Matthias Grenié
Chercheur Postdoctoral

Curriculum Vitae
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Cursus Universitaire

2016-2020	**Doctorat en Écologie** Montpellier, France	École Doctorale 584 GAIA, Univ. Montpellier

➤ Directeurs: **Prof. Françoiz Munoz** et **Dr. Cyrille Violle**
  Titre: « En dehors de la norme: déviation de l'optimalité écologique et rareté fonctionnelle »

2013-2015	**Master Biosciences** Lyon, France	École Normale Supérieure de Lyon, Univ. Claude Bernard Lyon 1

➤ Normalien élève

2012-2013	**Licence Biosciences** Lyon, France	École Normale Supérieure de Lyon, Univ. Claude Bernard Lyon 1

➤ Normalien élève

2010-2012	**Classe Préparatoire BCPST** Paris, France	Lycée Saint-Louis

➤ Admis au concours Agronomie et ENS Lyon

Expérience Académique

Octobre 2020 - **présent**	**Chercheur Postdoctoral** Leipzig, Allemagne	German Center for Integrative Biodiversity Research (iDiv) / Leipzig University

➤ Travail avec le **Dr. Marten Winter** sur la biogéographie fonctionnelle des plantes introduites

2016-2020	**Thèse** Montpellier, France	Université de Montpellier

➤ Directeurs: François Munoz et Cyrille Violle. Contrat doctoral spécifique normalien. Sur la rareté fonctionnelle et l'écologie fonctionnelle des communautés

Fév. 2015 - Juin 2015	**Stage de Master 2** Kourou, Guyane Française, France	EcoFOG

➤ Encadrant: **Dr. Bruno Hérault** sur la variabilité intraspécifique de croissance des arbres tropicaux en fonction de leurs traits fonctionnels

Sept. 2014 - Déc. 2014	**Stage de Master 2** Montpellier, France	ISEM, Université de Montpellier

➤ Encadrante: **Dr. Ophélie Ronce** sur la prédiction de l'adaptation au changement climatique des arbres en utilisant des modèles de génétique quantitative de populations structurées en stade

Fév. 2014 - Juillet 2014	**Stage de Master 2** Bloomington, IN, États-Unis	Indiana University

➤ Encadrent: **Dr. Jean-François Goût** dans l'équipe du **Pr. Michael Lynch** sur les motifs génomiques au sein du complexe *Paramecium*

Juin 2013 - Août 2013	**Stage de L3** Paris, France	Université Pierre et Marie Curie Paris 6

➤ Encadrants: **Dr. Éric Bapteste** et **Prof. Philippe Lopez** sur les relations de réseaux de similarités de séquences en fonction de l'origine évolutive des voies métaboliques

Encadrement Scientifique

Avril 2018 - Mai 2018	**Encadrement d'une étudiante de M1 Charlotte Guérineau**
	Stage sur la rareté fonctionnelle de différents groupes taxonomiques (oiseaux, plantes, poissons, et bactéries du sol) en France
Avril 2019 - Juin 2019	**Co-supervision stage de M1 de Nathan Mazet**
	Stage sur les stratégies alimentaires des oiseaux à l'échelle globale, encadrant principal: Pr. Jean-Yves Barnagaud

Scientific Service

2017-**now**	**Reviewer for Scientific Journals (see Publons profile)**
	For *Ecology Letters*, *Functional Ecology*, *Biological Reviews*, *PeerJ*, *Biological Conservation*, and *Journal of Biogeography*
2022-**now**	**Software reviewer for rOpenSci**
	For the npi package
2022-**now**	**Post-doctoral researchers representative**
	iDiv Council, an advisory council of iDiv
2021-**now**	**Organizer of the biweekly sDiv lab meetings**
	sDiv team
2022-**now**	**Member of PhD Advisory Committee of *Rachel Souza Fereira***
2018-2020	**Representative of PhD students in the CEFE lab council**
	CEFE lab council, the main governing body of the lab
2018	**Co-organizer of half-day workshop on Open Access Practices**
	An event on how to make your articles accessible, organized for ~50 people of the CEFE in Montpellier
2017	**Co-organizer of Junior Conference 'Models in Ecology and Evolution'**
	A junior conference organized yearly in Montpellier with ~100 people attending from Masters to Post-docs

Scientific Projects

2017-**now**	**Functional Rarity in *Ecology and Evolution* group (FREE)**	CESAB (French Biodiversity Synthesis Centre)
	➤ Core member of the group as the developer of the funrar package that computes functional rarity indices. Author of several core papers for the group. Led 3 papers attached to the work of the group.	
2021-**now**	**Global Naturalized Alien Flora (GloNAF)**	GloNAF
	➤ Contributor to the regular meetings. Currently leading one article for the group.	
2022-**now**	**IMPACTS group**	CESAB
	➤ Scientific Contributor to the group. Co-head of data management for the group. First meeting November 2022.	

