Strategic Action Plan for Coconut Rhinoceros Beetle (CRB)

Management and Containment across Pacific Island Countries and Territories

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Executive Summary

The tropical Pacific Islands are made up of 22 countries, territories, and the U.S. State of Hawai'i, within three sub-regions of Micronesia, Melanesia, and Polynesia. Combined, the Pacific Island Countries and Territories (PICTs) are populated by around 14 million people with a land area of around 600,000 square kilometres. The region's large maritime size, relatively small economies, and complex socio-political structures combine to present many unique challenges, particularly when confronted with climate change and ensuring ecosystem resilience, food security, cultural resources, quality of life, and long-term sustainable development. Unequivocally, the wellbeing of Pacific Island communities and the ecosystems that support them are inextricably linked.

The coconut palm exemplifies the entire Pacific region, with which livelihoods are intrinsically intertwined both culturally and economically. Coconut palms provide food, materials, and shelter and have been called the "Tree of Life" by native peoples. Coconut palms along coastlines are the essence of tranquility, providing aesthetics for tourists and locals alike. They withstand erosion and act as wind breaks, enabling other shade tolerant undergrowth to flourish and creating niche ecosystems for other organisms.

Both coconut and oil palms are at severe risk from the incursion and further spread of the invasive coconut rhinoceros beetle (CRB, *Oryctes rhinoceros*) in recent decades. CRB has caused devastating damage to palms by reducing yields and causing tree death. The resulting loss of coconuts and oil palm threatens livelihoods, economic development, and food security in the region. If uncontrolled, CRB is predicted to spread through the rest of the Pacific, on to the Americas (where it is expected to have similar devastating impacts), and beyond. An immediate, well-funded, coordinated effort is required to prevent this further expansion, contain the pest, and mitigate damage or eradicate it in affected islands. Support is needed for improved surveillance, early response actions, and long-term management plans. Eradication and effective control is highly unlikely with current technologies but is possible, and damage can be greatly reduced, with the development and deployment of new and improved tools.

Some regional initiatives are underway by the Pacific Community (SPC) and others as well as within some of the individual PICTs, but a wider regional approach is required to collectively address the issue. Whilst some management approaches already exist, research is urgently needed in areas of prevention, containment, and management, including the development of more effective biocontrol agents, insecticide and pheromone trap evaluation, and other novel techniques to develop the tools necessary for effective prevention, control of CRB and mitigation of its damage.

This Strategic Action Plan (SAP) outlines the actions required to improve biosecurity and management of CRB in the Pacific at local, country, and regional levels. The Plan has been jointly developed by representatives of many PICTs and other partner members from New Zealand, Australia, Japan, and the USA.

History and Context

CRB is native to the Asian region but has spread to many parts of the world, including the Pacific, where it is a key pest for coconut and oil palms. It was first reported in the Pacific Islands from Samoa in 1909, where it then spread to American Samoa, Wallis and Futuna, Tokelau, Tonga, and Fiji . A second wave of the beetle spread into PNG and Palau during WWII. CRB populations from these historical incursions were brought under control by a joint UNDP/FAO/SPC project in the 1960s and 70s through an integrated pest management (IPM) program which included release of a biocontrol virus (OrNV) that was identified from the native range in Malaysia.

However, in 2007 another population of the beetle with some resistance to the virus (OrNV) was detected in Guam. Since then, a rapid increase in CRB detections has occurred in previously uninfested islands (Figure 1), but some PICTs including Cook Islands, French Polynesia, FSM, Kiribati, Marshall Islands, Nauru, Pitcairn Islands, and Tuvalu, remain free of CRB and need to be protected.

