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**HISTORY OF LANDSCAPE
ARCHITECTURE IN HAWAI'I – PART XV**

MAKENA GOLF AND BEACH CLUB

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THE VOICE OF HAWAII'S GREEN INDUSTRY

contents

DEPARTMENTS

- 4 PRESIDENT'S LETTER
- 29 PEST COLUMN

FEATURES

- 5 AINA MOANA PARKING LOT RESTORATION PROJECT
- 6 CITY PARTNERS WITH COMMUNITY GROUPS FOR ARBOR DAY TREE GIVEAWAYS
- 9 MILLENIAL RISING- Q&A WITH BRANDON LAU
- 23 BEST OF HAWAII: CTAHR ALUM BUILDS HAWAIIAN TURFGRASS INTO A FAN FAVORITE
- 24 KNOW THE LAW BEFORE TREATING WEEDS IN STREAMS AND NEARBY AQUATIC AREAS
- 28 GROWING REAL TURF

COVER

- 8 A POCKET PARK FOR WAIKIKI
- 12 HISTORY OF LANDSCAPE ARCHITECTURE IN HAWAII PART XV
- 18 MAKENA GOLF AND BEACH CLUB: MEET THE LANDSCAPE AND TURF EXPERTS





PRESIDENT'S LETTER

BY CHRIS McCULLOUGH



POWER OF POSITIVITY

In my life I have always endeavored to be a positive person. I believe positive intentions can be manifested into positive outcomes. Positivity leads to unity in thought, mind, spirit and in action. When this positive power is focused for the benefit of all it is transformational. I believe it is important to give your energy to what is positive, to what is pono, to what is right for the common good of all of us. To do so is to connect to the positive flow. Our need for unity, for positive forward thinking and action, so we can heal our communities is needed now more than ever. We must address this challenge as a critical priority. Positive communication in our communities, words which envision a way our country can come together, a way for us to heal. We must face the truths that America needs to reconcile with. By facing these truths there is hope for communication, for understanding, for healing, for ho'oponopono.

I believe our recent positive change in leadership in our country and our return to diplomacy and stability is a path to achieving more understanding, more unity worldwide. This change in leadership has given me hope, as knowledge and experience and compassionate leadership will be needed to address our many challenges ahead. I believe we have taken a great stride forward in the election of a senior statesman as our President, and for the first time in our country the election of a woman, a African American, and a Asian American, as our Vice President! This is a giant leap forward in the promotion of unity and will help to reestablish respect and cooperation from our Global community. For this I am both thankful and grateful! I truly appreciated the words of unity and hope from our new President in the ending of his recent Inauguration address:

"And together we will write an American story of hope, not fear. Of unity not division, of light not darkness. A story of decency and dignity, love and healing, greatness and goodness. May this be the story that guides us. The story that inspires us. And the story that tells ages yet to come that we answered the call of history, we met the moment. Democracy and hope, truth and justice, did not die on our watch but thrive. That America secured liberty at home and stood once again as a beacon to the world. That is what we owe our forbearers, one another, and generations to follow."

So with purpose and resolve, we turn to those tasks of our time. Sustained by faith, driven by conviction, and devoted to one another and the country we love with all our hearts."

For me it felt good to hear these words. These are the words our nation needs to hear from our leadership, words of faith, of dignity and hope. Words that forge the path to unity.

It was a call to all good Americans to come together as diverse yet unifying citizens of our nation, to again be united and to be a beacon of light and hope in our world.

I was also very moved by the words of our Youth Poet Laureate Amanda Gorman, in addressing the truths of our recent challenges, in her brave call for unity and healing in her words of her Inauguration recitation and from this excerpt from her poem 'The Hill We Climb'.

"We will rebuild, reconcile and recover. And every known nook of our nation and every corner called our country, our people diverse and beautiful will emerge, battered and beautiful. When day comes we step out of the shade, aflame and unafraid, the new dawn blooms as we free it. For there is always light, if only we're brave enough to see it. If only we're brave enough to be it."

Be the change you want to see in the world, the words of Gandhi can be our guiding principal. Please do all you can to be the positive change for unity in our community. We can cherish and respect our diversity and in doing so heal our communities. We must recognize that our nation isn't broken, but simply unfinished. We must all do our part to bring understanding and healing in our hope for unity. Now is the time to come together, let's all be a part of the positive change!

A final excerpt from the youngest inaugural poet in U.S. history Amanda Gorman, again from her poem 'The Hill We Climb,' which speaks beautifully to this guiding principal, to act for unity:

"We are striving to forge a union with purpose, to compose a country committed to all cultures, colors, characters and conditions of man. And so we lift our gazes not to what stands between us, but what stands before us."

Christopher McCullough

Chris McCullough, LICH President

'ĀINA MOANA PARKING LOT RECONSTRUCTION PROJECT FINISHED WITH IMPROVED TREE PLANTERS

By Nathan Serota

On November 24, 2020, the 'Āina Moana (Magic Island) Parking Lot was reopened to vehicular traffic following the completion of a majority of the reconstruction project.

The 470-stall parking lot was completely repaved and restriped, with the installation of new gates, benches, and a drop-off zone. Additional improvements were made to the tree planting spaces, irrigation, and curbing, with a one-for-one replacement of unhealthy trees accompanying the planting of new trees. These efforts were made to help these Monkey-pod, Geometry, and Hau trees to thrive and provide a sufficient canopy to cool the area beneath them.

During the project, several meetings were held with community groups to address concerns about tree replacements and new tree plantings. As a result, the Department of Parks and Recreation's Division of Urban Forestry helped select new species of trees to provide larger canopy cover and help ensure the survivability of the trees.

"Throughout our administration we have given much needed care to Ala Moana, the People's Park, after it had been neglected for decades" said Mayor Kirk Caldwell. "Now the most popular park in the State can continue to serve our island, and help create many more memories for

our local families with improvements to the: roadway, parking, irrigation, beach, bathrooms, showers, exercise equipment, pathways, tree inventory, McCoy Pavilion, staffing, and security. All of this while making this location the first City park to convert completely to LED lights and house the first dedicated sand volleyball courts."

With the addition of dozens of recent tree plantings at 'Āina Moana, over 300 palms and trees have been planted in Ala Moana Regional Park over the last four years. This includes a wide variety of species ranging from Loulu palms to Lono-mea, Beach Heliotrope to Rainbow Shower trees. The City is very much dedicated to increasing our tree inventory and shade cover, as expressed in our goals to plant 100,000 trees by 2025 and increase urban canopy cover to 35% by 2035. While the public can use the highly demanded parking stalls at 'Āina Moana, there remains additional work to be conducted by the project's contractor, Road Builders Corporation, such as landscaping maintenance and restoration.

"With the tumultuous nature of this year, it will be nice to get back to some level of normalcy by reopening roughly half of the parking spots at our most popular park," said Honolulu Department of Parks and Recreation Director Michele Nekota. "We appreciate the patience of the park

users while these parking spots received a much-needed makeover. There is still some work to be done, so we appreciate your understanding as the project continues."

Nathan Serota is the Public Information Officer for the City and County of Honolulu's Department of Parks and Recreation

Photos by the Division of Urban Forestry, Department of Parks and Recreation



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Photos by the Division of Urban Forestry,
Department of Parks and Recreation

City Partners with Community Groups for Arbor Day Tree Giveaways

By: Nathan Serota



With the continuing pandemic emphasizing the importance of the outdoors and our natural areas, efforts to improve our environment have become even more essential.

