

Identity theft by aphids

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University of Guam entomology researchers photograph mounted aphid features through a Zeiss Axiolab microscope using a Nikon Coolpix 990 digital camera at magnifications of 50x-400x. The features (digital images) are measured using image-measuring software developed by Washington State University. Credit: Ross Miller

Collaborative research at the University of Guam has people asking: "What IS a species" and entomologists wondering about the relationship between an insect species and the host plant or plants it feeds on.

Western Pacific Tropical Research Center (WPTRC) entomologist Ross Miller has been studying aphids for years and this work has brought him in contact with [entomologists](#) in Canada and the US mainland. Aphid systemetist Robert Foottit, DNA expert Eric Maw and aphid authority Keith Pike have been working with Miller on the identification of aphids, particularly the dreaded banana aphid, *Pentalonia nigronervosa*

for nearly ten years. The banana aphid is of interest to researchers and growers worldwide due to its role in transmitting banana bunchy top virus (BBTV).

Using DNA sequencing, this shared project has discovered [genetic differences](#) in aphids that resemble banana aphids, but feed on different plants. In their recently published paper, *Zootaxa* 2358: 25-38 (2010), the authors present data supporting the idea that *Pentalonia caladii* may be a species in its own right instead of a form of *Pentalonia nigronervosa*.

Working with "banana aphids" collected from banana, heliconia and ginger plants gathered throughout Micronesia, Hawaii, Florida, and Australia the researchers discovered, through genetic bar coding, that aphids living on gingers and heliconias are genetically different than those living on banana plants. Their findings are definitive enough to warrant reclassification of *P. caladii*. "This research has important ramifications in the biological control of banana aphids to prevent the spread of BBTV since much of the previous work on banana aphid may have actually involved *P. caladii* instead of *P. nigronervosa*," says Miller. Researchers may find that aphids living on ginger and heliconia plants may pose no threat to [banana plants](#) if they are unable to harbor and transmit the virus.

As is often the case with significant findings, these results call for additional research efforts. It will be interesting to determine which species of aphid is found on other Micronesian islands and whether or not both species are equally capable of transmitting BBTV.

Currently, BBTV is found only on Guam in Micronesia and the Hawaiian islands. Miller and his lab, working with UOG plant pathologist George C. Wall, have received T-STAR funding to verify the host range of the two [aphids](#) and to examine their vectoring capabilities.

Provided by University of Guam

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