

Alessandro Sebastiani

Personal Information

Date of birth: June 29, 1992

Gender: Male

Nationality: Italian

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Research interests and expertise

My main research interest lies in Ecosystem Services and Nature-Based Solutions, and their role in improving the environmental quality of urban and peri-urban areas. My research projects were aimed at assessing regulating and cultural ecosystem services provided by urban and peri-urban forests and have been carried out through a multidisciplinary approach integrating field data and data modeling. I have also investigated the mismatch between the delivered and the demanded quantity of ecosystem services by developing ecosystem services indicators, and monitored vegetation through remote sensing techniques. In most of my research studies I provided a monetary evaluation, generally driven by the human health impact exerted by phenomena such as air pollution. The results of these studies were published in top-ranked journals in the sectors "Ecology", "Decision Sciences", and "Earth and Planetary Sciences".

My main expertise resides in geospatial and remote sensing analysis. Thanks to my training and research experience I've become an advanced GIS and remote sensing user, proficient in the use of software (QGIS, GRASS GIS, ESA SNAP, InVEST), and data sources (Corine Land Cover, Copernicus Global Land Service and HRL, Sentinel-2, Landsat 8 amongst the others).

Working Experience

Technologist [from 02/05/2023 ongoing] at the National Research Council, Research Institute on Terrestrial Ecosystems (IRET-CNR).

- **Project title:** ITINERIS (Italian Integrated Environmental Research Infrastructures System).

Research fellow [from 01/11/2022 to 01/05/2023] at CREA (Council for Agricultural Research and Agricultural Economy Analysis), at the Forestry and wood centre.

- **Project title:** Monitoring greenhouse-gas fluxes at the IT-Cp2 ICOS site.

Technical Officer [from 15/03/2022 to 31/10/2022] at General Direction of European and International Activities (AEI), at The Italian Ministry of the Ecological Transition.

Research fellow [from 01/01/2021 to 13/03/2022] at Sapienza University of Rome, Department of Environmental Biology, Laboratory of functional ecology and ecosystem services.

- **Project title:** Natural and cultivated plant species: potential toxicity of atmospheric pollutants on the photosynthetic process and assessment of Regulating Ecosystem Services provided by Green Infrastructure in rural and urbanized areas of different Italian Metropolitan Cities.

Education and Training

Ph.D. in Environmental and Evolutionary Biology, curriculum of Ecology [from 01/11/2017 to 28/04/2021]. Sapienza University of Rome, Department of Environmental Biology

- **Final Grade:** cum Laude.
- **Title of the Ph.D. Thesis:** Evaluation of Regulating Ecosystem Services in urban areas: Green Infrastructure and Nature-Based Solutions for the improvement of environmental quality.

Master's degree in environmental Monitoring and Recovery [from 01/11/2014 to 11/07/2017], Sapienza University of Rome.

- **Final Grade:** 110/110 cum Laude.
- **Title of the thesis:** Analysis of Regulating Ecosystem Services through remote sensing data in a GIS environment: effects of land consumption in the Lazio Region (2012-2016) on the removal of particulate and gaseous air pollutants.

Bachelor's degree in environmental sciences [from 01/11/2011 to 14/12/2014], Sapienza University of Rome.

- **Final Grade:** 110/110 cum Laude
- **Title of the thesis:** Servizi ecosistemici e miglioramento della qualità dell'aria operato dal verde urbano.

Language Skills

Mother tongue: Italian

Other languages: English

- Listening: B2; Writing: B2; Reading: B2; Spoken Production: B2; Spoken Interaction: B2.

Digital Skills

GIS: GRASS GIS; QGIS.

Remote Sensing: ESA SNAP; Sentinel-2; Landsat 8; Copernicus Global Land Service.

Operating systems and base coding: Windows; linux-based OSs; Python (base).

Statistical analysis: RStudio.

Other: Office suite; Libre Office suite; InVEST suite.

