

## Curriculum Vitae

# Thomas Michael Cullen

Department of Ecology and Evolutionary Biology

University of Toronto

[thomas.cullen@mail.utoronto.ca](mailto:thomas.cullen@mail.utoronto.ca)

[tmcullen.weebly.com](http://tmcullen.weebly.com)

ORCID: 0000-0002-4261-1323

### Mailing address (work):

Royal Ontario Museum  
Department of Natural History  
100 Queen's Park  
Toronto, Ontario, Canada  
M5S 2C6

### Mailing address (home):

[REDACTED]

Phone Number: [REDACTED]

## Personal Information

---

**Date of Birth:** June 11, 1988

**Place of Birth:** Ottawa, Ontario, Canada

**Citizenship:** Canadian

## Academic Background

---

**Ph.D.**, January 2013 to present. Community structure and palaeoecology of the Belly River Group (Campanian, Alberta), with a focus on evaluating the use of stable isotope methods for inferring vertebrate community ecology. Department of Ecology and Evolutionary Biology, University of Toronto. Thesis Supervisor: Dr. David Evans.

**Expected Completion: September 2017.**

**M.Sc.**, September 2010 to November 2012. Comparative description of a female *Enaliarctos emlongi* (Carnivora, Pinnipedimorpha) from the mid-Miocene of western Oregon and the evolution of sexual dimorphism within Pinnipedia. Department of Earth Sciences, Carleton University. Thesis Co-Supervisors: Dr. Natalia Rybczynski and Dr. Claudia Schröder-Adams.

**B.Sc.**, September 2006 to June 2010. Highest Honours, Earth Sciences (concentration in vertebrate palaeontology and palaeoecology), Carleton University. Undergraduate research project: Description of an ornithomimid (Dinosauria) bonebed from the late Cretaceous of Alberta, with implications for classification and ontogeny of ornithomimids. Supervisor: Dr. Michael Ryan and Dr. Claudia Schröder-Adams.

## **Major Awards and Funding (>\$5000)**

---

- 2016-2017:** Queen Elizabeth II/Dr. F. M. Hill Scholarship in Science and Technology  
**(\$15000)**
- 2013-2016:** Natural Sciences and Engineering Research Council Alexander Graham Bell  
Canada Graduate Scholarship (Doctoral) **(\$105,000, \$35,000 x 3 years)**
- 2013:** Ontario Graduate Scholarship (Doctoral) (Held until NSERC awarded for Sept. 2013)  
**(\$15000)**
- 2011-2012:** Natural Sciences and Engineering Research Council Alexander Graham Bell  
Canada Graduate Scholarship (Masters)  
**(\$17500)**
- 2011-2012:** Ontario Graduate Scholarship (Masters) **(\$15000)** (declined)
- 2011:** Donations from Gaineys Foundation, and Carleton alumni J.C Potvin and Jim Sullivan  
to fund travel expenses of Carleton University Antarctic Expedition members.  
**(\$36000 / 7 students = ~\$5143)**
- 2010:** Dr. George A. Jeletzky Memorial Scholarship, Department of Earth Sciences,  
Carleton University **(\$5000)**

## **Minor Awards (<\$5000) & Competitive Non-Monetary Awards**

---

- 2017:** Dinosaur Research Institute Student Project Grant **(\$1000)**
- 2017:** Internal Restricted Award, Department of Ecology and Evolutionary Biology,  
University of Toronto **(\$1000)**
- 2016:** Dinosaur Research Institute Student Project Grant **(\$2000)**
- 2016:** Ramsay Wright graduate student award (honourable mention), Department of  
Ecology and Evolutionary Biology, University of Toronto
- 2014:** Dinosaur Research Institute Rene Vandervelde Travel Award for attendance of  
Society of Vertebrate Paleontology Annual Meeting in Berlin, Germany. **(\$1250)**
- 2014:** Jackson School of Geosciences Student Member Travel Grant for attendance of  
Society of Vertebrate Paleontology Annual Meeting in Berlin, Germany. **(\$600)**
- 2013:** University of Toronto Department of Ecology and Evolutionary Biology Harold Harvey  
Travel Grant for attendance of Society of Vertebrate Paleontology Annual Meeting in  
Los Angeles, California, USA **(\$400)**
- 2013:** Dinosaur Research Institute Student Project Grant **(\$2300)**
- 2013:** C.S. Rufus Churcher Graduate Award in Zoology, Department of Ecology and  
Evolutionary Biology, University of Toronto **(\$1974)**
- 2013:** Frederick P. Ide Graduate Award in Ecology and Evolutionary Biology, Department of  
Ecology and Evolutionary Biology, University of Toronto **(\$826)**
- 2012:** Northern Science Training Program grant for High Arctic fieldwork, awarded by the  
Department of Aboriginal Affairs and Northern Development Canada for fieldwork at  
Horton River and Boundary Creek, Northwest Territories, Canada. **(\$2000)**
- 2012:** Dr. George A. Jeletzky Memorial Scholarship, Department of Earth Sciences,

- Carleton University (**\$1000**)
- 2011:** Dean's Honour List, Carleton University
- 2011:** Departmental Graduate Scholarship 3, Department of Earth Sciences, Carleton University (**\$2000**)
- 2011:** Departmental Graduate Scholarship 2, Department of Earth Sciences, Carleton University (**\$2100**)
- 2011:** Dr. George A. Jeletzky Memorial Scholarship, Department of Earth Sciences, Carleton University (**\$1000**)
- 2010:** Northern Science Training Program grant for High Arctic fieldwork, Department of Aboriginal Affairs and Northern Development Canada. Devon Island, Nunavut Territory, Canada. (**\$2500**)
- 2010:** W. H. Collins Fund for student travel for Carleton University earth sciences field schools. (**\$1000**)
- 2010:** Dean's Honour List, Carleton University
- 2010:** Departmental Graduate Scholarship 3, Department of Earth Sciences, Carleton University (**\$2000**)
- 2010:** Departmental Graduate Scholarship 2, Department of Earth Sciences, Carleton University (**\$2100**)
- 2010:** Undergraduate Research Day Award, Carleton University
- 2009-2010:** General In-course Scholarship, Carleton University (**\$750**)
- 2009:** Dean's Honour List, Carleton University
- 2008-2009:** Salaried Employees Alliance Canada Scholarship (**\$1000**)
- 2007-2008:** General In-course Scholarship, Carleton University (**\$750**)
- 2007:** Dean's Honour List, Carleton University

