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Ecology and Evolutionary Biology
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Website: https://tgelmi-candusso.github.io
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EDUCATION

2019 **PhD in Biodiversity and Ecology**
Georg-August-Universität Göttingen, Germany
Supervisors: Prof. Dr. Eckhard Heymann, Prof. Dr. Katrin Herr

2012 **MSc in Environmental biology**
Università di Trieste, Italia

2010 **BSc in Biology**
Università di Padova, Italia

RESEARCH EXPERIENCE

2019-ongoing **Post-doctoral fellow,** *Fortin lab,* Ecology and Evolutionary Biology, University of Toronto

- Research on Urban Ecology includes projects on spatio temporal analysis of habitat selection and landscape connectivity of urban mammals, mammalian interspecific interactions and plant-animal interactions. Multi–city analysis of connectivity and its effect on biodiversity, Individual–based modeling of disease transmission and Predator-prey networks (R, *Julia, Netlogo*)
- Data collection and management of camera trap images, GPS tracking data and remote sensing (*R, GIS, PostgreSQL)*
- Organization of undergraduates for data processing and mentoring of so far 21 undergraduate students in fieldwork and/or data analysis.
- Training and evaluating deep machine learning models for object classification (Python, *Linux*, *Azure*)
- Grant writing for the inclusion of undergraduate students in summer projects.
- Student mentoring for master thesis and research projects (Undergraduate and graduate students)
- Incorporation of current research group into international urban ecology network (UWIN) representing the University of Toronto.
- Side project for governmental entity (Ministry of Natural Resources): species distribution model for Red Wolves across North America (*MaxEnt*)
- Side project for governmental entity through Mitacs fellowship (Toronto Regional Conservation Authority): Multispecies landscape connectivity analysis under current and future policy scenarios for terrestrial mammals and amphibians (*Omniscape, Graphab).*

2014-2019 **Doctorate research,** *Heymann lab*, Leibniz Institute Deutsche Primatenzentrum

- Spatial analysis of animal movement from field behavioral observations using R, GIS.
- Population genetics assessment of tropical forest plant populations in relationship to the seed disperser behavior.
- Developing spatially explicit, individual–based models for estimating seed movement range.

2013 **Research Assistant,** *Ehrenreich lab*, Max Planck for multidisciplinary sciences
Running genetic analysis from animal tissue using PCR, rt-PCR

2012 **Master Research Project,** *Wahl lab,* Helmoltz Institut für Ozeanforschung - GEOMAR

- Modeling climate change conditions in mesocosms to understand fauna and flora resistance by evaluating physiological response.

Jun 2011 **Research intern,** *Whale lab,* University of Victoria

- Recording behavioral observations using focal and group sampling

Sep 2010 **Research intern,** *Tubaro lab,* Università di Trieste

- Running ecotoxicology analysis on animal tissue using LC-MS.

Aug 2010 **Research intern,** *WWF,* Area Marina Protetta Miramare Trieste

- Taxonomic identification of egg and larvae in water samples

TEACHING EXPERIENCE

2023 **Guest lecture –** Applications of Landscape Ecology analysis to Animal conservation and management practices
Course: Spatial Ecology.

2022- 2023 **Mentor –**Final year Undergraduate research projects –
BIO98 Janice Hau, Juan de los Rios. Introduction to ArcGIS Pro, Julia, R. Connectivity analysis and urban mammalian biodiversity

2022 **Mentor –** Summer undergraduate research projects –
NSERC Germain Collinge Menard, BIO98 Jeffrey Chen, BIO98 Devni Kumarasinghe
Introduction to R and spatial-occupancy analysis. Predator-Prey interactions

2021-2022 **Workshop** – Omnidirectional connectivity assessment using Omniscape link to workshop

2021-2022 **Course development**
EEB125H1: Introductory Computation and Data Science for the Life and Physical Sciences. EEB, University of Toronto

2021-2022 **Mentor** Undergraduate thesis on mesocarnivore activity patterns
BIO98 - *Jelany Duali*

2020-2021 **Training of volunteer undergraduate students** for field biosafety, on-site sampling, and data management

