

sDiv Newsletter

sDiv is the Synthesis Centre for Biodiversity Research of iDiv

Dear colleagues,

What's been happening at sDiv? 2018 was again a busy and successful year for sDiv. We supported 19 working group meetings here at our core centre and three more working group writing retreats outside Leipzig. For the first time we also funded a grant writing retreat, a new funding scheme which we plan to support more often in the future. Three new postdocs and two sabbatical researchers started in fall making sDiv to an even larger lab of great scientists with diverse scientific backgrounds and project topics.

One of the most exciting projects sDiv is involved in, is the ongoing (well, the deadline passed already) joint call for synthesis projects

about Biodiversity and Health together with the pan-European funding scheme *BiodivERSA* and two other synthesis centres (*CESAB (F)* and the *Swedish Lifewatch Data-Centre*). We hope we will host a few groups at sDiv and help them to conduct exciting and relevant synthesis research. Let's see.

In times when I hear a lot of discussions about necessity and efficiency of science administration, I especially want to use the opportunity to thank the incredible admin team behind the sDiv scenes, Carolin, Luise, Franziska and Peter (and Doreen on maternity leave)! Without them, the sDiv success story would not be one. Efficient and creative administration is one pillar of the success of any infrastructure

like sDiv/iDiv. It should never be seen as nuisance but rather as a supportive unit, like we always did at sDiv. I am sure all of you who have visited sDiv would agree. They are doing a fantastic job in communicating, organizing and reporting sDiv's activities. Without them, I would not have been able to find the sparse time for my own science.

Saying this, sDiv has to say goodbye to Franziska, who has been here almost since the first days. Very sad for me and for sDiv but great gain for anyone who will hire her. All the best for your future, Franzi!

sMarten Winter

Sabbatical insight story

Henrique Pereira's first suggestion of iDiv as a place for my sabbatical made it evident that it would indeed be an intellectually stimulating venue where my academic plans could be nurtured. Upon arrival, Marten Winter scheduled me for presentations in his lab, and at iDiv's seminar series. This quickly allowed me to start interacting with the community (researchers and students), and I quickly received good feedback regarding my two planned projects:

i) collecting global data to test the hypothesis that anthropogenic impact on animal communities is differential: the decline of medium/large mammals correlates with increased abundance of smaller species and such "downsizing" effect has a strong taxonomic signal of rodent increase in animal communities. We compiled a large data corpus that will allow us to test a novel "downsizing/rodentation hypothesis".

ii) a field project to examine if the previously documented geographic distribution of different defensive chemical genotypes of white clover plants (known to be strongly correlated with temperature) has changed according with observed warming trends in Europe. To test this hypothesis, we sampled populations across Europe (Spain to Scandinavia). Financial and lab support from iDiv, particularly Nicole van Dam's Lab, allowed me to sample ~1300 plants. Nico Eisenhauer also made his lab and growth chambers available to experimentally manipulate temperatures and examine clover's reaction.

I found iDiv to be a conducive intellectual venue and a terrific incubator of ideas and future collaborations. Danke, iDiv!

Rodolfo Dirzo



Rodolfo Dirzo

Individual postdoc insight story



sTraitChange working group

Before I started my individual postdoc position at iDiv I have already stayed in Leipzig as a visiting researcher, hosted by Prof. Volker Grimm. During that time I got to like the city, the charm of its old town and the proximity to lakes. So, I was excited when, shortly after defending my PhD, I heard from Volker about the call for proposals at iDiv, at that time a freshly formed research centre. By the end of my PhD, which focused on population viability analysis, I have realized that studying the population dynamics of single species, although useful, allows for a one-sided view of the reality. And, here was a chance to move beyond a single species perspective. I teamed up with Volker and his colleagues-ecotoxicologists (Paul van den Brink and Frederik de Laender) who had impressive datasets on responses of food webs to pesticides. We wanted to reuse

the data collected around 20 years ago to assess how changes in consumer biodiversity affect the ecosystem function delivered by primary producers.

We were lucky and I started my post-doc in November 2013. It was exciting. But at the beginning it was also challenging and scary. First, I was moving to a new city and had to organize lots of things: from finding a place to stay to getting a visa. But this all went smoothly thanks to the supportive and caring team of the iDiv Welcome Centre. Second, I was moving into a rather new to me field of biodiversity and ecosystem functioning. Hopefully, I had whom to learn from and to whom turn with my questions: I was surrounded by post-docs and PhDs who were experts on the topic. We had stimulating and inspiring discussions, it felt like we were pushing the boundaries! Importantly, we were supporting each other also outside of work, by suggesting where to buy groceries, going together for sports, to cinema, or for a beer. I still stay friends with some of the people whom I met during that year in Leipzig, although they meanwhile moved to different countries. This friendly, encouraging and motivating environment facilitated successful completion of my project. We showed that insecticide reduced and destabilized consumer diversity, however, ecosystem function delivered by primary producers was not affected. We explained the absence of effects on ecosystem functioning by the fact that the species most sensitive to insecticide were different from those that affected ecosystem functioning the most.

