Vacancies for three PhD positions (4 years)
Forest & Nature Lab, Ghent University (Belgium)

Forests are essential ecosystems that harbor rich biodiversity and deliver critical services to society such as climate regulation. However, they are increasingly threatened by pressures such as intensive management, climate change, and nitrogen deposition. We are currently offering three PhD positions that investigate how interacting environmental stressors influence forest biodiversity. While each position is linked to a distinct research project, they share overlapping teams, similar start dates, and a common research environment. Therefore, we are advertising them jointly to allow candidates to express interest in one or more positions simultaneously. The projects are:

1. Forest management and nitrogen deposition effects on soil biogeochemistry and plant communities in temperate forests
2. Novel light regimes and drought effects on temperate forest plant biodiversity (CanopyChange)
3. Risks from climate change and biodiversity loss across systems and scales: Leveraging the potential of tree-based solutions for adaptation in Europe (Trees4Adapt). This is a position with the Finnish Meteorological Institute (Helsinki, Finland), Freiburg University (Germany) and the Natural Resources Institute Finland LUKE (Helsinki, Finland), and other collaborators within the Trees4Adapt project.

Further details about each project, the positions, and contact information can be found on the following pages.

Join us in advancing science that informs sustainable forest management and enhances resilience in the face of global change!

How to apply

To apply, please send us the following documents, merged into a single PDF file:

- A one-page cover letter outlining your motivation to apply for the position(s)

- Your CV

- A transcript of records

In your cover letter, clearly indicate which of the three positions you are applying for—this can be one, two, or all of them.

Send this PDF document to Pieter.DeFrenne@ugent.be and Lander.Baeten@ugent.be by 9 June 2025 at 17:00h Central European time.

The interviews with selected applicants will be organized at the end of June and/or the first week of July 2025. Each candidate selected for the interview will have one selection interview; also when applying for multiple positions.

PhD position 1 - Forest management and nitrogen deposition effects on soil biogeochemistry and plant communities in temperate forests

FWO research project

Project background

Forests play a critical role in supporting biodiversity and providing essential ecosystem services, from wood production to climate regulation and air purification. In Europe, many forests are intensively managed, often focusing on timber and other wood-derived products like paper or bio-based energy. While management often focusses on the trees, the functioning, and especially the biodiversity of these systems is mainly determined by the herbaceous species growing on the forest floor, known as the understorey. Forest management, in combination with other pressures such as nitrogen deposition, can strongly affect the structure and composition of the understorey, but the way both drivers interact is still poorly understood. Being able to predict the combined effects of management and nitrogen deposition on forests will be key to define critical loads for nitrogen deposition and thereby conserve these ecosystems and the services they provide.

The PhD candidate will work on a research project funded by the Research Foundation Flanders (FWO, www.fwo.be), in a team together with a postdoc and the supervisors. This project is part of a collaborative effort between the Forest & Nature Lab at Ghent University (ForNaLab) and the Research Institute for Nature and Forest (INBO), with the aim to conduct cutting-edge forest ecology research with a tangible impact on forest conservation and management practices in Flanders and beyond. The candidate's work will be based at Ghent University, alongside a dynamic and experienced team of ForNaLab researchers, that jointly study the topics detailed above. The PhD candidate will be supervised by Dries Landuyt (UGent), Lander Baeten (UGent) and Karen Wuyts (INBO).

Summary of this PhD position

The successful candidate will carry out a combination of field and desktop work to support the work carried out in the project. Field work will include experimental work (e.g. https://pastforward.ugent.be/about.html#WPIII) but also observational work with planned vegetation and soil surveys in different temperate forests across Europe (focus on Belgium, France, Germany and the Netherlands). Field work will mainly rely on conventional soil and vegetation survey techniques, but the candidate will also have the opportunity to explore new techniques to assess the impact of nitrogen deposition on soil chemistry and forest functioning in general. Desktop work will include the use of large databases and analyses of existing and own field work data to better assess the combined impact of nitrogen deposition and forest management on compositional and structural changes in the understorey of temperate forests.