Publications in international scientific journals

- Fusaro, L., Nardella, L., Manes, F., Sebastiani, A., & Fares, S. (2023). Supply and demand mismatch analysis to improve regulating ecosystem services in Mediterranean urban areas: Insights from four Italian Municipalities. *Ecological Indicators*, 155, 110928. <https://doi.org/10.1016/j.ecolind.2023.110928> .
- Gaglio, M., Muresan, A. N., Sebastiani, A., Cavicchi, D., Fano, E. A., & Castaldelli, G. (2023). A "reserve" of regulating services: The importance of a remnant protected forest for human well-being in the Po delta (Italy). *Ecological Modelling*, 484, 110485. <https://doi.org/10.1016/j.ecolmodel.2023.110485> .
- Sebastiani, A.*, Salvati, R., & Manes, F. (2023). Comparing leaf area index estimates in a Mediterranean forest using field measurements, Landsat 8, and Sentinel-2 data. *Ecological Processes*, 12(1), 1-13. <https://doi.org/10.1186/s13717-023-00441-0>.
- Nardella, L., Sebastiani, A., Stafoggia, M., Franzese, P. P., & Manes, F. (2023). Modelling PM10 removal in three Italian coastal Metropolitan Cities along a latitudinal gradient. *Ecological Modelling*, 483, 110423. <https://doi.org/10.1016/j.ecolmodel.2023.110423>.
- Sebastiani, A.*, & Fares, S. (2023). Spatial prioritization of ecosystem services for land conservation: The case study of central Italy. *Forests*, 14(1), 145. <https://doi.org/10.3390/f14010145>.
- Lausi L., Amodio M., Sebastiani A.*, Fusaro L., Manes F. (2022). Assessing Cultural Ecosystem Services during the Covid-19 pandemic at the Garden of Ninfa (Italy). *Annali di Botanica*, 12, 63-75. DOI: <https://doi.org/10.13133/2239-3129/17681>.
- Muresan A., Sebastiani A. ^, Gaglio M., Fano EA., Manes F. (2022). Assessment of air pollutants removal by green infrastructure and urban and peri-urban forests management for a greening plan in the Municipality of Ferrara (Po river plain, Italy). *Ecological Indicators* 135 (2022): 108554. DOI: <https://doi.org/10.1016/j.ecolind.2022.108554>.
- Sebastiani A.*, Marando F., Manes, F. (2021). Mismatch of Regulating Ecosystem Services for sustainable urban planning: PM10 removal and urban heat island effect mitigation in the Municipality of Rome

- (Italy). *Urban Forestry & Urban Greening*, 57, 126938. DOI: <https://doi.org/10.1016/j.ecolmodel.2018.11.011>.
- Sebastiani A.*, Buonocore E., Franzese PP., Riccio A., Chianese E., Nardella L., Manes, F. (2021). Modeling air quality regulation by green infrastructure in a Mediterranean coastal urban area: The removal of PM10 in the Metropolitan City of Naples (Italy). *Ecological Modelling*, 440, 109383. DOI: <https://doi.org/10.1016/j.ecolmodel.2020.109383>.
- Capotorti G., Bonacquisti S., Abis L., Aloisi I., Attorre F., Bacaro G., ... & Blasi, C. (2020). More nature in the city. *Plant Biosystems-An International Journal Dealing with all Aspects of Plant Biology*, 154(6), 1003-1006. DOI: <https://doi.org/10.1080/11263504.2020.1837285>.
- Marando F., Salvatori E., Sebastiani A., Fusaro L., Manes, F. (2019). Regulating ecosystem services and green infrastructure: assessment of urban heat island effect mitigation in the municipality of Rome, Italy. *Ecological Modelling*, 392, 92-102. DOI: <https://doi.org/10.1016/j.ecolmodel.2018.11.011>.
- Fusaro L., Marando F., Sebastiani A., Capotorti G., Blasi C., Copiz R., Congedo L., Munafò M., Ciancarella L., Manes F. (2017). Mapping and assessment of PM10 and O3 removal by woody vegetation at urban and regional level. *Remote sensing*, 9(8), 791. DOI: <https://doi.org/10.3390/rs9080791>.

* Indicates Corresponding Author.

^ Indicates co-first authorship

Communication to conferences and congresses

Nardella L., Sebastiani A., Buonocore E., Stafoggia M., Franzese P. P., Manes F. (2023). Nature-Based Solutions and the multifunctional role of Ecosystem Services. XXXII Congresso S.It.E. "Sostenibilità ecologica: scienza, scenari e partecipazione".

Sebastiani A., Salvati R., Manes F. (2021). Assessing and mapping the Leaf Area Index to analyze the Ecosystem Services provision. XXX Congress of The S.It.E (Società Italiana di Ecologia).

Marando F., Sebastiani A., Manes F. (2019). Remote sensing in a landscape planning perspective: a multi-scale analysis for mismatches between regulating and provisioning Ecosystem Services. IALE (International Associations for Landscape Ecology) world Congress, Milano.