The memories from my time at iDiv inspired me to come back. And, last year it became possible: our sDiv working group *sTraitChange* got granted! I was impressed by how motivating and fruitful was our first meeting. Looking forward to be back again in April!

Viktoriia Radchuk

Funded working group projects

sTraitChange – How do trait responses to climate change translate into demographic rates and population dynamics?

main PIs: [Viktoriia Radchuk](#), [Marcel E. Visser](#)

2nd meeting: 08.-11.04.2019

sRoot – Root Trait functionality in a Whole-Plant Context

main PIs: [Liesje Mommer](#), [Alexandra Weigelt](#)

2nd meeting: 06.-10.05.2019

sREplot – Upscaling of individual species dynamics to community trends in biodiversity and composition using vegetation change data sets

main PIs: [Lander Baeten](#), [Markus Bernhardt-Römermann](#), [Ute Jandt](#)

2nd meeting: 14.-17.05.2019

sTWIST – Theory and Workflows for Alien and Invasive Species Tracking

main PIs: [Melodie McGeoch](#), [Marten Winter](#)

2nd meeting: 03.-07.06.2019

sYNGEO – The geography of synchrony in dendritic networks: understanding the causes, dynamics, and consequences across multiple scales

main PIs: [Julian D Olden](#), [Lise Comte](#)

2nd meeting: 29.07.-02.08.2019

sTreelines – Spatial pattern emergence from ecological processes at alpine treelines: model-supported hypothesis tests against globally-distributed field data

main PIs: [Maaïke Bader](#), [Bradley Case](#)

2nd meeting: 11.-15.11.2019

Examples of great sDiv papers

sDiv scientists and guests work very hard to move science forward. We present two outcomes involving two former sDiv postdocs. Anne was associated with the sTundra working group and Petr was an individual synthesis postdoc with his own project.

Accelerated increase in plant species richness on mountain summits is linked to warming.

Anne Bjorkman and sTundra working group

The tundra is the most rapidly warming biome on the planet, and this warming has already impacted vegetation in Arctic and alpine regions. The sTundra working group met in Leipzig with a goal of better understanding the consequences of these changes for the functioning of tundra ecosystems. We investigated the relationship between plant functional traits and temperature across the tundra biome, as well as over nearly three decades of ambient climate warming. We assembled a dataset of 117 long-term monitoring sites spread across the Arctic and upper alpine regions of the northern hemisphere, as well as nearly 60,000 functional trait measurements spanning the biome. We found strong spatial relationships between temperature, moisture, and traits for every trait we investigated (plant height, leaf area, specific leaf area, leaf dry matter content, leaf nitrogen content, community evergreenness, and community woodiness), suggesting that climate warming should lead to substantial shifts in these traits. However, the only trait that changed significantly over the three decades of monitoring was plant height, which increased strongly in nearly every site. This increase in height was caused primarily by species turnover - specifically, the immigration of taller species (but not the loss of shorter ones). An increase in height could lead to decreased surface albedo (reflectance) and the increased trapping of insulating snow, thus leading to higher soil temperatures, increased litter decomposition rates, and increased permafrost thaw; all of these scenarios would result in positive feedbacks to climate warming.



sTundra working group

➔ *Steinbauer, M. J., [...] Wipf, S. (2018): Accelerated increase in plant species richness on mountain summits is linked to warming. Nature.*

Global extinctions tell nothing about local biodiversity loss, and vice versa

Petr Keil

One of the most serious threats to humankind is the loss of biodiversity, but we have limited knowledge of its true magnitude. iDiv researchers led by Petr Keil argue that the true magnitude of biodiversity loss is obscured if we only look at a single spatial scale. In particular, there seems to be an unwarranted assumption that the local biodiversity change, contractions of species' ranges, country-wide losses, and global extinctions are all connected, perhaps reflecting one thing: human pressure. There is also a concern that Earth is undergoing a "sixth mass extinction", although the evidence is fragmented, coming from disparate types of data and spatial scales. Keil et al. present a concept that unifies all this. They show that the rate of biodiversity loss depends on area over which the losses are counted, and that looking at this relationship finally allows us to see the true magnitude of extinction crisis, from local plots to continents. However, Keil et al. also come up with a sobering finding: the relationship is unpredictable and non-linear. This means that local biodiversity loss can be faster, or slower, than global loss, and global extinction rates are irrelevant for biodiversity change in local communities. The authors derive this from major ecological theories, as well as from a suite of empirical datasets.



