

# Philippe Desjardins-Proulx

January 9, 2017

---

CURRENT POSITION	Ph.D. candidate, Université de Sherbrooke, Canada, Canada Research Chair on Integrative ecology, Canada, Poisot Lab, Université de Montréal, Canada, Quebec Center for Biodiversity Science, Canada.
CONTACT	<i>email:</i> <a href="mailto:philippe.d.proulx@gmail.com">philippe.d.proulx@gmail.com</a> <i>email (alt.):</i> <a href="mailto:philippe.desjardins.proulx@usherbrooke.ca">philippe.desjardins.proulx@usherbrooke.ca</a> <i>phone:</i> +1-418-732-9877 <i>skype:</i> philippe.desjardins-proulx <i>www:</i> <a href="http://phdp.github.io/">http://phdp.github.io/</a> <i>github:</i> <a href="https://github.com/phdp/">https://github.com/phdp/</a> <i>twitter:</i> <a href="#">phqpqc</a>
EXPERTISE	<ul style="list-style-type: none"><li>• <b>Machine Learning:</b> My thesis focuses on statistical relational learning (the union of logic with probability) and how deep learning can be used with symbolic systems.</li><li>• <b>Scientific computing:</b> I worked four years (2009-2012) as a research professional, focusing on C/C++ simulations and GPU computing with CUDA/OpenCL on the Canada Research Chair on Terrestrial Ecosystems' scientific cluster.</li><li>• <b>Bioinformatics:</b> My main Ph.D. project involved machine learning in ecology. I also contributed to theoretical evolutionary ecology (speciation, community ecology) and worked with several biological data-sets.</li></ul>
EDUCATION	<b>Department of Biology, Université de Sherbrooke, Canada.</b>  Ph.D., September 2012 – Winter 2017 [expected] <ul style="list-style-type: none"><li>• <b>Thesis Proposal:</b> <i>Deep Transfer Learning and the Problem of Biodiversity</i></li><li>• <b>Adviser:</b> Dr. Dominique Gravel</li><li>• <b>Co-adviser:</b> Dr. Timothée Poisot</li><li>• <b>Area of Study:</b> Machine learning, molecular ecology, population genetics.</li><li>• <b>Comprehensive exam:</b> Maximum Entropy in Ecology &amp; Evolution.</li><li>• <b>Courses:</b> Advanced Distributed Computing (A13), Business Intelligence (S15).</li></ul> <b>College of Engineering, University of Illinois at Chicago, Chicago, USA.</b>  Graduate Certificate in Bioinformatics, 2012, <ul style="list-style-type: none"><li>• <b>Area of Study:</b> Data Mining &amp; Biostatistics.</li></ul> <b>Université du Québec, Québec, Canada.</b>  B.S., 2009, <ul style="list-style-type: none"><li>• Major in Biology,</li><li>• Minor in Mathematics &amp; Computer Science.</li></ul>
AWARDS	Alexander Graham Bell Graduate Scholarship (2012) <ul style="list-style-type: none"><li>• <b>From:</b> Natural Sciences and Engineering Research Council of Canada</li><li>• <b>Description:</b> Most competitive Canadian scholarship in science.</li><li>• <b>Value:</b> 105 000 CAD (equivalent to 105 000 USD or 8 150 000 JPY, 2012 est.)</li></ul> Windows Azure Research Award (2013) <ul style="list-style-type: none"><li>• <b>From:</b> Microsoft Research</li></ul>

- **Description:** The first group of 32 awards given by Microsoft ( 1000 applications). Gives a generous access to Microsoft Azure (in my case, Linux VMs) for research purpose.
- **Proposal:** *Growing Intelligence with Cloud Markov Logic.*
- **Value:** >40 000 USD.

NVIDIA hardware donation program (2014)

- **Description:** I was awarded an NVIDIA card for high-performance computing.
- **Proposal:** *Transfer Learning, Deep Learning, and the Puzzle of Biodiversity.*

REFEREED  
JOURNAL  
PUBLICATIONS

- [1] **P Desjardins-Proulx**. Qilin: A C++/CUDA Machine Learning Library for Hybrid Probabilistic/Logic Algorithms. *In Preparation*.
- [2] **P Desjardins-Proulx**, D Gravel, T Poisot. Knowledge representation, learning, and the problem of biodiversity. *In revision*.
- [3] **P Desjardins-Proulx**, D Gravel, T Poisot. Scientific Theories and Machine Learning. *Submitted*.
- [4] **P Desjardins-Proulx**, D Gravel, T Poisot. Ecological Interactions and the Netflix Problem. *Submitted*.
- [5] D Beauchesne, **P Desjardins-Proulx**, P Archambault, D Gravel Thinking outside the box: Predicting biotic interactions in data-poor environments. *Vie & Milieu*, 2007 (Accepted).
- [6] MG Matias, D Gravel, F Guilhaumon, **P Desjardins-Proulx**, M Loreau, T Münkemüller, N Mouquet Estimates of species extinctions from species–area relationships strongly depend on ecological context. *Ecography* 37(5): 431-442.
- [7] D Gravel, T Poisot, **P Desjardins-Proulx** Using neutral theory to reveal the contribution of meta-community processes to assembly in complex landscapes. *Journal of Limnology* 73 (s1).
- [8] **P Desjardins-Proulx**, EP White, JJ Adamson, K Ram, T Poisot, and D Gravel. The case for open preprints in biology. *PLoS Biology* 11(5): e1001563
- [9] R Vergilino, TA Elliott, **P Desjardins-Proulx**, TJ Crease and F Dufresne. Evolution of a transposon in *Daphnia* hybrid genomes. *Mobile DNA* 4-7, 2013. DOI: [10.1186/1759-8753-4-7](https://doi.org/10.1186/1759-8753-4-7)
- [10] D Ai, **P Desjardins-Proulx**, C Chu, and G Wang. The influence of immigration and dispersal limitation on the repeatability of niche and neutral communities. *PLOS ONE* 7(9): e46164, 2012. DOI: [10.1371/journal.pone.0046164](https://doi.org/10.1371/journal.pone.0046164)
- [11] **P Desjardins-Proulx** and D Gravel. A complex speciation–richness relationship in a simple neutral model. *Ecology and Evolution* 2(8): 1781–1790, 2012. DOI: [10.1002/ece3.292](https://doi.org/10.1002/ece3.292)
- [12] **P Desjardins-Proulx** and D Gravel. How likely is speciation in neutral ecology? *The American Naturalist* 179(1):137-144, 2012. DOI: [10.1086/663196](https://doi.org/10.1086/663196)

