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: From elements to landscapes: the role of terrestrial consumers in ecosystem functioning
- 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. An asterisk (*) stands for equal contribution.

Peer Reviewed

- Heckford, T. R., Leroux, S. J., Vander Wal, E., **Rizzuto, M.**, Balluffi-Fry, J., Richmond, I. C., Wiersma, Y. F. (2021) Spatially explicit correlates of plant functional traits inform landscape patterns of resource quality. *Landscape Ecology*.
  DOI: 10.1007/s10980-021-01334-3
- **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* **197**(2), 327–338.
  DOI: 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-vectored spatial ecosystem subsidies. *Journal of Animal Ecology* **90**(7), 1605–1622. DOI: 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. DOI: 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. DOI: 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. DOI: 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. DOI: 10.1038/s41559-017-0386-1 ***Cover story***

In Progress

- McLeod, A.M., Leroux, S.J., **Rizzuto, M.**, Leibold, M.A., Schiesari, L. Integrating ecosystem and contaminant models to study the spatial dynamics of contaminants. Submitted. *The American Naturalist*, manuscript id: AMNAT-S-21-00583.
- 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: OECO-D-21-00125.
  Preprint: 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.
- 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
- 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

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 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 DEVELOPMENT

Courses

- **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 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
- **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

Ecological Society of America 2021–2022
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:* 14–15 NOV. 2013
  Carnivore Responses to Environmental Change
  Zoological Society of London, London, UK

- *Euroscience Open Forum* 2–7 JUL. 2010
  Turin, Italy
- *XIX Congress of the Italian Primatological Society* 1–3 APR. 2009
  Asti, Italy

SOFTWARE PROFICIENCY

R, RStudio, Mathematica, LaTeX, Markdown, Git, Unix shell, Atom, Inkscape, Quantum GIS, ArcGIS, Python (basic knowledge)

CERTIFICATES

- Wilderness and Remote First Aid 2016–2019
  Canadian Red Cross, St. John's, NL, Canada
- WHMIS and Lab Safety 2017
  Memorial University of Newfoundland, St. John's, NL, Canada
- Basic Outdoor First Aid 2014
  Marlin Training Ltd., London, UK
- International English Language Testing System, grade 8.5 2013
  British Council,Turin, Italy
- International Computer Driving Licence 2007
  University of Turin,Turin, Italy

INTERESTS

Backpacking, Hiking, Photography, Yoga