Enduring Sense Of Place

by Tracy Johnson, Research Entomologist, Institute of Pacific Islands Forestry, Pacific Southwest Research Station, USDA Forest Service

Gazing upward to the mountains from Hawaii's famous coasts, we see deep green forests, often wrapped in the clouds that bring our islands life. That green richness gives these islands a special and enduring sense of place. Indeed, for millions of years those mauka forests have been home to an extraordinary array of plants and animals that is unique in the world.

But all is not well in Hawaii's forests. Invasive species brought by humans are transforming the landscape and erasing millions of years of natural history. Certain plant species, brought here with good intentions, are now displacing many thousands of acres of native forest. Among the worst is strawberry guava (Psidium cattleianum), a native of Brazil brought to Hawaii in 1825 to be enjoyed for its tasty fruit, distinctive smooth bark and evergreen leaves. Now widespread, this tree penetrates native wet forests statewide, its seeds scattered by non-native birds and pigs. Strawberry guava grows rapidly, creating dense thickets and squeezing out native ohia, koa and numerous rare species.

Strawberry guava is among the greatest threats to native forests and the services that they provide (for example, filtering water for our island aquifers and streams). Nearly 300,000 acres of conservation lands are affected by this plant on the Big Island alone. Although control has been accomplished in small areas using hands, machines and herbicides, these methods are not possible over the vast landscape threatened by strawberry guava. For many years, biological control has been recognized as the only hope for limiting the destructive spread of this plant. Biocontrol is practiced worldwide and is based on the principle that specialized insects or diseases that keep a plant species in check in its native range can be

Inside this issue:

pg 1-2  Enduring Sense of Place
pg 3  President's Message
pg 4  Earth Day 2008
pg 5  August Plant Sale
pg 6  Online Resources
pg 7  Director's Report
pg 8-9  Our Members
pg 10  2008 Membership Form

Continued on pg. 2
used to help restore balance in places the plant has become invasive.

“Oh no, not another mongoose!” is a typical first reaction to biocontrol in Hawai‘i, where mongooses were introduced in 1883 to control rats and ended up wreaking havoc on native birds. However, this reckless and unregulated introduction is not at all representative of modern biocontrol. Today protocols for biocontrol-testing are rigorous and carefully reviewed by State and Federal agencies. Biocontrols introduced to Hawai‘i against invasive plants have been particularly specific to their targets and have successfully controlled important weeds such as lantana, prickly pear cactus, and banana poa, without becoming invasive themselves.

The U.S. Forest Service’s Institute of Pacific Islands Forestry has proposed release of a new biocontrol agent targeting strawberry guava: the scale insect Tectococcus ovatus. This insect was found in Brazil 15 years ago, and detailed studies in its native country have shown it to be the most promising potential biocontrol for this plant in Hawai‘i. Tectococcus does not kill strawberry guava, but rather reduces plant vigor and fruit production, limiting the plant’s ability to spread and overwhelm new areas of native forest. The young insects settle on the growing leaves and cause galls to form, reducing the amount of energy available to grow and make seeds.

Years of testing have shown that Tectococcus can survive only on strawberry guava in Hawai‘i and does not pose a risk to related plants in Hawai‘i. More than 80 plant species, including many members of the Myrtle family (common guava, ‘ōhi‘a, eucalyptus, paperbark, mountain apple, jaboticaba, Surinam cherry, allspice and others), have been offered as hosts to Tectococcus and it cannot develop on any of them. While such specificity may seem hard to believe, it actually is quite common among a wide range of plant-feeding insects, and it is the norm among gall-forming insects, which must live in intimate contact with their host plants.

The initial release of Tectococcus is proposed for the Big Island in 2008, but the insect is expected to be used for control of strawberry guava on Maui and other islands within a few years. (Biocontrol releases are regulated on a statewide basis, since eventual spread between islands is anticipated.) Since this scale insect cannot fly, it disperses from one strawberry guava plant to another by wind and crawling. Therefore, natural spread is expected to be gradual, moving outward from release sites across the landscape over a period of decades.

Although strawberry guava has little commercial value in Hawai‘i, it is grown as an ornamental tree in some gardens. Homeowners concerned about protecting a favorite yard tree may benefit from the insect’s limited dispersal ability. Plants in yards also can be protected using insecticides effective against scale insects, such as petroleum-based and organic oil sprays.

