Arnaud Becheler - Computational Evolutionary Biologist

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February 6, 1990 | French | Ph.D. Student

Education

Université Paris-Sud, Paris-Saclay, France
Ph.D., Population Genetics (2014 – . . .)
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 Experience

Environmental demogenetic models for biological invasion processes, application to the invasion of Vespa velutina.
Ph.D. Student 2014-. . . , 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. (2017), (submitted).
Quetzal - an open source C++ template library for coalescence-based environmental demo-genetic models inference.
See the preprint on bioRxiv.
doi:10.1101/214767. Under review at *Molecular Ecology Resources.*

Becheler A. (in preparation, 5 pages).
A new algorithm for faster coalescence simulation with simultaneous multiple merger: tackling demo-genetic models with high population-size variance.

Becheler A., Coron C., Dupas S., (in preparation, 5 pages).
Using the Fuzzy Transfer Distance with ABC for inferring contemporaneous demo-genetic processes without loosing information.

Softwares

Quetzal - C++ template library for coalescence. Open source project.
See the user page.
Generic components for simulating environmental demogenetic models and embed them into an ABC framework.

Collaborator on gdalcpp - C++11 wrapper classes for GDAL/OGR.
Modernizing the interface of the old-style geospatial library for easier and safer integration in modern C++ projects.

Talks & Posters

Study of recent coalescence events in contemporaneous landscapes : C++ template library for Approximate Bayesian Computation.
3rd BeNeLuxFra Student Symposium, July 2017, Lille (France).

Coalescence incomplète et ABC : utilisation d'indices de dissimilarités entre partitions floues comme statistique résumée.
MIRES-MADRES Workshop, September 2016, Paris (France).

Modèle de démogénétique environnementale : étude des processsus d'invasion biologique.
Rencontres doctorales Lebesgue, October 2016, Angers (France).

Environmental demogenetic model for biological invasion processes.
Journée de l'école doctorale Sciences du Végétal, September 2016, Orsay (France).

Modèle de démogénétique environnementale : étude des processsus d'invasion biologique.
ETEE 2015, Gif-sur-Yvette (France).

Demogenetic Model for Invasive Processes (poster).
JOBIM 2017, July 2017, Lille (France).

Demogenetic Model for Invasive Processes (poster).
MCEB 2017, June 2017, Porquerolles (France).

Conference Organization

Stochastic environmental demo-genetics: an integrative approach to build the future of the earth biodiversity.
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.

Mentoring

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: colaescence, C++ programing, object-oriented paradigm, generic paradigm.

Awards & Fellowships

IDEEV Travel fellowships
MCEB 2017, June 2017, Porquerolles (France).

Languages & Skills

French (native), English (advanced), Spanish (advanced), German (basic).
`C++`, Python, R, LaTeX, Git, Github.

Hobbies

I enjoy playing with my Water-Polo team twice a week, besides training with my swim club mates. Free-diving in marine reserves is a family hobby !