Tri-Isle Resource & Conservation Development Council, Inc.
Maui Invasive Species Committee

Miconia / Invasive Species Containment Project
Final Report
#WC-0392

Submitted to the
Maui County Department of Water Supply
SUMMARY OF PROJECT OBJECTIVES AND RESULTS

Funds from the County of Maui Department of Water Supply allowed the Maui Invasive Species Committee (MISC) to make significant progress controlling the most serious plant threats on Maui. Using the 728 square-mile island of Maui as a Weed Management Area, MISC surveyed and controlled the following priority target species: miconia (*Miconia calvescens*), pampas grass (*Cortaderia jubata* and *C. selloana*), fountain grass (*Pennisetum setaceum*), ivy gourd (*Coccinia grandis*), giant reed (*Arundo donax*), and rubber vine (*Cryptostegia grandiflora*) and downy rose myrtle (*Rhodomyrtus tomentosa*). MISC continues to monitor locations of four other target species: Jerusalem thorn (*Parkinsonia aculeata*), Malabar melastome (*Melastoma candidum*), yellow Himalayan raspberry (*Rubus ellipticus*), and a chenopodium (*Enchytraea tomentosa*). These invasive plants threaten Maui’s major watersheds, its resource-dependent economy, and its unique and vulnerable native ecosystems, which contain 79 endangered or threatened plant species and many more species of concern.

County funds are highly leveraged. MISC’s work also benefits from the cooperation of other partners, including: Haleakala National Park (NPS), the Pacific Islands Exotic Plant Management Team (NPS-PIEPMT), U.S. Geological Survey-Biological Resources Division (USGS/BRD), U.S. Fish and Wildlife Service (FWS), USDA Forest Service (USFS), Hawaii Department of Land and Natural Resources (DLNR), Hawaii Department of Agriculture (HDOA), University of Hawaii, The Nature Conservancy of Hawaii (TNC), East Maui Watershed Partnership, and Maui Land & Pineapple Co. (ML&P).

During the project period, MISC conducted ground and aerial surveys to locate and map target species. Field crew used mechanical and/or chemical methods to control and remove target plants on the ground. Aerial spot-spraying was used to treat otherwise inaccessible plants. Approximately 159,000 invasive plants were removed or treated. Many thousands of acres of natural areas on Maui were protected from the further spread of these targeted invasive species.

PROJECT ACCOMPLISHMENTS: JANUARY 1 – JUNE 30, 2005

Project accomplishments for the period July 1 to December 31, 2004 were outlined in a previous report. This report covers the remaining term of the grant.

PRIORITY PLANT SPECIES

**Miconia (Miconia calvescens)**
- A crew of six invasive species field workers, based in Hana, continued to focus exclusively on control of miconia. Six to eight other field crew members worked approximately half time on miconia.
- Crew treated newly-discovered miconia infestations and treated areas with newly emerging plants from established seed banks. Treatment included aerial spot-
spraying of individual trees and on-the-ground manual or chemical control of miconia.

- Aerial spray operations, supported by funding from the National Park Service, continued to successfully target miconia populations in both the core and outlying infestations of the East Maui Watershed. Aerial miconia spray operations occurred on twenty three (26) days over the project period, typically with two helicopters operating simultaneously. The helicopter operations allowed crews to cover approximately 20,400 acres for both survey and control activities. Crews controlled 23,477 plants by air, of which 146 were flowering or fruiting.

- During June, the Moloka’i subcommittee of MISC (MoMISC) conducted its first survey for miconia. MISC partners helped train MoMISC staff and helped conduct the survey. Approximately 7,900 acres were surveyed for miconia and no plants were found.

- Aerial and ground management units were used to help ensure thorough coverage and to provide meaningful information during revisits. Ground crews found and controlled over 130,000 miconia plants, of which 345 were flowering or fruiting.

- Continued aerial reconnaissance is needed to detect miconia in and near the outlying populations. Helicopter reconnaissance is especially useful in areas where mature trees are emerging through dense vegetation but difficult to detect on the ground.

**Pampas grass (Cortaderia jubata & Cortaderia selloana)**

- MISC’s work on pampas grass during the late winter and early summer focuses on residential infestations. During this period, MISC’s ground crews surveyed 75 acres. Crew controlled 327 plants, including 4 mature plants.

- Work during the fall and winter months will shift to aerial control, when it is possible to detect the plumes in inaccessible areas by air.

**Fountain grass (Pennisetum setaceum)**

- Fountain grass has been effectively controlled on Maui, with the infestation limited to a small number of sites. Because of established seed banks, surveys will need to continue for many years.

- Efforts continue to focus on interrupting the flowering cycle.

- On Maui, MISC surveyed approximately 26 acres for fountain grass and controlled 53 plants, four of which were flowering.

- Surveys and control work on fountain grass also were conducted on Lana’i, during both February and June. During these visits, over 3,000 plants were controlled and approximately 139 acres were inventoried. The fountain grass infestation on Lana’i will require increased survey and control work.

- A single planting of fountain grass on Moloka’i was previously controlled and continues to be monitored.

**Ivy gourd (Coccinia grandis)**

- Ivy gourd infestations are located primarily in residential areas of South Maui and in and near a major golf course in West Maui.
• Control methods continue to be effective, but time consuming. MISC continues to explore ways to reduce the need to retreat infestations.
• During this period, MISC surveyed 610 acres and controlled 4,805 plants, of which 81 were flowering or fruiting.

