyard biodiversity have shown that environmentally sound management may not only increase species richness but also provide ecosystem services such as improved regulation of pests, increased pollination, improvement of soil structure and reduction of soil erosion. In the present symposium, the relationship between vineyard management, biological diversity and ecosystem functions or services will be analysed and discussed in seven talks from four different European countries. The session keynote speaker Silvia Winter from BOKU Vienna presents an overview on trade-offs and synergies of biodiversity, ecosystem service provision and grapevine production. The two following talks by Adrien Rusch and Verena Rösch will analyse biodiversity at landscape scale in France and in Germany focusing on semi-natural habitats within and outside vineyards. They are followed by four presentations highlighting the importance of inter-row vegetation for vineyard biodiversity and related ecosystem services. The talks by Karsten Mody and Lea Schubert/Daniel Elias will show approaches to sow and establish species-rich inter-row vegetation and its effects on arthropod communities in two different German regions. Tamas Miglecz presents an evaluation of different Hungarian approaches to establish cover crops in vineyards and apple orchards. And the final talk by Leo Rocher and Emile Melloul will demonstrate interactions between spontaneous inter-row vegetation and predatory arthropods involved in biological control of pest insects. The presentation takes into account consequences of increased irrigation to compensate for water competition and for climate change induced drought. The work of the last three talks is part of the EU funded international Life project VineAdapt that also contributes to symposium funding.

· Speakers (Names, affiliations, emails, and tentative talk titles). Only speakers who have been contacted by the organizer(s), and have committed to the session should be listed.
WINTER, Silvia, BOKU Vienna, Austria (session keynote, 30 min): Sustainable vineyard vegetation management - balancing trade-offs and synergies of biodiversity and ecosystem service provision
RUSCH, Adrien, INRAE, Bordeaux, France (15 min): Combining in-field and off-field management options to benefit biodiversity and ecosystem services in vineyard landscapes
RÖSCH, Verena, University of Koblenz-Landau, Germany (15 min): Effects of semi-natural habitat cover on breeding bird diversity and abundance in vineyard landscapes
MODY, Karsten, Hochschule Geisenheim University, Germany (15 min): Species-rich inter-row vegetation in vineyards: establishment, management and effects on arthropod abundance and diversity
SCHUBERT, Lea, ELIAS, Daniel, Anhalt University of Applied Sciences, Bernburg, Germany (15 min): Effects of wildflower sowing on plant and insect diversity in Eastern German vineyards
MOGLECZ, Tamás, ÖMKi - Research Institute of Organic Agriculture, Budapest, Hungary (15 min): Evaluation of ecosystem services in Hungarian cover crop projects
ROCHER, Leo, MELLOL, Emile, IMBE University of Avignon, CNRS, IRD, Aix-Marseille University, Avignon, France (15 min): Effects of vineyard inter-row vegetation and irrigation on arthropod predators in Southern France

· Sponsorship: The travel costs of the keynote speaker will be funded by the EU Life project VineAdapt (up to a limit of 500 Euros).

	Sustainable vineyard vegetation management - balancing trade-offs and synergies of biodiversity and ecosystem service provision	S. Winter
	Combining in-field and off-field management options to benefit biodiversity and ecosystem services in vineyard landscapes	
	Effects of semi-natural habitat cover on breeding bird diversity and abundance in vineyard landscapes	V. Rösch
	Species-rich inter-row vegetation in vineyards: establishment, management and effects on arthropod abundance and diversity	K. Mody

	Effects of wildflower sowing on plant and insect diversity in Eastern German vineyards	**L.-F. Schubert**
	Evaluation of ecosystem services in Hungarian cover crop projects	**T. Miglécz**
	Effects of vineyard inter-row vegetation and irrigation on arthropod predators in Southern France	**L. Rocher** **E. Melloul**

13:45 - 15:45 — Room 06

GBIF4Ecology - the Global Biodiversity Information Facility

Main organizer (applicant) of the symposium (Name, institution, email):
Birgit Gemeinholzer, University Kassel, b.gemeinholzer@uni-kassel.de

Co-organizers of the symposium (Names, institutions, emails):
Dagmar Triebel, Staatliche Naturwissenschaftliche Sammlungen Bayerns, triebel@snsb.de

Session description:
GBIF - the Global Biodiversity Information Facility - is an international network and data infrastructure funded by the world's governments and aimed at providing open access to data about all types of life on Earth. It is coordinated by its Secretariat in Copenhagen and is working through 104 participant nodes, mainly the National Nodes of the GBIF member countries. The data backbone is diverse and set up by a growing community of more than 1,800 organisations providing free and open access to primary information about “where” and “when” species have been recorded.

