Norfolk Island Citizen Science Project Proposal # 1. Avocado Spotting Bug and Guava Moth Host Phenology.

Introduction

There is a lack of comprehensive understanding of the phenology of plants that may be acting as alternative (reservoir) hosts for both avocado spotting bug (*Amblypelta bilineata*), and guava moth (*Coscinoptycha improbana*) on Norfolk Island. Research in New Zealand shows that guava moth breeds all year round but doesn't occur in the colder areas of the country. This suggests that unlike other moths with similar lifecycles (eg codling moth) guava moth doesn't diapause or aestivate (to escape adverse conditions) and could be vulnerable when there are few hosts available. This is because guava moths only breed in fruit, so most host plants only have a relatively small window where they can act as a host for the pest. Because we know that all guava moths on Norfolk Island originate on the island and don't simply blow in from nearby breeding sites, it is possible to target susceptible hosts at key times in the moth's lifecycle with the aim of reducing the population overall damage. This may entail a further reduction in the wild guava population on the island which may also help with spotting bug, or more simply targeting management on a particular host at a vulnerable time in the pest's life-cycle. There are no guarantees that this will work but without phenological data on alternative hosts it is difficult to make well-informed management decisions.

Aim

To accurately record the time of year that host plants on Norfolk Island can support breeding of guava moth and/or avocado spotting bug.

Method

Citizen scientists will record the phenological state of the major hosts (see 'Host List' doc) of both guava moth and avocado spotting bug into standardised data sheets using yes / no responses. Data from the collection sheets will then be entered into electronic database (Microsoft excel?) for collation and data analysis

Roles

Data collectors. Will physically conduct field surveillance every fortnight (see SOP#1.1) for a period of 12 months from the start of the project and record phenological state of hosts and presence/absence of pest spp and (in the case of avocado spotting bug) life stage.

Data collator(s). Will enter data into database for future analysis.

Host/Pest verifier(s). Will visit host plants where either avocado spotting bug or guava moth are reported by data collectors (as required) to verify pest sighting. Will need competence in identification of host plants and pests.

Logistics/HR. Will take a lead role in recruiting citizen scientists and promoting the project.

Scientific supervisor. Will oversee the project, provide scientific support and meet with citizen scientists monthly to discuss findings.

Outcomes

At the end of the project, we will have a better understanding of how the two pests are using hosts over the year, and be in a position to identify vulnerabilities in their lifecycle if they exist.

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Data Collectors Standard Operating Procedure (SOP 1.1)

Purpose

To establish guidelines for collection of phenological data on host plants for avocado spotting bug and guava moth (Citizen Science Project #1)

Definitions

Phenology – study of seasonal changes in plant and animal life

Flushing vegetative growth – rapidly growing shoots, producing mainly leaves

Senescence – gradual biological deterioration of plants or plant parts – may be caused by end of season in deciduous

Procedure

Visit designated field site on designated fortnightly date.

Identify host plants from Host Plant List document (Table 1?)

Visually check host plant for its phenological state, specifically, the presence of flushing vegetative growth, flowers, fruit, senescence etc.

Visually check for presence of avocado spotting bug and active infestation of guava moth

If appropriate, use sweep net to check for Avocado spotting bug. If bugs are found, place in vial with label recording location, date, collector and host plant. Store bugs in freezer.

Enter your observations into data collection sheet as yes /no responses