

DNA barcode to identify intercepted gypsy moths

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DNA barcoding can accurately and rapidly identify destructive gypsy moths using minute amounts of insect material.

Gypsy moth caterpillars annually cause millions of dollars' damage to overseas forestry reserves, native forests and some crops.

Although the moth is not naturally occurring in Australia, quarantine has intercepted adults and their egg masses hitching rides on imports.

Distinguishing adult gypsy moths from closely related non-pest species by morphology is no easy task and identifying isolated egg masses to a particular moth is in most cases impossible.

So there is a need for an alternative method to provide accurate and rapid species identifications of intercepted samples at all stage of their life cycles.

NSW Department of Primary Industries (DPI) researcher, Dr David Gopurenko, colleagues at the Australian Museum and overseas collaborators have shown that DNA barcoding is the answer.

"Barcoding rapidly provides valuable information at the very early stages of a pest incursion," Dr Gopurenko said.

"Material obtained from small amounts of sampled tissue, such as an egg or a leg, is enough to analyse.

"The sampled DNA barcode is compared against a DNA barcode reference library developed from museum voucher specimens to identify species with greater confidence, much faster than standard identification methods."

DNA barcoding of gypsy moths has also provided some insight into the genetic variation among geographically distant global populations.

This information is useful for identifying possible sources and pathways of an incursion, and for determining mitigation responses.

Dr Gopurenko is currently collaborating to develop DNA barcode libraries for a variety of economically important insect groups, including leaf-hoppers, biting midges and whiteflies, and some important fungi and plant groups.

The work, conducted at the DNA barcoding facility at Wagga Wagga Agricultural Institute, is funded by the NSW Government's BioFirst initiative.

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Photo: Sharon Kiss



Researcher, Dr David Gopurenko, says DNA barcoding will rapidly distinguish between pest and non-pest gypsy moth species. Australian Quarantine has intercepted adults and their egg masses hitching rides on imports.

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