

Title	The role of leaf venation in stomatal conductance responses to drought in lianas and trees in the canopy of two tropical forests.
Project-type	MSc thesis
Credits	33- 39 ects
Examiner	Frans Bongers
Supervisor(s)	FEM group: Frank Sterck Other organization: Jose Medina (STRI, Panama)
Contact	Frank.sterck@wur.nl
Begin date	(2020/06/01 (flexible)
End date#	
Requirements	Recommended: FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	<p>MSc thesis</p> <p>Lianas are increasing in many tropical forests with potential negative implications for forest biodiversity, productivity, carbon sequestration and climate change mitigation. We have measured large, adult individuals of 16 liana species and 16 tree species from two canopy cranes over 2 years in tropical forests of Panama. This thesis will benefit from this data set, and explore the role of leaf venation for the stomatal responses that control carbon gain and water loss of these species. We have images of leaves of all species, and you will analyze those images for leaf venation patterns, and link that information to other functional traits to better understand the role of leaves for carbon gain, water loss and drought responses. The availability of our data for multiple species will allow you to compare lianas and trees in dry and wet forest, and speculate on drivers of the increase of lianas in Neotropical forest.</p> <p>Topics: Climate change effects /Biodiversity and functional diversity / Ecophysiology</p> <p>Region: Americas</p> <p>Climate: Tropical zone</p>
Used skills#	Statistical skills, image analysis
Offer to which study program(s)	MFN (=MSc Forest and Nature Conservation) MBI (=MSc Biology) MPS (=MSc Plant Sciences)

Title	Carbon Storage in Harvested Wood Products and Timber constructions in the Netherlands
Projecttype	Thesis
Credits	18-39 ECTS
Examiner	(Prof.Dr. F.J.J.M (Frans) Bongers)
Supervisor(s)	<i>Prof.dr.ir. Frits Mohren – FEM</i>
Contact	frits.mohren@wur.nl https://www.wur.nl/en/Persons/Frits-prof.dr.ir.-GMJ-Frits-Mohren.htm
Begin date	April 2020
End date#	
Requirements	FEM-30306 Forest Ecology and Forest Management REG-31806 Ecological Methods I; BSC: minimal 120 credits
Description	MSc / BSc thesis (depending on size / depth of analysis) FEM is involved in quantifying carbon in harvested wood products for a range of conditions, based on country data on harvested wood, wood use, and HWP life-span. Previously (in 2019), this has been quantified on the basis of FAOSTAT data for a range of countries, with the aim to assess the contribution of harvested wood products in total carbon storage, for different conditions and different countries. This will be further specified for the Netherlands, accounting for possible different forest management scenarios and different harvesting strategies; it involves review of available methods (e.g. according to IPCC guidelines, and as used in the LNV climate envelop projects), and the use of a simple wood-flow model in R as developed last year within the FAO project. The thesis project may focus on detailed analysis of carbon flow using more detailed country data, or focus on comparison of different management strategies. Climate change effects / Sustainable forest management/ Ecosystem services / Modelling The Netherlands/ Europe/ Temperate zone
Used skills#	R programming / knowledge of silvicultural systems
Offer to which study programme(s)	MFN (=MSc Forest and Nature Conservation) BBN (=BSc Forest and Nature Conservation) MPS (=MSc Plant Sciences)

