

# MATTEO RIZZUTO

Ecosystem Ecology Lab  
Department of Biology  
Memorial University of  
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## EDUCATION

### Ph.D. Candidate, *Biology*

MAY 2016-PRESENT

Memorial University of Newfoundland, St. John's, NL, Canada

- Thesis: Bottom-up or top-down? Intraspecific variability, resource quality, and space use in the Boreal Forest
- Supervisor: Dr. Shawn J. Leroux

### Master of Research, *Ecology, Evolution, and Conservation*

SEPT. 2013-SEPT. 2014

Imperial College London-Silwood Park, Ascot, UK

- Graduated with Distinction
- Research Projects:
  - The Scaling of Activity Budgets in Carnivores; Supervisors: Dr. Samraat Pawar and Dr. Chris Carbone
  - Comparison of two commonly used methods to estimate species diversity: dung counts and camera trapping; Supervisors: Prof. Mick J. Crawley FRS and Prof. Joris P. Cromsigt

### Master of Science, *Evolution of Animal and Human Behaviour*

MAR. 2009-DEC. 2012

University of Turin, Turin, Italy

- Thesis: Predator-prey interactions: feeding ecology of the Wolf (*Canis lupus*) and anti-predator behaviour of the Chamois (*Rupicapra rupicapra*) in the Western Alps
- Supervisor: Dr. Francesca Marucco

### Bachelor of Science (Honours), *Biology*

OCT. 2004-MAR. 2009

University of Turin, Turin, Italy

- Thesis: Individual characteristics of vocalisations emitted during the song of *Indri indri*
- Supervisors: Prof. Cristina Giacoma and Dr. Marco Gamba

## PUBLICATIONS

Note: for papers where I am first author, I led study design, data collection, analysis, and writing. For papers where I am fourth author or later, I contributed to ideas, data collection, and writing.

### Peer Reviewed

- Richmond, I. C., Leroux, S. H., Vander Wal, E., Heckford, T. R., **Rizzuto, M.**, Balluffi-Fry, J., Kennah, J., Wiersma, Y. F. (2020) Temporal variation and its drivers in the elemental traits of four boreal plant species. *Journal of Plant Ecology*, rtaa103. Available at: [10.1093/jpe/rtaa103](https://doi.org/10.1093/jpe/rtaa103).
- Balluffi-Fry, J., Leroux, S. J., Wiersma, Y. F., Heckford, T. R., **Rizzuto, M.**, Richmond, I. C., Vander Wal, E. (2020) Quantity-quality trade-offs revealed using a multiscale test of herbivore resource selection on elemental landscapes. *Ecology and Evolution* 10 (24), 13847–13859. Available at: [10.1002/ece3.6975](https://doi.org/10.1002/ece3.6975)

- **Rizzuto, M.**, Leroux, S. J., Vander Wal, E., Wiersma, Y. F., Heckford, T. R., Balluffi-Fry, J. (2019) Patterns and potential drivers of intraspecific variability in the body C, N, and P composition of a terrestrial vertebrate, the snowshoe hare (*Lepus americanus*). *Ecology and Evolution* **9** (24), 14453–14464. Available at: [10.1002/ece3.5880](https://doi.org/10.1002/ece3.5880)
- **Rizzuto, M.**, Carbone, C., and Pawar, S. (2018) Foraging constraints reverse the scaling of activity time in carnivores. *Nature Ecology and Evolution* **2** (2), 247–253. Available at: [10.1038/s41559-017-0386-1](https://doi.org/10.1038/s41559-017-0386-1) *Cover story*