Germany and France are among the top four countries delivering datasets and among the top eight regarding georeferenced single data records. Altogether GBIF is publishing more than 2.2 billion species occurrence records. GBIF-mediated data are used and cited in more than 6,900 peer-reviewed articles. Data, scripts, software as well as web tools and portals using the GBIF data landscape and standards are continually being developed. Biological research is supported by GBIF training courses and outreach activities worldwide.

The GBIF4Ecology symposium will introduce the unique data network as source, its variety of stakeholders, from citizen scientists to policy makers, and emphasis on its growing impact for data-driven research in ecology. GBIF standards, data and web tools are being integrated into a worldwide infrastructure given new options to integrate further types of biodiversity data like bio-logging data and eDNA data and interlink non-biological data. Ecological studies with various objectives use GBIF quality data. This session gives the background behind the GBIF landscape of data, standards and tools. It is highlighting the great potential of GBIF-mediated data and services on the long-run and for future (re-)use.

	GBIF4Ecology – the Global Biodiversity Information Facility	**D. Schigel**
	Introducing the GBIF global network and GBIF data use, tools and applications	**A.-S. Archambeau**
	Natural history collections in their role of providing vouchered and georeferenced data sources to the GBIF network – a perspective from the GBIF Germany Node	**D. Triebel**
	Collection data repository ready to identify and link DNA barcodes and metabarcoding data from biodiversity monitoring for GBIF	**P. Grobe**
	Roads and Politics: Quantifying geographic and political collection bias in GBIF-mediated data	**A. Zizka**
	Chemical properties of key metabolites determine the global distribution of lichens	**A. Schweiger**

13:45 - 15:45 — Room 09 + 10

Biogeography (2/2)

Chair
D. Montesinos

13:45	Müllerian mimicry in neotropical butterflies: One force to shape them all, and in the jungle bind them.	**M. Dore**
14:00	Island endemism - Speciation happens in company rather than in isolation!	**C. Beierkuhnlein**
14:15	The diversity of interactions complements functional and phylogenetic facets of biodiversity	**P. Gauzere**
14:30	Never put the mountains in a drawer, wrong range character classifications lead to wrong transition rates	**L. Bätscher**
14:45	Australian harvest termite (Drepanotermes) diversification suggests adaptation to past and resiliance to future climate change	**T. Hartke**
15:00	The global distribution of plant life-forms is modulated by phylogeny and contemporary climate	**A. Taylor**
15:15	Global trait space of native and endemic island plants	**T. Ferreira Arruda**

13:45 - 15:45		Verlaine A
Ecological interactions (3/3)		**Chair** T. Marchand
13:45	Biodiversity of food webs in response to warming across ecosystem types	**B. Gauzens**
14:00	Assessing the performance of statistical methods to infer animal interactions from movement data	**T. Fronville**
14:15	Daily temporal dynamics of plant-pollinator networks	**J. Fründ**
14:30	Can co-occurrence matrices predict trophic matches between plant resources and butterfly consumers?	**E. Menares**
14:45	Feeding in the frequency domain: The effects of nutritional heterogeneity grain size on consumer performance	**A. Koussoroplis**
15:00	Predator effects on herbivore host switch: an eco-evolutionary experiment	**E. Frago**
15:15	Forecasting in the face of ecological complexity: number and strength of species interactions determine forecast skill in ecological communities	**U. Daugaard**
15:30	Evidence of an animal-mediated fertilization in red algae.	**E. Lavaut**

13:45 - 15:45		Verlaine B
Nature and society (2/2)		**Chair** M. Laviale
13:45	Analysis of the determinants of social demand as a lever for a better consideration of the ecological impacts of land use planning	**C. Calvet**
14:00	Under shadows: How floating photovoltaic energy may impact freshwater biodiversity and ecosystem functioning?	**R. Nobre**
14:15	CiTIQUE : producing scientific quality-grade results with citizen on ticks in an open laboratory	**J. Durand**
14:30	Impacts of forest anthropisation on links between wild micromammals communities and their gut microbiota	**M. Bouilloud**
14:45	Comparison of arthropods communities between French military training and civil areas in a Natura 2000 context	**P. Caudal**
15:00	From gravel to nature gardens - differences for supporting local biodiversity	**D. Jakubka**
15:15	Understanding farmers’ adoption of agri-environmental schemes. Insights from farmer interviews and geospatial regression models	**M. Beckmann**
15:30	Novel Systems, Novel Approaches: Integrating ecological science into complex Social-Ecological-Technological Systems with Urban Green Infrastructure	**Z. Grabowski**

