

Profile: Forest Ecology and Forest Management group (FEM)

1. Background of the scientific area

Globally, forests are of great importance for the biodiversity they harbour and the ecosystem services they provide. Global threats like land-use and climate change, biodiversity decline and a growing human population increasingly challenge the way in which forest can adapt to these changes and maintain and improve the delivery of ecosystem services, conserve biodiversity and mitigate climate change. These changing realities and new roles of forests form the context in which the Forest Ecology and Forest Management group (FEM) operates. The FEM Group focusses on the ecology of trees and forests and contributes to the scientific basis of sustainable use and management of forests worldwide, with currently three main themes:

- (i) Multiple forest resource use and management.
- (ii) Resilient forests.
- (iii) Forest restoration.

2. Research approach

FEM research is conducted across a range of spatial and temporal scales and in both temperate and tropical forests, involving a wide range of organisational levels: from cell, individual tree, population, species, forest, landscape to global scales. This allows scaling up from detailed eco-physiological observations to large scale patterns, but also to scale down.

The research approach is interdisciplinary, and increasingly transdisciplinary, where the group combines field observations with experiments (field and greenhouse), (wood) laboratory analyses, tree and forest models and scenario analyses. The group also works on socio-ecological systems and explicitly works with non-academic stakeholder groups.

Staff expertise includes ecophysiology, wood anatomy, tree-ring research, tree and forest modelling, forest ecology, forest management, agroforestry, and social ecological systems, where forest biomes under investigation range from temperate to tropical, from natural to production, agroforestry systems, and forests in human modified landscapes.

The main output focus of the group is on publishing scientific papers, from basic ecological journals to applied (forestry) journals, and increasingly also in (cross-)disciplinary high-impact journals. Additionally, books and book chapters are published, both for professionals, scientists and students. Finally, FEM increasingly communicates research results, including fact sheets, websites, networks, social- and traditional media (radio, TV, newspapers).

The international standing of FEM is excellent as indicated in the external review of Wageningen University (WU) groups of 2015. This is reflected by the high number of publications in top trans-disciplinary journals (e.g. Science, Nature and PNAS), frequent invitations for keynote lectures, collaboration with leading international groups and success in acquiring personal grants (e.g. Rubicon, Veni, and ERC Starting and Advanced grants).

3. Collaborators and "stakeholders"

FEM is the only research group in the Netherlands entirely devoted to forest ecology and management. Within WU the group collaborates with a variety of chairgroups, such as: Forest and Nature Conservation Policy group, Wildlife Ecology and Conservation Group,

Plant Ecology and Nature Conservation, Geo-Information Sciences, Crop Systems Analysis, as well as Development Sociology, Development Economics and partners within Wageningen Environmental Research (WEnR).

At national level, FEM staff collaborates with the Netherlands Institute of Ecology (NIOO), the University of Amsterdam (UvA), Utrecht University (UU) and Naturalis Biodiversity Center (NBC). Internationally, FEM scientists collaborate with a large suite of internationally well recognized institutes and researchers, both individually and in research networks, and play important roles in international professional organisations on conservation, forest ecology and wood science.

FEM research has societal impact through intensive contacts with a diverse set of stakeholders. These include: forest owners and managers, wood industry, forest product consumers, forest users, certifiers, policy and decision makers, governmental organizations (ministries, State Forest Service, EU), NGOs (e.g. IUCN, WWF), consultancy companies (Commonland, Worldvision, Landlife Company), global scientific panels (IPCC, IPBES) and international organizations (ICRAF, CIFOR, CIAT, EFI, Tropenbos International).

4. Education

FEM staff considers academic teaching to be part of student's personal development, and therefore stimulates critical and analytical thinking in an interdisciplinary way, with an eye for the larger socio-economic and political context of forest management. Hence, FEM staff is strongly involved in the BSc programme Forest and Nature conservation (BBN: Bos- en Natuurbeheer in Dutch) and the MSc programme MFN (Forest and Nature Conservation), but also participates in eight other programs (including Biology). Moreover, students are offered challenging topics for thesis projects and internships, both within the Netherlands and in a range of foreign countries (temperate, boreal and tropical). The aim is that FEM thesis graduates are able to understand, create, employ, evaluate and transmit academic knowledge in the field of forest ecology and forest management.

5. Management

FEM is part of the Environmental Sciences Group at WUR. The group is composed of 8 tenured and tenure-track scientific staff (assistant, associate and personal professors), 3 lecturers, 2 research and teaching assistants, a secretary, and an administrator. The group also currently includes 6 postdocs and 27 PhD candidates.

Research and PhD training takes place within the Graduate School for Production Ecology and Resource Conservation (PE&RC). All tenured and tenure-track staff are involved in the supervision of PhD candidates, and all are members of PE&RC.