

# RENATO HENRIQUES DA SILVA

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Renato Henriques-Silva

## Current Affiliation:

Irstea – Groupement Aix-en-Provence  
Unité RECOVER – Équipe FRESHCO  
Pole ONEMA  
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13182 Aix-en-Provence Cedex 5  
+33 4 42 66 79 42

## Citizenship:

French & Brazilian

## Google Scholar:

H-index = 5; citations = 170

## EXECUTIVE SUMMARY

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Quantitative ecologist working in the fields of community ecology, landscape ecology and macroecology, focused on aquatic ecosystems. Possesses excellent interpersonal skills, is equally comfortable leading or collaborating within a team and has much experience in transmitting knowledge and skills. Has mastery of many operating systems and software suites (e.g., Windows, OSX, Office, JMP, MATLAB, R, ArcGIS, Sigmaplot, Statistica, MEGA). Experience in the development of individual-based models (i.e., agent-based models) and null models. Experience in designing and teaching statistical courses (over 450 hours of experience as a teaching assistant). Offers a solid background in univariate, multivariate and spatial statistics as well as SQL, data wrangling (dplyr, tidyverse) and data visualization (ggplot2). Proficient (spoken and written) in French, English and Portuguese.

## EDUCATION

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**PhD in Biology - Université du Québec à Montréal** 2016  
Thesis: *Ecological and evolutionary drivers of species range' dynamics and their effects on large-scale biodiversity patterns*

**M.Sc in Biology - Université du Québec à Montréal** 2011  
Thesis: *Elements of the metacommunity structure: comparison across multiple metacommunities*

**B.Sc in Biology - Universidade Federal de São Carlos** 2008  
Honour Thesis: *Aerobic and anaerobic mineralization of Pistia stratiotes lixivate in a eutrophic reservoir (Barra Bonita/SP)*

## SCHOLARSHIP & AWARDS

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- 2 Years Postdoctoral Scholarship, Irstea Aix-en-Provence - €60000 2017-2018
- F.A.R.E - Université du Québec à Montréal - \$6000 2014
- QCBS Intensive Course Award - \$550 2013
- F.A.R.E - Université du Québec à Montréal - \$6000 2013
- GRIL joint project, Ph.D. - Université du Québec à Montréal - \$6000 2012
- GRIL joint project, Ph.D. - Université du Québec à Montréal - \$6000 2011
- PhD scholarship from the UQAM Biology Department - \$48000 2011- 2014

## PUBLICATIONS (\*equal contribution)

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- **Henriques-Silva, R.**, Logez, M., Reynaud, N., Tedesco, P., Brosse, S., Januchowski-Hartley, S. R., Oberdorff, T. and Argillier, C. **in press**. A comprehensive examination of the network position hypothesis across multiple river metacommunities. *Ecography*.
- **Henriques-Silva, R.**, Kubish, A. and Peres-Neto, P. R. **in press**. Latitudinal-diversity gradients may be modulated by biotic processes: new insights derived from an individual-based simulation. *Ecography*.
- **Henriques-Silva, R.**, Pinel-Alloul, B., Peres-Neto, P. R. **2016**. Climate, history and life-history strategies interact in explaining differential macroecological patterns in freshwater zooplankton. *Global Ecology and Biogeography*, 25(12): 1454-1465.
- **Henriques-Silva, R.**, Boivin, F., Calcagno, V., Peres-Neto, P. R. **2015**. On the evolution of dispersal via spatial connectivity. *Proceedings of the Royal Society B: Biological Sciences*, 282: 20142879.
- Fernandes, I. M.\*, **Henriques-Silva, R.\***, Penha, J., Zuanon, J. And Peres-Neto, P. R. **2014**. Spatiotemporal dynamics in a seasonal metacommunity structure is predictable: the case of floodplain-fish communities. *Ecography*, 37, 464-475.
- **Henriques-Silva, R.**, Lindo, Z. and Peres-Neto, P. R. **2013**. A community of metacommunities: exploring patterns in species distribution across large geographical areas. *Ecology*, 94(3): 627-639.
- **Silva, R. H.**, Panhota, R. S. and Jr. Bianchini Jr., I. **2011**. Aerobic and anaerobic mineralization of *Salvinia molesta* and *Myriophyllum aquaticum* leachates from tropical reservoir (Brazil). *Acta Limnologica Brasiliensia*, 23(2): 109-118.
- Bianchini Jr., I., **Silva, R. H.**, Cunha-Santino, M. B. and Panhota, R. S. **2010**. Aerobic and anaerobic decomposition of *Pistia stratiotes* leachates from a tropical eutrophic reservoir (Barra Bonita, SP - Brazil). *Brazilian Journal of Biology*, 70(3): 559-568.

