Visitor Management Strategies for Hoʻomaluhia Botanical Garden

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1. Introduction

Increasing visitation has caused problems in outdoor recreational areas around the world. A growing number of these sites have had to develop management strategies to avoid damaging the area, guarantee the safety of its visitors, and improve the overall visitor experience. In recent years, Hoʻomaluhia Botanical Garden in Kāneʻohe, Oʻahu, has faced many issues resulting from increasing visitation.

Hoʻomaluhia was founded in 1982 by the U.S. Army Corps of Engineers as a flood control project. The facility doubles as a 400-acre botanical garden including a lake, hiking trails, a two-mile road, six parking lots, and 30 campsites. Annual visitation has dramatically increased in recent years, leading to an overwhelming number of visitors for the management team to oversee. The garden welcomed 193,996 visitors in 2015, but visitation grew by 189.3% to 561,209 visitors in 2021. Rising visitation has led to an overwhelming number of visitors for the management team to oversee. During their visit, many visitors remain on the garden's main road, resulting in overcrowding. Residents of the nearby community have also complained about vehicular traffic and visitors' cars parked or lined up outside their homes. As Hoʻomaluhia lacks a definitive plan for the future, the management team has expressed concerns about not being able to keep up with visitor and neighbor needs.

The management staff at Hoʻomaluhia has a long-term goal to develop a visitor management (VM) plan. Our team's role was to help inform their future long-term VM plan through data collection and a set of recommendations. This document is a collection of recommendations for Hoʻomaluhia Botanical Garden that aim to manage the total number of visitors to the garden, improve the visitor experience, and address the concerns of staff members and the nearby community. Worcester Polytechnic Institute students Megan Jacques, Caroline McLaughlin, Alyssa Morgan, and Megan Sin provided these strategies as a result of an Interactive Qualifying Project performed from October 2022 to March 2023. The team reviewed VM plans from similar outdoor recreational sites, collected and analyzed Hoʻomaluhia visitor data to identify visitor trends, and gathered feedback from stakeholders (visitors, garden staff, and residents of the nearby neighborhood) to

help develop controlled access management and VM strategies. The garden can examine each of these suggestions and conduct further research to create an effective and sustainable VM plan.

The following strategies are separated into long-term suggestions and short-term suggestions. Each category contains controlled access management strategies and VM strategies. Controlled access strategies intend to address issues caused by rising visitation by limiting daily visitation, while VM strategies intend to address issues caused by patterns of visitor behavior to reduce unsafe behavior and encourage visitors to fully utilize all areas of the garden. A list of pros and cons accompanies each strategy.

2. Short-term suggestions

Hoʻomaluhia could implement the following suggestions without major funding or assistance from external sources, including the city, county, state, or federal parties.

2.1 Controlled access strategies

Hours of operation

The garden is currently open to visitors seven days a week (except for Christmas Day and New Year's Day) from 9:00 a.m. to 4:00 p.m., and open for walk-in visitors from 6:30 a.m. to 6:30 p.m. Extended walk-in hours are intended to accommodate local residents. Staff members have shared that the current process of closing the garden and communicating the closing time to visitors is inefficient. Other staff members pointed out the lack of consistent grounds upkeep and time to familiarize themselves with the garden.

Strategy	Close the garden to public access for one day during the week	Close the entrance to the garden at 3:00 p.m.	No change to current strategy
Pros	• Provides staff members with more time for grounds maintenance • Allows staff members extra time to familiarize themselves with the layout and plants of the garden • Provides neighbors with more opportunities to use the garden while it is less crowded	• Decreases the number of visitors arriving right before closing • Allows late visitors to have enough time to explore the garden • Facilitates the closing procedure for staff members	• Maintains a consistent schedule
Cons	• Potentially increases the number of visitors on other days of the week	• Visitors may create long lines of vehicles to enter the garden right before closing access to the gate • May increase the number of vehicles parked outside residents' houses so visitors can walk into the garden	• Staff has 30 minutes to clear visitors out of the garden • The maintenance staff cannot operate machinery that may endanger visitors

We recommend that Hoʻomaluhia implements both changes to the garden. Adjusting Hoʻomaluhia's hours of operation could provide the staff with more time for maintenance, facilitate the garden's closing procedure, and provide neighbors with more opportunities to utilize the garden while it is less crowded. Based on data from 2022 and January 2023, we found that Wednesdays consistently received the lowest number of visitors, so Wednesday would be the most ideal day to close the garden.

