Gabriel Maltais-Landry

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Research profile

Biogeochemistry, soil science, agroecology, plant & ecosystem ecology.

The central goal of my research is to better understand biogeochemical cycling in agricultural systems, especially the impacts of agroecological practices (e.g., cover crops) and alternative fertilization (e.g., biosolids) on nitrogen and phosphorus cycling.

Appointments

2015 -	Postdoctoral fellow, University of British Columbia, Faculty of Land and Food Systems
current	Phosphorus and micronutrient limitation of symbiotic and associative nitrogen fixation
	Mentor: Sean Smukler

Education

2015	Ph. D. in Biology, Stanford University – Advisor: P. Vitousek The effects of cover crops on phosphorus cycling in agricultural soils of California
2008	M. Sc. in Biology, Université de Montréal – Advisors: R. Maranger, J. Brisson Nitrogen cycling in constructed wetlands: greenhouse gas emissions and nitrogen export
2005	B. Sc. in Biology, Université de Montréal, Dean's list for all 3 years

Publications

In Press	Maltais-Landry, G. The potential impact of cover crops on phosphorus cycling varies with plant species, plant diversity and phosphorus input types. Accepted to <i>Plant and Soil</i> on May 12 2015. DOI: 10.1007/s11104-015-2518-1.
	Maltais-Landry, G. , & Frossard, E. Similar phosphorus transfer from cover crop residues and water-soluble mineral fertilizer to soils and a subsequent crop. Accepted to <i>Plant and Soil</i> on April 7 2015. DOI: 10.1007/s11104-015-2477-6.
2015	Maltais-Landry, G. , Scow, K., Brennan, E., & Vitousek, P. Long-term effects of compost and cover crops on soil phosphorus in two California agroecosystems. <i>Soil Science Society of America Journal</i> . 79: 688-697.
2014	Maltais-Landry, G., Scow, K., & Brennan, E. Soil phosphorus mobilization in the rhizosphere of cover crops has little effect on phosphorus cycling in California agricultural soils. <i>Soil Biology & Biochemistry</i> . 78: 255-262.
	Comello, S.D., Maltais-Landry, G., Schwegler, B.R. & Lepech, M.D. Firm-Level Ecosystem Service Valuation using Mechanistic Biogeochemical Modeling and Functional Substitutability. <i>Ecological Economics.</i> 100: 63-73.
2012	Puiagut, J.*, Maltais-Landry, G.*, Gagnon, V. & Brisson, J. Are ciliated protozoa communities affected by macrophyte species, season and sampling location in horizontal subsurface flow constructed wetlands? <i>Water Research</i> . 46: 3005-3013. * = Equal contributors.

2012	Maltais-Landry, G. & Lobell, D.B. The contribution of weather to recent maize and wheat yield trends in twelve US states: a comparison of two approaches. <i>Agronomy Journal</i> . 104: 301-311.
	Blanchet, C., Maltais-Landry, G. , & Maranger, R. Variability in nitrogen content of submerged aquatic vegetation: utility as an indicator of N dynamics within and among lakes. <i>Water Science and Technology</i> . 65(7): 1151-1157.
2010	Gagnon, V., Maltais-Landry, G. , Puigagut, J., Chazarenc, F., & Brisson, J. Treatment of a hydroponics wastewater using constructed wetlands in winter conditions. <i>Water, Air, & Soil Pollution</i> . 212: 483-490.
2009	Maltais-Landry, G., Maranger, R., Brisson, J., & Chazarenc, F. Greenhouse gas production and global efficiency of planted and artificially aerated constructed wetlands. <i>Environmental Pollution</i> . 157(3): 748-754.
	Maltais-Landry, G., Maranger, R., Brisson, J., & Chazarenc, F. Nitrogen transformations and retention in planted and artificially aerated constructed wetlands. <i>Water Research</i> . 43(2): 535-545.
	Maltais-Landry, G. , Maranger, R., & Brisson, J. Effect of artificial aeration and macrophyte species on nitrogen cycling and gas flux in constructed wetlands. <i>Ecological Engineering</i> . 35(2): 221-229.
2007	Maltais-Landry, G., Chazarenc, F., Comeau, Y., Troesch, S., & Brisson, J. Effects of artificial aeration, macrophyte species and loading rate on removal efficiency in constructed wetland mesocosms treating fish farm wastewater. <i>Journal of Environmental Engineering and Science</i> . 6(4): 409-414.
	Chazarenc, F., Maltais-Landry, G., Comeau, Y., & Brisson, J. Effect of loading rate on performance of constructed wetlands treating an anaerobic supernatant. <i>Water Science and Technology</i> . 56(3): 23-29.

