

MATTEO RIZZUTO

Ecosystem Ecology Lab
Department of Biology
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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* 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

- **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). Filling the Information Gap in Meta-Ecosystem Ecology. 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

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, 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 *Courses*

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

MIT Teaching Systems Lab

Delivered online through 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

- **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 **Communications Officer, Biology Graduate Student Association** MAY 2019-APR. 2020

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

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

Chair, *Biology Graduate Student Association*

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

Seminar Coordinator, *Biology Graduate Student Association*

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

Youth Educator, *OASI-Operazione Mato Grosso*

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

Team Leader, *XX Winter Olympic and IX Paralympic Games*

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

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:*

14-15 NOV. 2013

Carnivore Responses to Environmental Change

Zoological Society of London, London, UK

- *Euroscience Open Forum*

2-7 JUL. 2010

Turin, Italy

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