Théophile L. Mouton

Quantitative Marine Ecologist | DataSphere Analytics, Montpellier, France
theophile.mouton92@gmail.com | *theophile-mouton.com* | *ORCID 0000-0003-2571-5777* | *github.com/TheophileMt92* | *linkedin.com/in/théophile-l-mouton*

EDUCATION

2020-23 **PhD in Macroecology**
Université Claude Bernard Lyon 1 (Lyon, France); research conducted at the University of Montpellier (MARBEC)
Dissertation: "Freshwater biodiversity under global change: analyses of changes in assemblages applied to benthic macroinvertebrates" (Advisors: Dr. Fabien Leprieur and Prof. Sylvain Dolédec)

2014-16 **MSc Dynamics of Aquatic Ecosystems**
University of Pau and Pays de l'Adour (Pau, France)
Thesis research at Massey University (Palmerston North, New Zealand): "Assessing the ecological health of the Rangitikei River: a numerical approach" (Advisor: Prof. Russell Death)

2012-14 **BSc Ecology and Organismal Biology**
University of Montpellier (Montpellier, France)

RESEARCH INTERESTS

macroecology · marine conservation · elasmobranchs and marine megafauna · fisheries and fishing effort · area-based management and spatial prioritisation · species distribution and abundance modelling · science-policy interface · reproducible research · functional and phylogenetic diversity · global change and climate change ecology · freshwater and river ecology

PROFESSIONAL APPOINTMENTS

2024-present **Founder and Scientific Data Consultant**
DataSphere Analytics (Montpellier, France)
Reproducible analyses, spatial modelling, interactive applications and automated reporting for research institutions, NGOs and government clients (IRD, University of Zurich, Government of Vanuatu, Citizens for Europe)

2026 **Postdoctoral Researcher**
Institute of Research for Development (IRD), BRIDGES programme (Montpellier, France)
Scoping review of socio-ecological models for marine and coastal management, including an AI-assisted extraction pipeline in Python and a statistical validation framework

2025 **Postdoctoral Researcher** (Pimiento Research Group)
University of Zurich (Zurich, Switzerland)
Global conservation prioritisation of sharks and rays using reinforcement learning (CAPTAIN), spatial gap analysis of the marine protected area network, and machine-learning models of fishing effort trained on satellite data (AIS and synthetic aperture radar) to estimate effort beyond AIS coverage

2023-24 **Postdoctoral Researcher and Scientific Coordinator**
IUCN SSC Shark Specialist Group, Important Shark and Ray Areas (ISRA) (remote, Montpellier, France)
Scientific coordination of the ISRA regional assessment process: preparation and running of expert workshops, compilation of the regional compendia, and spatial analyses of protection shortfalls, leading to publications in *Marine Policy*, *iScience* and *Ecology and Evolution*

2021-22 **Research Scientist** (PARSEC project, supervisor Prof. David Mouillot)
Foundation for Research on Biodiversity, Centre for the Synthesis and Analysis of Biodiversity (CESAB) (Montpellier, France)
Analysis of the relationship between human population growth and the establishment of protected areas across the United States, combining census, land-use and protected-area time series

2019-20 **Research Scientist**

French Research Institute for Exploitation of the Sea (Ifremer) (Sète, France)
Monitoring and analysis of eutrophication in French Mediterranean coastal lagoons: disentangling the effects of nutrient enrichment and natural variability on macrobenthic communities

2017-19 **Research Assistant**
National Institute of Water and Atmospheric Research (NIWA) (Hamilton, New Zealand)
Marine and freshwater ecology: species distribution modelling of New Zealand cetaceans, spatial prioritisation and marine ecosystem classification for Fisheries New Zealand and the Department of Conservation; analyses of stream macrophyte and macroinvertebrate assemblages under agricultural land use

PUBLICATIONS

In revision

14. **Mouton T.L.**, D. Silvestro, K. Kocáková, D. Spitznagel, F. Leprieur and C. Pimiento (*In revision*). Global gaps and priorities for shark and ray conservation: integrating threat, function, and evolutionary distinctiveness. *Science Advances* (minor revisions). Preprint: *bioRxiv*, https://doi.org/10.1101/2025.11.28.691085

Accepted, in press

13. Kocáková K., J.A. Villafaña, A. Gardiner, G.H. Mathes, **T.L. Mouton** and C. Pimiento (*In press*). FINS: a global occurrence dataset of fossil neoselachians from the Cretaceous to the Quaternary. *Global Ecology and Biogeography*.