Scientific Contributions

📄 14 publications (5 as first author). ❝❝ 457 citations (Google Scholar). ⊞ h-index 10 (Google Scholar). ® 6 R packages

Publications

Preprints

1. Munoz, F., Klausmeier, C., . . . , **Grenié, M.**, Loiseau, N., Mahaut, L., Maire, A., Mouillot, D., Violle, C., & Kraft, N. (2022). *The ecological causes of functional distinctiveness in communities*. https://doi.org/10.22541/au.166488862.28762630/v1

Published

1. Cutts, V., Hanz, D. M., Barajas-Barbosa, M. P., Schrodt, F., Steinbauer, M. J., Beierkuhnlein, C., Denelle, P., Fernández-Palacios, J. M., Gaüzère, P., **Grenié, M.**, Irl, S. D. H., . . . Algar, A. C. (2023). Links to rare climates do not translate into distinct traits for island endemics. *Ecology Letters*, *n/a*(n/a). https://doi.org/10.1111/ele.14169

2. **Grenié, M.**, & Gruson, H. (2023). Fundiversity: A modular R package to compute functional diversity indices. *Ecography*, *n/a*(n/a), e06585. https://doi.org/10.1111/ecog.06585

3. Gaüzère, P., Denelle, P., Fournier, B., **Grenié, M.**, Delalandre, L., Münkemüller, T., Munoz, F., Violle, C., & Thuiller, W. (2022). The functional trait distinctiveness of plant species is scale dependent. *Ecography*, *in press*.

4. **Grenié, M.**, Berti, E., Carvajal-Quintero, J., Dädlow, G. M. L., Sagouis, A., & Winter, M. (2022). Harmonizing taxon names in biodiversity data: A review of tools, databases and best practices. *Methods in Ecology and Evolution*, 2041–210X.13802. https://doi.org/10.1111/2041-210X.13802

5. Jurburg, S. D., Buscot, F., Chatzinotas, A., Chaudhari, N. M., Clark, A. T., Garbowski, M., **Grenié, M.**, Hom, E. F. Y., Karakoç, C., Marr, S., Neumann, S., . . . Heintz-Buschart, A. (2022). The community ecology perspective of omics data. *Microbiome*, *10*(1), 225. https://doi.org/10.1186/s40168-022-01423-8

6. Mouillot, D., Loiseau, N., **Grenié, M.**, Algar, A. C., Allegra, M., Cadotte, M. W., Casajus, N., Denelle, P., Guéguen, M., Maire, A., Maitner, B., … Auber, A. (2021). The dimensionality and structure of species trait spaces. *Ecology Letters*, *24*(9), 1988–2009. https://doi.org/10.1111/ele.13778

7. **Grenié, M.**, Violle, C., & Munoz, F. (2020). Is prediction of species richness from stacked species distribution models biased by habitat saturation? *Ecological Indicators*, *111*, 105970. https://doi.org/10.1016/j.ecolind.2019.105970

8. Loiseau, N., Mouquet, N., Casajus, N., **Grenié, M.**, Guéguen, M., Maitner, B., Mouillot, D., Ostling, A., Renaud, J., Tucker, C., Velez, L., … Violle, C. (2020). Global distribution and conservation status of ecologically rare mammal and bird species. *Nature Communications*, *11*(1, 1), 5071. https://doi.org/10.1038/s41467-020-18779-w

9. Barnagaud, J.-Y., Mazet, N., Munoz, F., **Grenié, M.**, Denelle, P., Sobral, M., Kissling, W. D., Sekercioglu, Ç. H., & Violle, C. (2019). Functional biogeography of dietary strategies in birds. *Global Ecology and Biogeography*, *28*(7), 1004–1017. https://doi.org/10.1111/geb.12910

10. Joffard, N., Massol, F., **Grenié, M.**, Montgelard, C., & Schatz, B. (2019). Effect of pollination strategy, phylogeny and distribution on pollination niches of Euro-Mediterranean orchids. *Journal of Ecology*, *107*(1), 478–490. https://doi.org/10.1111/1365-2745.13013

