LJ

LUCAS JORDÃO
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EDUCATION

BSc in Data Science
Universidade Estácio de Sá
since 2025 · graduating Jul 2027

Postdoctoral research in Botany
Rio de Janeiro Botanical Garden
2019

PhD in Botany
Rio de Janeiro Botanical Garden
2015 — 2019

MSc in Biological Sciences
Museu Nacional / UFRJ
2012 — 2014

Biological Sciences
Universidade Santa Úrsula
BSc and licentiate
2007 · 2009

TECHNOLOGIES

PROGRAMMING
TypeScript · JavaScript · Python · R · SQL

APPLICATIONS
Next.js · React · NestJS · Node.js · GraphQL · REST

DATA
Apache Airflow · dbt · BullMQ/Redis · Kafka · DuckDB · Trino · Superset

DATABASES
PostgreSQL/PostGIS · MongoDB · Neo4j · Jena Fuseki

INFRASTRUCTURE
Docker · Git · GitLab CI/CD · Linux · GCP · AWS · Azure

GEOSPATIAL
MapBiomas · Google Earth Engine · LULC series · IUCN criteria

PROCESS
Lean Inception · Product Backlog Building · Scrum · Kanban · requirements engineering

LANGUAGES

Portuguese native · English for technical reading and writing

AVAILABILITY

Immediate · remote, hybrid or Rio de Janeiro

Lucas Sá Barreto *Jordão*

Data engineering · Full stack · Geospatial — PhD in Botany

A botanist with a PhD who became an engineer. I spent six years building the infrastructure behind Brazil's plant extinction-risk assessments: Airflow and dbt pipelines, Next.js/NestJS applications over PostgreSQL/PostGIS, and geospatial analysis with MapBiomas. I know what the data means before I model it, and that is what lets me design systems the domain team can run on its own. I'm looking for a team where domain, data and product are the same conversation.

EXPERIENCE

CNCFlora / Rio de Janeiro Botanical Garden
2020 — 2026
Rio de Janeiro · Brazil

IT Analyst — 2024 — 2026

- Worked from architecture to interface on **Avalia-CNCFlora**, the internal environment that brings together taxonomic data, geospatial analysis, charts and supporting text for assessments: PostgreSQL/PostGIS modelling, a NestJS back end exposing REST and GraphQL, a Next.js front end and GitLab CI/CD pipelines.
- Integrated MapBiomas, AOO and EOO metrics, land-use and land-cover trends and structured rationale writing into Avalia — assessors now produce the analysis and the text in one place, with no intermediate spreadsheet.
- Designed and implemented the **Bull-ProFlora** ETL, connecting ProFlora to asynchronous queues and making heavy processing controllable, repeatable and auditable.
- Led the **legacy collection migration**: orchestrated extraction and loading with Apache Airflow, modelled and validated the transformations with dbt, and delivered the recovered history into the new database — data that now feeds CNCFlora's public portal.
- Gathered requirements with Sphinx-Needs, keeping traceability between need and implementation, and built the team's service catalogue in Backstage.

Red List Analyst — 2020 — 2024

- Built geospatial routines that made IUCN criterion B objective and reproducible: regression over MapBiomas series to estimate continuing decline in AOO, EOO and habitat, and a variable-buffer method to semi-automate the counting of *locations*.
- Proposed a structured architecture for the *rationale*, organising the justification text so that it consistently meets the criteria's requirements — which reduced variation between assessors and shortened review.
- **588 assessments** published on the IUCN Red List.

New York Botanical Garden
2016 — 2017
New York · United States — Herbarium Digitization Intern

- Specimen digitisation and taxonomic data curation at one of the world's largest herbaria, turning a physical collection into accessible data — where my interest in biodiversity infrastructure started.

Teaching
2007 — 2026
ENBT/JBRJ · UFMS · SEEDUC/RJ · Bioforense course

- Nine classes, courses and modules taught, from secondary school to postgraduate level — phyloinformatics, environmental law and extinction-risk assessment —, with eight open-access course books published in Quarto. Detailed on the next sheet.

HIGHLIGHTS

- **Honourable mention** at the 4th MapBiomas Award (2022), Public Policy Applications category.
- Six published **npm packages** and 53 public open-source repositories.
- Eight open-access course books in Quarto, totalling 74 chapters, plus an interactive identification key.
- Eight examining committees and *ad hoc* peer review for seven scientific journals.