15:45 - 16:15		Halls 1 & 2
Coffee break		

16:15 - 17:15		Hall 1
Poster session 2		
	Soil silicon enhances growth and modulates foliar nutrient concentrations in tropical tree species	**M. Klotz**
	How to find the right host - Olfactory signals as cues in bark beetle host selection	**L. Lehmanski**
	Socio-ecological niche differentiation for two Génépi species subject to natural harvesting	**N. Fontaine**
	Life history traits as drivers of species assemblage and breeding habitat selection in amphibians of the Upper Rhône floodplain, France	**M. Alain**
	Trait-based assembly of mutualistic networks	**T. Metz**
	Multiple global change factors affecting the plant community	**R. Rongstock**
	Environmental impregnation of bee-products in different ecosystems	**S. Jurjanz**
	Change or leave: adaptive strategies facing environmental variability	**M. Thierry**
	Introduction to NFDI4Biodiversity and its education activities	**M. Fischer**

	Adaptive potential of salinity-induced cell death in a halotolerant microalgae in fluctuating environments	**N. Zeballos**
	Arthropod communities in a post-mining, actively restored forest resemble communities in a natural forest in Ghana	**F.-G. Damptey**
	Aspen trees can switch their diet from carbohydrates to lipids under severe carbon limitation	**J. Helm**
	INCIDENCE OF PREDATORY MITES (ACARI: PHYTOSEIIDAE) AND SPIDER MITES (ACARI: TETRANYCHIDAE) ON GUAVA, CITRUS AND GRAPES IN RELATION TO DIFFERENT ABIOTIC FACTORS.	**B. Khan**
	Inventory of phytoremedium plant species of hexavalent chromium near the route of the Oued Mellah	**A. Korichi**
	Integrating Tree Species Identity and Diversity in Particulate Matter Adsorption	**M. Steinparzer**
	High consistency of trophic niches in generalist microarthropod species (Oribatida, Acari) across soil depth and forest type	**J. Lu**
	Disentangling forest effects on grassland plant diversity and forage yields	**M. Kernecker**
	Quantifying relationships between land use, functional diversity, and ecosystem services across European agroecosystems	**R. Bucher**
	Contrasting ionomic signatures of plants growing on metalliferous soils in New Caledonia	**Y. Pillon**
	Implications of drift and rapid evolution on negative nicheconstruction	**L.-P. Nguyen**
	Effects of competition reduction on intra-annual radial growth of European beech at stem base and crown base.	**L. Donfack**
	Effects of elevation and temperature on the diversity and structure of mountain forests in the Bavarian Alps	**M. Kortmann**
	Implications of plant modulation of nitrification for ecosystem structure, functioning and resilience	**A. Ardichvili**
	Ecological modeling reveals the conditionality of multiple stressor interactions	**R. Schäfer**
	Integrated simulation modeling across scales: Simultaneous assessment of land-use change effects on biodiversity and ecological and economic functions	**J. Henzler**
	Exposure of herbivores to arsenic from soil - the case of horses grazing on a geochemical anomaly	**C. Collas**
	SORTEE: promoting open, reliable, and transparent ecology and evolutionary biology	**R. Royauté** **M. Paquet**
	Assessing the effects of plastics contamination on the structure and functions of stream microbial communities	**L. Laffet**
	How diversity and heterogeneity of agropastoral habitats impact the provision of ecosystem services in low mountain region: Evaluation of ES bundles and social expectations.	**B. Allard**
	Restoring insect diversity in intensive grasslands by establishing native grassland flower strips	**R.-I. Hussain**
	Recreation, pastoralism and biodiversity : how does the environment contribute to their spatial coexistence ?	**P. Charlot**
	Mechanistic explanations and hypotheses in ecology: What is that, and how to represent?	**S.-L. Rojas Botero**
	Identifying pesticide cocktails across France	**M. Cairo**
	Drought-induced defoliation affects the climatic disequilibrium of recruit communities in Mediterranean shrubland	**R. Díaz Borrego**
	Impact of riparian plant vegetation on soil carbon dynamics and copper retention	**J. Jamin**
	Effects of landscape structure on community traits, diversity, and local adaptation	**J. Tardanico**
	Impact of Agroforestry on Insect Pollinators in European Agricultural Land	**R. Alusiola**
	Symbio(s)cene: Arts & sciences collaboration for an era beyond the Anthropocene	**S.-L. Rojas Botero**
	metaRange in Julia: a process-based model for range dynamics of plant species	**J. Blechschmidt**
	The severity of bacterial canker of kiwi (Actinidia deliciosa) under conditions of abiotic stresses	**C. Lacroix**
	Foraging personalities modify effects of habitat fragmentation on biodiversity	**M.-S. Rohwäder**
	Temporal dynamics of Echinococcus multilocularis prevalence in red foxes in an endemic area : two contrasted evolutions in North-eastern France.	**B. Combes**
	Autumn phenology of wood growth in deciduous forest trees: contrasting patterns between aboveground woody organs and coarse roots	**L.-J. Marchand**
	Modeling the influence of ecosystem coupling on ecosystem functions	**S. Osakpolor**
	A simple camera trap with automated insect detection for Monitoring and Citizen Science	**M. Sittinger**
	Spatio-temporal variation and spatial synchrony in flight dates in two corn borers	**A. Mouchet**