2.2 Visitor management strategies

Online presence

The team's visitor interviews indicated that most visitors found out about the garden through Google, where the garden's government website is the first page listed when one searches the keywords "Hoʻomaluhia Botanical Garden." Therefore, it is crucial that the garden updates its website and official accounts to include up-to-date information to reach a large number of future visitors.

Strategy	Restructure the garden's website	Expand the garden's social media presence	No change to current strategy
Pros	• Facilitates the accessibility of garden information • Reduces rule-breaking by clearly explaining the garden's restrictions (including its rules regarding photography) to potential visitors	• Informs more visitors about the garden's offerings and rules, such as where photography is allowed • Allows the garden to directly request for unauthorized photos and misinformation to be taken down	• No additional personnel or funding will be needed
Cons	• Requires outsourcing or hiring new staff to develop and/or maintain the website • Requires fees to maintain the website	• Requires personnel to manage social media	• Social media influenced visitation remains driven by restricted photographs

We recommend that Hoʻomaluhia implements both changes to the garden. Including up-to-date descriptions of the garden's rules on its website and social media accounts could reduce unsafe or unwanted visitor behavior.

Communication of rules

The garden's current methods for communicating rules to visitors do not effectively persuade visitors to follow the rules. Likewise, the staff does not have a centralized method for communicating rules. Hoʻomaluhia should develop a standard list of rules and effectively communicate them to visitors.

Strategy	Provide a rehearsed overview of the rules to each party upon their entrance (via the entrance security guard)	Post a QR code at the garden entrance and education center that leads to a digital list of the rules	No change to current strategy
Pros	• Allows staff to directly emphasize the garden's most disregarded rules to visitors (i.e., closing time, speed limit, photography, etc.)	• Further emphasizes and clarifies the garden's rules to visitors • Gives visitors a copy of the rules that they may view on their mobile device at any time	• No additional resources and planning will be needed
Cons	• Requires time to develop this speech and figure out which rules are the most important to share • Requires training and time to educate the security guards on how best to communicate rules to visitors	• Single drivers cannot safely scan the QR code at the entrance gate without stopping, which could create traffic • Unaccessible for visitors who do not have a mobile device with QR compatibility	• Visitors continue to have a poor understanding of the garden's rules • Staff members continue to dedicate a great deal of time to enforce the rules

We recommend that Hoʻomaluhia implements both changes to the garden. Effectively providing the rules to every visitor will limit the amount of unauthorized or unsafe behavior. The management team could conduct interviews with staff members to determine what rules they feel should be included in this list of rules, ensuring to collaborate with staff members throughout the development process.

2.3 Additional activities and offerings

Visitors and staff members who participated in the team's interviews provided suggestions for additional activities and offerings that would benefit visitors' experiences.

Strategy	Create a guided tour program	Introduce on-site concessions	No change to current strategy
Pros	- Allows visitors to learn more about the garden from a knowledgeable guide - Allows staff members to expand their knowledge and familiarity with the garden	- Enhances the visitor experience - Gives guests more incentive to picnic in the garden, one of Hoʻomaluhia's original intended uses	- No additional funding, personnel, or resources will be needed - No change to the visitor experience
Cons	- Need to find or hire staff members who would be willing to lead tours - Requires time and resources to plan the tours and communicate the introduction of the program to visitors	- Increases littering and waste production and thus increase the need for ground maintenance - Need to determine a feasible location to place a concession stand - Need to contract a company or small business to supply the concessions - Need to hire staff to run the concessions stand - Returning visitors indicated that they would generally not be likely to purchase concessions	No enhancement to the visitor experience

The team recommends implementing a guided tour program to appeal to visitors who wish to learn more about the garden. Due to the more complicated process of introducing a concessions stand, the team encourages the garden to determine its feasibility before deciding whether to incorporate the change.