Normally, the Honolulu Department of Parks and Recreation, Division of Urban Forestry (DUF) would continue these efforts by planting several trees and giving hundreds away to the public as part of Hawai'i's Arbor Day (the first Friday in November). However, like so many parts of our lives the way we celebrate our trees and forests has adapted.

On November 7, 2020, at Foster and Wahiawā botanical gardens, approximately 650 trees were provided to two community partners, the Girl Scouts of Hawai'i and Blue Zones Project. With assistance from Arbor Day Hawai'i, these partners dispersed these trees amongst their respective organizations, and eventually plant them into our island for the benefit of future generations. For instance, Blue Zones Project would be planting some of their trees at three elementary schools: 'Iliahi, Ka'ala, & Wahiawā.

Prior to this giveaway, DUF's Community Forester provided an instructional video to the Girl Scouts on the best way

to plant a tree, while helping to develop a unique, Hawai'i Tree Badge to show their understanding and appreciation for our forest friends. In order to earn this one-of-a-kind badge (place photo 2 close to here, no caption), the Girl Scout has to finish two of the following activities: complete an urban forest scavenger hunt, create an artistic tree guide, plant a tree and record it online, or take action in their communities by linking with other organizations. That instructional video can be viewed by everyone as the 17th episode of Nā Pāka ma ka Hale (Parks at Home), DPR's at home video tutorial series designed to provide recreational and educational opportunities to our communities in this COVID era of physical distancing. Visit DPR's YouTube Channel.

Anyone planting trees on O'ahu is encouraged to input that planting information into our tree planting map. Visit <https://bit.ly/100treesoahu> to provide that information and help us reach our goal of planting 100,000 trees by 2025!

Nathan Serota is the Public Information Officer for the City and County of Honolulu's Department of Parks and Recreation

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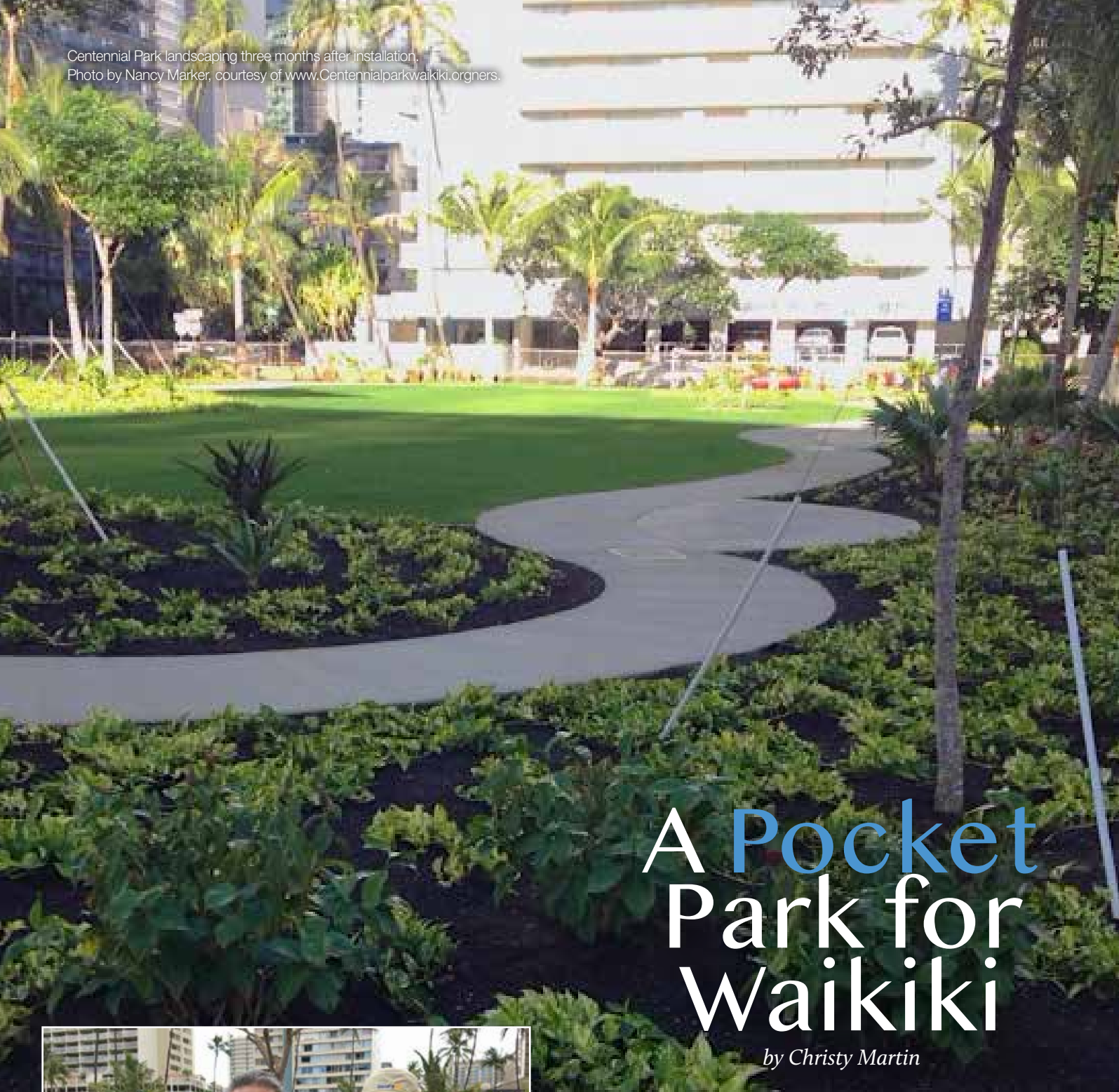
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Centennial Park landscaping three months after installation. Photo by Nancy Marker, courtesy of www.Centennialparkwaikiki.org.



A Pocket Park for Waikiki

by Christy Martin

Hidden behind hotels, condominiums, retail and office buildings is a 1-acre space that is scheduled to open this spring as a community park, thanks to a public-private partnership that started nearly forty years ago. In the late 1980's the lot contained abandoned houses and would have become more buildings if it hadn't been for nearby resident and Rotary Club member Bill Sweatt, his wife Helen, and the efforts of supportive City & County partners.



LA John Mossman and Bub Wo of the Rotary Club of Honolulu were on-site for the September 2020 landscape installation. Photo by Christy Martin



Centennial Park, pre-installation. Photo courtesy of www.Centennialparkwaikiki.org.

They thought that the property would make a great community park, and they set about the long process of building support, including working with the City Council and Mayor, the Department of Parks and Recreation, and bringing public sector support to the table through networks of Rotarians and others.

In 2003, the City and County purchased the property for the purpose of turning it into a park. Initially planned to be a project celebrating the Rotary Club of Honolulu's 100th anniversary in 2015, the newly named Centennial Park was instead used to store construction materials and equipment for Waikiki improvement projects. In 2016 an agreement between Mayor Kirk Caldwell and the Rotary Club of Honolulu was signed, formalizing the public-private partnership.

So it was that on a clear blue September day during the pandemic that I answered the call from Rotary Club of Honolulu for volunteers to help put thousands of plants into the landscape. The landscape design and planting plan by John K. Mossman Design, Inc. was sent to volunteers in advance, and volunteers

were assigned planting areas. With CDC distancing and mask protocols in place, John provided training for the volunteers on how to dig and prepare the holes, and how to position and plant the accent and groundcover plants that had been delivered by Green Thumb, Inc.

