

## 以生物多樣性指標評估集水區崩場地治理優選順序

陳添水<sup>[1]</sup> 林政侑<sup>[2]</sup> 何世華<sup>[2]</sup> 林昭遠<sup>[2]\*</sup> 楊耀隆<sup>[1]</sup>

**摘要** 台灣雖位處北回歸線，但因造山運動拱起 4,000 公尺海拔落差，使台灣物種跨越熱帶、溫帶及寒帶，且四面環海及高溫多雨之島嶼氣候，孕育出許多台灣特有種生物，然台灣因高山多、平地少，在高人口密度下，居民為了生活不得不開發山坡地之原始森林，此舉壓縮了動、植物之生存空間，此外，台灣山高且地質破碎，夏季之暴雨或颱風易造成大規模之崩塌，除對當地居民造成威脅外，亦影響其他物種之生存環境，為此，如何加速崩場地之植生復育，將有助於恢復各物種之棲地。本研究以莫拉克風災為事件，利用該事件前後期之衛星影像萃取集水區崩場區位，另計算災後集水區植生復育良窳之熱點區位，最後以生物多樣性指數配合崩場率及植生復育率評估集水區崩場地治理之優選順序。研究結果顯示，旗山溪及荖濃溪集水區中崩場率最高之子集水區分別為小林及清水溪；植生復育率則為下游高於上游區位；整體崩場地治理優先順序中，得分最高之前 10 處主要分布於荖濃溪集水區。期本研究之結果可作為相關生態保育單位於環境復育之參考。

**關鍵詞：**崩場地治理、植生復育率、生物多樣性指數。

## Evaluation of Priority Order for The Landslide Treatment Using Biodiversity Index in A Watershed

Tien-Shui Chen<sup>[1]</sup> Cheng-Yu Lin<sup>[2]</sup> Shih-Hua Ho<sup>[2]</sup> Chao-Yuan Lin<sup>[2]\*</sup> Yaw-Long Yang<sup>[1]</sup>

**ABSTRACT** The abundance of endemic species in Taiwan is a great natural treasure accomplished by a diverse altitude ranges due to violent tectonic activities and humid tropical weather conditions with ocean surrounded. With the characteristics of few flatlands, the slope lands are inevitable and have been developed for economic and social requirement gradually, which has caused habitation shrinking of animal and plant. Furthermore, Taiwan also suffers disasters such as striking of torrential rains and typhoons during summer season annually, and is vulnerable to landslide because of fragile geology which threatens to the living things. Thus, to enhance the efficiency of vegetation recovery in landslide area can benefit the habitats of species. Typhoon Morakot induced landslides and vegetation recovery rate in Kao-Ping watershed can be quickly extracted and/or derived from the satellite images in this study. The biodiversity index established in the database of the watershed can then be applied to assess the treatment priority of landslides. The result shows that the highest landslide rate in Chi-Shan and Lao-Nong watersheds are Xiao-Lin and Ching-Shui Xi sub-watersheds respectively. For vegetation recovery rate, the downstream area is higher than upstream area. For treatment priority, the top 10 of sub-watersheds almost distribute in Lao-Nong watershed. It hopes that the result could provide the related authorities as the references of environmental restoration.

**Key Words :** Landslide mitigation, Vegetation recovery rate, Biodiversity index.

### 一、前言

台灣地區位處熱帶及亞熱帶間，氣候溫暖而多雨，且高山林立，海拔落差大，因此蘊育出豐富之物種，根據農委會特生中心之統計結果，維管束植物約有 4,200 種、真菌 5,740 種、野生動物 19,000 種，另因台灣四面環海之長期地理區隔，特有種所占比例極高。然近年來，氣候變遷使全球溫度上升，部分高山物種開始向上移動，若照此趨勢持續發展，致終會造成

部分物種消失；另極端氣候亦使地質破碎之台灣地區造成多處崩塌，破壞原始森林區位，民國 98 年之八八風災即造成台灣中南部國有林班地約三萬公頃崩塌，嚴重壓縮及影響多數生物之生存環境及空間，崩場地治理優選以往皆以「人」為保全對象，但自然資源亦須作為保全對象納入考量，為此，如何快速復育，恢復其生存環境，以避免物種消失極為重要。本研究選擇八八風災受創嚴重之高屏溪集水區的荖濃溪與旗山溪等兩集水區為樣區，先以風災前、後兩期衛星影像萃取其崩場區

[1] 行政院農業委員會特有生物研究保育中心  
Endemic Species Research Institute, Nantou, Taiwan.

[2] 國立中興大學水土保持學系  
Department of Soil and Water Conservation, National Chung Hsing University, Taichung, Taiwan.

\* Corresponding Author. E-mail : cylin@water.nchu.edu.tw