

# ANNA HARGREAVES

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## EMPLOYMENT

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2017 – now Assistant Professor, McGill University  
2015 – 2016 Biodiversity Postdoctoral Fellow, University of British Columbia  
\* *includes 6 month maternity leave*  
2007 – 2009 Research Scientist, Centre for Conservation Research, Calgary Zoo  
2004 Field Camp Manager: Can. Wildlife Service (Arctic), Pomona College (Costa Rica)

## EDUCATION

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2010 – 2014 PhD, Queen's University *Thesis won 2015 Governor General's Gold Medal*  
2005 – 2007 MSc, University of Calgary  
1999 – 2003 BSc, Trent University (including thesis at U KwaZulu-Natal, South Africa)

## AWARDS & HONOURS (post undergrad only)

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- *Shortlist*: Ecography Award for Excellence in Ecology & Evolution (final decision in Oct 2019)
- Early Career Award, Canadian Society for Ecology & Evolution, 2019 (national; \$1500)
- JLH Young Investigator Award, American Society of Naturalists, 2017 (international; \$700)
- Biodiversity Post-doctoral fellowship, UBC, 2015-2016 (international; \$95K)
- Governor General's Academic Gold Medal, 2015 (national)
- Best student presentation, Canadian Society for Ecology & Evolution AGM (CSEE) 2014
- New Phytologist Award for Outstanding Student Presentation, CSEE 2014 (\$500)
- New Phytologist Award for Outstanding Student Presentation, CSEE 2011 (\$500)
- Alberta Society of Professional Biologists Graduate Award, 2005 (\$2000)
- U Calgary Dean's Research Excellence Award, 2005 (\$3000)

## PUBLICATIONS

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### PEER-REVIEWED JOURNALS

(GOOGLE SCHOLAR: >950 CITATIONS, H-INDEX 13; WEB OF SCIENCE: >600 CITATIONS, H-INDEX 13)

20. **Hargreaves, AL**, E Suarez, K Mehlreter, I Myers-Smith, S Vanderplank, H Slinn, Y Vargas-Rodriguez *et al* (17 authors in descending order of contribution). 2019.  
Seed predation increases from the Arctic to the Equator and from high to low elevations.  
*Science Advances*. 5: eaau4403.
19. **Hargreaves, AL**, CG Eckert. 2019.  
Local adaptation primes cold-edge populations for range expansion but not warming-induced range shifts. *Ecology Letters*. 22: 78-88
18. Sunday, J, JM Bennett, P Calosi, S Clusella-Trullas, S Gravel, **AL Hargreaves**, FP Leiva, WCEP Verberk, MA Olalla-Tarraga, I Morales-Castilla. 2019.

Thermal tolerance patterns across latitude and elevation. *Philosophical Transactions of the Royal Society B*. 374.

17. **Hargreaves, AL**, GT Langston, SD Johnson. 2019.  
Narrow entrance of short-tubed Aloe flower facilitates pollen transfer on long sunbird bills. *South African Journal of Botany*. 124: 23-28
  16. Freeman, B, J Lee-Yaw, J Sunday, **AL Hargreaves**. 2018.  
Expanding, shifting, and shrinking: the impact of global warming on species' elevational distributions. *Global Ecology & Biogeography*. 27: 1268-1276
  15. Gilbert K, N Sharp, A Angert\*, G Conte\*, J Draghi\*, F Guillaume\*, **AL Hargreaves\***, R Matthey-Doret\*, MC Whitlock. 2017.  
Local maladaptation reduces expansion load during range expansion. *American Naturalist*. 189: 368-380 \*order alphabetical
  14. Cheptou, PO, **AL Hargreaves**, D Bonte, H Jacquemyn. 2017.  
Adaptation to fragmentation: evolutionary dynamics driven by human influences. *Philosophical Transactions of the Royal Society*. 372(1712)
- Maternity leave in 2016*
13. **Hargreaves, AL**, SF Bailey, RA Laird. 2015.  
Local adaptation and poor-quality edge habitat affect dispersal evolution during range shifts induced by climate change. *Journal of Evolutionary Biology*. 28: 1489-1501
  12. **Hargreaves, AL**, JL Weiner, CG Eckert. 2015.  
High-elevation range limit of an annual herb is neither caused nor reinforced by declining pollinator service. *Journal of Ecology*. 103: 572-584
  11. **Hargreaves, AL**, KE Samis, CG Eckert. 2014.  
Are species' range limits simply niche limits writ large? A review of transplant experiments beyond the range. *American Naturalist*. 183: 157-173  
\*Web of Science 'Highly cited paper' (top 1% in Ecology/Environment)
  10. **Hargreaves, AL**, CG Eckert. 2014.  
Evolution of dispersal and mating systems along geographic gradients: implications for shifting ranges. *Functional Ecology*. 28: 5-21  
\*Cover article; Nominated for the Haldane young investigator prize
  9. **Hargreaves, AL**, LD Harder, SD Johnson. 2012.  
Floral traits mediate the vulnerability of aloes to pollen theft and inefficient pollination by bees. *Annals of Botany*. 109: 761-772
  8. **Hargreaves, AL**, DP Whiteside, HG Gilchrist. 2011.  
Concentrations of 17 elements, including mercury, in the tissues, food and abiotic environment of Arctic shorebirds. *Science of the Total Environment*. 409: 3757-3770
  7. **Hargreaves, AL**, LD Harder, SD Johnson. 2010.  
Native pollen thieves reduce the reproductive success of a hermaphroditic plant, *Aloe maculata*. *Ecology* 91: 1693-1703
  6. **Hargreaves, AL**, DP Whiteside, HG Gilchrist. 2010.