I first met John years ago through LICH and we circled back to talk about the Centennial Park project landscape design. "The park is a passive park, designed for walking, sitting, picnics, it's really a family park," he said. "The park is within the Waikiki Special Design District, so we used coconuts—we had to use them, and they are so iconic! But we also used monkey-pods for shade trees and native fan palms, including twelve loulou lelo (*Pritchardia hillebrandii*) and seven Nihoa loulou (*Pritchardia remota*)."

The site also has additional urban design considerations. "We had to think about the tall buildings, the sun and shade as it moves, and how the wind hits the buildings and gets funneled around. For the turf, I decided to use dwarf St. Augustine grass sod because volunteers are still responsible for the weeding. Already, the

areas with the pothos groundcover needs to be weeded, and volunteers will be doing that," he said.

Other park features include an elevated performance mound for small events, and a paved walking path that winds around the park, designed by Fritz Johnson, Inc. Still to come is a short perimeter wall or fence, and equally important, the development of a public-private maintenance plan for the ongoing care of this pocket-sized oasis in the middle of urban Waikiki. If all goes well, the park is expected to open to the public in spring 2021, thanks to many, many hands.

For more information on Centennial Park, visit www.centennialparkwaikiki.org. Mahalo to Carolann Biederman, Reese Liggett, and Rob Hale of the Rotary Club of Honolulu and to John Mossman for their help with this article.

Christy Martin is the program manager for the Coordinating Group on Alien Pest Species and has served on the LICH Board since 2011.

Millennial Rising

by Matt Lyum

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MARI'S GARDENS

Q: Where were you raised and how did that affect your path in life?

A: I was raised on the north shore of Oahu. As a child, I lived in a plantation camp with my grandmother. At the age of 6 we moved to Mokuleia and lived on our family nursery. Since I was a toddler our yard had always been full of plants and when we moved to the nursery, I began to work in the field.

Q: Hawaii high school? College?

A: I attended Kamehameha High School and then graduated with a degree in Tropical Agriculture from UH Manoa.

Q: When did you graduate and major?

A: I graduated in 2011 with a bachelor's degree in Tropical Agriculture and Soil Science with an emphasis on nursery production.

Q: Favorite green industry resource website?

A: Mari's garden website.
www.marisgardens.com

Q: Favorite restaurant?

A: Sushi Sho

Q: Favorite plant?

A: Bismarck Palm

Q: The trend is that landscape and agriculture are aging community your bucking the trend - why?

A: One of the reasons is that I was born and raised on a nursery. The other reason is that I was on a path towards getting a mechanical engineering degree, but when we started to do internships, I realized that it was not what I wanted to do for the foreseeable future.

Q: Who and/or what was the inspiration to start this business?

A: This is a family business that was started by my father.

Q: What you trying to accomplish?

A: I am trying to implement modern business and HR practices as well as make use of technology to propel our company to greater efficiency.

We hope to take the clientele that we currently have and give them the best possible service.

Q: Whats your best accomplishment so far?

A: Our best accomplishment thus far is building a labor force that is loyal and willing to do hard labor for us day in and day out. We are so grateful for them.

Q: What plants do you sell? particular sizes?

A: We sell many different types of plants from ground covers, succulents, and indoor plants to shrubs, palms and trees.

Q: What new plants are coming soon?

A: We are always looking for new plants to introduce to the public. One that we have recently secured a supply of is variegated monstera. We will be releasing them in small batches.

Q: Are you wholesale and retail?

A: Yes

Q: What has the current generation done well? What do you think could be improved by your generation?

A: The current generation has done a good job of putting the infrastructure of a business in place. They have worked hard and long to put together systems for technical parts of the business as well as a base of knowledge for general horticulture. I think our generation is really tasked with the challenge of doing business in a more environmentally friendly way and adapting to the ever changing market smoothly and efficiently.

Q: What will the landscape industry look like in 30 years?

A: In 30 years the landscape industry will most likely make much more use of robotics, AI, and cloud computing. I know that in 30 years the landscape industry will be at a place that I cannot imagine at this time.

Q: Could you provide 2 to 3 contacts/colleagues we could call for quotes?

A: I'm not sure what kind of quotes,

but some of the most recent people I have spoken to are Travis Miyashita from Glenn's Flowers and Plants, Craig Hiyakumoto from Green Thumb, and Lucas Holmes from Personal Touch Landscape.

Q: What advice would you give high school students consider a career in the green industry

A: I would tell them that we need them, and that they are very important to the future of humanity. I would also let them know that they are entering an industry that has unlimited and increasing potential. It is an industry that will be a necessity for all of our lifetimes.

Q: Do you work with the Hawaii extension office?

A: Yes

Q: Tell me about what you're working on now.

A: Right now I am working on building a fish research facility for UH Manoa to further the data on Tilapia growth habits. This is important to me because it may affect Hawaii's future food supply. My other major project at the moment is putting together training programs for our landscape laborers to increase the quality of our job sites.

Q: Who are your biggest influences?

A: My father, who started our green industry companies, is my biggest influence. He is still involved with our family's companies and we look to him for making calls on tough decisions or to help navigate unique situations.

Q: What advice would you give someone thinking of choosing a career in the green industry?

A: I would say it's a great and exciting time to enter this industry. If the first one or two experiences that you have in the industry don't turn out well, do not give up. There are so many avenues to explore in the green industry that I truly believe there is a place for many different types of people, it is up to you to figure out what they may be.

The History Of Landscape Architecture

Our Stories Of The History of Landscape Architecture In Hawai'i - Part XV

By: Dana Anne Yee, FASLA, ISA CA, LEED AP, RA, MG All photos by Dana Anne Yee



There are currently 304 parks on O'ahu, which now includes, the Centennial Park in Waikiki. It was recently blessed on December 16, 2020, through a partnership with the City and County of Honolulu, Mayor Kirk Caldwell, and the Waikiki Rotary Club of Honolulu. Earlier, Our Stories of the History of Landscape Architecture articles shared historical information about our treasured parks from our largest and second oldest park, Kapi'olani Regional Park to our largest beach park, Ala Moana Regional Park, to some of our oldest parks, Mother Waldron Neighborhood Park, and many other parks.

Our Landscape Industry Council of Hawai'i, Hawai'i Landscape Magazine's, outstanding executive director Garrett Webb, skilled editor Russell Galanti, and talented creative director Roann Gatdula, announced that the next LICH magazine issue March / April 2021, will focus on Parks. Our islands are relatively young, so just how did the park system start?

A park is defined in the dictionary as a large public green area in town, that provides recreational use.

The BEACH! My favorite writing spot! As the sun is setting, I see many people enjoying a variety of recreational activities that Ala Moana Regional Park has to offer. The City and County of Honolulu maintains the parks which include Regional Parks, District Parks, Community Parks, Neighborhood Parks, Botanical Gardens, Beach Parks, Mini Parks, Urban Parks, and Memorial Parks.

EUROPE

Public parks may have begun as early as 1574. In Seville, Spain, the La Alameda de Hércules Park is the oldest public garden in Spain and Europe. It was built from a public garden named after eight rows of white Poplar Trees.

In the 1790's, the city park Városliget, in Budapest, Hungary, established a forest or stand of trees called afforestation.

Afforestation is an area where there is no previous tree cover. (Today afforestation or the creation of forests help to increase the capture of carbon).

Prince's Park in the Liverpool suburb of Toxteth in London, England was an early public park. It was designed by Joseph Paxton, an English gardener and architect in 1842. The Prince's Park was influential in the idea of an open space for the benefit of the townspeople.

