**Mr. Francis Banville**

Language of correspondence: French, English

Birth date: October 9th

PhD candidate

**Contact information**

**Office:** 1375 Ave. Thérèse-Lavoie-Roux, Montréal, QC H2V 0B3, room B-5439

**Email address**: [francis.banville@umontreal.ca](mailto:francis.banville@umontreal.ca)

**Language**

**French**: Advanced

**English**: Write and Speak: Intermediate-Advanced; Understand and Read: Advanced

**Spanish**: Beginner

**Informatic skills**

**Programming languages**: Julia, R, Git

**Specialized software**: ArcGIS, BEAST, Excel, Maple, Mathematica, Maxima, OpenRefine, SPSS

**Profile**

**Keywords**: Computational biology, Machine learning, Ecological networks, Mathematical modelling, Numerical ecology, quantitative biology

**Degrees**

2019/9 PhD program, Biological Sciences, Université de Montréal

Status: Ongoing

2018/9 - 2019/8 Non-thesis master’s program, Quantitative and computational biology,

Université de Montréal

Status: Interrupted

2016/1 - 2018/4 Bachelor's program, Biological sciences, Université de Montréal

Status: Completed

2013/9 - 2015/8 Bachelor's program, Mathematics, Université de Montréal

Status: Interrupted

**Prizes**

2014/1 - 2018/5 Dean's Award of the Faculty of Arts and Sciences

Université de Montréal

Distinction, Academic excellence

2011/6 Governor General's Academic Medal

École secondaire Polybel

Distinction, obtention of the best overall average of the 2011 cohort

2011/5 Lieutenant Governor's Youth Medal

École secondaire Polybel

Distinction, Honorary medal for academic excellence and social involvement

**Employment**

2020/4 – today Teaching assistant, part-time

Courses: Biostatistics 1, Biostatistics 2, Population dynamics

Université de Montréal, Department of biological sciences

2022/1 – 2022/4 Mentor, part-time

Data.Trek training program

Institute for Data Valorization (IVADO)

2021/5 - 2021/9 Research assistant, part-time (internship)

Group on Earth Observations Biodiversity Observation Network (GEO BON)

Supervision: Drs. Timothée Poisot and Andrew Gonzalez

2020/1 – 2020/4 Event organizer, part-time (internship)

Data.Trek training program

Institute for Data Valorization (IVADO)

2018/5 - 2018/8 Research assistant, full-time

Biological sciences, Université de Montréal

Labs of Drs. Jean- François Lapierre and Marc Amyot

2017/5 - 2017/8 Research assistant, full-time

Biological sciences, Université de Montréal

Lab of Dr. Daniel Philippe Matton

2015/1 - 2015/7 Research intern, full-time

Practice Improvement Branch, Collège des médecins du Québec

Research agent in statistics and psychometry

**Research funding**

(2019/9 - 2023/8) Trophic-METE: A Parsimonious Theory of Food-Web Structure  
 **PI and Co-PI**: Drs. Timothée Poisot and Dominique Gravel

**Source of funding (competitive):**

Institute for Data Valorization (IVADO)

Amount: $25 000 / year (4 years)

2018/5 - 2018/8 Meta-analysis of mercury and methylmercury flux from Quebec rivers to adjacent   
 marine environments

**Researchers**: Drs. Jean-François Lapierre and Marc Amyot

**Source of funding (competitive):**

Université de Montréal

Amount: $8 000

2017/5 - 2017/8 Inhibition of pollen tube receptor kinases involved in guiding the tubes to the   
 ovum

**Researchers**: Mr. Valentin Joly and Dr. Daniel Philippe Matton

**Source of funding (competitive):**

Natural Sciences and Engineering Research Council of Canada (NSERC)

Undergraduate Student Research Awards (USRA)

Amount: $7 625

**Publications**

**Banville, F.**, Vissault, S., & Poisot, T. (2021). Mangal.jl and EcologicalNetworks.jl : Two complementary packages for analyzing ecological networks in Julia. Journal of Open Source Software, 6(61), 2721. <https://doi.org/10.21105/joss.02721>

Dansereau, G., **Banville, F.**, Basque, E., MacDonald, A., & Poisot, T. (2020). [Re] Chaos in a Three-Species Food Chain. ReScience C, 6(3), #5. <https://doi.org/10.5281/zenodo.4022518>