14	08	06	588
PUBLISHED PAPERS	AS FIRST AUTHOR	NEW SPECIES DESCRIBED	RED LIST ASSESSMENTS

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SYSTEMS I BUILT

Avalia-CNCFlora
INTERNAL APPLICATION

Next.js · NestJS · GraphQL · PostgreSQL/PostGIS · GitLab CI/CD

An environment bringing together taxonomic data, geospatial analysis, charts and supporting text for assessment under IUCN criteria. I modelled the data, built the back end and the front end, implemented CI/CD, and integrated MapBiomas, AOO and EOO metrics, land-use trends and structured rationale writing.

Bull-ProFlora
ETL IN PRODUCTION

BullMQ · Redis · Node.js · APIs · execution logs

The ETL that connected ProFlora to asynchronous queues, making heavy processing controllable, repeatable and auditable. The processing layer and its integrations were my delivery; the operations panel is Bull Board, generic to the Bull ecosystem.

Legacy data recovery
MIGRATION COMPLETED

Apache Airflow · dbt · PostgreSQL · ProFlora

I planned and ran the recovery of the historical collection from the legacy system. I orchestrated extraction and loading with Airflow, modelled and validated the transformations with dbt, and delivered the recovered legacy into the new database. That data now feeds CNCFlora's public portal.

Assessment tracking board
PROTOTYPE NOT ADOPTED

Apps Script · Google APIs · messaging · workflow

I conceived and built an application to make stages, owners, blockers and progress visible across hundreds of assessments in real time. It was never institutionally deployed: the workflow actually used stayed in a spreadsheet I set up with Apps Script, APIs and messaging, and that sustained operations until the end of the period.

ORIGINAL METHOD · IUCN CRITERION B, MADE OPERATIONAL

01 / CONTINUING DECLINE
Linear regression over the historical land-use and land-cover series to estimate increasing or decreasing trends in AOO, EOO and habitat.

02 / LOCATIONS
A variable-buffer method to cluster nearby occurrences and semi-automate the counting of threatening situations.

03 / RATIONALE
A structured architecture for the justification text, organising it to meet the criteria's requirements consistently.

OPEN SOURCE

@lsbjordao/type-taxon-script
typed data structures for systematics

@lsbjordao/iucn-red-list-criteria-validator.js
Red List criteria validation

@lsbjordao/mapbiomas-alerta.js
client for the deforestation alerts API

@lsbjordao/genbank-js
GenBank record parsing

@lsbjordao/ffb-js
client for Flora e Funga do Brasil

@lsbjordao/ibge-js
IBGE territorial meshes and data

Six packages published on npm and 53 public repositories on GitHub. TypeTaxonScript, a typed-data framework for systematics, was published in *Biology Methods and Protocols* (2024).

TEACHING AND DEVELOPING PEOPLE

- **Special Topics: Introduction to Phyloinformatics**
  National School of Tropical Botany / JBRJ · postgraduate
- **Threatened species: from public policy to extinction-risk assessment**
  Federal University of Mato Grosso do Sul · remote
- **Forensic botany and law applied to plant protection**
  Bioforense course · preparation for forensic examiners
- **Team training in extinction-risk assessment**
  CNCFlora / JBRJ
- Five further positions, from secondary school to undergraduate teaching assistance — SEEDUC/RJ, Sociedade Educacional Laranjeiras, Horto Escola Artesanal and Universidade Santa Úrsula.
- **Eight open-access course materials published in Quarto**, totalling 74 chapters, plus an interactive identification key.
- One undergraduate thesis supervised (IFRJ, 2023) and eight examining committees at doctoral, master's and undergraduate level.

ACADEMIC OUTPUT

- **TypeTaxonScript: sugarifying and enhancing data structures in biological systematics and biodiversity research**
  Biology Methods and Protocols · 2024 · first author
- **Advances in systematics of *Mimosa*: phylogeny and biogeography of the Petiolovariabilis clade**
  Botanical Journal of the Linnean Society · 2025 · first author
- **Precipitation is the main axis of tropical plant phylogenetic turnover across space and time**
  Science Advances · 2023
- **Toward a Census of *Mimosa* in the Atlantic Domain, Southeastern Brazil**
  Systematic Botany · 2018 · first author
- **Fabaceae** chapter in the *Red Book of the Endemic Flora of the State of Rio de Janeiro*
  Andrea Jakobsson Estúdio · 2018
- 14 papers published and 2 accepted, 8 as first author, 6 new species described. *Ad hoc* peer review for seven journals, among them *Systematic Botany* and *Database*.
- Full, verifiable list on the Lattes CV.

4TH EDITION · MAPBIOMAS AWARD
Honourable mention
2022

MapBiomas and the extinction-risk assessment of the Brazilian flora — Public Policy Applications category. Recognition for the work that made assessment under IUCN Red List criterion B more objective, reproducible and operational.