In 1835, the Regent's Park, one of the Royal Parks of London, England was opened to the public. Regent's Park was pioneered by Architect John Nash and it was the first example of garden suburbs. Joseph Paxton is credited for designing Regent's Park and influencing the principals for Central Park in New York. Central Park was designed by Fredrick Law Olmstead and Calvert Vaux in 1857, after Olmstead was influenced by his visit to Birkenhead Park in England in 1850. (Wikipedia.)

ASIA

In 1783, Bogd Khan Uul National Park was designed around the Saint Khan Mountain in Mongolia that overlooks the nation's capital, Ulaanbaatar. Bogd Khan Uul National Park is the oldest national park in the world. "Environmental protection on Bogd Khan Mountain dates back at least to the thirteenth century when the Tooril Khan ruler of the Keraites, forbade logging and hunting there, claiming that Bogd Khan was a holy mountain." (Wikipedia Bogd Kahn Mountain.)

In 1787, the Calcutta Botanical Gardens in India, was founded by an army officer of the British East Indian Company. Colonel Robert Kyd, founded the gardens for the purpose of identifying new plants of commercial value, such as Teak and spices. The Calcutta Botanical Gardens is now known as the Acharya Jagadish Chandra Bose Indian Botanic Garden. (Wikipedia Calcutta Botanical Gardens.)

In 916-1125, Beihai Park, known as the Winter Palace, became a public park. This was formally the imperial garden of



Ala Moana Regional Park, City and County of Honolulu, 2021
Photo Credit: Dana Anne Yee, FASLA

the Imperial City in Beijing. Beihai Park was originally built during the Liao Dynasty. It was rebuilt in the Jin, Yuan, and Ming Dynasties (1115-1911), with a large-scale renovation by Emperor Qianlong of the Qing Dynasty (1655 -1911). In 1925, the Beihai Park opened to the public, attracting hundreds of thousands of visitors from all over the world. Wikipedia.

AMERICA

Rural Cemeteries were the beginning of urban parks in the United States. They provided a place for the public to enjoy recreation outdoors.

Founded in 1634, Boston Common in Boston, Massachusetts, is America's oldest public city park.

Many public parks have been created around America's most scenic and historical places for the protection, education, and enjoyment for all people. People had the desire to escape the city and urbanization to see nature and wildlife and appreciate the beauty of our incredible lands.

In 1872, Yellowstone National Park in Wyoming, Montana, and Idaho, was signed into law by President Ulysses S. Grant as an American national park. Yellowstone is known for the Old Faithful Geysir. Yellowstone National Park was the first National Park in America. It was believed to be the oldest National Park but Indonesia's Bogd Khan Uul National Park is actually the oldest National Park in the world from 1778.

In the 19th century, city governments purchased land on the outskirts of their cities to create parks for workers to relax in nature. In the 1950's, after World War II, money was available for new parks that focused on recreational needs for the people.

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Haleakalā National Park at Sunrise, National Park Service, Maui, Hawai'i, 2018. Photo Credit: Dana Anne Yee, FASLA



Immature Native Hawaiian Silversword /'Ahinahina, *Argyroxiphium sandwicense* subsp. *Macrocephalum*. Photo Credit: Dana Anne Yee, FASLA



Haleakalā National Park at Sunrise, National Park Service, Maui, Hawai'i, 2018. Photo Credit: Dana Anne Yee, FASLA



Lei Day in Hawai'i, May 1, 2019, Kapi'olani Bandstand at Kapi'olani Regional Park, Honolulu, Hawai'i, 2019. Photo Credit: Dana Anne Yee, FASLA.



NATIONAL PARK SERVICE (NPS):

We are home to two major National Parks, one on Hawai'i Island and one on Maui. On Hawai'i Island, our impressive Hawai'i Volcanoes National Park, continues to grow as Volcanoes erupt and create new lands. Recently, on December 20, 2020 Kīlauea's Halema'uma'u Crater in Hawai'i Volcanoes National Park erupted with lava flowing into the summit water lake. Haleakalā National Park on Maui is the home of the rare native Hawaiian Silversword ('āhinahina meaning "very gray") plant. Another well known park, Pu'uhonua O Hōnaunau National Historical Park was established in 1955 as the City of Refuge National Historical Park, known for the protector Kii (tiki's) and heiau. Each of the National Parks are well maintained by the U.S. Department of the Interior, National Parks Service and they share their natural wonders for the public to honor, learn, and enjoy.

STATE AND CITY AND COUNTY PARKS:

The State of Hawai'i, the City and County of Honolulu, and the Counties of the neighborhood islands share and maintain our great Hawaiian island public park system.

Our islands are gifted with many amazing and spectacular visual and natural wonders that some of the State of Hawai'i, the City and County of Honolulu, and the neighboring County Island's public parks have been created around. There are numerous parks on almost every island. Here is a small sample of the State of Hawai'i and the City and County of Honolulu, and the neighboring island, County Parks, per island:

The Hawai'i State Park System is composed of 50 parks on approximately 30,000 acres on five islands; Hawai'i, O'ahu, Kaua'i, Maui, and Moloka'i. The State of Hawai'i Parks are administered by the Department of Land and Natural Resources, Division of State Parks.

Here is a small sample of Hawai'i State Parks, on each island:

O'ahu – Diamond Head State Monument

Hawai'i Island – Mauna Kea State Recreation Area

Kaua'i – Koke'e State Park

Maui – 'Iao Valley State Monument

Moloka'i – Palā'au State Park

City and County Parks, by islands:

O'ahu – City and County of Honolulu, there are 304 City and County of Honolulu parks.

County of Hawai'i, Parks & Recreation, there are 209 County of Hawai'i parks.

County of Kaua'i, Parks & Recreation, there are 74 County of Kaua'i parks.

County of Maui, Parks & Recreation – includes the islands of Moloka'i and Lana'i.

The County of Maui operates over 130 parks and recreation areas on three islands. On January 6, 2021, Honolulu was named the best City for an active lifestyle! And interestingly, Honolulu has the most tennis courts per capita.

I have had the pleasure of working for the City and County of Honolulu Parks and Recreation Department for over a year now. I accepted this planning position after being encouraged and supported by our fine Director of Parks and Recreation, Director Michele Nekota. Her leadership is reflected in the kind ways in which she has taken on the amazing task of maintaining, protecting, and managing the many parks and City employees. Director Nekota has led the way as our City and County of Honolulu Parks and Recreation Director for the past seven years. We are grateful for all that Director Michele Nekota has done for our community to help our island flourish and grow. Under the guidance of our 15th Mayor Rick Blangiardi (our 8th Mayor since statehood), Director Laura Thielen, Deputy Director Michele Nekota, and

Executive Assistant Carla Wong, our parks will continue to maintain a high quality of excellence for our grand open parks and recreational spaces for all the people of Honolulu, Hawai'i, Kama'āina and visitors alike to enjoy.

The Coronavirus (Covid-19) pandemic continues to be a global health crisis. Countries have redesigned their outdoor environments and surroundings to alleviate and accommodate people's natural inherent need for natural sunlight and fresh air. As a result of these pandemic outbreaks and of societies need to have open spaces with clean fresh air and natural light, garden spaces were developed and helped shape many of the grand landscape park spaces of today. (See past Our Stories of the History of Landscape Architecture in Hawai'i, Article about Pandemics, Part XII.)

