

Annual Report  
of Hawaiian  
T&E Plants, at  
Palomar  
Community  
College



March 15th

2021

Volume 8

*This report indicates the current status of the seeds and any subsequent seedlings from the collections made of cultivated T&E seeds from the Honolulu Botanic Gardens, National Tropical Botanic Garden, Waimea Valley Arboretum and the University of Hawaii's Lyon Arboretum in the spring of 2013 and the spring of 2018.*

Prepared by:

Antonio Rangel,

**Palomar Community College**

**Facilities Department, Grounds Services**

**&**

**Friends of the Palomar College Arboretum**

1140 West Mission Road  
San Marcos, California 92069

## Introduction

In the summer of 2012, and in the spring of 2018 I contacted the Hawaii Department of Land and Natural Resources (Forestry Division) and the US Fish and Wildlife Service to request approval to collect seeds of some Threatened and Endangered plant species native to the Hawaiian Islands. The Goal was to collect only from cultivated specimens growing in botanical gardens in Hawaii and bring them back to the mainland.

The collected species include:

- *Sesbania tomentosa*
- *Abutilon menziesii*
- *Abutilon sandwicensis*
- *Hibiscadelphus distans*
- *Polyscias racemosa*
- *Caesalpinia kaviaensis* (*Mezoneuron kaviaense*)
- *Hibiscus brackenridgeii* subsp. *brackenridgeii*
- *Hibiscus brackenridgeii* subsp. *mokuleianus*
- *Hibiscus clayi*

Currently *Polyscias racemosa* and *Hibiscadelphus distans* are in the garden. These species, along with a host of other Polynesian plants are providing visitors a chance to see how beautiful and diverse our world is and hopefully entice at least a few to take some active role in the efforts to protect the species.

**The Following Botanical institutions provided seeds for nearly all of the Hawaiian Native plants in these gardens.**

[The National Tropical Botanical Garden](#)

[NTBG- The National Tropical Botanic Gardens](#)

[The Honolulu Botanical Gardens](#)

[The Waimea Valley Botanical Garden](#)

[University of Hawaii's Lyon Arboretum](#)

## Campus Nursery & Soil Type for Planting

Refer to Volumes 1 and 2 for more information on the campus nursery and soil types used for planting.

## Seed and Seedling Status, As Of Spring 2020

No new seeds have been added to the seed bank this year.

Collection Year	Genus species	Remaining Seed in Seed Bank	Plants Alive at Present
2018	Abutilon eremtopetalum (Waimea Valley)	48	0
2018	Abutilon menziesii (Koko Crater)	0	0
2018	Abutilon menziesii (Waimea Valley)	21	0
2018	Abutilon sandwicense (Waimea Valley)	34	0
2013	Hibiscadelphus distans (NTBG)	4	1
2018	Hibiscus brackenridgei subsp. Mokuleianus (Waimea Valley)	24	0
2018	Hibiscus brackenridgei subsp. brackenridgei (Waimea Valley)	14	0
2018	Hibiscus clayi (Waimea Valley)	14	0
2018	Mezoneuron kauaiense (Lyon Arboretum)	15	0
2013	Mezoneuron kauaiense (Waimea Valley)	3	0
2013	Polyscias recemosa (NTBG)	1	1
2013	Sesbania tomentosa (Original Collection from NTBG)	18	0
2014-2016	Sesbania tomentosa Plant #1	494	0
2014-2016	Sesbania tomentosa Plant #2	84	0
2014-2016	Sesbania tomentosa Plant #2&3	64	0
2014-2016	Sesbania tomentosa Plant #3	60	0
2014-2016	Sesbania tomentosa Plant #4	877	0
2017-2018	Sesbania tomentosa Plant#4-1	8,918 seeds +1,501 pods	0
2017-2018	Sesbania tomentosa Plant #4-2	1,151.46 seed + 92 pods	0
2017-2018	Sesbania tomentosa Plant #4-3	1,484.73 seeds + 148 pods	0
		1741 bean pods at 10.7 avg = 18,628.7 + 13,094.19 seeds = 31,908.86 seeds	2
	Total Seeds in seed bank		

I should clarify that *S. tomentosa* numbered 1 through 4 in the chart above, are from years prior and that #4 is the plant whose progeny produced the most seed. Hence 4-1, 4-2 and 4-3.

