

sDiv writing retreat summary

"Rangshifter"

The sDiv RangeShifter working group aims at considering biotic processes in projections of species distributions in order to improve conservation of biodiversity under climate change. During previous workshops, we developed concepts to improve projections of biological responses to climate change focusing on projection reliability (Singer et al. 2016) and the implementation of six key biological mechanisms (Urban et al. 2016). Designing theoretical simulation studies, we started testing consequences of the key biological mechanisms for species range shifting.

During an sDiv writing retreat, we collated simulation results that demonstrate impacts of biological mechanisms on species and community responses to climate change. To better analyze interactions among key biological mechanisms we designed and implemented complementary simulation experiments. We worked on two manuscripts that summarize these theoretical studies.

Further, we planned a project on the development of a modelling platform for mechanistic simulations of biotic responses to climate change and prepared an according funding application.

RangeShifter writing retreat participants: Greta Bocedi (University of Aberdeen), Luc De Meester (Katholieke Universiteit Leuven), Alexander Singer (Sveriges lantbruksuniversitet), Mark Urban (University of Connecticut) and Justin Travis (University of Aberdeen).

Singer, A., K. Johst, T. Banitz, M. S. Fowler, J. Groeneveld, A. G. Gutiérrez, F. Hartig, R. M. Krug, M. Liess, G. Matlack, K. M. Meyer, G. Pe'er, V. Radchuk, A.-J. Voinopol-Sassu, and J. M. J. Travis. 2016. Community dynamics under environmental change: How can next generation mechanistic models improve projections of species distributions? *Ecological Modelling* 326:63–74.

Urban, M. C., G. Bocedi, A. P. Hendry, J.-B. Mihoub, G. Peer, A. Singer, J. R. Bridle, L. G. Crozier, L. De Meester, W. Godsoe, A. Gonzalez, J. J. Hellmann, R. D. Holt, A. Huth, K. Johst, C. B. Krug, P. W. Leadley, S. C. F. Palmer, J. H. Pantel, A. Schmitz, P. A. Zollner, and J. M. J. Travis. 2016. Improving the forecast for biodiversity under climate change. *Science* 353: aad8466-aad8466.