Sebastián Block Munguía

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Education

Apr 2016 – Apr 2022   **Ph.D. in Ecology and Evolution**
Princeton University, USA (Sep 2019 - Apr 2022)
ETH Zürich, Switzerland (Apr 2016 - Aug 2019)
Advisor: Jonathan Levine
Committee: Jessica Metcalf, Stephen Pacala, and Simon Levin

Aug 2013 – Aug 2015   **M.Sc. in Applied Ecology**, graduated with distinction
Erasmus Mundus International Program
University of Poitiers, France — Aug 2013 to Mar 2014
University of Coimbra, Portugal — Mar 2014 to Jul 2014
University of Kiel, Germany — Oct 2014 to Mar 2015
Master thesis co-advised by Corey Bradshaw, Ingmar Unkel, and
Frederik Saltré at the University of Adelaide, Australia.

Aug 2007 – Nov 2011   **B.Sc. in Biology**, graduated with honors
Faculty of Sciences, National Autonomous University of Mexico,
Mexico City, Mexico
Advisor: Jorge A. Meave

Professional experience

Sep 2022 – Present   **Research Director, Environmental Performance Index**
Yale Center for Environmental Law and Policy, Yale University
Develop indicators to quantify countries' performance on diverse
environmental issues, from deforestation to air quality and greenhouse
gas emissions, and use them to guide policy priorities and sustainability
investments around the world.

Oct 2015 – Feb 2016   **Graduate Researcher**
ETH Zürich, Switzerland
Co-wrote a research proposal funded with ca. $1 million USD
Designed and implemented a new experimental system in the Swiss
Alps and, for three consecutive field seasons, hired, trained, and led
teams of four to six scientists, working on a tight schedule under
extreme weather conditions.

Oct 2015 – Feb 2016   **Research Associate**
University of Adelaide, Australia
Compiled a global database of fossil records to study the range shifts,
extinctions, and community dynamics of the Late Pleistocene, and
their implications for modern conservation science.

Publications

Peer-reviewed (Google Scholar profile)

Visakorpi K., Block S., Pellissier L., Levine J.M and Alexander J.M. Eco-physiological and morphological traits explain alpine plant species' response to warming. *Functional Ecology* 0: 0–15.
DOI: 10.1111/1365-2435.14228

Block S., Maechler M-.J., Alexander J.M., Pellissier L. and Levine J.M. 2022. Ecological lags govern the pace and outcome of plant community responses to 21st-century climate change. *Ecology Letters* 25: 2156–2166.
DOI: 10.1111/ele.14087

Walker T.W.N., Gavazov K., Guillaume T., Lambert T., Mariotte P., Routh D., Signarbieux C., Block S., Münkemüller T., Nomoto H., Crowther T.W., Richter A., Buttler A., Alexander J.M. 2022. Lowland plant arrival in alpine ecosystems facilitates a decrease in soil carbon content under experimental climate warming. *Elife* 11: e78555.
DOI: 10.7554/eLife.78555

Block S. and Levine J.M. 2021. How dispersal evolution and local adaptation affect the range dynamics of species lagging behind climate change. *The American Naturalist* 197: E173-E187.
DOI: 10.1086/714130

Block S., Alexander J.M., and Levine J.M. 2020. Phenological plasticity is a poor predictor of subalpine plant population performance following experimental climate change. *Oikos* 129: 184–193.
DOI: 10.1111/oik.06667

Block S. and Meave J.A. 2017. Landscape-scale effects of geomorphological heterogeneity on variability of oak forest structure and composition in a monogenetic volcanic field. *Plant Ecology and Diversity* 10: 167–174.
DOI: 10.1080/17550874.2017.1330367

Block S., González E.J., Gallardo-Cruz A., Fernández A., Solórzano J.V., and Meave J.A. 2016. Using Google Earth Surface Metrics to Predict Plant Species Richness in a Complex Landscape. *Remote Sensing* 8(10):865.
DOI:10.3390/rs8100865