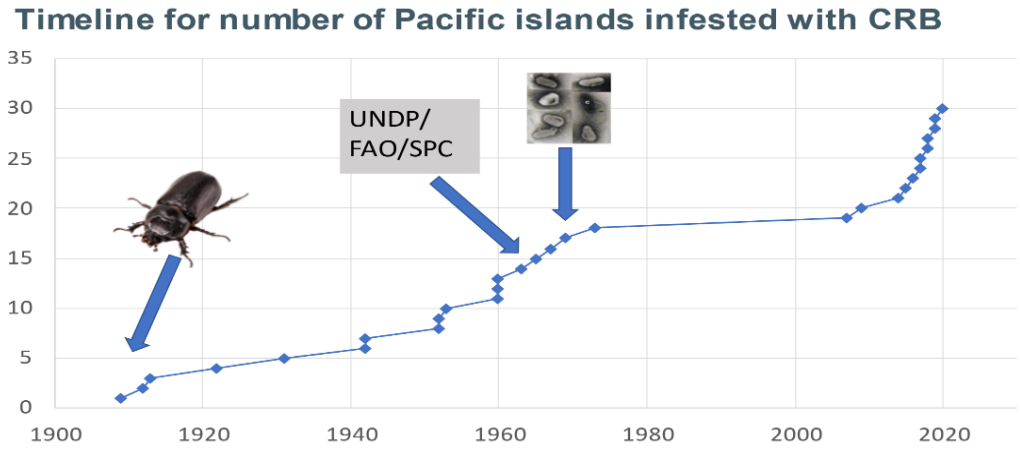

Figure 1. Timeline for the establishment, containment, and further rapid spread of CRB in the Pacific region in the last ten years.

Modelling shows that the pest has the potential to spread through all the islands in the tropical Pacific habitat of coconut and other tropical palms (Hao et al., 2022) and on to the Americas. Live beetles have been intercepted in the USA and Mexico, including recent reports of CRB-like damage to coconut palms in Mexico highlighting the potential for on-going invasion.

Figure 2. CRB distribution map (Source: PARC team, SPC).

The accelerated spread of CRB is potentially exacerbated by the extreme weather patterns and natural disasters that accompany climate change. More frequent and powerful tropical cyclones are predicted. Storms with winds above 140 mph kill coconut palms which become breeding sites. These breeding sites generate massive numbers of CRB adults which attack and kill many palms, resulting in a self-sustaining feedback cycle which may result in mortality of most palms on an island-wide scale. Coconut palms growing on shorelines are already being drowned by sea-rise. These dead palms will become CRB breeding sites, increasing the severity of CRB infestations along coasts. Loss of coastal coconuts from sea rise plus CRB will increase erosion, negatively impacting reefs and exacerbating the sea level rise impacts. Impacts will be most severe on atolls where islanders depend on the coconut palm as the *tree of life*.

Figure 3. Coconut palms killed by sea-level rise in the Pacific.

The CRB is also a pest for oil palms, an important cash crop for PNG and Solomon Islands. However, the oil palm industry is run mainly by private commercial companies and effective highly mechanized management systems have been employed to successfully control the pest. Contrasting this, coconut is cultivated mainly by smallholder growers across the Pacific region (> 592,553 hectares, representing ~5% of the world's coconut cultivated area), and high-cost mechanized control is not possible.

Coconut trees provide a source of income, food, and household materials. CRB feed on the palms causing damage that reduces crop yields and often kills them. In Guam, CRB has caused severe damage and death of palms, affecting the tourist industry. In PNG, a genetically diverse CRB population has been detected in Port Moresby and has spread along the coasts, destroying coconuts, and causing a shortage of nuts for local consumption. In Solomon Islands, CRB has devastated coconuts and damaged young, replanted oil palm seedlings in plantations along the Guadalcanal plains. The relatively recent incursion into Vanuatu has spread across almost half of Efate Island, resulting in very severe damage (> 80%) in some areas. Urgent management efforts are needed to contain the CRB and to prevent further damage and spread to the main coconut-growing islands located north of Efate. A similar situation exists in Hawai`i where CRB has become established on Oahu, killing large number of trees at popular tourist parks and golf courses. Efforts to prevent its introduction to other islands in the chain are critical.