How to model horizontal diversity in complex systems?	L. Wojcik
Impact of soil faunal necromass on soil organic matter and microbial diversity	S. Maass
Effects of heterogeneity on the functional-phylogenetic and taxonomic diversity of forest fauna	L. Heidrich
Assessing the spatial patterns of functional connectivity across multiple species and taxonomic groups in Switzerland.	A. Mardiris
Effects of the 2018 summer drought on Central European forests: a remote sensing perspective using Dynamic Habitat Indicators	M. Safaei
Developing new Methods for Woodcock Monitoring	D. Arend
A combination of immediate and lagged responses to autocorrelated climate can benefit or hinder the long-term growth rate of populations	S. Evers
Assessing stakeholders' perspectives on cultural ecosystem services provided by urban trees	J. Son
The impact of structural diversity on the socio-ecological significance of urban green spaces - introduction to a new project	S. Arzberger
Developing a remote sensing based monitoring system for quantitative and qualitative changes of traditional orchards in Hesse, Germany	A. Hanzl
Effect of intercropping and organic raised-bed gardening on soil nematode community structure and metabolic footprints in tomato small-scale farming	J. Clause
Assessment of habitat vulnerability for a better adaptation of forests to climate change	C. Dupont-Doaré
Using pixel- or superpixel-based segmentation for efficient classification of green roof digital images and rapid estimation of plant species abundance	D. Técher
Competition shapes distribution of productivity-related traits in a non-vascular vegetation community	Y. Ma
Can we easily read-across in ecotoxicity data? A case study with two dreissenid species exposed to three psychotropic drugs.	C. Baldacci
Tracking the fate of animal-dispersed seeds through the life of a plant	F. Rehling
Scale-dependent displacement effects of wind turbines on bats and birds in managed forests	F. Rehling
Habitat fragmentation per se and species diversity: The influence of local extinctions and species clustering	O. Mitesser
Body size and short distance mobility are modulated by field farming system and local habitat characteristics	E.-A. Djoudi
The influence of climate and habitat on photosynthetic pathways and chlorophyll fluorescence in a West African savannah ecosystem	D. Jakubka
Plant hydraulic behaviour is dynamic in two woody Mediterranean species	S. Haberstroh
The French biodiversity data Hub (PNDB), a virtual biodiversity data infrastrucutre for and by researchers.	O. Norvez
The domino effect of spring and fall phenological shifts: how long does it last?	A. Malyshev
Phenotypic plasticity and genetics in the adaptation of forest trees to climate change: results from large-scale provenance trials	A. Di Fabio
Can we use morphological traits to estimate genome size in fossil plants?	P. Jardine
Opportunistic plant observations capture shifts in species phenology	M. Rzanny
Combined effects of floods and pesticides on stream biofilms	J. Artigas
Genetic and phenotypic variation in Romanian beech along an altitudinal gradient.	O. Grigoriadou-Zormpa
Effects of biodiversity on the 3D structure of the forest: A comparison across BEF experiments using TLS	M.-D. Perles-Garcia
Impacts of tree species conversion on understorey vegetation communities in context of climate change	R. Ribémont
The Ecolopes animal model	V. Culshaw
Greenness, growth, and daily variations in stem diameter - Linking leaf phenology and wood growth in temperate forest trees	D. Basler
Wild bee body size as a response trait to anthropogenic disturbance in agriculturally dominated landscapes	B.-S. Stoykova
A 34-year survey under phosphorous decline and warming: Consequences on stoichiometry and functional trait composition of freshwater macroinvertebrate communities	M. Beck
Trait-based approach to disentangle the movement, tolerance and interaction dimensions in salt marsh community assembly	K. Lõhmus
A barrier to global plant invasion ecology: gaps in trait availability for alien species	M. Grenié
Is inflorescence preformation in overwintering buds linked to plant functional traits and plant phenology? – a multi-garden approach	S.-F. Bucher