We are indeed thankful to our pioneers who created these wonderful parks and we are grateful to the many community minded people who continue to protect, preserve, and maintain the many parks, here and around the world.

Let us hope that there will be an end to the COVID-19 pandemic soon. Stay safe, be kind to each other, and protect, preserve, and treasure our valuable Hawaiian land and all its people!

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 ©2021 Dana Anne Yee, all rights reserved
 By Dana Anne Yee, FASLA, ISA CA, LEED AP, RA, UH MG, from the firm of Dana Anne Yee, Landscape Architect, LLC, and City and County of Honolulu Planner. Dana has been a presence in the Landscape Architectural profession and has a long-standing pattern of service to her profession and the community. Dana was honored as a Fellow with the American Society of Landscape Architecture in 2012. www.danaanneyee.com. The Dana Anne Yee Foundation, www.dayifoundation.org, is a 501(c)(3) non-profit organization. The board of directors and members will continue in their commitment to serve to protect Hawai'i's delicate ecosystem and natural environment in their pursuit to help to preserve Hawai'i's beauty and to keep our Hawai'i green.

Makena Golf & Beach Club: Meet the Landscape and Turfgrass Experts

Interview by Hannah Lutgen, CTAHR extension agent, Maui



Kassie Haake, Landscape Maintenance Manager (Left)
Joseph Tardif, Golf Course Superintendent (Right)

The golf course and landscaping industry of Hawaii is extremely diverse. I recently had the pleasure to interview two extraordinary professionals, Kassie Haake and Joseph Tardif at the Makena Golf & Beach Club. The interview covers a wide range of topics from information about their backgrounds, horticulture tips and general updates from within the golf course industry.

Q: Hello, thanks for meeting with me. Please tell us a little bit about yourself and your job.

Kassie Haake (KH): I was born and raised on Maui and I've been working at Makena Golf & Beach Club for 5.5 years as the Landscape Maintenance Manager. I studied horticulture in college. I do a bit of landscape design, and used to work at The Four Sea-

sons Resort, at Wailea, Pukalani Plant Company, The King Kamehameha and The Kahili Golf Course in Waikapu, as well as working on a farm doing aquaponics, and now I'm here [at MGBC]. I directly manage 17 employees within the landscape department who maintain the landscapes on property as well as public access areas (beach parks). I also work on projects redesigning and adding landscapes, and with architects who want my opinion on plant palettes or what works here. With all the new homes being built in the community, I will eventually take over the homeowner's association (HOA) portion of the landscape. It's an exciting job because it's a nice mix; it's not just all maintenance, it's also upcoming projects working with the public and homeowners.

Joseph Tardif (JT): I grew up in Massachusetts in a small town just outside of Boston. When I was in high school I worked on a local golf course during the summer and realized how much I loved working outside and getting my hands dirty. I graduated from the University of Massachusetts Amherst with an Associate's degree in Turfgrass Management and a Bachelor's degree in Plant and Soil Science with a minor in Business Management. During my freshman year of college I interned on the Big Island and instantly fell in love with Hawaii and the culture. After I graduated from UMASS I worked as an Assistant Superintendent on Nantucket Island for 5 years. After four cold and dark winters on Nantucket I got sick of shoveling snow and took the Assistant Superintendent job at Kohanaiki Golf & Beach Club in Kona.



Spider Lilly and Monkey Pod Picture. Caption: Spider Lily and Monkeypod.
Photo credit: Makena Golf & Beach Club

I worked at Kohanaiki for a year and a half before getting the Golf Course Superintendent job at Makena Golf & Beach Club where I have been for almost five years. During my time at Makena it has been exciting to not only see how much the golf course has grown and improved over the years but how the entire property itself has expanded and developed. I am blessed to work with and manage some of the best and most talented managers along with an amazing union labor crew of 50 landscape and turfgrass professionals. I fell in love with this job and this industry because it is one of the few jobs where you can grind and put in countless hours of hard work but when you are all done you are able to step back and see your fruits of labor. Even if it's one of our golf course greenskeepers when they mow their greens or fairways in the morning afterwards they can look back and say "wow that looks good, that was my hard work". There are not a lot of jobs where you're able to take so much pride in your work and receive instant gratification and that's what pushes me and my team to hit peak performance.

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Native Wiliwili (*Erythrina sandwichensis*) growing on a golf course.
Photo credit: Makena Golf & Beach Club

Q. Please tell us about Makena Golf & Beach Club.

JT: MGBC is a residential community that includes a private golf course that stretches from Maluaka Beach up Mauka to Ulupalakua and is located on the leeward slopes of Haleakala on the island of Maui, HI. While this is a private, members-only course, we value the opportunity of being good neighbors by hosting charity golf events. The 18-hole golf course has 70 acres of Platinum Paspalum and 30 acres of surrounding landscape including bougainvilleas, willi willi, hau, naupaka, pohinahina and many other ornamentals. The 18-hole championship course starts at sea level and you climb to over 1000 ft above sea level and are left with stunning views of Lanai, Molokini, Kaho'olawe and sometimes Oahu. We are currently trying to eliminate some of the invasive species and have propagated native plants in our greenhouse to replace these invasive plants and grasses. We host annual community plantings to promote and educate on the use of more native plantings that thrive in the Makena region.

Q. What turfgrass and/or plants do you maintain?

KH: As far as landscape, we are limited because we irrigate with non-potable, saline water. We grow and maintain spider lily, a lot of bougainvillea for color, hau, plumeria, monkeypod trees, and areca palms. We actually have a lot of natives such as naupaka, maiapilo, ākulikuli, pōhinahina, ākia, wiliwili, 'a'ali'i, and native sedges. Luckily the *Erythrina* gall wasp didn't decimate the Wiliwili trees in Makena in comparison to the rest of the island. We harvest some of the seeds from Maiapilo and Wiliwili growing on the property and grow them. I have about 50 seedlings that I'm going to pot up and eventually put back on the course. We are trying to get more natives out there.

JT: The golf course is wall to wall Platinum TE Paspalum actually called platinum paspalum. A lot of golf courses are re-planting with paspalum cultivars because of its dark green, vigorous color and its low fertilizer requirements. It's an outstanding warm season turfgrass and has tremendous disease resistance and its dense canopy helps keep out weeds like goose grass and sedges.

The Platinum paspalum thrives at Makena because of our mostly dry weather and lots of sunlight year round. The only challenges we deal with are typically related to high cart traffic and our poorly structured areas. Platinum paspalum also struggles in dense shade and poorly drained areas.

Q. What is your company currently doing well? Do you have any tips on landscape or turfgrass maintenance?

KH: We are fortunate to have hard working staff and resources to shape the landscape and golf course into what it is today. Our employees work well together and in turn have figured out how to manage the landscapes and work with what we have. We are working towards building healthy and productive soils in our landscape by adding products such as biochar to increase soil fertility and drainage. The key is to pick the right plants for the right places and to understand the land you are working with.

JT: Honestly the hardest part of maintaining our platinum paspalum is keeping the growth under regulation especially during summer months.



Native Maiopilo (*Capparis sandwichiana*) growing on the golf course.
Photo credit: Makena Golf & Beach Club

If we get a surge growth on our greens from a rain event releasing bound up nutrients it can affect the playing surfaces and speed at which the ball rolls on the greens. We constantly are grooming and vertical mowing our greens to thin out the canopy and we follow these practices with light frequent sand topdressing practices that are brushed in. The sand allows for a smoother putting surface and also acts as a protectant for the crowns of the turf grass. Paspalum is a halophyte (salt loving) plant and was found growing on sand dunes in Asia. Platinum paspalum is also the only paspalum cultivar that grows both stoloniferous (lateral) and rhizomes (horizontal) which means plant growth regulators are key to allow our mowers to keep up with the constant growth.

