

人工林不同疏伐強度作業對脊椎動物族群及群聚組成之影響

The effects of differential thinning on diversity and community structures of vertebrates in artificial forests

東海大學 生命科學系 林良恭 關永才

研究計畫中英文摘要：

(一) 計畫中文摘要

關鍵字：生態系經營、人工森林、脊椎動物、疏伐

人工林為森林生態係之一部分，所佔面積達42 萬公頃。陸域脊椎動物在森林生態系的食物網中扮演掠食者與被掠食者的角色，且對於棲地環境之變化非常敏感，極適合作為指標生物及保護傘生物來探討環境變動對生物多樣性所造成之影響。因此了解人工林動態與不同結構對於脊椎動物多樣性的影響，作為人工森林經營管理重要的參考。本計劃將藉由比較群聚結構及物種組成，探討蓮花池及其周遭人工林不同疏伐程度，對陸域脊椎動物多樣性的影響。本計劃將監測及量化在四個不同疏伐程度（0%、12.5%、25% 和 50%）的人工林棲地中，脊椎動物多樣性及棲地的變化。計劃將從94 年8 月到98 年7 月，每個月將有系統地採集與調查脊椎動物相。探討不同疏伐處理對物種多樣性的改變，分析物種豐富度、物種歧異度、優勢度及棲地相似度來估算並利用多變量分析探討各樣區之棲地結構。預期得到的基本資料將提供台灣中低海拔森林棲地物種多樣性資料庫的建立，所得結果並可以作為發展永續長期經營人工林策略的參考。

(二) 計畫英文摘要

Key words: Ecosystem, Man-mode forest, vertebrates and thinning

Man-made forest ecosystem occupied about 420,000 ha in Taiwan. Terrestrial vertebrate fauna accounts for the dominant of animal diversity in the forest ecosystem, and are important in mediating interactions with predators and preys. Moreover, vertebrates are very sensitive to the conditions of habitats, and therefore they are suitable ecological indicators and as an umbrella species to assess the effects of environmental impacts on biodiversity. Understanding the effects of various strategies for forest restoration on vertebrate biodiversity plays a central role in long-term management of forests in Taiwan. This study aims to investigate the diversity of vertebrates (i.e., decapods, insects, spiders & aquatic invertebrates) in Lian Hwa Ts,s lowland forests, and to assess the influences of

various degree of logging on vertebrate diversity by comparing the community structure and guild composition of different vertebrate taxa. We propose to monitor and quantify vertebrate diversity and habitat parameters in four plantation types with 0%, 12.5%, 25% and 50% logging treatments. We propose to conduct the experiments from August 2005 to July 2009, and once each month we will systematically survey and collect vertebrates. Changes in vertebrate diversity during the course of study and among habitat types will be estimated by calculating the species richness, index of dominance, index of diversity (e.g., Shannon-Wiener function), and index of similarity. Multivariate analyses will be used to examine the relationships between habitat structures and vertebrate diversities. The findings will provide basic information useful for both biodiversity databases of lowland forests in Taiwan, and have the potential of exposing novel, specific methods for plantation management that might be more useful for long-term and sustaining forest management than commonly used strategies today.