

sDiv Newsletter

sDiv is the Synthesis Centre for Biodiversity Research of iDiv

Dear Colleagues,

Welcome to our fourth official newsletter to share the latest developments at sDiv. iDiv, of which sDiv is part of has successfully applied for further funding through the German Research Foundation (DFG) for another four years! Well done, congrats and hooray!!! sDiv and thus all of you and many more played a crucial part here. Reviewer comments mentioned explicitly the international visibility which is also driven by sDiv activities. I can only second Helge Bruelheide, one of our directors, who said *"the scientific exchange with leading scientists from all over the world has strengthened our research tremendously."* Again, thanks to all of you for your fantastic work in sDiv projects and also for spreading the word of the synthesis centre across the globe! Saying this, you can help again! sDiv just opened yesterday its fifth call for working groups, postdocs and sabbaticals. The deadline is 15 February 2017. Please spread the word!

What else happened with sDiv lately? As part of the Joint Synthesis Consortium sDiv is helping to develop the idea of a cross-centre Ubersynthesis, tackling some of the grand challenges in biodiversity research and beyond. I am excited to work together with my centre colleagues to develop this project further. One of those projects was a joint synthesis postdoc retreat at the French synthesis centre CESAB in Aix-en-Provence. Current and former sDiv postdocs as well as CESAB postdocs had a great meeting with stimulating discussion about career planning and actual work on joint outcomes on the evolution of the Linux universe and an opinion paper about research visibility vs impact. Enjoy reading our newsletter!

sDiv CALL for working groups,
postdocs and sabbaticals is open!

SUBMISSION DEADLINE
15 February 2017

Please find all important information
and application documents here:

www.idiv.de/sdiv/calls

Sabbatical Insight Story

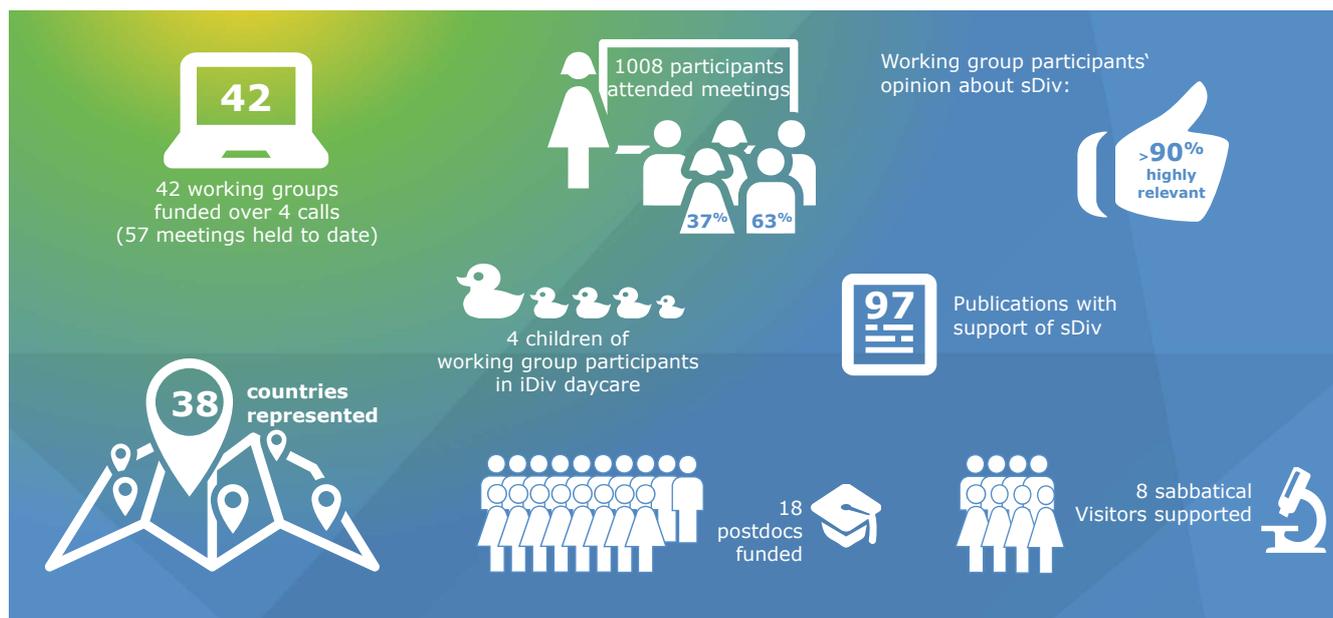
During the eight years since my last sabbatical from the University of Ottawa (they apparently missed the etymology of "sabbatical"), I spent a great deal of time teaching undergraduates (120 contact hours/year), serving on university committees and editing *Global Ecology and Biogeography*. That was all rewarding, but my own research slipped onto the back burner. For this sabbatical, I was anxious 1) to finish a project assessing the (lack of) impact of climate change on North American bird distributions that I started with a gifted honours student, Simon Venne; 2) to write a philosophical piece on the complimentary roles of experimental ecology and macroecology, and 3) to develop a spatially-explicit, predictive model of the continental variation of species richness - a sort of continental biogeography, inspired by MacArthur and Wilson's island biogeography. At the great Macroecology conference in Copenhagen 2015, Marten Winter tried to persuade me that sDiv could provide good surroundings to think, and talk, and write about geographic patterns of richness. He was absolutely right. Interactions with the students and post-docs in sDiv has been continuous, fun, and stimulating. My hosts Jon Chase & Marten Winter are busy folk, understandably; they have nonetheless been exceptionally welcoming and inclusive. I am also extremely grateful to many people at iDiv and Leipzig University who have made the logistics of a



