

# Alban Sagouis

Data Scientist

## PERSONAL DETAILS

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## PROFESSIONAL EXPERIENCE

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### Scientific programmer – Data manager

2019-present

*iDiv – Biodiversity Synthesis Group*

I aggregate, restructure and standardise heterogeneous data from the literature. As a scientific developer, I organize research projects, provide expert opinions on existing R programs, and promote reliable data management for improved reproducibility and archiving of scientific work. I collaborate with iDiv data repository project BioDivBank, with BioTIME and maintain various rOpenSci packages. Team leader: Jonathan Chase.

### Scientific assistant – Post-doc

2017-2019

*FU Berlin – IGB Leibniz-Institut Berlin – AG Jeschke*

In the framework of the INDYNET project, I lead analyses for a post-doc project studying fish responses following invasive species dynamics. This project aimed at using null models to assess critical abundances above which alien species had detrimental effects on diversity metrics. As a BIBS post-doc, I analysed taxonomic and functional diversity of aquatic invertebrate communities along a urbanisation gradient in Berlin and Brandenburg. I assisted post-docs and PhD students managing and analysing data and presenting their results. Team leader: Jonathan Jeschke.

### Post-doc

2018

*IZW Leibniz-Institut Berlin, Ecological Dynamics Department*

Short-term project aimed at conducting a meta-analysis of the effects of European and North-American beavers on terrestrial and aquatic plants, invertebrates, fish and amphibians. Supervisors: Dr. Stephanie Kramer-Schadt and Dr. Viktoriia Radchuk.

### PhD student

2013-2017

*Irstea, Aix en Provence*

I analysed lake fish community responses to disturbances using diversity indices. Following

this first metric assessment, eutrophication and non-native species effects on fish community assembly rules were analysed at the European scale thanks to null models and various taxonomic and functional metrics. MARS project tasks also included participating to a meta-analysis, workshops and report redaction. Under the supervision of Dr. Christine Argillier and Dr. Franck Jabot. Defended July 2017 in presence of Pr. Emili García-Berthou and Dr. Gaël Grenouillet as main committee members.

**Master student**

2013

*EDB, Toulouse, MSc. research training*

A large scale database of fish isotopic signature was aggregated thanks to a meta-analysis method and complementary environmental parameters were collected thanks to GIS tools. I then tested the effects of introduced species on fish trophic diversity in lakes and rivers worldwide thanks to linear mixed effect model selection. Supervisor: Dr. Julien Cucherousset.

**Master student**

2012

*Irstea Lyon, MSc. research training*

I analysed temporal and spatial dataset describing macroinvertebrate communities' responses to environmental conditions of temporary rivers in France. I retrieved and cleaned data from ONSET moisture loggers. Supervisor: Dr. Thibault Datry.

## WORKSHOPS

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### BioTIME

2022-present

*PIs: Maria Dornelas (University of St Andrews) & Anne M. Magurán (University of St Andrews)*

I participated to the data wrangling and to the discussions of the core group in preparation for the recent publication of version 2 of the BioTIME database. I am also leading the development of an R package aimed at opening, merging and standardising BioTIME data called BioTIMER.

### sTeTra

2022-present

*PIs: Franziska Schrodt (University of Nottingham) & Maria Dornelas (University of St Andrews)*

This sDiv working group aims at analysing intraspecific and interspecific functional change in time and space. I collaborated with various working groups by providing potential data sources and data wrangling support. To ensure easy access to online data sets, consistency and reproducibility, I created two packages that were distributed among the participants: sTrangling and sTools.

### sRealm

2021

*PIs: Malin Pinsky (UC Santa-Cruz), Helmut Hillebrand (HIFMB) & Jonathan Chase (iDiv)*

I was invited to support the participants by simulating changing communities in time. I built the R package sRealmTools that I was continuously updating and testing to address the requests. At the same time, I was running the simulations on the iDiv HPC.

### Indynet

2018

*PI: Jonathan Jeschke (FU Berlin)*

Indynet was an international consortium of researchers studying invasive species lead by the Jeschke group at FU Berlin. Besides organisational help, I collaborated on the Jarić *et al.* 2018 manuscript on Crypticity in biological invasions.