OTHER CONTRIBUTIONS	<p>[13] <b>P Desjardins-Proulx</b>. The case for arXiv and a broader conception of peer-reviews. Invited blog, International Network of Next-Generation Ecologists, 2012.  <a href="http://www.innge.net/?q=node/330">http://www.innge.net/?q=node/330</a>.</p> <p>[14] <b>P Desjardins-Proulx</b>, JL Rosindell, T Poisot, and D Gravel. A simple model to study phylogeographies and speciation patterns in space, 2012.  arXiv: 1203.1790.</p> <p>[15] <b>P Desjardins-Proulx</b>. A foot in the neutral trap.  Invited comment for <i>Trends in Ecology &amp; Evolution</i>, 2012.</p> <p>[16] <b>P Desjardins-Proulx</b>. L'origine de la Biodiversité. Le Mouton Noir, Mai-Juin. Cahier Spécial sur la Biodiversité p.2, 2010. <i>Selected and republished by Gaia-Presse, a group sponsored by the Université Laval</i>.</p>												
JOB EXPERIENCES	<p><b>Research Professional, Canada Research Chair on Terrestrial Ecosystem</b></p> <ul style="list-style-type: none"> <li>• From 2009 to 2012.</li> <li>• <b>Supervisor:</b> Dr. Dominique Gravel</li> <li>• <b>Responsabilities:</b> Programming high-performance simulations in C, C++, and CUDA on a distributed cluster (Xeon processors + Tesla cards); Design ecological models to understand biodiversity; Teaching scientific computing to graduate students (C, C++, CUDA, UNIX tools).</li> </ul>												
TEACHING EXPERIENCES	<p><b>Université du Québec, Québec, Canada.</b></p> <ul style="list-style-type: none"> <li>• 2013. I organized a series of meetings on information theory and inference.</li> <li>• 2012. CUDA training (intensive one-day course).</li> <li>• 2012. Scientific computing with C and C++ (grad. students/post-docs).</li> <li>• 2011. Scientific computing with C and C++ (grad. students/post-docs).</li> </ul>												
REFeree SERVICE	<p><i>Physica A: Statistical Mechanics and its Applications; Molecular Ecology Ressources; Methods in Ecology and Evolution; Ecology Letters; Journal of Theoretical Biology; Theoretical Ecology; Acta Biotheoretica; The American Naturalist; Journal of Plant Ecology.</i></p>												
PROGRAMMING SKILLS	<p>I have some experience with many programming languages, libraries, frameworks. I only list here my current working tools:</p> <ul style="list-style-type: none"> <li>• <b>Languages:</b> <i>Expert</i> C++, C, CUDA; <i>Proficient</i> Haskell, Scala; <i>Basic</i> Java, R, Rust, Python, F# ...</li> <li>• <b>Operating Systems:</b> Linux (mostly Debian/Ubuntu-based), Windows.</li> <li>• <b>Cloud:</b> Azure, Amazon.</li> <li>• <b>Writing:</b> L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>.</li> </ul>												
GRADUATE COURSES	<table> <tr> <td>• 2015. Business Intelligence [A, 3 credits]</td><td>Athabasca</td></tr> <tr> <td>• 2013. Advanced Distributed Computing [A, 3 credits]</td><td>Athabasca</td></tr> <tr> <td>• 2012. Datamining (machine learning) [A, 4 credits]</td><td>UIC</td></tr> <tr> <td>• 2011. Biostatistics [A, 4 credits]</td><td>UIC</td></tr> <tr> <td>• 2010. Intro. to bioinformatics [A, 4 credits]</td><td>UIC</td></tr> <tr> <td>• 2010. Reading course on Ancestral Recombination Graphs [A+, 3 credits]</td><td>UQAR</td></tr> </table>	• 2015. Business Intelligence [A, 3 credits]	Athabasca	• 2013. Advanced Distributed Computing [A, 3 credits]	Athabasca	• 2012. Datamining (machine learning) [A, 4 credits]	UIC	• 2011. Biostatistics [A, 4 credits]	UIC	• 2010. Intro. to bioinformatics [A, 4 credits]	UIC	• 2010. Reading course on Ancestral Recombination Graphs [A+, 3 credits]	UQAR
• 2015. Business Intelligence [A, 3 credits]	Athabasca												
• 2013. Advanced Distributed Computing [A, 3 credits]	Athabasca												
• 2012. Datamining (machine learning) [A, 4 credits]	UIC												
• 2011. Biostatistics [A, 4 credits]	UIC												
• 2010. Intro. to bioinformatics [A, 4 credits]	UIC												
• 2010. Reading course on Ancestral Recombination Graphs [A+, 3 credits]	UQAR												
ONLINE COURSES	<ul style="list-style-type: none"> <li>• 2014. Technology Entrepreneurship</li> </ul> <p>NovoEd/Stanford</p>												