3. Long-term suggestions

The following suggestions may require resources such as funding, personnel, or authorizations from the city of Honolulu. Because of this, we predict that implementing any of these solutions would take an extended period of time.

3.1 Controlled access strategies

Reservation system

Hoʻomaluhia currently receives an overwhelming amount of visitors for staff members to manage. A reservation system would allow the garden to limit daily visitation. This system could reduce overcrowding and facilitate communication between staff and visitors.

Strategy	Introduce a reservation system	No change to current strategy
Pros	- Caps visitation at a certain number of visitors each day or caps the number of new arrivals during certain time blocks - Reduces overcrowding - Facilitates communication between staff and all visitors	No additional funding, personnel, or resources will be needed
Cons	- Requires a website to be built and maintained by garden staff and/or contractors - Some people may not show up for their reservation	Continues to allow unrestricted daily visitation

A vast majority of interviewed visitors indicated that they would prefer to make a reservation online rather than in person; therefore, the team recommends that Hoʻomaluhia creates an online reservation system. Hoʻomaluhia could consult outside contacts to determine whether a custom-made or pre-existing reservation system (such as Eventbrite) would work best for them. We suggest that only one or two staff members oversee this system for simplicity. The garden could also reserve some space for walk-up visitors who do not have reservations to accommodate last-minute visitors while still providing a large degree of predictability and control over total daily visitation.

Admission fee model

An admission fee would discourage visitors who only want to briefly enter the garden for photography purposes from coming to Hoʻomaluhia, a behavior that is widely reported by staff members.

Strategy	Introduce an admission fee model	No change to current strategy
Pros	- Discourages visitors who only want to briefly enter the garden for photography purposes - Honolulu Botanical Garden's management staff has experience implementing this system at Foster Botanical Garden - Helps limit the total number of visitors (if charging admission per person) - Helps limit the number of vehicles on the garden's main road at a time (if charging admission per vehicle)	No additional funding, personnel, or resources will be needed
Cons	- No electricity at the garden's entrance gate, meaning an on-site payment station would have to be elsewhere or the garden will have to collect payment online - Would have to be programmed and maintained by staff and/or contractors, which would require additional time and money - Could create financial problems if the garden receives a cut to its funding while its admission fee revenue is pooled into the city's funds or is lower than expected - May encourage visitors to park outside of the garden in front of neighbor's homes or utilize rideshare services to avoid the fee (if charging admission per vehicle)	Continues to allow unhindered daily visitation

The team recommends that Hoʻomaluhia introduces a free reservation system before deciding whether to implement an admission fee. This would only be necessary if the garden finds that a reservation system does not substantially reduce unmanageable visitation. We recommend that Hoʻomaluhia does not charge Hawaiʻi residents, children aged 12 and under, or active-duty military members for entry, similar to the systems used by many other parks in Hawaiʻi. The garden should implement an online payment system that simultaneously allows staff to account for walk-up visitors who do not have a reservation, as well as allows walk-up visitors to pay. Additionally, Hoʻomaluhia must decide whether to charge an admission fee per person or per vehicle.

3.2 Visitor management strategies

Pedestrian lane

Visitors and staff members have expressed concerns regarding the safety of pedestrians walking through the garden. Many drivers do not abide by the speed limit, making it even more dangerous for walkers who share the road with vehicles.

Strategy	Create a pedestrian lane on the main road	No change to current strategy
Pros	- Creates a safe area for pedestrians to walk on the side of the road - Deters pedestrians from standing and walking in the middle of the road - Allows the garden to possibly create designated, paved areas for photography - Makes the garden more accessible to all visitors, including those in wheelchairs	- No additional funding, personnel, or resources will be needed - The garden will not have to close for construction
Cons	- The existing road may not be wide enough for a pedestrian lane, forcing staff to remove obstacles that may be in the way, reduce the width of the main road, leave a gap in the pedestrian lane, or expand the entire road - May encroach on plants and overgrown vegetation - May require closing garden and/or road during the construction process - Requires funding	Does not alleviate any dangers caused by drivers to pedestrians

The team recommends that the garden implements this change for the safety of all visitors.