By late March early April 2020, the two *Mezoneuron* seedlings we had in the green house unfortunately succumbed to what we assume was a fungal infection or the cold. The one *Sesbania tomentosa* also did not survive the winter. In March of 2020, the Governor of

California issued a stay-at-home order, to help slow the spread of the swiftly spreading Corona virus pandemic. As a result of the fewer man hours no seeds were planted in 2020.

Nearly a year has passed since the stay-at-home order was issued. Early on, the Grounds Department was considered to be essential workers, so thankfully we have been able to keep the gardens growing, always with our personal health and wellbeing in mind. Now that life is beginning to return to a bit more familiar sequence, we are hoping to plant more of the seeds in the seed bank to see if we can have success with the other species we are honored to have the opportunity to grow.

As mentioned last year, our *Polyscias racemosa* was, planted on the slope near the NS Building. It seems to have done well in this location. Though it still has been slow growing.

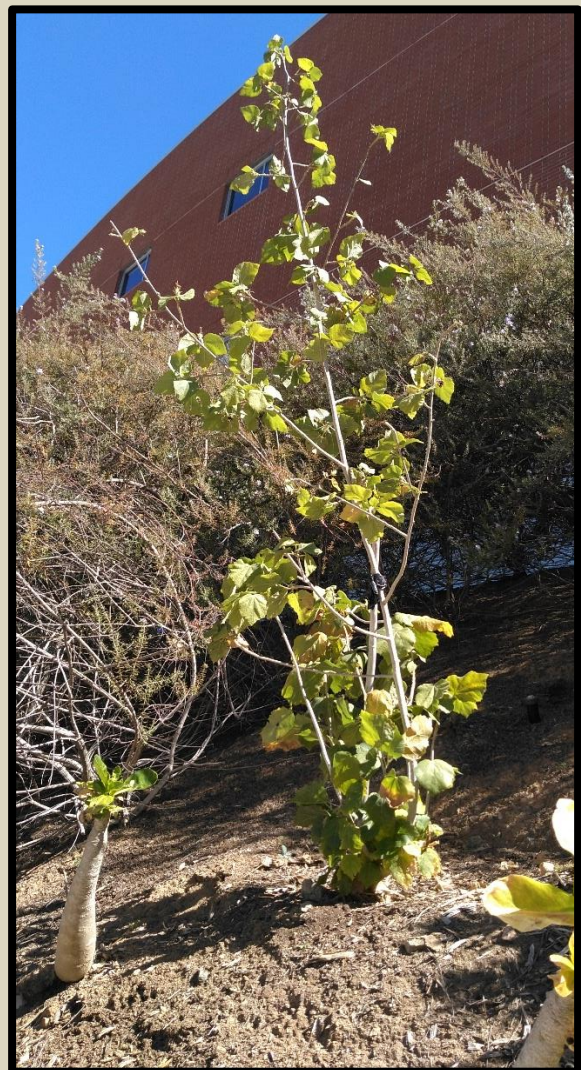


***Polyscias racemosa* is seen in the image above. The image was taken in late February 2021.**

As mentioned in the previous years report, the *Hibiscadelphus distans* was also planted on the slope

by the NS building. Steady growth occurred again in spring and fall, with blooms on the plant intermittently throughout the year, though as seems to be the norm, the majority of the blooming occurred in the late winter, spring and fall months. The specimen seems to be doing well in this location, though again we had no seed capsules produced this year.

Due to the Pandemic we were unable to study the pollen in 2020, though we are hopeful we can return to our plan to scrutinize the question of pollen viability in 2021.



***Hibiscadelphus distans* in the garden, March 2021.**



No pests or disease issues were found on the *Hibiscadelphus* or the *Polyscias* during 2020.

As mentioned last year, during the winter, one of the *Mezoneuron* plants seemed to have a very mild issue with a fungus that we have occasionally seen during the cold winter months on plants in the Greenhouse, the fungus bears a striking resemblance to *Botrytis cinerea*, though we were not able to confirm this. Unfortunately, none of the *Mezoneuron* survived past the spring. The one *Hibiscus clayii* seedling we had also died from what was likely this same the fungus that killed the one *Mezoneuron*.

## **Response to Cold**

The winter of 2020 had fewer frost days than 2019, though the few frosts we did have occurred on colder than normal nights. One storm event in particular subjected the landscape to winds in excess of 70 miles per hour and hail the size of BBs. Much of the hail was still on the ground in shaded areas as late as 11am-12pm in some places. At first glance it almost appeared as if snow had fallen over night. Rain fall has been minimal, with only three or four measurable storm events by early March.



