

# COFFEE BERRY BORER IN HAWAII

Bernarr R. Kumashiro, Neil J. Reimer, and Janis N. Garcia  
Hawaii Department of Agriculture  
1428 South King Street, Honolulu, HI

## ABSTRACT

The Coffee Berry Borer (CBB), *Hypothenemus hampei* (Ferrari), is a major pest in coffee-growing regions throughout the world. It bores through the berry and attacks the bean, rendering it unsuitable for market. CBB was first detected in Hawaii in late August 2010 in the Kona area on Hawaii Island, where world-premier coffee is grown. The initial identification was made by Hawaii systematists, and the final determination was made by the USDA Systematic Entomology Laboratory. Since this was a pest of known economic importance, the National Plant Diagnostic Network (NPDN) Standard Operating Procedure for APHIS-PPQ Pest of Concern was utilized to enhance rapid identification and notification. Following a delimiting survey, an interim quarantine was instituted on December 2, 2010 for Hawaii Island. In a collaborative effort, staff from the Hawaii Department of Agriculture and other government agencies are working together to develop methods to control CBB and to assist farmers in mitigating the effects of CBB on coffee crops.



*Hypothenemus hampei* adult female.



CBB larvae devouring coffee bean.



The first course of action taken by HDOA was to determine the extent of the infestation along the Kona Coast of the island of Hawaii (Big Island), where the first specimens were found. The HDOA Plant Pest Control Branch (PPC) staff collected coffee berries from many coffee farms and dissected them to inspect for the presence of CBB. Suspected CBB specimens were confirmed by Kumashiro and Samuelson. It was determined that the infestations extended from Kaloko (east of the Kona International Airport) at the north end, down south to Waiohinu, near the South Point of the Big Island (See map). Through a joint survey by HDOA and USDA-APHIS-PPQ, coffee berries were also collected from coffee farms on other areas of the state and inspected for CBB. No other areas were found to be infested. An interim quarantine rule was instituted by HDOA on December 2, 2010 for the Big Island to contain CBB and establish criteria for movement of coffee plants, plant parts, unroasted beans, and used bags out of the area.