Figure 4. CRB larva in a dead coconut log in Solomon Islands (Photo: Courtesy of Tanya Robinson.)
Figure 5. Coconut palms severely damaged by CRB on Efate (Photo: Courtesy of Sulav Paudel).

If uncontrolled, on-going spread of the CRB can cause a loss of >50% of coconut palms on each infested island, resulting in an economic loss worth millions of dollars. Apart from income, Pacific communities are reliant on coconuts as a major food source and their loss can alter traditional lifestyles of local communities such as consumption of less healthy foods and increasing susceptibility to non-communicable diseases (NCDs).

Coconuts are seldom planted for their ecological role, yet they can be ecologically useful because of the vast areas that plantations cover and coastal shorelines they naturally inhabit. The destruction of 50% of coconut palms on an island(s) would release a significant amount of carbon which contributes to climate change. In addition, coconuts grow on the coast, acting as wind break and preventing erosion which helps stabilize the shoreline in the face of rising sea levels. Most coconuts are grown in villages or plantations within integrated cropping systems where other shade-tolerant crops such as cocoa and vanilla are interplanted, potentially creating niche ecosystems for other flora and fauna to thrive. Coconuts along coastlines are the epitome of tropical tranquility, providing an attraction for tourists.

With request from the Pacific Islands Heads of Agriculture and Forestry (HOAFs) for action to address the issue and two sub-regional consultative meetings organized by SPC (Suva Fiji Sept. 2017; Kolonia, FSM Dec. 2019), and attended by various organizations (FAO, ACIAR, EU, local governments (Palau, FSM, Northern Marianas, Guam, PNG, Solomon Islands), AgResearch NZ, SPC, USDA-APHIS, private oil palm industries, and tertiary research groups from Guam, Hawai`i, and Australia), a recommendation was made for the formation of the Pacific regional CRB coordinating committee under the auspices of the Regional Technical Meeting on Plant Protection (RTMPP) to coordinate national efforts and solicit funding.

From this regional effort emanated the MFAT funded CRB sub-regional program (Pacific Awareness and Response to the Coconut Rhinoceros Beetle, PARC) based within SPC and implemented in partnership with AgResearch, NZ. The program is confined to Melanesia sub-region covering PNG, Solomon Islands, and Vanuatu. Apart from the MFAT funded CRB program, some aspects of CRB research and management activities at SPC have been complemented through the EU-funded

Coconut Industry for the Pacific (CIDP) project, and the ACIAR funded HORT 2016/185 and HORT 2017/025 projects that are both implemented in partnership with the University of Queensland (UQ), Australia. An independent Australian Government Department of Foreign Affairs and Trade (DFAT) funded project also supports an 18-month CRB metagenomic research. For PICTs in Micronesia and Hawai'i with CRB incursions, direct U.S. Departments of Agriculture, Defense and Interior fundings have been made available in short-term grants to address the issue.

Whilst there are already existing efforts in various areas (awareness, management, research) of CRB work to address the situation, critical gaps remain which will require additional funding support to improve coordination, complement the existing efforts, enhance and expand research efforts, and undertake a regional approach to contain the pest, manage its spread and mitigate its severe impacts. This Plan incorporates the existing initiatives, identifies the activity gaps, and proposes the necessary measures to mitigate them.

Scope of the Plan

The CRB SAP is intended for use by all island nations, states, and jurisdictions within the Pacific region: American Samoa, Cook Islands, Federated States of Micronesia (FSM), Fiji, French Polynesia, Guam, Hawai'i, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Northern Mariana Islands (CNMI), Palau, Papua New Guinea (PNG), Pitcairn Islands, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, and Wallis and Futuna, as well as SPC members partners (Australia, NZ, USA, EU) and other non-member collaborators (Japan, China, Philippines).