All though this image was taken in the Edwin and Frances Hunter Arboretum, just around the corner from the Polynesian Garden, you can see the

accumulated hail on the ground giving the illusion of snow.



The Image above shows a *Pritchardia* with cold and hail damage on the frond. You can actually see some hail has accumulated near the hastual. This palm is already beginning to flush new growth.

As mentioned above, one of the *Mezoneuron* specimens did show signs of a fungal infection on a single petiole by late December 2019. As the temperatures dropped through that winter, both plants did exhibit leaf drop. By early March of 2020, both plants were still alive though none survived past March of 2020.

Now that we have some experience growing this species, it is possible that cold weather may be more detrimental to the species than originally assumed. This will take a few more attempts though before I am truly convinced.

As in years past, it is evident that both *Hibiscadelphus distans* and the *Polyscias racemosa* are not bothered

by our winter weather, and the *Hibiscadelphus* may actually prefer the cooler weather.



***Pritchardia remota* with inflorescences, January 2020. We first noticed these in September of 2019. Though they still have not opened by late February.**

## **Garden Areas as of March 2021**

With each passing year the garden takes on a new look and feel as the plants continue to grow and flourish. Many plants in the garden are now reaching maturity, while others still have many years to go before they can begin to contribute their floral beauty to the garden and hopefully contribute seed to the seed bank.



**This is the view from the Natural Sciences building west terrace, looking west over the Polynesian Garden, with the new Library nearly complete in the background.**

## **Discussion on Pollination of Hawaiian T&E Plant Species**

Due to Covid-19, we were unable to conduct much in depth study on why/how our *Brighamia insignis* plants in the garden are producing seed. Two of the plants on the slope did bloom this year and one of the plants near the P building also bloomed. Though we only had one ovary develop, produce a seed capsule and provide seed. That seed was harvested and placed in the seed bank, but it was not counted. The plan is to plant that seed this month.



## Educational Outreach



**An example of the garden plant labels. [1]**

As mentioned in reports from years' past, each species when they are planted in the garden are given a plaque or label. These labels provide some basic information concerning the plant. The scientific name of the plant is given, as well as the plant's common name (often in Hawaiian or another Polynesian language), the place of origin, botanical family and the IUCN Red List status or USFWS listing status. By giving visitors insight to what they are looking at, these labels help to educate the public and have the effect of engaging them in thought and further discussion.

Growing T&E plants is a great undertaking and it comes with a responsibility to share knowledge and findings with others, as well as to take advantage of educational opportunities when they arise. Ex-situ and in-situ conservation efforts are important, but so is educating the public about why botanical institutions do the work we do. The intent of growing these species on campus (first and foremost) was to create a unique garden to showcase plants from Hawaii and Greater Polynesia that are in peril; this hopefully encourages people to become active in conservation efforts wherever they may live.

## Conclusion

At this point, collectively, these approaches only scratch the surface of the possibilities. But they do meet our goal of conservation through education and cultivation. As time progresses, we will certainly improve upon our educational program and hope that the end result will be that our visitors are one step closer to contributing to a society that is willing to sacrifice, even if just a little, to preserve our planet's beautiful biodiversity.

The opportunity to grow unique and rare plants such as the Hawaiian T&E species listed above has provided us new insight to their cultural requirements and tolerances. As we move forward in our efforts to grow many of these rare and unique species, we will no doubt continue to learn more about their adaptability and survivability in new habitats. This information may help in conservation efforts, but will at least provide us with an opportunity to share our discoveries with others. And no doubt, for some species that can adapt to California's climate, they will have the chance to serve as ambassadors for conservation to the students, staff, faculty and the community.

## A Few Special Thanks

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The Palomar Community College Administration, Grounds staff, college staff, faculty, the Friends of the Edwin and Frances Hunter Arboretum, students and community who provide us with the much-needed support. As well as everyone else who is working diligently to preserve Hawaii's native flora and fauna.

## **Bibliography**

[1] The IUCN Red List of Threatened Species. Version 2014.3. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on **03 March 2015**.

**Palomar Community College**  
**District,**

**Grounds Services Supervisor**

**President of the Edwin and**  
**Francis Hunter Arboretum**

**I.S.A. Certified Arborists**

**WE-8721A -Antonio Rangel**



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