David Currie

sabbatical overseas so painless. While here, I had the opportunity to host a small working group that is attempting to reconcile historical and contemporary hypotheses about geographic patterns of diversity. My philosophical piece is nearly done. And, Petr Keil, a current sDiv postdoc agreed to help me get the coding started on my continental biogeography project (bravo Petr!). Nach Feierabend, I have discovered that Leipzig and Saxony are a remarkably interesting place to live and work. Farmers' markets, the Lichtfest, the Christmas Market, and abundant music and history have been literally at the doorstep of my flat near the Nikolaikirche. It is truly amazing. And, there are occasionally days in Leipzig when it does not rain! I will be sad to leave in December.

sDiv in a Nutshell



Upcoming Working Group Meetings



SAPROPOS working group

sToichNutNet – Linking ecological stoichiometry with environment diversity productivity relationships in grasslands

PIs: Elizabeth Borer, Anne Ebeling

1st date: 09. – 12.01.2017

2nd date: 19. – 22.06.2017

sMonodominance – Towards a unifying theory of the emergence and maintenance of monodominance in species-rich tropical forests

PIs: Andreas Huth, Kelvin Peh

1st date: 31.01. – 03.02.2017

2nd date: 23. – 26.01.2018

SAPROPOS – Analysis of PROjections of POPulationS

PI: Roberto Salguero-Gomez

2nd date: 06. – 10.02.2017

3rd date: 12. – 16.06.2017



iDiv child care

sWORM – A global soil biodiversity database and its application to data synthesis and theory development

PIs: Erin Cameron, Nico Eisenhauer
associated postdoc: Helen Phillips

1st date: 14. – 17.03.2017

2nd date: 13. – 16.11.2017

sFDvent – A functional trait perspective on the global biodiversity of hydrothermal vent communities

PIs: Amanda Bates, Abbie Chapman

2nd date: 24. – 28.04.2017

Great sDiv Papers

sDiv scientists and guests work very hard to move science forward. Here we want to present two recent studies from two sDiv working groups.

Mechanistic forecasts of biodiversity responses to climate change can become feasible

Alexander Singer, Mark Urban, Justin Travis and the *rangeShifter* working group

Biodiversity conservation must prepare for ever increasing anthropogenic pressures and environmental change. Models that project species distributions in response to environmental change, provide important tools to design and target conservation efforts. In order to accommodate more complicated dynamics, such models are increasingly incorporating biological mechanisms. During two sDiv-workshops, the sDiv working group rangeShifter developed strategies to analyze biotic response processes with the novel process-based species distribution model RangeShifter. In ongoing research, facilitated by Alexander Singer, sDiv postdoc at the time of the meetings, we explore eco-evolutionary impacts on the range-shifting of species. Reviewing ecological responses to climate change within the, we identified a list of six processes and factors (demography & life history, physiology, evolution, species interactions, dispersal and environment) that should be considered in forecasts of future species fate. Recent spatially-explicit individual-based population models technically cope with the required complexity. However, many models ignore relevant biotic processes because of a lack in detailed information about biotic responses. Therefore, we suggest parameters that capture biological response mechanisms should become a focus of future collection efforts. Combining empirical and modelling research in a global initiative promises to improve the projection of future species distributions and inform biodiversity conservation under climate change.

