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■ 密件、不公開

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行政院農業委員會林務局107年度科技計畫研究報告

計畫名稱： 因應氣候變遷生物多樣性回復力之研究(3/3)-以大白山至大南澳嶺與雙溪、頭城山區為例 (第3年/全程3年)

(英文名稱) A study on the resilience of biodiversity under long-term climate change(3/3)- a case study of Dabaishan to Dananao ridges and Shuangxi to Toucheng shan area

計畫編號： 107農科-10.7.1-務-e3(2)

全程計畫期間： 自 105年1月1日 至 107年12月31日

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一、執行成果中文摘要：

本計畫針對雙溪、頭城山區及大白山至大南澳嶺山區兩個氣候變遷高風險地點進行深入分析，初步瞭解氣候變遷及極端氣候事件對於主要標的植群與植物的可能影響。就前述計畫研究架構而言，所稱「殘存地點」即類似於 Hannah (2014)所提之堅守點概念，部分中及低海拔稀有的族群則可視為一處實際案例；另外也針對區域中植群型的未來變化做預測，針對減少生育面積的物種或族群做保育評估，擬定適宜之保育策略與實務方法。因此，本計畫擬定研究架構如下：

依據長期氣候變遷殘存地點，依植物相特殊性、物種稀有性及專有性、週邊環境潛在威脅等因子，瞭解各殘存地點生態系及物種之保育急迫性，並提出優先次序。重要工作項目有：(1)主要標的植群與植物的情境模擬、(2)主要標的植群與植物的監測(3)保育標的物之適應性經營架構的提出。

選定雙溪-頭城山區及大白山至大南澳嶺山區兩個 的 殘存地點之高風險森林生態系。透過長期資料累積與現地調查，瞭解該生態系及物種的消退或遷徙情形，依研究結果提出對應之保育措施建議。重要工作項目有：(1)擇定其中雙溪-頭城山區及大白山至大南澳嶺山區兩個區域設立監測樣區，比較並監測殘存地點高風險物種之存活與更新狀況。(2)樣區設立之原則，擬以400 m 2分散樣區方式進行，逐年複查監測殘存植株之存活狀況，並進行樹種複查，瞭解目標物種之幼苗存活與生長情形。(3)選定可能遭受暖化衝擊之殘存地點，進行詳細的植群調查，並繪製現生植群圖，進行情境模擬，探討未來這些主要目標物的變遷和遇到的衝擊程度，並研討可能的對策。

依據雙溪-頭城山區及大白山至大南澳嶺山區2個地點的生態系及物種之保育急迫性，提出可能的保育對策及具體作法，配合目前已完成的兩個區域優先保育物種名單，如台灣水青岡、四照花，以野外實務調查、預測及監測檢討這二種物種之適切性，並選定適當的試驗操作。於雙溪-頭城山區及大白山至大南澳嶺山區兩個可能遭受暖化衝擊之殘存地點，對標的植群(台灣水青岡型)與植物(台灣水青岡和四照花)，初步提出整體避難所之保育操作流程。

二、執行成果英文摘要：

In this Project, we conducts an analysis of two climate change high-risk locations in Shuangxi to Toucheng area and Dabaishan to Dananao ridges, and get a preliminary understanding of the possible impact of climate change and extreme weather events on the target of the vegetation and rare plant. In the context of the aforementioned project research framework, the term "remnant place" is similar to the concept of “Holdouts” from Hannah (2014), while some medium or low altitude of rare populations can be considered as a practical case; and in the future, Based on the changes in species of populations we can to do prediction, for the reduction of reproductive area of species or rare

populations to do conservation assessment, to development of appropriate conservation strategies and practical methods, the frame works of this project are as following:

According to long-term climate change remnants, Which according to flora unique, species rareness and specificity, the potential threats to the surrounding environment and other factors, understand the ecliptic conservation of ecosystems and species at the remaining sites, and give priority. Important work items include: (1) situational simulation of the main target vegetation and plants, (2) monitoring of the main target vegetation and flora (3) proposal of an adaptive management frame for the conservation target.

1.To select the high-risk forest ecosystems of the two sites where was in Shuangxi-Toucheng area and Dabashan to Nanao Ridge, Through long-term data accumulation and field survey, we know the faded or migration of the ecosystem and species, and propose corresponding conservation strategy according to the research results. Important work items include: (1) To set up a monitoring sample area in two areas, namely, Shuangxi-Toucheng area and Dabashan to Nanao Ridge to compared and monitoring the survival and regeneration of high-risk species at the remaining sites. (2) The principle of establishment of plots. It is proposed to disperse plots of 400 m 2 . The survival of surviving plants should be reviewed and monitored annually. Seedlings should be re-examined to see the survival and growth of seedlings of the target species. (3) Selected surviving sites that may suffer from the impact of warming, detailed plantation surveys, and mapping of existing plantings, situational simulation to explore the future changes of these major targets and the impact they encounter, and discuss possible Countermeasures.

2.Propose possible conservation strategies and practices based on the urgency of conservation of ecosystems and species, coordinate with the list of priority conservation species currently in existence, monitoring and review the suitability of the species list with field practice surveys, and select appropriate cases of vegetation or species for the practice of experimental operation. From the the remaining sites of Shuangxi-Toucheng area and Dabashan to Nanao Ridge, which are likely to be affected by the impact of the warming, preliminary research on the conservation of target vegetation and plants has been conducted.