Rainforest CRC Cooperative Research Centre for Tropical Rainforest Ecology and Management

PROJECT 6.3.2
Seed dispersal: a threatened ecological process

Project Leaders: Dr David Westcott (CSIRO)

Managing tropical forests, tropical forest fragments and their biodiversity in a manner which is sustainable on appropriate ecological time frames remains one of the key challenges facing conservation. Current approaches have focused primarily on reservation of ecosystems and biodiversity. However, experience indicates that reservation alone is only partially successful. This is in part because reservation all but ignores the landscape context of a reserve and the processes that operate within and across reserve boundaries.
This project has set out to make explicit consideration of ecosystem processes accessible to managers for planning and decision-making.

Many of the processes that maintain ecosystems are being altered or degraded by changes in landscape structure. Processes that are mediated by animal movement are further impacted by changes in the behaviour, distribution and abundance of animals, particularly threatened species. This project focuses on one such animal-mediated ecosystem process, seed dispersal. Seed dispersal is arguably the one of the most pervasive and influential ecosystem processes as it impacts plant ecology and evolution at every level from that of the individual through to the structuring and dynamics of plant communities. In addition, it has ecological and evolutionary flow-on effects for vertebrate populations and communities. Astonishingly, we know virtually nothing of the consequences of global change for outcomes of processes such as seed dispersal.

By combining scientific descriptions of seed dispersal processes within rainforests and agricultural landscapes with spatially explicit, agent-based simulation modeling, this project aims to provide managers with an understanding of seed dispersal and its outcomes in rainforest landscapes. The project aims to use this understanding to develop modeling tools which will enable prediction and exploration of the consequences of management actions and species declines on the outcomes of seed dispersal processes in the context of management for vegetation persistence in humid tropical landscapes over realistic ecological timeframes. In addition, this understanding will inform the development and assessment of management strategies in the control and eradication of environmental and agricultural weeds.

POSTGRADUATE STUDENTS

Nicola DOWDING (JCU) PhD
Fruit dispersal by a colonial species of bird: the Metallic Starling (Aplonis metallica)
Sarah McCALL (JCU) Honours
Does long distance dispersal and variation in frugivore deposition patterns influence seed fate for a tropical tree species?
Jacqueline MILTON (UQ) PhD
Potential effects of global climate change on geographically restricted amphibian species from the Wet Tropics
Romina RADER (JCU) PhD
The impact of fragmentation on seed dispersal
Matthew SHAW (UQ) PhD
Parasitic mites: influence of the nest
Liana JOSEPH (UQ)
Effective monitoring and management of rare and threatened birds of Australian tropical and sub-tropical rainforests