Sebastiani A., Marando F., Zulian G., Salvatori E., Fusaro L., Manes F. (2019). Regulating Ecosystem Services: supply and demand for air quality improvement and local temperature mitigation in the Municipality of Rome. XXIX Congresso S.It.E. "Capitale Naturale: la gestione per la conservazione", Ferrara.

Sebastiani A., Marando F., Fusaro L., Salvatori E., Manes F. (2018). Mapping and assessment of the Ecosystem Service of air pollution removal by urban green in five cities in the Latium Region (Italy). Sixth International Conference on Remote sensing and geoinformation of the environment, Paphos (Cyprus).

Marando F., Sebastiani A., Capotorti G., Fusaro L., Salvatori E., Blasi C., Manes F. (2018). Functional biodiversity and air pollution removal potential of urban Green Infrastructure in 5 municipalities of the Latium Region. Biodiver-City: Enhancing urban biodiversity and ecosystem services to make cities more resilient, Sofia.

Contribution to monographic publications

Manes F., Sebastiani A. (2023). Servizi Ecosistemici di regolazione nelle aree metropolitane: rimozione di inquinanti atmosferici e mitigazione dell'isola di calore urbana. Contenuto in: Scienza e Società. L'ecologia per un futuro migliore. II Volume. ISBN: 9791221038484.

Manes F., Sebastiani A., Fusaro L. (2022). Consumo di suolo e influenza diretta e indiretta sulla fornitura di servizi ecosistemici. Contenuto in:

Consumo di suolo, dinamiche territoriali e servizi ecosistemici. Edizione 2022. Report SNPA n. 32/2022; ISBN: 978-88-448-1124-2.

Manes F., Sebastiani A., Fusaro L., Salvatori E. (2021). Servizi Ecosistemici di regolazione forniti dalle foreste periurbane della Tenuta Presidenziale di Castelporziano nel territorio della città di Roma: analisi di stress biotici e abiotici. In: "Il Sistema Ambientale della Tenuta presidenziale di Castelporziano. Ricerche sulla complessità di un ecosistema forestale costiero mediterraneo", Scritti e documenti LXII Accademia Nazionale delle Scienze detta dei XL, in collaborazione con Segretariato Generale della Presidenza della Repubblica. ISBN: 978-88-98075-42-3, ISSN: 03-91-4666.

Comitato Capitale Naturale (2019), Terzo Rapporto sullo Stato del Capitale Naturale in Italia. Roma

Consumo di suolo, dinamiche territoriali e Servizi Ecosistemici. Edizione 2017. ISBN 978-88-448-0831-0

Other roles

Special issue Editor for the scientific journal LAND [I.F. 3.9]. Special issue "Applying Ecosystem Services Indicators in Land Use Planning and Management" [from March 2023, ongoing].

Assistant Editor at the international scientific journal "Annali di Botanica - Coenology and Plant Ecology" Annali di Botanica - Coenology and Plant Ecology. ISSN 2239-3129 [from 31/05/2020 to 14/05/2022].

Appointed Expert in applied ecology by the CAD (Consiglio di Area Didattica), during the session held on the 24th of June 2020, by the Department of Environmental Biology.

Lecturer at DISS Delta International Summer School. Lecture title: Landscape monitoring at different spatial and temporal scales [from 13/06/2021 to 18/06/2021].

Training and summer schools

Programming for Everybody (Getting started with Python). Course authorized by the University of Michigan [August 2018].

GeoComputation using free and open-source software. Coursed provided by Università degli Studi della Basilicata - Dipartimento delle Culture Europee e del Mediterraneo [June 2018].

Autorizzo il trattamento dei miei dati personali presenti nel CV ai sensi dell'art. 13 d. lgs. 30 giugno 2003 n. 196 - "Codice in materia di protezione dei dati personali" e dell'art. 13 GDPR 679/16 - "Regolamento europeo sulla protezione dei dati personali".

Consapevole della responsabilità penale a cui può andare incontro, ai sensi dell'art. 76 del D.P.R. 445/2000, in caso di dichiarazioni mendaci, sotto la sua personale responsabilità lo scrivente dichiara che quanto riportato è conforme al vero.

Roma, 12/11/2023

A handwritten signature in dark ink, consisting of stylized initials followed by a horizontal line.