## Research

---

### Peer-Reviewed Publications

10. McFeeters, B., Ryan, M.J., and **Cullen, TM.** (In Review). Morphology and variation in ungual phalanges of North American ornithomimosaur (Dinosauria, Theropoda): implications for interpreting isolated elements. *Vertebrate Anatomy Morphology Palaeontology*
9. LeBlanc, ARH., Brink, K., **Cullen, TM.,** and Reisz, R. (In Press). Evolutionary implications of tooth attachment versus tooth implantation: a case study using dinosaur, crocodylian, and mammal teeth. *Journal of Vertebrate Paleontology*
8. Evans, DC., **Cullen, TM.,** Larson, DL., and Rego, A. (2017). A new species of troodontid theropod (Dinosauria: Maniraptora) from the Horseshoe Canyon Formation (Maastrichtian) of Alberta, Canada. *Canadian Journal of Earth Sciences*

7. **Cullen, TM.** and Evans, DC. (2016). Palaeoenvironmental drivers of vertebrate community composition in the Belly River Group (Campanian) of Alberta, Canada, with implications for dinosaur biogeography. *BMC Ecology*. doi: 10.1186/s12898-016-0106-8. ([Editor's Pick and BMC Ecology top 10 highlight for 2016](#), and subject of a [BMC Series blog](#))
6. McFeeters, B., Ryan, MJ., Schröder-Adams, C., and **Cullen, TM.** (2016). A new ornithomimid theropod from the Dinosaur Park Formation of Alberta, Canada. *Journal of Vertebrate Paleontology*. doi: 10.1080/02724634.2016.1221415
5. **Cullen, TM.**, Fanti, F., Capobianco, C., Ryan, MJ., and Evans, DC. (2016). A vertebrate microsite from a marine-terrestrial transition in the Foremost Formation (Campanian) of Alberta, Canada, and the use of faunal assemblage data as a palaeoenvironmental indicator. *Palaeogeography, Palaeoclimatology, Palaeoecology* 444: 101-114. doi: 10.1016/j.palaeo.2015.12.015
4. **Cullen, TM.**, Ryan, MJ., Currie, PJ., Kobayashi, Y., and Evans, DC. (2014). Osteohistological variation in growth marks and osteocyte lacunar density in a theropod dinosaur (Coelurosauria: Ornithomimidae). *BMC Evolutionary Biology* ([Editor's Pick and a BMC series highlight for November 2014](#), and included in [list of the 12 best figures in BMC Evolutionary Biology for 2014](#))
3. Evans, DC., Larson, DW., **Cullen, TM.**, & Sullivan, RM. (2014). 'Saurornitholestes' *robustus* is a troodontid (Dinosauria: Theropoda). *Canadian Journal of Earth Sciences* 51(7): 730-734. doi: 10.1139/cjes-2014-0073
2. **Cullen, TM.**, Fraser, D., Rybczynski, N., and Schröder-Adams, C. (2014). Early evolution of sexual dimorphism and polygyny in Pinnipedia. *Evolution* 68(5): 1469-1484. ([Subject of the May 2014 cover of Evolution](#))
1. **Cullen TM.**, Ryan MJ, Schröder-Adams C, Currie PJ, Kobayashi Y. (2013). An Ornithomimid (Dinosauria) Bonebed from the Late Cretaceous of Alberta, with Implications for the Behavior, Classification, and Stratigraphy of North American Ornithomimids. *PLoS ONE* 8(3): e58853. doi:10.1371/journal.pone.0058853

### **Conference presentations (\* indicates oral presentation)**

23. **\*Cullen, TM.**, Longstaffe, FJ., Wortmann, UG., Goodwin, MB., Huang, L., Evans, DC. 2017. Stable isotope analysis of an extant vertebrate community using palaeontological sampling constraints reveals low ecological resolution in a C3 floodplain system. Society of Vertebrate Paleontology 77th Annual Meeting, 23-26 August 2017, Calgary, Alberta, Canada.

22. \*Evans, DC., **Cullen, TM.**, Larson, DW., and Rego, A. 2017. A new species of troodontid theropod (Dinosauria: Maniraptora) from the Horseshoe Canyon Formation (Maastrichtian) of Alberta, Canada. Canadian Society of Vertebrate Palaeontology 4th Annual Meeting. May 18th-21st, University of Toronto Mississauga, Mississauga, ON, Canada
21. **Cullen, TM.**, Longstaffe, FJ., Evans, DC. 2016. An intensive multi-taxic stable carbon and oxygen isotopic analysis of vertebrates from a microsite in the Oldman Formation (Late Cretaceous) of Alberta. Society of Vertebrate Paleontology Annual Meeting. Oct. 26th-29th, Salt Lake City, UT, USA.
20. Benner, EKC., **Cullen, TM.**, Evans, DC. 2016. A new large-bodied caenagnathid specimen (Theropoda, Oviraptorosauria) from the Hell Creek Formation (Late Cretaceous) of Montana, with implications for osteohistological variability in caenagnathids. Society of Vertebrate Paleontology Annual Meeting. Oct.26th-29th, Salt Lake City, UT, USA.
19. \*McFeeters, B., **Cullen, T.** 2016. Holotype of the Late Cretaceous dinosaur *Dromiceiomimus brevetertius*, with implications for the utility of distal caudal vertebrae in ornithomimid classification. Canadian Paleontological Conference. Aug. 26th-28th, Cape Breton University, Sydney, NS, Canada.
18. \*Benner, EKC., **Cullen, TM.**, Evans, DC. 2016. Morphological and histological analysis of a new large-bodied caenagnathid specimen (Theropoda: Oviraptorosauria) from the Hell Creek Formation (Montana). Canadian Society of Vertebrate Palaeontology 4th Annual Meeting. May 18th-21st, University of Toronto Mississauga, Mississauga, ON, Canada
17. \***Cullen, TM.** 2016. The influence of environmental drivers on vertebrate faunal assemblages in the late Cretaceous of Alberta, Canada. Canadian Society of Vertebrate Palaeontology 4th Annual Meeting. May 18th-21st, University of Toronto Mississauga, Mississauga, ON, Canada
16. \***Cullen, TM.**, Evans, DC., Ryan, MJ., and Currie. PJ. 2015. New data on dinosaur faunal turnover and extinction timing in the Dinosaur Park Formation (Late Cretaceous: Campanian) of Alberta, Canada. Society of Vertebrate Paleontology Annual Meeting. Oct.14<sup>th</sup>-17<sup>th</sup>, Dallas, TX, USA.
15. **Cullen, TM.**, Evans, DC., Ryan, MJ., Kobayashi, Y., and Currie. PJ. 2014. Variation in intra- and inter-individual osteocyte lacunar density in a theropod dinosaur (Coelurosauria: Ornithomimidae). Society of Vertebrate Paleontology Annual Meeting. Nov.5<sup>th</sup>-8<sup>th</sup>, Berlin, Germany.