11. **Grenié, M.**, Mouillot, D., Villéger, S., Denelle, P., Tucker, C. M., Munoz, F., & Violle, C. (2018). Functional rarity of coral reef fishes at the global scale: Hotspots and challenges for conservation. *Biological Conservation*, *226*, 288–299. https://doi.org/10.1016/j.biocon.2018.08.011

12. Munoz, F., **Grenié, M.**, Denelle, P., Taudière, A., Laroche, F., Tucker, C., & Violle, C. (2018). Ecolottery: Simulating and assessing community assembly with environmental filtering and neutral dynamics in R. *Methods in Ecology and Evolution*, *9*(3), 693–703. https://doi.org/10.1111/2041-210X.12918

13. **Grenié, M.**, Denelle, P., Tucker, C. M., Munoz, F., & Violle, C. (2017). Funrar: An R package to characterize functional rarity. *Diversity and Distributions*, *23*(12), 1365–1371. https://doi.org/10.1111/ddi.12629

14. Violle, C., Thuiller, W., Mouquet, N., Munoz, F., Kraft, N. J. B., Cadotte, M. W., Livingstone, S. W., **Grenié, M.**, & Mouillot, D. (2017). A Common Toolbox to Understand, Monitor or Manage Rarity? A Response to Carmona et al. *Trends in Ecology & Evolution*, *32*(12), 891–893. https://doi.org/10.1016/j.tree.2017.10.001

R packages

➤ `funrar` (main creator and maintainer)
   computes functional originality indices central for CESAB FREE group analyses
   📄 published paper – Ⓡ CRAN – ⓞ GitHub

➤ `ecolottery` (co-creator)
   simulates community assembly processes cleverly with both niche and neutral processes
   📄 published paper – Ⓡ CRAN – ⓞ GitHub

➤ `fundiversity` (co-creator and maintainer)
   a fast and modular package to compute functional diversity indices
   📄 published paper – Ⓡ CRAN – ⓞ GitHub

➤ `rromeo` (co-creator and maintainer)
   accesses the Sherpa/RoMEO API that indexes the open access policies of journals
   published by rOpenSci – Ⓡ CRAN – ⓞ GitHub

➤ `funbiogeo` (co-creator and maintainer)
   helps create functional biogeography workflows, developed in the context of the FREE CESAB group
   ⓞ GitHub

➤ `rtaxref` (creator and maintainer)
   accesses the French Taxonomic Referential (TAXREF) API
   ⓞ GitHub

➤ Significant contributions to other packages: `taxize`, `ggfortify`, and `traitdataform`

Conference Proceedings

1. **Grenié, M.**, Berti, E., Carvajal-Quintero, J., Winter, M., & Sagouis, A. (2021). Matching Species Names Across Biodiversity Databases: Sources, tools, pitfalls and best practices for taxonomic harmonization. *Biodiversity Information Science and Standards*, *5*, e75359. https://doi.org/10.3897/biss.5.75359

Invited Talks

December 2021   **Holger Kreft's regular lab seminar on 'Navigating the landscape of taxonomic harmonization'**
                University of Göttingen

May 2022   **Invited talk at the 3rd meeting of Data to Knowledge in Agronomy and Biodiversity (D2KAB) on 'Taxonomic Databases of Plants and Animals'**
                Paris/Online

Talks

September 2022	**A barrier to global plant invasion ecology: gaps in trait availability for alien species**
	Neobiota 2022, Tartu, Estonia
July 2022	**A barrier to global plant invasion ecology: gaps in trait availability for alien species**
	BES Macro 2022, Online
April 2022	**A barrier to global plant invasion ecology: gaps in trait availability for alien species**
	iDiv Conference 2022, Leipzig, Germany
August 2021	**Navigating the landscape of taxonomic harmonization: data, tools, and best practices**
	GfÃ– conference (German Speaking Ecological Society Meeting) 2021
July 2021	**Navigating the landscape of taxonomic harmonization: data, tools, and best practices**
	BES Macro 2021, Online
October 2018	**Functional rarity of coral reef fishes at the global scale: Hotspots and challenges for conservation**
	French Ecological Society Meeting (SFÃ‰cologie) 2018, Rennes, France
July 2018	**Predicting Species Richness with unicorns or why should we discuss the use of thresholds?**
	BES Macro (British Ecological Society Macroecology Special Interest Group Meeting) 2018, Saint-Andrews, Scotland
February 2017	**Functional rarity of coral reef fishes across space (Best Presentation Award)**
	Young Natural History Scientistsâ€™ Meeting, Paris, France
September 2016	**A case study of Functional Rarity: worldwide coral reef fishes**
	EcoSummit 2016, Montpellier, France

