# Willian Vieira <span>PhD Candidate</span>

< 📊 + 🤖 > Quantitative ecologist | I love to automate stuff

## CONTACT

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🔗 Publications

## 🎓 EDUCATION

**Current | 2017**

**PhD. Candidate, Ecology**
Integrative Ecology Lab - Université de Sherbrooke, Canada

- Developing demographic models to better understand how trees will face climate change
- Integral Projection Models | mathematical modeling | Hierachical models | Bayesian statistics | Quantitative thecniques

**2016 | 2015**

**Masters 2, Agroecology and Resource Management**
École Nationale Supérieure des Sciences Agronomiques
de Bordeaux (BSA), Bordeaux, France

- Thesis: "Modelling the dispersion of weed species in agricultural landscapes"
- Process-based modelling | R | Sensitivity analysis

**2015 | 2010**

**BSc in Agronomy**
Universidade Federal de Santa Catarina, Florianópolis, Brazil

## 💼 CONSULTING EXPERIENCE

**2022 | 2020**

**Biostatistician**
Environment and Climate Change Canada (ECCC)
- Boreal Optimal Sampling Strategy for birds monitoring in Quebec
- Scripting spatial analysis | spatially stratified sampling | R
- Code: 🐙, Report: 📄

## 🖥 RESEARCH EXPERIENCE

**2018**

**Research visiting**
National Research Institute for Agriculture, Food and
Environment INRAe - EcoSystèmes et Sociétés En Montagne ⚲ Grenoble, France
- Collaboration on the mathematical formulation of how forest management affect forest dynamics
- Analytical analysis | Modelling | ShinyApp | R package

**2017**

**Mitacs Internship**
Ouranos ⚲ Montréal, CA
- Forest dynamic models | Climate change models

**2016**

**Master 2 internship**
French National Institute for Agricultural Research
(INRA - UMR 1347 Agroecologie) ⚲ Dijon, France
- Modelling weed dispersion in agricultural landscapes to improve the sustainable management of weeds

**2015**
**|**
**2014**

**Undergraduate Researcher**
Group of Research in Tropical forests
(NPFT - Universidade Fedaral de Santa Catarina)
📍 Florianópolis, Brazil
• Characterize the dynamics of tropical forest
• Data analysis | Statistics | R | data management | field work

**2014**
**|**
**2012**

**Undergraduate Researcher**
Laboratory of Plant Developmental Physiology and Genetics
(LFDGV - Universidade Fedaral de Santa Catarina)
📍 Florianópolis, Brazil
• Quantify the genetic diversity of tropical trees
• Lab work | PCR | microsatellites markers | genotyping

## 🖥 TEACHING EXPERIENCE

**2021**

**Biodiversity Modelling Summer School**
Bios$^2$ summer school
📍 Sherbrooke, CA
• Teaching assistant and lectured for graduate students
• Evaluating ecological models using Bayesian statistics

**2020**
**|**
**2019**

**Methods in computational ecology**
BIO500 - Département de biologie, Université de Sherbrooke
📍 Sherbrooke, CA
• Teaching assistant and lectured for undergraduate students
• Tools for reproducible science | SQL | Git | R | LaTeX | Markdown | Makefile

**2020**

**Software and Data Carpentry workshop**
Bios$^2$ training for graduate students
📍 Online
• The Unix Shell
• Data Management with SQL for Ecologists

**2019**
**|**
**2018**

**QCBS R Workshops**
Université de Sherbrooke & Université du Québec à Rimouski
📍 Sherbrooke & Rimouski, CA
• Instructor to graduate students
• Workshops: Introduction to R | Data management | Data Visualization | Control flow | Linear models

**2019**

**Probability and statistics**
GCI145 - Faculté de génie, Université de Sherbrooke
📍 Sherbrooke, CA
• Teaching assistant and lectured for undergraduate students
• Probability theory | Distribution | Descriptive statistics | Hypothesis testing | Linear models