14. \*LeBlanc, A., Brink, K., **Cullen, TM.**, Reisz, R. 2014. Tooth sockets and interdental plates: the development and histology of thecodonty in amniotes. Society of Vertebrate Paleontology Annual Meeting. Nov.5<sup>th</sup>-8<sup>th</sup>, Berlin, Germany.
13. Larson, D., **Cullen, TM.**, Todd, E., Evans, DC. 2014. Geometric morphometrics of small theropod frontals from the Dinosaur Park formation, Alberta. Society of Vertebrate Paleontology Annual Meeting. Nov.5<sup>th</sup>-8<sup>th</sup>, Berlin, Germany.
12. \***Cullen, TM.** 2014. Intraspecific variation in osteohistologic traits in a size-series of an ornithomimid dinosaur (Theropoda: Coelurosauria). 24<sup>th</sup> Canadian Paleontology Conference. Aug.28<sup>th</sup>-31<sup>st</sup>, Montreal, QC, Canada.
11. **Cullen, TM.**, Ryan, MJ., Capobianco, C., Newbrey, M., and Evans, DC. 2013. A vertebrate microfossil site with a terrestrial-dominated faunal assemblage from the upper Foremost Formation (Campanian) of Alberta. Society of Vertebrate Paleontology Annual Meeting. Oct.30<sup>th</sup>-Nov.2<sup>nd</sup>, Los Angeles, CA, USA.
10. \***Cullen, TM.**, Fraser, D., Rybczynski, N., and Schröder-Adams, C. 2013. Early evolution of sexual dimorphism and polygyny within Pinnipedia. 23<sup>rd</sup> Canadian Paleontology Conference. Aug.29<sup>th</sup>-Sept.1<sup>st</sup>, Edmonton, AB, Canada.
9. **Cullen, TM.**, Ryan, MJ., Currie, PJ., Kobayashi, Y., and Evans, DC. 2013. Multi-element histological analysis of an ornithomimid (Dinosauria: Theropoda) bonebed from the late cretaceous of Alberta, with implications for skeletochronology in theropods. Second International Symposium on Paleohistology. July 18<sup>th</sup>-20<sup>th</sup>, Bozeman, MT, USA.
8. \***Cullen, T.**, Ryan, M., Schröder-Adams, C., Kobayashi, Y., and Currie, P. 2012. Multi-element histological analysis of an ornithomimid (Dinosauria) bone bed from the Horseshoe Canyon Formation, Alberta. Society of Vertebrate Paleontology Annual Meeting. Oct.17<sup>th</sup>-20<sup>th</sup>, Raleigh, USA.
7. **Cullen, TM.**, Ryan, MJ., Evans, DC., Capobianco, C., and Newbrey, M. 2012. Taxonomy and palaeoecology of a vertebrate microsite from the Foremost Formation of southern Alberta, Canada. 22<sup>nd</sup> Canadian Paleontology Conference. Sept. 21<sup>st</sup>-23<sup>rd</sup>, Toronto, ON, Canada.
6. **Cullen, T.**, Rybczynski, N. and Schröder-Adams, C. 2012. A female *Enaliarctos emlongi* (Carnivora, Pinnipedimorpha) from the Miocene of western Oregon and the evolution of sexual dimorphism within Pinnipedia. 1<sup>st</sup> Joint Congress on Evolutionary Biology. July 6<sup>th</sup>-10<sup>th</sup>, Ottawa, ON, Canada.

5. **\*Cullen, T.**, Ryan, M., Evans, D, Currie, P, and Kobayashi, Y. 2012. Preliminary results of a multi-element histological analysis of an ornithomimid (Dinosauria) bone bed from the late Cretaceous of Alberta. Geological Association of Canada – Mineralogical Association of Canada Meeting. May 27<sup>th</sup>-29<sup>th</sup>, St. John's, NL, Canada.
4. **Cullen, T.**, Pugh, A., Schröder-Adams, C., Halfkenny, B., Rybczynski, N., and Mitchell, T. 2012. Geoheritage Sites of the Canadian Arctic: Increasing Awareness through Education and Co-operation. International Polar Year Conference. April 22<sup>nd</sup>-27<sup>th</sup>, Montreal, QC, Canada.
3. **Cullen, T.**, Rybczynski, N., and Schröder-Adams, C. 2011. Description of a small skull specimen of *Enaliarctos* (Carnivora, Pinnipedimorpha) from the Miocene of western Oregon. Society of Vertebrate Paleontology Annual Meeting. Nov.2<sup>nd</sup>-5<sup>th</sup>, Las Vegas, NV, USA.
2. **Cullen, T.**, Rybczynski, N. and Schröder-Adams, C. 2011. Preliminary description of a female *Enaliarctos emlongi* (Carnivora: Pinnipedia) from the Miocene of western Oregon and implications for the evolution of pinniped mating systems. Canadian Society of Zoologists Annual Meeting. May.16<sup>th</sup>-20<sup>th</sup>, Ottawa, ON, Canada.
1. **Cullen, T.**, Ryan, M., Schröder-Adams, C., Kobayashi, Y., Currie, P. 2010. Description of the first ornithomimid (Dinosauria) bonebed from North America with implications for the discrimination, ontogeny and behavior of ornithomimids. Society of Vertebrate Paleontology Annual Meeting. Oct.10<sup>th</sup>-13<sup>th</sup>, Pittsburgh, PA, USA.