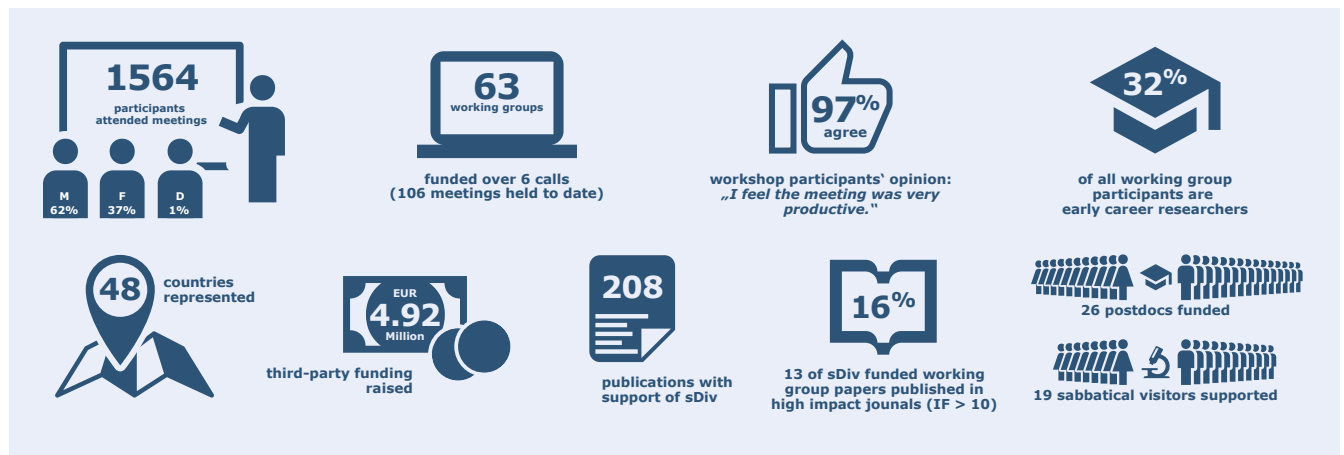
Petr Keil

➔ *Keil, P., [...] Winter, M. (2018): Spatial scaling of extinction rates: Theory and data reveal nonlinearity and a major upscaling and downscaling challenge. Global Ecology and Biogeography.*

Some recent publications

- Bruelheide, H. [...] Zverev, A. (2019) *sPlot – a new tool for global vegetation analyses*. *Journal of Vegetation Science*. From *sPlot* working group
 - Seppelt, R. [...] Newbold, T. (2019) *Trade-Offs and Synergies Between Biodiversity Conservation and Productivity in the Context of Increasing Demands on Landscapes*. *Atlas of Ecosystem Services*, Springer. From *LU-BD-ES* working group by Joint SESYNC - UFZ - sDiv Call
 - van Kleunen, M. [...] Winter, M. (2019) *The Global Naturalized Alien Flora (GloNAF) database*. *Ecology*. From *GloNAF* project (incl M. Winter)
 - Moreira, F. [...] Pe'er, G. (2018) *Agricultural policy can reduce wildfires*. *Science*. From catalyst postdoc *Guy Pe'er*
 - Phillips, H.R.P. [...] Purvis, A. (2018) *The effect of fragment area on site-level biodiversity*. *Ecography*. From *sWORM* working group
 - Thomas Clark, A. [...] Tilman, D. (2018) *Identifying mechanisms that structure ecological communities by snapping model parameters to empirically observed tradeoffs*. *Ecology Letters*. From catalyst postdoc *Adam Clark*
 - Thomas, H.J.D. [...] van Bodegom, P.M. (2018) *Traditional plant functional groups explain variation in economic but not size-related traits across the tundra biome*. *Global Ecology and Biogeography*. From *sTUNDRA* working group
 - van der Plas, F. [...] Allan, E. (2018) *Continental mapping of forest ecosystem functions reveals a high but unrealised potential for forest multifunctionality*. *Ecology Letters*. From *sFunDivEUROPE* working group
 - van Klink, R. [...] WallisDeVries, M.F. (2018) *Risks and opportunities of trophic rewilding for arthropod communities*. *Philosophical Transactions of the Royal Society. Biological Sciences*. From individual postdoc *Roel van Klink*
- ➔ [see all iDiv publications here](#)

sDiv in a nutshell



Since your feedback is always welcome, please do not hesitate to contact *sMarten Winter*, the scientific coordinator, or the *sDiv administration*.

With our best regards from Leipzig

sMarten Winter & team




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