

# MATTEO RIZZUTO

Ecosystem Ecology Lab  
Department of Biology  
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## EDUCATION

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

2016–PRESENT

Memorial University of Newfoundland and Labrador, 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 (Distinction), *Ecology, Evolution, and Conservation*

2013–2014

Imperial College London-Silwood Park, Ascot, UK

- 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 Crawley and Prof. Joris Cromsigt

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

2009–2012

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*

2004–2009

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* (\* stands for equal contribution)

- **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. *Oecologia*, Available at: [10.1101/2020.08.13.248831](https://doi.org/10.1101/2020.08.13.248831)  
*Highlighted Student Paper*
- Ellis-Soto, D. \*, Ferraro, K. M. \*, **Rizzuto, M.**, Briggs, E., Monk, J. D., and Schmitz, O. J. (2021) A methodological roadmap to quantify animal-vector spatial ecosystem subsidies. *Journal of Animal Ecology*, Available at: [10.1111/1365-2656.13538](https://doi.org/10.1111/1365-2656.13538)

- 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* 14 (3), 398–413. 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*

- Balluffi-Fry, J., Leroux, S.J., Wiersma, Y.F., Richmond, I.C., Heckford, T.R., **Rizzuto, M.**, Kennah, J.L., Vander Wal, E. Integrating plant stoichiometry and feeding experiments: state-dependent forage choice and its implications on body mass. In review. *Oecologia*, manuscript id: OEKO-D-21-00125. Preprint: [10.1101/2021.02.16.431523](https://doi.org/10.1101/2021.02.16.431523)
- 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. 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. Filling the Information Gap in Meta-Ecosystem Ecology. Preprint: [10.32942/osf.io/hc83u](https://doi.org/10.32942/osf.io/hc83u)
- 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. 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 and Labrador 2019
- Mitacs Globalink Research Award, Mitacs Canada 2018
- Dean's Doctoral Award, Memorial University of Newfoundland and Labrador 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

TEACHING  
EXPERIENCE

**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

**Guest Lecturer, *Department of Biology***  
Memorial University of Newfoundland and Labrador, 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 and Labrador, 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** *Courses*

**DEVELOPMENT** - **Becoming a More Equitable Educator: Mindsets and Practices,** MAR.-JUN. 2020

*MIT Teaching Systems Lab*

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 and Labrador, 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 and Labrador, 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 and Labrador, St. John's, NL, Canada

- **Open Access and Scholarly Publishing,** 22 OCT. 2019

*Centre for Innovation in Teaching and Learning*

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

- **AARMS CRG Software Carpentry Workshop,** 27 MAY 2017

*The Carpentries*

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

**VOLUNTEER**  
**EXPERIENCE**

**Communications Officer, *Biology Graduate Student Association*** 2019–2020

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

- Managed the Association's weekly newsletter, website, and all of its social media presence

**Chair, *Biology Graduate Student Association*** 2018–2019  
Memorial University of Newfoundland and Labrador, 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

**Seminar Coordinator, *Biology Graduate Student Association*** 2017–2018  
Memorial University of Newfoundland and Labrador, 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

**Youth Educator, *OASI-Operazione Mato Grosso*** 2000–2013  
Turin, Italy

- Volunteer work with children and teenagers in primary, secondary and high school, in Turin, Italy, and at the Hospital São Julião in Campo Grande, MS, Brazil

**Team Leader, *XX Winter Olympic and IX Paralympic Games*** 2005–2006  
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 2016–2021

**CONFERENCES ATTENDED** - *"Unifying Ecology Across Scales"* 21–27 JUL. 2018  
*Gordon Research Seminar and Conference*  
Biddeford, ME, USA

- *Canadian Society for Ecology and Evolution Annual General Meeting* 18–21 JUL. 2018  
Guelph, ON, Canada

- *Canadian Society for Ecology and Evolution Annual General Meeting* 7–11 JUL. 2016  
St. John's, NL, Canada

- *From Energetics to Macro Ecology: Carnivore Responses to Environmental Change* 14–15 NOV. 2013  
Zoological Society of London, London, UK

- *Euroscience Open Forum* 2–7 JUL. 2010  
Turin, Italy

	<ul style="list-style-type: none"><li>- <i>XIX Congress of the Italian Primatological Society</i> Asti, Italy</li></ul>	I–3 APR. 2009
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	<ul style="list-style-type: none"><li>- Wilderness and Remote First Aid Canadian Red Cross, St. John's, NL, Canada</li><li>- WHMIS and Lab Safety Memorial University of Newfoundland, St. John's, NL, Canada</li><li>- Basic Outdoor First Aid Marlin Training Ltd., London, UK</li><li>- International English Language Testing System, grade 8.5 British Council, Turin, Italy</li><li>- International Computer Driving Licence University of Turin, Turin, Italy</li></ul>	2016–2019 2017 2014 2013 2007
INTERESTS	Backpacking, Hiking, Photography, Yoga	