Tommaso **Trotto, MSc**

Vancouver, British Columbia, Canada

📱 604 968 9743   ✉ tommaso.trotto.97@gmail.com   ⓘD 009-0001-0307-7076   ⬤ [ttrotto](#)   in [LinkedIn](#)

About me

I have more than five years of experience in forest resources management, inventory, applied silviculture, and remote sensing, with a primary focus on North American ecosystems. My PhD contributions have so far resulted in two peer-review publications, in addition to one in press, and one in preparation for submission to peer-reviewed journals, as well as the development of *rusterize*, a software solution designed for very fast geometry rasterization useful for forest inventory purposes. My interests include remote sensing data engineering at scale, from lidar to satellite imagery, and the exploration of deep learning approaches for tree-level analyses and biomass estimation. My primary expertise includes managing and conducting scientific studies, developing methodologies for remote sensing research using a variety of statistical and machine learning techniques, and collaborating with university and industries to achieve unified goals. I excel in building strong working relationships that deliver high-quality results and I am committed to achieving project objectives in a timely manner. I am looking forward to collaborating with an experienced team in diverse projects and offer my expertise from project inception to completion.

Interests

Remote Sensing Leadership	Managing and conducting lidar and satellite imagery projects.
Ecosystem Management	Investigating forest ecosystem resilience and dynamics at landscape and tree level in face of natural disturbances.
Computing & Data Science	Rust, Python, R, Google Earth Engine, LAStools, GIS, ENVI, eCognition. Shallow learning, deep learning, unsupervised learning, and statistical analyses for big geospatial data.
Forest Inventory Innovation	Developing tools for modern forest inventory management and data exploration.
Scientific Communication	Bridging the gap between science and operational applications for public, industry, and academia.

Core Experience

SILVA21 High Quality Personnel - PhD Candidate

FACULTY OF FOREST RESOURCES MANAGEMENT (UBC)

Characterizing and quantifying the effect of non-stand replacing disturbances on boreal forest resilience:
- Publishing scientific literature on the role of spruce budworm infestations on the structural changes in the boreal forests of Quebec, Canada;
- Exploring a variety of supervised and unsupervised machine learning techniques to characterize the presence of infestations at the stand and landscape level from lidar point clouds and satellite imagery;
- Interfacing with cloud computing platforms to process large volumes of data at scale, improving project efficiency;
- Producing modern software solutions in compiled programming languages for very fast geometry rasterization useful for forest inventory purposes;
- Translating scientific results into potential management strategies at a tactical level;
- Collaborating and facilitating consultation with partner universities and industries as part of the SILVA21 research program (www.silva21.com);
- Actively communicating complex scientific outcomes to a diverse audience of project partners to ensure clarity;
- Developing and leading workshops on the use of machine learning techniques for remote sensing data, producing educational resources;
- Mentoring a diverse groups of graduate researchers to cultivate their skills and promoting their success, underlining leadership and educational prowess.

Education

PhD Candidate in Forest Resources Management
2022 – current

Integrated Remote Sensing Studio, The University of British Columbia, Canada
Supervisor: Dr. Nicholas Coops

Master of Forestry
2020 – 2021

Transatlantic Forestry Master at The University of British Columbia, Canada
Theses titles (supervisor: Dr. Nicholas Coops):
- *"Individual tree crown delineation under dense Douglas Fir regeneration"*
- *"Spectroscopic assessment of foliar traits in a dense Douglas Fir forest"*

Master in Forest Science
2019 – 2020

University of Padova, Italy. Graduated with Honors (110/110 *summa cum laude*)

Bachelor in Forestry and Environmental Technologies
2016 – 2019

University of Padova, Italy (110/110 *summa cum laude*)
Thesis title (supervisor: Dr. Emanuele Lingua):
- *"Age-independent growth curves for mixedwood forests in central Ontario"*

Awards & Career Highlights

PhD Candidate funding
CAD 30,000   Annual since January 2022

Funded as part of the Canada-wide Silva21 research program to study forest resilience to natural disturbances using forest inventory and remote sensing data (project code AD-2). NSERC Alliance project Silva21 NSERC ALLRP 556265-20. Grantee Dr. Alexis Achim.

International Tuition Award
CAD 4,650   Annual since January 2022

Award assigned in recognition of high academic achievements.

ESRI Canada Scholarship   CAD 2,000   March 2022

Evaluation of multi-temporal tree height growth using LiDAR data. The submission's goal was to map tree height variations over time to understand forest response to natural disturbances.

Transatlantic Forestry Master double-degree program   September 2019 – August 2021

Qualification for the Transatlantic Forestry Master double-degree program between the University of Padova, Italy, and The University of British Columbia, Canada. The program offers highly qualified students the opportunity to earn two Master's Degrees in Forestry in Europe and Canada.