#### *In Progress*

- **Rizzuto, M.**, Leroux, S.J., Vander Wal, E., Richmond, I. C., Heckford, T. R., Balluffi-Fry, J., Wiersma, Y. F. (2021). Forage stoichiometry predicts the home range size of a small terrestrial herbivore. In review. *Oecologia*, manuscript id: OECO-D-21-00094. Preprint: [10.1101/2020.08.13.248831](https://doi.org/10.1101/2020.08.13.248831)
- Balluffi-Fry, J., Leroux, S.J., Wiersma, Y.F., Richmond, I.C., Heckford, T.R., **Rizzuto, M.**, Kennah, J.L., Vander Wal, E. (2021) Integrating plant stoichiometry and feeding experiments: state-dependent forage choice and its implications on body mass. In review. *Oecologia*, manuscript id: OECO-D-21-00125. Preprint: [10.1101/2021.02.16.431523](https://doi.org/10.1101/2021.02.16.431523)
- Ellis-Soto, D., Ferraro, K. M., **Rizzuto, M.**, Briggs, E., Monk, J. D., and Schmitz, O. J. (2020). A Methodological Roadmap to Quantify Animal-vectored Spatial Ecosystem Subsidies. In revision. *Journal of Animal Ecology*, manuscript id: JAE-2021-00175. Preprint: [10.32942/osf.io/zyx84](https://doi.org/10.32942/osf.io/zyx84)
- Heckford, T. R., Leroux, S. J., Vander Wal, E., **Rizzuto, M.**, Balluffi-Fry, J., Richmond, I. C., Wiersma, Y. F. Foliar elemental niche responses of balsam fir (*Abies balsamea*) and white birch (*Betula papyrifera*) to differing community types across geographic scales. In revision, *Functional Ecology*, manuscript id: FE-2020-00432.
- Heckford, T. R., Leroux, S. J., Vander Wal, E., **Rizzuto, M.**, Balluffi-Fry, J., Richmond, I. C., Wiersma, Y. F. (2021) Does where you live influence what you're made of? Spatial correlates of chemical traits across commonly occurring boreal plants. In review. *Landscape Ecology*, manuscript id: LAND-D-21-00046. Preprint: [10.1101/2021.01.26.428320](https://doi.org/10.1101/2021.01.26.428320)
- Little, C. J.\*, **Rizzuto, M.\***, Luhring, T. M., Monk, J. D., Nowicki, R. J., Paseka, R. E., Stegen, J. C., Symons, C. C., Taub, F. B., Yan, J. D. L. (2020). Movement with Meaning: Integrating Information into Meta-Ecology. Submitted. *Ecology*, manuscript id: ECY21-0233. Preprint: [10.32942/osf.io/hc83u](https://doi.org/10.32942/osf.io/hc83u) *\*equal contribution*
- Richmond, I. C., Balluffi-Fry, J., Vander Wal, E., Leroux, S. J., **Rizzuto, M.**, Heckford, T. R., Kennah, J. L., Riefesel, G. R., Wiersma, Y. F. (2021). Individual snowshoe hares manage risk differently: Integrating stoichiometric distribution models and foraging ecology. In review. *Journal of Mammalogy*, manuscript id: JMAMM-2021-026.

#### *Scientific Outreach*

- Cagnacci, F., Rocca, M., Nicoloso, S., Ossi, F., Peters, W., Mancinelli, S., Valent, M., **Rizzuto, M.**, Hebblewhite, M. (2013). *Il progetto 2C2T*. Il Cacciatore Trentino, 93, 4–15.

#### CONFERENCE PRESENTATIONS

##### Talks

- **Rizzuto, M.**, Leroux, S. J., Vander Wal, E., Wiersma, Y., Heckford, T. R., Balluffi-Fry, J. *Ontogeny and Ecological Stoichiometry of Snowshoe hares (*Lepus americanus*) in the Boreal Forests of Newfoundland*. Canadian Society for Ecology and Evolution Annual General Meeting, Guelph, ON, Canada. 18–21 JUL. 2018
- **Rizzuto, M.**, Carbone, C., and Pawar, S. *Bio-mechanical constraints on foraging reverse the scaling of activity rate among carnivores*. Canadian Society for Ecology and Evolution Annual General Meeting, St. John's, NL, Canada. 7–11 JUL. 2016

##### Posters

- **Rizzuto, M.**, Leroux, S. J., Vander Wal, E., Wiersma, Y., Heckford, T. R., Balluffi-Fry, J. *Beyond Diffusion: Animal-Mediated Nutrient Transport at Different Spatial Scales*. “Unifying Ecology Across Scales” Gordon Research Seminar and Conference, Biddeford, ME, USA. 21–27 JUL. 2018

#### HONORS & AWARDS

- Mitacs Research Training Award, Mitacs Canada 2020
- First Place, H5P Maker Session, Centre for Innovation in Teaching and Learning, Memorial University of Newfoundland 2019
- Mitacs Globalink Research Award, Mitacs Canada 2018
- Dean's Doctoral Award, Memorial University of Newfoundland 2016–2018
- Graduated with Distinction, Imperial College London 2014
- Erasmus-LLP Scholarship, University of Turin 2010

#### RESEARCH EXPERIENCE

**Visiting Assistant in Research, Schmitz Lab** FEB.-APR. 2019  
School of the Environment, Yale University, New Haven, CT

- Collaboration to develop a mathematical metaecosystem model describing animal-mediated nutrient transport across ecosystem boundaries
- Reviewed metaecosystem, metapopulation, and animal movement literature
- Performed simulations of ecosystem persistence over time under different animal movement and nutrient transport scenarios

