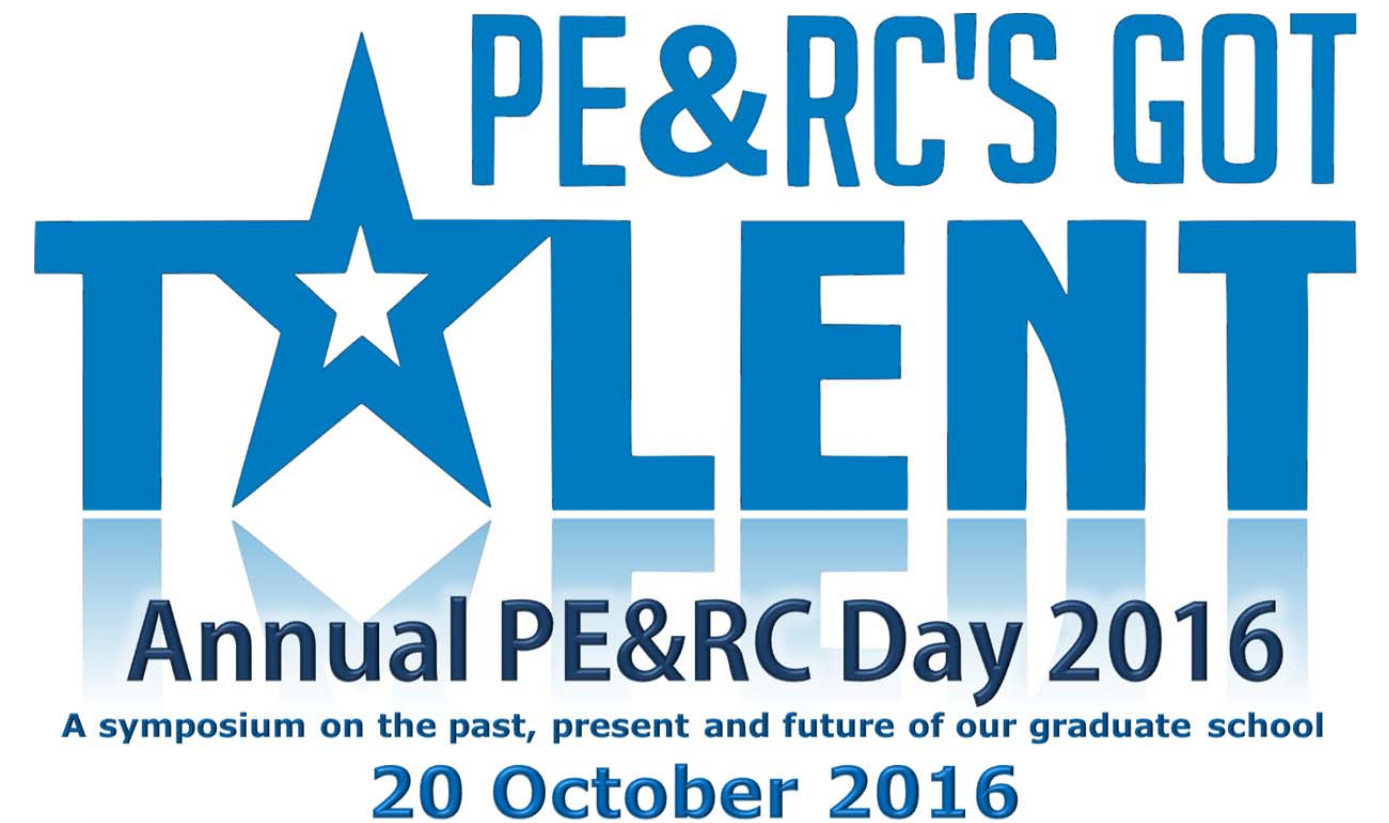


PROGRAMME

- 09:30 Registration & Coffee / Tea**
- 10:00 Opening by the Chair of the Day**
(Prof. Bas Zwaan, Professor of Genetics, Wageningen University & Scientific Director of the Graduate School PE&RC)
- 10:15 PE&RC after 25 years: facing the future, inspired by the past?**
(Prof. Johan Bouma, Emeritus Professor of Soil Sciences, Wageningen University & first Scientific Director of the Graduate School PE&RC)
- 10:45 Tragedies in plant communities and directions for agriculture**
(Prof. Niels Anten, Professor of Crop and Weed Ecology, Wageningen University)
- 11:15 Coffee / Tea**
- 11:45 Plant movement strategies in a rapidly changing world: winners and losers**
(Dr Merel Soons, Associate Professor of Ecology and Biodiversity, Utrecht University)
- 12:15 Past, present and future of the discovery of the Amazon tree flora**
(Prof. Hans ter Steege, Group leader - Biodiversity Dynamics, Naturalis Biodiversity Center & Professor of Tropical Forest Diversity and Tree Traits, VU University Amsterdam)
- 12:45 Lunch**
- 14:00 Counterintuitive effects of individual life history on population and community dynamics**
(Prof. André de Roos, Professor of Theoretical Ecology, University of Amsterdam)
- 14:30 What's the buzz about mosquito-borne viruses?**
(Dr Gorben Pijlman, Associate Professor of Arboviruses, Wageningen University)
- 15:00 Coffee / Tea**
- 15:30 Avian movement ecology: interdisciplinary research and public engagement**
(Dr Judy Shamoun-Baranes, Assistant Professor of Ornithology, University of Amsterdam)
- 16:00 Herbivores as engineers of wetland ecosystems**
(Dr Liesbeth Bakker, Researcher at the Department of Aquatic Ecology, Netherlands Institute of Ecology)
- 16:30 Synthesis and Closure**
- 16:45 PE&RC Picture Award Ceremony**
- 17:00 Drinks**
- 18:00 Dinner @ Wageningen Campus**

PE&RC Day 2016

Orion Building, Wageningen Campus



ABSTRACTS

10:15 PE&RC after 25 years: facing the future, inspired by the past?

Prof. Johan Bouma, Emeritus Professor of Soil Sciences, Wageningen University & first Scientific Director of the Graduate School PE&RC