## COMMUNICATIONS

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- **Henriques-Silva, R.**, Logez, M., Reynaud, N., Tedesco, P., Brosse, S., Januchowski-Hartley, S. R., Oberdorff, T. and Argillier 2018. A comprehensive examination of the network position hypothesis across multiple river metacommunities. *SFECOLOGIE – International Conference on Ecological Sciences*, Rennes (France).
- **Henriques-Silva, R.** 2018. Searching for predictable assembly processes in fish metacommunities. Invited seminar given at the University of Valencia, Valencia (Spain).
- **Henriques-Silva, R.** 2017. Dispersal, species ranges and large-scale distributional patterns in freshwater organisms. Invited seminar given at the Katholieke Universiteit Leuven, Leuven (Belgium).
- **Henriques-Silva, R.**, Kubisch, A., Pinel-Alloul, B. & Peres-Neto, P. R. 2017. Latitudinal-diversity gradients may be driven by biotic processes: New insights from an individual-based simulation and a large-scale zooplankton dataset. *IBS 8<sup>th</sup> Biennial Conference*, Tucson (AZ - USA).
- **Henriques-Silva, R.**, Kubisch, A., Pinel-Alloul, B. & Peres-Neto, P. R. 2016. The influence of local species interactions in large-scale ecological patterns: new insights from an individual-based simulation and a large-scale zooplankton dataset. *CSBQ annual symposium*, Montreal (QC - Canada).
- **Henriques-Silva, R.** 2016. Ecological and evolutionary drivers of species range dynamics and their effects on large-scale diversity patterns. Invited seminar given in the Programa da Pós-graduação em ecological e conservação (PPG-ECO) at the Federal University of Paraná, Curitiba (PR – Brazil).
- **Henriques-Silva, R.**, Boivin, F.\*, Calcagno, V., Urban, M.C. & Peres-Neto, P.R. 2015. The structure of spatial networks influences dispersal evolution. *CSBQ annual symposium*, Montreal (QC - Canada).
- **Henriques-Silva, R.**, Pinel-Alloul, B. & Peres-Neto, P.R. 2015. Reproductive strategies and their effect on macroecological patterns: the trade-off between dispersal and local adaptation in zooplankton communities. *CSEE 10<sup>th</sup> annual symposium*, Saskatoon (SK - Canada).
- **Henriques-Silva, R.**, Pinel-Alloul, B. & Peres-Neto, P.R. 2014. [Poster] Does the dispersal-ecological specialization (CDES) trade-off explain the latitudinal diversity gradient in freshwater zooplankton communities? *Genomes to Biomes*, Montreal (QC - Canada).