Peer-reviewed articles

12. Cochran J.E.M., R. Charles, A.J. Temple, P.M. Kyne, E. García-Rodríguez, A. Gonzalez-Pestana, A. Batlle-Morera, **T.L. Mouton**, A.O. Armstrong, C.A. Rohner, R.W. Jabado et al. (2026). Only one percent of Important Shark and Ray Areas in the Western Indian Ocean are fully protected from fishing pressure. *Ecology and Evolution*, 16, e72690.
11. Rohner C.A., A.J. Richardson, E. García-Rodríguez, R. Charles, A. Batlle-Morera, J.R. Bortoluzzi, **T.L. Mouton**, G. Notarbartolo di Sciara, A.O. Armstrong, J.D. Everett et al. (2025). Important Shark and Ray Areas can inform conservation planning in the Mediterranean and Black Seas. *iScience*, 113192.
10. **Mouton T.L.**, A. Gonzalez-Pestana, C.A. Rohner, R. Charles, E. García-Rodríguez, P.M. Kyne, A. Batlle-Morera, G. Notarbartolo di Sciara, A.O. Armstrong et al. (2024). Shortfalls in the protection of Important Shark and Ray Areas undermine shark conservation efforts in the Central and South American Pacific. *Marine Policy*, 171, 106448.
9. Jones A.G., G. Schaal, A. Boyé, M. Creemers, V. Derolez, N. Desroy, A. Fiandrino, **T.L. Mouton**, M. Simier, N. Smith and V. Ouisse (2024). Disentangling the effects of eutrophication and natural variability on macrobenthic communities across French coastal lagoons. *Peer Community Journal*, 4, e112.
8. Pimiento C., C. Albouy, D. Silvestro, **T.L. Mouton**, L. Velez, D. Mouillot, A.B. Judah, J.N. Griffin and F. Leprieur (2023). Functional diversity of sharks and rays is highly vulnerable and supported by unique species and locations worldwide. *Nature Communications*, 14(1), 7691.
7. **Mouton T.L.**, F. Leprieur, M. Floury, F. Stephenson, P. Verburg and J.D. Tonkin (2022). Climate and land-use driven reorganisation of structure and function in river macroinvertebrate communities. *Ecography*, 2022(3), e06148.
6. **Mouton T.L.**, F. Stephenson, L.G. Torres, W. Rayment, T. Brough, M. McLean, J.D. Tonkin, C. Albouy and F. Leprieur (2022). Spatial mismatch in diversity facets reveals contrasting protection for New Zealand's cetacean biodiversity. *Biological Conservation*, 267, 109484.
5. Stephenson F., A.A. Rowden, T. Brough, G. Petersen, R.H. Bulmer, J.R. Leathwick, A.M. Lohrer, J.I. Ellis, D.A. Bowden, S.W. Geange, G.A. Funnell, […] **T.L. Mouton**, et al. (2022). Development of a seafloor community classification for the New Zealand region using a gradient forest approach. *Frontiers in Marine Science*, 8, 792712.
4. Stephenson F., J.E. Hewitt, L.G. Torres, **T.L. Mouton**, T. Brough, K.T. Goetz, C.J. Lundquist, A.B. MacDiarmid, J. Ellis and R. Constantine (2021). Cetacean conservation planning in a global diversity hotspot: dealing with uncertainty and data deficiencies. *Ecosphere*, 12(7).

3. **Mouton T.L.**, J.D. Tonkin, F. Stephenson, P. Verburg and M. Floury (2020). Increasing climate-driven taxonomic homogenization but functional differentiation among river macroinvertebrate assemblages. *Global Change Biology*, 26, 1-12.

2. Stephenson F., K. Goetz, B.R. Sharp, **T.L. Mouton**, F.L. Beets, J. Roberts, A.B. MacDiarmid, R. Constantine and C.J. Lundquist (2020). Modelling the spatial distribution of cetaceans in New Zealand waters. *Diversity and Distributions*, 26(4), 495-516.

1. **Mouton T.L.**, F.E. Matheson, F. Stephenson, P.D. Champion, S. Wadhwa, M.P. Hamer, A. Catlin and T. Riis (2019). Environmental filtering of native and non-native stream macrophyte assemblages by habitat disturbances in an agricultural landscape. *Science of the Total Environment*, 659, 1370-1381.

SCIENTIFIC REPORTS

5. Jabado R., P.M. Kyne, E. García-Rodríguez, R. Charles, A.O. Armstrong, **T.L. Mouton**, A. Gonzalez-Pestana, A. Batlle-Morera and C.A. Rohner (2024). *Western Indian Ocean: a regional compendium of Important Shark and Ray Areas*. IUCN SSC Shark Specialist Group.

4. Jabado R., E. García-Rodríguez, P.M. Kyne, R. Charles, A.O. Armstrong, J. Bortoluzzi, **T.L. Mouton**, A. Gonzalez-Pestana, A. Batlle-Morera, C.A. Rohner and G. Notarbartolo di Sciara (2023). *Mediterranean and Black Seas: a regional compendium of Important Shark and Ray Areas*. IUCN SSC Shark Specialist Group.

3. Stephenson F., K. Goetz, **T.L. Mouton**, F. Beets, S. Hailes, J. Roberts, M. Pinkerton and A. MacDiarmid (2020). *Spatial distribution modelling of New Zealand cetacean species*. Fisheries New Zealand, New Zealand Aquatic Environment and Biodiversity Report No. 240, 217 pp.

2. Stephenson F., A. Rowden, T. Anderson, J. Hewitt, M. Costello, M. Pinkerton, M. Morrison, M. Clark, S. Wadhwa, **T.L. Mouton** and C.J. Lundquist (2018). *Mapping key ecological areas in the New Zealand marine environment: data collation*. Prepared for the Department of Conservation.

