Paul Rymer

Biography

Research focuses on the ecology and evolution of organisms in natural populations, applied to understanding the origin of biodiversity hotspots, the evolution of invasiveness, and adaptation to climate change.

EcoTAS abstract

Understanding the capacity of trees to respond to environmental change is essential for the maintenance of biodiversity, forest health and productivity. In south-west Australia, altered environments have resulted in tree death associated with droughts, pest, and disease. Adaptive land management is urgently needed in order to mitigate the risk of large-scale mortality. Heritability and genetic variation are the essential ingredients for adaptation to a rapidly changing world. The phenotypic traits expressed by a plant are determined by its genetic make-up, as well as, the environment. Quantitative genetics partitions the phenotypic variation to estimate genetic heritability. This research took advantage of large quantitative genetic trials established for Corymbia calophylla (Marri), an economically and ecologically important forest tree of south-west Australia. The trials have 18 provenances with approximately 170 families; each with 24 seedlings planted in a randomised blocking design at two sites with contrasting rainfall patterns. We estimated tree growth (height, basal diameter) and disease resistance (shoot blight) in Margaret River and Mt Baker trials during 2015 and 2016. Growth and disease resistance both show moderate levels of genetic heritability (0.2 to 0.3).

Barbara Rice Memorial Poster Session (Monday)

Monday, November 27, 2017

5:45 PM - 7:30 PM

The Event Centre

Oral presentation

Rymer P [1] , Ahrens C [1] , Mazanec R [2] , Byrne M [2] , Tissue D [1] , Hardy G [3]

[1] Hawkesbury Institute for the Environment, Western Sydney University, Richmond New South Wales, Australia

[2] Department of Biodiversity, Conservation and Attractions, Perth WA, Australia

[3] Murdoch University, Perth WA, Australia

Rapid growth and disease resistance are adaptations to cool and wet climates in southwest forests

Heritability was greatest in warm and cool regions with admixture found in the intermediate region potentially increasing epistatic effects. There was strong associations with the climate of origin (temperature, rainfall) showing high growth and disease resistance in southern coastal populations experiencing cool and wet climatic conditions. This study highlights provenances that could be selected for assisted migration to enhance competition and disease resistance in southwest WA forests.

SYMPOSIUM: Assisted migration under climate change

Wednesday, November 29, 2017

4:00 PM - 6:00 PM

Brokenback Room

Rymer P

Fitness consequences of assisted migration: Insights from historic provenance trials of Australian woody species

EcoTAS 2017

The joint conference of the Ecological Society of Australia and the New Zealand Ecological Society

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Kiri (Reihana) Spraggs

EcoTAS abstract

The widespread degradation of water quality and quantity and its state of mauri, is a significant issue for Māori. This issue is represented by widespread degradation of

Open session (1)

Monday, November 27, 2017

3:45 PM - 5:45 PM

Sugarloaf Room

Oral presentation