### **Invited lectures**

7. **Cullen, TM.** ROM collections reveal a new dinosaur: *Rativates evadens*. 'Fossil Fest Family Funday' at the Royal Ontario Museum, January 22<sup>nd</sup>, 2017, Toronto, ON.
6. **Cullen, TM.** Evaluating osteohistological variation in growth marks and osteocyte lacunar density: a case study using theropod dinosaurs. Department of Ecology and Evolutionary Biology Atwood Colloquium 2015, April 10<sup>th</sup>-11<sup>th</sup>, Toronto, ON.
5. **Cullen, TM.** Sorting out the world of dinosaurs: palaeoecology and palaeoenvironments in the Cretaceous of Alberta. 'Dinosaurs Invade! Weekend' at the Royal Ontario Museum, January 24<sup>th</sup>-25<sup>th</sup>, 2015, Toronto, ON.
4. **Cullen, TM.** Early evolution of sexual dimorphism and polygyny in Pinnipedia. Advances in Earth Sciences Research Conference 2014. Mar.28<sup>th</sup>-30<sup>th</sup>, Ottawa, ON.
3. **Cullen, TM.** Fieldwork in palaeontology. March Break 'ROMology' program at the Royal Ontario Musuem. March 2014, Toronto, ON.

2. **Cullen, TM.** Skeletochronology and reducing subjectivity in palaeohistological analyses. First International ROM Palaeohistology Workshop, September 27<sup>th</sup>, 2013, Toronto, ON.
1. **Cullen TM.** Antarctica's ecosystems through time: a change from terrestrial to fully marine. Students on Ice – Carleton University Antarctic Expedition lecture series at the Canadian Museum of Nature. April 14<sup>th</sup>, 2011, Ottawa, ON.

### **Non-refereed publications**

4. **Cullen, T.** January 10, 2017. Dinosaur Distributions in the Belly River. Blog for BMC Series Blog. <http://blogs.biomedcentral.com/bmcseriesblog/2017/01/10/dinosaur-distributions-belly-river/>
3. **Cullen, T.** July 9, 2016. Microsites and Macroinferences. Blog for 'Valley of the Last Dinosaurs' project of Denver Museum of Nature & Science and the Howard Hughes Medical Institute. <http://lastdinosaurs.livesci.org/field-notebook/>
2. **Cullen, T.** July 7, 2016. Field Camps in Many Shapes and Sizes. Blog for 'Valley of the Last Dinosaurs' project of Denver Museum of Nature & Science and the Howard Hughes Medical Institute. <http://lastdinosaurs.livesci.org/field-notebook/>
1. **Cullen, T.** November 19, 2014. Photography in the Field: equal parts business & pleasure. ROM blogs. <https://www.rom.on.ca/en/blog/photography-in-the-field-equal-parts-business-pleasure>

### **Professional Development, Workshops, and Training**

---

**April 2017: Red Cross Wilderness First Aid Course.** 3-day intensive course with hands-on experience in remote and wilderness situations.

**September 2014, 2015, 2016: 2<sup>nd</sup>/3<sup>rd</sup>/4<sup>th</sup> Annual International ROM Palaeohistology workshops.** Assisted in organization and implementation of workshop, including three days of lectures and hands-on thin section preparation. The workshop instructed 8-10 students on the theory and methodologies behind the generation of palaeohistological thin sections. I acted as an instructor during the lecture and hands-on portions of the workshop. My lectures focused on bone biology and skeletochronological methods, and on limiting subjectivity in osteohistological analyses.

**December 2015: Morphometrics workshop.** Organized and led (alongside Derek Larson) a workshop focused on the understanding and use of geometric morphometric analyses. This workshop instructed 8 students from a range of backgrounds (undergraduate, graduate) and study interests. Lectures and discussions



focused on the theoretical background underlying morphometrics, the advantages and drawbacks to different morphometric methods. Practical instruction included hands-on data collection, and R coding to carry out multiple geometric morphometric analyses using multiple datasets and different analytical techniques (including Procrustes analysis, PCA, landmark-based data, semi-landmark data, deformation grid generation and comparisons, etc).

**May 2015, Jan 2016, May 2016, Sept 2016: Laser ablation stable isotope mass spectrometry.** Analyzed samples using the laser-ablation gas chromatography-isotope ratio mass spectrometry (GC-IRMS) system at Western University in London, Ontario, on multiple occasions throughout 2015 and 2016. During this time the technician, Li Huang, and the head researcher in the lab, Dr. Fred Longstaffe, instructed me on the proper operation of the LA-ICPMS system, preparation of samples, and on the interpretation of raw data outputs from this system.

**October 2014: Teaching Fundamentals (TF) certificate** program completion. Awarded after completing a series of teaching workshops through the Centre for Teaching Support and Innovation at the University of Toronto.

Workshops completed as part of TF certificate program:

**Preparing your teaching dossier** (November 7<sup>th</sup>, 2013), facilitated by Michelle Majeed and Sara Carpenter.

**Pedagogy 101** (November 28<sup>th</sup>, 2013), facilitated by Sara Carpenter, Lana Kuhle, and Leanne De Souza

**Looking ahead: documenting teaching & demonstrating effectiveness** (January 16<sup>th</sup> 2014), facilitated by Sara Carpenter

**Fostering academic integrity: noble intentions & sticky situations** (February 4<sup>th</sup>, 2014), facilitated by Saira Mall and Martha Harris

**Active learning methods in science & engineering** (February 7<sup>th</sup>, 2014), facilitated by Ben Moulton and Andrea Lupascu

**Identifying your transferable skills** (March 4<sup>th</sup>, 2014), facilitated by Heather Kelly and Jonathon Turner.

**June – July 2014: FossilWorks Intensive Workshop in Analytical Paleobiology**, June 9 – July 14, Macquarie University, Sydney, Australia. Detailed instruction on the understanding and implementation of quantitative methods using the R programming language. Some topics covered in this training include community palaeoecology, diversity estimation, geometric morphometrics, and phylogenetic analyses.

