

Dr. Chantel E. Markle

Postdoctoral Research Fellow
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EDUCATION

- 2017 **PhD: McMaster University, Department of Biology**
Title: Landscape-level strategies for conservation of imperiled freshwater turtles
Supervisor: Dr. Patricia Chow-Fraser
- 2013 **MSc: McMaster University, Department of Biology**
Transfer Exam/Comprehensive Exam: Passed with distinction
- 2012 **BSc (Hons): McMaster University, Faculty of Science**
Biology with Biodiversity Specialization
Graduated with distinction and on Dean's Honour List
3.95 GPA on last 20 classes; 3.80 GPA cumulative average

GRANTS

- 2017 – 2018 URBAN 2.0: Emerging tools for monitoring aquatic ecosystems
RBC Blue Water Foundation Project (\$20,000)
- 2016 – 2017 URBAN 2.0: Emerging tools for monitoring aquatic ecosystems
RBC Blue Water Foundation Project (\$22,640)
- 2014 – 2016 Assessing use of eco-passages by imperiled freshwater turtles
Species at Risk Stewardship Fund, OMNRF (\$37,215)
- 2014 – 2015 Mapping the Minesing Wetlands (Ontario) for habitat restoration and
conservation of species at risk
Habitat Stewardship Fund, Environment Canada (\$30,000)

FELLOWSHIPS

- 2017 – 2020 Postdoctoral Research Fellow
McMaster Ecohydrology Lab – Dr. Waddington
- 2014 – 2017 NSERC Canada Graduate Scholarship – PhD (\$105,000)
- 2013 – 2014 NSERC Canada Graduate Scholarship – MSc (PhD stipend \$21,000)
- 2012 – 2013 Ontario Graduate Scholarship (\$15,000)

AWARDS AND PRIZES

- 2016 Keith Leppmann Teaching Assistance Excellence Award (Nomination) Nominated
by undergraduate students based on commitment to teaching, reliability,
enthusiasm for subject matter, personality, adaptability, and communication skills.

- 2016 Biology Travel Scholarship
Awarded \$600 towards attendance at the Canadian Herpetological Society Conference
- 2015 Clemens-Rigler Travel Award
Awarded \$150 towards attendance at the International Association of Great Lakes Research
- 2012 Best Oral Presentation in Session, Undergraduate Thesis in physiology, environmental physiology, and ecology
- 2012 The Weather Network Internship Award
Awarded \$1000 for my contribution to the spatial content department as an intern
- 2011 The University Senate Scholarship
Awarded \$800 for being in the top 10-15% of the Faculty of Science
- 2010 The D.M. Davies Prize
Awarded \$575 for the completion of 60 units in Honours Biology, attaining a minimum of A- in Ecology, and in a Field Biology course
- 2008 McMaster Entrance Scholarship
\$3,000 for entrance average

PUBLICATIONS

Journal articles:

7. **Markle, C.E.** and Chow-Fraser, P. (2018). Effects of European Common Reed on Blanding's Turtle Spatial Ecology. *Journal of Wildlife Management*, in press.
6. **Markle, C.E.**, Chow-Fraser, G., and Chow-Fraser, P. (2018). Long-term habitat changes in a protected area: Implications for herpetofauna habitat management and restoration. *PLoS ONE* 13(2):e0192134.
5. **Markle, C.E.**, Gillingwater, S.D., Levick, R., & Chow-Fraser, P. (2017). The true cost of partial fencing: Evaluating strategies to reduce reptile road mortality. *Wildlife Society Bulletin* 41(2):342–350.
4. **Markle, C.E.** & Chow-Fraser, P. (2017). Thermal characteristics of overwintering sites for the Blanding's turtle (*Emydoidea blandingii*) across three study areas in Ontario, Canada. *Herpetological Conservation and Biology* 12:241–251.
3. **Markle, C.E.** & Chow-Fraser, P. (2016). An integrative approach to regional mapping of suitable habitat for the Blanding's turtle (*Emydoidea blandingii*) on islands in Georgian Bay, Lake Huron. *Global Ecology and Conservation*. 6(2016): 219–231.
2. Marcaccio, J.V., **Markle, C.E.**, & Chow-Fraser, P. (2016). Use of fixed-wing and multi-rotor unmanned aerial vehicles to map dynamic changes in a freshwater marsh. *Journal of Unmanned Vehicle Systems*. 4(3): 193–202.
1. **Markle, C.E.** & Chow-Fraser, P. (2014). Habitat selection by the Blanding's turtle (*Emydoidea blandingii*) on a protected island in Georgian Bay, Lake Huron. *Chelonian Conservation and Biology*. 13(2): 216–226

Peer-Reviewed Proceedings:

1. Marcaccio, J.V., **Markle, C.E.**, & Chow-Fraser, P. (2015). Unmanned aerial vehicles produce high-resolution, seasonally-relevant imagery for classifying wetland vegetation. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XL-1/W4, 2015, International Conference on Unmanned Aerial Vehicles in Geomatics, 30 Aug – 02 Sep 2015, Toronto, Canada, pages 249–256. doi: 10.5194/isprsarchives-XL-1-W4-249-2015. (peer-reviewed).