Mapping microclimate variations using near-surface temperature modelling: validation of the Microclima R package on the scale of the Compiègne forest and its surroundings	**T. Brusse**
Winter and spring frost events decrease survival and growth and delay leaf-out in European beech seedlings in the first two years	**L. Muffler-Weigel**
Response of birds and bats to outbreaking Lymantria dispar caterpillars and aerial insecticide application in forests	**S. Hochrein**
A CITIZEN SCIENCE-BASED WILD BEE MONITORING APPROACH- HOW VOLUNTEERS WITHOUT TAXONOMIC KNOWLEDGE SURVEY CAVITY-NESTING HYMENOPTERA	**L. Lindermann**
The role of stem diameter in tree hydraulics – insights from pure and mixed stands of European beech and Douglas fir during four consecutive years	**C. Hackmann**
The Attitudinal Space Framework: embracing the multidimensionality of attitudinal diversity	**U. Arbieu**
The mangrove-saltmarsh ecotone: Explaining observed vegetation patterns with a fully coupled mechanistic modelling approach	**J. Vollhüter**
Lantana camara can aid mitigating environmental and social challenges in the Western Himalaya	**J. Willig**
Modeling pollinator populations in response to land use changes in agroecosystems - A systematic review	**A. Rouabah**
Meta-ecosystem modelling of aquatic-terrestrial bottom-up interactions	**A. Ahmed**
Decoupling eco-evolutionary variation on floral nectar sugar composition across central Europe	**Y. Liu**
Ecological diagnostic tool for metal contaminated soils: use of functional traits of bacteria and invertebrates	**V. Laderriere**
Modeling of a climate-adapted tree species distribution for Germany based on National Forest Inventory and remote sensing data. Tree Species Project	**K. Pietras-Couffignal**
NOZ BREIZH UNIVERSITY CHAIR	**A. Cocrelle**
Effects of tropical tree leaf trait composition on abundance and body mass of herbivorous arthropod communities	**J. Schön**
Effects of essential trace metal elements on non-essential trace metal elements' toxicity on the zebra finch in a context of urban pollution	**C. Parnet**
Return of a native Mediterranean ant community after Carpobrotus removal on a small island	**R. Blaya**
Short-term effects of mowing and plant species richness of river dike grasslands on carabids and cicadas	**M. Moosner**
WHY IS THE ROLE OF BIODIVERSITY SO HARD TO RETELL? DYNAMIC EFFECTS IN PUBLIC BIODIVERSITY NARRATIVES	**M. Holy**
New mesure of the robustifying nature of interaction network and its analytical prediction	**M. Desallais**
Changes in taxonomical diversity in the vineyard flora with succession on abandoned vineyards	**A. Govor**
Multitrophic analysis of fungal communities by metatranscriptomics of forest soils	**M. Buée**
Biochemical and microbial drivers involved in the decomposition processes of fungal necromass in forest soils	**E. Hilaire**
Effects of trees structural traits on their response to storm	**A. Penanhoat**
The impact of increased nighttime temperature on the phenotype of a vertebrate ectotherm and its plastic aspects	**C. Perry**
No impacts of azoxystrobin-based fungicide on bumblebee colonies in dose-response experiment mimicking fungicide decline	**D. Wintermantel**
The smallest DNA phages, two sister Microviridae clades that followed different paths to reduce their genomes	**E. Olo Ndela**
Pronounced genetic structuring of a fossorial rodent across a small spatial scale, affected by landscape structure	**V. Reuber**
Designing of a long term environmental observatory around an industrial project: Ex of Andra - Ope	**Q.-M. Tenailleau**
Mechanized forest operations as an emerging driver of understory vegetation change - 50 years of plant communities' composition in the Amance forest (France)	**S. Vennin**
ALAN locally alleviates the impact of drought on leaf litter decomposition	**N. Juvigny-Khenafou**
Upscaling of ecosystem services from plot to farm scale: more complex than you might think	**V. Klaus**
Estimating process-based model parameters from species distribution data	**V. Van Der Meersch**
Bti-based mosquito control alters natural benthic macroinvertebrate communities and dragonfly emergence	**V. Gerstle**