Title	Tree crown development in relation to stand density
Project-type	MSc thesis (BSc thesis)
Credits	24-39
Examiner	(Jan den Ouden)
Supervisor(s)	Etiënne Thomassen, Frits Mohren
Contact	etienne.thomassen@wur.nl
Begin date	2020/05/01
End date#	
Requirements	FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	<p>MSc thesis (BSc thesis)</p> <p>Thinning interventions often aim at crown expansion of the future crop tree that is released with the treatment. QD Forest management is a novel management approach aiming to achieve 'free growth' of a tree in order to maximize diameter growth and tree vigour and shorten the rotation. It depends on the strong allometric relation between DBH and crown size. But this relation is not independent of stand density/history as trees with small crowns can eventually reach a high DBH regardless of limited growing space. Verkaik (2020) recently found in his BSc thesis that angle of the cone of a Douglas fir crown seems to be a constant variable, with variability in other parameters. If true, this would limit a trees ability to respond to crown release.</p> <p>This project revolves around the allometric relation between DBH and crown size as well as shape in relation to stand density. Ranging from dense forest to open grown crowns. Do tree crowns posses fixed architecture such as Verkaik's result suggest or are they able to truly able to actively fill newly opened space. How does this differ between abundant Dutch tree species and tree species types (ie broadleave vs coniferous). Literature study complemented with analysis of existing data.</p> <p>https://www.wur.nl/en/project/Optimizing-thinning-for-quality-timber-.htm</p> <p>Topics Sustainable forest management/ Modelling</p> <p>Region: the Netherlands</p> <p>Climate: Temperate zone</p>
Used skills#	
Offer to which study program(s)	MFN (=MSc Forest and Nature Conservation) BBN (=BSc Forest and Nature Conservation)

Title	Financial analysis of thinning intensity
Project-type	MSc thesis (BSc thesis)
Credits	24-39
Examiner	(Frans Bongers / Jan den Ouden)
Supervisor(s)	Etiënne Thomassen, Frits Mohren
Contact	etienne.thomassen@wur.nl
Begin date	2020/05/01
End date#	
Requirements	FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	<p>MSc thesis (BSc thesis)</p> <p>Thinning interventions -among other goals- often aim to optimize financial performance of a stand. QD Forest management is a novel management approach aiming to achieve 'free growth' of a tree in order to maximize diameter growth and tree vigour and shorten the rotation. It takes the traditional future crop tree management strategy to the extreme; shortening the investment period but also putting 'all' the eggs in one basket.</p> <p>The aim of the study is to find the best way to compare thinning strategies with one another, even in extreme cases. The project consists of literature study comparing existing methods and develop an evaluation method and as well as a case study to put the method into practice.</p> <p>By incorporating risk and regeneration the topic can be expanded further.</p> <p>https://www.wur.nl/en/project/Optimizing-thinning-for-quality-timber-.htm</p> <p>Topics Sustainable forest management/ Modelling</p> <p>Region: the Netherlands</p> <p>Climate: Temperate zone</p>
Used skills#	
Offer to which study program(s)	MFN (=MSc Forest and Nature Conservation) BBN (=BSc Forest and Nature Conservation)

Title	Effects of rooting by wild boar on soil organic carbon
Project-type	BSc thesis / MSc thesis
Credits	24-39
Examiner	Frans Bongers / Jan den Ouden
Supervisor(s)	Frits Mohren
Contact	frits.mohren@wur.nl https://www.wur.nl/en/Persons/Frits-prof.dr.ir.-GMJ-Frits-Mohren.htm
Begin date	2020/05/01
End date#	
Requirements	FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	<p>BSc thesis / MSc thesis (depending on size / depth of analysis)</p> <p>Rooting activity by wild boar may lead to loss of soil organic matter and soil carbon, depending on rooting intensity and frequency. In the Netherlands, high wild boar densities on e.g. the Veluwe area lead to extensive, repeated soil disturbance, likely leading to loss of soil organic matter and hence loss of carbon and nutrients. Previous studies have shown inconclusive results but case studies indicate large effects depending on site conditions and wild boar density, as do some international studies. There is a need for compilation of literature data combined with a conceptual approach of organic matter dynamics in relation to soil disturbance to explore the possible extent of effects for different forest ecosystems.</p> <p>Literature study complemented with analysis of existing data.</p> <p>Topics: Ecosystem services / Modelling</p> <p>Region: the Netherlands / Europe</p> <p>Climate: Temperate zone</p>
Used skills#	Soil science / wild boar ecology
Offer to which study program(s)	MFN (=MSc Forest and Nature Conservation) BBN (=BSc Forest and Nature Conservation)

