鱗翅目有害生物鑑識的現況與挑戰

顏聖紘 [1,*]

[1] 國立中山大學生物科學系。台灣 高雄市。

摘要

由於物種及其與植物及真菌關係的多樣性，鱗翅目昆蟲在台灣的農業有害生物中佔有相當龐大的比例，而這也為鑑識工作帶來巨大的挑戰。本文根據文獻分析、農委會歷年計畫成果與近年研究案例歸納出如下造成鑑識工作困難的原因：(1) 農業昆蟲學與系統分類學在台灣長期以來是兩個相關但交集不多的領域，因此農業文獻中經常出現早已不再使用的同物異名或錯誤拚寫學名影響資訊流通；(2) 農業昆蟲學領域習慣使用作物命名害蟲，造成同一種昆蟲具有多重中名，而同一個中名卻未必指涉同一物種；(3) 農業文獻系統中累積了大量未經修訂但被廣泛運用的的錯誤資訊；(4) 許多物種的危害紀錄缺乏引證標本難以核實；(5) 幼蟲形態對物種層級鑑定的應用性有限；(6) GenBank 與 CBOL 中的 DNA 序列亦經常缺乏引證標本以供核實因此未必能輔助鑑識；(7) 高多樣性類群的形態與序列資訊不足因此無法提供有效鑑識；(8) 僅靠 COI 序列無法鑑識科級分類歸屬；(9) 完整的形態、生態與序列資訊僅限於中大型物種；以及 (10) 檢索系統的可用性限用於歐美與日本，而廣大的東亞與東南亞地區至今缺乏根據最新分類體系所建立的檢索系統。我因此建議有關單位應對具中高入侵與危害風險的分類群及其近緣或相似類群進行完整的形態、DNA 序列以及生態棲位資訊盤點與收集，根據最新分類資訊訂正所有農業文獻中的鱗翅目物種學名、建立一個適用於台灣與鄰近地區的幼蟲與成蟲形態檢索表，並與寄主利用方式搭配，始能改善從鑑識到防治端的困境。

關鍵詞：系統分類、外來入侵種、生命條碼、形態鑑識、幼生期

*論文聯繫人

E-mail: shenhornyen@mail.nsysu.edu.tw

Current Status and Challenges of Identification of Lepidopteran Pests in Taiwan

Shen-Horn Yen[1,*]

Department of Biological Sciences, National Sun Yat-Sen University, Kaohsiung city, Taiwan, ROC.

Abstract

Due to the high diversity in species richness and the relationships with plants and fungi, lepidopteran insects occupy a relatively large proportion of the agricultural pest species in Taiwan, and this has also brought challenges in identification. The present article attempts to summarize the reasons making species identification difficult according to an integration from literature, projects reports sponsored by COA and case studies in recent years: (1) although agricultural and systematic entomology are two fields that are relevant to each other, these two areas, however, have been poorly collaborated. Numerous synonyms and mis-spelt names have therefore been circulated and caused problems in communication; (2) many species have multiple Chinese names based on their hostplants, but one insect name can also represent multiple species; (3) numerous uncorrected names have been accumulated in agricultural literature and widely used; (4) voucher specimens of some species are often lacking so verification of the identity is difficult; (5) the use of larval morphology for species identification is limited; (6) sequence information from GenBank and CBOL is often not associated with voucher specimens, which are expected to

*Corresponding author.
E-mail: shenhornyen@mail.nsysu.edu.tw

assist in verification ; (7) either morphological or sequence data of speciose groups is insufficient for effective identification ; (8) species identification based on COI sequence alone is not necessarily accurate; (9) complete information is confined to larger species ; and (10) the identification keys based on the most recent classification is more applicable for the fauna of Europe, N. America and Japan, but not for E. and SE. Asia. I therefore strongly suggest that the authorities concerned should start a survey for the morphology, DNA sequences and ecological niche of the species and the relatives that have medium and high risks regarding invasiveness and agricultural damage. An updated checklist of the lepidopteran pests according to the most recent classification system should be prepared. Moreover, an identification key suitable for Taiwan and the surrounding areas should be constructed and integrated with host utilization in order to fill the gap from species identification to control and managements.

Key Words: Systematics, Invasive Species, Barcode of Life, Morphological identification, Immature Stages