In addition to protecting Hawai‘i’s remaining native forests from invasion by strawberry guava, Tectococcus is expected to benefit agriculture by reducing numbers of pest fruit flies that emerge from wild strawberry guava to attack neighboring fruit crops. Biocontrol of strawberry guava also is expected to increase the effectiveness of other weed control methods such as cutting and herbicide, since resprouting stems and reseeding by strawberry guava can be controlled through the action of Tectococcus.

The U.S. Forest Service is writing an Environmental Assessment for release of Tectococcus, to be submitted for public comments later this year. For more information contact Dr. Tracy Johnson (808) 967-7122, tracyjohnson@fs.fed.us.
At the beginning of July, I became the Board President of Maui Nui Botanical Gardens. I am following in the footsteps—very capably laid out—of Janet Allan, who served in this position for seven years. Mahalo, Janet, for guiding MNBG so successfully and carefully. Under your leadership we have grown and developed and become a recognized and necessary haven for endangered/native plants. Community support continues to grow through volunteer efforts and generous contributions. I hope to be able to continue these trends, and to support the staff and board members with efficient and responsible leadership.

I would also like to thank several others who have left the Board for their service and contributions. Stuart Funke d’Egnuff aided greatly in developing fiscal procedures and in opening doors to other agencies and funding possibilities. A special thanks to Marilyn Ratcliffe for TEN YEARS of service to MNBG. Marilyn’s dedication to native plants and to our mission kept us focused and helped define the image of MNBG in the community and State.

I am excited at the future prospects of MNBG and I also recognized the challenges ahead. As Maui’s natural resources become more stressed, the role of the Gardens will grow. We will need the help (volunteers) and support (donations) of the whole community to thrive and to meet our mission of protecting, propagating and spreading native plants through cultural programs and education. Please join us!

FROM OUR NEW PRESIDENT-Dorothy Pyle

Wish List

- 2 office desks and chairs
- Kōkua to build our compost bins
- Kōkua to fix rusty spots on our storage containers
- Picnic tables for our playground
- Sturdy outdoor furniture
- New push mower
- New Dymo Tapewriter for plant accession labels
- Cotton work gloves

With Gratitude from Our Garden

Mahalo to Cynthia & Terry Quisenberry for the purchase and donation of new filing and storage cabinets. The office has never been so organized! We were also thrilled to receive the timely gift from the Zadoc W. & Lawrence N. Brown Foundation to replace our old and slow computers.

A super big mahalo to Gage Schubert and AHS Foundation for the generous $10,000 donation recently made to our Garden. Your generosity keeps our Garden growing!

Mahalo to Arborists Richard Langford, Asplundh Tree Experts, and Tai Domen for the generous mulch donations.

Richard also donated a much-appreciated load of compost to be used in our kalo (taro) patch.

And a big mahalo to Ann Patterson for the lovely donation of vintage pots. We look forward to using them for special projects.

We also wish to thank our Kamehameha High School Intern, Cheyenne Kaikea Blevins for his outstanding work. Cheyenne contributed 40 hours to the Garden and will be doing his senior project on māmaki and its uses.
This year’s Earth Day Celebration was the best ever. It is amazing what happens when people come together. We’d like to thank everyone who participated.


MAHALO TO OUR SPONSORS: The County of Maui, Dept. of Water Supply, Department of Land & Natural Resources-Natural Area Reserve System, Tri-Isle Resource Conservation & Development Council Inc., Hawai’i Tourism Authority, Community Work Day, Friends of Haleakalā, Maui Tomorrow, Native Hawaiian Plant Society, and Sierra Club-Maui,

MAHALO TO OUR VOLUNTEERS: Mira Allen, Linda Anderson, Lahela Augustin, Keoni Baldwin, Lisa Chinn, Ka’ohi Clark, Greg Czar, Mike Dahlem, Gregory Davis, Gwen De Rego, Colton Deardorff, Chris Dela Cruz, Kuilani Eleban, Darren Espirito, Rie Ganir, Mike Gormley, Lee Guthrie, Marny Hall-Moriyasu, Shea Harper, George Kaimiola, Nā’ilima Kana, Kalani Kapu, Keary Katsu, Wainani Kealoha, Deborah Kremins, Renée Leiter, Kate Lundblad, Alika Ma’alea, Rory Macaya, Alijah Madkour, Bernadine Maio, Zakeri Mannoia, Naone Morinaga-Kama, Jim Moriyasu, Dwight Muraoaka, Velma Nakamoto, Ben Noland, Damon Parillo, Ki’ope Raymond, Kale’a Raymond, Travis Roberts, Jennifer Rose, Trent Rulloda, Brandon Salacup, Roberto Santos, Ben Shaw, Dakota Shelton, Keilani Williams, Kathy Wong, Risa Yarborough, Trina Zander