PINUS HALEPENSIS RESILIENCE TO DROUGHT ACROSS ITS DISTRIBUTION RANGE	L. Veuillen

16:15 - 17:15	Verlaine B
Art & Ecology (videos)_2 Or l'oiseau (25'): more details here Prolivariation (9'): more details here Dendromite (10'): more details here Main organizer: Joanne Clavel	

17:15 - 17:55	Auditorium
EEF awardee lecture: Biodiversity dynamics under past, present and future global change – insights from macroecology and implications for biosphere stewardship Earth's wonderful diversity of life is under strong, increasing pressures from human-induced global change, and it is a massive challenge how to avoid catastrophic biodiversity losses, while meeting the rising needs for sustainable development. Through large-scale and long-term perspectives, macroecology offer important insights on biodiversity dynamics under global change and what is required to achieve sustainable biosphere stewardship in the long-term on a human-dominated planet. The last few millions years have experienced extraordinary instability in climate and the rise of humans as a global ecological force. Hence, there is much to learn from biodiversity and ecosystem dynamics through this period for conservation, restoration and sustainable development in a future characterized by a rising human population and human-driven climate change. The strong climate shifts drove massive ecosystem reorganization, with dispersal and extinction playing major roles. Importantly, strong shifts to novel climates caused massive biodiversity losses, with enduring legacies. Further, there is a globally consistent pattern of strong biodiversity and ecosystem changes in the wake of the global spread of modern humans, Homo sapiens. Losses of large vertebrates are typical, and the associated trophic downgrading had profound ecological effects on a global scale. For the last 10,000 years increasing land transformation through agriculture have exacerbated these impacts. Looking ahead, we can forecast further intensifying impacts from direct human activities and human-driven climate change, with strong potential to lead to massive biodiversity losses with long-lasting consequences. Achieving a positive future for biodiversity requires intensified, integrative efforts to solve the climate and biodiversity crises alongside sustainable, democratic development. We need to strengthen conservation efforts, with major foci on safeguarding biodiversity hotspots and intact ecosystems with special attention to areas buffered against future climate stress – alongside the massive efforts needed to limit global warming as much as possible. Simultaneously, there is strong need, but also high potential for widespread ecosystem restoration through rewilding (restoration to restore self-managing complex ecosystems) to enhance the biodiversity capacity and resilience of natural areas. An emerging important point is that global change is increasingly forcing the rise of novel ecosystems, where alien species inevitably play increasing roles. While their effects can be negative, they also sometimes have positive contributions for biodiversity that need greater consideration. Proactive approaches such as species translocations will be needed to overcome negative effects and enhance adaptive responses to climate change. These efforts to secure biodiversity have major potential for sustainable development, contributing important co-benefits for climate mitigation and adaptation, livelihoods and livability.	
	J.-C. Svenning

17:55 - 18:15	Auditorium
Closing ceremony	

18:15 - 19:15	Hall 1
Happy Hour	

SFE² GfÖ EEF

Joint meeting, International Conference on Ecological Sciences

"Ecology and Evolution: New perspectives and societal challenges"

21-25 Nov 2022 Metz (France)

Ecology & Evolution: New perspectives
and societal challenges

J5 - 25/11/22

Organized by :

LIEC & North Eastern France Labs in Ecology & Evolution — Université de Lorraine — cnrs — sfé² — GfÖ The Ecological Society of Germany, Austria and Switzerland — eef European Ecological Federation

08:00 - 14:00	The Art Nouveau in Nancy
Excursion 7 (half day) => The Art Nouveau in Nancy	

08:00 - 14:00	From the Récollets to the Pompidou
Excursion 9 (half day) => From the Récollets to the Pompidou	

08:00 - 14:00	Guided tour in Metz city
Excursion 8 (half day) => Guided tour in Metz city	

08:00 - 14:00	Nancy historical center
Excursion 6 (half day) => Nancy historical center	

08:00 - 18:00	Cultural and socio-ecological heritages
Excursion 3 (full day) => Cultural and socio-ecological heritages	

08:00 - 18:00	Les Vosges du Nord
Excursion 2 (full day) => Les Vosges du Nord	

08:00 - 18:00	Metz surroundings
Excursion 5 (full day) => Metz surroundings	

08:00 - 18:00	Natural and semi-naturals wetlands in Lorraine
Excursion 4 (full day) => Natural and semi-naturals wetlands in Lorraine	