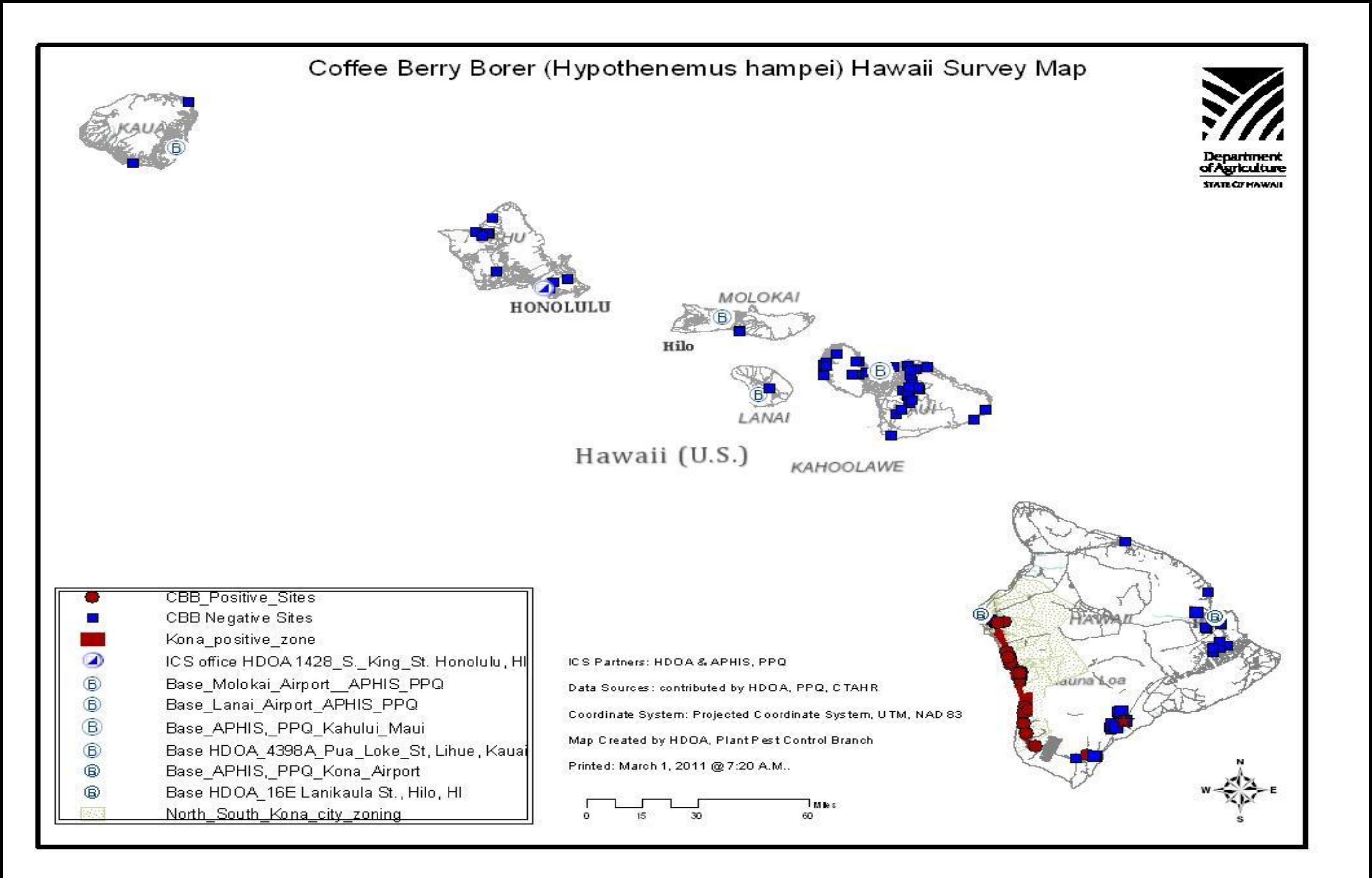


CBB trap.  
Photo: Lori Carvalho, USDA-ARS-PBARC



Thousands of CBB adults collected in trap at Honaunau.  
Photo: John Scharf, USDA-APHIS-PPQ

The Hawaii Department of Agriculture (HDOA) first became aware of CBB, on September 2, 2010, when Elsie Burbano, University of Hawaii graduate student, and H.C. Bittenbender, UH, CTAHR, Extension Crop Specialist, brought beetle specimens from infested coffee berries to HDOA. Suspecting that it may be CBB, the most economically important insect pest of coffee in the world, Insect Taxonomist Bernarr Kumashiro immediately sent specimens to the Bishop Museum in Honolulu. Coleoptera specialist, G.A. Samuelson, concurred that it was in fact CBB. Simultaneously, because of the critical importance of this pest, HDOA processed the sample through the NPDN Standard Operating Procedure (SOP) for pests of serious concern. NPDN was created in 2002, in the aftermath of the 9/11/2001 attack, to protect agriculture in the U.S from agro-terrorism and other threats. In the SOP, established pathways are utilized to rapidly and authoritatively identify the pest and to notify USDA, state, and NPDN officials of the pending urgency. The USDA Systematic Entomology Laboratory at Beltsville, MD confirmed the identification of the beetle as CBB, *Hypothenemus hampei* (Ferrari), on September 8, 2010.



To further enhance surveys of CBB at Kona coffee farms and processing mills, use of special scolytid traps were initiated. Joint studies were conducted by HDOA and USDA-APHIS-PPQ, including identification of various insects in the traps, relative numbers of CBB and Tropical Nut Borer in each trap, trap designs, varying concentrations of alcohol lures, and placements of traps within the field. It appears that there are many abiotic and biotic variables involved in the field, and many of the results are inconclusive. Generally, however, the red Mexican traps (see photo) with a 3:1 ratio of methanol/ethanol has proven effective. As many as 6,000 CBB have been collected in a trap at a coffee farm in Honaunau within a 2 week period. Other scolytids collected from traps were sent to Donald Bright, scolytid specialist at Colorado State University, for identification.

## CONCLUSION

CBB has developed into a serious pest of coffee on the Kona Coast of the Big Island, since its initial report in September 2010. Samples in traps indicate there was a steady increase in numbers in the months that followed. Many agencies have been involved in the studies, control, and regulatory aspects of CBB, and here, we have described some of the activities and involvement of the HDOA.

The HDOA and USDA-APHIS-PPQ will continue to monitor and study CBB in the Mexican traps at Kona coffee farms and processing mills. The numbers of CBB in the traps have declined in February primarily because most of the crop had been harvested by January. The HDOA PPC staff in Hilo will continue to monitor CBB traps on the outskirts of the quarantine zone and on the Hilo side of the island. No new areas outside of the quarantine zone have been reported.

The HDOA will continue to pursue methods for controlling CBB. It recently gained approval for the importation and use of *Beauveria bassiana* strain GHA, a commercially available fungus, as a biopesticide.