Block S., Saltré F. Rodríguez-Rey M., Fordham D.A., Unkel I., and Bradshaw C.J.A. 2016. Where to Dig for Fossils: Combining Climate Envelope, Taphonomy and Discovery Models. *PLoS ONE* 11(3):e0151090.
DOI:10.1371/journal.pone.0151090

Block S. and Meave J.A. 2015. Structure and diversity of oak forests in the El Tepozteco National Park (Morelos, Mexico). *Botanical Sciences* 93(3): 1–32.
DOI:10.17129/botsci.150

Presentations

Invited talks

Block S. 2023. Lags in plant community responses to climate change. Marine Ecology Seminar, GEOMAR, Kiel, Germany.

Block S. 2023. Climate performance in the EU according to the 2022 Environmental Performance Index. Workshop on the role of the EU budget in international climate finance, European Parliament, Brussels, Belgium.

Block S. 2023. Climate Change and Air Quality Indicators in the Environmental Performance Index. Oman Sustainability Conference on Air Quality and Climate Change, Muscat, Oman.

Contributed conference talks

Block S. and Levine J.M. 2020. Accelerated migration of species lagging climate change. Nordic Society Oikos Meeting, Reykjavík, Iceland.

Block S. and Levine J.M. 2018. Population spread acceleration due to migration lags during climate change-driven range shifts. Ecological Society of Germany, Austria and Switzerland, Vienna, Austria.

Block S., Levine J.M. and Alexander J. 2017. Phenological plasticity is a poor predictor of alpine species responses to climate change. POPBIO 2017, Halle / Salle, Germany.

Contributed conference posters

Block S., Levine J.M. and Alexander J. 2017. Phenological plasticity is unrelated to alpine species responses to warming. BES, GfÖ, NecoV, and EEF Joint Annual Meeting, Ghent, Belgium.

Block S. and Meave J.A. 2013. Geomorphological heterogeneity is a major driver of oak forest diversity in a complex volcanic landscape. INTECOL-BES-2013 Joint Meeting, London, United Kingdom.

Block S. and Meave J.A. 2013. How Does Geomorphological Heterogeneity Affect Structure and Beta-Diversity of the Tropical Montane Oak Forests of the El Tepozteco National Park (Morelos State), Mexico? ATBC-OTS-2013 Joint Meeting, San José, Costa Rica.

Block S. and Meave J.A. 2013. Estructura y diversidad de los encinares del Parque Nacional El Tepozteco (México). XIX Congreso Mexicano de Botánica (XIX Mexican Congress of Botany), Tuxtla Gutiérrez, Chiapas, Mexico.

Block S. and Meave J.A. 2013. Heterogeneidad florística de los encinares del Parque Nacional El Tepozteco (Morelos, México). IV Congreso Mexicano de Ecología (IV Mexican Congress of Ecology), Villahermosa, Tabasco, México.

Awards

2021. 1st Place Princeton University Graduate Student Consulting Club Case Competition Fall/Winter.

2020. Best Student Oral Presentation Award. Oikos2020. 4th Conference of the Nordic Society Oikos

2017. Best Oral Presentation Award. POPBIO2017. 30th Conference of the Plant Population Biology Section of the Ecological Society of Germany, Austria and Switzerland (GfÖ)

2016. 1st Prize Modelling Complex Ecological Dynamics Award (BSc/MSc Category)

2014-2015. University of Coimbra Academic Achievement Award

2013-2015. Erasmus Mundus Category A Scholarship

2010-2011. National Autonomous University of Mexico Academic Achievement Recognition

2011. National Autonomous University of Mexico International Mobility Scholarship

Teaching

University courses

Agriculture, Human Diets and the Environment (Spring 2021, Princeton University)

   Guided discussions based on course readings and designed exam questions.

Life on Earth: Chaos and Clockwork in Nature (Fall 2019, Princeton University)

   Taught lab sections of introductory ecology and evolution course.