And MAHALO to our 32 conservation and environmental exhibitors.
Maui Nui
Botanical Gardens

Native Hawaiian Plant Sale

August 9, 2008
9:00am to 12:00pm
150 Kanaloa Ave. Kahului
Across from War Memorial Stadium

Offering:

hinahina, ʻohai, multi-colored
grafted Hawaiian hibiscus, taro, kukui,
manini bananas, ʻulei, ʻilima papa,
aʻaliʻi, ʻihi, ʻōhiʻa lehua
and much more...

Participating Growers:
Native Nursery, Hoʻolawa Farms
Maui Nui Botanical Gardens,
Kulamanu Farms, and
New Moon Enterprises.

For more information call 808/249-2798 or
email mnbg@maui.net

Drawing by Kali Speere
Maui Nui Botanical Gardens has a new website! We were able to recreate and update our website with the skills of our talented graphic artist U‘i Naho‘olewa. U‘i is also working on our newsletters, walking tour guide, and event posters. A big mahalo to the Leiter Foundation for the generous grant that made it all possible.

There are a lot of great reference sites on the website but I wanted to list a few here that are especially helpful for finding important information on Hawaiian species, invasive species, Hawaiian cultural information, and water conservation.

**Water Conservation & Landscape Information**
- County of Maui Department of Water Supply
  [http://mauiwater.org/](http://mauiwater.org/)
- Maui Association of Landscape Professionals
  [http://malp.org](http://malp.org)

**Hawaiian Cultural Resources**
- Hawaiian Ethnobotany Online Database
  [http://www2.bishopmuseum.org/ethnobotanydb/index.asp](http://www2.bishopmuseum.org/ethnobotanydb/index.asp)
- *The Canoe Plants of Ancient Hawai‘i*
  [http://www.canoeplants.com](http://www.canoeplants.com)

**Native Plant Propagation**
- Hawaiian Native Plant Propagation Database

**Plant Identification**
- UH Botany Dept. Hawaiian Native Plants
  [http://www.botany.hawaii.edu/faculty/carr/natives.htm](http://www.botany.hawaii.edu/faculty/carr/natives.htm)
- An excellent site for native & nonnative and invasive species information
  [http://www.hear.org/](http://www.hear.org/)
- An amazing collection of plant photos by Forest & Kim Starr

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**2008 Event Dates at Maui Nui Botanical Gardens**

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<tr>
<th>Date</th>
<th>Time</th>
<th>Event Description</th>
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<tr>
<td>August 9, 2008</td>
<td>9:00am - 12:00 pm</td>
<td>Hawaiian Plant Sale featuring a wide variety of plants and over 30 varieties of taro.</td>
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<tr>
<td>October 2-6</td>
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<td>Maui County Fair: Maui Nui Botanical Gardens will be closed Saturday, October 4th due to lack of parking.</td>
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<tr>
<td>November 8, 2008</td>
<td>9:00 am - 2:00 pm</td>
<td>Maui Nui Botanical Gardens &amp; Maui Association of Landscape Professionals Arbor Day Tree Give Away and Lawn &amp; Garden Fair</td>
</tr>
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</table>
This month’s activity for our Weed & Pot Club was cordage-making. Hawaiians made kaula (cordage) out of many different plants such as: hau, ‘ahu‘awa, ‘olonā, ‘uki‘uki, hala, niu and koali. Our talented MCC service-learning student, Kahaku Ritte-Camara, taught the Weed & Potters how to make cordage from hau bark. This task was not easy. For some, it was difficult for their fingers to get the stripped pieces of bark to roll along their thigh. For others, it came naturally after a couple of tries.

LOCATION & HOURS
150 Kanaloa Avenue
Keōpūolani Park, Kahului
Across from the War Memorial Sports Complex
Monday-Saturday
8:00 am—4:00 pm*
Closed Sundays & Major Holidays
*Weather permitting & staff availability.

GROUP RESERVATIONS
Reservations are required for group activities.

