

Antoine Perrier

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Education

- 2020 **PhD in Ecology and Evolution.**
University of Basel, Switzerland.
Advisor: Prof. Dr. Yvonne Willi.
- 2015 Complementary qualification in environmental pollution and nuisance law and policies.
University of Strasbourg, France.
- 2014 **Master in Biology and Plant Valorization**, Specialization in Plants and Environment.
University of Strasbourg, France.
- 2012 Franco-German **Bachelor of Science.**
University of Saarland, Germany.
University of Strasbourg, France.

Research interests

Ecology and evolution at species range limits, population genetics, population demography, adaptation, genetic drift, environmental stress, Plant species response to environmental change and climate change, species distribution, biogeography, phylogeography, plant mating systems, plant biology, botany, systematics, invasion biology, freshwater ecology, ecological restoration.

Employment history

- Since 10/2022 **Post- Doctoral Research Associate**
Dept. of Biology, University of Virginia, VA, USA.
Head of group: Prof. Laura F. Galloway.
- 04/2021 – 09/2022 **Swiss National Science Foundation (SNSF) Postdoctoral fellow.**
Dept. of Biology, University of Virginia, VA, USA.
Head of group: Prof. Laura F. Galloway.
- 09/2020 – 12/2020 **Postdoctoral research assistant (SNSF funded).**
Dept. of Environmental Sciences, University of Basel, Switzerland.
Head of Group: Prof. Dr. Yvonne Willi.
- 09/2016 – 09/2020 **Graduate research fellow (SNSF funded).**
Dept. of Environmental Sciences, University of Basel, Switzerland.
Head of Group: Prof. Dr. Yvonne Willi.
- 07/2016 – 09/2016 **Laboratory technician.**
Laboratoire Image, Ville, Environnement (LIVE), UMR CNRS, University of Strasbourg, France.
- 03/2016 – 06/2016 **Laboratory technician.**

Herbarium of the University of Strasbourg, France.

- 03/2015 – 09/2015 **Voluntary internship.**
LIVE, University of Strasbourg, France.
Advisors: Dr. Laurent Hardion, Maître de conférence (MCF), Dr. Isabelle Combroux, MCF, Prof. Dr. Anne Rozan
- 03/2014 – 09/2014 **Master internship.**
LIVE, University of Strasbourg, France.
Advisors: Dr. Isabelle Combroux, MCF, Prof. Dr. Anne Rozan
- 03/2012 – 07/2012 **Bachelor internship.**
Laboratoire génétique moléculaire, génomique, microbiologie (GMGM), UMR CNRS, University of Strasbourg, France.
Advisor: Françoise Bringel, MCF.

Grants

- 04/2021 – 07/2022 The past shapes the future: how does evolutionary history determine persistence and extinction of rear-edge populations under climate change? **SNSF Early Postdoc.Mobility fellowship** (P2BSP3_195363, 71 250 \$). Dept. of Biology, University of Virginia, VA, USA.

Publications

Peer reviewed journals:

- Sanchez Castro D., Patsiou TS., **Perrier A.**, Schepers J., & Willi Y. Uncovering the cause of breakup between species' range limits and niche limits under climate warming. *Journal of Biogeography* – *In press*.
- Perrier A.**, & Willi Y. (2023). Intraspecific variation in reproductive barriers between two closely related *Arabidopsis* sister species. *Journal of Evolutionary Biology*.
<https://doi.org/10.1111/jeb.14122>
- Perrier A.**, Sanchez-Castro D. & Willi Y. (2022). Environment dependence of the expression of mutational load and species' range limits. *Journal of Evolutionary Biology*.
<https://doi.org/10.1111/jeb.13997>
- Sanchez Castro D., **Perrier A.**, & Willi Y. (2022). Reduced climate adaptation at range edges in North American *Arabidopsis lyrata*. *Global Ecology and Biogeography*.
<https://doi.org/10.1111/geb.13483>
- Perrier A.**, Sánchez-Castro D. & Willi Y. (2020). Expressed mutational load increases toward the edge of a species' geographic range. *Evolution* 74, 1711 – 1723.
<https://doi.org/10.1111/evo.14042>
- Hardion L., **Perrier A.**, Martinez M., Navrot N., Gaquerel E., Tournay F., Nguéfacq J. & Combroux I. (2020). Integrative revision of *Dianthus superbus* subspecies reveals different degrees of differentiation, from plasticity to species distinction. *Systematics & Biodiversity* 18, 255 – 268.
<https://doi.org/10.1080/14772000.2020.1737979>
- Perrier A.**, Hardion L., Rozan A., Staentzel C. & Combroux I. (2019). *Miscanthus x giganteus* crop fields hide a genotype of the invasive *M. sacchariflorus*. *Weed Research* 59, 446– 457.
<https://doi.org/10.1111/wre.12382>

Peer-reviewed monographs:

Perrier A. (2020). Genetic and environmental constraints causing species' range limits. *PhD thesis, University of Basel, Basel, Switzerland.* <https://doi.org/10.5451/unibas-ep79337>

Contribution to conferences

Talks:

- 2023 **Perrier A.**, Turner MC. & Galloway LF. Reproductive cues and phenology adapt to vernalization gradient across the range of a monocarpic herb. Southeastern population Ecology & Evolutionary Genetics. Pembroke, Virginia, USA.
- 2023 **Perrier A.**, Keenan OJ. & Galloway LF. Evolution at range limits: Is the rear-edge exposed to strong genetic drift? Evolution 2023. Albuquerque, New Mexico, USA.
- 2022 **Perrier A.** & Galloway LF. Evolution at the rear edge: phenotypic variation within and among populations. Evolution 2022. Cleveland, Ohio, USA.
- 2021 **Perrier A.**, Sanchez-Castro D. & Willi Y. Causes of species' range limits: Expressed mutational load increases toward the edge of a species' geographic range. Invasion Genomics 2021. Lafayette, Louisiana, USA.
- 2021 **Perrier A.**, Sanchez-Castro D. & Willi Y. Causes of species' range limits: Expressed mutational load increases toward the edge of a species' geographic range. Virtual Evolution 2021.