Title	Seed rain: reproductive strategies during secondary succession in wet tropical forest
Project-type	MSc thesis
Credits	33- 39 ects
Examiner	Lourens Poorter
Supervisor(s)	FEM group: Frans Bongers
Contact	Frans.Bongers@wur.nl
Begin date	(2020/06/01 (flexible)
End date#	
Requirements	Recommended: FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	<p>MSc thesis</p> <p>During secondary succession after land abandonment in the wet tropics the vegetation recovers rapidly. Local forest recovery is determined by many factors but availability of seeds is crucial. This is largely determined by the matrix of surrounding vegetation, the species available in that matrix, and the reproductive strategies of those species. Some species produce seeds every year and/or year round, other species reproduce only in a particular season and/or once in a few years.</p> <p>Local forest recovery depends on propagule availability, for instance resprouting, seeds germinating from the seed bank, or new seeds coming to the site (eg by wind, or animals), or being produced locally.</p> <p>In Chajul, southern Mexico, we study wet forests secondary succession for 20 years now. For half a dozen forest plots of different ages after abandonment we have monthly seed fall data for a period of 7-8 years.</p> <p>In this project you will describe the seed rain community and focus on reproductive strategies of the species, and may also relate the reproductive strategies of species to other species characteristics. You will evaluate the (potential) consequences of seed availability for secondary succession and recovery.</p> <p>Topics: Climate change effects / Secondary succession/ forest restoration</p> <p>Region: Americas</p> <p>Climate: Tropical zone</p>
Used skills#	R or equivalent, Statistical skills
Offer to which study program(s)	MFN (=MSc Forest and Nature Conservation) MBI (=MSc Biology) MPS (=MSc Plant Sciences)

Title	Litterfall during secondary succession in wet tropical forest
Project-type	MSc thesis
Credits	33- 39 ects
Examiner	Lourens Poorter
Supervisor(s)	FEM group: Frans Bongers
Contact	Frans.Bongers@wur.nl
Begin date	(2020/06/01 (flexible)
End date#	
Requirements	Recommended: FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	<p>MSc thesis</p> <p>During secondary succession after land abandonment in the wet tropics the vegetation recovers rapidly. With biomass building up, the productivity and the biomass cycling also increases. Generally with more standing biomass the litterfall also increases. With increasing litterfall more possibilities for decomposition, depending on litter quality and local conditions. Over time during succession the net biomass production may increase to a certain maximum, the old growth above ground biomass. Seasonal variation is high with generally most litterfall at the end of the dry season.</p> <p>In this project you will describe and evaluate the litterfall during secondary succession in this wet tropical forest and focus on changes with season, year, and forest age. You may relate litterfall to standing above ground biomass and other factors. You may also dive into litterfall as part of primary productivity in regrowing forests.</p> <p>We have data available on monthly litterfall in half a dozen successional forests of different ages for a period of at least 7-8 years, 12 litterfall traps per forest. Litterfall data consist of dry weight of leaf fraction, small branches, flowers, seeds and a rest fraction. For all these forests we have also aboveground standing biomass at yearly intervals.</p> <p>Topics: Climate change effects / Secondary succession/ forest restoration</p> <p>Region: Americas</p> <p>Climate: Tropical zone</p>
Used skills#	R or equivalent, Statistical skills
Offer to which study program(s)	MFN (=MSc Forest and Nature Conservation) MBI (=MSc Biology) MPS (=MSc Plant Sciences)

