

*Abutilon menziesii* 2016-2017 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 2016-2017 status report serves as a way of monitoring the progress towards this end goal.

The main focus for 2016-2017 was to establish a new outplanting site at State Department of Agriculture lands located at Kahuku and provide better. The focus for 2017-2018 is contingent upon the decision by the ESRC and DLNR on how to proceed. Therefore, this report will not contain a summary of goals for next year.

Propagation of select rare coastal species continued during this reporting period. Cooperative outplanting projects were completed in coordination with US Fish and Wildlife Service, Oahu Plant Extinction Prevention, and Division of Forestry and Wildlife.

## **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 2016-2017, no new plants were outplanted. There are a total of 72 plants at Diamond Head representing 59% 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. There were no new seedlings during the reporting period. Of the seedlings seen during previous reporting periods, 12 have survived for more than five years. Two seedlings from previous reporting years died during this reporting period.

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

The plants at Koko Head Botanical Garden are thriving. There are 84 plants representing 76% of the Kapolei genetic stock. No new plants were outplanted during the reporting period. During 2016-2017, the focus of work was to produce air layers and outplant additional founders at Kahuku. 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 2017-2018, work will continue to expand the founders, maintain the vegetation around the plants, and replace any plants that senesce.

### 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 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 have been removed from irrigation. 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 once a month and weeded as needed. Access is an issue at this site due to bird nesting and the usage by school groups for outdoor education. There were no new seedlings during the report period. There are 107 seedlings that have survived longer than five years. This site has reached capacity; therefore, the only plantings planned in the future are for replacement of plants that die. 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 2017, there are a total of 73 adult plants representing 54% 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. There are currently 72 total plants at this site representing 70% of the genetic stock available.

### 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 to 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. At this time, more than three quarters of the perimeter of the CRA is protected by a green firebreak.

Weeds are a huge problem at this site. During 2015-2016, time was spent planting common natives to complete the green firebreak and controlling grass. Over 400 plants were planted in an effort to complete the green firebreak. Species include *Dodonea viscosa* (aalii), *Gossypium hirsutum* (mao), and *Myoporum sandwicense* (naio).

There are a total of 68 plants representing 66% of the genetic stock at this site. No new plants were outplanted during this reporting period. Outplanting of thousands of common native species has taken place over the past few reporting periods. The idea was to add additional plants to the habitat to reduce the incoming light to reduce weed pressure. The hope was that this would increase seedling success. Unfortunately, there has been no *Abutilon* seedling recruitment at this site for many years.

#### F. 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 this report no new plants were outplanted. Currently, there are 77 plants representing 75% of the Kapolei population genetics. There was one seedling during this reporting period. 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.

#### G. Kahuku

The newest and final wild site is located at Kahuku. The site currently has 111 *Abutilon* from 64 founders and over 1,000 common native outplants. Planting is now at a standstill due to lack of water on site. Approximately 1/3 to 1/2 of the available space has been used. The other 1/2 of the space has been graded and is ready for additional outplanting. An entrance road has been completed. The area is partially fenced and a rock wall/border is in place. All agreements have been drafted and are ready for signature.

### **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 2016-2017, typical greenhouse upkeep included building and road maintenance, such as repairing the watering system, repairing damage from rock falls, and weeding.

## B. Propagation

Propagation of select common and rare coastal species including *Sesbania tomentosa* (ohai), *Myoporum sandwicense* (naio), *Dodonea viscosa* (aalii), and *Gossypium hirsutum* (mao) is ongoing.

During this reporting period, work continued in cooperation with the Oahu Plant Extinction Prevention Program (OPEP) on *Schiedea adamantis*. This species' distribution is restricted to Diamond Head. During 2012, 49 plants were planted in the crater. During 2014-2015, 29 plants were planted in the crater. During 2015-2016, additional plants were outplanted; however, all perished in a fire. During 2016-2017, 200 additional plants were outplanted and none survived.

#### IV. Summary

Table 3. Status of *Abutilon menziesii* populations

Tracking Measures	Wild Sites			Kahuku	Other Sites			Total
	Diamond Head	Honouliuli Reserve	Pouhala Marsh		Ewa Villages	CRA	Koko Head	
<b>Initial Outplants</b>	104 (2004)	22 (2002)	63 (2007)	111 (2017)	57	35	62	343
<b>Initial Outplant Genetic Representation</b>	65%	21%	61%	63%	47%	34%	45%	100%
<b>2017 Mature* (Reproductive) Plants</b>	72	73	77	111	72	68	78	551
<b>2017 % Genetic Representation</b>	59%	54%	75%	63%	70%	66%	76%	100%
<b>2017 Seedlings</b>	0	0	1	0	0	0	0	1
<b>Seedlings surviving at least 5 years (as of 2016)</b>	12	107	0	0	0	0	0	119
<b>Date Irrigation Ceased</b>	2012	2011	Ongoing	N/A	Ongoing	Ongoing	Ongoing	N/A
<b>Reproductive Plants Present After Irrigation Ceased (best 5 year average)</b>	71	73	N/A	N/A	N/A	N/A	N/A	N/A

\* This is the number of plants with doubles removed. Total number of plants, including those with more than one genetic representative, is reflected in the text of the document.