Your profile

- You have a Masters or Honours degree in Bioscience Engineering, Biology, Ecology, Forestry, Geology, or related sciences. Also candidates that will obtain their degree in the summer of 2025 are invited to apply.
- You are a team player with good (English) communication skills and are motivated to work in a collaborative project with other researchers and technical assistants
- You have experience with soil and vegetation survey techniques or are eager to acquire these skills
- You have experience with programming languages such as R and/or Python for data analysis
- You have a good knowledge on nutrient cycling in soils and soil biogeochemistry in general or are interested in acquiring this knowledge

- You have a good knowledge of the biodiversity and functioning of temperate forest ecosystems, and vegetation ecology in general or are interested in acquiring this knowledge

Our offer

- A PhD scholarship for four years, based at Ghent University in Belgium (full-time, scholarship salary following the legal salary scales)
- Start date preferably September 2025
- The possibility to gain research experience, with opportunities to visit other research groups and forest sites across Europe, and attend international scientific conferences to expand your academic network
- The possibility to collaborate with ecology experts at INBO
- A young and dynamic team of researchers to collaborate with
- A unique work environment: our offices are located within the Aelmoeseneie forest, offering access to nearby in-situ experiments, but also a tranquil and stimulating place to focus and collaborate
- The opportunity to obtain a PhD degree at Ghent University

Research Environment

The successful candidate will be based at the Forest & Nature Lab (www.fornalab.ugent.be) of Ghent University, located in Gontrode, nearby the city of Ghent. ForNaLab is a cheerful, hospitable and collaborative research team, consisting of around 40 staff members and is headed by Professors Kris Verheyen, Lander Baeten, Jan Mertens and Pieter De Frenne. The research group is part of the Department of Environment at the Faculty of Bioscience Engineering, Ghent University (ww.ugent.be/bw/environment).

The Forest & Nature Lab aims at understanding the interactions between the ecological processes, composition, and structure of terrestrial ecosystems, with a clear link to management and policy. ForNaLab is actively involved in numerous national and international projects and networks, including FLEUR (fleur.ugent.be), TreeDivNet (treedivnet.ugent.be), FunDivEurope (project.fundiveurope.eu/) and forestREplot (forestreplot.ugent.be).

Additional information

For more information, please do not hesitate to contact lander.baeten@ugent.be and dries.landuyt@ugent.be

PhD position 2 - Novel light regimes and drought effects on temperate forest plant biodiversity (CanopyChange)

ERC Consolidator Grant project

https://canopychange.ugent.be/

Project background

Tree canopies are one of the most recognizable features of forests, providing shelter from external influences to a myriad of species that live in the understorey. Canopy disturbances are now accelerating across European forests, and climate-change induced drought is a key driver. These disturbances are opening the canopy and exposing forest biodiversity to no-analog light regimes and drought – light and drought levels they have never been exposed to before. As the majority of forest plant species occur in the shade below tree canopies, the combination of altered light regimes and intensifying droughts can strongly impact forest biodiversity. However, the interactive effects of novel light regimes and drought on temperate forest biodiversity have never been investigated before. Since recent European droughts are unprecedented in the last two millennia, and this has initiated the largest pulse of forest disturbances in almost two centuries, the time to assess impacts on biodiversity is now. The overarching aim of CanopyChange is to quantify, understand and predict the impacts of no-analog light regimes and drought on below-canopy forest plant biodiversity. To address this challenging goal, cross-continental resurveyed vegetation plots, the first pan-European forest disturbance-drought experiment, and a pioneering canopy clipping mesocosm experiment will be combined with an interdisciplinary toolbox drawing from ecology, forestry, and climatology. These data will then feed into cutting-edge joint species distribution models to project European forest plant biodiversity responses to future climate and canopy change.

Summary of this PhD position

Here we advertise for one PhD position which will be part of the broader CanopyChange project and team. This particular PhD position will focus on a forest disturbance-drought experiment which will be installed at several sites across Europe (WP2; see https://canopychange.ugent.be/) and in Belgium (WP3).

Your profile

- You have a Masters, or Honours, degree in Bioscience Engineering, Biology, Ecology, Forestry or equivalent degree in Life or Mathematical Sciences with background in Ecology. Also candidates that will obtain their degree in the summer of 2025 are invited to apply.
- You have excellent study grades.
- You have a strong interest in forests, ecology, and climate change.
- You have good knowledge of both the biotic and abiotic components and processes in temperate forest ecosystems.
- You are highly motivated to perform scientific research that involves field work, quantitative data analyses as well as writing scientific publications.
- You are a team player with good communication skills, you like to write and discuss ideas. An excellent knowledge of the English language is required.
- You are highly motivated to work in a collaborative project with other PhD students, postdocs and technical assistants.