Posters:

- 2022 **Perrier A.**, Galloway LF. & Busch JW. Does evolutionary history facilitate or constrain adaptation and response to changing climates of rear-edge populations? Southeastern population Ecology & Evolutionary Genetics. Eatonton, Georgia, USA.
- 2020 **Perrier A.**, Sanchez-Castro D. & Willi Y. Contribution of mutational load to species' range limits. Biology 20, Fribourg, Switzerland.
- 2018 **Perrier A.**, Sanchez-Castro D. & Willi Y. Causes of species range limits: the impact of mutational load on population performance assessed in a species-wide transplant experiment. Evolution 2018: II Joint Congress on Evolutionary Biology, Montpellier, France.
- 2017 **Perrier A.**, Sanchez-Castro D. & Willi Y. What determines range limits in the North American *A. lyrata* subsp. *lyrata*?. Biology 17, Bern, Switzerland.
- 2015 **Perrier A.**, Combroux I., Dumax N, Rozan A. Contribution to the evaluation of the ecological restoration of a Rhine plain wetland through an environmental-economic habitat evaluation procedure. Colloquium Rever 6: REVER et Dynamiser, Durable and functional restauration, Strasbourg, France.
- 2015 Combroux I., Staenzel C., **Perrier A.**, Kern S. Propagule bank transfer, transplants, temporary disconnection: efficient measures in wetland restorations?. Colloquium Rever 6: REVER et Dynamiser, Durable and functional restauration, Strasbourg, France.
- 2015 Hess M., Colin C., **Perrier A.**, Combroux I. Demonstration of *Potamogeton lucens* allelopathic effects in a context of biological control of the invasive *Elodea nuttallii*. Colloquium Rever 6: REVER et Dynamiser, Durable and functional restauration, Strasbourg, France.

Invited talks:

- 2020 Genetic and environmental constraints causing species' range limits. Faculté des Sciences de la Vie, Université de Strasbourg, France.
- 2018 Causes of species range limits: The impact of mutational load on population performance assessed in a species wide transplant experiment. Dept. of Natural Sciences, Paul Smith's College, NY, USA.
- 2018 What determines range limits in the North American *Arabisopsis lyrata* subsp. *lyrata*? Dept. of Biology, Wake Forest University, NC, USA.
- 2016 Genotypic characterization of an exotic hybrid suited for mudflow limitation. Dept. of Environmental Sciences, University of Basel, Switzerland.

Mentoring

University of Virginia:

- Olivia J. Keenan (08/2021 – 05/2023)** – Third & fourth year undergraduate student. Undergraduate research project (10h/week). Co-PI with Prof. Laura F. Galloway. *Project title 2021 - 2022: Does phenotypic diversity within and between populations increase towards the rear edge of *Campanula americana*? Project title 2022 - 2023: Role of genetic drift in shaping patterns of phenotypic diversity within and differentiation between populations at the rear-edge.*
- Megan C. Turner (08/2021 – 05/2023)** - Third & fourth year undergraduate student. Undergraduate research project (10h/week). Co-PI with Prof. Laura F. Galloway. *Project title 2021 - 2022: Are the rear-edge populations of *Campanula americana* better adapted to warmer climates than the core populations? Project title 2022 – 2023: Can bolting cues adapt to differences in vernalization conditions across a geographic distribution?*
- Emily M. Scott (06/2023 – 05/2024)** - Fourth year undergraduate student. Undergraduate research project (10h/week). Co-PI with Prof. Laura F. Galloway. *Project title: Ecological and evolutionary drivers of variation in genetic differentiation across the range of *Campanula americana*.*
- Lauren Pizzaro (06/2023 – 05/2024)** - Fourth year undergraduate student. Undergraduate research project (10h/week). Co-PI with Prof. Laura F. Galloway. *Project title: Variation in hybrid breakdown across the range of *Campanula americana*.*
- Katie C. Haines (09/2023 – 05/2024)** - Third year undergraduate student. Undergraduate research project (10h/week). Co-PI with Prof. Laura F. Galloway and Dr. Alfredo López.

University of Basel:

- Maja Pfund (03/2019 – 07/2019)** – Third year BSc Student. Undergraduate internship (10h/week). Co-PI with Prof. Dr. Yvonne Willi.

Teaching activities

BSc/Undergraduate Course:

Ecology & Conservation, Practical (30h/year), University of Basel, 2019, 2020, including lecture on ecology and evolution, and project supervision of students.

Reviewing activities

American Naturalist (1), Evolution (2), Frontiers in Biogeography (1), Heredity (2), Journal of Ecology (1), Molecular Ecology (1), Perspectives in Plant Ecology (1), Evolution and Systematics (2).

Membership in scientific societies

American Society of Naturalists

Society for the Study of Evolution

Botanical Society of America