Putting humans into the equations: Better representation of human behaviour needed in models of social-ecological systems

Studies of integrated systems of humans and nature (SES, social-ecological systems) often use modelling as a tool to advance theory and inform policy making. However, most modelling approaches in the field have tended to neglect or oversimplify human behaviours. One of the interdisciplinary *working groups*, lead by Maja Schlueter and Marco Janssen jointly funded by SESYNC, UFZ and sDiv published a study providing help for modellers and other researchers to find and formalize relevant theories of human behaviour for modelling of SES. They introduce a new framework for Modelling Human Behaviour called "MoHuB", and apply it to a number of well-established social-science theories. Modellers often have to identify and transform relevant theories on human decision-making into crisp causal relationships, while the best available knowledge is fragmented, context dependent and descriptive. The MoHuB framework is a way to support mapping, describing, organizing and comparing different behavioural theories. The mapping helps clarify the focus and underlying assumptions of a theory and develop a joint vocabulary for comparison and communication. It also alerts researchers to consider the different elements and processes relevant for decision making, namely perception, evaluation, the state of the actor, its perceived behavioural options, as well as the selection of a behaviour and the actual behaviour itself which may change the social and ecological environment of the agent.



rangeShifter working group

➔ Urban et al. (2016): Improving the forecast for biodiversity under climate change. *Science*, 353.



Human decision making working group

➔ Schlüter et al. (2017): A framework for mapping and comparing behavioural theories in models of social-ecological systems. *Ecological Economics*, 131, 21-35.

Some recent Publications

- *Harmonizing Biodiversity Conservation and Productivity in the Context of Increasing Demands on Landscapes* (working group: LU-BD-ES)
- *Twenty-million-year relationship between mammalian diversity and primary productivity.* (working group: sFOSSIL)
- *A guide to phylogenetic metrics for conservation, community ecology and macroecology.* (working group: sPHY)
- *Delineating probabilistic species pools in ecology and biogeography.* (working group: sREGPOOL)
- *Plant diversity effects on grassland productivity are robust to both nutrient enrichment and drought.* (working group: sStability)
- *The influence of balanced and imbalanced resource supply on biodiversity-functioning relationship across ecosystems.* (working group: sTOICHFUN)



The International Synthesis Consortium in October at the Powell Centre

➔ www.idiv.de/publications.html

sDiv Scientists

As result of our 4th sDiv call we support ten new working group projects, two individual postdoc projects by Katharina Gerstner and Duarte Viana, two sabbatical fellowships for David Currie (Ottawa, Can) and Birgitta König-Ries (Jena, Ger), and one working group postdocs (Helen Phillips, sWORM). About David's sabbatical please read here in the newsletter. Birgitta will focus on making data sharing and integration easier. She will do this in the context of sWorm, in a joint effort with other iDiv researchers to mobilize mostly species abundance data, and in some smaller projects of her own. Nina Gurselmann supports as research assistant a project started by the former sDiv postdoc Katherine Bannar-Martin and Marten Winter as part of the 2016 iDiv Summer School called "A comprehensive review of diversity congruence in community ecology". In the administration team, Carolin Kögler (nee Kablau) returned from her maternity leave and is supporting sDiv again full of energy.

Unfortunately we also had to say goodbye to some of our team: Juliano Sarmiento Cabral started as Junior Professor for Ecosystem Modeling at the Center for Computational and Theoretical Biology (CCTB) at the University of Würzburg in April, Joanne Bennett stayed at iDiv and now works in the Spatial Interaction Ecology research group of Tiffany Knight, Stefano Larsen has moved back to Italy progressing his research and Katherine Bannar-Martin started as NSERC postdoc at the Pacific Biological Station, Department of Fisheries and Oceans Canada in British Columbia.



Almost all current sDiv sPeople

➔ [sDiv people](#)

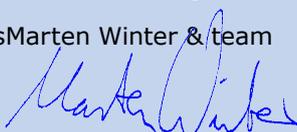
➔ [sDiv Alumni](#)

Since your feedback is always welcome, please do not hesitate to contact sMarten Winter, the Scientific Coordinator, or the sDiv secretary Franziska Hübner at +49 341 9733113.

We wish you harmonious Christmas holidays!

With our best regards from Leipzig

sMarten Winter & team




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