Academic exchange nomination   January 2019 – August 2019

Qualification for an exchange program sponsored by the University of Padova, Italy with the Sir Sandford Fleming College, Ontario, Canada.

Tuition Award   EUR 2,000   Annual 2016 – 2021

Qualified for a full tuition compensation at the University of Padova, Italy for 5 consecutive years for outstanding academic achievements.

Applied Skills

Remote Sensing	Satellite imagery, lidar point clouds, and vector data processing in local and cloud computing platforms (Digital Research Alliance of Canada).
Programming	Advanced use of Rust, Python, R, Google Earth Engine, LAStools, GIS, ENVI, and eCognition for geospatial analysis, modelling, and big data.
Forest Management	Interpreting forest inventories, conducting scientific statistical and machine learning analyses on ecological attributes.
Scientific Writing	Experienced in writing peer-reviewed publications.
Communication	Public speaker and mentor to audiences of varying backgrounds with strong graphical data communication skills.

Soft Skills

Personal	Diligent, confident, accountable, adaptable, enthusiastic, respectful, friendly, positive.
Social	Team-oriented, equitable, emotionally and culturally intelligent
Methodological	Pragmatic, analytical, problem-solver, self-motivated, organized
Languages	English, Italian, Spanish (basic)

Peer-Reviewed Publications

1. *Trotto, T.*, Coops, N. C., Achim, A., & Gergel, S. E. (2025). Spectral remote sensing reveals forest structural characteristics resilient to spruce budworm infestations. *Ecological Indicators*, 181, 114382. https://doi.org/10.1016/j.ecolind.2025.114382

2. **Trotto, T.**, Coops, N.C., Achim, A., Gergel S. E., Roeser, D. (2025). Characterizing landscape configuration effects on eastern spruce budworm infestation dynamics. *Landscape Ecology*, 40, 183. https://doi.org/10.1007/s10980-025-02203-z.

3. **Trotto, T.**, Coops, N. C., Achim, A., Gergel, S. E., Roeser, D. (2024). Characterizing forest structural changes in response to non-stand replacing disturbances using bitemporal airborne laser scanning data. *Science of Remote Sensing*, 10, 100160. https://doi.org/10.1016/j.srs.2024.100160.

Software

1. **Trotto, T. (2024).** *rusterize:* High performance rasterization tool for Python built in Rust.

Certificates

1. **Trotto, T. (2024).** Pilot Certificate – Basic operations for Small Remotely Piloted Aircraft (VLOS). Issued by Transport Canada

Code Development & Review

Code Development	Self-motivated development of software solution outside of my current academic position.
Code Maintenance & Quality Assurance	Creating high-quality codebases and associated documentation for reproducibility and maintenance through continuous updates.
Code Review	Reviewed software in Python and R for academic purposes.
Collaborative Development	Effective Git user to build collaborative codebases.

Conferences

Living Data (Bogotá, Columbia)   2025
Mapping and monitoring landscape configuration effects on natural disturbances from space

Silva21 – Annual General Meeting (Sherbrooke, Canada)   2025
Characterizing landscape configuration effects on spruce budworm infestations

Silva21 – Annual General Meeting (Ottawa, Canada)   2024

Data fusion of lidar and Landsat reveals landscape-level structural patterns of spruce budworm infestations

Silvilaser (London, UK) 2023

Characterizing fine-scale forest structural changes due to non-stand replacing disturbances with bitemporal airborne laser scanning data

Silva21 – Annual General Meeting (Halifax, Canada) 2023

Fine-scale structural characterization of non-stand replacing disturbances using bitemporal aerial laser scanning data

Silva21 – Annual General Meeting (Quesnel, Canada) 2022

Learning from the past: lidar-derived products to link resistance and resilience to non-stand replacing disturbances

Teaching & Instructional Workshop Experience ─────────

Advancing Equity in Forestry: Digital Research Infrastructure and Deep Learning for All 2025

Machine learning in forest modeling

TA – MGEM 500 Annual since 2022

Landscape Ecology and Management, UBC

TA – FRST 443 Annual since 2023

Remote Sensing for Ecosystem Management, UBC

TA – MGEM 530 2024 – 2025

Geospatial Data Analysis

TA – CONS 430 2023

Introduction to GIS for Forestry and Conservation

TA – FRST 544 2022

Technical Communication Skills I

International Journals ─────────

Reviewer   Journal of Remote Sensing in Ecology and Conservation

Reviewer   Journal of Environmental Management

Reviewer   Current Forestry Reports

Personal Hobbies ─────────

Code development
- Enthusiastic coder developing packages that facilitate my work.

Language
- I enjoy multicultural environments and language is a first interface to new cultures. Currently learning Mandarin.

Sports
- Experienced tennis player (15+ years), once playing ranked tournaments.
- Intermediate climber.