Book chapters:

1. **Markle, C.E.** & Chow-Fraser, P. (2017). “Georgian Bay, Lake Huron: Freshwater turtles and their wetland habitat in a changing landscape”. In E. Freedman & M. Neuzil (Eds.), *Biodiversity, Conservation and Environmental Management in the Great Lakes Basin: From passenger pigeons and pollution to public policy*. New York, USA: Routledge.

CONTRIBUTED TALKS AND POSTERS

21. **Markle, C.E.**, Waddington, J.M., and Chow-Fraser, P. (2017). Mapping suitable habitat for at-risk turtles: Using integrative approaches to identify areas for protection. CASIOPA, September 2017. Collingwood, ON.
20. Rupasinghe, P.A, **Markle, C.E.**, Marcaccio, J.V., and Chow-Fraser, P. (2017). Determination of treatment effectiveness of *Phragmites australis* at Rondeau Bay Provincial Park, Ontario. CASIOPA, September 2017. Collingwood, ON.
19. **Markle, C.E.**, Gilbert, J., & Chow-Fraser, P*. (2017). Effectiveness monitoring of a control program for invasive *Phragmites australis* in Rondeau Bay Wetland Complex. International Association for Great Lakes Research, May 2017. Detroit, USA.
18. Rupasinghe, P.A., Marcaccio, J.V., **Markle, C.E.**, & Chow-Fraser, P*. (2017). Determining the best time to map invasive *Phragmites* in wetlands using time series analysis. International Association for Great Lakes Research, May 2017. Detroit, USA.
17. **Markle, C.E.** & Chow-Fraser, P. (2017). Effects of invasive *Phragmites australis* on spatial ecology of Blanding’s turtles in wetlands. 5th Annual Long Point World Biosphere Reserve Foundation Research and Conservation Conference, April 2017. Simcoe, ON.
16. **Markle, C.E.** & Chow-Fraser, P. (2017). Landscape-level strategies for conservation of imperiled freshwater turtles. McMaster University, PhD Seminar, January 2017. Hamilton, ON. (Departmental Seminar, oral presentation).
15. Piczak, M., **Markle, C.E.**, & Chow-Fraser, P. (2016). Current status of the common snapping turtle (*Chelydra serpentina*) in Cootes Paradise Marsh. McMaster Water Week, November 2016. Hamilton, ON. (Local conference, poster presentation).
14. **Markle, C.E.** & Chow-Fraser, P. (2016). Thermal characteristics of overwintering sites for the Blanding’s turtle in Ontario. International Association for Great Lakes Research, June 2016. Guelph, ON. (International conference, oral presentation, PhD work).
13. **Markle, C.E.**, Fraser, G.*, & Chow-Fraser, P. (2016). Long-term habitat changes in Point Pelee National Park: Implications for re-establishment of the spotted turtle (*Clemmys guttata*). International Association for Great Lakes Research, June 2016. Guelph, ON. (* denotes presenter).

