

Improved traps for the coconut rhinoceros beetle, *Oryctes rhinoceros*

Improved traps for
the coconut
rhinoceros beetle
Moore, Quitugua,
Siderhurst and
Jang

Introduction

Pheromone Traps
Vaned bucket traps
Ultraviolet light
emitting diodes
(UVLEDs)
Pan traps

Fish Net Traps

Mark-Release-
Recapture

Conclusions

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Overview

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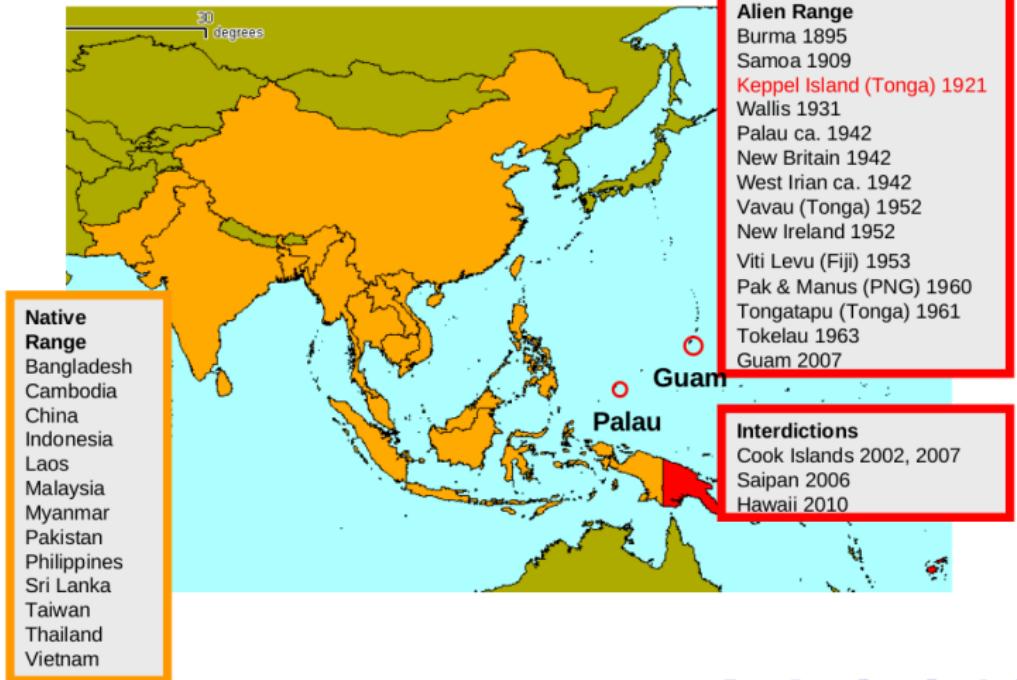
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Oryctes rhinoceros Distribution



Coconut rhinoceros beetle damage



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Coconut rhinoceros beetle grubs



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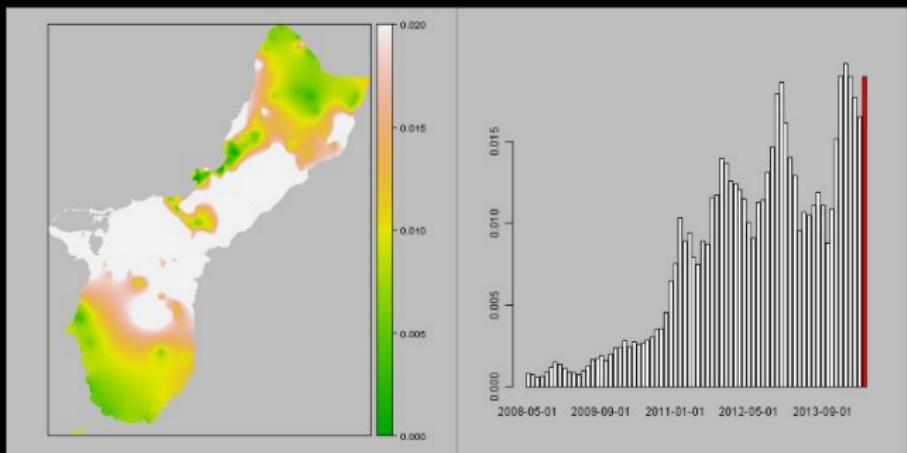
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Mean number of beetles caught per trap-day

