

*Abutilon menziesii* 2010-2011 Status Report



By Greg Mansker, Horticulturist, Hawaii Department of Land and Natural Resources  
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## **I. Introduction**

A population of *Abutilon menziesii* was discovered in late 1996 at Kapolei in the Ewa area, island of Oahu, on former sugarcane land. *Abutilon menziesii* has been a federally listed species since 1986. This population was located within the footprint of a Department of Transportation road and as a result, a Habitat Conservation Plan (HCP) for *Abutilon menziesii* at Kapolei was completed to mitigate for the effects of development on this population (November 2003). The HCP outlines the measures planned over the next 20 years. The goal of the HCP is to initiate and sustain a program which would result in an overall net gain in the number of *Abutilon menziesii* on Oahu. The end goal is the establishment of three protected off-site populations on Oahu from the single degraded Kapolei population. This 2010-2011 status report serves as a way of monitoring the progress towards this end goal.

The main focus for 2010-2011, was to continue to represent the full genetic stock available for this species at each of the reintroduction sites, monitor for seedling establishment, control the threats to the populations, and to look for potential sites for future outplantings.

## **II. Population Summaries**

### **A. Diamond Head**

In 2004, an MOU was established with the Hawaii State Parks and the Hawaii Army National Guard to establish an *Abutilon menziesii* population. One-hundred and four plants were outplanted in September 2004 representing 65 % of the genetics from the Kapolei population. A low flow, low maintenance irrigation system is in place that utilizes the municipal water supply. The only [plants on irrigation are new outplantings. The planting strategy used at this site was to plant the plants close together with high rates of fertilization and water to help the plants out compete the weeds and fill the area with a continuous stand of *Abutilon menziesii*. This has resulted in a very healthy population of *Abutilon menziesii*. The thought behind this strategy is that by getting the plants off to a healthy start, a seed bank will be established early on in the process. A firebreak was established around the perimeter of the population using plants that were present in the nursery in excess numbers. Groundcover was established for fire and weed control purposes using the following native species: *Vitex rotundifolia*, *Rauvolfia sandwicensis*, *Lipochaeta lobata*, *Sida fallax*, and *Sesbania tomentosa*.

During 2010-2011, 7 new plants were outplanted. There are now 80 total plants at Diamond Head representing 76% of the Kapolei genetic stock. This site is currently monitored once a month and selectively weeded (i.e. weeding only the high threat species). This weeding strategy emphasizes control versus elimination. Of the 28 seedlings seen during 2008-2009, 11 seedlings have survived for over two years. During 2010-2011, 7 seedlings have emerged. Two of the outplanted adults have died. The goal for 2011-2012 is to maintain and monitor the outplantings and seedlings.

### **B. Koko Crater Botanical Garden**

The plants at Koko Head Botanical Garden are thriving. Originally, there were 62 plants representing 46 lineages at this site. During 2010-2011, five new plants were outplanted. Currently, 56% of the genetic stock is represented at this site. The plants located at Koko Head are an invaluable source of working material for the program (i.e. cuttings, seeds, etc). This is a good example of how botanical gardens and various forestry programs can and should work together towards recovery of rare species.

During 2010-2011, maintenance of the irrigation system continued. The goal for 2011-2012 is to continue to add more plants to the site.

### C. Honouliuli

The Honouliuli outplanting site is located along the western edge of the West Loc of Pearl Harbor and was established in 2002 and 2003. This site is within three to four miles of the original population and is very well protected. The site itself is part of the Oahu National Wildlife Refuge Complex. The refuge consists of 37 acres of fenced land, much of which is occupied by two ponds. The land itself is still under Navy ownership but USFWS has a cooperative agreement with the Navy to manage the site as a refuge in perpetuity. There are two separate areas being used for outplanting within the refuge. The first consists of a narrow strip, approximately 20 by 600 feet, while the second site is approximately 60 by 300 feet. The first planting commenced on March 15, 2002 in the 20 by 600 foot site. Work at the second location began January of 2003. The new location is about 500 yards south of the first outplanting site. The plants at Honouliuli are healthy and the site is showing promise.