- Fernandes, I.M., **Henriques-Silva, R.**, Penha, J., Zuanon, J. & Peres-Neto, P. R. 2013. Spatiotemporal dynamics in a seasonal metacommunity structure is predictable: the case of floodplain-fish communities. CSBQ annual symposium, Montreal (QC - Canada).
- **Henriques-Silva, R.**, Lindo, Z. & Peres-Neto, P.R. 2013. [Poster] Exploring species distributional patterns within metacommunities across large geographical areas. IBS Special Meeting, Montréal (QC - Canada)
- **Henriques-Silva, R.**, Boivin, F., Calcagno, V., Urban, M.C. & Peres-Neto, P.R. 2013. The structure of spatial networks influences dispersal evolution. CSEE 8<sup>th</sup> annual symposium, Kelowna (BC - Canada).
- Rodríguez-González, P. M.\*, **Henriques-Silva, R.**, Peres-Neto, P.R. & Albuquerque, A. 2012. Phylogenetic and trait structure along an environmental and canopy gradient in understory communities of a southern European wetland forest, ESA 97<sup>th</sup> annual meeting, Portland (OR – USA).
- **Henriques-Silva, R.**, Lindo, Z. & Peres-Neto, P. R. 2012. A community of metacommunities: exploring patterns in species distribution across large geographical scales. GRIL annual symposium, St-Ferdinand (QC - Canada).
- **Henriques-Silva, R.**, Jacobson, B. & Peres-Neto, P.R. 2011. Linking phylogenetic and niche community states: emergent patterns of community assembly and structure – CSBQ annual symposium, Montreal (QC – Canada).
- **Silva, R. H.**, Cunha-Santino, M., Panhota, R.S. & Bianchini Jr., I. 2007. Aerobic Mineralization for lixiviates with high and low molecular masses of *Pistia Stratiotes* – XV UFSCAR Scientific Initiation Seminars, São Carlos (SP – Brazil).
- **Silva, R. H.**, M., Panhota, R.S. & Bianchini Jr. 2006. [Poster] Aerobic and Anaerobic Mineralization of *Myriophyllum aquaticum* lixivate – Monjolinho Reservoir, XIV UFSCAR Scientific Initiation Seminars, São Carlos (SP – Brazil).

## ADDITIONAL TRAINING

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| • Species Distribution Modelling Course, 4 <sup>th</sup> Edition, University of Évora, Évora (Portugal)                       | 2017 |
| • Workshop: Software Carpentry, Quebec Center for Biodiversity Science (QCBS), Université de Montréal, Montreal (QC – Canada) | 2016 |
| • Course: Introduction to post-secondary education (DDD9666 – UQAM), Montreal (QC – Canada)                                   | 2014 |
| • Biodiversity Intensive Course, Quebec Center for Biodiversity Science (QCBS), McGill University (QC -Canada).               | 2013 |
| • Workshop: Introduction to null models in ecology, QCBS, Montreal (QC - Canada).   | 2013 |
| • Workshop: Introduction to phylogenies, QCBS, Montreal (QC - Canada).  | 2013 |
| • Course: Introduction to management in the life-sciences sector (ADM 9001 – UQAM), Montreal (QC – Canada)                    | 2013 |
| • Course : Introduction to Geographic Information Systems (GEO7511 – UQAM), Montreal (QC – Canada).                           | 2011 |
| • Course: Analysis of biological data (BIO8092 – UQAM), Montreal (QC – Canada).   | 2008 |

## PROFFESIONAL EXPERIENCE

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- **Postdoctoral Researcher**, Institut National de Recherche en Sciences et Technologies en Environnement et Agriculture (Irstea) 03/2017-present  
 Advisor: Dr. Christine Argillier  
 Co-Advisor: Dr. Maxime Logez  
 Collaborators:
  - Dr. Thierry Oberdorff, Institut de Recherche pour le Développement (IRD)
  - Dr. Pablo A. Tedesco, Institut de Recherche pour le Développement (IRD)
  - Dr. Sebastien Brosse, Université Paul Sabatier
  - Dr. Stéphanie R. Januchowski-Hartley, Swansea University
  - Nathalie Reynaud, Irstea Aix-en-Provence

Created a series of scripts using SQL and R to process, clean and format a large dataset on stream fish surveys from the Agence Française de Biodiversité. Used the “Réseau Hydrologique Théorique (RHT) on ArcGIS to extract information on the structure of river networks of French watersheds. Applied network analysis and multivariate statistics using R to evaluate the influence of the dendritic structure of river networks on the diversity and distribution of fish species across French streams.

Used parallel computing in R to create a series of null models to evaluate patterns in functional diversity of freshwater fishes. Contributed to a R package (“betapart”).

- **Ph.D. student.** Université du Québec à Montréal (UQAM) 02/2011-06/2016

Advisor: Dr Pedro R. Peres-Neto, UQAM

Co-Advisor: Dr. Bernadette Pinel-Alloul, Université de Montréal

Collaborators:

- Dr. Mark C. Urban, University of Connecticut
- Dr. Vincent Calcagno, French Institute for Agriculture Research
- M.Sc. Frédéric Boivin, UQAM
- Dr. Alexander Kubisch, University of Würzburg

Developed individual-based models (i.e., agent-based models) in MATLAB as a theoretical framework to evaluate how variation in climatic conditions, habitat fragmentation and interspecific interactions influenced species expansion of their geographic ranges and the resulting patterns of diversity. The predictions generated through these models were evaluated with statistical analyses performed on a Canada-wide database of freshwater zooplankton.