CONTACT INFORMATION
Mailing: P.O. Box 6040
Kahului, HI 96733
TEL: (808) 249-2798 FAX: (808) 249-0325
Email: mnbg@maui.net
Website: www.mnbg.org

July 1 marks our 8th anniversary of restoration and expansion of the Maui Nui Botanical Gardens. Our collections continue to grow with new mal’a (banana) varieties fruiting for the first time, nine ‘uala (sweet potato) varieties now on display in our hale garden and strange and exciting new ipu (gourd) varieties maturing.

Aloha and Mahalo to Program Manager Kea Hokoana-Gormley and M.C.C. Intern Kahaku Ritte-Camara. We appreciate their contributions to the Garden over the last year and wish them well on their new adventures.

I hope you will help me welcome a new staff member to our newly created position of Development Director, Kathy Kaohu.

We are also excited to welcome three new Board members, Kiera Stromm-Lyons, Keali‘i Reichel, and Gwen DeRego.

- Lisa Schattenburg-Raymond

Mahalo to Our Weed & Pot Volunteers

Anudeva Stevens
Becky Lau
Carol Isaak
Cindy Singer
Darren Espirito
Deb Guzman
Deborah Kremins
Duncan Stenzel
Florence Shotts
Gwen DeReg
Janet Allan

Jennifer Rose
Linda Anderson
Maya Sepulveda
Mike Dahlem
Nicolas Sepulveda
Paul Kastner
Renee Leiter
Terry Thomas
Velma Nakamoto
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Kiera Stromm-Lyons

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Hawaiian Culture
Hōkūlani Holt-Padilla
Community Relations
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Legal
Brian Jenkins
Hawaiian Language
Ki‘ope Raymond
Propagation Specialist
Richard Nakagawa

MNBG STAFF
Executive Director
Lisa Schattenburg-Raymond
Landscape Maintenance Supervisor
Nick Turner
Nursery Supervisor/ Curator
Stephanie Seidman
Development Director
Kathy Kaohu

CURRENT DONORS
Mahalo to our new & returning donors! (Since June of 2008)

HONORARY LIFETIME
Dr. Isabella Abbott
Mary Evanson
Tamara Sherrill

Ma‘o Hau Hele ($5,000+)
AHS Foundation
Atherton Family Foundation
Mary Cameron Sanford

Kanaloa ($1,000 - $4,999)
Angela Kay Kepler & Frank Rust
Anne Carter
Cynthia & Terry Quisenberry
Graham Family Foundation
Ho‘ollo House
Jim Moriyasu
Stanley & Edie Raymond
Tri-Isle Resource Conservation & Development Council
Zadoc W. Brown & Lawrence N. Brown Foundation

‘Ili‘iha ($500 - $999)
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K.M. Spalding
Native Hawaiian Plant Society
Raymond S. Higashi
Richard Langford
Robert & Cherry Anne Sutherland

‘Ilima ($50 - $499)
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Al Harty
Alisa A. Morison
Althea & Eric Magno
Amy Muramatsu
Anders & Kiera Lyons
Anna Wynn
Anne & Jacob Starr Foundation
Antoinette Lucienne deNaie
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Dale & Patricia Hillman
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Debbie Brown

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COUNTY OF MAUI & DEPARTMENT OF WATER SUPPLY
DEPARTMENT OF LAND AND NATURAL RESOURCES/KAULUNANI
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HAWAI‘I TOURISM AUTHORITY P.E.P.
LEITER FAMILY FOUNDATION
LENNOX BOTANICAL RESEARCH FUND
OFFICE OF HAWAIIAN AFFAIRS
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Community Work Day
Plant Extinction Prevention Program
Maui Coastal Land Trust
Maui Association of Landscape Professionals
Maui Invasive Species Committee
Native Hawaiian Plant Society

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Friends of Moku‘ula
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We apologize if your name was omitted.

Contact us at mnbg@maui.net.
MAUI NUI BOTANICAL GARDENS
P.O. Box 6040
Kahului, HI  96733

Visit us on the web at: www.mnbg.org

‘Ōhi’a ‘ai
Syzygium malaccense
Mountain Apple Flower
Polynesian Introduced

### MAUI NUI BOTANICAL GARDENS ANNUAL DONOR PROGRAM
(December 31, 2008)

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<td>$500-$999 ‘Iliahi (Sustaining)</td>
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<td>$1,000-$4,999 Ka Palupalu O Kanaloa (Patron)</td>
<td>$5,000+ Ma‘o Hau Hele (Visionary)</td>
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Mail your tax deductible donations to: Maui Nui Botanical Gardens P.O. Box 6040 Kahului, HI 96733

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FOR STAFF USE ONLY

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