Title	Detecting effects of CO2 rise on the drivers of tropical tree growth
Project-type	MSc thesis
Credits	33- 39 ects
Examiner	FEM staff member
Supervisor(s)	FEM group: Pieter Zuidema, Sophie Zwartsenberg
Contact	pieter.zuidema@wur.nl
Begin date	2020/05/01 (flexible)
End date#	
Requirements	Recommended: FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	<p>MSc thesis</p> <p>Atmospheric CO2 rise increases photosynthesis and decreases water loss of trees, but it may also increase leaf temperatures beyond optimum for photosynthesis. Generally, CO2 rise is thought to increase tree growth, the 'CO2 fertilization effect', but this may be smaller than expected.</p> <p>The responses of trees to atmospheric CO2 rise likely depends on climatic conditions at a certain time and place. Or, put differently, the effects of temperature and rainfall on tree growth may shift with CO2 rise. Tree rings offer an interesting tool to investigate these CO2 x climate interactions. First analyses show that for tropical tree species, these interactions may cause growth to be both reduced and increased by CO2 rise. It is of interest to conduct similar analyses for other species, across climatic gradients. You will use the International Tree-ring Databank, to evaluate whether CO2 rise has shifted the climatic drivers of tree growth.</p> <p>Topics: Climate change effects / Ecophysiology / Tree ring analyses and wood anatomy /</p> <p>Region: worldwide</p> <p>Climate: Tropical zone</p>
Used skills#	Statistical skills, image analysis
Offer to which study program(s)	MFN (=MSc Forest and Nature Conservation) MBI (=MSc Biology) MPS (=MSc Plant Sciences)

Title	Reproductive strategies of tropical tree species
Project-type	MSc thesis / MSc internship / BSc thesis / BSc internship (Choose the right project-type(s), and put the best fitting one first)
Credits	24-36 ects
Examiner	Prof. Dr. Frans Bongers
Supervisor(s)	FEM group: Prof. Dr. Lourens Poorter
Contact	Lourens.poorter@wur.nl https://www.wur.nl/en/Persons/Lourensprof.dr.ir.-L-Lourens-Poorter.htm
Begin date	2020/04/15
End date#	
Requirements	Standard for MSc thesis/internship: FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	<p>MSc thesis / MSc internship / BSc thesis / BSc internship</p> <p>Tropical forests harbor a tremendous diversity of trees, which are able to coexist because of differences in their life history strategies. Tree species are engaged in a race for the canopy, where fast growth and tall mature sizes allow them to get a better access to light, but at the expense of a delayed reproduction. In this desk study, you will enter data from a field study and analyze the size-dependent reproduction of 40 Bolivian rainforest tree species, and link it to their maximum adult stature, flowering strategy, fruiting strategy, and shade tolerance. With these data you will quantify the reproductive thresholds of trees (i.e., at what diameter and height does the species reproduce). This allows to fine tune minimum diameter cutting limits for timber trees, to guarantee sufficient reproduction and sustainable timber production.</p> <p>Topics: Biodiversity and functional diversity/ Plant-animal interactions/ Population and forest dynamics/ Sustainable forest management</p> <p>Region: America's</p> <p>Climate: Tropical zone</p>
Used skills#	
Offer to which study program(s)	(Choose program from list:) MFN (=MSc Forest and Nature Conservation) BBN (=BSc Forest and Nature Conservation) BBI (=BSc Biology) MBI (=MSc Biology) BPW (=BSc Plant Sciences) MPS (=MSc Plant Sciences)