1. de Winton M. and **T.L. Mouton** (2018). *Technical report on vegetation status in Waituna Lagoon: 2009-2018*. Prepared for the Department of Conservation.

SOFTWARE AND DATA PRODUCTS

2026	**FINS**: interactive application for exploring the global fossil neoselachian occurrence dataset (Pimiento Research Group). R/Shiny, https://fins-app.shinyapps.io/FINS_App/
2026	**SAFE**: interactive application for elasmobranch functional traits. R/Shiny, GitHub
2026	**CAPTAIN elasmobranch prioritisation**: archived analysis code and data. Zenodo, https://doi.org/10.5281/zenodo.20719267
2026	**DateBack**: application for archaeozoological dating data (IRD/CNRS). R/Shiny, https://cloudapps.france-bioinformatique.fr/dateback/
2025	**Citizens for Europe diversity dashboard**: interactive reporting of diversity survey data. R/Shiny
2025	**Vanuatu disaster damage assessment pipeline**: automated Quarto reporting for the Government of Vanuatu (with Yan Holtz)
2025	**DataSphere Quarto report template**: open, ocean-themed reproducible reporting template. GitHub Pages
2024	Contributor, **R Graph Gallery** data visualisation tutorials (r-graph-gallery.com, with Yan Holtz)

GRANTS, FELLOWSHIPS AND AWARDS

2026	Global Fishing Watch Data Laboratory, Rome: selected participant, full travel and accommodation support
2023	Re:wild research grant for work on Important Shark and Ray Areas (EUR 50,000)
2020-23	Doctoral contract, French Ministry of Higher Education and Research (3 years)

CONSULTANCY CONTRACTS

Selected contracts delivered through DataSphere Analytics. The IRD BRIDGES and University of Zurich contracts are described under Professional Appointments.

2024-26	**Citizens for Europe**: interactive dashboards for diversity survey data, with continuous integration (four contracts)
2024-26	**CNRS / IRD** (Muriel Gros-Balthazard): DateBack, an interactive application for archaeozoological dating data (three contracts)
2025	**Government of Vanuatu** (with Yan Holtz): automated Quarto pipeline for disaster risk and damage assessment reporting
2024	**Universidad de Chile**, Institute of Nutrition and Food Technology (INTA), Santiago (María Paulina Correa): hierarchical edge bundling visualisations of molecular and cardiometabolic clustering results, prepared as publication-ready figures

PRESENTATIONS

2026	**Oral presentation** (accepted), 8th International Marine Conservation Congress, Edinburgh, UK
2024	**Oral presentation**, IUCN SSC Shark Specialist Group, Important Shark and Ray Areas Western Indian Ocean workshop, Durban, South Africa
2023	**Oral presentation**, IUCN SSC Shark Specialist Group, Important Shark and Ray Areas Mediterranean and Black Seas workshop, Thessaloniki, Greece
2023	**PhD defence**, Université Claude Bernard Lyon 1, Villeurbanne, France
2020	**Departmental talk**, Marine Biodiversity, Exploitation and Conservation (MARBEC), Sète, France
2019	**Oral presentation**, New Zealand Freshwater Sciences Society Conference, Hamilton, New Zealand

MENTORSHIP

2023	Adriana Gonzalez-Pestana, Research Assistant, IUCN SSC Shark Specialist Group (1 year); co-author on a *Marine Policy* publication
2022	Niam Smith, MSc student, MARBEC (6 months). Thesis: effects of eutrophication on the benthic biodiversity of Mediterranean lagoons

PROFESSIONAL SERVICE

2023-24	Scientific coordinator, Important Shark and Ray Areas regional compendia (IUCN SSC Shark Specialist Group)
2019-24	Co-organiser of four international scientific workshops with more than 250 participants in total
2019-	Peer reviewer for *Biological Conservation*, *Diversity and Distributions*, *Ecography*, *Ecology and Evolution*, *Ecosphere*, *Frontiers in Marine Science*, *Global Change Biology*, *Journal of Biogeography*, *Marine Ecology Progress Series*, *Marine Policy* and *Science of the Total Environment*

TECHNICAL SKILLS

Modelling	Species distribution and abundance modelling of marine megafauna; generalised additive and linear models (mgcv), boosted regression trees, random forests and reinforcement learning; null and permutation models; environmental covariate processing; spatial prediction, model validation and uncertainty estimation; spatial conservation prioritisation and gap analysis
Programming	Advanced R (tidyverse, ggplot2, terra, sf, Quarto, Shiny); Python for machine learning, reinforcement learning and LLM-based data extraction; git and GitHub; reproducible workflows and public code archiving; web development (HTML, CSS, JavaScript, Astro, React)
Geospatial	QGIS, ArcGIS Pro and Google Earth Engine; raster, vector and satellite imagery processing; AIS and SAR fishing effort data
Project work	Defining objectives and timelines, coordinating deliverables, progress reporting, multidisciplinary collaboration from basic research to management; remote collaboration (Notion, Slack, Mattermost)

LANGUAGES

French (native) · English (fluent) · Spanish (advanced)