

Arnaud Becheler - Computational Evolutionary Biologist



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French



Ph.D. Student

Education

Université Paris-Sud, Paris-Saclay, France

Ph.D., Population Genetics (December 2014 – June 2018)

Fields: Coalescence Theory, Computational Biology, Applied Mathematics.

Université de Montpellier, France

MSc, Biodiversity, Ecology and Evolution (2013/2014)

Ranked 6/17

Universidad de Salamanca, Spain

MSc, Biodiversity and Terrestrial Ecosystems (2012/2013)

Université de Bordeaux, France

BSc, Biodiversity of Organisms and Ecosystems (2011/2012)

Major of the promotion

Research

*Environmental demogenetic models for biological invasion processes, application to the invasion of *Vespa velutina*.*

Experience

Ph.D. Student December 2014 – June 2018, Laboratory EGCE (Gif-sur-Yvette, France).

Supervisor: Dr. Stéphane Dupas, (EGCE)

Co-supervisor: Dr. Camille Coron, (Laboratoire de Mathématiques d'Orsay)

Research groups:

MIRES-MADRES (modeling and analyzing dynamics in seeds exchange networks)

Mathematical Models for Biology Chair : www.cmap.polytechnique.fr/chaire-mmb

Limits of genome-scans for detecting loci under selection in selfing species, a simulation study.

MSc thesis 2014, 6 months, CBGP (Montpellier, France).

Supervisors: Miguel Navascuès, Renaud Vitalis.

(Pre)

Publications

Becheler A., Coron C. and Dupas S. (2019), *Molecular Ecology Resources*.

The Quetzal Coalescence template library: A C++ programmers resource for integrating distributional, demographic and coalescent models.



Access to the article.

doi:10.1111/1755-0998.12992.

Becheler A. (submitted).

Occupancy spectrum distribution: implementation, approximation and application to coalescence simulation with generic hybrid mergers.

Becheler A. (in preparation, 5 pages).

Using the Fuzzy Transfer Distance with ABC for inferring contemporaneous demo-genetic processes without losing information.

Softwares	<p><i>Quetzal - C++ template library for coalescence. Open source project.</i></p> <p>🐼 See the user page.</p> <p>Generic components for simulating environmental demogenetic models and embed them into an ABC framework.</p>
Talks & Posters	<p><i>Modèle de démogénétique environnementale pour l'étude des processus d'invasion biologique</i> IDEEV Seminar, March 2018</p> <p><i>Modèle de démogénétique environnementale pour l'étude des processus d'invasion biologique</i> Meeting of the Mathematical Models for Biology Chair, February 2018</p> <p><i>Study of recent coalescence events in contemporaneous landscapes : C++ template library for Approximate Bayesian Computation.</i> 3rd BeNeLuxFra Student Symposium, July 2017, Lille (France).</p> <p><i>Coalescence incomplète et ABC : utilisation d'indices de dissimilarités entre partitions floues comme statistique résumée.</i> MIREs-MADRES Workshop, September 2016, Paris (France).</p> <p><i>Modèle de démogénétique environnementale : étude des processus d'invasion biologique.</i> Rencontres doctorales Lebesgue, October 2016, Angers (France).</p> <p><i>Environmental demogenetic model for biological invasion processes.</i> Journée de l'école doctorale Sciences du Végétal, September 2016, Orsay (France).</p> <p><i>Modèle de démogénétique environnementale : étude des processus d'invasion biologique.</i> ETEE 2015, Gif-sur-Yvette (France).</p> <p><i>Demogenetic Model for Invasive Processes</i> (poster). JOBIM 2017, July 2017, Lille (France).</p> <p><i>Demogenetic Model for Invasive Processes</i> (poster). MCEB 2017, June 2017, Porquerolles (France).</p>
Conference Organization	<p><i>Stochastic environmental demo-genetics: an integrative approach to build the future of the earth biodiversity.</i> Institut Pascal, Université Paris-Saclay, 2019 project call (submitted). Stéphane Dupas , Camille Coron, Arnaud Becheler, Adelaïde Olivier. Research Program on demogenetic models, niche models, inference, computation tools. 1 week of summer school (six 4-hours courses), 3 research weeks.</p>
Mentoring	<p>Florence Jornod (2016) Mise en place d'un simulateur de généalogie de gènes dans le cadre d'un modèle d'invasion biologique. MSc thesis. Master 1 Biologie Informatique Bioinformatique, Université Paris-Diderot (France). Mentoring quota: 100%. Fields: coalescence, C++ programming, object-oriented paradigm, generic paradigm.</p>
Awards & Fellowships	<p>IDEEV Travel fellowships MCEB 2017, June 2017, Porquerolles (France).</p>
Languages & Skills	<p>French (native), English (advanced), Spanish (advanced), German (basic). C++, Python, R, L^AT_EX, Git, Github.</p>