Title	Does shade tolerance explain the distribution of wet and dry tropical tree species?
Project-type	MSc thesis / MSc internship / BSc thesis / BSc internship (Choose the right project-type(s), and put the best fitting one first)
Credits	24-36 ects
Examiner	Prof. Dr. Frans Bongers
Supervisor(s)	FEM group: Prof. Dr. Lourens Poorter
Contact	Lourens.poorter@wur.nl https://www.wur.nl/en/Persons/Lourensprof.dr.ir.-L-Lourens-Poorter.htm
Begin date	2020/04/15
End date#	
Requirements	Standard for MSc thesis/internship: FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	<p>MSc thesis / MSc internship / BSc thesis / BSc internship</p> <p>Species distribution is determined by environmental filters that can determine what species can occur where. Shade and drought are thought to be the two most important environmental filters determining the distribution of lowland tree species. In this desk study you will enter and analyze data from a greenhouse experiment carried out with 50 tree species from wet and from dry forests in Bolivia. Species have been germinated and grown in 10% and 1% of full light, and their survival has been monitored on a weekly basis for a one year period, which allows you to quantify shade tolerance. You can link the shade survival to their 1) forest type (wet evergreen or seasonally dry deciduous forest, 2) functional group (pioneers or shade tolerants), and 3) functional traits that may explain their shade survival (e.g., wood density, leaf traits). You can evaluate whether wet species have indeed a better shade survival than dry species. Alternatively, dry species survive equally well in the shade, and is species distribution not explained by shade tolerance but by drought tolerance.</p> <p>Climate change effects /Biodiversity and functional diversity/ Population and forest dynamics/ Sustainable forest management Region(s): America's Climate: Tropical zone</p>
Used skills#	
Offer to which study program(s)	(Choose program from list:) MFN (=MSc Forest and Nature Conservation) BBN (=BSc Forest and Nature Conservation) BBI (=BSc Biology) MBI (=MSc Biology) BPW (=BSc Plant Sciences) MPS (=MSc Plant Sciences)

Title	Effects of climatic variability on tropical tree populations. How to scale up from tree growth to population viability?
Project-type	MSc thesis
Credits	33- 39 ects
Examiner	FEM staff member
Supervisor(s)	FEM group: Pieter Zuidema & Peter van der Sleen
Contact	pieter.zuidema@wur.nl
Begin date	2020/05/01 (flexible)
End date#	
Requirements	Recommended: FEM-30806 Resource Dynamics and Sustainable Utilization FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	<p>MSc thesis</p> <p>Tree-ring analyses of tropical tree species have shown that years with low rainfall and high temperatures reduce stem growth and may also increase mortality. Climate change will likely increase the frequency and severity of such years and thus affect tree populations. Yet, we have very little information on how growth variation of individual trees leads to variation or changes in population growth.</p> <p>You will use information on the climate sensitivity of tropical tree growth of some Bolivian species (obtained from tree-ring analysis) and combine this with data on survival and</p>

	<p>reproduction (from permanent plots) to conduct demographic analyses that allow to evaluate the effects of varying tree growth on the viability of populations.</p> <p>Topics: Climate change effects / Population and forest dynamics</p> <p>Region: Bolivia Climate: Tropical zone</p>
Used skills#	Statistical skills, image analysis
Offer to which study program(s)	<p>MFN (=MSc Forest and Nature Conservation)</p> <p>MBI (=MSc Biology)</p> <p>MPS (=MSc Plant Sciences)</p>

Title	Can logged tropical forests be good for climate? Estimating the effect of selective logging on forest carbon worldwide.
Project-type	MSc thesis
Credits	33- 39 ects
Examiner	FEM staff member
Supervisor(s)	FEM group: Pieter Zuidema External: Federico Alice Guier, National University of Costa Rica
Contact	pieter.zuidema@wur.nl
Begin date	2020/05/01 (flexible)
End date#	
Requirements	Recommended: FEM-30806 Resource Dynamice and Sustainable Utilization FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I
Description	MSc thesis Exploitation and use of tropical timber from natural forests may lead to net carbon sequestration in forest and products, and thus contribute to climate change mitigation. Within this product chain from forest to consumer to waste, substantial amounts of carbon can be lost if forests do not recover after logging; and substantial amounts of carbon can be gained if products are used for a long time.

