53rd ATBC 2016

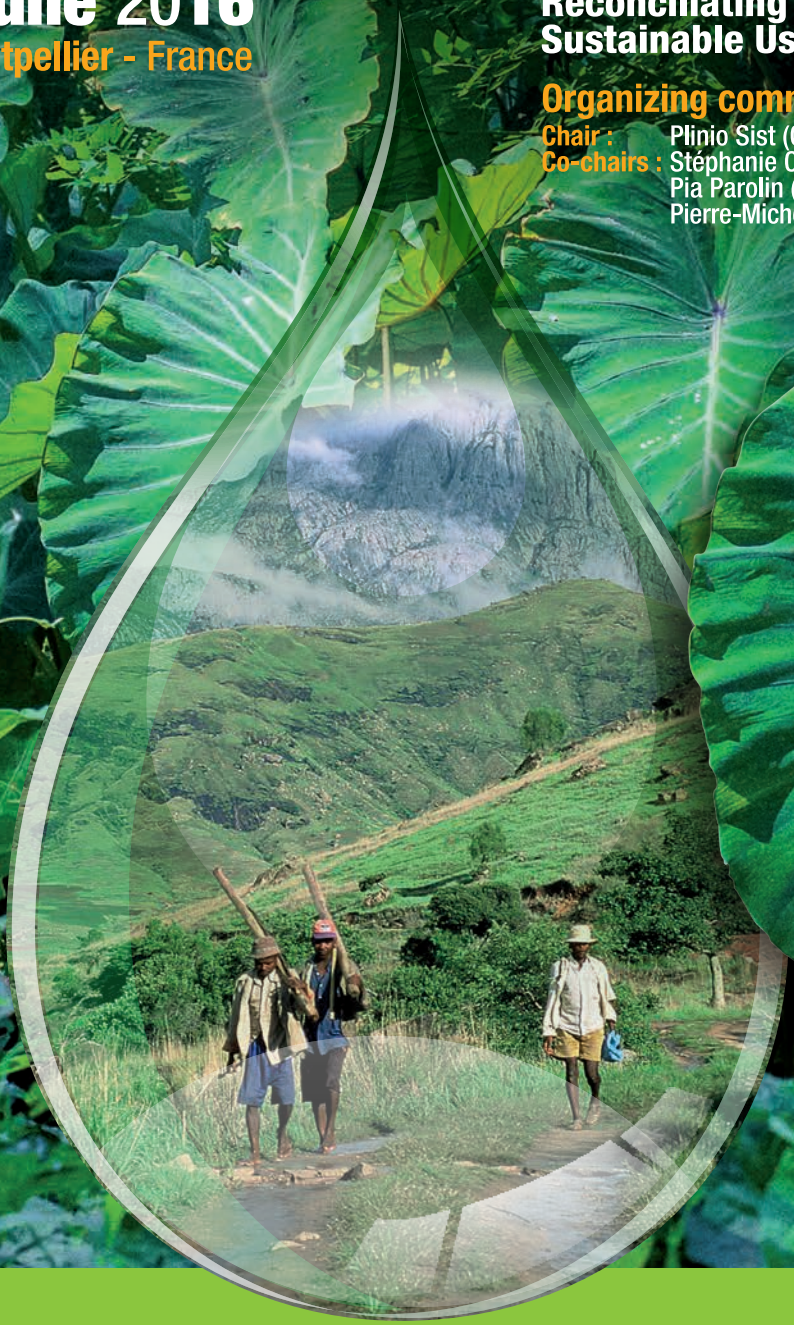
Annual Meeting of the Association for Tropical Biology and Conservation

19-23 June 2016
Le Corum, Montpellier - France

Tropical Ecology and Society
Reconciliating Conservation and Sustainable Use of Biodiversity

Organizing committee :

Chair : Plinio Sist (CIRAD)
Co-chairs : Stéphanie Carrière (IRD)
Pia Parolin (INRA)
Pierre-Michel Forget (MNHN, CNRS-INEE)



PROGRAM & ABSTRACTS

www.atbc2016.org

Association for Tropical Biology and Conservation

cirad

IRD Institut de recherche pour le développement

INRA SCIENCE & IMPACT

MUSÉUM NATIONAL D'HISTOIRE NATURELLE

cnrs

CIFOR

CONGRESS OFFICE
HOPSCOTCH CONGRÈS
23/25, rue Notre-Dame des Victoires
75002 Paris | France
www.hopscotchcongres.com

O57-14 – S57 *Intraspecific variation in tropical trees – implications for tropical forest responses to global change*
Thursday 23 June / 08:00-10:00 – Sully I

