

# A Comparison of Vegetative Diversity in Native and Plantation Forests in Guangxi, China and Significant Contributing Factors

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The topic of biodiversity within Eucalyptus plantations in China and the value they hold for the greater ecosystem has been hotly debated for decades. In an area of the world which is designated as a Biodiversity "Hot Spot" and used to have one of the highest densities of biodiversity in the world, this issue has important implications for environmental and human welfare. In order to better understand the diversity, vegetative wise, of different forests in this area we collaborated with a local Chinese college and worked with students there to collect data on forest characteristics, forest floor attributes and soil properties to compare correlations found between the environmental properties of the forest and diversity. Between the main two forest types compared, native Masson Pine and non-native Eucalyptus, more species were found in Eucalyptus forests with the distribution heavily skewed toward the two most abundant species. Masson Pine forests had higher species evenness and diversity within the sample plots. In order to determine the key factors in the differences between the diversity of the forests, soil and forest characteristic data was correlated (Person's Correlation Coefficients,  $p < 0.05$ ) with diversity and evenness in each forest type. In the Eucalyptus forest significant correlations with diversity were found with Electrical Conductivity (EC) at 20 cm soil depth ( $p = 0.0447$ ) and a negative correlation with age ( $p = 0.0300$ ). Moisture ( $p = 0.0194$ ) and NPK ( $p = 0.0519$ ) were highly correlated with species evenness in the Eucalyptus forest. In the Masson Pine forest, diversity was highly correlated with NPK ( $p = 0.0294$ ) and with pH ( $p = 0.0085$ ) in the soil along with a negative correlation with soil temperature ( $p = 0.0021$ ). By understanding what most affects diversity in each type of forest, forest managers can create more specific objectives and plans to tailor management toward improving the valuable biodiversity value of these forests for generations to come.