2019 **Guest lecture –** Animal Seed dispersal
M.Biodiv.408: Primate ecology. Master of International Nature Conservation - University of Göttingen

PUBLICATIONS

Gelmi-Candusso TA, Chin ATM, Thompson CA, McLaren AAD, Wheeldon TJ, Patterson BR, Fortin MJ. (*2024*) Dynamic connectivity assessment for a terrestrial predator in a metropolitan region. ***Frontiers in Ecology and the Environment.***
https://esajournals.onlinelibrary.wiley.com/doi/10.1002/fee.2633

Fidino, M., Sander, HA., Lewis, JS., Lehrer, EW., Rivera, K., Murray, MH., Adams, HC., Kase, A., Flores, A., Stankowich, T., Schell, CJ., Salsbury, CM., Rohnke, AT., Jordan, MJ., Green, AM., Gramza, AR., Zellmer, AJ., Williamson, J., Surasinghe, TD., Storm, H., Sparks, KL., Ryan, TJ., Remine, KR., Pendergast, ME., Mullen, K., Minier, DE., Middaugh, CR., Mertl, AL., McClung, MR., Long, RA., Larson, RN., Kohl, MT., Harris, LR., Hall, CT., Haight, JD., Drake, D., Davidge, AM., Cheek, AO., Bloch, CP., Biro, EG., Anthonysamy, WJB., Angstmann, JL., Allen, ML., Adalsteinsson, SA., Gianotti, AGS., LaMontagne, JM., **Gelmi-Candusso, TA.,** Magle, S.B. (*In press*) Gentrification drives patterns of alpha and beta diversity in cities. **PNAS**

Dimitrov N, **Gelmi-Candusso TA,** Krkošek M, Fortin M-J. (*In review*) The effects of fox movement and landscape heterogeneity on the spread of sarcoptic mange in urban settings.

Gelmi-Candusso, Wheeldon TJ, Patterson B, Fortin MJ. (*2023*) The effect of urbanization and behavioral factors on coyote net displacement and its implications for seed dispersal. ***Urban Ecosystems***. *https://doi.org/10.1007/s11252-023-01460-7*

Gelmi-Candusso TA, Rodriguez P, Fortin M-J. (*2023)* Unveiling Urban Complexity: Enhancing Fine-Scale Landscape Heterogeneity through OpenStreetMap Integration. *Biorxiv*. *https://doi.org/10.1101/2023.10.31.564785*

Gelmi-Candusso TA, Brimacombe C, Collinge Menard G., Fortin MJ. (2023) Generating predator-prey networks from camera traps. ***Food webs*** *37*. *https://doi.org/10.1016/j.fooweb.2023.e00305*

Gelmi-Candusso TA, Hämäläinen, A. (2019) Seeds and the city: the interdependence of zoochory and ecosystem dynamics in urban environments. ***Frontiers in Ecology and Evolution.*** *https://doi.org/10.3389/fevo.2019.00041*

Gelmi-Candusso TA, Bialozyt, R., Slana. D., Zarate–Gomez R., Heymann, E. W., and Heer, K. (2019). Estimating seed dispersal distance: a comparison of methods using animal movement and plant genetic data on two primate–dispersed Neotropical plant species. ***Ecology and Evolution***. *https://doi.org/10.1002/ece3.5422*

Gelmi-Candusso TA, Heymann, EW., and Heer, K. (2017). Effects of zoochory on the spatial genetic structure of plant populations. ***Molecular Ecology.*** https://doi:10.1111/mec.14351.