- Concentrations of 17 elements, including mercury, and their relationship to fitness measures in arctic shorebirds and their eggs. *Science of the Total Environment* 408: 3153-3161
5. **Hargreaves, AL**, LD Harder, SD Johnson. 2009.  
Consumptive emasculation: the ecological and evolutionary consequences of pollen theft. *Biological Reviews* 84: 259-276
  4. **Hargreaves, AL**, LD Harder, SD Johnson. 2008.  
*Aloe inconspicua*: the first record of an exclusively insect-pollinated aloe. *South African Journal of Botany* 74: 606-612
  3. Bailey, SF, **AL Hargreaves**, S Hechtenthal, RA Laird, *et al.* (8 authors). 2007.  
Empty flowers as a pollination-enhancement strategy. *Evolutionary Ecology Research* 9: 1245-1262
  2. Johnson, SD, **AL Hargreaves**, M Brown. 2006.  
Dark, bitter-tasting nectar functions as a filter of flower visitors in a bird-pollinated plant. *Ecology* 87: 2709-2716 \*Cover article
  1. **Hargreaves, AL**, SD Johnson, E Nol. 2004.  
Do floral syndromes predict specialization in plant pollination systems? An experimental test in an "ornithophilous" African *Protea*. *Oecologia* 140: 295-301

#### MANUSCRIPTS IN REVIEW

**Hargreaves, AL**, R Germain, J Persi†, M Bontrager, AL Angert. *In 2<sup>nd</sup> Review* (Ref: 59113).  
Biotic interactions affect fitness but not local adaptation. *American Naturalist*.  
Preprint on BioRxiv: [www.biorxiv.org/content/10.1101/575498v1](http://www.biorxiv.org/content/10.1101/575498v1)  
\* work started since arriving at McGill; † indicates one of my students

Klemet-N'Guessan†, R. Jackewi, CG Eckert, **Hargreaves, AL**. *In Review* (Ref: cjc2019-0121)  
Edgy conservation: Canadian at-risk plants are overwhelmingly range-edge populations and poorly studied. *Botany*.  
\* work started since arriving at McGill; † indicates one of my students

#### NON-REFEREED WRITTEN CONTRIBUTIONS (SELECTED)

**Hargreaves AL**, JD Thomson. 2013. Monitoring pollen limitation with pollen supplementation experiments. Report from 2013 NSERC CANPOLIN workshop, Kluane, YK.

**Hargreaves AL**. 2008. Conserving Ghanaian amphibians: Status, needs, and potential for captive breeding-reintroduction. Calgary Zoo & Nature Conservation Research Centre, Ghana.

**Hargreaves AL**. 2007. Differential nest box use by mountain bluebirds and tree swallows: Final report on a seven-year study. Calgary Zoo Centre for Conservation Research.

Dearlove, T, **Hargreaves AL**. 2007. Northern leopard frog 2017 research summary & recommendations. Written for Calgary Zoo & Cypress Hills Inter-Provincial Park.

