# Arguments for a Section 18 Emergency Exemption to Allow Use of *Metarhizium majus* and *Oryctes rhinoceros* nudivirus as Biological Control Agents for Coconut Rhinoceros Beetle on Guam

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1. Coconut rhinoceros beetle (CRB), *Oryctes rhinoceros*, a major pest of coconut and other palms, was first detected on Guam in 2007. Adults bore into the crowns of palms to feed on sap, causing mortality if they destroy the meristem. CRB grubs do no economic damage. They feed in dead coconut stems, fallen logs, and any material high in organic content such as green waste, manure, sawdust, and soil. Guam is currently experiencing an uncontrolled and unmonitored CRB outbreak triggered by abundant breeding sites left in the wake of a recent typhoon. Many palms have already been killed island-wide, approaching 100% mortality in some areas. If the current outbreak cannot be controlled, it is likely that Guam will loose 50% or more of its palms, as happened when Palau was invaded by CRB at the end of WWII. It is also likely that CRB will be accidentally exported to other islands. The CRB outbreak prompted Governor Calvo to declare a state of emergency on July 13, 2017.

2. The insect pathogens, *Oryctes rhinoceros* nudivirus, OrNV, and *Metarhizium majus*, also known as green muscardine fungus, GMF, are biological control agents for CRB. OrNV is applied by autodissemination as a classical, innoculative biocontrol agent. GMF is used as an augmentive biocontrol agent by incorporating spores into active or potential CRB breeding sites.

3. Humans have lived with *Metarhizium majus*, *Oryctes rhinoceros* nudivirus for thousands of years. No adverse human health effects have been reported. These insect pathogens are not genetically engineered organisms nor are they synthetic pesticides. They have always been part of the human environment in the native range of CRB, which includes Souteast Asia including the Philippines. These biocontrol agents have also been introduced to many Pacific islands following CRB invasions.

4. The total amount of active ingredient applied to the environment is minuscule. In an island-wide biocontrol program using GMF, a few milligrams of spores will be used. In the case of OrNV, a few nanograms of virus particles will be used.

5. Both *M. majus* and OrNV are known to attack only dynastid beetles. The coconut rhinoceros beetle is the only member of Dynastidae on Guam. This high degree of host specificity is highly desired for insect pathogens used as biocontrol agents.

6. There are no reports of nontarget effects following release of *M. majus* and OrNV as biocontrol agents on Guam, on other Pacific islands and elsewhere.

7. Perceived, potential risks to human health and the environment from exposure to *M. majus* and OrNV should be balanced against the known risks to human health and the environment from the loss of coconut palms.

8. *M. majus* and OrNV are regulated as biocontrol agents by USDA-APHIS. Perhaps regulation of these same biocontrol agents by USEPA is an unnecessary duplication of effort. Both *M. majus* and OrNV have been imported to Guam and released under conditions of permits received from USDA-APHIS.

9. *M. majus* is already well established throughout Guam. A recent survey indicates that between 10% and 38% of CRB are being killed by fungal infections caused by *M. majus*. Unfortunately, this level of population suppression is too low to counteract the current outbreak triggered by abundant new breeding sites left in the wakr of Typhoon Dolphin. We are hoping to implement effective biocontrol using an OrNV isolate which is highly pathogenic for CRB on Guam.