Gelmi–Candusso TA (2019) Frugivore behavior and plant spatial genetics. *Doctoral dissertation*. Georg–August–Universität, Göttingen, Germany. http://hdl.handle.net/11858/00–1735–0000–002E–E5C8–C

PRESENTATIONS

June 2023	"Can urban landscape connectivity explain biodiversity variability across cities?" – Invited talk. International Urban Wildlife Conference, Washington DC.
Nov 2022	"The Ecology of Urban mammals in Toronto" – Invited Seminar. UTM Biology Seminar Series. University of Toronto Mississauga
Sep 2022	"Training a machine learning object classifier for the urban ecosystem" – Invited talk. at Camtrap Ecology meets AI Workshop
Aug 2022	"Dynamic connectivity for coyotes in the Toronto region" The International Society for Ecological Modelling Global Conference.
Aug 2021	"Coyotes as seed dispersers in urbanized landscapes", CSEE–SCEE, Vancouver
May 2021	"Landscape connectivity for coyotes in the Toronto region" Atwood EEB, University of Toronto
May 2021	"A review of key urban features affecting mammalian mesopredator movement across cities" International Urban Wildlife Conference, Portland, Oregon
May 2020	"Landscape connectivity for coyotes in the Toronto region" IALE - Toronto
Feb 2017	"How does territoriality behavior of seed dispersers affect spatial genetics of dispersed plants?" European conference of Tropical Ecology - Brussels, Belgium
Sep 2016	"The influence of animal behavior on plant population genetics" Annual Meeting of the

Ecological Society of Germany, Austria, and Switzerland - Marburg, Germany

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

Academic networks	Urban wildlife information network UWIN (lead for U of Toronto) The Urban Wildlife Working Group WILDLABS. The conservation technology network British Ecological Society BES Canadian Society for Ecology and Evolution CSEE The Ecological Society of Germany, Austria and Switzerland Gfö
Committees	Technology committee UWIN Wildlife health committee UWIN Administrative committee UWIN
Peer review	Journal of Applied Ecology Ecology and Evolution Food webs Scientific reports
Grant review panel	EEB PhD research grant, University of Toronto, 2021
Award jury panel	EEB Undergraduate Research Fair, University of Toronto, 2022
Symposiums organized	Urban animal movement Symposium International Urban Wildlife Conference, May 2021 Urban Seed Dispersal Symposium Frugivores and Seed dispersal conference, Mar 2020
Conference organizing committee	Woman's Career Network conference Göttingen, Germany, 2018
Community outreach	Introduction to camera traps and urban ecology School-aged students 2021, 2023 Science communication posts on plant spatial genetics for the Frugivore and Seed dispersal (FSD) webpage. General public - 2019 In-situ introduction to the ecology of marine protected areas Young school-aged children – 2010
Workshops and additional training	"Science Policy and Advocacy certificate program" – University California Irvine, Jul 1-Sep 26, 2023 "Forecasting for Decision-making short course" – Canadian Ecological Forecasting Initiative, Jul 24-28, 2023 "AI Computer vision methods for Ecology" – California Institute of Technology, Aug 1–20, 2022 "Agent–based modeling with NetLogo" – Georg-August-Universität Göttingen, Sep 19–23, 2017 "Spatially–Explicit Modeling of Ecological Systems in R" – Universität Würzburg, May 8–12, 2017 "GIS for ecology, and Species distribution modeling" – European conference of Tropical Ecology, Feb 2016 "Modelling of Biogeochemical and Oxygen Dynamics in the Ocean" – Universität Bremen and Christian-Albrechts-Universität Kiel, Sep 1-15, 2012 "Taxonomy and Physiology of marine invertebrates" –

Sorbonne Université August 1-30, 2011

GRANTS AND FELLOWSHIPS

2023	Mitacs Postdoctoral internship (4m, 20,000 CAD)
2023	School of Cities grant, University of Toronto (1y, 30,000CAD)
2019	DFG Research Fellowship (3y6m, 180,000€)
2017	Georg-August- Göttingen university grant (6m, 11,000€)
2012	Erasmus placement (8m, 4,000€)

LANGUAGES English, Spanish, Italian (fluent)
German, French (advanced)

REFERENCES Prof. Dr. Marie-Josee Fortin, University of Toronto
Prof. Dr. Jonathan Ruppert, Toronto Region Conservation Authority
Prof. Dr. Brent Patterson, Ontario Ministry of Natural Resources
Prof. Dr. Eckhard Heymann, University of Göttingen
Prof. Dr. Katrin Heer, University of Freiburg