We spoon feed fertilize every 2-3 weeks giving the plant low rates making sure we are giving the plant enough nutrients to produce carbohydrates but not too much where it starts growing out of control leading to scalping and soft greens. We foliar feed using very low rates of Nitrogen and Potassium. Dialing in our Zinc and Manganese rates has allowed the plant to build immunity and boosts overall plant health so the plant can fight disease naturally and we don't have to spend as much money on fungicides. We also spread a slow-release granular fertilizer three times a year which helps feed the soil and helps promote root growth. If you skip using slow release granular fertilizers and only do foliar sprays you aren't giving the plant a base fertilization and will be susceptible to thatch and soil borne diseases.



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Best of Hawai'i: CTAHR alum builds Hawaiian Turfgrass into a fan favorite



Sean Fong, CTAHR grad and owner of Hawaiian Turfgrass

Q: Do you have any updates or tips for the golf course industry?

JT: We are excited about the insecticide Acelepryn [active ingredient is Chlorantraniliprole]. This systemic insecticide was recently approved in Hawaii and lasts longer in the plant protecting turfgrass for 6-8 months. Acelepryn has shown zero resistance and it is one of the safest insecticides not even having a caution label. Rotating our fungicide and insecticide classes and FRAC numbers has been key to preventing any bad disease outbreaks especially during rainy, wet winter months.

Q: Do you experience any pest or disease issues and how do you manage them?

KH: We try to manage the landscapes through preventative maintenance first. By pairing the right plants to its suitable growing environment, removing debris and managing areas to deter breeding grounds for pests and disease to name a few. One example is when I first came to this property, I knew we had a lot of young plumeria trees. As a result, we purchased an Arborjet system and schedule tree injections once per year to manage

whitefly. The coconut palm maintenance methods have also been improved from the use of tree climbing spikes to spike-less practices to maintain our mature, coconut palms. This year is the first year I noticed boron deficiency. We applied a Solubor drench early this year, we will check again in June and re-apply if needed. We try to build our soils for healthier plants, follow a routine fertilization schedule, and alternate our pesticides using different active ingredients (MOA). If you are constantly monitoring and adjusting your program you can potentially avoid catastrophe.

JT: Our big three pests on the golf course are armyworms, sod webworms, and occasionally billbugs. The presence of birds typically indicates we have some type of pest activity. Once we see that activity we spot spray foliar insecticides and leave the water off that night when the worms come out to feed on the leaf blades. We time the irrigation around the insecticide applications to ensure that water stays off at night and in the morning so that the product stays on the leaf blades. We try not to use any RUP and we always rotate our mode

of actions for insecticide and fungicide sprays.

For disease management cultivation is huge for us - we core aerate and verticut the course twice per year. If there is an excessive thatch layer it's difficult to get some fungicides into the disease zone. For thatch diseases - I take a core sample, split it in half, incubate it in the fridge for two days. Based on where the white mycelial growth is, I then know where the disease is active, and how deep it goes. If the disease is really deep, we will solid tine first, apply fungicide with a wetting agent which helps the product move and stay into the thatch layer for 24-48 hours so the fungicide effectively kills the disease. Thatch diseases are tough to treat curatively once you have an outbreak unless you can really work the fungicide down into the thatch layer where the disease is present. Lastly, it's very important to track fungicides and record FRAC codes to make sure you're not developing any resistance.

Thanks Joseph and Kassie for sharing your time and expertise!

When Sean Fong was an undergrad in the Dept. of Tropical Plant and Soil Sciences, like many young people, he wasn't quite sure what the future held for him. But he liked the professors, respected their vast knowledge, and was grateful for their willingness to mentor him.

Then he took a turfgrass management class, and the rest is history. The company he would eventually build from scratch, Hawaiian Turfgrass, won Hawai'i's Best 2020 by the Star Advertiser.

"The recognition means a lot," Sean says. "It's a validation of the hard work our crew is doing, the great job my team is doing. It comes down to the growers taking pride in quality control of the grass, the installers working with customers and setting them up for success, not skipping steps. I also want to thank our customers for spreading the word about us."

After the turfgrass class, Sean had found his focus. He learned everything he could about grass management and production, the best varieties and how

to bring them to Hawai'i. The multitude of classes taught him to look at quality control, technology, greenhouse aspects.

"When I graduated, I was so gung ho, I knew what I wanted to do," he says. "We started with nothing, no equipment or land, going at it every day without getting paid at first, investing everything back into the company. Day by day, we won, built some more."

Sean continues, "We made sure to get the very best varieties, and really manage production - CTAHR taught me all that. All the professors have been a great source of information, beyond graduation. They taught me to perfect my craft and become the best grass farmer I could."

Sean learned quickly to 'piggyback' on varieties that were university and privately bred for superior characteristics and traits, and still relies on the expertise of CTAHR.

"We're adding grasses used in NFL and college football fields," he says. "Our grasses are proven, rating high in tests. They perform better, with less maintenance, less watering, more draught tolerant, better characteristics,

nicer look, less thatch (grass buildup and spongy). They require less fertilizer, yet outperform the common varieties. It's personally satisfying to see the grass doing its best, shining, standing out. The quality speaks for itself."

In the decade+ since Sean graduated and started Hawaiian Turfgrass, the company has gone from leasing a single 6,000-sq. ft. bed to now owning 67 acres. He credits his success to "not being afraid to get your hands dirty," and CTAHR professors.

"The professors have been great resource to circle back to. I believe in education, the more we can do to perfect our craft, the better overall. Dr. Zhiqiang Cheng, Dr. Joe DeFrank, and other professors come out and visit us. They're great resources."

He adds, "I had a NO FEAR mentality, but I don't know everything, so CTAHR professors have been great resource to circle back to. Mahalo!"

Article courtesy of the UH College of Tropical Agriculture and Human Resources (CTAHR). Photos courtesy of Sean Fong and CTAHR.



KNOW THE LAW BEFORE TREATING WEEDS IN STREAMS AND NEARBY AQUATIC AREAS.

By: Joseph DeFrank, Ph.D retired
UH-Manoa faculty.

In consultations with Hawaii's turf and landscape managers, the question of vegetation management adjacent to various types of water features remains a topic of concern and confusion. Most landscape managers are resigned to the belief that chemical weed control in any ditch or stream is strictly prohibited by the Federal Clean Water Act. The result of this belief is a hesitancy to properly care for these water systems. Without proactive management, waterways will become infested, restricting flow leading to severe flood hazard when debris dams form and storm water overflows its banks destroying property and people's lives. Streams and other natural and man-made water features either on private or public lands are the most sensitive areas for any kind of work including chemical weed control. In this article, I will discuss [updated] conditions and definitions contained in the EPA's latest draft of the publication titled: "PESTICIDE GENERAL PERMIT (PGP) FOR DISCHARGES FROM THE APPLICATION OF PESTICIDES" of which Hawaii falls

under. The online EPA document (at URL: <https://www.epa.gov/npdes/pesticide-permitting-draft-2021-pgp>), is a draft version signed by all 10 U.S. EPA Regions on 12/14/2020 and submitted for publication in the Federal Register. Once codified, provisions of this EPA document will be incorporated into Hawaii Administrative Rules (HAR) and administered by the Hawaii Department of Health (DOW-CWB) Clean Water Branch (URL: <https://health.hawaii.gov/cwb/>).