Manuscripts in preparation/in review

In Maltais-Landry, G., Scow, K., Brennan, E., & Vitousek, P. Phosphorus budgets of California agroecosystems with contrasting fertilization management. To be submitted to *Agriculture, Ecosystems & Environment* by June 1 2015.

Grants, awards and scholarships

Postdoctoral Fellowship – Natural Sciences and Engineering Research Council of Canada (NSERC, 45 000 CAD per year for two years) and Fonds Québécois de la Recherche sur la Nature et les Technologies (FQRNT, declined)
Outstanding Graduate Student Award – American Society of Agronomy, Environmental Quality Section (150 USD)
Doctoral Dissertation Improvement Grant – US National Science Foundation (19 812 USD)
Excellence in teaching award – Stanford University
Office of the Vice Provost for Graduate Education SCORE research grant – Stanford University (2000 USD)
Ph.D. scholarship – NSERC (year 1 & 2, 21 000 CAD per year) and FQRNT (year 3, 20 000 CAD)

2008	Award of excellence – Quebec chapter of the Society of Environmental Toxicology and Chemistry & Society for Risk Analysis (2000 CAD)
2007	Award of excellence – Royal Bank of Canada Financial Group (5000 CAD) & Employees of Université de Montréal Faculty of Graduate studies (2500 CAD)
2006	M.Sc. scholarship – Julie-Payette (NSERC, 25 000 CAD, year 1), ES M (NSERC, 17 500 CAD, year 2), and Master's scholarship (FQRNT, declined)
2005, 2004	NSERC summer undergraduate research scholarship (5625 CAD per year)
2004	Award of excellence – Birks Foundation (500 CAD)
2003	Award of excellence – Dr Alexandre Germain's foundation (500 CAD)
	Scholarship – Canadian Foundation of Millennium Grants (4000 CAD per year for 2 years)
2002	Admission scholarship – Université de Montréal (2000 CAD)

Teaching experience

2013 & 2012	Teaching assistant, <i>Measurements in Earth Systems</i> Pr. Scott Fendorf (Stanford)
2010	Teaching assistant, <i>Ethical Issues in Ecology and Evolutionary Biology</i> Pr. Paul Ehrlich (Stanford)
	Teaching assistant, <i>Ecology</i> Pr. Peter Vitousek & Rodolfo Dirzo (Stanford)
	Course assistant, <i>Core Experimental Laboratory in Ecology</i> Dr. Shyamala Malladi (Stanford)
2009, 2008 & 2006	Teaching assistant, <i>Internship in plant ecology</i> Pr. Jacques Brisson (Université de Montréal)
2004	Teaching assistant, <i>Plant physiology</i> Pr. Jean Rivoal (Université de Montréal)

Oral and poster presentations

2014	Maltais-Landry, G., Vitousek, P & Frossard, E. Phosphorus Transfer from Cover Crop
	Residues to Soil Pools and a Subsequent Wheat Crop. American Society of Agronomy/Soil Science Society of America/Crop Science Society of America (ASA/SSSA/CSSA), Long Beach (CA) – Nov. 2014 (talk).
	Maltais-Landry, G . Contrasting effects of different cover crops on soil P cycling via residue nutrient content and rhizosphere properties. Ecological Society of America (ESA), Sacramento (CA) – Aug. 2014 (talk).
2013	Maltais-Landry, G., Scow, K., Brennan, E., & Vitousek, P. The Long-Term Effects of Compost and Cover Crops On Soil P Dynamics in Two California Agricultural Systems. ASA/SSSA/CSSA, Tampa (FL) – Nov. 2013 (talk).
	Maltais-landry, G. , Scow, K., & Vitousek, P. Legume cover crops affect rhizosphere properties and soil phosphorus fractions but do not increase phosphorus availability in California plots. ESA, Minneapolis (MN) – Aug. 2013 (talk).
2010	Maltais-Landry, G., & Lobell, D. The contribution of weather to recent maize and wheat yield trends in the US: a comparison of two approaches. American Geophysical Union, San Francisco (CA) – Dec. 2010 (poster).

