

The Research Training Group (RTG) 2300 ‘**Enrichment of European beech forests with conifers: impacts of functional traits on ecosystem functioning**’ (EnriCo) at the Georg-August-University Göttingen in Germany, is currently inviting applications for

11 PhD Positions (f, m, d)

starting on October 1, 2023. The salary is based on TV-L E13 and amounts 65 % of a full position for PhD candidates in life science and associated topics and 75 % in statistics. The positions are funded by the German Research Foundation (DFG) for 3 years.

The interdisciplinary Research Training Group 2300 was established in 2017. The PhD students enrolled in this program investigate ecological challenges and societal demands on forests in a changing climate. The program focuses on European temperate forests. A central goal is to uncover the impact of mixed compared to monospecific forests on ecosystem functions and processes with a special focus on the importance of functional traits. Our research approaches involve field studies in European beech, Norway spruce and Douglas fir forests and their mixtures, experimental studies to uncover cause-effect relationships, and statistical as well as economic analyses. We hypothesize that mixtures of European beech with conifers show higher functional diversity than pure European beech stands, resulting in higher resilience and providing multiple ecosystem services.

The RTG2300 offers a vibrant academic environment, joint supervision of PhD candidates by thesis committees, and a structured study program with many opportunities to improve scientific and personal skills. The following research groups are offering PhD projects: silviculture, tree physiology (mycorrhiza), plant ecology, soil sciences, animal ecology, wildlife sciences, forest nature conservation, forest modelling, forest economics, and spatial forest structures as well as applied statistics. You can find detailed information on the individual positions below and online at www.uni-goettingen.de/de/623417.html. General information on the RTG2300 and the different projects are available at www.uni-goettingen.de/grk2300.

We are seeking highly motivated candidates, who wish to conduct their PhD training in an interdisciplinary environment. Successful candidates

- will have completed their MSc or equivalent university degree in a subject area relevant for the RTG 2300 program (see details for the different positions below)
- are fluent in English (IELTS min. 6.0 or equivalent) and motivated to learn some German
- are eager to conduct field work
- are keen to collaborate and share data with their PhD colleagues

Your application must include (**compiled as one pdf document, in the order mentioned below!**):

- curriculum vitae including information on posters, presentations, awards and publication list, if applicable
- motivation letter for the preferred project(s) (maximum 1 page). You can list up to three projects
- certificates of studies (if a degree is not yet completed you may also provide a document listing your current grades)
- two references (name and contact information of two senior researchers)
- summary of your MA thesis and if applicable one publication
- if applicable, additional documents

Please be aware that the application procedure consists of two steps:

- a) Please complete the **online form on [our application website](#)** with your personal data, your degrees etc.
- b) Please **send your application in one pdf to grk2300-coordination@forst.uni-goettingen.de**

The closing date for applications is **May 14, 2023**. We also encourage advanced Master candidates to apply but successful completion of the MSc or equivalent university degree is mandatory prior to employment.

If you have any questions, please contact the RTG’s coordinator Dr. Serena Müller (grk2300-coordination@forst.uni-goettingen.de, +49-551-3921217) or the potential supervisor for subject specific questions.

The University of Göttingen is an equal opportunities employer and places particular emphasis on fostering career opportunities for women. Qualified women are therefore strongly encouraged to apply as they are underrepresented in the field. The university has committed itself to being a family-friendly institution and supports their employees in balancing work and family life. The mission of the University is to employ a greater number of severely disabled persons. Applications from severely disabled persons with equivalent qualifications will be given preference.



Please note:

With submission of your application, you accept the processing of your applicant data in accordance with the data-protection law. Further information on the applicable law and data usage is provided in the Hinweisblatt zur Datenschutzgrundverordnung (DSGVO) (www.uni-goettingen.de/hinweisdservo).