The EPA's PGP (dating back to 2012) and related Hawaii state rules include conditions and authorizations needed to release chemical pesticides into State waters. Many land managers fail to understand the specific land areas covered by this permitting process and the path for vegetation management that makes use of chemical herbicides. It is important to understand certain terms and definitions to determine if permits are required to deploy chemical vegetation management in and around State waters.

The term: **Pesticide Discharges to Waters of the State from Pesticide Application** - means the discharges that result from the application of biological pesticides, and the application of chemical pesticides that leave a residue, from point sources to waters of the State. For weed control purposes, the pollutant would be a chemical herbicide solution, released into the water from a point source such as the tip of a spray nozzle. Another important term used in these rules is: **Waters of the State** - meaning (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (b) All interstate waters, including interstate "wetlands;" (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters. The last phrase important to this discussion is: **Wetlands** - means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. With these definitions in mind, Photo 1 shows the areas of stream where application for and coverage under the PGP would be required for chemical herbicide applications. Even if an herbicide application could be made with no discharge of spray solution into the water body, i.e. by wiping herbicides directly onto the weedy foliage or cut stumps, a PGP would still be required. Photo 2 shows the same stream where weedy shrubs and weeds on the banks were mechanically removed. A PGP would be required if herbicides are used to treat plants in the bank area designated as a "wetland". This part of the bank is still considered "Waters of the State" because the area is continually wet and plants growing there are adapted for life in saturated soil. The areas of the bank that are not continually saturated with water would not need a PGP for vegetation management using chemical herbicide application.

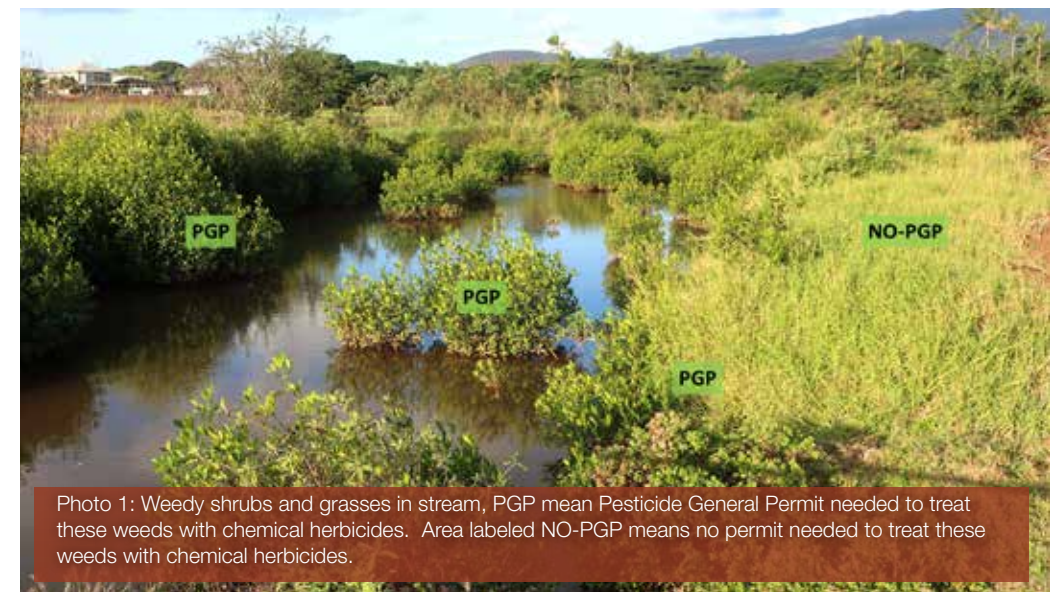


Photo 1: Weedy shrubs and grasses in stream, PGP mean Pesticide General Permit needed to treat these weeds with chemical herbicides. Area labeled NO-PGP means no permit needed to treat these weeds with chemical herbicides.



Photo 2: Stream banks with weedy shrubs and grasses removed. PGP means Pesticide General Permit needed to treat these areas with chemical herbicides. Area labeled NO-PGP means no permit needed to treat with chemical herbicides.

Applicators contracted to administer pesticides in state waters should be familiar with the PGP application process or seek professional consultation with expertise in pesticide rules and regulations. An herbicide application to be covered under Hawaii Department of Health's PGP would need to include: target pest identification, an action threshold (i.e. weed growth and % coverage of the management area) would need to be established. Prior to any pesticide application, the decision maker for weed management of Waters of the State area must evaluate the following management options, including a combination of these management options, considering impact to water quality, impact to non-target organisms, feasibility, and cost effectiveness of: 1. No action, 2. Prevention 3. Mechanical or physical methods 4. Cultural methods

5. Biological control agents and 6. Pesticides. All pesticide applications covered under the PGP, must be monitored before and after the herbicide treatment to document discharge and dissipation in the surrounding environment.

Clearly, obtaining legal use of herbicides in and around Waters of State is an expensive and involved process, best pursued by experienced professionals. As of this writing, I am not aware of any pesticide applications covered by a DOH-CWB PGP. If anyone can share herbicide based Hawaii-based PGP, it would be helpful for the entire landscape community to understand all the documents and procedures needed to manage vegetation safely and legally in this very environmentally sensitive area of land management.



COMMON TURFGRASS PESTS ▲▲▲ IN HAWAII▲▲▲



Figure 1. Bird feeding on armyworm grubs.



Figure 2: Lawn Army Worm damage 1 month after initial infestation in Figure 1.



Bermudagrass Mites Damage.



Spring is here and Hawaii's warm season turfgrasses will soon be inundated with a wide variety of pests. There are specific signs and symptoms for each insect but one surefire way to identify the beginning of a problem is to monitor local bird activity, as the consistent presence of birds is a sign of high pest activity. Controls for each vary but the best management practice is to maintain healthy lawns, with low thatch, proper irrigation techniques and correct use of fertilizers. If chemical controls are used, be sure to read labels for proper application methods and timing.

Here are the more common pests in our warm season lawns:

Chinch Bugs – *Blissus sp.*

Chinch bugs are small, black-bodied insects with adults being only 1/8" long, mostly common in summer months in Hawaii. St. Augustine turfgrass is the most common meal for chinch bugs but they also feed on

zoysia grasses. They eat by sucking sap out of the blades, causing uneven spots of yellowing in the lawn. As infestations age, the lawn turns brown, resembling a dry spot lacking irrigation. Insect activity lies in the perimeter between the dead patch and the green, healthy lawn. To confirm the presence of chinch bugs, have a bucket with water, dig up lawn and soil and put it into the water. The chinch bugs will float to the top of the water. To prevent these infestations, keep your lawns healthy and prevent thatch, as this is a great area for chinch bugs to live and lay eggs.

Lawn Armyworm – *Spodoptera sp.*

The life cycle of lawn armyworms begin as eggs on shrub or tree foliage, walls of buildings, or any convenient surface. Once hatched, they crawl to the lawn of choice, typically seashore paspalum or bermudagrass. Armyworms eat the blades of grass down to the culms. The lawn dies, causing the worms to move out in

uneven patterns as they feed both day and night. Confirm the presence of army worms by laying a board at the edge of the damaged area of lawn for an hour. Lift the board to see the worms on the surface of the lawns. Larvae are gray in color when young, turning brown with age. The caterpillars burrow into the ground to pupate into a moth, completing their lifecycle.