- **Teaching assistant** in “Seminars in ecology and data analysis” –UQAM Aug-Dec of 2009-2015

Enrolment: 30-40 students; Subject: *Ecology and Statistics*

Supported the academic development of students from non-scientific backgrounds by providing conceptual learning and report-writing modules as key components to an applied statistics course. I co-designed teaching material and taught students to test hypotheses, perform statistical analyses (t-test, ANOVA,  $\chi^2$ , regression, correlation) and analyze results with “JMP” software.

- **Teaching assistant** in “General Ecology” - UQAM 01/2014 - 04/2014

Enrolment: 30 students; Subject: *Ecology & Sampling design*

Assisted students in laboratory experiments and sampling design. Tasks included to prepare lab material, tutor students and assist with assignments, grade assignments, and monitor students during class work and exams as well as in a field trip.

- **Ms.c. student,** Université du Québec à Montréal 08/2008 - 12/2010

Advisor: Dr. Pedro R. Peres-Neto, UQAM

Collaborator:

-Dr. Zoë Lindo, Western University

Evaluated the role of climate and landscape connectivity in determining taxonomic and phylogenetic diversity patterns and geographic distribution of fishes in watersheds across the Province of Ontario. To do so performed various spatial and multivariate statistics in a large lake-fish database (+9000 lakes). Created phylogenetic trees using MEGA. Developed randomization and permutation procedures (i.e., null models) in MATLAB to evaluate the statistical significance of observed relationships. Created maps in ArcGIS for better result visualization.

- **Internship** at Piscicultura São Matheus , São Carlos (SP - Brazil). 01/2008 - 05/2008

Responsible for raising tropical ornamental fishes, water quality monitoring, aquarium maintenance, organisms handling, animal husbandry and inventory management.

- **Internship** at the Dalia Gali Elementary School, São Carlos (SP – Brazil). 03/2007 - 07/2007

Enrolment: 30-40 students (6<sup>th</sup> grade)

Responsible for preparing teaching material, tutoring students, assisting students with assignments, grade assignments as well as monitoring students during class work and exams

- **Internship** at the Álvaro Guião High School, São Carlos (SP –Brazil). 08/2006 - 11/2006

Enrolment: 20-30 students (10<sup>th</sup> grade)

Responsible for preparing teaching material, tutoring students, assisting students with assignments, grade assignments as well as monitoring students during class work and exams

## SERVICE & INVOLVEMENT

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- Member of the scientific committee 5th European Congress of Conservation Biology 2018
- Organizer of the Irstea Scientific Writing Group, Aix-en-Provence (PACA, France). 2017-2018
- Member of the Eco-responsible committee for the QCBS symposium Montreal (QC – Canada). 2016
- Volunteer at the 84<sup>th</sup> edition of the ACFAS (Association francophone pour le savoir) symposium, Montréal (QC – Canada). 2016
- Organizer of the laboratory Journal Club, UQAM, Montreal (QC – Canada) 2013
- Organizing committee, International Biogeography Society Special Meeting, Montréal (QC – Canada). 2013
- Organizing committee for the GRIL Symposium, Saint-Hyppolyte (QC - Canada) 2011
- Volunteer at the 8<sup>th</sup> edition of the International Environmental Technology Trade Show and Conference “AMERICANA”, Montréal (QC - Canada). 2009

### **Reviewed Manuscripts (n =14)**

<https://publons.com/author/1188466/renato-henriques-da-silva#profile>

- Ecography (2)
- Marine & Freshwater research (1)
- Ecology of Freshwater Fish (1)
- Journal of Biogeography (3)
- Oecologia (1)
- Environmental Biology of Fishes (1)
- Lakes & Reservoirs – Research and Management (1)
- Limnology & Oceanography - Letters (1)
- Oikos (1)
- Mètode Science Studies Journal (1)
- Global Ecology and Biogeography (1)

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