12. **Markle, C.E.** & Chow-Fraser, P. (2016). Mitigating road mortality and assessing use of culverts by at-risk reptiles along the Long Point Causeway. 4th Annual Long Point World Biosphere Reserve Foundation Research and Conservation Conference, April 9, 2016. Backus Heritage Conservation Area, Ontario. (Local conference, oral presentation, PhD work).
11. **Markle, C.E.** & Chow-Fraser, P. (2016). Mitigating road mortality and assessing use of culverts by at-risk turtles along the Long Point Causeway. Royal Botanical Gardens, March 31, 2016. Hamilton, Ontario. (Oral presentation, PhD work).
10. **Markle, C.E.** & Chow-Fraser, P. (2015). Evaluating exclusion fencing and use of culverts by imperiled freshwater turtles in Long Point, Ontario. Canadian Herpetological Society, September 19, 2015. Saint John, New Brunswick. (National conference, oral presentation, PhD work).
9. **Markle, C.E.**, Marcaccio, J.V., Rutledge, J., Weller, J.D., & Chow-Fraser, P. (2014). Mapping the Minesing Wetlands for Habitat Restoration and Conservation of Species at Risk. Minesing Wetlands and Nottawasaga River Annual Meeting, December 2, Nottawasaga Valley Conservation Authority, ON. (Oral Presentation).
8. **Markle, C.E.** & Chow-Fraser, P. (2014). Comparing approaches to model habitat suitability for Blanding's turtles (*Emydoidea blandingii*) in the Georgian Bay archipelago. International Association for Great Lakes Research, May 28, 2014. Hamilton, ON. (International conference, oral presentation, PhD work).
7. Mui, A., **Markle, C.E.***, He, Y., Chow-Fraser, P., & Johnson, B. (2014). Mapping habitat and travel corridors for Blanding's turtles in Rouge Park using remote sensing imagery and geospatial analyses. Research Meeting for Rouge National Urban Park, May 6. Toronto Zoo, Scarborough, ON. (Oral Presentation). (* denotes presenter).
6. Mui, A., **Markle, C.E.***, He, Y., Chow-Fraser, P., & Johnson, B. (2014). Mapping habitat and travel corridors for Blanding's turtles in Rouge Park using remote sensing imagery and geospatial analyses. Ontario Turtle Conservation Group, April 8, 2014. Algonquin Park, ON. (Provincial meeting, oral presentation, PhD work). (* denotes presenter).
5. **Markle, C.E.** & Chow-Fraser, P. (2014). Comparing approaches to model habitat suitability for Blanding's turtles (*Emydoidea blandingii*) in the Georgian Bay archipelago. Ontario Wetlands Conference, February 2, 2014. Toronto, ON. (Provincial conference, poster presentation, PhD work).
4. **Markle, C.E.** & Chow-Fraser, P. (2013). Comparing approaches to model habitat suitability for Blanding's turtles (*Emydoidea blandingii*) in the Georgian Bay archipelago. International Association for Great Lakes Research, June 3, 2013. West Lafayette, IN. (International conference, oral presentation, PhD work).
3. **Markle, C.E.** & Chow-Fraser, P. (2012). Habitat use by the Blanding's Turtle (*Emydoidea blandingii*) over an active season on Beausoleil Island, Georgian Bay Islands National Park. International Association for Great Lakes Research, May 17, 2012. Cornwall, ON. (International conference, oral presentation, undergraduate work).

2. **Markle, C.E.** & Chow-Fraser, P. (2012). Habitat use by the Blanding's Turtle (*Emydoidea blandingii*) over an active season on Beausoleil Island, Georgian Bay Islands National Park. McMaster University 2012. Hamilton, ON. (Institutional conference, oral presentation, undergraduate work).
1. Christensen, R.J., **Markle, C.E.***, & Chow-Fraser, P. (2012). Comparison of environmental factors affecting the movement patterns and habitat preferences of Blanding's Turtles in two protected areas in Ontario. Ontario Wetlands Conference, February 2, 2012. Toronto, ON. (Provincial conference, poster presentation, undergraduate work). (* denotes presenter).

ADDITIONAL CONTRIBUTIONS

3. Rutledge, J., **Markle, C.E.**, Tedesci, A., & Chow-Fraser, P. (2016). Guide for Assessing Stream Health and Productivity: Periphyton Monitoring. Manual submitted to the RBC Blue Water Foundation.
2. **Markle, C.E.** (2016). Long Point Biosphere Reserve episode of Striking Balance documentary series produced by TVO and the Knowledge Network. Interviewed and research featured in episode. Filmed April – August 2015. Aired October 4 2016. www.strikingbalance.ca.
1. **Markle, C.E.** & Chow-Fraser, P. (2013). Blanding's Turtles in the Georgian Bay Archipelago. Landscrip: preserving our unique archipelago. (Published by the Georgian Bay Land Trust; Bi-annual newsletter, PhD work).

INVITED SPEAKING ENGAGEMENTS

2018	Trent University, Species at Risk Research Lab, Peterborough
2016	EcoExplorer Event, Rouge National Urban Park, Toronto
2015	EcoExplorer Event, Rouge National Urban Park, Toronto
2015	University of Waterloo Ecological Restoration Field Course
2014	Minesing Wetlands/Nottawasaga River Annual Meeting, NVCA
2014	Ingersoll Nature Club, Ingersoll
2014	Otter Valley Naturalist Club, Tillsonburg
2014	University of Waterloo Ecological Restoration Field Course
2014	EcoExplorer Event, Rouge Park, Toronto
2013	EcoExplorer Event, Rouge Park, Toronto
2012	Graduate Student Day, McMaster University

TEACHING EXPERIENCE

Certificates:

- 2017 Teaching and Learning Foundations Certificate
- 2017 Instructional Skills Workshop Certificate

Personal Development Courses:

