

DNA barcoding: A tool to identify exotic wood-boring beetle larvae of the family Bostrichidae

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The beetle family Bostrichidae contains economically important timber pests. These include powder post beetles and auger beetles, which are regularly detected as larvae boring into imported wooden items at the border and post border. In this presentation we will discuss the processes followed to establish a reference library of Bostrichidae DNA barcodes at the Plant Health and Environment Laboratory (PHEL), Ministry of Agriculture and Forestry, New Zealand. The current identification method for wood-boring beetle larvae relies on morphological characters and dichotomous keys that are not easy to use and require specialist diagnostic skills to interpret. In addition, rearing immature stages to adults is often necessary for identification. This is problematic in a biosecurity context, as rapid identification is crucial to enable appropriate risk management. Recent advances in DNA barcoding methodologies have revolutionized the classical taxonomic process by allowing rapid identification, and barcoding is gaining prominence as a reliable diagnostic tool for species level identification. Very few barcodes for economically important species of the Bostrichidae family are available in on-line sequence databases. This limits the use of DNA barcoding as a routine diagnostic method for wood-boring beetle interceptions. This study validated approximately 30 frequently intercepted species of Bostrichidae from different geographical regions in order to establish a reference barcode library for this family. This study also trialled several DNA extraction methods, and we will show that this is a key component to obtaining reliable, high quality DNA barcodes. The utility of barcoding Bostrichidae species for rapid species identification will be discussed.