**April 2014: Red Cross Wilderness First Aid Course.** 3-day (April 25<sup>th</sup>-27<sup>th</sup>) intensive course led by Carl Chambers with hands-on experience in remote and wilderness situations.

**May 2009: Canadian Society of Petroleum Geologists Student Industry Field Trip (SIFT)**, Alberta and British Columbia, Canada. From May 2<sup>nd</sup> – 15<sup>th</sup>, one student per participating university was instructed in theoretical and practical (both lab and field based) exercises focused on imparting knowledge and skills needed for work in the petroleum industry, with demonstrations of new industry methods and techniques.

## **Field Experience**

---

**July – August 2016:** Alberta, Canada. Participated in Southern Alberta Dinosaur Project (SADP) working in late Cretaceous Belly River Group strata near Manyberries, Alberta. Field work focus – vertebrate palaeontology, dinosaur excavation, prospecting, quarry relocation, biostratigraphy.

**July 2016:** Montana, USA. Measuring stratigraphic sections and relocating old sites in late Cretaceous Hell Creek Formation strata near Jordan, Montana, and the Judith River Formation strata near Havre, Montana. This work was performed alongside the field camp of Drs. Greg Wilson, Mark Goodwin, and Jack Horner. Field work focus – vertebrate palaeontology, biostratigraphy, quarry relocation

**July 2016:** North Dakota, USA. Prospecting vertebrate material in late Cretaceous Hell Creek Formation strata near Marmarth, North Dakota. This work was performed alongside the field camp of Dr. Tyler Lyson. Field work focus – vertebrate palaeontology, prospecting, stratigraphy

**October 2015:** Louisiana, USA. Led opportunistic sampling of hard tissues from vertebrates in the Atchafalaya Basin, near Lafayette, Louisiana. Field work focus – field ecology.

**July 2015:** Alberta, Canada. Participated in SADP working in late Cretaceous Belly River Group strata (primarily Oldman Formation) near Manyberries, Alberta. Field work focus – vertebrate palaeontology, dinosaur excavation, prospecting.

**June – July 2015:** Montana, USA. Excavating dinosaur material in late Cretaceous Judith River Formation strata near Malta, Montana. Field work focus – vertebrate palaeontology, prospecting, stratigraphy

**February 2015:** Louisiana, USA. Led opportunistic sampling of hard tissues from vertebrates in the Atchafalaya Basin, near Baton Rouge, Louisiana. Field work focus – field ecology.

**July 2014:** Alberta, Canada. Participated in SADP working in late Cretaceous Belly River Group strata (primarily Oldman Formation) near Manyberries, Alberta. Field work focus – vertebrate palaeontology, dinosaur excavation

**July 2013:** Montana, USA. Excavating dinosaur material in late Cretaceous Judith River Formation strata near Malta, Montana. Field work focus – vertebrate palaeontology, dinosaur excavation, prospecting

**June – July 2013:** Alberta, Canada. Participated in SADP working in late Cretaceous Belly River Group strata (primarily Oldman Formation) near Manyberries, Alberta. Field work focus – vertebrate palaeontology, dinosaur excavation, microsite collection, quarry relocation

**July – August 2012:** Northwest Territories, Canada. Participated in field expedition of late Cretaceous deposits along the Horton and Big Fish rivers, North West Territories. Field work focus – stratigraphy, sediment sampling, prospecting

**July 2011:** Alberta, Canada. Participated in SADP working in late Cretaceous Belly River Group strata (primarily Oldman Formation) near Manyberries, Alberta. Field work focus – vertebrate palaeontology, dinosaur excavation, prospecting

**February 2011:** Tierra del Fuego, Argentina, and Antarctica. Participated in interdisciplinary field and education expedition led by Students on Ice and teams from six international universities (Canadian, American, British, Swedish). Expedition was based on the research vessel *M/V Ushuaia*, and involved landings on locations across the Antarctic Peninsula. Field work focus - geology, glaciology, oceanography, marine biology.

**July 2010:** Nunavut, Canada. Participated in field expedition in early Miocene deposits of the Haughton Formation and associated Haughton Impact Structure on Devon Island, Nunavut. Field work focus – mammal palaeontology, prospecting, stratigraphy

**July 2009:** Alberta, Canada. Participated in Southern Alberta Dinosaur Project (SADP) working in late Cretaceous Belly River Group strata (primarily Oldman Formation) near Manyberries, Alberta. Field work focus – vertebrate palaeontology, dinosaur excavation

## **Teaching and Mentoring Experience**

---

### **Student Project Mentoring:**

As a senior graduate student in the Evans lab at the University of Toronto, I have assisted in the mentoring of junior graduate students by orientating them with the University and the Royal Ontario Museum, assisting them in learning relevant methods of data acquisition, and discussing their research data.

I have also assisted in the supervision of several undergraduate student projects. In most cases this involves assisting the students in developing their hypotheses, providing literature pertinent to their projects, teaching them relevant methods, and discussing their research results prior to more formal progress meetings with Dr. Evans.

Specific student projects in which I have assisted in supervising are as follows:

- Adam Rego, Horseshoe Canyon Formation *Troodon* frontal morphology
- Elizabeth Benner, Hell Creek Formation oviraptorosaur osteohistology
- Talia Lowi-Merri, *Gryposaurus* cranial morphometrics
- Erin Todd, Dinosaur Park Formation theropod frontal morphometrics

### **Teaching Assistant Assignments & Duties:**

#### **January – April 2017:**

**EEB267: Vertebrate Diversity.** Teaching assistant. Department of Ecology and Evolutionary Biology, University of Toronto. Professor: Deborah McLennan. Conducted weekly laboratory sessions & lab exams.

**EEB390: Vertebrate Palaeontology.** Teaching assistant. Department of Ecology and Evolutionary Biology, University of Toronto. Professors: David Evans, Kevin Seymour, Gerry De Iuliis. Design lab content, conduct weekly laboratory sessions, proctor/mark lab exams.