Strong spatial genetic structure is correlated with climatic niche in a tree of the African tropical rain forest

RUMSAIS BLATRIX[1], JEAN PECCOUD[2], CELINE BORN[1], FINN PIATSCHECK[1], LAURE BENOIT[3], MATHIEU SAUVE[1], CHAMPLAIN DJIETO-LORDON[4], CHRISTIANE ATTEKE[5], JAN J. WIERINGA[6], DAVID J. HARRIS[7], DOYLE MCKEY[8]
[1]CNRS, CEFE, 34293, Montpellier, France
[2]Université de Poitiers, Ecologie et Biologie des Interactions, 86000, Poitiers, France
[3]CIRAD, CBGB, 34988, Montferrier-sur-Lez, France
[4]University of Yaounde 1, Laboratory of Zoology, POB812, Yaounde, Cameroon
[5]Université des Sciences et Techniques de Masuku, Département de Biologie, -, Franceville, Gabon
[6]Wageningen University, Biosystematics Group, 6708, Wageningen, the Netherlands
[7]Royal Botanic Garden Edinburgh, -, EH3 5NZ, Edinburgh, United Kingdom
[8]University of Montpellier, CEFE, 34293, Montpellier, France

Background: Pleistocene climatic oscillations led to range fluctuations in African rain forest organisms. Isolation of populations during the driest climatic phases resulted in genetic differentiation through mutation and drift. Recent re-expansion of the forest brought differentiated groups into secondary contact. We investigated whether past climate changes may have led to sufficient differentiation to trigger speciation in a central African rainforest tree, Barteria fistulosa (Passifloraceae).
Method: We genotyped 765 individuals of B. fistulosa at 12 microsatellite loci and characterized the spatial genetic structure by using Bayesian clustering algorithms, isolation-by-distance analyses and clines of synthetic alleles. We used species niche modelling (environmental and soil variables) to investigate ecological variables associated with genetic discontinuities.
Results: Trees showed a very steep genetic discontinuity between groups north and south of latitude 1°N. There was no evidence for effective gene flow between the two tree lineages in contact at the transition zone, despite the presence of a few hybrids. Niche modelling did not predict the occurrence of northern trees south of this genetic transition, and vice versa. The variable that contributed the most to niche differentiation was precipitation during the driest quarter of the year.
Discussion: The genetic discontinuity near latitude 1°N is inferred to be a tension zone resulting from reproductive incompatibilities between previously allopatric tree lineages. This tension zone may have stabilized at a climatic transition (between boreal and austral seasonal regimes), and matches patterns of genetic structure previously observed in other forest plant species of the region, suggesting that a tension zone may separate distinct lineages of several central African forest plants near the thermal equator. Our results suggest that northern and southern lineages could be locally adapted to climatic parameters, even for species with a continuous distribution in this area, and thus may respond differently to climate change. Understanding spatial genetic structure may thus help refine prediction of species distribution under future climate conditions.

O57-15 – S57 *Intraspecific variation in tropical trees – implications for tropical forest responses to global change*
Thursday 23 June / 08:00-10:00 – Sully I

Are tropical tree habitat specialists less variable in key functional traits than habitat generalists?

NATHAN KRAFT[1], IAN MCFADDEN[1], CLAIRE FORTUNEL[1], RENATO VALENCIA[2]
[1]University of California, Los Angeles, Department of Ecology and Evolutionary Biology, 90095, Los Angeles, United States
[2]Pontificia Universidad Católica del Ecuador, Laboratorio de Ecología de Plantas, Quito, Ecuador

Background: First principles suggest that habitat niche breadth within a species should be positively correlated with intraspecific variability or plasticity in traits related habitat use. We explored this prediction by examining intraspecific trait variation in tropical forest trees from the Yasuní forest dynamics plot in Eastern Ecuador, one of the most diverse forest communities on the planet. The plot is characterized by distinct topographic habitats formed by a ridge and valley system, and previous study has identified a number of taxa species that either specialize on ridge or valley habitat, or alternatively range across the topographic gradient. In particular, we predicted that topographic habitat generalists should display a great degree of trait variation within species than habitat specialists.
Methods: We compared variation in key functional traits sampled within the plot between three groups of species: ridge specialists, habitat specialists, and habitat generalists.
Results: Contrary to our expectations, we find little evidence that habitat generalization within the Yasuní plot is correlated with greater intraspecific variation in key functional traits.
Discussion: While broader habitat niche breadth is often associated with greater variability in key traits related to habitat use, we discuss alternative scenarios related to specialization that may result in the patterns that we have found in Yasuní.