Cut Worms – *Agrotis sp.*

Cutworms are often confused with armyworms, but bermudagrass seems to be their meal of choice. There are several types of cutworms in Hawaii with the larger, dark brown to black caterpillars feeding at night. When disturbed during the day, the caterpillars will curl up as a defense mechanism, whereas armyworms tend to stay straight. They are not as prolific as armyworms, but the feeding damage is similar. You will find them using the same methods as armyworms. Caterpillars pupate into a dark brown moth.

Rhodesgrass Scale – *Solenopsis sp.*

Despite the common name, rhodesgrass scale is a type of mealybug that feeds most commonly on zoysia lawns in Hawaii. While it is not the most widespread of the turfgrass pests, it is often difficult to identify. This mealybug hides in the base of the grass blades, against the culms, and are protected by what resembles a small bit of cotton. As it feeds, honeydew is secreted causing a little bit of stickiness on the lawn. The most distinguishing sign is the faint grayish spots on the lawns, caused by waxy secretions of the mealy bug. As the infestation increases, the lawn dies in patches, with yellowing on the perimeter of the remaining healthy areas. Rhodesgrass scale, occurring in summer months, has an interesting life cycle with nearly invisible nymphs and crawlers. As they mature, they become sedentary and feed in the same spot for the remainder of their life.

Bermudagrass Mites – *Eriophyes sp.*

You will most likely never see the Bermuda grass mite, as they are practically microscopic, but you can identify their presence by observing the damage on your lawns. These mites have an amazingly fast life cycle, laying eggs on the leaf sheath, growing through 2 nymph stages, then maturing into an adult, all within 10 days. Hawaii's consistently warm temperatures can speed up this cycle, causing high infestations. Bermudagrass typically grows with the fine blades tightly knitted together. These mites' feeding damage causes the nodes of the grass to shorten, creating bunched together tufts of blades. Severe infestations will cause the lawn to die.

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Allison Wright is the Superintendent for Island Plant Company, LLC and Co-Owner of Valhalla Flower Farm, LLC

GROWING REAL TURF

Selection & Characteristics of Turfgrass Varieties in Hawaii

BY DANNY GREEN

In This Photo: Geo Zoysia



ABOUT THE OWNER

Since 1991, Danny Green of Southern Turf Hawaii has grown over 12 varieties of turf on his 92-acre Oahu farm. Danny has partnered with sod brokers and is instrumental with field testing new types of sod on the farm. He has introduced several of varieties to the state of Hawaii.

www.SouthernTurfHawaii.com



With an ever-growing inventory of turfgrass varieties available in Hawaii, selecting a turfgrass for a customer's residence or commercial property is an important task. Each island in Hawaii has many microclimates and growing conditions that directly affect plants and turfgrass growth habits. By assessing the use and microclimate of a property, grass varieties can be selected to highlight the features of the property and provide lower maintenance requirements and long-term property cost.

CONDITIONS TO CONSIDER



Science is helping to develop and determine desirable characteristics in turfgrass through hybridization and selection in field trials. Due to damages to athletic fields and golf courses, turfgrass requires growth that will shorten recovery time. In resorts and homes, limited sunlight in certain areas may determine the variety needed to present an aesthetically pleasing appearance and functionality for the property.

Most of the university research and field testing data we use comes from states with similar climate conditions.

By using test plot data from the University of Florida at Citra and The Turfgrass Breeding Research in Tifton, Georgia, the likely performance can be analyzed prior to field testing in Hawaii. Field testing of each variety, prior to release in our landscape, is the only way to know how a turfgrass will do in our climate. Each variety that comes through a one-year quarantine, must then be grown out in the farm for about another year prior to being made available to the public.

Celebration® Bermudagrass

(*Cynodon dactylon sp.*) has a large, deep root system and is very shade tolerant. Originally found in Australia as Riley's Super Sport 600, Celebration Bermudagrass was brought to Hawaii by our company for Puo'waina Punchbowl Cemetery of the Pacific. Bermudagrass was always the grass of choice for the Veterans Administration, but growing bermudagrass under the beautiful trees was a challenge. Larry Thornton, foreman, brought Celebration to my attention when the cemetery began planning a renovation of 40 acres. Majority of the grave plots are in full sun, however, there are also many that fall in the shade of the expansive canopy of trees. Celebration performs well in conditions with a minimum of 4 hours of sunlight. Many older varieties of bermudagrass require 8-10 hours to maintain a full canopy of turf.

Citra Blue St. Augustine

(*Stenotaphrum secundatum sp.*) is a variety that came out of research from the University of Florida turfgrass breeding program. This grass has a deep blue-green color, excellent resistance to chinch bug, and has a drought tolerance not found in most St. Augustines. The leaf blades are close together on the runners and have short internode spacing, creating a very tight canopy of leaf blades with exceptional color. Shade tolerance in most St. Augustine grasses is good and Citra Blue is among the best. Citra Blue has proven to be resistant to St. Augustine Decline, a disease that kills off large areas of St. Augustine turf.

Examples of Hybrid Turfgrasses in the Market Now

El Toro Zoysia

(*Zoysia japonica x Zoysia matrella*) is a hybrid developed at the University of California Riverside in 1998. This variety has been in Hawaii for more than 20 years, having been brought through quarantine by Southern Turf Hawaii. Consumers have benefited from the natural adaptability of this turfgrass to our climate in the islands. Insect resistance, disease resistance, and low nutrient requirements make this variety a favorite of most landscapers.

EMPIRE® Turf Zoysia

(*Zoysia japonica x Zoysia matrella*) is a hybrid similar aesthetically to El Toro with characteristics desired in the landscape. Shade tolerance and disease resistance to dollar spot and brown patch are superior to El Toro. In the landscape this variety can be used in wet and shady areas where El Toro may not thrive.

Platinum TE Seashore Paspalum

(*Paspalum vaginatum sp.*) was developed by Dr. Ronnie Duncan, who started the turfgrass breeding program at the University of Georgia and developed the first turfgrass varieties of Seashore Paspalum such as, Salam, Sealsle 1, Sealsle 2000, SeaDwarf, and Sealsle Supreme. After a very successful career with UG, Dr. Duncan traveled the world and collected seashore paspalum specimens to develop a new hybrid named Platinum TE. Considered the top variety of seashore paspalum in golf and athletic fields, this variety is used on golf courses from tees to greens. It has a very high salt tolerance, shade tolerance, a dense root system, and is disease resistant.



In This Photo: Roots & Stolons

TIFTUF® Bermudagrass

(*Cynodon dactylon sp.*) is the most drought-tolerant turfgrass in the world. Developed in the University of Georgia turfgrass breeding program, the deep root system and genetics make this bermudagrass tolerant of long periods of drought while maintaining color and canopy density. Water is a limited and expensive resource in Hawaii, and this hybrid allows savings without sacrificing quality.

Geo™ Zoysia

(*Zoysia japonica x Zoysia tenuifolia*) is a fine-bladed zoysia that is taking the place of Emerald Zoysia in the landscape. This dense fine bladed zoysia can be mowed very low and is being used on golf greens at Hilo Municipal Golf Course. It does well in low light conditions and creates lower thatch than older varieties. This translates to less frequent verticutting and dethatching practices.

Toccoa Green™ Zoysia

(*Zoysia japonica sp. x Zoysia tenuifolia sp.*) is a fine-bladed zoysia that can be mowed higher than most fine-bladed zoysias without excessive thatch buildup. The color and ease of maintenance make this variety a popular new item.



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