Goal

To prevent the spread and limit the damaging impact of CRB within the Pacific region by enhancing regional partnership to guide efforts, developing critical new tools and technologies, and to use these for improved surveillance, containment, and control of CRB.

Objectives and Actions

Objective 1: Enhance Regional Coordination and support of PICTs to achieve the objectives of the CRB Strategic Action Plan (SAP)

Management of the CRB across the Pacific region (22 PICTs) is complex. Many of the PICTs are small, isolated, and lack the experience and resources to deal with the complex CRB pest issue. The crisis caused by the CRB in affected countries requires leadership to coordinate a regional response involving PICTs and global partnership to foster efficiency.

The collaborative response to CRB in the 1960s and 70s that used the OrNV biocontrol agent to manage CRB should be re-evaluated as an option to manage current CRB populations. The Land Resources Division (LRD) is the technical division of SPC mandated with the role of research and technical support to the agriculture and forestry sectors and is well placed to support regional CRB activities.

The coordination role will fall within the Sustainable Agriculture Pillar of LRD, delivered through the Plant Health team, and implementation in partnership with collaborating partners. This role can build on the existing team and activities established under the MFAT-funded Pacific Awareness and Response to CRB (PARC) project and aligned to Pacific Plant Protection Organization operations. The role of SPC will include the following actions:

Coordination and expertise:

a) Lead a CRB SAP implementation working group of PICTs and other partners to monitor implementation of the SAP, identify needs, gaps and needed modifications, and identify funding opportunities.
b) Strengthen the CRB partner research network across the Pacific region to promote the importance of research and facilitate coordination between researchers and national stakeholders and in-country working groups.
c) Leverage resource mobilization to support national CRB management task groups.
d) Organize the development of CRB workplans with partners.
e) Provide advice on containment and control where needed.
f) Organize, develop, and evaluate PICT response plans, and promote implementation.

Outreach and communication:

a) Provide regional information and resources for awareness and response on CRB.
b) Coordinate the storage and sharing of the Pacific regional genomic CRB and its biocontrol agent's data in collaboration with research partners.
c) Partner with PICTs to develop educational materials to raise awareness of CRB and appropriate responses.
d) Share activity related information with PPPO, RTMPP, and donors.

Objective 2. Conduct immediate and long-term collaborative research to develop tools and understanding necessary to enable effective CRB prevention, control, and eradication

Existing CRB tools and technologies are currently insufficient to effectively and reliably prevent, eradicate, contain or control the pest. To properly manage the CRB problem across the Pacific Islands, new technologies are urgently needed.

Research support and infrastructure:

a) Strengthen network among researchers and research agencies working on CRB within the region and globally to enhance communication and collaboration opportunities
b) Identify research gaps and potential sources of funding for prioritized research (listed below).
c) Nations support, encourage, and enable their researchers to enter into collaborative research efforts with researchers from other Pacific Basin countries and territories.
d) Establish a clear pathway to disseminate research results.
e) Identify promising researchers from within the region and foster their professional development.
f) Facilitate the development of an annual publication of research agendas and deliverables.
g) Update existing CRB management strategies with new research information.
h) Convene regular workshops to disseminate results and prioritize research needs that includes practitioners, extension personnel, and policy staff as a mechanism for information dissemination and priority setting.

Technology and tools:

a) Search for natural enemies within native range of the beetle as well as on islands within the region where CRB has established.
b) Identify novel effective biocontrol agents and develop related biocontrol programs through laboratory bioassay and field screening studies.
c) Develop standardized rapid CRB DNA and virus confirmation tests (e.g., through eDNA, CRISPR diagnostics) to aid the early detection and control of CRB.

d) Improve the understanding of CRB endobacteria and their potential roles on the evolution of resistance to CRB fungal and viral biocontrol agents.
e) Develop systematic approaches for effective eradication of small outbreaks using new and improved technologies.
f) Improve monitoring and early detection systems by identifying spread pathways and use of targeted early detection technologies (use of pheromone traps, cameras, detector dogs, damage symptom monitoring, remote sensing, routine surveillance, eDNA, CRISPR diagnostics).
g) Evaluate RNAi and other genetics-based technologies as management options for CRB.
h) Evaluate targeted chemical control options that can be used in synergy with other options.
i) Identify, develop, and evaluate coconut palm cultivar resistance to CRB.
j) Improve trapping protocols by identifying new pheromone attractants, trap designs, optimum trap density, for maximum catch.
k) Promote community based engaged trapping.