Quantitative Approaches to Plant Population and Community Ecology (Spring 2018 & 2019, ETH Zürich)

   Organized and taught two-week module on analysis of community data.

Fundamental Questions in Environmental Sciences (Spring 2017, ETH Zürich)

   Mentored bachelor students in writing essays about fundamental questions in ecology and evolution.

Quantitative Approaches to Plant Population and Community Ecology (Spring 2017, ETH Zürich)

   Assisted in a two-week module on using experiments to parameterize models of interspecific competition.

Environmental Biology Seminars (Fall 2016, 2017, 2018; ETH Zürich)

   Mentored students reviewing the scientific literature and preparing presentations about climate change effects on plant communities and about the causes of the Late Pleistocene megafauna extinctions.

Summer School on Alpine Plant Ecology (Summer 2018, Zürich-Basel Plant Science Center)

   Co-mentored students analyzing data and preparing presentations about brief field research projects in Furka Pass, Swiss Central Alps.

Online courses

Coastal Ecology (Fall 2014-2018, *México Sostenible*)
   I designed and taught a three-week module on marine and coastal ecology in the online
   course "Integral Coastal Zone Management"

Student Mentoring & Community Outreach

Students mentored

Nina Huang – "Sensitivity analysis to weighting scheme and measurement error of 2022 EPI
scores and rankings" (Yale University)

Fabienne Spahn – "Different facets of climate change impose contrasting selection pressures
on *Arabidopsis thaliana*" (ETH Zürich)

Camille Brioschi – "Using Landolt indicator values to predict alpine species responses to
climate change" (ETH Zürich)

Popular science blog posts (in Spanish)

Historia Natural del Chichinautzin - A website about the natural history of the natural
   protected area in central Mexico where I grew up. Link

Nuestra riqueza invisible - About the great ecosystem services of the poorly known bacterial
   diversity. Link

Ingeniería climática - About climate engineering. Link

La cena romántica de una serpiente - About the natural history of *Lampropeltis* snakes. Link

La grandeza perdida - About the Australian megafauna. Link

La danza glacial de la vida - About the glacial cycles of the Pleistocene. Link

Academic Community Service

Peer referee (Publons profile)

Journal of Ecology (×4)
Functional Ecology (×2)
Journal of Plant Ecology (×2)
Ecology Letters
Oikos
Science of the Total Environment
Palaeogeography, Palaeoclimatology, Palaeoecology
Plant Ecology & Diversity

Advanced Coursework

2018. Landscape Genetics – Distributed Graduate Seminar
         University of Zürich (17-week graduate course)

2017. Learning to Teach. Course for ETH Doctoral Teaching Assistants

         ETH Zürich (3-day graduate course)

2017. Biotic Interactions (1-week workshop)

Instructors: Ragan M. Callaway, Christopher J. Lortie, Rob W. Brooker, Richard Michalet, Francisco I. Pugnaire, Lohengrin A. Cavieres, Christian Schöb, Bodil Ehlers.

2016. Mixed-Effects Modelling with R

University of Zürich (1-week graduate course)

2016. Alpine Ecology – International Summer School on Alpine Plant Life

Zürich-Basel Plant Sciences Center (1-week field course)

2015. Reproducible Research
Coursera Online Platform / Johns Hopkins University (10-hour online course)

2015. R Programming
Coursera Online Platform / Johns Hopkins University (20-hour online course)

2014. The Data Scientist's Toolbox
Coursera Online Platform / Johns Hopkins University (8-hour online course)

2012. Diploma in Science Communication
National Autonomous University of Mexico (1-year course)

Skills

Computer

Data analysis and modelling in R and Python

Basic database management with SQL

Version control with Git and GitHub

Spatial analysis with R, QGIS and ArcGIS

Languages

Spanish (native)

English (full professional proficiency)

German (Level A2 in Common European Framework of Reference for Languages)

French (Level B1 in Common European Framework of Reference for Languages)