**Research Assistant, Pawar Lab** JAN.-MAR. 2016  
Imperial College London-Silwood Park, Ascot, UK

- Digitized data from terrestrial plant thermal response from published studies
- Assisted with database management and cleanup, and formation of new team members

**Research Assistant, Tsaobis Baboon Project** JUN.-OCT. 2015  
Zoological Society of London, London, UK

- Assisted with collection of behavioural and population data from two troops of wild, habituated Chacma baboons, and with plant phenology surveys

**Research Assistant, *Roe & Red deer in Trentino & Technology Project*** JUN.-SEPT. 2013  
Trento, Italy

- Studied the migratory behaviour of roe deer using radio-tracking techniques (GPS, VHF), plant phenology surveys, and pellet decay rate analyses
- Intensive fieldwork in a physically demanding environment, under harsh weather conditions

**Graduate Intern, *Piedmont Wolf Project*** JUN.-DEC. 2011  
Maritime Alps Nature Park, Entraque (CN), Italy

- Designed and performed a study of the predator-prey interactions of wolves and chamois in the Maritime Alps Natural Park
- Managed all aspects of the project, from behavioural sampling to prey identification by hair analysis to scat specimen preparation for DNA analyses

**Undergraduate Intern, *Ethology Lab*** JUN. 2008-MAR. 2009  
University of Turin, Turin, Italy

- Bioacoustics study of the Indri lemur, testing for potential identification of lemurs from individuals' contributions to the family group song

TEACHING  
EXPERIENCE

**Guest Lecturer, *Department of Biology***  
Memorial University of Newfoundland, St. John's, NL, Canada  
*Models in Biology*

WINTER 2020

- Lecture: Classical Models in Ecology
- Lecture: Models of Species Interactions
- Lecture: Meta-ecology Models

**Teaching Assistant, *Department of Biology***  
Memorial University of Newfoundland, St. John's, NL, Canada  
*Principles of Ecology*

FALL 2018

- Managed the online learning section of the course, developing weekly new content introducing students to preeminent ecologists
- Provided administrative and academic support to students

*Principles of Biology*

WINTER 2017

- Supported students during practical laboratories
- Invigilated midterm and final exams, marked weekly lab reports

**Undergraduate Teaching Assistant, *Department of Life Sciences***  
Imperial College London, London, UK

*Ecology*

SPRING 2015

- Helped students collect data and plan analyses for final projects

*Behavioral Ecology*

WINTER 2015

- Assisted in laboratory setup for weekly practicals

- Helped student design analyses on data collected during practicals

*Introduction to Biological Statistics*

FALL 2014

- Helped students learn base and advanced R language

**Graduate Teaching Assistant, Department of Life Sciences**

Imperial College London-Silwood Park, Ascot, UK

*Statistics*

FALL 2014

- Assisted students with R coding and in developing statistical analyses

*Macroecology and Climate Change*

FALL 2014

- Assisted students using the species distribution software Maxent

#### SERVICE

Manuscript reviewer for *Ecology and Evolution* and *Science of the Total Environment*.

#### PROFESSIONAL DEVELOPMENT

*Courses*

- **Becoming a More Equitable Educator: Mindsets and Practices,**  
*MIT Teaching Systems Lab*

MAR.-JUN. 2020

Delivered online through [edX.org](https://edX.org)

- **Teaching Skills Enhancement Program,**

SEPT.-AUG. 2020

*Centre for Innovation in Teaching and Learning*

Memorial University of Newfoundland, St. John's, NL, Canada

*Workshops*

- **Reproducible Research through Open Science,**

11 JUNE 2020

*Canadian Institute for Ecology and Evolution & NSERC-CREATE "Living Data Project"*

Attended online through [osf.io](https://osf.io)