Our offer

- A PhD scholarship for four years, based at Ghent University in Belgium (full-time, scholarship salary following the legal salary scales).
- The start date is 1 September 2025.
- Collaboration in a young and dynamic scientific team.
- The possibility to gain experience in doing scientific research, with many travelling opportunities and field work across Europe.
- The opportunity to obtain a PhD degree at Ghent University in a topical field of applied environmental sciences and climate change.

Research Environment

The successful candidate will be based, along with the rest of the CanopyChange team, at the Forest & Nature Lab (www.fornalab.ugent.be) of Ghent University, Belgium. ForNaLab consists of 30 staff members and is headed by professors Kris Verheyen, Lander Baeten, Jan Mertens and Pieter De Frenne. The research group is part of the Department of Environment at the Faculty of Bioscience Engineering, Ghent University (https://www.ugent.be/bw/environment).

The Forest & Nature Lab aims at understanding the interactions between the ecological processes, composition, and structure of terrestrial ecosystems, with a clear link to management and policy. ForNaLab is actively involved in numerous national and international projects and networks, including FLEUR (www.fleur.ugent.be), forestREplot (www.forestreplot.ugent.be), TreeDivNet (www.treedivnet.ugent.be), PASTFORWARD (https://pastforward.ugent.be/), FORMICA (https://formica.ugent.be/) and CanopyChange (https://canopychange.ugent.be/).

Additional information

For more information, please do not hesitate to contact Prof. Pieter De Frenne, via telephone at +32 9 264 90 36 or via email at Pieter.DeFrenne@UGent.be

More information on our work and research group is available at http://www.fornalab.ugent.be and at https://canopychange.ugent.be/

PhD position 3 - Risks from climate change and biodiversity loss across systems and scales: Leveraging the potential of tree-based solutions for adaptation in Europe (Trees4Adapt)

Horizon Europe project

Summary of the whole project

Climate change and biodiversity loss are interdependent crises, but knowledge gaps on their interplays prevent effective risk assessment and solutions. Trees4Adapt will 1) enhance empirical understanding of climate change, biodiversity loss, their interdependencies, and how these influence risks; 2) develop evidence-informed tools and solutions that build climate resilience and support biodiversity at the same time. We focus particularly on tree-based solutions, which are nature-based solutions involving trees that promise to safeguard the EU by delivering cross-sectoral benefits, if we better tailor their design and implementation.

Trees4Adapt combines field-quantified understanding from multi-national research platforms and case studies representative of boreal, temperate, and Mediterranean biomes with novel bioeconomic modelling and high-resolution modelling and mapping of complex risks. Our activities operate from the plot- to EU-level, with interdisciplinary models developed during the project integrating the scale-dependent findings. Trees4Adapt applies co-creational approaches, and key stakeholders - including public administration and authorities - from the local- to EU levels will actively guide, inform and participate in the project. This will ensure the outputs of our research are useable, custom-made to stakeholders' specific needs, and result in changes in decision-making and other impact in relation to recognized societal needs and key EU and global policy priorities including the Adaptation, Forest, and Biodiversity Strategies. Trees4Adapt's consortium consists of leading experts on climate change science, ecosystems and land use changes, nature-based solutions, transdisciplinary and participatory research, bioeconomics, environmental policy, risk assessment and modelling.

Summary of this PhD position

Here we advertise for one PhD position within the broader Trees4Adapt project. The PhD will focus on studying microclimate and biodiversity data in tree diversity observatories and experiments across Europe. The goal is to provide empirical understanding of the co-benefits of tree species and mixtures on climate change adaptation and biodiversity conservation. This is expected to provide novel insights on the mechanisms by which these co-benefits occur (e.g., by considering how trees best buffer the microclimate from macroclimatic changes). We aim to advance the understanding of interlinkages, synergies and trade-offs among climate adaptation, cross-taxa biodiversity and ecosystem functioning in young plantations and mature forests across Europe. For this, data will be collected from 200 plots at eight sites in seven European countries (Italy, France, Romania, Poland, Germany, Belgium and Finland) spanning a gradient in mean annual temperature of c. 11°C. Sites are part of the long-standing research platforms (a) TreeDivNet (https://treedivnet.ugent.be/), representing tree diversity experiments, with plots established by planting tree monocultures and mixtures in homogeneous environmental conditions, and (b) FunDivEUROPE (http://project.fundiveurope.eu/), representing comparative study plots in mature forests along gradients of tree diversity, keeping environmental conditions as constant as possible.