Plans for the C.T. de Wit Graduate School of Production Ecology (PE) were initiated in 1991 by Rudy Rabbinge, its spiritual father, followed by official approval by the ECOS in June 1995. The scope of PE was significantly extended in 1998 by including Resource Conservation and ecological research. With that, PE&RC emerged! A comprehensive Systems Analysis approach, pioneered in the 1960's by Cees de Wit and his students and based on creative interdisciplinary research focusing on sustainable development, was and is the basis for much of the scientific work. PhD candidates not only follow scientific courses but also other activities that connect science with the real world. This becomes particularly relevant in a time when the gap between science and society seems to be widening and emotional fact-free politics is successful beyond reason. PE&RC, where PhD candidates are trained to obtain "T-shaped skills", is in a unique position to demonstrate the essential contributions that science can make to society.

10:45 Tragedies in plant communities and directions for agriculture

Prof. Niels Anten, Professor of Crop and Weed Ecology, Wageningen University

Evolutionary game theoretical (EGT) models show that plant communities with traits that would maximize community performance can be invaded by plants that invest extra in acquiring resources or service providers (e.g. pollinators) at the expense of others, lowering the overall community performance, a so-called tragedy of the commons (TOC). But in managed systems, such as agriculture, maximum community performance is usually the objective. Here I discuss how linking EGT to our increased understanding of the physiological regulation of trait expression and ecological interactions in agro-ecosystems, can provide insights in- and cues for improvement of crop breeding and management.

11:45 Plant movement strategies in a rapidly changing world: winners and losers

Dr Merel Soons, Associate Professor of Ecology and Biodiversity, Utrecht University

Plant movement strategies consist of much more than just 'how to move'. In many species, the timing of movement and the mode of transportation are dependent on environmental conditions that determine the eventual movement path. If global changes affect these environmental conditions, the tight connection between plant movement strategy and plant habitat may be disrupted. How will this affect plant species? I briefly compare wind, water and waterbird-dispersed plant species to suggest winners and losers in heavily modified landscapes.