**2018**
**|**
**2017**

**Soil ecology**
Département de biologie - Université de Sherbrooke
📍 Sherbrooke, CA
• Teaching assistant and lectured for undergraduate students
• Lab | Covered methods to determine soil texture

**2018**

**Modelisation de la dynamique forestier du Quebec face au changement climatique**
Département de biologie, Université de Sherbrooke
📍 Sherbrooke, CA
• Guest lecturer in Plant Ecology (Presentation) to undergraduate students
• Covered modelling approaches in ecology | model construction and applications

**2018**

**Introduction to scientific programming**
BIO109 - Département de biologie, Université de Sherbrooke     📍 Sherbrooke, CA
• Teaching assistant for undergraduate students
• Pogramming concepts | Data management | Control flow | R language

## ✳ TRAINING

**2022**

**Data visualization and biodiversity modelling**
Summer school - Bios²     📍 Magog, CA
• Business intelligence | data user profiles | Conceptualize interactive dashboard | Figma

**2020**

**Mathematical Modelling in Ecology and Evolution**
Workshop - Bios²     📍 Remote
• Developing equations | Finding equilibria | analyzing stability | Maxima

**2019**

**Stage-based demographic models in ecology, evolution and conservation biology**
NERC Advanced Training - University of Oxford     📍 Oxford, UK
• Theory and practice | Matrix population models | Integral Projection Models

**2019**

**Biodiversity Modelling**
Summer school - Université de Sherbrooke     📍 Magog, CA
• Theory and practice on different biodiversity modelling techniques
• Statistics | Differential equations | Stochastic simulations | Climate change models | uncertainty tracking

**2017**

**Data-driven ecological synthesis**
DDES summer school - Université de Montréal     📍 Montréal, CA
• Good practices in scientific computing
• Data management | Mathematical tools | Data analysis tools | Parallel computing | Rreproducible science

**2017**

**Bayesian Statistics for Ecologists**
Summer school - Université de Sherbrooke     📍 Magog, CA
• Theory and practice using Stan | Probability theory | Likelihood | MCMC | Hierarchical modelling | Model
  comparison

## 📖 PUBLICATIONS

**2023**

**Paying colonization credit with forest management could accelerate the range shift of temperate trees under climate change**
Under review. Preprint hosted on 🎧
Vieira, W., Boulangeat, I., Brice, M.H., Bradley, R.L., Gravel, D.

**2020**

**Moderate disturbances accelerate forest transition dynamics under climate change in the temperate–boreal ecotone of eastern North America**
Global Change Biology 🔴doi
• Brice, M.H., Vissault, S., Vieira, W., Gravel, D., Legendre, P., Fortin, M.J.

2020　**Genetic and demographic aspects of Varronia curassavica Jacq. in a heterogeneous coastal ecosystem**
Anais da Academia Brasileira de Ciências 🔴

- Hoeltgebaum, M.P., Lauterjung, M.B., Montagna, T., Candido-ribeiro, R., Vieira, W., Bernardi, A.P., Cristofolini, C., Reis, M.S.D.

## 👤🖥 SELECTED TALKS AND POSTERS

2020　**Lab: {STManaged} R package**
Biodiversity Modelling summer school　　　　　　　　　　　📍 Magog, CA
- Demonstration of my R package to be used during the intensive course (Presentation)

2019　**Using Integral Projection Models to assess how Contemporary Niche Theory predicts trees range limits**
British Ecological Society Annual Meeting　　　　　　　　📍 Belfast, UK
- (Poster)

2018　**The effect of forest management on forest distribution under climate change**
QCBS annual symposium　　　　　　　　　　　　　　　📍 Montréal, CA
- (Presentation)

2017　**Can forest management help increase the rate of forest migration northward to follow climate change?**
European Geosciences Union General Assembly　　　　　📍 Vienna, AT
- (Poster)