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Coconut Rhinoceros Beetle Biological Control

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Repository: https://github.com/aubreymoore/FB18-Report-2
Document: https://github.com/aubreymoore/FB18-Report-2/raw/master/report.pdf

Contents

1. Summary

Coming soon!

2. Background

The major goal of this project is to find an effective biological control agent for coconut rhinoceros beetle biotype G (CRB-G).

Prior to arrival of CRB-G on Guam during 2007, coconut rhinoceros beetle infestations of Pacific islands were readily controlled by classical biological control using *Oryctes* nudivirus (OrNV). Following a lack of response to release of OrNV on Guam, research showed that the Guam CRB population is a genetically distinct virus-resistant biotype which has become known as CRB-G[2]. This biotype is highly invasive and is causing massive damage to coconut and oil palms in Papua New Guinea and the Solomon Islands. CRB-G has also invaded Oahu and Rota. Eradication attempts have been launched on these two islands.

Additional goals for this project are to establish a CRB damage survey to evaluate efficacy of biocontrol and other tactics, and to maintain and facilitate collaboration with other Pacific island entomologists working to find solutions for CRB-G management.

3. Staffing

Staff for this project currently comprises of only 2 people: the PI, Dr. Aubrey Moore, and a post-doc, Dr. James Grasela.

- Dr. James Grasela, an insect pathologist, has been hired for a term of 2 years with a grant from Department of Interior, Office of Island Affairs.
- Ian Iriarte, a graduate student working on this project, resigned to accept a permanent job. Search for a replacement is under way.

4. Bioassays to Detect Candidate Biocontrol Agents for CRB-G

[1]

4.1. Bioassay Results

4.2. CRB Rearing Facility

4.3. Laboratory Information System

4.4. Acquisition of an OrNV isolate from Taiwan

4.5. Acquisition of a Virus-Susceptible CRB Biotype for Comparative Bioassays

4.6. Laboratory Improvements

5. CRB Damage Survey

Proof of concept [3].

6. Regional Collaboration

6.1. Wiki Site

6.2. Facebook Site

6.3. CRB Bibliography

[4]

7. References

[1] James Grasela. *Progress in Bioassays of OrNV Isolates to Detect Biocontrol Candidates for CRB-G*. University of Guam, Sept. 29, 2019, p. 2. URL: https://github.com/aubreymoore/FB18-Report-2/raw/master/Grasela-September%202019%20Progress%20Report.pdf.

[2] Sean D. G. Marshall et al. "A New Haplotype of the Coconut Rhinoceros Beetle, *Oryctes Rhinoceros*, Has Escaped Biological Control by *Oryctes Rhinoceros* Nudivirus and Is Invading Pacific Islands". In: *Journal of Invertebrate Pathology* 149 (Oct. 1, 2017), pp. 127–134. ISSN: 0022-2011. DOI: 10.1016/j.jip.2017.07.006. URL: http://www.sciencedirect.com/science/article/pii/S0022201117300289 (visited on 08/26/2017).

[3] Aubrey Moore. *Training an Object Detector to Locate Coconut Palms Damaged or Killed by Coconut Rhinoceros Beetle*. July 2019. URL: https://www.youtube.com/watch?v=zzSorqcmt9U (visited on 10/09/2019).

[4] Aubrey Moore and James Grasela. *Coconut Rhinoceros Beetle Bibliography*. 2019. URL: https://www.overleaf.com/project/5d92e50a61cab30001783d1a.

A. Coconut Rhinoceros Beetle Bibliography