## INVITED TALKS

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### INVITED PLENARIES

- 2019 Early Career Award, *Canadian Society for Ecology & Evolution meeting, Fredericton NB*  
 2017 Plenary speaker, *Canadian Botany Association meeting, Waterloo ON*  
 Young Investigators Award, *Evolution meeting, Portland, USA*  
 Student-invited keynote, *Conservation, Ecology & Evolution retreat, Mont St Hilaire QC*

### INVITED SEMINARS

- 2019 Departmental seminar, *ETH Zurich, Switzerland*  
 Departmental seminar, *University of Basel, Switzerland*  
 Departmental seminar, *Université de Lausanne, Switzerland*  
 Departmental seminar, *University of Vermont, Burlington USA*  
 2018 Departmental seminar, *University of Virginia, Charlottesville USA*  
 Research seminar, *Botanical Garden/Université de Montreal*  
 Global Change seminar series, *University of Toronto*  
 Departmental seminar, *McGill University (NRS, MacDonald campus)*  
 Departmental seminar (elected by graduate student association), *University of Concordia*  
 2017 Departmental seminar, *University of Ottawa*  
 Departmental seminar, *University of Colorado, Boulder USA*  
 Departmental seminar, *Université de Sherbrooke*  
 2016 Ecology seminar, *Simon Fraser University*  
 2015 Departmental seminar, *University of Calgary*  
 Organismal Biology seminar, *McGill University*  
 Biodiversity Research Centre internal seminar, *University of British Columbia*  
 2014 Departmental seminar, *Queen's University*  
 2013 Departmental seminar, *University of Alberta*  
 Departmental seminar, *Trent University*  
 2010 Ecology, Evolution & Behaviour seminar, *Queen's University*

### INVITED SYMPOSIUM PRESENTATIONS

- 2017 Symposium speaker, *Canadian Society for Ecology & Evolution meeting, Victoria*  
 2016 Symposium speaker, *CSEE meeting, Newfoundland*

## CONTRIBUTED TALKS

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(\* = presenter, † = student in my lab)

- 2019 **Hargreaves**, Germain, Bontrager, Persi†\*, Angert. *Canadian Soc. for Ecology & Evolution*  
 Klemet-N'Guessan†\*, Jackewi, Eckert, **Hargreaves**. *Canadian Soc. Ecology & Evolution*  
 2018 **Hargreaves\***. *Montreal Eco-evo symposium*  
 Persi & **Hargreaves\***. *Montreal Eco-evo symposium*  
 2017 Sora, Eckert, Ensing, **Hargreaves**. *Evolution, USA*  
 Angert, + 9 coauthors including **Hargreaves**. *Evolution, USA*  
 2015 **Hargreaves**, Bailey, Laird\*. *Canadian Society for Ecology & Evolution*  
 2014 **Hargreaves\***, Eckert. *Canadian Society for Ecology & Evolution*

- \*Winner Best Student Talk
- \*Winner of the New Phytologist Award for Outstanding Student Presentation
- Hargreaves**, Falk, Weiner, Eckert\*. *Canadian Society for Ecology & Evolution*
- 2013 **Hargreaves**, Samis, Eckert\*. *International Biogeography Society meeting*
- Hargreaves**, Eckert\*. *Canadian Society for Ecology & Evolution*
- Falk\*, **Hargreaves**, Eckert. *Ontario Ecology, Ethology & Evolution Colloq (OE3C)*.
- 2012 **Hargreaves**, Samis, Eckert\*. *OE3C*
- Weiner\*, **Hargreaves**, Eckert. *OE3C*
- 2011 **Hargreaves**\*, Harder, Johnson. *OE3C*
- Hargreaves** \*, Harder, Johnson. *Canadian Society for Ecology & Evolution*
- \*Winner of the New Phytologist Award for Outstanding Student Presentation
- Hargreaves**\*, Eckert. (poster). *OE3C*
- Hargreaves**\*, Eckert. (poster). *Canadian Society for Ecology & Evolution*
- Eckert\*, **Hargreaves**, Samis. *Canadian Society for Ecology & Evolution*
- 2006 **Hargreaves**\*, Johnson, Brown. *North American Ornithological Conference (Mexico)*
- Hargreaves**\*, Johnson, Brown. *Ecological Society of America*

