台灣森林中雌雄異株木本植物的性別比例、空間分布與環境因子的關係之研究

Study on sex ratios of dioecious trees and its spatialdistribution and the relationship with environmental factors in Taiwan forest

中文摘要

研究雌雄異株植物性別的表現和選擇，在植物生殖行為學中相當重要，植物不同性別的空間分異，可反映出對於周遭環境的適應性，亦有助於維持物種的多樣性及生態系統的穩定；除基礎理論研究的探索之外，更可應用於單一性別經濟作物的栽培及育種。台灣木本被子植物中雌雄異株植物的比例，高於全世界的平均值，但有關雌雄異株的研究卻相當稀少。台灣森林動態樣區是對於區內所有胸高直徑(DBH)達到 1cm 的木本植物，皆記錄物種名稱、胸高直徑與詳細位置，並對於樣區內的各項地形及土壤等環境因子亦有詳細的測量，為木本植物性別研究最佳的試區。本研究在蓮華池常綠闊葉林及墾丁高位珊瑚礁二處森林動態樣區內，選擇桃實百日青(*Podocarpus nakaii*)、毛柿(*Diospyros discolor*)及茄苳(*Bischofi javanica*)等三種具開發潛力的雌雄異株木本植物，共 3453 株，於花期進行每木調查紀錄其性別，並重新量測其胸高直徑。本研究目的為瞭解此三種木本植物在蓮華池森林以及墾丁高位珊瑚礁森林中雌雄性別的比例、雌雄異株的分布及生長差異，並利用空間回歸統計方法，探討可能影響其性別的環境因子。研究成果可作為不同性別植株栽植時，環境最佳化之選擇參考依據，並可累積建立台灣特有種資料庫之資料，以利物種的保育及天然資源的永續利用。

英文摘要

Studying sexual selection and sexual performance of dioecious plants is very important in plant reproductive ecology. Sexual spatial segregation helps adapt to environment, maintain biodiversity and keep suitable of ecosystem. Studying diocious plants not only focus on the basic theoretical sciences but also can be applied at cultivate and breeding of female or male plants. The percentage of diocious plants in Taiwan is much higher than which of average of the world, however, we have very few research. Forest dynamics plot is the best study site which we can do studies of dioecious plants, because each stand of woody plants in the plots were identified, mapped, and recorded their value of DBH, and the environmental factors were also measured, i.e. topography and soil factors. In this project, we will choose three tree woody species with high potentials

and survey their gender in flowering season and re-measure their DBH. *Podocarpus nakaii* in the Lienhuachih dynamics plot, *Diospyros discolor* and *Bischofi javanica* in the Kenting dynamics plot, totally 3453 individual of trees. The purpose of this study is to know sex ratio, spatial distribution with environmental factors and differences in DBH growth in male and female trees of 3 woody species. We will use spatial autoregressive model to test which environmental factor affect the spatial distribution of different gender trees. Data could be accumulated and archived in the database of Taiwan endemic plants, which might be used for cultivating different gender trees, and helping conservation of sustainable usage of nature resources.