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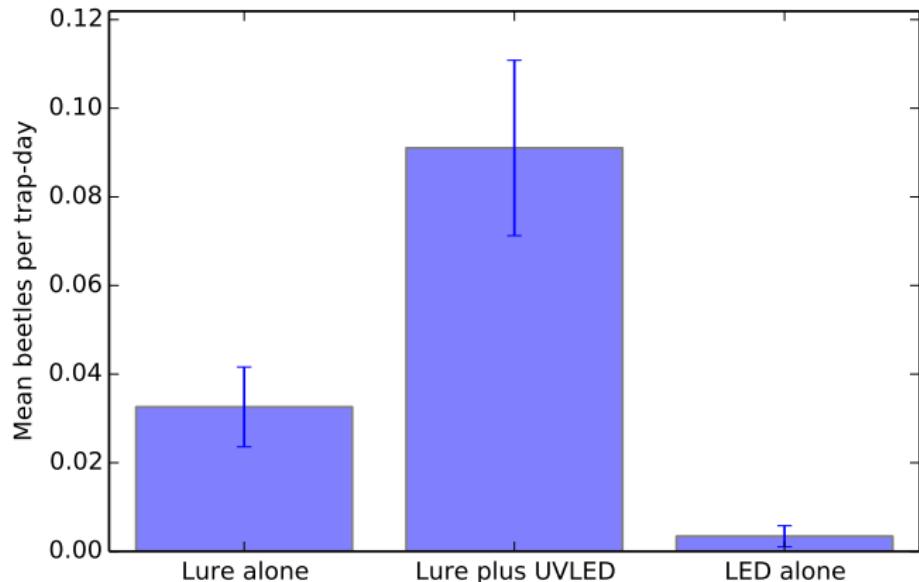
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Pan traps catch 16X as many rhino beetles as surrounding vaned bucket pheromone traps

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Pan traps - with/without substrate in barrel

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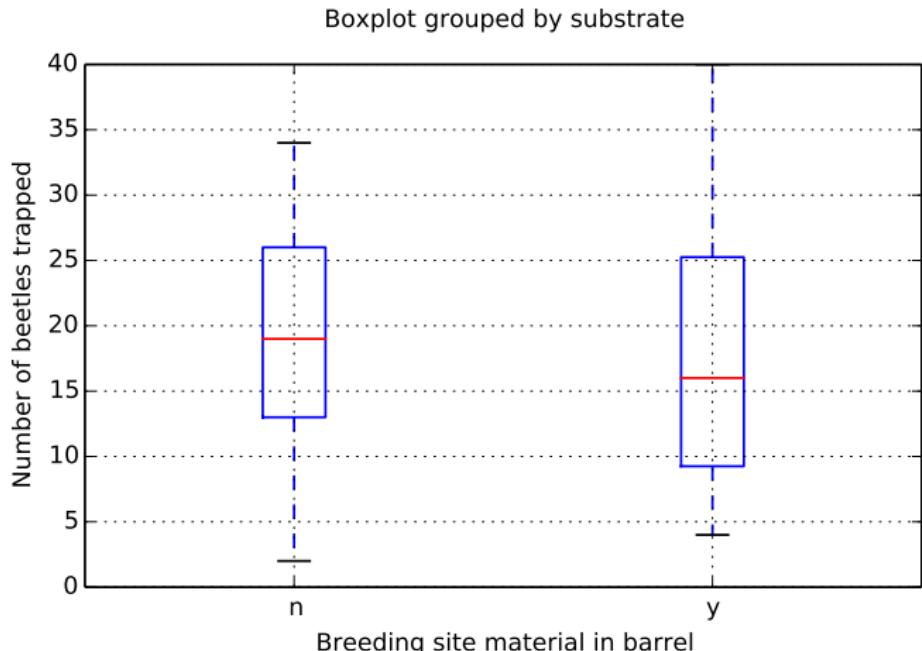
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Number of beetles caught per trap between 2014-07-22 and 2014-10-10.