Subprojects offering PhD positions

Subproject 1 entitled **‘Rooting patterns, water acquisition strategy, and growth response under intra- and interspecific competition’** (65 % TV-L E13) will be carried out by the Silviculture and Forest Ecology working group of Prof. Dr. Christian Ammer (www.uni-goettingen.de/en/67090.html). The successful candidate will study whether fine roots explore the soils directly or randomly to acquire belowground resources. They will also investigate to what extent daily stem growth patterns are correlated to tree water status and tree neighborhood identity. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field with advanced knowledge of tree ecophysiology. Experience in the application of explorative statistics is required; knowledge on soil water dynamics is advantageous.

Subproject 2 entitled **‘Heat sensitivity of beech, spruce and Douglas fir under field conditions’** (65 % TV-L E13) is located in the Plant Ecology working group of Prof. Dr. Christoph Leuschner (www.uni-goettingen.de/en/71395.html). This subproject aims to assess the climate change vulnerability of three important timber species in Central Europe. Therefore, the heat sensitivity of young shoots of adult and juvenile individuals is compared among the three species in its seasonal variability, using chlorophyll fluorescence measurements of photosynthesis under field conditions. Measurements will be conducted in mature stands using canopy access with a mobile elevator, and potted saplings in the botanical garden. Determined critical heat levels will be related to in situ temperature measurements and projected heat intensities as derived from regional climate scenarios. By the time of employment, the successful candidate should hold a very good M.Sc. degree in forest science or botany (preferably plant ecology) with very good grade and strong interests in climate change impacts on forests and ecophysiological field work.

Subproject 3 entitled **‘Soil greenhouse gas fluxes and nutrient response efficiency’** (65 % TV-L E13) is located in the Soil Science (PTS) working group of Prof. Dr. Edzo Veldkamp (www.uni-goettingen.de/en/67070.html). The main objective of the subproject is to assess the global warming potential of monospecific forests compared to mixed forests. Furthermore, this project will evaluate how monospecific forests and mixed forests will affect the nutrient response efficiency. At the time of employment, the successful candidate should have completed a very good M.Sc. degree in forest sciences, geology, environmental sciences or a related field. Advanced knowledge of soil science especially in nutrient cycling and/or greenhouse gas fluxes, very good statistical knowledge and experience and willingness to conduct fieldwork are required. Furthermore, a valid driver’s license is required.

Subproject 4 entitled **‘Microbial community structure and stress responses’** (65 % TV-L E13) is located in the Forest Botany and Tree Physiology working group of Prof. Dr. Andrea Polle (www.uni-goettingen.de/en/67024.html) and co-supervised by Nathaly Guerrero Ramirez. The main goal of the subproject is to understand community functions of mycorrhizas and other tree-associated microbes under environmental stress in different forest types. The successful candidate will conduct field experiments and use molecular, phylogenetic and ecological statistics for data analysis. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in biological sciences, forest sciences, ecology or a related field. Furthermore, experience with sequencing methods and statistics is required; knowledge on ecological concepts is advantageous.

Subproject 5 entitled **‘Decomposer community structure and decomposition processes’** (65 % TV-L E13) is located in the Animal Ecology group of Prof. Dr. Stefan Scheu (www.uni-goettingen.de/en/107728.html). The main

objective of the subproject is to understand the response of the decomposer food web and its functioning when planting Douglas-fir in comparison to European beech and Norway spruce. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field with skills/knowledge in entomology, soil ecology, ecological concepts, statistics, programming and ecological fieldwork. Knowledge of soil animal and microbial ecology as well as food web ecology is beneficial.

Subproject 6 entitled **‘Arthropod diversity and functioning in mixed versus pure stands’** (65 % TV-L E13) is located in the Forest Nature Conservation group of Prof. Dr. Andreas Schuldt (www.uni-goettingen.de/en/588022.html). The main goal of this subproject is to analyze the impact of stand structure and tree species composition on the community composition, diversity, and functions of arthropods and other animal taxa within and across different forest stand types. A particular focus of this project will be on winter activity and overwintering dynamics of arthropods and birds. There will also be the possibility to contribute to data synthesis across forest strata and taxa based on data assessed in the project thus far. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecology, biological sciences, forest sciences, or a related field. Knowledge of ecological concepts, arthropod identification, statistics, and experience with ecological fieldwork are essential. In addition, experience with the identification of birds (as predators of arthropods) is an asset. Furthermore, a driver’s license is required.

