Status of a Major Outbreak of Coconut Rhinoceros Beetle, *Oryctes rhinoceros* Biotype G, on Guam and Attempts at Establishing Biological Control

A Moore[1*], JJ Grasela[1] and SDG Marshall[2]
1University of Guam, College of Natural and Applied Sciences, Mangilao, GU 96923, USA
2AgResearch Limited, Lincoln Research Centre, Private Bag 4749, Christchurch 8140, New Zealand

***Email: aubreymoore@guam.net**

Abstract: Coconut rhinoceros beetle (CRB; *Oryctes rhinoceros*) was first detected on Guam in 2007. An eradication attempt using mass trapping and sanitation failed when the beetle spread to all parts of the island. *Oryctes rhinoceros* nudivirus (OrNV) and green muscardine fungus (GMF; *Metarhizium majus*) where introduced as biocontrol agents. GMF successfully established as a classical biocontrol agent and a 2015 survey indicated that between 10% and 38% of Guam's CRB were infected by this fungus. However, the preferred biocontrol agent for CRB, namely OrNV, failed to have any effect. This lead us to discover that the Guam CRB population is genetically distinct from other Pacific island populations and it is being referred to as the CRB-G biotype. CRB-G is resistant to all available isolates of OrNV, previously the most effective biocontrol agent for CRB, and it appears to have other characteristics, which make it more invasive and harder to control than other CRB biotypes. There where no range expansions of CRB between 1980 and 2007. However, CRB is now on the move with detection on Guam in 2007, Port Moresby area, Papua New Guinea in 2009, Oahu, Hawaii in 2013, the Honiara area, Guadalcanal, Solomon Islands in 2015, and Rota, Northern Mariana Islands in 2017. It is significant that all of these new invasions involve CRB-G. Thus, CRB-G is a regional problem which poses significant risks to Pacific island economies and ecosystems. Status of the Guam CRB-G outbreak and current research focused on establishing effective biocontrol on Guam will be discussed.