- **Teaching Inclusively & Equitably Online,**

21 MAY 2020

*American Society for Engineering Education & NSF INCLUDES Aspire Alliance*

Attended online through Blackboard Collaborate Ultra

- **H5P Maker Session,**

24 OCT. 2019

*Centre for Innovation in Teaching and Learning*

Memorial University of Newfoundland, St. John's, NL, Canada

- **Community of Inquiry Coffee Break: Open Access,**

23 OCT. 2019

*Centre for Innovation in Teaching and Learning*

Memorial University of Newfoundland, St. John's, NL, Canada

- **Open Access and Scholarly Publishing,**

22 OCT. 2019

*Centre for Innovation in Teaching and Learning*

Memorial University of Newfoundland, St. John's, NL, Canada

- **Four Things to Consider for Graduate Student Teaching,**

8 NOV. 2018

*Enhanced Development of the Graduate Experience*

Memorial University of Newfoundland, St. John's, NL, Canada

- **AARMS CRG Software Carpentry Workshop,**

27 MAY 2017

*The Carpentries*

Memorial University of Newfoundland, St. John's, NL, Canada

VOLUNTEER EXPERIENCE	<b>Communications Officer, <i>Biology Graduate Student Association</i></b> MAY 2019-APR. 2020 Memorial University of Newfoundland, St. John's, NL, Canada
	- Managed the Association's weekly newsletter, website, and all of its social media presence
	<b>Chair, <i>Biology Graduate Student Association</i></b> MAY 2018-APR. 2019 Memorial University of Newfoundland, St. John's, NL, Canada
	- Designed, funded, and run "The Balanced Student: stress and work management for graduate students", a workshop series on graduate students mental health and wellness
	- Hosted a Student-Supervisor Relationship workshop during the Graduate Core Seminar course for new graduate students
	- Coordinated the activities of the Executive Committee, focusing on fundraising and community outreach
	<b>Seminar Coordinator, <i>Biology Graduate Student Association</i></b> MAY 2017-APR. 2018 Memorial University of Newfoundland, St. John's, NL, Canada
	- Organized and run the weekly Seminar series for the Department of Biology, in a team of three coordinators
	- Helped in organizing the annual Symposium showcasing the research produced by the Department's graduate students
	- Contributed to the Association's fundraising and outreach activities
	<b>Youth Educator, <i>OASI-Operazione Mato Grosso</i></b> MAY 2000-AUG. 2013 Turin, Italy
	- Volunteer work with children and teenagers in primary, secondary and high school, in Turin, Italy, and at the Hospital São Julião in Campogrande, MS, Brazil
	<b>Team Leader, <i>XX Winter Olympic and IX Paralympic Games</i></b> NOV. 2005-MAR. 2006 Turin, Italy
	- Organized and supervised daily activities of a team of 10 volunteers in the Protocol Crew, International Relations and Services
PROFESSIONAL AFFILIATIONS	Canadian Society of Ecology and Evolution 2016-2019
CONFERENCES ATTENDED	- "Unifying Ecology Across Scales" 21-27 JUL. 2018 <i>Gordon Research Seminar and Conference</i> Biddeford, ME, USA
	- <i>Canadian Society for Ecology and Evolution Annual General Meeting</i> 18-21 JUL. 2018 Guelph, ON, Canada
	- <i>Canadian Society for Ecology and Evolution Annual General Meeting</i> 7-11 JUL. 2016 St. John's, NL, Canada
	- <i>From Energetics to Macro Ecology: Carnivore Responses to Environmental Change</i> 14-15 NOV. 2013 Zoological Society of London, London, UK

	- <i>Euroscience Open Forum</i>	2–7 JUL. 2010
	Turin, Italy	
	- <i>XIX Congress of the Italian Primatological Society</i>	1–3 APR. 2009
	Asti, Italy	
SOFTWARE PROFICIENCY	R, RStudio, Mathematica, L <sup>A</sup> T <sub>E</sub> X, Markdown, Git, Unix shell, Atom, Inkscape, Quantum GIS, ArcGIS, Python (basic knowledge)	
CERTIFICATES	- Wilderness and Remote First Aid	MAY 2016–2019
	Canadian Red Cross, St. John's, NL, Canada	
	- WHMIS and Lab Safety	JAN. 2017
	Memorial University of Newfoundland, St. John's, NL, Canada	
	- Basic Outdoor First Aid	APR. 2014
	Marlin Training Ltd., London, UK	
	- International English Language Testing System, grade 8.5	FEB. 2013
	British Council, Turin, Italy	
	- International Computer Driving Licence	MAY 2007
	University of Turin, Turin, Italy	
INTERESTS	Backpacking, Hiking, Photography, Yoga, T'ai Chi Quan, Shaolin Kung Fu	
REFERENCES	<b>Dr. Shawn J. Leroux</b> Associate Professor, Department of Biology Memorial University of Newfoundland St. John's, NL Canada <a href="mailto:sleroux@mun.ca">sleroux@mun.ca</a> tel: +1 (709) 864 3042	<b>Dr. Yolanda F. Wiersma</b> Professor, Department of Biology Memorial University of Newfoundland St. John's, NL Canada <a href="mailto:ywiersma@mun.ca">ywiersma@mun.ca</a> tel: +1 (709) 864 7499
	<b>Dr. Samraat Pawar</b> Reader, Department of Life Sciences Imperial College London London, UK <a href="mailto:s.pawar@imperial.ac.uk">s.pawar@imperial.ac.uk</a> tel: +44 (0) 2075 942 213	