

Persistent spread of the *Oryctes NudiVirus* (OrNV) resistant biotype (CRB-G) of the Coconut Rhinoceros Beetle (CRB) in the Pacific



■ ALERT:

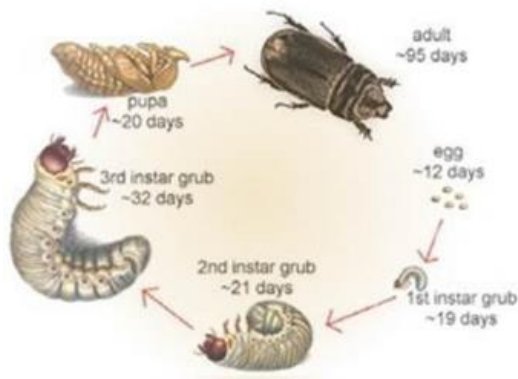
A new strain of the Coconut Rhinoceros Beetle (CRB), *Oryctes rhinoceros* (CRB-G) is consistently spreading and establishing itself throughout the Pacific region since first detected in Guam in 2007. Highly resistant to the *Oryctes NudiVirus* (OrNV) - a biological control agent used to contain it, the CRB-G strain is highly invasive and destructive to coconut and oil palm. Its incursion can affect the income earning opportunities and livelihoods of many communities that depend on the crops including atolls where coconut is a main staple.

■ INTRODUCTION:

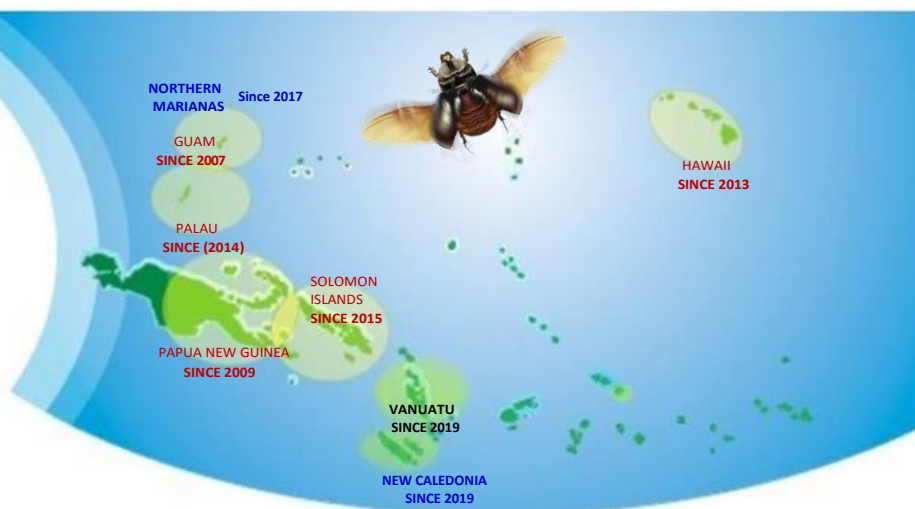
This Pest Alert is an upgrade of **Pest Alert No. 52**, which forewarned on the imminent threat of CRB-G within the Pacific region. It updates on the regional and local spread of CRB-G and underlines the spread of the common strain (CRB-S) escaping virus (OrNV) infection. The potential impact of the beetle on livelihoods of local communities is highlighted.

Since the original confirmation of CRB-G from Tumon Bay, Guam in 2007, the biotype has been detected in Papua New Guinea (PNG) mainland (2009), Hawaii (2014), Palau (2014), and Solomon Islands (2015). New incursions have been reported from Northern Marianas and New Caledonia in 2017 and 2019 respectively, but the biotypes remain to be fully confirmed. Apart from CRB-G, Palau and PNG also have co-existence





Life Cycle



Countries in the Pacific where new CRB incursion has been confirmed

of CRB-S with virus infection. Since the original detection, CRB-G has spread to about four different countries within a space of ten years. This trend will potentially continue, unless the spread is effectively monitored and managed at the regional level. The impact of damage can be dire for smaller island countries that depend primarily on coconuts for income and survival.

In countries of incursion, CRB-G population has rapidly spread from its point of original detection, including onto smaller outer islands, decimating coconuts in its path of spread. In oil palm areas, particularly in the Solomon Islands, it has become a major issue during replant. For PNG, CRB-G has not entered oil palm project areas.

The actual dispersal pathway for the beetle within the region is unclear but is highly dependent on human mediated activities. Soil and plant materials contain the immature life stages of the beetle, which can remain dormant for long periods. The adult beetles are attracted to light from boats and planes, enabling potential accidental transportation to new locations. It is also a good flier and can fly onto land when within close proximity if hitch hiking on sea transport. Detection of first incursions usually results from evidence of physical damage symptoms on palm leaves.

Apart from CRB-G, the common biotype (CRB-S) has spread to new areas within the region escaping the OrNV infection. The new incursion in Vanuatu (2019) has been confirmed to be without OrNV infection. For CRB-S population where OrNV is absent, the intensity of damage level can be similar to CRB-G damage. It is critical

to confirm the beetle biotype through molecular analysis and introduce the virus for incursions where the virus is absent.

RECOMMENDATIONS:

Effective surveillance and monitoring, biotype confirmation and establishment of proactive management programmes in areas of incursion is critical to slow down the spread. The following course of action is required for the region:

- Devise regional monitoring, emergency response, biosecurity and management plans for the beetle.
- Identify potential CRB dispersal pathways and develop effective long-term monitoring and surveillance programmes.
- Search for potential effective natural enemies of the *NudiVirus* resistant biotype (CRB-G) within the native range for possible import.
- Provide training and build national capacities within the PICTs on monitoring, surveillance and management approaches.
- PICTs mobilize support from local and national government to address the issue.
- Centralize molecular analysis capabilities to one laboratory for consistency.
- Build molecular capacity at the regional level for continuity in the identification and management of the pest.
- Redistribute OrNV in areas with CRB-S infestation but without infection of the virus.



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