## **EDUCATION**

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### **PhD. Community Ecology**

2013-2017

*University of Aix-Marseille*

*Assembly rules of lake fish communities: biotic and abiotic influences.*

PhD thesis supervisors: Dr. Christine Argillier and Dr. Franck Jabot.

PhD thesis reviewers: Pr. Emili García-Berthou and Dr. Gaël Grenouillet.

### **MSc. Ecosystem Modeling**

2012-2013

*University of Toulouse*

Comprehensive formation encompassing a wide array of modeling procedures and statistical analyses based on multiple languages (C++, MATLAB, R and L<sup>A</sup>T<sub>E</sub>X).

### **MSc. Ecosystem Functioning**

2011-2012

*University of Toulouse*

Theoretical and applied courses covering energy and matter cycles, biodiversity function relations, ecotoxicology and risk assessment, global change and statistics (R).

### **BSc. Biology of Organisms, Populations and Ecosystems**

2007-2010

*University of Toulouse*

General formation on organism biology, taxonomy, evolution and ecology.

## **PUBLICATIONS**

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Sagouis A., Blowes S. A., Xu W. & Chase J. M. Checklist Change: resurrecting naturalistic historical data for community change analysis. In prep. GEB

Blowes S. A., McGill B., Brambilla V., Chow C. F. Y., Engel T., Fontrodona-Eslava A., Martins I. S., McGlenn D., Moyes F., Sagouis A., Shimadzu H., van Klink R., Xu W., Gotelli N. J., Magurran A. E., Dornelas M. & Chase J. M. 2024. Synthesis reveals approximately balanced biotic differentiation and homogenization *Science Advances*. [link](#)

Martins I. S., Schrodt F., Blowes S. A., Bates A. E., Bjorkman A. D., Brambilla V., Carvajal Quintero J., Chow C. F. Y., Daskalova G. N., Edwards K., Eisenhauer N., Field R., Fontrodona-Eslava A., Henn J. J., van Klink R., Madin J. S., Magurran A. E., McWilliam M., Moyes F., Pugh B., Sagouis A., Trindade-Santos I., McGill B. J., Chase J. M. & Dornelas M. 2023. Widespread shifts in body size within populations and assemblages. *Science*. [link](#)

Xu W., Blowes S. A., Brambilla V., Chow C. F. Y., Fontrodona-Eslava A., Martins I. S., McGlenn D., Moyes F., Sagouis A., Shimadzu H., van Klink R., Magurran A. E., Gotelli N. J., McGill B. J., Dornelas M. & Chase J. M. 2023. Regional occupancy increases for widespread species but decreases for narrowly distributed species in metacommunity time series. *Nature Communications*. [link](#)

Grenié M., Berti E., Carvajal Quintero J., Dädlow G. M. L., Sagouis A. & Winter M. 2023. Harmonizing taxon names in biodiversity data: A review of tools, databases and best practices. *Methods in Ecology and Evolution*. [link](#)

Blowes S. A., Daskalova G. N., Dornelas M., Engel T., Gotelli N. J., Magurran A. E., Martins I. S., McGill B., McGlenn D. J., Sagouis A., Shimadzu H., Supp, S. R. & Chase J. M. 2023. Local biodiversity change reflects interactions among changing abundance, evenness, and richness. *Ecology*. [link](#)

Musseau C., Onandia G., Sagouis A., Peterman J. & Jeschke J. M. 2022. Functional shifts of freshwater communities due to extreme drought events in an agriculture landscape. *Ecology and Evolution*. [link](#)

Gooriah L., Blowes S. A., Sagouis A., Schrader A., Karger D. N., Kreft H., Chase J. M., Hui C. 2021. Synthesis reveals that island species–area relationships emerge from processes beyond passive sampling. *Global Ecology and Biogeography*. [link](#)

Birk, S., ..., Sagouis, A., ... & Hering, D., 2020, Impacts of multiple stressors on freshwater biota across spatial scales and ecosystems *Nature Ecology & Evolution*, **4**, 1060-1068. [link](#)