#### **January – April 2016:**

**EEB267: Vertebrate Diversity.** Teaching assistant. Department of Ecology and Evolutionary Biology, University of Toronto. Professor: David Zamparo. Conducted weekly laboratory sessions, proctored/marked lab exams.

**EEB390: Vertebrate Palaeontology.** Teaching assistant. Department of Ecology and Evolutionary Biology, University of Toronto. Professors: David Evans, Kevin Seymour, Gerry De Iuliis. Design lab content, conduct weekly laboratory sessions & lab exams.

#### **January – April 2015:**

**EEB267: Vertebrate Diversity.** Teaching assistant. Department of Ecology and Evolutionary Biology, University of Toronto. Professor: Deborah McLennan. Conducted weekly laboratory sessions, proctored/marked lab exams.

### **September – December 2014:**

**EEB267: Vertebrate Diversity.** Teaching assistant. Department of Ecology and Evolutionary Biology, University of Toronto. Professor: Deborah McLennan. Created course content (new lab demonstration, materials, and assignment)

### **January – April 2014:**

**EEB267: Vertebrate Diversity.** Teaching assistant. Department of Ecology and Evolutionary Biology, University of Toronto. Professor: Deborah McLennan. Conducted weekly laboratory sessions, proctored/graded lab exams.

### **January – April 2013:**

**EEB267: Vertebrate Diversity.** Teaching assistant. Department of Ecology and Evolutionary Biology, University of Toronto. Professor: Deborah McLennan. Created course content (exercises in existing labs), conducted weekly laboratory sessions, proctored/graded lab exams.

### **January – April 2012:**

**ERTH2312: Invertebrate Palaeontology.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: R. Tim Patterson. Conducted weekly laboratory sessions, updated laboratory assignment content.

**ERTH3113: Geology of Human Origins.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: Sanja Hinic-Frlog. Conducted and prepared assignment sessions, graded quizzes/tests.

### **September – December 2011:**

**ERTH2401: Dinosaurs.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: Claudia Schröder-Adams. Assisted in course administration, prepared tests/quizzes, held office hours, and gave guest lecture.

### **April – May 2011:**

**ERTH2802: Field Geology.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: Fred Gaidies. Assisted in teaching field methods and geological mapping during intensive two-week field course.

### **January – April 2011:**

**ERTH2312: Invertebrate Palaeontology.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: R. Tim Patterson. Conducted weekly laboratory sessions.

**ERTH3112: Palaeontology and Evolution of Vertebrates.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: Sanja Hinic-Frlog. Conducted weekly laboratory sessions, updated lab assignment content.

### **September – December 2010:**

**ERTH2314: Sedimentation and Stratigraphy.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: George Dix. Conducted weekly laboratory sessions, led short field assignments.

**ERTH2102: Introductory Mineralogy.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: Fred Gaidies. Conducted weekly laboratory sessions.

### **January – April 2010:**

**ERTH1007: Introduction to Geology II.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: Brian Cousens. Conducted weekly laboratory sessions.

### **September – December 2009:**

**ERTH1006: Introduction to Geology I.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: Brian Cousens. Conducted weekly laboratory sessions.

### **January – April 2009:**

**ERTH1007: Introduction to Geology II.** Teaching assistant. Department of Earth Sciences, Carleton University. Professor: Brian Cousens. Conducted weekly laboratory sessions.

## **Volunteer Work & Public Engagement**

---

**June 2017: Royal Ontario Museum.** Interacted with museum visitors and discussed recent ROM palaeontology discoveries during 'DinoNite' Friday Night Live event (June 2<sup>nd</sup>, 2017).

**February 2017-present: Science Borealis.** a Canadian non-profit organization dedicated to highlighting and disseminating Canadian scientific research & policy through blogs, events, and social media. My primary duties with Science Borealis are as a member of their Outreach Team, where I contribute to discussions of public engagement strategies and assist in running social media accounts. More information about Science Borealis can be found at [scienceborealis.ca](http://scienceborealis.ca)

**January 2015-2017: Royal Ontario Museum.** Interacted with museum visitors, explained vertebrate fossil microsites and their use in inferring palaeoecology and palaeoenvironments. Part of the 'Dinosaurs Invade! Weekend' (January 24<sup>th</sup>-25<sup>th</sup>, 2015; January 23<sup>rd</sup>-24<sup>th</sup>, 2016) and/or 'Fossil Fest Family Funday' (January 22<sup>nd</sup>, 2017) events at the Royal Ontario Museum.

**November 2014: Royal Ontario Museum.** Alongside Dr. David Evans, provided tour of collections and research facilities to visiting guest Adam Savage ('Mythbusters'), November 29<sup>th</sup>, 2014.

**May 2014: Royal Ontario Museum.** Provided tours of palaeontological collections to public during 'ROM Revealed' open house weekend (May 3<sup>rd</sup> & 4<sup>th</sup> 2014)

**March 2014, 2015: Royal Ontario Museum.** March Break Dinosaur Touch Table. Interacted with museum visitors, explained fossil specimens, and answered questions on a wide range of topics relating to dinosaurs, palaeontology, and evolution.

**September 2014-2016: University of Toronto Department of Ecology and Evolutionary Biology Graduate Student Association.** Graduate Student Union representative. Act as link between graduate students of our department and the broader University of Toronto Graduate Student Union (UTGSU) council, report on union actions and initiatives, forward information on upcoming events, issues, and services to grad students.

**September 2013- April 2014: University of Toronto Ecology and Evolutionary Biology Graduate Student Association.** Royal Ontario Museum Representative. Act as link to executive and co-presidents for ROM grad students, assist in planning tri-campus events and seminars.

**August 2013- April 2014: University of Toronto Graduate Students Union.** Member of Civics Committee, with work focused on student engagement in student union, improvement of January term orientation, providing information for students of upcoming civic/provincial/federal elections.

**November 2012: Science Travels.** Organization based out of the University of Ottawa geared towards providing students in remote or First Nations communities additional science education opportunities. Participated in four-person team sent to northern Ontario (within and between Dryden and Kenora), which visited multiple schools and First Nations communities and performed a series of science workshops/seminars geared towards ages 5-17.