	<p>Yet, it is unclear which practices of logging (intensity, cycle length, reduced impact logging techniques) and what type of forests offer better opportunities for complete recovery of lost forest carbon. Information will be used from a number of sources: global databases on timber volumes exported, areas of forest under management, and studies on forest damage and recovery. This information will be combined with a simple simulation model to estimate the effect of selective logging on carbon stocks in managed tropical forests worldwide.</p> <p>Topics: Climate change effects / Population and forest dynamics / Sustainable forest management</p> <p>Region: worldwide Climate: Tropical zone</p>
Used skills#	Statistical skills, image analysis
Offer to which study program(s)	MFN (=MSc Forest and Nature Conservation) MBI (=MSc Biology) MPS (=MSc Plant Sciences)

Title	What do ontogenetic changes in wood density tell us about species' functional strategy?
Project-type	MSc thesis / MSc internship
Credits	24-36
Examiner	Prof. Lourens Poorter
Supervisor(s)	FEM group: Masha van der Sande
Contact	masha.vandersande@wur.nl
Begin date	flexible
End date#	flexible
Requirements	FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I (or comparable statistical experience and tree ecology)
Description	<p>MSc thesis / MSc internship</p> <p>A tree experiences strongly changing pressures during its lifetime. For example, protection from herbivores and other physical damage may be more important in early life stages, whereas support is important for later life stages. The wood density is an important functional trait that integrates many different functional aspects of a tree (support, defense against drought and herbivory, and shade-tolerance). However, we know little of how wood density changes during a tree's lifetime, and how this differs between tree species.</p> <p>Here, you can work with a large dataset of wood density and wood dry matter content taken along the radial gradient of the stem of 593 individual trees, belonging to 171 species from tropical forests in Bolivia, Guyana and Brazil. You can also link these data to other functional traits (e.g. specific leaf area, nutrient concentrations, toughness) to species' functional strategies.</p>

	Topics: Ecophysiology Region: America's Climate: Tropical zone
Used skills#	Statistical skills (preferably in R software).
Offer to which study program(s)	MFN (=MSc Forest and Nature Conservation) MBI (=MSc Biology) MPS (=MSc Plant Sciences)

Title	Nutrient balances in tropical trees
Project-type	MSc thesis / MSc internship
Credits	24-36
Examiner	Prof. Lourens Poorter
Supervisor(s)	FEM group: Masha van der Sande
Contact	masha.vandersande@wur.nl
Begin date	flexible
End date#	flexible
Requirements	FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I (or comparable statistical experience and tree ecology)
Description	<p>MSc thesis / MSc internship</p> <p>Trees compete for the acquisition of nutrients. Nutrients such as nitrogen and phosphorus are crucial for plant growth and survival. Species can have different strategies to deal with (limiting) nutrient availability, which depend on the local soil fertility, but also on species' strategies related to other limiting conditions such as drought. Often, the limitation of nutrients is reflected by the nutrient concentrations in the leaves and wood. Nevertheless, leaves and wood serve completely different purposes in a tree, and have different lifespan. It is therefore still unclear how leaf and wood nutrient concentrations are coordinated, and how they are associated to species' functional strategies to deal with low fertility.</p> <p>Here, you can work with a large dataset of nutrient contents of leaves and wood from almost 100 tree species from tropical forest in Guyana (on very nutrient-poor soils) and Brazil (on somewhat more fertile soils). You can also link</p>

	<p>these data to other functional traits (e.g. deciduousness, specific leaf area, wood density, capacity to fix nitrogen) to assess species' functional strategies to acquire and conserve nutrients.</p> <p>Topics: Ecophysiology Region: America's Climate: Tropical zone</p>
Used skills#	Statistical skills (preferably in R software).
Offer to which study program(s)	MFN (=MSc Forest and Nature Conservation) MBI (=MSc Biology) MPS (=MSc Plant Sciences)

Title	How accurately can land cover metrics predict land use history?
Projecttype	Thesis
Credits	36 ects
Examiner	
Supervisor(s)	<i>FEM group</i> : Catarina Jakovac
Contact	Email address: Catarina.jakovac@wur.nl