Both locations are on an irrigation system (only used for new outplantings) and are managed entirely by the State of Hawaii Forestry and Wildlife staff. Efforts are being made to adjust the conditions of the soil at both sites so that they are more favorable for regeneration and growth. This site is monitored twice a month. Access is an issue at this site due to bird nesting and the usage by school groups for outdoor education. The 2 seedlings found in 2008-2009 survived for over one year with one remaining as of August 2011. Twenty-six new seedlings were found in 2009-2010; however, only 17 of those remained in August of 2010. As of August 2011, 14 of those seedlings remain. During 2010-2011, 159 additional seedlings have emerged. All seedlings will be followed and their survival monitored again during 2011-2012. This site has reached capacity; therefore, the only plantings planned in the future are for replacement of plants that die. During 2010-2011, no plants senesced, therefore, no new plants were outplanted. Although all plants at this site produce seeds, a large percentage of the plants are also reproducing vegetatively by mounding (i.e. lower branches root on contact with the ground). As of 2011, there are a total of 75 adult plants representing 52% of the genetic stock available.

### D. Ewa Villages Golf Course

The Ewa Villages Golf Course is located adjacent to the original wild *Abutilon* site. The Ewa Villages Golf Course population is located within 125 yards of the original wild site; which was the primary reason for choosing this location. Even though this is not a “wild” situation, it is an undisturbed, protected site with favorable conditions, much like the original wild site. Irrigation is present at this site. This site is monitored once a month. Five additional plants were installed at this site during the 2010-2011 reporting period in order to balance the founders. There are currently 74 total plants at this site representing 70% of the genetic stock available. The goal for 2011-2012 is to increase the genetic representation with additional number of outplantings; however, this site is reaching capacity.

### E. Contingency Reserve Area

During 2005-2006, 35 plants were moved to the Contingency Reserve Area (CRA). Only one plant was lost during the move. Once the plants were moved, a perimeter fence was installed by the Department of Transportation contractors around the CRA site. A firebreak was also installed prior to the construction of the fence. The firebreak consists of a weed free gravel barrier. The perimeter fence and firebreak require regular and consistent weed control. During 2006-2007, one of the plants that had been

previously moved the CRA died. Unfortunately, this was one of the new plants located in 2002 and it is not represented in any of the outplanting sites or in genetic storage.

On October 31, 2005, a small fire occurred in the CRA taking out approximately one acre. The fire was quickly contained and no *Abutilon* were damaged. A meeting was held with the Waipahu/Ewa Fire Department at the CRA site to determine possible wildfire issues and to familiarize them with the site.

During 2010-2011, time was spent maintaining the firebreak around the CRA. During 2010-2011, 12 additional plants were planted into the CRA. This site is currently weeded once every couple months. There are a total of 65 plants representing 62% of the genetic stock at this site. The goal for 2011-2012 is to continue outplanting additional plants and continue habitat restoration.

#### F. Kealia Experimental Sites

In 2003, there were approximately twenty-five plants at two sites located near the top of Kealia Trail. There are currently 6 plants at this site. This is an experimental site with no irrigation. No work, other than monitoring, was conducted at this site during this reporting period.

#### G. Pouhala Marsh

The Pouhala Marsh population is located on City and County property in Waipahu. During April 2007, 63 plants were outplanted, of which half were lost due to tidal fluctuations within the marsh. During 2010-2011, 17 additional *Abutilon menziesii* were outplanted. Currently, there are 43 plants representing 41% of the Kapolei population genetics. Weeds are not really a major problem at this site. The benefit of this site is the opportunity for community involvement and education because the site is so accessible. Management of this site is a cooperative effort between various Division of Forestry and Wildlife Branches and the Research Corporation of the University of Hawaii staff. The goal for 2011-2012 is to continue to increase the representation of the Kapolei plants at this site.