**September 2012 – December 2012: Let's Talk Science.** Teaching program run through the University of Ottawa and Carleton University, connecting graduate students with elementary and high school science teachers. Taught elementary aged students about paleontology at several locations in Ottawa during 2012.

**May 2012: Advances in Earth Sciences Research Conference (AESRC).**

Representative from Carleton University on the planning & executive committee of AESRC. Assisted in drafting of formal organization constitution, securing of corporate funding, and recruitment of the Department of Earth Sciences at Western University as a conference member organization.

**November 2011 – November 2012: Carleton University Graduate Students in Earth Sciences Society (GRAESSOC).** One of the founding members, and first president. Assisted in drafting of society constitution, led council meetings, assisted in planning of society social events (e.g. curling bonspiel, chilli cook-off, research presentations and discussions), co-ordinated with partners in uOttawa geology graduate society and AESRC executive & planning committee.

**March 2011: Advances in Earth Sciences Research Conference (AESRC).** Member of the organizing and host committee for (AESRC) when held at Carleton University, March 25<sup>th</sup> – 27<sup>th</sup>, 2011.

**November 2011: Canadian Museum of Nature.** 'Meet the Experts' event. Positioned at station in new arctic research gallery to explain and answer questions regarding the 'missing-link' pinniped fossil *Puijila darwini*, arctic field work, and my M.Sc. research on pinniped evolution.

**May 2011: Geological Association of Canada – Mineralogical Association of Canada 2011 General Meeting,** held in Ottawa, Ontario. Assisted in setup of conference and speaker resources. Assisted in chairing symposium on the Ottawa-Bonnechere graben system.

**September 2010 – December 2012: Carleton Palaeontology and Evolution**

**Discussion Group.** Co-Organizer of bimonthly journal discussion group focusing on a wide range of current research topics in palaeontology and evolution.



**June 2010: Society for the Preservation of Natural History Collections (SPNHC) 2010 Annual Meeting**, held in Ottawa, Ontario. Co-led conference field trip to the Burnt Lands Alvar in Gatineau, Quebec. Focus of field trip was the flora and geology of the area.

**November 2010: Canadian Museum of Nature.** 'Meet the Experts' event. Positioned at station in fossil gallery to explain and answer questions regarding the 'missing-link' fossil *Puijila darwini*, and my M.Sc. research on pinniped evolution.

**May 2010: Canadian Museum of Nature.** Museum Grand Re-Opening Event 'Rediscover Your Museum'. Positioned at station in fossil gallery to explain and answer questions regarding the 'missing-link' fossil *Puijila darwini*.

**October 2008 – 2012: Carleton University Department of Earth Sciences.** 'Geoheritage Day'. Provided information and interactive displays for public at sites of geologic interest around Ottawa.

**October 2006: Society of Vertebrate Paleontology 66<sup>th</sup> Annual Meeting**, held in Ottawa, Ontario. Assisted vendors/presenters in assembling displays. Processed credit card payments from benefit auction.

## **Work Experience**

---

**January 2013 – present: Research Assistant, University of Toronto.** Collect research data for my PhD project and for other projects assisting Dr. David Evans. Analyze data using various statistical and geochemical methodologies, and perform fieldwork in remote areas assisting with the excavation of dinosaur material and management of camp/quarries. Assist in mentoring of undergraduate students working in lab on research projects or conducting palaeontological field methods courses.

**January 2013 – present: Teaching Assistant, University of Toronto.** Instruct students in laboratory setting on the diversity of vertebrates, their ecology, and evolutionary history.

**September 2010 – November 2012: Research Assistant, Carleton University.** Collected research data pertinent to my Master's project and projects pertinent to my supervisor, Dr. Natalia Rybczynski and Dr. Claudia Schröder-Adams. Analyzed data using various statistical methodologies, performed fieldwork in remote areas.

**January 2009 – May 2012: Teaching Assistant, Carleton University.** Instructed students, in both lab and field settings, on a wide variety of topics in earth sciences, including sedimentology, mineralogy, invertebrate and vertebrate palaeontology, and field mapping.

**May – September 2009, 2010: Research and Collections Technician, Canadian Museum of Nature.** Organized, identified, and catalogued fossil material, cleaned and prepared fossil material, updated specimen labels and files following taxonomic guidelines, retrofitted and constructed heavy fossil specimen pallets to comply with new safety protocols, assisted in cleaning and preparation of blue whale skeleton for new gallery, assisted in reconstructing/repairing damaged specimens in collections and galleries, performed field excursions to assist museum scientists, performed brief field excursions to evaluate fossil finds by members of the public.

**May 2008: Research Assistant, Canadian Museum of Nature.** Assisted Dr. Stephen Cumbaa in identifying and organizing fossil specimens. Also organizing reprint journals and entered journal data into EndNote database.

**May – October 2005 – 2009: Head Park Monitor & Park Naturalist, Friends of Petrie Island / City of Ottawa.** Operated park interpretive centre, managed employees, inspected trails, performed local biodiversity studies, prepared fact sheets on local flora and fauna, led public nature tours, compiled statistical information on park usage, repaired signs/trails/facilities as required.

## Media Appearances & Press Coverage

---

**December 21, 2016:** My research highlighted in PLoS Blogs and on Phys.org by Jon Tennant, entitled “Dinosaur bonebeds and biogeography: what the tiniest fossils tell us about the largest patterns”.

Link:

<http://blogs.plos.org/paleocomm/2016/12/21/dinosaur-bonebeds-and-biogeography-what-the-tiniest-fossils-tell-us-about-the-largest-patterns/>

<http://phys.org/news/2016-12-dinosaur-bonebeds-biogeographywhat-tiniest-fossils.html>

**July 8, 2015:** Interviewed by Jon Tennant for Discover Magazine article, “New Horned Dinosaur, Cousin of *Triceratops*, Discovered”.

Link:

<http://blogs.discovermagazine.com/d-brief/2015/07/08/horned-dinosaur-triceratops/>

**June 6, 2015:** Interviewed on CJSW 90.9 FM (Calgary) speculative science program ‘Theoretically Speaking’ by Alexander Kim regarding the conditions under which humans could be naturally or artificially selected for traits resembling those of fictional mermaids, and the time scales that would likely be involved.