12:15 Past, present and future of the discovery of the Amazon tree flora

Prof. Hans ter Steege, Group leader - Biodiversity Dynamics, Naturalis Biodiversity Center & Professor of Tropical Forest Diversity and Tree Traits, VU University Amsterdam

The vast extent of Amazonia has historically restricted the study of its tree communities. Using empirical data collected in ~1700 tree plots I will discuss commonness, rarity, and richness of lowland tree species across Amazonia. The debate over how many tree species grow there remains contentious. Based on collections in Amazonia, dating between 1707 and 2015, 11,676 species have been collected, supporting our previous estimates. At least 36% and up to 57% of all Amazonian tree species are likely to qualify as globally threatened under IUCN Red List criteria but existing Amazonian protected areas and indigenous territories will protect viable populations of most threatened species if these areas suffer no further degradation. I will discuss further studies into the functioning, evolution and biogeography of this fabulous natural history lab.

14:00 Counterintuitive effects of individual life history on population and community dynamics

Prof. André de Roos, Professor of Theoretical Ecology, University of Amsterdam

Growth in body size is by far the most prominent aspect of the ontogenetic development that individuals go through during their life history. Furthermore, development depends on the availability of food and thus indirectly on the feedback from population foraging. Much of our existing ecological theory, however, ignores development and considers population dynamics to be the balance between reproduction and mortality alone. In this presentation I will show that models that account for two ubiquitous elements of life histories, the delay between birth and onset of reproduction and the necessity to cover maintenance costs for individual survival, lead to population and community predictions that contrast with the predictions of classic ecological theory. I furthermore discuss how these insights can be used for new, counterintuitive strategies for the management of fish communities.

14:30 What's the buzz about mosquito-borne viruses?

Dr Gorben Pijlman, Associate Professor of Arboviruses, Wageningen University

Pathogenic viruses can be transmitted to humans in very different ways: via the air or contaminated water, through direct contact, or during sexual encounters. But certain viruses have my special interest - the ones that are transmitted by blood sucking, flying transmission vehicles: mosquitoes. To study the transmission of these mosquito-borne viruses in realistic settings, a specialized biosafety level 3 (BSL3) laboratory has been constructed in Wageningen. In the BSL3 lab we conduct virus transmission experiments using live mosquitoes, in a fruitful collaboration between the laboratories of Virology and Entomology. Our current research focus is the deeper, molecular understanding of virus transmission: what happens inside the infected mosquito, and which protein-protein or RNA-protein interactions are important for a productive, transmissible infection? I will highlight our recent research on West Nile, Usutu and chikungunya viruses, and present our current plans with Zika virus.

15:30 Avian movement ecology: interdisciplinary research and public engagement

Dr Judy Shamoun-Baranes, Assistant Professor of Ornithology, University of Amsterdam

During flight birds must move efficiently through an environment which is constantly changing, an environment which is also in motion. Radar networks and global tracking systems have created fantastic opportunities to study bird movement 24/7, over land and sea and across continents. By integrating measurements, models and expertise across a range of disciplines we study how birds respond to their environment and explore potential short and long term consequences of their flight behaviour. I show examples of how our knowledge is applied to reduce human-wildlife conflicts, to engage the public and foster fascination for science and the natural world around us.

16:00 Herbivores as engineers of wetland ecosystems

Dr Liesbeth Bakker, Researcher at the Department of Aquatic Ecology, Netherlands Institute of Ecology

Vertebrate herbivores are well known to have strong impacts on plant diversity, productivity and landscape structure. However, most of our knowledge on herbivore impacts comes from terrestrial ecosystems, which puts forward the question: do herbivores have similarly strong engineering effects in wetland and aquatic ecosystems? This question is relevant in the context of nature conservation and restoration where the engineering effects of herbivores will affect the outcome of nature management. Sometimes the herbivores themselves are explicit part of ecosystem restoration, such as in rewilding. Ongoing global change opens new questions on the roles for herbivores including whether they can provide biotic resistance to exotic aquatic plant species, how exotic herbivores affect aquatic ecosystem functioning and how temperature rise may affect herbivory rates by aquatic omnivores. Including animals in general, and herbivores in particular, will improve predictions of the outcomes of wetland restoration and the implications of global change.