



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE 5348

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Scienze e Politiche Ambientali**

Scientist- in - charge: DR FRANCESCO FICETOLA

Carteron Alexis

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Alexis
Name	Carteron
Date of birth	19 06 1989

PRESENT OCCUPATION

Appointment	Structure
None	NA

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree			
Specialization			
PhD	Biological sciences	Université de Montréal	2020
Master	Biodiversity conservation	Université de Montpellier II	2012
Degree of medical specialization			
Degree of European specialization			
Other			

FOREIGN LANGUAGES

Languages	level of knowledge
English	Fluent
French	Mother tongue



AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2022	SPUN scholar grant, USA
2019-2020	Hydro-Québec excellence award, Université de Montréal, Canada.
2019-2020	Doctoral scholarship, Fonds québécois de la recherche sur la nature et les technologies
2019	Study abroad scholarship, Minister for education and higher education, Québec
2018, 2019	Internship and conference travel scholarship, Centre for forest research, Canada
2018	Marie-Victorin excellence scholarship, Institut de recherche en biologie végétale, Canada
2018	Student excellence scholarship, Université de Montréal, Canada
2017, 2018, 2019	Excellence award, Quebec centre for biodiversity science, Canada
2017	Excellence award, Biological sciences department, Université de Montréal
2017	Intensive course scholarship, Quebec centre for biodiversity science, Canada
2017	Biological sciences fund, Université de Montréal, Canada
2016, 2017 2018, 2019	Jacques-Rousseau travel scholarship, Institut de recherche en biologie végétale, Canada

TRAINING OR RESEARCH ACTIVITY

My career path has been enriched by a university curriculum that I have chosen to complete in different universities. This was made possible by obtaining several mobility and research grants. First, I completed a Bachelor's degree in ecology at the University of Toulouse III, including one year abroad at Bangor University (UK). At the end of these three academic years, I obtained a merit scholarship for the excellence of my undergraduate years, which allowed me to integrate the French-Greek Master "Biodiversity Conservation" from the universities of Montpellier II and the Aegean. During these Master's years, I continued to develop my adaptability, autonomy at work and leadership skills, notably by developing quantitative data analysis, which led to publishing three scientific articles. I had the opportunity to compliment my knowledge in ecology through experiences in different territories (e.g. Guyana, New Caledonia and New Zealand). These diverse experiences allowed me to develop technical, organizational and strategic skills with experienced scientists and academics. My different internships abroad also allowed me to strengthen my open-mindedness and interpersonal skills through the exchange and discovery of different cultures. Finally, in trying to find new encounters and collaborations with other science enthusiasts, I have been greatly involved in many committees and student associations throughout my career.

In my early research experiences, it quickly became clear to me that underground processes remained poorly known and little studied, even though they are essential to understanding the functioning of ecosystems. I therefore turned my attention to soil ecology. In the current context of environmental change, the study of plant-soil interactions represents an avenue with great potential to improve our ability to understand and predict changes in biodiversity. I undertook a PhD with the aim of determining the impact of interactions between trees and soil microorganisms on ecological processes. I did my PhD in the laboratory of Plant functional ecology directed by Etienne Laliberté, in co-supervision with Mark Vellend. I greatly improved my knowledge and skills in the fields of functional ecology, community and ecosystem ecology, as well as microbial ecology. Thus, taxonomic and functional level analysis of fungal communities was an important component of my PhD using microscopic and molecular approaches (DNA metabarcoding). To measure the impact of fungal and plant communities on the soil, I mainly focused on the carbon and nitrogen cycle by measuring, in particular, the decomposition process in the early soil layers. A large part of my research was conducted in the laboratory, but also in the field, under sometimes difficult material and climatic conditions, yet I always completed the objectives. A particularly challenging experience for me was organizing, and supervising, two weeks of field-work with five field assistants of various



competencies and backgrounds, where we sampled a large quantity of soil for a greenhouse experiment carried out for my PhD thesis. This project aimed at investigating the extent to which edaphic constraints on range expansion have an abiotic or biotic origin. Interestingly, we found that species distributions can also be limited at their cold edges by biotic factors such as mutualism.