Link:

<https://soundcloud.com/cjsw-90-9-fm/episode-2-merpeople>

**July 2013 & 2014:** Filmed performing fieldwork in July of 2013 and 2014 alongside Dr. David Evans and Southern Alberta Dinosaur Project team for 'Horned Dinosaur Mysteries' episode of 'Dino Hunt Canada'. Advised staff on descriptions and reconstructions of dinosaurs for website related to this program. Air date: December 15<sup>th</sup>, 2014 (website) and January 31<sup>st</sup>, 2015 (episode) on History Channel Canada.

Website link:

<http://dinhuntcanada.history.ca/#/>

Episode link:

<http://www.history.ca/video/#dino-hunt-canada/video>

**February 19, 2014:** Joint press release from Carleton University and Canadian Museum of Nature associated with paper published in Evolution. Interviews with several media outlets, including LiveScience, Nunatsiaq Online, CBC radio, and others.

**Press Release:**

<http://newsroom.carleton.ca/2014/02/19/carleton-science-graduate-makes-major-discovery-seal-evolution/>

<http://www.nature.ca/en/about-us/museum-news/news/press-releases/graduate-student-makes-major-discovery-about-seal-evolution>

**Examples:**

LiveScience, February 25, 2014. Interviewed by Agata Blaszczyk-Boxe for article, "Why male and female seals look so different".

<http://www.livescience.com/43663-why-male-female-seals-different.html>

Nunatsiaq Online, February 20, 2014. Interviewed by Sarah Rogers for article, "Climate change could change the way that seals mate: research".

[http://www.nunatsiaqonline.ca/stories/article/65674climate\\_change\\_could\\_change\\_how\\_seals\\_mate\\_research/](http://www.nunatsiaqonline.ca/stories/article/65674climate_change_could_change_how_seals_mate_research/)

**July 2013:** Filmed performing field work with David Evans and rest of Southern Alberta Dinosaur Project team for segment of 'Museum Diaries – Dinos Rediscovered' episode. Air date: March 31<sup>st</sup>, 2014 (re-aired January 31<sup>st</sup>, 2015) on TVO, Toronto.

Episode link:

<http://tvo.org/video/programs/museum-diaries/dinos-rediscovered>

**November 24, 2011:** Interviewed on CKCU FM (Ottawa) 'Thursday Morning Special Blend' by David Yazbeck regarding my participation in the 'Meet the Experts' event at the Canadian Museum of Nature.

**March 18, 2011:** Interviewed by Tom Spears of the Ottawa Citizen for article, "Carleton University students spend a month studying in Antarctica".

Original link: <http://www.ottawacitizen.com/news/Carleton+University+students+spend+month+studying+Antarctica/4631764/story.html>

Archive copy:

<http://www.untarctic.org/archives/press/2011/unconventional-classroom.php>

**March 8, 2011:** Interviewed by Kathleen Petty of CBC Radio One 'Ottawa Morning' regarding Students on Ice/Carleton University Antarctic Expedition.

## **Affiliations & Professional Societies**

---

**2006–present:** Member of the Society of Vertebrate Paleontology

**2013–present:** Member of the Canadian Society of Vertebrate Palaeontology

**2010–present:** Member of the Canadian Society of Zoologists

**2010–present:** Member of the Canadian Society for Ecology & Evolution

**2010–present:** Member of the Society for the Study of Evolution

**2013–present:** Member of the American Association for the Advancement of Science

**2011–present:** Member of the Association of Polar Early Career Scientists

**2009–present:** Member of the Canadian Society of Petroleum Geologists

**2007–2015:** Member of the Geological Association of Canada

## **Other Skills/Information**

---

**Language:** Bilingual (English/French)

**Wilderness skills/training:** fire making, shelter construction, fishing, hunting, long distance hiking, canoe and kayak use, snowmobile and ATV operation, watercraft and outboard motor operation.

**Photography:** wildlife, scenery, and macro-photography. My photographs have been used for educational or promotional purposes by several organizations (e.g. Students on Ice, Royal Ontario Museum), and have been featured in a university textbook (Cornell Lab of Ornithology Handbook of Bird Biology, 3rd Edition). Selection of photos are hosted at <https://www.flickr.com/photos/tmcullen/>.

**Natural History skills:** North American (primarily Canadian) mammal, bird, amphibian, and reptile identification.

**Laboratory techniques:** Osteological thin-section production and imaging, stable isotopic sample preparation and analyses (C/N/O using LA-GC-IRMS and/or EA-IRMS), fossil casting/moulding, vertebrate dissection/de-fleshing, screen-washing and size-separation of vertebrate microfossil material, stratigraphic section measurement.

## References

---

David C. Evans, Ph.D.

Temerty Chair in Vertebrate Palaeontology & Deputy Head,  
Department of Natural History, Royal Ontario Museum  
100 Queen's Park, Toronto, Ontario, Canada, M5S 2C6  
Tel: 1 (416) 586-5753

Associate Professor,  
Department of Ecology & Evolutionary Biology, University of Toronto  
d.evans@utoronto.ca

Natalia Rybczynski, Ph.D.

Associate Researcher,  
Department of Palaeobiology, Canadian Museum of Nature  
1740 Pink Road, Gatineau, Quebec, Canada, J9J 3N7  
Adjunct Research Professor,  
Departments of Earth Sciences & Biology, Carleton University  
nrybczynski@gmail.com, nrybczynski@mus-nature.ca

Claudia Schröder-Adams, Ph.D.

Professor,  
Department of Earth Sciences, Carleton University  
1125 Colonel By Drive  
Ottawa, Ontario, Canada, K1S 5B6  
Tel: 1 (613) 520-2600 ext 1852  
claudia.schroderadams@carleton.ca

Kevin Seymour, Ph.D.

Assistant Curator,  
Department of Natural History, Royal Ontario Museum  
100 Queen's Park, Toronto, Ontario, Canada, M5S 2C6  
Tel: 1 (416) 586-5754  
kevins@rom.on.ca