Economics and understanding:

a) Predict and understand the role of climate change on CRB population dynamics and implications on future damage trends.
b) Evaluate options for effective management of dead coconut trunks including value added product options.
c) Predict and demonstrate the benefits and cost avoidance of preventing CRB damage to coconut and oil palm.
d) Analyze agricultural and cultural impacts of CRB spread to non-infested countries or territories at high-risk points of introduction from current trade partners with CRB infestations. Determine the economic and social impacts of CRB damage on coconut to local communities and commercial plantations.

Objective 3. Prevent the spread of CRB to new locations in the Pacific region and beyond

Preventing the spread of the beetle into un-infested areas is critical. Prevention starts in the infested areas by preventing accidental transport (via human-associated actions) of beetles to uninfested areas. Prevention activities at international borders requires a variety of actions applied at and around ports of entry. Essential to these efforts are trained and resourced biosecurity teams with knowledge of CRB and the pathways by which they are likely to arrive, supported by novel rapid detection technologies (detector dog and electronic sensor) appropriate for cargo inspections. Countries with the pest should have a focused CRB management program (population control) at high-risk areas in ports of exit and be ready to develop and implement an interdiction plan as needed.

Risk analyses:

a) Analyze high-risk pathways of CRB egress on islands with established CRB populations.
b) Conduct gap analysis of current management strategies in places instituting interdiction programs.

Regulatory:

a) Create a regional regulatory framework to empower NPPOs to conduct interdiction activities at ports of exit in infested islands or local regions through a regional standard or recommendation via PPPO.

b) Align CRB national biosecurity operations and regulatory enforcement to existing national Biosecurity legislations.
c) Evaluate legislative and administrative authority to implement quarantine and exclusion zones to enable effective CRB rapid response activities.

Operations
a) Development of guidance or best management practices to prevent CRB incursions and implement regional standard/recommendation.
b) Establish well-trained and well-resourced biosecurity teams at the NPPO levels to perform interdiction according to developed guidance (above).
c) Operationalize new, more effective technologies as it is developed.
d) Establish regional funding source to implement spread prevention measures.

Objective 4 Implement an active early detection, and rapid response system for new outbreaks at regional and island levels

Early detection and rapid response efforts are critical for eradication, containment, and control of CRB in new incursion areas. Despite growing recognition of the CRB problem, the insect is often not reported until a population has become well-established. Local biosecurity and extension personnel are the first line of defense and will need regular training to keep abreast with current knowledge. A general awareness program will encourage citizens, including to report possible sightings of the CRB as well as coconut palm damage symptoms to local authorities. Reported sightings will be assessed by a response team and management plans initiated as required following a pre-prepared site-specific response plan.

Early detection:
a) Train local staff at key risk points to be ready to respond.
b) Raise awareness of quarantine/biosecurity staff, port of entry staff, as well as grower communities and plantations with educational materials produced and distributed.
c) Develop an open information database for CRB distribution to guide management responses.
d) Develop and distribute pest alerts with targeted threat warnings.
e) Operationalize new detection technology as available.

Rapid response:
a) National governments set emergency funds aside and make available to support rapid response programs whenever new incursions are detected.
b) Develop rapid response plans for currently un-infested nations, territories, or islands.
c) Regularly test incursion response plans.
d) Operationalize new response technology as available.