Blogposts

1. **Grenié, M.** (2022, December 6). How to Save Ggplot2 Plots in a targets Workflow? Retrieved February 3, 2023, from https://ropensci.org/blog/2022/12/06/save-ggplot2-targets/

2. Salmon, M., **Grenié, M.**, & Gruson, H. (2022, June 16). Why You Should (or Shouldn't) Build an API Client. Retrieved February 16, 2023, from https://ropensci.org/blog/2022/06/16/publicize-api-client-yes-no/

3. **Grenié, M.**, Berti, E., Carvajal-Quintero, J., Dädlow, G. M. L., Sagouis, A., & Winter, M. (2022, March 2). Best practices for taxonomic harmonization, an overlooked yet crucial step in biodiversity analyses. Retrieved May 27, 2022, from https://methodsblog.com/2022/03/02/best-practices-for-taxonomic-harmonization-an-overlooked-yet-crucial-step-in-biodiversity-analyses/

4. **Grenié, M.**, & Gruson, H. (2020, July 15). Community Captioning of rOpenSci Community Calls. Retrieved May 27, 2022, from https://ropensci.org/blog/2020/07/15/subtitles/

5. **Grenié, M.**, & Gruson, H. (2019, June 4). Access Publisher Copyright & Self-Archiving Policies via the 'SHERPA/RoMEO' API. Retrieved May 27, 2022, from https://ropensci.org/blog/2019/06/04/rromeo/

Teaching Experience

I taught 100+ hours on Ecology, Biodiversity Statistics, and R programming from 2nd year of Bachelor to PhD students (detail below).

I am a certified Carpentries instructor, focusing on **R programming** and **Data Visualization**.

I also founded the R User Group at the Center for Functional and Evolutionary Ecology in Montpellier. There, I organized regular 1h meet-ups on various R topics (plotting with `ggplot2`, mapping with `sf`, project organization with RStudio, workflow organization with `drake`, parallelization with `future`).

Teaching detail

Course Name	Year(s)	Level	Total time
Descriptive Statistics with R (UM)	2016/2017	Bachelor's (2nd yr)	50h
Functional Biogeography with R (UM, material)	2017/2018	Master's (2nd yr)	8h
Guest Lecture on Biodiversity Facets (UL)	2021/2022	Master's (1st yr)	4h
Biodiversity Facets with R (UL, material)	2021/2022	Master's (1st yr)	12h
Group project on Biodiversity Facets (UL)	2021	Master's (1st yr)	20h
Introduction to git and GitHub (UL/iDiv, material)	2022	Masters, PhD students, and postdocs	10h
Workshop on Functional Diversity and Rarity, (@CESAB, material)	2022	Masters, PhD students, postdocs, & reseachers	3.5h
Guest Lecture on Taxonomic Harmonization @NFDI4Biodiversity Winter School on Data Management in Ecology and Evolution	2022	Masters, PhD students, and postdocs	2h

UM: University of Montpellier; UL: University of Leipzig

Skills

Languages

Level estimates are given following the Common European Framework of Reference for Languages (CEFR)
French [native speaker]; English [C2, fluent speaker]; Spanish [B1-B2]; German [A2-B1]; Chinese [A2-B1]; Japanese [A2]

Programming languages

- ➤ ⓡ **R** language • Best Package Development Practices (`testthat` unit tests, `pkgdown` website, Continuous Integration/Continuous Deployment, submission to CRAN) • data visualization (advanced `ggplot2` and extension packages) • spatial data manipulation [`terra` rasters, `sf` vectors, PostGIS database, and interactions]
- ➤ ⬛ **SQL** interaction with databases • high-performance query • interaction with R • PostgreSQL/PostGIS spatial database
- ➤ ▦ **High Performance Computing** job submission on SLURM/SGE • complex array jobs
- ➤ **git** version control • git flow framework • collaborative development through ⓖ GitHub
- ➤ Basic knowledge of 🐍 **Python** and **Julia**

Other

Digital Photography, Film Photography, Hiking