Evolution of CRB Pheromone Traps

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Chipped breeding site material: 0.52 CRB trapped per day
26X more attractive than standard pheromone traps



Fresh, unchipped green waste (pandanus, bamboo,
breadfruit): 0.57 CRB trapped per day
29X more attractive than standard pheromone traps

Fish Net Traps



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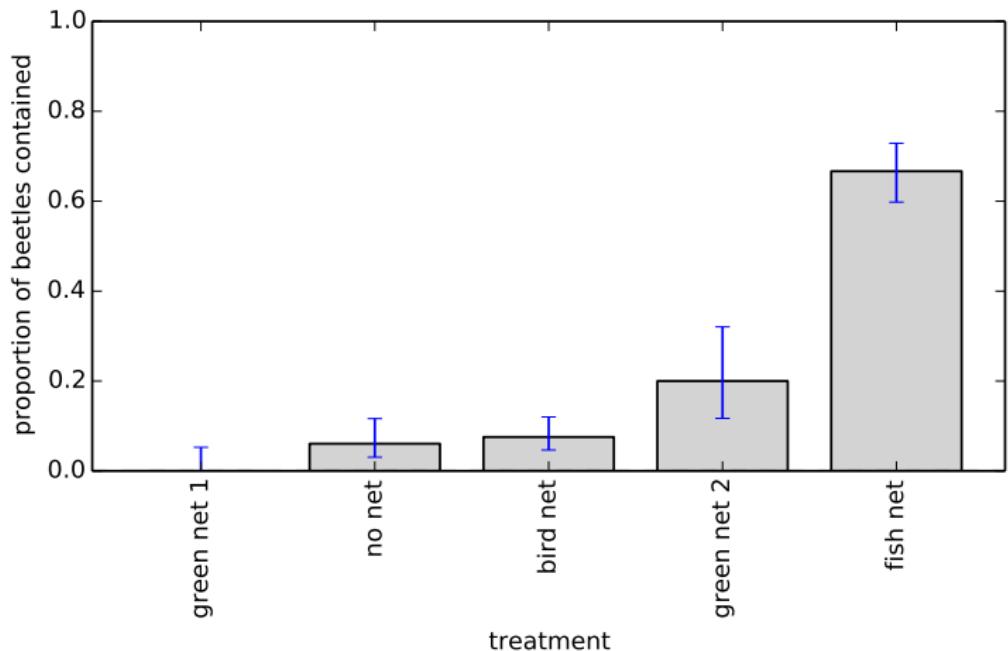
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1. Trapped beetles are fed and allowed to rest for one week
2. Beetles which pass a laboratory flight test are marked with a number
3. Marked beetles are released at the center of 31 pan traps spaced 100m apart
4. About 20% of beetles have been recaptured
5. If wild beetles behave the same as marked beetles, we can infer that pan traps catch about 20% of the wild population

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Trap	Relative attractiveness	Proportion of population trapped
Standard pheromone trap	1X	1%
Standard pheromone trap + UVLED	3X	4%
Pan trap	16X	20%
Fish net	26X	33%

Conclusions

1. Mass trapping using standard vaned-bucket pheromone traps did not result in population suppression. These traps catch only about 1% of the adult population.
2. Our best pheromone trap is a pan trap equipped with cone and UVLED. It catches about 16X more rhino beetles per day than our standard vaned bucket traps.
3. Addition of breeding site material to the barrels did not increase trap catch.
4. Covering breeding sites with fish netting may be effective for population suppression: traps adults attracted to the pile and prevents emergence of adults from within the pile. Netted piles catch more than 25X more rhino beetles per day than standard pheromone traps.

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