Rubber vine (*Cryptostegia grandiflora*)
• Revisits to known sites continue.
• Complete eradication continues to be limited by landowner reluctance to allow control of remaining plants.

Giant reed (*Arundo donax*)
• MISC’s focus on giant reed has shifted to using a site-led strategy, concentrating on infestations that threaten wetland or other high-value natural areas and foregoing work on upcountry gulches. This decision was made based on the amount of time required to control giant reed and the relatively low threat to natural areas in upcountry Maui.
• During this time, MISC surveyed 45 acres and controlled 353 plants.

Downy rose myrtle (*Rhodomyrtus tomentosa*)
• Once-a-year surveys remain the appropriate interval to ensure that recruitment at previous infestations is being addressed.
• No plants were found during this period.

Other Targets
No new infestations were found of MISC’s other four invasive targets: Jerusalem thorn (*Parkinsonia aculeata*), Malabar melastome (*Melastoma candidum*), yellow Himalayan raspberry (*Rubus ellipticus*), and a chenopodium (*Enchytraea tomentosa*).

MISC continued to assess other potential targets for inclusion as priority weeds. In addition to the work described above, MISC targeted fourteen (14) species as part of a project supported by US Fish and Wildlife Service funding. Based on known distribution and feasibility of control, these species were chosen as potentially eradicable, either from the entire island or from geographically distinct areas. MISC worked on the following species during this period:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Latin Name</th>
<th>Island/Local</th>
<th>Acres Surveyed</th>
<th>Plants Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earpod wattle</td>
<td><em>Acacia auriculiformis</em></td>
<td>Island-wide</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Queensland silver wattle</td>
<td><em>Acacia podalyriifolia</em></td>
<td>Island-wide</td>
<td>8.3</td>
<td>0</td>
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<td>Water wattle</td>
<td><em>Acacia retinoides</em></td>
<td>Island-wide</td>
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<td>Bingabing</td>
<td><em>Macaranga mappa</em></td>
<td>Island-wide</td>
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<tr>
<td>Parasol leaf tree</td>
<td><em>Macaranga tanarius</em></td>
<td>Local</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Osage orange</td>
<td><em>Maclura pomifera</em></td>
<td>Island-wide</td>
<td>1.9</td>
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<tr>
<td>Mullein</td>
<td><em>Verbascum thapsus</em></td>
<td>Island-wide</td>
<td>2.2</td>
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</table>
PUBLIC EDUCATION & OUTREACH

- During this time period, MISC had display booths at numerous community events, including Aloha Friday Farmer’s Market, East Maui Taro Festival, Kokua Festival, Earth Day, Haiku Ho’olaulea, and the Ulupalakua Thing. These events allow MISC staff to talk directly with local citizens and community leaders about invasive species issues on Maui. Over 850 people visited our booths during these events.
- Two display booths on invasive species were installed during this period at the Kahului Airport. The booths will be up until December.
- MISC gave presentations to a variety of school groups on Maui, ranging from preschool through college, including the Kamehameha School in Hana, Kalama Intermediate School, Lahainaluna High School, and visiting college students.
- MISC staff attended meetings of the Maui Association of Landscape Professionals (MALP). MISC staff also attended the Landscape Industry Council of Hawaii conference.
- Several articles about MISC's efforts to control invasive species occurred during this time period, including coverage in the "National Geographic" and a full-length article in "Hawaii" magazine. MISC provided articles for the Maui Nui Botanical Garden newsletter and for the Hawaii Department of Land and Natural Resources staff newsletter.
- A compelling video about efforts to control miconia, produced by a local videographer, was released during this time. MISC assisted with distribution of the video and participated in the premiere.
- During the summer months, a student from Stanford University began a research project to evaluate the effectiveness of miconia outreach programs in Hana. MISC staff helped with project design and provided valuable community contacts.
- MISC maintained close communication with the other islands' Invasive Species Committees – Big Island (BIISC), Oahu (OISC), Kauai (KISC), and the subcommittee of MISC on Molokai (MoMISC) – and with the Coordinating Group on Alien Pest Species (CGAPS). MISC served on the CGAPS Steering Committee and was an active participant in the Hawaii Invasive Species Council (HISC) Working Group on Public Outreach.
### Acres Protected, Surveyed and Monitored – January 1 – June 30, 2005

<table>
<thead>
<tr>
<th></th>
<th>Miconia</th>
<th>Pampas Grass</th>
<th>Fountain Grass</th>
<th>Ivy Gourd</th>
<th>Giant Reed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acres Protected:</strong></td>
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<tr>
<td>Treated</td>
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<td>0.01</td>
<td>1.52</td>
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<td><strong>Surveyed, Monitored:</strong></td>
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<td>Survey</td>
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<td>610.28</td>
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<td>Aerial</td>
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<td>Ground</td>
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<td>75.04</td>
<td>25.89</td>
<td>610.28</td>
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<td><strong>Plants Treated or Controlled:</strong></td>
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<tr>
<td>Mature</td>
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<td>158,461</td>
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<td>327</td>
<td>53</td>
<td>4,805</td>
<td>353</td>
<td>159,041</td>
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