Mr. Francis Banville

Language of correspondence: French, English
Birth date: October 9th
PhD candidate

Contact information

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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