## WORKSHOPS & WORKING GROUPS

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- 2019 ‘Distributed ecological observatories and long-term monitoring of mountain biodiversity’. Mountain Invasion Research Network working group (invited participant). Switzerland
- 2019 ‘Incorporating phenotypic variation of thermal tolerance to improve projections of climate responses’. *Can. Instit. Ecol. Evol.* working group (invited participant). Mont St Hilaire, QC
- 2018 ‘Using species’ thermal physiological limits to predict future biodiversity changes’. *Quebec Centre for Biodiversity Studies* working group (invited participant). Malbaie QC
- 2018 ‘Species range shifts & local adaptation’ *ANDINA workshop* (one of 6 fully-funded early career participants), Mt Tronador, Argentina
- 2016 ‘Globetherm’ sDIV writing retreat (invited to participate in funded writing retreat in Germany; joined working group but declined the retreat), Germany
- 2015 ‘Does biodiversity explain underfilling of species’ thermal range limits?’ *UBC Biodiversity Research Centre workshop* (co-organizer). Vancouver, BC
- 2013 ‘Pollination, climate change, and invasive species’ *NSERC-CANPOLIN workshop* (invited participant). Kluane National Park, Yukon.

## RESEARCH GRANTS & FUNDING

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(TOTAL OF \$507K FUNDING TO MY RESEARCH PROGRAM)

- Hargreaves, AL.** 2019. Canadian Foundation for Innovation (CFI) John R Evans Leaders’ Fund. ‘Evolutionary ecology of species distributions’. (\$350K)
- Hargreaves, AL.** 2019. Liber Ero McGill Conservation Biology Allocation. ‘Pollen limitation in the tropics’. (\$12K)
- Hargreaves, AL.** 2018. NSERC Discovery Grant. ‘Evolutionary ecology of species distributions’. (\$33K/yr for 5 years + \$12K in year 1)
- Hargreaves, AL.** 2018. FRQNT New Researcher Start-up Grant. ‘Non-temperature determinants of species range limits’. (\$20K/yr for 2 years + \$50K for equipment)

Vézina, F, K Elliott, **AL Hargreaves**. 2018. FRQNT Team Research Project Grant. ‘ArcticSCOPE: A thermal modelling approach for predicting Arctic vertebrate performance under climate change’. (\$68K/yr for 3 years + \$17K for equipment; \$63K for my lab)

**Hargreaves, AL**. 2018. Liber Ero McGill Conservation Biology Allocation. ‘Canadian species conservation meet range limit theory: are our species-at-risk ‘just’ edge populations?’ (\$6K)

**Hargreaves, AL**. 2017-2019. McGill Biology Start-up Research funds. (\$120K)

**Hargreaves, AL**. 2015-2016. Biodiversity Post-doctoral Fellow Research funds. (\$14K)

**Hargreaves, AL**, JM Sunday. 2015. Biodiversity Research Centre workshop grant. ‘Does biodiversity explain underfilling of species’ thermal range limits?’. (\$1200)

**Hargreaves, AL**. 2012. Alberta Conservation Association Biodiversity grant. ‘Ecology and evolution of altitudinal range limits in a montane herb’. (\$9050)

Eckert, CG, **AL Hargreaves**. 2011. NSERC-Canadian Pollination Initiative Strategic Network. ‘Pollinations role in local adaptation and species range limits from prairie to alpine’. (\$15K)

2002-2008 Arctic research funding. 2002-2004 Northern Science Training Program (3 awards \$2000-3000 each). 2008 Logistical support from Canadian North Airlines (return flight and shipping to Iqaluit, \$3000) and Nunavut Wildlife Trust.

## SCHOLARSHIPS (post undergrad only)

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- Queen Elizabeth II Scholarship in Science and Technology, 2013 (\$15K)
- IODE War Memorial doctoral scholarship, 2012 (\$15K)
- Queen’s RS McLaughlin Fellowship, 2011 (\$10K)
- Queen’s Graduate Dean’s Travel Grant for PhD research, 2011 (\$3K)
- Queen’s Tri-Council Recipient Recognition Award, 2010 (\$5K)
- Natural Sciences and Engineering Research Council (NSERC) Alexander Graham Bell Canadian Graduate Scholarship PhD, 2010 & 2011 (\$70K)
- Research Fellowship, Calgary Zoo Centre for Conservation Research, 2007 (\$25K)
- Alberta Graduate Student Scholarship, 2007 (\$2K)
- NSERC Alexander Graham Bell Canadian Graduate Scholarship MSc, 2005-6 (\$35.8K)
- Commonwealth Scholarship, U Canterbury New Zealand 2004 (\$28K) declined

