

# Towards an Understanding of Butterfly Diversity and Composition in an Artificial Habitat: A Case Study of the Ecology Education Park in the Endemic Species Research Institute

了解蝴蝶群聚於人工棲地的多樣性及組成：以特有生物研究保育中心之生態教育園區為例

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## Abstract

Habitat destruction by human activity is a severe issue around the world. The growing number of semi-natural habitats and artificial habitats should be further studied owing to their potential functions in conservation and education. A one-year survey of butterflies in an artificial habitat, Ecology Education Park (EEP) in the Endemic Species Research Institute, was conducted to understand the composition and monthly variation of the butterfly community there. In total 96 butterfly species and 1754 individuals

were recorded during 12 investigations. Among them, 9, 16, 13, 18, and 40 recorded species came from families Hesperiidae, Papilionidae, Pieridae, Lycaenidae, and Nymphalidae, respectively. Species richness peaked in July and October, and a similar pattern showed in all five butterfly families in EEP. During the 12-months period, large variation of butterfly abundance happened in Lycaenidae and Nymphalidae owing to one or two apparent peak(s); but no apparent peak resulted in relatively small abundance variation in Pieridae. For different families, the peak could have occurred due to outbreak of one or two species, or multiple species maintaining a certain level of population during the same period. Among the results from four diversity indices, a similar pattern was found when considering the number of individuals in the total sample. The apparent drop of values of indices occurred in December owing to a population outbreak of a small number of species. The preliminary results from this study can give light to the importance of monitoring community structure in artificial habitats by manipulating proper sampling methods and by adopting adequate diversity indices.

### 摘要

人類活動造成的棲地破壞為全球性嚴重議題。隨之增加的半天然棲地和人工棲地因具備保育及教育的潛在功能，值得加以重視。特有生物研究保育中心的生態教育園區為人工營造的棲地，為了解棲息於該地之蝴蝶群聚的組成及月間變化，進行為期一年的蝶相調查。每月一次共計 12 次調查，記錄到 96 種蝶類共計 1754 隻次，其中弄蝶科(Hesperiidae) 9 種、鳳蝶科(Papilionidae) 16 種、粉蝶科(Pieridae) 13 種、灰蝶科(Lycaenidae) 18 種、蛺蝶科(Nymphalidae) 40 種。分屬五科的蝶類在 7 月及 10 月達種數高峰。灰蝶科和蛺蝶科在數量分布上有較大的月間變異，肇因於一至二次的數量高峰；月間變異較小的粉蝶科在數量上則無明顯高峰。不同科別的蝶類，其數量高峰的複因可能為一或二個物種的族群擴張，或是多個物種在同一期間維持一定的數量。採用四種多樣性指數計算的結果指出，在考量物種個體數於總個體數中比例時，數值於月間呈現出相似模式，均於 12 月驟降至最低數值，原因為該月份少數物種在個體數量上有族群擴張現象。本研究的初步結果旨在強調：透過適當的採樣方法及採用適當的多樣性指數，將有助於提供人工棲地中物族群聚組成監測上的重要訊息。

**Key words :** artificial habitat, Ecology Education Park, butterfly community structure, population outbreak, diversity index

**關鍵詞：**人工棲地、生態教育園區、蝴蝶群聚組成、族群擴張、多樣性指數

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