Objective 5. Improve implementation of control efforts and mitigate the impacts of CRB where already present in the region

Once established, the CRB cannot be readily eradicated using currently available technologies. To contain and reduce CRB to non-damaging levels and reduce probability of spread, existing control measures should be combined into a systems approach (IPM) that is adapted to fit the needs and situation of the affected industry, neighborhood, or community. Current control measures include trapping, sanitation (removal of breeding sites), biological and chemical control. A well designed IPM program can mitigate damage, and, through effective collaborations, new elements can be

brought in to the IPM program. CRB control will be carried out through responsible statutory organizations (biosecurity and extension), community-based organizations, plantation, and smallholder growers, but advice and training will be needed to enable the implementation of a successful IPM program and will include:

a) SPC provides regional advice on IPM program implementation to responsible statutory organizations and private coconut bodies.
b) Provide training to extension officers, grower communities and plantation owners on the implementation of IPM control strategies.
c) Ensure a supply of equipment and supplies to manage CRB is available to infested jurisdictions.
d) Raise awareness and motivate communities to take responsibility and ownership of issue.
e) Regularly monitor and evaluate regional-specific IPM programs.
f) Operationalize new control and mitigation tools and technologies as available.

Key Recommendations for Immediate Actions to Achieve Objectives

- That the PARC model be expanded to ensure a Pacific-wide response to CRB with full cooperation and coordination through regular information flow and meetings.
- Training should be provided for countries without CRB to increase awareness and prevent invasions.
- Support should be provided for rapid response to control outbreaks of CRB.
- Efforts should be increased to find an effective self-sustaining biological control agent(s) that can be used by PICTs.
- Support PICTs to implement Integrated Pest Management of CRB consistent with the Plan.

Highest priority actions for Coconut Rhinoceros Beetle:

- Immediate development of CRB response plans for PICTs.
- Immediate support to initiate and increase research for regional and in-country initiatives to quickly develop critically needed tools, technologies, and methodologies for early detection, containment, and potentially eradication.
- Funding to provide staff and resources for affected PICTs to contain CRB invasions.

Appendix 1 (Provided separately): Status and Needs for Implementation

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Appendix 1: Summary of Status and Needs for Implementing the Coconut Rhinoceros Beetle (CRB) Strategic Action Plan (SAP)

Background

Leading up to the Pacific Ecological Security Conference (PESC) held in Palau from 3-5 October 2022, zoom meetings were convened with specialists involved in CRB work from within the region including USA, Australia, and New Zealand on a weekly basis for input into the development of the CRB Strategic Development Plan (SAP) draft for the region. During the PESC, the draft SAP was shared with delegates of PICTs that were present at the PESC for provisional endorsement, and development of high-level recommendations for immediate activities to achieve the objectives. A survey evaluating the awareness of CRB and needs to contain and control the pest was also conducted. For PICTs that were not present at the conference, the survey form was circulated through email for input. PICTs were divided into three subgroups depending on the incursion level, those facing a recent damaging outbreak (Outbreak), those where CRB has been established for a long period > 50 years (Established), and those yet to be infested by CRB (CRB-Free). Responses were obtained from 23 PICTs and Hawai'i, except for French Polynesia, Niue and Pitcairn. The high-level recommendations from the PESC and summary results of the survey are provided here.

Brief summary

Key recommendations for immediate activities to achieve objectives

- CRB is recognized as a major threat to economic development, food security and environmental stability for the region. An urgent response with adequate resourcing is required immediately.
- The PARC (Pacific Awareness and Response to CRB) model should be expanded to ensure a Pacific-wide response to CRB with full cooperation and coordination through regular information flow and meetings.
- Training be provided for PICTs without CRB to increase awareness and prevent invasion. Support should be provided for rapid response (RR) to control outbreaks of CRB.
- There is an urgent need to find an effective self-sustaining biological control agent agent(s) for invasive variants of CRB that can be used by the PICTs. Efforts should be increased.
- Affected PICTs urgently need support to implement Integrated Pest Management (IPM) of CRB consistent with the SAP.