Your profile

- You have a Masters, or Honours, degree in Bioscience Engineering, Biology, Ecology, Forestry or equivalent degree in Life or Mathematical Sciences with background in Ecology. Also, candidates that will obtain their degree in the summer of 2025 are invited to apply.
- You have excellent study grades.
- You have a strong interest in forests, meteorology, ecology, and climate change.
- You have good knowledge of both the biotic and abiotic components and processes in forest ecosystems.
- You are highly motivated to perform scientific research that involves field work, quantitative data analyses as well as writing scientific publications.
- You have good skills in managing and processing spatio-temporal data using e.g. GIS, and have basic understanding on modelling (statistical or process-based)
- You are a team player with good communication skills, you like to write and discuss ideas. An excellent knowledge of the English language is required.
- You are highly motivated to work in a collaborative project with other PhD students, postdocs and technical assistants.

Our offer

- A PhD scholarship for four years, based at Ghent University in Belgium for two years and based at the FMI, Helsinki in Finland for two years (full-time, scholarship salary following the legal salary scales).
- The start date is 1 October 2025.
- Collaboration in young, dynamic and multidisciplinary scientific teams.
- The possibility to gain experience in doing scientific research, with many travelling opportunities and field work across Europe.
- The opportunity to obtain a joint PhD degree at Ghent University and FMI in a topical field of applied environmental sciences and climate change.

Research Environment

The successful candidate will be based jointly at the Forest & Nature Lab (www.fornalab.ugent.be) of Ghent University, Belgium and at the Weather and Climate Change Impact Research Unit (hereafter WCCIRU) of the Finnish Meteorological Institute, Helsinki, Finland (https://en.ilmatieteenlaitos.fi/weather-and-climate-change-impact-research). This position will also be in strong collaboration with Freiburg University (Germany) and the Natural Resources Institute Finland LUKE (Helsinki, Finland), and other collaborators within the Trees4Adapt project.

ForNaLab (UGent) consists of 30 staff members and is headed by professors Kris Verheyen, Lander Baeten, Jan Mertens and Pieter De Frenne. The research group is part of the Department of Environment at the Faculty of Bioscience Engineering, Ghent University (https://www.ugent.be/bw/environment). The Forest & Nature Lab aims at understanding the interactions between the ecological processes, composition, and structure of terrestrial ecosystems, with a clear link to management and policy. ForNaLab is actively involved in numerous national and international projects and networks, including FLEUR (www.fleur.ugent.be), forestREplot (www.forestreplot.ugent.be), TreeDivNet (www.treedivnet.ugent.be), PASTFORWARD (https://pastforward.ugent.be/), FORMICA (https://formica.ugent.be/) and CanopyChange (https://canopychange.ugent.be/).

WCCIRU (FMI) consist of 30 staff members led by research professor Hilppa Gregow, operating under the Meteorological and Marine Research Program. It is actively involved in various national and international projects, including PIISA (https://piisa-project.eu/), CLIMAAX (https://www.climaax.eu/) and VALORADA (https://valorada-project.eu/). The WCCIRU aims at increasing understanding on the

connections between climate change and extreme weather phenomena across spatiotemporal scales, adaptation needs, the economic and social impacts of climate change, the develop seasonal forecasts and their application across sectors.

Additional information

For more information, please do not hesitate to contact Prof. Pieter De Frenne, via telephone at +32 9 264 90 36 or via email at Pieter.DeFrenne@UGent.be or prof. Juha Aalto via telephone at +358 50 409 09 63 or via email at Juha.Aalto@fmi.fi

More information on our work and research group is available at http://www.fornalab.ugent.be and at https://en.ilmatieteenlaitos.fi/weather-and-climate-change-impact-research