Signage

The garden currently lacks directional signage that encourages visitors to venture away from the main road and education center and towards the garden's hiking trails and scenic points. Meanwhile, staff members have shared that they feel there is an overabundance of signs that tell visitors what not to do (negative signage), disrupting the natural serenity of the garden. This signage may be perceived by visitors as unhelpful or overly harsh, as the signs do not clarify that photography is discouraged for safety purposes.

Strategy	Add more directional signage	Remove excess negative signage	No change to current strategy
Pros	● Facilitates navigation ● Encourages visitors to spread out to underutilized areas of the garden	● Restores the natural serenity of the garden ● Focuses on the quality of signage over its quantity ● Visitors are likely to have a more positive reaction to clear, respectful signage rather than harsh ones	● No additional funding, personnel, or resources will be needed
Cons	● Requires the help of the maintenance team ● Requires time and planning to determine where to place signage ● May require the help of external parties who specialize in designing signage	● Requires the help of the maintenance team ● Requires time and planning to determine how to phrase signage ● May require the help of external parties who specialize in designing signage	● Continues to discourage visitors from exploring underutilized areas of the garden

We recommend that Hoʻomaluhia implements both changes to the garden. Signage that specifies which trails are nearby and indicates trailheads would encourage visitors to deviate from the main road and explore more of the garden. Furthermore, the team recommends that the garden reassesses the clarity, usefulness, and potential repetitiveness of its existing signage to determine whether to keep, update, or remove each sign.

4. Dismissed suggestions

The following strategies were considered as suggestions, but the team ultimately decided against recommending them. The dismissed strategies and their reasons for dismissal are as follows.

Suggestion	Reason for dismissal
Expand the garden's hours	Hoʻomaluhia experiences issues with being open seven days a week and has additional hours for residents already. Additional hours would cause daylight hours to be taken away from the residents and would cause the staff—who are already spread thin—to work more.
Implement an admission fee for all visitors, including Hawaiʻi residents	Through our interviews, we found that many Hawaiʻi residents would not go to the garden if there was an admission fee for them. Enforcing a fee on residents could cause a decline in visitation from residents, meaning a decline in around 50% of the garden's visitors. While we aim to help manage and reduce visitation to the garden, we do not seek to discourage a group from visiting nor make them feel ostracized from their local areas.

5. Areas of further research

In addition to considering our recommendations, Hoʻomaluhia should consider performing an in-depth analysis of each accepted recommendation while developing its full VM plan. This analysis should especially focus on each strategy's timeline and feasibility, including the exact costs, resources, and authorizations needed from the city of Honolulu. Using this information, the garden can create a VM plan that outlines the best course of action to address rising visitation. Our team has identified specific areas that may warrant more research.

- The garden should **establish and/or refine its estimated carrying capacity** to further develop a reservation system. Carrying capacity can be used to inform the maximum number of reservation and walk-in groups that the garden can accommodate at one time, the maximum size of each of these groups, and how the garden spaces out each reservation time slot.
- Hoʻomaluhia should **determine how an admission fee may impact the garden's budget due to increased revenue.** The management team could speak with representatives from the city to determine potential consequences.
- If the garden decides to implement guided tours, staff members should **work with visitors to determine potential tour routes and length.** Staff could interview visitors to determine which areas they are most curious about, how long they would be willing to participate in a guided tour, and if visitors would be interested in specialized tours (i.e., tours regarding wildlife or specific types of plants) or paid tours.
- Instead of an admission fee, Hoʻomaluhia could **implement a suggested donation model alongside their reservation system,** similar to Lyon Arboretum. This would appease the portion of interview respondents who do not wish to pay for admission. A drawback to this model is that the garden will first need approval from the city, which requires paperwork and takes time to get a response. If interested, Hoʻomaluhia could research the benefits of this model as opposed to a flat admission fee.

The garden can conduct more in-depth interviews with stakeholders, VM experts, and the city to gather information regarding these areas. Focused research will allow Ho'omaluhia's management team to determine which strategies best fit the garden's needs and available resources.