- 2016 Essential Skills in Teaching and Learning (EDU 600)

2017 Peer-Evaluated Teaching Experience (EDU 650)

Guest Lectures:

2017 Assessing stream health and productivity
(Nelson High School, Burlington)
Ecology of Freshwater Turtles
(BIO 2F03 Ecology, McMaster University)
Reptile Conservation
(Earth Sci 3B03 Global Change and Ecosystems, McMaster University)

2016 GIS day, McMaster University

2016 Overview of Final Project
(LS 3D03 Global Environment and Sustainability, McMaster University)

2015 Field Methodology and Interpreting Field Data
(LS 3F03 Applied Ecology, McMaster University)

2015 Freshwater Turtle Ecology and Conservation
(LS 3F03 Applied Ecology, McMaster University)

2014 Remote Sensing in Ecology
(EARTH SC 3RS3 Remote Sensing, McMaster University)

2014 Field Methodology and Interpreting Field Data
(LS 3F03 Applied Ecology, McMaster University)

2014 Freshwater Turtle Ecology and Conservation
(LS 3F03 Applied Ecology, McMaster University)

Teaching Assistant:

2017 Wetland biodiversity: coastal marshes to vernal pools (BIO 3R03 Field course)

2017 Advanced Topics in Ecology (BIO 4A03)

2016 Communities and Ecosystems (BIO 3DD3)

2016 Global and Environment Sustainability (LS 3D03; head TA)

2015 Global and Environment Sustainability (LS 3D03; head TA)

2015 Applied Ecology Seminars (LS 3F03)

2014 Global and Environment Sustainability (LS 3D03)

2014 Applied Ecology Seminars (LS 3F03)

2013 Global and Environment Sustainability (LS 3D03)

2013 Communities and Ecosystems (BIO 3DD3)

2013 Indicators of ecosystem health: streams and wetlands (BIO 3R03 Field course)

2012 Communities and Ecosystems (BIO 3DD3)

Supervision:

2016 Reese Curiale (volunteer undergraduate research assistant)

2016 Victorino Nodalo (volunteer undergraduate research assistant)

2015 Aaron Buckley (volunteer undergraduate research assistant)

2015 Sarah Song (volunteer undergraduate research assistant)

2015 Rebecca Graves (undergraduate senior project, supervisor: Dr. Chow-Fraser)

2015 Nicole Zathay (undergraduate senior thesis, supervisor: Dr. Chow-Fraser)

2014 Aman Gill (undergraduate senior thesis, supervisor: Dr. Chow-Fraser)

2014 Jessica Watts (undergraduate research practicum, supervisor: Dr. Chow-Fraser)

2012 Margaret Sawatzky (NSERC undergraduate research project, supervisor: Dr. Chow-Fraser)

VOLUNTEER WORK

- 2017 Executive Secretary for Biology Graduate Student Society
- 2016 Executive Secretary for Biology Graduate Student Society
- 2016 Session Chair, Interdisciplinary approaches to solve problems relating to Great Lakes coastal wetlands, International Association for Great Lakes Research
- 2016 Graduate Student Welcome Buddy
Student mentor to new international graduate students
- 2016 Biology Undergraduate Symposium Judge
- 2015 Executive Secretary for Biology Graduate Student Society
- 2015 Graduate Student Welcome Buddy
Student mentor to new international graduate students
- 2015 Session Chair, Novel techniques for wetland habitat management and assessment, International Association for Great Lakes Research
- 2015 Biology Undergraduate Symposium Judge
- 2014 Executive Secretary for Biology Graduate Student Society
- 2014 Session Chair, Reptile and amphibian conservation in a changing landscape, International Association for Great Lakes Research
- 2014 Bay Area Science and Engineering Fair (BASEF) Judge, Mohawk College
- 2014 Abstract Selection Committee, Biology Graduate Research Day
- 2013 Executive Secretary for Biology Graduate Student Society
- 2013 NSERC Undergraduate Student Research Award Presentations Judge
- 2013 Ontario Biology Day Judge
- 2013 Abstract Selection Committee, Biology Graduate Research Day
- 2011 Amphibian and habitat surveys, Marsh Monitoring Program
- 2011 Speak Easy English Tutor, McMaster University

ADDITIONAL CERTIFICATIONS

- 2016 Firearms Possession and Acquisition Licence
- 2015 Hunting and Fishing Outdoors Card
- 2008 Class G Driver's Licence
- 2007 Open Water Scuba Diver
- 2003 Pleasure Craft Operator

REVIEWING

Journals:

Chelonian Conservation and Biology, Wildlife Society Bulletin, Tropical Conservation Science, Herpetological Review

MEMBERSHIP

Canadian Herpetological Society