François Leroy

Keywords: Macroecology, Numerical Ecology, Modeling, Machine Learning

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Website
GitHub (FrsLry)

Experience

2020-2024 Ongoing — **PhD. Modeling spatio-temporal biodiversity changes across scales**, *Faculty of Environmental Sciences, CZU, dept. of Spatial sciences*, Prague.

- Modeling biodiversity using machine learning, frequentists and bayesian methods
- Programming
- English communication skills (both oral and writing)
- Supervised by Dr. Petr Keil

2018–2020 — **Marine Sciences MSc**, *Sorbonne University*, Paris (France, graduated September 2020).
Numerical Ecology, modelling, geostatistics, GIS, oceanography, marine ecology, biogeochemistry, database management

2017–2018 — **3rd year of Bachelor of Science**, *South Brittany University*, Vannes (France).
Specialized in Coastal Ecosystems and Management, GIS

2015–2017 — **1st and 2nd year of Bachelor of Science**, *Rouen Normandy University*, Rouen (France).
Specialized in Botanic

Internships

2020 (6 months) — **Community modelling** , *DYNECO-LEBCO, IFREMER*, Brest (France).

- **Objective:** develop a simulation tool to assess dynamic communities accompanying biogenic reefs built by *Sabellaria alveolata* (Linnaeus, 1767)(honeycomb worm)
- Explore the community topology using qualitative modelling (Dambacher *et al.* 2002, Marzloff *et al.* 2016)
- Infer a Dynamic Bayesian Network (BN) from a large database (REEHAB project)

2019 (2 months) — **Numerical ecology study**, *UMR BOREA - MNHN - LOCEAN* , Paris (France).

- **Objective:** spatiotemporal recruitement variability of *Sicyopterus lagocephalus* (Pallas 1770)(Teleostei : Gobiidae : Sicydiinae), amphidromous species of the Indian Ocean
- Pelagic Larval Duration (PLD) determination by otolithometry
- Statistical analysis to observe spatial (rivers) and temporal (season/year) differences of those PLD
- Larval dispersion modelling using the Ichthyop lagrangian model in backward to assess larval provenance

2018 (2 months) — **Ecological study**, *Géoarchitecure Laboratory*, Vannes (France).

- **Objective:** use the opportunistic feature of the European shag to assess fish biodiversity
- Rejection pellets dissection and harvesting
- Fish identification using otoliths, data analysis

2017 (5 months) — **Mapping, Photogrammetry**, *Géosciences Océans Laboratory*, Vannes (France).

- **Objective:** study the coastal dynamic of a beach in order to distribute sediment at the most relevant place
- Three dimensional modelling of a beach to observe its evolution
- Production of DEM (*i.e.* Digital Elevation Model) to exploit in GIS software

Computer skills

Basic — Julia, Shell, MATLAB, HTML5, CSS
Intermediate — Python, MySQL, Creative Cloud, Agisoft Metashape
Advanced — R, Git, QGIS, ArcGIS, LaTeX

Teaching

2021 — Introduction to GIS using ArcGIS (14 hours)

Talks

Conference
Online
2021-10-23

Modeling biodiversity changes across a continuum of spatial scales, *International Biogeography Society conference (Early career)*, Slides.

Content:

- Using machine learning methods to model species richness trends across spatial scales
- Uding models output to highlight the influence of spatio-temporal grains
- Taxon: birds
- Study extent: Czech Republic

Conference
Online
2021-09-01

Spatio-temporal scaling of biodiversity trends, *GfÖ Virtual Annual Meeting*, Slides.

Content:

- Pilot results of my PhD
- Highlighting the spatial scaling of biodiversity trends
- Taxon: birds
- Study extent: Czech Republic

Seminar
Prague
2020-07-01

Introduction to Reproducible Science: Version Control using Git, *CZU*, Slides.

Content:

- Why is reproducible science essential?
- What is a version control software?
- How to use git and github from the command line?
- How to share your work with Github?

Publications

François Leroy, Jiri Reif, David Storch, and Petr Keil. How has bird biodiversity changed over time? A review across spatio-temporal scales. *EcoEvoRxiv (preprint)*, 2022. URL: https://ecoevorxiv.org/jhr6v/, doi:10.32942/osf.io/jhr6v.