## UNDERGRADUATE TEACHING

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2018 Conservation Biology (BIOL465: 4<sup>th</sup> yr course, McGill, guest lectures)  
 2018– Biology of Organisms (BIOL205: 2<sup>nd</sup> yr course, McGill, course coordinator for 2019)  
 2018– Organismal Biology (BIOL111: 1<sup>st</sup> yr course, McGill)  
 2017– Ecology & Behaviour Field Course (BIOL331: 3<sup>rd</sup> yr course, McGill)  
 2012–13 Ecology & Evolution of the Galapagos (Trent University)

## OUTREACH

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2019 Public lecture, *Redpath Museum ‘Cutting Edge’* lecture series (November)  
 Public lecture, *Lake O’Hara Park*, summer speaker series, Yoho National Park, BC (July)  
 Public lecture, McGill’s Annual ‘*Mini-Science*’ lecture series



- Research seminar, *Vanier College CEGEP Science week*, Montreal QC  
 Faculty advisor, student-lead ‘Bee School’ initiative to protect pollinators (McGill)
- 2018 Public lecture, McGill’s Annual ‘*Mini-Science*’ lecture series:  
 (www.youtube.com/watch?v=PTdZsGCPYbM)  
 Women in Science Panel, *Let’s Talk Science* event for grade 5/6 students, Montreal QC  
 Research seminar, *Dawson College CEGEP*, Montreal QC
- 2017 Speaker in *Soup and Science* lunchtime outreach series, Montreal QC  
 Interviewed for *Diversity in STEMM* initiative, now an exhibit at McGill Redpath Museum.
- 2015 Public lecture, *Beatty Biodiversity Museum* ‘*Way Cool*’ lecture series, Vancouver BC
- 2014 Guest blog *ecoevoeco.blogspot.ca/2014/11/why-stop-there-probing-species-range.html*  
 Classroom presenter, Alberta Science Network *Scientists-in-the-classroom* program
- 2012 Guided wildflower hikes, *U Calgary Biogeoscience field station* open houses.  
 Presentations to grade 1 classes on pollination biology, Calgary & Edmonton AB
- 2009 Public lecture, *Alberta Wilderness Association* monthly seminar series, Calgary AB  
 Popular science articles about conservation research, *Calgary Zoo newsletter* (two)
- 2008 Published article ‘Conserving Alberta’s amphibians’ in *Wild Lands Advocate* 16: 14-15.  
 (www.albertawilderness.ca/AWRC/WLA/2008/200802\_WLA.pdf)  
 Popular science articles about conservation research, *Calgary Zoo newsletter* (four)  
 Talk for *Alberta Society of Professional Biologists*  
 Lunch hour research talk, *Calgary Zoo*
- 2007 Talk for *Mountain Bluebird Trails Conservation Society* meeting, Lethbridge AB

## MENTORING

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### GRADUATE STUDENT SUPERVISION

- 2018– J Persi, MSc. Non-thermal limits to species ranges.  
 2018– C Larsen, MSc. Dispersal evolution across temporally variable landscapes.  
 2018– S Meadley-Dunphy, PhD. Hosts-to-competitors shifts across hemiparasite ranges.

### ADDITIONAL MENTORING

Supervised 9 undergraduate thesis students, McGill (2017-now)  
 Co-supervised 4 undergraduate thesis students, Queen’s (2012-2014)  
 Supervised 14 research assistants and volunteers, McGill & UBC (2015-2019)  
 Thesis committee member for 9 MSc and PhD students (7 McGill, 1 U Sherbrooke, 1 U Memorial)  
 External examiner for 1 MSc defense, 3 PhD qualifying exams, 2 PhD defenses

## PROFESSIONAL SERVICE

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### UNIVERSITY & EXTERNAL SERVICE (SELECTED)

- 2019– Redpath Museum ‘Mini Science’ Lecture Series Organizing Committee  
 2018– American Society of Naturalists Student Research Award Committee  
 2017– McGill Liber Ero Chair Advisory Committee  
 2018 Judge; Canadian Society Ecology & Evolution PhD Diversity & Excellence Award  
 Judge; student presentations, Quebec Centre for Biodiversity Symposium, Montreal  
 2017 Judge; student presentations, Evolution (Portland OR), CSEE (Victoria BC)  
 2015&16 Co-organizer; Inter-university Ecology & Evolution Retreat, Squamish, BC