Higino, G., Windsor, F., **Banville, F.**, Dansereau, G., Muñoz, N. R. F., & Poisot, T. (2022). Mismatch between IUCN range maps and species interactions data illustrated using the Serengeti food web. EcoEvoRxiv. <https://doi.org/10.32942/osf.io/8rvzf>

Lawlor, J., **Banville, F.**, Forero-Muñoz, N.-R., Hébert, K., Martínez-Lanfranco, J. A., Rogy, P., & MacDonald, A. A. M. (2022). Ten simple rules for teaching yourself R. PLOS Computational Biology, 18(9), e1010372. <https://doi.org/10.1371/journal.pcbi.1010372>

MacDonald, A. A. M., **Banville, F.**, & Poisot, T. (2020). Revisiting the Links-Species Scaling Relationship in Food Webs. Patterns, 0(0). <https://doi.org/10.1016/j.patter.2020.100079>

Strydom, T., Bouskila, S., **Banville, F.**, Barros, C., Caron, D., Farrell, M. J., Fortin, M.-J., Hemming, V., Mercier, B., Pollock, L. J., Runghen, R., Dalla Riva, G. V., & Poisot, T. (2022). Food web reconstruction through phylogenetic transfer of low-rank network representation. Methods in Ecology and Evolution, n/a(n/a). <https://doi.org/10.1111/2041-210X.13835>

Strydom, T., Catchen, M. D., **Banville, F.**, Caron, D., Dansereau, G., Desjardins-Proulx, P., Forero-Muñoz, N. R., Higino, G., Mercier, B., Gonzalez, A., Gravel, D., Pollock, L., & Poisot, T. (2021). A roadmap towards predicting species interaction networks (across space and time). Philosophical Transactions of the Royal Society B: Biological Sciences, 376(1837), 20210063. <https://doi.org/10.1098/rstb.2021.0063>

**Oral presentations**

**Banville, F**., MacDonald, A., Gravel, D., & Poisot, T. (2019, December 18-20). How to estimate network structure without data [Conference presentation]. 10th Annual QCBS Symposium, Montreal, Qc, Canada.

**Banville, F**., MacDonald, A., Gravel, D., & Poisot, T. (2020, February 19). How to estimate network structure without data [Conference presentation]. Extreme Climate Events Symposium 2020, Toronto, On, Canada.

**Banville, F**., Vissault, S., Bélisle, Z., Hoebeke, L., Stock, M., Szefer, P., & Poisot, T. (2020, July 29-31). Analyzing species interaction networks in Julia [Lightning talk]. Juliacon 2020, virtual.

**Banville, F.**, Gravel, D., & Poisot, T. (2020, October 22). Predicting networks of species interactions [Conference presentation]. IVADO Digital October 2020, virtual.

**Banville, F.**, Gravel, D. & Poisot, T. (2021, December 8-10). Given limited ecological knowledge, what can we say about a food web’s properties? [Lightning talk & poster presentation]. 12th Annual QCBS Symposium, virtual.

**Banville, F.**, Gravel, D., & Poisot, T. (2021, October 28). Predicting food webs across space: First estimates of food-web structure derived from species richness [Lightning talk]. IVADO Digital October 2021, virtual.

**Banville, F.**, Gravel, D., & Poisot, T. (2022, March 25). Food webs of maximum entropy: A story of ecology and stochasticity [Conference presentation]. 33e Symposium de sciences biologiques de l'Université de Montréal, Montreal, Qc, Canada.

**Banville, F.**, Gravel, D., & Poisot, T. (2022, August 14-19). What constrains food webs? A maximum entropy model for predicting their structure with minimal biases [Conference presentation]. 2022 Annual Meeting of the Ecological Society of America, Montreal, Qc, Canada.

**Student involvement**

2022/8 – 2023/4 Co-organizer of the symposium of the department of biological sciences  
 Association des étudiants-chercheurs en biologie de l'Université de Montréal

2016/2 - 2016/8 Environmental Coordinator, Association étudiante de biologie de   
 l'Université de Montréal

2015/1 - 2015/8 Treasurer, Club Végé de l'Université de Montréal