Data analysis is an exercise that I particularly enjoy and appreciate, therefore I have made it a professional development goal since the beginning of my university training and research experiences. As can be seen from my various publications, I have strong skills in multivariate analysis, linear and generalized models (frequentist and Bayesian approaches). I am already familiar with network analyses applied to underground communities. To this end, I did an internship in Mélanie Roy's team in Toulouse in 2019. Whether for statistical or bioinformatical analyses, I mainly use the R programming language.

I have always carefully considered how best to communicate the results of my research. I have demonstrated this in oral communication by winning several prizes at conferences. My written communication skills can be demonstrated by participating in writing nine scientific articles, five as first author, and two under review in international journals. In addition, various stays in English-speaking countries (New Zealand, Wales, Canada outside of Québec) have allowed me to improve my English.

My background has allowed me to acquire solid knowledge and skills to study the functioning of ecosystems, while confirming my desire for scientific research. Also, I hope to contribute to a science that is more inclusive on the human aspect and more open to data sharing.

CONGRESSES AND SEMINARS

Date	Title	Place
05/2022	Les mycorhizes au cœur des forêts : Dynamiques des végétaux et du carbone dans le sol	Université du Québec en Abitibi-Témiscamingue, Canada.
01/2020	Influence of mycorrhizas in forest	INRAE Scientific seminar, Nancy, France.
04/2019	Microorganismes et propriétés abiotiques : des freins à l'établissement d'une espèce tempérée dominante dans la forêt boréale	ECOVEG 14 - Écologie des communautés végétales, Toulouse, France.
12/2018	Ectomycorrhizal-dominated temperate forests show faster decomposition of soil organic matter than neighbouring arbuscular mycorrhizal-dominated forests.	Quebec centre for biodiversity science symposium, Montréal, Canada.
06/2018	Changements majeurs des communautés fongiques de sol forestiers à différentes profondeurs et à stratégies mycorrhiziennes contrastées.	5èmes journées francophones des mycorhizes, Dunkerque, France.
05/2018	Environmental DNA metabarcoding: From raw data to RDA.	Quebec centre for biodiversity science R symposium, St-Hippolyte, Canada.
04/2018	Major changes in soil fungal communities across soil horizons and between adjacent forests.	Northeast natural history conference, Burlington, Vermont, USA.
03/2017	Rétroactions plantes-sol et stockage du carbone : impact des mycorhizes en forêt tempérée.	Biological sciences department symposium, Université de Montréal, Canada.



PUBLICATIONS

Articles in reviews
Mycorrhizal dominance reduces local tree species diversity across US forests. <i>Nature Ecology and Evolution</i> 1-5. 2022.
Ectomycorrhizas accelerate decomposition to a greater extent than arbuscular mycorrhizas in a northern deciduous forest. <i>Ecosystems</i> 1-15. 2021.
Plant responses to environmental change along an elevational gradient in Mont Mégantic National Park, Québec, Canada. <i>Northeastern Naturalist</i> . 28:4-28. 2021.
Temperate forests dominated by arbuscular or ectomycorrhizal fungi are characterized by strong shifts from saprotrophic to mycorrhizal fungi with increasing soil depth. <i>Microbial Ecology</i> . 82:377-390. 2021.
Foliar spectra and traits of bog plants across nitrogen deposition gradients. <i>Remote Sensing</i> 12, 2448. 2020.
Soil abiotic and biotic properties constrain the establishment of a dominant temperate tree into boreal forests. <i>Journal of ecology</i> 3:931-944. 2020.
Urbanization impacts the taxonomic and functional structure of aquatic macroinvertebrate communities in a small Neotropical city. <i>Urban Ecosystems</i> 1-9. 2017.
Tank bromeliads as natural microcosms: a facultative association with ants influences the aquatic invertebrate community structure. <i>Comptes Rendus Biologies</i> . 10:696-700. 2015.
Assessing the efficiency of clustering algorithms and goodness-of-fit measures using phytoplankton field data. <i>Ecological Informatics</i> 9:64-68. 2012.

OTHER INFORMATION

Article currently in review
Metabarcoding data reveal vertical multi-taxa variation in topsoil communities during the colonization of deglaciated forelands. <i>Molecular Ecology</i> .

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Place and date: Montréal, Canada, 09/06/2022

SIGNATURE