Begin date	open
End date#	
Requirements	<p><i>Standard for MSc thesis:</i></p> <p>FEM-30306 Forest Ecology and Forest Management; REG-31806 Ecological Methods I;</p> <p><i>Standard for BSc:</i></p> <p>minimal 120 credits</p>
Description	<p>Land use history is an important factor affecting the rates and dynamics of forest succession. Retrieving land use history information, however is often difficult and information can be incomplete. Landscape metrics, on the other hand, are easier to retrieve from global freely available satellite images. It is known that many socio-economic dynamics are reflected on land cover changes, such as forest cover over time, mean fragment size and proportion of different land uses in the landscape. The aim of this topic is to try and identify landscape metrics that can be used as proxies for categorizing land use history.</p> <p>The project will be based on spatial analyses of available databases from Brazil and/or multiple countries (depends on availability and interests). The student must be able to perform land use and land cover classification of satellite images and spatial analyses of socio-economic databases.</p> <p>No field work possibility.</p> <p>Keywords: land use change, forest succession</p> <p>Choose topic(s): Population and forest dynamics/ Forest restoration and succession /</p> <p>Choose Region(s): America's</p>

	Choose climat(s): Tropical zone
Used skills#	
Offer to which study programme(s)	<i>Standard</i> MFN (=MSc Forest and Nature Conservation)

Title	Dynamics of dispersal mode in tree communities during forest restoration after mining
Projecttype	Thesis
Credits	36 ects
Examiner	
Supervisor(s)	<i>FEM group: Catarina Jakovac</i>
Contact	Email address: Catarina.jakovac@wur.nl

Begin date	open
End date#	
Requirements	<p><i>Standard for MSc thesis:</i></p> <p>FEM-30306 Forest Ecology and Forest Management; REG-31806 Ecological Methods I;</p> <p><i>Standard for BSc:</i></p> <p>minimal 120 credits</p>
Description	<p>Give description of your project</p> <p>If topic is part of research project: give internet address of this project</p> <p>Within a conservation area in the southern Brazilian Amazon there has been large tin mining activity in the past. Since 10 years now, the areas impacted by mining are been restored and monitored annually for vegetation development and soil improvement. The restoration areas have different ages, soil properties and landscape conditions. All tree species have been classified regarding their dispersal mode.</p> <p>No field work possibility.</p> <p>Keywords: forest restoration, mining, plant ecology, dispersal</p> <p>Choose topic(s): Biodiversity and functional diversity/ Plant-</p>

	<p>animal interactions/ Population and forest dynamics/ Forest restoration and succession /</p> <p>Choose Region(s): America's</p> <p>Choose climat(s): Tropical zone</p>
Used skills#	
Offer to which study programme(s)	<p><i>Standard</i></p> <p>MFN (=MSc Forest and Nature Conservation)</p>

Title	Understanding reproductive strategies of new forests in the Atlantic Forest region of Brazil.
Projecttype	<p>Thesis or internship</p> <p><i>both</i></p>
Credits	24-36
Examiner	Prof.Dr. F.J.J.M (Frans) Bongers
Supervisor(s)	<p><i>FEM group:</i> Rens Brouwer; Prof. Dr. Marielos Peña-claros, Prof. Dr. Frans Bongers</p> <p><i>Other organisation:</i></p>

Contact	<p>Rens.brouwer@wur.nl</p> <p>https://www.wur.nl/nl/Personen/Rens-RG-Rens-Brouwer-MSc.htm</p>
Begin date	(2020/05/01)
End date#	
Requirements	<p><i>Standard for MSc thesis:</i></p> <p>FEM-30306 Forest Ecology and Forest Management; REG-31806 Ecological Methods I;</p> <p><i>If different: give course code and name</i></p>
Description	<p>Give description of your project</p> <p>If topic is part of research project: give internet address of this project</p> <p>Large-scale restoration in the Atlantic Forest region of Brazil needs novel upscaling from thousands to millions of hectares. The NewFor project is part of a large collaboration between Dutch and Brazilian partners that are investigating how to achieve this. We work together with Luiz de Queiroz College of Agriculture of the University of São Paulo in Piracicaba. We evaluate how upscaling from plot-based inventories to large-scale planning and design is possible, taking into account ecological functions, forest services and human perceptions. We determine characteristics of new forests and their drivers of regeneration and deforestation, assess their aboveground diversity and structure, evaluate key forest functions based on functional traits, predict new forests' potential contributions to ecosystem services, develop a large-scale method with remote sensing to identify areas with the highest forest restoration potential to promote ecosystem services, and develop novel policies and market instruments to foster and stimulate new forests. In an era of ambitious restoration commitments</p>