2008	Maltais-Landry, G. , Maranger, R., Brisson J., & Chazarenc, F. Greenhouse gas production and global efficiency of planted and artificially aerated constructed wetlands. ESA, Milwaukee (WI) – Aug. 2008 (poster).
	 Maltais-Landry, G., Maranger, R., & Brisson J. Nitrogen transformations and retention in constructed wetlands. Association for the Sciences of Limnology and Oceanography (ASLO), St-John's (Canada) – June 2008 (talk); International Society of Limnology (SIL), Montreal (Canada) – Aug. 2008 (talk).
2007	 Maltais-Landry, G., Maranger, R., & Brisson, J. Effect of artificial aeration and macrophyte species on nitrogen cycling and gas flux in constructed wetland. Wetland Pollutant Dynamics and Control, Tartu (Estonia) – Sept. 2007 (talk); Canadian Society for Ecology and Evolution, Toronto (Canada) – May 2007 (talk); Canadian Society of Limnologists, Montreal (Canada) – Jan. 2007 (talk).
2005	Maltais-Landry G., Chazarenc, F., Comeau, Y., & Brisson, J. Constructed wetlands to treat fish farm wastewater: effect of artificial aeration, macrophyte species and loading rate. ESA, Montreal (Canada) – Aug. 2005 (poster).

Outreach, mentoring and service

Outreach	
2014	Oral presentation on phosphorus budgets in California agricultural systems – Russell Ranch field day (Davis, CA)
2013	Lecture on sustainable agriculture – Los Gatos High School (Los Gatos, CA)
	Poster on soil phosphorus dynamics in California – Russell Ranch field day (Davis, CA)
2008	Poster on constructed wetlands - Forum national des lacs (St-Sauveur, Canada)
2008 & 2007	Judge for the Montréal science fair (Montréal, Canada)

Guest lectures

2014	Guest lecturer on agriculture and climate change, <i>Climate change ecology</i> Dr. Amy Wolf (University of California – Santa Cruz)
2013 & 2012	Guest lecturer on cover crops, <i>Principles and practice of sustainable agriculture</i> Dr. Patrick Archie (Stanford)
2008	Guest lecturer on phytoremediation, <i>Plant ecology</i> Dr. Alain Paquette (McGill)

Student mentoring

2012 -	Advised eight undergraduate students at Stanford:
current	 Micah Patterson – Earth Systems / Bioengineering (junior)
	• Dylan Sarkisian – Materials Science and Engineering (freshman)
	 Ashley Overbeek – International relations (freshman)
	 Christopher Turner – Earth Systems (senior)
	 Ava Lindstrom – Earth Systems (junior)
	 Linta Reji – Earth Systems (junior)
	 Toni Canonico – Civil Engineering (junior)
	• Sarah Kolarik – Earth Systems (freshman)

2013	 Advised one high-school student during an independent summer project at Stanford Rhea Bergman – Mountain View High School
2006	 Co-advised one undergraduate student at Université de Montréal Yann Foucard – Civil Engineering
Service	
2009 – current	Reviewer for Proceedings of the National Academy of Sciences, Food Security, European Journal of Soil Biology, Environmental Science and Pollution Research, Oecologia, Ecosystems, Ecological Engineering, Hydrobiologia, Environmental Management
2011 - 2012	Student member on the Jasper Ridge Biological Preserve (Stanford) advisory committee
2009	International development aid work in Mali on desertification for Great Lakes United
2013, 2008, 2007 & 2005	Volunteer and/or session moderator during meetings of ESA, ASLO and SIL
2007 - 2008	President of the Association of graduate students in Biology at Université de Montréal and Biology representative of the student union at Université de Montréal
2006 - 2007	Student representative of the Association of graduate students in Biology at Université de Montréal
2011, 2008, 2007 & 2005	Volunteer work on ecosystem restoration for the NGOs Acterra (Palo Alto, CA) and Les Amis du Mont-Royal (Montreal, Canada)

Societies membership

2012 – current	Soil Science Society of America (SSSA), American Society of Agronomy (ASA)
2013 – current	Ecological Society of America (ESA)

Other research experience

2009 & 2005	Research assistant, Université de Montréal / Dr. Roxane Maranger Field work, laboratory work and data analysis in limnology & oceanography
2008 & 2004	Research assistant, Université de Montréal / Pr. Jacques Brisson Field, laboratory work & data analysis in water quality and plant community ecology
2008 & 2007	Research assistant, Université de Montréal / Dr. Roxane Maranger Research cruise on board CCGS Amundsen (9 weeks) in the Arctic

Professional references

- Peter Vitousek Ph.D. advisor Professor – Stanford University Stanford (CA) USA 650-725-1866 vitousek@stanford.edu
- Sean Smukler Postdoctoral mentor Assistant professor – U. of British Columbia Vancouver (BC) Canada 604-822-2795 sean.smukler@ubc.ca
- Kate Scow Ph.D. committee member Professor – University of California (Davis) Davis, CA 530-752-4632 kmscow@ucdavis.edu
- Scott Fendorf Ph.D. committee member Professor – Stanford University Stanford, CA 650-723-5238 fendorf@stanford.edu