### **III. Greenhouse**

#### A. Construction

The greenhouse established for *Abutilon menziesii* is located near the base of the Kealia Trail head, just behind the western end of Dillingham Airstrip in Mokuleia. The initial structure was completed in December 2002. The greenhouse is 130 feet long by 40 feet wide by 12 feet tall. It is divided into an upper and a lower section along the entire length and has gravel floor. The site contains two separate Matson container type storage facilities, one is used as office space. The site also contains an additional raised 8-foot by 32 foot storage facility was completed inside the greenhouse structure. During 2010-2011, typical greenhouse upkeep included building and road maintenance, such as repairing the watering system, repairing damage from rock falls, and weeding.

#### B. Propagation

An ongoing goal of the program, is to continue to collect and propagate *Abutilon menziesii* plants found at the outplanting sites and/or the CRA at Kapolei that were not represented with stock on hand at the Mokuleia nursery. In other words, filling in the gaps between plants on hand at the nursery and plants in the field, which are not represented in the nursery stock. These gaps are due to the time needed for the

construction of the Mokuleia nursery, during which there was no propagation of plants. This was due to the lack of facilities to grow and care for them and the time that was needed to complete the greenhouse and the HCP.

C. Issues to be Resolved

A new fuel and pesticide storage area needs to be constructed and will be pursued during the 2011-2012 reporting period.

#### IV. Summary

Table 4. Status of *Abutilon menziesii* populations

	<b>Kaena Point</b>	<b>Koko Head</b>	<b>CRA</b>	<b>Honouliuli Reserve</b>	<b>Ewa Villages</b>	<b>Pouhala Marsh</b>	<b>Diamond Head</b>	<b>Total</b>
<b>Mature</b>	0	88	65	75	74	43	80	425
<b>% Genetic Representation</b>	0%	56%	65%	75%	74%	43%	76%	100%
<b>Seedlings 2004 (Natural Regeneration)</b>	0	N/A	N/A	0	N/A	N/A	N/A	0
<b>Seedlings 2005 (Natural Regeneration)</b>	0	N/A	N/A	0	N/A	N/A	N/A	0
<b>Seedlings 2006 (Natural Regeneration)</b>	0	N/A	N/A	1	N/A	N/A	0	1
<b>Seedlings 2006 (Natural Regeneration)</b>	0	N/A	N/A	0	N/A	N/A	0	0
<b>Seedlings 2007 (Natural Regeneration)</b>	0	N/A	N/A	0	0	N/A	6	6
<b>Seedling 2008 (Natural Regeneration)</b>	0	N/A	N/A	2	0	0	28	30
<b>Seedling 2009 (Natural Regeneration)</b>	0	N/A	N/A	26	N/A	N/A	5	31
<b>Seedling 2010 (Natural Regeneration)</b>	0	N/A	N/A	0	N/A	N/A	0	0
<b>Seedling 2011 (Natural Regeneration)</b>	0	N/A	N/A	159	N/A	1	7	167
<b>Survival of Seedlings (0 mon.-1 yr.)</b>	0	N/A	N/A	159	N/A	1	7	167
<b>Survival of Seedlings (over 1 yr.)</b>	0	N/A	N/A	14	N/A	N/A	11	25

A. Accomplishments for 2010-2011

- Added additional founders to Koko Crater.
- Added additional founders to the Ewa Golf Course.
- Added additional founders to the Contingency Reserve Area.
- Added additional founders to Pouhala Marsh.
- Monitored and weeded all previous outplanting site.
- Air Layers were collected from the Ewa Villages Golf Course and Koko Head.
- Continued collecting and propagating other coastal species in the greenhouse.

B. Goals for 2011-2012

- Complete the tracking database for the project.
- Ensure that at least one (as many as possible given space availability) of every Kapolei plant is represented in at least one of the outplanting sites.
- Continue to monitor and maintain the plants at all sites.
- Continue to survey for and collect from rare coastal species.
- Continue to outplant rare coastal species within the *Abutilon* populations.
- Establish an additional outplanting site (location unknown at this time).
- Expand Mokuleia Nursery facilities to accommodate a pesticide and fuel storage area.
- Continue to outplant coastal species with *Abutilon*.