Highest Priority Actions for Coconut Rhinoceros Beetle

- Immediate development of CRB response plan for PICTs
- Immediate support to initiate and increase research for regional and in-country initiatives to quickly develop critically needed tools, technologies, and methodologies for early detection, containment and potentially eradication.
- Funding to provide staff and resources for affected PICTs to contain CRB invasions.
- Capacity building and staff training at regional and national levels.
- Coordination of regional-level initiatives building on the MFAT/SPC Pacific Awareness and Response to the Coconut Rhinoceros Beetle (PARC) project model.

Survey questions and responses

As part of this process a "Capabilities and Needs" survey exercise for each PICT was carried out using the questions and criteria outlined in the table below.

Question	Score

Do you (people in your country) recognise CRB and the damage it causes?	
Do you have an awareness programme to alert people about the dangers of CRB?	
Do you have a surveillance plan?	
Do you have a plan for restricting entry or eliminating CRB?	
Do you have a response plan to deal with an outbreak?	
Do you have sufficient staff to deal with the CRB problem?	
Do you have the tools necessary to cope with CRB?	
Do you have the capability to carry out research for your specific problem with CRB?	

The respondents from the PICTs provided feedback to the questions using a five-point scale with the following values.

0 = None/nothing known of CRB
1 = minimal preparation/awareness of CRB, very high need for training/resources/support to prepare CRB response
2 = limited preparation/awareness of CRB, high need for training/resources/support to prepare CRB response
3 = some preparation/awareness of CRB, additional training/resources/support will improve preparation for CRB response
4 = well prepared for CRB response, may need support for specific aspects of the CRB response

Question	Mean Score	Outbreak	Established	CRB-Free
Do you (people in your country) recognise CRB and the damage it causes?	2.32	2.86	3.60	0.86
Do you have an awareness programme to alert people to the dangers of CRB?	2.16	3.00	2.80	0.86
Do you have a surveillance plan?	1.79	2.71	2.40	0.43
Do you have a plan for restricting entry or eliminating CRB?	1.97	2.58	2.50	1.14
Do you have a response plan to deal with an outbreak?	1.86	2.79	2.00	0.86
Do you have sufficient staff to deal with the CRB problem?	1.63	2.00	1.80	1.14
Do you have the tools necessary to cope with CRB?	1.68	2.43	2.40	0.43
Do you have the capability to carry out research for your specific problem with CRB?	1.21	1.71	2.20	0.00

Responses from individual PICTs are available upon request. The survey showed that the countries without CRB are ill prepared for incursions and that those suffering from a major wave of attack do not have the resources for a sustained response. The following key points were drawn from the feedback:

- There is an urgent need for currently CRB-free countries to establish surveillance and response plans to be able to act quickly in response to any CRB incursions.

- It is vital that outbreak countries reduce CRB populations, especially around ports and transport hubs, to limit further spread of CRB.
- Better tools (new strains of biocontrol agents, improved traps, rapid detection systems) are needed to provide PICTs with the technologies they need to overcome the pest.
- Regional coordination can help the PICTs, especially the smaller ones, to be prepared and promptly to control the problem.

Overall summary of feedback
Delegates at the PESC conference recognized that invasive CRB is a major threat to livelihoods of Pacific islanders and the ecology of their islands. Unregulated attack by the beetle will challenge food security, damage fragile economies and leave islanders with few opportunities other than emigration. The situation will be exacerbated by climate change and rising sea levels.

A survey of PICTs shows that there is an urgent need for awareness in those PICTs as yet unaffected by CRB to support early recognition and action to prevent invasion and establishment of the pest. The countries currently in the midst of outbreaks need capacity building and support to control the outbreaks, reduce pest numbers, and limit spread. Resources are needed from the supporting countries for coordination and for new technologies and controls to minimize spread and impact of the pest.