Subproject 7 entitled **‘Effects of small mammal movement behavior and competition on seed predation and seed dispersal’** (65 % TV-L E13) is located in the Wildlife Sciences group of Prof. Dr. Niko Balkenhol (www.uni-goettingen.de/en/450568.html). This subproject will characterize how seed removal (i.e., seed predation and seed dispersal) is influenced by competition among different small mammal species. Furthermore, the project will evaluate the impact of species-specific and individual behavioral differences on seed removal patterns. The subproject will involve a substantial amount of field work to map habitat and to capture, radio-collar and track small mammals on different forest plots, so candidates possessing relevant field experience are particularly encouraged to apply. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field with skills/knowledge in ecological concepts, analysis of spatial/telemetry data and ecological fieldwork. A valid driver’s license is required and certifications in animal handling and care (e.g., European FELASA or equivalent) are beneficial.

Subproject 8 entitled **‘Architectural characteristics of trees and how they relate to stand productivity’** (65 % TV-L E13) is located in the Department for Spatial Structures and Digitization of Forests led by Prof. Dr. Dominik Seidel (www.uni-goettingen.de/de/team/653311.html). The main objective of this subproject is to investigate how stand level structural complexity relates to stand level complexity, which structural tree traits explain the community (stand level) productivity, how different patterns of tree removal (silvicultural approaches) affect the stand-level structural complexity, and whether there are differences in these patterns in mixed vs. pure stands. To do so, 3D mobile laser scanning will be used, along with virtual modelling of harvesting approaches in the computer. Therefore, the successful candidate should enjoy working at the computer (with 3D data) as well as fieldwork with the laser scanner. A very good M.Sc. degree in ecological sciences, biology, forest sciences, geography or closely related disciplines is required, as well as an open-minded attitude, the ability to work in international teams, and commitment.

Subproject 9 entitled **‘Predicting structural changes and growth in pure and mixed stands of European beech, Norway spruce, and Douglas-fir’** (65 % TV-L E13) offers one PhD position in forest growth research located in the growth modelling group of PD Dr. Matthias Albert at the Northwest German Forest Research Institute, Göttingen (www.nw-fva.de/wir/mitarbeitende/details/120). The general objective of this subproject is to refine existing statistical single-tree growth models in the context of species mixtures. Modelling approaches include, among others, novel crown form models, site-sensitive diameter growth models and quantifying the effects of environmental stressors on tree growth. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field with knowledge in growth modelling, statistics, and R programming. Experience with field work and ecological concepts is beneficial.

Subproject 10 entitled **‘Semiparametric Regression’** (75 % TV-L E13) is located in the Statistics group with Prof. Dr. Thomas Kneib (www.uni-goettingen.de/en/264255.html). The general objective of this subproject is to develop flexible and practical forms of semiparametric regression models for the type of data collected within the RTG. A particular focus will be on spatial confounding and structural equation models as flexible tools for modelling complex relations in empirical data. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in statistics, data science, computer science, mathematics or other areas related to the scientific work of the RTG with a strong focus on quantitative methods.

Subproject 11 entitled **‘Economic implications of species mixture and structural diversity’** offers one position in bio-economic modelling (65 % TV-L E13) located in the department of Forest Economics and Sustainable Land-use Planning of Prof. Dr. Carola Paul (www.uni-goettingen.de/felap). The main objective of this subproject is to clarify the level and stability of economic returns and ecosystem services in admixed European beech stands and their functional relationship with species identity, mixture, and stand structural diversity. This improved understanding shall support the identification of potential management pathways, in terms of species composition and silvicultural interventions, which balance production and conservation-oriented goals. The subproject will involve risk-sensitive bio-economic modelling coupled with simulation of growth and tree structures in close cooperation with RTG Partners (particularly SP 8 and 9). For this position candidates should have completed a very good M.Sc. in forest sciences, ecological sciences, environmental economics or a related field with advanced knowledge of forest economics and skills in bio-economic and/or statistical programming.