	<p>and societal demands for ecosystem services, we provide alternative landscape developments and promote a sustainable future of the Atlantic Forest.</p> <p>In this project you will collect data on reproductive traits (e.g. seed size, dispersal syndrome, pollination syndrome, minimum reproduction size) and other traits (invasiveness, n-fixing ability, deciduousness) of tree species naturally growing or planted in forests in the Atlantic Forest region of Brazil. You will collect data through literature, online herbarium and database research. We also will have plot level data available for about 200 plots of different forest and restoration types, including basal area and species taxonomy and structural parameters. This thesis can benefit from this data set. Ultimately, you can evaluate reproductive strategies and study how to predict reproductive strategies in tree species based on other traits. Using the plot level data for different forest types allows you to compare reproductive strategies in different forest types and restoration methods and speculate on drivers of reproductive strategies in forest communities.</p> <p>This project is part of the NewFor Project: https://www.wur.nl/en/project/Understanding-restored-forests-for-benefiting-people-and-nature-in-the-Atlantic-Forest.htm</p> <p>Biodiversity and functional diversity/Sustainable forest management/ Forest restoration and succession /</p> <p>Choose Region(s): America's</p> <p>Choose climat(s): Tropical zone</p>
Used skills#	Literature research, statistical analyses.
Offer to which study programme(s)	<p><i>Standard</i></p> <p>MFN (=MSc Forest and Nature Conservation)</p>

Title	Scaling-up functional trait mapping using spectrometry
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Project-type	MSc thesis / MSc internship
Credits	24-36
Examiner	Prof. dr. Frans Bongers
Supervisor(s)	FEM group: Rens Brouwer Other organization: Joannès Guillemot (CIRAD, visiting professor at ESALQ/USP Brazil)
Contact	Rens.brouwer@wur.nl
Begin date	(Fill in:) 2020/05/01 (flexible)
End date#	
Requirements	Standard for MSc thesis/internship: FEM-30306 Forest Ecology and Forest Management and REG-31806 Ecological Methods I Recommended: GRS-20306 Remote Sensing for basic understanding of image

	spectroscopy
Description	<p>MSc thesis / MSc internship /</p> <p>The linking of individual functional traits to ecosystem processes used extensively in ecology, however the measurement of individual trait values requires extensive measurements and is time consuming. Recently, advances have been made in the up-scaling of trait mapping through the use of spectrometry. Spectrometry is the recording of light properties after irradiation of an object or substance. If we apply this on tree leaves, the technique allows us for trait data to be inferred, since the reflectance, transmittance, and absorbance of light depend on the size, density, and shape of plant tissues and the content of chemical components.</p> <p>We have hyperspectral data set for 120 tree species, and for 3 leaves per species. These species are being used in restoration plantations in the Atlantic Forest region of Brazil. For the same species we have a data set of 7 commonly measured functional traits (e.g. SLA, LDMC, Wood density etc.). This thesis will benefit from these data sets, and will study the relations between reflectance and functional traits to explore the possibilities for using spectrometry to scale up functional trait measurements.</p> <p>This thesis will be part of the NewFor project: https://www.wur.nl/en/project/Understanding-restored-forests-for-benefiting-people-and-nature-in-the-Atlantic-Forest.htm</p> <p>Topics (Choose appropriate topic(s) from list): Biodiversity and functional diversity/ Forest restoration and succession</p> <p>Region(s) (choose): the Netherlands/ / America's/ Climate(s) (chOOSE): Tropical zone</p>
Used skills#	Statistical skills (R)

Offer to which study program(s)	(Choose program from list: MFN (=MSc Forest and Nature Conservation) MPS (=MSc Plant Sciences)