Chase, J. M., Liebergesell, M., Sagouis, A., May, F., Blowes, S. A., Berg, Å., ... & Ziv, Y., 2019, FragSAD: A database of diversity and species abundance distributions from

habitat fragments. *Ecology*. link

Jarić, I., Heger, T., Castro-Monzon, F., Jeschke, J. M., Jones, C. G., McConkey, K. R., Pyšek, P., Sagouis, A. & Essl F., 2018, Crypticity in Biological Invasions, *Trends in Ecology & Evolution*. link

Teichert N., Lepage M., Sagouis A., Borja Á., Chust G., Ferreira M.T., Pasquaud S., et al., 2017, Functional redundancy and sensitivity of fish assemblages in European rivers, lakes and estuarine ecosystems, *Scientific Reports*, **7**, 17611. link

Sagouis, A., Jabot F. & Argillier C., 2017, Taxonomic versus functional diversity metrics: how do fish communities respond to anthropogenic stressors in reservoirs? *Ecology of Freshwater Fish*, **226**, 621-635. link

Nõges, P., Argillier C., Borja Á., Garmendia J. M., Hanganu J., Kodeš V., Pletterbauer F., Sagouis A. & Birk S., 2016, Quantified biotic and abiotic responses to multiple stress in freshwater, marine and ground waters. *Science of The Total Environment*, **540**, 43–52. link

Blabolil, P., Logez M., Ricard D., Prchalová M., Říha M., Sagouis A., et al., 2016, An assessment of the ecological potential of Central and Western European reservoirs based on fish communities. *Fisheries Research*, **173**, 80–87. link

Vander Vorste, R., Corti R., Sagouis A. & Datry T., 2016, Invertebrate communities in gravel-bed, braided rivers are highly resilient to flow intermittence. *Freshwater Science*, **35**, 164–177. link

Sagouis, A., Cucherousset J., Villéger S., Santoul F. & Boulétreau S., 2015, Non-native species modify the isotopic structure of freshwater fish communities across the globe. *Ecography*, **38**, 979–985. link

## **TECHNICAL REPORTS**

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Nöges, P., Argillier C., Borja Á., Garmendia J. M., Hanganu J., Kodeš V., Pletterbauer F., Sagouis A. & Birk S., 2015, MARS Deliverable 2.1: Four manuscripts on the multiple stressor framework. pdf

Argillier C., Teichert N., Sagouis A., Lepage M., Schinegger R., Palt M., Schmutz S., Segurado P., Ferreira M.T., Chust G., Uriarte A., Borja Á., 2015, MARS Deliverable 5.A: Report on the comparison of the sensitivity of fish metrics to multi-stressors in rivers, lakes and transitional waters. pdf

Teichert N., Argillier C., Lepage M., Sagouis A., Schinegger R., Palt M., Schmutz S., Segurado P., Ferreira M.T., Chust G., Borja Á., 2016, MARS Deliverable 5.1-5: Reports on stressor classification and effects at the European scale: New functional diversity indices allowing assessing vulnerability in abiotic multi-stressor context. pdf

## SKILLS

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<i>Languages</i>	French (mother tongue) English (fluent) Spanish (intermediate) German (beginner)
<i>Reviewing</i>	Hydrobiologia, Scientific Reports, Fish and Fisheries
<i>Data extraction</i>	R ( pdftools, staplr, tabulapdf (formerly tabulizer), jsonlite, stringi, parzer)
<i>Data wrangling</i>	R ( data.table, dplyr, tidyr)
<i>Taxonomy</i>	R ( rgnparser, taxize)
<i>Package building</i>	R ( devtools, covr, revdepcheck, codemeter)
<i>Consolidating data and code</i>	R ( testthat, checkmate)
<i>Spatial tools</i>	R ( sf, terra, geosphere, parzer, dggridR)
<i>Reproducibility</i>	R ( renv)
<i>Other programming languages</i>	Basic knowledge of bash, C++, Python and MATLAB
<i>Other tools</i>	git and gitHub RStudio and Visual Studio Code Jekyll, R Shiny, Markdown and L <sup>A</sup> T <sub>E</sub> X ArcGIS Office