

The Bulletin

OF THE NATIONAL TROPICAL BOTANICAL GARDEN

Volume XXVI, No. 1

Winter-Spring 2009



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ON THE COVER: Species in McBryde's tropical world collection of *Erythrina* were damaged by invasive gall wasps. Another wasp may hold the key to their survival. See story on page 4.
Pictured: The green-flowered *Erythrina sandwicensis*, the native Hawaiian species of this genus. Photo taken in 2007 by Janet Leopold

The Bulletin is a publication for supporters of the National Tropical Botanical Garden, a not-for-profit institution dedicated to tropical plant conservation, scientific research, and education.

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ISSN 1057-3968

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by Maria Stewart (our first director's wife), on February 1, 1972 Nā Lima Kōkua was organized with an initial group of 17 volunteers. For the past 37 years this amazing group has grown and grown and today numbers well over 200 registered volunteers who provide over 20,000 hours of service to the NTBG! We could not possibly do all that we do without the help of these and other dedicated volunteers. When you add to this the unrecorded number of hours provided by our volunteer Board of Trustees, as well as groups like the Bali Ha'i Committee and the Lāwa'i-kai Citizens Advisory Group, and many others, the numbers and services provided become even more amazing.

What we see happening at NTBG is extraordinary, but not completely unique. In fact, in these challenging times, Americans across our great nation are rising to the call and providing services to organizations that serve a public need. A recent article from the "On Philanthropy" website stated:

“We are already living in a time of heightened commitment to service. Indeed, Americans are now volunteering at higher levels than ever before. The latest report from the Corporation for National and Community Service estimates that, in 2007, 60.8 million Americans or 26 percent of the adult population gave 8.1 billion hours of volunteer service. That is a million more volunteers than in 2002.” These are numbers of which we all should be proud. To think that over one-fourth of the adult population in America have dedicated some of their precious time and energy to helping others by volunteering is nothing short of astounding. While we are now at an all-time high, the economic recession will undoubtedly impact this. Just as people will have less discretionary money in 2009 they may also have less “discretionary time” as the world around us changes. This is another real challenge we will face in 2009 and beyond as all nonprofit organizations depend to some degree on volunteers. This

▲ Abnormal tissue growths called "galls" on the leaves of the erythrina feed gall wasp larvae.
Photo by Scott Sloan



and farm windbreaks. Eventually, field research turned up some candidates for testing — potential natural predators and parasitoids of the burgeoning gall wasps. In Hawai‘i, HDOA entomologists tested one of these and, after a year of laboratory studies, found this beneficial wasp to attack only the erythrina gall wasp and not any other unintended insects. The beneficial wasp was approved for release in November 2008 after extensive review by State and Federal agencies.

A research team of University of Hawai‘i (UH) and HDOA entomologists have so far chosen several locations on Hawai‘i Island, O‘ahu, Maui, and Kaua‘i’s south shore to release the biological control agent, *Eurytoma erythrinae*, a predatory wasp only slightly larger than the tiny gall wasp itself. Key sites on Kaua‘i were McBryde Garden and the Makauwahi Cave Reserve nearby. The former, in addition to its large and once spectacular collection of exotic *Erythrina* species, also contains some large mature native wiliwili in the Native Hawaiian Section. At Makauwahi, about 60 wiliwili trees have been established in dry forest restorations.

Dr. Leyla Kaufman, Junior Researcher with UH’s College of Tropical Agriculture and Horticultural Research, and her assistant Roshan Manandhar, began visiting these sites several months ago, collecting background data on tree numbers, locations, and degree of infestation. The beneficial wasp, which is being propagated by the



▲ Immediately after the first release of *Eurytoma erythrinae* (below: magnified), Assistant Director of Living Collections Mike DeMotta and Cindy Adams of the Conservation Department observed the beneficial wasp at work. Photo above by Leyla Kaufman, wasp photo by Walter Nagamine; used with permission

HDOA, was released by Dr. Kaufman and Juliana Yalem (HDOA) on infested trees at NTBG beginning in December 2008. These tiny wasps are not harmful to humans, animals, or plants and pose no threat to native insects.



The life cycle of the biocontrol agent is only about 18 days but it is still too early to assess its effectiveness. The research team is currently monitoring establishment as well as releasing more individuals during each visit. The control species does its work by laying an egg in the gall and, upon hatching, the beneficial wasp larva will feed on one or more erythrina gall

wasp larvae to complete its development. This swollen leaf structure would otherwise have continued swelling to provide plant tissue to

feed the gall wasp larvae until they emerged as adults to breed and find another leaf on which to lay eggs.

“Biological control is the best solution for long-term control of the erythrina gall wasp,” Dr. Kaufman stated on a recent visit to NTBG to release more of the predatory wasp. “This is probably the best hope for saving the trees.” She indicates that another species is under consideration for release as well.

NTBG staff hope that someday soon, with the aid of these tiny wasp helpers, the “rescue collection” of rare erythrina cuttings they rooted (now poking against the ceiling of the greenhouse) can be set out along the erythrina alée¹ near Pump Six in McBryde Garden to once again grace the roadside with a shower of crimson blossoms.

¹ A landscape design element where a row of trees is planted immediately along each side of a road or path.



▲ Left: Years ago the erythrina alée in the McBryde Garden was a riot of intense red. Right: From a similar vantage point in early 2009. Photos from NTBG archives and by Jon Letman

This piece was just one of the articles featured in the print magazine
The Bulletin of the National Tropical Botanical Garden.

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